Phase Two Environmental Site Assessment
365 Forest Street, 1420 Richmond Road & 2589 Bond Street, Ottawa, Ontario

Client:
11061917 Canada Incorporated
100-768 St. Joseph Boulevard
Gatineau, QC J8Y4B8

Project Number:
OTT-00252625-B0

Prepared By: Mark McCalla, P. Geo.

Reviewed By: Carl Hentschel, P. Eng., PMP

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Type of Document:
Final

Date Submitted:
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May 11, 2021

Legal Notification

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Executive Summary

EXP Services Inc. (EXP) was retained by 11061917 Canada Incorporated to complete a Phase Two Environmental Site Assessment (ESA) of three adjacent parcels of land: 365 Forest Street, 1420 Richmond Road, and 2589 Bond Street, in Ottawa, Ontario hereinafter referred to as the 'Phase Two property'. The objective of the Phase Two ESA was to address areas of potential environmental concern (APEC) identified in a Phase One ESA conducted at the Phase Two property by EXP. It is understood that this report is required as part of the permitting process with the City of Ottawa. We understand that a Record of Site Condition (RSC) is required due to a change in land use.

The findings of a Phase One ESA were presented in a report entitled *Phase One Environmental Site Assessment, 365 Forest Street, 1420 Richmond Road, and 2589 Bond Street, Ottawa, Ontario* dated April 26, 2019. The Phase One ESA identified the following APECs:

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 Concern	Media Potentially Impacted (Groundwater, Soil and/or Sediment)
1. Potential contamination from a former retail gasoline sales outlets and service garage at 1420 Richmond Road.	Northern lot of Phase One property (1420 Richmond Road)	#10: Autobody Repair Shops #28: Gasoline & Associated Products Storage in Fixed Tanks #30: Importation of Fill Material of Unknown Quality	Northern portion of Phase One property	Petroleum hydrocarbons (PHCs), benzene, toluene, ethylbenzene and xylenes (BTEX), volatile organic compounds (VOCs), and lead.	Soil and groundwater
2. Historic automotive repair garage at 2589 Bond Street Unknown fill material used in demolition of former residence.	Southeastern lot (2589 Bond Street) of Phase One property	#10: Autobody Repair Shops #30: Importation of Fill Material of Unknown Quality	Southeast portion of Phase One property	PHCs, BTEX, VOCs, Polycyclic aromatic hydrocarbons PAHs), and metals	Soil and groundwater

Area of Potential Environmental Concern (APEC)	Location of APEC on Phase One Property	Potentially Contaminating Activity (PCA)	Location of PCA (On-Site or Off-Site)	Contaminants of Concern	Media Potentially Impacted (Groundwater, Soil and/or Sediment)
3. Historic retail gasoline sales outlet and automotive repair garage at 2599 Carling Avenue	Southwest corner of 365 Forest Street lot	#10: Autobody Repair Shops #28: Gasoline & Associated Products Storage in Fixed Tanks	Adjacent to the south	PHCs, BTEX, VOCs, and lead	Soil and groundwater
4. Active automotive repair garage	365 Forest Street; northern part of building	#10: Autobody Repair Shops	Middle portion of Phase One property	PHCs, BTEX, VOCs, and lead	Soil and groundwater
5. Suspected former aboveground fuel oil storage tank location	365 Forest Street; south facing	#28: Gasoline & Associated Products Storage in Fixed Tanks	Middle portion of Phase One property	PHCs and BTEX	Soil and groundwater

Based on the Phase One ESA findings, EXP recommended conducting a Phase Two ESA at the Phase Two property. The Phase Two ESA consisted of advancing boreholes and completing them as groundwater monitoring wells. Soil and groundwater samples were collected and submitted for laboratory analysis of one or more of the following parameters: BTEX and PHC, VOC, PAH and metals.

For assessment purposes, EXP selected the Site Condition Standards (SCS), provided in Table 3 of *Soil, Groundwater and Sediment Standards for use Under Part XV.1 of the Environmental Protection Act*, Ministry of the Environment, Conservation and Parks (MECP), 2011 for residential/institutional land use at a site with coarse textured soil in accordance with Ontario Regulation 153/04 (as amended).

Based on the Phase Two ESA results, the following summary is provided:

- From April 24 to 30, 2019, a total of 12 boreholes (BH19-1 to BH19-12) were advanced at the Phase Two property and six (MW19-2, MW19-6 to MW19-10) were instrumented with a monitoring well.
- During drilling activities, fill was contacted beneath the pavement structure and surficial granular layer in all the boreholes. The fill extended to depths ranging from 1.4 m to 3.0 m. Borehole BH19-12 terminated within the fill at 4.4 m depth. The fill consists of clayey silty sand to silty sand with gravel. The fill contains rootlets and brick debris. A petroleum odour was noted in the fill samples from BH19-05. The fill in BH19-01 to BH19-03 is underlain by a sandy silt to silty sand layer from

1.4 m to 2.2 m depths. The fill and sandy silt to silty sand layer are underlain by glacial till that extends to depths of 6.5 m to 7.8 m. The glacial till ranges from a clayey silty sand to a silty sand with gravel. The glacial till is a silty clay in BH19-03 to BH19-05 from 2.2 m to 5.3 m depths. The glacial till contains shale fragments, cobbles and boulders.

- Auger refusal was met in BH19-02 to BH19-04, and MW19-05 at 6.2 m to 6.2 m depths. Groundwater was encountered at a depth of 1.31 m bgs in MW13 to 5.95 m bgs in MW19-9 on May 15, 2019. No petroleum sheens were observed in the monitoring wells during the sampling event. Based on the groundwater elevations, the groundwater flow direction is to the north.
- Based on the results of the investigation, there was one soil sample, located near the south side of the west building (BH19-5) that had exceedances of the MECP Table 3 SCS for PHC F2 and F3 and PAH parameters.

  Using the clean hole approach, an estimated area of 2,500 m^2 and an estimated thickness of impact of 1.7 m, the resulting volume of impacted soil is approximately 4,200 m^3.
- There was one groundwater sample, located near the south side of the west building that had exceedances of the MECP Table 3 SCS for PHC F2 and F3. The estimated area of impacted groundwater is approximately 1,700 m^2.

It is recommended that the impacted soil and groundwater on the Phase Two property be remediated. If the wells are no longer needed, they should be decommissioned in accordance with Ontario Regulation 903.

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1 Introduction

EXP Services Inc. (EXP) was retained by 11061917 Canada Incorporated to complete a Phase Two Environmental Site Assessment (ESA) of three adjacent parcels of land: 365 Forest Street, 1420 Richmond Road, and 2589 Bond Street, in Ottawa, Ontario, Ontario, hereinafter referred to as the 'Phase Two property'. The Phase Two property location is shown on Figure 1 in Appendix B. The objective of the Phase Two ESA was to address areas of potential environmental concern (APEC) identified in a Phase One ESA conducted at the Phase Two property by EXP. EXP understands that 11061917 Canada Incorporated plans to re-develop the land as residential and that this report is required as part of the permitting process with the City of Ottawa. We understand that a Record of Site Condition (RSC) is required.

This report has been prepared in accordance with the Phase Two ESA standard as defined by Ontario Regulation 153/04 (as amended), and in accordance with generally accepted professional practices. Subject to this standard of care, EXP makes no express or implied warranties regarding its services and no third-party beneficiaries are intended. Limitation of liability, scope of report and third-party reliance are outlined in Section 7 of this report.

1.1 Site Description

The Phase Two property is currently composed of three lots with a total area of 0.53 hectares. The lots are defined as:

- 1420 Richmond Road (20176 ft^2); Legal description of Plan 311 N Part of Lot 57; RICHMOND S; PIN 039620357.
- 365 Forest Street (21161 ft^2); Legal description of Plan 311 Part of Lots 56 & 57; Registered Plan 4R515 Parts 3 & 4 Less; Registered Plan 5R6510 Part 1; PIN 039620356.
- 2589 Bond Street (15267 ft^2); Legal description of Plan 311 Lot 41 Part of Lots 42 and 56; PINs 039620352, 039620390, & 039620391.

Topographically, the Phase Two property is relatively flat. The surrounding area has a slope down towards the north. Regional groundwater flow direction is inferred to be in the northerly direction towards the Ottawa River, found 650 m to the north.

The approximate Universal Transverse Mercator (UTM) coordinates for the Phase One property centroid is NAD83, Zone 18T, 438234m E, 5023654m N. The UTM coordinates were based on an estimate derived using Google Earth™. The accuracy of the centroid is estimated to range from 5 to 50 m.

1.2 Property Ownership

At the time of the investigation, the Phase Two Property was owned by 11061917 Canada Incorporated.

Owner Contact: Mr. Carmine Zayoun
11061917 Canada Incorporated
100-768 St. Joseph Boulevard
Gatineau, QC J8Y4B8

1.3 Current and Proposed Future Uses

At the time of the Phase Two ESA investigation, the Phase Two Property had a commercial land use. The future land use will be residential. A site plan is included in Appendix B.

1.4 Applicable Site Condition Standards

Analytical results obtained for Phase Two property soil and groundwater samples were assessed against Site Condition Standards (SCS) as established under subsection 169.4(1) of the Environmental Protection Act, and presented in the document Ontario Ministry of Environment, Conservation and Parks (MECP) "*Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act*", ("SGWS" Standards), (MECP, 2011a). 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 are provided in MECP (2011a). 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).

Application of the generic or background SCS to a specific site is based on a consideration of site conditions related to soil pH (i.e. surface and subsurface soil), thickness and extent of overburden material, (i.e. shallow soil conditions), and proximity to an area of environmental sensitivity or of natural significance. For some chemical constituents, 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 MECP (2011) Table 3: Full Depth Generic Site Condition Standards (SCS) in a non-potable groundwater condition for a residential/parkland/institutional property use and coarse textured soil. The selection of this category was based on the following factors:

- The predominant soil type on the Phase Two property was considered to be coarse textured (refer to the results of the Grain Size Analysis as provided in the Certificates of Analysis presented in Appendix E);
- There was no intention to carry out a stratified restoration at the Phase Two property;
- More than two-thirds of the Phase Two property has an overburden thickness greater than 2 m;
- The Phase Two property is not located within 30 m of a surface water body or an area of natural significance;
- The soil at the Phase Two property has a pH value between 5 and 9 for surficial soils; and, between 5 and 11 for subsurface soils;
- The property is not within an area of natural significance; does not include, nor is it adjacent to an area of natural significance, nor is it part of such an area; and, it does not include land that is within 30 m of an area of natural significance, nor is it part of such an area;
- The Phase Two property is serviced by the City of Ottawa's water distribution system and the surrounding properties are municipally serviced; and,
- The Phase Two property is planned for future residential use.

2 Background Information

2.1 Physical Setting

The Phase Two property has an area of 0.54 hectares and is currently improved with two buildings as shown in Figure 3 in Appendix B. The 365 Forest Street lot is improved with a single story, slab-on-grade multi-tenant building. The northern portion is a single bay automotive garage bay, with the southern portion formerly tenanting a restaurant. A mezzanine residential apartment was found at the southern side of the building but was not accessed due to structural concerns due to water damage. The building is built of painted masonry block with stucco on the western façade and the building has a flat roof.

The 2589 Bond Street property is improved with a single-story, peaked roofed, single bay garage building formerly used for automotive repairs. It is constructed of stucco covered block. At the time of the investigation, this lot and building were not accessible.

The Phase Two property is located within a municipally serviced area of the City of Ottawa (Figure 2 in Appendix B). Local Ontario Ministry of Environment, Conservation and Parks (MECP) water wells records show that bedrock was found at 8 - 10 m from surface. The bedrock in the general area is shale with sandstone lenses. With respect to surficial geology, beneath any fill, the Phase One property is underlain by medium grained stratified sand channels, with some silt, cut into marine clay

Topographically, the Phase Two property is relatively flat. The surrounding area has a slope down towards the north. Regional groundwater flow direction is inferred to be in the northerly direction towards the Ottawa River, found 650 m to the north.

2.2 First Developed Use Determination

Based on a review of historical aerial photographs, chain of title for the property, historical maps, and other records review, it appears the Phase One property had been developed with a motel and three residences along Bond Street in 1932. The 1921 to 1946 city directories showed that Forest Street, Bond Street, and Richmond Road either were not listed or did not have any listings.

2.3 Past Investigations

The following previous reports were provided to EXP for review.

- *Phase I-II Environmental Site Assessment, 1420 Richmond Road, 365 Forest Street and 2583 & 2589 Bond Street, Ottawa, Ontario*, dated July 24, 2012, prepared by Paterson Group Inc.
- *Supplemental Phase II Environmental Site Assessment, 1420 Richmond Road, Ottawa, Ontario*, dated April 8, 2019, prepared by Paterson Group Inc.
- *Phase One Environmental Site Assessment, 365 Forest Street, 1420 Richmond Road, and 2589 Bond Street, Ottawa, Ontario* dated June 27, 2019.

The findings of the Phase One ESA identified the following APECs:

Table 2.1: 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 Concern	Media Potentially Impacted (Groundwater, Soil and/or Sediment)
1. Potential contamination from a former retail gasoline sales outlets and service garage at 1420 Richmond Road.	Northern lot of Phase One property (1420 Richmond Road)	#10: Autobody Repair Shops #28: Gasoline & Associated Products Storage in Fixed Tanks #30: Importation of Fill Material of Unknown Quality	Northern portion of Phase One property	Petroleum hydrocarbons (PHCs), benzene, toluene, ethylbenzene and xylenes (BTEX), volatile organic compounds (VOCs), and lead.	Soil and groundwater
2. Historic automotive repair garage at 2589 Bond Street Unknown fill material used in demolition of former residence.	Southeastern lot (2589 Bond Street) of Phase One property	#10: Autobody Repair Shops #30: Importation of Fill Material of Unknown Quality	Southeast portion of Phase One property	PHCs, BTEX, VOCs, Polycyclic aromatic hydrocarbons PAHs), and metals	Soil and groundwater
3. Historic retail gasoline sales outlet and automotive repair garage at 2599 Carling Avenue	Southwest corner of 365 Forest Street lot	#10: Autobody Repair Shops #28: Gasoline & Associated Products Storage in Fixed Tanks	Adjacent to the south	PHCs, BTEX, VOCs, and lead	Soil and groundwater
4. Active automotive repair garage	365 Forest Street; northern part of building	#10: Autobody Repair Shops	Middle portion of Phase One property	PHCs, BTEX, VOCs, and lead	Soil and groundwater

Area of Potential Environmental Concern (APEC)	Location of APEC on Phase One Property	Potentially Contaminating Activity (PCA)	Location of PCA (On-Site or Off-Site)	Contaminants of Concern	Media Potentially Impacted (Groundwater, Soil and/or Sediment)
5. Suspected former aboveground fuel oil storage tank location	365 Forest Street; south facing	#28: Gasoline & Associated Products Storage in Fixed Tanks	Middle portion of Phase One property	PHCs and BTEX	Soil and groundwater

Based on the results of the Phase One ESA, EXP recommended that a Phase Two ESA be completed to assess the soil and groundwater quality at the Phase Two property.

3 Scope of the Investigation

3.1 Overview of Site Investigation

The purpose of the Phase Two ESA was to investigate the soil and groundwater quality at the Phase Two property and to obtain soil and groundwater data to further characterize conditions in the surficial fill/shallow overburden soils.

It is understood that the Phase One Property is to be re-developed with a residential development. As part of the permitting process, the City of Ottawa requires that a Phase Two ESA be completed in accordance with Ontario Regulation 153/04 (as amended).

3.2 Scope of Work

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

- Request local utility locating companies (e.g., cable, telephone, gas, hydro) to mark any underground utilities present at the Phase Two property;
- Retain a private utility locating company to mark any underground utilities present in the vicinity of the borehole locations and to clear the individual borehole locations;
- Advance a total of eleven (11) boreholes and complete six (6) of them as a groundwater monitoring wells;
- Collect representative soil samples for chemical analysis of metals, VOC, PHC, and BTEX (PAH were added to assess the fill quality);
- Collect representative groundwater samples for chemical analysis of metals, VOC, PHC, and BTEX;
- Measure groundwater levels in the monitoring wells;
- Complete a survey of the borehole locations relative to a geodetic or other permanent benchmark and in reference with the Universal Transverse Mercator (UTM) coordinate system for vertical and horizontal control; and,
- Review the analytical data and prepare a report of the findings.

Mark Devlin B. Sc. conducted assessment work for this project and was supervised by Mark McCalla, P.Geo., QP_{ESA}. Mark McCalla is a qualified person as defined by O. Reg. 153/04.

3.3 Media Investigated

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

The potential contaminants of concern (PCOCs) identified in EXP's (2019) Phase One ESA were identified as target parameters for this Phase Two ESA. The areas of potential environmental concern (APEC) and PCOCs identified in the Phase One ESA are outlined in Table 2.1.

The rationale for the selection of borehole and monitoring well locations during this investigation are to place them on the property to assess the soil and groundwater conditions in the APECs. A copy of the Sampling and Analysis Plan prepared for the Phase Two property is provided in Appendix A.

3.4 Phase One ESA Conceptual Site Model

In order to develop a conceptual model for the Phase Two property and surrounding study area, the following physical characteristics and pathways were considered.

3.4.1 Current and Past Uses

Based on a review chain of title information, air photos, and other records, the Phase One property had been developed with a motel and three residences along Bond Street around 1951. A gasoline retail outlet at 1420 Richmond Road was constructed in 1961 and the restaurant and service garage at 365 Forest Street were constructed in the late 1960s. The three residences along Bond Street were removed between 1976 and 1991 and a small service garage was constructed along Bond Street. The gasoline retail outlet at 1420 Richmond Road was removed between 1991 and 1999.

3.4.2 Summary of Potentially Contaminating Activities

As per Ontario Regulation (O.Reg.) 153/04, a Potential Contaminating Activity (PCA) is defined as one of fifty-nine (59) industrial operations set out in Table 2 of Schedule D that occurs or has occurred in a Phase One study area. The following PCAs were identified and are shown on Figure 2 in Appendix B:

- PCA #1 – 1420 Richmond – Historic retail gasoline sales outlet and service garage, located on northern portion of the Phase One property (PCA#10 – Autobody Repair Shops, PCA#28 – Gasoline and Associated Products Stored in Fixed Tanks, and PCA#30 – Importation of Fill Material of Unknown Quality.
- PCA #2 – 1420 Richmond – Unknown fill material brought on the Phase Two property after the decommissioning of residence at the southeast corner of the property (PCA#30 – Importation of Fill Material of Unknown Quality).
- PCA #3 – 2589 Bond Street – Historic automotive repair garage, located on the southeast portion of the Phase One property (PCA#10 – Autobody Repair Shops).
- PCA #4 – 2576 Carling Avenue – Historic Fire Station located 100 m to the south of the Phase One property (PCA#24 – Fire Training). Since this was just a fire hall, with no training activities, it is not considered to be an APEC.
- PCA #5 – 2599 Carling Avenue – Historic retail gasoline sales outlet and automotive repair garage, located adjacent to south of the Phase One property (PCA#10 – Autobody Repair Shops, PCA#28 – Gasoline and Associated Products Stored in Fixed Tanks).
- PCA #6 – 1386 Richmond Road– Historic retail gasoline sales outlet, located 100 m to the northeast of the Phase One property (PCA#28 – Gasoline and Associated Products Stored in Fixed Tanks). Based on the intervening distance and downgradient direction, this is not considered an APEC.
- PCA #7 – 1377 Richmond Road – Automotive sales dealership and repair garage, located 100 m to the northeast of the Phase One property (PCA#10 – Commercial Autobody Shops). Based on the intervening distance and downgradient direction, this is not considered an APEC
- PCA #8 – 365 Forest Street – Active automotive repair garage, located at western side of the Phase One property (PCA#10 – Autobody Repair Shops).
- PCA #9 – 1397 Richmond Road – Ottawa Fire Station 22, located 40 m to the north of the Phase One property. (PCA#24 – Fire Training). Based on the assumed direction of groundwater flow and intervening distance, this is not considered an APEC.

- PCA #10 – 365 Forest Street – Suspected a former AST location, identified by others, along the site building's southern side (PCA#28 – Gasoline and Associated Products Stored in Fixed Tanks). While previously investigated by others.

No other PCAs that took place within the vicinity of the Phase Two property (approximately 250 m radius) were identified.

3.4.3 Areas of Potential Environmental Concern

As a result of the PCAs, the report identified the following APECs at the Phase Two property as shown on Figures 4 and 5 in Appendix B:

- APEC 1 – (entirety of 1420 Richmond portion of the Phase One property property) Contaminated soil and groundwater. This APEC is associated with PCAs 1 and 2. The potential contaminants of concern include PHC, BTEX, VOCs, and lead.
- APEC 2 – (entirety of 2589 Bond Street portion of the Phase One property property) Contaminated soil and groundwater. This APEC is associated with PCA 3. The potential contaminants of concern include PHC, BTEX, VOCs, PAHs, and metals.
- APEC 3 – (southwest corner of 365 Forest Street portion of the Phase One property property) Contaminated soil and groundwater. This APEC is associated with PCA 5. The potential contaminants of concern include PHC, BTEX, VOCs, and lead.
- APEC 4 – (in vicinity of garage bay on 365 Forest Street portion of the Phase One property property) Contaminated soil and groundwater. This APEC is associated with PCA 8. The potential contaminants of concern include PHC, BTEX, VOCs, and lead.
- APEC 5 – (along southern exterior facing of 365 Forest Street building on the Phase One property property) Contaminated soil and groundwater. This APEC is associated with PCA 10. The potential contaminants of concern include PHC and BTEX.

It is noted that any significant uncertainty or absence of information has the ability to affect the Phase One Conceptual Site Model. However, based on the information and findings presented within the Phase One ESA, it is EXP's opinion that any uncertainty would be minimal, and it would not alter the validity of the model presented above.

3.4.4 Topography and Geology

Topographically, the Phase Two property is relatively flat. The Phase One property is located in the physiographic region known as the Rockcliffe Formation. The bedrock in the general area is shale with sandstone lenses. With respect to surficial geology, beneath any fill, the Phase One property is underlain by medium grained stratified sand channels, with some silt, cut into marine clay. The depth to bedrock is approximately 8 to 10 m below grade

3.4.5 Estimated Groundwater Flow Direction

Topographically, the Phase One property relatively flat with an area downwards slope towards the north. Regional groundwater flow direction is to be in the northern direction towards the Ottawa River.

3.4.6 Underground Utilities

The Phase Two property is connected to the municipal water and sewage systems, the natural gas distribution network, and overhead Hydro/telephone/cable lines.

3.5 Deviations from Sampling and Analysis Plan

The field investigative and sampling program was carried out following the requirements of the Site Sampling and Analysis Plan (SAAP in Appendix A). No significant deviations from the Sampling and Analysis Plan were reported that affected the sampling and data quality objectives for the Phase Two property.

3.6 Impediments

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

4 Investigation Method

4.1 General

The Phase Two property investigative activities consisted of drilling boreholes to facilitate the collection of soil samples for chemical analysis and the installation of monitoring wells for hydrogeological property characterization and the collection of groundwater samples for chemical analysis.

4.2 Borehole Drilling

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

From April 24 to 30, 2019, a total of 12 boreholes (BH19-1 to BH19-12) were advanced at the Phase Two property by Marathon Drilling, a licensed well contractor, under the full-time supervision of EXP staff. A track mounted CME drill rig with split spoon samplers was used to collect the soil samples. A monitoring well was installed in six boreholes to facilitate groundwater sampling. The locations of the boreholes and monitoring wells are presented on Figure 5 in Appendix B.

No petroleum-based greases or solvents were used during drilling activities. EXP staff continuously monitored the drilling activities and recorded the depth of soil sample collection and total depth of boring. Field observations are summarized on the borehole logs provided in Appendix C.

The split spoon samplers were decontaminated between sampling intervals by the drilling contractor using a potable water/phosphate-free detergent solution followed by rinses with potable water.

4.3 Soil Sampling

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

Soil samples for geologic characterization were collected on a continuous basis in the overburden materials using 5 cm diameter, 61 cm long, split spoon samplers advanced into the subsurface using the drilling rig. The soil cores were removed from the samplers upon retrieval by drilling personnel. Geologic details of the recovered cores were logged by EXP field staff. EXP staff continuously monitored the drilling activities to log the stratigraphy observed from the recovered soil cores, to record the depth of soil sample collection, to record total depths of borings, and to record visual or olfactory observations of potential impacts. Field observations are summarized on the borehole logs provided in Appendix C.

Soil samples identified for possible laboratory analysis were collected from the split spoon sampler and placed directly into pre-cleaned, laboratory-supplied glass sample jars/vials. Samples to be analysed for VOC, PHC fraction F1 and BTEX were collected using a soil core sampler and placed into vials containing methanol as a preservative. The jars and vials were sealed with Teflon-lined lids to minimize head-space and reduce the potential for induced volatilization during storage/transport prior to analysis. All soil samples were placed in clean coolers containing ice prior to and during transportation to the subcontract laboratory, Maxxam Analytics (Maxxam) of Ottawa, Ontario. The samples were transported/submitted within 24 hours of collection to the laboratory following chain of custody protocols for chemical analysis.

4.4 Field Screening Measurements

Where there was sufficient recovery, readings of petroleum vapour concentrations in the soil samples collected during the drilling investigation were recorded using a RKI Eagle 2. This instrument is designed

to detect and measure concentrations of combustible gas in the atmosphere to within 5 parts per million by volume (ppmv) from 0 ppmv to 200 ppmv, 10 ppmv increments from 200 ppmv to 1,000 ppmv, 50 ppmv increments from 1,000 ppmv to 10,000 ppmv, and 250 ppmv increments above 10,000 ppmv. It is equipped with two ranges of measurement, reading concentrations in ppmv or in percentage lower explosive limit (% LEL). The RKI Eagle 2 instrument can determine combustible vapour concentrations in the range equivalent to 0 to 11,000 ppmv of hexane.

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

A portion of each soil sample collected from the boreholes was placed in a sealed “zip-lock” plastic bag and allowed to reach ambient temperature prior to field screening using an RKI Eagle combustible vapour meter, calibrated to hexane. The samples are left to equilibrate within the bag at a temperature above 15^{o}C for thirty minutes before measurement of the peak headspace concentration is taken. The measurements were made by inserting the instrument’s probe into the plastic bag while manipulating the sample to ensure volatilization of the soil gases. These readings provide a real-time indication of the relative concentration of combustible vapours encountered in the subsurface during drilling and are used to aid in the assessment of the vertical and horizontal extent of contamination and the selection of soil samples for analysis The field screening measurements, in parts per million (ppm) hexane equivalents, are presented with the borehole logs provided in Appendix C.

4.5 Soil Sample Submission

Soil samples were selected for laboratory analysis based on combustible vapour measurements and visual and olfactory evidence of impacts, where observed. One worst case soil sample from each borehole was submitted for laboratory analysis of metals, VOC, PAH, PHC, and BTEX.

4.6 Groundwater: Monitoring Well Installation

Groundwater monitoring wells were installed in six of the boreholes (MW19-2, MW19-6 to MW19-10) by Marathon. The monitoring wells were installed in general accordance with the Ontario Water Resources Act - R.R.O. 1990, Regulation 903 (as-amended).

The monitoring wells consisted of a 3.0 m length of 37 mm diameter Schedule 40 PVC screen and an appropriate length of PVC riser pipe. The annular space around the well was backfilled with sand to an average height of 0.3 m above the top of the screen. A bentonite seal was added from the top of the sand pack to approximately 0.3 m below ground surface. The monitoring wells were completed with flush mount protector at the surface grade. Details of the monitoring well installations are shown on the Borehole Logs provided in Appendix C.

The installation details of the installed monitoring wells are summarized in Table 4.1.

Table 4.1: Monitoring Well Installation Details

Monitoring Well/Piezometer	Ground Elevation (MASL)	Top of Sand Elevation (m)	Top of Screen Elevation (m)	Bottom of Screen Elevation (m)	Bottom of Borehole Elevation (m)	Depth of Borehole (mbgs)
BH1-18	75.75	71.75	71.60	68.55	68.55	7.2
MW19-2	74.37	71.52	71.22	68.17	68.07	6.2
MW19-6	75.28	72.55	72.25	69.20	69.20	6.1
MW19-7	75.21	72.45	72.15	69.10	69.10	6.1
MW19-8	75.51	72.76	72.46	69.41	65.90	9.6
MW19-9	75.65	72.90	72.60	69.55	67.00	9.6
MW19-10	74.74	71.95	71.65	68.60	68.6	6.1

Note: Elevations were collected using a high precision GPS unit and a geodetic datum was established at the Phase Two Property.
mbgs – metres below ground surface
TOC - top of plastic well casing

When the monitoring wells are no longer required, they must be decommissioned in accordance with the procedure outlined in the Ontario Water Resources Act - R.R.O. 1990, Regulation 903 - Amended to O. Reg. 128/03.

Measures taken to minimize the potential for cross contamination or the introduction of contaminants during well construction included:

- The use of well pipe components (e.g. riser pipe and well screens) with factory machined threaded flush coupling joints;
- Construction of wells without the use of glues or adhesives;
- Removing the protective plastic wraps from well components at the time of borehole insertion to prevent contact with the ground and other surfaces;
- Cleaning of augers between sampling locations; and,
- The use of hollow stem augers to prevent loose and potentially contaminated material in overlying layers from sloughing into the boreholes and coming into contact with groundwater.

4.7 Groundwater: Field Measurement of Water Quality Parameters

The static water level was measured, the depth of each well was recorded and the well sampled. EXP used an interface probe to measure the possible presence of light non-aqueous phase liquid (LNAPL) in the monitoring well. The meter was calibrated by Pine Environmental Limited prior to the fieldwork using standard pH and conductivity solution.

4.8 Groundwater: Sampling

Groundwater samples were collected from the monitoring wells on May 15, 2019. The monitoring activities consisted of measuring the depth to groundwater in each monitoring well so that groundwater flow and direction below the Phase Two Property could be assessed. The water level measurements were recorded on water level log sheets. The water level meter probe was decontaminated between monitoring well locations with a spray bottle of water and alconox solution, paper towel, then potable water.

The well was then sampled using a “low flow” technique whereby the well was continuously purged using an electric pump (equipped with dedicated tubing) and parameters within the purged water were monitored using a groundwater chemistry multi-meter probe (YSI 550) at 3 minute intervals. These parameters include: pH, conductivity, temperature, and salinity. Once these parameters were found to deviate less than 10% over three testing events, equilibrium was deemed to have occurred and a sample of the groundwater was collected.

The purge water was also continuously monitored for visual and olfactory evidence of petroleum and solvent impact (sheen and odour). The groundwater sampling during the completion of this Phase Two ESA was undertaken in accordance with the Sampling and Analysis Plan presented in Appendix A.

The groundwater samples were collected in laboratory provided sample bottles and submitted to Maxxam Analytics for analysis of metals, VOC, PHC, and BTEX. The groundwater samples were placed in clean coolers containing ice prior to and during transportation to the subcontract laboratory.

4.9 Sediment: Sampling

As no water body was present at the Phase Two Property, sediment sampling was not part of the Phase Two ESA.

4.10 Analytical Testing

The contracted laboratory selected to perform chemical analysis on all soil and water samples was Maxxam Analytics. Maxxam 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*.

4.11 Elevation Survey

An elevation survey was conducted to obtain vertical control of the newly installed monitoring well locations. The top of casing and ground surface elevation of each monitoring well location was surveyed using a high precision GPS unit.

4.12 Residue Management

The drill cuttings were placed in steel drums at the Phase Two property.

Purge water was also stored in a steel drum at the Phase Two property.

4.13 Quality Assurance and Quality Control Measures

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 collected regarding any given site. 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:

- Collection and analysis of blind duplicate soil and groundwater samples to ensure analytical precision;
- Using dedicated and/or disposal sampling equipment;
- Using a trip blank for BTEX during sampling;
- 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.

Maxxam Analytics'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 Review and Evaluation

5.1 Geology

The detailed soil profiles encountered in the boreholes are provided on the borehole logs found in Appendix C. Boundaries of soils indicated on the logs are intended to reflect transition zones for the purpose of environmental assessment and should not be interpreted as exact planes of geological change. A brief description of the soil stratigraphy at the Phase Two property, in order of depth, is summarized in the following sections.

5.1.1 Fill Material

Fill was contacted beneath the pavement structure and surficial granular layer in all the boreholes. The fill extended to depths ranging from 1.4 m to 3.0 m. Borehole No. 19-12 terminated within the fill at 4.4 m depth. The fill consists of clayey silty sand to silty sand with gravel. The fill contains rootlets and brick debris. A petroleum odour was noted in the fill samples from BH19-05.

5.1.2 Native Material

The fill in BH19-01 to BH19-03 is underlain by a sandy silt to silty sand layer from 1.4 m to 2.2 m depths. The fill and sandy silt to silty sand layer are underlain by glacial till that extends to depths of 6.5 m to 7.8 m. The glacial till ranges from a clayey silty sand to a silty sand with gravel. The glacial till is a silty clay in BH19-03 to BH19-05 from 2.2 m to 5.3 m depths. The glacial till contains shale fragments, cobbles and boulders.

The grain size analyses showed that less than 50% of the soil had a grain size of silt or finer. This indicates that the native soil is coarse grained. The results of the grain size analyses are found in Appendix A.

5.1.3 Bedrock

Auger refusal was met in BH19-02 to BH19-04, and MW19-05 at 6.2 m to 6.2 m depths. Conventional core drilling techniques were used to advance BH 19-01, BH19-03, MW19-08, MW19-09 and BH19-11 beyond the auger refusal depths to termination depths of 8.0 m to 9.6 m confirming that auger refusal was met on shale bedrock.

5.2 Aquifers

In the Ottawa area, the regional aquifers consist of both bedrock and overburden sources, with the two key aquifers consisting of the highly weathered and fractured portion of the upper bedrock surface and overlying sand and gravel deposits (contact zone aquifer) and deeper bedrock aquifers.

In southeastern Ontario, there are four main bedrock aquifers (Singer et al., 2003):

- Nepean-March-Oxford Aquifer
- Rockcliffe Aquifer
- Ottawa Group Aquifer
- Billing-Carlsbad-Queenston Aquifer

In the vicinity of the Phase One Property, the primary bedrock aquifer is the Ottawa Group. This aquifer is considered to have good water yielding capacity with generally fair to good water quality (RRCA and SNCA, 2008).

The contact zone aquifer, which generally includes the sand and gravel deposits and underlying fractured bedrock, is present across the Ottawa region, with more than 90% of the water extracted in eastern Ontario is extracted from the Contact Zone Aquifer (RRCA and SNCA, 2008). The contact zone aquifer varies in thickness across the region due to the large variation in the zone of upper bedrock fracturing.

Regional groundwater flow in both the contact zone and bedrock have been interpreted to be to the northeast towards the Ottawa River, generally following bedrock topography.

Recharge of aquifers regionally is limited due to the confining silty clay layer resulting from the former Champlain Sea. It has been estimated that only 10% of precipitation that falls in the Ottawa region infiltrates into the ground to recharge the aquifers, with the remainder of the precipitation being lost to evapotranspiration or runoff to rivers and lakes (City of Ottawa, 2011).

5.3 Groundwater: Elevations and Flow Direction

The monitoring well network advanced as part of this Phase Two ESA consists of eleven monitoring wells screened within the overburden bedrock at the Phase Two property.

Groundwater elevations and water levels were measured at the Phase Two property on May 15, 2019. Groundwater was encountered at a depth of 1.31 m bgs in MW13 to 5.95 m bgs in MW19-9. No petroleum sheens were observed in the monitoring wells during either sampling event.

A summary of the elevation survey and groundwater levels for each well are shown on Table 5.1.

Table 5.1: Groundwater Elevations

Monitoring Well ID	Ground Elevation (MASL)	May 15, 2019	
		Water Level (mbg)	Water Level (MASL)
BH1-18	75.75	3.50	72.25
MW2A	74.56	1.79	72.77
MW3A	74.95	1.94	73.01
BH6	74.80	2.40	72.40
MW13	74.07	1.31	72.76
MW19-2	74.37	1.92	72.45
MW19-6	75.28	2.40	72.88
MW19-7	75.21	1.40	73.81
MW19-8	75.51	5.68	69.83
MW19-9	75.65	5.95	69.70
MW19-10	74.74	2.29	72.45

Note: Elevations were referenced using a high precision GPS unit and a geodetic datum was established at the Phase Two Property.

mbtoc – metres below top of plastic well casing
mASL – metres above sea level
NA – not applicable

Based on the groundwater elevations from May 15, 2019, the groundwater flow direction is to the north as shown on Figure 6 in Appendix B. EXP notes that groundwater flow direction and level can be influenced by utility trenches and other subsurface structures and may migrate in the bedding stone of nearby subsurface utility trenches.

5.4 Groundwater: Hydraulic Gradients

The horizontal hydraulic gradients for the groundwater flow components identified in the overburden aquifer based on the May 2019 groundwater elevations and was 0.007.

5.5 Single Well Response Tests (SWRTs) Analysis

Single well response tests were conducted on BH1-18 and MW19-2 as a part of this Phase Two ESA. The calculated hydraulic conductivity of the silty glacial till was 1.6×10^{-8} m/s.

5.6 Groundwater: Hydraulic Conductivity

The horizontal hydraulic conductivity in the overburden unit was estimated from the analysis of the soil types observed during the drilling activities and from a review of the grain size analysis. The majority of the native soils consisted of sandy silt overlying silty till. The water table was found within the silty till. Based on estimates provided by *Freeze and Cherry (1979)* the approximate horizontal hydraulic conductivity for silty till ranges from 10^{-6} m/s to 10^{-12} m/s.

5.7 Soil Texture

Based on the grain size analysis of 5 soil samples, the soil texture at the water table at the Phase Two property was assessed to be coarse textured (refer to the five grain-size/hydrometer analyses in Appendix E) consisting of sandy silt till. Therefore, the soil texture is coarse grained.

5.8 Soil: Field Screening

Field screening involved using the combustible vapour meter to measure vapour concentrations, in parts per million volume (ppmv) hexane equivalent, in the collected soil samples in order to assess the presence of soil gases which would imply potential petroleum hydrocarbon impact. The vapour readings obtained during the drilling activities are presented on the borehole logs in Appendix D. As indicated, all boreholes have vapour readings ranging from 0 ppm to 200 ppmv. The sample with 200 ppmv also had petroleum odours.

Inspection of the soil cores retrieved from the boreholes did not indicate the presence of sheen, the presence of a separate organic phase, or other evidence of a non-aqueous phase liquid (NAPL) either in the surficial fill or overburden soil materials. No petroleum staining was observed in any of the soil samples.

5.9 Soil Quality

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

Summaries of the soil analytical results are found in Appendix D. Copies of the laboratory Certificates of Analysis for the tested soil samples are provided in Appendix E.

The MECP Table 3 SCS are applicable if soil pH is in the range of 5 to 11 for subsurface soil (greater than 1.5 m below soil surface). The Certificates of Analysis includes a pH measurement taken from the subsurface. Three soil samples were submitted for pH analysis with results of 6.06 to 7.73. The pH values were within the acceptable range for the application of MECP Table 3 SCS.

5.9.1 Petroleum Hydrocarbons

Twelve (12) soil samples and two blind duplicates were submitted for PHC and BTEX analyses. The concentrations of PHC and BTEX measured in the analysed soil samples were less than the MECP 2011 Table 3 SCS, with the exception of PHC F1, F2 and F3 in the soil sample from MW19-5 at a depth of 1.5 m to 2.1 m, as shown in Table 1 in Appendix D. The area of PHC impact to soil is shown on Figure 7 and on cross-sections shown on Figures 10A and 11A.

5.9.2 Volatile Organic Compounds

Twelve (12) soil samples and two blind duplicates were submitted for VOC analyses. The concentrations of VOC measured in the analysed soil samples were less than the MECP 2011 Table 3 SCS, as shown in Table 2 in Appendix D.

5.9.3 Metals

Twelve (12) soil samples and two blind duplicates were submitted for metals analyses. The concentrations of metals measured in the analysed soil samples were less than the MECP 2011 Table 3 SCS, as shown in Table 3 in Appendix D.

5.9.4 Polycyclic Aromatic Hydrocarbons

Twelve (12) soil samples and two blind duplicates were submitted for PAH analyses. As shown in Table 4 in Appendix D, the concentrations of PAH measured in the analysed soil samples were less than the MECP 2011 Table 3 SCS, with the exception of methylnaphthalene and naphthalene in the soil sample from MW19-5 at a depth of 1.5 m to 2.1 m. The detection limits for acenaphthalene and dibenz(a,h)anthracene exceeded the MECP Table 3 SCS in the same sample. The area of PAH impact to soil is shown on Figure 8 and on the cross-sections shown on Figure 10 B and 11B.

5.9.5 Chemical Transformation and Soil Contaminant Sources

There was one sample, located near the south side of the west building that had exceedances of PHC F1 to F3, methylnaphthalene and naphthalene of the MECP Table 3 SCS. Chemical transformations are a concern at the Phase Two property. It is also expected that these parameters could be acting as a contaminant mass that could impact the Phase Two property ’s groundwater. The maximum soil concentrations are presented in Table 5.

5.9.6 Evidence of Non-Aqueous Phase Liquid

Inspection of the soil cores retrieved from the boreholes did not indicate the presence of non-aqueous phase liquid (NAPL), staining or sheen. Petroleum odours were observed during soil sampling activities at BH 19-5. NAPLs are not expected to be present at the Phase Two property.

5.10 Groundwater Quality

Representative groundwater samples were collected from the monitoring wells to assess groundwater quality at the Phase Two property. Evidence of free phase product (i.e. visible film or sheen), and odour was not noted during well development or purging.

The groundwater analytical results are summarized on Tables 6 to 9 in Appendix D and the Certificates of Analysis are enclosed in Appendix E.

5.10.1 Petroleum Hydrocarbons

Ten (10) groundwater samples and two blind duplicates were submitted for the chemical analysis of PHC and BTEX. As shown in Table 5 in Appendix D, the concentrations of PHC and BTEX parameters in the groundwater samples were non-detect and below the MECP Table 3 SCS, with the exception of the groundwater sample from BH6 which had exceedences of PHC F2 and F3. The area of PHC impact to soil is shown on Figure 9 and on cross-sections shown on Figures 12 and 13.

5.10.2 Volatile Organic Compounds

Ten (10) groundwater samples and two blind duplicates and a trip blank were submitted for the chemical analysis of volatile organic compounds (VOC). As shown in Table 6 in Appendix D, the concentrations of VOC parameters in the groundwater sample were non-detect and below the MECP Table 3 SCS, with the exception of 1,2-dichloroethane in the groundwater sample from MW19-8. This well was re-sampled on May 29, 2019 and the 1,2-dichloroethane concentration was less than the MECP Table 3 SCS.

5.10.3 Metals

Ten (10) groundwater samples and two blind duplicates were submitted for the chemical analysis of metals. As shown in Table 7 in Appendix D, the concentrations of metals parameters in the groundwater samples were less than the MECP Table 3 SCS.

5.10.4 Polycyclic Aromatic Hydrocarbons

Ten (10) groundwater samples and two blind duplicates were submitted for the chemical analysis of PAH. As shown in Table 8 in Appendix D, the concentrations of PAHs parameters in the groundwater samples were less than the MECP Table 3 SCS.

5.10.5 Chemical Transformation and Contaminant Sources

There was one sample, located near the south side of the west building that had exceedances of PHC F2 and F3 of the MECP Table 3 SCS. Chemical transformations are a concern at the Phase Two property . The maximum groundwater concentrations are presented in Table 10.

5.10.6 Evidence of Non-Aqueous Phase Liquid

Inspection of the groundwater monitoring wells did not indicate the presence of non-aqueous phase liquid (NAPL), staining or sheen. Odours were not observed during groundwater sampling activities. NAPLs are not expected to be present at the Phase Two property.

5.11 Sediment Quality

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

5.12 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/upper overburden materials and groundwater at the Phase Two property. QA/QC measures, as described in Section 4.13, included:

- Using dedicated and/or disposal 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.

Review of field activity documentation indicated that recommended sample volumes were collected from groundwater for each analytical test group into appropriate containers and preserved with proper chemical reagents in accordance with the protocols set out in the *Protocol for Analytical Methods used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act* (MOE, 2004). Samples were preserved at the required temperatures in insulated coolers and met applicable holding time requirements, when relinquished to the receiving laboratory. Where the concentrations of the analyzed representative soil sample and/or the duplicate were not greater than five times the laboratory MDL, RPDs could not be calculated. The results of the analyses where the concentrations were at least five times the laboratory MDL compared to the duplicate sample concentrations were within an acceptable degree of variance. The RPD results are found in Tables 11 to 18 in Appendix D. Since laboratory duplicate measures laboratory precision while field duplicates measures laboratory and field precision, alert limits for field duplicates are two times the laboratory RPD.

Duplicate soil sample pairs MW19-2 SS3 and its duplicate BH19-17 SS3, and MW19-6 SS3 and its duplicate BH15 SS3 were submitted for chemical analysis of BTEX, PHC, VOC, and metals. For QA/QC purposes, the analytical sample results are quantitatively evaluated by calculating the relative percent difference (RPD) between the samples and their duplicates. The concentrations of BTEX and PHC F1 were generally less than the laboratory reported detection limits for both the primary and duplicate samples. The RPD for PHC, PAH, and VOC could not be calculated and the metals pair had RPDs that were less than the alert limits and therefore the soil data is acceptable from a RPD perspective.

The RPD for PHC, PAH, and VOC in the groundwater sample pairs (MW13 and its duplicate MW19-21, and BH6 and its duplicate MW19-20) were less that the alert limits and therefore the groundwater data is acceptable from a RPD perspective. The RPD for one metal (zinc) exceeded the alert limit. The remaining metals parameters were less than the alert limits. This indicates that the groundwater data the is acceptable from a RPD perspective.

Certificates of Analysis were received from Maxxam Analytics reporting the results of all the chemical analyses performed on the submitted soil and groundwater samples. Copies of the laboratory Certificates of Analysis are provided in Appendix E. A review of the Certificates of Analysis prepared by the laboratory indicates that they were in compliance with the requirements set out under subsection 47(3) of O.Reg. 511/09.

The analytical program conducted by laboratory included analytical test group specific QA/QC measures to evaluate the accuracy and precision of the analytical results and the efficiency of analyte recovery during solute extraction procedures. The laboratory 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 (VOCs only) to evaluate extraction efficiency. The laboratory QA/QC results are presented in the Quality Assurance Report provided in the Certificate of Analysis prepared by the laboratory. The QA/QC results are reported as percent recoveries for matrix spikes, spike blanks and QC standards, relative percent difference for laboratory duplicates and analyte concentrations for method blanks.

The laboratory QA/QC results were assessed against test group control limits in the case of spiked blanks, matrix spikes and surrogate recoveries and alert criteria in the case of method blanks and laboratory duplicates. Review of the laboratory QA/QC results reported by the laboratory indicated that they were within acceptable control limits or below applicable alert criteria for the sampled media and analytical test groups. Based on the assessment of the QA/QC, the analytical results reported by the laboratory are of acceptable quality and data qualifications are not required.

6 Phase Two Conceptual Site Model

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

For the purposes of this Phase Two CSM, the information relied upon was taken from all current and previous environmental reports conducted for the Phase Two property. However, the data relied upon was limited to the most recent information to convey the current Phase Two property conditions.

6.1 Site Identification Information

The Phase Two property is located on the southeast corner of Richmond Road and Forest Street in Ottawa, as shown on Figure 1 in Appendix B. The Phase Two property is occupied by three buildings. The 365 Forest Street lot is improved with a single story, slab-on-grade multi-tenant building. The northern portion is a single bay automotive garage bay, with the southern portion formerly tenanting a restaurant. A mezzanine residential apartment was found at the southern side of the building but was not accessed due to structural concerns due to water damage. The building is built of painted masonry block with stucco on the western façade and the building has a flat roof.

The 2589 Bond Street property is improved with a single-story, peaked roofed, single bay garage building formerly used for automotive repairs. It is constructed of stucco covered block. At the time of the investigation, this lot and building were not accessible (Figure 2 in Appendix B). The Phase Two property is located within a municipally serviced area of the City of Ottawa.

Refer to the following table for the Phase Two property identification information.

Civic Address	1420 Richmond Road, 365 Forest Street, and 2589 Bond Street, Ottawa, ON
Current Land Use	Commercial
Proposed Land Use	Residential
Legal Description	*Plan 311 N Part of Lot 57; RICHMOND S;* PIN 039620357 *Plan 311 Part of Lots 56 & 57; Registered Plan 4R515 Parts 3 & 4 Less; Registered Plan 5R6510 Part 1* *Plan 311 Lot 41 Part of Lots 42 and 56*; PINs 039620352, 039620390, & 039620391, City of Ottawa
Property Identification Number	039620357, 039620356, 039620352, 039620390, & 039620391
UTM Coordinates	438234m E, 5023654m N
Phase One Property Area	0.53 ha
Property Owner	11061917 Canada Incorporated
Owner Contact	Mr. Carmine Zayoun
Owner Address	100-768 St. Joseph Boulevard, Gatineau, QC, J8Y4B8

6.2 Physical Site Description

The Phase Two CSM provides a narrative and graphical interpretation of the Phase Two property surface features, near surface geologic and hydrogeologic conditions, PCOCs, contaminant fate and transport mechanisms, and relevant receptors and exposure pathways. These components are discussed in the following sections and summarized in Table 1 in the Tables appendix.

The Phase Two property is located in a mixed commercial and residential area of Ottawa where potable water is supplied by the City of Ottawa and therefore the MECP Table 3 Site Condition Standards (SCS) are applied to the Phase Two property. The City of Ottawa obtains its water from the Ottawa River, located approximately 0.8 km north of the Phase Two property.

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

Based on the Phase Two ESA investigation, the Phase Two property is not a shallow soil property as defined in Section 43.1 of the regulation. It does it 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.

6.3 Geological and Hydrogeological Setting

Fill was contacted beneath the pavement structure and surficial granular layer in all the boreholes. The fill extended to depths ranging from 1.4 m to 3.0 m. Borehole BH19-12 terminated within the fill at 4.4 m depth. The fill consists of clayey silty sand to silty sand with gravel. The fill contains rootlets and brick debris. A petroleum odour was noted in the fill samples from BH19-05.

The fill in BH19-01 to BH19-03 is underlain by a sandy silt to silty sand layer from 1.4 m to 2.2 m depths. The fill and sandy silt to silty sand layer are underlain by glacial till that extends to depths of 6.5 m to 7.8 m. The glacial till ranges from a clayey silty sand to a silty sand with gravel. The glacial till is a silty clay in BH19-03 to BH19-05 from 2.2 m to 5.3 m depths. The glacial till contains shale fragments, cobbles and boulders.

The grain size analyses showed that less than 50% of the soil had a grain size of silt or finer. This indicates that the native soil is coarse grained. The results of the grain size analyses are found in Appendix E.

The Phase Two property stratigraphy characteristics are summarized in Table 6.1.

Table 6.1: Site Geological Characteristics

Stratigraphy	Details	Minimum Depth Observed (m bgs)	Maximum Depth Observed (m bgs)	Approximate Elevation Range (m ASL)
Surface	Asphalt / Concrete / Topsoil	0	0.15	74.98 to 75.28
	Fill Material – Gravel/Crushed Stone	0	4.4	71.0 to 75.7
Overburden	Silty Sand and Gravel Till	1.1	>4.4	71.0 to 73.9
Bedrock	shale	6.2	7.8	67.9 to 68.2

The geology of the Phase Two property is illustrated on the cross-sections (Figures 10A to 13).

Auger refusal was met in BH19-02 to BH19-04, and MW19-05 at 6.2 m to 6.2 m depths. Groundwater was encountered at a depth of 1.31 m bgs in MW13 to 5.95 m bgs in MW19-9 on May 15, 2019. No petroleum sheens were observed in the monitoring wells during the sampling event.

Topographically, the Phase Two property is relatively flat. The Ottawa River is approximately 1 km north from the Phase Two property. Regional groundwater flow direction is inferred to be in the northern direction towards the Ottawa River. Based on the groundwater elevations, the groundwater flow direction is to the north.

Refer to Table 6.2 for the Phase Two property hydrogeology characteristics based on groundwater monitoring observations.

Table 6.2: Site Hydrogeology Characteristics

Location	Observations
Depth to Groundwater	1.31 m to 5.95 m bgs
Groundwater Elevation	69.70 m AMSL to 73.81 m AMSL
Direction of Groundwater Flow	North
Hydraulic Conductivity (1)	1.6×10^{-8} m/s.
Horizontal Hydraulic Gradient	0.007 m/m

m bgs = meters below ground surface; m AMSL = meters above mean sea level

(1) Based on values calculated in the Phase Two ESA (EXP, 2019)

The hydrogeology of the Phase Two property is illustrated on the groundwater elevation plans (Figure 6) and are based on the most recent groundwater information collected from the Phase Two property.

Site Sensitivity

The Phase Two property sensitivity classification with respect to the conditions set out under Section 41 and 43.1 of O.Reg.153/04 were evaluated to determine if the Phase Two property is sensitive, as presented in Table 6.7.

Table 6.3: Site Sensitivity

Sensitivity	Classification	Does Sensitivity Apply to Phase Two Property?
Section 41 applies if	(i) property is within an area of natural significance	No
	(ii) property includes or is adjacent to an area of natural significance or part of such an area	No
	(iii) property includes land that is within 30 m of an area of natural significance or part of such an area	No
	(iv) soil at property has a pH value for surface soil less than 5 or greater than 9	No
	(v) soil at property has a pH value for sub-surface soil less than 5 or greater than 11	No

Sensitivity	Classification	Does Sensitivity Apply to Phase Two Property?
	(vi) a qualified person is of the opinion that, given the characteristics of the property and the certifications the qualified person would be required to make in a record of Phase Two Property condition in relation to the property as specified in Schedule A, it is appropriate to apply this section to the property	No
Section 43.1 applies if	(i) property is a shallow soil property	No
	(ii) property includes all or part of a water body or is adjacent to a water body or includes land that is within 30 m of a water body	No

6.3.6 Land Use

Based on a review of historical aerial photographs, chain of title for the property, historical maps, and other records review, it appears the Phase One property had been developed with a motel and three residences along Bond Street in 1932. A gasoline retail outlet at 1420 Richmond Road was constructed in 1961 and the restaurant and service garage at 365 Forest Street were constructed in the late 1960s. The three residences along Bond Street were removed between 1976 and 1991 and a small service garage was constructed along Bond Street. The gasoline retail outlet at 1420 Richmond Road was removed between 1991 and 1999. The Phase One property has been used for commercial uses since that time.

The intended future land use of the Phase Two property is residential.

6.4 Subsurface Structures and Utilities

The Phase Two property is municipally serviced by underground utilities such as bell, gas, water and sewer. The groundwater flow pattern in the overburden could be influenced by buried services.

6.5 Potentially Contaminating Activities

As per Ontario Regulation (O.Reg.) 153/04, a Potential Contaminating Activity (PCA) is defined as one of fifty-nine (59) industrial operations set out in Table 2 of Schedule D that occurs or has occurred in a Phase One study area. The following PCAs were identified:

- PCA #1 – 1420 Richmond – Historic retail gasoline sales outlet and service garage, located on northern portion of the Phase One property (PCA#10 – Autobody Repair Shops, PCA#28 – Gasoline and Associated Products Stored in Fixed Tanks, and PCA#30 – Importation of Fill Material of Unknown Quality.
- PCA #2 – 1420 Richmond – Unknown fill material brought on the Phase Two property after the decommissioning of residence at the southeast corner of the property (PCA#30 – Importation of Fill Material of Unknown Quality).
- PCA #3 – 2589 Bond Street – Historic automotive repair garage, located on the southeast portion of the Phase One property (PCA#10 – Autobody Repair Shops).
- PCA #4 – 2576 Carling Avenue – Historic Fire Station located 100 m to the south of the Phase One property (PCA#24 – Fire Training). Since this was just a fire hall, with no training activities, it is not considered to be an APEC.

- PCA #5 – 2599 Carling Avenue – Historic retail gasoline sales outlet and automotive repair garage, located adjacent to south of the Phase One property (PCA#10 – Autobody Repair Shops, PCA#28 – Gasoline and Associated Products Stored in Fixed Tanks).
- PCA #6 – 1386 Richmond Road– Historic retail gasoline sales outlet, located 100 m to the northeast of the Phase One property (PCA#28 – Gasoline and Associated Products Stored in Fixed Tanks). Based on the intervening distance and downgradient direction, this is not considered an APEC.
- PCA #7 – 1377 Richmond Road – Automotive sales dealership and repair garage, located 100 m to the northeast of the Phase One property (PCA#10 – Commercial Autobody Shops). Based on the intervening distance and downgradient direction, this is not considered an APEC
- PCA #8 – 365 Forest Street – Active automotive repair garage, located at western side of the Phase One property (PCA#10 – Autobody Repair Shops).
- PCA #9 – 1397 Richmond Road – Ottawa Fire Station 22, located 40 m to the north of the Phase One property. (PCA#24 – Fire Training). Based on the assumed direction of groundwater flow and intervening distance, this is not considered an APEC.
- PCA #10 – 365 Forest Street – Suspected a former AST location, identified by others, along the site building's southern side (PCA#28 – Gasoline and Associated Products Stored in Fixed Tanks). While previously investigated by others.

No other PCAs that took place within the vicinity of the Phase Two property (approximately 250 m radius) were identified.

6.6 Areas of Potential Environmental Concern / Potential Contaminants of Concern

As per Ontario Regulation 153/04 (as amended), Potential Contaminating Activity (PCA) is defined as one of the 59 industrial operations set out in Table 2 of Schedule D that occurs or has occurred on the Phase Two property or within the Phase One ESA study area. Based on Phase One ESA, the identified areas of potential environmental concern (APEC) and potential contaminants of concern (PCOC) are summarized in the table below and are shown on Figure 2 in Appendix B.

Table 5.2: 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 Concern	Media Potentially Impacted (Groundwater, Soil and/or Sediment)
1. Potential contamination from a former retail gasoline sales outlets and service garage at 1420 Richmond Road.	Northern lot of Phase One property (1420 Richmond Road)	#10: Autobody Repair Shops #28: Gasoline & Associated Products Storage in Fixed Tanks	Northern portion of Phase One property	Petroleum hydrocarbons (PHCs), benzene, toluene, ethylbenzene and xylenes (BTEX), volatile organic compounds	Soil and groundwater

Area of Potential Environmental Concern (APEC)	Location of APEC on Phase One Property	Potentially Contaminating Activity (PCA)	Location of PCA (On-Site or Off-Site)	Contaminants of Concern	Media Potentially Impacted (Groundwater, Soil and/or Sediment)
		#30: Importation of Fill Material of Unknown Quality		(VOCs), and lead.	
2. Historic automotive repair garage at 2589 Bond Street Unknown fill material used in demolition of former residence.	Southeastern lot (2589 Bond Street) of Phase One property	#10: Autobody Repair Shops #30: Importation of Fill Material of Unknown Quality	Southeast portion of Phase One property	PHCs, BTEX, VOCs, Polycyclic aromatic hydrocarbons PAHs), and metals	Soil and groundwater
3. Historic retail gasoline sales outlet and automotive repair garage at 2599 Carling Avenue	Southwest corner of 365 Forest Street lot	#10: Autobody Repair Shops #28: Gasoline & Associated Products Storage in Fixed Tanks	Adjacent to the south	PHCs, BTEX, VOCs, and lead	Soil and groundwater
4. Active automotive repair garage	365 Forest Street; northern part of building	#10: Autobody Repair Shops	Middle portion of Phase One property	PHCs, BTEX, VOCs, and lead	Soil and groundwater
5. Suspected former aboveground fuel oil storage tank location	365 Forest Street; south facing	#28: Gasoline & Associated Products Storage in Fixed Tanks	Middle portion of Phase One property	PHCs and BTEX	Soil and groundwater

6.7 Investigation and Remediation

The Phase Two ESA was conducted to assess the soil and groundwater quality at the Phase Two property. As indicated in the APEC and PCOC Table (above), the analytical program of the Phase Two ESA included testing of soil ad groundwater for PHC, VOC, PAH, and metals from the boreholes and monitoring wells on the Phase Two property. The monitoring well locations are shown on Figure 5 in Appendix B.

6.8 Contaminants of Concern (COC)

Soil

Based on the results of the investigation, there was one sample at MW19-5, located near the south side of the west building that had exceedances of PHC F1 to F3, methylnaphthalene and naphthalene of the MECP Table 3 SCS found between 1.5 m and 2.1 m.

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

Concentrations of the COCs in soil will be reduced by the effects of molecular diffusion and the creation of concentration gradients. As non-volatile chemical constituents PHC F3, benzo(a)pyrene and fluoranthene may undergo abiotic or biotic chemical reactions associated with the soil mineral particles and the micro-organisms present in the overburden material.

As a result of the various natural attenuation mechanisms in the soil environment, the concentrations of any COCs in soil will be reduced at the Phase Two property. The soil impacts are shown on the geologic cross sections (Figures 10A to 11B).

There was one sample collected located near the south side of the west building that had exceedances of PHC F1 to F3, methylnaphthalene and naphthalene of the MECP Table 3 SCS. Using the clean hole approach, an estimated area of 2,500 m^2 and an estimated thickness of impact of 1.7 m, the resulting volume of impacted soil is approximately 4,200 m^3.

Groundwater

There was one sample, located near the south side of the west building that had exceedances of PHC F2 and F3 of the MECP Table 3 SCS. A variety of physical, chemical and biochemical mechanisms affect the fate and transport of the potential COCs in groundwater, the contribution of which is dependent on the groundwater conditions and the chemical/physical properties of the COCs. Relevant fate and transport mechanisms are advection, dispersion, molecule diffusion, phase partitioning including adsorption and ion exchange, chemical and biochemical reaction. The relevant physical properties are water solubility, saturated vapour pressure, Henry's Law Constants (as a measure of the potential for partitioning into the vapour phase) and, the sorption partition coefficient (as a measure of the potential for surface interactions or solid phase).

Concentrations of the groundwater COCs will be reduced and mass velocities retarded while being transported along the groundwater flow paths by the combined effects of mechanical dispersion and molecular diffusion. Molecular diffusion is mixing arising from concentration gradients and differences in molecule thermal energies and velocities. Mechanical dispersion is mixing arising from differences in fluid velocities both within pores and fractures as a result of frictional effects and along flow paths due to differences in pore and fracture geometry and orientation. The greater contribution is provided by

mechanical dispersion by as much as four (4) orders of magnitude as compared to molecular diffusion. Concentrations of the COCs will be also be reduced by bulk mixing of groundwater up-gradient of the source zone with the source zone groundwater. The groundwater impacts are shown on the geologic cross sections (Figures 12 and 13).

While migrating along groundwater flow paths, COC groundwater concentrations can be reduced by the volatilization into the air-filled pore spaces and fractures of the unsaturated bedrock. This mechanism is most relevant to benzene and the aliphatic fractions of PHC F2, which are characterized by moderate vapour pressures/Henry's Law constants and therefore greater tendency for vapour phase partitioning. As a result, and under optimal conditions, these compounds may partition from soil or groundwater into soil/bedrock gas in the soil/bedrock unsaturated zone and potentially be transported through soil/bedrock gas under the influence of pressure and partial pressure gradients to outdoor air or the indoor air of an overlying building. The heavier constituents (including naphthalene) have almost negligible vapour pressures and therefore limited tendency for vapour phase partitioning.

The movement of COCs can also be retarded by sorption on to organic carbon associated with soil mineral particles. The degree of retardation is dependent on the organic carbon content of the soil mineral particles and the magnitude of the organic carbon partition coefficient of the chemical. Given that PHCs have high organic carbon partition coefficients, the movement of these COCs may be retarded as groundwater passes through high organic content materials. Benzene has relatively moderate organic carbon partition coefficients; as such, this mechanism is not considered significant for these COCs.

As a result of the physical and chemical processes affecting the fate and transport of COCs at the Phase Two property, the mass velocities of these chemical constituents can be expected to be much less than the linear groundwater velocity.

Approximately 1,700 m^2 of petroleum impacted groundwater associated with the former AST south of the building at Forest Street has been estimated within the overburden in the central part of the Phase Two property.

6.9 Contaminant Fate and Transport

Human Health Receptors and Exposure Pathways

The Phase Two property is used for commercial purposes and is occupied by two commercial buildings. The Phase Two property will be redeveloped to medium density residential in the future. The potential on-Site human receptors currently comprise residents, long-term workers, short-term workers, property visitors (adult, teen, child, toddler, and infant), and construction workers. The future potential residential land use on-Site human receptors comprise residents (adult, teen, child, toddler, and infant) and short-term visitors (adult, teen, child, toddler, and infant).

The potential on-site exposure pathways for the construction workers are inadvertent soil ingestion, soil particulate inhalation, soil dermal contact, incidental groundwater ingestion, groundwater dermal contact and ambient vapour inhalation (sourced from soil, due to potential work conducted in a trench scenario).

The potential on-site exposure pathways for the short-term (outdoor) workers are soil particulate inhalation, soil dermal contact, and inadvertent soil ingestion.

The potential on-site exposure pathways for the long-term (indoor) workers, residents and property visitors indoor air inhalation (sourced from soil and/or groundwater).

Ecological Receptors and Exposure Pathways

The Phase Two property is comprised of developed commercial lands capable of supporting some terrestrial ecological receptors. Relevant terrestrial receptors are terrestrial vegetation, such as trees, grasses and weeds; soil invertebrates, such as earthworms, millipedes and beetles; terrestrial birds, such as pigeons, sparrows and robins; and small terrestrial mammals, such as moles, voles, and mice.

The potential on-site exposure pathways for terrestrial vegetation are root uptake (soil and groundwater), and stem and foliar uptake of vapours (sourced from soil and/or groundwater).

The potential on-site exposure pathways for soil invertebrates are soil particulate inhalation, soil dermal contact, soil ingestion, vapour inhalation (sourced from soil and/or groundwater), and dermal contact and ingestion of groundwater.

The potential on-site exposure pathways for mammals and birds are soil particulate inhalation, soil dermal contact, soil ingestion, vapour inhalation (sourced from soil and/or groundwater), animal tissue ingestion (as a result of biotransformation of soil and/or groundwater), and dermal contact and ingestion of groundwater.

7 Conclusions and Recommendations

Based on the Phase Two ESA results, the following summary is provided:

- From April 24 to 30, 2019, a total of 12 boreholes (BH19-1 to BH19-12) were advanced at the Phase Two property and six (MW19-2, MW19-6 to MW19-10) were instrumented with a monitoring well.
- During drilling activities, fill was contacted beneath the pavement structure and surficial granular layer in all the boreholes. The fill extended to depths ranging from 1.4 m to 3.0 m. Borehole BH19-12 terminated within the fill at 4.4 m depth. The fill consists of clayey silty sand to silty sand with gravel. The fill contains rootlets and brick debris. A petroleum odour was noted in the fill samples from BH19-05. The fill in BH19-01 to BH19-03 is underlain by a sandy silt to silty sand layer from 1.4 m to 2.2 m depths. The fill and sandy silt to silty sand layer are underlain by glacial till that extends to depths of 6.5 m to 7.8 m. The glacial till ranges from a clayey silty sand to a silty sand with gravel. The glacial till is a silty clay in BH19-03 to BH19-05 from 2.2 m to 5.3 m depths. The glacial till contains shale fragments, cobbles and boulders.
- Auger refusal was met in BH19-02 to BH19-04, and MW19-05 at 6.2 m to 6.2 m depths. Groundwater was encountered at a depth of 1.31 m bgs in MW13 to 5.95 m bgs in MW19-9 on May 15, 2019. No petroleum sheens were observed in the monitoring wells during the sampling event. Based on the groundwater elevations, the groundwater flow direction is to the north.
- Based on the results of the investigation, there was one soil sample, located near the south side of the west building (BH19-5) that had exceedances of the MECP Table 3 SCS for PHC F2 and F3 and PAH parameters.

  Using the clean hole approach, an estimated area of 2,500 m^2 and an estimated thickness of impact of 1.7 m, the resulting volume of impacted soil is approximately 4,200 m^3.
- There was one groundwater sample, located near the south side of the west building that had exceedances of the MECP Table 3 SCS for PHC F2 and F3. The estimated area of impacted groundwater is approximately 1,700 m^2.

It is recommended that the impacted soil and groundwater on the Phase Two property be remediated. If the wells are no longer needed, they should be decommissioned in accordance with Ontario Regulation 903.

8 General Limitations

The information presented in this report is based on a limited investigation designed to provide information to support an assessment of the current environmental conditions within the Phase Two property. The conclusions and recommendations presented in this report reflect Phase Two property conditions existing at the time of the investigation.

More specific information with respect to the conditions between samples, or the lateral and vertical extent of materials may become apparent during excavation operations. The interpretation of the borehole information must, therefore, be validated during any such excavation operations. Consequently, during the future development of the property, conditions not observed during this investigation may become apparent. Should this occur, EXP Services Inc. should be contacted to assess the situation, and the need for additional testing and reporting. EXP has qualified personnel to provide assistance in regards to any future geotechnical and environmental issues related to this property.

The environmental investigation was carried out to address the intent of applicable provincial Regulations, Guidelines, Policies, Standards, Protocols and Objectives administered by the Ministry of Environment. It should also be noted that current environmental Regulations, Guidelines, Policies, Standards, Protocols and Objectives are subject to change, and such changes, when put into effect, could alter the conclusions and recommendations noted throughout this report. Achieving the study objectives stated in this report has required us to arrive at conclusions based upon the best information presently known to us. No investigative method can completely eliminate the possibility of obtaining partially imprecise or incomplete information; it can only reduce the possibility to an acceptable level. Professional judgment was exercised in gathering and analyzing the information obtained and in the formulation of the conclusions. Like all professional persons rendering advice we do not act as absolute insurers of the conclusions we reach, but we commit ourselves to care and competence in reaching those conclusions.

Our undertaking at EXP, therefore, is to perform our work within limits prescribed by our clients, with the usual thoroughness and competence of the engineering profession. It is intended that the outcome of this investigation assist in reducing the client's risk associated with environmental impairment. Our work should not be considered 'risk mitigation'. No other warranty or representation, either expressed or implied, is included or intended in this report.

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We trust this report satisfies your immediate requirements. If you have any questions regarding the information in this report, please do not hesitate to contact this office.

9 References

This study was conducted in general accordance with the applicable Regulations, Guidelines, Policies, Standards, Protocols and Objectives administered by the Ministry of the Environment. Specific reference is made to the following:

- City of Ottawa. 2011. Characterization of Ottawa's Watersheds: An Environmental Foundation Document with Supporting Information Base. March.
- Environmental Protection Act, R.S.O. 1990, Chapter E.19, as amended, September 2004.
- *EXP Services Inc.* June 27, 2019. *Phase One Environmental Site Assessment, 365 Forest Street, 1420 Richmond Road, and 2589 Bond Street*.
- Groundwater, Freeze and Cheery 1979. Prentice Hall.
- Ministry of the Environment [MOE] (1996) Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario. Ontario Ministry of the Environment, December 1996.
- MOE (2011) Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act. Ontario Ministry of the Environment, April 15, 2011.
- MOE (2011) Guide for Completing Phase Two Environmental Site Assessments under Ontario Regulation 153/04. Ontario Ministry of the Environment, June 2011.
- MOE (2011) Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act. Ontario Ministry of the Environment, March 2004, amended as of July 1, 2011.
- Ontario Regulation 153/04, made under the Environmental Protection Act, May 2004, last amended to O.Reg.333/13.
- Ontario Water Resources Act – R.R.O. 1990, Regulation 903, amended to O.Reg. 128/03, August 2003.
- Paterson Group Inc. July 24, 2012. *Phase I-II Environmental Site Assessment, 1420 Richmond Road, 365 Forest Street and 2583 & 2589 Bond Street, Ottawa, Ontario*.
- Paterson Group Inc. April 8, 2019. *Supplemental Phase II Environmental Site Assessment, 1420 Richmond Road, Ottawa, Ontario*.
- Singer, S.N., C.K. Cheng, M.G. Scafe. 2003. Hydrogeology of Southern Ontario. Hydrogeology of Ontario Series – Report 1. Prepared for Ministry of Environment.
- WESA. 2006. Watershed Characterization: Geologic Model and Conceptual Hydrogeological Model, Raisin Region CA and South Nation Conservation, Source Protection Plan Partnership.

Tables

Table 1

Characteristic	Description
Minimum Depth to Bedrock	6.2 m
Minimum Depth to Overburden Groundwater	1.31 (May 15, 2019)
Shallow Soil Property	Yes, bedrock less than 2.0 m
Proximity to water body or ANSI	1 km north
Soil pH	6.06 to 7.73
Soil Texture	Coarse
Current Property Use	Commercial
Future Property Use	Residential
Proposed Future Building	Over entire Site
Areas where soil has been brought to the Phase Two Property	North part of Phase Two Property

Appendix A – 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 365 Forest Street, 1420 Richmond Road, and 2589 Bond Street in Ottawa, Ontario (hereinafter referred to as the 'site'). The SAAP presents the procedures and measures that will be undertaken during field investigative activities to characterize the site conditions and meet the data quality objectives of the Phase Two ESA.

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

2 Field Sampling Program

The field sampling program was developed to provide for the collection of samples of the soil and groundwater for chemical analysis of petroleum hydrocarbons (PHC), benzene, toluene, ethylbenzene and xylenes (collectively known as 'BTEX'), polycyclic aromatic hydrocarbons (PAH), volatile organic compounds (VOC), and/or metals. The soil sampling media is to consist of the overburden materials (depths up to 1.5 m of overburden beneath site). The soil sampling will be location-specific to assess for the potential presence of PHC, BTEX, VOC, and/or metals based on the identification of potential areas of potential environmental concern identified in a Phase One ESA completed by EXP in 2019. Vapour readings will also be taken in the field to determine samples to be submitted for laboratory analysis.

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

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

3 Field Methods

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

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

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

3.1 Borehole Drilling

Boreholes will be advanced at the site to facilitate the collection of soil samples for chemical analysis and geologic characterization; and, for the installation of groundwater monitoring wells. A total of eleven (11) boreholes are proposed to be advanced at the site, up to a maximum overburden depth of approximately 6 m below grade, to provide for the collection of samples of the surficial and overburden materials beneath the site. The borehole locations will be selected to delineate the extent and magnitude of PCOC related impacts to the soils and the groundwater.

