



Phase Two Environmental Site Assessment

3025 Albion Road North, Ottawa, ON

Client

Ahlul-Bayt Center Ottawa
200 Baribeau Street
Ottawa, ON K1L 7R6

Project Number

OTT-00246047-B0

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Date Submitted

December 21, 2018

Executive Summary

EXP Services Inc. (EXP) was retained by Ahlul-Bayt Center Ottawa to complete a Phase One Environmental Phase Two Property Assessment (ESA) of the property at 3025 Albion Road North in Ottawa, Ontario, hereinafter referred to as the 'Phase Two Property'.

The Phase Two Property is located on the east side of Albion Road North at 3025 Albion Road, Ottawa. At the time of the investigation, as offices, parking areas and equipment storage warehouse for Hydro Ottawa. The municipal address consists of three parcels; however, this Phase I ESA included Parcel 1 in the assessment. The Phase Two Property is rectangular in shape, has an area of approximately 3.4 hectares (8.4 acres) and is occupied by a large office and warehouse building that was initially constructed in 1956 as an office and works yard. The building has two stories for the office portion, transformer workshop, storage warehouse, former service garage and large interior parking area. The exterior areas of the Phase Two Property consist of asphalt parking areas, gravel covered storage areas, and landscaped areas..

The need for a Phase Two ESA on the property was identified in the Phase One ESA completed for the Phase Two Property in June 2018. The Phase One ESA identified the following potentially contaminating activities (PCAs) and Areas of Potential Environmental Concern (APECs):

Area of Potential Environmental Concern (APEC)	Location of APEC on Phase One Property	Potentially Contaminating Activity (PCA)	Location of PCA (on-Phase Two Property or off-Phase Two Property)	Contaminants of Potential Concern	Media Potentially Impacted (Groundwater, soil and/or sediment)
APEC 1: A former on-Site vehicle service garage	Northwest part of the Site building	#10 –Commercial Auto Body Shops	On-Site	Petroleum Hydrocarbon (PHC), volatile organic compounds (VOC), and metals	Soil and Groundwater
APEC 2: Potential oil spraying of the former baseball diamonds and gravel access road	Eastern and north-central portions of the Phase One Property	PCA#18- Electricity Generation, Transformation and Power Stations	On-Site	PHC and polychlorinated biphenyls (PCB)	Soil and Groundwater
APEC 3: A former underground storage tank (UST) and dispensing pumps that were removed	North of the garage area	PCA#28- Gasoline and Associated Products Storage in Fixed Tanks	On-Site	PHC and benzene, toluene, ethylbenzene, xylenes (BTEX)	Soil and Groundwater

Area of Potential Environmental Concern (APEC)	Location of APEC on Phase One Property	Potentially Contaminating Activity (PCA)	Location of PCA (on-Phase Two Property or off-Phase Two Property)	Contaminants of Potential Concern	Media Potentially Impacted (Groundwater, soil and/or sediment)
APEC 4: Three (3) interior above ground waste oil and new oil storage tanks	South part of the Site building	PCA#28- Gasoline and Associated Products Storage in Fixed Tanks	On-Site	PHC, BTEX, and PCBs	Soil and Groundwater
APEC 5: Fill of unknown quality at the Phase One Property	Entire Phase One Property	PCA#30- Importation of Fill Material of Unknown Quality	On-Site	PHC, metals and PAHs	Soil and Groundwater
APEC 6: Storage of poles and electrical equipment along with a former PCB storage area and diesel fuel AST	Eastern property boundary of Phase One Property	PCA#18- Electricity Generation, Transformation and Power Stations	Off-Site	PHC, BTEX, metals, pentachlorophenol, PCB	Groundwater
APEC 7: Former works yard that had a PCB storage facility and underground fuel storage tanks.	Southern property boundary of Phase One Property	PCA#28- Gasoline and Associated Products Storage in Fixed Tanks	Off-Site (90 m south)	PCBs, PHCs, BTEX and metals	Groundwater

This Phase Two ESA was conducted in accordance with the Phase Two ESA standard as defined by O.Reg. 153, as amended, and in accordance with generally accepted professional practices.

For assessment purposes, EXP selected the Ontario Ministry of the Environment, Conservation and Parks (MECP) Table 3 Phase Two Property Condition Standards (SCS) of "Soil, Groundwater and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act," for Residential/Institutional Property Use in a non-potable groundwater situation with fine-textured soil in accordance with Ontario Regulation 153/04 (made under the Environmental Protection Act), July 2011.

Based on the results of the subsurface investigation conducted at the Phase Two Property, the following findings are presented:

- The Phase Two ESA consisted of advancing a total of six (6) boreholes to investigate the quality of soil in the areas of potential environmental concern identified in EXP's Phase One ESA. Three (3) of the boreholes were instrumented with groundwater monitoring wells for the collection of groundwater.
- The general stratigraphy at the Phase Two Property, as observed in the boreholes, consisted of a layer of grey gravel (crushed stone) fill was encountered in each of the boreholes below the asphalt

and concrete. Below the fill was a brown silty sand with a thickness that ranged from 0.9 m to 2.8 m in BH311. No silty sand was observed in BH305. Below the silty sand was grey silty clay to the maximum depth drilled of 6.1 m. A slight petroleum odour was observed in the silty sand in MW306 and black staining was observed in the silty sand in MW311. No other indications of impact to soil were observed. Bedrock was not observed during drilling.

- The groundwater depths ranged between approximately 0.8 and 3.4 m bgs within the installed wells. Based on the relative groundwater elevations, the inferred local groundwater flow direction is generally to the northwest. However, EXP notes that the direction of localized groundwater flow may be influenced by fill material within the building footprint.
- To assess the quality of soil and groundwater quality in the identified areas of environmental concern, selected soil and groundwater samples were submitted for analysis of PCBs, PHCs including BTEX, VOCs, PAHs, and metals. Based on the reported analytical results, various PHCs, hexane and methyl isobutyl ketone, and metals (cyanide and vanadium) were detected at concentrations above the applicable MECP Table 3 SCS in soil. Groundwater samples met the applicable MECP Table 3 SCS.
- A soil remediation program was completed between June and August 2018 to remove the PHC and cyanide impacts identified in the northeastern portion of the Phase Two Property.
- A total of approximately 949 tonnes (approximately 475 m³) of excavated impacted soils were transported off-Phase Two Property by Drain-All. to the Green For Life landfill in Moose Creek, Ontario. The excavations were backfilled with imported crushed stone.
- Following removal of the impacted soil, three (3) confirmatory floor samples, twenty-three (23) sidewall samples, and two (2) duplicate samples were analyzed from depths ranging from 1.2 m to 3.3 m bgs from the petroleum excavation. A total of two (2) confirmatory floor samples, four (4) sidewall samples, and one (1) duplicate sample were analyzed from depths ranging from 1.2 m to 2.9 m bgs from the cyanide excavation.
- Based on the analytical results of the confirmatory soil sampling program, the cyanide impacts in soil were successfully removed. Residual PHC impacts remain in the soil located beneath the north wall of the building in the northwest part of the Phase Two Property.

Based on the results of the Phase Two ESA, PHC and vanadium impacted soil remain on the Phase Two Property and are being addressed through the completion of an MGRA. The groundwater on the Phase Two Property has concentrations of the contaminants of concerns noted in the Phase One ESA that meet the applicable MECP Table 3 SCS. No further remedial action is recommended at this time.

This executive summary is a brief synopsis of the report and should not be read in lieu of reading the report in its entirety. Limitation of liability, scope of report and third party reliance are outlined in Section 9 of this report.

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1. Introduction

EXP Services Inc. (EXP) was retained by Ahlul-Bayt Center Ottawa to complete a Phase One Environmental Phase Two Property Assessment (ESA) of the property at 3025 Albion Road North in Ottawa, Ontario, hereinafter referred to as the 'Phase Two Property'.

The objective of the investigation was to support the potential filing of a Record of Phase Two Property Condition (RSC) in accordance with Ontario Regulation 153/04, as amended by Ontario Regulations 511/09 and 179/11 (O.Reg.153, as amended).

At the time of the investigation, the Phase Two Property was owned by Hydro Ottawa Limited. The property identification number (PIN) for the Phase Two Property is 047410017. Refer to Appendix H for a copy of the Phase Two Property survey.

The owner contact information is provided below:

Company Name	Hydro Ottawa Limited
Company Address	3025 Albion Road North Ottawa, ON K1G 3S4

This Phase Two ESA was conducted in accordance with the Phase Two ESA standard as defined by O.Reg. 153, 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 9 of this report.

1.1 Phase Two Property Description

The Phase Two Property, is a rectangular shaped parcel of land that has the municipal address 3025 Albion Road North, in Ottawa, Ontario (Figure 1). The Phase Two Property is located south of Walkley Road and east of Kitchener Avenue. At the time of the investigation, the Phase Two Property was used as offices, parking areas and equipment storage warehouse for Hydro Ottawa. The municipal address consists of three parcels however, this Phase I ESA included Parcel 1, which is located along Albion Road North. Based on a review of historical aerial photographs, chain of title information, historical maps, and other records, the Phase Two Property was first developed for commercial use in 1956 with the development of the current Phase Two Property building in the west half of the Phase Two Property.

The approximate Universal Transverse Mercator (UTM) coordinates for the Phase Two Property centroid is NAD83 18T 449081.34 m E 5024327.56 m N. The UTM coordinates were based on measurements from Google Earth with an estimated accuracy of 10 metres (m).

A copy of the Phase Two Property survey is provided in Appendix H.

1.2 Property Ownership

At the time of the investigation, the Phase Two Property was owned by Hydro Ottawa Limited.

1.3 Current and Proposed Future Uses

The Phase Two Property is currently zoned specifically "IL" light industrial zone and was most recently utilized for commercial purposes (Figure 2). It is EXP's understanding that the Phase Two Property will be developed with an institutional land use.

1.4 Applicable Phase Two Property Condition Standards

The assessment criteria, Phase Two Property Condition Standards (SCS), applicable to a given Phase Two Property in Ontario are established under subsection 168.4(1) of the Environmental Protection Act. Tabulated generic criteria are provided in "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act" ("the SGWS Standards"), Ontario Ministry of Environment, Conservation and Parks (MECP), May 2011. These criteria, which came into force on July 1, 2011, are based on Phase Two Property sensitivity (sensitive or non-sensitive), groundwater use (potable or non-potable), property use (residential, parkland, institutional, commercial, industrial, community and agricultural/other), soil type (coarse or medium to fine textured) and restoration depth (full or stratified restoration). In addition, Phase Two Property specific criteria may be established on the basis of the findings of a Risk Assessment carried out in accordance with Part IX and Schedule C of O. Reg. 153/04, as amended.

The SGWS Standards specify SCS for soil, groundwater and sediment that are tabulated as follows:

- Table 1 - Full Depth Background Phase Two Property Condition Standards;
- Table 2 - Full Depth Generic Phase Two Property Condition Standards in a Potable Ground Water Condition;
- Table 3 - Full Depth Generic Phase Two Property Condition Standards in a Non-Potable Ground Water Condition.;
- Table 4 - Stratified Phase Two Property Condition Standards in a Potable Ground Water Condition;
- Table 5 - Stratified Phase Two Property Condition Standards in a Non-Potable Ground Water Condition;
- Table 6 - Generic Phase Two Property Condition Standards for Shallow Soils in a Potable Ground Water Condition;
- Table 7 - Generic Phase Two Property Condition Standards for Shallow Soils in a Non-Potable Ground Water Condition
- Table 8 - Generic Phase Two Property Condition Standards for Use within 30 m of a Water Body in a Potable Groundwater Condition;
- Table 9 - Generic Phase Two Property Condition Standards for Use within 30 m of a Water Body in a Non-Potable Groundwater Condition.

For assessment purposes, EXP selected the MECP Table 3 SCS for Residential Property Use in a non-potable groundwater situation with coarse-textured soil.

The selection of this category was based on the following factors:

- the Phase Two Property is not considered a sensitive Phase Two Property;
- the best of EXP's knowledge, the Phase Two Property and surrounding area (within 250 m of the Phase Two Property) are serviced by the City of Ottawa municipal water supply;
- the Phase Two Property is not located in an area designated in a municipal official plan as a well-head protection area or other designation identified by the municipality for the protection of groundwater;
- the intended land use of the Phase Two Property is institutional;

- the predominant soil type on the Phase Two Property is considered to be coarse-textured (refer to the 75 micron sieve analysis in the Certificates of Analysis - Appendix D); and,
- there is no intention to carry out a stratified restoration at the Phase Two Property.

2. Background Information

2.1 Physical Setting

The Phase Two Property, is a rectangular shaped parcel of land that has the municipal address 3025 Albion Road North, in Ottawa, Ontario. The Phase Two Property is located south of Walkley Road and east of Kitchener Avenue. At the time of the investigation, the Phase Two Property was used as offices, parking areas and equipment storage warehouse for Hydro Ottawa (Figure 3). Based on available soil and geology mapping, the Phase Two Property and surrounding areas are expected to consist of silt and clay. The bedrock geology underlying the Phase Two Property consists of shale and limestone of the Carlsbad Formation. Local borehole data identify a layer of clay over glacial till over limestone bedrock.

The Phase Two Property and surrounding topography is relatively flat. The local groundwater flow direction is likely to the west towards the Rideau River located approximately 3 km west. Based on previous work conducted on the Phase Two Property, the groundwater flow direction at the Phase Two Property is to the northwest, towards the Rideau River.

2.2 Previous Investigations

The following environmental reports were available for review with respect to the Phase Two Property. The previous environmental investigations are summarized below.

- *Phase I Environmental Site Assessment, 3025 Albion Road, Ottawa, Ontario, September 2008, prepared for Hydro Ottawa Limited, by Trow Associates Inc., (formerly EXP Services Inc.).*

The building was constructed in 1956 and had been used by Hydro Ottawa since that time. A former underground storage tank (UST) and pump island were identified near the northwest corner of the building. The following reports were also summarized in this report, and may correspond to areas both on-site (Parcel 1), and on adjacent properties to the east (Parcel 2 and Parcel 3), or other neighbouring properties.

In 2001, Oliver, Mangione, McCalla & Associates, a division of Trow Consulting Engineers Limited (now EXP) assessed the potential for PCB impact from the PCB storage facility located 50 m east of the Phase One Property. The report was entitled, "*Delisting of PCB Storage Facility 3025 Albion Road, Ottawa, Ontario*", dated February 23, 2001 and was intended for the use of delisting the neighbouring site from the Ontario Ministry of Environment (MOE) inventory of PCB storage facilities. Soil sampling was conducted in the interior of the structure where PCB materials were kept in a containment area consisting of a series of six (6) containment bunker partitions. A large steel bin was also used for PCB storage. The initial sampling event found that PCB concentrations exceeded the provincial criteria in the containment area. Sanexen Environmental Services Inc. was commissioned to clean up the containment area and the area around the steel bin. A Certificate of Destruction/Removal manifest was attained by Trow confirming that Bovar Waste Management dismantled the PCB storage site.

A Limited Phase II ESA was completed 50 m east of the Phase One Property by Trow, dated January 1999, which consisted of drilling four (4) boreholes, installing three (3) monitoring wells and excavating thirteen (13) test pits in the off-Site PCB storage area, the former and current pole storage areas, the transformer substation, the personnel training area, and the transformer storage area. Borehole BH1 was located east of the PCB storage building to verify if there was any soil and groundwater impact. Borehole BH2 was located in the former pole storage area to verify if there was impact from the past practice of pole storage and dust suppression. Borehole BH3 was located in the vicinity of the transformer substation, and borehole BH4 was located in the current pole storage area. Monitoring

wells were installed in boreholes BH 1, BH2 and BH4. The pole storage area showed signs of soil contamination so further investigation was recommended.

A Phase II ESA was conducted 50 m east of the Phase One Property by Trow entitled *Ottawa Hydro/Training Yard Subsurface Investigation* dated July 22, 1999. The purpose of the investigation was to further assess odours and previously identified ground contamination from a treated lumber pile (hydro poles), identified during the Limited Phase II ESA completed January 1999. The report concluded that the air quality at the property boundary was acceptable in comparison with recommended provincial criteria. The report also concluded that the soil and groundwater regimes underlying the site were found to be acceptable, with the exception of the training area. The training area was used as a waste container disposal area in the 1970s in accordance with the accepted practice of the day. Pentachlorophenol-impacted soil was found there and believed to be the result of waste containers of pentachlorophenol which were discovered to be buried in the area. Impacted soil was estimated to be in the range of 100 to 200 m³ and was removed as recommended. Impacted groundwater in excess of the provincial criteria was not migrating beyond the property boundaries at the time.

The building on the Phase One Property has a history of asbestos. Trow was involved in asbestos abatement programs in 1999, 2000 and 2002. Trow completed a Designated Substance Survey (DSS) at the Phase One Property in 2002. The report concluded that Hydro Ottawa had an Asbestos Abatement Program to deal with asbestos containing materials (ACM) that remained in the building. Some amounts of lead paint were found in areas of the penthouse fans and Garage A. Caution was given if renovation or demolition occurred in those areas.

- *Phase II ESA, Ellwood MTS, 3025 Albion Road North, Ottawa, Ontario, May, 2008* by Trow Associates Inc., (formerly EXP).

The Phase II ESA was conducted 50 m east of the Phase One Property in the materials storage area to identify any potential adverse environmental impacts prior to a construction of a hydro substation which was to augment the existing substation. Based on use of the site, there was a strong possibility that transformer oil, possibly containing PCB's, would be present on the eastern portion of that site. There was also a possibility that wood preservatives had been released to the ground during historic storage of hydro poles. The contaminants of concern (COC) related to pole storage at the site were creosote, pentachlorophenol, copper, chromium and arsenic. The COC related to transformer storage at that site were polychlorinated biphenyls (PCB), petroleum hydrocarbons (PHC), polycyclic aromatic hydrocarbons (PAH), volatile organic compounds (VOC) and metals. The COC related to fill quality at that site were PAH, metals and PHC. Due to the historical storage practices in the eastern part of that site, the used transformers and hydro poles were stored in an organized fashion but in random locations on that site. It was recommended that a Phase II ESA be completed on the east half of that site to determine the quality of the fill and determine if the subsurface had been impacted from minor spills due to transformer and pole storage. The Phase II ESA consisted of drilling nine (9) boreholes and completing three (3) boreholes as monitoring wells. Up to 1.5 m of silty sand and gravel fill was identified in the boreholes (PCA#30-Importation of Fill Material of Unknown Quality). Soil and groundwater samples were collected and submitted for laboratory analysis of the above-noted COCs. The results indicated that the soil and groundwater quality at that site satisfied the provincial criteria and no further environmental work was recommended for that site.

- *Phase II ESA 3025 Albion Road North, Ottawa, Ontario, December, 2015* by EXP Services Inc.

The Phase II ESA was completed for due diligence purposes and consisted of drilling eleven (11) exterior boreholes across the Phase One Property and completing six (6) of them (MW15-5, MW15-6, and MW15-8 to MW15-11) as monitoring wells. Soil and groundwater samples were collected and submitted for laboratory analysis of metals, pentachlorophenol (PCP), PHC, PCB, and/or VOC.

A layer of grey gravel (crushed stone) fill was encountered in each of the boreholes below the asphalt and concrete. Below the fill was a brown silty sand with a thickness that ranged from 0.9 m to 2.8 m in BH311. Below the silty sand was grey silty clay to the maximum depth drilled of 6.1 m. A slight petroleum odour was observed in the silty sand in MW306 and black staining was observed in the silty sand in MW311. No other indications of impact to soil were observed. Bedrock was not observed during drilling.

Groundwater was encountered at depths ranging from 1.19 m in MW307 to 3.19 m in MW308. No petroleum sheens were observed in the monitoring wells during the sampling event. Based on the water levels measured on November 4, 2015, the principal direction of groundwater flow in the overburden materials was to the west. No petroleum sheens were observed in the monitoring wells during the sampling event.

The concentrations of PHC, BTEX, and PCB measured in the analyzed soil samples were generally less than the MECP 2011 Table 3 site condition standards (SCS), with the exception of the soil sample from MW306 that was collected from a depth of 0.3 m to 1.5 m. This sample had concentrations of benzene, ethylbenzene, xylenes and PHC F1 that exceeded the MECP 2011 Table 3 SCS. This borehole is located at the former location of the pump island and UST at the northwest corner of the building. The concentrations of the analyzed metals were less than the MECP 2011 Table 3 SCS, with the exception of cyanide (0.06 ug/g) in the soil sample collected from a depth of 0.3 m to 1.5 m in MW307 which slightly exceeded the MECP Table 3 criteria of 0.051 ug/g. This borehole is located near the north part of the garage in the northwest part of the building and it is assumed that the cyanide impact is limited in extent.

The concentrations of PHC, VOC, metals, and PCB measured in the analyzed groundwater samples were generally less than the laboratory detection limits and were less than the MECP 2011 Table 3 SCS.

The only location where impacted soil was found was at MW306, which had PHC impacted soil. This borehole is located at the former location of the pump island and gasoline UST at the northwest corner of the building. The gasoline impact to soil was not identified in MW307, located within the building to the south but was undelineated to the east, west, and north. It was recommended that the impacted soil in this area be delineated.

- *Phase III ESA 3025 Albion Road, Ottawa, Ontario, February 21, 2018 by Enviro-Experts*

The Phase III ESA consisted of drilling twelve (12) boreholes on the Phase One Property and completing three (3) of them (MW1, MW2, and MW3) as monitoring wells. This was done to delineate the previously identified petroleum impacted soil in the northwest part of the Phase One Property. Soil and groundwater samples were submitted for laboratory analysis of metals, PHC, PCBs, and VOC. The soil results showed that the only exceedance was the soil sample from the former UST and pump island location which had concentrations of PHC and BTEX that exceeded the provincial standards. The groundwater at this location was not impacted. The concentrations of two (2) PAH parameters (benzo(g,h,i)perylene and indeno(1,2,3-sd)pyrene) had detection limits that exceeded the provincial standards in MW1 and MW2.

Additional groundwater samples were collected from MW1 and MW2 by EXP in April 2018 and were found to have non-detectable concentrations of PAHs that were less than the provincial standards.

Previous reports by Trow (now EXP) completed on the NCC property 90 m to the south were also reviewed. Soil and groundwater contamination were identified and remediation activities had been completed on that site. In each case, contamination was localized and off-site migration of contaminants was not occurring.

The review of previous reports identified the following issues of potential environmental concern that are associated with PCAs as per Table 2, Schedule D of O.Reg.153/04;

- A former on-site vehicle service garage in the north part of the building is associated with PCA#10-Commercial Autobody Shops.
- A former underground storage tank (UST) and pump island were identified near the northwest corner of the is associated with PCA#28-Gasoline and Associated Products Storage in Fixed Tanks.
- Fill is likely to have been brought on to the Phase One Property during site construction in 1956. This aspect is associated with PCA#30-Importation of Fill Material of Unknown Quality.
- The off-site property to the east is an operating hydro station and is associated with PCA#18-Electricity Generation, Transformation and Power Stations.
- Former off-site works yard (90 m south) that had a PCB storage facility and underground fuel storage tanks. This aspect is associated with PCA#28-Gasoline and Associated Products Storage in Fixed Tanks.

The need for a Phase Two ESA on the Phase Two Property was identified in the Phase One ESA completed for the Phase Two Property by EXP in June 2018. The Phase One ESA identified seven (7) Potentially Contaminating Activities (PCAs) within the Phase One ESA Study Area (Figure 3) and corresponding Areas of Potential Environmental Concern (APECs) as shown on Figure 4 and presented in the following table:

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-Phase Two Property or off-Phase Two Property)	Contaminants of Potential Concern	Media Potentially Impacted (Groundwater, soil and/or sediment)
APEC 1: A former on-Site vehicle service garage	Northwest part of the Site building	#10 –Commercial Auto Body Shops	On-Site	Petroleum Hydrocarbon (PHC), volatile organic compounds (VOC), and metals	Soil and Groundwater
APEC 2: Potential oil spraying of the former baseball diamonds and gravel access road	Eastern and north-central portions of the Phase One Property	PCA#18- Electricity Generation, Transformation and Power Stations	On-Site	PHC and polychlorinated biphenyls (PCB)	Soil and Groundwater
APEC 3: A former underground storage tank (UST) and dispensing	North of the garage area	PCA#28- Gasoline and Associated Products Storage in Fixed Tanks	On-Site	PHC and benzene, toluene, ethylbenzene, xylenes (BTEX)	Soil and Groundwater

Area of Potential Environmental Concern (APEC)	Location of APEC on Phase One Property	Potentially Contaminating Activity (PCA)	Location of PCA (on-Phase Two Property or off-Phase Two Property)	Contaminants of Potential Concern	Media Potentially Impacted (Groundwater, soil and/or sediment)
pumps that were removed					
APEC 4: Three (3) interior above ground waste oil and new oil storage tanks	South part of the Site building	PCA#28- Gasoline and Associated Products Storage in Fixed Tanks	On-Site	PHC, BTEX, and PCBs	Soil and Groundwater
APEC 5: Fill of unknown quality at the Phase One Property	Entire Phase One Property	PCA#30- Importation of Fill Material of Unknown Quality	On-Site	PHC, metals and PAHs	Soil and Groundwater
APEC 6: Storage of poles and electrical equipment along with a former PCB storage area and diesel fuel AST	Eastern property boundary of Phase One Property	PCA#18- Electricity Generation, Transformation and Power Stations	Off-Site	PHC, BTEX, metals, pentachlorophenol, PCB	Groundwater
APEC 7: Former works yard that had a PCB storage facility and underground fuel storage tanks.	Southern property boundary of Phase One Property	PCA#28- Gasoline and Associated Products Storage in Fixed Tanks	Off-Site (90 m south)	PCBs, PHCs, BTEX and metals	Groundwater

Based on the findings and conclusions of the Phase One ESA, a Phase Two ESA was recommended to investigate the above PCAs within the APECs. The APECs are shown on Figure 4.