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

3.2 Soil Sampling

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

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

3.3 Monitoring Well Installation

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

3.4 Monitoring Well Development

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

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

3.5 Groundwater Level Measurements

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

3.6 Elevation Survey

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

3.7 Groundwater Sampling

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

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

4 Field Quality Assurance/Quality Control Program

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

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

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

4.1 Decontamination Protocols

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

4.2 Equipment Calibration

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

4.3 Sample Preservation

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

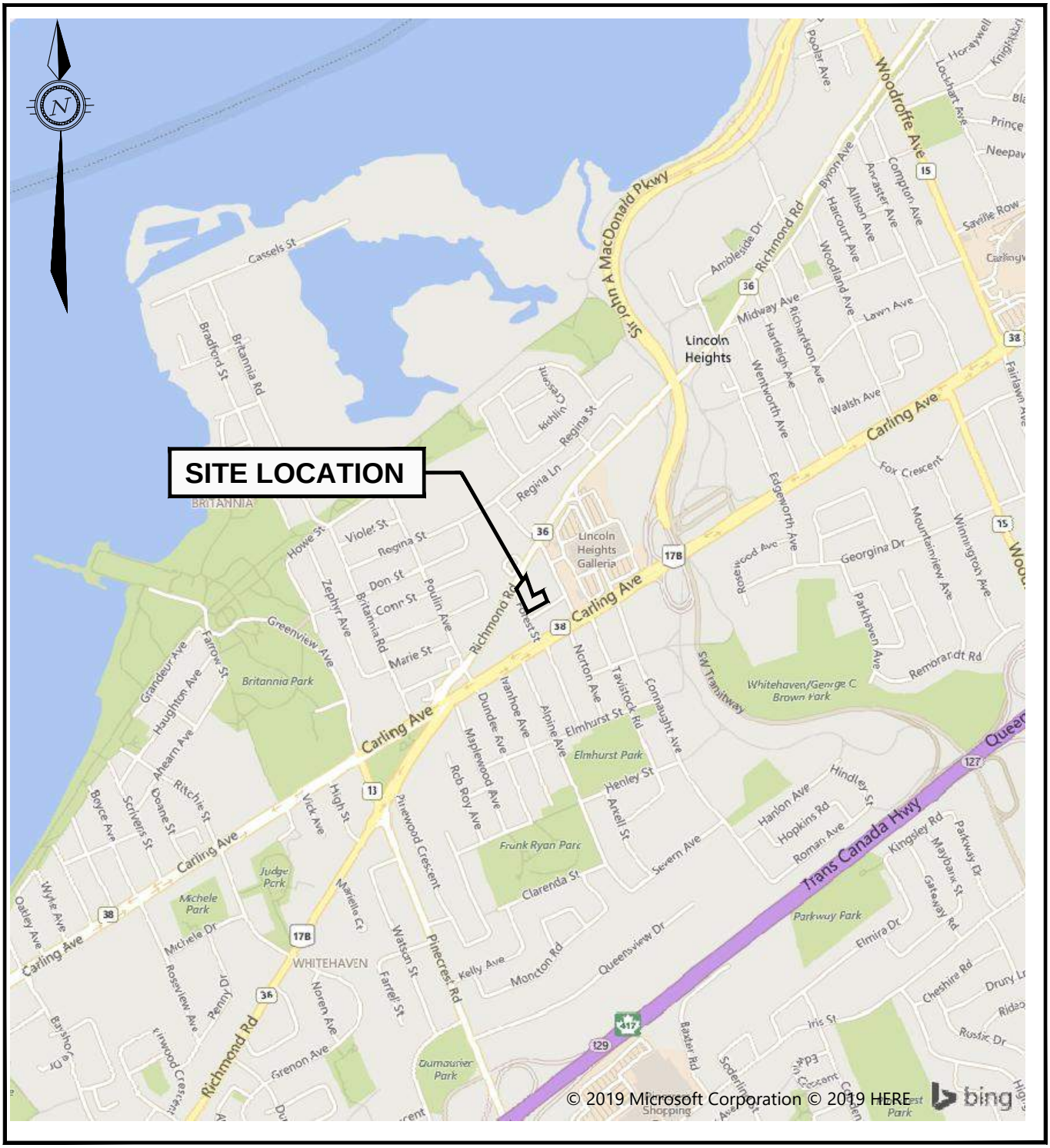
4.4 Sample Documentation

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

4.5 Field Quality Control

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

Appendix B – Figures



BACKGROUND MAP DATA © 2010,
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0 200m 400m 800m

HORIZONTAL 1:20,000

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

DESIGN	MM
DRAWN	TM
DATE	MAY 2021
FILE NO	OTT-00252625-A0

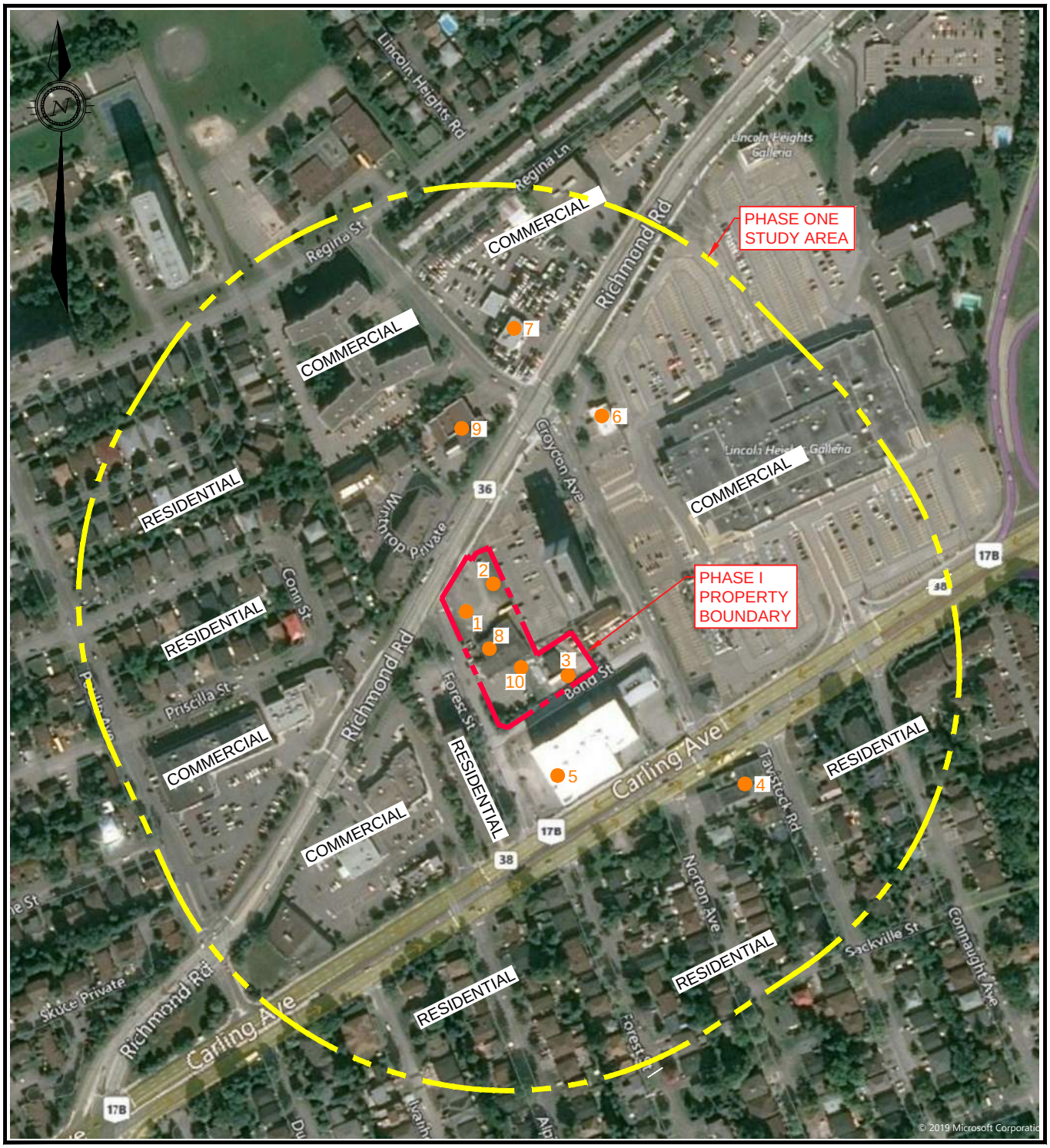
PHASE TWO ESA

365 FOREST STREET, OTTAWA, ONTARIO

SITE LOCATION PLAN

SCALE 1:20,000

SKETCH NO FIG 1



BACKGROUND MAP DATA © 2010,
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0 40m 80m 160m
HORIZONTAL 1:4000

Filename: P:\Projects\Environmental\250000s\252000\252625 Phase One and Two ESA Forest&Bond\Working Drawings\252625-a0 FIG 1-2.dwg
Last Saved: May 7, 2021 10:38 AM Last Plotted: May 7, 2021 11:28 AM Plotted by: mckeet

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DESIGN	MM
DRAWN	TM
DATE	MAY 2021
FILE NO	OTT-00252625-A0

PHASE TWO ESA

365 FOREST STREET, OTTAWA, ONTARIO

STUDY AREA AND PCAs

SCALE 1:4,000

SKETCH NO FIG 2

LEGEND

BH-12 75.42	BOREHOLE NO. GROUND ELEVATION
MW1-18	MONITORING WELL NO.
MW10	EXISTING MONITORING WELL
BH2	EXISTING BOREHOLE
MW15	DESTROYED MONITORING WELL
– – – –	1997 AFTER REMEDIAL EXCAVATION LIMITS

ANTICIPATED GROUNDWATER FLOW DIRECTION

APPROX. LOCATION OF FORMER UNDERGROUND STORAGE TANK NEST (1980s)

APPROX. LOCATION OF FORMER GAS STATION BUILDING

APPROX. LOCATION OF FORMER UNDERGROUND STORAGE TANK

ABOVE GROUND HOIST

APPROX. LOCATION OF FORMER ABOVEGROUND STORAGE TANK NEST

APPROX. LOCATION OF FORMER PUMP ISLANDS

REMEDIAL EXCAVATION LIMITS

APPROX. LOCATION OF FORMER UNDERGROUND STORAGE TANK NEST (1960s)

MOSQUE

2575 BOND STREET

356 CROYDON AVENUE RESIDENTIAL APARTMENT BUILDING

ASPHALT PARKING

25 BOND ST

BOND STREET

LARGE STORAGE FACILITY

GRAVEL PARKING

RICHMOND ROAD

RESIDENTIAL BUILDINGS

GRAVEL

CARWASH/ SERVICE GARAGE

FLOOR DRAIN

365 FOREST STREET

VACANT RESTAURANT

ASPHALT PARKING

PCA 2599 CARLING AVENUE FORMER GAS SERVICE

FOREST STREET

MW1-18 MW2A MW3A MW8 MW9 MW10 MW11 MW13 MW15 MW15 MW16

BH1 BH2 BH4 BH5 BH6 BH7

0 5m 10m 20m

HORIZONTAL 1:500

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365 FOREST STREET, OTTAWA, ONTARIO

SITE PLAN

SCALE 1:500

SKETCH NO FIG 3

Filename: P:\Projects\Environmental\250000s\252000\252625 Phase One and Two ESA Forest&Bond\Working Drawings\252625-a0 Phase 2.dwg
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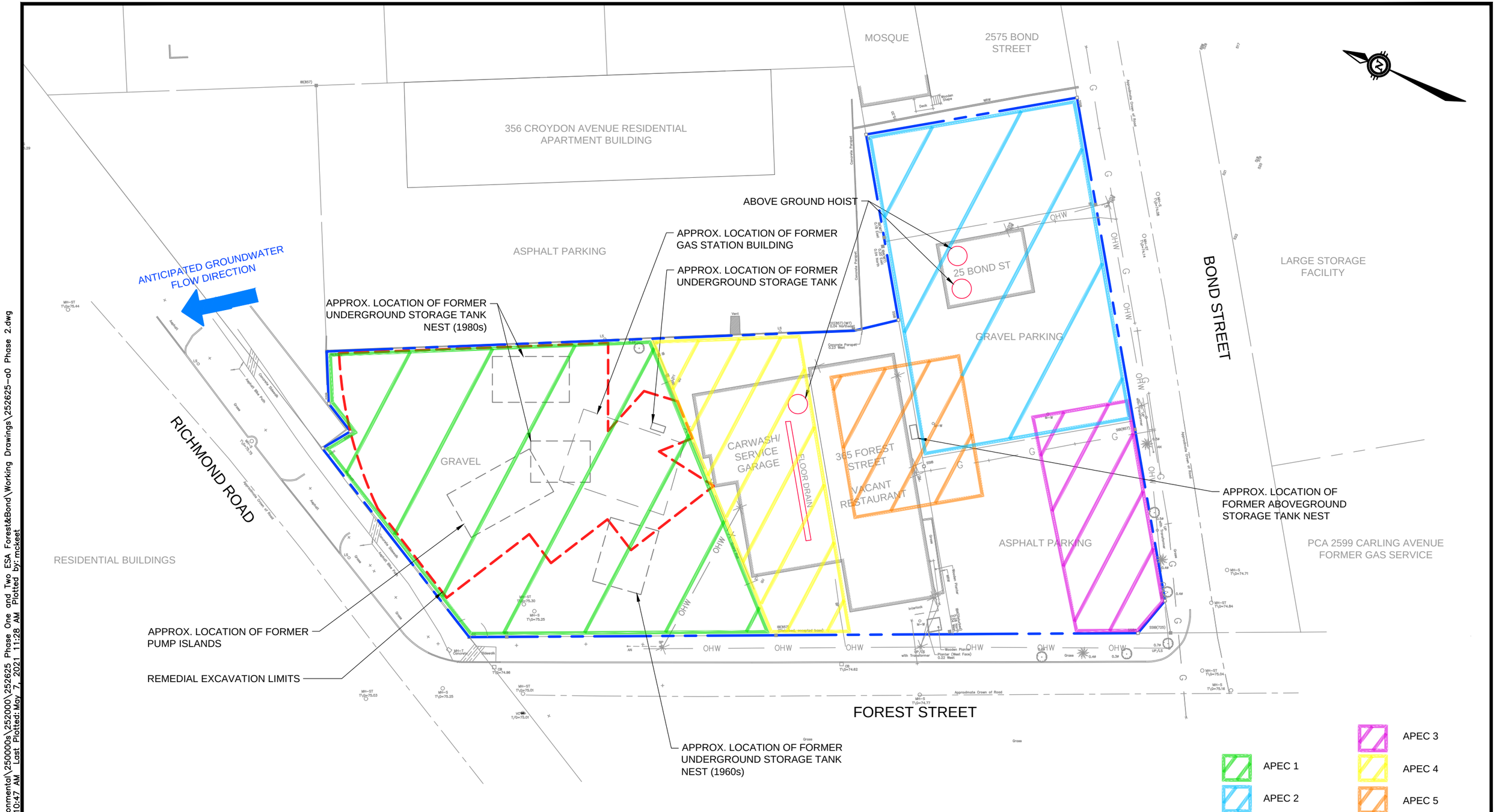

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365 FOREST STREET, OTTAWA, ONTARIO

SITE PLAN & AREAS OF POTENTIAL ENVIRONMENTAL CONCERN

SCALE 1:500

SKETCH NO FIG 4

LEGEND

- BH-12 75.42 — BOREHOLE NO. GROUND ELEVATION
- MW1-18 — MONITORING WELL NO.
- MW10 — EXISTING MONITORING WELL
- BH2 — EXISTING BOREHOLE
- MW15 — DESTROYED MONITORING WELL
- 1997 AFTER REMEDIAL EXCAVATION LIMITS

MOSQUE

2575 BOND STREET

356 CROYDON AVENUE RESIDENTIAL APARTMENT BUILDING

ASPHALT PARKING

LARGE STORAGE FACILITY

BOND STREET

RICHMOND ROAD

RESIDENTIAL BUILDINGS

GRAVEL

GRAVEL PARKING

ASPHALT PARKING

CARWASH/ SERVICE GARAGE

FLOOR DRAIN

365 FOREST STREET

VACANT RESTAURANT

25 BOND ST

PCA 2599 CARLING AVENUE FORMER GAS SERVICE

FOREST STREET

ANTICIPATED GROUNDWATER FLOW DIRECTION

ABOVE GROUND HOIST

APPROX. LOCATION OF FORMER GAS STATION BUILDING

APPROX. LOCATION OF FORMER UNDERGROUND STORAGE TANK

APPROX. LOCATION OF FORMER UNDERGROUND STORAGE TANK NEST (1980s)

APPROX. LOCATION OF FORMER ABOVEGROUND STORAGE TANK NEST

APPROX. LOCATION OF FORMER PUMP ISLANDS

REMEDIAL EXCAVATION LIMITS

APPROX. LOCATION OF FORMER UNDERGROUND STORAGE TANK NEST (1960s)

BH7, BH19-1, MW16, MW13, MW9, BH6, BH19-05, MW2A, MW19-02, MW15, MW3A, BH19-03, BH19-04, MW11, MW19-07, MW19-08, BH19-12, BH5, BH1, MW8, MW19-09, BH19-11, MW19-10, BH4, BH2, MW19-06, MW10, MW1-18

- APEC 1
- APEC 2
- APEC 3
- APEC 4
- APEC 5

0 5m 10m 20m

HORIZONTAL 1:500

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SCALE	1:500
SKETCH NO	FIG 5

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365 FOREST STREET, OTTAWA, ONTARIO

BOREHOLE LOCATION PLAN & AREAS OF POTENTIAL ENVIRONMENTAL CONCERN

Filename: P:\Projects\Environmental\250000s\252000\252625 Phase One and Two ESA Forest&Bond\Working Drawings\252625-00 Phase 2.dwg
Last Saved: May 7, 2021 10:47 AM Last Plotted: May 7, 2021 11:28 AM Plotted by:mckeet

LEGEND

BH-12 75.42	BOREHOLE NO. GROUND ELEVATION
MW1-18	MONITORING WELL NO.
MW10	EXISTING MONITORING WELL
BH2	EXISTING BOREHOLE
MW15	DESTROYED MONITORING WELL
	1997 AFTER REMEDIAL EXCAVATION LIMITS
(69.83)	GROUNDWATER ELEVATION MAY 15, 2019

ANTICIPATED GROUNDWATER FLOW DIRECTION

MOSQUE

2575 BOND STREET

356 CROYDON AVENUE RESIDENTIAL APARTMENT BUILDING

ASPHALT PARKING

LARGE STORAGE FACILITY

BOND STREET

RICHMOND ROAD

RESIDENTIAL BUILDINGS

GRAVEL

GRAVEL PARKING

ASPHALT PARKING

365 FOREST STREET

VACANT RESTAURANT

CAR WASH/ SERVICE GARAGE

FLOOR DRAIN

25 BOND ST

PCA 2599 CARLING AVENUE FORMER GAS SERVICE

FOREST STREET

BH1 BH2 BH4 BH5 BH6 BH7

MW1 MW1-18 (72.25) MW2A (72.77) MW3 MW3A (73.01) MW10 MW11 MW13 (72.76) MW15 MW15 MW16

BH19-01 BH19-02 BH19-03 BH19-04 BH19-05 (72.40) BH19-11 BH19-12

MW19-06 (72.88) MW19-07 (73.81) MW19-08 (69.83) MW19-09 (69.70) MW19-10 (72.45)

A A' B B'

72.50 70.50 71.00 71.50 72.00 72.50 73.00

OHW

0 5m 10m 20m

HORIZONTAL 1:500

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365 FOREST STREET, OTTAWA, ONTARIO

GROUNDWATER CONTOURS

SCALE 1:500

SKETCH NO FIG 6

Filename: P:\Projects\Environmental\250000s\252000\252625 Phase One and Two ESA Forest&Bond\Working Drawings\252625-a0 Phase 2.dwg
Last Saved: May 7, 2021 10:47 AM Last Plotted: May 7, 2021 11:28 AM Plotted by: mckeet

LEGEND

BH-12 75.42	BOREHOLE NO. GROUND ELEVATION
MW1-18	MONITORING WELL NO.
MW10	EXISTING MONITORING WELL
BH2	EXISTING BOREHOLE
MW15	DESTROYED MONITORING WELL
	1997 AFTER REMEDIAL EXCAVATION LIMITS

BH19-5 553 (1.5m-2.1m)		
PARAMETER	TABLE 3 SCS (ug/g)	SAMPLE (ug/g)
PHC F1	55	140
PHC F2	98	1400
PHC F3	300	870

BOND STREET

RICHMOND ROAD

FOREST STREET

ESTIMATED ZONE OF PHC IMPACTED SOIL

BH7
MW16
BH19-1
MW13
MW9
MW2A
MW19-02
BH6
BH19-05
MW15
MW15
MW3A
BH19-03
MW19-07
MW11
BH19-04
MW19-06
MW10
BH2
MW1-18
BH19-11
MW19-10
BH4
MW19-09
BH1
MW8
MW19-08
BH19-12
BH5

0 5m 10m 20m
HORIZONTAL 1:500

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PHASE TWO ESA
365 FOREST STREET, OTTAWA, ONTARIO
PHC IMPACTS IN SOIL

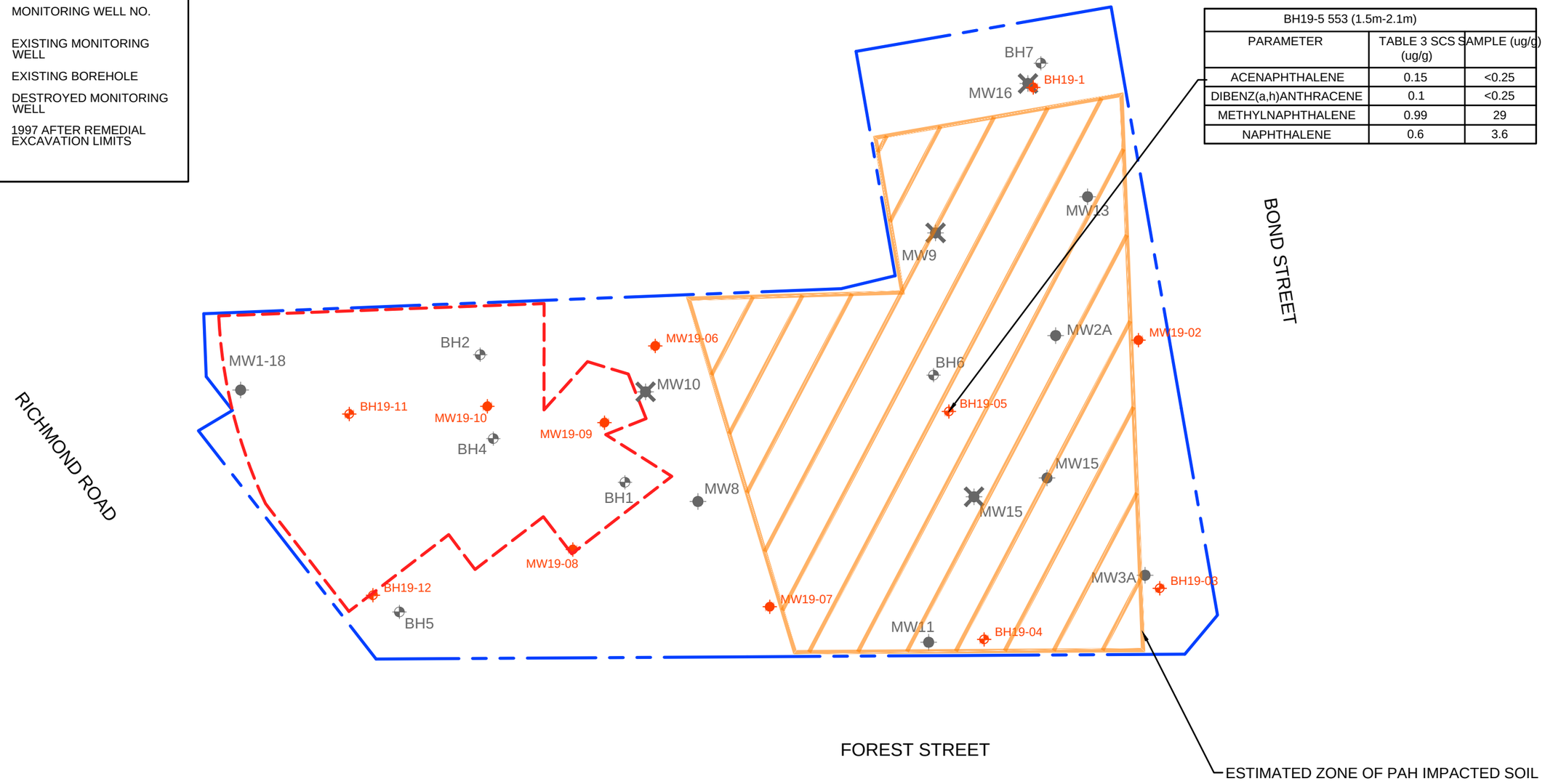
SCALE 1:500
SKETCH NO
FIG 7

Filename: P:\Projects\Environmental\250000s\252000\252625 Phase One and Two ESA Forest&Bond\Working Drawings\252625-a0 Phase 2.dwg
Last Saved: May 7, 2021 10:47 AM Last Plotted: May 7, 2021 11:28 AM Plotted by: mckeet

LEGEND

BH-12 75.42	BOREHOLE NO. GROUND ELEVATION
MW1-18	MONITORING WELL NO.
MW10	EXISTING MONITORING WELL
BH2	EXISTING BOREHOLE
MW15	DESTROYED MONITORING WELL
	1997 AFTER REMEDIAL EXCAVATION LIMITS

BH19-5 553 (1.5m-2.1m)		
PARAMETER	TABLE 3 SCS (ug/g)	SAMPLE (ug/g)
ACENAPHTHALENE	0.15	<0.25
DIBENZ(a,h)ANTHRACENE	0.1	<0.25
METHYLNAPHTHALENE	0.99	29
NAPHTHALENE	0.6	3.6



0 5m 10m 20m

HORIZONTAL 1:500

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PHASE TWO ESA

365 FOREST STREET, OTTAWA, ONTARIO

PAH IMPACTS IN SOIL

SCALE 1:500

SKETCH NO FIG 8

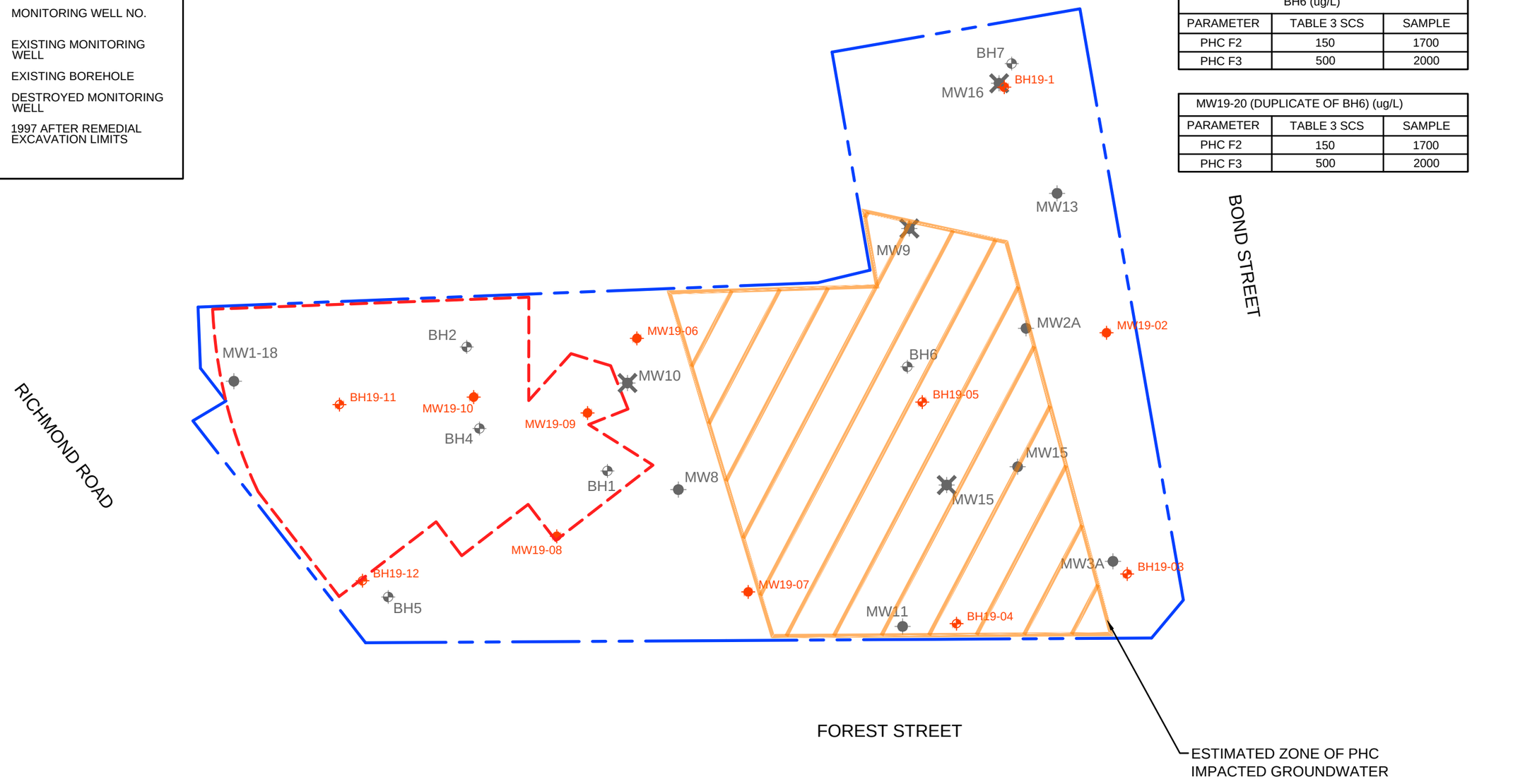
Filename: P:\Projects\Environmental\250000s\252000\252625 Phase One and Two ESA Forest&Bond\Working Drawings\252625-a0 Phase 2.dwg
Last Saved: May 7, 2021 10:47 AM Last Plotted: May 7, 2021 11:28 AM Plotted by: mckeet

LEGEND

BH-12 75.42	BOREHOLE NO. GROUND ELEVATION
MW1-18	MONITORING WELL NO.
MW10	EXISTING MONITORING WELL
BH2	EXISTING BOREHOLE
MW15	DESTROYED MONITORING WELL
	1997 AFTER REMEDIAL EXCAVATION LIMITS

BH6 (ug/L)		
PARAMETER	TABLE 3 SCS	SAMPLE
PHC F2	150	1700
PHC F3	500	2000

MW19-20 (DUPLICATE OF BH6) (ug/L)		
PARAMETER	TABLE 3 SCS	SAMPLE
PHC F2	150	1700
PHC F3	500	2000



0 5m 10m 20m

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365 FOREST STREET, OTTAWA, ONTARIO

PHC IMPACTS IN GROUNDWATER

SCALE 1:500

SKETCH NO FIG 9

Filename: P:\Projects\Environmental\250000s\252000\252625 Phase One and Two ESA Forest&Bond\Working Drawings\252625-a0 Phase 2.dwg
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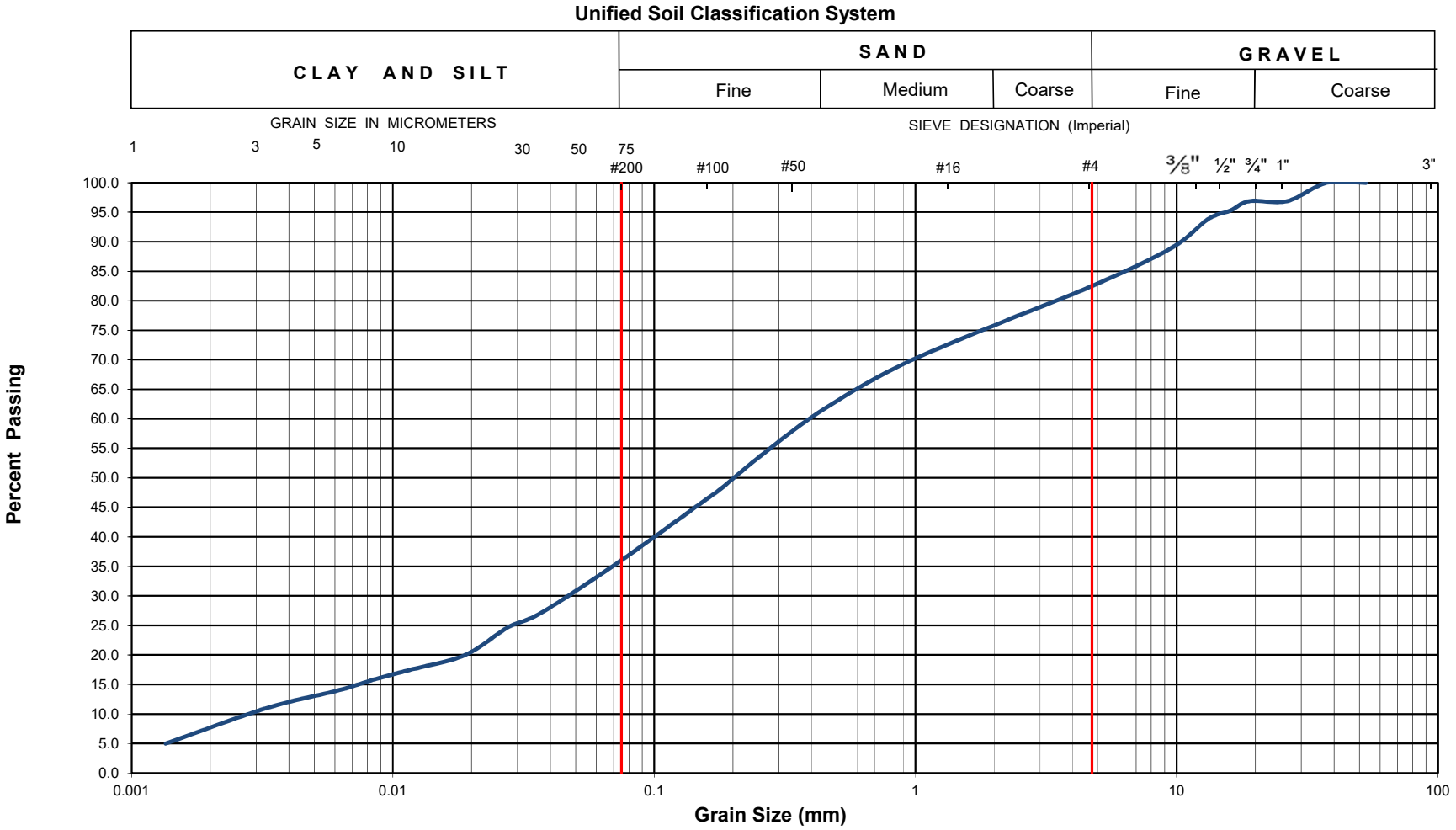
Grain-Size Distribution Curve
Method of Test For Particle Size Analysis of Soil
ASTM C-136/ASTM D422



EXP Project No.:	**OTT-00252625-A0**	**Project Name :**	**Geotechnical Investigation - 365 Forest Ave, Proposed Residential**						
Client :	**Heafey Group**	**Project Location :**	**365 Forest Ave, Ottawa. ON**						
Date Sampled :	**April 25, 2019**	**Borehole No:**	**BH8**		**Sample No.:**	**SS5**		**Depth (m) :**	**3.0-3.7**
Sample Description :		**% Silt and Clay**	**36**	**% Sand**	**47**	**% Gravel**	**17**	**Figure :**	**xxxx**
Sample Description :		**Silty Sand (SM)**							

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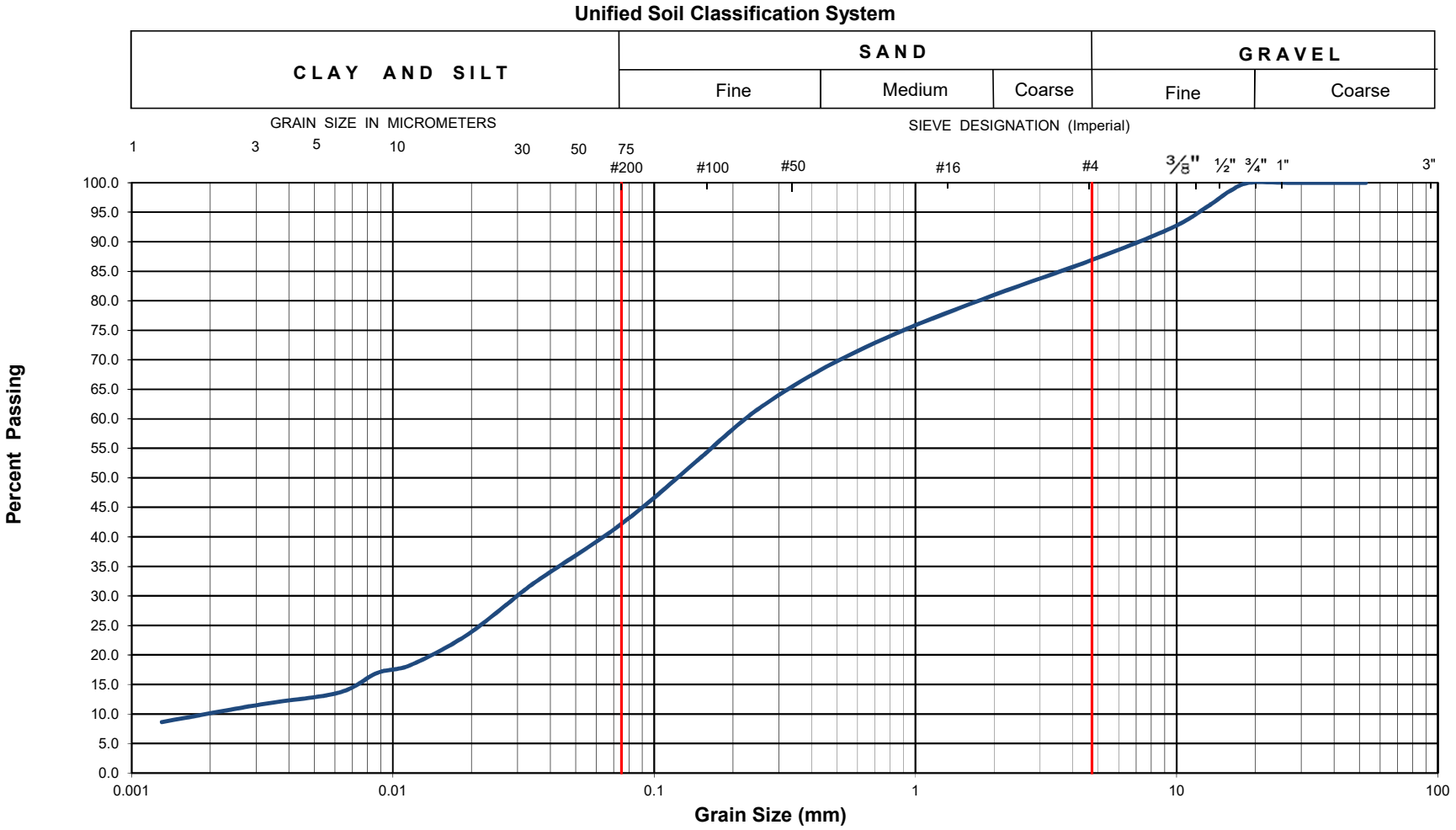
Grain-Size Distribution Curve
Method of Test For Particle Size Analysis of Soil
ASTM C-136/ASTM D422



EXP Project No.:	**OTT-00252625-A0**	**Project Name :**	**Geotechnical Investigation - 365 Forest Ave, Proposed Residential**						
Client :	**Heafey Group**	**Project Location :**	**365 Forest Ave, Ottawa. ON**						
Date Sampled :	**April 29, 2019**	**Borehole No:**	**BH2**		**Sample No.:**	**SS5**		**Depth (m) :**	**3.8-4.4**
Sample Description :		**% Silt and Clay**	**42**	**% Sand**	**45**	**% Gravel**	**13**	**Figure :**	**xxxx**
Sample Description :		**Silty Sand (SM)**							

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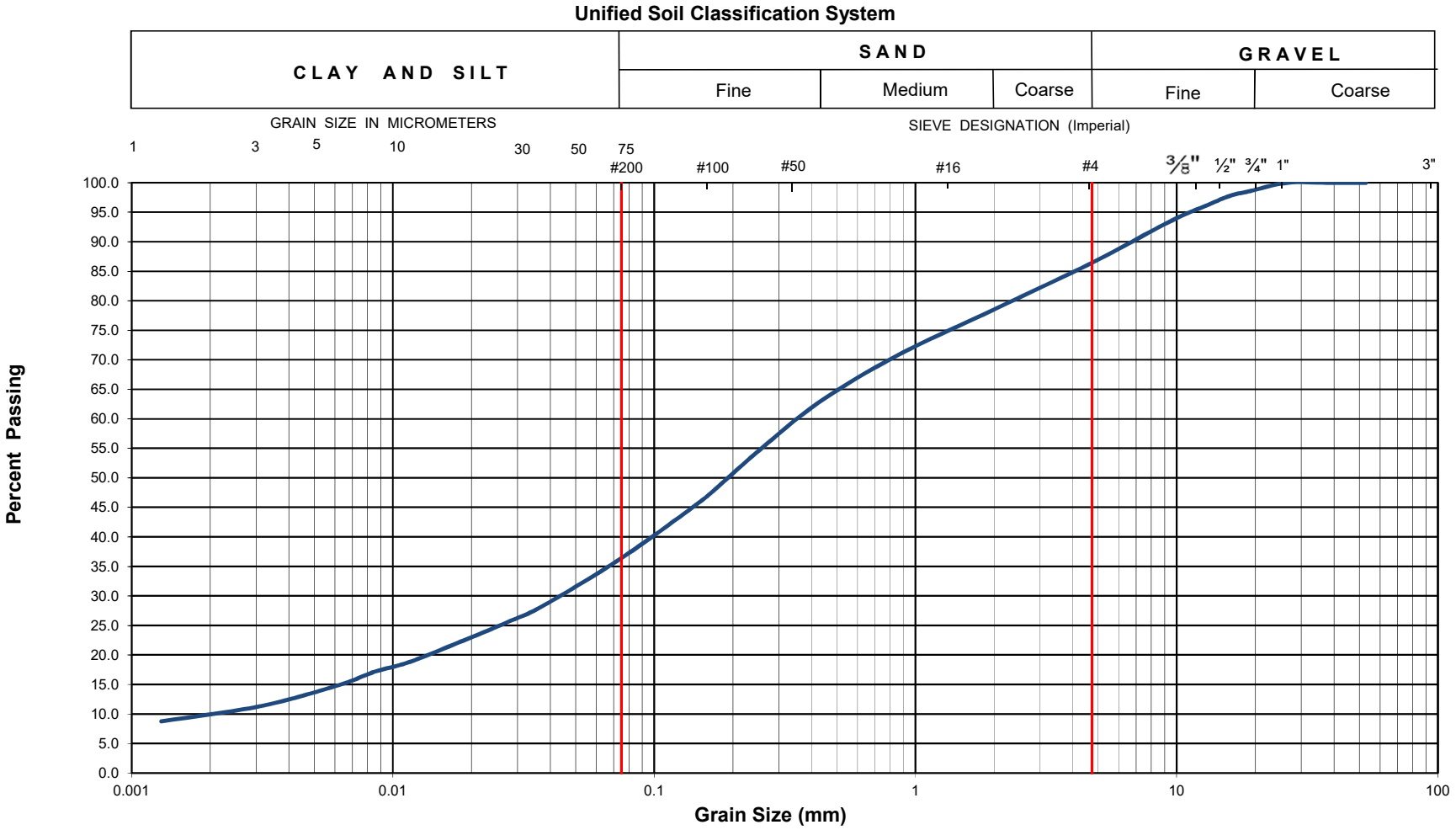
Grain-Size Distribution Curve
Method of Test For Particle Size Analysis of Soil
ASTM C-136/ASTM D422



EXP Project No.:	**OTT-00252625-A0**	**Project Name :**	**Geotechnical Investigation - 365 Forest Ave, Proposed Residential**						
Client :	**Heafey Group**	**Project Location :**	**365 Forest Ave, Ottawa. ON**						
Date Sampled :	**April 24, 2019**	**Borehole No:**	**BH11**		**Sample No.:**	**SS6**		**Depth (m) :**	**4.6-5.2**
Sample Description :		**% Silt and Clay**	**36**	**% Sand**	**51**	**% Gravel**	**13**	**Figure :**	**xxxx**
Sample Description :		**Silty Sand (SM)**							

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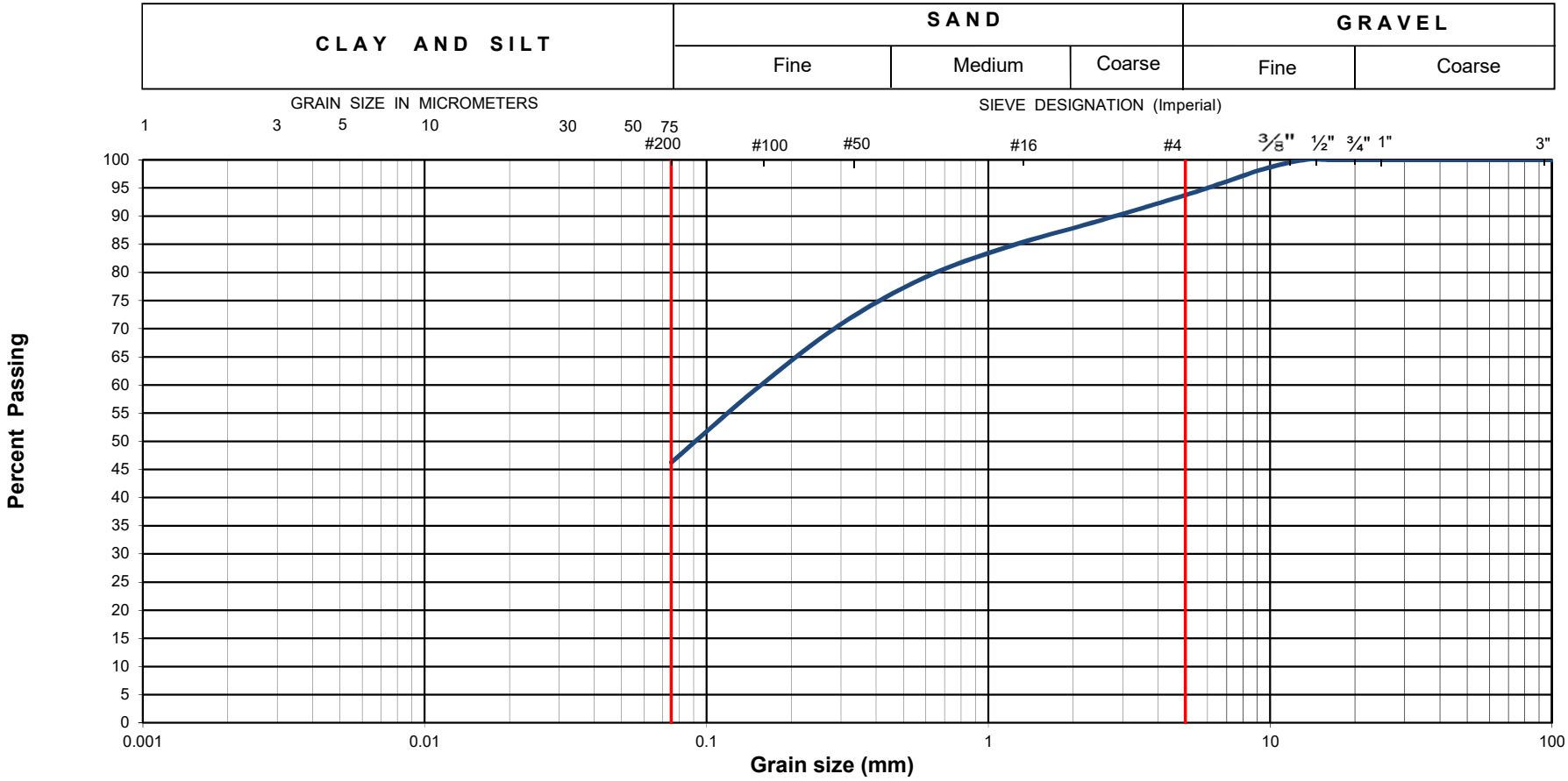
Grain-Size Distribution Curve
Method of Test For Sieve Analysis of Aggregate
ASTM C-136

Unified Soil Classification System



EXP Project No.:	**OTT-00252625-A0**	**Project Name :**	**Geotechnical Investigation 365 Forest Ave, Proposed Residential**					
Client :	**Heafey Group**	**Project Location :**	**365 Forest Ave, Ottawa. ON**					
Date Sampled :	**April 25, 2019**	**Borehole No:**	**BH10**	**Sample:**	**SS3**		**Depth (m) :**	**1.5-2.1**
Sample Composition :		**Gravel (%)**	**7**	**Sand (%)**	**47**	**Silt & Clay (%)**	**46**	**Figure :** **xxx**
Sample Description :		**Silty Sand (SM)**						

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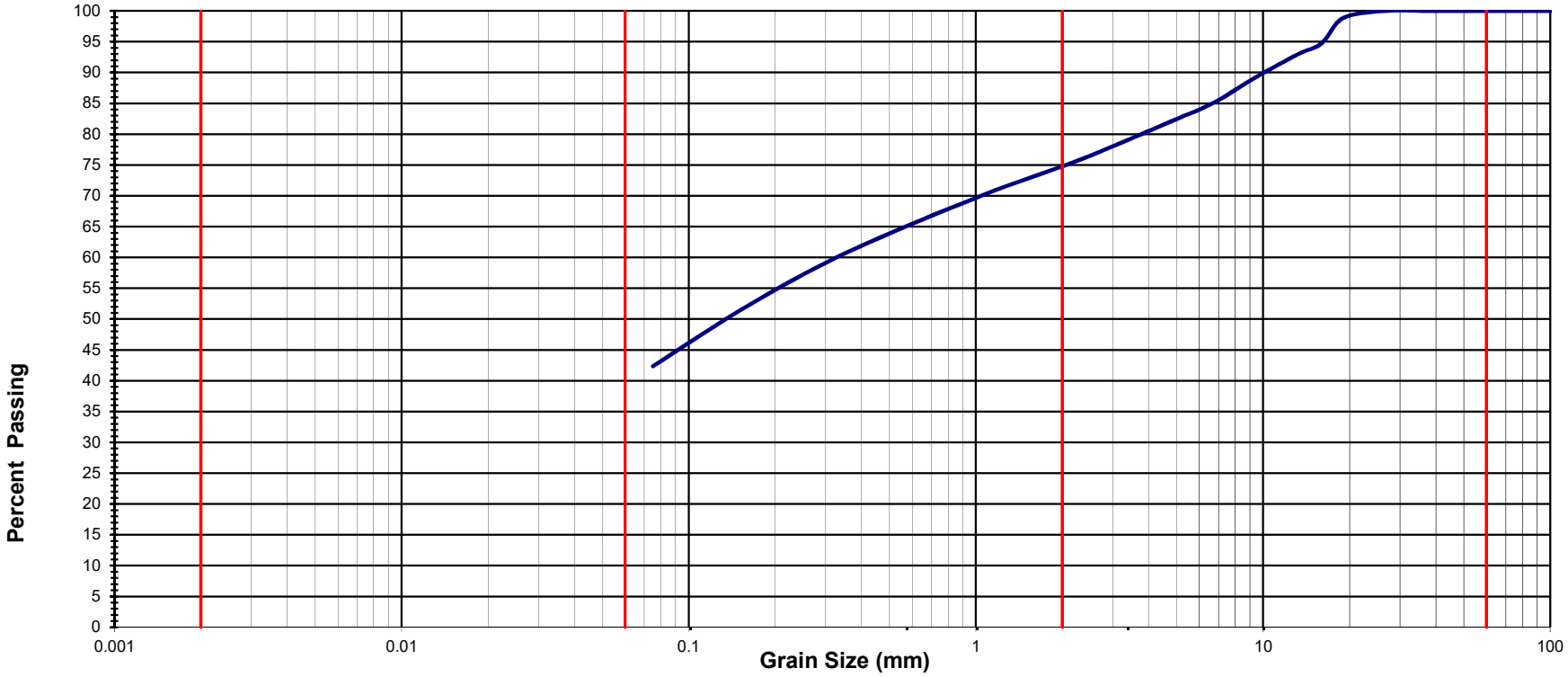
Grain-Size Distribution Curve
Method Test for Sieve Analysis of Aggregate
ASTM C-136

Modified M.I.T. Classification

CLAY	SILT			SAND			GRAVEL		
	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse



EXP Project No.:	**OTT-00252625-A0**	**Project Name :**	**Geotechnical Investigation 365 Forest Ave, Proposed Residential**						
Client :	**Heafey Group**	**Project Location :**	**365 Forest Ave, Ottawa. ON**						
Date Sampled :	**April 25, 2019**	**Borehole No:**	**BH4**	**Sample:**	**SS6**	**Depth (m) :**	**4.6-5.2**		
Sample Composition :		**Gravel (%)**	**25**	**Sand (%)**	**37**	**Silt & Clay (%)**	**38**	**Figure :**	**xxx**
Sample Description :		**Gravelly Sand & Silt**							

Appendix C: 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:

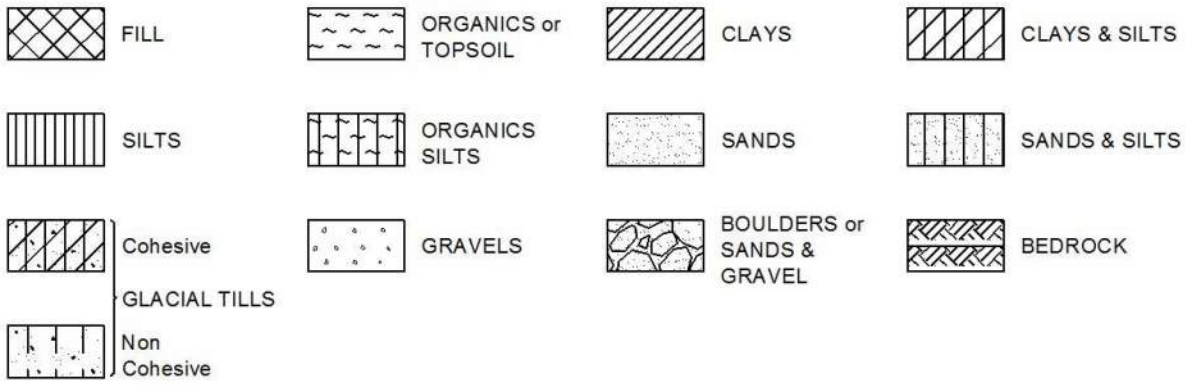
Table c: Consistency of Cohesive Soil

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 BH 19-01

Project No: OTT-00252625-A0

Project: Phase Two Environmental Site Assessment

Location: 365 Forest Street, Ottawa, Ontario

Date Drilled: 'April 30, 2019

Drill Type: CME-75 Truck Mounted Drill Rig

Datum: Geodetic Elevation

Logged by: M.L. Checked by: I.T.

Figure No. 3

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 Elevation m	Depth	Standard Penetration Test N Value / Shear Strength kPa	Combustible Vapour Reading (ppm) / Natural Moisture Content % / Atterberg Limits (% Dry Weight)	SAMPLES	Natural Unit Wt. kN/m³
		GRANULAR FILL ~200 mm Crushed gravel with silt and sand, grey, damp	74.13 73.9	0				
		FILL Silty sand with gravel, brick debris, grey and brown, wet, (loose)		1	6	0	SS1	
			72.6					
		SANDY SILT With clay and gravel, brown and grey, wet, (loose)		2	4	30	SS2	
			71.9					
		GLACIAL TILL Silty clayey sand with gravel, cobbles and boulders, grey, wet, (very loose to loose)		3	3	35	SS3	
					3	25	SS4	
				4	4	35	SS5	
			69.6					
		GLACIAL TILL Silty sand with gravel, cobbles and boulders, grey, wet, (loose)		5	4	40	SS6	
					9 then 50/25 mm	25	SS7	
		Cobbles and boulders from 5.8 m to 6.5 m depths		6				
			67.6					
		SHALE BEDROCK Grey, (poor to good quality)		7			Run 1	
							Run 2	
			65.8	8				
		Borehole Terminated at 8.3 m Depth						

LOG OF BOREHOLE BH LOGS - 252625 FOREST.GPJ TROW OTTAWA.GDT 4/6/21

NOTES:

1. Borehole data requires interpretation by EXP before use by others
2. A 32 mm diameter monitoring well installed in borehole as shown.
3. Field work supervised by an EXP representative.
4. See Notes on Sample Descriptions
5. Log to be read with EXP Report OTT-00252625-A0

WATER LEVEL RECORDS

Date	Water Level (m)	Hole Open To (m)
Completion	N/A	

CORE DRILLING RECORD

Run No.	Depth (m)	% Rec.	RQD %
1	6.5 - 7.2	90	29
2	7.2 - 8.3	100	84

Log of Borehole MW 19-02

Project No: OTT-00252625-A0

Project: Phase Two Environmental Site Assessment

Location: 365 Forest Street, Ottawa, Ontario

Figure No. 4

Page. 1 of 1

Date Drilled: 'April 29, 2019

Drill Type: CME-75 Truck Mounted Drill Rig

Datum: Geodetic Elevation

Logged by: M.L. Checked by: I.T.

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 Elevation m	Depth	Standard Penetration Test N Value / Shear Strength kPa	Combustible Vapour Reading (ppm) / Natural Moisture Content % / Atterberg Limits (% Dry Weight)	SAMPLES	Natural Unit Wt. kN/m³
		GRANULAR FILL ~500 mm Crushed gravel with silt and sand, grey, damp	74.37	0				
		FILL Silty sand with gravel, brown and grey, wet, (loose)	73.9					
		SANDY SILT With clay and gravel, grey, wet, (loose)	73.0	1	6	5	SS1	20.6
▽			72.47		8	10	SS2	19.4
		GLACIAL TILL Silty clayey sand with gravel, cobbles, and boulders, grey wet, (very loose to loose)	72.2	2	5	20	SS3	
				3	1	25	SS4	
		GLACIAL TILL Silty sand with gravel, cobbles and boulders, grey, wet, (very loose to loose)	70.7	4	4	20	SS5	
				5	3		SS6	
				6	50 for 75 mm	15	SS7	
		Auger Refusal at 6.2 m Depth	68.2					

LOG OF BOREHOLE BH LOGS - 252625 FOREST.GPJ TROW OTTAWA.GDT 4/6/21

NOTES:

1. Borehole data requires interpretation by EXP before use by others
2. A 32 mm diameter monitoring well installed in borehole as shown.
3. Field work supervised by an EXP representative.
4. See Notes on Sample Descriptions
5. Log to be read with EXP Report OTT-00252625-A0

WATER LEVEL RECORDS

Date	Water Level (m)	Hole Open To (m)
Completion	5.2	
11 days	1.8	
17 days	1.9	

CORE DRILLING RECORD

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

Log of Borehole BH 19-03

Project No: OTT-00252625-A0

Project: Phase Two Environmental Site Assessment

Location: 365 Forest Street, Ottawa, Ontario

Figure No. 5

Page. 1 of 1

Date Drilled: 'April 30, 2019

Drill Type: CME-75 Truck Mounted Drill Rig

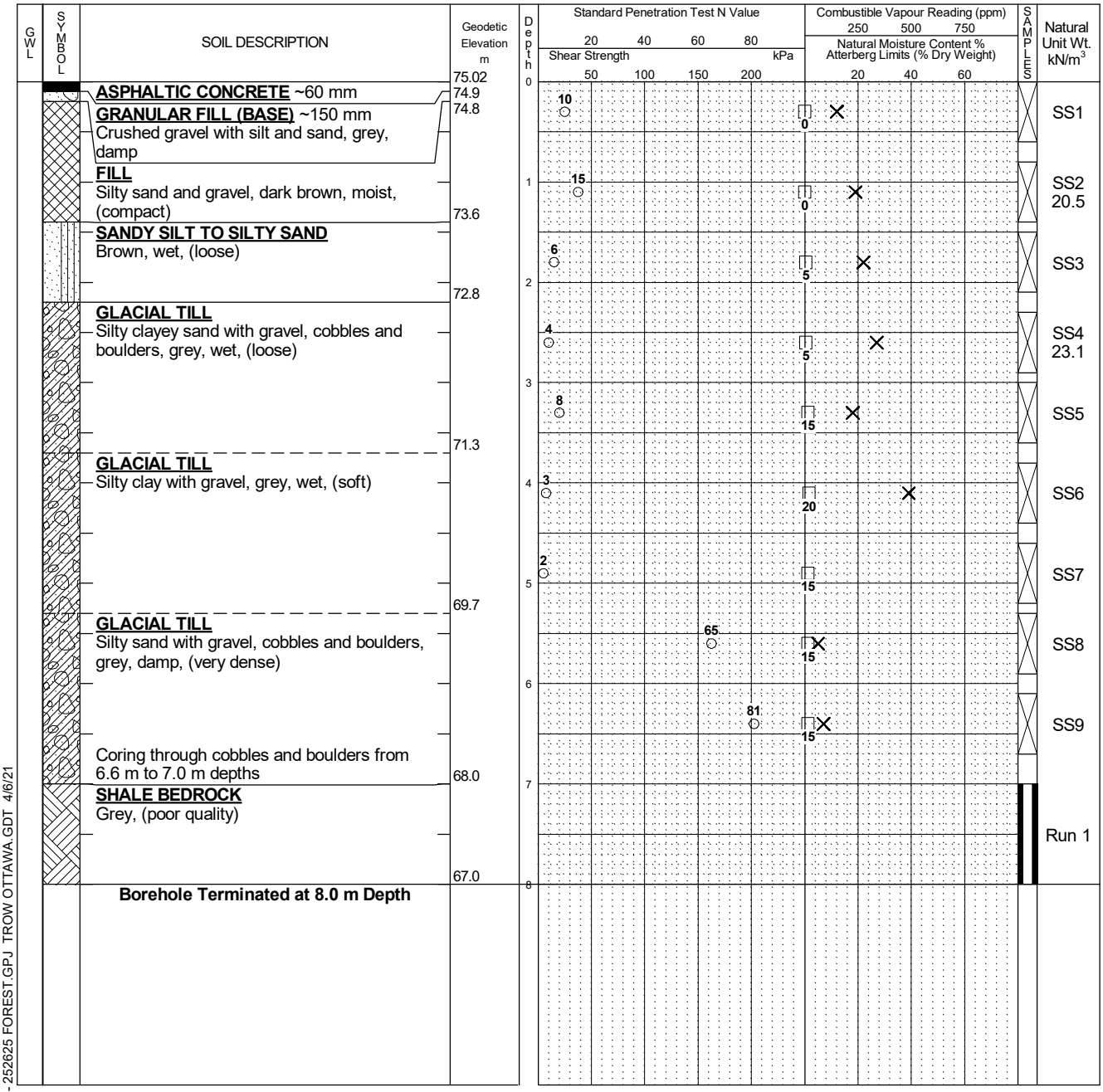
Datum: Geodetic Elevation

Logged by: M.L. Checked by: I.T.

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 Elevation m	Depth	Standard Penetration Test N Value / Shear Strength kPa	Combustible Vapour Reading (ppm) / Natural Moisture Content % / Atterberg Limits (% Dry Weight)	SAMPLES	Natural Unit Wt. kN/m³
		ASPHALTIC CONCRETE ~60 mm	75.02	0				
		GRANULAR FILL (BASE) ~150 mm Crushed gravel with silt and sand, grey, damp	74.9 / 74.8					
		FILL Silty sand and gravel, dark brown, moist, (compact)		1				
			73.6					
		SANDY SILT TO SILTY SAND Brown, wet, (loose)		2				
			72.8					
		GLACIAL TILL Silty clayey sand with gravel, cobbles and boulders, grey, wet, (loose)		3				
			71.3					
		GLACIAL TILL Silty clay with gravel, grey, wet, (soft)		4				
			69.7	5				
		GLACIAL TILL Silty sand with gravel, cobbles and boulders, grey, damp, (very dense)						
		Coring through cobbles and boulders from 6.6 m to 7.0 m depths	68.0	6				
		SHALE BEDROCK Grey, (poor quality)		7				
			67.0	8				
		Borehole Terminated at 8.0 m Depth						



NOTES:

1. Borehole data requires interpretation by EXP before use by others
2. Borehole backfilled upon completion of drilling.
3. Field work supervised by an EXP representative.
4. See Notes on Sample Descriptions
5. Log to be read with EXP Report OTT-00252625-A0

WATER LEVEL RECORDS

Date	Water Level (m)	Hole Open To (m)
Completion	N/A	8.0

CORE DRILLING RECORD

Run No.	Depth (m)	% Rec.	RQD %
1	7 - 8	100	40

LOG OF BOREHOLE BH LOGS - 252625 FOREST.GPJ TROW OTTAWA.GDT 4/6/21

Log of Borehole BH 19-04

Project No: OTT-00252625-A0

Project: Phase Two Environmental Site Assessment

Location: 365 Forest Street, Ottawa, Ontario

Figure No. 6

Page. 1 of 1

Date Drilled: 'April 29, 2019

Drill Type: CME-75 Truck Mounted Drill Rig

Datum: Geodetic Elevation

Logged by: M.L. Checked by: I.T.

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 Elevation m	Depth	Standard Penetration Test N Value / Shear Strength kPa	Combustible Vapour Reading (ppm) / Natural Moisture Content % / Atterberg Limits (% Dry Weight)	SAMPLES	Natural Unit Wt. kN/m³
		ASPHALTIC CONCRETE ~60 mm	74.98	0	30	×	SS1	
		GRANULAR FILL (BASE) ~250 mm Crushed gravel with silt and sand, grey, damp	74.9					
		FILL Clayey silty sand to silty sand with gravel, brown, moist to wet, (loose)	74.7	1	5	×	SS2	19.1
				2	5	×	SS3	
		GLACIAL TILL Silty clay with sand and gravel, cobbles and boulders, grey, wet, (soft)	72.8	3	4	×	SS4	
		Petroleum odour from 3.0 m to 3.6 m depths			3	×	SS5	
		GLACIAL TILL Silty sand with gravel, cobbles and boulders, grey, wet, (compact to very dense)	70.9	4	22	×	SS6	23.9
		Petroleum odour from 5.5 m to 6.1 m depths		5	67	×	SS7	
		Auger Refusal at 6.6 m Depth	68.4	6				

NOTES:

1. Borehole data requires interpretation by EXP before use by others
2. Borehole backfilled upon completion of drilling.
3. Field work supervised by an EXP representative.
4. See Notes on Sample Descriptions
5. Log to be read with EXP Report OTT-00252625-A0

WATER LEVEL RECORDS

Date	Water Level (m)	Hole Open To (m)
Completion	5.5	6.6

CORE DRILLING RECORD

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

LOG OF BOREHOLE BH LOGS - 252625 FOREST.GPJ TROW OTTAWA.GDT 4/6/21

Log of Borehole BH 19-05

Project No: OTT-00252625-A0

Project: Phase Two Environmental Site Assessment

Location: 365 Forest Street, Ottawa, Ontario

Date Drilled: 'April 30, 2019

Drill Type: CME-75 Truck Mounted Drill Rig

Datum: Geodetic Elevation

Logged by: M.L. Checked by: I.T.

Figure No. 7

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 Elevation m	Depth	Standard Penetration Test N Value / Shear Strength kPa	Combustible Vapour Reading (ppm) / Natural Moisture Content % / Atterberg Limits (% Dry Weight)	SAMPLES	Natural Unit Wt. kN/m³
		GRANULAR FILL ~100 mm Crushed gravel wtih silt and sand, grey, damp	74.82 / 74.7	0	11	40	SS1	
		FILL Clayey silty sand to silty sand with gravel, rootlets, brown and grey, moist to wet, petroleum odour, (loose)		1	9	40	SS2	20.5
		Petroleum odour from 1.5 m to 2.7 m depth		2	6	200	SS3	
					7	60	SS4	22.9
		GLACIAL TILL Silty clay with sand and gravel, grey, wet, (soft)	71.8 / 71.1	3	2	45	SS5	
		GLACIAL TILL Silty clayey sand with gravel, cobbles and boulders, grey, wet, petroleum odour, (very loose)		4	3	30	SS6	
				5	1	15	SS7	
				6				
		Auger Refusal at 6.7 m Depth	68.1					

NOTES:

1. Borehole data requires interpretation by EXP before use by others
2. Borehole backfilled upon completion of drilling.
3. Field work supervised by an EXP representative.
4. See Notes on Sample Descriptions
5. Log to be read with EXP Report OTT-00252625-A0

WATER LEVEL RECORDS

Date	Water Level (m)	Hole Open To (m)
Completion	4.6	5.5

CORE DRILLING RECORD

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

LOG OF BOREHOLE BH LOGS - 252625 FOREST.GPJ TROW OTTAWA.GDT 4/6/21

Log of Borehole MW 19-06

Project No: OTT-00252625-A0

Project: Phase Two Environmental Site Assessment

Location: 365 Forest Street, Ottawa, Ontario

Figure No. 8

Page. 1 of 1

Date Drilled: 'April 25, 2019

Drill Type: CME-75 Truck Mounted Drill Rig

Datum: Geodetic Elevation

Logged by: M.L. Checked by: I.T.

Split Spoon Sample
Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Shear Strength by Vane Test

Combustible Vapour Reading
Natural Moisture Content
Atterberg Limits
Undrained Triaxial at % Strain at Failure
Shear Strength by Penetrometer Test

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic Elevation m	Depth	Standard Penetration Test N Value / Shear Strength kPa	Combustible Vapour Reading (ppm) / Natural Moisture Content % / Atterberg Limits (% Dry Weight)	SAMPLES	Natural Unit Wt. kN/m³
		ASPHALTIC CONCRETE ~30 mm	75.28	0				
		GRANULAR FILL (BASE) ~200 mm Crushed gravel with silt and sand, grey, damp	75.2					
		FILL Silty clayey sand to silty sand with gravel, brick debris, brown, moist to wet, (loose)	75.0		5	0	SS1	
				1	5	5	SS2	
					9	0	SS3	
				2				
			72.88		4	0	SS4	
		GLACIAL TILL Silty sand with gravel, cobbles and boulders, grey, wet, (very loose to loose)	72.7	3	3	0	SS5	
				4	5	0	SS6	
					3	0	SS7	
				5	9	0	SS8	
		Borehole Terminated at 5.9 m Depth	69.4					

NOTES:

1. Borehole data requires interpretation by EXP before use by others
2. A 32 mm diameter monitoring well installed in borehole as shown.
3. Field work supervised by an EXP representative.
4. See Notes on Sample Descriptions
5. Log to be read with EXP Report OTT-00252625-A0

WATER LEVEL RECORDS

Date	Water Level (m)	Hole Open To (m)
Completion	4.6	
15 days	2.5	
20 days	2.4	

CORE DRILLING RECORD

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

LOG OF BOREHOLE BH LOGS - 252625 FOREST.GPJ TROW OTTAWA.GDT 4/6/21

Log of Borehole MW 19-07

Project No: OTT-00252625-A0

Project: Phase Two Environmental Site Assessment

Location: 365 Forest Street, Ottawa, Ontario

Figure No. 9

Page. 1 of 1

Date Drilled: 'April 24, 2019

Drill Type: CME-75 Truck Mounted Drill Rig

Datum: Geodetic Elevation

Logged by: M.L. Checked by: I.T.

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 Elevation m	Depth	Standard Penetration Test N Value / Shear Strength kPa	Combustible Vapour Reading (ppm) / Natural Moisture Content % / Atterberg Limits (% Dry Weight)	SAMPLES	Natural Unit Wt. kN/m³
		ASPHALTIC CONCRETE ~60 mm	75.21	0				
		GRANULAR FILL (BASE) ~220 mm Crushed gravel with silt and sand, grey, damp	75.1 74.9					
▽		**FILL** Silty sand with gravel, brown, moist to wet, (loose)	73.81	1	9	0	SS1	19.4
				2	8	0	SS2	
		GLACIAL TILL Silty sand with gravel, cobbles and boulders, grey, wet, (loose to compact)	73.0	3	13	0	SS3	
		Shale fragements from 3.0 m to 3.6 m depths			8	0	SS4	
				4	13	0	SS5	
				5	8	0	SS6	
					8	0	SS7	
		Borehole Terminated at 5.9 m Depth	69.3					

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

NOTES:

1. Borehole data requires interpretation by EXP before use by others
2. A 32 mm diameter monitoring well installed in borehole as shown.
3. Field work supervised by an EXP representative.
4. See Notes on Sample Descriptions
5. Log to be read with EXP Report OTT-00252625-A0

WATER LEVEL RECORDS

Date	Water Level (m)	Hole Open To (m)
Completion	5.2	6.1
16 days	1.4	
22 Days	1.4	

CORE DRILLING RECORD

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

LOG OF BOREHOLE BH LOGS - 252625 FOREST.GPJ TROW OTTAWA.GDT 4/6/21

Log of Borehole MW 19-08

Project No: OTT-00252625-A0

Project: Phase Two Environmental Site Assessment

Location: 365 Forest Street, Ottawa, Ontario

Date Drilled: 'April 25, 2019

Drill Type: CME-75 Truck Mounted Drill Rig

Datum: Geodetic Elevation

Logged by: M.L. Checked by: I.T.