3. Scope of the Investigation

3.1 Overview of Phase Two Property Investigation

The purpose of the Phase Two ESA was to investigate the soil and groundwater quality on the Phase Two Property to address the identified PCAs in the APECs.

3.2 Media Investigated

The Phase Two ESA included the investigation of the Phase Two Property soil and groundwater. As there were no surface water bodies on the Phase Two Property, sediment sampling was not required.

3.3 Deviations from Sampling and Analysis Plan

The field investigative and sampling program was carried out following the requirements of the Phase Two Property Sampling and Analysis Plan (Appendix F). No significant deviations from the Sampling and Analysis Plan were reported, that could affect the sampling and data quality objectives for the Phase Two Property.

3.4 Impediments

No physical impediments were encountered during the field investigation; and the entire property was accessible at the time of the investigation.

4. Investigation Method

4.1 General

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

- Request local utility locating companies (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 test pit/borehole locations and to clear the individual test pit/borehole locations;
- Advance six (6) boreholes and complete three (3) of them as groundwater monitoring wells;
- Collect representative soil samples from the boreholes for laboratory analysis of PCBs, metals, PAHs, Petroleum Hydrocarbons (PHCs) including benzene, toluene, ethylbenzene and xylenes (BTEX) and Volatile Organic Compounds (VOCs), and/or PCBs, pH and 75 micron (μm) sieve;
- Collect representative groundwater samples from the existing and new groundwater monitoring wells for laboratory analysis of dissolved metals, PAHs, PHCs, PCBs, and/or VOCs including BTEX;
- Oversee the removal of the soil exceeding the applicable Table 3 SCS within the Phase Two Property boundary;
- Examine the final excavation limits and collect confirmatory soil samples from the floor and sidewalls of the excavations; and,
- Prepare a report of the findings.

EXP personnel who conducted assessment work for this project included:

- Mark McCalla, P.Geo. (Qualified Person);
- Jeff O'Banion (Field Technician)
- Mark Devlin, B. Sc. (Field Technician);

4.2 Borehole Drilling and Soil Sampling

Prior to the commencement of excavation activities, the locations of underground public utilities including telephone, natural gas and electrical lines were determined and marked, where necessary, at the Phase Two Property by locating companies. A private utility locating contractor was also retained to clear the individual test pit locations. The approximate locations of underground utilities are shown on Figure 5 and 6.

Three (3) boreholes (MW18-1 to MW18-3) were advanced on the Phase Two Property on May 28, 2018 by Strata Soil of Ottawa, Ontario, using a Geoprobe direct push drilling rig, under the full-time supervision of EXP field staff. Petroleum-based greases or solvents were not used during test pitting activities.

The soil sampling during the completion of this Phase Two ESA was undertaken in accordance with the Sampling and Analysis Plan presented in Appendix F. Three additional boreholes (BH18-4 to BH18-6) were drilled in the northeast corner of the Phase Two Property on September 20, 2018 to delineate vanadium in soil that was found in MW18-3.

EXP continuously monitored the drilling activities to record the physical characteristics of the soil, depth of soil sample collection and total depth of each borehole. Field observations of each borehole are provided in the borehole logs in Appendix E. Representative soil samples were recovered in the overburden of the borehole at regular intervals.

Soil sampling activities were conducted in accordance to EXP's Standard Operating Procedures (SOPs). Dedicated nitrile gloves were used during sample handling. Soil samples were placed directly into pre-cleaned, laboratory-supplied glass sample jars/vials. The soil samples were placed in clean ice-packed coolers prior to and during transportation to the subcontract laboratory, Maxxam Analytics Inc. (Maxxam) of Ottawa, Ontario and were transported/submitted under Chain of Custody documentation. A list of soil samples analyzed and corresponding rationale is provided in Table 4.10.1.

Soil samples were subsequently delivered to EXP's laboratory for visual, textural and olfactory classification.

The boreholes were advanced to completion depths between approximately 4.6 and 7.6 m bgs. Petroleum-based greases or solvents were not used during drilling activities. The approximate locations of the above-mentioned boreholes advanced on the Phase Two Property are shown on Figures 5 and 6.

Field observations are summarized on the borehole logs provided in Appendix E.

Selected soil samples were submitted to the laboratory under transported/submitted under Chain of Custody documentation. A list of soil samples analyzed and corresponding rationale is provided in Section 4.10.1.

4.4 Field Screening Measurements

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 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 vapors 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.

4.5 Confirmatory Soil Sampling

Soil remedial activities were carried out by excavating and disposing of soil that did not meet the Table 3 SCS to a licensed landfill facility. Confirmatory soil samples were collected from the base and walls of the final excavation limits. Details of the remedial activities are presented in Appendix G.

4.6 Groundwater Monitoring Well Installation

Three (3) groundwater monitoring wells (MW18-1 to MW18-3) were installed at the Phase Two Property on May 28, 2018 (refer to Figures 5 and 6).

The monitoring wells were installed in general accordance with the Ontario Water Resources Act - R.R.O. 1990, Regulation 903 - Amended to O. Reg. 128/03 and were installed by a licensed well contractor (Strata Soil) using a Geoprobe drilling rig. Petroleum-based greases or solvents were not used during well installation activities.

The monitoring wells consisted of a 3 m length of 37 mm diameter PVC screen and an appropriate length of PVC riser pipe. The annular space around the wells were 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 flushmount protective well casings.

The current property owners are considered to be the owners of the wells installed in the specific areas of the Phase Two Property ("well owner", Section 1.0, Regulation 903). 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.

4.7 Field Measurement of Water Quality Parameters

Prior to and during groundwater sampling activities, field parameters (temperature, pH, and electrical conductivity) were measured in the purged water from the groundwater monitoring wells using a Horiba water quality meter. 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 three (3) installed monitoring wells and seven (7) existing wells on June 8 and 14, 2018. Ten (10) groundwater samples were submitted to the laboratory for chemical analysis (refer to Section 4.10.2). Groundwater samples that were analyzed for metals were field filtered using 0.45 micron inline filters prior to filling the laboratory supplied bottle. Preservatives were provided in the laboratory supplied bottles, where required. Dedicated nitrile gloves were utilized during sample handling.

The groundwater sampling during the completion of this Phase Two ESA was undertaken in accordance with the Sampling and Analysis Plan presented in Appendix F.

4.9 Sediment Sampling

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

4.10 Analytical Testing

The contracted laboratories selected to perform chemical analysis on select soil and water samples were Maxxam and Eurofins. Both Maxxam and Eurofins are accredited laboratories under the Standards Council of Canada/Canadian Association of Laboratory Accreditation (CALA) (Accredited Laboratory No. 97) in accordance with ISO/IEC 17025:1999- "General Requirements for the Competence of Testing and Calibration Laboratories".

4.10.1 Soil Analysis

A total of seven (7) soil samples, including one (1) QA/QC field duplicate sample, were analyzed from the boreholes (MW18-1 to BH18-6) during the current analytical program. The current and previous (2015 and 2018) analytical testing conducted on the soil samples and corresponding submission rationale is summarized in Table 4.10.1,

Table 4.10.1: Summary of Sample Submission for Laboratory Analysis

Soil			
Location ID	Basis	Analysis	Exceeds Table 3 SCS?
MW301	APEC 2: Former oil sprayed area APEC 5: Fill of Unknown Quality APEC 6: Off-Phase Two Property utility pole storage and PCB storage	PHC, BTEX, metals, pentachlorophenol, PAH, PCB	No
MW302	APEC 2: Former oil sprayed area APEC 5: Fill of Unknown Quality APEC 6: Off-Phase Two Property utility pole storage and PCB storage	PHC, BTEX	No
BH303	APEC 2: Former oil sprayed area APEC 5: Fill of Unknown Quality	PHC, BTEX, metals	No
BH304	APEC 2: Former oil sprayed area APEC 5: Fill of Unknown Quality	PHC, BTEX, pH	No
BH305	APEC 2: Former oil sprayed area APEC 5: Fill of Unknown Quality	PHC, BTEX	No
MW306	APEC 3: Former UST and pump island APEC 5: Fill of Unknown Quality	PHC, BTEX, VOC	Yes (benzene, xylenes, hexane, PHC F1)
MW307	APEC 1: Former service garage APEC 5: Fill of Unknown Quality	PHC, BTEX, VOC, metals	Yes (cyanide)
MW308	APEC 1: Former service garage APEC 5: Fill of Unknown Quality	PHC, BTEX, VOC, metals	No
MW309	APEC 1: Former service garage APEC 5: Fill of Unknown Quality	PHC, BTEX, VOC	No
BH310	Not drilled		
BH311	APEC 5: Fill of Unknown Quality APEC 7: Former off-Phase Two Property work yard with USTs and PCB storage	PHC, BTEX	No
BH1/MW3	APEC 3: Former UST and pump island	PHC, BTEX, VOC	No
BH2	APEC 3: Former UST and pump island	PHC, BTEX, VOC	No
BH3/MW2	APEC 3: Former UST and pump island	PHC, BTEX, VOC	Yes (benzene, ethylbenzene, xylenes, hexane, methyl isobutyl ketone, PHC F1)
BH4	APEC 3: Former UST and pump island	PHC, BTEX, metals, PAH	No
BH5	APEC 3: Former UST and pump island	PHC, BTEX, VOC	No
BH6	APEC 3: Former UST and pump island	PHC, BTEX, VOC	No
BH7	APEC 3: Former UST and pump island	PHC, BTEX, VOC	No

Soil			
Location ID	Basis	Analysis	Exceeds Table 3 SCS?
BH8	APEC 4: Waste oil with possible PCBs ASTs and new oil storage and emergency generator diesel AST	PHC, BTEX, PAH	No
BH9/MW1	APEC 4: Waste oil with possible PCBs ASTs and new oil storage and emergency generator diesel AST	PHC, BTEX, PAH	No
BH10	APEC 4: Waste oil with possible PCBs ASTs and new oil storage and emergency generator diesel AST	Metals, PAH	No
BH11	APEC 2: Former oil sprayed area APEC 5: Fill of Unknown Quality	PHC, BTEX, metals	No
BH12	APEC 2: Former oil sprayed area APEC 5: Fill of Unknown Quality	PHC, BTEX	No
MW18-1	APEC 5: Fill of Unknown Quality APEC 7: Former off-Phase Two Property work yard with USTs and PCB storage	PHC, BTEX, metals	No
MW18-2	APEC 3: Former UST and pump island	PHC, BTEX, metals	No
MW18-3	APEC 2: Former oil sprayed area APEC 5: Fill of Unknown Quality APEC 6: Off-Phase Two Property utility pole storage and PCB storage	PHC, BTEX, metals	Yes (vanadium)
BH18-4	APEC 5: Fill of Unknown Quality	Vanadium	Yes (vanadium)
BH18-5	APEC 5: Fill of Unknown Quality	Vanadium	Yes (vanadium)
BH18-6	APEC 5: Fill of Unknown Quality	Vanadium	Yes (vanadium)

During the remediation process, a total of 35 confirmatory soil samples, including three (3) QA/QC field duplicate samples, were collected from the bases and walls of the excavations and submitted for laboratory analysis. Details are presented in Appendix G.

4.10.2 Groundwater Analysis

A total of ten (10) groundwater samples were analyzed during the analytical program in June 2018. The analytical testing conducted on the representative groundwater samples and corresponding submission rationale is summarized in Table 4.10.2 in Appendix A.

Table 4.10.1: Summary of Sample Submission for Laboratory Analysis

Groundwater			
Location ID	Basis	Analysis	Exceeds Table 3 SCS?
MW301	APEC 2: Former oil sprayed area APEC 5: Fill of Unknown Quality APEC 6: Off-Phase Two Property utility pole storage and PCB storage	PHC, BTEX, metals, pentachlorophenol, PAH, PCB	No
MW302	APEC 2: Former oil sprayed area APEC 5: Fill of Unknown Quality APEC 6: Off-Phase Two Property utility pole storage and PCB storage	PHC, BTEX	No
MW306	APEC 3: Former UST and pump island APEC 5: Fill of Unknown Quality	PHC, BTEX, VOC	No
MW307	APEC 1: Former service garage APEC 5: Fill of Unknown Quality	PHC, BTEX, VOC, metals	No
MW308	APEC 1: Former service garage APEC 5: Fill of Unknown Quality	PHC, BTEX, VOC, metals	No
MW309	APEC 1: Former service garage APEC 5: Fill of Unknown Quality	PHC, BTEX, VOC	No
BH9/MW1	APEC 4: Waste oil with possible PCBs ASTs and new oil storage and emergency generator diesel AST	PHC, BTEX, PAH	No
BH3/MW2	APEC 3: Former UST and pump island	PHC, BTEX, VOC	No (Feb 2018)
BH1/MW3	APEC 3: Former UST and pump island	PHC, BTEX, VOC	No (Feb 2018)
MW18-1	APEC 5: Fill of Unknown Quality APEC 7: Former off-Phase Two Property work yard with USTs and PCB storage	PHC, BTEX, metals	No
MW18-2	APEC 3: Former UST and pump island	PHC, BTEX, metals	No
MW18-3	APEC 2: Former oil sprayed area APEC 5: Fill of Unknown Quality APEC 6: Off-Phase Two Property utility pole storage and PCB storage	PHC, BTEX, metals	No

4.11 Residue Management Procedures

The drill cuttings from the monitoring well installation and purged water from groundwater sampling were stored on the Phase Two Property in labeled drums.

4.12 Elevation Survey

EXP staff surveyed the borehole and monitoring well locations with respect to a geodetic benchmark (TBM) described as the top of the catch basin located east of MW306 with a geodetic elevation of 89.61 m above mean sea level (m AMSL).

The elevations of the boreholes are presented on the borehole logs. The installation details of the installed monitoring wells are summarized in Table 4.12.

4.13 Quality Assurance and Quality Control Measures

Quality Assurance/Quality Control (QA/QC) measures were integral components of the field sampling and laboratory analytical programs undertaken for this project. The field QA/QC measures consisted of the use of dedicated sampling equipment, the implementation of decontamination procedures, the use of laboratory supplied analytical test group specific sampling containers and preservatives as required, the collection of duplicate samples, Chain of Custody protocols and sample preservation following analytical test group temperature and holding time requirements.

Details regarding quality assurance measures taken in the field, including instrument calibration, decontamination procedures, use of dedicated equipment, sample storage and Chain of Custody documentation are provided in Section 4 above.

Maxxam'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.

One field duplicate soil sample and one (1) field duplicate groundwater samples, and one (1) laboratory trip blank were analyzed as part of this investigation. Details regarding the results of the QA/QC program are presented in Section 5.10.

5. Review and Evaluation

5.1 Geology

The detailed soil profiles encountered during this investigation are provided on the attached borehole logs (Appendix E). Boundaries of soil indicated on the log sheets are intended to reflect transition zones for the purpose of environmental assessment and should not be interpreted as exact planes of geological change.

The general stratigraphy at the Phase Two Property, as observed in the boreholes, consisted of silty sand / sandy silt overlying silty clay. Fill material was encountered in several locations in the vicinity of the former building footprint and in the vicinity of a former railway line. 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

A layer of grey gravel (crushed stone) fill was encountered in each of the boreholes below the asphalt and concrete. No indications of petroleum impact were identified in the fill. No debris was encountered in the fill material.

5.1.2 Native Material

Below the fill was a brown silty sand with a thickness that ranged from 0.9 m to 2.8 m (BH311). No silty sand was observed in BH305. Below the silty sand was grey silty clay to the maximum depth drilled of 6.1 m in . Below the silty sand in MW306 to MW309 and MW18-2, was silty sand and clay with some gravel till. A slight petroleum odour was observed in the silty sand in MW306 and black staining was observed in the silty sand in MW311. Both of these boreholes are in APEC 3. No other indications of impact to the native soil were observed. Bedrock was not observed during drilling..

Refer to the geological cross sections in Figures 18, 20, 22, 24 and 25 for an overview of the Phase Two Property stratigraphy.

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 (RRVCA 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 west towards the Rideau 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 Ground Water Elevations and Flow Direction

Groundwater was measured in the monitoring wells at least 24 hours following development and sampling on June 8 and 14, 2018. The depth to groundwater ranged between approximately 0.8 and 3.4 m below ground surface (bgs). Groundwater elevations relative to ground surface are summarized below.

Table 5.1: Groundwater Elevations

Monitoring Well ID	Top of Well Casing (m)	October 16, 2015		June 14, 2018	
		Water Level (mbtoc)	Water Level (MASL)	Water Level (mbtoc)	Water Level (MASL)
MW301	89.39	1.44	87.90	1.27	88.12
MW302	89.44	1.36	88.05	1.39	88.05
MW306	89.95	2.53	87.35	2.00	87.95
MW307	90.00	1.13	88.87	0.79	89.21
MW308	89.95	3.08	86.87	2.22	87.73
MW309	89.76	2.49	87.35	3.10	86.66
MW 18-1	90.02	NA	NA	3.38	86.64
MW 18-2	89.64	NA	NA	2.66	86.98
MW 18-3	89.20	NA	NA	1.06	88.14
MW1/BH9	90.73	NA	NA	1.58	89.15
MW2/BH3	89.99	NA	NA	0.74	89.25
MW3/BH1	90.01	NA	NA	NM	NA

Note: Elevations were referenced to an assumed benchmark (top of the catch basin located east of MW306) with a geodetic elevation of 89.61 m above mean sea level (m AMSL).
 Mbtoc – metres below top of plastic well casing
 MASL – metres above sea level
 NM – not measured
 NA – not applicable

Based on the groundwater data collected on June 14, 2018, the inferred local groundwater flow direction is generally to the northwest. The groundwater elevations within the building were not used

to calculate the groundwater flow direction. 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. The groundwater elevation contours are presented on Figure 7.

5.3.1 Groundwater: Hydraulic Gradients

Horizontal hydraulic gradients were estimated for the groundwater flow components identified in the overburden aquifer (i.e. west flow) based on the June 2018 groundwater elevations.

The horizontal hydraulic gradient, between each monitoring well pair, is calculated using the following equation:

$$i = \Delta h / \Delta s$$

Where,

i = horizontal hydraulic gradient;

Δh (m) = groundwater elevation difference; and,

Δs (m) = separation distance.

The horizontal hydraulic gradient, based on the groundwater elevations, is estimated to average about 0.006 m/m.

5.4 Groundwater Hydraulic Conductivity

Based on the grain size of the shallow water-bearing unit (silty clay), the hydraulic conductivity value for the Phase Two Property soils is estimated to range between 10^{-7} to 10^{-9} m/s.

5.4 Soil Texture

Based on the grain size analysis of the soil sample collected near the water table at the Phase Two Property was assessed to be fine textured (refer to the 75 micron sieve analysis in Appendix A). Therefore, the soil texture is fine grained.

5.5 Soil Field Screening

Field screening involved using the combustible vapour meter to measure vapour concentrations, in parts per million (ppm) 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 20 ppm. These results do not indicate any significant petroleum impact to soil.

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 or odours were observed in any of the soil samples collected in 2018 by EXP.

5.6 Soil Quality

In accordance with the authorized scope of work, chemical analyses were performed on selected soil samples recovered from the test pits. The selection of representative “worst case” soil samples from each borehole was based on visual evidence of impacts or highest potential for impacts based on historic Phase Two Property use. The summarized analytical data are presented in Appendix B. Copies of the laboratory Certificates of Analysis for the tested soil samples are provided in Appendix D.

The Table 3 SCS criteria are applicable if soil pH is in the range of 5 to 9 for surface soil (less than 1.5 m below soil surface) and 5 to 11 for subsurface soil (greater than 1.5 m below soil surface). The Certificates of Analysis include pH measurements taken on four surface soil samples and three subsurface soil sample. The reported pH values ranged between 7.30 and 7.46 which are within the acceptable range to use the Table 3 SCS.

5.6.1 PHCs including BTEX and PCBs

Four (4) soil samples, including one (1) QA/QC field duplicate, were analyzed for PHCs including BTEX and PCBs. The results of the analysis together with the applicable Table 3 SCS are presented in Table 1 in Appendix C.

The detected concentrations of PHC F1 and F2 in the soil samples were less than the applicable Table 3 SCS. The remaining PHC F3, F4, BTEX and PCBs parameters were not detected in the samples.

The previous soil sample from MW306 that was collected from a depth of 0.3 m to 1.5 m. This sample had concentrations of benzene, xylenes, and PHC F1 that exceeded the MECP 2011 Table 3 SCS. A second sample from the same area (the former location of the pump island and UST at the northwest corner of the building) from BH3 from 1.2 m to 2.4 m, had concentrations of benzene, ethylbenzene, xylenes and PHC F1 that exceeded the MECP 2011 Table 3 SCS. A third soil sample, BH7 SS2 from a depth of 1.2 to 2.4 m had a PHC F3 concentration that exceeded the MECP 2011 Table 3 SCS.

The concentrations of PHC, BTEX, and PCBs in the remaining analyzed soil samples were either detected below the Table 3 SCS or were not detected above the laboratory Method Detection Limits (MDLs). The laboratory MDLs were below the Table 3 SCS.

The locations of the soil samples analyzed for PHCs is presented in plan view on Figure 8A and in cross section on Figure 18A. The pre-remediation distribution of soil impacted with PHC is presented in plan view and in cross section in Figures 8A, 18A, and 20A. The locations of the soil samples analyzed for PCBs are shown on Figure 10.

Based on the above analytical results, remediation of the impacted soil in the area of MW306, BH3 and BH7 was conducted (Figure 8C). A summary of the remedial activities is provided in Appendix G.

5.6.2 VOCs

No soil samples were submitted for VOC analysis in May 2018. Eleven (11) previous soil samples, including one (1) QA/QC field duplicate, were analyzed for VOCs. The results of the analysis together with the applicable Table 3 SCS are presented in Table 2 in Appendix C.

With the exception of BTEX parameters discussed above and hexane and methyl isobutyl ketone, VOCs were not detected above the Table 3 SCS in the soil samples analyzed. Hexane concentrations exceeded the Table 3 SCS in MW306 and BH3, and methyl isobutyl ketone exceeded the MOE Table 3 SCS in BH3. Both of these boreholes are located within the area of the former UST. The laboratory MDLs were below the Table 3 SCS.

The locations of the soil samples analyzed for VOCs is presented in plan view on Figure 9A and in cross section on Figure 18B. The pre-remediation distribution of soil impacted with VOC is presented in plan view and in cross section in Figures 9A, 18B and 20B.

Based on the above analytical results, remediation of the impacted soil in the area of MW306 and BH3 was conducted (Figure 13B). A summary of the remedial activities is provided in Appendix G.

5.6.3 Metals

Eight (8) soil samples, including one QA/QC field duplicate, were analyzed for metals and/or vanadium. The results of the analysis together with the applicable Table 3 SCS are presented in Table 3 in Appendix C. The concentrations of metals in the soil samples were either detected below the Table 3 SCS or were not detected above the laboratory Method Detection Limits (MDLs), with the exception of vanadium in the sample from MW18-3 at a depth of 1.5 m to 2.3 m. The laboratory MDLs were below the Table 3 SCS. The vanadium concentrations were vertically delineated at MW18-3.

In the previous soil samples, the detected concentrations of cyanide in the soil sample from MW307 at a depth of 0.3 m to 1.5 m exceeded the applicable Table 3 SCS. The concentrations of metals in the remaining analyzed soil samples were either detected below the Table 3 SCS or were not detected above the laboratory Method Detection Limits (MDLs). The laboratory MDLs were below the Table 3 SCS.

The locations of the soil samples analyzed for cyanide and metals is presented in plan view on Figures 11A and 12 and in cross section on Figures 20C, 22A.

The pre-remediation distribution of soil impacted with metals is presented in plan view and in cross section in Figures 20C, 22A, 24A and 25A.

Based on the above analytical results, remediation of the impacted soil in the area of MW307 was conducted (Figure 13B). A summary of the remedial activities is provided in Appendix G. The vanadium concentrations are less than the 98th percentile background vanadium concentrations in the Ottawa area. The vanadium concentrations in soil are addressed in an MGRA conducted for the Phase Two Property.

5.6.4 PAHs

No soil samples were submitted for PAH analysis in May 2018. Four (4) previous soil samples, including one (1) QA/QC field duplicate, were analyzed for PAH in February 2018. The results of the analysis together with the applicable Table 3 SCS are presented in Table 4 in Appendix C.

PAHs were not detected in the analyzed soil samples analyzed and the laboratory MDLs were below the Table 3 SCS.

5.7 Soil Quality – Confirmatory Sampling

During the remediation process, a total of 35 confirmatory soil samples, including three (3) QA/QC field duplicate samples, were collected from the bases and walls of the excavations and submitted for laboratory analysis. Details are presented in Appendix G.

The concentrations of PHC and BTEX detected in the confirmatory soil samples collected from the final excavation limits met the applicable Table 3 SCS, with the exception of the south wall of the excavation. Soil samples from a depth of 2.0 and 3.0 m below ground surface (below the footing of the building) had concentrations of benzene, toluene and/or PHC F1 that exceeded the MECF Table 3 SCS. This material was not removed due to structural considerations. A Modified Generic Risk Assessment was

completed to address these remaining soil impacts below the building footing. Details are presented in Appendix G.

5.8 Ground Water Quality

The summarized analytical data are presented in Appendix C. Copies of the laboratory Certificates of Analysis for the groundwater samples are provided in Appendix D.