Figure No. 10

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 Elevation m	Depth	Standard Penetration Test N Value / Shear Strength kPa	Combustible Vapour Reading (ppm) / Natural Moisture Content % / Atterberg Limits (% Dry Weight)	SAMPLES	Natural Unit Wt. kN/m³
		GRANULAR FILL ~150 mm Crushed limestone with silt and sand, grey, damp	75.51 / 75.4	0	4	0	SS1	
		FILL Silty sand with gravel, brown, moist to wet, (loose)		1	6	0	SS2	
				2	6	10	SS3	
			72.9	2	13	25	SS4	
		GLACIAL TILL Silty sand with gravel, cobbles and boulders, grey, moist to wet, (compact)		3	16	15	SS5	23.6
				4	17	25	SS6	23.3
				5	10	20	SS7	
			69.81	5	13	10	SS8	
				7	60		SS9	
		SHALE BEDROCK Grey, (fair to good quality)	68.2				Run 1	
				9			Run 2	
		Borehole Terminated at 9.6 m Depth	65.9					

NOTES:

1. Borehole data requires interpretation by EXP before use by others
2. A 32 mm diameter monitoring well installed in borehole as shown.
3. Field work supervised by an EXP representative.
4. See Notes on Sample Descriptions
5. Log to be read with EXP Report OTT-00252625-A0

WATER LEVEL RECORDS

Date	Water Level (m)	Hole Open To (m)
Completion	N/A	N/A
15 days	5.6	
20 days	5.7	

CORE DRILLING RECORD

Run No.	Depth (m)	% Rec.	RQD %
1	7.3 - 8.1	94	53
2	8.1 - 9.6	100	78

LOG OF BOREHOLE BH LOGS - 252625 FOREST GPJ TROW OTTAWA GDT 4/6/21

Log of Borehole MW 19-09

Project No: OTT-00252625-A0

Project: Phase Two Environmental Site Assessment

Location: 365 Forest Street, Ottawa, Ontario

Figure No. 11

Page. 1 of 1

Date Drilled: 'April 24, 2019

Drill Type: CME-75 Truck Mounted Drill Rig

Datum: Geodetic Elevation

Logged by: M.L. Checked by: I.T.

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 Elevation m	Depth	Standard Penetration Test N Value / Shear Strength kPa	Combustible Vapour Reading (ppm) / Natural Moisture Content % / Atterberg Limits (% Dry Weight)	SAMPLES	Natural Unit Wt. kN/m³
		GRANULAR FILL ~300 mm Crushed gravel with silt and sand, grey, damp	75.65 75.4	0	7	0	SS1	
		FILL Silty sand with gravel, brown, moist, (very loose to loose)		1	1	5	SS2	
				2	9	0	SS3	21.9
			73.1				SS4	
		GLACIAL TILL Silty sand with gravel, cobbles and boulders, grey, moist to wet, (loose to compact)		3	10	0	SS5	
				4	18	0	SS6	
				5	7	0	SS7	
					6	0	SS8	
			69.65	6	13	0	SS9	
				7				
			68.1					
		SHALE BEDROCK Grey, (fair quality)		8			Run 1	
			67.0					
		Borehole Terminated at 8.7 m Depth						

NOTES:

1. Borehole data requires interpretation by EXP before use by others
2. A 32 mm diameter monitoring well installed in borehole as shown.
3. Field work supervised by an EXP representative.
4. See Notes on Sample Descriptions
5. Log to be read with EXP Report OTT-00252625-A0

WATER LEVEL RECORDS

Date	Water Level (m)	Hole Open To (m)
Completion	N/A	N/A
21 days	6.0	

CORE DRILLING RECORD

Run No.	Depth (m)	% Rec.	RQD %
1	7.6 - 8.7	95	61

LOG OF BOREHOLE BH LOGS - 252625 FOREST GPJ TROW OTTAWA GDT 4/6/21

Log of Borehole MW 19-10

Project No: OTT-00252625-A0

Project: Phase Two Environmental Site Assessment

Location: 365 Forest Street, Ottawa, Ontario

Figure No. 12

Page. 1 of 1

Date Drilled: 'April 25, 2019

Drill Type: CME-75 Truck Mounted Drill Rig

Datum: Geodetic Elevation

Logged by: M.L. Checked by: I.T.

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 Elevation m	Depth	Standard Penetration Test N Value / Shear Strength kPa	Combustible Vapour Reading (ppm) / Natural Moisture Content % / Atterberg Limits (% Dry Weight)	SAMPLES	Natural Unit Wt. kN/m³
		GRANULAR FILL ~150 mm Crushed gravel with silt and sand, grey	75.74 / 75.6	0			SS1	
		FILL Silty sand, brown and grey, moist, (loose to compact)		1			SS2	
			73.6	2			SS3	20.9
▽		**GLACIAL TILL** Silty sand with gravel, grey, moist to wet, (loose to dense)	73.44				SS4	23.6
				3			SS5	
				4			SS6	
				5			SS7	
			69.8				SS8	
		Borehole Terminated at 5.9 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

SS1: 5 | 5
SS2: 4 | 10
SS3: 12 | 10
SS4: 29 | 10
SS5: 41 | 30
SS6: 16 | 25
SS7: 5 | 25
SS8: 10 | 15

NOTES:
1. Borehole data requires interpretation by EXP before use by others
2. A 32 mm diameter monitoring well installed in borehole as shown.
3. Field work supervised by an EXP representative.
4. See Notes on Sample Descriptions
5. Log to be read with EXP Report OTT-00252625-A0

WATER LEVEL RECORDS

Date	Water Level (m)	Hole Open To (m)
Completion	5.2	N/A
15 days	2.2	
20 days	2.3	

CORE DRILLING RECORD

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

LOG OF BOREHOLE BH LOGS - 252625 FOREST.GPJ TROW OTTAWA.GDT 4/6/21

Log of Borehole BH 19-11

Project No: OTT-00252625-A0

Project: Phase Two Environmental Site Assessment

Location: 365 Forest Street, Ottawa, Ontario

Figure No. 13

Page. 1 of 1

Date Drilled: 'April 29, 2019

Drill Type: CME-75 Truck Mounted Drill Rig

Datum: Geodetic Elevation

Logged by: M.L. Checked by: I.T.

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 Elevation m	Depth	Standard Penetration Test N Value / Shear Strength kPa	Combustible Vapour Reading (ppm) / Natural Moisture Content % / Atterberg Limits (% Dry Weight)	SAMPLES	Natural Unit Wt. kN/m³
		GRANULAR FILL ~200 mm Crushed limestone with silt and sand, grey, damp	75.71 / 75.5	0				
		FILL Silty sand with gravel, brown, moist to wet, (loose to compact)		1	14	0	SS1	
				2	6	0	SS2	
				3	7	0	SS3	
		GLACIAL TILL Silty sand with gravel, grey, moist to wet, (compact to dense)	72.7	3	32	0	SS4	
				4	12	0	SS5	
		Silty sand		5	10	0	SS6	
				6	10	0	SS7	
				7				
		SHALE BEDROCK Grey, (good quality)	67.9	8			Run 1	
							Run 2	
		Borehole Terminated at 8.8 m Depth	66.9					

LOG OF BOREHOLE BH LOGS - 252625 FOREST.GPJ TROW OTTAWA.GDT 4/6/21

NOTES:

1. Borehole data requires interpretation by EXP before use by others
2. Borehole backfilled upon completion of drilling.
3. Field work supervised by an EXP representative.
4. See Notes on Sample Descriptions
5. Log to be read with EXP Report OTT-00252625-A0

WATER LEVEL RECORDS

Date	Water Level (m)	Hole Open To (m)
Completion	N/A	8.8

CORE DRILLING RECORD

Run No.	Depth (m)	% Rec.	RQD %
1	7.8 - 8.2	94	77
2	8.2 - 8.8	100	86

Log of Borehole BH 19-12

Project No: OTT-00252625-A0

Project: Phase Two Environmental Site Assessment

Location: 365 Forest Street, Ottawa, Ontario

Figure No. 14

Page. 1 of 1

Date Drilled: 'April 24, 2019

Drill Type: CME-75 Truck Mounted Drill Rig

Datum: Geodetic Elevation

Logged by: M.L. Checked by: I.T.

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 Elevation m	Depth	Standard Penetration Test N Value / Shear Strength kPa	Combustible Vapour Reading (ppm) / Natural Moisture Content % / Atterberg Limits (% Dry Weight)	SAMPLES	Natural Unit Wt. kN/m³
		GRANULAR FILL ~150 mm Crushed gravel with silt and sand, damp, grey	75.42	0	4	0	SS1	
			75.3					
		FILL Silty sand with gravel, brown, moist to wet, (loose to compact)		1	12	0	SS2	
				2	16	0	SS3	
					7	0	SS4	22.4
				3	7	0	SS5	
				4	5	0	SS6	
			71.0					
		Borehole Terminated at 4.4 m Depth						

NOTES:

1. Borehole data requires interpretation by EXP before use by others
2. Borehole backfilled upon completion of drilling.
3. Field work supervised by an EXP representative.
4. See Notes on Sample Descriptions
5. Log to be read with EXP Report OTT-00252625-A0

WATER LEVEL RECORDS

Date	Water Level (m)	Hole Open To (m)
Completion	Dry	3.8

CORE DRILLING RECORD

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

LOG OF BOREHOLE BH LOGS - 252625 FOREST.GPJ TROW OTTAWA.GDT 4/6/21

Appendix D - Analytical Summary Tables

TABLE 1 SOIL ANALYTICAL RESULTS *(µg/g)*
PETROLEUM HYDROCARBONS
365 Forest Street, Ottawa, Ontario

Parameter	MECP Table 3[1]	BH19-1 SS6	MW19-2 SS3	BH19-17 SS3	BH19-3 SS6	BH19-5 SS3	MW19-6 SS3	BH15 SS3
Sample Date (d/m/y)	Residential	30/04/2019	29/04/2019	Duplicate of	30/04/2019	30/04/2019	25/04/2019	Duplicate of
Sample Depth (mbsg)		4.5 - 5.1	2.3 - 2.9	MW19-2 SS3	3.8 - 4.4	1.5 - 2.1	1.5 - 2.1	MW19-6 SS3
Maxxam ID		JOY434	JOY435	JOY439	JOY436	JOY437	JOH666	JOH669
Date of Analysis		05/02/19	05/02/19	05/02/19	05/02/19	05/02/19	05/02/19	05/02/19
Maxxam Certificate of Analysis		B9B4447	B9B4447	B9B4447	B9B4447	B9B4447	B9B1459	B9B1459
Benzene	0.21	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Ethylbenzene	2	<0.020	<0.020	<0.020	<0.020	0.58	<0.020	<0.020
Toluene	2.3	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Xylenes	3.1	<0.020	<0.020	<0.020	<0.020	0.51	<0.020	<0.020
PHC F_1 (>C_6-C_{10})	55	<10	<10	<10	<10	**140**	<10	<10
PHC F_2 (>C_{10}-C_{16})	98	<10	<10	<10	<10	**1400**	<10	<10
PHC F_3 (>C_{16}-C_{34})	300	<50	<50	<50	<50	**870**	<50	<50
PHC F_4 (>C_{34}-C_{50})	2800	<50	<50	<50	<50	<50	<50	<50

Parameter	MECP Table 3[1]	MW19-7 SS4	MW19-8 SS4	MW19-9 SS5	MW19-10 SS2	MW19-10 SS7	BH19-11 SS4	BH19-12 SS6
Sample Date (d/m/y)	Residential	24/04/2019	25/04/2019	24/04/2019	25/04/2019	25/04/2019	29/04/2019	25/04/2019
Sample Depth (mbsg)		3.0 - 3.6	2.3 - 2.9	3.0 - 3.6	0.9 - 1.5	4.5 - 5.1	3.0 - 3.6	0.8 - 1.4
Maxxam ID		JOH667	JOH668	JOH670	JOH671	JOH672	JOY438	JOH673
Date of Analysis		05/02/19	05/02/19	05/02/19	05/02/19	05/02/19	05/02/19	05/02/19
Maxxam Certificate of Analysis		B9B1459	B9B1459	B9B1459	B9B1459	B9B1459	B9B4447	B9B1459
Benzene	0.21	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Ethylbenzene	2	<0.020	<0.020	<0.020	<0.020	<0.020	0.041	<0.020
Toluene	2.3	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Xylenes	3.1	<0.020	<0.020	<0.020	<0.020	<0.020	0.028	<0.020
PHC F_1 (>C_6-C_{10})	55	<10	<10	<10	<10	<10	<10	<10
PHC F_2 (>C_{10}-C_{16})	98	<10	<10	<10	<10	<10	<10	<10
PHC F_3 (>C_{16}-C_{34})	300	<50	<50	<50	<50	<50	<50	<50
PHC F_4 (>C_{34}-C_{50})	2800	<50	<50	<50	<50	<50	<50	<50

NOTES:

1 MECP *Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the EPA, April 2011, Table 3 non-potable residential standards.*

Shaded/Bold Concentration exceeds MECP Table 3 soil quality standard.

TABLE 2 **SOIL ANALYTICAL RESULTS *(µg/g)***
VOLATILE ORGANIC COMPOUNDS
365 Forest Street, Ottawa, Ontario

Parameter	MECP Table 3[1]	BH19-1 SS6	MW19-2 SS3	BH19-17 SS3	BH19-3 SS6	BH19-5 SS3	MW19-6 SS3	BH15 SS3
Sample Date (d/m/y)	Residential	30/04/2019	29/04/2019	Duplicate of	30/04/2019	30/04/2019	25/04/2019	Duplicate of
Sample Depth (mbgs)		4.5 - 5.1	2.3 - 2.9	MW19-2 SS3	3.8 - 4.4	1.5 - 2.1	1.5 - 2.1	MW19-6 SS3
Maxxam ID		JOY434	JOY435	JOY439	JOY436	JOY437	JOH666	JOH669
Date of Analysis		05/07/19	05/07/19	05/07/19	05/07/19	05/07/19	05/03/19	05/03/19
Maxxam Certificate of Analysis		B9B4447	B9B4447	B9B4447	B9B4447	B9B4447	B9B1459	B9B1459
Acetone	16	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Benzene	0.21	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Bromodichloromethane	13	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Bromoform	0.27	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Bromomethane	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Carbon Tetrachloride	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Chlorobenzene	2.4	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Chloroform	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Dibromochloromethane	9.4	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,2-Dichlorobenzene	3.4	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,3-Dichlorobenzene	4.8	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,4-Dichlorobenzene	0.083	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Difluorodifluoromethane	16	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,1-Dichloroethane	3.5	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,2-Dichloroethane	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,1-Dichloroethylene	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Cis-1,2-Dichloroethylene	3.4	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Trans-1,2-Dichloroethylene	0.084	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,2-Dichloropropane	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,3-Dichloropropene (cis+trans)	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Ethylbenzene	2	<0.020	<0.020	<0.020	<0.020	0.58	<0.020	<0.020
Ethylene Dibromide	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Hexane	2.8	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Methylene Chloride	0.1	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Methyl Ethyl Ketone	16	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Methyl Isobutyl Ketone	1.7	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Methyl-t-Butyl Ether	0.75	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Styrene	0.7	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,1,1,2-Tetrachloroethane	0.058	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,1,2,2-Tetrachloroethane	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Tetrachloroethylene	0.28	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Toluene	2.3	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
1,1,1-Trichloroethane	0.38	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,1,2-Trichloroethane	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Trichloroethylene	0.061	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Trichlorofluoromethane	4	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Vinyl Chloride	0.02	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Total Xylenes	3.1	<0.020	<0.020	<0.020	<0.020	0.51	<0.020	<0.020

NOTES:

1 MECP Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the EPA, April 2011, Table 3 non-potable residential standards.

Shaded/ Bold Concentration exceeds MECP Table 3 soil quality standard.

TABLE 2 **SOIL ANALYTICAL RESULTS *(µg/g)***
VOLATILE ORGANIC COMPOUNDS
365 Forest Street, Ottawa, Ontario

Parameter	MECP Table 3[1]	MW19-7 SS4	MW19-8 SS4	MW19-9 SS5	MW19-10 SS2	MW19-10 SS7	BH19-11 SS4	BH19-12 SS6
Sample Date (d/m/y)	Residential	24/04/2019	25/04/2019	24/04/2019	25/04/2019	25/04/2019	29/04/2019	25/04/2019
Sample Depth (mbgs)		3.0 - 3.6	2.3 - 2.9	3.0 - 3.6	0.9 - 1.5	4.5 - 5.1	3.0 - 3.6	0.8 - 1.4
Maxxam ID		JOH667	JOH668	JOH670	JOH671	JOH672	JOY438	JOH673
Date of Analysis		05/03/19	05/03/19	05/03/19	05/03/19	05/03/19	05/07/19	05/03/19
Maxxam Certificate of Analysis		B9B1459	B9B1459	B9B1459	B9B1459	B9B1459	B9B4447	B9B1459
Acetone	16	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Benzene	0.21	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Bromodichloromethane	13	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Bromoform	0.27	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Bromomethane	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Carbon Tetrachloride	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Chlorobenzene	2.4	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Chloroform	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Dibromochloromethane	9.4	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,2-Dichlorobenzene	3.4	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,3-Dichlorobenzene	4.8	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,4-Dichlorobenzene	0.083	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Difluorodifluoromethane	16	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,1-Dichloroethane	3.5	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,2-Dichloroethane	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,1-Dichloroethylene	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Cis-1,2-Dichloroethylene	3.4	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Trans-1,2-Dichloroethylene	0.084	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,2-Dichloropropane	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,3-Dichloropropene (cis+trans)	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Ethylbenzene	2	<0.020	<0.020	<0.020	<0.020	<0.020	0.041	<0.020
Ethylene Dibromide	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Hexane	2.8	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Methylene Chloride	0.1	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Methyl Ethyl Ketone	16	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Methyl Isobutyl Ketone	1.7	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Methyl-t-Butyl Ether	0.75	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Styrene	0.7	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,1,1,2-Tetrachloroethane	0.058	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,1,2,2-Tetrachloroethane	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Tetrachloroethylene	0.28	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Toluene	2.3	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
1,1,1-Trichloroethane	0.38	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,1,2-Trichloroethane	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Trichloroethylene	0.061	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Trichlorofluoromethane	4	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Vinyl Chloride	0.02	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Total Xylenes	3.1	<0.020	<0.020	<0.020	<0.020	<0.020	0.028	<0.020

NOTES:

1 EPA, April 2011, Table 3 non-potable residential standards.

Shaded/ Bold Concentration exceeds MECP Table 3 soil quality standard.

TABLE 3 SOIL ANALYTICAL RESULTS *(µg/g)*
METALS
365 Forest Street, Ottawa, Ontario

Parameter	MECP Table 3[1]	BH19-1 SS6	MW19-2 SS3	BH19-17 SS3	BH19-3 SS6	BH19-5 SS3	MW19-6 SS3	BH15 SS3
Sample Date (d/m/y)	Residential	30/04/2019	29/04/2019	Duplicate of	30/04/2019	30/04/2019	25/04/2019	Duplicate of
Sample Depth (mbgs)		4.5 - 5.1	2.3 - 2.9	MW19-2 SS3	3.8 - 4.4	1.5 - 2.1	1.5 - 2.1	MW19-6 SS3
Maxxam ID		JOY434	JOY435	JOY439	JOY436	JOY437	JOH666	JOH669
Date of Analysis		05/03/19	05/03/19	05/03/19	05/03/19	05/03/19	05/01/19	05/01/19
Maxxam Certificate of Analysis		B9B4447	B9B4447	B9B4447	B9B4447	B9B4447	B9B1459	B9B1459
Antimony	7.5	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Arsenic	18	1.4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Barium	390	61	130	120	260	78	52	56
Beryllium	4	0.37	0.45	0.44	0.48	0.27	0.28	0.29
Boron	120	7.9	6.7	6.5	5.7	<5.0	<5.0	<5.0
Cadmium	1.2	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Chromium	160	17	30	29	32	26	25	26
Cobalt	22	6.1	9.5	9.4	9.9	6.4	5.7	5.7
Copper	140	13	21	19	23	13	13	13
Lead	120	5.4	6.4	5.7	5.1	2.6	2.4	2.6
Molybdenum	6.9	1.4	<0.50	<0.50	0.63	<0.50	<0.50	<0.50
Nickel	100	12	20	19	20	15	14	15
Selenium	2.4	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Silver	20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Thallium	1	0.11	0.19	0.17	0.19	0.091	0.084	0.10
Uranium	23	0.80	0.55	0.54	1.1	0.55	0.53	0.66
Vanadium	86	26	41	38	47	28	29	27
Zinc	340	19	40	38	49	28	24	23
Conductivity	0.7	NA	0.32	0.36	NA	0.19	NA	NA
SAR	5.0	NA	1.9	1.9	NA	0.76	NA	NA
Cyanide	0.051	NA	<0.01	<0.01	NA	<0.01	NA	NA
Chromium VI	8	NA	<0.2	<0.2	NA	<0.2	NA	NA
Mercury	0.27	NA	<0.050	<0.050	NA	<0.050	NA	NA

NOTES:

1 MECP Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the EPA, April 2011, Table 3 non-potable residential standards.

Shaded/ Bold Concentration exceeds MECP Table 3 soil quality standard.

NA Not analyzed

TABLE 3 SOIL ANALYTICAL RESULTS *(µg/g)*
METALS
365 Forest Street, Ottawa, Ontario

Parameter	MECP Table 3[1]	MW19-7 SS4	MW19-8 SS4	MW19-9 SS5	MW19-10 SS2	MW19-10 SS7	BH19-11 SS4	BH19-12 SS6
Sample Date (d/m/y)	Residential	24/04/2019	25/04/2019	24/04/2019	25/04/2019	25/04/2019	29/04/2019	25/04/2019
Sample Depth (mbgs)		3.0 - 3.6	2.3 - 2.9	3.0 - 3.6	0.9 - 1.5	4.5 - 5.1	3.0 - 3.6	0.8 - 1.4
Maxxam ID		JOH667	JOH668	JOH670	JOH671	JOH672	JOY438	JOH673
Date of Analysis		05/01/19	05/01/19	05/01/19	05/01/19	05/01/19	05/03/19	05/01/19
Maxxam Certificate of Analysis		B9B1459	B9B1459	B9B1459	B9B1459	B9B1459	B9B4447	B9B1459
Antimony	7.5	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Arsenic	18	1.5	<1.0	<1.0	1.5	1.4	<1.0	1.5
Barium	390	91	70	100	170	100	77	71
Beryllium	4	0.34	0.28	0.37	0.61	0.36	0.26	0.39
Boron	120	5.8	6.1	8.8	5.4	7.3	<5.0	5.6
Cadmium	1.2	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Chromium	160	15	12	15	40	16	13	20
Cobalt	22	7.4	5.7	6.6	10	5.9	4.8	7.2
Copper	140	14	13	16	27	12	11	15
Lead	120	5.5	6.2	6.8	7.2	5.6	7.6	7.3
Molybdenum	6.9	0.71	0.54	<0.50	<0.50	0.90	<0.50	<0.50
Nickel	100	14	11	12	25	12	9.3	15
Selenium	2.4	<0.50	<0.50	0.53	<0.50	<0.50	<0.50	<0.50
Silver	20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Thallium	1	0.12	0.12	0.15	0.21	0.10	0.11	0.13
Uranium	23	0.50	0.49	0.55	0.73	1.3	0.59	0.53
Vanadium	86	24	19	23	45	24	23	29
Zinc	340	17	15	15	44	22	26	23

NOTES:

1 April 2011, Table 3 non-potable residential standards.

Shaded/ Bold Concentration exceeds MECP Table 3 soil quality standard.

TABLE 4 SOIL ANALYTICAL RESULTS *(µg/g)*
POLYCYCLIC AROMATIC HYDROCARBONS
365 Forest Street, Ottawa, Ontario

Parameter	MECP Table 3[1]	BH19-1 SS6	MW19-2 SS3	BH19-17 SS3	BH19-3 SS6	BH19-5 SS3	MW19-6 SS3	BH15 SS3
Sample Date (d/m/y)	Residential	30/04/2019	29/04/2019	Duplicate of	30/04/2019	30/04/2019	25/04/2019	Duplicate of
Sample Depth (mbsg)		4.5 - 5.1	2.3 - 2.9	MW19-2 SS3	3.8 - 4.4	1.5 - 2.1	1.5 - 2.1	MW19-6 SS3
Maxxam ID		JOY434	JOY435	JOY439	JOY436	JOY437	JOH666	JOH669
Date of Analysis		05/06/19	05/06/19	05/06/19	05/06/19	05/06/19	05/02/19	05/02/19
Maxxam Certificate of Analysis		B9B4447	B9B4447	B9B4447	B9B4447	B9B4447	B9B1459	B9B1459
Acenaphthene	7.9	<0.0050	<0.0050	<0.0050	<0.0050	1.8	<0.0050	<0.0050
Acenaphthylene	0.15	<0.0050	<0.0050	<0.0050	<0.0050	**<0.25**	<0.0050	<0.0050
Anthracene	0.67	<0.0050	<0.0050	<0.0050	<0.0050	0.39	<0.0050	<0.0050
Benzo[a]anthracene	0.5	0.012	<0.0050	<0.0050	<0.0050	<0.25	<0.0050	<0.0050
Benzo[a]pyrene	0.3	0.0083	<0.0050	<0.0050	<0.0050	<0.25	<0.0050	<0.0050
Benzo[b]fluoranthene	0.78	0.011	<0.0050	<0.0050	<0.0050	<0.25	<0.0050	<0.0050
Benzo[g,h,i]perylene	6.6	0.0056	<0.0050	<0.0050	<0.0050	<0.25	<0.0050	<0.0050
Benzo[k]fluoranthene	0.78	<0.0050	<0.0050	<0.0050	<0.0050	<0.25	<0.0050	<0.0050
Chrysene	7	0.011	<0.0050	<0.0050	<0.0050	<0.25	<0.0050	<0.0050
Dibenz[a,h]anthracene	0.1	<0.0050	<0.0050	<0.0050	<0.0050	**<0.25**	<0.0050	<0.0050
Fluoranthene	0.69	0.023	<0.0050	<0.0050	<0.0050	<0.25	<0.0050	<0.0050
Fluorene	62	<0.0050	<0.0050	<0.0050	<0.0050	2.4	<0.0050	<0.0050
Indeno[1,2,3-cd]pyrene	0.38	0.0052	<0.0050	<0.0050	<0.0050	<0.25	<0.0050	<0.0050
Methylnaphthalene, 2-(1-)	0.99	<0.0071	<0.0071	<0.0071	<0.0071	**29**	<0.0071	<0.0071
Naphthalene	0.6	<0.0050	<0.0050	<0.0050	<0.0050	**3.6**	<0.0050	<0.0050
Phenanthrene	6.2	0.014	<0.0050	<0.0050	<0.0050	5.4	<0.0050	<0.0050
Pyrene	78	0.019	<0.0050	<0.0050	<0.0050	0.44	<0.0050	<0.0050

NOTES:

1 MECP Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the EPA, April 2011, Table 3 non-potable residential standards.

Shaded/ Bold Concentration exceeds MECP Table 3 soil quality standard.

TABLE 4 SOIL ANALYTICAL RESULTS *(µg/g)*
POLYCYCLIC AROMATIC HYDROCARBONS
365 Forest Street, Ottawa, Ontario

Parameter	MECP Table 3[1]	MW19-7 SS4	MW19-8 SS4	MW19-9 SS5	MW19-10 SS2	MW19-10 SS7	BH19-11 SS4	BH19-12 SS6
Sample Date (d/m/y)	Residential	24/04/2019	25/04/2019	24/04/2019	25/04/2019	25/04/2019	29/04/2019	25/04/2019
Sample Depth (mbsg)		3.0 - 3.6	2.3 - 2.9	3.0 - 3.6	0.9 - 1.5	4.5 - 5.1	3.0 - 3.6	0.8 - 1.4
Maxxam ID		JOH667	JOH668	JOH670	JOH671	JOH672	JOY438	JOH673
Date of Analysis		05/02/19	05/02/19	05/02/19	05/02/19	05/02/19	05/06/19	05/02/19
Maxxam Certificate of Analysis		B9B1459	B9B1459	B9B1459	B9B1459	B9B1459	B9B4447	B9B1459
Acenaphthene	7.9	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0056	<0.0050
Acenaphthylene	0.15	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0072
Anthracene	0.67	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[a]anthracene	0.5	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.013
Benzo[a]pyrene	0.3	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.019
Benzo[b]fluoranthene	0.78	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0061	0.027
Benzo[g,h,i]perylene	6.6	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0053	0.018
Benzo[k]fluoranthene	0.78	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0089
Chrysene	7	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.014
Dibenz[a,h]anthracene	0.1	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Fluoranthene	0.69	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0090	0.022
Fluorene	62	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.014	<0.0050
Indeno[1,2,3-cd]pyrene	0.38	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.017
Methylnaphthalene, 2-(1-)	0.99	<0.0071	<0.0071	<0.0071	<0.0071	<0.0071	0.65	<0.071
Naphthalene	0.6	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.39	<0.0050
Phenanthrene	6.2	<0.0050	<0.0050	<0.0050	<0.0050	0.0052	0.018	0.0050
Pyrene	78	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.010	0.021

NOTES:

1 2011, Table 3 non-potable residential standards.

Shaded/ Bold Concentration exceeds MECP Table 3 soil quality standard.

TABLE 5 MAXIMUM CONCENTRATIONS IN SOIL
365 Forest Street, Ottawa, Ontario

Parameter	Sample Location	Sample Depth (mbgs)	Sampling Date	Maximum Concentration	MECP Table 3
Petroleum Hydrocarbons					
F1 PHC (C6 - C10) - BTEX	BH19-5 SS3	1.5 - 2.1	30-Apr-19	140	55
F2 PHC (C10-C16)	BH19-5 SS3	1.5 - 2.1	30-Apr-19	1400	98
F3 PHC (C16-C34)	BH19-5 SS3	1.5 - 2.1	30-Apr-19	870	300
F4 PHC (C34-C50)	All Locations	0.8 - 5.1	April 24-30, 2019	<50	2800
Volatile Organic Compounds					
Acetone	All Locations	0.8 - 5.1	April 24-30, 2019	<0.50	16
Benzene	All Locations	0.8 - 5.1	April 24-30, 2019	<0.020	0.21
Bromodichloromethane	All Locations	0.8 - 5.1	April 24-30, 2019	<0.050	13
Bromoform	All Locations	0.8 - 5.1	April 24-30, 2019	<0.050	0.27
Bromomethane	All Locations	0.8 - 5.1	April 24-30, 2019	<0.050	0.05
Carbon Tetrachloride	All Locations	0.8 - 5.1	April 24-30, 2019	<0.050	0.05
Chlorobenzene	All Locations	0.8 - 5.1	April 24-30, 2019	<0.050	2.4
Chloroform	All Locations	0.8 - 5.1	April 24-30, 2019	<0.050	0.05
Dibromochloromethane	All Locations	0.8 - 5.1	April 24-30, 2019	<0.050	9.4
1,2-Dichlorobenzene	All Locations	0.8 - 5.1	April 24-30, 2019	<0.050	3.4
1,3-Dichlorobenzene	All Locations	0.8 - 5.1	April 24-30, 2019	<0.050	4.8
1,4-Dichlorobenzene	All Locations	0.8 - 5.1	April 24-30, 2019	<0.050	0.083
Difluorodifluoromethane	All Locations	0.8 - 5.1	April 24-30, 2019	<0.050	16
1,1-Dichloroethane	All Locations	0.8 - 5.1	April 24-30, 2019	<0.050	3.5
1,2-Dichloroethane	All Locations	0.8 - 5.1	April 24-30, 2019	<0.050	0.05
1,1-Dichloroethylene	All Locations	0.8 - 5.1	April 24-30, 2019	<0.050	0.05
Cis-1,2-Dichloroethylene	All Locations	0.8 - 5.1	April 24-30, 2019	<0.050	3.4
Trans-1,2-Dichloroethylene	All Locations	0.8 - 5.1	April 24-30, 2019	<0.050	0.084
1,2-Dichloropropane	All Locations	0.8 - 5.1	April 24-30, 2019	<0.050	0.05
1,3-Dichloropropene (cis+trans)	All Locations	0.8 - 5.1	April 24-30, 2019	<0.050	0.05
Ethylbenzene	All Locations	0.8 - 5.1	April 24-30, 2019	<0.050	2
Ethylene Dibromide	All Locations	0.8 - 5.1	April 24-30, 2019	<0.050	0.05
Hexane	All Locations	0.8 - 5.1	April 24-30, 2019	<0.050	2.8
Methylene Chloride	All Locations	0.8 - 5.1	April 24-30, 2019	<0.050	0.1
Methyl Ethyl Ketone	All Locations	0.8 - 5.1	April 24-30, 2019	<0.50	16
Methyl Isobutyl Ketone	All Locations	0.8 - 5.1	April 24-30, 2019	<0.50	1.7
Methyl-t-Butyl Ether	All Locations	0.8 - 5.1	April 24-30, 2019	<0.050	0.75
Styrene	All Locations	0.8 - 5.1	April 24-30, 2019	<0.050	0.7
1,1,1,2-Tetrachloroethane	All Locations	0.8 - 5.1	April 24-30, 2019	<0.050	0.058
1,1,2,2-Tetrachloroethane	All Locations	0.8 - 5.1	April 24-30, 2019	<0.050	0.05
Tetrachloroethylene	All Locations	0.8 - 5.1	April 24-30, 2019	<0.050	0.28
Toluene	All Locations	0.8 - 5.1	April 24-30, 2019	<0.020	2.3
1,1,1-Trichloroethane	All Locations	0.8 - 5.1	April 24-30, 2019	<0.050	0.38
1,1,2-Trichloroethane	All Locations	0.8 - 5.1	April 24-30, 2019	<0.050	0.05
Trichloroethylene	All Locations	0.8 - 5.1	April 24-30, 2019	<0.050	0.061
Trichlorofluoromethane	All Locations	0.8 - 5.1	April 24-30, 2019	<0.050	4
Vinyl Chloride	All Locations	0.8 - 5.1	April 24-30, 2019	<0.020	0.02
Total Xylenes	BH19-5 SS3	1.5 - 2.1	30-Apr-19	0.51	3.1

Inorganic Parameters					
Antimony	All Locations	0.8-5.1	April 24-30, 2019	<0.20	7.5
Arsenic	MW19-7 SS4	3.0 - 3.6	24-Apr-19	1.5	18
	MW19-10 SS2	0.9 - 1.5	25-Apr-19		
	BH19-12 SS6	0.8 - 1.4	25-Apr-19		
Barium	MW19-3 SS6	3.8 - 4.4	30-Apr-19	260	390
Beryllium	MW19-10 SS2	0.9 - 1.5	25-Apr-19	0.61	4
Boron	MW19-9 SS5	3.0 - 3.6	24-Apr-19	8.8	120
Cadmium	All Locations	0.8-5.1	April 24-30, 2019	<0.10	1.2
Chromium	MW19-10 SS2	0.9 - 1.5	25-Apr-19	40	160
Cobalt	MW19-10 SS2	0.9 - 1.5	25-Apr-19	10	22
Copper	MW19-10 SS2	0.9 - 1.5	25-Apr-19	27	140
Lead	BH19-11 SS4	3.0 - 3.6	29-Apr-19	7.6	120
Molybdenum	MW19-1 SS6	4.5 - 5.1	30-Apr-19	1.4	6.9
Nickel	MW19-10 SS2	0.9 - 1.5	25-Apr-19	25	100
Selenium	MW19-9 SS5	3.0 - 3.6	24-Apr-19	0.53	2.4
Silver	All Locations	0.8-5.1	April 24-30, 2019	<0.20	20
Thallium	MW19-10 SS2	0.9 - 1.5	25-Apr-19	0.21	1
Uranium	MW19-3 SS6	3.8 - 4.4	30-Apr-19	1.1	23
Vanadium	MW19-3 SS6	3.8 - 4.4	30-Apr-19	47	86
Zinc	MW19-3 SS6	3.8 - 4.4	30-Apr-19	49	340
Cyanide	MW19-2 SS3	2.3 - 2.9	29-Apr-19	<0.01	0.051
	BH19-17 SS3	2.3 - 2.9	29-Apr-19		
	BH19-5 SS3	1.5 - 2.1	30-Apr-19		
Chromium VI	MW19-2 SS3	2.3 - 2.9	29-Apr-19	<0.2	8
	BH19-17 SS3	2.3 - 2.9	29-Apr-19		
	BH19-5 SS3	1.5 - 2.1	30-Apr-19		
Mercury	MW19-2 SS3	2.3 - 2.9	29-Apr-19	<0.05	0.27
	BH19-17 SS3	2.3 - 2.9	29-Apr-19		
	BH19-5 SS3	1.5 - 2.1	30-Apr-19		
Polycylic Aromatic Hydrocarbons					
Acenaphthene	BH19-5 SS3	1.5 - 2.1	30-Apr-19	1.8	7.9
Acenaphthylene	BH19-5 SS3	1.5 - 2.1	30-Apr-19	<0.25	0.15
Anthracene	BH19-5 SS3	1.5 - 2.1	30-Apr-19	0.39	0.67
Benzo(a)anthracene	BH19-5 SS3	1.5 - 2.1	30-Apr-19	<0.25	0.5
Benzo(a)pyrene	BH19-5 SS3	1.5 - 2.1	30-Apr-19	<0.25	0.3
Benzo(b/j)fluoranthene	BH19-5 SS3	1.5 - 2.1	30-Apr-19	<0.25	0.78
Benzo(g,h,i)perylene	BH19-5 SS3	1.5 - 2.1	30-Apr-19	<0.25	6.6
Benzo(k)fluoranthene	BH19-5 SS3	1.5 - 2.1	30-Apr-19	<0.25	0.78
Chrysene	BH19-5 SS3	1.5 - 2.1	30-Apr-19	<0.25	7
Dibenz(a,h)anthracene	BH19-5 SS3	1.5 - 2.1	30-Apr-19	<0.25	0.1
Fluoranthene	BH19-5 SS3	1.5 - 2.1	30-Apr-19	<0.25	0.69
Fluorene	BH19-5 SS3	1.5 - 2.1	30-Apr-19	2.4	62
Indeno(1,2,3-cd)pyrene	BH19-5 SS3	1.5 - 2.1	30-Apr-19	<0.25	0.38
Methylnaphthalene, 2-(1-)	BH19-5 SS3	1.5 - 2.1	30-Apr-19	29	0.99
Naphthalene	BH19-5 SS3	1.5 - 2.1	30-Apr-19	3.6	0.6
Phenanthrene	BH19-5 SS3	1.5 - 2.1	30-Apr-19	5.4	6.2
Pyrene	BH19-5 SS3	1.5 - 2.1	30-Apr-19	0.44	78

NOTES:

Analysis by Maxxam Analytics

All results are in ppm on dry weight basis

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

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

TABLE 6 GROUNDWATER ANALYTICAL RESULTS *(µg/L)*
PHC and BTEX
365 Forest Street, Ottawa, Ontario

Parameter	MECP Table 3[1]	BH1-18		MW19-2A	MW19-2	MW19-3A	MW19-6	MW19-7	MW19-8	MW19-10
Sample Date (d/m/y)		26/11/2018	16/5/2019	16/5/2019	16/5/2019	16/5/2019	16/5/2019	16/5/2019	16/5/2019	16/5/2019
Screened Interval		4.3 - 4.3	4.3 - 4.3	na	3.0 - 6.0	na	3.0 - 6.0	3.0 - 6.0	3.0 - 6.0	3.0 - 6.0
Laboratory ID		1848101-01	JTB408	JTB403	JTB405	JTB406	JTB411	JTB407	JTB410	JTB409
Date of Analysis		29/11/2018	23/5/2019	23/5/2019	23/5/2019	23/5/2019	23/5/2019	23/5/2019	23/5/2019	23/5/2019
Lab Certificate of Analysis		1848101	B9D2759	B9D2759	B9D2759	B9D2759	B9D2759	B9D2759	B9D2759	B9D2759
Benzene	44	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Ethylbenzene	2300	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Toluene	18000	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Xylenes	4200	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
PHC F_1 (C_6-C_{10})	750	<25	<25	<25	<25	<25	<25	<25	<25	<25
PHC F_2 (>C_{10}-C_{16})	150	<100	<100	<100	<100	<100	<100	<100	<100	<100
PHC F_3 (>C_{16}-C_{34})	500	<100	<200	<200	<200	<200	<200	<200	<200	<200
PHC F_4 (>C_{34}-C_{50})	500	<100	<200	<200	<200	<200	<200	<200	<200	<200

Parameter	MECP Table 3[1]	BH6	MW19-20	MW13	MW19-21
Sample Date (d/m/y)		16/5/2019	Dup of BH6	21/5/2019	Dup of MW13
Screened Interval		na	na	na	na
Maxxam ID		JTB412	JTB404	JTM907	JTM908
Date of Analysis		23/5/2019	23/5/2019	22/5/2019	22/5/2019
Maxxam Certificate of Analysis		B9D2759	B9D2759	B9D4608	B9D4608
Benzene	44	<0.20	<0.20	<0.20	<0.20
Ethylbenzene	2300	0.39	0.39	<0.20	<0.20
Toluene	18000	<0.20	<0.20	<0.20	<0.20
Xylenes	4200	<0.20	<0.20	<0.40	<0.40
PHC F_1 (C_6-C_{10})	750	<25	<25	<25	<25
PHC F_2 (>C_{10}-C_{16})	150	**1700**	**1600**	<100	<100
PHC F_3 (>C_{16}-C_{34})	500	**2000**	**1800**	<200	<200
PHC F_4 (>C_{34}-C_{50})	500	<200	<200	<200	<200

NOTES:

1 MECP *Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the EPA, April 2011, Table 3 non-potable standards.*

Shaded Concentration exceeds MECP Table 3 groundwater quality standard.

TABLE 7 GROUNDWATER ANALYTICAL RESULTS *(µg/L)*
VOLATILE ORGANIC COMPOUNDS
365 Forest Street, Ottawa, Ontario

Parameter	MECP Table 3[1]	TRIP BLANK	FIELD BLANK	MW19-2A	MW19-2	MW19-3A	MW19-7	BH1-18	MW19-10
Sample Date			16/5/2019	16/5/2019	16/5/2019	16/5/2019	16/5/2019	16/5/2019	16/5/2019
Screened Interval		na	na	na	3.0 - 6.0	na	3.0 - 6.0	4.3 - 4.3	3.0 - 6.0
Maxxam ID		JTB401	JTB402	JTB403	JTB405	JTB406	JTB407	JTB408	JTB409
Date of Analysis		22/5/2019	22/5/2019	22/5/2019	22/5/2019	22/5/2019	22/5/2019	22/5/2019	22/5/2019
Maxxam Certificate of Analysis		B9D2759	B9D2759	B9D2759	B9D2759	B9D2759	B9D2759	B9D2759	B9D2759
Acetone	130000	<10	<10	<10	<10	<10	<10	<10	<10
Benzene	44	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Bromodichloromethane	85000	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Bromoform	380	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bromomethane	5.6	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Carbon Tetrachloride	0.79	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Chlorobenzene	630	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Chloroform	2.4	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Dibromochloromethane	82000	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Dichlorodifluoromethane	4400	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,2-Dichlorobenzene	4600	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,3-Dichlorobenzene	9600	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,4-Dichlorobenzene	8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethane	320	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,2-Dichloroethane	1.6	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1-Dichloroethylene	1.6	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Cis-1,2-Dichloroethylene	1.6	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Trans-1,2-Dichloroethylene	1.6	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,2-Dichloropropane	16	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,3-Dichloropropylene	5.2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Ethylbenzene	2300	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Ethylene Dibromide	0.25	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Hexane	51	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Methylene Chloride	610	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Methyl Ethyl Ketone	470000	<10	<10	<10	<10	<10	<10	<10	<10
Methyl Isobutyl Ketone	140000	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Methyl-t-Butyl Ether	190	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	4.6	<0.50
Styrene	1300	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1,1,2-Tetrachloroethane	3.3	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1,2,2-Tetrachloroethane	3.2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Tetrachloroethylene	1.6	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Toluene	18000	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,1,1-Trichloroethane	640	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,1,2-Trichloroethane	4.7	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Trichloroethylene	1.6	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Trichlorofluoromethane	2500	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Vinyl Chloride	0.5	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Total Xylenes	4200	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20

NOTES:

1 MECP Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the EPA, April 2011, Table 3 non-potable standards.

Shaded Concentration exceeds MECP Table 3 groundwater quality standard.

TABLE 7 GROUNDWATER ANALYTICAL RESULTS *(µg/L)*
VOLATILE ORGANIC COMPOUNDS
365 Forest Street, Ottawa, Ontario

Parameter	MECP Table 3[1]	MW19-8		MW19-6	BH6	MW19-20	MW13	MW19-21
Sample Date		16/5/2019	29/5/2019	16/5/2019	16/5/2019	Dup of BH6	21/5/2019	Dup of MW13
Screened Interval		3.0 - 6.0	3.0 - 6.0	3.0 - 6.0	na	na	na	na
Maxxam ID		JTB410	OVO490	JTB411	JTB412	JTB404	JTM907	JTM908
Date of Analysis		22/5/2019	30/5/2019	22/5/2019	22/5/2019	22/5/2019	23/5/2019	23/5/2019
Maxxam Certificate of Analysis		B9D2759	B9E3952	B9D2759	B9D2759	B9D2759	B9D4608	B9D4608
Acetone	130000	<10	<10	<10	<10	<10	<10	<10
Benzene	44	0.56	0.64	<0.20	<0.20	<0.20	<0.20	<0.20
Bromodichloromethane	85000	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Bromoform	380	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bromomethane	5.6	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Carbon Tetrachloride	0.79	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Chlorobenzene	630	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Chloroform	2.4	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Dibromochloromethane	82000	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Dichlorodifluoromethane	4400	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,2-Dichlorobenzene	4600	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,3-Dichlorobenzene	9600	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,4-Dichlorobenzene	8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethane	320	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,2-Dichloroethane	1.6	**2.0**	1.5	<0.50	<0.50	<0.50	<0.50	<0.50
1,1-Dichloroethylene	1.6	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Cis-1,2-Dichloroethylene	1.6	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Trans-1,2-Dichloroethylene	1.6	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,2-Dichloropropane	16	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,3-Dichloropropylene	5.2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Ethylbenzene	2300	<0.020	<0.20	<0.20	0.39	0.39	<0.20	<0.20
Ethylene Dibromide	0.25	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Hexane	51	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Methylene Chloride	610	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Methyl Ethyl Ketone	470000	<10	<10	<10	<10	<10	<10	<10
Methyl Isobutyl Ketone	140000	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Methyl-t-Butyl Ether	190	0.75	0.98	<0.50	<0.50	<0.50	<0.50	<0.50
Styrene	1300	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1,1,2-Tetrachloroethane	3.3	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1,2,2-Tetrachloroethane	3.2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Tetrachloroethylene	1.6	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Toluene	18000	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,1,1-Trichloroethane	640	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,1,2-Trichloroethane	4.7	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Trichloroethylene	1.6	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Trichlorofluoromethane	2500	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Vinyl Chloride	0.5	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Total Xylenes	4200	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20

NOTES:

1 MECP Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the EPA, April 2011, Table 3 non-potable standards.

Shaded Concentration exceeds MECP Table 3 groundwater quality standard.

TABLE 8 GROUNDWATER ANALYTICAL RESULTS *(µg/L)*
METALS
365 Forest Street, Ottawa, Ontario

Parameter	MECP Table 3[1]	MW19-2A	MW19-2	MW19-3A	MW19-7	BH1-18	MW19-10
Sample Date (d/m/y)		16/5/2019	16/5/2019	16/5/2019	16/5/2019	16/5/2019	16/5/2019
Screened Interval		na	3.0 - 6.0	na	3.0 - 6.0	4.3 - 4.3	3.0 - 6.0
Maxxam ID		JTB403	JTB405	JTB406	JTB407	JTB408	JTB409
Date of Analysis		23/5/2019	23/5/2019	23/5/2019	22/5/2019	22/5/2019	22/5/2019
Maxxam Certificate of Analysis		B9D2759	B9D2759	B9D2759	B9D2759	B9D2759	B9D2759
Antimony	20000	<0.50	0.61	0.58	<0.50	<0.50	<0.50
Arsenic	1900	<1.0	1.2	<1.0	<1.0	<1.0	<1.0
Barium	29000	78	190	160	90	72	68
Beryllium	67	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Boron	45000	71	56	22	110	57	280
Cadmium	2.7	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Chromium	810	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Cobalt	66	0.67	0.81	0.58	1.1	0.86	1.1
Copper	87	1.9	1.3	4.1	<1.0	1.8	1.7
Lead	25	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Molybdenum	9200	<0.50	13	0.73	1.1	1.1	8.0
Nickel	490	7.1	5.8	1.0	5.9	6.6	4.6
Selenium	63	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Silver	1.5	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Sodium	2300000	140000	140000	98000	530000	590000	590000
Thallium	510	<0.050	<0.050	<0.050	0.16	<0.050	0.051
Uranium	420	3.4	3.7	1.4	2.7	2.5	5.1
Vanadium	250	<0.50	1.1	<0.50	0.61	<0.50	1.0
Zinc	1100	<5.0	<5.0	8.6	<5.0	<5.0	<5.0

NOTES:

1 MECP Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the EPA, April 2011, Table 3 non-potable standards.

Shaded Concentration exceeds MECP Table 3 groundwater quality standard.

TABLE 8 GROUNDWATER ANALYTICAL RESULTS *(µg/L)*
METALS
365 Forest Street, Ottawa, Ontario

Parameter	**MECP Table 3[1]**	**MW19-6**	**MW19-8**	**BH6**	**MW19-20**	**MW13**	**MW19-21**
Sample Date (d/m/y)		16/5/2019	16/5/2019	16/5/2019	Dup of BH6	21/5/2019	Dup of MW13
Screened Interval		3.0 - 6.0	3.0 - 6.0	na	na	na	na
Maxxam ID		JTB411	JTB410	JTB412	JTB404	JTM907	JTM908
Date of Analysis		22/5/2019	22/5/2019	22/5/2019	22/5/2019	24/5/2019	24/5/2019
Maxxam Certificate of Analysis		B9D2759	B9D2759	B9D2759	B9D2759	B9D4608	B9D4608
Antimony	20000	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Arsenic	1900	<1.0	<1.0	1.5	1.6	<1.0	<1.0
Barium	29000	120	45	300	300	82	82
Beryllium	67	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Boron	45000	24	400	26	24	160	150
Cadmium	2.7	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Chromium	810	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Cobalt	66	<0.50	1.1	<0.50	<0.50	<0.50	<0.50
Copper	87	<1.0	<1.0	<1.0	<1.0	7.6	7.2
Lead	25	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Molybdenum	9200	2.2	1.9	1.1	1.2	5.5	5.2
Nickel	490	2.2	2.0	<1.0	<1.0	2.9	2.8
Selenium	63	<2.0	<2.0	<2.0	<2.0	5.2	5.2
Silver	1.5	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Sodium	2300000	53000	200000	230000	230000	200000	200000
Thallium	510	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Uranium	420	1.9	9.1	1.7	1.8	19	19
Vanadium	250	<0.50	<0.50	1.7	1.6	8.3	7.2
Zinc	1100	<5.0	<5.0	<5.0	<5.0	21	6.7

NOTES:

1 MECP Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the EPA, April 2011, Table 3 non-potable standards.

Shaded Concentration exceeds MECP Table 3 groundwater quality standard.

TABLE 9 GROUNDWATER ANALYTICAL RESULTS *(µg/L)*
POLYCYCLIC AROMATIC HYDROCARBONS
365 Forest Street, Ottawa, Ontario

Parameter	MECP Table 3[1]	MW19-2A	MW19-2	MW19-3A	MW19-7	BH1-18	MW19-10
Sample Date (d/m/y)		16/5/2019	16/5/2019	16/5/2019	16/5/2019	16/5/2019	16/5/2019
Screened Interval		na	3.0 - 6.0	na	3.0 - 6.0	4.3 - 4.3	3.0 - 6.0
Maxxam ID		JTB403	JTB405	JTB406	JTB407	JTB408	JTB409
Date of Analysis		23/5/2019	23/5/2019	23/5/2019	23/5/2019	23/5/2019	23/5/2019
Maxxam Certificate of Analysis		B9D2759	B9D2759	B9D2759	B9D2759	B9D2759	B9D2759
Acenaphthene	600	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Acenaphthylene	1.8	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Anthracene	2.4	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Benzo[a]anthracene	4.7	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Benzo[a]pyrene	0.81	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Benzo[b]fluoranthene	0.75	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Benzo[g,h,i]perylene	0.2	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Benzo[k]fluoranthene	0.4	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Chrysene	1	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Dibenzo[a,h]anthracene	0.52	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Fluoranthene	130	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Fluorene	400	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Indeno[1,2,3-cd]pyrene	0.2	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Methylnaphthalene (1&2)	1800	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071
Naphthalene	1400	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Phenanthrene	580	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Pyrene	68	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050

NOTES:

1 MECP Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the EPA, April 2011, Table 3 non-potable standards.

Shaded Concentration exceeds MECP Table 3 groundwater quality standard.

TABLE 9 GROUNDWATER ANALYTICAL RESULTS *(µg/L)*
POLYCYCLIC AROMATIC HYDROCARBONS
365 Forest Street, Ottawa, Ontario

Parameter	MECP Table 3[1]	MW19-6	MW19-8	BH6	MW19-20	MW13	MW19-21
Sample Date (d/m/y)		16/5/2019	16/5/2019	16/5/2019	Dup of BH6	21/5/2019	Dup of MW13
Screened Interval		3.0 - 6.0	3.0 - 6.0	na	na	na	na
Maxxam ID		JTB411	JTB410	JTB412	JTB404	JTM907	JTM907
Date of Analysis		23/5/2019	23/5/2019	23/5/2019	23/5/2019	24/5/2019	24/5/2019
Maxxam Certificate of Analysis		B9D2759	B9D2759	B9D2759	B9D2759	B9D4608	B9D4608
Acenaphthene	600	<0.050	<0.050	3.3	3.0	<0.050	<0.050
Acenaphthylene	1.8	<0.050	<0.050	<0.20	<0.20	<0.050	<0.050
Anthracene	2.4	<0.050	<0.050	0.51	0.34	<0.050	<0.050
Benzo[a]anthracene	4.7	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Benzo[a]pyrene	0.81	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Benzo[b]fluoranthene	0.75	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Benzo[g,h,i]perylene	0.2	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Benzo[k]fluoranthene	0.4	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Chrysene	1	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Dibenzo[a,h]anthracene	0.52	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Fluoranthene	130	<0.050	<0.050	0.14	0.12	<0.050	<0.050
Fluorene	400	<0.050	<0.050	2.8	2.7	<0.050	<0.050
Indeno[1,2,3-cd]pyrene	0.2	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Methylnaphthalene (1&2)	1800	<0.071	<0.071	11	9.0	<0.071	<0.071
Naphthalene	1400	<0.050	<0.050	0.51	<1.1	<0.050	<0.050
Phenanthrene	580	<0.030	<0.030	1.4	1.7	<0.030	<0.030
Pyrene	68	<0.050	<0.050	0.67	0.57	<0.050	<0.050

NOTES:

1 MECP Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the EPA, April 2011, Table 3 non-potable standards.

Shaded Concentration exceeds MECP Table 3 groundwater quality standard.

TABLE 10 MAXIMUM CONCENTRATIONS IN GROUNDWATER
365 Forest Street, Ottawa, Ontario

Parameter	Sample Location	Screen Interval (mbgs)	Sampling Date	Maximum Concentration	MECP Table 3
Petroleum Hydrocarbons					
F1 PHC (C6 - C10) - BTEX	All Locations	NA	Nov 26, 2018 - May 21, 2019	<25	750
F2 PHC (C10-C16)	BH6	NA	16-May-19	1700	150
F3 PHC (C16-C34)	BH6	NA	16-May-19	2000	500
F4 PHC (C34-C50)	All Locations	NA	Nov 26, 2018 - May 21, 2019	<200	500
Volatile Organic Compounds					
Acetone	All Locations	NA	May 16-29, 2019	<10	130000
Benzene	MW19-8	3.0 - 6.0	29-May-19	0.64	44
Bromodichloromethane	All Locations	NA	May 16-29, 2019	<0.50	85000
Bromoform	All Locations	NA	May 16-29, 2019	<1.0	380
Bromomethane	All Locations	NA	May 16-29, 2019	<0.50	5.6
Carbon Tetrachloride	All Locations	NA	May 16-29, 2019	<0.20	0.79
Chlorobenzene	All Locations	NA	May 16-29, 2019	<0.20	630
Chloroform	All Locations	NA	May 16-29, 2019	<0.20	2.4
Dibromochloromethane	All Locations	NA	May 16-29, 2019	<0.50	82000
Dichlorodifluoromethane	All Locations	NA	May 16-29, 2019	<0.50	4400
1,2-Dichlorobenzene	All Locations	NA	May 16-29, 2019	<0.50	4600
1,3-Dichlorobenzene	All Locations	NA	May 16-29, 2019	<0.50	9600
1,4-Dichlorobenzene	All Locations	NA	May 16-29, 2019	<1.0	8
1,1-Dichloroethane	All Locations	NA	16-May-19	<0.20	320
1,2-Dichloroethane	MW19-8	3.0 - 6.0	16-May-19	**2.0**	1.6
1,1-Dichloroethylene	All Locations	NA	May 16-29, 2019	<0.20	1.6
Cis-1,2-Dichloroethylene	All Locations	NA	May 16-29, 2019	<0.50	1.6
Trans-1,2-Dichloroethylene	All Locations	NA	May 16-29, 2019	<0.50	1.6
1,2-Dichloropropane	All Locations	NA	May 16-29, 2019	<0.20	16
1,3-Dichloropropylene	All Locations	NA	May 16-29, 2019	<0.30	5.2
Ethylbenzene	MW19-8	3.0 - 6.0	16-May-19	2.0	2300
Ethylene Dibromide	All Locations	NA	May 16-29, 2019	<0.20	0.25
Hexane	All Locations	NA	May 16-29, 2019	<1.0	51
Methylene Chloride	All Locations	NA	May 16-29, 2019	<2.0	610
Methyl Ethyl Ketone	All Locations	NA	May 16-29, 2019	<10	470000
Methyl Isobutyl Ketone	All Locations	NA	May 16-29, 2019	<5.0	140000
Methyl-t-Butyl Ether	BH1-18	3.0 - 6.0	16-May-19	4.6	190
Styrene	All Locations	NA	May 16-29, 2019	<0.50	1300
1,1,1,2-Tetrachloroethane	All Locations	NA	May 16-29, 2019	<0.50	3.3
1,1,2,2-Tetrachloroethane	All Locations	NA	May 16-29, 2019	<0.50	3.2
Tetrachloroethylene	All Locations	NA	May 16-29, 2019	<0.20	1.6
Toluene	All Locations	NA	May 16-29, 2019	<0.20	18000
1,1,1-Trichloroethane	All Locations	NA	May 16-29, 2019	<0.20	640
1,1,2-Trichloroethane	All Locations	NA	May 16-29, 2019	<0.50	4.7
Trichloroethylene	All Locations	NA	May 16-29, 2019	<0.20	1.6
Trichlorofluoromethane	All Locations	NA	May 16-29, 2019	<0.50	2500
Vinyl Chloride	All Locations	NA	May 16-29, 2019	<0.20	0.5
Total Xylenes	All Locations	NA	May 16-29, 2019	<0.20	4200
Polycyclic Aromatic Hydrocarbons					
Acenaphthene	BH6	NA	16-May-19	3.3	600
Acenaphthylene	BH6	NA	16-May-19	<0.20	1.8
	MW19-20	NA	16-May-19		
Anthracene	BH6	NA	16-May-19	0.51	2.4
Benzo[a]anthracene	All Locations	NA	May 16-21, 2019	<0.050	4.7
Benzo[a]pyrene	All Locations	NA	May 16-21, 2019	<0.010	0.81
Benzo[b]fluoranthene	All Locations	NA	May 16-21, 2019	<0.050	0.75
Benzo[g,h,i]perylene	All Locations	NA	May 16-21, 2019	<0.050	0.2
Benzo[k]fluoranthene	All Locations	NA	May 16-21, 2019	<0.050	0.4
Chrysene	All Locations	NA	May 16-21, 2019	<0.050	1
Dibenzo[a,h]anthracene	All Locations	NA	May 16-21, 2019	<0.050	0.52
Fluoranthene	BH6	NA	16-May-19	0.14	130
Fluorene	BH6	NA	16-May-19	2.8	400
Indeno[1,2,3-cd]pyrene	All Locations	NA	May 16-21, 2019	<0.050	0.2
Methylnaphthalene (1&2)	BH6	NA	16-May-19	11	1800
Naphthalene	BH6	NA	16-May-19	0.51	1400
Phenanthrene	MW19-20	NA	16-May-19	1.7	580
Pyrene	BH6	NA	16-May-19	0.67	68

Inorganic Parameters					
Antimony	MW19-2	3.0 - 6.0	16-May-19	0.61	20000
Arsenic	MW19-20	NA	16-May-19	1.6	1900
Barium	MW19-20	NA	16-May-19	300	29000
	BH6	NA	16-May-19		
Beryllium	All Locations	NA	May 16-21, 2019	<0.50	67
Boron	MW19-8	3.0 - 6.0	16-May-19	400	45000
Cadmium	All Locations	NA	May 16-21, 2019	<0.10	2.7
Chromium	All Locations	NA	May 16-21, 2019	<5.0	810
Cobalt	MW19-7	3.0 - 6.0	16-May-19	1.1	66
	MW19-10	3.0 - 6.0	16-May-19		
	MW19-8	3.0 - 6.0	16-May-19		
Copper	MW13	NA	21-May-19	7.6	87
Lead	All Locations	NA	May 16-21, 2019	<0.50	25
Molybdenum	MW19-2	3.0 - 6.0	16-May-19	13	9200
Nickel	MW19-2A	NA	16-May-19	7.1	490
Selenium	MW13	NA	21-May-19	5.2	63
	MW19-21	NA	21-May-19		
Silver	All Locations	NA	May 16-21, 2019	<0.10	1.5
Sodium	BH1-18	4.3 - 4.3	16-May-19	590000	2300000
	MW19-10	3.0 - 6.0	16-May-19		
Thallium	MW19-7	3.0 - 6.0	16-May-19	0.16	510
Uranium	MW13	NA	21-May-19	19	420
	MW19-21	NA	21-May-19		
Vanadium	MW13	NA	21-May-19	8.3	250
Zinc	MW13	NA	43606	21	1100

NOTES:

Analysis by Maxxam Analytics

All results are in ppb

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

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

TABLE 11 RELATIVE PERCENT DIFFERENCES
PETROLEUM HYDROCARBONS - SOIL
365 Forest Street, Ottawa, Ontario

Parameter	Units	RDL	MW19-2 SS3	BH19-17 SS3	RPD (%)	Alert Limit (%)
			29-Apr-19	29-Apr-19		
Petroleum Hydrocarbons						
PHC F_1 (>C_6-C10)	ug/g	10	<10	<10	nc	60
PHC F_2 (>C_{10}-C_{16})	ug/g	10	<10	<10	nc	60
PHC F_3 (>C_{16}-C_{34})	ug/g	50	<50	<50	nc	60
PHC F_4 (>C_{34}-C_{50})	ug/g	50	<50	<50	nc	60
Volatiles						
Benzene	ug/g	0.020	<0.02	<0.02	nc	100
Ethylbenzene	ug/g	0.020	<0.02	<0.02	nc	100
Toluene	ug/g	0.020	<0.02	<0.02	nc	100
Total Xylenes	ug/g	0.020	<0.02	<0.02	nc	100

Parameter	Units	RDL	MW19-6 SS3	BH15 SS3	RPD (%)	Alert Limit (%)
			25-Apr-19	25-Apr-19		
Petroleum Hydrocarbons						
PHC F_1 (>C_6-C10)	ug/g	10	<10	<10	nc	60
PHC F_2 (>C_{10}-C_{16})	ug/g	10	<10	<10	nc	60
PHC F_3 (>C_{16}-C_{34})	ug/g	50	<50	<50	nc	60
PHC F_4 (>C_{34}-C_{50})	ug/g	50	<50	<50	nc	60
Volatiles						
Benzene	ug/g	0.020	<0.02	<0.02	nc	100
Ethylbenzene	ug/g	0.020	<0.02	<0.02	nc	100
Toluene	ug/g	0.020	<0.02	<0.02	nc	100
Total Xylenes	ug/g	0.020	<0.02	<0.02	nc	100

NOTES:

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

TABLE 12 RELATIVE PERCENT DIFFERENCES
VOLATILE ORGANIC COMPOUNDS - SOIL
365 Forest Street, Ottawa, Ontario

Parameter	Units	RDL	MW19-2 SS3	MW19-17 SS3	RPD (%)	Alert Limit (%)
			29-Apr-19	29-Apr-19		
Volatiles						
Acetone	ug/g	0.50	<0.50	<0.50	nc	100
Benzene	ug/g	0.020	<0.020	<0.020	nc	100
Bromodichloromethane	ug/g	0.050	<0.050	<0.050	nc	100
Bromoform	ug/g	0.050	<0.050	<0.050	nc	100
Bromomethane	ug/g	0.050	<0.050	<0.050	nc	100
Carbon Tetrachloride	ug/g	0.050	<0.050	<0.050	nc	100
Chlorobenzene	ug/g	0.050	<0.050	<0.050	nc	100
Chloroform	ug/g	0.050	<0.050	<0.050	nc	100
Dibromochloromethane	ug/g	0.050	<0.050	<0.050	nc	100
1,2-Dichlorobenzene	ug/g	0.050	<0.050	<0.050	nc	100
1,3-Dichlorobenzene	ug/g	0.050	<0.050	<0.050	nc	100
1,4-Dichlorobenzene	ug/g	0.050	<0.050	<0.050	nc	100
Difluorodifluoromethane	ug/g	0.050	<0.050	<0.050	nc	100
1,1-Dichloroethane	ug/g	0.050	<0.050	<0.050	nc	100
1,2-Dichloroethane	ug/g	0.050	<0.050	<0.050	nc	100
1,1-Dichloroethylene	ug/g	0.050	<0.050	<0.050	nc	100
Cis-1,2-Dichloroethylene	ug/g	0.050	<0.050	<0.050	nc	100
Trans-1,2-Dichloroethylene	ug/g	0.050	<0.050	<0.050	nc	100
1,2-Dichloropropane	ug/g	0.050	<0.050	<0.050	nc	100
1,3-Dichloropropene (cis+trans)	ug/g	0.030	<0.050	<0.050	nc	100
Ethylbenzene	ug/g	0.050	<0.020	<0.020	nc	100
Ethylene Dibromide	ug/g	0.050	<0.050	<0.050	nc	100
Hexane	ug/g	0.050	<0.050	<0.050	nc	100
Methylene Chloride	ug/g	0.050	<0.050	<0.050	nc	100
Methyl Ethyl Ketone	ug/g	0.50	<0.50	<0.50	nc	100
Methyl Isobutyl Ketone	ug/g	0.50	<0.50	<0.50	nc	100
Methyl-t-Butyl Ether	ug/g	0.050	<0.050	<0.050	nc	100
Styrene	ug/g	0.05	<0.050	<0.050	nc	100
1,1,1,2-Tetrachloroethane	ug/g	0.050	<0.050	<0.050	nc	100
1,1,2,2-Tetrachloroethane	ug/g	0.050	<0.050	<0.050	nc	100
Tetrachloroethylene	ug/g	0.050	<0.050	<0.050	nc	100
Toluene	ug/g	0.050	<0.020	<0.020	nc	100
1,1,1-Trichloroethane	ug/g	0.050	<0.050	<0.050	nc	100
1,1,2-Trichloroethane	ug/g	0.050	<0.050	<0.050	nc	100
Trichloroethylene	ug/g	0.050	<0.050	<0.050	nc	100
Trichlorofluoromethane	ug/g	0.050	<0.050	<0.050	nc	100
Vinyl Chloride	ug/g	0.020	<0.020	<0.020	nc	100
Total Xylenes	ug/g	0.050	<0.020	<0.020	nc	100

NOTES:

Analysis by Maxxam Analytics

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

- means "not analysed"

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

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

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

TABLE 12 RELATIVE PERCENT DIFFERENCES
VOLATILE ORGANIC COMPOUNDS - SOIL
365 Forest Street, Ottawa, Ontario

Parameter	Units	RDL	MW19-6 SS3	BH15 SS3	RPD (%)	Alert Limit (%)
			25-Apr-19	29-Apr-19		
Volatiles						
Acetone	ug/g	0.50	<0.50	<0.50	nc	100
Benzene	ug/g	0.020	<0.020	<0.020	nc	100
Bromodichloromethane	ug/g	0.050	<0.050	<0.050	nc	100
Bromoform	ug/g	0.050	<0.050	<0.050	nc	100
Bromomethane	ug/g	0.050	<0.050	<0.050	nc	100
Carbon Tetrachloride	ug/g	0.050	<0.050	<0.050	nc	100
Chlorobenzene	ug/g	0.050	<0.050	<0.050	nc	100
Chloroform	ug/g	0.050	<0.050	<0.050	nc	100
Dibromochloromethane	ug/g	0.050	<0.050	<0.050	nc	100
1,2-Dichlorobenzene	ug/g	0.050	<0.050	<0.050	nc	100
1,3-Dichlorobenzene	ug/g	0.050	<0.050	<0.050	nc	100
1,4-Dichlorobenzene	ug/g	0.050	<0.050	<0.050	nc	100
Difluorodifluoromethane	ug/g	0.050	<0.050	<0.050	nc	100
1,1-Dichloroethane	ug/g	0.050	<0.050	<0.050	nc	100
1,2-Dichloroethane	ug/g	0.050	<0.050	<0.050	nc	100
1,1-Dichloroethylene	ug/g	0.050	<0.050	<0.050	nc	100
Cis-1,2-Dichloroethylene	ug/g	0.050	<0.050	<0.050	nc	100
Trans-1,2-Dichloroethylene	ug/g	0.050	<0.050	<0.050	nc	100
1,2-Dichloropropane	ug/g	0.050	<0.050	<0.050	nc	100
1,3-Dichloropropene (cis+trans)	ug/g	0.030	<0.050	<0.050	nc	100
Ethylbenzene	ug/g	0.050	<0.020	<0.020	nc	100
Ethylene Dibromide	ug/g	0.050	<0.050	<0.050	nc	100
Hexane	ug/g	0.050	<0.050	<0.050	nc	100
Methylene Chloride	ug/g	0.050	<0.050	<0.050	nc	100
Methyl Ethyl Ketone	ug/g	0.50	<0.50	<0.50	nc	100
Methyl Isobutyl Ketone	ug/g	0.50	<0.50	<0.50	nc	100
Methyl-t-Butyl Ether	ug/g	0.050	<0.050	<0.050	nc	100
Styrene	ug/g	0.05	<0.050	<0.050	nc	100
1,1,1,2-Tetrachloroethane	ug/g	0.050	<0.050	<0.050	nc	100
1,1,2,2-Tetrachloroethane	ug/g	0.050	<0.050	<0.050	nc	100
Tetrachloroethylene	ug/g	0.050	<0.050	<0.050	nc	100
Toluene	ug/g	0.050	<0.020	<0.020	nc	100
1,1,1-Trichloroethane	ug/g	0.050	<0.050	<0.050	nc	100
1,1,2-Trichloroethane	ug/g	0.050	<0.050	<0.050	nc	100
Trichloroethylene	ug/g	0.050	<0.050	<0.050	nc	100
Trichlorofluoromethane	ug/g	0.050	<0.050	<0.050	nc	100
Vinyl Chloride	ug/g	0.020	<0.020	<0.020	nc	100
Total Xylenes	ug/g	0.050	<0.020	<0.020	nc	100

NOTES:

Analysis by Maxxam Analytics

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

- means "not analysed"

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

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

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

TABLE 13 RELATIVE PERCENT DIFFERENCES
METALS - SOIL
365 Forest Street, Ottawa, Ontario

Parameter	Units	RDL	MW19-2 SS3	BH19-17 SS6	RPD (%)	Alert Limit (%)
			29-Apr-19	29-Apr-19		
Inorganic Parameters						
Antimony	ug/g	0.20	<0.20	<0.20	nc	60
Arsenic	ug/g	1.0	<1.0	<1.0	nc	60
Barium	ug/g	0.50	130	120	8	60
Beryllium	ug/g	0.20	0.45	0.44	2	60
Boron	ug/g	5.0	6.7	6.5	3	60
Cadmium	ug/g	0.10	<0.10	<0.10	nc	60
Chromium	ug/g	1.0	30	29	3	60
Cobalt	ug/g	0.10	9.5	9.4	1	60
Copper	ug/g	0.50	21	19	10	60
Lead	ug/g	1.0	6.4	5.7	12	60
Molybdenum	ug/g	0.50	<0.50	<0.50	nc	60
Nickel	ug/g	0.50	20	19	5	60
Selenium	ug/g	0.50	<0.50	<0.50	nc	60
Silver	ug/g	0.20	<0.20	<0.20	nc	60
Thallium	ug/g	0.050	0.19	0.17	11	60
Uranium	ug/g	0.050	0.55	0.54	2	60
Vanadium	ug/g	5.0	41	38	8	60
Zinc	ug/g	5.0	40	38	5	60
Cyanide	ug/g	0.0	<0.01	<0.01	nc	60
Chromium VI	ug/g	0.2	<0.2	<0.2	nc	60
Mercury	ug/g	0.050	<0.05	<0.05	nc	60

NOTES:

Analysis by Maxxam Analytics

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

- means "not analysed"

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

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

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

TABLE 13 RELATIVE PERCENT DIFFERENCES
METALS - SOIL
365 Forest Street, Ottawa, Ontario

Parameter	Units	RDL	MW19-6 SS3	BH15 SS3	RPD (%)	Alert Limit (%)
			25-Apr-19	25-Apr-19		
Inorganic Parameters						
Antimony	ug/g	0.20	<0.20	<0.20	nc	60
Arsenic	ug/g	1.0	<1.0	<1.0	nc	60
Barium	ug/g	0.50	52	56	7	60
Beryllium	ug/g	0.20	0.28	0.29	4	60
Boron	ug/g	5.0	<5.0	<5.0	nc	60
Cadmium	ug/g	0.10	<0.10	<0.10	nc	60
Chromium	ug/g	1.0	25	26	4	60
Cobalt	ug/g	0.10	5.7	5.7	0	60
Copper	ug/g	0.50	13	13	0	60
Lead	ug/g	1.0	2.4	2.6	8	60
Molybdenum	ug/g	0.50	<0.50	<0.50	nc	60
Nickel	ug/g	0.50	14	15	7	60
Selenium	ug/g	0.50	<0.50	<0.50	nc	60
Silver	ug/g	0.20	<0.20	<0.20	nc	60
Thallium	ug/g	0.050	0.084	0.10	17	60
Uranium	ug/g	0.050	0.53	0.66	22	60
Vanadium	ug/g	5.0	29	27	7	60
Zinc	ug/g	5.0	24	23	4	60