No evidence of free product (i.e. visible film or sheen), or odour was observed during well purging and groundwater sampling.

5.8.1 PHCs and PCBs

Ten (10) groundwater samples, including one (1) QA/QC field duplicate, were analyzed for PHCs and BTEX. Six (6) groundwater samples, including one (1) QA/QC field duplicate, were analyzed for PCBs. The results of the analysis together with the applicable Table 3 SCS are presented in Table 5 in Appendix C.

The concentrations of PHCs and BTEX were less than the MECP Table 3 SCS. The concentrations of PCBs were less than the detection limits and the MECP Table 3 SCS.

The location of the groundwater samples analyzed for PHCs is presented in plan view on Figure 13 and the location of the groundwater samples analyzed for PCBs is presented in plan view on Figure 15.

5.8.2 VOCs

In the previous investigations, seven (7) water samples, including one (1) QA/QC field duplicate and one (1) QA/QC laboratory trip blank, were analyzed for VOCs. The results of the analysis together with the applicable Table 3 SCS are presented in Table 6 in Appendix C. The concentrations of VOC were less than the MECP Table 3 SCS.

The location of the groundwater sample analyzed for PHCs is presented in plan view on Figure 14.

5.8.3 Metals

Ten (10) groundwater samples, including one (1) QA/QC field duplicate, were analyzed for metals. The results of the analysis together with the applicable Table 3 SCS are presented in Table 7 in Appendix C. The concentrations of metals were less than the MECP Table 3 SCS.

The location of the groundwater sample analyzed for Metals is presented in plan view on Figure 12.

5.8.4 PAHs

Two (2) groundwater samples were analyzed for PAHs on two occasions. The results of the analysis together with the applicable Table 3 SCS are presented in Table 8 in Appendix C. The concentrations of PAH were less than the MECP Table 3 SCS.

The location of the groundwater sample analyzed for PAHs is presented in plan view on Figure 17.

5.9 Sediment Quality

As there were no surface water bodies on the Phase Two Property, sediment sampling was not conducted.

5.10 Quality Assurance and Quality Control Results

As part of this Phase Two ESA, the following field duplicate soil and groundwater samples were submitted for analysis:

- MW18-1 SS8 for PHC, BTEX, PCBs and metals:
- MW302 for PHC, BTEX, PCBs and metals.

The analytical sample results were quantitatively evaluated by calculating the relative percent difference (RPD) between the samples and their duplicates. Where the concentrations of the analyzed representative soil sample and the duplicate were not both 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 laboratory quality assurance program included the analysis of laboratory duplicate (replicate) samples, method blanks, spiked blanks, spiked samples and samples of reference materials in accordance with the Analytical Protocol. These analytical results comprise portions of the Certificates of Analysis in Appendix D.

One (1) laboratory-prepared trip blank was transported in the field during the groundwater sampling and re-analyzed for PCHs. PCHs were not detected in the blank indicating that the field sampling procedures did not contribute to the addition of PCHs.

The results of all QA/QC analysis provide confidence in the laboratory results obtained during this investigation.

6. Phase Two Conceptual Phase Two Property Model

This section presents the Phase Two Conceptual Phase Two Property Model (P2CSM), as it relates to the Phase Two Property designated as 3025 Albion Road North providing a narrative, graphical and tabulated description integrating information related to the Phase Two Property geologic and hydrogeologic conditions, areas of potential environmental concern/potential contaminating activities, the presence and distribution of potential contaminants of concern, contaminant fate and transport, and potential exposure pathways. The P2CSM was completed in accordance with Ontario Regulation 153/04, as amended (O.Reg.153/04), as defined by the Ontario Ministry of the Environment, Conservation and Parks (MECP).

6.1 Introduction

The Site is located south of Walkley Road and east of Kitchener Avenue at 3025 Albion Road North in Ottawa, Ontario, as shown on Figure 1 and Figure 2. The municipal address consists of three (3) parcels, however, this environmental investigation included only Parcel 1 in the assessment, as defined by the property boundary illustrated in Figure 2. The Site is approximately 3.4 hectares (8.4 acres) in size and is occupied by a building utilized as office and warehouse space for Hydro Ottawa. Based on the reviewed aerial photographs, chain of title information, and other records, the Site was first developed circa 1956 with the current Site building, located in the west/central portion of the Site. The eastern portion of the Site was developed from vacant land to an asphalt paved parking lot between 1965 and 1975.

Refer to Table 1, below, for the Site identification information.

Table 1: Site Identification Information

Civic Address	3025 Albion Road North, Ottawa, Ontario
Current Land Use	Commercial
Proposed Land Use	Institutional
Legal Description	PT LT, CON 4RF, as in OT11813, OT13680, CT124173, except CT124894 & PART3, 5R8913; Ottawa/Gloucester T/W an Easement over PART 1 ON 4R-15540 and PART 3 PM 4R-15540 except Part 2 ON 4R-15746 as in LT1398965 together with an Easement Over Part 2 PLAN 4R15746 as in OC9066 together with an Easement over Part 4 PLAN 4R15547 as in OC8079 together with an Easement over Part 2 Plan 4R15547 as om OC8080 together with an Easement over Parts 4,5,6,7 and 11 PLAN 4R15397 as in OC9564.
Property Identification Number (PIN)	04741-0017 (LT)
Assessment Roll Number (ARN)	0614 116 505 03400 0000
Universal Transverse Mercator (UTM) coordinates	NAD 83 18T 449081.34E 5024327.56N
Site Area	3.4 hectares
Property Owners, Owner Contact and Address	Hydro Ottawa Limited, 3025 Albion Road North, Box 8700, Ottawa, ON K1G 3S4

6.2 PCAs and APECs

6.2.1 Potentially Contaminating Activities

A Phase One ESA, in accordance with O.Reg.153/04, was conducted by EXP in September 2018 for the Site. Several potentially contaminating activities (PCAs) were identified on-Site and within 250 m from the Site boundaries (Phase One Study Area). All PCAs that were identified within 250 m of the RA property are shown on Figure 2. Each PCA was further evaluated to determine if the activity may be contributing to an area of potential environmental concern (APEC) at the Site.

All PCAs identified on-Site were considered to contribute to an APEC on-Site. The QP(ESA) determined that select off-Site PCAs may contribute to an APEC for the property, while select off-Site PCAs were determined to not contribute to an APEC, due to various factors including, but not limited to, relative distance to the Site, orientation to the Site; degree and nature of PCA operations, potentially impacted media, etc. Refer to Table 2 for the evaluation of the PCAs in the Phase One Study Area.

Table 6.2: Potentially Contaminating Activities

PCA Identifier	Address	Location of Activity (in relation to Phase Two Property) ⁽¹⁾	Potentially Contaminating Activity (PCA) ⁽²⁾	Approximate timeline that PCA occurred	Contribution to APEC at the Phase Two Property (Yes/No)
1	3025 Albion Road North	Phase Two Property	10-Commercial Autobody Shops	The Phase Two Property visit identified a former vehicle repair shop in the northwest part of the on-Phase Two Property building. It was in operation from the late 1950s to the 2000s.	Yes (PCA located on-Phase Two Property)
2	3025 Albion Road North	Phase Two Property	Not Listed – Oil Spraying of Ground Surface	Interview with Phase Two Property personnel in 2008 identified the former practice of spraying the road with oil to keep dust down. This was done until the road was paved in the 1970s.	Yes (PCA located on-Phase Two Property)
3	3025 Albion Road North	Phase Two Property	28 – Gasoline and Associated Products Stored in Fixed Tanks	During the interview process and air photo review, there was A former underground storage tank (UST) and pump island identified near the northwest corner of the Phase Two Property, north of the building.	Yes (PCA located on-Phase Two Property)
4	3025 Albion Road North	Phase Two Property	28 – Gasoline and Associated Products Stored in Fixed Tanks	During the Phase Two Property visit, waste oil ASTs, new oil storage, a hydraulic lift at loading dock, and an emergency generator diesel storage tank were identified.	Yes (PCA located on-Phase Two Property)
5	3025 Albion Road North	Phase Two Property	30 – Importation of Fill Material of Unknown Quality	Fill is likely to have been brought on to the Phase Two Property during Phase Two Property construction in 1956.	Yes (PCA located on-Phase Two Property)

PCA Identifier	Address	Location of Activity (in relation to Phase Two Property) ⁽¹⁾	Potentially Contaminating Activity (PCA) ⁽²⁾	Approximate timeline that PCA occurred	Contribution to APEC at the Phase Two Property (Yes/No)
6	3025 Albion Road North	5 m east of the Phase Two Property	18-Electricity Generation, Transformation and Power Stations	Air photos and interviews with Hydro Ottawa and the Phase Two Property visit identified that the off-Phase Two Property property to the east is an operating hydro station with PCB storage facilities, a diesel AST and transformer storage.	Yes (PCA located east adjacent)
7	3099 Albion Road North	90 m south of the Phase Two Property	28 – Gasoline and Associated Products Stored in Fixed Tanks	Air photos and city directories identified a former off-Phase Two Property works yard (90 m south) that had a PCB storage facility and underground fuel storage tanks.	Yes (PCA located potentially up-gradient of Phase Two Property)

(1) Distances are approximate. Precise distances are not possible due to the age of some listings and the aggregation and/or loss of addresses.

(2) Potentially contaminating activity means a use or activity set out in Column A of Table 2 of Schedule D (O.Reg 153/04, as amended) that is occurring or has occurred in a Phase One Study area.

Refer to Figure 3 for the location of the PCAs.

6.2.2 APECs

Based on the evaluation of the PCAs located within the Phase One Study Area, seven (7) areas of potential environmental concern (APECs) were identified, as presented in Table 3.

Table 6.3: 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-Phase Two Property or off-Phase Two Property)	Contaminants of Potential Concern	Media Potentially Impacted (Groundwater, soil and/or sediment)
APEC 1: A former on-Phase Two Property vehicle service garage	Northwest part of the building	#10 –Commercial Auto Body Shops	On-Phase Two Property	Petroleum Hydrocarbon (PHC), volatile organic compounds (VOC), and metals	Soil and Groundwater
APEC 2: Potential oil spraying of the former baseball diamonds and gravel access road	Eastern and north-central portions of Phase Two Property	PCA#18- Electricity Generation, Transformation and Power Stations	On-Phase Two Property	PHC and polychlorinated biphenyls (PCB)	Soil and Groundwater

Area of Potential Environmental Concern (APEC)	Location of APEC on Phase One Property	Potentially Contaminating Activity (PCA)	Location of PCA (on-Phase Two Property or off-Phase Two Property)	Contaminants of Potential Concern	Media Potentially Impacted (Groundwater, soil and/or sediment)
APEC 3: A former underground storage tank (UST) and dispensing pumps that were removed	North of the garage area	PCA#28- Gasoline and Associated Products Storage in Fixed Tanks	On-Phase Two Property	PHC and benzene, toluene, ethylbenzene, xylenes (BTEX)	Soil and Groundwater
APEC 4: 3 interior above ground waste oil and new oil storage tanks	South part of the building	PCA#28- Gasoline and Associated Products Storage in Fixed Tanks	On-Phase Two Property	PCB, PHC and BTEX	Soil and Groundwater
APEC 5: Fill quality at the Phase Two Property	Entire property	PCA#30- Importation of Fill Material of Unknown Quality	On-Phase Two Property	PHC, metals and PAHs	Soil and Groundwater
APEC 6: Storage of poles and electrical equipment along with a former PCB storage area and diesel fuel AST	East edge of Phase Two Property	PCA#18- Electricity Generation, Transformation and Power Stations	Off-Phase Two Property	PHC, BTEX, metals, pentachlorophenol, PCB	Groundwater
APEC 7: Former works yard that had a PCB storage facility and underground fuel storage tanks.	South edge of property	PCA#28- Gasoline and Associated Products Storage in Fixed Tanks	Off-Phase Two Property (90 m south)	PCBs, PHCs, BTEX and metals	Groundwater

(1) Potentially contaminating activity means a use or activity set out in Column A of Table 2 of Schedule D (O.Reg.153/04, as amended) that is occurring or has occurred in a Phase One Study area.

Refer to Figure 4 for the location of the APECs.

6.2.2 Underground Utilities

Based on the depth of groundwater levels (0.74 to 3.38 m below grade), it is possible that the underground utilities would influence the groundwater flow at the Site. It is noted that the precise underground location of the utilities cannot be determined without professional locate services.

Table 6.4: Site Utilities

Utility	Source	Location	Site Entry
Natural Gas	Enbridge Gas	Not observed	Unknown/non-existent – Inferred to be Albion Road North
Sanitary Sewer	Municipality – City of Ottawa	Not observed	Unknown/non-existent – Inferred to be Albion Road North
Storm Sewer	Municipality – City of Ottawa	Catch basins along Albion Road North	Unknown/non-existent – Inferred to be Albion Road North
Water	Municipality – City of Ottawa	Not observed	Unknown/non-existent – Inferred to be Albion Road North
Electricity	Hydro Ottawa	Not observed	Overhead hydro lines were observed along Albion Road North
Telecommunications	Bell	Not observed	Unknown

6.3 Physical Phase Two Property Description

6.3.1 Stratigraphy

The Site and surrounding areas generally consist of silt and clay. The bedrock in the general area consists of shale and limestone of the Carlsbad Formation. Local borehole data identify a layer of clay over glacial till over limestone bedrock.

The Site stratigraphy characteristics are summarized in Table 6.5.

Table 6.5: 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	~90.06 to 90.0
	Fill Material – Gravel/Crushed Stone	0.06	1.51	~90.0 to 89.5
Overburden	Silty Sand	0.26	6.1	~89.5 to 88.5
	Silty Clay Till	1.56	7.62	~88.5 to 82.4
Bedrock	Not Observed	11.7 (refusal at this depth)	Not Observed	Not Observed

The geology of the Site is illustrated on the cross-sections (Figures 18 to 25).

6.3.2 Hydrogeology

The Site and surrounding topography is relatively flat. Based on the location and distance of the Site to the Rideau River (approximately 3km to the west) and to Sawmill Creek (approximately 275 m to the south), as well as groundwater data collected from across the Site, the inferred local groundwater flow

direction at the Site is considered to be to the west. However, EXP notes that the direction of localized groundwater flow may be influenced by fill material within the former building footprint and from the presence of on-Site utilities.

Refer to Table 6.6 for the Site hydrogeology characteristics based on groundwater monitoring observations.

Table 6.6: Site Hydrogeology Characteristics

Location	Observations
Depth to Groundwater	0.74 to 3.4 m bgs
Groundwater Elevation	86.64 m AMSL to 89.25 m AMSL
Direction of Groundwater Flow	West
Hydraulic Conductivity ⁽¹⁾	2×10^{-5} to 9×10^{-6} m/s
Horizontal Hydraulic Gradient	0.006 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, 2018)

The hydrogeology of the Site is illustrated on the groundwater elevation plan (Figure 7) and are based on the most recent groundwater information collected from the Site.

6.3.3 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 6.7: Phase Two Property 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
	(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

Sensitivity	Classification	Does Sensitivity Apply to Phase Two Property?
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

6.3.4 Remedial Activities

A Soil Remediation Program (SRP) was completed at the Site in between June and August 2018. The scope of work for the SRP was as follows:

- Complete two (2) excavations within the Site;
- Excavation 1 (PHC Excavation) was completed on the northwest portion of the Phase Two Property to address petroleum impacts;
- Excavation 2 (Cyanide Excavation) was completed on the northwest portion of the Phase Two Property to address cyanide impacts;
- Collect confirmatory samples in accordance with confirmatory sampling requirements as outlined in O. Reg. 153/04, as amended.

A summary of the excavations and confirmatory samples is as follows:

- The PHC Excavation measured approximately 11 m wide and 15 m long, with an average depth of approximately 3.3 mbgs. A total of twenty-three (23) confirmatory samples were collected from the floors and walls of the final excavation limits which comprised of twenty (20) sidewall samples and three (3) floor samples.
- The Cyanide Excavation measured approximately 2.0 m wide and 3.0 m long, with a depth of approximately 2.9 mbgs. A total of six (6) confirmatory samples were collected from the floors and walls of the excavation which comprised of two (2) floor and eight (8) sidewall samples.
- Between June 23 and July 11, 2018, a total of approximately 949 metric tonnes of cyanide and petroleum impacted soil was excavated and transported off-Site to the Green For Life landfill in Moose Creek, a licensed landfill, Ontario.

Based on the analytical results of the SRP, the cyanide impacts in soil located in the previously identified areas have been removed. There were several soil samples (Footing, 2B, 2D, 2E, 3A, and 3C) from the south wall of the petroleum excavation (Excavation 2) that had concentrations of PHC F1 and/or BTEX which exceeded the MECP Table 3 SCS. These exceedances were located beneath the footing of the building, and therefore could not be removed without potentially damaging the building.

Refer to Figures 8A and 11A for pre-remediation conditions, and to Figures 8B, 8C, 11B and 11C for the post-remediation conditions.

6.3.5 Soil Importation

The excavations completed between June and August 2018 were backfilled with Granular B Type II and Granular A (approximately 950 cubic meters) crushed stone imported from the Tomlinson's quarry in Ottawa. The fill materials were sampled for BTEX and PHC, and no impacts were identified.

6.3.6 Land Use

Based on available information, 3025 Albion Road North is utilized as a commercial office and warehouse building for Hydro Ottawa, with an asphalt paved parking lot. A review of historical aerial photographs and previous reports indicated that the Site has been used as offices, parking areas and equipment storage warehouse for Hydro Ottawa since the late 1950s.

The intended future land use of the Site is institutional.

6.4 Contaminants of Concern

The Ministry of the Environment, Conservation and Parks (2011a) Table 3: Full Depth Generic Site Condition Standards (SCS) for Residential/Parkland/Institutional Property Use and coarse textured soil were considered applicable for determining contaminants of concern (COCs), based on the reasons presented in Table 6.8.

Table 6.8: Site Condition Standards

Descriptor	Site-Specific Condition
Section 41 Site Sensitivity	<p>Not Applicable</p> <ul style="list-style-type: none"> ○ The soil at the Site has pH values between 5 and 9 for surficial soil; and, between 5 and 11 for subsurface soil. ○ The Site is not located adjacent to an area of natural significance/or an environmentally sensitive area.
Section 43.1 Site Sensitivity	<p>Not Applicable</p> <ul style="list-style-type: none"> ○ The Site is not considered a shallow soil property, based on the recovered soil cores, which indicated that more than two-thirds of the Site has an overburden thickness in excess of 2 m. ○ The Site is not located within 30 m of a surface water body; the nearest surface water body, Sawmill Creek, is located approximately 275 m to the south. The Rideau River is located approximately 3 kilometres west of the Site.
Ground Water	<p>Non-Potable</p> <ul style="list-style-type: none"> ○ The Site and surrounding properties within 250 m of the Site are supplied by a municipal drinking water system, and no potable water wells are located on the Site or within 250 m of the Site.
Land Use	<p>Residential/Parkland/Institutional</p> <ul style="list-style-type: none"> ○ The Site is currently developed for commercial land use. ○ The proposed future use of the Site is for institutional use.
Soil Texture	<p>Coarse textured</p> <ul style="list-style-type: none"> ○ The predominant texture of soils at the Site is considered to be coarse textured, based on soil characteristics identified in the borehole logs and the grain size analysis.

Based on the reported analytical results, the parameters that were detected at concentrations above the applicable MECP Table 3 SCS, and that remain at the Site post-remediation, are presented in Table 6.9 (soil).

Table 6.9: Contaminants of Concern in Soil Post-Remediation

Parameter Analyzed in Soil	Maximum Concentration	Site Condition Standard	Maximum Concentration Above Applicable SCS?
Vanadium	120 ug/g	86 ug/g	Yes – Not considered a COC. Refer to Section 4.1 for further details
Benzene	14 ug/g	0.21 ug/g	Yes
Ethylbenzene	7.8 ug/g	2.1 ug/g	Yes
Toluene	14 ug/g	2.3 ug/g	Yes
Total Xylenes	37 ug/g	3.1 ug/g	Yes
Hexane	9.78 ug/g	2.8 ug/g	Yes
Methyl Isobutyl Ketone	2.78 ug/g	1.7 ug/g	Yes
PHC F1	160 ug/g	55 ug/g	Yes

(1) MECP (2011) Table 3 Site Condition Standards in a Non-Potable Ground Water Condition for Residential/ Parkland/ Institutional Property Use and coarse textured soils.

With respect to groundwater, none of the parameters analyzed were reported to be greater than their respective MECP Table 3 SCS.

The shallowest depth to groundwater during all groundwater sampling events was observed at 0.74 m bgs on June 14, 2018. The depth to groundwater reflects the distance and opportunity for potential contaminant biodegradation and natural attenuation to occur, which are considered in the modelling of the groundwater to indoor exposure pathway during the human health risk assessment. Given that the MECP (2011a) Table 7 Generic SCS for Shallow Soils in a Non-Potable Ground Water Condition consider a scenario where biodegradation cannot be assured and where soil may not be present to provide attenuation, volatile parameters in groundwater at the Site were selected as COCs if they had a maximum detected concentration in excess of the MECP Table 7 SCS.

No parameters were found to exceed the MECP Table 7 SCS, therefore, no COCs in groundwater were identified.

6.4.1 Soil Impacts

Samples collected on the Site that meet or exceed the Table 3 SCS are shown in plan view on Figures 8A to 11C for soil, and Figure 12 to 16 for groundwater. Details of the delineation, source and distribution of all impacts are summarized in Table 6.10.

Table 6.10: Delineation of Remediated Soil Impacts

Parameter Group and Media	Pre-Excavation			Post Excavation		
	Lateral Delineation	Vertical Delineation	Associated Figures	Lateral Delineation	Vertical Delineation	Associated Figures
PHCs & BTEX in Soil	Northwest portion of the Site	Impacts identified to a maximum depth of approximately 2.4 m	Figure 8A, 17A, 19A	Impacts remain along the southern boundary of the excavation. Impacts to be addressed through risk assessment	Impacts remain along the southern boundary of the excavation. Impacts to be addressed through risk assessment	Figure 8B, 8C, 18A, 20A
VOCs in Soil	Northwest portion of the Site	Impacts identified to a maximum depth of approximately 2.4 m bgs	Figure 9, 19B, 17B	Lateral delineation achieved at BH2, BH1/MW3, MW307, BH6, BH7, BH5	No vertical delineation achieved was achieved for hexane and methyl isobutyl ketone. These two (2) parameters will be delineated in the subsequent submission.	Figure 9A, 19B
Cyanide in Soil	Western portion of the Site	Impacts identified to a maximum depth of 1.5 m	Figure 11A, 19C, 21A	Impacts Removed (Excavation 4 Wall Samples N3, E2, S3, and W4)	Impacts Removed (Excavation 2 Floor Samples F1 and F2)	Figure 11B, 11C, 20B, 22A

As noted previously, a remediation program in accordance with O.Reg.153/04 has been undertaken. The cyanide impacted soil has been remediated. There were several soil samples (Footing, 2B, 2D, 2E, 3A, and 3C) from the south wall of the petroleum excavation that had concentrations of PHC F1 and/or benzene, toluene and xylenes exceeded the MECF Table 3 SCS. They were located beneath the footing of the building and therefore could not be removed without potentially damaging the building.

Table 6.11: Delineation of In-Situ Soil Impacts

Parameter Group and Media	Lateral Delineation	Vertical Delineation	Associated Figures
Metals Impacts in Soil	No lateral delineation achieved. Impacts (vanadium) are considered to be naturally occurring.	Vertical delineation achieved at MW18-3 SS5 & MW18-3 SS7	Figure 11B, 23A, 24A

Vanadium was detected in soil at one (1) location (MW18-3), in exceedance of the applicable MECP Table 3 SCS. Following the identification of this soil exceedance, three (3) additional samples were taken from the surrounding soil (within a 5 metre radius of the original exceedance) in an effort to laterally delineate the impact. However, results demonstrated consistent vanadium exceedances at this depth (between 1.5 and 2.7 m bgs), within the native silty clay. These measured concentrations are considered to be representative of background conditions based on the following factors:

- the concentrations of metals in the three fill samples (MW303 SS1, MW307 SS1 and MW308 SS1) were less than the MECP Table 3 SCS;
- there was no detectable vanadium in the groundwater samples taken at the Site;
- there is no potential on-Site source of vanadium since the fill was not impacted;
- the local MECP office was contacted and they confirmed via e-mail that elevated metals levels such as barium, cobalt and vanadium have been reported in the native soil (i.e. silty clay) in the Ottawa area by qualified professionals (see Appendix F for the correspondence); and,
- a technical paper entitled Elevated Background Metals Concentrations in Champlain Sea Clay – Ottawa Region written by two engineering firms and the City of Ottawa was presented at GEO Ottawa in 2017. The paper presented results from several studies in the Ottawa area that showed that the concentrations of several metals including cobalt and vanadium in the native silty clay are elevated above the MOECC Table 3 site condition standards. New background concentrations that are higher than the MOECC Table 3 SCS were proposed for five metals for eastern Ontario.

Based on these conclusions, the elevated concentrations of vanadium in the native silty clay are considered to be naturally occurring and are not considered contaminants of concern at the Site. Based on the above technical paper, the range of concentrations of vanadium in 267 native soil samples in the Ottawa area ranged from 10.0 to 136 ug/g with a 98th percentile of 123 ug/g. The measured concentrations of vanadium in the silty clay at the subject site range from 55 to 120 ug/g. This indicates that the measured concentrations of vanadium in the native silty clay at the Site are within the typical range of concentrations cited in the above technical paper and are not indicative of anthropogenic impact.

6.5 Contaminant Fate and Transport

6.5.1 Soil Media

The soil COCs found at the Phase Two Property comprised of PHC F1, benzene, ethylbenzene, toluene, xylenes, hexane, and methyl isobutyl ketone.

Based on the former activities on and within the vicinity of the Phase Two Property, the impacts in soil are likely associated with the gasoline storage and dispensing and fill importation that occurred on the Phase Two Property.

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 volatile chemical constituents (i.e. moderately high Henry's Law

Constant and saturated vapour pressure), benzene, ethylbenzene, xylenes and PHC F1 can volatilize into soil gas and be transported through soil gas under the influence of pressure (e.g. water table fluctuations) and partial pressure gradients in the unsaturated zone. The transport of volatile COCs can also be retarded by sorption on to organic material that may be associated with the soil mineral particles through the overburden material.

As a result of the various natural attenuation mechanisms in the soil environment, the concentrations of COCs in soil are expected to decrease at the Site in the long-term.

6.5.2 Groundwater Media

No groundwater COCs were identified at the Phase Two Property.

6.5.3 Preferential Pathways

The preferential pathways for contaminants present in soil media typically include various underground utilities, building footings and surface features

6.5.4 Climatic Conditions

It is noted that climatic or meteorological conditions may influence the distribution and migration of COCs at the Site. However, based on the conditions observed at the Site, it is not anticipated that the climatic or meteorological changes will result in significant alterations in the distribution of contaminants.

Details on the climatic or meteorological conditions are summarized in Table 6.12.

Table 6.12: Climatic or Meteorological Conditions

Climatic or meteorological conditions that may have influenced distribution and migration of the contaminants, such as temporal fluctuations in ground water levels.	Some groundwater fluctuations are expected at the Site, but not significant variation. These fluctuations in groundwater are not expected influence the distribution and migration of COCs in soil at the Site.
--	---

6.5.5 Soil Vapour Migration

Given the presence of volatile COCs in soil prior to the remediation undertaken at the Site, soil vapour intrusion may have been a potential contaminant transport mechanism for volatile COCs in soil. Intrusion of vapour-phase contaminants into the indoor air occurs from volatilization of chemicals from the dissolved or non-aqueous phases in the subsurface.

The relevant mechanisms for soil vapour intrusion are soil gas advection and vapour migration from diffusion through the building foundation. Soil gas advection is the dominant mechanism when the pressure gradient is greater than 1 Pascal (MECP, 2011b), as is the case in many commercial buildings. Soil gas advection can occur through any unsealed entry points, cracks or openings present in the building foundation.

Soil vapour flow is greatest within 1 m to 2 m below the building foundation (MECP, 2011b); as such, the soil permeability of backfill beneath the building foundation will affect the soil vapour flow rate. Furthermore, pressure gradients (i.e. depressurization of the indoor airspace of the building) created by temperature differences between indoor and outdoor air may affect soil gas flow rate by creating a “stack effect” where, as warm air rises, it is replaced by air infiltrating through doors and windows, and soil gas migrating through the foundation.

As such, in the event that the vapour intrusion pathway is present there may be potential for unacceptable health risks to building occupants via inhalation of indoor air. Since the identified PHC

soil impacts are present beneath the northwest foundation wall of the building on the Phase Two Property; the vapour intrusion pathway is considered complete. This will be assessed during the completion of a MGRA for the Site.

Details on soil vapour migration are summarized in Table 6.13.

Table 6.13: Soil Vapour Migration

1. if applicable, information concerning soil vapour intrusion of the contaminants into buildings including,	There is a potential for soil vapours to be present within the subsurface (sourced from soil); to migrate along preferential pathways such as building footings and underground utility services; and, eventually to migrate into an overlying building or the atmosphere. Since the identified PHC soil impacts are present beneath the northwest foundation wall of the building on the Phase Two Property; the vapour intrusion pathway is considered complete.
2. relevant construction features of a building, such as a basement or crawl space,	No basement.
3. building heating, ventilating and air conditioning design and operation, and	Unknown
4. subsurface utilities,	Underground utilities could affect soil vapour migration, however, there were no buried utilities in the area of the PHC impacted soil.

6.6 Exposure Pathways

6.6.1 Human Health Receptors and Exposure Pathways

The Site is currently used as offices, parking areas, and equipment storage warehouse for Hydro Ottawa. The intention is to redevelop the Site as institutional (i.e., future school) land use. As such, the potential human receptors on the Site consist of students, property and recreational visitors, long-term workers (indoor and outdoor), and subsurface (construction) workers.

Based on the on-Site COCs (COCs in soil), the potentially complete on-Site human receptor exposure pathways for the future institutional land use are presented in Table 6.14.

Table 6.14: Human Health Conceptual Exposure Model

Scenario	Receptor	Exposure Pathways
Students	Toddler, Child, Teen & Adult (incl. pregnant female)	Incidental soil ingestion, soil dermal contact (S1) Indoor air vapour inhalation (S-IA) Outdoor air vapour inhalation (OA) Vapour skin contact
Property & Recreational Visitors	All ages (i.e., infant, toddler, child, teen and adult) (incl. pregnant female)	Incidental soil ingestion, soil dermal contact (S1) Indoor air vapour inhalation (S-IA) Outdoor air vapour inhalation (OA) Vapour skin contact
Long-Term Indoor Worker	Adult (including pregnant female)	Indoor air vapour inhalation (S-IA) Vapour skin contact
Long-Term Outdoor Worker	Adult (including pregnant female)	Incidental soil ingestion, soil dermal contact (S2) Outdoor air vapour inhalation (OA) Vapour skin contact
Subsurface Worker-Construction/Remediation	Adult (including pregnant female)	Incidental soil ingestion, soil dermal contact, and particulate inhalation (S3) Trench air vapour inhalation Vapour skin contact

Refer to Figure C-1 in Appendix C for the human health conceptual exposure model.

6.6.2 Ecological Receptors and Exposure Pathways

The Site is proposed to be developed as institutional lands capable of supporting some terrestrial ecological receptors in an urban environment. Consistent with the MECP (2011b), the potential on-Site ecological receptors that may be present on-Site include terrestrial vegetation such as trees, grasses and shrubs; soil invertebrates such as earthworms; terrestrial birds such as woodcocks and blackbirds; and terrestrial mammals such as voles and shrews. Additionally, it is noted that the MECP evaluates exposure to aquatic receptors located within 5 km of a RA Property. Given that the Sawmill Creek is located approximately 275 m south of the Site, and the Rideau River is located approximately 3 km west of the Site, off-Site aquatic receptors are also considered.

Terrestrial receptors may come into contact with COCs in soil via the following pathways:

Terrestrial Vegetation

- Root uptake/contact; and,
- Stem & foliar uptake

Soil Invertebrates and Terrestrial Mammals and Birds

- Soil particle inhalation;

- Dermal contact and incidental ingestion;
- Vapour inhalation; and,
- Ingestion of impacted plant and animal tissue.

Depth to groundwater at the Site is relatively shallow and is less than 1.5 m bgs. However, no COCs in groundwater have been identified, and as such, relevant exposure pathways have been deemed incomplete.

Given that the nearest surface water bodies to the Site are located within 5 km of the Site boundary, off-Site aquatic receptors may come into contact with COCs in soil from the Site that have leached to groundwater, migrated and eventually discharged to the nearest off-Site waterbodies. Specifically, off-Site aquatic receptors may come into contact with these COCs via the following exposure pathways:

- Root, stem and foliar uptake of surface water (GW3);
- Surface water dermal contact (GW3);
- Surface water ingestion (GW3);
- Ingestion of plant and animal tissue (GW3); and,
- Gill uptake (GW3).

Refer to Figure C-4 in Appendix C for the Ecological Conceptual Exposure Model

6.7 Summary and Conclusion

Based on the results of the Phase Two ESA, PHC and vanadium impacted soil remain on the Phase Two Property and are being addressed through the completion of an MGRA. The groundwater on the Phase Two Property has concentrations of the contaminants of concerns noted in the Phase One ESA that meet the applicable Table 3 SCS. No further remedial action is recommended at this time.

7. Summary and Conclusions

Based on the results of the subsurface investigation conducted at the Phase Two Property, the following findings are presented:

- The Phase Two ESA consisted of advancing a total of six (6) boreholes to investigate the quality of soil in the areas of potential environmental concern identified in EXP's Phase One ESA. Three (3) of the boreholes were instrumented with groundwater monitoring wells for the collection of groundwater.
- The general stratigraphy at the Phase Two Property, as observed in the boreholes, consisted of a layer of grey gravel (crushed stone) fill was encountered in each of the boreholes below the asphalt and concrete. Below the fill was a brown silty sand with a thickness that ranged from 0.9 m to 2.8 m in BH311. No silty sand was observed in BH305. Below the silty sand was grey silty clay to the maximum depth drilled of 6.1 m. A slight petroleum odour was observed in the silty sand in MW306 and black staining was observed in the silty sand in MW311. No other indications of impact to soil were observed. Bedrock was not observed during drilling.
- The groundwater depths ranged between approximately 0.8 and 3.4 m bgs within the installed wells. Based on the relative groundwater elevations, the inferred local groundwater flow direction is generally to the northwest. However, EXP notes that the direction of localized groundwater flow may be influenced by fill material within the building footprint.
- To assess the quality of soil and groundwater quality in the identified areas of environmental concern, selected soil and groundwater samples were submitted for analysis of PCBs, PHCs including BTEX, VOCs, PAHs, and metals. Based on the reported analytical results, various PHCs, hexane and methyl isobutyl ketone, and metals (cyanide and vanadium) were detected at concentrations above the applicable MECP Table 3 SCS in soil. Groundwater samples met the applicable MECP Table 3 SCS.
- A soil remediation program was completed between June and August 2018 to remove the PHC and cyanide impacts identified in the northeastern portion of the Phase Two Property.
- A total of approximately 949 tonnes (approximately 475 m³) of excavated impacted soils were transported off-Phase Two Property by Drain-All, to the Green For Life landfill in Moose Creek, Ontario. The excavations were backfilled with imported crushed stone.
- Following removal of the impacted soil, three (3) confirmatory floor samples, twenty-three (23) sidewall samples, and two (2) duplicate samples were analyzed from depths ranging from 1.2 m to 3.3 m bgs from the petroleum excavation. A total of two (2) confirmatory floor samples, four (4) sidewall samples, and one (1) duplicate sample were analyzed from depths ranging from 1.2 m to 2.9 m bgs from the cyanide excavation.
- Based on the analytical results of the confirmatory soil sampling program, the cyanide impacts in soil were successfully removed. Residual PHC impacts remain in the soil located beneath the north wall of the building in the northwest part of the Phase Two Property.

Based on the results of the Phase Two ESA, PHC and vanadium impacted soil remain on the Phase Two Property and are being addressed through the completion of an MGRA. The groundwater on the Phase Two Property has concentrations of the contaminants of concerns noted in the Phase One ESA that meet the applicable MECP Table 3 SCS. No further remedial action is recommended at this time.

8. 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 and Climate Change. Specific reference is made to the following:

- “*Guidance on Sampling and Analytical Methods for Use at Contaminated Phase Two Propertys in Ontario*,” Ministry of the Environment of Ontario, December 1996;
- *The Ontario Water Resources Act - R.R.O. 1990, Regulation 903 - Amended to O. Reg. 128/03*, August 2003;
- “*Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act*,” 2011;
- “*Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act*,” March 2004 (amended as of July 1, 2011);
- *Ontario Regulation 153/04 (made under the Environmental Protection Act)*, May 2004 (as amended by O. Reg. 511/09 and O. Reg. 179/11;
- *Environmental Protection Act*, R.S.O. 1990, Chapter E.19, as amended, September 2004;
- “*Phase One Environmental Site Assessment, 3025 Albion Road North, Ottawa, Ontario*,” EXP Services Inc., September 2018.
- “*Phase I Environmental Site Assessment, 3025 Albion Road, Ottawa, Ontario*”, Trow Associates Inc., (former identity of EXP Services Inc.), September 2008.
- “*Phase II ESA, Ellwood MTS, 3025 Albion Road North, Ottawa, Ontario*”, Trow Associates Inc., May, 2008.
- “*Phase III ESA 3025 Albion Road, Ottawa, Ontario*”, Enviro-Experts, February 21, 2018.
- “*Phase II ESA 3025 Albion Road North, Ottawa, Ontario*”, EXP Services Inc., .December, 2015.

9. 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 subject property. The conclusions and recommendations presented in this report reflect Phase Two Property conditions existing at the time of the investigation (November 2016).

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 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 completed to address the intent of applicable provincial Regulations, Guidelines, Policies, Standards, Protocols and Objectives administered by the Ministry of Environment and Climate Change. 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.

This report was prepared for the exclusive use of Ahlul-Bayt Center Ottawa and may not be reproduced in whole or in part, without the prior written consent of EXP, or used or relied upon in whole or in part by other parties for any purposes whatsoever. Any use which a third party makes of this report, or any part thereof, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. EXP Services Inc. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

We trust this report is satisfactory for your purposes. Should you have any questions, please do not hesitate to contact this office.

Yours truly,

EXP Services Inc.

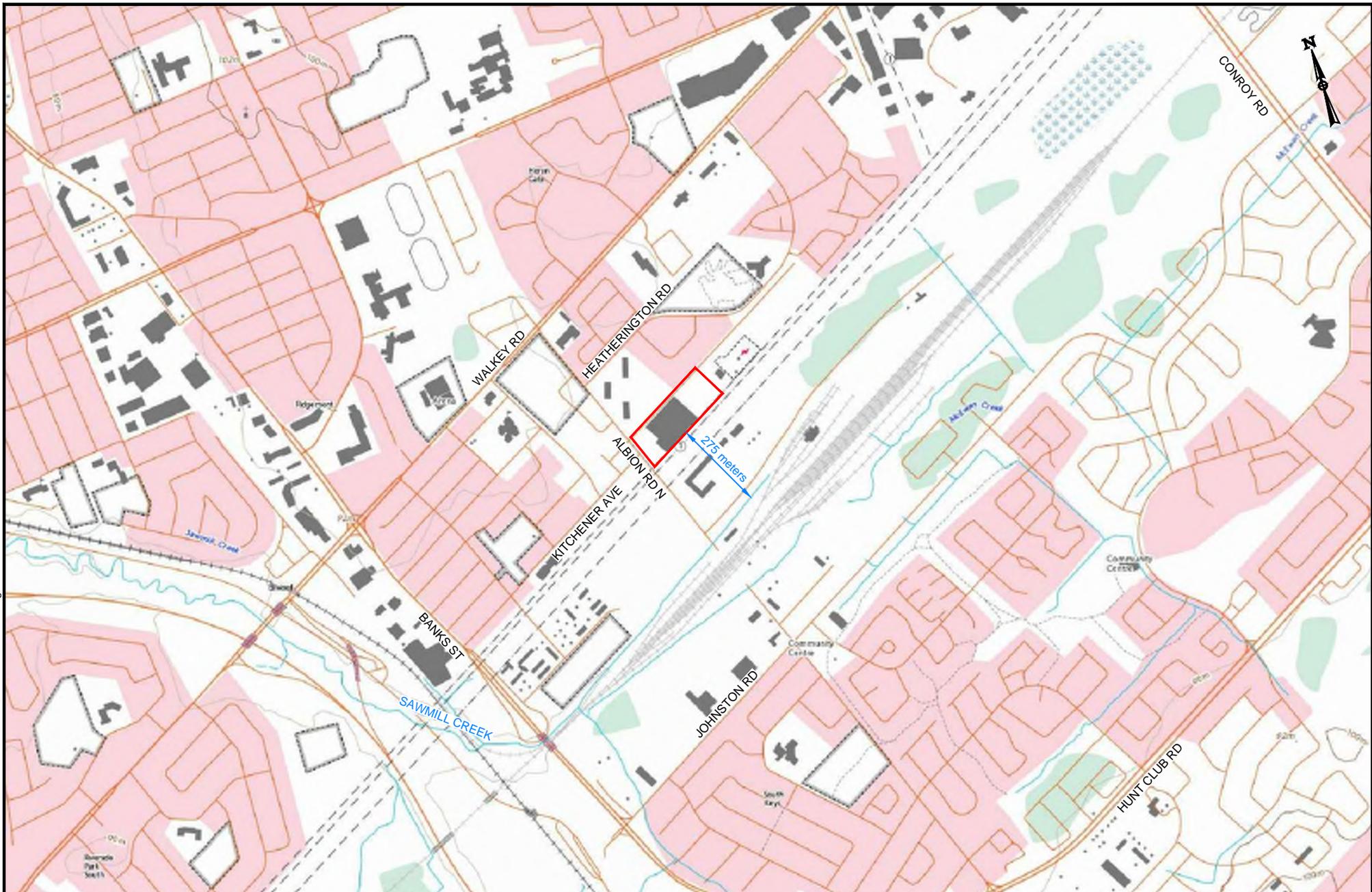


Mark McCalla, P. Geo. QP_{ESA}
Environmental Geoscientist
Earth and Environment



Robert Renaud, P. Geo. QP_{ESA}
Environmental Geoscientist
Earth and Environment

Figures



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LEGEND:
— APPROXIMATE SITE BOUNDARY

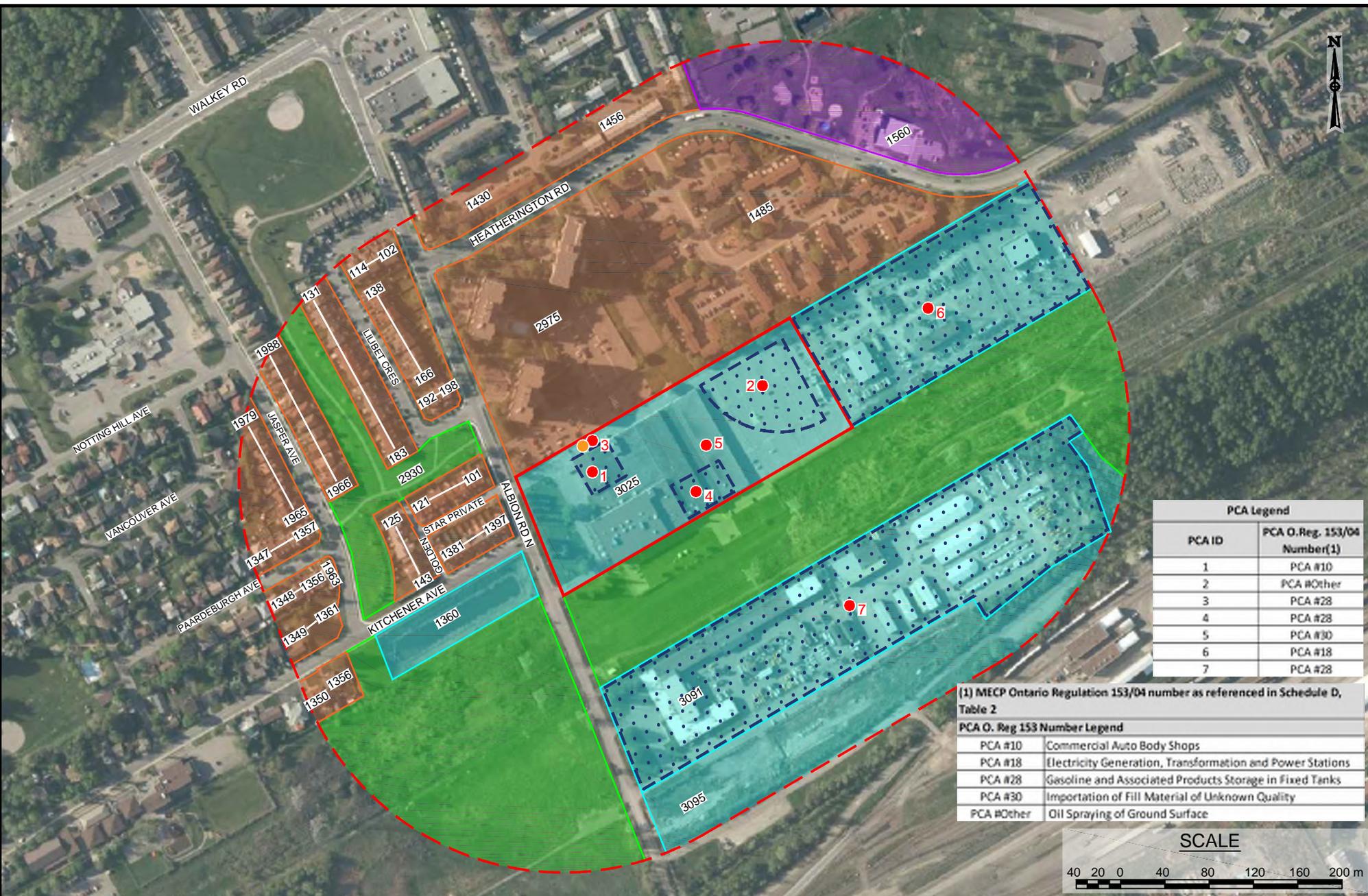
SCALE



TITLE AND LOCATION:

SITE LOCATION PLAN
 RISK ASSESSMENT
 3025 ALBION ROAD NORTH
 OTTAWA, ONTARIO

PROJECT NO.:	DWN.:
OTT-00246047-D0	DP
SCALE:	CK:
AS NOTED	PV
DATE:	FIG. NO.:
DECEMBER 2018	1



PCA Legend	
PCA ID	PCA O.Reg. 153/04 Number(1)
1	PCA #10
2	PCA #Other
3	PCA #28
4	PCA #28
5	PCA #30
6	PCA #18
7	PCA #28

(1) MECP Ontario Regulation 153/04 number as referenced in Schedule D, Table 2

PCA O. Reg 153 Number Legend	
PCA #10	Commercial Auto Body Shops
PCA #18	Electricity Generation, Transformation and Power Stations
PCA #28	Gasoline and Associated Products Storage in Fixed Tanks
PCA #30	Importation of Fill Material of Unknown Quality
PCA #Other	Oil Spraying of Ground Surface



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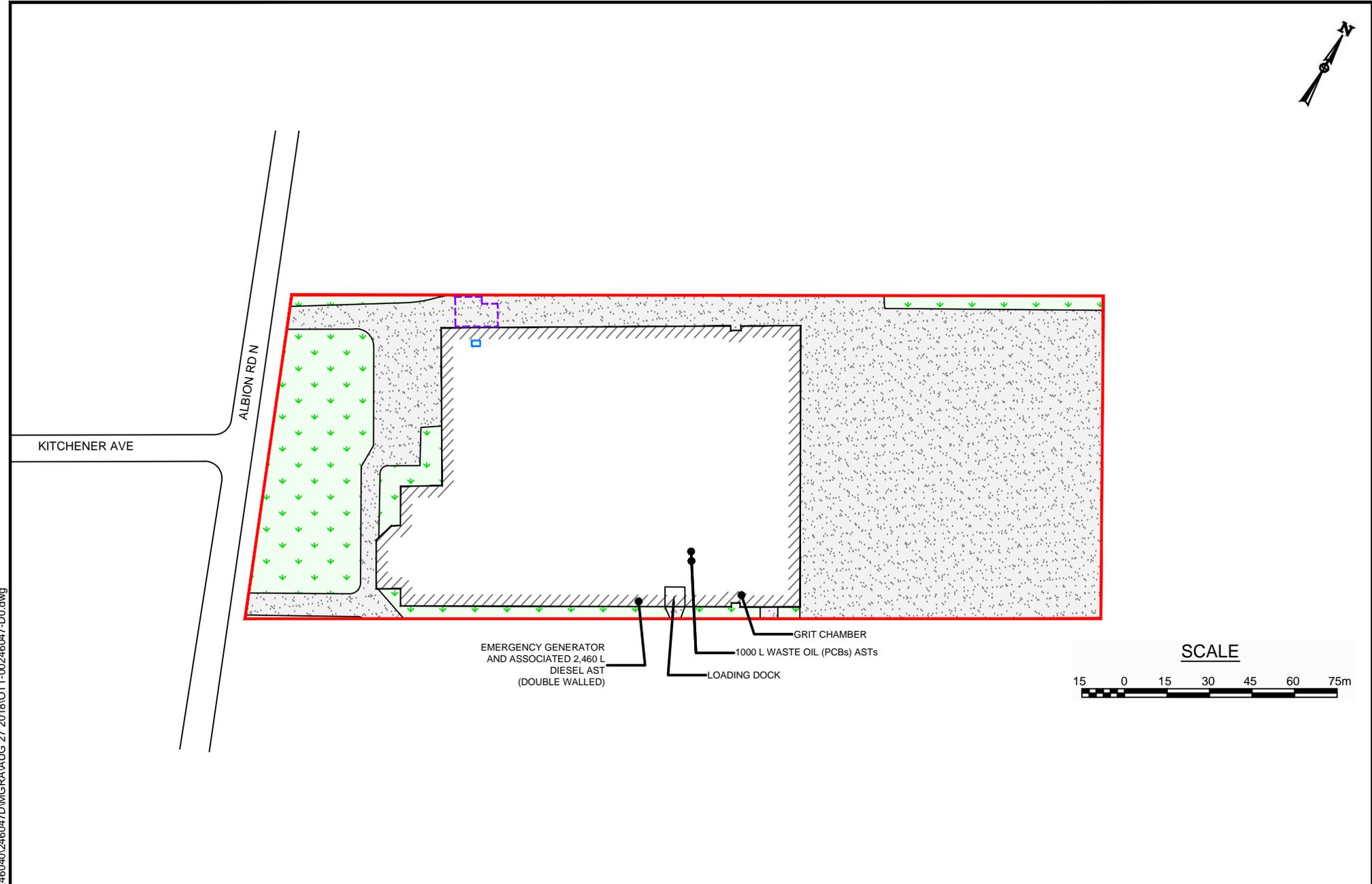
LEGEND:

- APPROXIMATE SITE BOUNDARY
- PHASE ONE STUDY AREA
- PCA IDENTIFIER
- APPROXIMATE EXTENT OF PCA
- RESIDENTIAL
- INDUSTRIAL
- COMMUNITY
- OPEN SPACE / VACANT
- APPROXIMATE LOCATION OF UST

TITLE AND LOCATION:
**SURROUNDING LAND USE PLAN,
 PHASE ONE STUDY AREA AND PCAs**
 RISK ASSESSMENT
 3025 ALBION ROAD NORTH
 OTTAWA, ONTARIO

PROJECT NO.:	DWN.:
OTT-00246047-D0	DP
SCALE:	CK:
AS NOTED	PV
DATE:	FIG. NO.:
DECEMBER 2018	2

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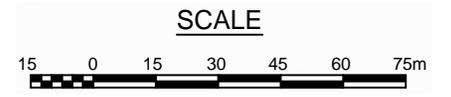


EMERGENCY GENERATOR AND ASSOCIATED 2,460 L DIESEL AST (DOUBLE WALLED)

LOADING DOCK

GRIT CHAMBER

1000 L WASTE OIL (PCBs) ASTs



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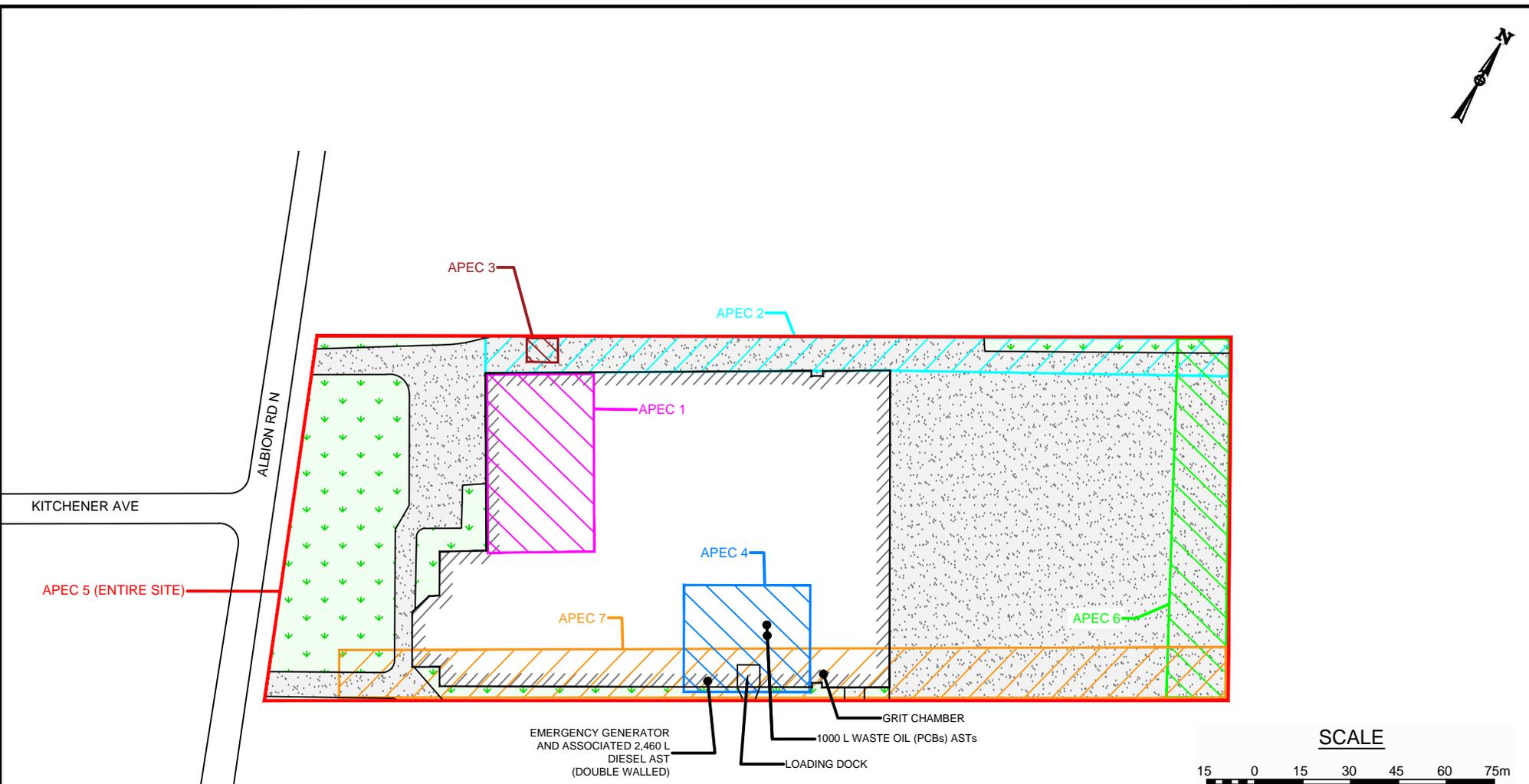
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LEGEND:	
	APPROXIMATE SITE BOUNDARY
	BUILDING FOOTPRINT
	LANDSCAPED AREA
	ASPHALT / CONCRETE
	EXTENT OF EXCAVATION 1 (PHC)
	EXTENT OF EXCAVATION 2 (CYANIDE)

TITLE AND LOCATION:

SITE PLAN
 RISK ASSESSMENT
 3025 ALBION ROAD NORTH
 OTTAWA, ONTARIO

PROJECT NO.:	OTT-00246047-D0	DWN.:	DP
SCALE:	AS NOTED	CK:	PV
DATE:	DECEMBER 2018	FIG. NO.:	3



Areas of Potential Environmental Concern (APECs)

APEC Number	APEC Description	PCA O.Reg. 153/04 Number ¹¹⁰
1	Former vehicle repair shop in the northwest part of the on-Site building.	PCA #10 - Commercial Auto Body Shops
2	Former spraying of road and baseball diamond with oil to manage dust.	PCA #Other - Oil Spraying of Ground Surface
3	Former UST and pump island located north of the Site building.	PCA #28 – Gasoline and Associated Products Stored in Fixed Tanks
4	Presence of waste oil ASTs, new oil storage, hydraulic lift, an emergency generator diesel storage tank.	PCA #28 – Gasoline and Associated Products Stored in Fixed Tanks
5	Importation of fill material during Site development, beginning in 1956.	PCA #30 – Importation of Fill Material of Unknown Quality
6	Operating hydro station with PCB storage facilities, a diesel AST and transformer storage.	PCA #18 - Electricity Generation, Transformation and Power Stations
7	Former off-Site works yard with a PCB storage facility and USTs.	PCA #28 – Gasoline and Associated Products Stored in Fixed Tanks

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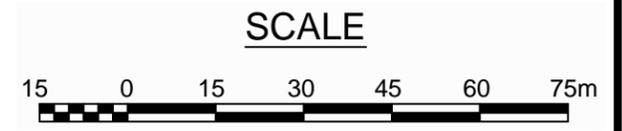
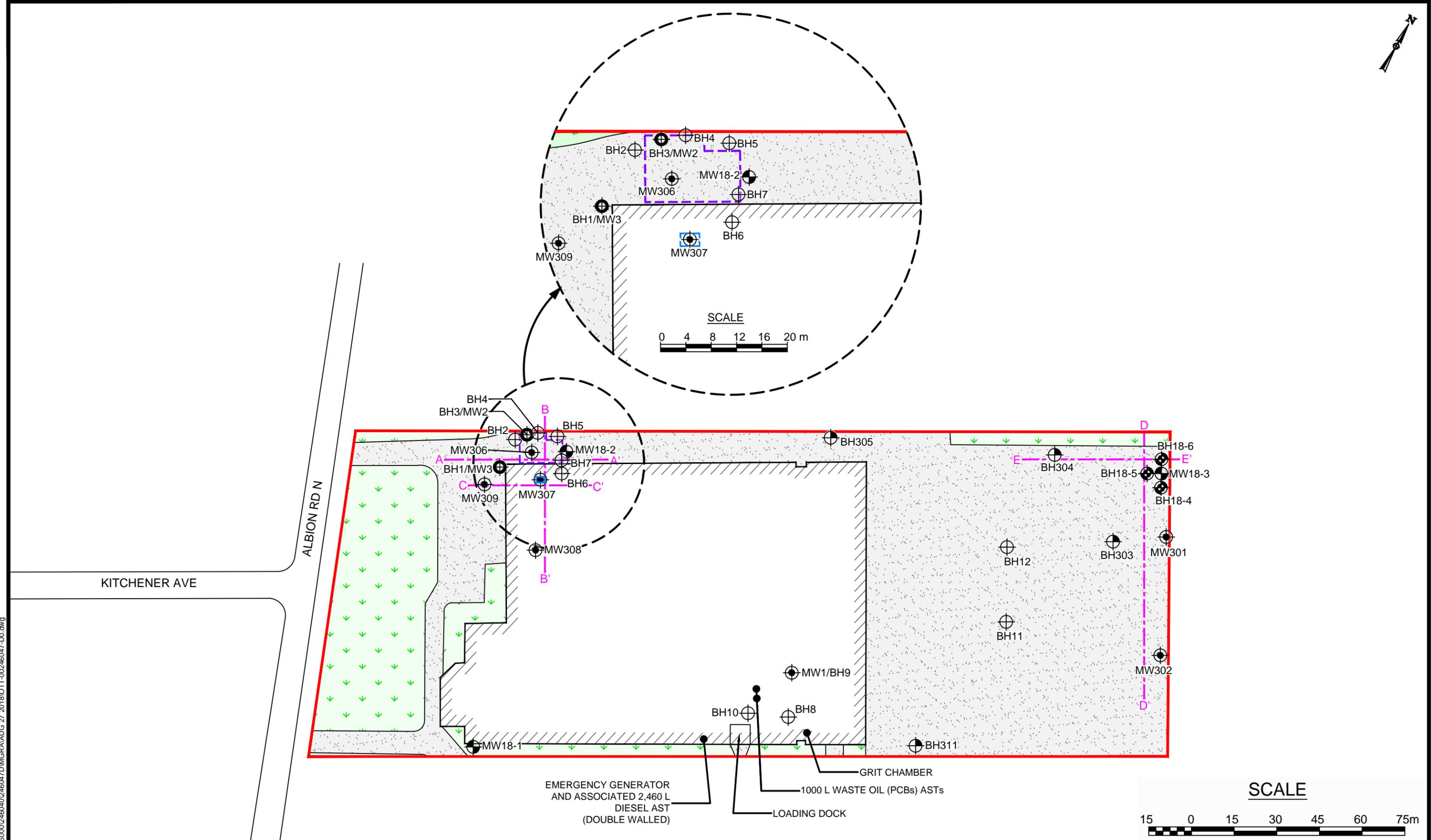
- APPROXIMATE SITE BOUNDARY
- BUILDING FOOTPRINT
- LANDSCAPED AREA
- ASPHALT / CONCRETE

TITLE AND LOCATION:

SITE PLAN AND APECs
 RISK ASSESSMENT
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PROJECT NO.:	OTT-00246047-D0	DWN.:	DP
SCALE:	AS NOTED	CK:	PV
DATE:	DECEMBER 2018	FIG. NO.:	4

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LEGEND:
 - - - - - APPROXIMATE SITE BOUNDARY
 // // // BUILDING FOOTPRINT
 [Green Area with Arrows] LANDSCAPED AREA
 [Stippled Area] ASPHALT / CONCRETE

- - - - - EXTENT OF EXCAVATION 1 (PHC)
 - - - - - EXTENT OF EXCAVATION 2 (CYANIDE)
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 [Circle with Center] BOREHOLE / MONITORING WELL LOCATION (EXP, 2016)

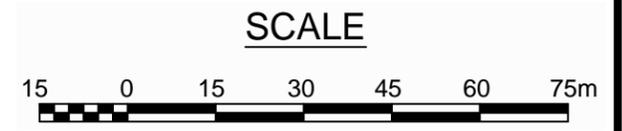
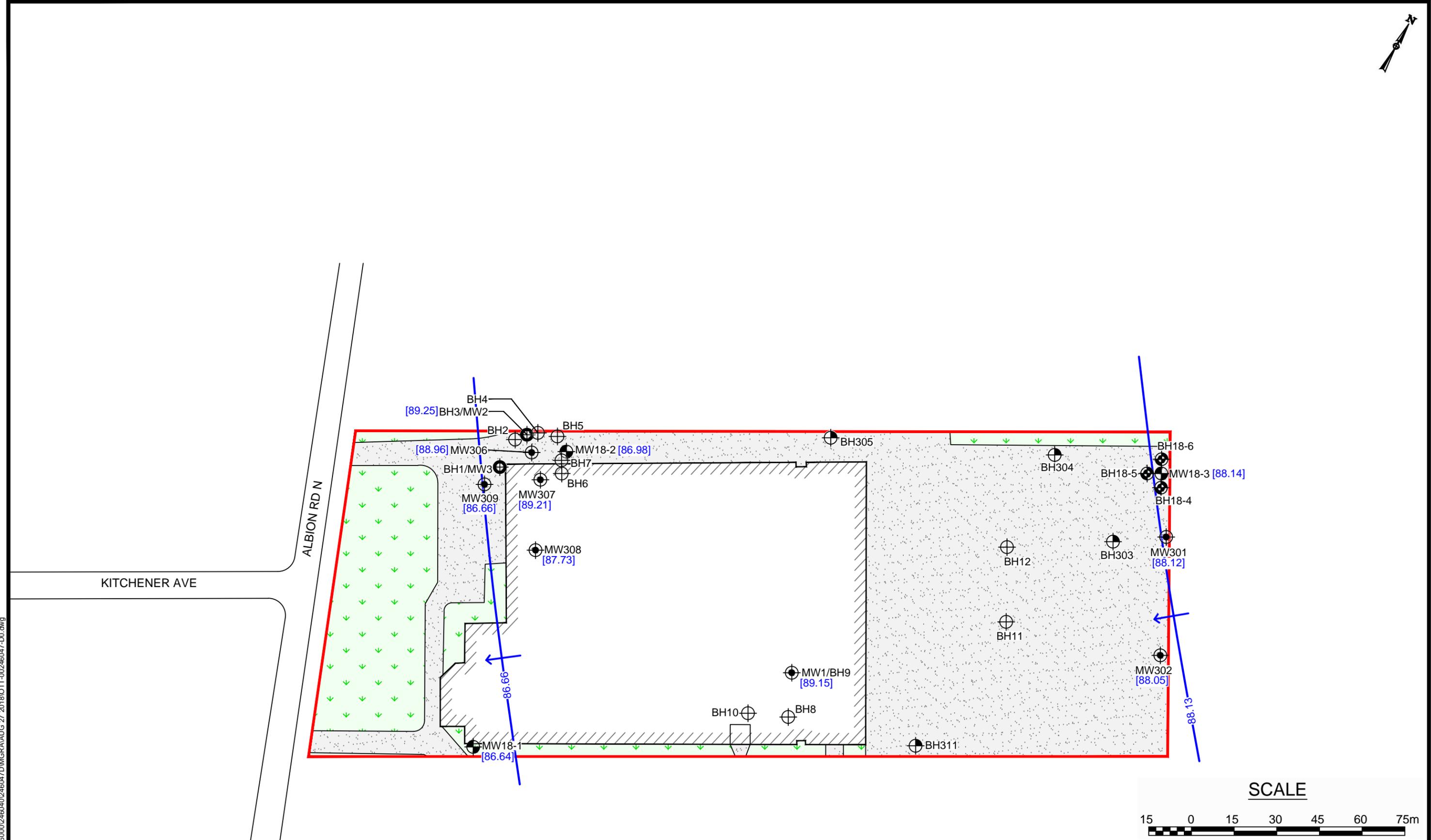
[Circle with Center] BOREHOLE LOCATION (ENVIRO-EXPERTS, 2018)
 [Circle with Center] BOREHOLE / MONITORING WELL LOCATION (ENVIRO-EXPERTS, 2018)
 [Circle with Center] BOREHOLE / MONITORING WELL LOCATION (EXP, 2018)

[Circle with Center] BOREHOLE LOCATION (EXP, 2018)
 A-A' CROSS SECTION A-A' (SEE FIGURE 17)
 B-B' CROSS SECTION B-B' (SEE FIGURE 18)
 C-C' CROSS SECTION C-C' (SEE FIGURE 19)
 D-D' CROSS SECTION D-D' (SEE FIGURE 20)
 E-E' CROSS SECTION E-E' (SEE FIGURE 21)

TITLE AND LOCATION:
BOREHOLE / MONITORING WELL LOCATION PLAN
 RISK ASSESSMENT
 3025 ALBION ROAD NORTH
 OTTAWA, ONTARIO

JOB NO.: OTT-00246047-D0	DRAWN BY: DP
SCALE: AS NOTED	CHECKED BY: PV
DATE: DECEMBER 2018	FIG NO.: 5

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LEGEND:
 — APPROXIMATE SITE BOUNDARY
 ▨ BUILDING FOOTPRINT
 ▾ LANDSCAPED AREA
 ▨ ASPHALT / CONCRETE

⊕ BOREHOLE LOCATION (EXP, 2016)
 ⊕ BOREHOLE / MONITORING WELL LOCATION (EXP, 2016)
 ⊕ BOREHOLE LOCATION (ENVIRO-EXPERTS, 2018)

⊕ BOREHOLE / MONITORING WELL LOCATION (ENVIRO-EXPERTS, 2018)
 ⊕ BOREHOLE / MONITORING WELL LOCATION (EXP, 2018)

⊕ BOREHOLE LOCATION (EXP, 2018)
 ~ GROUNDWATER CONTOURS
 [86.64] GROUNDWATER ELEVATION AS MEASURED IN JUNE 2018
 → GROUNDWATER FLOW DIRECTION

TITLE AND LOCATION:
GROUNDWATER CONTOUR PLAN
 RISK ASSESSMENT
 3025 ALBION ROAD NORTH
 OTTAWA, ONTARIO

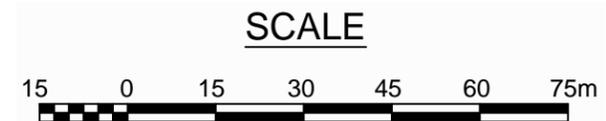
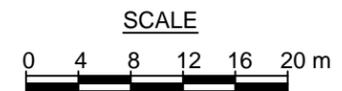
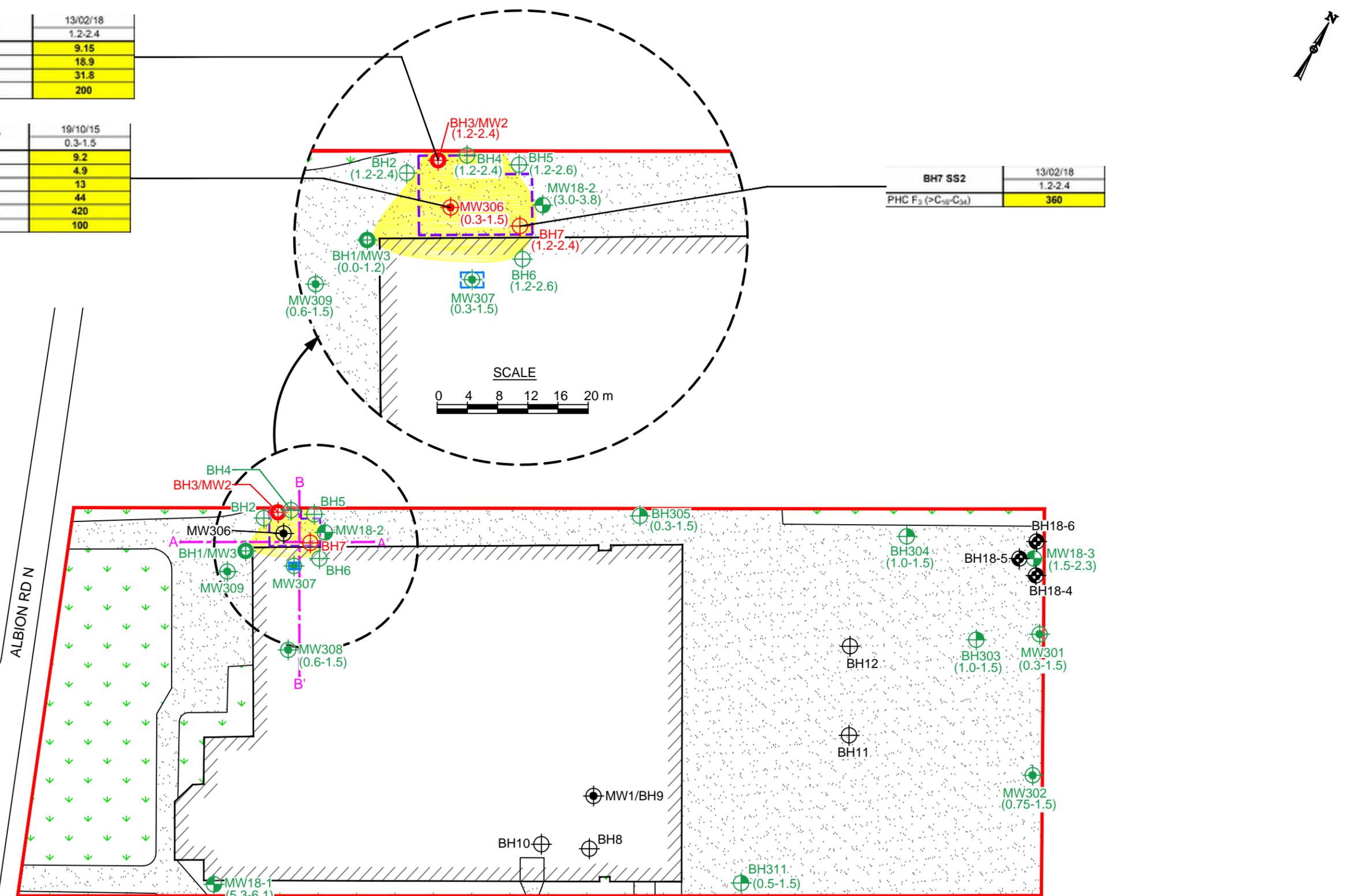
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SCALE: AS NOTED	CHECKED BY: PV
DATE: DECEMBER 2018	FIG NO.: 7

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BH3 SS2*	
Parameter	Concentration (µg/g)
Benzene	9.15
Ethylbenzene	18.9
Xylenes	31.8
PHC F ₁ (>C ₆ -C ₁₀)	200

MW306 SS1*	
Parameter	Concentration (µg/g)
Benzene	9.2
Toluene	4.9
Ethylbenzene	13
Xylenes	44
PHC F ₁ (>C ₆ -C ₁₀)	420
PHC F ₂ (>C ₁₀ -C ₁₆)	100

BH7 SS2	
Parameter	Concentration (µg/g)
PHC F ₃ (>C ₁₉ -C ₃₄)	360



Legend

BH1	Date
Parameter	Sample Depth (m bgs)
Parameter	Concentration (µg/g)
Benzene	0.21
Toluene	2.3
Ethylbenzene	2
Xylenes	3.1
PHC F ₁ (>C ₆ -C ₁₀)	55
PHC F ₂ (>C ₁₀ -C ₁₆)	98
PHC F ₃ (>C ₁₆ -C ₃₄)	300

MECP Table 3 SCS = Ministry of the Environment, Conservation and Parks Table 3 Full Depth Generic Site Condition Standards in a Non-Potable Groundwater Condition (residential/parkland/institutional land use) with coarse textured soil.

Bold Parameter exceeds Table 3 SCS.