NOTES:

Analysis by Maxxam Analytics

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

- means "not analysed"

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

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

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

TABLE 14 RELATIVE PERCENT DIFFERENCES
POLYCYCLIC AROMATIC HYDROCARBONS - SOIL
365 Forest Street, Ottawa, Ontario

Parameter	Units	RDL	MW19-2 SS3	BH19-17 SS3	RPD (%)	Alert Limit (%)
			29-Apr-19	29-Apr-19		
Polycyclic Aromatic Hydrocarbons						
Acenaphthene	ug/g	0.0050	<0.0050	<0.0050	nc	80
Acenaphthylene	ug/g	0.0050	<0.0050	<0.0050	nc	80
Anthracene	ug/g	0.0050	<0.0050	<0.0050	nc	80
Benzo(a)anthracene	ug/g	0.0050	<0.0050	<0.0050	nc	80
Benzo(a)pyrene	ug/g	0.0050	<0.0050	<0.0050	nc	80
Benzo(b/j)fluoranthene	ug/g	0.0050	<0.0050	<0.0050	nc	80
Benzo(ghi)perylene	ug/g	0.0050	<0.0050	<0.0050	nc	80
Benzo(k)fluoranthene	ug/g	0.0050	<0.0050	<0.0050	nc	80
Chrysene	ug/g	0.0050	<0.0050	<0.0050	nc	80
Dibenz(a,h)anthracene	ug/g	0.0050	<0.0050	<0.0050	nc	80
Fluoranthene	ug/g	0.0050	<0.0050	<0.0050	nc	80
Fluorene	ug/g	0.0050	<0.0050	<0.0050	nc	80
Indeno(1,2,3-cd)pyrene	ug/g	0.0050	<0.0050	<0.0050	nc	80
Methylnaphthalene, 2-(1-)	ug/g	0.0050	<0.0071	<0.0071	nc	80
Naphthalene	ug/g	0.0050	<0.0050	<0.0050	nc	80
Phenanthrene	ug/g	0.0050	<0.0050	<0.0050	nc	80
Pyrene	ug/g	0.0050	<0.0050	<0.0050	nc	80

Parameter	Units	RDL	MW19-6 SS3	BH15 SS3	RPD (%)	Alert Limit (%)
			25-Apr-19	25-Apr-19		
Polycyclic Aromatic Hydrocarbons						
Acenaphthene	ug/g	0.0050	<0.0050	<0.0050	nc	80
Acenaphthylene	ug/g	0.0050	<0.0050	<0.0050	nc	80
Anthracene	ug/g	0.0050	<0.0050	<0.0050	nc	80
Benzo(a)anthracene	ug/g	0.0050	<0.0050	<0.0050	nc	80
Benzo(a)pyrene	ug/g	0.0050	<0.0050	<0.0050	nc	80
Benzo(b/j)fluoranthene	ug/g	0.0050	<0.0050	<0.0050	nc	80
Benzo(ghi)perylene	ug/g	0.0050	<0.0050	<0.0050	nc	80
Benzo(k)fluoranthene	ug/g	0.0050	<0.0050	<0.0050	nc	80
Chrysene	ug/g	0.0050	<0.0050	<0.0050	nc	80
Dibenz(a,h)anthracene	ug/g	0.0050	<0.0050	<0.0050	nc	80
Fluoranthene	ug/g	0.0050	<0.0050	<0.0050	nc	80
Fluorene	ug/g	0.0050	<0.0050	<0.0050	nc	80
Indeno(1,2,3-cd)pyrene	ug/g	0.0050	<0.0050	<0.0050	nc	80
Methylnaphthalene, 2-(1-)	ug/g	0.0050	<0.0071	<0.0071	nc	80
Naphthalene	ug/g	0.0050	<0.0050	<0.0050	nc	80
Phenanthrene	ug/g	0.0050	<0.0050	<0.0050	nc	80
Pyrene	ug/g	0.0050	<0.0050	<0.0050	nc	80

NOTES:

Analysis by Maxxam Analytics

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

- means "not analysed"

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

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

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

TABLE 15 RELATIVE PERCENT DIFFERENCES
PETROLEUM HYDROCARBONS - GROUNDWATER
365 Forest Street, Ottawa, Ontario

Parameter	Units	RDL	BH6	MW19-20	RPD (%)	Alert Limit (%)
			16-May-19	16-May-19		
Petroleum Hydrocarbons						
PHC F_1 (>C_6-C10)	ug/L	25	<25	<25	nc	60
PHC F_2 (>C_{10}-C_{16})	ug/L	100	1700	1600	6	60
PHC F_3 (>C_{16}-C_{34})	ug/L	100	2000	1800	11	60
PHC F_4 (>C_{34}-C_{50})	ug/L	100	<100	<100	nc	60
Volatiles						
Benzene	ug/L	0.20	<0.5	<0.5	nc	60
Ethylbenzene	ug/L	0.20	0.39	0.39	0	60
Toluene	ug/L	0.20	<0.5	<0.5	nc	60
Total Xylenes	ug/L	0.20	<0.5	<0.5	nc	60

Parameter	Units	RDL	MW13	MW19-21	RPD (%)	Alert Limit (%)
			21-May-19	21-May-19		
Petroleum Hydrocarbons						
PHC F_1 (>C_6-C10)	ug/L	25	<25	<25	nc	60
PHC F_2 (>C_{10}-C_{16})	ug/L	100	<100	<100	nc	60
PHC F_3 (>C_{16}-C_{34})	ug/L	100	<200	<200	nc	60
PHC F_4 (>C_{34}-C_{50})	ug/L	100	<200	<200	nc	60
Volatiles						
Benzene	ug/L	0.20	<0.2	<0.2	nc	60
Ethylbenzene	ug/L	0.20	<0.2	<0.2	nc	60
Toluene	ug/L	0.20	<0.2	<0.2	nc	60
Total Xylenes	ug/L	0.20	<0.2	<0.2	nc	60

NOTES:

Analysis by Maxxam Analytics

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

- means "not analysed"

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

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

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

TABLE 16 RELATIVE PERCENT DIFFERENCES
VOLATILE ORGANIC COMPOUNDS - GROUNDWATER
365 Forest Street, Ottawa, Ontario

Parameter	Units	RDL	BH6	MW19-20	RPD (%)	Alert Limit (%)
			16-May-19	16-May-19		
Volatiles						
Acetone	ug/L	10	<10	<10	nc	60
Benzene	ug/L	0.20	<0.20	<0.20	nc	60
Bromodichloromethane	ug/L	0.50	<0.50	<0.50	nc	60
Bromoform	ug/L	1.0	<1.0	<1.0	nc	60
Bromomethane	ug/L	0.50	<0.50	<0.50	nc	60
Carbon Tetrachloride	ug/L	0.20	<0.20	<0.20	nc	60
Chlorobenzene	ug/L	0.20	<0.20	<0.20	nc	60
Chloroform	ug/L	0.20	<0.20	<0.20	nc	60
Dibromochloromethane	ug/L	0.50	<0.50	<0.50	nc	60
Dichlorodifluoromethane	ug/L	1.0	<0.50	<0.50	nc	60
1,2-Dichlorobenzene	ug/L	0.50	<0.50	<0.50	nc	60
1,3-Dichlorobenzene	ug/L	0.50	<0.50	<0.50	nc	60
1,4-Dichlorobenzene	ug/L	0.50	<1.0	<1.0	nc	60
1,1-Dichloroethane	ug/L	0.20	<0.20	<0.20	nc	60
1,2-Dichloroethane	ug/L	0.50	<0.50	<0.50	nc	60
1,1-Dichloroethylene	ug/L	0.20	<0.20	<0.20	nc	60
Cis-1,2-Dichloroethylene	ug/L	0.50	<0.50	<0.50	nc	60
Trans-1,2-Dichloroethylene	ug/L	0.50	<0.50	<0.50	nc	60
1,2-Dichloropropane	ug/L	0.20	<0.20	<0.20	nc	60
1,3-Dichloropropylene	ug/L	0.30	<0.30	<0.30	nc	60
Ethylbenzene	ug/L	0.20	0.39	0.39	0	60
Ethylene Dibromide	ug/L	0.20	<0.20	<0.20	nc	60
Hexane(n)	ug/L	1.0	<1.0	<1.0	nc	60
Methylene Chloride	ug/L	2.0	<2.0	<2.0	nc	60
Methyl Ethyl Ketone	ug/L	10	<10	<10	nc	60
Methyl Isobutyl Ketone	ug/L	5.0	<5.0	<5.0	nc	60
Methyl-t-Butyl Ether	ug/L	0.50	<0.50	<0.50	nc	60
Styrene	ug/L	0.50	<0.50	<0.50	nc	60
1,1,1,2-Tetrachloroethane	ug/L	0.50	<0.50	<0.50	nc	60
1,1,2,2-Tetrachloroethane	ug/L	0.20	<0.50	<0.50	nc	60
Tetrachloroethylene	ug/L	0.20	<0.20	<0.20	nc	60
Toluene	ug/L	0.20	<0.20	<0.20	nc	60
1,1,1-Trichloroethane	ug/L	0.20	<0.20	<0.20	nc	60
1,1,2-Trichloroethane	ug/L	0.50	<0.50	<0.50	nc	60
Trichloroethylene	ug/L	0.20	<0.20	<0.20	nc	60
Trichlorofluoromethane	ug/L	0.50	<0.50	<0.50	nc	60
Vinyl Chloride	ug/L	0.20	<0.20	<0.20	nc	60
Total Xylenes	ug/L	0.20	<0.20	<0.20	nc	60

NOTES:

Analysis by Maxxam Analytics

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

- means "not analysed"

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

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

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

TABLE 16 RELATIVE PERCENT DIFFERENCES
VOLATILE ORGANIC COMPOUNDS - GROUNDWATER
365 Forest Street, Ottawa, Ontario

Parameter	Units	RDL	MW13	MW19-21	RPD (%)	Alert Limit (%)
			21-May-19	21-May-19		
Volatiles						
Acetone	ug/L	10	<10	<10	nc	60
Benzene	ug/L	0.20	<0.20	<0.20	nc	60
Bromodichloromethane	ug/L	0.50	<0.50	<0.50	nc	60
Bromoform	ug/L	1.0	<1.0	<1.0	nc	60
Bromomethane	ug/L	0.50	<0.50	<0.50	nc	60
Carbon Tetrachloride	ug/L	0.20	<0.20	<0.20	nc	60
Chlorobenzene	ug/L	0.20	<0.20	<0.20	nc	60
Chloroform	ug/L	0.20	<0.20	<0.20	nc	60
Dibromochloromethane	ug/L	0.50	<0.50	<0.50	nc	60
Dichlorodifluoromethane	ug/L	1.0	<0.50	<0.50	nc	60
1,2-Dichlorobenzene	ug/L	0.50	<0.50	<0.50	nc	60
1,3-Dichlorobenzene	ug/L	0.50	<0.50	<0.50	nc	60
1,4-Dichlorobenzene	ug/L	0.50	<1.0	<1.0	nc	60
1,1-Dichloroethane	ug/L	0.20	<0.20	<0.20	nc	60
1,2-Dichloroethane	ug/L	0.50	<0.50	<0.50	nc	60
1,1-Dichloroethylene	ug/L	0.20	<0.20	<0.20	nc	60
Cis-1,2-Dichloroethylene	ug/L	0.50	<0.50	<0.50	nc	60
Trans-1,2-Dichloroethylene	ug/L	0.50	<0.50	<0.50	nc	60
1,2-Dichloropropane	ug/L	0.20	<0.20	<0.20	nc	60
1,3-Dichloropropylene	ug/L	0.30	<0.30	<0.30	nc	60
Ethylbenzene	ug/L	0.20	<0.20	<0.20	nc	60
Ethylene Dibromide	ug/L	0.20	<0.20	<0.20	nc	60
Hexane(n)	ug/L	1.0	<1.0	<1.0	nc	60
Methylene Chloride	ug/L	2.0	<2.0	<2.0	nc	60
Methyl Ethyl Ketone	ug/L	10	<10	<10	nc	60
Methyl Isobutyl Ketone	ug/L	5.0	<5.0	<5.0	nc	60
Methyl-t-Butyl Ether	ug/L	0.50	<0.50	<0.50	nc	60
Styrene	ug/L	0.50	<0.50	<0.50	nc	60
1,1,1,2-Tetrachloroethane	ug/L	0.50	<0.50	<0.50	nc	60
1,1,2,2-Tetrachloroethane	ug/L	0.20	<0.50	<0.50	nc	60
Tetrachloroethylene	ug/L	0.20	<0.20	<0.20	nc	60
Toluene	ug/L	0.20	<0.20	<0.20	nc	60
1,1,1-Trichloroethane	ug/L	0.20	<0.20	<0.20	nc	60
1,1,2-Trichloroethane	ug/L	0.50	<0.50	<0.50	nc	60
Trichloroethylene	ug/L	0.20	<0.20	<0.20	nc	60
Trichlorofluoromethane	ug/L	0.50	<0.50	<0.50	nc	60
Vinyl Chloride	ug/L	0.20	<0.20	<0.20	nc	60
Total Xylenes	ug/L	0.20	<0.20	<0.20	nc	60

NOTES:

Analysis by Maxxam Analytics

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

- means "not analysed"

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

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

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

TABLE 17 RELATIVE PERCENT DIFFERENCES
METALS - GROUNDWATER
365 Forest Street, Ottawa, Ontario

Parameter	Units	RDL	BH6	MW19-20	RPD (%)	Alert Limit (%)
			16-May-2019	16-May-2019		
Inorganics						
Antimony	ug/L	0.50	<0.50	<0.50	nc	40
Arsenic	ug/L	1.0	1.5	1.6	6	40
Barium	ug/L	2.0	300	300	0	40
Beryllium	ug/L	0.50	<0.50	<0.50	nc	40
Boron	ug/L	10	26	24	8	40
Cadmium	ug/L	0.10	<0.10	<0.10	nc	40
Chromium	ug/L	5.0	<5.0	<5.0	nc	40
Cobalt	ug/L	0.50	<0.50	<0.50	nc	40
Copper	ug/L	1.0	<1.0	<1.0	nc	40
Lead	ug/L	0.50	<0.50	<0.50	nc	40
Molybdenum	ug/L	0.50	1.1	1.2	9	40
Nickel	ug/L	1.0	<1.0	<1.0	nc	40
Selenium	ug/L	2.00	<2.0	<2.0	nc	40
Silver	ug/L	0.10	<0.10	<0.10	nc	40
Sodium	ug/L	100	230000	230000	0	40
Thallium	ug/L	0.050	<0.050	<0.050	nc	40
Uranium	ug/L	0.10	1.7	1.8	6	40
Vanadium	ug/L	0.50	1.7	1.6	6	40
Zinc	ug/L	5.0	<5.0	<5.0	nc	40

Parameter	Units	RDL	MW13	MW19-20	RPD (%)	Alert Limit (%)
			21-May-2019	21-May-2019		
Inorganics						
Antimony	ug/L	0.50	<0.50	<0.50	nc	40
Arsenic	ug/L	1.0	<1.0	<1.0	nc	40
Barium	ug/L	2.0	82	82	0	40
Beryllium	ug/L	0.50	<0.50	<0.50	nc	40
Boron	ug/L	10	160	150	6	40
Cadmium	ug/L	0.10	<0.10	<0.10	nc	40
Chromium	ug/L	5.0	<5.0	<5.0	nc	40
Cobalt	ug/L	0.50	<0.50	<0.50	nc	40
Copper	ug/L	1.0	7.6	7.2	5	40
Lead	ug/L	0.50	<0.50	<0.50	nc	40
Molybdenum	ug/L	0.50	5.5	5.2	6	40
Nickel	ug/L	1.0	2.9	2.8	4	40
Selenium	ug/L	2.00	5.2	5.2	0	40
Silver	ug/L	0.10	<0.10	<0.10	nc	40
Sodium	ug/L	100	200000	200000	0	40
Thallium	ug/L	0.050	<0.050	<0.050	nc	40
Uranium	ug/L	0.10	19	19	0	40
Vanadium	ug/L	0.50	8.3	7.2	14	40
Zinc	ug/L	5.0	21	6.7	**103**	40

NOTES:

Analysis by Maxxam Analytics

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

- means "not analysed"

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

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

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

TABLE 18 RELATIVE PERCENT DIFFERENCES
POLYCYCLIC AROMATIC HYDROCARBONS - GROUNDWATER
365 Forest Street, Ottawa, Ontario

Parameter	Units	RDL	BH6	MW19-20	RPD (%)	Alert Limit (%)
			16-May-19	16-May-19		
Polycyclic Aromatic Hydrocarbons						
Acenaphthene	ug/L	0.05	3.3	3.0	10	60
Acenaphthylene	ug/L	0.05	<0.20	<0.20	nc	60
Anthracene	ug/L	0.01	0.51	0.34	40	60
Benzo(a)anthracene	ug/L	0.01	<0.050	<0.050	nc	60
Benzo(a)pyrene	ug/L	0.01	<0.010	<0.010	nc	60
Benzo(b/j)fluoranthene	ug/L	0.05	<0.050	<0.050	nc	60
Benzo(ghi)perylene	ug/L	0.05	<0.050	<0.050	nc	60
Benzo(k)fluoranthene	ug/L	0.05	<0.050	<0.050	nc	60
Chrysene	ug/L	0.05	<0.050	<0.050	nc	60
Dibenz(a,h)anthracene	ug/L	0.05	<0.050	<0.050	nc	60
Fluoranthene	ug/L	0.01	0.14	0.12	15	60
Fluorene	ug/L	0.05	2.8	2.7	4	60
Indeno(1,2,3-cd)pyrene	ug/L	0.05	<0.050	<0.050	nc	60
Methylnaphthalene, 2-(1-)	ug/L	0.10	11	9	20	60
Naphthalene	ug/L	0.05	0.51	<1.1	nc	60
Phenanthrene	ug/L	0.05	1.4	1.7	19	60
Pyrene	ug/L	0.01	0.67	0.57	16	60

Parameter	Units	RDL	MW13	MW19-20	RPD (%)	Alert Limit (%)
			21-May-19	21-May-19		
Polycyclic Aromatic Hydrocarbons						
Acenaphthene	ug/L	0.05	<0.050	<0.050	nc	60
Acenaphthylene	ug/L	0.05	<0.050	<0.050	nc	60
Anthracene	ug/L	0.01	<0.050	<0.050	nc	60
Benzo(a)anthracene	ug/L	0.01	<0.050	<0.050	nc	60
Benzo(a)pyrene	ug/L	0.01	<0.010	<0.010	nc	60
Benzo(b/j)fluoranthene	ug/L	0.05	<0.050	<0.050	nc	60
Benzo(ghi)perylene	ug/L	0.05	<0.050	<0.050	nc	60
Benzo(k)fluoranthene	ug/L	0.05	<0.050	<0.050	nc	60
Chrysene	ug/L	0.05	<0.050	<0.050	nc	60
Dibenz(a,h)anthracene	ug/L	0.05	<0.050	<0.050	nc	60
Fluoranthene	ug/L	0.01	<0.050	<0.050	nc	60
Fluorene	ug/L	0.05	<0.050	<0.050	nc	60
Indeno(1,2,3-cd)pyrene	ug/L	0.05	<0.050	<0.050	nc	60
Methylnaphthalene, 2-(1-)	ug/L	0.10	<0.071	<0.071	nc	60
Naphthalene	ug/L	0.05	<0.050	<0.050	nc	60
Phenanthrene	ug/L	0.05	<0.030	<0.030	nc	60
Pyrene	ug/L	0.01	<0.050	<0.050	nc	60

NOTES:

Analysis by Maxxam Analytics

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

- means "not analysed"

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

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

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

Appendix E – Laboratory Certificates of Analysis

Maxxam
A Bureau Veritas Group Company

Your Project #: OTT-00252625-A0
Your C.O.C. #: 713967-01-01

Attention: Mark McCalla

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

Report Date: 2019/05/03
Report #: R5695699
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B9B1459
Received: 2019/04/26, 16:40

Sample Matrix: Soil
Samples Received: 8

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum (1)	8	N/A	2019/05/02	CAM SOP-00301	EPA 8270D m
1,3-Dichloropropene Sum	8	N/A	2019/05/03	OTT SOP-00002	EPA 8260C m
Petroleum Hydrocarbons F2-F4 in Soil (2)	8	2019/05/01	2019/05/02	OTT SOP-00001	CCME CWS
Strong Acid Leachable Metals by ICPMS (1)	8	2019/05/01	2019/05/01	CAM SOP-00447	EPA 6020B m
Moisture	8	N/A	2019/05/02	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM) (1)	8	2019/05/01	2019/05/02	CAM SOP-00318	EPA 8270D m
Volatile Organic Compounds and F1 PHCs	8	N/A	2019/04/30	OTT SOP-00002	EPA 8260C m

Remarks:

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

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam 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.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam 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 Maxxam, unless otherwise agreed in writing. Maxxam 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 Maxxam, 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 Maxxam Analytics Mississauga
(2) All CCME PHC results met required criteria unless otherwise stated in the report. The CWS PHC methods employed by Maxxam 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

Your Project #: OTT-00252625-A0
Your C.O.C. #: 713967-01-01

Attention: Mark McCalla

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

Report Date: 2019/05/03
Report #: R5695699
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B9B1459
Received: 2019/04/26, 16:40
reported using validated cold solvent extraction instead of Soxhlet extraction.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Alisha Williamson, Project Manager
Email: AWilliamson@maxxam.ca
Phone# (613) 274-0573
==========
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B9B1459
Report Date: 2019/05/03

exp Services Inc
Client Project #: OTT-00252625-A0
Sampler Initials: ML

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID		JOH666	JOH667	JOH668	JOH669	JOH670		
Sampling Date		2019/04/25	2019/04/24	2019/04/25	2019/04/25	2019/04/24		
COC Number		713967-01-01	713967-01-01	713967-01-01	713967-01-01	713967-01-01		
	UNITS	**MW19-6 SS3**	**MW19-7 SS4**	**MW19-8 SS4**	**BH15-SS3**	**MW19-9 SS5**	**RDL**	**QC Batch**
Metals								
Acid Extractable Antimony (Sb)	ug/g	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	6097355
Acid Extractable Arsenic (As)	ug/g	<1.0	1.5	<1.0	<1.0	<1.0	1.0	6097355
Acid Extractable Barium (Ba)	ug/g	52	91	70	56	100	0.50	6097355
Acid Extractable Beryllium (Be)	ug/g	0.28	0.34	0.28	0.29	0.37	0.20	6097355
Acid Extractable Boron (B)	ug/g	<5.0	5.8	6.1	<5.0	8.8	5.0	6097355
Acid Extractable Cadmium (Cd)	ug/g	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	6097355
Acid Extractable Chromium (Cr)	ug/g	25	15	12	26	15	1.0	6097355
Acid Extractable Cobalt (Co)	ug/g	5.7	7.4	5.7	5.7	6.6	0.10	6097355
Acid Extractable Copper (Cu)	ug/g	13	14	13	13	16	0.50	6097355
Acid Extractable Lead (Pb)	ug/g	2.4	5.5	6.2	2.6	6.8	1.0	6097355
Acid Extractable Molybdenum (Mo)	ug/g	<0.50	0.71	0.54	<0.50	<0.50	0.50	6097355
Acid Extractable Nickel (Ni)	ug/g	14	14	11	15	12	0.50	6097355
Acid Extractable Selenium (Se)	ug/g	<0.50	<0.50	<0.50	<0.50	0.53	0.50	6097355
Acid Extractable Silver (Ag)	ug/g	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	6097355
Acid Extractable Thallium (Tl)	ug/g	0.084	0.12	0.12	0.10	0.15	0.050	6097355
Acid Extractable Uranium (U)	ug/g	0.53	0.50	0.49	0.66	0.55	0.050	6097355
Acid Extractable Vanadium (V)	ug/g	29	24	19	27	23	5.0	6097355
Acid Extractable Zinc (Zn)	ug/g	24	17	15	23	15	5.0	6097355

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B9B1459
Report Date: 2019/05/03

exp Services Inc
Client Project #: OTT-00252625-A0
Sampler Initials: ML

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID		JOH671	JOH672	JOH673		
Sampling Date		2019/04/25	2019/04/25	2019/04/25		
COC Number		713967-01-01	713967-01-01	713967-01-01		
	UNITS	**MW19-10 SS2**	**MW19-10 SS7**	**MW19-12 SS6**	**RDL**	**QC Batch**
Metals						
Acid Extractable Antimony (Sb)	ug/g	<0.20	<0.20	<0.20	0.20	6097355
Acid Extractable Arsenic (As)	ug/g	1.5	1.4	1.5	1.0	6097355
Acid Extractable Barium (Ba)	ug/g	170	100	71	0.50	6097355
Acid Extractable Beryllium (Be)	ug/g	0.61	0.36	0.39	0.20	6097355
Acid Extractable Boron (B)	ug/g	5.4	7.3	5.6	5.0	6097355
Acid Extractable Cadmium (Cd)	ug/g	<0.10	<0.10	<0.10	0.10	6097355
Acid Extractable Chromium (Cr)	ug/g	40	16	20	1.0	6097355
Acid Extractable Cobalt (Co)	ug/g	10	5.9	7.2	0.10	6097355
Acid Extractable Copper (Cu)	ug/g	27	12	15	0.50	6097355
Acid Extractable Lead (Pb)	ug/g	7.2	5.6	7.3	1.0	6097355
Acid Extractable Molybdenum (Mo)	ug/g	<0.50	0.90	<0.50	0.50	6097355
Acid Extractable Nickel (Ni)	ug/g	25	12	15	0.50	6097355
Acid Extractable Selenium (Se)	ug/g	<0.50	<0.50	<0.50	0.50	6097355
Acid Extractable Silver (Ag)	ug/g	<0.20	<0.20	<0.20	0.20	6097355
Acid Extractable Thallium (Tl)	ug/g	0.21	0.10	0.13	0.050	6097355
Acid Extractable Uranium (U)	ug/g	0.73	1.3	0.53	0.050	6097355
Acid Extractable Vanadium (V)	ug/g	45	24	29	5.0	6097355
Acid Extractable Zinc (Zn)	ug/g	44	22	23	5.0	6097355

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Maxxam Job #: B9B1459
Report Date: 2019/05/03

exp Services Inc
Client Project #: OTT-00252625-A0
Sampler Initials: ML

O.REG 153 PAHS (SOIL)

Maxxam ID		JOH666	JOH667	JOH668	JOH669	JOH670	JOH671		
Sampling Date		2019/04/25	2019/04/24	2019/04/25	2019/04/25	2019/04/24	2019/04/25		
COC Number		713967-01-01	713967-01-01	713967-01-01	713967-01-01	713967-01-01	713967-01-01		
	UNITS	**MW19-6 SS3**	**MW19-7 SS4**	**MW19-8 SS4**	**BH15-SS3**	**MW19-9 SS5**	**MW19-10 SS2**	**RDL**	**QC Batch**
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	<0.0071	<0.0071	<0.0071	<0.0071	<0.0071	<0.0071	0.0071	6092945
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	6098212
Acenaphthylene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	6098212
Anthracene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	6098212
Benzo(a)anthracene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	6098212
Benzo(a)pyrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	6098212
Benzo(b/j)fluoranthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	6098212
Benzo(g,h,i)perylene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	6098212
Benzo(k)fluoranthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	6098212
Chrysene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	6098212
Dibenz(a,h)anthracene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	6098212
Fluoranthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	6098212
Fluorene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	6098212
Indeno(1,2,3-cd)pyrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	6098212
1-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	6098212
2-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	6098212
Naphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	6098212
Phenanthrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	6098212
Pyrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	6098212
Surrogate Recovery (%)									
D10-Anthracene	%	105	105	102	105	104	105		6098212
D14-Terphenyl (FS)	%	107	113	105	108	108	110		6098212
D8-Acenaphthylene	%	98	102	100	101	100	102		6098212

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O.REG 153 PAHS (SOIL)

Maxxam ID		JOH672	JOH673		
Sampling Date		2019/04/25	2019/04/25		
COC Number		713967-01-01	713967-01-01		
	UNITS	**MW19-10 SS7**	**MW19-12 SS6**	**RDL**	**QC Batch**
Calculated Parameters					
Methylnaphthalene, 2-(1-)	ug/g	<0.0071	<0.0071	0.0071	6092945
Polyaromatic Hydrocarbons					
Acenaphthene	ug/g	<0.0050	<0.0050	0.0050	6098212
Acenaphthylene	ug/g	<0.0050	0.0072	0.0050	6098212
Anthracene	ug/g	<0.0050	<0.0050	0.0050	6098212
Benzo(a)anthracene	ug/g	<0.0050	0.013	0.0050	6098212
Benzo(a)pyrene	ug/g	<0.0050	0.019	0.0050	6098212
Benzo(b/j)fluoranthene	ug/g	<0.0050	0.027	0.0050	6098212
Benzo(g,h,i)perylene	ug/g	<0.0050	0.018	0.0050	6098212
Benzo(k)fluoranthene	ug/g	<0.0050	0.0089	0.0050	6098212
Chrysene	ug/g	<0.0050	0.014	0.0050	6098212
Dibenz(a,h)anthracene	ug/g	<0.0050	<0.0050	0.0050	6098212
Fluoranthene	ug/g	<0.0050	0.022	0.0050	6098212
Fluorene	ug/g	<0.0050	<0.0050	0.0050	6098212
Indeno(1,2,3-cd)pyrene	ug/g	<0.0050	0.017	0.0050	6098212
1-Methylnaphthalene	ug/g	<0.0050	<0.0050	0.0050	6098212
2-Methylnaphthalene	ug/g	<0.0050	<0.0050	0.0050	6098212
Naphthalene	ug/g	<0.0050	<0.0050	0.0050	6098212
Phenanthrene	ug/g	0.0052	0.0050	0.0050	6098212
Pyrene	ug/g	<0.0050	0.021	0.0050	6098212
Surrogate Recovery (%)					
D10-Anthracene	%	106	107		6098212
D14-Terphenyl (FS)	%	109	110		6098212
D8-Acenaphthylene	%	101	105		6098212

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O.REG 153 VOCS BY HS & F1-F4 (SOIL)

Maxxam ID		JOH666	JOH667	JOH668	JOH669	JOH670		
Sampling Date		2019/04/25	2019/04/24	2019/04/25	2019/04/25	2019/04/24		
COC Number		713967-01-01	713967-01-01	713967-01-01	713967-01-01	713967-01-01		
	UNITS	**MW19-6 SS3**	**MW19-7 SS4**	**MW19-8 SS4**	**BH15-SS3**	**MW19-9 SS5**	**RDL**	**QC Batch**
Inorganics								
Moisture	%	19	10	8.7	16	11	0.2	6097306
Calculated Parameters								
1,3-Dichloropropene (cis+trans)	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	6093253
Volatile Organics								
Acetone (2-Propanone)	ug/g	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	6094621
Benzene	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	6094621
Bromodichloromethane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	6094621
Bromoform	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	6094621
Bromomethane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	6094621
Carbon Tetrachloride	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	6094621
Chlorobenzene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	6094621
Chloroform	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	6094621
Dibromochloromethane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	6094621
1,2-Dichlorobenzene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	6094621
1,3-Dichlorobenzene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	6094621
1,4-Dichlorobenzene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	6094621
Dichlorodifluoromethane (FREON 12)	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	6094621
1,1-Dichloroethane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	6094621
1,2-Dichloroethane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	6094621
1,1-Dichloroethylene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	6094621
cis-1,2-Dichloroethylene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	6094621
trans-1,2-Dichloroethylene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	6094621
1,2-Dichloropropane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	6094621
cis-1,3-Dichloropropene	ug/g	<0.030	<0.030	<0.030	<0.030	<0.030	0.030	6094621
trans-1,3-Dichloropropene	ug/g	<0.040	<0.040	<0.040	<0.040	<0.040	0.040	6094621
Ethylbenzene	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	6094621
Ethylene Dibromide	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	6094621
Hexane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	6094621
Methylene Chloride(Dichloromethane)	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	6094621
Methyl Ethyl Ketone (2-Butanone)	ug/g	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	6094621
Methyl Isobutyl Ketone	ug/g	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	6094621
Methyl t-butyl ether (MTBE)	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	6094621
Styrene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	6094621
1,1,1,2-Tetrachloroethane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	6094621
1,1,2,2-Tetrachloroethane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	6094621
Tetrachloroethylene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	6094621

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Maxxam Job #: B9B1459
Report Date: 2019/05/03

exp Services Inc
Client Project #: OTT-00252625-A0
Sampler Initials: ML

O.REG 153 VOCS BY HS & F1-F4 (SOIL)

Maxxam ID		JOH666	JOH667	JOH668	JOH669	JOH670		
Sampling Date		2019/04/25	2019/04/24	2019/04/25	2019/04/25	2019/04/24		
COC Number		713967-01-01	713967-01-01	713967-01-01	713967-01-01	713967-01-01		
	UNITS	**MW19-6 SS3**	**MW19-7 SS4**	**MW19-8 SS4**	**BH15-SS3**	**MW19-9 SS5**	**RDL**	**QC Batch**
Toluene	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	6094621
1,1,1-Trichloroethane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	6094621
1,1,2-Trichloroethane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	6094621
Trichloroethylene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	6094621
Trichlorofluoromethane (FREON 11)	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	6094621
Vinyl Chloride	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	6094621
p+m-Xylene	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	6094621
o-Xylene	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	6094621
Total Xylenes	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	6094621
F1 (C6-C10)	ug/g	<10	<10	<10	<10	<10	10	6094621
F1 (C6-C10) - BTEX	ug/g	<10	<10	<10	<10	<10	10	6094621
F2-F4 Hydrocarbons								
F2 (C10-C16 Hydrocarbons)	ug/g	<10	<10	<10	<10	<10	10	6097296
F3 (C16-C34 Hydrocarbons)	ug/g	<50	<50	<50	<50	<50	50	6097296
F4 (C34-C50 Hydrocarbons)	ug/g	<50	<50	<50	<50	<50	50	6097296
Reached Baseline at C50	ug/g	Yes	Yes	Yes	Yes	Yes		6097296
Surrogate Recovery (%)								
o-Terphenyl	%	84	84	84	83	86		6097296
4-Bromofluorobenzene	%	96	96	102	93	94		6094621
D10-o-Xylene	%	87	103	88	94	98		6094621
D4-1,2-Dichloroethane	%	101	96	107	92	107		6094621
D8-Toluene	%	98	99	98	98	94		6094621

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O.REG 153 VOCS BY HS & F1-F4 (SOIL)

Maxxam ID		JOH671	JOH672	JOH673		
Sampling Date		2019/04/25	2019/04/25	2019/04/25		
COC Number		713967-01-01	713967-01-01	713967-01-01		
	UNITS	**MW19-10 SS2**	**MW19-10 SS7**	**MW19-12 SS6**	**RDL**	**QC Batch**
Inorganics						
Moisture	%	20	8.6	14	0.2	6097306
Calculated Parameters						
1,3-Dichloropropene (cis+trans)	ug/g	<0.050	<0.050	<0.050	0.050	6093253
Volatile Organics						
Acetone (2-Propanone)	ug/g	<0.50	<0.50	<0.50	0.50	6094621
Benzene	ug/g	<0.020	<0.020	<0.020	0.020	6094621
Bromodichloromethane	ug/g	<0.050	<0.050	<0.050	0.050	6094621
Bromoform	ug/g	<0.050	<0.050	<0.050	0.050	6094621
Bromomethane	ug/g	<0.050	<0.050	<0.050	0.050	6094621
Carbon Tetrachloride	ug/g	<0.050	<0.050	<0.050	0.050	6094621
Chlorobenzene	ug/g	<0.050	<0.050	<0.050	0.050	6094621
Chloroform	ug/g	<0.050	<0.050	<0.050	0.050	6094621
Dibromochloromethane	ug/g	<0.050	<0.050	<0.050	0.050	6094621
1,2-Dichlorobenzene	ug/g	<0.050	<0.050	<0.050	0.050	6094621
1,3-Dichlorobenzene	ug/g	<0.050	<0.050	<0.050	0.050	6094621
1,4-Dichlorobenzene	ug/g	<0.050	<0.050	<0.050	0.050	6094621
Dichlorodifluoromethane (FREON 12)	ug/g	<0.050	<0.050	<0.050	0.050	6094621
1,1-Dichloroethane	ug/g	<0.050	<0.050	<0.050	0.050	6094621
1,2-Dichloroethane	ug/g	<0.050	<0.050	<0.050	0.050	6094621
1,1-Dichloroethylene	ug/g	<0.050	<0.050	<0.050	0.050	6094621
cis-1,2-Dichloroethylene	ug/g	<0.050	<0.050	<0.050	0.050	6094621
trans-1,2-Dichloroethylene	ug/g	<0.050	<0.050	<0.050	0.050	6094621
1,2-Dichloropropane	ug/g	<0.050	<0.050	<0.050	0.050	6094621
cis-1,3-Dichloropropene	ug/g	<0.030	<0.030	<0.030	0.030	6094621
trans-1,3-Dichloropropene	ug/g	<0.040	<0.040	<0.040	0.040	6094621
Ethylbenzene	ug/g	<0.020	<0.020	<0.020	0.020	6094621
Ethylene Dibromide	ug/g	<0.050	<0.050	<0.050	0.050	6094621
Hexane	ug/g	<0.050	<0.050	<0.050	0.050	6094621
Methylene Chloride(Dichloromethane)	ug/g	<0.050	<0.050	<0.050	0.050	6094621
Methyl Ethyl Ketone (2-Butanone)	ug/g	<0.50	<0.50	<0.50	0.50	6094621
Methyl Isobutyl Ketone	ug/g	<0.50	<0.50	<0.50	0.50	6094621
Methyl t-butyl ether (MTBE)	ug/g	<0.050	<0.050	<0.050	0.050	6094621
Styrene	ug/g	<0.050	<0.050	<0.050	0.050	6094621
1,1,1,2-Tetrachloroethane	ug/g	<0.050	<0.050	<0.050	0.050	6094621
1,1,2,2-Tetrachloroethane	ug/g	<0.050	<0.050	<0.050	0.050	6094621
Tetrachloroethylene	ug/g	<0.050	<0.050	<0.050	0.050	6094621

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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O.REG 153 VOCS BY HS & F1-F4 (SOIL)

Maxxam ID		JOH671	JOH672	JOH673		
Sampling Date		2019/04/25	2019/04/25	2019/04/25		
COC Number		713967-01-01	713967-01-01	713967-01-01		
	UNITS	**MW19-10 SS2**	**MW19-10 SS7**	**MW19-12 SS6**	**RDL**	**QC Batch**
Toluene	ug/g	<0.020	<0.020	<0.020	0.020	6094621
1,1,1-Trichloroethane	ug/g	<0.050	<0.050	<0.050	0.050	6094621
1,1,2-Trichloroethane	ug/g	<0.050	<0.050	<0.050	0.050	6094621
Trichloroethylene	ug/g	<0.050	<0.050	<0.050	0.050	6094621
Trichlorofluoromethane (FREON 11)	ug/g	<0.050	<0.050	<0.050	0.050	6094621
Vinyl Chloride	ug/g	<0.020	<0.020	<0.020	0.020	6094621
p+m-Xylene	ug/g	<0.020	<0.020	<0.020	0.020	6094621
o-Xylene	ug/g	<0.020	<0.020	<0.020	0.020	6094621
Total Xylenes	ug/g	<0.020	<0.020	<0.020	0.020	6094621
F1 (C6-C10)	ug/g	<10	<10	<10	10	6094621
F1 (C6-C10) - BTEX	ug/g	<10	<10	<10	10	6094621
F2-F4 Hydrocarbons						
F2 (C10-C16 Hydrocarbons)	ug/g	<10	<10	<10	10	6097296
F3 (C16-C34 Hydrocarbons)	ug/g	<50	<50	<50	50	6097296
F4 (C34-C50 Hydrocarbons)	ug/g	<50	<50	<50	50	6097296
Reached Baseline at C50	ug/g	Yes	Yes	Yes		6097296
Surrogate Recovery (%)						
o-Terphenyl	%	85	86	85		6097296
4-Bromofluorobenzene	%	96	97	94		6094621
D10-o-Xylene	%	98	90	90		6094621
D4-1,2-Dichloroethane	%	99	97	102		6094621
D8-Toluene	%	99	97	99		6094621

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B9B1459
Report Date: 2019/05/03

exp Services Inc
Client Project #: OTT-00252625-A0
Sampler Initials: ML

TEST SUMMARY

Maxxam ID: JOH666
Sample ID: MW19-6 SS3
Matrix: Soil

Collected: 2019/04/25
Shipped:
Received: 2019/04/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	6092945	N/A	2019/05/02	Automated Statchk
1,3-Dichloropropene Sum	CALC	6093253	N/A	2019/05/03	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	6097296	2019/05/01	2019/05/02	Mariana Vascan
Strong Acid Leachable Metals by ICPMS	ICP/MS	6097355	2019/05/01	2019/05/01	Viviana Canzonieri
Moisture	BAL	6097306	N/A	2019/05/02	Mariana Vascan
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	6098212	2019/05/01	2019/05/02	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	6094621	N/A	2019/04/30	Liliana Gaburici

Maxxam ID: JOH667
Sample ID: MW19-7 SS4
Matrix: Soil

Collected: 2019/04/24
Shipped:
Received: 2019/04/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	6092945	N/A	2019/05/02	Automated Statchk
1,3-Dichloropropene Sum	CALC	6093253	N/A	2019/05/03	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	6097296	2019/05/01	2019/05/02	Mariana Vascan
Strong Acid Leachable Metals by ICPMS	ICP/MS	6097355	2019/05/01	2019/05/01	Viviana Canzonieri
Moisture	BAL	6097306	N/A	2019/05/02	Mariana Vascan
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	6098212	2019/05/01	2019/05/02	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	6094621	N/A	2019/04/30	Liliana Gaburici

Maxxam ID: JOH668
Sample ID: MW19-8 SS4
Matrix: Soil

Collected: 2019/04/25
Shipped:
Received: 2019/04/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	6092945	N/A	2019/05/02	Automated Statchk
1,3-Dichloropropene Sum	CALC	6093253	N/A	2019/05/03	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	6097296	2019/05/01	2019/05/02	Mariana Vascan
Strong Acid Leachable Metals by ICPMS	ICP/MS	6097355	2019/05/01	2019/05/01	Viviana Canzonieri
Moisture	BAL	6097306	N/A	2019/05/02	Mariana Vascan
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	6098212	2019/05/01	2019/05/02	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	6094621	N/A	2019/04/30	Liliana Gaburici

Maxxam ID: JOH669
Sample ID: BH15-SS3
Matrix: Soil

Collected: 2019/04/25
Shipped:
Received: 2019/04/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	6092945	N/A	2019/05/02	Automated Statchk
1,3-Dichloropropene Sum	CALC	6093253	N/A	2019/05/03	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	6097296	2019/05/01	2019/05/02	Mariana Vascan
Strong Acid Leachable Metals by ICPMS	ICP/MS	6097355	2019/05/01	2019/05/01	Viviana Canzonieri
Moisture	BAL	6097306	N/A	2019/05/02	Mariana Vascan
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	6098212	2019/05/01	2019/05/02	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	6094621	N/A	2019/04/30	Liliana Gaburici

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Maxxam Job #: B9B1459
Report Date: 2019/05/03

exp Services Inc
Client Project #: OTT-00252625-A0
Sampler Initials: ML

TEST SUMMARY

Maxxam ID: JOH670
Sample ID: MW19-9 SS5
Matrix: Soil

Collected: 2019/04/24
Shipped:
Received: 2019/04/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	6092945	N/A	2019/05/02	Automated Statchk
1,3-Dichloropropene Sum	CALC	6093253	N/A	2019/05/03	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	6097296	2019/05/01	2019/05/02	Mariana Vascan
Strong Acid Leachable Metals by ICPMS	ICP/MS	6097355	2019/05/01	2019/05/01	Viviana Canzonieri
Moisture	BAL	6097306	N/A	2019/05/02	Mariana Vascan
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	6098212	2019/05/01	2019/05/02	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	6094621	N/A	2019/04/30	Liliana Gaburici

Maxxam ID: JOH671
Sample ID: MW19-10 SS2
Matrix: Soil

Collected: 2019/04/25
Shipped:
Received: 2019/04/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	6092945	N/A	2019/05/02	Automated Statchk
1,3-Dichloropropene Sum	CALC	6093253	N/A	2019/05/03	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	6097296	2019/05/01	2019/05/02	Mariana Vascan
Strong Acid Leachable Metals by ICPMS	ICP/MS	6097355	2019/05/01	2019/05/01	Viviana Canzonieri
Moisture	BAL	6097306	N/A	2019/05/02	Mariana Vascan
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	6098212	2019/05/01	2019/05/02	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	6094621	N/A	2019/04/30	Liliana Gaburici

Maxxam ID: JOH672
Sample ID: MW19-10 SS7
Matrix: Soil

Collected: 2019/04/25
Shipped:
Received: 2019/04/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	6092945	N/A	2019/05/02	Automated Statchk
1,3-Dichloropropene Sum	CALC	6093253	N/A	2019/05/03	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	6097296	2019/05/01	2019/05/02	Mariana Vascan
Strong Acid Leachable Metals by ICPMS	ICP/MS	6097355	2019/05/01	2019/05/01	Viviana Canzonieri
Moisture	BAL	6097306	N/A	2019/05/02	Mariana Vascan
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	6098212	2019/05/01	2019/05/02	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	6094621	N/A	2019/04/30	Liliana Gaburici

Maxxam ID: JOH673
Sample ID: MW19-12 SS6
Matrix: Soil

Collected: 2019/04/25
Shipped:
Received: 2019/04/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	6092945	N/A	2019/05/02	Automated Statchk
1,3-Dichloropropene Sum	CALC	6093253	N/A	2019/05/03	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	6097296	2019/05/01	2019/05/02	Mariana Vascan
Strong Acid Leachable Metals by ICPMS	ICP/MS	6097355	2019/05/01	2019/05/01	Viviana Canzonieri
Moisture	BAL	6097306	N/A	2019/05/02	Mariana Vascan
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	6098212	2019/05/01	2019/05/02	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	6094621	N/A	2019/04/30	Liliana Gaburici

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Maxxam Job #: B9B1459
Report Date: 2019/05/03

exp Services Inc
Client Project #: OTT-00252625-A0
Sampler Initials: ML

GENERAL COMMENTS

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

Package 1	12.0°C

Results relate only to the items tested.

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Maxxam Job #: B9B1459
Report Date: 2019/05/03

QUALITY ASSURANCE REPORT

exp Services Inc
Client Project #: OTT-00252625-A0
Sampler Initials: ML

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
6094621	4-Bromofluorobenzene	2019/04/30			104	60 - 140	98	%		
6094621	D10-o-Xylene	2019/04/30			101	60 - 130	101	%		
6094621	D4-1,2-Dichloroethane	2019/04/30			122	60 - 140	109	%		
6094621	D8-Toluene	2019/04/30			97	60 - 140	96	%		
6097296	o-Terphenyl	2019/05/02	87	30 - 130	88	30 - 130	96	%		
6098212	D10-Anthracene	2019/05/01	106	50 - 130	114	50 - 130	109	%		
6098212	D14-Terphenyl (FS)	2019/05/01	107	50 - 130	112	50 - 130	108	%		
6098212	D8-Acenaphthylene	2019/05/01	100	50 - 130	110	50 - 130	105	%		
6094621	1,1,1,2-Tetrachloroethane	2019/04/30			97	60 - 130	<0.050	ug/g	0.66	50
6094621	1,1,1-Trichloroethane	2019/04/30			90	60 - 130	<0.050	ug/g	2.5	50
6094621	1,1,2,2-Tetrachloroethane	2019/04/30			117	60 - 130	<0.050	ug/g	17	50
6094621	1,1,2-Trichloroethane	2019/04/30			105	60 - 130	<0.050	ug/g	14	50
6094621	1,1-Dichloroethane	2019/04/30			94	60 - 130	<0.050	ug/g	3.6	50
6094621	1,1-Dichloroethylene	2019/04/30			87	60 - 130	<0.050	ug/g	4.7	50
6094621	1,2-Dichlorobenzene	2019/04/30			88	60 - 130	<0.050	ug/g	1.3	50
6094621	1,2-Dichloroethane	2019/04/30			104	60 - 130	<0.050	ug/g	17	50
6094621	1,2-Dichloropropane	2019/04/30			86	60 - 130	<0.050	ug/g	7.6	50
6094621	1,3-Dichlorobenzene	2019/04/30			85	60 - 130	<0.050	ug/g	7.8	50
6094621	1,4-Dichlorobenzene	2019/04/30			88	60 - 130	<0.050	ug/g	4.3	50
6094621	Acetone (2-Propanone)	2019/04/30			103	60 - 140	<0.50	ug/g	9.9	50
6094621	Benzene	2019/04/30			97	60 - 130	<0.020	ug/g	2.6	50
6094621	Bromodichloromethane	2019/04/30			103	60 - 130	<0.050	ug/g	10	50
6094621	Bromoform	2019/04/30			114	60 - 130	<0.050	ug/g	16	50
6094621	Bromomethane	2019/04/30			101	60 - 140	<0.050	ug/g	2.4	50
6094621	Carbon Tetrachloride	2019/04/30			83	60 - 130	<0.050	ug/g	3.6	50
6094621	Chlorobenzene	2019/04/30			94	60 - 130	<0.050	ug/g	0.54	50
6094621	Chloroform	2019/04/30			91	60 - 130	<0.050	ug/g	5.3	50
6094621	cis-1,2-Dichloroethylene	2019/04/30			91	60 - 130	<0.050	ug/g	5.7	50
6094621	cis-1,3-Dichloropropene	2019/04/30			92	60 - 130	<0.030	ug/g	13	50
6094621	Dibromochloromethane	2019/04/30			106	60 - 130	<0.050	ug/g	11	50
6094621	Dichlorodifluoromethane (FREON 12)	2019/04/30			107	60 - 140	<0.050	ug/g	5.9	50
6094621	Ethylbenzene	2019/04/30			81	60 - 130	<0.020	ug/g	7.1	50

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
6094621	Ethylene Dibromide	2019/04/30			114	60 - 130	<0.050	ug/g	15	50
6094621	F1 (C6-C10) - BTEX	2019/04/30					<10	ug/g		
6094621	F1 (C6-C10)	2019/04/30			106	80 - 120	<10	ug/g	5.4	30
6094621	Hexane	2019/04/30			92	60 - 130	<0.050	ug/g	5.0	50
6094621	Methyl Ethyl Ketone (2-Butanone)	2019/04/30			88	60 - 140	<0.50	ug/g	12	50
6094621	Methyl Isobutyl Ketone	2019/04/30			116	60 - 130	<0.50	ug/g	19	50
6094621	Methyl t-butyl ether (MTBE)	2019/04/30			93	60 - 130	<0.050	ug/g	9.3	50
6094621	Methylene Chloride(Dichloromethane)	2019/04/30			100	60 - 130	<0.050	ug/g	8.7	50
6094621	o-Xylene	2019/04/30			87	60 - 130	<0.020	ug/g	4.9	50
6094621	p+m-Xylene	2019/04/30			86	60 - 130	<0.020	ug/g	8.0	50
6094621	Styrene	2019/04/30			91	60 - 130	<0.050	ug/g	1.9	50
6094621	Tetrachloroethylene	2019/04/30			81	60 - 130	<0.050	ug/g	9.3	50
6094621	Toluene	2019/04/30			85	60 - 130	<0.020	ug/g	4.4	50
6094621	Total Xylenes	2019/04/30					<0.020	ug/g		
6094621	trans-1,2-Dichloroethylene	2019/04/30			88	60 - 130	<0.050	ug/g	1.2	50
6094621	trans-1,3-Dichloropropene	2019/04/30			113	60 - 130	<0.040	ug/g	17	50
6094621	Trichloroethylene	2019/04/30			89	60 - 130	<0.050	ug/g	2.5	50
6094621	Trichlorofluoromethane (FREON 11)	2019/04/30			95	60 - 130	<0.050	ug/g	5.5	50
6094621	Vinyl Chloride	2019/04/30			102	60 - 130	<0.020	ug/g	3.0	50
6097296	F2 (C10-C16 Hydrocarbons)	2019/05/02	97	50 - 130	96	80 - 120	<10	ug/g	NC	50
6097296	F3 (C16-C34 Hydrocarbons)	2019/05/02	97	50 - 130	96	80 - 120	<50	ug/g	NC	50
6097296	F4 (C34-C50 Hydrocarbons)	2019/05/02	97	50 - 130	96	80 - 120	<50	ug/g	NC	50
6097306	Moisture	2019/05/02							19	50
6097355	Acid Extractable Antimony (Sb)	2019/05/01	93	75 - 125	103	80 - 120	<0.20	ug/g	NC	30
6097355	Acid Extractable Arsenic (As)	2019/05/01	105	75 - 125	100	80 - 120	<1.0	ug/g	16	30
6097355	Acid Extractable Barium (Ba)	2019/05/01	NC	75 - 125	103	80 - 120	<0.50	ug/g	5.3	30
6097355	Acid Extractable Beryllium (Be)	2019/05/01	102	75 - 125	101	80 - 120	<0.20	ug/g	6.5	30
6097355	Acid Extractable Boron (B)	2019/05/01	104	75 - 125	100	80 - 120	<5.0	ug/g	NC	30
6097355	Acid Extractable Cadmium (Cd)	2019/05/01	101	75 - 125	101	80 - 120	<0.10	ug/g	NC	30
6097355	Acid Extractable Chromium (Cr)	2019/05/01	110	75 - 125	102	80 - 120	<1.0	ug/g	1.4	30
6097355	Acid Extractable Cobalt (Co)	2019/05/01	104	75 - 125	103	80 - 120	<0.10	ug/g	2.6	30
6097355	Acid Extractable Copper (Cu)	2019/05/01	98	75 - 125	103	80 - 120	<0.50	ug/g	16	30

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
6097355	Acid Extractable Lead (Pb)	2019/05/01	102	75 - 125	104	80 - 120	<1.0	ug/g	0.097	30
6097355	Acid Extractable Molybdenum (Mo)	2019/05/01	102	75 - 125	101	80 - 120	<0.50	ug/g	NC	30
6097355	Acid Extractable Nickel (Ni)	2019/05/01	106	75 - 125	102	80 - 120	<0.50	ug/g	1.3	30
6097355	Acid Extractable Selenium (Se)	2019/05/01	105	75 - 125	108	80 - 120	<0.50	ug/g	NC	30
6097355	Acid Extractable Silver (Ag)	2019/05/01	103	75 - 125	101	80 - 120	<0.20	ug/g	NC	30
6097355	Acid Extractable Thallium (Tl)	2019/05/01	101	75 - 125	104	80 - 120	<0.050	ug/g	9.5	30
6097355	Acid Extractable Uranium (U)	2019/05/01	104	75 - 125	104	80 - 120	<0.050	ug/g	8.5	30
6097355	Acid Extractable Vanadium (V)	2019/05/01	NC	75 - 125	103	80 - 120	<5.0	ug/g	4.5	30
6097355	Acid Extractable Zinc (Zn)	2019/05/01	NC	75 - 125	94	80 - 120	<5.0	ug/g	0.62	30
6098212	1-Methylnaphthalene	2019/05/01	119	50 - 130	122	50 - 130	<0.0050	ug/g	NC	40
6098212	2-Methylnaphthalene	2019/05/01	111	50 - 130	115	50 - 130	<0.0050	ug/g	NC	40
6098212	Acenaphthene	2019/05/01	103	50 - 130	104	50 - 130	<0.0050	ug/g	NC	40
6098212	Acenaphthylene	2019/05/01	102	50 - 130	105	50 - 130	<0.0050	ug/g	NC	40
6098212	Anthracene	2019/05/01	102	50 - 130	106	50 - 130	<0.0050	ug/g	NC	40
6098212	Benzo(a)anthracene	2019/05/01	110	50 - 130	110	50 - 130	<0.0050	ug/g	NC	40
6098212	Benzo(a)pyrene	2019/05/01	104	50 - 130	108	50 - 130	<0.0050	ug/g	NC	40
6098212	Benzo(b/j)fluoranthene	2019/05/01	104	50 - 130	109	50 - 130	<0.0050	ug/g	NC	40
6098212	Benzo(g,h,i)perylene	2019/05/01	107	50 - 130	112	50 - 130	<0.0050	ug/g	NC	40
6098212	Benzo(k)fluoranthene	2019/05/01	97	50 - 130	102	50 - 130	<0.0050	ug/g	NC	40
6098212	Chrysene	2019/05/01	87	50 - 130	88	50 - 130	<0.0050	ug/g	NC	40
6098212	Dibenz(a,h)anthracene	2019/05/01	103	50 - 130	109	50 - 130	<0.0050	ug/g	NC	40
6098212	Fluoranthene	2019/05/01	112	50 - 130	113	50 - 130	<0.0050	ug/g	NC	40
6098212	Fluorene	2019/05/01	102	50 - 130	105	50 - 130	<0.0050	ug/g	NC	40
6098212	Indeno(1,2,3-cd)pyrene	2019/05/01	108	50 - 130	118	50 - 130	<0.0050	ug/g	NC	40
6098212	Naphthalene	2019/05/01	103	50 - 130	106	50 - 130	<0.0050	ug/g	NC	40
6098212	Phenanthrene	2019/05/01	103	50 - 130	106	50 - 130	<0.0050	ug/g	NC	40

Maxxam Analytics International Corporation o/a Maxxam Analytics 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxam.ca

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
6098212	Pyrene	2019/05/01	111	50 - 130	112	50 - 130	<0.0050	ug/g	NC	40

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 (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

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).

Maxxam Analytics International Corporation o/a Maxxam Analytics 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxam.ca

Maxxam Job #: B9B1459
Report Date: 2019/05/03

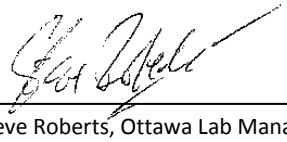
exp Services Inc
Client Project #: OTT-00252625-A0
Sampler Initials: ML

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Brad Newman, Scientific Service Specialist

Liliana Gaburici, VOC Lab



Steve Roberts, Ottawa Lab Manager

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Analytics International Corporation o/a Maxxam Analytics 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxam.ca

Maxxam
A Bureau Veritas Group Company

Maxxam Analytics International Corporation o/a Maxxam Analytics
6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel:(905) 817-5700 Toll-free:800-563-6266 Fax:(905) 817-5777 www.maxxam.ca

CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#17498 exp Services Inc	Company Name:		Quotation #:	B91718 Stream 3.	Maxxam Job #:	Bottle Order #:
Attention:	Accounts Payable	Attention:	Mark McCalla	P.O. #:			713967
Address:	100-2650 Queensview Drive Ottawa ON K2B 8H6	Address:		Project:	OTT-00252625-A0	COC #:	Project Manager:
Tel:	(613) 688-1899 Fax: (613) 225-7337	Tel:	Fax:	Project Name:		C#713967-01-01	Alisha Williamson
Email:	accounting.ottawa@exp.com; Karen.Burke@exp.com;	Email:	mark.mccalla@exp.com	Site #:			
				Sampled By:	ML		

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

Regulation 153 (2011)	Other Regulations	Special Instructions
☐ Table 1 ☒ Res/Park ☐ Medium/Fine ☐ Table 2 ☐ Ind/Comm ☒ Coarse ☒ Table 3 ☐ Agri/Other ☒ For RSC ☐ Table ___	☐ CCME ☐ Sanitary Sewer Bylaw ☐ Reg 558 ☐ Storm Sewer Bylaw ☐ MISA Municipality ___ ☐ PWQO ☐ Other ___	

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

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT: ☒
(will be applied if Rush TAT is not specified)
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ___ Time Required: ___ ☐
Rush Confirmation Number: ___ *(call lab for #)*

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O.Reg 153 VOCs by HS & F1-F4 (Soil)	O.Reg 153 PAHs (Soil)	O.Reg 153 ICPMS Metals (Soil)	# of Bottles	Comments
1		MW19-6 SS3	Apr. 25/19	AM	S.		X	X	X	4	
2		MW19-7 SS4	Apr. 24/19	AM	S		X	X	X	4	
3										4	
4		MW19-8 SS4	Apr. 25/19	PM	S		X	X	X	4	
5		BH15 SS3	Apr. 25/19	AM	S		X	X	X	4	
6		MW19-9 SS5	Apr. 24/19	AM	S		X	X	X	4	
7		MW19-10 SS2	Apr. 25/19	PM	S		X	X	X	4	
8		MW19-10 SS7	Apr. 25/19	PM	S		X	X	X	4	
9		MW19-12 SS6	Apr. 25/19	PM	S		X	X	X	4	
10											

26-Apr-19 16:40
Alisha Williamson
B9B1459

on ice

RECEIVED IN OTTAWA

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Mark McCalla	2019/04/26		Serge Leger	19/04/26	16:40	

Laboratory Use Only

Time Sensitive	Temperature (°C) on Recei	Custody Seal	Yes	No
	13, 10, 13	Present		
		Intact	X	

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'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.MAXXAM.CA/TERMS.

* 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 HTTP://MAXXAM.CA/WP-CONTENT/UPLOADS/ONTARIO-COC.PDF.

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

White: Maxxa Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

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Maxxam Analytics International Corporation o/a Maxxam Analytics
6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel:(905) 817-5700 Toll-free:800-563-6266 Fax:(905) 817-5777 www.maxxam.ca

CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE TO:
Company Name: #17498 exp Services Inc
Attention: Accounts Payable
Address: 100-2650 Queensview Drive, Ottawa ON K2B 8H6
Tel: (613) 688-1899 Fax: (613) 225-7337
Email: accounting.ottawa@exp.com; Karen.Burke@exp.com;

REPORT TO:
Company Name:
Attention: Mark McCalla
Address:
Tel: Fax:
Email: mark.mccalla@exp.com

PROJECT INFORMATION:
Quotation #: B91718 Stream 3.
P.O. #:
Project: OTT-00252625-A0
Project Name:
Site #:
Sampled By: ML

Laboratory Use Only:
Maxxam Job #: Bottle Order #: 713967
COC #: C#713967-01-01 Project Manager: Alisha Williamson

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM 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 ☐ Other

Special Instructions

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

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

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	O.Reg 153 VOCs by HS & F1-F4 (Soil)	O.Reg 153 PAHs (Soil)	O.Reg 153 ICPMS Metals (Soil)	# of Bottles	Comments
1		MW19-6 553	Apr. 25/19	AM	S.	X	X	X	4	
2		MW19-7 554	Apr. 24/19	AM	S	X	X	X	4	
3									4	
4		MW19-8 554	Apr. 25/19	PM	S	X	X	X	4	
5		BH15 553	Apr. 25/19	AM	S	X	X	X	4	
6		MW19-9 555	Apr. 24/19	AM	S	X	X	X	4	
7		MW19-10 552	Apr. 25/19	PM	S	X	X	X	4	
8		MW19-10 557	Apr. 25/19	PM	S	X	X	X	4	
9		MW19-12 556	Apr. 25/19	PM	S	X	X	X	4	
10										

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 #)*

26-Apr-19 16:40
Alisha Williamson
B9B1459

on ice

RECEIVED IN OTTAWA

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Mark McCalla	2019/04/26		[illegible]	19/04/26	16:40	
			[illegible]	2019/04/30	08:00	

Laboratory Use Only
Time Sensitive
Temperature (°C) on Recei: 13, 10, 13
Custody Seal: Present ☐ Intact ☒ — Yes ☒ No ☐

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'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.MAXXAM.CA/TERMS.

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8/5/17

** SAMPLE CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT HTTP://MAXXAM.CA/WP-CONTENT/UPLOADS/ONTARIO-COC.PDF.

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

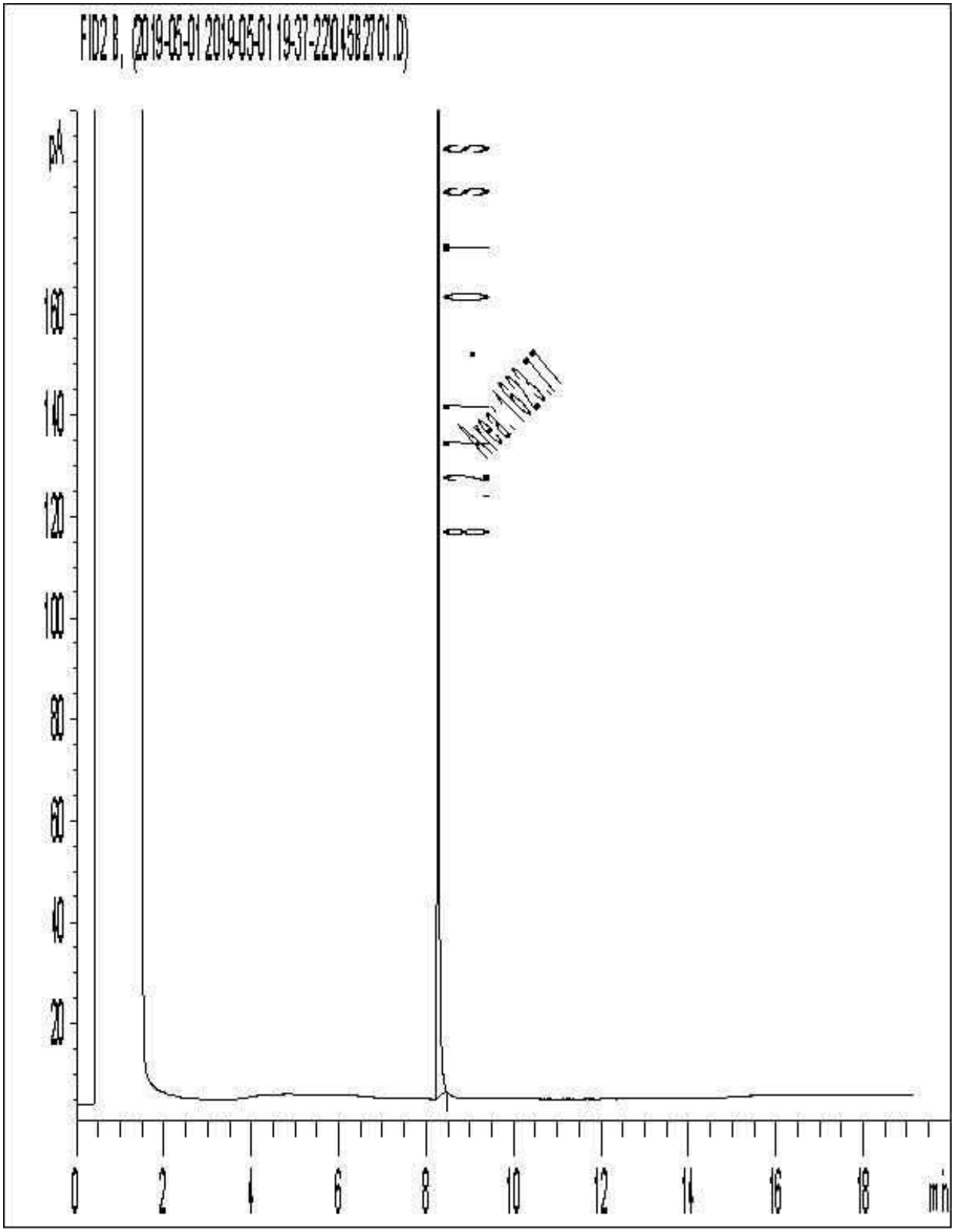
White: Maxxa Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B9B1459
Report Date: 2019/05/03
Maxxam Sample: JOH666

exp Services Inc
Client Project #: OTT-00252625-A0
Client ID: MW19-6 SS3

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

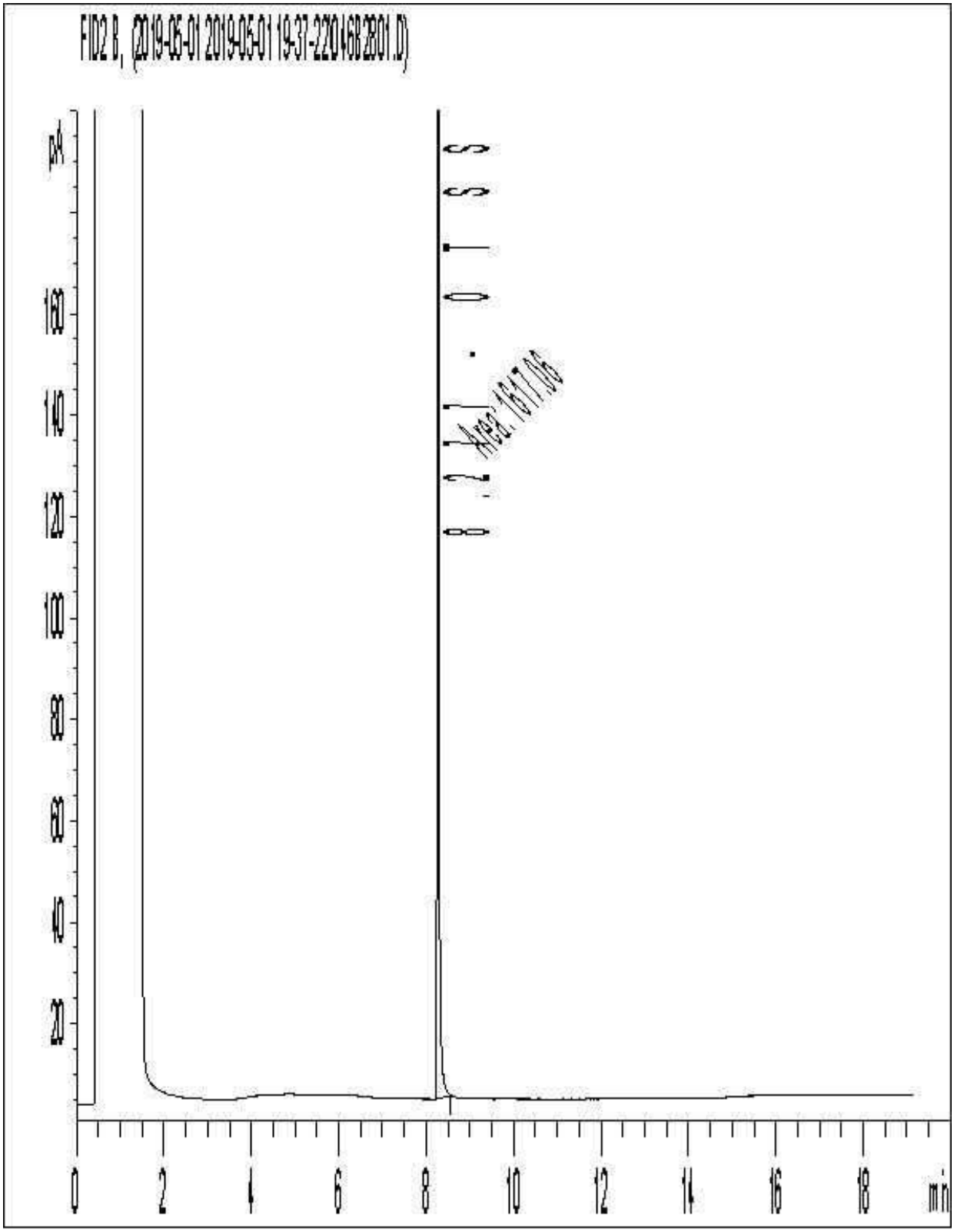


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B9B1459
Report Date: 2019/05/03
Maxxam Sample: JOH667

exp Services Inc
Client Project #: OTT-00252625-A0
Client ID: MW19-7 SS4

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

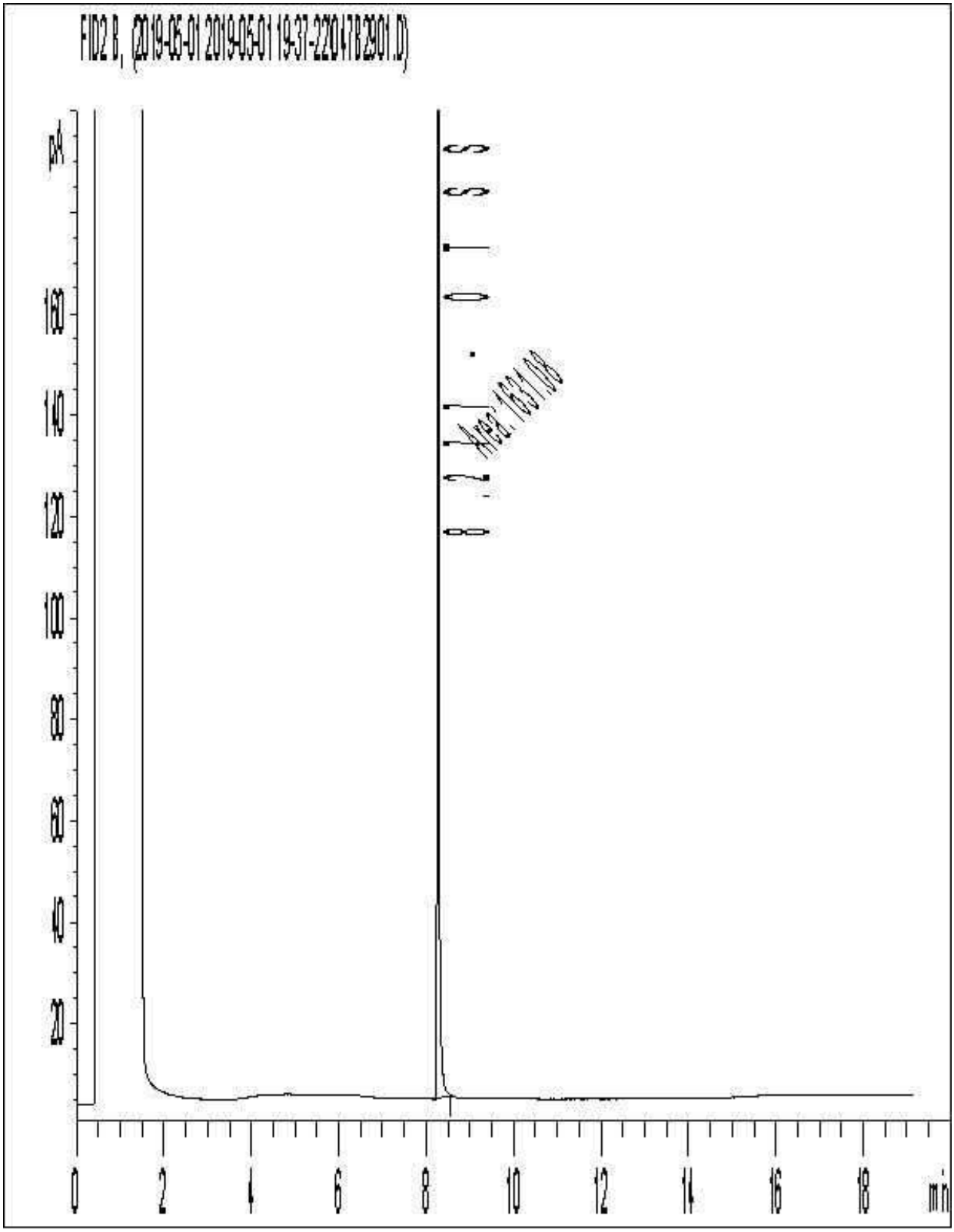


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B9B1459
Report Date: 2019/05/03
Maxxam Sample: JOH668

exp Services Inc
Client Project #: OTT-00252625-A0
Client ID: MW19-8 SS4

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

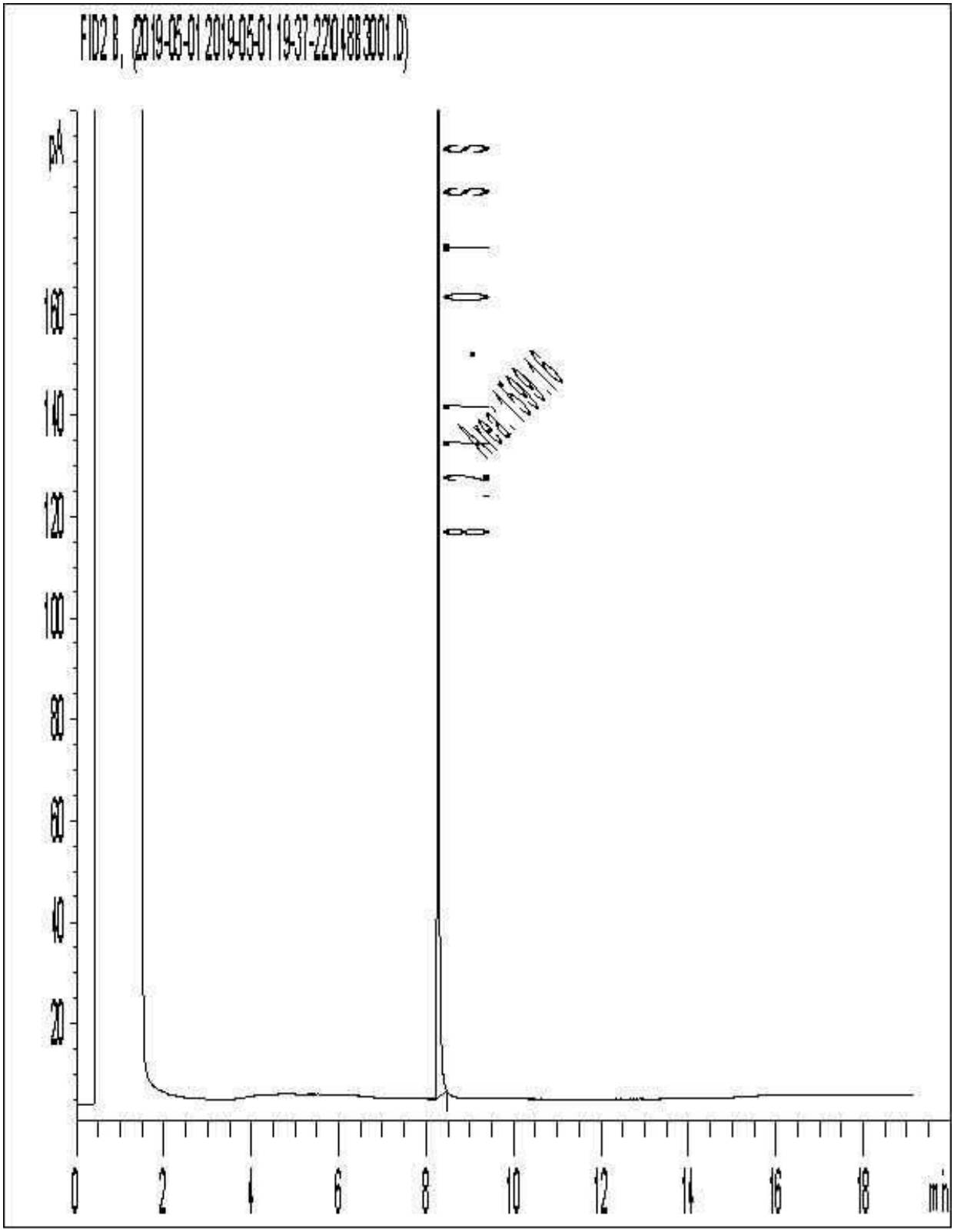


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B9B1459
Report Date: 2019/05/03
Maxxam Sample: JOH669

exp Services Inc
Client Project #: OTT-00252625-A0
Client ID: BH15-SS3

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

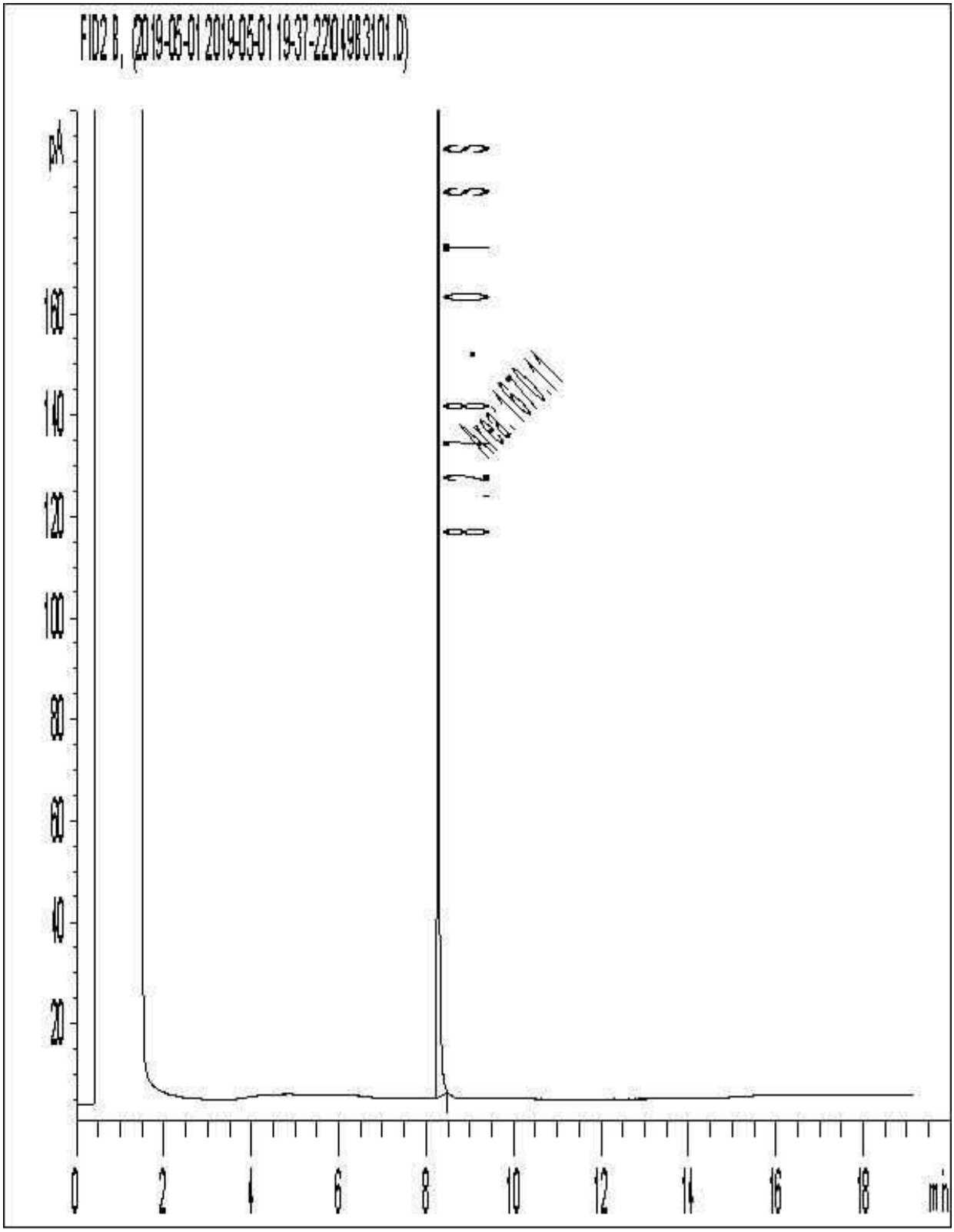


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B9B1459
Report Date: 2019/05/03
Maxxam Sample: JOH670

exp Services Inc
Client Project #: OTT-00252625-A0
Client ID: MW19-9 SS5

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

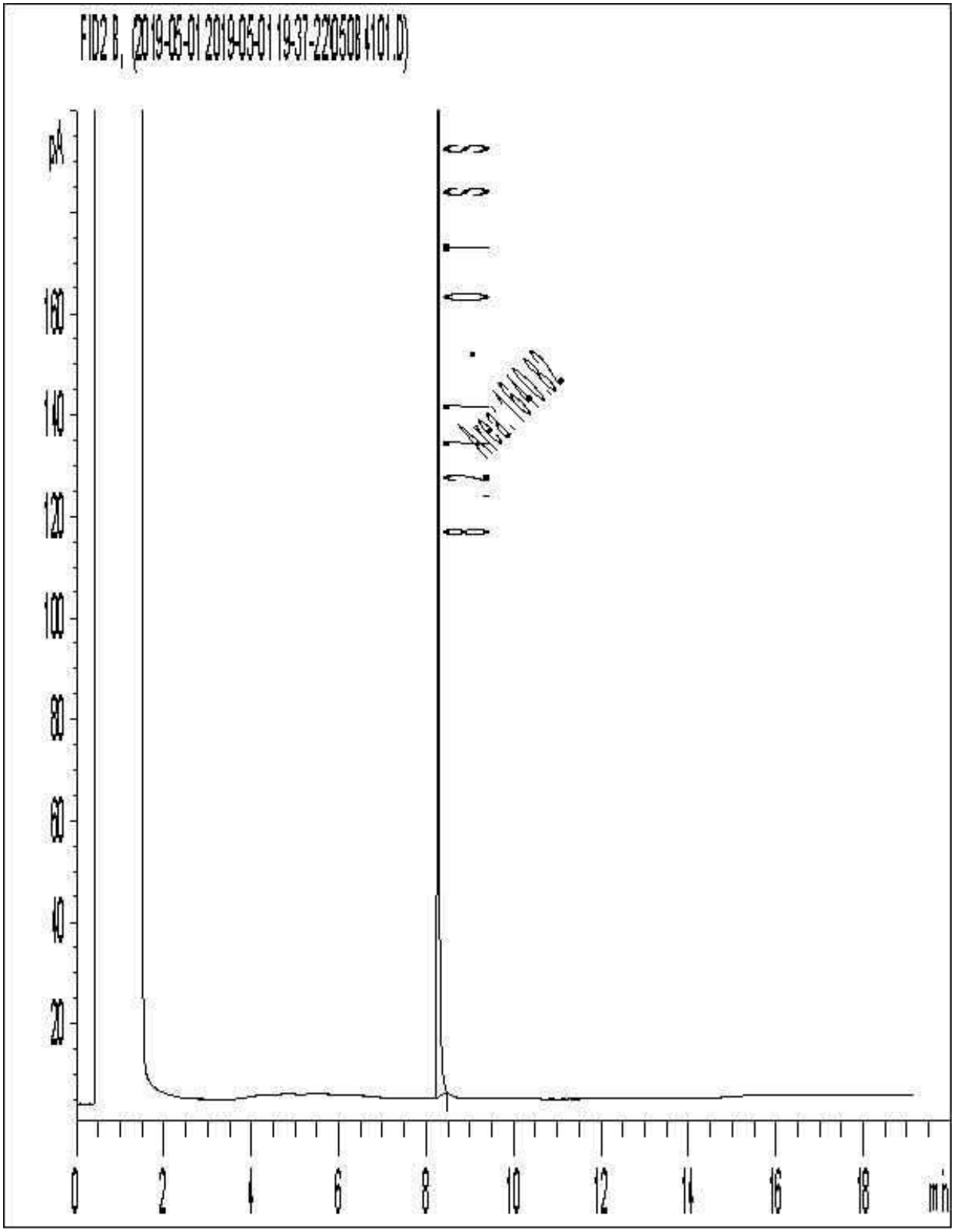


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B9B1459
Report Date: 2019/05/03
Maxxam Sample: JOH671

exp Services Inc
Client Project #: OTT-00252625-A0
Client ID: MW19-10 SS2

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

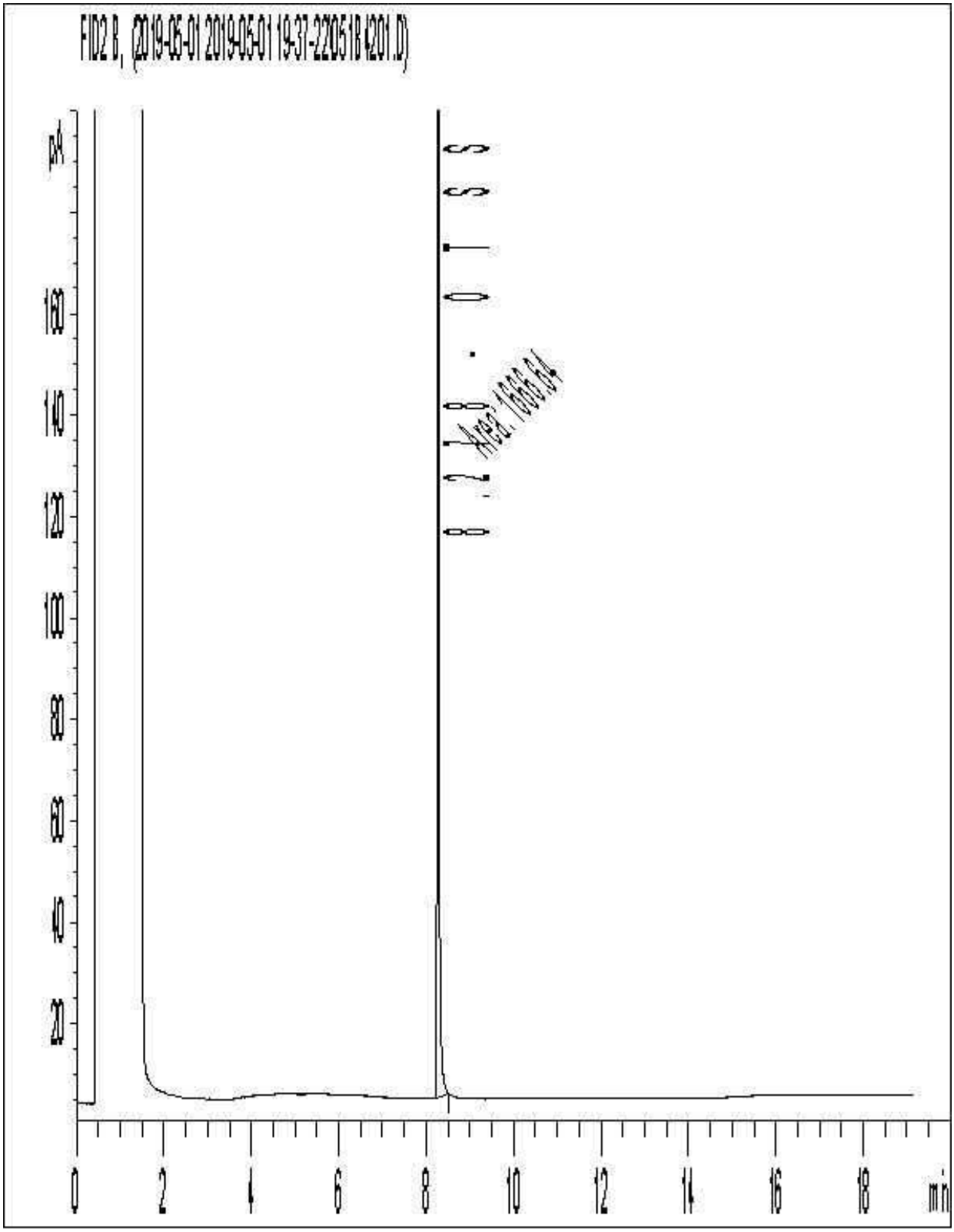


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B9B1459
Report Date: 2019/05/03
Maxxam Sample: JOH672

exp Services Inc
Client Project #: OTT-00252625-A0
Client ID: MW19-10 SS7

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

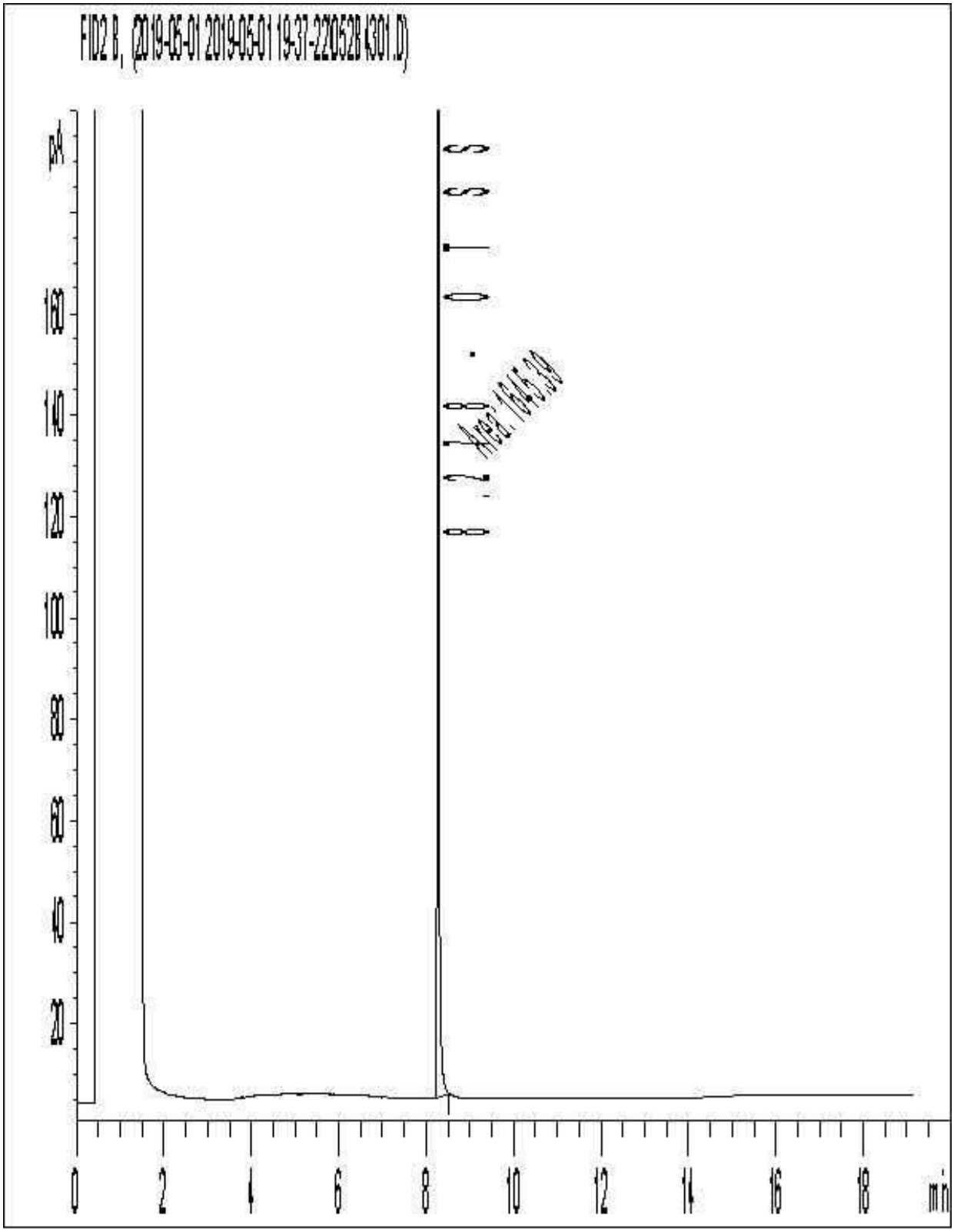


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B9B1459
Report Date: 2019/05/03
Maxxam Sample: JOH673

exp Services Inc
Client Project #: OTT-00252625-A0
Client ID: MW19-12 SS6

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



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

Your Project #: OTT-00252625-AO
Your C.O.C. #: 117555

Attention: Mark McCalla

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

Report Date: 2019/05/08
Report #: R5702276
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B9B4447
Received: 2019/05/01, 10:40

Sample Matrix: Soil
Samples Received: 6

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum (1)	5	N/A	2019/05/06	CAM SOP-00301	EPA 8270D m
Methylnaphthalene Sum (1)	1	N/A	2019/05/07	CAM SOP-00301	EPA 8270D m
Hot Water Extractable Boron (1)	3	2019/05/03	2019/05/06	CAM SOP-00408	R153 Ana. Prot. 2011
1,3-Dichloropropene Sum	6	N/A	2019/05/07	OTT SOP-00002	EPA 8260C m
Free (WAD) Cyanide (1)	3	2019/05/02	2019/05/03	CAM SOP-00457	OMOE E3015 m
Conductivity (1)	3	2019/05/06	2019/05/06	CAM SOP-00414	OMOE E3530 v1 m
Hexavalent Chromium in Soil by IC (1, 2)	3	2019/05/03	2019/05/07	CAM SOP-00436	EPA 3060/7199 m
Petroleum Hydrocarbons F2-F4 in Soil (3)	3	2019/05/02	2019/05/07	OTT SOP-00001	CCME CWS
Petroleum Hydrocarbons F2-F4 in Soil (3)	3	2019/05/02	2019/05/08	OTT SOP-00001	CCME CWS
Strong Acid Leachable Metals by ICPMS (1)	3	2019/05/03	2019/05/03	CAM SOP-00447	EPA 6020B m
Strong Acid Leachable Metals by ICPMS (1)	3	2019/05/07	2019/05/07	CAM SOP-00447	EPA 6020B m
Moisture	2	N/A	2019/05/06	CAM SOP-00445	McKeague 2nd ed 1978
Moisture	1	N/A	2019/05/07	CAM SOP-00445	McKeague 2nd ed 1978
Moisture (1)	3	N/A	2019/05/02	CAM SOP-00445	Carter 2nd ed 51.2 m
PAH Compounds in Soil by GC/MS (SIM) (1)	6	2019/05/02	2019/05/03	CAM SOP-00318	EPA 8270D m
pH CaCl2 EXTRACT (1)	3	2019/05/03	2019/05/03	CAM SOP-00413	EPA 9045 D m
Sodium Adsorption Ratio (SAR) (1)	3	N/A	2019/05/06	CAM SOP-00102	EPA 6010C
Volatile Organic Compounds and F1 PHCs	6	N/A	2019/05/07	OTT SOP-00002	EPA 8260C m

Remarks:

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

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam 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.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam 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 Maxxam, unless otherwise agreed in writing. Maxxam is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their

Your Project #: OTT-00252625-AO
Your C.O.C. #: 117555

Attention: Mark McCalla

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

Report Date: 2019/05/08
Report #: R5702276
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B9B4447
Received: 2019/05/01, 10:40
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 Maxxam, 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 Maxxam Analytics Mississauga
(2) Soils are reported on a dry weight basis unless otherwise specified.
(3) All CCME PHC results met required criteria unless otherwise stated in the report. The CWS PHC methods employed by Maxxam 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.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Alisha Williamson, Project Manager
Email: AWilliamson@maxxam.ca
Phone# (613) 274-0573
==========
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B9B4447
Report Date: 2019/05/08

exp Services Inc
Client Project #: OTT-00252625-AO
Sampler Initials: ML

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			JOY434	JOY436	JOY438		
Sampling Date			2019/04/30	2019/04/30	2019/04/29		
COC Number			117555	117555	117555		
	UNITS	**Criteria**	**MW19-1 SS6**	**MW19-3 SS6**	**BH19-11 SS4**	**RDL**	**QC Batch**
Metals							
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	<0.20	0.20	6102010
Acid Extractable Arsenic (As)	ug/g	**18**	1.4	<1.0	<1.0	1.0	6102010
Acid Extractable Barium (Ba)	ug/g	**390**	61	260	77	0.50	6102010
Acid Extractable Beryllium (Be)	ug/g	**4**	0.37	0.48	0.26	0.20	6102010
Acid Extractable Boron (B)	ug/g	**120**	7.9	5.7	<5.0	5.0	6102010
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	<0.10	<0.10	0.10	6102010
Acid Extractable Chromium (Cr)	ug/g	**160**	17	32	13	1.0	6102010
Acid Extractable Cobalt (Co)	ug/g	**22**	6.1	9.9	4.8	0.10	6102010
Acid Extractable Copper (Cu)	ug/g	**140**	13	23	11	0.50	6102010
Acid Extractable Lead (Pb)	ug/g	**120**	5.4	5.1	7.6	1.0	6102010
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	1.4	0.63	<0.50	0.50	6102010
Acid Extractable Nickel (Ni)	ug/g	**100**	12	20	9.3	0.50	6102010
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	0.50	6102010
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	0.20	6102010
Acid Extractable Thallium (Tl)	ug/g	**1**	0.11	0.19	0.11	0.050	6102010
Acid Extractable Uranium (U)	ug/g	**23**	0.80	1.1	0.59	0.050	6102010
Acid Extractable Vanadium (V)	ug/g	**86**	26	47	23	5.0	6102010
Acid Extractable Zinc (Zn)	ug/g	**340**	19	49	26	5.0	6102010

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Textured Soil

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Maxxam Job #: B9B4447
Report Date: 2019/05/08

exp Services Inc
Client Project #: OTT-00252625-AO
Sampler Initials: ML

O.REG 153 METALS & INORGANICS PKG (SOIL)

Maxxam ID			JOY435	JOY437	JOY439			JOY439		
Sampling Date			2019/04/29	2019/04/30	2019/04/29			2019/04/29		
COC Number			117555	117555	117555			117555		
	UNITS	**Criteria**	**MW19-2 SS3**	**BH19-5 SS3**	**BH19-17 SS3**	**RDL**	**QC Batch**	**BH19-17 SS3 Lab-Dup**	**RDL**	**QC Batch**
Calculated Parameters										
Sodium Adsorption Ratio	N/A	**5.0**	1.9	0.76	1.9		6097343			
Inorganics										
Conductivity	mS/cm	**0.7**	0.32	0.19	0.36	0.002	6105615			
Moisture	%	**-**	12	19	20	1.0	6100712			
Available (CaCl2) pH	pH	-	7.73	6.06	7.68		6102374			
WAD Cyanide (Free)	ug/g	**0.051**	<0.01	<0.01	<0.01	0.01	6100782			
Chromium (VI)	ug/g	**8**	<0.2	<0.2	<0.2	0.2	6102072	<0.2	0.2	6102072
Metals										
Hot Water Ext. Boron (B)	ug/g	**1.5**	0.086	0.11	0.074	0.050	6102722			
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	<0.20	0.20	6107259			
Acid Extractable Arsenic (As)	ug/g	**18**	<1.0	<1.0	<1.0	1.0	6107259			
Acid Extractable Barium (Ba)	ug/g	**390**	130	78	120	0.50	6107259			
Acid Extractable Beryllium (Be)	ug/g	**4**	0.45	0.27	0.44	0.20	6107259			
Acid Extractable Boron (B)	ug/g	**120**	6.7	<5.0	6.5	5.0	6107259			
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	<0.10	<0.10	0.10	6107259			
Acid Extractable Chromium (Cr)	ug/g	**160**	30	26	29	1.0	6107259			
Acid Extractable Cobalt (Co)	ug/g	**22**	9.5	6.4	9.4	0.10	6107259			
Acid Extractable Copper (Cu)	ug/g	**140**	21	13	19	0.50	6107259			
Acid Extractable Lead (Pb)	ug/g	**120**	6.4	2.6	5.7	1.0	6107259			
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	<0.50	<0.50	0.50	6107259			
Acid Extractable Nickel (Ni)	ug/g	**100**	20	15	19	0.50	6107259			
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	0.50	6107259			
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	0.20	6107259			
Acid Extractable Thallium (Tl)	ug/g	**1**	0.19	0.091	0.17	0.050	6107259			
Acid Extractable Uranium (U)	ug/g	**23**	0.55	0.55	0.54	0.050	6107259			
Acid Extractable Vanadium (V)	ug/g	**86**	41	28	38	5.0	6107259			
Acid Extractable Zinc (Zn)	ug/g	**340**	40	28	38	5.0	6107259			
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	<0.050	0.050	6107259			

RDL = Reportable Detection Limit
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Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Textured Soil

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Maxxam Job #: B9B4447
Report Date: 2019/05/08

exp Services Inc
Client Project #: OTT-00252625-AO
Sampler Initials: ML

O.REG 153 PAHS (SOIL)

Maxxam ID			JOY434	JOY435	JOY436		JOY437		JOY438		
Sampling Date			2019/04/30	2019/04/29	2019/04/30		2019/04/30		2019/04/29		
COC Number			117555	117555	117555		117555		117555		
	UNITS	**Criteria**	**MW19-1 SS6**	**MW19-2 SS3**	**MW19-3 SS6**	**RDL**	**BH19-5 SS3**	**RDL**	**BH19-11 SS4**	**RDL**	**QC Batch**
Calculated Parameters											
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.0071	<0.0071	<0.0071	0.0071	**29**	0.35	0.65	0.0071	6097245
Polyaromatic Hydrocarbons											
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	0.0050	1.8	0.25	0.0056	0.0050	6101317
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	0.0050	**<0.25 (1)**	0.25	<0.0050	0.0050	6101317
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	0.0050	0.39	0.25	<0.0050	0.0050	6101317
Benzo(a)anthracene	ug/g	**0.5**	0.012	<0.0050	<0.0050	0.0050	<0.25	0.25	<0.0050	0.0050	6101317
Benzo(a)pyrene	ug/g	**0.3**	0.0083	<0.0050	<0.0050	0.0050	<0.25	0.25	<0.0050	0.0050	6101317
Benzo(b/j)fluoranthene	ug/g	**0.78**	0.011	<0.0050	<0.0050	0.0050	<0.25	0.25	0.0061	0.0050	6101317
Benzo(g,h,i)perylene	ug/g	**6.6**	0.0056	<0.0050	<0.0050	0.0050	<0.25	0.25	0.0053	0.0050	6101317
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	0.0050	<0.25	0.25	<0.0050	0.0050	6101317
Chrysene	ug/g	**7**	0.011	<0.0050	<0.0050	0.0050	<0.25	0.25	<0.0050	0.0050	6101317
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	0.0050	**<0.25 (1)**	0.25	<0.0050	0.0050	6101317
Fluoranthene	ug/g	**0.69**	0.023	<0.0050	<0.0050	0.0050	<0.25	0.25	0.0090	0.0050	6101317
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	0.0050	2.4	0.25	0.014	0.0050	6101317
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	0.0052	<0.0050	<0.0050	0.0050	<0.25	0.25	<0.0050	0.0050	6101317
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	0.0050	**17**	0.25	0.25	0.0050	6101317
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	0.0050	**12**	0.25	0.40	0.0050	6101317
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	0.0050	**3.6**	0.25	0.39	0.0050	6101317
Phenanthrene	ug/g	**6.2**	0.014	<0.0050	<0.0050	0.0050	5.4	0.25	0.018	0.0050	6101317
Pyrene	ug/g	**78**	0.019	<0.0050	<0.0050	0.0050	0.44	0.25	0.010	0.0050	6101317
Surrogate Recovery (%)											
D10-Anthracene	%	-	108	104	107		98		109		6101317
D14-Terphenyl (FS)	%	-	94	99	95		96		96		6101317
D8-Acenaphthylene	%	-	103	101	102		119		105		6101317

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Soil - Residential/Parkland/Institutional Property Use - Coarse Textured Soil
(1) RDL exceeds criteria

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O.REG 153 PAHS (SOIL)

Maxxam ID			JOY439		
Sampling Date			2019/04/29		
COC Number			117555		
	UNITS	**Criteria**	**BH19-17 SS3**	**RDL**	**QC Batch**
Calculated Parameters					
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.0071	0.0071	6097245
Polyaromatic Hydrocarbons					
Acenaphthene	ug/g	**7.9**	<0.0050	0.0050	6101317
Acenaphthylene	ug/g	**0.15**	<0.0050	0.0050	6101317
Anthracene	ug/g	**0.67**	<0.0050	0.0050	6101317
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	0.0050	6101317
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	0.0050	6101317
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	0.0050	6101317
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	0.0050	6101317
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	0.0050	6101317
Chrysene	ug/g	**7**	<0.0050	0.0050	6101317
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	0.0050	6101317
Fluoranthene	ug/g	**0.69**	<0.0050	0.0050	6101317
Fluorene	ug/g	**62**	<0.0050	0.0050	6101317
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	0.0050	6101317
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	0.0050	6101317
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	0.0050	6101317
Naphthalene	ug/g	**0.6**	<0.0050	0.0050	6101317
Phenanthrene	ug/g	**6.2**	<0.0050	0.0050	6101317
Pyrene	ug/g	**78**	<0.0050	0.0050	6101317
Surrogate Recovery (%)					
D10-Anthracene	%	-	106		6101317
D14-Terphenyl (FS)	%	-	102		6101317
D8-Acenaphthylene	%	-	99		6101317

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Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
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Maxxam Job #: B9B4447
Report Date: 2019/05/08

exp Services Inc
Client Project #: OTT-00252625-AO
Sampler Initials: ML

O.REG 153 VOCS BY HS & F1-F4 (SOIL)

Maxxam ID			JOY434			JOY434			JOY435		
Sampling Date			2019/04/30			2019/04/30			2019/04/29		
COC Number			117555			117555			117555		
	UNITS	**Criteria**	**MW19-1 SS6**	**RDL**	**QC Batch**	**MW19-1 SS6 Lab-Dup**	**RDL**	**QC Batch**	**MW19-2 SS3**	**RDL**	**QC Batch**
Inorganics											
Moisture	%	-	9.6	0.2	6100729						
Calculated Parameters											
1,3-Dichloropropene (cis+trans)	ug/g	**0.05**	<0.050	0.050	6098010				<0.050	0.050	6098010
Volatile Organics											
Acetone (2-Propanone)	ug/g	**16**	<0.50	0.50	6105049	<0.50	0.50	6105049	<0.50	0.50	6105049
Benzene	ug/g	**0.21**	<0.020	0.020	6105049	<0.020	0.020	6105049	<0.020	0.020	6105049
Bromodichloromethane	ug/g	**13**	<0.050	0.050	6105049	<0.050	0.050	6105049	<0.050	0.050	6105049
Bromoform	ug/g	**0.27**	<0.050	0.050	6105049	<0.050	0.050	6105049	<0.050	0.050	6105049
Bromomethane	ug/g	**0.05**	<0.050	0.050	6105049	<0.050	0.050	6105049	<0.050	0.050	6105049
Carbon Tetrachloride	ug/g	**0.05**	<0.050	0.050	6105049	<0.050	0.050	6105049	<0.050	0.050	6105049
Chlorobenzene	ug/g	**2.4**	<0.050	0.050	6105049	<0.050	0.050	6105049	<0.050	0.050	6105049
Chloroform	ug/g	**0.05**	<0.050	0.050	6105049	<0.050	0.050	6105049	<0.050	0.050	6105049
Dibromochloromethane	ug/g	**9.4**	<0.050	0.050	6105049	<0.050	0.050	6105049	<0.050	0.050	6105049
1,2-Dichlorobenzene	ug/g	**3.4**	<0.050	0.050	6105049	<0.050	0.050	6105049	<0.050	0.050	6105049
1,3-Dichlorobenzene	ug/g	**4.8**	<0.050	0.050	6105049	<0.050	0.050	6105049	<0.050	0.050	6105049
1,4-Dichlorobenzene	ug/g	**0.083**	<0.050	0.050	6105049	<0.050	0.050	6105049	<0.050	0.050	6105049
Dichlorodifluoromethane (FREON 12)	ug/g	**16**	<0.050	0.050	6105049	<0.050	0.050	6105049	<0.050	0.050	6105049
1,1-Dichloroethane	ug/g	**3.5**	<0.050	0.050	6105049	<0.050	0.050	6105049	<0.050	0.050	6105049
1,2-Dichloroethane	ug/g	**0.05**	<0.050	0.050	6105049	<0.050	0.050	6105049	<0.050	0.050	6105049
1,1-Dichloroethylene	ug/g	**0.05**	<0.050	0.050	6105049	<0.050	0.050	6105049	<0.050	0.050	6105049
cis-1,2-Dichloroethylene	ug/g	**3.4**	<0.050	0.050	6105049	<0.050	0.050	6105049	<0.050	0.050	6105049
trans-1,2-Dichloroethylene	ug/g	**0.084**	<0.050	0.050	6105049	<0.050	0.050	6105049	<0.050	0.050	6105049
1,2-Dichloropropane	ug/g	**0.05**	<0.050	0.050	6105049	<0.050	0.050	6105049	<0.050	0.050	6105049
cis-1,3-Dichloropropene	ug/g	**0.05**	<0.030	0.030	6105049	<0.030	0.030	6105049	<0.030	0.030	6105049
trans-1,3-Dichloropropene	ug/g	**0.05**	<0.040	0.040	6105049	<0.040	0.040	6105049	<0.040	0.040	6105049
Ethylbenzene	ug/g	**2**	<0.020	0.020	6105049	<0.020	0.020	6105049	<0.020	0.020	6105049
Ethylene Dibromide	ug/g	**0.05**	<0.050	0.050	6105049	<0.050	0.050	6105049	<0.050	0.050	6105049
Hexane	ug/g	**2.8**	<0.050	0.050	6105049	<0.050	0.050	6105049	<0.050	0.050	6105049
Methylene Chloride(Dichloromethane)	ug/g	**0.1**	<0.050	0.050	6105049	<0.050	0.050	6105049	<0.050	0.050	6105049
Methyl Ethyl Ketone (2-Butanone)	ug/g	**16**	<0.50	0.50	6105049	<0.50	0.50	6105049	<0.50	0.50	6105049

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Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
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Sampler Initials: ML

O.REG 153 VOCS BY HS & F1-F4 (SOIL)

Maxxam ID			JOY434			JOY434			JOY435		
Sampling Date			2019/04/30			2019/04/30			2019/04/29		
COC Number			117555			117555			117555		
	UNITS	**Criteria**	**MW19-1 SS6**	**RDL**	**QC Batch**	**MW19-1 SS6 Lab-Dup**	**RDL**	**QC Batch**	**MW19-2 SS3**	**RDL**	**QC Batch**
Methyl Isobutyl Ketone	ug/g	**1.7**	<0.50	0.50	6105049	<0.50	0.50	6105049	<0.50	0.50	6105049
Methyl t-butyl ether (MTBE)	ug/g	**0.75**	<0.050	0.050	6105049	<0.050	0.050	6105049	<0.050	0.050	6105049
Styrene	ug/g	**0.7**	<0.050	0.050	6105049	<0.050	0.050	6105049	<0.050	0.050	6105049
1,1,1,2-Tetrachloroethane	ug/g	**0.058**	<0.050	0.050	6105049	<0.050	0.050	6105049	<0.050	0.050	6105049
1,1,2,2-Tetrachloroethane	ug/g	**0.05**	<0.050	0.050	6105049	<0.050	0.050	6105049	<0.050	0.050	6105049
Tetrachloroethylene	ug/g	**0.28**	<0.050	0.050	6105049	<0.050	0.050	6105049	<0.050	0.050	6105049
Toluene	ug/g	**2.3**	<0.020	0.020	6105049	<0.020	0.020	6105049	<0.020	0.020	6105049
1,1,1-Trichloroethane	ug/g	**0.38**	<0.050	0.050	6105049	<0.050	0.050	6105049	<0.050	0.050	6105049
1,1,2-Trichloroethane	ug/g	**0.05**	<0.050	0.050	6105049	<0.050	0.050	6105049	<0.050	0.050	6105049
Trichloroethylene	ug/g	**0.061**	<0.050	0.050	6105049	<0.050	0.050	6105049	<0.050	0.050	6105049
Trichlorofluoromethane (FREON 11)	ug/g	**4**	<0.050	0.050	6105049	<0.050	0.050	6105049	<0.050	0.050	6105049
Vinyl Chloride	ug/g	**0.02**	<0.020	0.020	6105049	<0.020	0.020	6105049	<0.020	0.020	6105049
p+m-Xylene	ug/g	-	<0.020	0.020	6105049	<0.020	0.020	6105049	<0.020	0.020	6105049
o-Xylene	ug/g	-	<0.020	0.020	6105049	<0.020	0.020	6105049	<0.020	0.020	6105049
Total Xylenes	ug/g	**3.1**	<0.020	0.020	6105049	<0.020	0.020	6105049	<0.020	0.020	6105049
F1 (C6-C10)	ug/g	**55**	<10	10	6105049	<10	10	6105049	<10	10	6105049
F1 (C6-C10) - BTEX	ug/g	**55**	<10	10	6105049	<10	10	6105049	<10	10	6105049
F2-F4 Hydrocarbons											
F2 (C10-C16 Hydrocarbons)	ug/g	**98**	<10	10	6100721				<10	10	6100721
F3 (C16-C34 Hydrocarbons)	ug/g	**300**	<50	50	6100721				<50	50	6100721
F4 (C34-C50 Hydrocarbons)	ug/g	**2800**	<50	50	6100721				<50	50	6100721
Reached Baseline at C50	ug/g	-	Yes		6100721				Yes		6100721
Surrogate Recovery (%)											
o-Terphenyl	%	-	94		6100721				92		6100721
4-Bromofluorobenzene	%	-	98		6105049	96		6105049	95		6105049
D10-o-Xylene	%	-	119		6105049	99		6105049	121		6105049
D4-1,2-Dichloroethane	%	-	92		6105049	93		6105049	93		6105049
D8-Toluene	%	-	106		6105049	101		6105049	102		6105049

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Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Textured Soil

Maxxam Analytics International Corporation o/a Maxxam Analytics 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxam.ca

Maxxam Job #: B9B4447
Report Date: 2019/05/08

exp Services Inc
Client Project #: OTT-00252625-AO
Sampler Initials: ML

O.REG 153 VOCS BY HS & F1-F4 (SOIL)

Maxxam ID			JOY436			JOY437			JOY438		
Sampling Date			2019/04/30			2019/04/30			2019/04/29		
COC Number			117555			117555			117555		
	UNITS	**Criteria**	**MW19-3 SS6**	**RDL**	**QC Batch**	**BH19-5 SS3**	**RDL**	**QC Batch**	**BH19-11 SS4**	**RDL**	**QC Batch**
Inorganics											
Moisture	%	-	21	0.2	6100729				8.1	0.2	6106138
Calculated Parameters											
1,3-Dichloropropene (cis+trans)	ug/g	**0.05**	<0.050	0.050	6098010	<0.050	0.050	6098010	<0.050	0.050	6098010
Volatile Organics											
Acetone (2-Propanone)	ug/g	**16**	<0.50	0.50	6105049	<0.50	0.50	6105049	<0.50	0.50	6105049
Benzene	ug/g	**0.21**	<0.020	0.020	6105049	<0.020	0.020	6105049	<0.020	0.020	6105049
Bromodichloromethane	ug/g	**13**	<0.050	0.050	6105049	<0.050	0.050	6105049	<0.050	0.050	6105049
Bromoform	ug/g	**0.27**	<0.050	0.050	6105049	<0.050	0.050	6105049	<0.050	0.050	6105049
Bromomethane	ug/g	**0.05**	<0.050	0.050	6105049	<0.050	0.050	6105049	<0.050	0.050	6105049
Carbon Tetrachloride	ug/g	**0.05**	<0.050	0.050	6105049	<0.050	0.050	6105049	<0.050	0.050	6105049
Chlorobenzene	ug/g	**2.4**	<0.050	0.050	6105049	<0.050	0.050	6105049	<0.050	0.050	6105049
Chloroform	ug/g	**0.05**	<0.050	0.050	6105049	<0.050	0.050	6105049	<0.050	0.050	6105049
Dibromochloromethane	ug/g	**9.4**	<0.050	0.050	6105049	<0.050	0.050	6105049	<0.050	0.050	6105049
1,2-Dichlorobenzene	ug/g	**3.4**	<0.050	0.050	6105049	<0.050	0.050	6105049	<0.050	0.050	6105049
1,3-Dichlorobenzene	ug/g	**4.8**	<0.050	0.050	6105049	<0.050	0.050	6105049	<0.050	0.050	6105049
1,4-Dichlorobenzene	ug/g	**0.083**	<0.050	0.050	6105049	<0.050	0.050	6105049	<0.050	0.050	6105049
Dichlorodifluoromethane (FREON 12)	ug/g	**16**	<0.050	0.050	6105049	<0.050	0.050	6105049	<0.050	0.050	6105049
1,1-Dichloroethane	ug/g	**3.5**	<0.050	0.050	6105049	<0.050	0.050	6105049	<0.050	0.050	6105049
1,2-Dichloroethane	ug/g	**0.05**	<0.050	0.050	6105049	<0.050	0.050	6105049	<0.050	0.050	6105049
1,1-Dichloroethylene	ug/g	**0.05**	<0.050	0.050	6105049	<0.050	0.050	6105049	<0.050	0.050	6105049
cis-1,2-Dichloroethylene	ug/g	**3.4**	<0.050	0.050	6105049	<0.050	0.050	6105049	<0.050	0.050	6105049
trans-1,2-Dichloroethylene	ug/g	**0.084**	<0.050	0.050	6105049	<0.050	0.050	6105049	<0.050	0.050	6105049
1,2-Dichloropropane	ug/g	**0.05**	<0.050	0.050	6105049	<0.050	0.050	6105049	<0.050	0.050	6105049
cis-1,3-Dichloropropene	ug/g	**0.05**	<0.030	0.030	6105049	<0.030	0.030	6105049	<0.030	0.030	6105049
trans-1,3-Dichloropropene	ug/g	**0.05**	<0.040	0.040	6105049	<0.040	0.040	6105049	<0.040	0.040	6105049
Ethylbenzene	ug/g	**2**	<0.020	0.020	6105049	0.58	0.020	6105049	0.041	0.020	6105049
Ethylene Dibromide	ug/g	**0.05**	<0.050	0.050	6105049	<0.050	0.050	6105049	<0.050	0.050	6105049
Hexane	ug/g	**2.8**	<0.050	0.050	6105049	<0.050	0.050	6105049	<0.050	0.050	6105049
Methylene Chloride(Dichloromethane)	ug/g	**0.1**	<0.050	0.050	6105049	<0.050	0.050	6105049	<0.050	0.050	6105049
Methyl Ethyl Ketone (2-Butanone)	ug/g	**16**	<0.50	0.50	6105049	<0.50	0.50	6105049	<0.50	0.50	6105049
Methyl Isobutyl Ketone	ug/g	**1.7**	<0.50	0.50	6105049	<0.50	0.50	6105049	<0.50	0.50	6105049

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Textured Soil

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Maxxam Job #: B9B4447
Report Date: 2019/05/08

exp Services Inc
Client Project #: OTT-00252625-AO
Sampler Initials: ML

O.REG 153 VOCS BY HS & F1-F4 (SOIL)

Maxxam ID			JOY436			JOY437			JOY438		
Sampling Date			2019/04/30			2019/04/30			2019/04/29		
COC Number			117555			117555			117555		
	UNITS	**Criteria**	**MW19-3 SS6**	**RDL**	**QC Batch**	**BH19-5 SS3**	**RDL**	**QC Batch**	**BH19-11 SS4**	**RDL**	**QC Batch**
Methyl t-butyl ether (MTBE)	ug/g	**0.75**	<0.050	0.050	6105049	<0.050	0.050	6105049	<0.050	0.050	6105049
Styrene	ug/g	**0.7**	<0.050	0.050	6105049	<0.050	0.050	6105049	<0.050	0.050	6105049
1,1,1,2-Tetrachloroethane	ug/g	**0.058**	<0.050	0.050	6105049	<0.050	0.050	6105049	<0.050	0.050	6105049
1,1,2,2-Tetrachloroethane	ug/g	**0.05**	<0.050	0.050	6105049	<0.050	0.050	6105049	<0.050	0.050	6105049
Tetrachloroethylene	ug/g	**0.28**	<0.050	0.050	6105049	<0.050	0.050	6105049	<0.050	0.050	6105049
Toluene	ug/g	**2.3**	<0.020	0.020	6105049	<0.020	0.020	6105049	<0.020	0.020	6105049
1,1,1-Trichloroethane	ug/g	**0.38**	<0.050	0.050	6105049	<0.050	0.050	6105049	<0.050	0.050	6105049
1,1,2-Trichloroethane	ug/g	**0.05**	<0.050	0.050	6105049	<0.050	0.050	6105049	<0.050	0.050	6105049
Trichloroethylene	ug/g	**0.061**	<0.050	0.050	6105049	<0.050	0.050	6105049	<0.050	0.050	6105049
Trichlorofluoromethane (FREON 11)	ug/g	**4**	<0.050	0.050	6105049	<0.050	0.050	6105049	<0.050	0.050	6105049
Vinyl Chloride	ug/g	**0.02**	<0.020	0.020	6105049	<0.020	0.020	6105049	<0.020	0.020	6105049
p+m-Xylene	ug/g	-	<0.020	0.020	6105049	0.34	0.020	6105049	0.028	0.020	6105049
o-Xylene	ug/g	-	<0.020	0.020	6105049	0.17	0.020	6105049	<0.020	0.020	6105049
Total Xylenes	ug/g	**3.1**	<0.020	0.020	6105049	0.51	0.020	6105049	0.028	0.020	6105049
F1 (C6-C10)	ug/g	**55**	<10	10	6105049	**140**	10	6105049	<10	10	6105049
F1 (C6-C10) - BTEX	ug/g	**55**	<10	10	6105049	**140**	10	6105049	<10	10	6105049
F2-F4 Hydrocarbons											
F2 (C10-C16 Hydrocarbons)	ug/g	**98**	<10	10	6100721	**1400**	10	6100721	<10	10	6100721
F3 (C16-C34 Hydrocarbons)	ug/g	**300**	<50	50	6100721	**870**	50	6100721	<50	50	6100721
F4 (C34-C50 Hydrocarbons)	ug/g	**2800**	<50	50	6100721	<50	50	6100721	<50	50	6100721
Reached Baseline at C50	ug/g	-	Yes		6100721	Yes		6100721	Yes		6100721
Surrogate Recovery (%)											
o-Terphenyl	%	-	93		6100721	97		6100721	91		6100721
4-Bromofluorobenzene	%	-	98		6105049	100		6105049	103		6105049
D10-o-Xylene	%	-	106		6105049	106		6105049	111		6105049
D4-1,2-Dichloroethane	%	-	99		6105049	96		6105049	108		6105049
D8-Toluene	%	-	100		6105049	105		6105049	95		6105049

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
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O.REG 153 VOCS BY HS & F1-F4 (SOIL)

Maxxam ID			JOY438			JOY439		
Sampling Date			2019/04/29			2019/04/29		
COC Number			117555			117555		
	UNITS	**Criteria**	**BH19-11 SS4 Lab-Dup**	**RDL**	**QC Batch**	**BH19-17 SS3**	**RDL**	**QC Batch**
Inorganics								
Moisture	%	-	8.6	0.2	6106138			
Calculated Parameters								
1,3-Dichloropropene (cis+trans)	ug/g	**0.05**				<0.050	0.050	6098010
Volatile Organics								
Acetone (2-Propanone)	ug/g	**16**				<0.50	0.50	6105049
Benzene	ug/g	**0.21**				<0.020	0.020	6105049
Bromodichloromethane	ug/g	**13**				<0.050	0.050	6105049
Bromoform	ug/g	**0.27**				<0.050	0.050	6105049
Bromomethane	ug/g	**0.05**				<0.050	0.050	6105049
Carbon Tetrachloride	ug/g	**0.05**				<0.050	0.050	6105049
Chlorobenzene	ug/g	**2.4**				<0.050	0.050	6105049
Chloroform	ug/g	**0.05**				<0.050	0.050	6105049
Dibromochloromethane	ug/g	**9.4**				<0.050	0.050	6105049
1,2-Dichlorobenzene	ug/g	**3.4**				<0.050	0.050	6105049
1,3-Dichlorobenzene	ug/g	**4.8**				<0.050	0.050	6105049
1,4-Dichlorobenzene	ug/g	**0.083**				<0.050	0.050	6105049
Dichlorodifluoromethane (FREON 12)	ug/g	**16**				<0.050	0.050	6105049
1,1-Dichloroethane	ug/g	**3.5**				<0.050	0.050	6105049
1,2-Dichloroethane	ug/g	**0.05**				<0.050	0.050	6105049
1,1-Dichloroethylene	ug/g	**0.05**				<0.050	0.050	6105049
cis-1,2-Dichloroethylene	ug/g	**3.4**				<0.050	0.050	6105049
trans-1,2-Dichloroethylene	ug/g	**0.084**				<0.050	0.050	6105049
1,2-Dichloropropane	ug/g	**0.05**				<0.050	0.050	6105049
cis-1,3-Dichloropropene	ug/g	**0.05**				<0.030	0.030	6105049
trans-1,3-Dichloropropene	ug/g	**0.05**				<0.040	0.040	6105049
Ethylbenzene	ug/g	**2**				<0.020	0.020	6105049
Ethylene Dibromide	ug/g	**0.05**				<0.050	0.050	6105049
Hexane	ug/g	**2.8**				<0.050	0.050	6105049
Methylene Chloride(Dichloromethane)	ug/g	**0.1**				<0.050	0.050	6105049
Methyl Ethyl Ketone (2-Butanone)	ug/g	**16**				<0.50	0.50	6105049

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
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O.REG 153 VOCS BY HS & F1-F4 (SOIL)

Maxxam ID			JOY438			JOY439		
Sampling Date			2019/04/29			2019/04/29		
COC Number			117555			117555		
	UNITS	**Criteria**	**BH19-11 SS4 Lab-Dup**	**RDL**	**QC Batch**	**BH19-17 SS3**	**RDL**	**QC Batch**
Methyl Isobutyl Ketone	ug/g	**1.7**				<0.50	0.50	6105049
Methyl t-butyl ether (MTBE)	ug/g	**0.75**				<0.050	0.050	6105049
Styrene	ug/g	**0.7**				<0.050	0.050	6105049
1,1,1,2-Tetrachloroethane	ug/g	**0.058**				<0.050	0.050	6105049
1,1,2,2-Tetrachloroethane	ug/g	**0.05**				<0.050	0.050	6105049
Tetrachloroethylene	ug/g	**0.28**				<0.050	0.050	6105049
Toluene	ug/g	**2.3**				<0.020	0.020	6105049
1,1,1-Trichloroethane	ug/g	**0.38**				<0.050	0.050	6105049
1,1,2-Trichloroethane	ug/g	**0.05**				<0.050	0.050	6105049
Trichloroethylene	ug/g	**0.061**				<0.050	0.050	6105049
Trichlorofluoromethane (FREON 11)	ug/g	**4**				<0.050	0.050	6105049
Vinyl Chloride	ug/g	**0.02**				<0.020	0.020	6105049
p+m-Xylene	ug/g	**-**				<0.020	0.020	6105049
o-Xylene	ug/g	**-**				<0.020	0.020	6105049
Total Xylenes	ug/g	**3.1**				<0.020	0.020	6105049
F1 (C6-C10)	ug/g	**55**				<10	10	6105049
F1 (C6-C10) - BTEX	ug/g	**55**				<10	10	6105049
F2-F4 Hydrocarbons								
F2 (C10-C16 Hydrocarbons)	ug/g	**98**				<10	10	6100721
F3 (C16-C34 Hydrocarbons)	ug/g	**300**				<50	50	6100721
F4 (C34-C50 Hydrocarbons)	ug/g	**2800**				<50	50	6100721
Reached Baseline at C50	ug/g	**-**				Yes		6100721
Surrogate Recovery (%)								
o-Terphenyl	%	**-**				90		6100721
4-Bromofluorobenzene	%	**-**				96		6105049
D10-o-Xylene	%	**-**				104		6105049
D4-1,2-Dichloroethane	%	**-**				96		6105049
D8-Toluene	%	**-**				99		6105049

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
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Maxxam Job #: B9B4447
Report Date: 2019/05/08

exp Services Inc
Client Project #: OTT-00252625-AO
Sampler Initials: ML

TEST SUMMARY

Maxxam ID: JOY434
Sample ID: MW19-1 SS6
Matrix: Soil

Collected: 2019/04/30
Shipped:
Received: 2019/05/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	6097245	N/A	2019/05/06	Automated Statchk
1,3-Dichloropropene Sum	CALC	6098010	N/A	2019/05/07	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	6100721	2019/05/02	2019/05/07	Mariana Vascan
Strong Acid Leachable Metals by ICPMS	ICP/MS	6102010	2019/05/03	2019/05/03	Viviana Canzonieri
Moisture	BAL	6100729	N/A	2019/05/06	Mariana Vascan
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	6101317	2019/05/02	2019/05/03	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	6105049	N/A	2019/05/07	Liliana Gaburici

Maxxam ID: JOY434 Dup
Sample ID: MW19-1 SS6
Matrix: Soil

Collected: 2019/04/30
Shipped:
Received: 2019/05/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Volatile Organic Compounds and F1 PHCs	GC/MSFD	6105049	N/A	2019/05/07	Liliana Gaburici

Maxxam ID: JOY435
Sample ID: MW19-2 SS3
Matrix: Soil

Collected: 2019/04/29
Shipped:
Received: 2019/05/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	6097245	N/A	2019/05/06	Automated Statchk
Hot Water Extractable Boron	ICP	6102722	2019/05/03	2019/05/06	Suban Kanapathippllai
1,3-Dichloropropene Sum	CALC	6098010	N/A	2019/05/07	Automated Statchk
Free (WAD) Cyanide	TECH	6100782	2019/05/02	2019/05/03	Barbara Kalbasi Esfahani
Conductivity	AT	6105615	2019/05/06	2019/05/06	Kazzandra Adeva
Hexavalent Chromium in Soil by IC	IC/SPEC	6102072	2019/05/03	2019/05/07	Sally Norouz
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	6100721	2019/05/02	2019/05/07	Mariana Vascan
Strong Acid Leachable Metals by ICPMS	ICP/MS	6107259	2019/05/07	2019/05/07	Viviana Canzonieri
Moisture	BAL	6100712	N/A	2019/05/02	Prgya Panchal
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	6101317	2019/05/02	2019/05/03	Mitesh Raj
pH CaCl2 EXTRACT	AT	6102374	2019/05/03	2019/05/03	Gnana Thomas
Sodium Adsorption Ratio (SAR)	CALC/MET	6097343	N/A	2019/05/06	Automated Statchk
Volatile Organic Compounds and F1 PHCs	GC/MSFD	6105049	N/A	2019/05/07	Liliana Gaburici

Maxxam ID: JOY436
Sample ID: MW19-3 SS6
Matrix: Soil

Collected: 2019/04/30
Shipped:
Received: 2019/05/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	6097245	N/A	2019/05/06	Automated Statchk
1,3-Dichloropropene Sum	CALC	6098010	N/A	2019/05/07	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	6100721	2019/05/02	2019/05/07	Mariana Vascan
Strong Acid Leachable Metals by ICPMS	ICP/MS	6102010	2019/05/03	2019/05/03	Viviana Canzonieri
Moisture	BAL	6100729	N/A	2019/05/06	Mariana Vascan
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	6101317	2019/05/02	2019/05/03	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	6105049	N/A	2019/05/07	Liliana Gaburici

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Maxxam Job #: B9B4447
Report Date: 2019/05/08

exp Services Inc
Client Project #: OTT-00252625-AO
Sampler Initials: ML

TEST SUMMARY

Maxxam ID: JOY437
Sample ID: BH19-5 SS3
Matrix: Soil

Collected: 2019/04/30
Shipped:
Received: 2019/05/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	6097245	N/A	2019/05/06	Automated Statchk
Hot Water Extractable Boron	ICP	6102722	2019/05/03	2019/05/06	Suban Kanapathippllai
1,3-Dichloropropene Sum	CALC	6098010	N/A	2019/05/07	Automated Statchk
Free (WAD) Cyanide	TECH	6100782	2019/05/02	2019/05/03	Barbara Kalbasi Esfahani
Conductivity	AT	6105615	2019/05/06	2019/05/06	Kazzandra Adeva
Hexavalent Chromium in Soil by IC	IC/SPEC	6102072	2019/05/03	2019/05/07	Sally Norouz
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	6100721	2019/05/02	2019/05/08	Mariana Vascan
Strong Acid Leachable Metals by ICPMS	ICP/MS	6107259	2019/05/07	2019/05/07	Viviana Canzonieri
Moisture	BAL	6100712	N/A	2019/05/02	Prgya Panchal
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	6101317	2019/05/02	2019/05/03	Mitesh Raj
pH CaCl2 EXTRACT	AT	6102374	2019/05/03	2019/05/03	Gnana Thomas
Sodium Adsorption Ratio (SAR)	CALC/MET	6097343	N/A	2019/05/06	Automated Statchk
Volatile Organic Compounds and F1 PHCs	GC/MSFD	6105049	N/A	2019/05/07	Liliana Gaburici

Maxxam ID: JOY438
Sample ID: BH19-11 SS4
Matrix: Soil

Collected: 2019/04/29
Shipped:
Received: 2019/05/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	6097245	N/A	2019/05/07	Automated Statchk
1,3-Dichloropropene Sum	CALC	6098010	N/A	2019/05/07	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	6100721	2019/05/02	2019/05/08	Mariana Vascan
Strong Acid Leachable Metals by ICPMS	ICP/MS	6102010	2019/05/03	2019/05/03	Viviana Canzonieri
Moisture	BAL	6106138	N/A	2019/05/07	Fatemeh Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	6101317	2019/05/02	2019/05/03	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	6105049	N/A	2019/05/07	Liliana Gaburici

Maxxam ID: JOY438 Dup
Sample ID: BH19-11 SS4
Matrix: Soil

Collected: 2019/04/29
Shipped:
Received: 2019/05/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	6106138	N/A	2019/05/07	Fatemeh Habibagahi

Maxxam ID: JOY439
Sample ID: BH19-17 SS3
Matrix: Soil

Collected: 2019/04/29
Shipped:
Received: 2019/05/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	6097245	N/A	2019/05/06	Automated Statchk
Hot Water Extractable Boron	ICP	6102722	2019/05/03	2019/05/06	Suban Kanapathippllai
1,3-Dichloropropene Sum	CALC	6098010	N/A	2019/05/07	Automated Statchk
Free (WAD) Cyanide	TECH	6100782	2019/05/02	2019/05/03	Barbara Kalbasi Esfahani
Conductivity	AT	6105615	2019/05/06	2019/05/06	Kazzandra Adeva
Hexavalent Chromium in Soil by IC	IC/SPEC	6102072	2019/05/03	2019/05/07	Sally Norouz
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	6100721	2019/05/02	2019/05/08	Mariana Vascan

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Maxxam Job #: B9B4447
Report Date: 2019/05/08

exp Services Inc
Client Project #: OTT-00252625-AO
Sampler Initials: ML

TEST SUMMARY

Maxxam ID: JOY439
Sample ID: BH19-17 SS3
Matrix: Soil

Collected: 2019/04/29
Shipped:
Received: 2019/05/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	6107259	2019/05/07	2019/05/07	Viviana Canzonieri
Moisture	BAL	6100712	N/A	2019/05/02	Prgya Panchal
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	6101317	2019/05/02	2019/05/03	Mitesh Raj
pH CaCl2 EXTRACT	AT	6102374	2019/05/03	2019/05/03	Gnana Thomas
Sodium Adsorption Ratio (SAR)	CALC/MET	6097343	N/A	2019/05/06	Automated Statchk
Volatile Organic Compounds and F1 PHCs	GC/MSFD	6105049	N/A	2019/05/07	Liliana Gaburici

Maxxam ID: JOY439 Dup
Sample ID: BH19-17 SS3
Matrix: Soil

Collected: 2019/04/29
Shipped:
Received: 2019/05/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	6102072	2019/05/03	2019/05/07	Sally Norouz

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GENERAL COMMENTS

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

Package 1	9.7°C

Sample JOY437 [BH19-5 SS3] : PAH analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Results relate only to the items tested.

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Report Date: 2019/05/08

QUALITY ASSURANCE REPORT

exp Services Inc
Client Project #: OTT-00252625-AO
Sampler Initials: ML

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
6100721	o-Terphenyl	2019/05/07	96	30 - 130	99	30 - 130	96	%		
6101317	D10-Anthracene	2019/05/02	117	50 - 130	109	50 - 130	104	%		
6101317	D14-Terphenyl (FS)	2019/05/02	103	50 - 130	96	50 - 130	98	%		
6101317	D8-Acenaphthylene	2019/05/02	109	50 - 130	102	50 - 130	100	%		
6105049	4-Bromofluorobenzene	2019/05/07	98	60 - 140	103	60 - 140	100	%		
6105049	D10-o-Xylene	2019/05/07	108	60 - 130	122	60 - 130	103	%		
6105049	D4-1,2-Dichloroethane	2019/05/07	99	60 - 140	102	60 - 140	112	%		
6105049	D8-Toluene	2019/05/07	107	60 - 140	107	60 - 140	94	%		
6100712	Moisture	2019/05/02							2.1	20
6100721	F2 (C10-C16 Hydrocarbons)	2019/05/08	99	50 - 130	101	80 - 120	<10	ug/g	NC	50
6100721	F3 (C16-C34 Hydrocarbons)	2019/05/08	99	50 - 130	101	80 - 120	<50	ug/g	NC	50
6100721	F4 (C34-C50 Hydrocarbons)	2019/05/08	99	50 - 130	101	80 - 120	<50	ug/g	NC	50
6100729	Moisture	2019/05/06							28	50
6100782	WAD Cyanide (Free)	2019/05/03	102	75 - 125	105	80 - 120	<0.01	ug/g	NC	35
6101317	1-Methylnaphthalene	2019/05/02	128	50 - 130	114	50 - 130	<0.0050	ug/g	NC	40
6101317	2-Methylnaphthalene	2019/05/02	115	50 - 130	103	50 - 130	<0.0050	ug/g	NC	40
6101317	Acenaphthene	2019/05/02	104	50 - 130	94	50 - 130	<0.0050	ug/g	NC	40
6101317	Acenaphthylene	2019/05/02	113	50 - 130	101	50 - 130	<0.0050	ug/g	NC	40
6101317	Anthracene	2019/05/02	113	50 - 130	99	50 - 130	<0.0050	ug/g	NC	40
6101317	Benzo(a)anthracene	2019/05/02	128	50 - 130	112	50 - 130	<0.0050	ug/g	NC	40
6101317	Benzo(a)pyrene	2019/05/02	102	50 - 130	90	50 - 130	<0.0050	ug/g	NC	40
6101317	Benzo(b/j)fluoranthene	2019/05/02	92	50 - 130	84	50 - 130	<0.0050	ug/g	NC	40
6101317	Benzo(g,h,i)perylene	2019/05/02	93	50 - 130	80	50 - 130	<0.0050	ug/g	NC	40
6101317	Benzo(k)fluoranthene	2019/05/02	97	50 - 130	85	50 - 130	<0.0050	ug/g	NC	40
6101317	Chrysene	2019/05/02	89	50 - 130	79	50 - 130	<0.0050	ug/g	NC	40
6101317	Dibenz(a,h)anthracene	2019/05/02	92	50 - 130	76	50 - 130	<0.0050	ug/g	NC	40
6101317	Fluoranthene	2019/05/02	113	50 - 130	99	50 - 130	<0.0050	ug/g	NC	40
6101317	Fluorene	2019/05/02	102	50 - 130	92	50 - 130	<0.0050	ug/g	NC	40
6101317	Indeno(1,2,3-cd)pyrene	2019/05/02	103	50 - 130	87	50 - 130	<0.0050	ug/g	NC	40
6101317	Naphthalene	2019/05/02	97	50 - 130	88	50 - 130	<0.0050	ug/g	NC	40
6101317	Phenanthrene	2019/05/02	100	50 - 130	89	50 - 130	<0.0050	ug/g	NC	40
6101317	Pyrene	2019/05/02	113	50 - 130	99	50 - 130	<0.0050	ug/g	NC	40

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
6102010	Acid Extractable Antimony (Sb)	2019/05/03	95	75 - 125	101	80 - 120	<0.20	ug/g		
6102010	Acid Extractable Arsenic (As)	2019/05/03	96	75 - 125	100	80 - 120	<1.0	ug/g	4.7	30
6102010	Acid Extractable Barium (Ba)	2019/05/03	NC	75 - 125	97	80 - 120	<0.50	ug/g		
6102010	Acid Extractable Beryllium (Be)	2019/05/03	97	75 - 125	100	80 - 120	<0.20	ug/g		
6102010	Acid Extractable Boron (B)	2019/05/03	95	75 - 125	101	80 - 120	<5.0	ug/g		
6102010	Acid Extractable Cadmium (Cd)	2019/05/03	96	75 - 125	101	80 - 120	<0.10	ug/g		
6102010	Acid Extractable Chromium (Cr)	2019/05/03	99	75 - 125	101	80 - 120	<1.0	ug/g		
6102010	Acid Extractable Cobalt (Co)	2019/05/03	97	75 - 125	101	80 - 120	<0.10	ug/g		
6102010	Acid Extractable Copper (Cu)	2019/05/03	93	75 - 125	99	80 - 120	<0.50	ug/g		
6102010	Acid Extractable Lead (Pb)	2019/05/03	100	75 - 125	102	80 - 120	<1.0	ug/g		
6102010	Acid Extractable Molybdenum (Mo)	2019/05/03	96	75 - 125	99	80 - 120	<0.50	ug/g		
6102010	Acid Extractable Nickel (Ni)	2019/05/03	94	75 - 125	101	80 - 120	<0.50	ug/g		
6102010	Acid Extractable Selenium (Se)	2019/05/03	100	75 - 125	107	80 - 120	<0.50	ug/g		
6102010	Acid Extractable Silver (Ag)	2019/05/03	95	75 - 125	100	80 - 120	<0.20	ug/g		
6102010	Acid Extractable Thallium (Tl)	2019/05/03	95	75 - 125	99	80 - 120	<0.050	ug/g		
6102010	Acid Extractable Uranium (U)	2019/05/03	96	75 - 125	100	80 - 120	<0.050	ug/g	2.5	30
6102010	Acid Extractable Vanadium (V)	2019/05/03	100	75 - 125	100	80 - 120	<5.0	ug/g		
6102010	Acid Extractable Zinc (Zn)	2019/05/03	NC	75 - 125	101	80 - 120	<5.0	ug/g		
6102072	Chromium (VI)	2019/05/07	83	70 - 130	91	80 - 120	<0.2	ug/g	NC	35
6102374	Available (CaCl2) pH	2019/05/03			100	97 - 103			0.58	N/A
6102722	Hot Water Ext. Boron (B)	2019/05/06	98	75 - 125	96	75 - 125	<0.050	ug/g	5.6	40
6105049	1,1,1,2-Tetrachloroethane	2019/05/07	97	60 - 140	101	60 - 130	<0.050	ug/g	NC	50
6105049	1,1,1-Trichloroethane	2019/05/07	92	60 - 140	95	60 - 130	<0.050	ug/g	NC	50
6105049	1,1,2,2-Tetrachloroethane	2019/05/07	91	60 - 140	98	60 - 130	<0.050	ug/g	NC	50
6105049	1,1,2-Trichloroethane	2019/05/07	86	60 - 140	91	60 - 130	<0.050	ug/g	NC	50
6105049	1,1-Dichloroethane	2019/05/07	88	60 - 140	93	60 - 130	<0.050	ug/g	NC	50
6105049	1,1-Dichloroethylene	2019/05/07	86	60 - 140	90	60 - 130	<0.050	ug/g	NC	50
6105049	1,2-Dichlorobenzene	2019/05/07	86	60 - 140	90	60 - 130	<0.050	ug/g	NC	50
6105049	1,2-Dichloroethane	2019/05/07	79	60 - 140	84	60 - 130	<0.050	ug/g	NC	50
6105049	1,2-Dichloropropane	2019/05/07	78	60 - 140	81	60 - 130	<0.050	ug/g	NC	50
6105049	1,3-Dichlorobenzene	2019/05/07	87	60 - 140	88	60 - 130	<0.050	ug/g	NC	50
6105049	1,4-Dichlorobenzene	2019/05/07	87	60 - 140	89	60 - 130	<0.050	ug/g	NC	50

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Report Date: 2019/05/08

QUALITY ASSURANCE REPORT(CONT'D)

exp Services Inc
Client Project #: OTT-00252625-AO
Sampler Initials: ML

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
6105049	Acetone (2-Propanone)	2019/05/07	82	60 - 140	92	60 - 140	<0.50	ug/g	NC	50
6105049	Benzene	2019/05/07	92	60 - 140	97	60 - 130	<0.020	ug/g	NC	50
6105049	Bromodichloromethane	2019/05/07	87	60 - 140	92	60 - 130	<0.050	ug/g	NC	50
6105049	Bromoform	2019/05/07	93	60 - 140	99	60 - 130	<0.050	ug/g	NC	50
6105049	Bromomethane	2019/05/07	87	60 - 140	93	60 - 140	<0.050	ug/g	NC	50
6105049	Carbon Tetrachloride	2019/05/07	86	60 - 140	89	60 - 130	<0.050	ug/g	NC	50
6105049	Chlorobenzene	2019/05/07	93	60 - 140	96	60 - 130	<0.050	ug/g	NC	50
6105049	Chloroform	2019/05/07	85	60 - 140	87	60 - 130	<0.050	ug/g	NC	50
6105049	cis-1,2-Dichloroethylene	2019/05/07	81	60 - 140	86	60 - 130	<0.050	ug/g	NC	50
6105049	cis-1,3-Dichloropropene	2019/05/07	69	60 - 140	85	60 - 130	<0.030	ug/g	NC	50
6105049	Dibromochloromethane	2019/05/07	93	60 - 140	99	60 - 130	<0.050	ug/g	NC	50
6105049	Dichlorodifluoromethane (FREON 12)	2019/05/07	104	60 - 140	107	60 - 140	<0.050	ug/g	NC	50
6105049	Ethylbenzene	2019/05/07	89	60 - 140	94	60 - 130	<0.020	ug/g	NC	50
6105049	Ethylene Dibromide	2019/05/07	92	60 - 140	97	60 - 130	<0.050	ug/g	NC	50
6105049	F1 (C6-C10) - BTEX	2019/05/07					<10	ug/g	NC	30
6105049	F1 (C6-C10)	2019/05/07	99	60 - 140	95	80 - 120	<10	ug/g	NC	30
6105049	Hexane	2019/05/07	104	60 - 140	105	60 - 130	<0.050	ug/g	NC	50
6105049	Methyl Ethyl Ketone (2-Butanone)	2019/05/07	88	60 - 140	98	60 - 140	<0.50	ug/g	NC	50
6105049	Methyl Isobutyl Ketone	2019/05/07	87	60 - 140	95	60 - 130	<0.50	ug/g	NC	50
6105049	Methyl t-butyl ether (MTBE)	2019/05/07	84	60 - 140	88	60 - 130	<0.050	ug/g	NC	50
6105049	Methylene Chloride(Dichloromethane)	2019/05/07	86	60 - 140	90	60 - 130	<0.050	ug/g	NC	50
6105049	o-Xylene	2019/05/07	93	60 - 140	96	60 - 130	<0.020	ug/g	NC	50
6105049	p+m-Xylene	2019/05/07	94	60 - 140	97	60 - 130	<0.020	ug/g	NC	50
6105049	Styrene	2019/05/07	87	60 - 140	91	60 - 130	<0.050	ug/g	NC	50
6105049	Tetrachloroethylene	2019/05/07	87	60 - 140	91	60 - 130	<0.050	ug/g	NC	50
6105049	Toluene	2019/05/07	91	60 - 140	92	60 - 130	<0.020	ug/g	NC	50
6105049	Total Xylenes	2019/05/07					<0.020	ug/g	NC	50
6105049	trans-1,2-Dichloroethylene	2019/05/07	79	60 - 140	85	60 - 130	<0.050	ug/g	NC	50
6105049	trans-1,3-Dichloropropene	2019/05/07	78	60 - 140	81	60 - 130	<0.040	ug/g	NC	50
6105049	Trichloroethylene	2019/05/07	87	60 - 140	92	60 - 130	<0.050	ug/g	NC	50
6105049	Trichlorofluoromethane (FREON 11)	2019/05/07	99	60 - 140	101	60 - 130	<0.050	ug/g	NC	50
6105049	Vinyl Chloride	2019/05/07	97	60 - 140	104	60 - 130	<0.020	ug/g	NC	50

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
6105615	Conductivity	2019/05/06			101	90 - 110	<0.002	mS/cm	7.2	10
6106138	Moisture	2019/05/07							6.0	50
6107259	Acid Extractable Antimony (Sb)	2019/05/07	85	75 - 125	104	80 - 120	<0.20	ug/g	NC	30
6107259	Acid Extractable Arsenic (As)	2019/05/07	86	75 - 125	105	80 - 120	<1.0	ug/g	25	30
6107259	Acid Extractable Barium (Ba)	2019/05/07	NC	75 - 125	99	80 - 120	<0.50	ug/g	12	30
6107259	Acid Extractable Beryllium (Be)	2019/05/07	89	75 - 125	98	80 - 120	<0.20	ug/g	19	30
6107259	Acid Extractable Boron (B)	2019/05/07	87	75 - 125	99	80 - 120	<5.0	ug/g	NC	30
6107259	Acid Extractable Cadmium (Cd)	2019/05/07	87	75 - 125	100	80 - 120	<0.10	ug/g	20	30
6107259	Acid Extractable Chromium (Cr)	2019/05/07	90	75 - 125	101	80 - 120	<1.0	ug/g	14	30
6107259	Acid Extractable Cobalt (Co)	2019/05/07	89	75 - 125	101	80 - 120	<0.10	ug/g	10	30
6107259	Acid Extractable Copper (Cu)	2019/05/07	86	75 - 125	99	80 - 120	<0.50	ug/g	14	30
6107259	Acid Extractable Lead (Pb)	2019/05/07	90	75 - 125	102	80 - 120	<1.0	ug/g	11	30
6107259	Acid Extractable Mercury (Hg)	2019/05/07	83	75 - 125	94	80 - 120	<0.050	ug/g	NC	30
6107259	Acid Extractable Molybdenum (Mo)	2019/05/07	87	75 - 125	98	80 - 120	<0.50	ug/g	NC	30
6107259	Acid Extractable Nickel (Ni)	2019/05/07	89	75 - 125	102	80 - 120	<0.50	ug/g	10	30
6107259	Acid Extractable Selenium (Se)	2019/05/07	89	75 - 125	106	80 - 120	<0.50	ug/g	NC	30
6107259	Acid Extractable Silver (Ag)	2019/05/07	87	75 - 125	102	80 - 120	<0.20	ug/g	NC	30
6107259	Acid Extractable Thallium (Tl)	2019/05/07	87	75 - 125	101	80 - 120	<0.050	ug/g	13	30
6107259	Acid Extractable Uranium (U)	2019/05/07	88	75 - 125	99	80 - 120	<0.050	ug/g	11	30
6107259	Acid Extractable Vanadium (V)	2019/05/07	94	75 - 125	102	80 - 120	<5.0	ug/g	13	30
6107259	Acid Extractable Zinc (Zn)	2019/05/07	NC	75 - 125	102	80 - 120	<5.0	ug/g	13	30

N/A = Not Applicable

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 (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

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).