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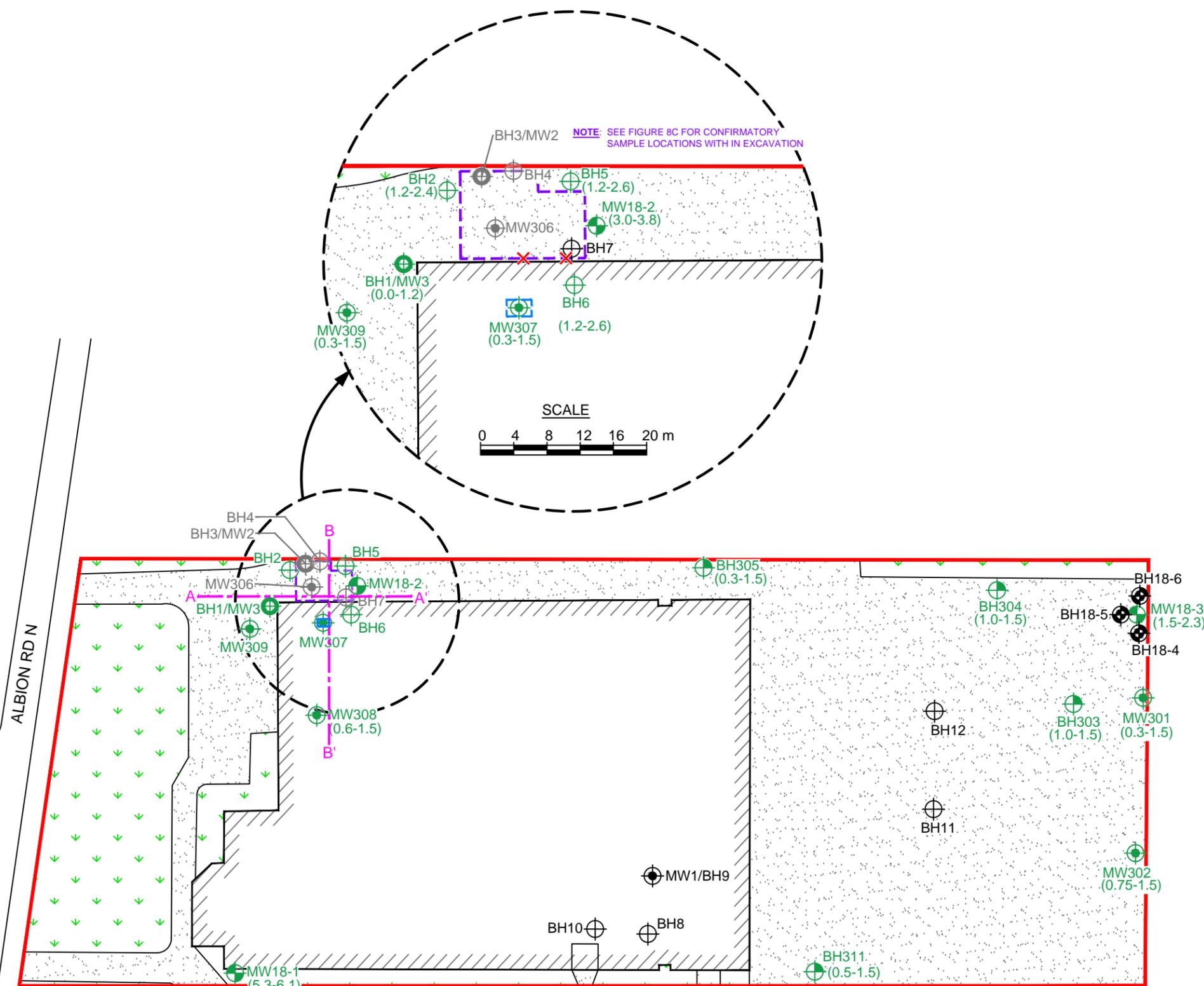
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- LEGEND:**
- APPROXIMATE SITE BOUNDARY
 - EXTENT OF EXCAVATION 1 (PHC)
 - EXTENT OF EXCAVATION 2 (CYANIDE)
 - ⊕ BOREHOLE LOCATION (ENVIRO-EXPERTS, 2018)
 - ⊕ BOREHOLE / MONITORING WELL LOCATION (ENVIRO-EXPERTS, 2018)
 - ⊕ BOREHOLE LOCATION (EXP, 2016)
 - ⊕ BOREHOLE LOCATION (EXP, 2018)
 - ⊕ BOREHOLE / MONITORING WELL LOCATION (EXP, 2016)
 - ⊕ BOREHOLE / MONITORING WELL LOCATION (EXP, 2018)
 - (X.X-X.X) SAMPLE DEPTH (mbgs)
 - ⊕ SAMPLE MEETS TABLE 3 SCS
 - ⊕ SAMPLE EXCEEDS TABLE 3 SCS
 - EXTENT OF IMPACT

TITLE AND LOCATION:		JOB NO.:	DRAWN BY:
PHC AND BTEX IMPACTS IN SOIL		OTT-00246047-D0	DP
PRE REMEDIATION RISK ASSESSMENT		SCALE:	CHECKED BY:
3025 ALBION ROAD NORTH		AS NOTED	PV
OTTAWA, ONTARIO		DATE:	FIG NO.:
		DECEMBER 2018	8A

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Legend

BH1	Date
Parameter	Sample Depth (m bgs)
	Concentration (µg/g)
Parameter	MECP Table 3 SCS (µg/g)
Benzene	0.21
Toluene	2.3
Ethylbenzene	2
Xylenes	3.1
PHC F ₁ (>C ₆ -C ₁₀)	55
PHC F ₂ (>C ₁₀ -C ₁₄)	98
PHC F ₃ (>C ₁₄ -C ₃₄)	300

MECP Table 3 SCS = Ministry of the Environment, Conservation and Parks Table 3 Full Depth Generic Site Condition Standards in a Non-Potable Groundwater Condition (residential/parkland/institutional land use) with coarse textured soil.

Bold Parameter exceeds Table 3 SCS.



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LEGEND:

- APPROXIMATE SITE BOUNDARY
- EXTENT OF EXCAVATION 1 (PHC)
- EXTENT OF EXCAVATION 2 (CYANIDE)
- ▨ BUILDING FOOTPRINT
- ▭ LANDSCAPED AREA
- ▨ ASPHALT / CONCRETE
- ⊕ BOREHOLE LOCATION (ENVIRO-EXPERTS, 2018)
- ⊕ BOREHOLE / MONITORING WELL LOCATION (ENVIRO-EXPERTS, 2018)
- ⊕ BOREHOLE LOCATION (EXP, 2016)
- ⊕ BOREHOLE LOCATION (EXP, 2018)
- ⊕ BOREHOLE / MONITORING WELL REMOVED DURING EXCAVATION
- ⊕ BOREHOLE / MONITORING WELL LOCATION (EXP, 2016)
- (x.x-x.x) SAMPLE DEPTH (mbgs)
- ⊕ SAMPLE MEETS TABLE 3 SCS
- ⊕ SAMPLE EXCEEDS TABLE 3 SCS
- ⊕ BOREHOLE / MONITORING WELL REMOVED DURING EXCAVATION
- ⊕ BOREHOLE / MONITORING WELL LOCATION (EXP, 2018)
- ⊕ EXCAVATION WALL SAMPLE WHICH STILL EXCEEDS TABLE 3 SCS

TITLE AND LOCATION:
 PHC AND BTEX IMPACTS IN SOIL
 POST REMEDIATION RISK ASSESSMENT
 3025 ALBION ROAD NORTH
 OTTAWA, ONTARIO

JOB NO.: OTT-00246047-DO

SCALE: AS NOTED

DATE: DECEMBER 2018

DRAWN BY: DP

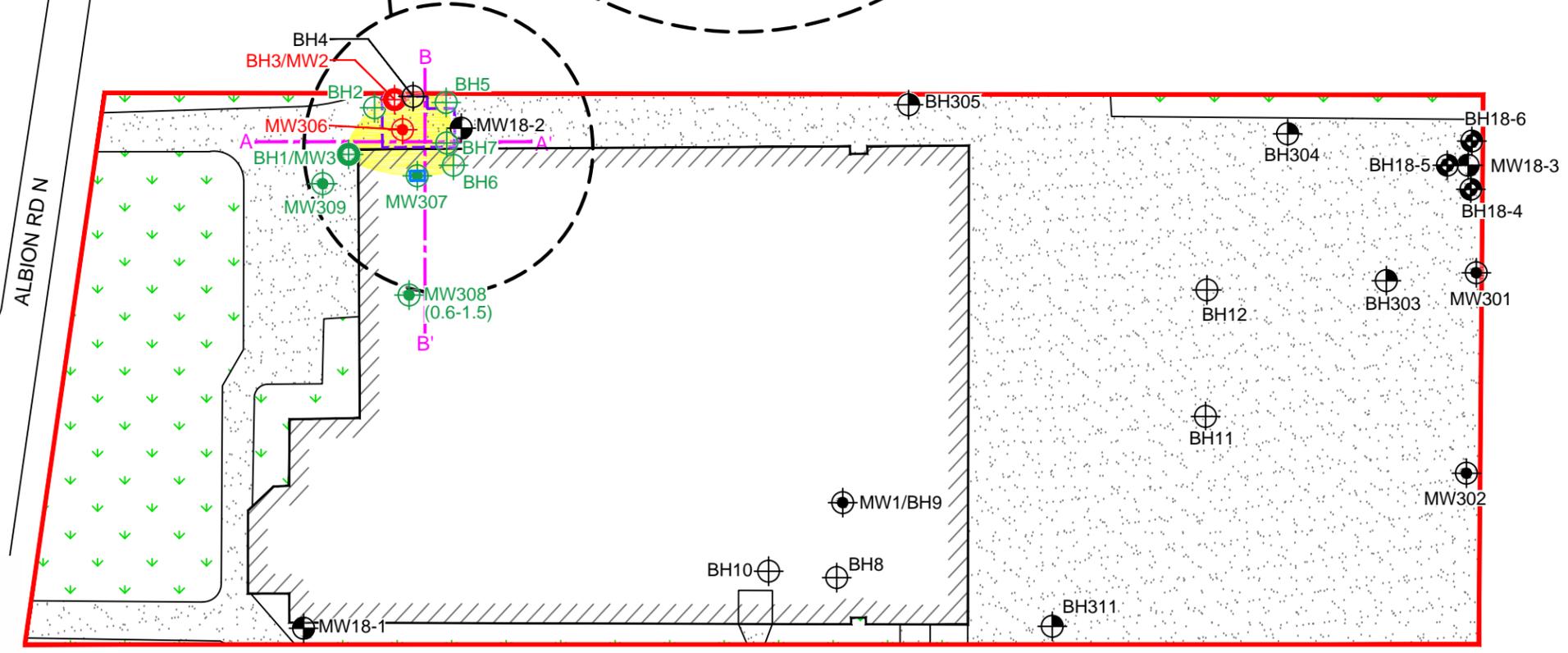
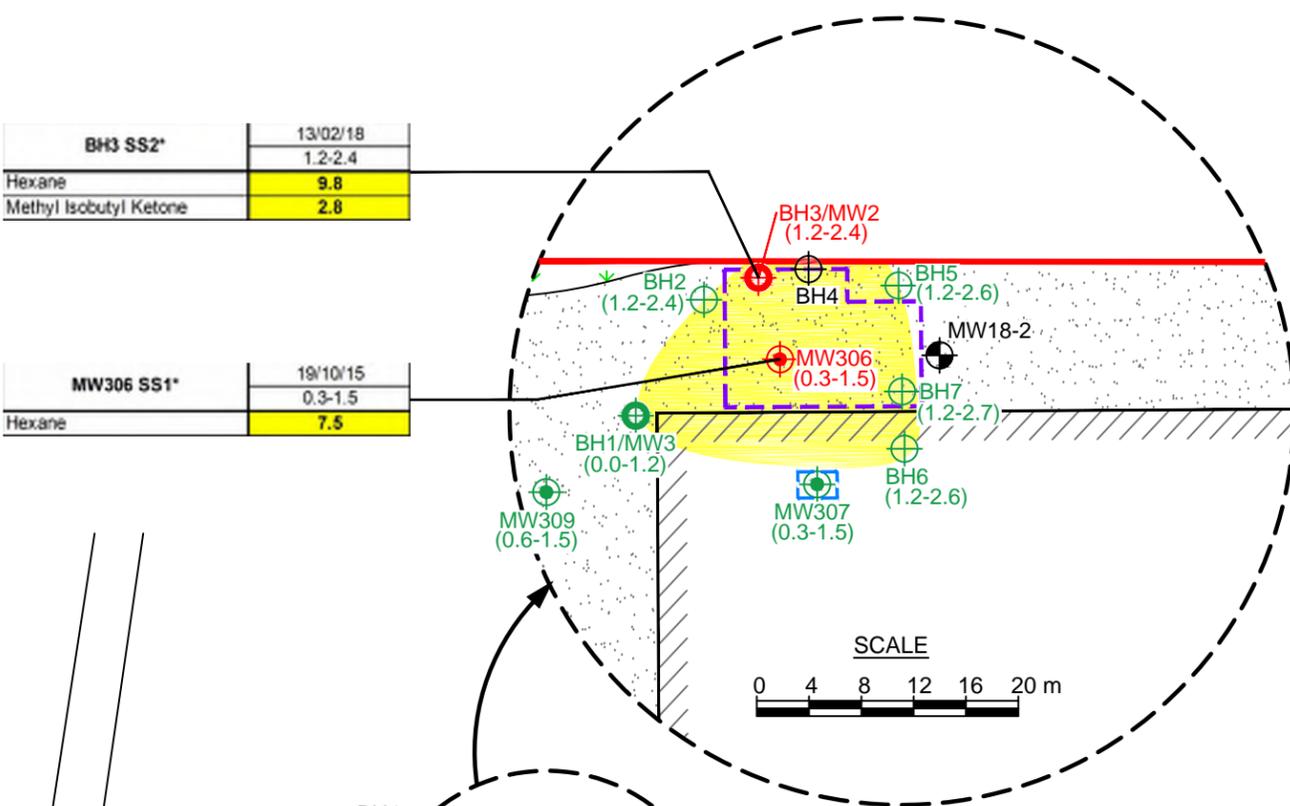
CHECKED BY: PV

FIG NO.: 8B



BH3 SS2*	13/02/18
Hexane	9.8
Methyl Isobutyl Ketone	2.8

MW306 SS1*	19/10/15
Hexane	7.5



Parameter	MECP Table 3 SCS (µg/g)
Hexane	2.8
Methyl Isobutyl Ketone	1.7

MECP Table 3 SCS = Ministry of the Environment, Conservation and Parks Table 3 Full Depth Generic Site Condition Standards in a Non-Potable Groundwater Condition (residential/parkland/institutional land use) with coarse textured soil.

Bold Parameter exceeds Table 3 SCS.



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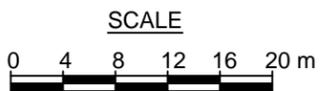
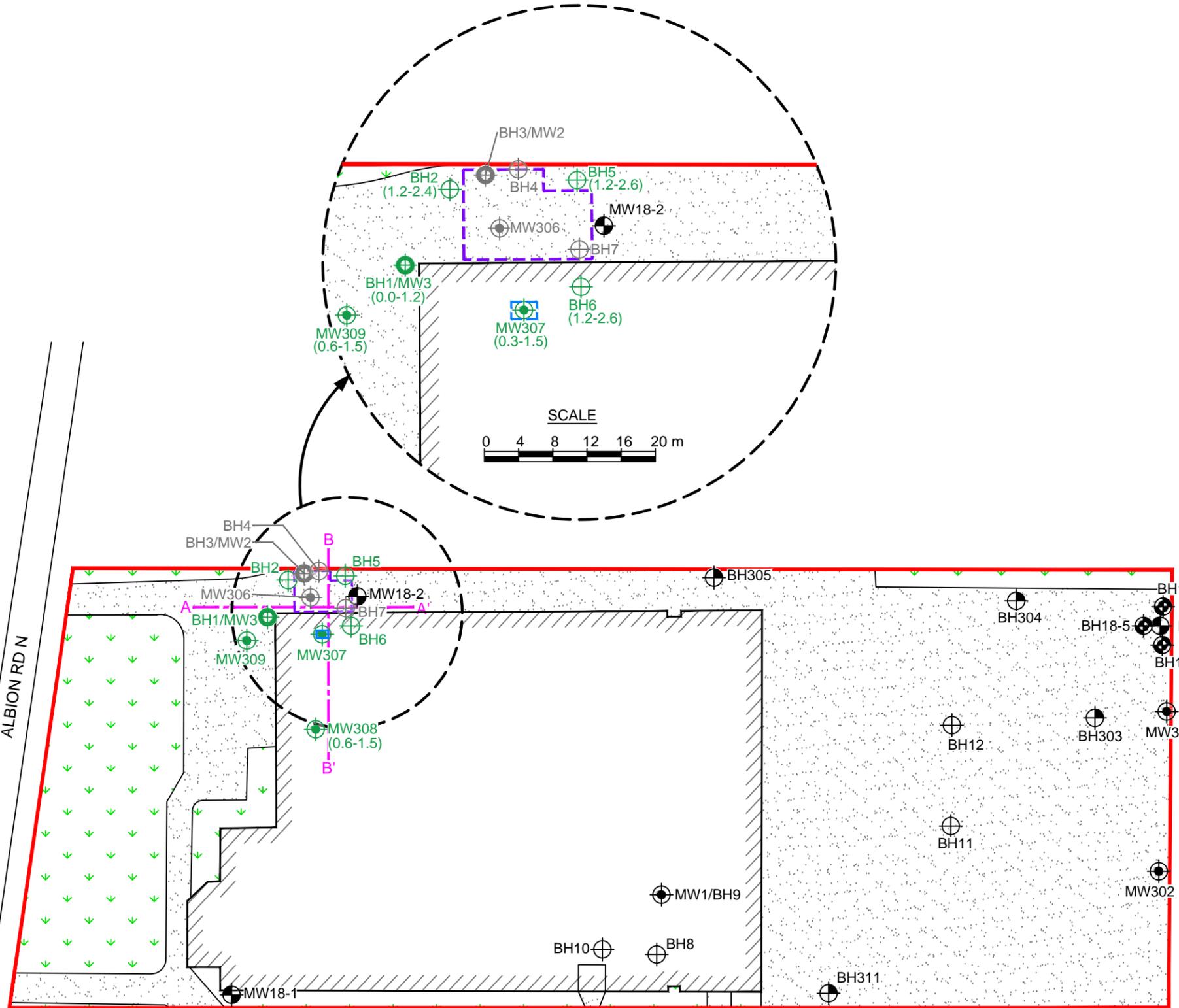
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LEGEND:

- APPROXIMATE SITE BOUNDARY
- EXTENT OF EXCAVATION 1 (PHC)
- EXTENT OF EXCAVATION 2 (CYANIDE)
- BUILDING FOOTPRINT
- LANDSCAPED AREA
- ASPHALT / CONCRETE
- BOREHOLE LOCATION (ENVIRO-EXPERTS, 2018)
- BOREHOLE / MONITORING WELL LOCATION (ENVIRO-EXPERTS, 2018)
- BOREHOLE LOCATION (EXP, 2016)
- BOREHOLE / MONITORING WELL LOCATION (EXP, 2016)
- BOREHOLE LOCATION (EXP, 2018)
- BOREHOLE / MONITORING WELL LOCATION (EXP, 2018)
- (X.X-X.X) SAMPLE DEPTH (mbgs)
- SAMPLE MEETS TABLE 3 SCS
- SAMPLE EXCEEDS TABLE 3 SCS
- EXTENT OF IMPACT

TITLE AND LOCATION:
VOC (NOT INCLUDING BTEX)
IMPACTS IN SOIL
 PRE REMEDIATION
 RISK ASSESSMENT
 3025 ALBION ROAD NORTH
 OTTAWA, ONTARIO

JOB NO.:	OTT-00246047-D0	DRAWN BY:	DP
SCALE:	AS NOTED	CHECKED BY:	PV
DATE:	DECEMBER 2018	FIG NO.:	9A



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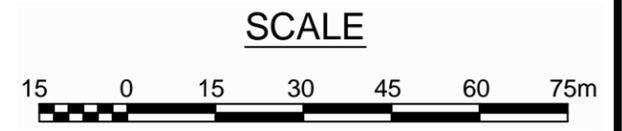
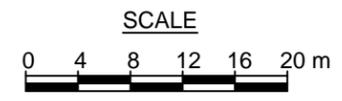
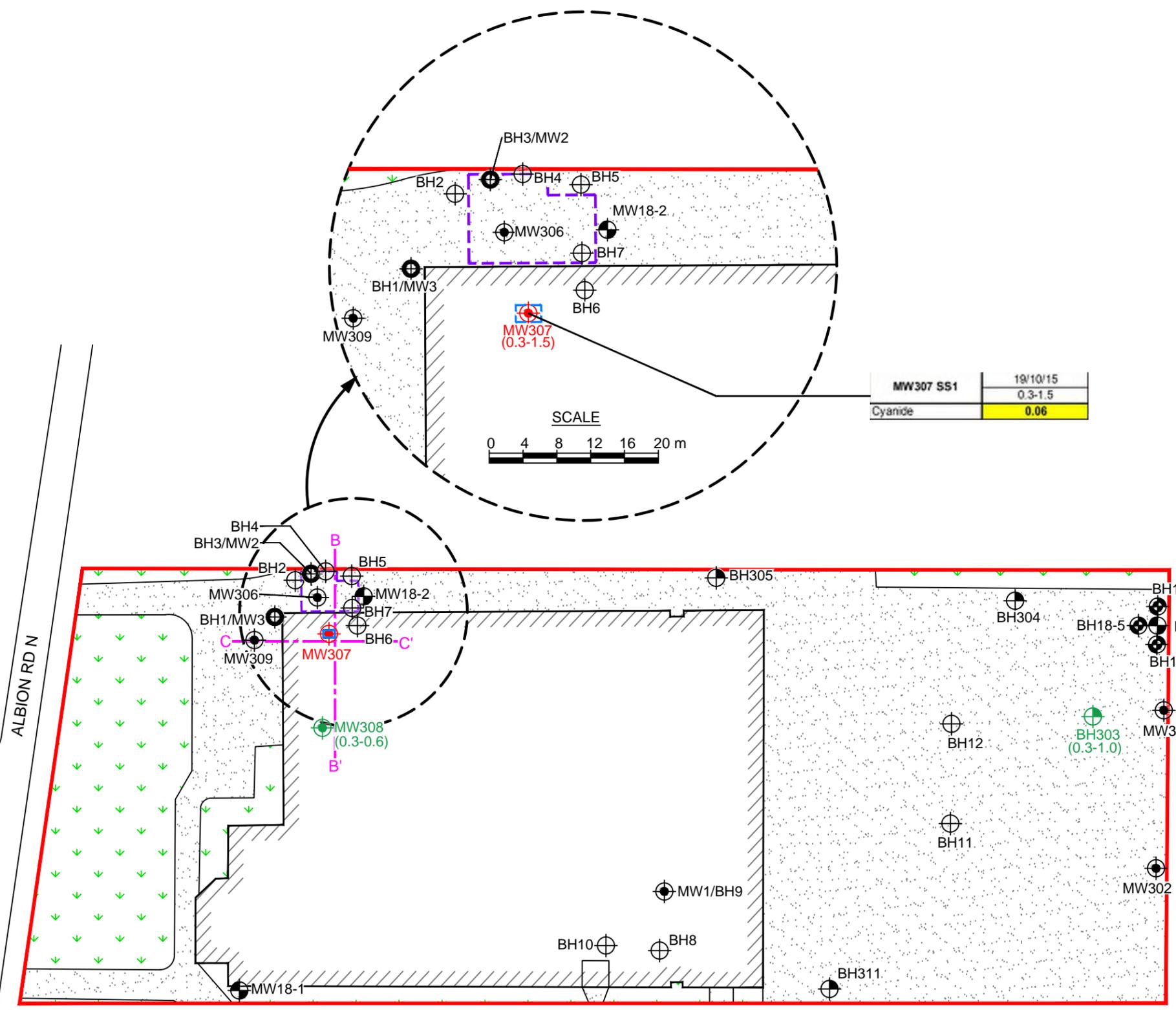
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LEGEND:	
	APPROXIMATE SITE BOUNDARY
	BUILDING FOOTPRINT
	LANDSCAPED AREA
	ASPHALT / CONCRETE
	EXTENT OF EXCAVATION 1 (PHC)
	EXTENT OF EXCAVATION 2 (CYANIDE)
	BOREHOLE LOCATION (EXP, 2016)
	BOREHOLE / MONITORING WELL LOCATION (EXP, 2016)
	BOREHOLE LOCATION (EXP, 2018)
	BOREHOLE / MONITORING WELL LOCATION (EXP, 2018)
	BOREHOLE LOCATION (ENVIRO-EXPERTS, 2018)
	BOREHOLE / MONITORING WELL LOCATION (ENVIRO-EXPERTS, 2018)
	(X.X-X.X) SAMPLE DEPTH (mbgs) SAMPLE MEETS TABLE 3 SCS
	SAMPLE EXCEEDS TABLE 3 SCS
	BOREHOLE / MONITORING WELL REMOVED DURING EXCAVATION

TITLE AND LOCATION:
VOC (NOT INCLUDING BTEX)
IMPACTS IN SOIL
POST REMEDIATION
RISK ASSESSMENT
 3025 ALBION ROAD NORTH
 OTTAWA, ONTARIO

JOB NO.: OTT-00246047-D0	DRAWN BY: DP
SCALE: AS NOTED	CHECKED BY: PV
DATE: DECEMBER 2018	FIG NO.: 9B



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Legend

BH1	Date
Parameter	Sample Depth (m bgs)
	Concentration (µg/g)

Parameter	MECP Table 3 SCS (µg/g)
Cyanide	0.051

MECP Table 3 SCS = Ministry of the Environment, Conservation and Parks Table 3 Full Depth Generic Site Condition Standards in a Non-Potable Groundwater Condition (residential/parkland/institutional land use) with coarse textured soil.
Bold Parameter exceeds Table 3 SCS.

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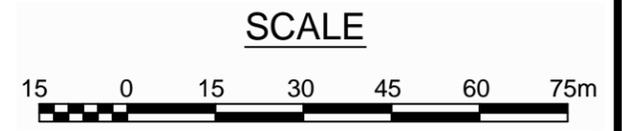
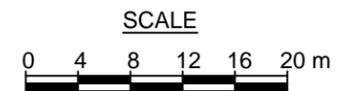
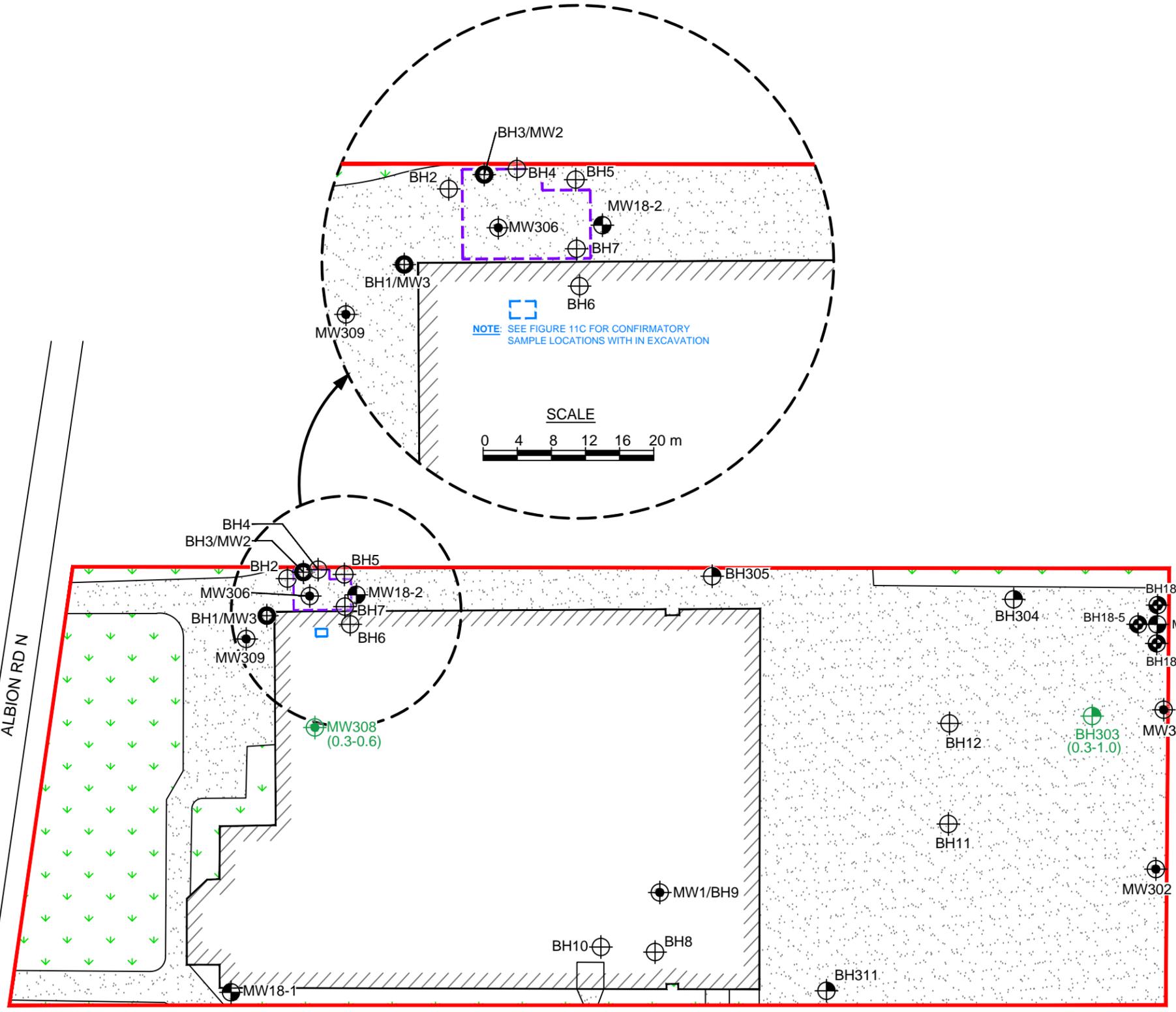
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LEGEND:

- APPROXIMATE SITE BOUNDARY
- EXTENT OF EXCAVATION 1 (PHC)
- EXTENT OF EXCAVATION 2 (CYANIDE)
- BUILDING FOOTPRINT
- LANDSCAPED AREA
- ASPHALT / CONCRETE
- BOREHOLE LOCATION (EXP, 2016)
- BOREHOLE LOCATION (EXP, 2018)
- BOREHOLE / MONITORING WELL LOCATION (ENVIRO-EXPERTS, 2018)
- BOREHOLE / MONITORING WELL LOCATION (EXP, 2016)
- BOREHOLE / MONITORING WELL LOCATION (EXP, 2018)
- BOREHOLE / MONITORING WELL LOCATION (EXP, 2018)
- (X.X-X.X) SAMPLE DEPTH (mbgs)
- SAMPLE MEETS TABLE 3 SCS
- SAMPLE EXCEEDS TABLE 3 SCS

TITLE AND LOCATION:
CYANIDE IMPACTS IN SOIL
 PRE REMEDIATION
 RISK ASSESSMENT
 3025 ALBION ROAD NORTH
 OTTAWA, ONTARIO

JOB NO.: OTT-00246047-D0	DRAWN BY: DP
SCALE: AS NOTED	CHECKED BY: PV
DATE: DECEMBER 2018	FIG NO.: 11A



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Legend

BH1	Date
Parameter	Sample Depth (m bgs)
	Concentration (µg/g)

Parameter	MECP Table 3 SCS (µg/g)
Cyanide	0.051

MECP Table 3 SCS = Ministry of the Environment, Conservation and Parks Table 3 Full Depth Generic Site Condition Standards in a Non-Potable Groundwater Condition (residential/parkland/institutional land use) with coarse textured soil.
Bold Parameter exceeds Table 3 SCS.

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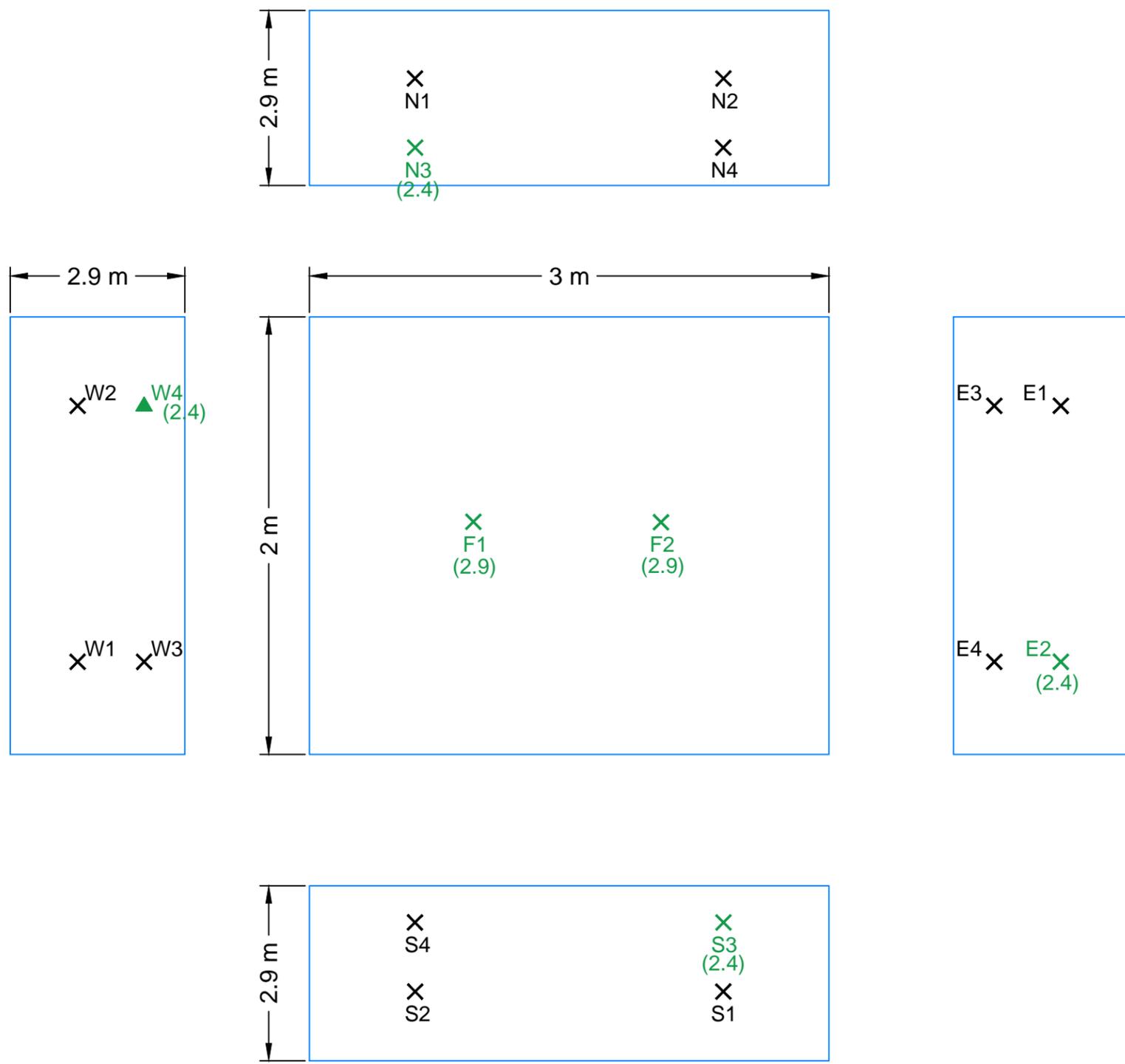
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LEGEND:

- APPROXIMATE SITE BOUNDARY
- EXTENT OF EXCAVATION 1 (PHC)
- EXTENT OF EXCAVATION 2 (CYANIDE)
- LANDSCAPED AREA
- BUILDING FOOTPRINT
- ASPHALT / CONCRETE
- BOREHOLE LOCATION (ENVIRO-EXPERTS, 2018)
- BOREHOLE / MONITORING WELL LOCATION (ENVIRO-EXPERTS, 2018)
- BOREHOLE LOCATION (EXP, 2016)
- BOREHOLE / MONITORING WELL LOCATION (EXP, 2016)
- BOREHOLE LOCATION (EXP, 2018)
- BOREHOLE / MONITORING WELL LOCATION (EXP, 2018)
- SAMPLE MEETS TABLE 3 SCS
- SAMPLE EXCEEDS TABLE 3 SCS
- (X.X-X.X) SAMPLE DEPTH (mbgs)

TITLE AND LOCATION:
 CYANIDE IMPACTS IN SOIL
 POST REMEDIATION
 RISK ASSESSMENT
 3025 ALBION ROAD NORTH
 OTTAWA, ONTARIO

JOB NO.: OTT-00246047-D0	DRAWN BY: DP
SCALE: AS NOTED	CHECKED BY: PV
DATE: DECEMBER 2018	FIG NO.: 11B



Legend

BH1	Date	
	Sample Depth (m bgs)	Concentration (µg/g)
Parameter		
Parameter	MECP Table 3 SCS (µg/g)	
Cyanide	0.051	

MECP Table 3 SCS = Ministry of the Environment, Conservation and Parks Table 3 Full Depth Generic Site Condition Standards in a Non-Potable Groundwater Condition (residential/parkland/institutional land use) with coarse textured soil.

Bold Parameter exceeds Table 3 SCS.



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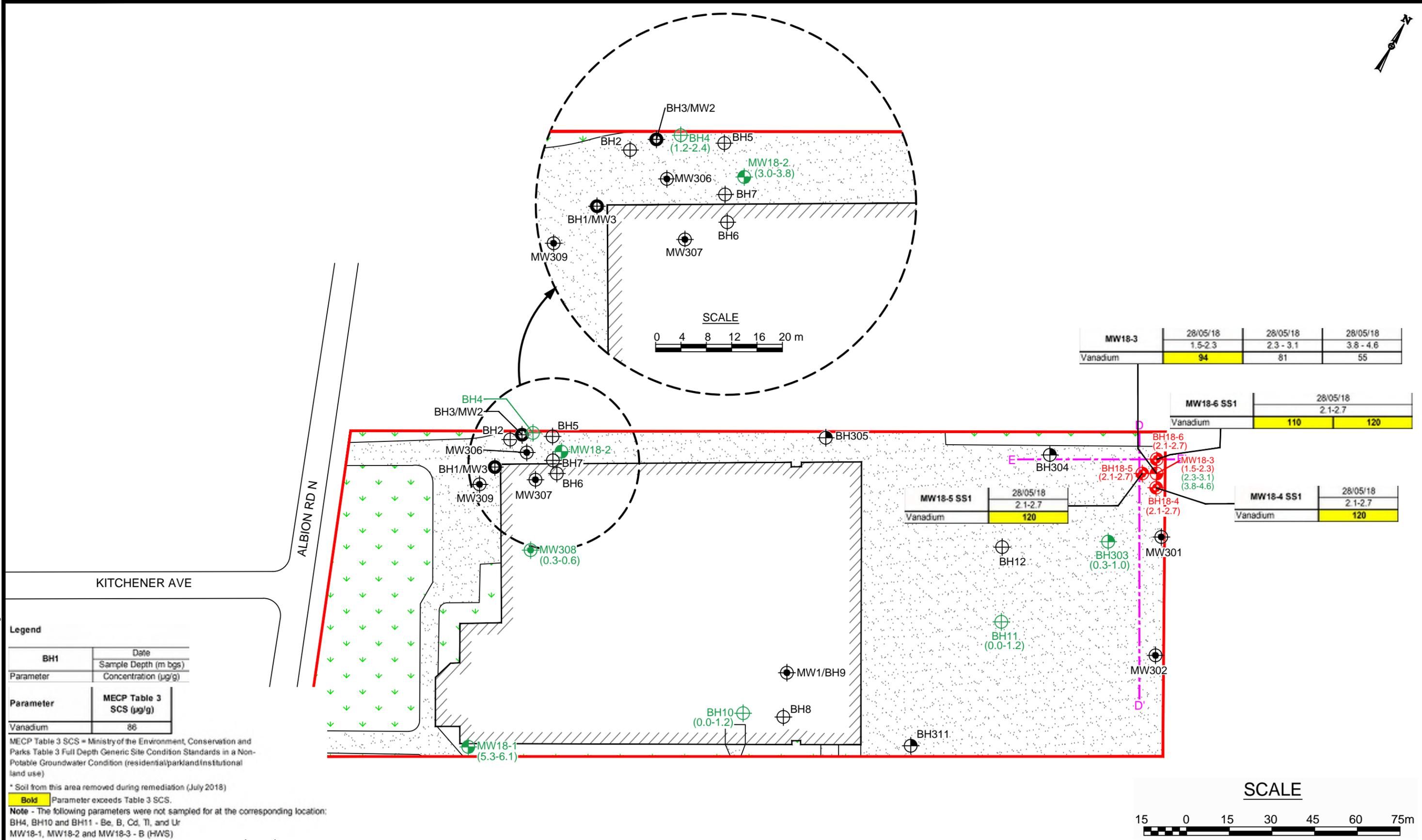
- LEGEND:
- ✕ SAMPLE COLLECTED AND SCREENED FOR VAPOUR READING BUT NOT SUBMITTED FOR ANALYSIS
 - ▲ SAMPLE COLLECTED AND SUBMITTED FOR ANALYSIS

- ✕ SAMPLE EXCEEDS TABLE 3 SCS
- NOTE: RESULTS FOR SOIL WHICH WAS REMOVED DURING THE REMEDIATION IS NOT ILLUSTRATED

TITLE AND LOCATION:
CYANIDE IMPACTED SOIL EXCAVATION
 POST EXCAVATION
 RISK ASSESSMENT
 3025 ALBION ROAD NORTH
 OTTAWA, ONTARIO

JOB NO.: OTT-00246047-D0	DRAWN BY: DP
SCALE: AS NOTED	CHECKED BY: PV
DATE: DECEMBER 2018	FIG NO.: 11C

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MW18-3	28/05/18	28/05/18	28/05/18
Vanadium	1.5-2.3 94	2.3 - 3.1 81	3.8 - 4.6 55

MW18-6 SS1	28/05/18
Vanadium	2.1-2.7 110 120

MW18-5 SS1	28/05/18
Vanadium	2.1-2.7 120

MW18-4 SS1	28/05/18
Vanadium	2.1-2.7 120

Legend

BH1	Date
Parameter	Sample Depth (m bgs)
Parameter	Concentration (µg/g)

Parameter	MECP Table 3 SCS (µg/g)
Vanadium	86

MECP Table 3 SCS = Ministry of the Environment, Conservation and Parks Table 3 Full Depth Generic Site Condition Standards in a Non-Potable Groundwater Condition (residential/parkland/institutional land use)

* Soil from this area removed during remediation (July 2018)

Bold Parameter exceeds Table 3 SCS.

Note - The following parameters were not sampled for at the corresponding location:
BH4, BH10 and BH11 - Be, B, Cd, Tl, and Ur
MW18-1, MW18-2 and MW18-3 - B (HWS)



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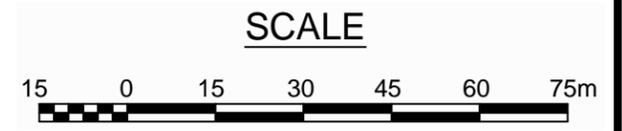
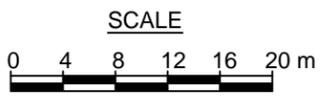
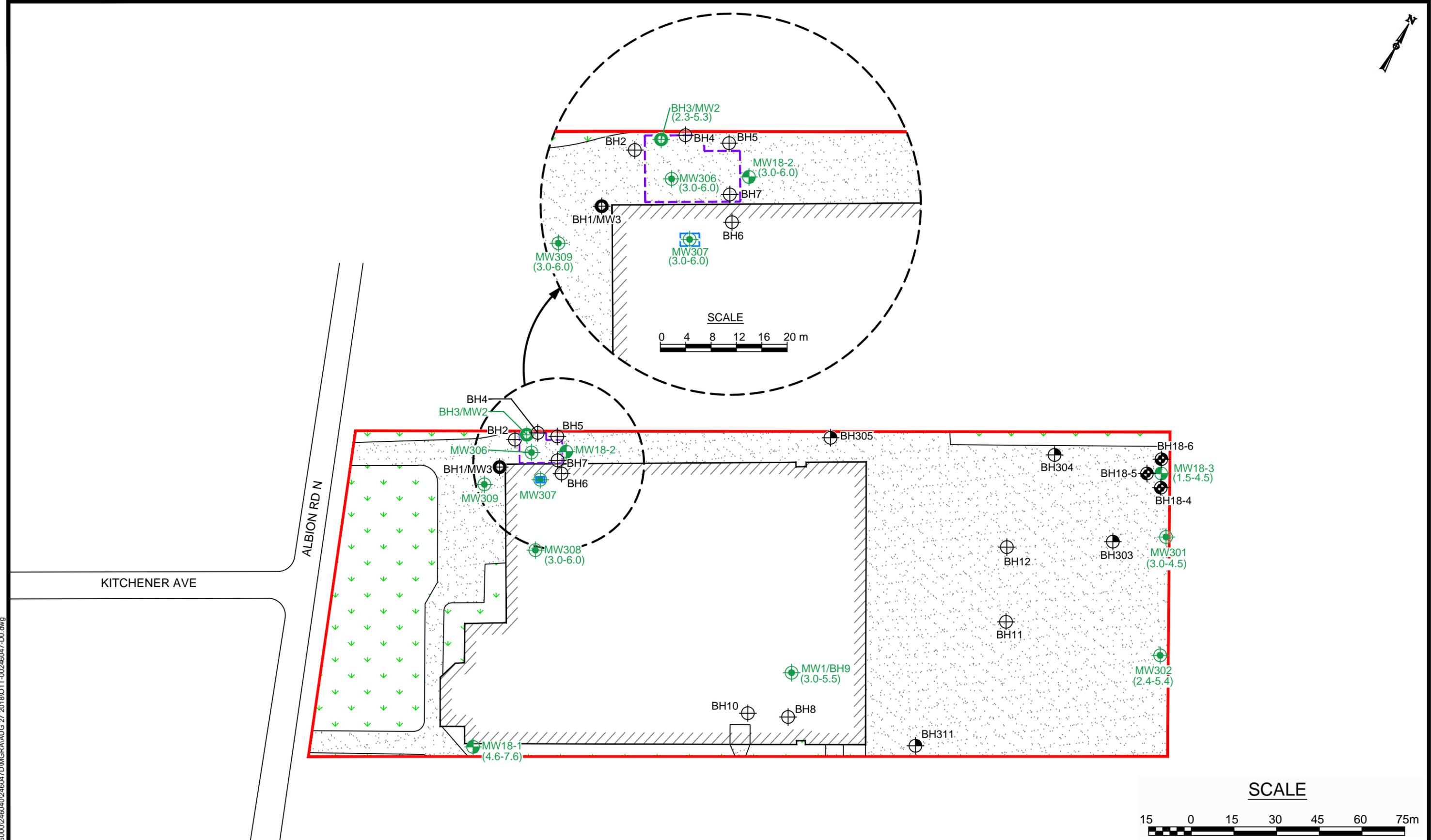
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LEGEND:

- APPROXIMATE SITE BOUNDARY
- EXTENT OF EXCAVATION 1 (PHC)
- EXTENT OF EXCAVATION 2 (CYANIDE)
- ▼ LANDSCAPED AREA
- ASPHALT / CONCRETE
- BOREHOLE LOCATION (ENVIRO-EXPERTS, 2018)
- BOREHOLE / MONITORING WELL LOCATION (ENVIRO-EXPERTS, 2018)
- BOREHOLE LOCATION (EXP, 2016)
- BOREHOLE LOCATION (EXP, 2018)
- BOREHOLE / MONITORING WELL LOCATION (EXP, 2016)
- BOREHOLE / MONITORING WELL LOCATION (EXP, 2018)
- (X.X-X.X) SAMPLE DEPTH (mbgs)
- SAMPLE MEETS TABLE 3 SCS
- SAMPLE EXCEEDS TABLE 3 SCS

TITLE AND LOCATION:
**METALS IMPACTS IN SOIL
RISK ASSESSMENT
3025 ALBION ROAD NORTH
OTTAWA, ONTARIO**

JOB NO.: OTT-00246047-D0	DRAWN BY: DP
SCALE: AS NOTED	CHECKED BY: PV
DATE: DECEMBER 2018	FIG NO.: 12



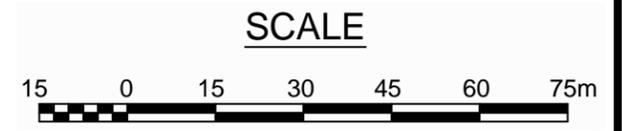
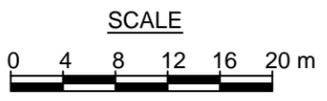
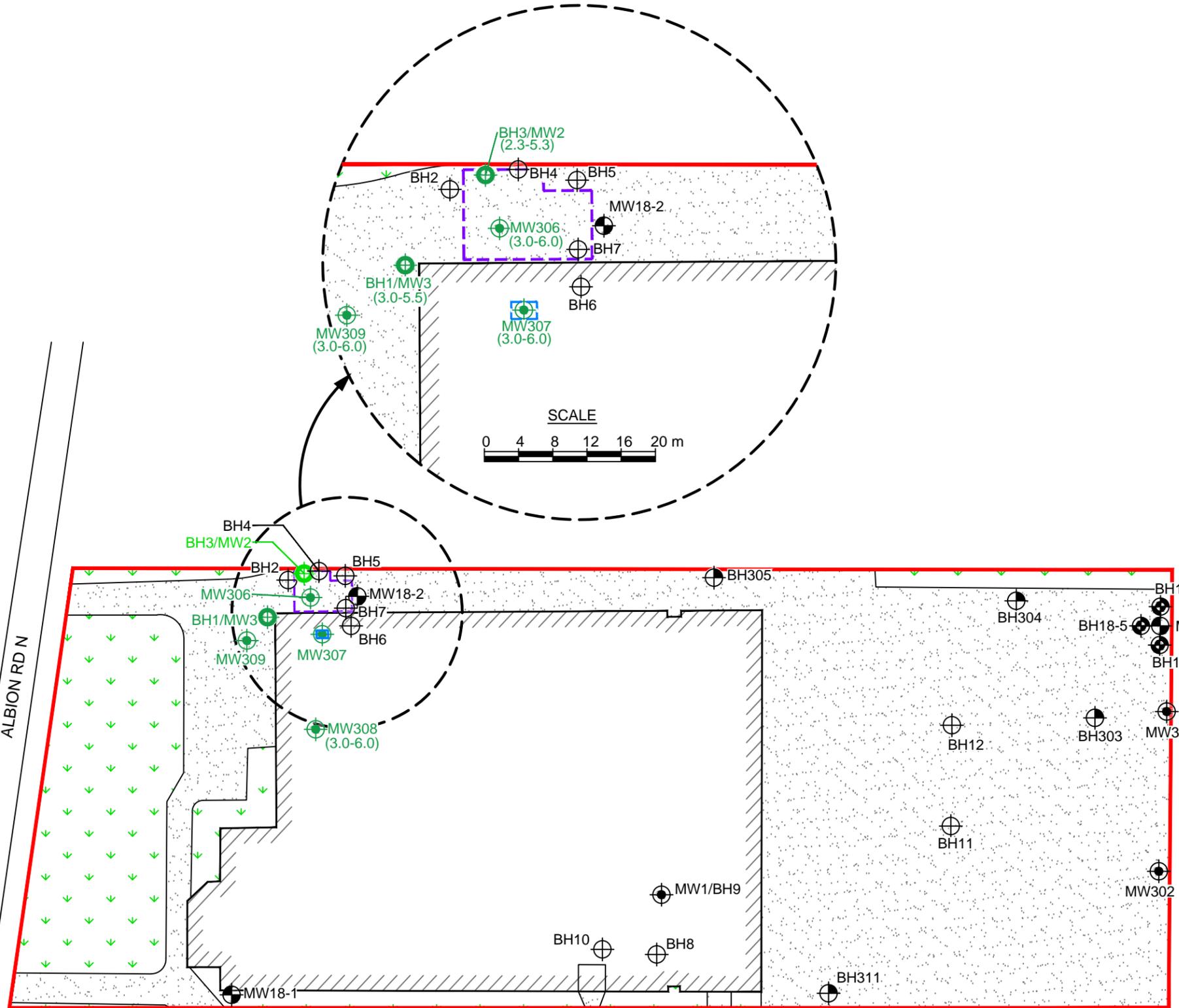
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LEGEND:	
	APPROXIMATE SITE BOUNDARY
	BUILDING FOOTPRINT
	LANDSCAPED AREA
	ASPHALT / CONCRETE
	EXTENT OF EXCAVATION 1 (PHC)
	EXTENT OF EXCAVATION 2 (CYANIDE)
	BOREHOLE LOCATION (EXP, 2016)
	BOREHOLE / MONITORING WELL LOCATION (EXP, 2016)
	BOREHOLE LOCATION (ENVIRO-EXPERTS, 2018)
	BOREHOLE / MONITORING WELL LOCATION (ENVIRO-EXPERTS, 2018)
	BOREHOLE LOCATION (EXP, 2018)
	BOREHOLE / MONITORING WELL LOCATION (EXP, 2018)
	(X.X-X.X) SCREEN DEPTH (mbgs)
	SAMPLE MEETS TABLE 3 SCS