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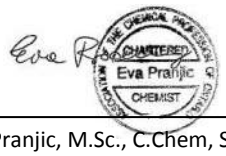
Report Date: 2019/05/08

exp Services Inc
Client Project #: OTT-00252625-AO
Sampler Initials: ML

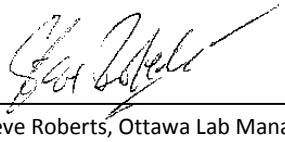
VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



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

Liliana Gaburici, VOC Lab



Steve Roberts, Ottawa Lab Manager

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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CAM FCD-01191/3

CHAIN OF CUSTODY RECORD 117555 Page ____ of ____

Invoice Information	Report Information (if differs from invoice)	Project Information (where applicable)	Turnaround Time (TAT) Required
Company Name: EXP Services Inc.	Company Name:	Quotation #: B91718 Stream 3	[X] 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-00252625-A0	Rush TAT (Surcharges will be applied) [ ] 1 Day [ ] 2 Days [ ] 3-4 Days
		Site Location:	
Phone: 613 688-1899 Fax:	Phone: Fax:	Site #:	
Email: mark.mccalla@exp.com	Email:	Sampled By: ML	Date Required:

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

Rush Confirmation #:

Regulation 153

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

Other Regulations

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

Include Criteria on Certificate of Analysis: Y / N

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

LABORATORY USE ONLY

CUSTODY SEAL: (Y) / N — Present: X — Intact: X

COOLER TEMPERATURES: 11, 10, 8

COOLING MEDIA PRESENT: (Y) / N

	SAMPLE IDENTIFICATION	DATE SAMPLED (YYYY/MM/DD)	TIME SAMPLED (HH:MM)	MATRIX	# OF CONTAINERS SUBMITTED	FIELD FILTERED (CIRCLE) Metals / Hg / CrVI	BTEX/ PHC F1	PHCs F2 - F4	VOCs	REG 153 METALS & INORGANICS	REG 153 ICPMS METALS	REG 153 METALS (Hg, Cr VI, ICPMS Metals, HWS - B)	PAH								HOLD- DO NOT ANALYZE
1	MW 19-1 SS6	2019/04/30	AM	S			X	X	X		X		X								
2	MW 19-2 SS3	2019/04/29	PM	S			X	X	X		X		X								
3	MW 19-3 SS6	2019/04/30	PM	S			X	X	X		X		X								
4	~~BH~~ BH 19-5 SS3	2019/04/30	PM	S			X	X	X		X		X								
5	~~MW19-6 SS3~~	~~2019/04/29~~	~~AM~~	~~S~~			~~X~~	~~X~~	~~X~~		~~X~~		~~X~~								
6	BH 19-11 SS4	2019/04/29	PM	S			X	X	X	X	X		X								
7	BH 19-17 SS3	"	PM	S			X	X	X	X	X		X								
8																					
9																					
10																					

01-May-19 10:40
Alisha Williamson
B9B4447

RECEIVED IN OTTAWA

8n ice

RELINQUISHED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	MAXXAM JOB #
Mark McCalla	2019/05/01	10:40	Serge Léger	2019/05/01	10:40	

Unless otherwise agreed to in writing, work submitted on this Chain of Custody is subject to Maxxam'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.maxxam.ca/terms. Sample container, preservation, hold time and packages information can be viewed at http://maxxam.ca/wp-content/uploads/Ontario-COC.pdf.

COC-1004 (03/17)

White: Maxxam ~ Yellow: Client

Maxxam
A Bureau Veritas Group Company

6740 Campobello Road, Mississauga, Ontario L5N 2L8
Phone: 905-817-5700 Fax: 905-817-5779 Toll Free: 800-563-6266
CAM FCD-01191/3

CHAIN OF CUSTODY RECORD 117555

Page ____ of ____

Invoice Information		Report Information (if differs from invoice)		Project Information (where applicable)		Turnaround Time (TAT) Required
Company Name:	EXP Services Inc.	Company Name:		Quotation #:	B91718 - Stream 3	[X] 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.	Address:		Project #:	OTT-00252625-A0	Rush TAT (Surcharges will be applied)
	Ottawa			Site Location:		[ ] 1 Day [ ] 2 Days [ ] 3-4 Days
Phone:	613 688-1899 Fax:	Phone:	Fax:	Site #:		
Email:	mark.mccalla@exp.com	Email:		Sampled By:	ML	Date Required:

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

Rush Confirmation #:

Regulation 153

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

Other Regulations

- [ ] CCME [ ] Sanitary Sewer Bylaw
- [ ] MISA [ ] Storm Sewer Bylaw
- [ ] PWQO Region
- [ ] Other (Specify)
- [ ] REG 558 (MIN. 3 DAY TAT REQUIRED)

Include Criteria on Certificate of Analysis: Y / N

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

LABORATORY USE ONLY

CUSTODY SEAL (Y) / N		COOLER TEMPERATURES
Present	Intact	
X	X	11, 10, 8
		2/3/5

COOLING MEDIA PRESENT: (Y) / N

Analysis Requested

#	SAMPLE IDENTIFICATION	DATE SAMPLED (YYYY/MM/DD)	TIME SAMPLED (HH:MM)	MATRIX	# OF CONTAINERS SUBMITTED	FIELD FILTERED (CIRCLE) Metals / Hg / CrVI	BTEX/ PHC F1	PHCs F2 - F4	VOCs	REG 153 METALS & INORGANICS	REG 153 ICPMS METALS	REG 153 METALS (Hg, Cr VI, ICPMS Metals, HWS - B)	PAH								HOLD- DO NOT ANALYZE	COMMENTS
1	MW 19-1 SS6	2019/04/30	AM	S			X	X	X		X		X									
2	MW 19-2 SS3	2019/04/29	PM	S			X	X	X		X		X									
3	MW 19-3 SS6	2019/04/30	PM	S			X	X	X		X		X									
4	BH 19-5 SS3	2019/04/30	PM	S			X	X	X		X		X									
5	~~MW 19-6 SS3~~	~~2019/04/29~~	~~AM~~	~~S~~			~~X~~	~~X~~	~~X~~		~~X~~		~~X~~									
6	BH 19-11 SS4	2019/04/29	PM	S			X	X	X	X	X		X									
7	BH 19-17 SS3	"	PM	S			X	X	X	X	X		X									
8																						
9																						on ice
10																						

01-May-19 10:40
Alisha Williamson
B9B4447

RECEIVED IN OTTAWA

RELINQUISHED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	MAXXAM JOB #
Mark McCalla	2019/05/01	10:40	Serge Léger	2019/05/01	10:40	
			Evelyn Gyulushan	2019/05/02	08:00	

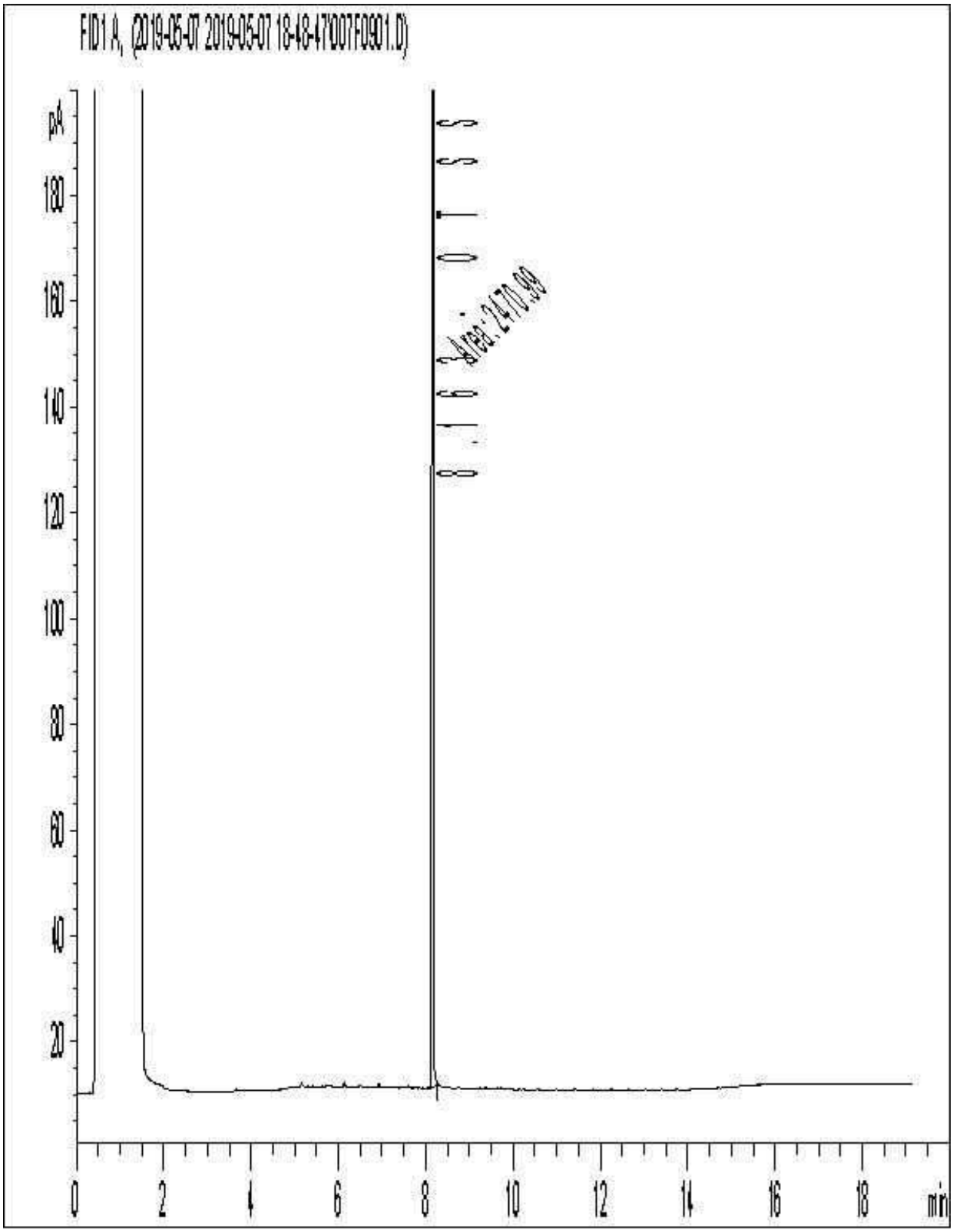
COC-1004 (03/17)

White: Maxxam – Yellow: Client

Maxxam Job #: B9B4447
Report Date: 2019/05/08
Maxxam Sample: JOY434

exp Services Inc
Client Project #: OTT-00252625-AO
Client ID: MW19-1 SS6

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

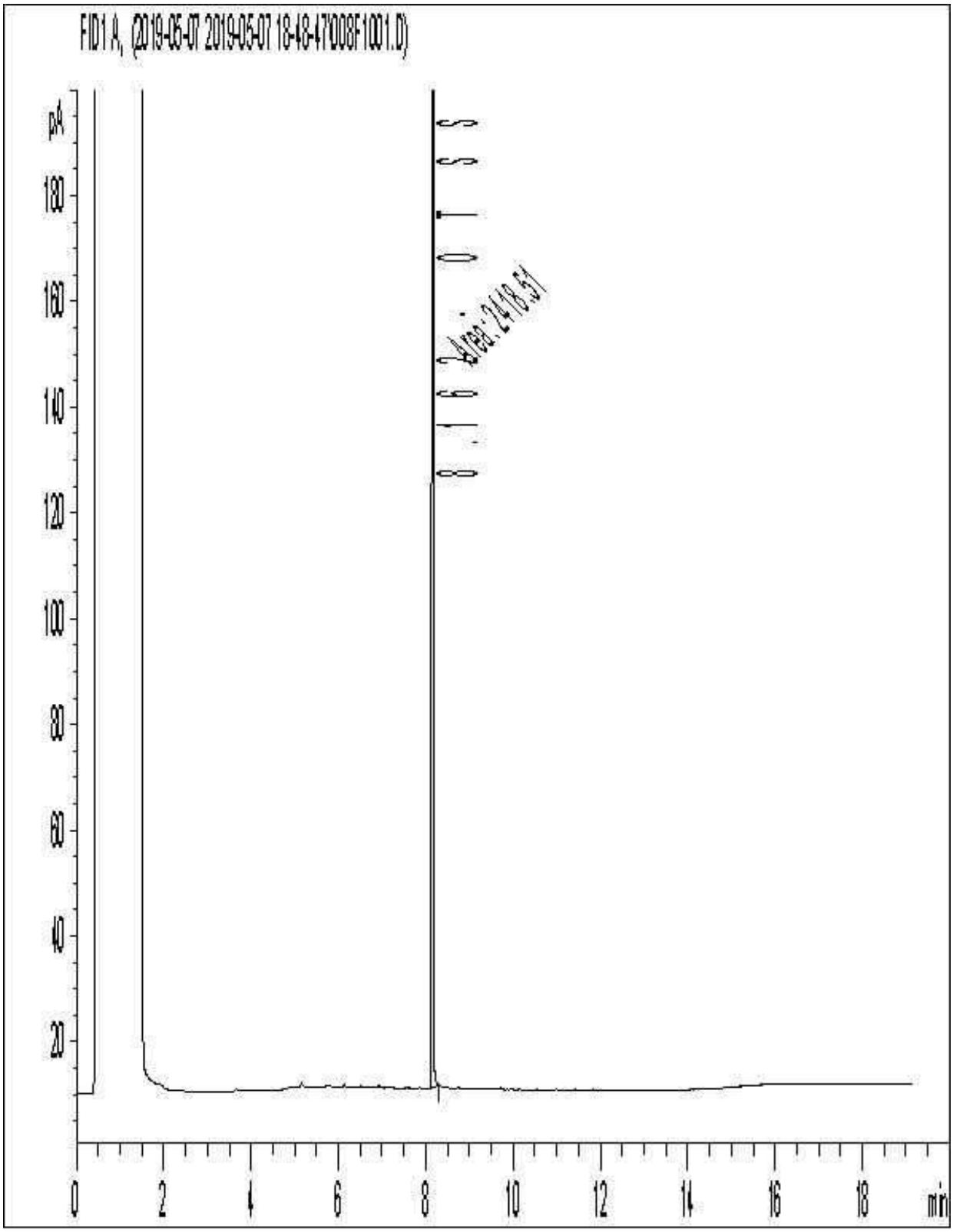


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B9B4447
Report Date: 2019/05/08
Maxxam Sample: JOY435

exp Services Inc
Client Project #: OTT-00252625-AO
Client ID: MW19-2 SS3

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

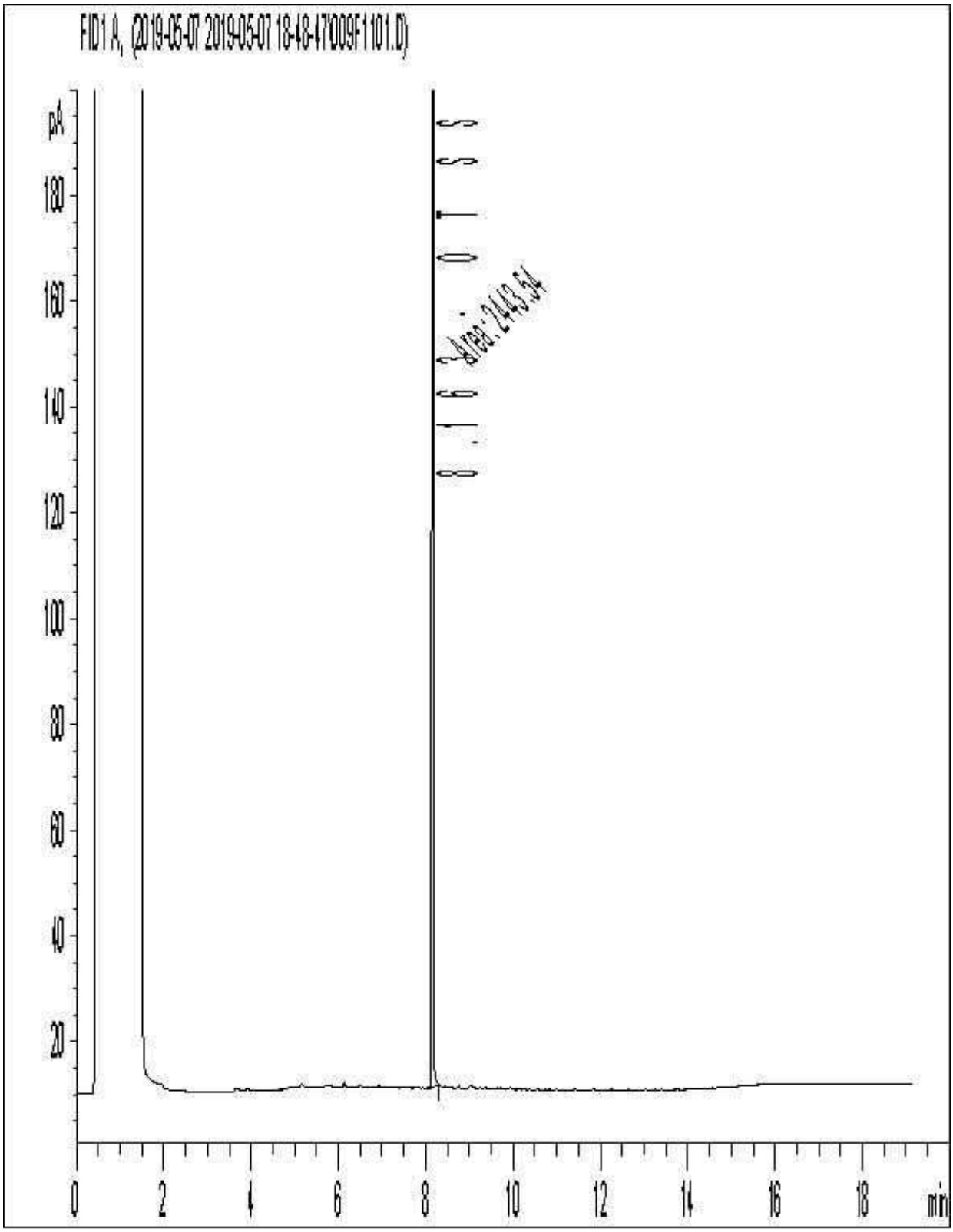


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B9B4447
Report Date: 2019/05/08
Maxxam Sample: JOY436

exp Services Inc
Client Project #: OTT-00252625-AO
Client ID: MW19-3 SS6

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

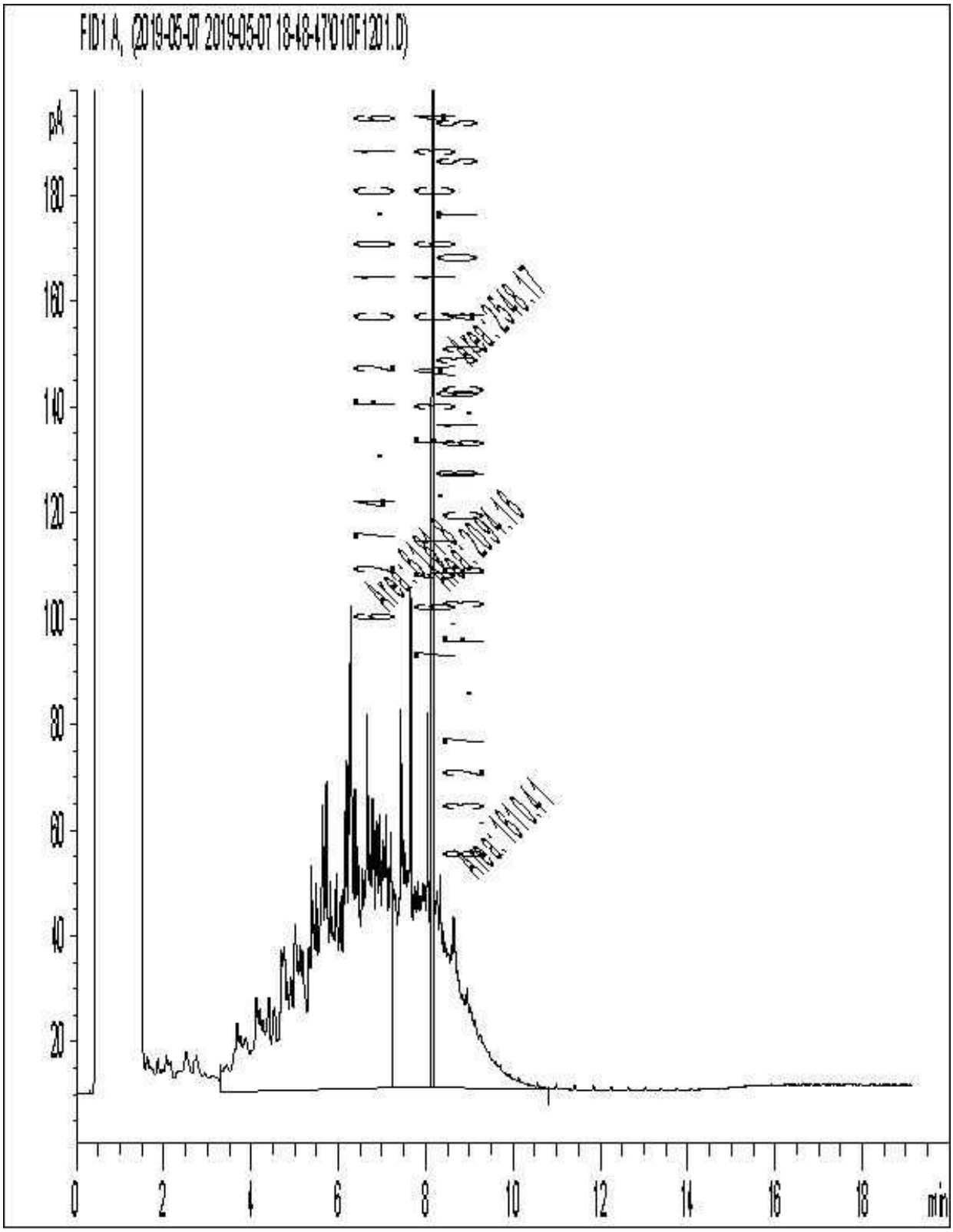


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B9B4447
Report Date: 2019/05/08
Maxxam Sample: JOY437

exp Services Inc
Client Project #: OTT-00252625-AO
Client ID: BH19-5 SS3

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

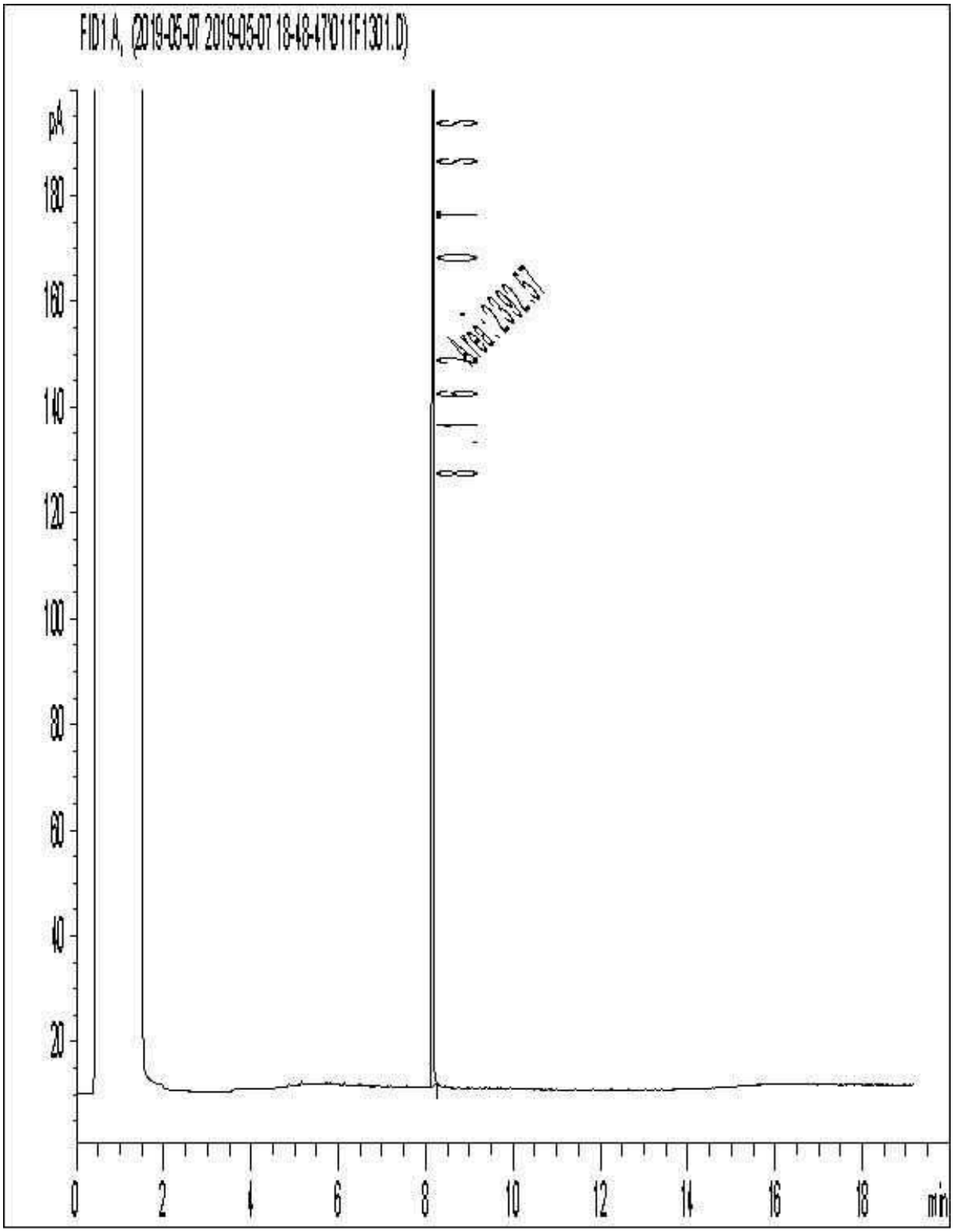


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B9B4447
Report Date: 2019/05/08
Maxxam Sample: JOY438

exp Services Inc
Client Project #: OTT-00252625-AO
Client ID: BH19-11 SS4

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

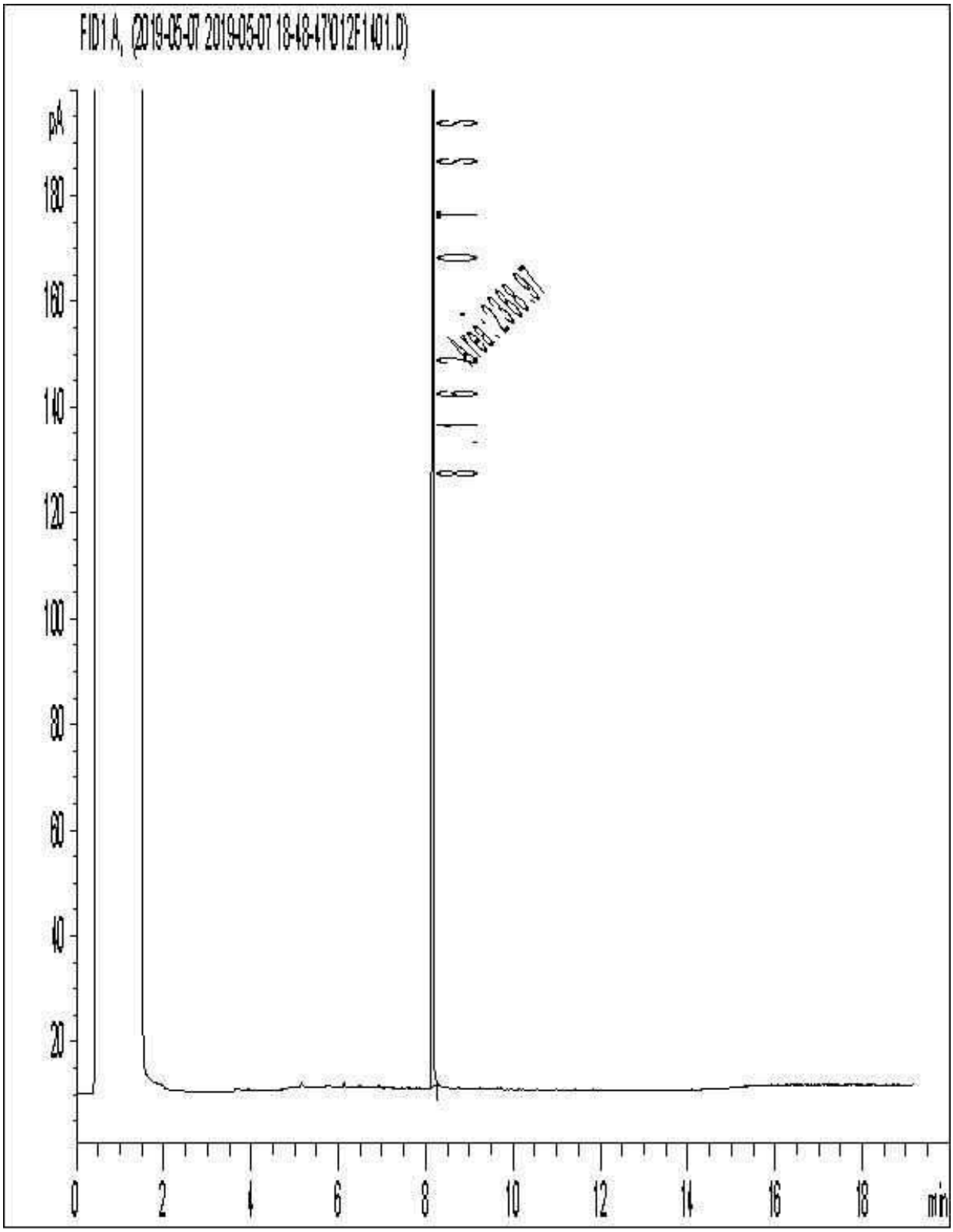


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B9B4447
Report Date: 2019/05/08
Maxxam Sample: JOY439

exp Services Inc
Client Project #: OTT-00252625-AO
Client ID: BH19-17 SS3

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



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

Maxxam
A Bureau Veritas Group Company

Your Project #: OTT-00252625-A
Site Location: FOREST
Your C.O.C. #: 717293-01-01, 717293-02-01

Attention: Mark McCalla

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

Report Date: 2019/05/24
Report #: R5723853
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B9D2759
Received: 2019/05/16, 17:45

Sample Matrix: Water
Samples Received: 12

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum (1)	3	N/A	2019/05/23	CAM SOP-00301	EPA 8270D m
Methylnaphthalene Sum (1)	7	N/A	2019/05/24	CAM SOP-00301	EPA 8270D m
1,3-Dichloropropene Sum (1)	9	N/A	2019/05/22		EPA 8260C m
1,3-Dichloropropene Sum (1)	1	N/A	2019/05/23		EPA 8260C m
Petroleum Hydrocarbons F2-F4 in Water (1, 2)	10	2019/05/22	2019/05/23	CAM SOP-00316	CCME PHC-CWS m
Dissolved Metals by ICPMS (1)	10	N/A	2019/05/22	CAM SOP-00447	EPA 6020B m
PAH Compounds in Water by GC/MS (SIM) (1)	10	2019/05/22	2019/05/23	CAM SOP-00318	EPA 8270D m
Volatile Organic Compounds and F1 PHCs (1)	12	N/A	2019/05/22	CAM SOP-00230	EPA 8260C m

Remarks:

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

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam 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.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam 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 Maxxam, unless otherwise agreed in writing. Maxxam 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 Maxxam, 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 Maxxam Analytics Mississauga
(2) All CCME PHC results met required criteria unless otherwise stated in the report. The CWS PHC methods employed by Maxxam 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

Maxxam Analytics International Corporation o/a Maxxam Analytics 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxam.ca

Your Project #: OTT-00252625-A
Site Location: FOREST
Your C.O.C. #: 717293-01-01, 717293-02-01

Attention: Mark McCalla

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

Report Date: 2019/05/24
Report #: R5723853
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B9D2759

Received: 2019/05/16, 17:45

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.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Alisha Williamson, Project Manager
Email: AWilliamson@maxxam.ca
Phone# (613)274-0573
==========

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B9D2759
Report Date: 2019/05/24

exp Services Inc
Client Project #: OTT-00252625-A
Site Location: FOREST
Sampler Initials: MAD

VOLATILE ORGANICS BY GC/MS (WATER)

Maxxam ID		JTB401	JTB402		
Sampling Date			2019/05/16		
COC Number		717293-01-01	717293-01-01		
	UNITS	**TRIP BLANK#4538**	**FIELD BLANK**	**RDL**	**QC Batch**
Volatile Organics					
Acetone (2-Propanone)	ug/L	<10	<10	10	6129612
Benzene	ug/L	<0.20	<0.20	0.20	6129612
Bromodichloromethane	ug/L	<0.50	<0.50	0.50	6129612
Bromoform	ug/L	<1.0	<1.0	1.0	6129612
Bromomethane	ug/L	<0.50	<0.50	0.50	6129612
Carbon Tetrachloride	ug/L	<0.20	<0.20	0.20	6129612
Chlorobenzene	ug/L	<0.20	<0.20	0.20	6129612
Chloroform	ug/L	<0.20	<0.20	0.20	6129612
Dibromochloromethane	ug/L	<0.50	<0.50	0.50	6129612
1,2-Dichlorobenzene	ug/L	<0.50	<0.50	0.50	6129612
1,3-Dichlorobenzene	ug/L	<0.50	<0.50	0.50	6129612
1,4-Dichlorobenzene	ug/L	<0.50	<0.50	0.50	6129612
Dichlorodifluoromethane (FREON 12)	ug/L	<1.0	<1.0	1.0	6129612
1,1-Dichloroethane	ug/L	<0.20	<0.20	0.20	6129612
1,2-Dichloroethane	ug/L	<0.50	<0.50	0.50	6129612
1,1-Dichloroethylene	ug/L	<0.20	<0.20	0.20	6129612
cis-1,2-Dichloroethylene	ug/L	<0.50	<0.50	0.50	6129612
trans-1,2-Dichloroethylene	ug/L	<0.50	<0.50	0.50	6129612
1,2-Dichloropropane	ug/L	<0.20	<0.20	0.20	6129612
cis-1,3-Dichloropropene	ug/L	<0.30	<0.30	0.30	6129612
trans-1,3-Dichloropropene	ug/L	<0.40	<0.40	0.40	6129612
Ethylbenzene	ug/L	<0.20	<0.20	0.20	6129612
Ethylene Dibromide	ug/L	<0.20	<0.20	0.20	6129612
Hexane	ug/L	<1.0	<1.0	1.0	6129612
Methylene Chloride(Dichloromethane)	ug/L	<2.0	<2.0	2.0	6129612
Methyl Ethyl Ketone (2-Butanone)	ug/L	<10	<10	10	6129612
Methyl Isobutyl Ketone	ug/L	<5.0	<5.0	5.0	6129612
Methyl t-butyl ether (MTBE)	ug/L	<0.50	<0.50	0.50	6129612
Styrene	ug/L	<0.50	<0.50	0.50	6129612
1,1,1,2-Tetrachloroethane	ug/L	<0.50	<0.50	0.50	6129612
1,1,2,2-Tetrachloroethane	ug/L	<0.50	<0.50	0.50	6129612
Tetrachloroethylene	ug/L	<0.20	<0.20	0.20	6129612
Toluene	ug/L	<0.20	<0.20	0.20	6129612
1,1,1-Trichloroethane	ug/L	<0.20	<0.20	0.20	6129612

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Analytics International Corporation o/a Maxxam Analytics 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxam.ca

Maxxam Job #: B9D2759
Report Date: 2019/05/24

exp Services Inc
Client Project #: OTT-00252625-A
Site Location: FOREST
Sampler Initials: MAD

VOLATILE ORGANICS BY GC/MS (WATER)

Maxxam ID		JTB401	JTB402		
Sampling Date			2019/05/16		
COC Number		717293-01-01	717293-01-01		
	UNITS	**TRIP BLANK#4538**	**FIELD BLANK**	**RDL**	**QC Batch**
1,1,2-Trichloroethane	ug/L	<0.50	<0.50	0.50	6129612
Trichloroethylene	ug/L	<0.20	<0.20	0.20	6129612
Trichlorofluoromethane (FREON 11)	ug/L	<0.50	<0.50	0.50	6129612
Vinyl Chloride	ug/L	<0.20	<0.20	0.20	6129612
p+m-Xylene	ug/L	<0.20	<0.20	0.20	6129612
o-Xylene	ug/L	<0.20	<0.20	0.20	6129612
Total Xylenes	ug/L	<0.20	<0.20	0.20	6129612
F1 (C6-C10)	ug/L	<25	<25	25	6129612
F1 (C6-C10) - BTEX	ug/L	<25	<25	25	6129612
Surrogate Recovery (%)					
4-Bromofluorobenzene	%	89	89		6129612
D4-1,2-Dichloroethane	%	111	109		6129612
D8-Toluene	%	93	96		6129612

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Analytics International Corporation o/a Maxxam Analytics 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxam.ca

Maxxam Job #: B9D2759
Report Date: 2019/05/24

exp Services Inc
Client Project #: OTT-00252625-A
Site Location: FOREST
Sampler Initials: MAD

O.REG 153 DISSOLVED ICPMS METALS (WATER)

Maxxam ID		JTB403	JTB403	JTB404	JTB405	JTB406	JTB407		
Sampling Date		2019/05/16	2019/05/16	2019/05/16	2019/05/16	2019/05/16	2019/05/16		
COC Number		717293-01-01	717293-01-01	717293-01-01	717293-01-01	717293-01-01	717293-01-01		
	UNITS	**MW19-2A**	**MW19-2A Lab-Dup**	**MW19-20**	**MW19-2**	**MW19-3A**	**MW19-7**	**RDL**	**QC Batch**
Metals									
Dissolved Antimony (Sb)	ug/L	<0.50	<0.50	<0.50	0.61	0.58	<0.50	0.50	6131544
Dissolved Arsenic (As)	ug/L	<1.0	<1.0	1.6	1.2	<1.0	<1.0	1.0	6131544
Dissolved Barium (Ba)	ug/L	78	77	300	190	160	90	2.0	6131544
Dissolved Beryllium (Be)	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	6131544
Dissolved Boron (B)	ug/L	71	70	24	56	22	110	10	6131544
Dissolved Cadmium (Cd)	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	6131544
Dissolved Chromium (Cr)	ug/L	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	6131544
Dissolved Cobalt (Co)	ug/L	0.67	0.73	<0.50	0.81	0.58	1.1	0.50	6131544
Dissolved Copper (Cu)	ug/L	1.9	1.7	<1.0	1.3	4.1	<1.0	1.0	6131544
Dissolved Lead (Pb)	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	6131544
Dissolved Molybdenum (Mo)	ug/L	<0.50	<0.50	1.2	13	0.73	1.1	0.50	6131544
Dissolved Nickel (Ni)	ug/L	7.1	7.4	<1.0	5.8	1.0	5.9	1.0	6131544
Dissolved Selenium (Se)	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	6131544
Dissolved Silver (Ag)	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	6131544
Dissolved Sodium (Na)	ug/L	140000	140000	230000	140000	98000	530000	100	6131544
Dissolved Thallium (Tl)	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	0.16	0.050	6131544
Dissolved Uranium (U)	ug/L	3.4	3.3	1.8	3.7	1.4	2.7	0.10	6131544
Dissolved Vanadium (V)	ug/L	<0.50	<0.50	1.6	1.1	<0.50	0.61	0.50	6131544
Dissolved Zinc (Zn)	ug/L	<5.0	<5.0	<5.0	<5.0	8.6	<5.0	5.0	6131544

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

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Maxxam Job #: B9D2759
Report Date: 2019/05/24

exp Services Inc
Client Project #: OTT-00252625-A
Site Location: FOREST
Sampler Initials: MAD

O.REG 153 DISSOLVED ICPMS METALS (WATER)

Maxxam ID		JTB408	JTB409	JTB410	JTB411	JTB412		
Sampling Date		2019/05/16	2019/05/15	2019/05/15	2019/05/15	2019/05/16		
COC Number		717293-01-01	717293-01-01	717293-02-01	717293-02-01	717293-02-01		
	UNITS	**BH1-18**	**MW19-10**	**MW19-8**	**MW19-6**	**BH6**	**RDL**	**QC Batch**
Metals								
Dissolved Antimony (Sb)	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	6131544
Dissolved Arsenic (As)	ug/L	<1.0	<1.0	<1.0	<1.0	1.5	1.0	6131544
Dissolved Barium (Ba)	ug/L	72	68	45	120	300	2.0	6131544
Dissolved Beryllium (Be)	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	6131544
Dissolved Boron (B)	ug/L	57	280	400	24	26	10	6131544
Dissolved Cadmium (Cd)	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	6131544
Dissolved Chromium (Cr)	ug/L	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	6131544
Dissolved Cobalt (Co)	ug/L	0.86	1.1	1.1	<0.50	<0.50	0.50	6131544
Dissolved Copper (Cu)	ug/L	1.8	1.7	<1.0	<1.0	<1.0	1.0	6131544
Dissolved Lead (Pb)	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	6131544
Dissolved Molybdenum (Mo)	ug/L	1.1	8.0	1.9	2.2	1.1	0.50	6131544
Dissolved Nickel (Ni)	ug/L	6.6	4.6	2.0	2.2	<1.0	1.0	6131544
Dissolved Selenium (Se)	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	6131544
Dissolved Silver (Ag)	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	6131544
Dissolved Sodium (Na)	ug/L	590000	590000	200000	53000	230000	100	6131544
Dissolved Thallium (Tl)	ug/L	<0.050	0.051	<0.050	<0.050	<0.050	0.050	6131544
Dissolved Uranium (U)	ug/L	2.5	5.1	9.1	1.9	1.7	0.10	6131544
Dissolved Vanadium (V)	ug/L	<0.50	1.0	<0.50	<0.50	1.7	0.50	6131544
Dissolved Zinc (Zn)	ug/L	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	6131544

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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exp Services Inc
Client Project #: OTT-00252625-A
Site Location: FOREST
Sampler Initials: MAD

O.REG 153 PAHS (WATER)

Maxxam ID		JTB403		JTB404		JTB405			JTB405		
Sampling Date		2019/05/16		2019/05/16		2019/05/16			2019/05/16		
COC Number		717293-01-01		717293-01-01		717293-01-01			717293-01-01		
	UNITS	**MW19-2A**	**RDL**	**MW19-20**	**RDL**	**MW19-2**	**RDL**	**QC Batch**	**MW19-2 Lab-Dup**	**RDL**	**QC Batch**
Calculated Parameters											
Methylnaphthalene, 2-(1-)	ug/L	<0.071	0.071	9.0	0.071	<0.071	0.071	6127751			
Polyaromatic Hydrocarbons											
Acenaphthene	ug/L	<0.050	0.050	3.0	0.050	<0.050	0.050	6134194	<0.050	0.050	6134194
Acenaphthylene	ug/L	<0.050	0.050	<0.20 (1)	0.20	<0.050	0.050	6134194	<0.050	0.050	6134194
Anthracene	ug/L	<0.050	0.050	0.34	0.050	<0.050	0.050	6134194	<0.050	0.050	6134194
Benzo(a)anthracene	ug/L	<0.050	0.050	<0.050	0.050	<0.050	0.050	6134194	<0.050	0.050	6134194
Benzo(a)pyrene	ug/L	<0.010	0.010	<0.010	0.010	<0.010	0.010	6134194	<0.010	0.010	6134194
Benzo(b/j)fluoranthene	ug/L	<0.050	0.050	<0.050	0.050	<0.050	0.050	6134194	<0.050	0.050	6134194
Benzo(g,h,i)perylene	ug/L	<0.050	0.050	<0.050	0.050	<0.050	0.050	6134194	<0.050	0.050	6134194
Benzo(k)fluoranthene	ug/L	<0.050	0.050	<0.050	0.050	<0.050	0.050	6134194	<0.050	0.050	6134194
Chrysene	ug/L	<0.050	0.050	<0.050	0.050	<0.050	0.050	6134194	<0.050	0.050	6134194
Dibenz(a,h)anthracene	ug/L	<0.050	0.050	<0.050	0.050	<0.050	0.050	6134194	<0.050	0.050	6134194
Fluoranthene	ug/L	<0.050	0.050	0.12	0.050	<0.050	0.050	6134194	<0.050	0.050	6134194
Fluorene	ug/L	<0.050	0.050	2.7	0.050	<0.050	0.050	6134194	<0.050	0.050	6134194
Indeno(1,2,3-cd)pyrene	ug/L	<0.050	0.050	<0.050	0.050	<0.050	0.050	6134194	<0.050	0.050	6134194
1-Methylnaphthalene	ug/L	<0.050	0.050	8.7	0.050	<0.050	0.050	6134194	<0.050	0.050	6134194
2-Methylnaphthalene	ug/L	<0.050	0.050	0.33	0.050	<0.050	0.050	6134194	<0.050	0.050	6134194
Naphthalene	ug/L	<0.050	0.050	<1.1 (1)	1.1	<0.050	0.050	6134194	<0.050	0.050	6134194
Phenanthrene	ug/L	<0.030	0.030	1.7	0.030	<0.030	0.030	6134194	<0.030	0.030	6134194
Pyrene	ug/L	<0.050	0.050	0.57	0.050	<0.050	0.050	6134194	<0.050	0.050	6134194
Surrogate Recovery (%)											
D10-Anthracene	%	111		106		108		6134194	114		6134194
D14-Terphenyl (FS)	%	119		87		93		6134194	98		6134194
D8-Acenaphthylene	%	87		111		101		6134194	102		6134194

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
(1) DL was raised due to matrix interference.

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Report Date: 2019/05/24

exp Services Inc
Client Project #: OTT-00252625-A
Site Location: FOREST
Sampler Initials: MAD

O.REG 153 PAHS (WATER)

Maxxam ID		JTB406	JTB407	JTB408	JTB409	JTB410	JTB411		
Sampling Date		2019/05/16	2019/05/16	2019/05/16	2019/05/15	2019/05/15	2019/05/15		
COC Number		717293-01-01	717293-01-01	717293-01-01	717293-01-01	717293-02-01	717293-02-01		
	UNITS	**MW19-3A**	**MW19-7**	**BH1-18**	**MW19-10**	**MW19-8**	**MW19-6**	**RDL**	**QC Batch**
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/L	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	0.071	6127751
Polyaromatic Hydrocarbons									
Acenaphthene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	6134194
Acenaphthylene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	6134194
Anthracene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	6134194
Benzo(a)anthracene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	6134194
Benzo(a)pyrene	ug/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	6134194
Benzo(b/j)fluoranthene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	6134194
Benzo(g,h,i)perylene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	6134194
Benzo(k)fluoranthene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	6134194
Chrysene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	6134194
Dibenz(a,h)anthracene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	6134194
Fluoranthene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	6134194
Fluorene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	6134194
Indeno(1,2,3-cd)pyrene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	6134194
1-Methylnaphthalene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	6134194
2-Methylnaphthalene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	6134194
Naphthalene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	6134194
Phenanthrene	ug/L	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	0.030	6134194
Pyrene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	6134194
Surrogate Recovery (%)									
D10-Anthracene	%	106	110	116	104	114	105		6134194
D14-Terphenyl (FS)	%	96	111	113	111	125	117		6134194
D8-Acenaphthylene	%	86	87	91	84	89	91		6134194

RDL = Reportable Detection Limit
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Report Date: 2019/05/24

exp Services Inc
Client Project #: OTT-00252625-A
Site Location: FOREST
Sampler Initials: MAD

O.REG 153 PAHS (WATER)

Maxxam ID		JTB412		
Sampling Date		2019/05/16		
COC Number		717293-02-01		
	UNITS	**BH6**	**RDL**	**QC Batch**
Calculated Parameters				
Methylnaphthalene, 2-(1-)	ug/L	11	0.70	6127751
Polyaromatic Hydrocarbons				
Acenaphthene	ug/L	3.3	0.050	6134194
Acenaphthylene	ug/L	<0.20 (1)	0.20	6134194
Anthracene	ug/L	0.51	0.050	6134194
Benzo(a)anthracene	ug/L	<0.050	0.050	6134194
Benzo(a)pyrene	ug/L	<0.010	0.010	6134194
Benzo(b/j)fluoranthene	ug/L	<0.050	0.050	6134194
Benzo(g,h,i)perylene	ug/L	<0.050	0.050	6134194
Benzo(k)fluoranthene	ug/L	<0.050	0.050	6134194
Chrysene	ug/L	<0.050	0.050	6134194
Dibenz(a,h)anthracene	ug/L	<0.050	0.050	6134194
Fluoranthene	ug/L	0.14	0.050	6134194
Fluorene	ug/L	2.8	0.050	6134194
Indeno(1,2,3-cd)pyrene	ug/L	<0.050	0.050	6134194
1-Methylnaphthalene	ug/L	11	0.050	6134194
2-Methylnaphthalene	ug/L	<0.70 (1)	0.70	6134194
Naphthalene	ug/L	0.51	0.050	6134194
Phenanthrene	ug/L	1.4	0.030	6134194
Pyrene	ug/L	0.67	0.050	6134194
Surrogate Recovery (%)				
D10-Anthracene	%	123		6134194
D14-Terphenyl (FS)	%	115		6134194
D8-Acenaphthylene	%	99		6134194

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) DL was raised due to matrix interference.

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Report Date: 2019/05/24

exp Services Inc
Client Project #: OTT-00252625-A
Site Location: FOREST
Sampler Initials: MAD

O.REG 153 VOCS BY HS & F1-F4 (WATER)

Maxxam ID		JTB403	JTB404		JTB405			JTB405		
Sampling Date		2019/05/16	2019/05/16		2019/05/16			2019/05/16		
COC Number		717293-01-01	717293-01-01		717293-01-01			717293-01-01		
	UNITS	**MW19-2A**	**MW19-20**	**QC Batch**	**MW19-2**	**RDL**	**QC Batch**	**MW19-2 Lab-Dup**	**RDL**	**QC Batch**
Calculated Parameters										
1,3-Dichloropropene (cis+trans)	ug/L	<0.50	<0.50	6127752	<0.50	0.50	6128695			
Volatile Organics										
Acetone (2-Propanone)	ug/L	<10	<10	6129612	<10	10	6129612			
Benzene	ug/L	<0.20	<0.20	6129612	<0.20	0.20	6129612			
Bromodichloromethane	ug/L	<0.50	<0.50	6129612	<0.50	0.50	6129612			
Bromoform	ug/L	<1.0	<1.0	6129612	<1.0	1.0	6129612			
Bromomethane	ug/L	<0.50	<0.50	6129612	<0.50	0.50	6129612			
Carbon Tetrachloride	ug/L	<0.20	<0.20	6129612	<0.20	0.20	6129612			
Chlorobenzene	ug/L	<0.20	<0.20	6129612	<0.20	0.20	6129612			
Chloroform	ug/L	<0.20	<0.20	6129612	<0.20	0.20	6129612			
Dibromochloromethane	ug/L	<0.50	<0.50	6129612	<0.50	0.50	6129612			
1,2-Dichlorobenzene	ug/L	<0.50	<0.50	6129612	<0.50	0.50	6129612			
1,3-Dichlorobenzene	ug/L	<0.50	<0.50	6129612	<0.50	0.50	6129612			
1,4-Dichlorobenzene	ug/L	<0.50	<0.50	6129612	<0.50	0.50	6129612			
Dichlorodifluoromethane (FREON 12)	ug/L	<1.0	<1.0	6129612	<1.0	1.0	6129612			
1,1-Dichloroethane	ug/L	<0.20	<0.20	6129612	<0.20	0.20	6129612			
1,2-Dichloroethane	ug/L	<0.50	<0.50	6129612	<0.50	0.50	6129612			
1,1-Dichloroethylene	ug/L	<0.20	<0.20	6129612	<0.20	0.20	6129612			
cis-1,2-Dichloroethylene	ug/L	<0.50	<0.50	6129612	<0.50	0.50	6129612			
trans-1,2-Dichloroethylene	ug/L	<0.50	<0.50	6129612	<0.50	0.50	6129612			
1,2-Dichloropropane	ug/L	<0.20	<0.20	6129612	<0.20	0.20	6129612			
cis-1,3-Dichloropropene	ug/L	<0.30	<0.30	6129612	<0.30	0.30	6129612			
trans-1,3-Dichloropropene	ug/L	<0.40	<0.40	6129612	<0.40	0.40	6129612			
Ethylbenzene	ug/L	<0.20	0.39	6129612	<0.20	0.20	6129612			
Ethylene Dibromide	ug/L	<0.20	<0.20	6129612	<0.20	0.20	6129612			
Hexane	ug/L	<1.0	<1.0	6129612	<1.0	1.0	6129612			
Methylene Chloride(Dichloromethane)	ug/L	<2.0	<2.0	6129612	<2.0	2.0	6129612			
Methyl Ethyl Ketone (2-Butanone)	ug/L	<10	<10	6129612	<10	10	6129612			
Methyl Isobutyl Ketone	ug/L	<5.0	<5.0	6129612	<5.0	5.0	6129612			
Methyl t-butyl ether (MTBE)	ug/L	<0.50	<0.50	6129612	<0.50	0.50	6129612			
Styrene	ug/L	<0.50	<0.50	6129612	<0.50	0.50	6129612			
1,1,1,2-Tetrachloroethane	ug/L	<0.50	<0.50	6129612	<0.50	0.50	6129612			
1,1,2,2-Tetrachloroethane	ug/L	<0.50	<0.50	6129612	<0.50	0.50	6129612			
Tetrachloroethylene	ug/L	<0.20	<0.20	6129612	<0.20	0.20	6129612			

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

Maxxam Job #: B9D2759
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O.REG 153 VOCS BY HS & F1-F4 (WATER)

Maxxam ID		JTB403	JTB404		JTB405			JTB405		
Sampling Date		2019/05/16	2019/05/16		2019/05/16			2019/05/16		
COC Number		717293-01-01	717293-01-01		717293-01-01			717293-01-01		
	UNITS	**MW19-2A**	**MW19-20**	**QC Batch**	**MW19-2**	**RDL**	**QC Batch**	**MW19-2 Lab-Dup**	**RDL**	**QC Batch**
Toluene	ug/L	<0.20	<0.20	6129612	<0.20	0.20	6129612			
1,1,1-Trichloroethane	ug/L	<0.20	<0.20	6129612	<0.20	0.20	6129612			
1,1,2-Trichloroethane	ug/L	<0.50	<0.50	6129612	<0.50	0.50	6129612			
Trichloroethylene	ug/L	<0.20	<0.20	6129612	<0.20	0.20	6129612			
Trichlorofluoromethane (FREON 11)	ug/L	<0.50	<0.50	6129612	<0.50	0.50	6129612			
Vinyl Chloride	ug/L	<0.20	<0.20	6129612	<0.20	0.20	6129612			
p+m-Xylene	ug/L	<0.20	<0.20	6129612	<0.20	0.20	6129612			
o-Xylene	ug/L	<0.20	<0.20	6129612	<0.20	0.20	6129612			
Total Xylenes	ug/L	<0.20	<0.20	6129612	<0.20	0.20	6129612			
F1 (C6-C10)	ug/L	<25	<25	6129612	<25	25	6129612			
F1 (C6-C10) - BTEX	ug/L	<25	<25	6129612	<25	25	6129612			
F2-F4 Hydrocarbons										
F2 (C10-C16 Hydrocarbons)	ug/L	<100	1600	6134190	<100	100	6134190	<100	100	6134190
F3 (C16-C34 Hydrocarbons)	ug/L	<200	1800	6134190	<200	200	6134190	<200	200	6134190
F4 (C34-C50 Hydrocarbons)	ug/L	<200	<200	6134190	<200	200	6134190	<200	200	6134190
Reached Baseline at C50	ug/L	Yes	Yes	6134190	Yes		6134190	Yes		6134190
Surrogate Recovery (%)										
o-Terphenyl	%	106	108	6134190	105		6134190	101		6134190
4-Bromofluorobenzene	%	88	92	6129612	90		6129612			
D4-1,2-Dichloroethane	%	112	113	6129612	109		6129612			
D8-Toluene	%	94	95	6129612	95		6129612			

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Report Date: 2019/05/24

exp Services Inc
Client Project #: OTT-00252625-A
Site Location: FOREST
Sampler Initials: MAD

O.REG 153 VOCS BY HS & F1-F4 (WATER)

Maxxam ID		JTB406	JTB407	JTB408	JTB409	JTB410		
Sampling Date		2019/05/16	2019/05/16	2019/05/16	2019/05/15	2019/05/15		
COC Number		717293-01-01	717293-01-01	717293-01-01	717293-01-01	717293-02-01		
	UNITS	**MW19-3A**	**MW19-7**	**BH1-18**	**MW19-10**	**MW19-8**	**RDL**	**QC Batch**
Calculated Parameters								
1,3-Dichloropropene (cis+trans)	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	6128695
Volatile Organics								
Acetone (2-Propanone)	ug/L	<10	<10	<10	<10	<10	10	6129612
Benzene	ug/L	<0.20	<0.20	<0.20	<0.20	0.56	0.20	6129612
Bromodichloromethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	6129612
Bromoform	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	6129612
Bromomethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	6129612
Carbon Tetrachloride	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	6129612
Chlorobenzene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	6129612
Chloroform	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	6129612
Dibromochloromethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	6129612
1,2-Dichlorobenzene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	6129612
1,3-Dichlorobenzene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	6129612
1,4-Dichlorobenzene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	6129612
Dichlorodifluoromethane (FREON 12)	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	6129612
1,1-Dichloroethane	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	6129612
1,2-Dichloroethane	ug/L	<0.50	<0.50	<0.50	<0.50	2.0	0.50	6129612
1,1-Dichloroethylene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	6129612
cis-1,2-Dichloroethylene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	6129612
trans-1,2-Dichloroethylene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	6129612
1,2-Dichloropropane	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	6129612
cis-1,3-Dichloropropene	ug/L	<0.30	<0.30	<0.30	<0.30	<0.30	0.30	6129612
trans-1,3-Dichloropropene	ug/L	<0.40	<0.40	<0.40	<0.40	<0.40	0.40	6129612
Ethylbenzene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	6129612
Ethylene Dibromide	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	6129612
Hexane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	6129612
Methylene Chloride(Dichloromethane)	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	6129612
Methyl Ethyl Ketone (2-Butanone)	ug/L	<10	<10	<10	<10	<10	10	6129612
Methyl Isobutyl Ketone	ug/L	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	6129612
Methyl t-butyl ether (MTBE)	ug/L	<0.50	<0.50	4.6	<0.50	0.75	0.50	6129612
Styrene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	6129612
1,1,1,2-Tetrachloroethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	6129612
1,1,2,2-Tetrachloroethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	6129612
Tetrachloroethylene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	6129612

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B9D2759
Report Date: 2019/05/24

exp Services Inc
Client Project #: OTT-00252625-A
Site Location: FOREST
Sampler Initials: MAD

O.REG 153 VOCS BY HS & F1-F4 (WATER)

Maxxam ID		JTB406	JTB407	JTB408	JTB409	JTB410		
Sampling Date		2019/05/16	2019/05/16	2019/05/16	2019/05/15	2019/05/15		
COC Number		717293-01-01	717293-01-01	717293-01-01	717293-01-01	717293-02-01		
	UNITS	**MW19-3A**	**MW19-7**	**BH1-18**	**MW19-10**	**MW19-8**	**RDL**	**QC Batch**
Toluene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	6129612
1,1,1-Trichloroethane	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	6129612
1,1,2-Trichloroethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	6129612
Trichloroethylene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	6129612
Trichlorofluoromethane (FREON 11)	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	6129612
Vinyl Chloride	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	6129612
p+m-Xylene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	6129612
o-Xylene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	6129612
Total Xylenes	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	6129612
F1 (C6-C10)	ug/L	<25	<25	<25	<25	<25	25	6129612
F1 (C6-C10) - BTEX	ug/L	<25	<25	<25	<25	<25	25	6129612
F2-F4 Hydrocarbons								
F2 (C10-C16 Hydrocarbons)	ug/L	<100	<100	<100	<100	<100	100	6134190
F3 (C16-C34 Hydrocarbons)	ug/L	<200	<200	<200	<200	<200	200	6134190
F4 (C34-C50 Hydrocarbons)	ug/L	<200	<200	<200	<200	<200	200	6134190
Reached Baseline at C50	ug/L	Yes	Yes	Yes	Yes	Yes		6134190
Surrogate Recovery (%)								
o-Terphenyl	%	108	110	108	108	107		6134190
4-Bromofluorobenzene	%	88	88	88	88	90		6129612
D4-1,2-Dichloroethane	%	108	108	110	112	110		6129612
D8-Toluene	%	96	95	96	94	95		6129612

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O.REG 153 VOCS BY HS & F1-F4 (WATER)

Maxxam ID		JTB411	JTB412		
Sampling Date		2019/05/15	2019/05/16		
COC Number		717293-02-01	717293-02-01		
	UNITS	**MW19-6**	**BH6**	**RDL**	**QC Batch**
Calculated Parameters					
1,3-Dichloropropene (cis+trans)	ug/L	<0.50	<0.50	0.50	6128695
Volatile Organics					
Acetone (2-Propanone)	ug/L	<10	<10	10	6129612
Benzene	ug/L	<0.20	<0.20	0.20	6129612
Bromodichloromethane	ug/L	<0.50	<0.50	0.50	6129612
Bromoform	ug/L	<1.0	<1.0	1.0	6129612
Bromomethane	ug/L	<0.50	<0.50	0.50	6129612
Carbon Tetrachloride	ug/L	<0.20	<0.20	0.20	6129612
Chlorobenzene	ug/L	<0.20	<0.20	0.20	6129612
Chloroform	ug/L	<0.20	<0.20	0.20	6129612
Dibromochloromethane	ug/L	<0.50	<0.50	0.50	6129612
1,2-Dichlorobenzene	ug/L	<0.50	<0.50	0.50	6129612
1,3-Dichlorobenzene	ug/L	<0.50	<0.50	0.50	6129612
1,4-Dichlorobenzene	ug/L	<0.50	<0.50	0.50	6129612
Dichlorodifluoromethane (FREON 12)	ug/L	<1.0	<1.0	1.0	6129612
1,1-Dichloroethane	ug/L	<0.20	<0.20	0.20	6129612
1,2-Dichloroethane	ug/L	<0.50	<0.50	0.50	6129612
1,1-Dichloroethylene	ug/L	<0.20	<0.20	0.20	6129612
cis-1,2-Dichloroethylene	ug/L	<0.50	<0.50	0.50	6129612
trans-1,2-Dichloroethylene	ug/L	<0.50	<0.50	0.50	6129612
1,2-Dichloropropane	ug/L	<0.20	<0.20	0.20	6129612
cis-1,3-Dichloropropene	ug/L	<0.30	<0.30	0.30	6129612
trans-1,3-Dichloropropene	ug/L	<0.40	<0.40	0.40	6129612
Ethylbenzene	ug/L	<0.20	0.39	0.20	6129612
Ethylene Dibromide	ug/L	<0.20	<0.20	0.20	6129612
Hexane	ug/L	<1.0	<1.0	1.0	6129612
Methylene Chloride(Dichloromethane)	ug/L	<2.0	<2.0	2.0	6129612
Methyl Ethyl Ketone (2-Butanone)	ug/L	<10	<10	10	6129612
Methyl Isobutyl Ketone	ug/L	<5.0	<5.0	5.0	6129612
Methyl t-butyl ether (MTBE)	ug/L	<0.50	<0.50	0.50	6129612
Styrene	ug/L	<0.50	<0.50	0.50	6129612
1,1,1,2-Tetrachloroethane	ug/L	<0.50	<0.50	0.50	6129612
1,1,2,2-Tetrachloroethane	ug/L	<0.50	<0.50	0.50	6129612
Tetrachloroethylene	ug/L	<0.20	<0.20	0.20	6129612

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: B9D2759
Report Date: 2019/05/24

exp Services Inc
Client Project #: OTT-00252625-A
Site Location: FOREST
Sampler Initials: MAD

O.REG 153 VOCS BY HS & F1-F4 (WATER)

Maxxam ID		JTB411	JTB412		
Sampling Date		2019/05/15	2019/05/16		
COC Number		717293-02-01	717293-02-01		
	UNITS	**MW19-6**	**BH6**	**RDL**	**QC Batch**
Toluene	ug/L	<0.20	<0.20	0.20	6129612
1,1,1-Trichloroethane	ug/L	<0.20	<0.20	0.20	6129612
1,1,2-Trichloroethane	ug/L	<0.50	<0.50	0.50	6129612
Trichloroethylene	ug/L	<0.20	<0.20	0.20	6129612
Trichlorofluoromethane (FREON 11)	ug/L	<0.50	<0.50	0.50	6129612
Vinyl Chloride	ug/L	<0.20	<0.20	0.20	6129612
p+m-Xylene	ug/L	<0.20	<0.20	0.20	6129612
o-Xylene	ug/L	<0.20	<0.20	0.20	6129612
Total Xylenes	ug/L	<0.20	<0.20	0.20	6129612
F1 (C6-C10)	ug/L	<25	<25	25	6129612
F1 (C6-C10) - BTEX	ug/L	<25	<25	25	6129612
F2-F4 Hydrocarbons					
F2 (C10-C16 Hydrocarbons)	ug/L	<100	1700	100	6134190
F3 (C16-C34 Hydrocarbons)	ug/L	<200	2000	200	6134190
F4 (C34-C50 Hydrocarbons)	ug/L	<200	<200	200	6134190
Reached Baseline at C50	ug/L	Yes	Yes		6134190
Surrogate Recovery (%)					
o-Terphenyl	%	105	113		6134190
4-Bromofluorobenzene	%	89	90		6129612
D4-1,2-Dichloroethane	%	112	111		6129612
D8-Toluene	%	95	93		6129612

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B9D2759
Report Date: 2019/05/24

exp Services Inc
Client Project #: OTT-00252625-A
Site Location: FOREST
Sampler Initials: MAD

TEST SUMMARY

Maxxam ID: JTB401 **Collected:**
Sample ID: TRIP BLANK#4538 **Shipped:**
Matrix: Water **Received:** 2019/05/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Volatile Organic Compounds and F1 PHCs	GC/MSFD	6129612	N/A	2019/05/22	Xueming Jiang

Maxxam ID: JTB402 **Collected:** 2019/05/16
Sample ID: FIELD BLANK **Shipped:**
Matrix: Water **Received:** 2019/05/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Volatile Organic Compounds and F1 PHCs	GC/MSFD	6129612	N/A	2019/05/22	Xueming Jiang

Maxxam ID: JTB403 **Collected:** 2019/05/16
Sample ID: MW19-2A **Shipped:**
Matrix: Water **Received:** 2019/05/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	6127751	N/A	2019/05/24	Automated Statchk
1,3-Dichloropropene Sum	CALC	6127752	N/A	2019/05/22	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	6134190	2019/05/22	2019/05/23	Prabhjot Gulati
Dissolved Metals by ICPMS	ICP/MS	6131544	N/A	2019/05/22	Thao Nguyen
PAH Compounds in Water by GC/MS (SIM)	GC/MS	6134194	2019/05/22	2019/05/23	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	6129612	N/A	2019/05/22	Xueming Jiang

Maxxam ID: JTB403 Dup **Collected:** 2019/05/16
Sample ID: MW19-2A **Shipped:**
Matrix: Water **Received:** 2019/05/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Metals by ICPMS	ICP/MS	6131544	N/A	2019/05/22	Thao Nguyen

Maxxam ID: JTB404 **Collected:** 2019/05/16
Sample ID: MW19-20 **Shipped:**
Matrix: Water **Received:** 2019/05/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	6127751	N/A	2019/05/23	Automated Statchk
1,3-Dichloropropene Sum	CALC	6127752	N/A	2019/05/22	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	6134190	2019/05/22	2019/05/23	Prabhjot Gulati
Dissolved Metals by ICPMS	ICP/MS	6131544	N/A	2019/05/22	Thao Nguyen
PAH Compounds in Water by GC/MS (SIM)	GC/MS	6134194	2019/05/22	2019/05/23	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	6129612	N/A	2019/05/22	Xueming Jiang

Maxxam ID: JTB405 **Collected:** 2019/05/16
Sample ID: MW19-2 **Shipped:**
Matrix: Water **Received:** 2019/05/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	6127751	N/A	2019/05/23	Automated Statchk

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Report Date: 2019/05/24

exp Services Inc
Client Project #: OTT-00252625-A
Site Location: FOREST
Sampler Initials: MAD

TEST SUMMARY

Maxxam ID: JTB405 **Collected:** 2019/05/16
Sample ID: MW19-2 **Shipped:**
Matrix: Water **Received:** 2019/05/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	6128695	N/A	2019/05/22	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	6134190	2019/05/22	2019/05/23	Prabhjot Gulati
Dissolved Metals by ICPMS	ICP/MS	6131544	N/A	2019/05/22	Thao Nguyen
PAH Compounds in Water by GC/MS (SIM)	GC/MS	6134194	2019/05/22	2019/05/23	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	6129612	N/A	2019/05/22	Xueming Jiang

Maxxam ID: JTB405 Dup **Collected:** 2019/05/16
Sample ID: MW19-2 **Shipped:**
Matrix: Water **Received:** 2019/05/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	6134190	2019/05/22	2019/05/23	Prabhjot Gulati
PAH Compounds in Water by GC/MS (SIM)	GC/MS	6134194	2019/05/22	2019/05/23	Mitesh Raj

Maxxam ID: JTB406 **Collected:** 2019/05/16
Sample ID: MW19-3A **Shipped:**
Matrix: Water **Received:** 2019/05/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	6127751	N/A	2019/05/24	Automated Statchk
1,3-Dichloropropene Sum	CALC	6128695	N/A	2019/05/22	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	6134190	2019/05/22	2019/05/23	Prabhjot Gulati
Dissolved Metals by ICPMS	ICP/MS	6131544	N/A	2019/05/22	Thao Nguyen
PAH Compounds in Water by GC/MS (SIM)	GC/MS	6134194	2019/05/22	2019/05/23	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	6129612	N/A	2019/05/22	Xueming Jiang

Maxxam ID: JTB407 **Collected:** 2019/05/16
Sample ID: MW19-7 **Shipped:**
Matrix: Water **Received:** 2019/05/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	6127751	N/A	2019/05/24	Automated Statchk
1,3-Dichloropropene Sum	CALC	6128695	N/A	2019/05/22	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	6134190	2019/05/22	2019/05/23	Prabhjot Gulati
Dissolved Metals by ICPMS	ICP/MS	6131544	N/A	2019/05/22	Thao Nguyen
PAH Compounds in Water by GC/MS (SIM)	GC/MS	6134194	2019/05/22	2019/05/23	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	6129612	N/A	2019/05/22	Xueming Jiang

Maxxam ID: JTB408 **Collected:** 2019/05/16
Sample ID: BH1-18 **Shipped:**
Matrix: Water **Received:** 2019/05/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	6127751	N/A	2019/05/24	Automated Statchk
1,3-Dichloropropene Sum	CALC	6128695	N/A	2019/05/22	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	6134190	2019/05/22	2019/05/23	Prabhjot Gulati

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Report Date: 2019/05/24

exp Services Inc
Client Project #: OTT-00252625-A
Site Location: FOREST
Sampler Initials: MAD

TEST SUMMARY

Maxxam ID: JTB408 **Collected:** 2019/05/16
Sample ID: BH1-18 **Shipped:**
Matrix: Water **Received:** 2019/05/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Metals by ICPMS	ICP/MS	6131544	N/A	2019/05/22	Thao Nguyen
PAH Compounds in Water by GC/MS (SIM)	GC/MS	6134194	2019/05/22	2019/05/23	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	6129612	N/A	2019/05/22	Xueming Jiang

Maxxam ID: JTB409 **Collected:** 2019/05/15
Sample ID: MW19-10 **Shipped:**
Matrix: Water **Received:** 2019/05/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	6127751	N/A	2019/05/24	Automated Statchk
1,3-Dichloropropene Sum	CALC	6128695	N/A	2019/05/22	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	6134190	2019/05/22	2019/05/23	Prabhjot Gulati
Dissolved Metals by ICPMS	ICP/MS	6131544	N/A	2019/05/22	Thao Nguyen
PAH Compounds in Water by GC/MS (SIM)	GC/MS	6134194	2019/05/22	2019/05/23	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	6129612	N/A	2019/05/22	Xueming Jiang

Maxxam ID: JTB410 **Collected:** 2019/05/15
Sample ID: MW19-8 **Shipped:**
Matrix: Water **Received:** 2019/05/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	6127751	N/A	2019/05/24	Automated Statchk
1,3-Dichloropropene Sum	CALC	6128695	N/A	2019/05/22	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	6134190	2019/05/22	2019/05/23	Prabhjot Gulati
Dissolved Metals by ICPMS	ICP/MS	6131544	N/A	2019/05/22	Thao Nguyen
PAH Compounds in Water by GC/MS (SIM)	GC/MS	6134194	2019/05/22	2019/05/23	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	6129612	N/A	2019/05/22	Xueming Jiang

Maxxam ID: JTB411 **Collected:** 2019/05/15
Sample ID: MW19-6 **Shipped:**
Matrix: Water **Received:** 2019/05/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	6127751	N/A	2019/05/24	Automated Statchk
1,3-Dichloropropene Sum	CALC	6128695	N/A	2019/05/22	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	6134190	2019/05/22	2019/05/23	Prabhjot Gulati
Dissolved Metals by ICPMS	ICP/MS	6131544	N/A	2019/05/22	Thao Nguyen
PAH Compounds in Water by GC/MS (SIM)	GC/MS	6134194	2019/05/22	2019/05/23	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	6129612	N/A	2019/05/22	Xueming Jiang

Maxxam ID: JTB412 **Collected:** 2019/05/16
Sample ID: BH6 **Shipped:**
Matrix: Water **Received:** 2019/05/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	6127751	N/A	2019/05/23	Automated Statchk

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Maxxam Job #: B9D2759
Report Date: 2019/05/24

exp Services Inc
Client Project #: OTT-00252625-A
Site Location: FOREST
Sampler Initials: MAD

TEST SUMMARY

Maxxam ID: JTB412
Sample ID: BH6
Matrix: Water

Collected: 2019/05/16
Shipped:
Received: 2019/05/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	6128695	N/A	2019/05/23	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	6134190	2019/05/22	2019/05/23	Prabhjot Gulati
Dissolved Metals by ICPMS	ICP/MS	6131544	N/A	2019/05/22	Thao Nguyen
PAH Compounds in Water by GC/MS (SIM)	GC/MS	6134194	2019/05/22	2019/05/23	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	6129612	N/A	2019/05/22	Xueming Jiang

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exp Services Inc
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GENERAL COMMENTS

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

Package 1	8.3°C

Results relate only to the items tested.

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Maxxam Job #: B9D2759
Report Date: 2019/05/24

QUALITY ASSURANCE REPORT

exp Services Inc
Client Project #: OTT-00252625-A
Site Location: FOREST
Sampler Initials: MAD

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
6129612	4-Bromofluorobenzene	2019/05/21	98	70 - 130	97	70 - 130	89	%		
6129612	D4-1,2-Dichloroethane	2019/05/21	106	70 - 130	104	70 - 130	107	%		
6129612	D8-Toluene	2019/05/21	102	70 - 130	102	70 - 130	95	%		
6134190	o-Terphenyl	2019/05/22	104	60 - 130	95	60 - 130	103	%		
6134194	D10-Anthracene	2019/05/23	107	50 - 130	103	50 - 130	114	%		
6134194	D14-Terphenyl (FS)	2019/05/23	90	50 - 130	91	50 - 130	98	%		
6134194	D8-Acenaphthylene	2019/05/23	106	50 - 130	97	50 - 130	100	%		
6129612	1,1,1,2-Tetrachloroethane	2019/05/22	100	70 - 130	95	70 - 130	<0.50	ug/L	NC	30
6129612	1,1,1-Trichloroethane	2019/05/22	97	70 - 130	93	70 - 130	<0.20	ug/L	NC	30
6129612	1,1,2,2-Tetrachloroethane	2019/05/22	103	70 - 130	98	70 - 130	<0.50	ug/L	NC	30
6129612	1,1,2-Trichloroethane	2019/05/22	103	70 - 130	98	70 - 130	<0.50	ug/L	NC	30
6129612	1,1-Dichloroethane	2019/05/22	102	70 - 130	98	70 - 130	<0.20	ug/L	NC	30
6129612	1,1-Dichloroethylene	2019/05/22	99	70 - 130	95	70 - 130	<0.20	ug/L	NC	30
6129612	1,2-Dichlorobenzene	2019/05/22	100	70 - 130	95	70 - 130	<0.50	ug/L	NC	30
6129612	1,2-Dichloroethane	2019/05/22	101	70 - 130	97	70 - 130	<0.50	ug/L	NC	30
6129612	1,2-Dichloropropane	2019/05/22	94	70 - 130	91	70 - 130	<0.20	ug/L	NC	30
6129612	1,3-Dichlorobenzene	2019/05/22	98	70 - 130	92	70 - 130	<0.50	ug/L	NC	30
6129612	1,4-Dichlorobenzene	2019/05/22	99	70 - 130	93	70 - 130	<0.50	ug/L	NC	30
6129612	Acetone (2-Propanone)	2019/05/22	103	60 - 140	99	60 - 140	<10	ug/L	NC	30
6129612	Benzene	2019/05/22	100	70 - 130	96	70 - 130	<0.20	ug/L	NC	30
6129612	Bromodichloromethane	2019/05/22	97	70 - 130	93	70 - 130	<0.50	ug/L	NC	30
6129612	Bromoform	2019/05/22	96	70 - 130	91	70 - 130	<1.0	ug/L	NC	30
6129612	Bromomethane	2019/05/22	108	60 - 140	101	60 - 140	<0.50	ug/L	NC	30
6129612	Carbon Tetrachloride	2019/05/22	96	70 - 130	93	70 - 130	<0.20	ug/L	NC	30
6129612	Chlorobenzene	2019/05/22	97	70 - 130	92	70 - 130	<0.20	ug/L	NC	30
6129612	Chloroform	2019/05/22	101	70 - 130	97	70 - 130	<0.20	ug/L	NC	30
6129612	cis-1,2-Dichloroethylene	2019/05/22	104	70 - 130	99	70 - 130	<0.50	ug/L	NC	30
6129612	cis-1,3-Dichloropropene	2019/05/22	79	70 - 130	67 (1)	70 - 130	<0.30	ug/L	NC	30
6129612	Dibromochloromethane	2019/05/22	99	70 - 130	94	70 - 130	<0.50	ug/L	NC	30
6129612	Dichlorodifluoromethane (FREON 12)	2019/05/22	86	60 - 140	87	60 - 140	<1.0	ug/L	NC	30
6129612	Ethylbenzene	2019/05/22	87	70 - 130	83	70 - 130	<0.20	ug/L	NC	30
6129612	Ethylene Dibromide	2019/05/22	100	70 - 130	95	70 - 130	<0.20	ug/L	NC	30

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
6129612	F1 (C6-C10) - BTEX	2019/05/22					<25	ug/L	NC	30
6129612	F1 (C6-C10)	2019/05/22	95	60 - 140	96	60 - 140	<25	ug/L	NC	30
6129612	Hexane	2019/05/22	90	70 - 130	86	70 - 130	<1.0	ug/L	NC	30
6129612	Methyl Ethyl Ketone (2-Butanone)	2019/05/22	100	60 - 140	96	60 - 140	<10	ug/L	NC	30
6129612	Methyl Isobutyl Ketone	2019/05/22	91	70 - 130	87	70 - 130	<5.0	ug/L	NC	30
6129612	Methyl t-butyl ether (MTBE)	2019/05/22	89	70 - 130	86	70 - 130	<0.50	ug/L	NC	30
6129612	Methylene Chloride(Dichloromethane)	2019/05/22	111	70 - 130	106	70 - 130	<2.0	ug/L	NC	30
6129612	o-Xylene	2019/05/22	87	70 - 130	83	70 - 130	<0.20	ug/L	NC	30
6129612	p+m-Xylene	2019/05/22	79	70 - 130	75	70 - 130	<0.20	ug/L	NC	30
6129612	Styrene	2019/05/22	85	70 - 130	82	70 - 130	<0.50	ug/L	NC	30
6129612	Tetrachloroethylene	2019/05/22	105	70 - 130	100	70 - 130	<0.20	ug/L	NC	30
6129612	Toluene	2019/05/22	102	70 - 130	97	70 - 130	<0.20	ug/L	NC	30
6129612	Total Xylenes	2019/05/22					<0.20	ug/L	NC	30
6129612	trans-1,2-Dichloroethylene	2019/05/22	102	70 - 130	98	70 - 130	<0.50	ug/L	NC	30
6129612	trans-1,3-Dichloropropene	2019/05/22	84	70 - 130	69 (1)	70 - 130	<0.40	ug/L	NC	30
6129612	Trichloroethylene	2019/05/22	99	70 - 130	95	70 - 130	<0.20	ug/L	NC	30
6129612	Trichlorofluoromethane (FREON 11)	2019/05/22	105	70 - 130	102	70 - 130	<0.50	ug/L	NC	30
6129612	Vinyl Chloride	2019/05/22	99	70 - 130	96	70 - 130	<0.20	ug/L	NC	30
6131544	Dissolved Antimony (Sb)	2019/05/22	105	80 - 120	96	80 - 120	<0.50	ug/L	NC	20
6131544	Dissolved Arsenic (As)	2019/05/22	101	80 - 120	97	80 - 120	<1.0	ug/L	NC	20
6131544	Dissolved Barium (Ba)	2019/05/22	97	80 - 120	96	80 - 120	<2.0	ug/L	0.99	20
6131544	Dissolved Beryllium (Be)	2019/05/22	100	80 - 120	97	80 - 120	<0.50	ug/L	NC	20
6131544	Dissolved Boron (B)	2019/05/22	103	80 - 120	102	80 - 120	<10	ug/L	2.1	20
6131544	Dissolved Cadmium (Cd)	2019/05/22	100	80 - 120	95	80 - 120	<0.10	ug/L	NC	20
6131544	Dissolved Chromium (Cr)	2019/05/22	98	80 - 120	96	80 - 120	<5.0	ug/L	NC	20
6131544	Dissolved Cobalt (Co)	2019/05/22	96	80 - 120	96	80 - 120	<0.50	ug/L	8.4	20
6131544	Dissolved Copper (Cu)	2019/05/22	100	80 - 120	96	80 - 120	<1.0	ug/L	10	20
6131544	Dissolved Lead (Pb)	2019/05/22	93	80 - 120	93	80 - 120	<0.50	ug/L	NC	20
6131544	Dissolved Molybdenum (Mo)	2019/05/22	107	80 - 120	98	80 - 120	<0.50	ug/L	NC	20
6131544	Dissolved Nickel (Ni)	2019/05/22	94	80 - 120	95	80 - 120	<1.0	ug/L	4.2	20
6131544	Dissolved Selenium (Se)	2019/05/22	101	80 - 120	98	80 - 120	<2.0	ug/L	NC	20
6131544	Dissolved Silver (Ag)	2019/05/22	99	80 - 120	94	80 - 120	<0.10	ug/L	NC	20

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
6131544	Dissolved Sodium (Na)	2019/05/22	NC	80 - 120	97	80 - 120	<100	ug/L	1.1	20
6131544	Dissolved Thallium (Tl)	2019/05/22	93	80 - 120	93	80 - 120	<0.050	ug/L	NC	20
6131544	Dissolved Uranium (U)	2019/05/22	89	80 - 120	87	80 - 120	<0.10	ug/L	2.9	20
6131544	Dissolved Vanadium (V)	2019/05/22	103	80 - 120	98	80 - 120	<0.50	ug/L	NC	20
6131544	Dissolved Zinc (Zn)	2019/05/22	96	80 - 120	96	80 - 120	<5.0	ug/L	NC	20
6134190	F2 (C10-C16 Hydrocarbons)	2019/05/23	108	50 - 130	101	60 - 130	<100	ug/L	NC	30
6134190	F3 (C16-C34 Hydrocarbons)	2019/05/23	107	50 - 130	100	60 - 130	<200	ug/L	NC	30
6134190	F4 (C34-C50 Hydrocarbons)	2019/05/23	105	50 - 130	97	60 - 130	<200	ug/L	NC	30
6134194	1-Methylnaphthalene	2019/05/23	107	50 - 130	81	50 - 130	<0.050	ug/L	NC	30
6134194	2-Methylnaphthalene	2019/05/23	81	50 - 130	67	50 - 130	<0.050	ug/L	NC	30
6134194	Acenaphthene	2019/05/23	92	50 - 130	88	50 - 130	<0.050	ug/L	NC	30
6134194	Acenaphthylene	2019/05/23	97	50 - 130	91	50 - 130	<0.050	ug/L	NC	30
6134194	Anthracene	2019/05/23	93	50 - 130	95	50 - 130	<0.050	ug/L	NC	30
6134194	Benzo(a)anthracene	2019/05/23	101	50 - 130	101	50 - 130	<0.050	ug/L	NC	30
6134194	Benzo(a)pyrene	2019/05/23	92	50 - 130	95	50 - 130	<0.010	ug/L	NC	30
6134194	Benzo(b/j)fluoranthene	2019/05/23	97	50 - 130	98	50 - 130	<0.050	ug/L	NC	30
6134194	Benzo(g,h,i)perylene	2019/05/23	81	50 - 130	83	50 - 130	<0.050	ug/L	NC	30
6134194	Benzo(k)fluoranthene	2019/05/23	91	50 - 130	99	50 - 130	<0.050	ug/L	NC	30
6134194	Chrysene	2019/05/23	80	50 - 130	82	50 - 130	<0.050	ug/L	NC	30
6134194	Dibenz(a,h)anthracene	2019/05/23	81	50 - 130	78	50 - 130	<0.050	ug/L	NC	30
6134194	Fluoranthene	2019/05/23	94	50 - 130	97	50 - 130	<0.050	ug/L	NC	30
6134194	Fluorene	2019/05/23	98	50 - 130	93	50 - 130	<0.050	ug/L	NC	30
6134194	Indeno(1,2,3-cd)pyrene	2019/05/23	90	50 - 130	91	50 - 130	<0.050	ug/L	NC	30
6134194	Naphthalene	2019/05/23	84	50 - 130	75	50 - 130	<0.050	ug/L	NC	30
6134194	Phenanthrene	2019/05/23	98	50 - 130	98	50 - 130	<0.030	ug/L	NC	30

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Maxxam Job #: B9D2759
Report Date: 2019/05/24

QUALITY ASSURANCE REPORT(CONT'D)

exp Services Inc
Client Project #: OTT-00252625-A
Site Location: FOREST
Sampler Initials: MAD

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
6134194	Pyrene	2019/05/23	96	50 - 130	98	50 - 130	<0.050	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 (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

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).

(1) The recovery was below the lower control limit. This may represent a low bias in some results for this specific analyte.

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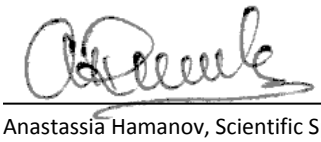
Maxxam Job #: B9D2759
Report Date: 2019/05/24

exp Services Inc
Client Project #: OTT-00252625-A
Site Location: FOREST
Sampler Initials: MAD

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Anastassia Hamanov, Scientific Specialist

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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16-May-19 17:45
Alisha Williamson
B9D2759
GK1 ENV-936

Presence of Visible Particulate/Sediment

Maxxam Analytics
CAM FCD-01013/5

When there is >1cm of visible particulate/sediment, the amount will be recorded in the field below

		Bottle Types																														
			...organics					Organics											Hydrocarbons							Volatiles				Other
	Sample ID	All	CrVI	CN	General	Hg	Metals (Diss.)	Organic 1 of 2	Organic 2 of 2	PCB 1 of 2	PCB 2 of 2	Pest/ Herb 1 of 2	Pest/ Herb 2 of 2	SVOC/ ABN 1 of 2	SVOC/ ABN 2 of 2	PAH 1 of 2	PAH 2 of 2	Dioxin /Furan	F1 Vial 1	F1 Vial 2	F1 Vial 3	F1 Vial 4	F2-F4 1 of 2	F2-F4 2 of 2	F4G	VOC Vial 1	VOC Vial 2	VOC Vial 3	VOC Vial 4	
1	MW19-3D	TS																														
2	BH1-1D	TS																														
3	BH6	TS																														
4																																
5																																
6																																
7																																
8																																
9																																
10																																

Comments: Soil + DUP

Legend:	
P	Suspended Particulate
TS	Trace Settled Sediment (just covers bottom of container or less)
S	Sediment greater than (>) Trace, but less than (<) 1 cm

Recorded By: (signature/print)

Maxxam
A Bureau Veritas Group Company

Maxxam Analytics International Corporation o/a Maxxam Analytics
6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel:(905) 817-5700 Toll-free:800-563-6266 Fax:(905) 817-5777 www.maxxam.ca

CHAIN OF CUSTODY RECORD

Page 1 of 2

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#17497 exp Services Inc	Company Name:		Quotation #:	B91716 (Stream 3)	Maxxam Job #:	Bottle Order #: 717293
Attention:	Accounts Payable	Attention:	Mark McCalla / Mark.DeVelis	P.O. #:			
Address:	100-2650 Queensview Drive Ottawa ON K2B 8H6	Address:		Project:	OTT-00252625-A	COC #: C#717293-01-01	Project Manager: Alisha Williamson
Tel:	(613) 688-1899 Fax: (613) 225-7337	Tel:	(613) 225-9940 Ext: 243 Fax:	Project Name:	Forest		
Email:	accounting.ottawa@exp.com; Karen.Burke@exp.com;	Email:	mark.mccalla@exp.com, Mark.deVelis@exp	Site #:			
				Sampled By:	MAD/PO		

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

Regulation 153 (2011)
- [ ] Table 1 [ ] Res/Park [ ] Medium/Fine
- [ ] Table 2 [x] Ind/Comm [ ] Coarse
- [x] Table 3 [ ] Agri/Other [ ] For RSC
- [ ] Table ___

Other Regulations
- [ ] CCME [ ] Sanitary Sewer Bylaw
- [ ] Reg 558. [ ] Storm Sewer Bylaw
- [ ] MISA Municipality ___
- [ ] PWQO
- [ ] Other ___

Special Instructions

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

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

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

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	O.Reg 153 VOCs by HS & F1-F4	O.Reg 153 Dissolved ICPMS Metals (Water) + Sodium	O.Reg 153 PAHs	VOC/F1	# of Bottles	Comments
1		Trip Blank			DI				X	2	
2		Field Blank	May 16 2019		DI				X	2	
3		MW19-2A	May 16 2019		GW	X	X	X		8	on ice
4		MW19-20	May 16 2019								
5		MW19-2	MAY 16 2019								RECEIVED IN OTTAWA
6		MW19-3A	MAY 16 2019								
7		MW19-7	MAY 16 2019								
8		BH1-18	MAY 16 2019								
9		MW19-10	MAY 15 2019								
10		~~MW19-9~~	MAY 15 2019								

16-May-19 17:45
Alisha Williamson
B9D2759
GK1 ENV-936

Tumaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT: [x]
(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 #)*

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Philip Oliveira	2019-05-16	5h45	Ian Campbell	2019/05/16	17:45	
Philip Oliveira				2019/05/17	08h00	

Laboratory Use Only

Time Sensitive	Temperature (°C) on Recei	Custody Seal	Yes	No
	8 & 9	Present	X	
		Intact	X	

$13/10
6131

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'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.MAXXAM.CA/TERMS.

* 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 HTTP://MAXXAM.CA/WP-CONTENT/UPLOADS/ONTARIO-COC.PDF.

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

White: Maxxa Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Analytics International Corporation o/a Maxxam Analytics
6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel:(905) 817-5700 Toll-free:800-563-6266 Fax:(905) 817-5777 www.maxxam.ca

CHAIN OF CUSTODY RECORD Page 2/2

INVOICE TO:	REPORT TO:	PROJECT INFORMATION:	Laboratory Use Only:
Company Name: #17497 exp Services Inc	Company Name:	Quotation #: B91716 (STREAM 3)	Maxxam Job #: / Bottle Order #: 717293
Attention: Accounts Payable	Attention: Mark McCalla / MARK DEVLIN	P.O. #:	
Address: 100-2650 Queensview Drive, Ottawa ON K2B 8H6	Address:	Project: OTT-00252625-A	COC #: C#717293-02-01
Tel: (613) 688-1899 Fax: (613) 225-7337	Tel: (613) 225-9940 Ext: 243 Fax:	Project Name: Forest	Project Manager: Alisha Williamson
Email: accounting.ottawa@exp.com; Karen.Burke@exp.com;	Email: mark.mccalla@exp.com MARK.DEVLIN@EXP.COM	Site #: / Sampled By: MAD / P.O	

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM 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 ☐ Reg 558 ☐ MISA ☐ PWQO ☐ Other ☐ Sanitary Sewer Bylaw ☐ Storm Sewer Bylaw Municipality ___

Special Instructions

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

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): (Metals) / Hg / Cr VI	O.Reg 153 VOCs by HS & F1-F4 PHC	O.Reg 153 Dissolved ICPMS Metals (Water) + SODIUM	O.Reg 153 PAHs	# of Bottles	Comments
1		MW19-8	MAY 15 2019		GW	X	X	X	X	8	
2		MW 19-6	MAY 15 2019		GW	X	X	X	X	8	
3		BH6	May 16 2019		GW	X	X	X	X	6	On ice
4											
5											RECEIVED IN OTTAWA
6											
7											
8											
9											
10											

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 #)*

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Philip Oliveira	2019-05-16	5h45	Ian Campbell	2019/05/16	17:45	
Philip Oliveira			[illegible]	2019/05/17	0810	

Time Sensitive	Laboratory Use Only			
	Temperature (°C) on Recei	Custody Seal	Yes	No
	8, 8, 9	Present	X	
		Intact	X	

White: Maxxam Yellow: Client

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'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.MAXXAM.CA/TERMS.

* 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. 5/3/1/0 6/3/1

** SAMPLE CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT HTTP://MAXXAM.CA/WP-CONTENT/UPLOADS/ONTARIO-COC.PDF.

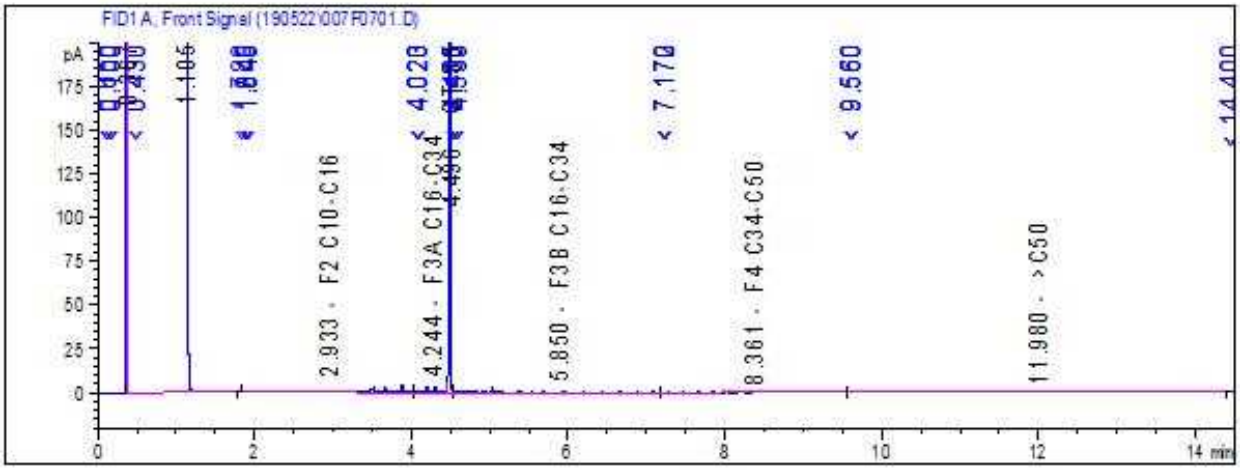
SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

Maxxam Analytics International Corporation o/a Maxxam Analytics

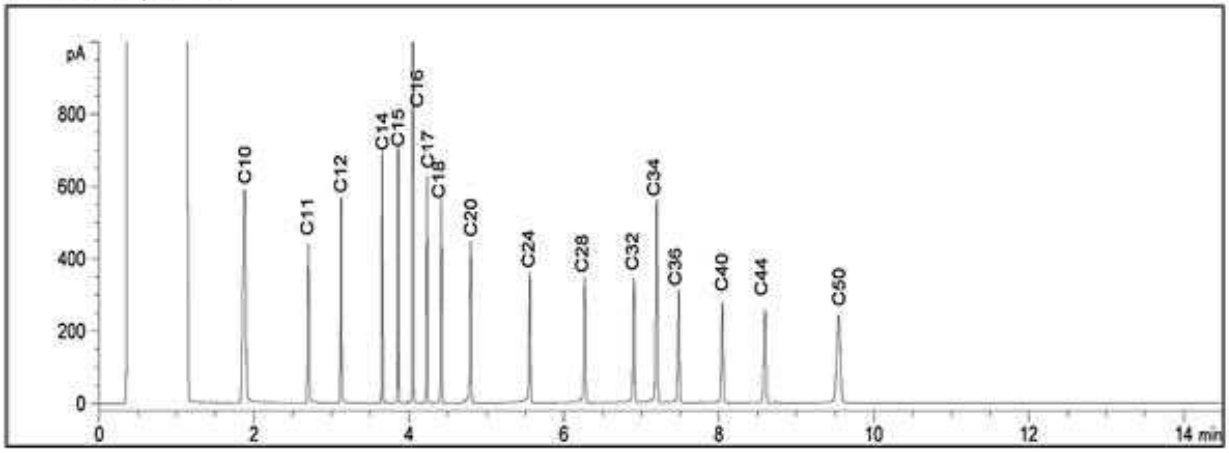
Maxxam Job #: B9D2759
Report Date: 2019/05/24
Maxxam Sample: JTB403

exp Services Inc
Client Project #: OTT-00252625-A
Project name: FOREST
Client ID: MW19-2A

Petroleum Hydrocarbons F2-F4 in Water Chromatogram



Reference Spectrum



TYPICAL PRODUCT CARBON NUMBER RANGES

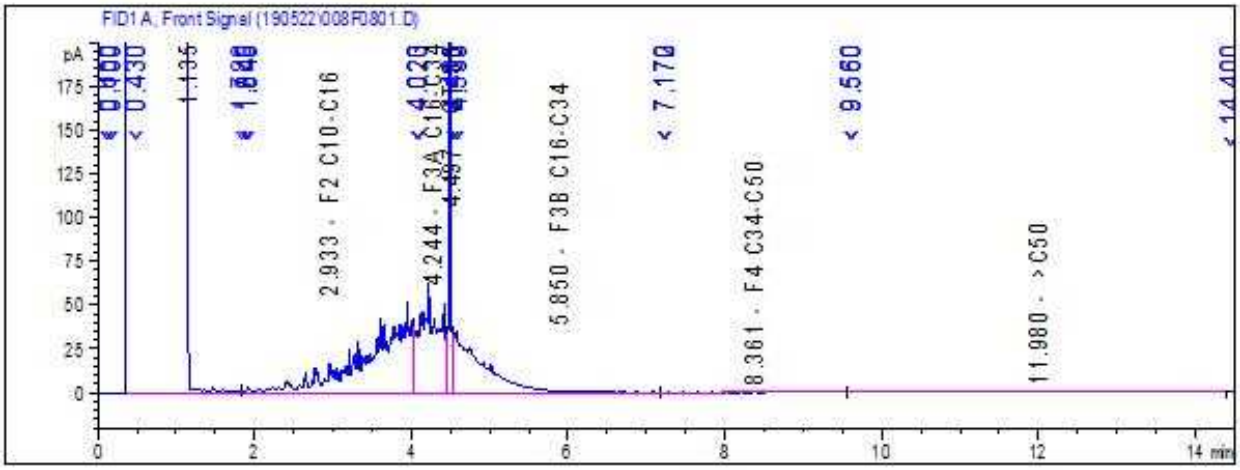
Gasoline: **C6 - C12**	Diesel: **C10 - C24**	Jet Fuels: **C6 - C16**
Varsol: **C8 - C12**	Fuel Oils: **C6 - C32**	Creosote: **C10 - C26**
Kerosene: **C8 - C16**	Motor Oils: **C16 - C50**	Asphalt: **C18 - C50+**

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

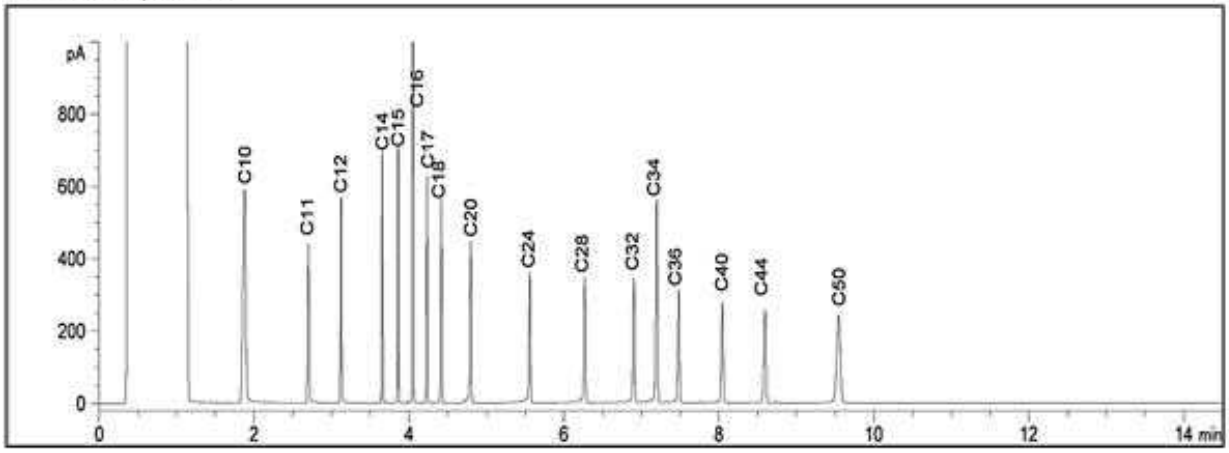
Maxxam Job #: B9D2759
Report Date: 2019/05/24
Maxxam Sample: JTB404

exp Services Inc
Client Project #: OTT-00252625-A
Project name: FOREST
Client ID: MW19-20

Petroleum Hydrocarbons F2-F4 in Water Chromatogram



Reference Spectrum



TYPICAL PRODUCT CARBON NUMBER RANGES

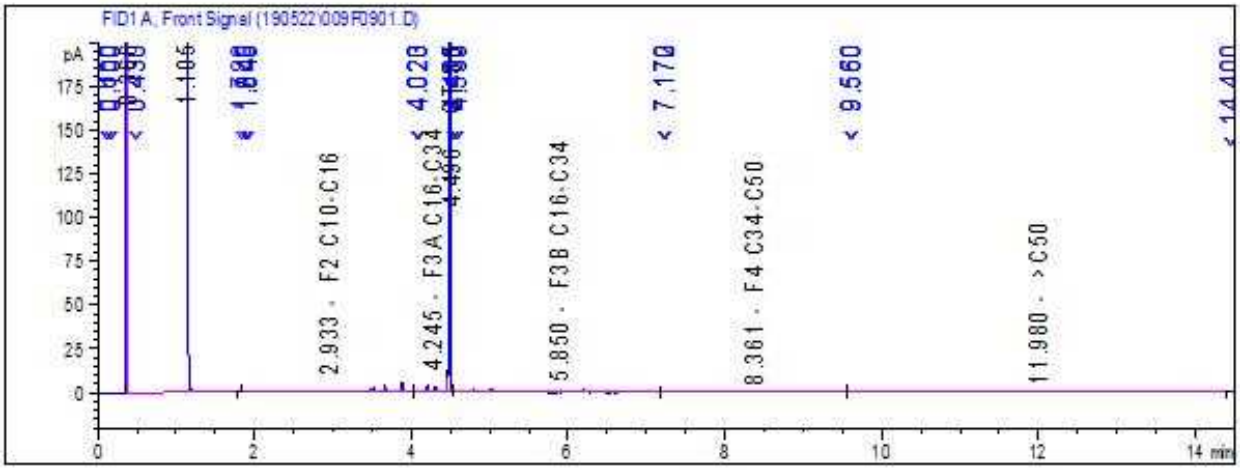
Gasoline: **C6 - C12**	Diesel: **C10 - C24**	Jet Fuels: **C6 - C16**
Varsol: **C8 - C12**	Fuel Oils: **C6 - C32**	Creosote: **C10 - C26**
Kerosene: **C8 - C16**	Motor Oils: **C16 - C50**	Asphalt: **C18 - C50+**

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

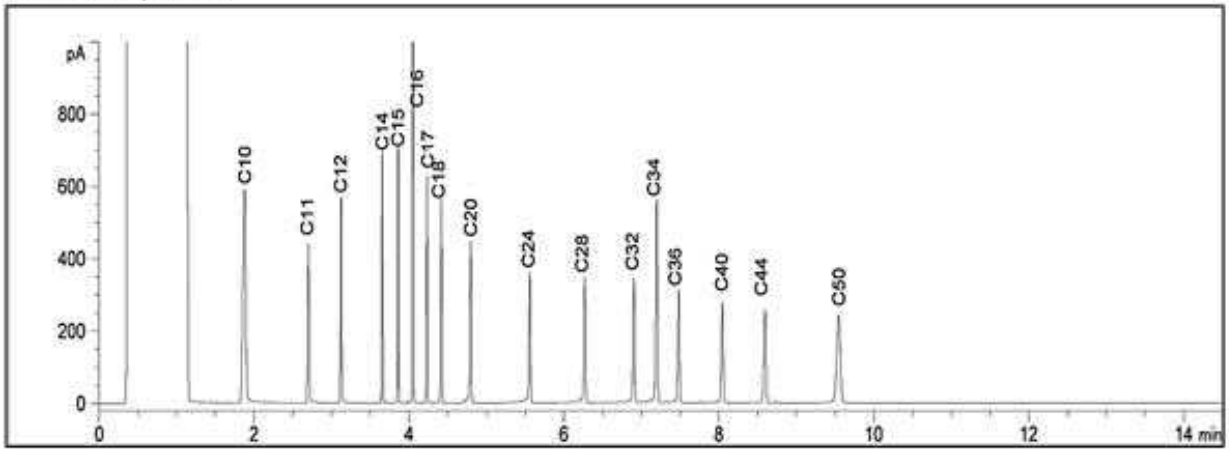
Maxxam Job #: B9D2759
Report Date: 2019/05/24
Maxxam Sample: JTB405

exp Services Inc
Client Project #: OTT-00252625-A
Project name: FOREST
Client ID: MW19-2

Petroleum Hydrocarbons F2-F4 in Water Chromatogram



Reference Spectrum



TYPICAL PRODUCT CARBON NUMBER RANGES

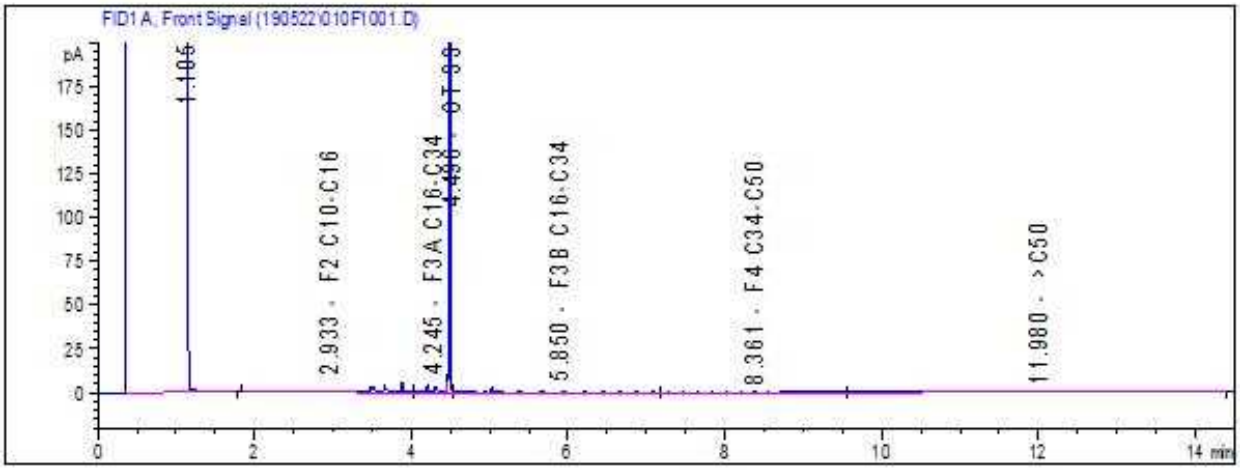
Gasoline: **C6 - C12**	Diesel: **C10 - C24**	Jet Fuels: **C6 - C16**
Varsol: **C8 - C12**	Fuel Oils: **C6 - C32**	Creosote: **C10 - C26**
Kerosene: **C8 - C16**	Motor Oils: **C16 - C50**	Asphalt: **C18 - C50+**

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

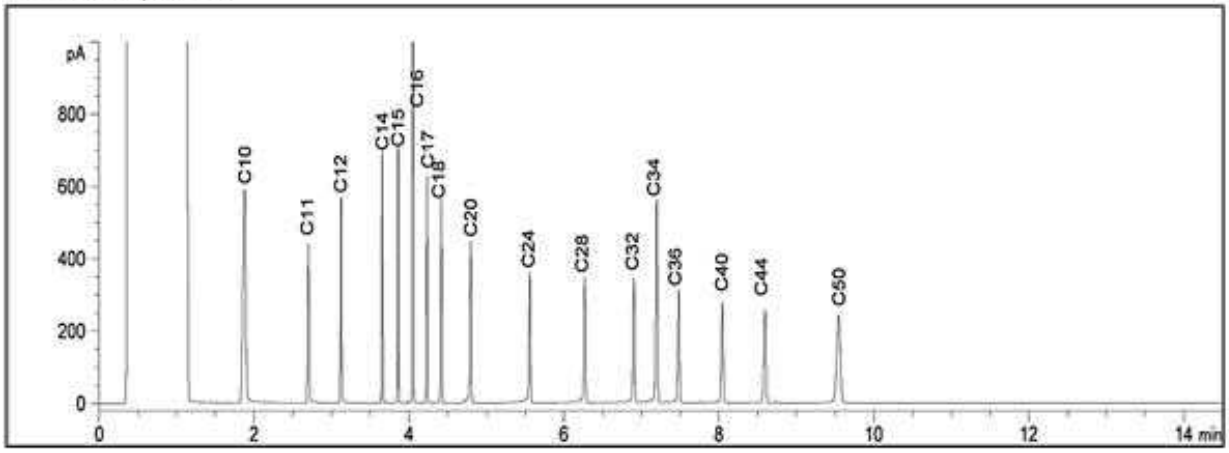
Maxxam Job #: B9D2759
Report Date: 2019/05/24
Maxxam Sample: JTB405 Lab-Dup

exp Services Inc
Client Project #: OTT-00252625-A
Project name: FOREST
Client ID: MW19-2

Petroleum Hydrocarbons F2-F4 in Water Chromatogram



Reference Spectrum



TYPICAL PRODUCT CARBON NUMBER RANGES

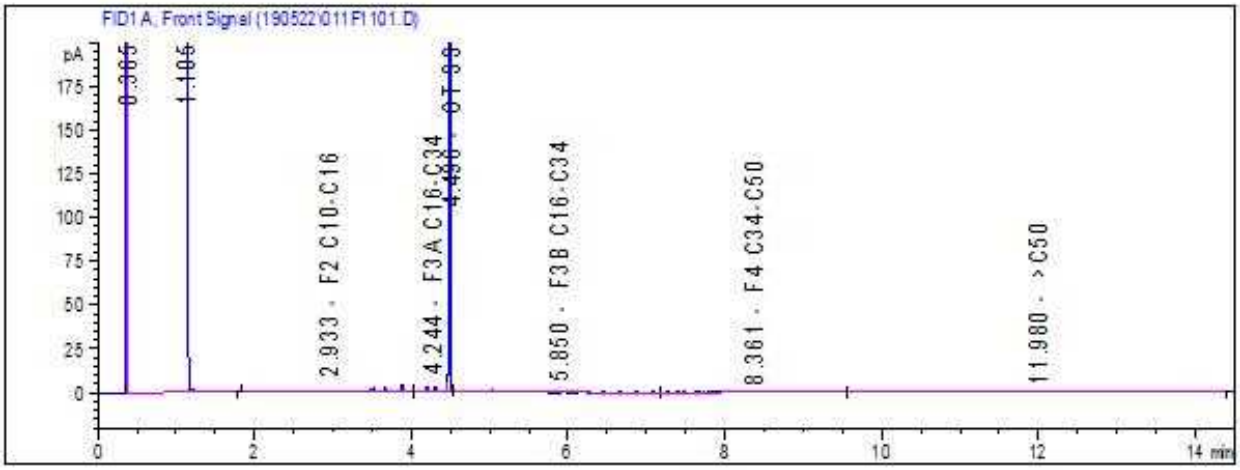
Gasoline: **C6 - C12**	Diesel: **C10 - C24**	Jet Fuels: **C6 - C16**
Varsol: **C8 - C12**	Fuel Oils: **C6 - C32**	Creosote: **C10 - C26**
Kerosene: **C8 - C16**	Motor Oils: **C16 - C50**	Asphalt: **C18 - C50+**

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

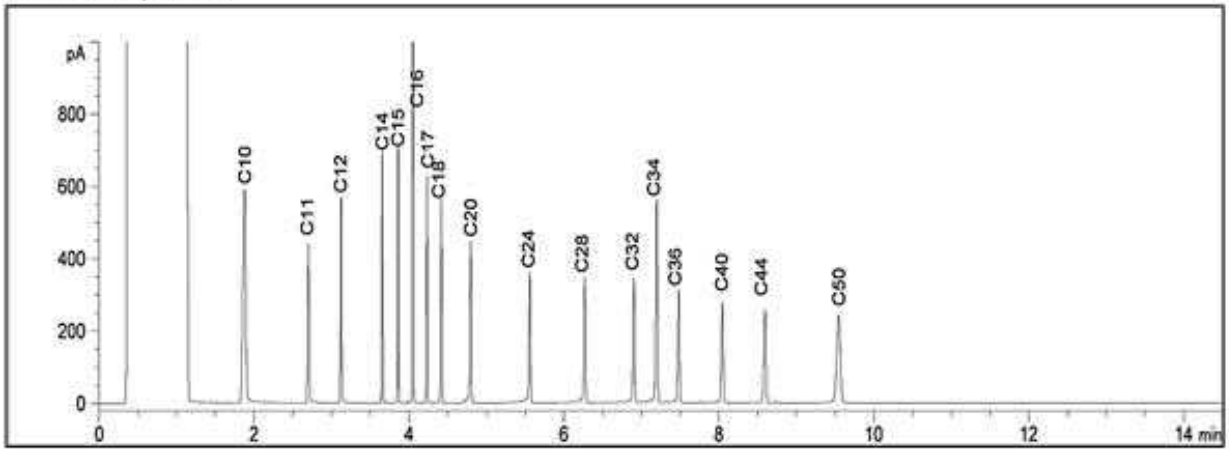
Maxxam Job #: B9D2759
Report Date: 2019/05/24
Maxxam Sample: JTB406

exp Services Inc
Client Project #: OTT-00252625-A
Project name: FOREST
Client ID: MW19-3A

Petroleum Hydrocarbons F2-F4 in Water Chromatogram



Reference Spectrum



TYPICAL PRODUCT CARBON NUMBER RANGES

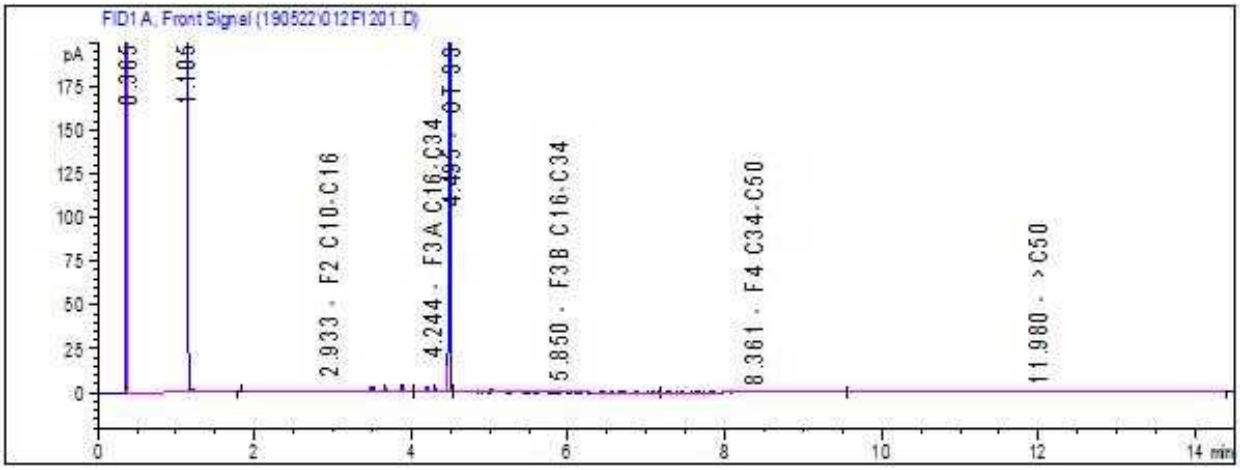
Gasoline: **C6 - C12**	Diesel: **C10 - C24**	Jet Fuels: **C6 - C16**
Varsol: **C8 - C12**	Fuel Oils: **C6 - C32**	Creosote: **C10 - C26**
Kerosene: **C8 - C16**	Motor Oils: **C16 - C50**	Asphalt: **C18 - C50+**

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

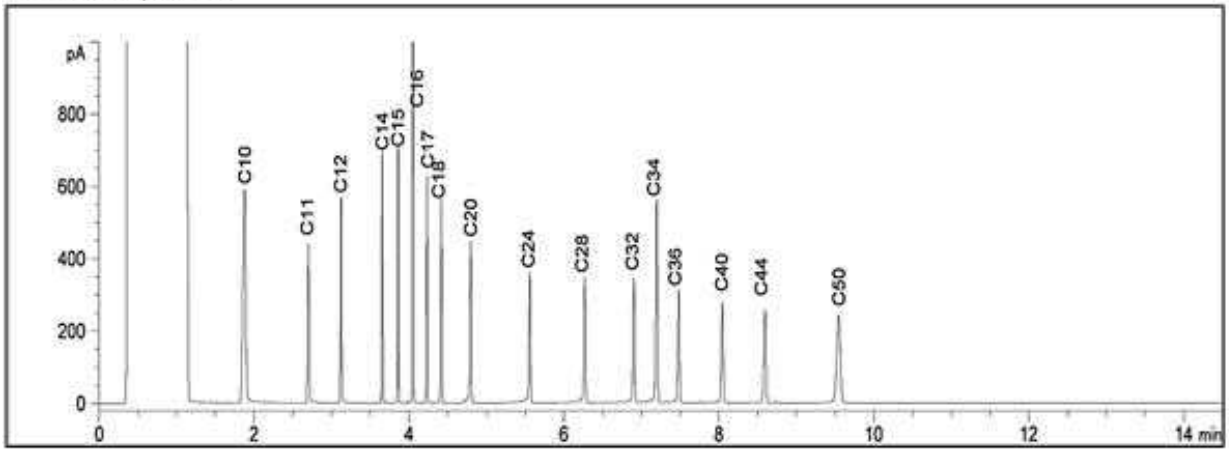
Maxxam Job #: B9D2759
Report Date: 2019/05/24
Maxxam Sample: JTB407

exp Services Inc
Client Project #: OTT-00252625-A
Project name: FOREST
Client ID: MW19-7

Petroleum Hydrocarbons F2-F4 in Water Chromatogram



Reference Spectrum



TYPICAL PRODUCT CARBON NUMBER RANGES

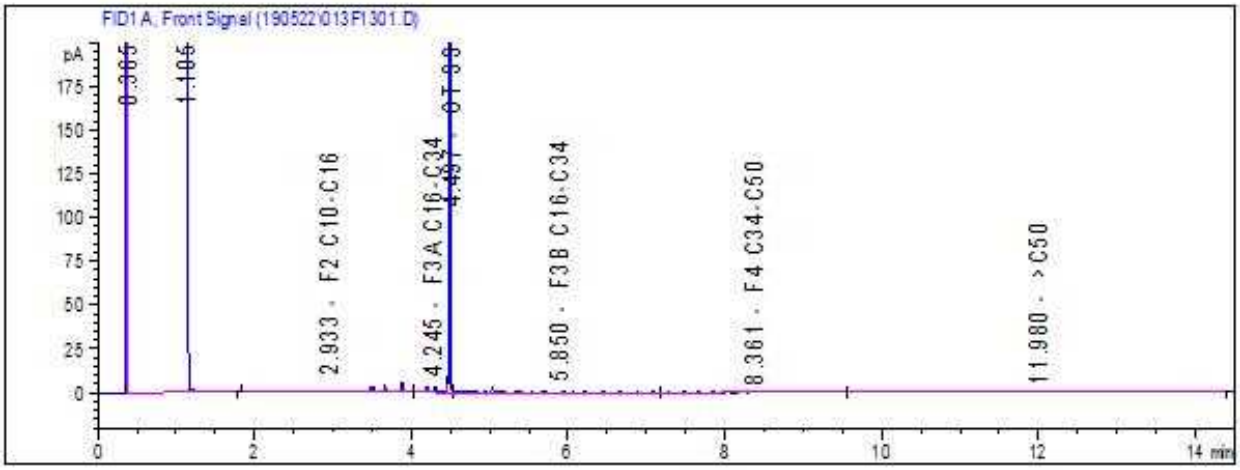
Gasoline: **C6 - C12**	Diesel: **C10 - C24**	Jet Fuels: **C6 - C16**
Varsol: **C8 - C12**	Fuel Oils: **C6 - C32**	Creosote: **C10 - C26**
Kerosene: **C8 - C16**	Motor Oils: **C16 - C50**	Asphalt: **C18 - C50+**

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

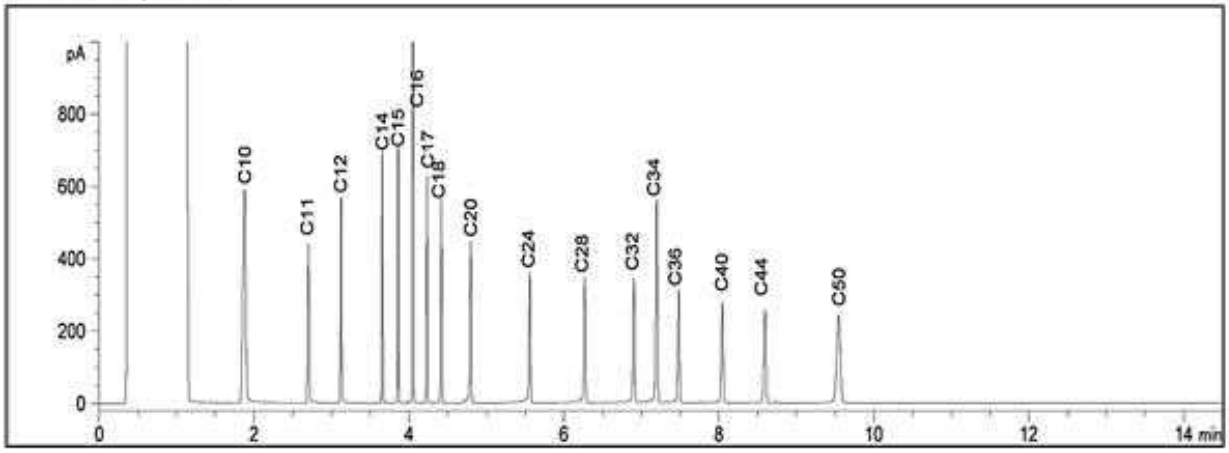
Maxxam Job #: B9D2759
Report Date: 2019/05/24
Maxxam Sample: JTB408

exp Services Inc
Client Project #: OTT-00252625-A
Project name: FOREST
Client ID: BH1-18

Petroleum Hydrocarbons F2-F4 in Water Chromatogram



Reference Spectrum



TYPICAL PRODUCT CARBON NUMBER RANGES

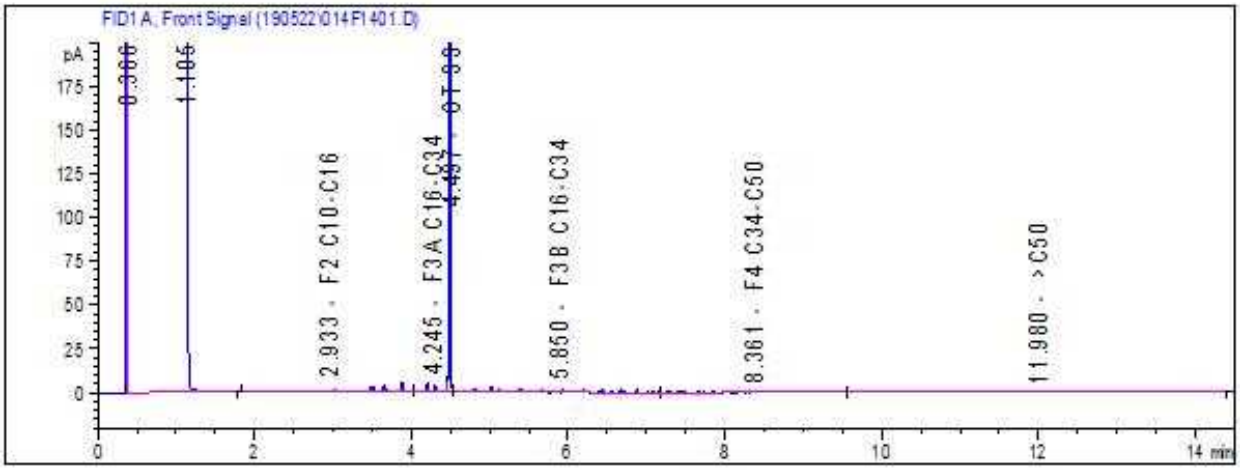
Gasoline: **C6 - C12**	Diesel: **C10 - C24**	Jet Fuels: **C6 - C16**
Varsol: **C8 - C12**	Fuel Oils: **C6 - C32**	Creosote: **C10 - C26**
Kerosene: **C8 - C16**	Motor Oils: **C16 - C50**	Asphalt: **C18 - C50+**

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

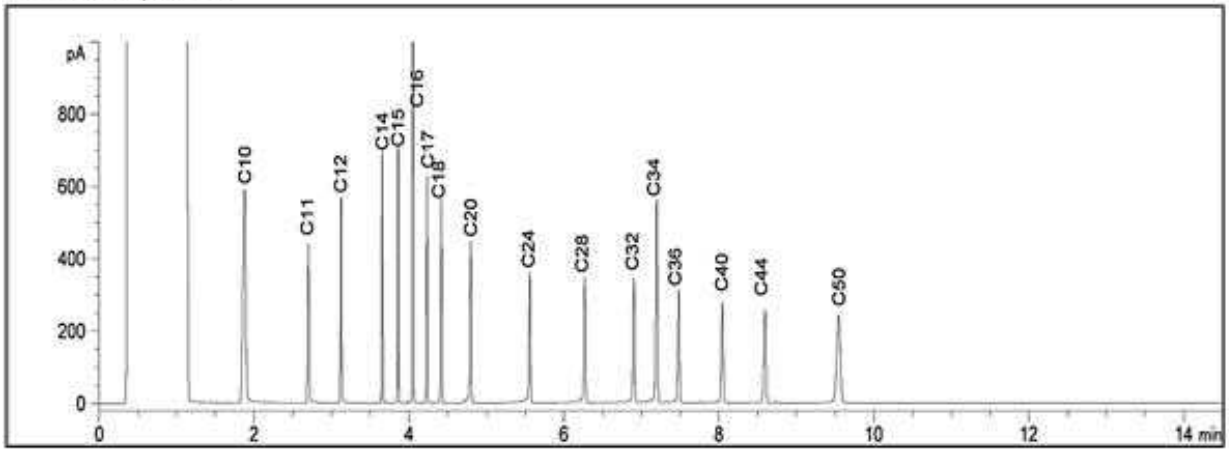
Maxxam Job #: B9D2759
Report Date: 2019/05/24
Maxxam Sample: JTB409

exp Services Inc
Client Project #: OTT-00252625-A
Project name: FOREST
Client ID: MW19-10

Petroleum Hydrocarbons F2-F4 in Water Chromatogram



Reference Spectrum



TYPICAL PRODUCT CARBON NUMBER RANGES

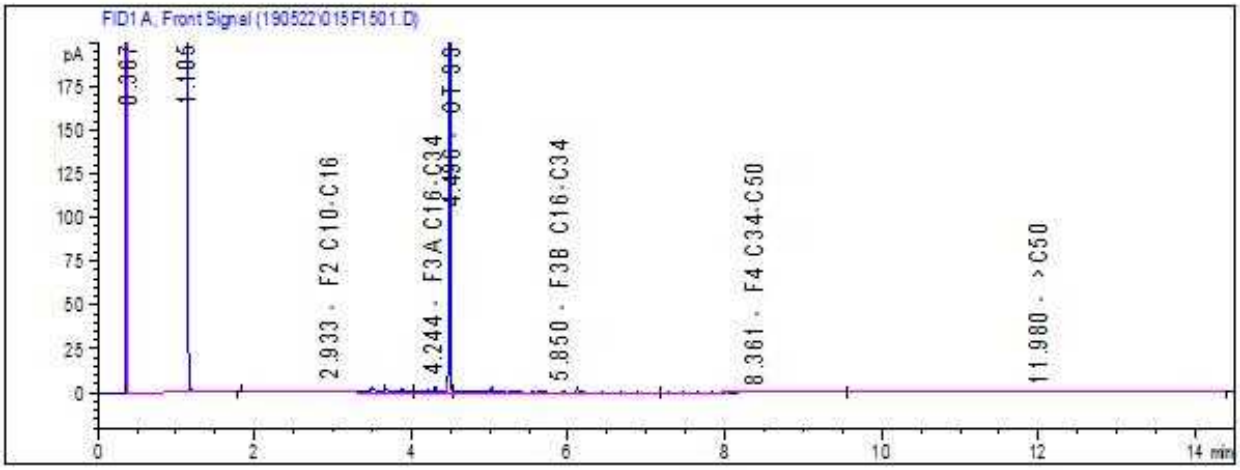
Gasoline: **C6 - C12**	Diesel: **C10 - C24**	Jet Fuels: **C6 - C16**
Varsol: **C8 - C12**	Fuel Oils: **C6 - C32**	Creosote: **C10 - C26**
Kerosene: **C8 - C16**	Motor Oils: **C16 - C50**	Asphalt: **C18 - C50+**

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

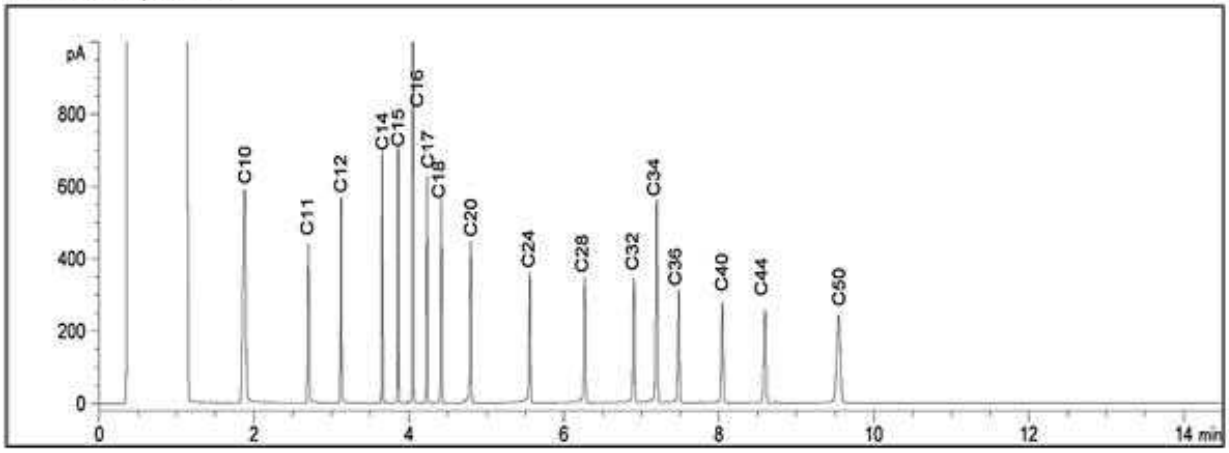
Maxxam Job #: B9D2759
Report Date: 2019/05/24
Maxxam Sample: JTB410

exp Services Inc
Client Project #: OTT-00252625-A
Project name: FOREST
Client ID: MW19-8

Petroleum Hydrocarbons F2-F4 in Water Chromatogram



Reference Spectrum



TYPICAL PRODUCT CARBON NUMBER RANGES

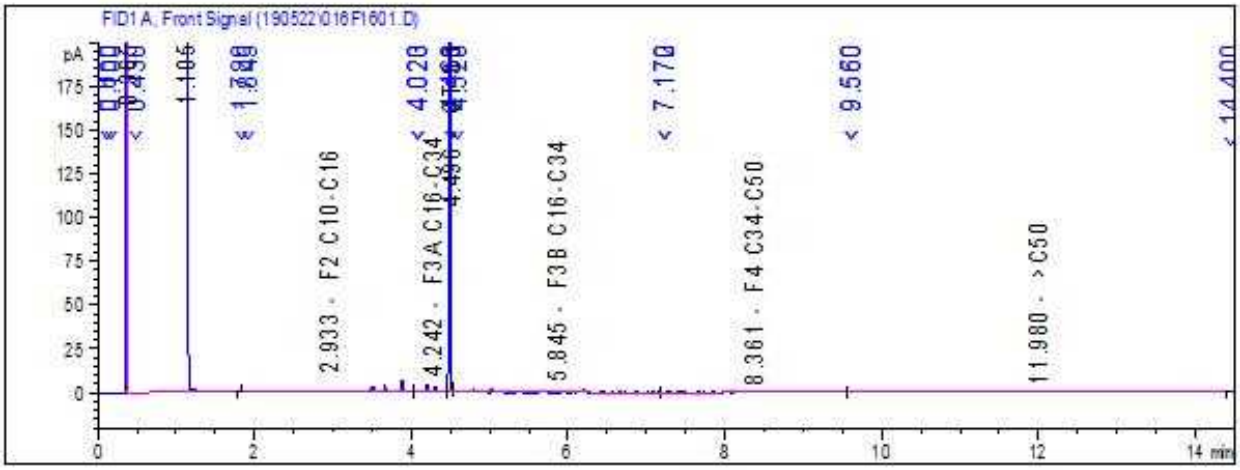
Gasoline: **C6 - C12**	Diesel: **C10 - C24**	Jet Fuels: **C6 - C16**
Varsol: **C8 - C12**	Fuel Oils: **C6 - C32**	Creosote: **C10 - C26**
Kerosene: **C8 - C16**	Motor Oils: **C16 - C50**	Asphalt: **C18 - C50+**

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

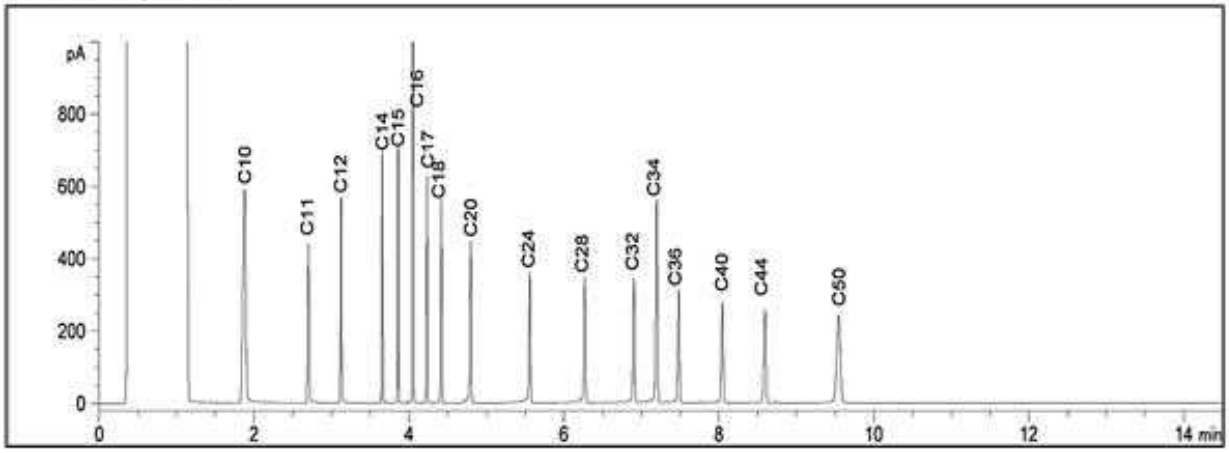
Maxxam Job #: B9D2759
Report Date: 2019/05/24
Maxxam Sample: JTB411

exp Services Inc
Client Project #: OTT-00252625-A
Project name: FOREST
Client ID: MW19-6

Petroleum Hydrocarbons F2-F4 in Water Chromatogram



Reference Spectrum



TYPICAL PRODUCT CARBON NUMBER RANGES

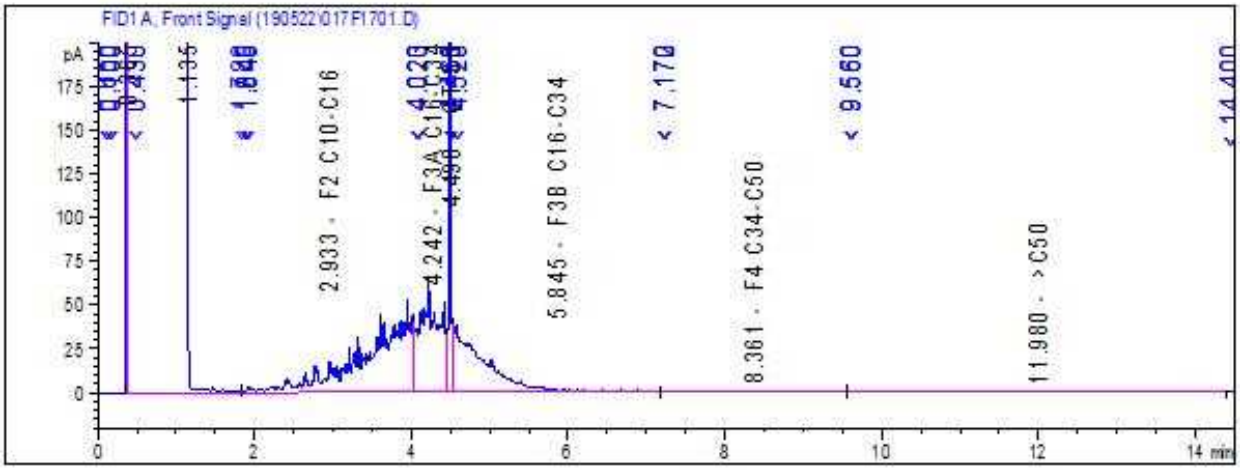
Gasoline: **C6 - C12**	Diesel: **C10 - C24**	Jet Fuels: **C6 - C16**
Varsol: **C8 - C12**	Fuel Oils: **C6 - C32**	Creosote: **C10 - C26**
Kerosene: **C8 - C16**	Motor Oils: **C16 - C50**	Asphalt: **C18 - C50+**

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

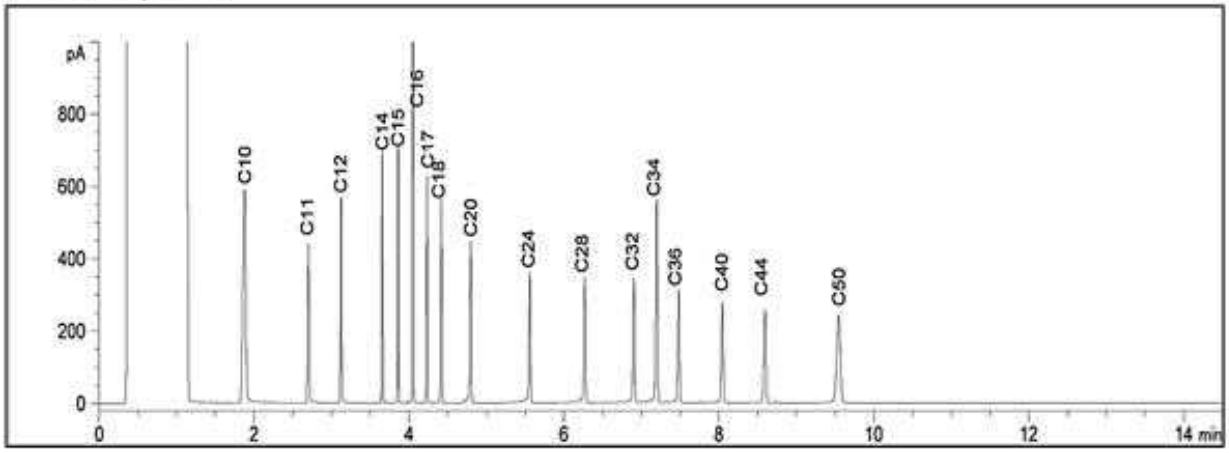
Maxxam Job #: B9D2759
Report Date: 2019/05/24
Maxxam Sample: JTB412

exp Services Inc
Client Project #: OTT-00252625-A
Project name: FOREST
Client ID: BH6

Petroleum Hydrocarbons F2-F4 in Water Chromatogram



Reference Spectrum



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline: **C6 - C12**	Diesel: **C10 - C24**	Jet Fuels: **C6 - C16**
Varsol: **C8 - C12**	Fuel Oils: **C6 - C32**	Creosote: **C10 - C26**
Kerosene: **C8 - C16**	Motor Oils: **C16 - C50**	Asphalt: **C18 - C50+**