TITLE AND LOCATION:
**PHC AND BTEX IMPACTS IN
 GROUNDWATER
 RISK ASSESSMENT**
 3025 ALBION ROAD NORTH
 OTTAWA, ONTARIO

JOB NO.: OTT-00246047-D0	DRAWN BY: DP
SCALE: AS NOTED	CHECKED BY: PV
DATE: DECEMBER 2018	FIG NO.: 13

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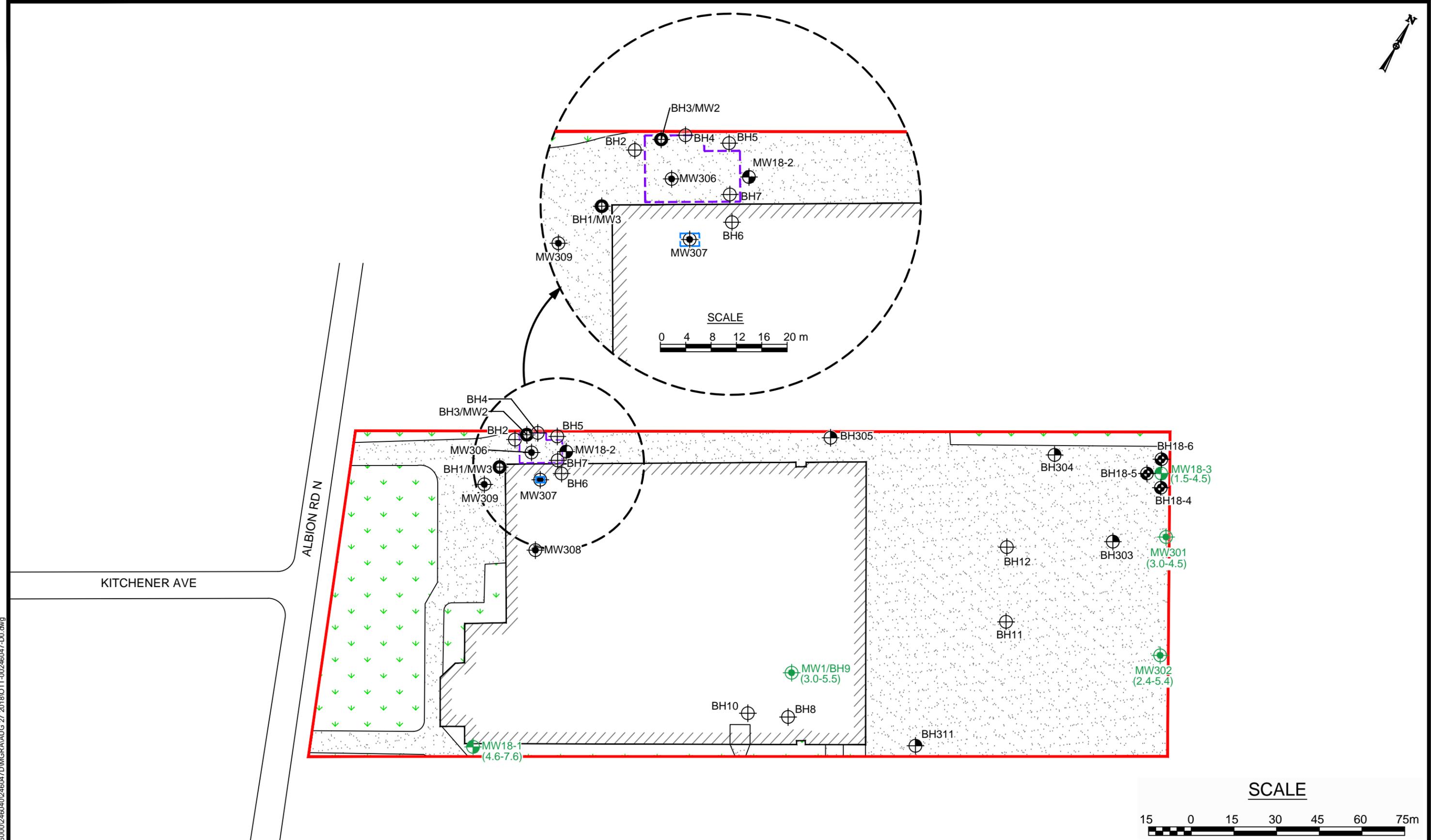
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LEGEND:	
	APPROXIMATE SITE BOUNDARY
	BUILDING FOOTPRINT
	LANDSCAPED AREA
	ASPHALT / CONCRETE
	EXTENT OF EXCAVATION 1 (PHC)
	EXTENT OF EXCAVATION 2 (CYANIDE)
	BOREHOLE LOCATION (EXP, 2016)
	BOREHOLE / MONITORING WELL LOCATION (EXP, 2016)
	BOREHOLE LOCATION (ENVIRO-EXPERTS, 2018)
	BOREHOLE / MONITORING WELL LOCATION (ENVIRO-EXPERTS, 2018)
	BOREHOLE LOCATION (EXP, 2018)
	BOREHOLE / MONITORING WELL LOCATION (EXP, 2018)
	SAMPLE MEETS TABLE 3 SCS
(X.X-X.X)	SCREEN DEPTH (mbgs)

TITLE AND LOCATION:
VOC IMPACTS IN GROUNDWATER
 RISK ASSESSMENT
 3025 ALBION ROAD NORTH
 OTTAWA, ONTARIO

JOB NO.:	OTT-00246047-D0	DRAWN BY:	DP
SCALE:	AS NOTED	CHECKED BY:	PV
DATE:	DECEMBER 2018	FIG NO.:	14



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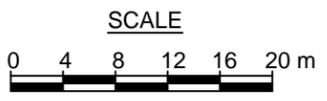
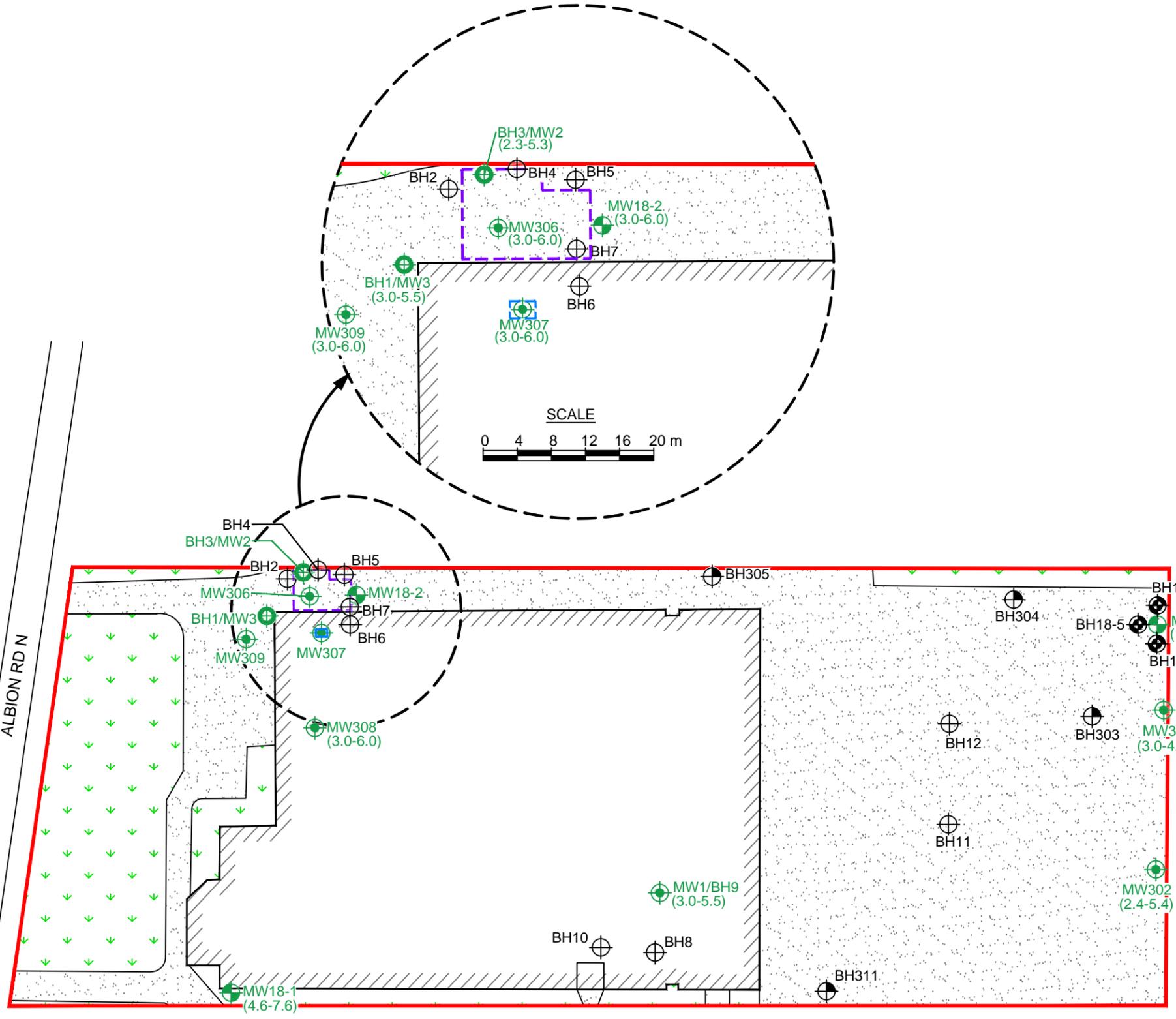
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• INDUSTRIAL • INFRASTRUCTURE • SUSTAINABILITY •

LEGEND:		BOREHOLE LOCATION (ENVIRO-EXPERTS, 2018)		(X.X-X.X) SCREEN DEPTH (mbgs)	
	APPROXIMATE SITE BOUNDARY		BOREHOLE LOCATION (ENVIRO-EXPERTS, 2018)		SAMPLE MEETS TABLE 3 SCS
	EXTENT OF EXCAVATION 1 (PHC)		BOREHOLE / MONITORING WELL LOCATION (ENVIRO-EXPERTS, 2018)		
	EXTENT OF EXCAVATION 2 (CYANIDE)		BOREHOLE LOCATION (EXP, 2016)		
	BUILDING FOOTPRINT		BOREHOLE LOCATION (EXP, 2018)		
	LANDSCAPED AREA		BOREHOLE / MONITORING WELL LOCATION (EXP, 2016)		
	ASPHALT / CONCRETE		BOREHOLE / MONITORING WELL LOCATION (EXP, 2018)		

TITLE AND LOCATION:
**PCB IMPACTS IN GROUNDWATER
RISK ASSESSMENT
3025 ALBION ROAD NORTH
OTTAWA, ONTARIO**

JOB NO.:	OTT-00246047-D0	DRAWN BY:	DP
SCALE:	AS NOTED	CHECKED BY:	PV
DATE:	DECEMBER 2018	FIG NO.:	15

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Note - The following parameters were not sampled for at the corresponding location:
 MW1: Cr, VI, Hg, Na
 MW2 & MW3: Be, Cr, VI, Tl, Ur, V
 MW306, MW307, MW308, MW18-1, MW18-2 & MW18-3: Cr, VI, Hg and Na



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LEGEND:		BOREHOLE LOCATION		SCREEN DEPTH (MBGS)	
APPROXIMATE SITE BOUNDARY	EXTENT OF EXCAVATION 1 (PHC)	BOREHOLE LOCATION (ENVIRO-EXPERTS, 2018)	BOREHOLE LOCATION (EXP, 2016)	BOREHOLE LOCATION (EXP, 2018)	BOREHOLE LOCATION (EXP, 2018)
BUILDING FOOTPRINT	EXTENT OF EXCAVATION 2 (CYANIDE)	BOREHOLE / MONITORING WELL LOCATION (ENVIRO-EXPERTS, 2018)	BOREHOLE / MONITORING WELL LOCATION (EXP, 2016)	BOREHOLE / MONITORING WELL LOCATION (EXP, 2018)	BOREHOLE / MONITORING WELL LOCATION (EXP, 2018)
LANDSCAPED AREA	LANDSCAPED AREA	SAMPLE MEETS TABLE 3 SCS	NOTE: INITIAL SAMPLE EXCEEDANCE ATTRIBUTED TO SEDIMENT IN THE SAMPLES. CONFIRMATORY SAMPLES DEMONSTRATE NO IMPACT. THEREFORE, ALL SAMPLE LOCATIONS ARE CONSIDERED TO BE UNIMPACTED		
ASPHALT / CONCRETE					

TITLE AND LOCATION:
METALS IMPACTS IN GROUNDWATER RISK ASSESSMENT
 3025 ALBION ROAD NORTH
 OTTAWA, ONTARIO

JOB NO.:	15	DRAWN BY:	DP
SCALE:	AS NOTED	CHECKED BY:	PV
DATE:	DECEMBER 2018	FIG NO.:	16

MW309
EL:89.96

BH1/MW3*

BH2*

BH3/MW2* MW306
EL:89.96

BH4*

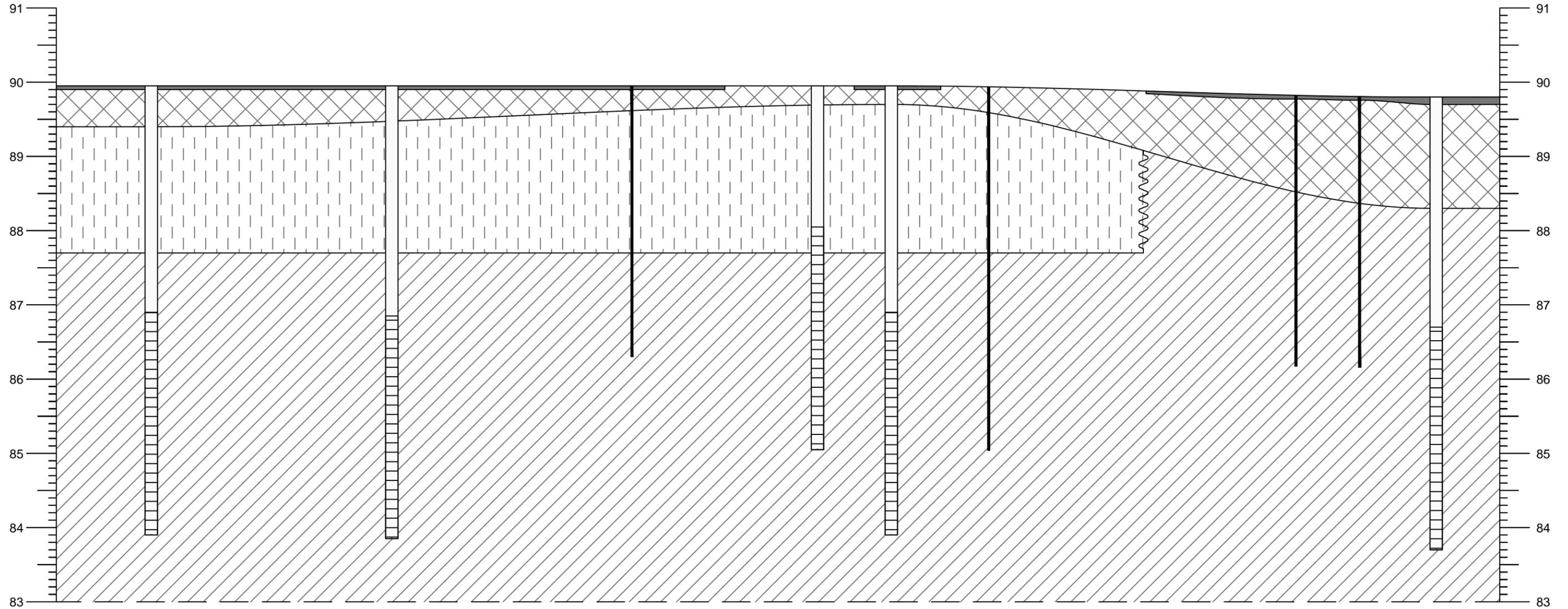
BH7*

BH5*

MW18-2
EL:89.81

A
WEST

A'
EAST



VERTICAL SCALE: AS SHOWN

HORIZONTAL SCALE:



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LEGEND:

	ASPHALT
	FILL
	SILTY SAND
	TILL

NOTE: BOREHOLE / MONITORING WELL INCLUDED FOR CHEMICAL CHARACTERIZATION ONLY

TITLE AND LOCATION:
CROSS SECTION A-A'
PRE EXCAVATION
RISK ASSESSMENT
 3025 ALBION ROAD NORTH
 OTTAWA, ONTARIO

JOB NO.:	OTT-00246047-D0	DRAWN BY:	DP
SCALE:	AS NOTED	CHECKED BY:	PV
DATE:	DECEMBER 2018	FIG NO.:	18

MW309
EL:89.96

BH1/MW3*

BH2*

BH3/MW2* MW306
EL:89.96

BH4*

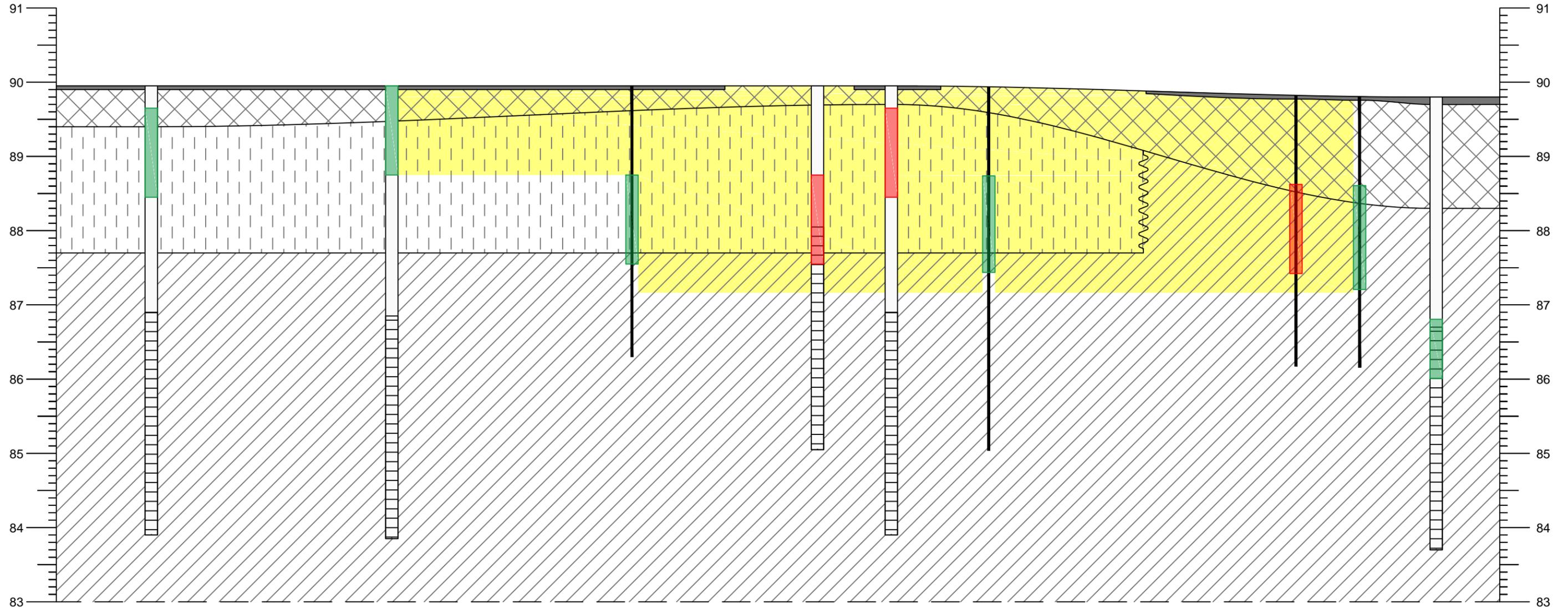
BH7*

BH5*

MW18-2
EL:89.81

A
WEST

A'
EAST



VERTICAL SCALE: AS SHOWN

HORIZONTAL SCALE:



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LEGEND:

	ASPHALT
	FILL
	SILTY SAND
	TILL

- SAMPLE MEETS TABLE 3 SCS
- SAMPLE EXCEEDS TABLE 3 SCS

NOTE: BOREHOLE / MONITORING WELL INCLUDED FOR CHEMICAL CHARACTERIZATION ONLY

CROSS SECTION A-A' WITH PHCs IMPACTS IMPACTS IN SOIL

PRE EXCAVATION
 RISK ASSESSMENT
 3025 ALBION ROAD NORTH
 OTTAWA, ONTARIO

JOB NO.: OTT-00246047-D0	DRAWN BY: DP
SCALE: AS NOTED	CHECKED BY: PV
DATE: DECEMBER 2018	FIG NO.: 18A

MW309
EL:89.96

BH1/MW3*

BH2*

BH3/MW2* MW306
EL:89.96

BH4*

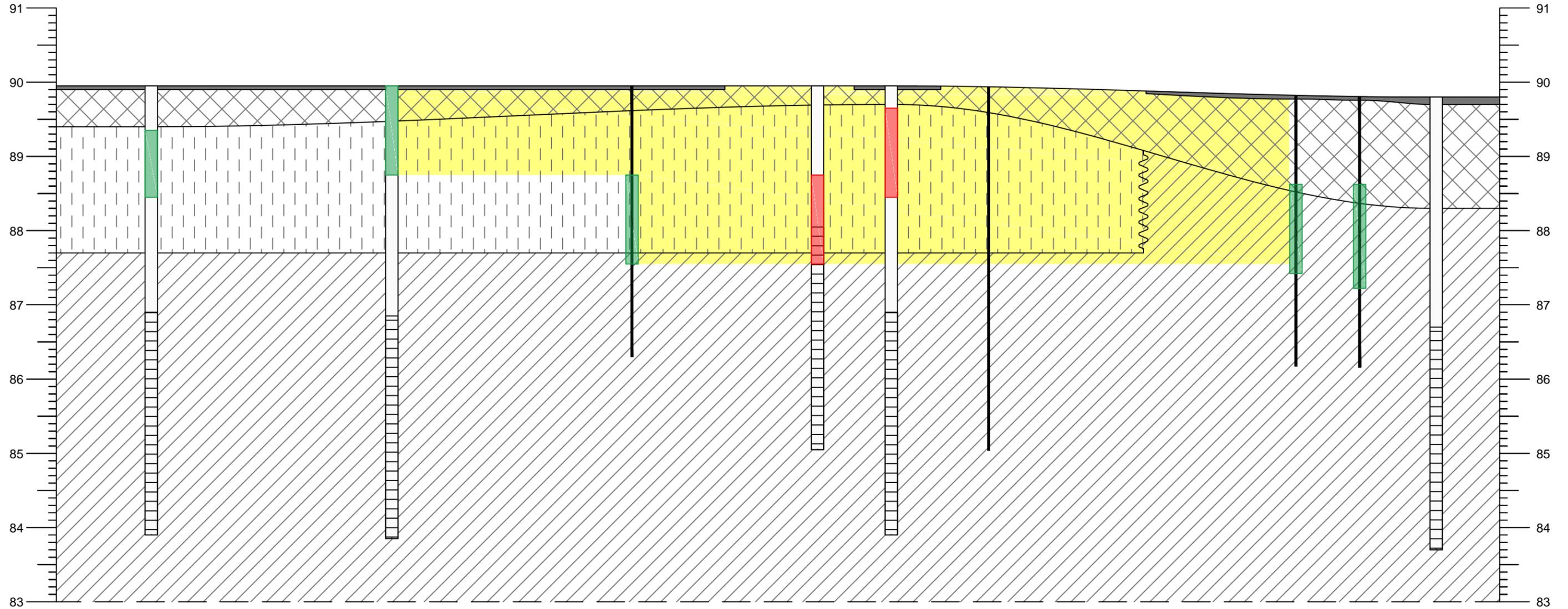
BH7*

BH5*

MW18-2
EL:89.81

A
WEST

A'
EAST



VERTICAL SCALE: AS SHOWN

HORIZONTAL SCALE:



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LEGEND:

- ASPHALT
- FILL
- SILTY SAND
- TILL
- SAMPLE MEETS TABLE 3 SCS
- SAMPLE EXCEEDS TABLE 3 SCS
- EXTENT OF IMPACT

NOTE: BOREHOLE / MONITORING WELL INCLUDED FOR CHEMICAL CHARACTERIZATION ONLY

CROSS SECTION A-A' WITH VOCs IMPACTS IMPACTS IN SOIL
 PRE EXCAVATION
 RISK ASSESSMENT
 3025 ALBION ROAD NORTH
 OTTAWA, ONTARIO

JOB NO.: OTT-00246047-D0	DRAWN BY: DP
SCALE: AS NOTED	CHECKED BY: PV
DATE: DECEMBER 2018	FIG NO.: 18B

MW309
EL:89.96

BH1/MW3*