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

Maxxam
A Bureau Veritas Group Company

Your Project #: OTT-00252625-A
Site Location: FOREST
Your C.O.C. #: 718059-01-01

Attention: Mark Devlin

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

Report Date: 2019/05/27
Report #: R5726618
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B9D4608
Received: 2019/05/21, 14:08

Sample Matrix: Water
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum (1)	2	N/A	2019/05/24	CAM SOP-00301	EPA 8270D m
1,3-Dichloropropene Sum	2	N/A	2019/05/23	OTT SOP-00002	EPA 8260C m
Petroleum Hydrocarbons F2-F4 in Water (2)	2	2019/05/22	2019/05/22	OTT SOP-00001	CCME Hydrocarbons
Dissolved Metals by ICPMS (1)	2	N/A	2019/05/24	CAM SOP-00447	EPA 6020B m
PAH Compounds in Water by GC/MS (SIM) (1)	2	2019/05/23	2019/05/24	CAM SOP-00318	EPA 8270D m
Volatile Organic Compounds and F1 PHCs	1	N/A	2019/05/22	OTT SOP-00002	EPA 8260C m
Volatile Organic Compounds and F1 PHCs	1	N/A	2019/05/23	OTT SOP-00002	EPA 8260C m

Remarks:

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

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam 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.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam 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 Maxxam, unless otherwise agreed in writing. Maxxam 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 Maxxam, 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 Maxxam Analytics Mississauga
(2) All CCME PHC results met required criteria unless otherwise stated in the report. The CWS PHC methods employed by Maxxam 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

Your Project #: OTT-00252625-A
Site Location: FOREST
Your C.O.C. #: 718059-01-01

Attention: Mark Devlin

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

Report Date: 2019/05/27
Report #: R5726618
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B9D4608
Received: 2019/05/21, 14:08
reported using validated cold solvent extraction instead of Soxhlet extraction.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Alisha Williamson, Project Manager
Email: AWilliamson@maxxam.ca
Phone# (613)274-0573
==========
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B9D4608
Report Date: 2019/05/27

exp Services Inc
Client Project #: OTT-00252625-A
Site Location: FOREST
Sampler Initials: PO

O.REG 153 DISSOLVED ICPMS METALS (WATER)

Maxxam ID		JTM907	JTM908		
Sampling Date		2019/05/21	2019/05/21		
COC Number		718059-01-01	718059-01-01		
	UNITS	**MW 13**	**MW 19-21**	**RDL**	**QC Batch**
Metals					
Dissolved Antimony (Sb)	ug/L	<0.50	<0.50	0.50	6134307
Dissolved Arsenic (As)	ug/L	<1.0	<1.0	1.0	6134307
Dissolved Barium (Ba)	ug/L	82	82	2.0	6134307
Dissolved Beryllium (Be)	ug/L	<0.50	<0.50	0.50	6134307
Dissolved Boron (B)	ug/L	160	150	10	6134307
Dissolved Cadmium (Cd)	ug/L	<0.10	<0.10	0.10	6134307
Dissolved Chromium (Cr)	ug/L	<5.0	<5.0	5.0	6134307
Dissolved Cobalt (Co)	ug/L	<0.50	<0.50	0.50	6134307
Dissolved Copper (Cu)	ug/L	7.6	7.2	1.0	6134307
Dissolved Lead (Pb)	ug/L	<0.50	<0.50	0.50	6134307
Dissolved Molybdenum (Mo)	ug/L	5.5	5.2	0.50	6134307
Dissolved Nickel (Ni)	ug/L	2.9	2.8	1.0	6134307
Dissolved Selenium (Se)	ug/L	5.2	5.2	2.0	6134307
Dissolved Silver (Ag)	ug/L	<0.10	<0.10	0.10	6134307
Dissolved Sodium (Na)	ug/L	200000	200000	100	6134307
Dissolved Thallium (Tl)	ug/L	<0.050	<0.050	0.050	6134307
Dissolved Uranium (U)	ug/L	19	19	0.10	6134307
Dissolved Vanadium (V)	ug/L	8.3	7.2	0.50	6134307
Dissolved Zinc (Zn)	ug/L	21	6.7	5.0	6134307

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B9D4608
Report Date: 2019/05/27

exp Services Inc
Client Project #: OTT-00252625-A
Site Location: FOREST
Sampler Initials: PO

O.REG 153 PAHS (WATER)

Maxxam ID		JTM907	JTM908		
Sampling Date		2019/05/21	2019/05/21		
COC Number		718059-01-01	718059-01-01		
	UNITS	**MW 13**	**MW 19-21**	**RDL**	**QC Batch**
Calculated Parameters					
Methylnaphthalene, 2-(1-)	ug/L	<0.071	<0.071	0.071	6131044
Polyaromatic Hydrocarbons					
Acenaphthene	ug/L	<0.050	<0.050	0.050	6136905
Acenaphthylene	ug/L	<0.050	<0.050	0.050	6136905
Anthracene	ug/L	<0.050	<0.050	0.050	6136905
Benzo(a)anthracene	ug/L	<0.050	<0.050	0.050	6136905
Benzo(a)pyrene	ug/L	<0.010	<0.010	0.010	6136905
Benzo(b/j)fluoranthene	ug/L	<0.050	<0.050	0.050	6136905
Benzo(g,h,i)perylene	ug/L	<0.050	<0.050	0.050	6136905
Benzo(k)fluoranthene	ug/L	<0.050	<0.050	0.050	6136905
Chrysene	ug/L	<0.050	<0.050	0.050	6136905
Dibenz(a,h)anthracene	ug/L	<0.050	<0.050	0.050	6136905
Fluoranthene	ug/L	<0.050	<0.050	0.050	6136905
Fluorene	ug/L	<0.050	<0.050	0.050	6136905
Indeno(1,2,3-cd)pyrene	ug/L	<0.050	<0.050	0.050	6136905
1-Methylnaphthalene	ug/L	<0.050	<0.050	0.050	6136905
2-Methylnaphthalene	ug/L	<0.050	<0.050	0.050	6136905
Naphthalene	ug/L	<0.050	<0.050	0.050	6136905
Phenanthrene	ug/L	<0.030	<0.030	0.030	6136905
Pyrene	ug/L	<0.050	<0.050	0.050	6136905
Surrogate Recovery (%)					
D10-Anthracene	%	115	111		6136905
D14-Terphenyl (FS)	%	99	96		6136905
D8-Acenaphthylene	%	99	94		6136905

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B9D4608
Report Date: 2019/05/27

exp Services Inc
Client Project #: OTT-00252625-A
Site Location: FOREST
Sampler Initials: PO

O.REG 153 VOCS BY HS & F1-F4 (WATER)

Maxxam ID		JTM907			JTM907			JTM908		
Sampling Date		2019/05/21			2019/05/21			2019/05/21		
COC Number		718059-01-01			718059-01-01			718059-01-01		
	UNITS	**MW 13**	**RDL**	**QC Batch**	**MW 13 Lab-Dup**	**RDL**	**QC Batch**	**MW 19-21**	**RDL**	**QC Batch**
Calculated Parameters										
1,3-Dichloropropene (cis+trans)	ug/L	<0.50	0.50	6131573				<0.50	0.50	6131573
Volatile Organics										
Acetone (2-Propanone)	ug/L	<10	10	6133399	<10	10	6133399	<10	10	6133399
Benzene	ug/L	<0.20	0.20	6133399	<0.20	0.20	6133399	<0.20	0.20	6133399
Bromodichloromethane	ug/L	<0.50	0.50	6133399	<0.50	0.50	6133399	<0.50	0.50	6133399
Bromoform	ug/L	<1.0	1.0	6133399	<1.0	1.0	6133399	<1.0	1.0	6133399
Bromomethane	ug/L	<0.50	0.50	6133399	<0.50	0.50	6133399	<0.50	0.50	6133399
Carbon Tetrachloride	ug/L	<0.20	0.20	6133399	<0.20	0.20	6133399	<0.20	0.20	6133399
Chlorobenzene	ug/L	<0.20	0.20	6133399	<0.20	0.20	6133399	<0.20	0.20	6133399
Chloroform	ug/L	<0.20	0.20	6133399	<0.20	0.20	6133399	<0.20	0.20	6133399
Dibromochloromethane	ug/L	<0.50	0.50	6133399	<0.50	0.50	6133399	<0.50	0.50	6133399
1,2-Dichlorobenzene	ug/L	<0.50	0.50	6133399	<0.50	0.50	6133399	<0.50	0.50	6133399
1,3-Dichlorobenzene	ug/L	<0.50	0.50	6133399	<0.50	0.50	6133399	<0.50	0.50	6133399
1,4-Dichlorobenzene	ug/L	<0.50	0.50	6133399	<0.50	0.50	6133399	<0.50	0.50	6133399
Dichlorodifluoromethane (FREON 12)	ug/L	<1.0	1.0	6133399	<1.0	1.0	6133399	<1.0	1.0	6133399
1,1-Dichloroethane	ug/L	<0.20	0.20	6133399	<0.20	0.20	6133399	<0.20	0.20	6133399
1,2-Dichloroethane	ug/L	<0.50	0.50	6133399	<0.50	0.50	6133399	<0.50	0.50	6133399
1,1-Dichloroethylene	ug/L	<0.20	0.20	6133399	<0.20	0.20	6133399	<0.20	0.20	6133399
cis-1,2-Dichloroethylene	ug/L	<0.50	0.50	6133399	<0.50	0.50	6133399	<0.50	0.50	6133399
trans-1,2-Dichloroethylene	ug/L	<0.50	0.50	6133399	<0.50	0.50	6133399	<0.50	0.50	6133399
1,2-Dichloropropane	ug/L	<0.20	0.20	6133399	<0.20	0.20	6133399	<0.20	0.20	6133399
cis-1,3-Dichloropropene	ug/L	<0.30	0.30	6133399	<0.30	0.30	6133399	<0.30	0.30	6133399
trans-1,3-Dichloropropene	ug/L	<0.40	0.40	6133399	<0.40	0.40	6133399	<0.40	0.40	6133399
Ethylbenzene	ug/L	<0.20	0.20	6133399	<0.20	0.20	6133399	<0.20	0.20	6133399
Ethylene Dibromide	ug/L	<0.20	0.20	6133399	<0.20	0.20	6133399	<0.20	0.20	6133399
Hexane	ug/L	<1.0	1.0	6133399	<1.0	1.0	6133399	<1.0	1.0	6133399
Methylene Chloride(Dichloromethane)	ug/L	<2.0	2.0	6133399	<2.0	2.0	6133399	<2.0	2.0	6133399
Methyl Ethyl Ketone (2-Butanone)	ug/L	<10	10	6133399	<10	10	6133399	<10	10	6133399
Methyl Isobutyl Ketone	ug/L	<5.0	5.0	6133399	<5.0	5.0	6133399	<5.0	5.0	6133399
Methyl t-butyl ether (MTBE)	ug/L	<0.50	0.50	6133399	<0.50	0.50	6133399	<0.50	0.50	6133399
Styrene	ug/L	<0.50	0.50	6133399	<0.50	0.50	6133399	<0.50	0.50	6133399
1,1,1,2-Tetrachloroethane	ug/L	<0.50	0.50	6133399	<0.50	0.50	6133399	<0.50	0.50	6133399
1,1,2,2-Tetrachloroethane	ug/L	<0.50	0.50	6133399	<0.50	0.50	6133399	<0.50	0.50	6133399

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

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Maxxam Job #: B9D4608
Report Date: 2019/05/27

exp Services Inc
Client Project #: OTT-00252625-A
Site Location: FOREST
Sampler Initials: PO

O.REG 153 VOCS BY HS & F1-F4 (WATER)

Maxxam ID		JTM907			JTM907			JTM908		
Sampling Date		2019/05/21			2019/05/21			2019/05/21		
COC Number		718059-01-01			718059-01-01			718059-01-01		
	UNITS	**MW 13**	**RDL**	**QC Batch**	**MW 13 Lab-Dup**	**RDL**	**QC Batch**	**MW 19-21**	**RDL**	**QC Batch**
Tetrachloroethylene	ug/L	<0.20	0.20	6133399	<0.20	0.20	6133399	<0.20	0.20	6133399
Toluene	ug/L	<0.20	0.20	6133399	<0.20	0.20	6133399	<0.20	0.20	6133399
1,1,1-Trichloroethane	ug/L	<0.20	0.20	6133399	<0.20	0.20	6133399	<0.20	0.20	6133399
1,1,2-Trichloroethane	ug/L	<0.50	0.50	6133399	<0.50	0.50	6133399	<0.50	0.50	6133399
Trichloroethylene	ug/L	<0.20	0.20	6133399	<0.20	0.20	6133399	<0.20	0.20	6133399
Trichlorofluoromethane (FREON 11)	ug/L	<0.50	0.50	6133399	<0.50	0.50	6133399	<0.50	0.50	6133399
Vinyl Chloride	ug/L	<0.20	0.20	6133399	<0.20	0.20	6133399	<0.20	0.20	6133399
p+m-Xylene	ug/L	<0.20	0.20	6133399	<0.20	0.20	6133399	<0.20	0.20	6133399
o-Xylene	ug/L	<0.20	0.20	6133399	<0.20	0.20	6133399	<0.20	0.20	6133399
Total Xylenes	ug/L	<0.20	0.20	6133399	<0.20	0.20	6133399	<0.20	0.20	6133399
F1 (C6-C10)	ug/L	<25	25	6133399	<25	25	6133399	<25	25	6133399
F1 (C6-C10) - BTEX	ug/L	<25	25	6133399	<25	25	6133399	<25	25	6133399
F2-F4 Hydrocarbons										
F2 (C10-C16 Hydrocarbons)	ug/L	<100	100	6133416				<100	100	6133416
F3 (C16-C34 Hydrocarbons)	ug/L	<200	200	6133416				<200	200	6133416
F4 (C34-C50 Hydrocarbons)	ug/L	<200	200	6133416				<200	200	6133416
Reached Baseline at C50	ug/L	Yes		6133416				Yes		6133416
Surrogate Recovery (%)										
o-Terphenyl	%	104		6133416				101		6133416
4-Bromofluorobenzene	%	96		6133399	93		6133399	95		6133399
D4-1,2-Dichloroethane	%	114		6133399	108		6133399	110		6133399
D8-Toluene	%	92		6133399	91		6133399	93		6133399

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
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Maxxam Job #: B9D4608
Report Date: 2019/05/27

exp Services Inc
Client Project #: OTT-00252625-A
Site Location: FOREST
Sampler Initials: PO

O.REG 153 VOCS BY HS & F1-F4 (WATER)

Maxxam ID		JTM908		
Sampling Date		2019/05/21		
COC Number		718059-01-01		
	UNITS	**MW 19-21 Lab-Dup**	**RDL**	**QC Batch**
F2-F4 Hydrocarbons				
F2 (C10-C16 Hydrocarbons)	ug/L	<100	100	6133416
F3 (C16-C34 Hydrocarbons)	ug/L	<200	200	6133416
F4 (C34-C50 Hydrocarbons)	ug/L	<200	200	6133416
Reached Baseline at C50	ug/L	Yes		6133416
Surrogate Recovery (%)				
o-Terphenyl	%	104		6133416

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

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Maxxam Job #: B9D4608
Report Date: 2019/05/27

exp Services Inc
Client Project #: OTT-00252625-A
Site Location: FOREST
Sampler Initials: PO

TEST SUMMARY

Maxxam ID: JTM907
Sample ID: MW 13
Matrix: Water

Collected: 2019/05/21
Shipped:
Received: 2019/05/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	6131044	N/A	2019/05/24	Automated Statchk
1,3-Dichloropropene Sum	CALC	6131573	N/A	2019/05/23	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	6133416	2019/05/22	2019/05/22	Mariana Vascan
Dissolved Metals by ICPMS	ICP/MS	6134307	N/A	2019/05/24	Thao Nguyen
PAH Compounds in Water by GC/MS (SIM)	GC/MS	6136905	2019/05/23	2019/05/24	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	6133399	N/A	2019/05/22	Liliana Gaburici

Maxxam ID: JTM907 Dup
Sample ID: MW 13
Matrix: Water

Collected: 2019/05/21
Shipped:
Received: 2019/05/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Volatile Organic Compounds and F1 PHCs	GC/MSFD	6133399	N/A	2019/05/22	Liliana Gaburici

Maxxam ID: JTM908
Sample ID: MW 19-21
Matrix: Water

Collected: 2019/05/21
Shipped:
Received: 2019/05/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	6131044	N/A	2019/05/24	Automated Statchk
1,3-Dichloropropene Sum	CALC	6131573	N/A	2019/05/23	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	6133416	2019/05/22	2019/05/22	Mariana Vascan
Dissolved Metals by ICPMS	ICP/MS	6134307	N/A	2019/05/24	Thao Nguyen
PAH Compounds in Water by GC/MS (SIM)	GC/MS	6136905	2019/05/23	2019/05/24	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	6133399	N/A	2019/05/23	Liliana Gaburici

Maxxam ID: JTM908 Dup
Sample ID: MW 19-21
Matrix: Water

Collected: 2019/05/21
Shipped:
Received: 2019/05/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	6133416	2019/05/22	2019/05/22	Mariana Vascan

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GENERAL COMMENTS

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

Package 1	8.3°C

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

exp Services Inc
Client Project #: OTT-00252625-A
Site Location: FOREST
Sampler Initials: PO

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
6133399	4-Bromofluorobenzene	2019/05/22	102	70 - 130	103	70 - 130	97	%		
6133399	D4-1,2-Dichloroethane	2019/05/22	88	70 - 130	120	70 - 130	108	%		
6133399	D8-Toluene	2019/05/22	97	70 - 130	96	70 - 130	92	%		
6133416	o-Terphenyl	2019/05/22	104	30 - 130	100	30 - 130	103	%		
6136905	D10-Anthracene	2019/05/24	118	50 - 130	122	50 - 130	126	%		
6136905	D14-Terphenyl (FS)	2019/05/24	106	50 - 130	110	50 - 130	117	%		
6136905	D8-Acenaphthylene	2019/05/24	102	50 - 130	105	50 - 130	107	%		
6133399	1,1,1,2-Tetrachloroethane	2019/05/22	102	70 - 130	103	70 - 130	<0.50	ug/L	NC	30
6133399	1,1,1-Trichloroethane	2019/05/22	96	70 - 130	91	70 - 130	<0.20	ug/L	NC	30
6133399	1,1,2,2-Tetrachloroethane	2019/05/22	121	70 - 130	120	70 - 130	<0.50	ug/L	NC	30
6133399	1,1,2-Trichloroethane	2019/05/22	106	70 - 130	104	70 - 130	<0.50	ug/L	NC	30
6133399	1,1-Dichloroethane	2019/05/22	102	70 - 130	96	70 - 130	<0.20	ug/L	NC	30
6133399	1,1-Dichloroethylene	2019/05/22	93	70 - 130	88	70 - 130	<0.20	ug/L	NC	30
6133399	1,2-Dichlorobenzene	2019/05/22	91	70 - 130	89	70 - 130	<0.50	ug/L	NC	30
6133399	1,2-Dichloroethane	2019/05/22	109	70 - 130	103	70 - 130	<0.50	ug/L	NC	30
6133399	1,2-Dichloropropane	2019/05/22	94	70 - 130	89	70 - 130	<0.20	ug/L	NC	30
6133399	1,3-Dichlorobenzene	2019/05/22	88	70 - 130	87	70 - 130	<0.50	ug/L	NC	30
6133399	1,4-Dichlorobenzene	2019/05/22	91	70 - 130	90	70 - 130	<0.50	ug/L	NC	30
6133399	Acetone (2-Propanone)	2019/05/22	103	60 - 140	102	60 - 140	<10	ug/L	NC	30
6133399	Benzene	2019/05/22	109	70 - 130	100	70 - 130	<0.20	ug/L	NC	30
6133399	Bromodichloromethane	2019/05/22	110	70 - 130	105	70 - 130	<0.50	ug/L	NC	30
6133399	Bromoform	2019/05/22	124	70 - 130	123	70 - 130	<1.0	ug/L	NC	30
6133399	Bromomethane	2019/05/22	111	60 - 140	103	60 - 140	<0.50	ug/L	NC	30
6133399	Carbon Tetrachloride	2019/05/22	91	70 - 130	85	70 - 130	<0.20	ug/L	NC	30
6133399	Chlorobenzene	2019/05/22	96	70 - 130	95	70 - 130	<0.20	ug/L	NC	30
6133399	Chloroform	2019/05/22	100	70 - 130	97	70 - 130	<0.20	ug/L	NC	30
6133399	cis-1,2-Dichloroethylene	2019/05/22	100	70 - 130	96	70 - 130	<0.50	ug/L	NC	30
6133399	cis-1,3-Dichloropropene	2019/05/22	89	70 - 130	83	70 - 130	<0.30	ug/L	NC	30
6133399	Dibromochloromethane	2019/05/22	113	70 - 130	110	70 - 130	<0.50	ug/L	NC	30
6133399	Dichlorodifluoromethane (FREON 12)	2019/05/22	99	60 - 140	92	60 - 140	<1.0	ug/L	NC	30
6133399	Ethylbenzene	2019/05/22	78	70 - 130	79	70 - 130	<0.20	ug/L	NC	30
6133399	Ethylene Dibromide	2019/05/22	119	70 - 130	118	70 - 130	<0.20	ug/L	NC	30

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Report Date: 2019/05/27

QUALITY ASSURANCE REPORT(CONT'D)

exp Services Inc
Client Project #: OTT-00252625-A
Site Location: FOREST
Sampler Initials: PO

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
6133399	F1 (C6-C10) - BTEX	2019/05/22					<25	ug/L	NC	30
6133399	F1 (C6-C10)	2019/05/22	95	60 - 140	112	60 - 140	<25	ug/L	NC	30
6133399	Hexane	2019/05/22	101	70 - 130	92	70 - 130	<1.0	ug/L	NC	30
6133399	Methyl Ethyl Ketone (2-Butanone)	2019/05/22	112	60 - 140	105	60 - 140	<10	ug/L	NC	30
6133399	Methyl Isobutyl Ketone	2019/05/22	108	70 - 130	113	70 - 130	<5.0	ug/L	NC	30
6133399	Methyl t-butyl ether (MTBE)	2019/05/22	99	70 - 130	96	70 - 130	<0.50	ug/L	NC	30
6133399	Methylene Chloride(Dichloromethane)	2019/05/22	113	70 - 130	107	70 - 130	<2.0	ug/L	NC	30
6133399	o-Xylene	2019/05/22	82	70 - 130	84	70 - 130	<0.20	ug/L	NC	30
6133399	p+m-Xylene	2019/05/22	85	70 - 130	85	70 - 130	<0.20	ug/L	NC	30
6133399	Styrene	2019/05/22	87	70 - 130	88	70 - 130	<0.50	ug/L	NC	30
6133399	Tetrachloroethylene	2019/05/22	85	70 - 130	84	70 - 130	<0.20	ug/L	NC	30
6133399	Toluene	2019/05/22	88	70 - 130	87	70 - 130	<0.20	ug/L	NC	30
6133399	Total Xylenes	2019/05/22					<0.20	ug/L	NC	30
6133399	trans-1,2-Dichloroethylene	2019/05/22	97	70 - 130	92	70 - 130	<0.50	ug/L	NC	30
6133399	trans-1,3-Dichloropropene	2019/05/22	110	70 - 130	103	70 - 130	<0.40	ug/L	NC	30
6133399	Trichloroethylene	2019/05/22	100	70 - 130	93	70 - 130	<0.20	ug/L	NC	30
6133399	Trichlorofluoromethane (FREON 11)	2019/05/22	105	70 - 130	98	70 - 130	<0.50	ug/L	NC	30
6133399	Vinyl Chloride	2019/05/22	110	70 - 130	103	70 - 130	<0.20	ug/L	NC	30
6133416	F2 (C10-C16 Hydrocarbons)	2019/05/22	99	50 - 130	94	80 - 120	<100	ug/L	NC	50
6133416	F3 (C16-C34 Hydrocarbons)	2019/05/22	99	50 - 130	94	80 - 120	<200	ug/L	NC	50
6133416	F4 (C34-C50 Hydrocarbons)	2019/05/22	99	50 - 130	94	80 - 120	<200	ug/L	NC	50
6134307	Dissolved Antimony (Sb)	2019/05/24	99	80 - 120	102	80 - 120	<0.50	ug/L		
6134307	Dissolved Arsenic (As)	2019/05/24	98	80 - 120	100	80 - 120	<1.0	ug/L		
6134307	Dissolved Barium (Ba)	2019/05/24	97	80 - 120	100	80 - 120	<2.0	ug/L		
6134307	Dissolved Beryllium (Be)	2019/05/24	97	80 - 120	99	80 - 120	<0.50	ug/L		
6134307	Dissolved Boron (B)	2019/05/24	96	80 - 120	99	80 - 120	<10	ug/L		
6134307	Dissolved Cadmium (Cd)	2019/05/24	96	80 - 120	102	80 - 120	<0.10	ug/L		
6134307	Dissolved Chromium (Cr)	2019/05/24	94	80 - 120	99	80 - 120	<5.0	ug/L		
6134307	Dissolved Cobalt (Co)	2019/05/24	93	80 - 120	99	80 - 120	<0.50	ug/L		
6134307	Dissolved Copper (Cu)	2019/05/24	97	80 - 120	102	80 - 120	<1.0	ug/L		
6134307	Dissolved Lead (Pb)	2019/05/24	89	80 - 120	96	80 - 120	<0.50	ug/L	NC	20
6134307	Dissolved Molybdenum (Mo)	2019/05/24	102	80 - 120	105	80 - 120	<0.50	ug/L		

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
6134307	Dissolved Nickel (Ni)	2019/05/24	91	80 - 120	97	80 - 120	<1.0	ug/L		
6134307	Dissolved Selenium (Se)	2019/05/24	97	80 - 120	100	80 - 120	<2.0	ug/L		
6134307	Dissolved Silver (Ag)	2019/05/24	94	80 - 120	102	80 - 120	<0.10	ug/L		
6134307	Dissolved Sodium (Na)	2019/05/24	NC	80 - 120	101	80 - 120	<100	ug/L		
6134307	Dissolved Thallium (Tl)	2019/05/24	89	80 - 120	96	80 - 120	<0.050	ug/L		
6134307	Dissolved Uranium (U)	2019/05/24	92	80 - 120	97	80 - 120	<0.10	ug/L		
6134307	Dissolved Vanadium (V)	2019/05/24	96	80 - 120	101	80 - 120	<0.50	ug/L		
6134307	Dissolved Zinc (Zn)	2019/05/24	95	80 - 120	100	80 - 120	<5.0	ug/L		
6136905	1-Methylnaphthalene	2019/05/24	102	50 - 130	120	50 - 130	<0.050	ug/L	NC	30
6136905	2-Methylnaphthalene	2019/05/24	90	50 - 130	110	50 - 130	<0.050	ug/L	NC	30
6136905	Acenaphthene	2019/05/24	85	50 - 130	109	50 - 130	<0.050	ug/L	NC	30
6136905	Acenaphthylene	2019/05/24	93	50 - 130	111	50 - 130	<0.050	ug/L	NC	30
6136905	Anthracene	2019/05/24	90	50 - 130	110	50 - 130	<0.050	ug/L	NC	30
6136905	Benzo(a)anthracene	2019/05/24	97	50 - 130	118	50 - 130	<0.050	ug/L	1.6	30
6136905	Benzo(a)pyrene	2019/05/24	89	50 - 130	112	50 - 130	<0.010	ug/L	93 (1)	30
6136905	Benzo(b/j)fluoranthene	2019/05/24	89	50 - 130	112	50 - 130	<0.050	ug/L	NC	30
6136905	Benzo(g,h,i)perylene	2019/05/24	63	50 - 130	77	50 - 130	<0.050	ug/L	NC	30
6136905	Benzo(k)fluoranthene	2019/05/24	86	50 - 130	108	50 - 130	<0.050	ug/L	NC	30
6136905	Chrysene	2019/05/24	75	50 - 130	93	50 - 130	<0.050	ug/L	NC	30
6136905	Dibenz(a,h)anthracene	2019/05/24	85	50 - 130	103	50 - 130	<0.050	ug/L	NC	30
6136905	Fluoranthene	2019/05/24	97	50 - 130	120	50 - 130	<0.050	ug/L	NC	30
6136905	Fluorene	2019/05/24	93	50 - 130	112	50 - 130	<0.050	ug/L	NC	30
6136905	Indeno(1,2,3-cd)pyrene	2019/05/24	73	50 - 130	90	50 - 130	<0.050	ug/L	NC	30
6136905	Naphthalene	2019/05/24	NC	50 - 130	103	50 - 130	<0.050	ug/L	NC	30
6136905	Phenanthrene	2019/05/24	90	50 - 130	114	50 - 130	<0.030	ug/L	23	30

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Maxxam Job #: B9D4608
Report Date: 2019/05/27

QUALITY ASSURANCE REPORT(CONT'D)

exp Services Inc
Client Project #: OTT-00252625-A
Site Location: FOREST
Sampler Initials: PO

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
6136905	Pyrene	2019/05/24	98	50 - 130	120	50 - 130	<0.050	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 (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

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).

(1) Duplicate results exceeded RPD acceptance criteria. The variability in the results for this analyte may be more pronounced.

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Maxxam Job #: B9D4608
Report Date: 2019/05/27

exp Services Inc
Client Project #: OTT-00252625-A
Site Location: FOREST
Sampler Initials: PO

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Anastassia Hamanov, Scientific Specialist

Steve Roberts, Ottawa Lab Manager

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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CHAIN OF CUSTODY RECORD

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#17497 exp Services Inc	Company Name:	EXP	Quotation #:	~~B91718~~ B91716 (Stream3)	Maxxam Job #:	Bottle Order #:
Attention:	Accounts Payable	Attention:	Mark Devlin / Mark McCallig	P.O. #:			718059
Address:	100-2650 Queensview Drive Ottawa ON K2B 8H6	Address:		Project:	OTT-00252625 - A	COC #:	Project Manager:
Tel:	(613) 688-1899 Fax: (613) 225-7337	Tel:	Fax:	Project Name:	FOREST	C#718059-01-01	Alisha Williamson
Email:	accounting.ottawa@exp.com; Karen.Burke@exp.com;	Email:	mark.devlin@exp.com Mark.McCallig@exp.com	Site #:			
				Sampled By:	P.O		

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

Regulation 153 (2011)	Other Regulations	Special Instructions
☐ Table 1 ☐ Res/Park ☐ Medium/Fine ☐ Table 2 ☒ Ind/Comm ☐ Coarse ☒ Table 3 ☐ Agri/Other ☐ For RSC ☐ Table ___	☐ CCME ☐ Sanitary Sewer Bylaw ☐ Reg 558. ☐ Storm Sewer Bylaw ☐ MISA Municipality ___ ☐ PWQO ☐ Other ___	

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

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O. Reg 153 VOC's + BTEX + F1-F4 + PHC	O. Reg 153 Dissolved ICPMS metals + Sodium	O. Reg 153 PAH's	# of Bottles	Comments
1		MW13	2019-05-21		GW	X	X	X	X	8	
2		MW19-21	2019-05-21		GW	X	X	X	X	8	
3											
4											
5											
6											
7											
8											
9											on ice packs
10											

21-May-19 14:08
Alisha Williamson
B9D4608

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 #)*

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted	Laboratory Use Only				
Philip Oliveira	2019.05.21	14h07	Serge Leger	19/05/21	14:08		Time Sensitive	Temperature (°C) on Recei	Custody Seal	Yes	No
								10;6;9	Present	X	
									Intact	X	

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'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.MAXXAM.CA/TERMS.

* 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 HTTP://MAXXAM.CA/WP-CONTENT/UPLOADS/ONTARIO-COC.PDF.

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

White: Maxxam Yellow: Client

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Page 1 of 1

CHAIN OF CUSTODY RECORD

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#17497 exp Services Inc	Company Name:	EXP	Quotation #:	~~B91718~~ B91716 (STREAM 3)	Maxxam Job #:	Bottle Order #:
Attention:	Accounts Payable	Attention:	Mark Devlin / MARK McCallig	P.O. #:			718059
Address:	100-2650 Queensview Drive	Address:		Project:	OTT-00252625 - A	COC #:	Project Manager:
	Ottawa ON K2B 8H6			Project Name:	FOREST	C#718059-01-01	Alisha Williamson
Tel:	(613) 688-1899 Fax: (613) 225-7337	Tel:	Fax:	Site #:			
Email:	accounting.ottawa@exp.com; Karen.Burke@exp.com;	Email:	mark.devlin@exp.com MARK.MCCALLIG@EXP.COM	Sampled By:	P.G		

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

Regulation 153 (2011)	Other Regulations	Special Instructions
☐ Table 1 ☐ Res/Park ☐ Medium/Fine	☐ CCME ☐ Sanitary Sewer Bylaw	
☐ Table 2 ☒ Ind/Comm ☐ Coarse	☐ Reg 558. ☐ Storm Sewer Bylaw	
☒ Table 3 ☐ Agri/Other ☐ For RSC	☐ MISA Municipality _____	
☐ Table ___	☐ PWQO	
	☐ Other _____	

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

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	Field Filtered (please circle): Metals / Hg / Cr VI	O.Reg 153 VOCs & PHC	O.Reg 153 F1-F4 PHC	O.Reg 153 Dissolved ICPMS metals+Sodium	O.Reg 153 PAHs	# of Bottles	Comments
1		MW 13	2019-05-21		GW	X	X	X	X		8	
2		MW 19-21	2019-05-21		GW	X	X	X	X		8	
3												
4												
5												
6												
7												
8												
9												on ice packs
10												

21-May-19 14:08
Alisha Williamson
B9D4608
KIV OTT-001

RECEIVED IN OTTAWA

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Philip Viveiros	2019.05.21	14h07	Serge Léger	19/05/21	14:08	
				2019/05/22	08h00	

Laboratory Use Only

Time Sensitive	Temperature (°C) on Recei	Custody Seal	Yes	No
	10.6.9	Present		
		Intact	X	

61317

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'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.MAXXAM.CA/TERMS.

* 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 HTTP://MAXXAM.CA/WP-CONTENT/UPLOADS/ONTARIO-COC.PDF.

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

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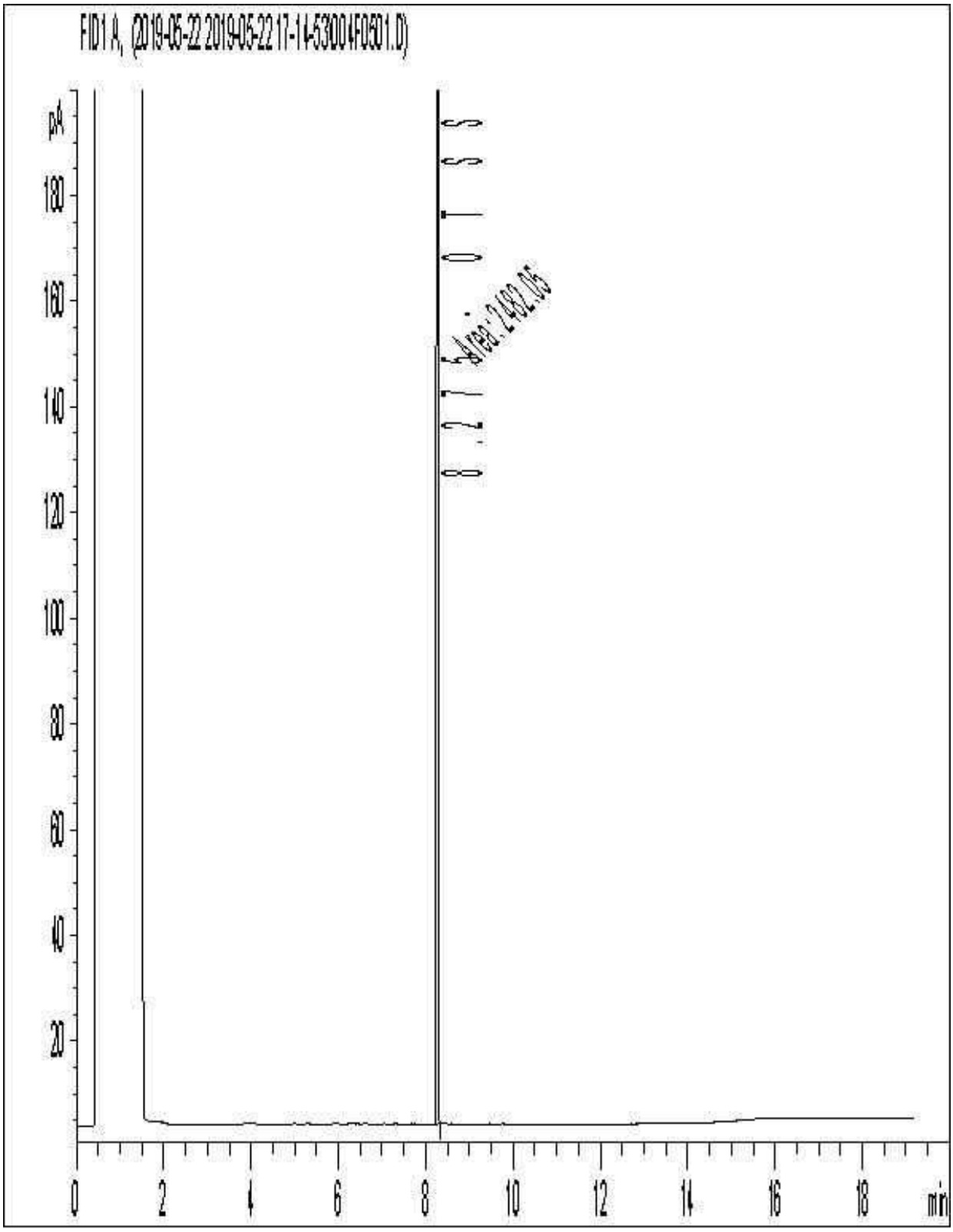
Maxxam Job #: B9D4608
Report Date: 2019/05/27
Maxxam Sample: JTM907

exp Services Inc
Client Project #: OTT-00252625-A
Project name: FOREST
Client ID: MW 13

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

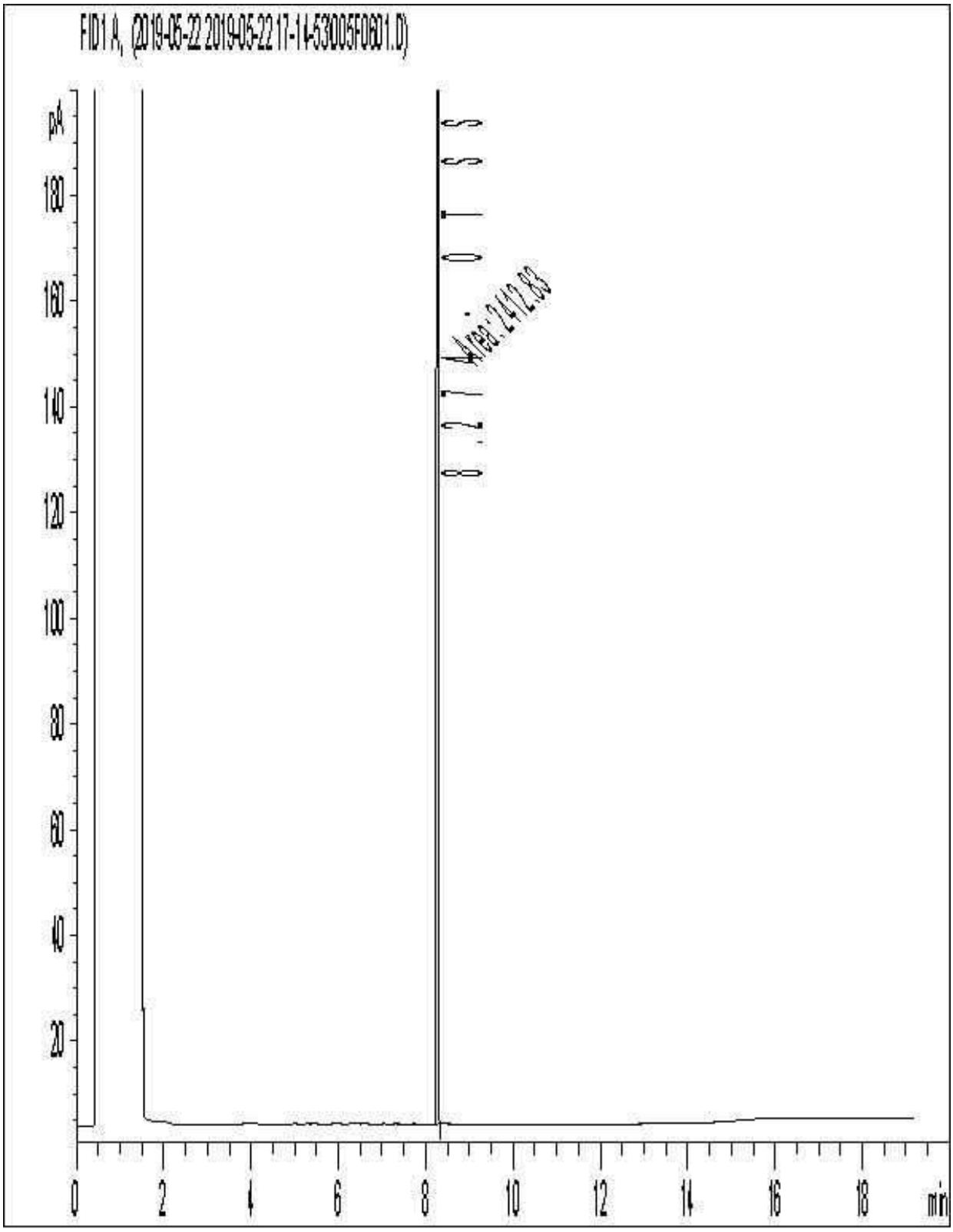


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B9D4608
Report Date: 2019/05/27
Maxxam Sample: JTM908

exp Services Inc
Client Project #: OTT-00252625-A
Project name: FOREST
Client ID: MW 19-21

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

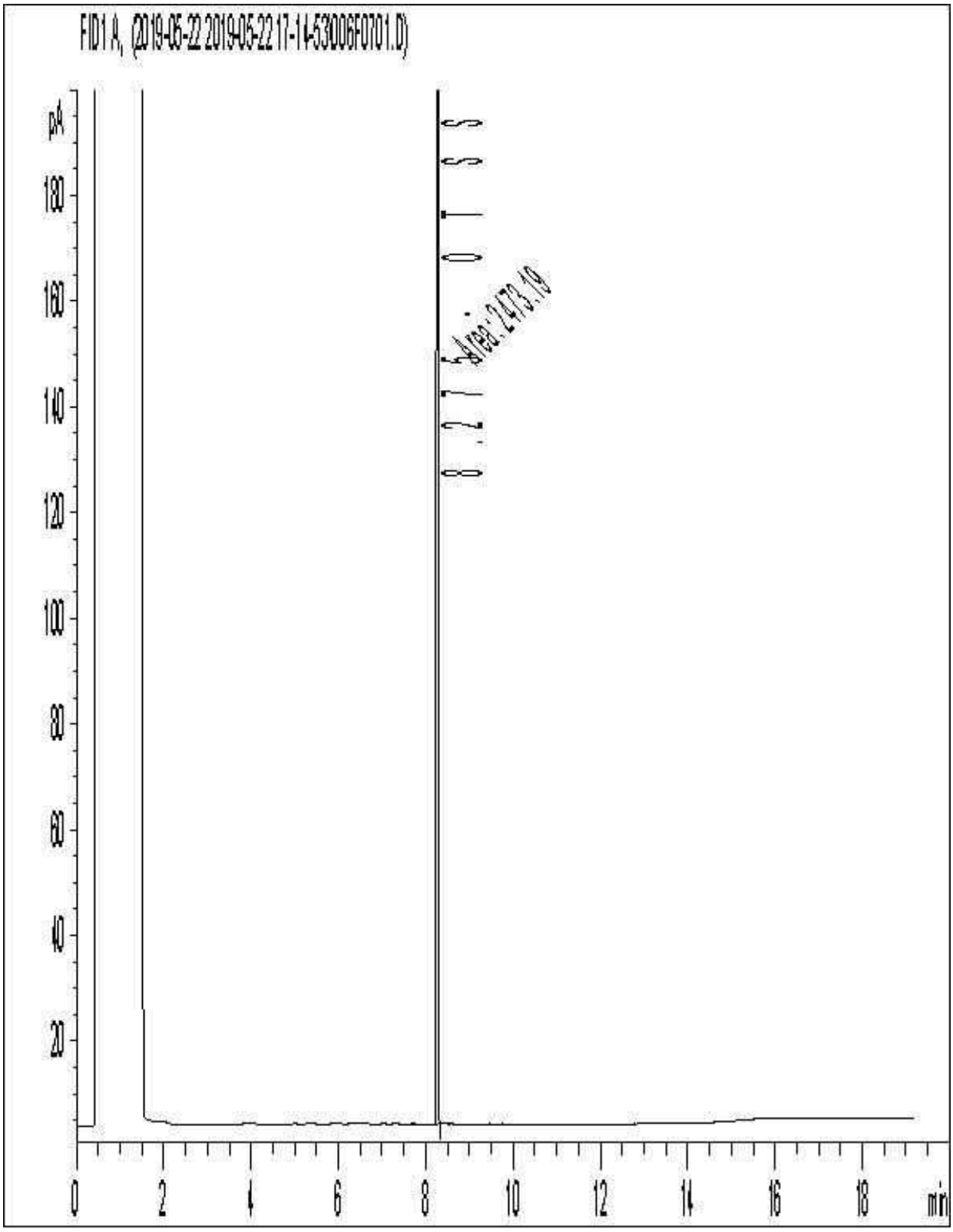


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B9D4608
Report Date: 2019/05/27
Maxxam Sample: JTM908 Lab-Dup

exp Services Inc
Client Project #: OTT-00252625-A
Project name: FOREST
Client ID: MW 19-21

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.

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A Bureau Veritas Group Company

Your Project #: OTT-00252625-A
Site Location: FOREST
Your C.O.C. #: 713169-04-01

Attention: Mark McCalla

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

Report Date: 2019/05/31
Report #: R5733839
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B9E3952
Received: 2019/05/29, 13:10

Sample Matrix: Water
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
1,3-Dichloropropene Sum	1	N/A	2019/05/31	OTT SOP-00002	EPA 8260C m
Volatile Organic Compounds in Water	1	N/A	2019/05/30	OTT SOP-00002	EPA 8260C m

Remarks:

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

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam 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.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam 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 Maxxam, unless otherwise agreed in writing. Maxxam 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 Maxxam, 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.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Alisha Williamson, Project Manager
Email: AWilliamson@maxxam.ca
Phone# (613)274-0573

==========

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E),

Your Project #: OTT-00252625-A
Site Location: FOREST
Your C.O.C. #: 713169-04-01

Attention: Mark McCalla

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

Report Date: 2019/05/31
Report #: R5733839
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B9E3952
Received: 2019/05/29, 13:10

signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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Maxxam Job #: B9E3952
Report Date: 2019/05/31

exp Services Inc
Client Project #: OTT-00252625-A
Site Location: FOREST
Sampler Initials: LW

O.REG 153 VOCS (WATER)

Maxxam ID		JVO490		
Sampling Date		2019/05/29		
COC Number		713169-04-01		
	UNITS	**MW19-8**	**RDL**	**QC Batch**
Calculated Parameters				
1,3-Dichloropropene (cis+trans)	ug/L	<0.50	0.50	6146598
Volatile Organics				
Acetone (2-Propanone)	ug/L	<10	10	6147046
Benzene	ug/L	0.64	0.20	6147046
Bromodichloromethane	ug/L	<0.50	0.50	6147046
Bromoform	ug/L	<1.0	1.0	6147046
Bromomethane	ug/L	<0.50	0.50	6147046
Carbon Tetrachloride	ug/L	<0.20	0.20	6147046
Chlorobenzene	ug/L	<0.20	0.20	6147046
Chloroform	ug/L	<0.20	0.20	6147046
Dibromochloromethane	ug/L	<0.50	0.50	6147046
1,2-Dichlorobenzene	ug/L	<0.50	0.50	6147046
1,3-Dichlorobenzene	ug/L	<0.50	0.50	6147046
1,4-Dichlorobenzene	ug/L	<0.50	0.50	6147046
Dichlorodifluoromethane (FREON 12)	ug/L	<1.0	1.0	6147046
1,1-Dichloroethane	ug/L	<0.20	0.20	6147046
1,2-Dichloroethane	ug/L	1.5	0.50	6147046
1,1-Dichloroethylene	ug/L	<0.20	0.20	6147046
cis-1,2-Dichloroethylene	ug/L	<0.50	0.50	6147046
trans-1,2-Dichloroethylene	ug/L	<0.50	0.50	6147046
1,2-Dichloropropane	ug/L	<0.20	0.20	6147046
cis-1,3-Dichloropropene	ug/L	<0.30	0.30	6147046
trans-1,3-Dichloropropene	ug/L	<0.40	0.40	6147046
Ethylbenzene	ug/L	<0.20	0.20	6147046
Ethylene Dibromide	ug/L	<0.20	0.20	6147046
Hexane	ug/L	<1.0	1.0	6147046
Methylene Chloride(Dichloromethane)	ug/L	<2.0	2.0	6147046
Methyl Ethyl Ketone (2-Butanone)	ug/L	<10	10	6147046
Methyl Isobutyl Ketone	ug/L	<5.0	5.0	6147046
Methyl t-butyl ether (MTBE)	ug/L	0.98	0.50	6147046
Styrene	ug/L	<0.50	0.50	6147046
1,1,1,2-Tetrachloroethane	ug/L	<0.50	0.50	6147046
1,1,2,2-Tetrachloroethane	ug/L	<0.50	0.50	6147046
Tetrachloroethylene	ug/L	<0.20	0.20	6147046

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B9E3952
Report Date: 2019/05/31

exp Services Inc
Client Project #: OTT-00252625-A
Site Location: FOREST
Sampler Initials: LW

O.REG 153 VOCS (WATER)

Maxxam ID		JVO490		
Sampling Date		2019/05/29		
COC Number		713169-04-01		
	UNITS	**MW19-8**	**RDL**	**QC Batch**
Toluene	ug/L	<0.20	0.20	6147046
1,1,1-Trichloroethane	ug/L	<0.20	0.20	6147046
1,1,2-Trichloroethane	ug/L	<0.50	0.50	6147046
Trichloroethylene	ug/L	<0.20	0.20	6147046
Trichlorofluoromethane (FREON 11)	ug/L	<0.50	0.50	6147046
Vinyl Chloride	ug/L	<0.20	0.20	6147046
p+m-Xylene	ug/L	<0.20	0.20	6147046
o-Xylene	ug/L	<0.20	0.20	6147046
Total Xylenes	ug/L	<0.20	0.20	6147046
Surrogate Recovery (%)				
4-Bromofluorobenzene	%	91		6147046
D4-1,2-Dichloroethane	%	99		6147046
D8-Toluene	%	86		6147046

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B9E3952
Report Date: 2019/05/31

exp Services Inc
Client Project #: OTT-00252625-A
Site Location: FOREST
Sampler Initials: LW

TEST SUMMARY

Maxxam ID: JVO490
Sample ID: MW19-8
Matrix: Water

Collected: 2019/05/29
Shipped:
Received: 2019/05/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	6146598	N/A	2019/05/31	Automated Statchk
Volatile Organic Compounds in Water	GC/MS	6147046	N/A	2019/05/30	Liliana Gaburici

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Maxxam Job #: B9E3952
Report Date: 2019/05/31

exp Services Inc
Client Project #: OTT-00252625-A
Site Location: FOREST
Sampler Initials: LW

GENERAL COMMENTS

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

Package 1	13.0°C

Results relate only to the items tested.

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Maxxam Job #: B9E3952
Report Date: 2019/05/31

QUALITY ASSURANCE REPORT

exp Services Inc
Client Project #: OTT-00252625-A
Site Location: FOREST
Sampler Initials: LW

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
6147046	4-Bromofluorobenzene	2019/05/30	102	70 - 130	105	70 - 130	97	%		
6147046	D4-1,2-Dichloroethane	2019/05/30	86	70 - 130	116	70 - 130	105	%		
6147046	D8-Toluene	2019/05/30	100	70 - 130	101	70 - 130	94	%		
6147046	1,1,1,2-Tetrachloroethane	2019/05/30	92	70 - 130	95	70 - 130	<0.50	ug/L	4.7	30
6147046	1,1,1-Trichloroethane	2019/05/30	86	70 - 130	95	70 - 130	<0.20	ug/L	8.9	30
6147046	1,1,2,2-Tetrachloroethane	2019/05/30	98	70 - 130	102	70 - 130	<0.50	ug/L	2.4	30
6147046	1,1,2-Trichloroethane	2019/05/30	86	70 - 130	92	70 - 130	<0.50	ug/L	3.8	30
6147046	1,1-Dichloroethane	2019/05/30	86	70 - 130	96	70 - 130	<0.20	ug/L	4.3	30
6147046	1,1-Dichloroethylene	2019/05/30	77	70 - 130	89	70 - 130	<0.20	ug/L	7.7	30
6147046	1,2-Dichlorobenzene	2019/05/30	84	70 - 130	80	70 - 130	<0.50	ug/L	8.5	30
6147046	1,2-Dichloroethane	2019/05/30	88	70 - 130	93	70 - 130	<0.50	ug/L	1.9	30
6147046	1,2-Dichloropropane	2019/05/30	80	70 - 130	86	70 - 130	<0.20	ug/L	5.9	30
6147046	1,3-Dichlorobenzene	2019/05/30	80	70 - 130	87	70 - 130	<0.50	ug/L	2.0	30
6147046	1,4-Dichlorobenzene	2019/05/30	83	70 - 130	83	70 - 130	<0.50	ug/L	5.0	30
6147046	Acetone (2-Propanone)	2019/05/30	103	60 - 140	107	60 - 140	<10	ug/L	2.7	30
6147046	Benzene	2019/05/30	91	70 - 130	99	70 - 130	<0.20	ug/L	6.7	30
6147046	Bromodichloromethane	2019/05/30	95	70 - 130	99	70 - 130	<0.50	ug/L	5.8	30
6147046	Bromoform	2019/05/30	104	70 - 130	107	70 - 130	<1.0	ug/L	0.85	30
6147046	Bromomethane	2019/05/30	88	60 - 140	100	60 - 140	<0.50	ug/L	0.080	30
6147046	Carbon Tetrachloride	2019/05/30	83	70 - 130	90	70 - 130	<0.20	ug/L	10	30
6147046	Chlorobenzene	2019/05/30	81	70 - 130	87	70 - 130	<0.20	ug/L	2.3	30
6147046	Chloroform	2019/05/30	83	70 - 130	90	70 - 130	<0.20	ug/L	15	30
6147046	cis-1,2-Dichloroethylene	2019/05/30	85	70 - 130	91	70 - 130	<0.50	ug/L	5.7	30
6147046	cis-1,3-Dichloropropene	2019/05/30	91	70 - 130	91	70 - 130	<0.30	ug/L	9.5	30
6147046	Dibromochloromethane	2019/05/30	97	70 - 130	102	70 - 130	<0.50	ug/L	200 (1)	30
6147046	Dichlorodifluoromethane (FREON 12)	2019/05/30	75	60 - 140	83	60 - 140	<1.0	ug/L	7.2	30
6147046	Ethylbenzene	2019/05/30	91	70 - 130	74	70 - 130	<0.20	ug/L	7.6	30
6147046	Ethylene Dibromide	2019/05/30	95	70 - 130	101	70 - 130	<0.20	ug/L	2.9	30
6147046	Hexane	2019/05/30	83	70 - 130	91	70 - 130	<1.0	ug/L	14	30
6147046	Methyl Ethyl Ketone (2-Butanone)	2019/05/30	109	60 - 140	116	60 - 140	<10	ug/L	2.0	30
6147046	Methyl Isobutyl Ketone	2019/05/30	105	70 - 130	117	70 - 130	<5.0	ug/L	2.9	30
6147046	Methyl t-butyl ether (MTBE)	2019/05/30	88	70 - 130	91	70 - 130	<0.50	ug/L	3.2	30

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
6147046	Methylene Chloride(Dichloromethane)	2019/05/30	95	70 - 130	103	70 - 130	<2.0	ug/L	4.4	30
6147046	o-Xylene	2019/05/30	72	70 - 130	78	70 - 130	<0.20	ug/L	6.2	30
6147046	p+m-Xylene	2019/05/30	72	70 - 130	79	70 - 130	<0.20	ug/L	7.2	30
6147046	Styrene	2019/05/30	71	70 - 130	82	70 - 130	<0.50	ug/L	0.60	30
6147046	Tetrachloroethylene	2019/05/30	75	70 - 130	83	70 - 130	<0.20	ug/L	7.5	30
6147046	Toluene	2019/05/30	73	70 - 130	84	70 - 130	<0.20	ug/L	0.31	30
6147046	Total Xylenes	2019/05/30					<0.20	ug/L		
6147046	trans-1,2-Dichloroethylene	2019/05/30	81	70 - 130	90	70 - 130	<0.50	ug/L	10	30
6147046	trans-1,3-Dichloropropene	2019/05/30	80	70 - 130	83	70 - 130	<0.40	ug/L	2.6	30
6147046	Trichloroethylene	2019/05/30	87	70 - 130	95	70 - 130	<0.20	ug/L	9.4	30
6147046	Trichlorofluoromethane (FREON 11)	2019/05/30	92	70 - 130	103	70 - 130	<0.50	ug/L	8.8	30
6147046	Vinyl Chloride	2019/05/30	84	70 - 130	101	70 - 130	<0.20	ug/L	8.0	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.

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

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Maxxam Job #: B9E3952
Report Date: 2019/05/31

exp Services Inc
Client Project #: OTT-00252625-A
Site Location: FOREST
Sampler Initials: LW

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Steve Roberts, Ottawa Lab Manager

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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Maxxam Analytics International Corporation o/a Maxxam Analytics
6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel:(905) 817-5700 Toll-free:800-563-6266 Fax:(905) 817-5777 www.maxxam.ca

CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#17498 exp Services Inc	Company Name:		Quotation #:	~~B01748~~ B91716 (Stream 3)	Maxxam Job #:	Bottle Order #:
Attention:	Accounts Payable	Attention:	~~Patricia Stelmack~~ Mark McCalla / Leah Wells	P.O. #:	B91716		713169
Address:	100-2650 Queensview Drive Ottawa ON K2B 8H6	Address:		Project:	OTT-~~00020755-C0~~ 00853625-A	COC #:	Project Manager:
Tel:	(613) 688-1899 Fax: (613) 225-7337	Tel:	~~MARK.MCCALLA~~ Fax:	Project Name:	Forest	C#713169-04-01	Alisha Williamson
Email:	accounting.ottawa@exp.com; Karen.Burke@exp.com;	Email:	~~patricia.stelmack~~@exp.com Leah.wells@exp.com	Site #:			
				Sampled By:	LDW		

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

Regulation 153 (2011)	Other Regulations	Special Instructions
☐ Table 1 ☐ Res/Park ☐ Medium/Fine ☐ Table 2 ☑ Ind/Comm ☐ Coarse ☑ Table 3 ☐ Agri/Other ☐ For RSC ☐ Table ___	☐ CCME ☐ Sanitary Sewer Bylaw ☐ Reg 558 ☐ Storm Sewer Bylaw ☐ MISA Municipality ___ ☐ PWQO ☐ Other ___	

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

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O.Reg 153 VOCs by HS (Water)	# of Bottles	Comments
1		MW19-8	May 29/19		GW		X	2	
2									
3									
4									
5									
6									
7									
8									
9									
10									

29-May-19 13:10
Alisha Williamson
B9E3952

RECEIVED IN OTTAWA
on ice

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: May 31 Time Required: 6pm ☑
Rush Confirmation Number: ___ *(call lab for #)*

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Leah Wells	May 29/19	1:10pm	Serge Leger	19/05/29	13:10	

Laboratory Use Only				
Time Sensitive	Temperature (°C) on Recei	Custody Seal	Yes	No
	14.1,1.4	Present		
		Intact	X	

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'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.MAXXAM.CA/TERMS.

* 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 HTTP://MAXXAM.CA/WP-CONTENT/UPLOADS/ONTARIO-COC.PDF.

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

White: Maxxa Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam
A Bureau Veritas Group Company

Your Project #: OTT-00252625-A
Site Location: FOREST
Your C.O.C. #: 713169-04-01

Attention: Mark McCalla

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

Report Date: 2019/05/31
Report #: R5733839
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B9E3952
Received: 2019/05/29, 13:10

Sample Matrix: Water
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
1,3-Dichloropropene Sum	1	N/A	2019/05/31	OTT SOP-00002	EPA 8260C m
Volatile Organic Compounds in Water	1	N/A	2019/05/30	OTT SOP-00002	EPA 8260C m

Remarks:

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

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam 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.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam 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 Maxxam, unless otherwise agreed in writing. Maxxam 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 Maxxam, 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.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Alisha Williamson, Project Manager
Email: AWilliamson@maxxam.ca
Phone# (613)274-0573

==========

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E),

Your Project #: OTT-00252625-A
Site Location: FOREST
Your C.O.C. #: 713169-04-01

Attention: Mark McCalla

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

Report Date: 2019/05/31
Report #: R5733839
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B9E3952
Received: 2019/05/29, 13:10

signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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Maxxam Job #: B9E3952
Report Date: 2019/05/31

exp Services Inc
Client Project #: OTT-00252625-A
Site Location: FOREST
Sampler Initials: LW

O.REG 153 VOCS (WATER)

Maxxam ID		JVO490		
Sampling Date		2019/05/29		
COC Number		713169-04-01		
	UNITS	**MW19-8**	**RDL**	**QC Batch**
Calculated Parameters				
1,3-Dichloropropene (cis+trans)	ug/L	<0.50	0.50	6146598
Volatile Organics				
Acetone (2-Propanone)	ug/L	<10	10	6147046
Benzene	ug/L	0.64	0.20	6147046
Bromodichloromethane	ug/L	<0.50	0.50	6147046
Bromoform	ug/L	<1.0	1.0	6147046
Bromomethane	ug/L	<0.50	0.50	6147046
Carbon Tetrachloride	ug/L	<0.20	0.20	6147046
Chlorobenzene	ug/L	<0.20	0.20	6147046
Chloroform	ug/L	<0.20	0.20	6147046
Dibromochloromethane	ug/L	<0.50	0.50	6147046
1,2-Dichlorobenzene	ug/L	<0.50	0.50	6147046
1,3-Dichlorobenzene	ug/L	<0.50	0.50	6147046
1,4-Dichlorobenzene	ug/L	<0.50	0.50	6147046
Dichlorodifluoromethane (FREON 12)	ug/L	<1.0	1.0	6147046
1,1-Dichloroethane	ug/L	<0.20	0.20	6147046
1,2-Dichloroethane	ug/L	1.5	0.50	6147046
1,1-Dichloroethylene	ug/L	<0.20	0.20	6147046
cis-1,2-Dichloroethylene	ug/L	<0.50	0.50	6147046
trans-1,2-Dichloroethylene	ug/L	<0.50	0.50	6147046
1,2-Dichloropropane	ug/L	<0.20	0.20	6147046
cis-1,3-Dichloropropene	ug/L	<0.30	0.30	6147046
trans-1,3-Dichloropropene	ug/L	<0.40	0.40	6147046
Ethylbenzene	ug/L	<0.20	0.20	6147046
Ethylene Dibromide	ug/L	<0.20	0.20	6147046
Hexane	ug/L	<1.0	1.0	6147046
Methylene Chloride(Dichloromethane)	ug/L	<2.0	2.0	6147046
Methyl Ethyl Ketone (2-Butanone)	ug/L	<10	10	6147046
Methyl Isobutyl Ketone	ug/L	<5.0	5.0	6147046
Methyl t-butyl ether (MTBE)	ug/L	0.98	0.50	6147046
Styrene	ug/L	<0.50	0.50	6147046
1,1,1,2-Tetrachloroethane	ug/L	<0.50	0.50	6147046
1,1,2,2-Tetrachloroethane	ug/L	<0.50	0.50	6147046
Tetrachloroethylene	ug/L	<0.20	0.20	6147046

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B9E3952
Report Date: 2019/05/31

exp Services Inc
Client Project #: OTT-00252625-A
Site Location: FOREST
Sampler Initials: LW

O.REG 153 VOCS (WATER)

Maxxam ID		JVO490		
Sampling Date		2019/05/29		
COC Number		713169-04-01		
	UNITS	**MW19-8**	**RDL**	**QC Batch**
Toluene	ug/L	<0.20	0.20	6147046
1,1,1-Trichloroethane	ug/L	<0.20	0.20	6147046
1,1,2-Trichloroethane	ug/L	<0.50	0.50	6147046
Trichloroethylene	ug/L	<0.20	0.20	6147046
Trichlorofluoromethane (FREON 11)	ug/L	<0.50	0.50	6147046
Vinyl Chloride	ug/L	<0.20	0.20	6147046
p+m-Xylene	ug/L	<0.20	0.20	6147046
o-Xylene	ug/L	<0.20	0.20	6147046
Total Xylenes	ug/L	<0.20	0.20	6147046
Surrogate Recovery (%)				
4-Bromofluorobenzene	%	91		6147046
D4-1,2-Dichloroethane	%	99		6147046
D8-Toluene	%	86		6147046

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B9E3952
Report Date: 2019/05/31

exp Services Inc
Client Project #: OTT-00252625-A
Site Location: FOREST
Sampler Initials: LW

TEST SUMMARY

Maxxam ID: JVO490
Sample ID: MW19-8
Matrix: Water

Collected: 2019/05/29
Shipped:
Received: 2019/05/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	6146598	N/A	2019/05/31	Automated Statchk
Volatile Organic Compounds in Water	GC/MS	6147046	N/A	2019/05/30	Liliana Gaburici

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Maxxam Job #: B9E3952
Report Date: 2019/05/31

exp Services Inc
Client Project #: OTT-00252625-A
Site Location: FOREST
Sampler Initials: LW

GENERAL COMMENTS

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

Package 1	13.0°C

Results relate only to the items tested.

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Report Date: 2019/05/31

QUALITY ASSURANCE REPORT

exp Services Inc
Client Project #: OTT-00252625-A
Site Location: FOREST
Sampler Initials: LW

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
6147046	4-Bromofluorobenzene	2019/05/30	102	70 - 130	105	70 - 130	97	%		
6147046	D4-1,2-Dichloroethane	2019/05/30	86	70 - 130	116	70 - 130	105	%		
6147046	D8-Toluene	2019/05/30	100	70 - 130	101	70 - 130	94	%		
6147046	1,1,1,2-Tetrachloroethane	2019/05/30	92	70 - 130	95	70 - 130	<0.50	ug/L	4.7	30
6147046	1,1,1-Trichloroethane	2019/05/30	86	70 - 130	95	70 - 130	<0.20	ug/L	8.9	30
6147046	1,1,2,2-Tetrachloroethane	2019/05/30	98	70 - 130	102	70 - 130	<0.50	ug/L	2.4	30
6147046	1,1,2-Trichloroethane	2019/05/30	86	70 - 130	92	70 - 130	<0.50	ug/L	3.8	30
6147046	1,1-Dichloroethane	2019/05/30	86	70 - 130	96	70 - 130	<0.20	ug/L	4.3	30
6147046	1,1-Dichloroethylene	2019/05/30	77	70 - 130	89	70 - 130	<0.20	ug/L	7.7	30
6147046	1,2-Dichlorobenzene	2019/05/30	84	70 - 130	80	70 - 130	<0.50	ug/L	8.5	30
6147046	1,2-Dichloroethane	2019/05/30	88	70 - 130	93	70 - 130	<0.50	ug/L	1.9	30
6147046	1,2-Dichloropropane	2019/05/30	80	70 - 130	86	70 - 130	<0.20	ug/L	5.9	30
6147046	1,3-Dichlorobenzene	2019/05/30	80	70 - 130	87	70 - 130	<0.50	ug/L	2.0	30
6147046	1,4-Dichlorobenzene	2019/05/30	83	70 - 130	83	70 - 130	<0.50	ug/L	5.0	30
6147046	Acetone (2-Propanone)	2019/05/30	103	60 - 140	107	60 - 140	<10	ug/L	2.7	30
6147046	Benzene	2019/05/30	91	70 - 130	99	70 - 130	<0.20	ug/L	6.7	30
6147046	Bromodichloromethane	2019/05/30	95	70 - 130	99	70 - 130	<0.50	ug/L	5.8	30
6147046	Bromoform	2019/05/30	104	70 - 130	107	70 - 130	<1.0	ug/L	0.85	30
6147046	Bromomethane	2019/05/30	88	60 - 140	100	60 - 140	<0.50	ug/L	0.080	30
6147046	Carbon Tetrachloride	2019/05/30	83	70 - 130	90	70 - 130	<0.20	ug/L	10	30
6147046	Chlorobenzene	2019/05/30	81	70 - 130	87	70 - 130	<0.20	ug/L	2.3	30
6147046	Chloroform	2019/05/30	83	70 - 130	90	70 - 130	<0.20	ug/L	15	30
6147046	cis-1,2-Dichloroethylene	2019/05/30	85	70 - 130	91	70 - 130	<0.50	ug/L	5.7	30
6147046	cis-1,3-Dichloropropene	2019/05/30	91	70 - 130	91	70 - 130	<0.30	ug/L	9.5	30
6147046	Dibromochloromethane	2019/05/30	97	70 - 130	102	70 - 130	<0.50	ug/L	200 (1)	30
6147046	Dichlorodifluoromethane (FREON 12)	2019/05/30	75	60 - 140	83	60 - 140	<1.0	ug/L	7.2	30
6147046	Ethylbenzene	2019/05/30	91	70 - 130	74	70 - 130	<0.20	ug/L	7.6	30
6147046	Ethylene Dibromide	2019/05/30	95	70 - 130	101	70 - 130	<0.20	ug/L	2.9	30
6147046	Hexane	2019/05/30	83	70 - 130	91	70 - 130	<1.0	ug/L	14	30
6147046	Methyl Ethyl Ketone (2-Butanone)	2019/05/30	109	60 - 140	116	60 - 140	<10	ug/L	2.0	30
6147046	Methyl Isobutyl Ketone	2019/05/30	105	70 - 130	117	70 - 130	<5.0	ug/L	2.9	30
6147046	Methyl t-butyl ether (MTBE)	2019/05/30	88	70 - 130	91	70 - 130	<0.50	ug/L	3.2	30

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
6147046	Methylene Chloride(Dichloromethane)	2019/05/30	95	70 - 130	103	70 - 130	<2.0	ug/L	4.4	30
6147046	o-Xylene	2019/05/30	72	70 - 130	78	70 - 130	<0.20	ug/L	6.2	30
6147046	p+m-Xylene	2019/05/30	72	70 - 130	79	70 - 130	<0.20	ug/L	7.2	30
6147046	Styrene	2019/05/30	71	70 - 130	82	70 - 130	<0.50	ug/L	0.60	30
6147046	Tetrachloroethylene	2019/05/30	75	70 - 130	83	70 - 130	<0.20	ug/L	7.5	30
6147046	Toluene	2019/05/30	73	70 - 130	84	70 - 130	<0.20	ug/L	0.31	30
6147046	Total Xylenes	2019/05/30					<0.20	ug/L		
6147046	trans-1,2-Dichloroethylene	2019/05/30	81	70 - 130	90	70 - 130	<0.50	ug/L	10	30
6147046	trans-1,3-Dichloropropene	2019/05/30	80	70 - 130	83	70 - 130	<0.40	ug/L	2.6	30
6147046	Trichloroethylene	2019/05/30	87	70 - 130	95	70 - 130	<0.20	ug/L	9.4	30
6147046	Trichlorofluoromethane (FREON 11)	2019/05/30	92	70 - 130	103	70 - 130	<0.50	ug/L	8.8	30
6147046	Vinyl Chloride	2019/05/30	84	70 - 130	101	70 - 130	<0.20	ug/L	8.0	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.

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

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VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Steve Roberts, Ottawa Lab Manager

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#17498 exp Services Inc	Company Name:		Quotation #:	~~B01748~~ B91716 (Stream 3)	Maxxam Job #:	Bottle Order #:
Attention:	Accounts Payable	Attention:	~~Patricia Stelmack~~ Mark McCalla / Leah Wells	P.O. #:	B91716		713169
Address:	100-2650 Queensview Drive Ottawa ON K2B 8H6	Address:		Project:	OTT-~~00020755-C0~~ 00853625-A	COC #:	Project Manager:
Tel:	(613) 688-1899 Fax: (613) 225-7337	Tel:	~~MARK.MCCALLA~~ Fax:	Project Name:	Forest	C#713169-04-01	Alisha Williamson
Email:	accounting.ottawa@exp.com; Karen.Burke@exp.com;	Email:	~~patricia.stelmack~~@exp.com Leah.wells@exp.com	Site #:			
				Sampled By:	LDW		

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

Regulation 153 (2011)	Other Regulations	Special Instructions
☐ Table 1 ☐ Res/Park ☐ Medium/Fine ☐ Table 2 ☑ Ind/Comm ☐ Coarse ☑ Table 3 ☐ Agri/Other ☐ For RSC ☐ Table ___	☐ CCME ☐ Sanitary Sewer Bylaw ☐ Reg 558 ☐ Storm Sewer Bylaw ☐ MISA Municipality ___ ☐ PWQO ☐ Other ___	

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

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O.Reg 153 VOCs by HS (Water)	# of Bottles	Comments
1		MW19-8	May 29/19		GW		X	2	
2									
3									
4									
5									
6									
7									
8									
9									
10									

29-May-19 13:10
Alisha Williamson
B9E3952

RECEIVED IN OTTAWA
on ice

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: May 31 Time Required: 6pm ☑
Rush Confirmation Number: ___ *(call lab for #)*

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Leah Wells	May 29/19	1:10pm	Serge Leger	19/05/29	13:10	

Laboratory Use Only				
Time Sensitive	Temperature (°C) on Recei	Custody Seal	Yes	No
	14.1,1.4	Present		
		Intact	X	

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'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.MAXXAM.CA/TERMS.

* 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 HTTP://MAXXAM.CA/WP-CONTENT/UPLOADS/ONTARIO-COC.PDF.

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

White: Maxxa Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics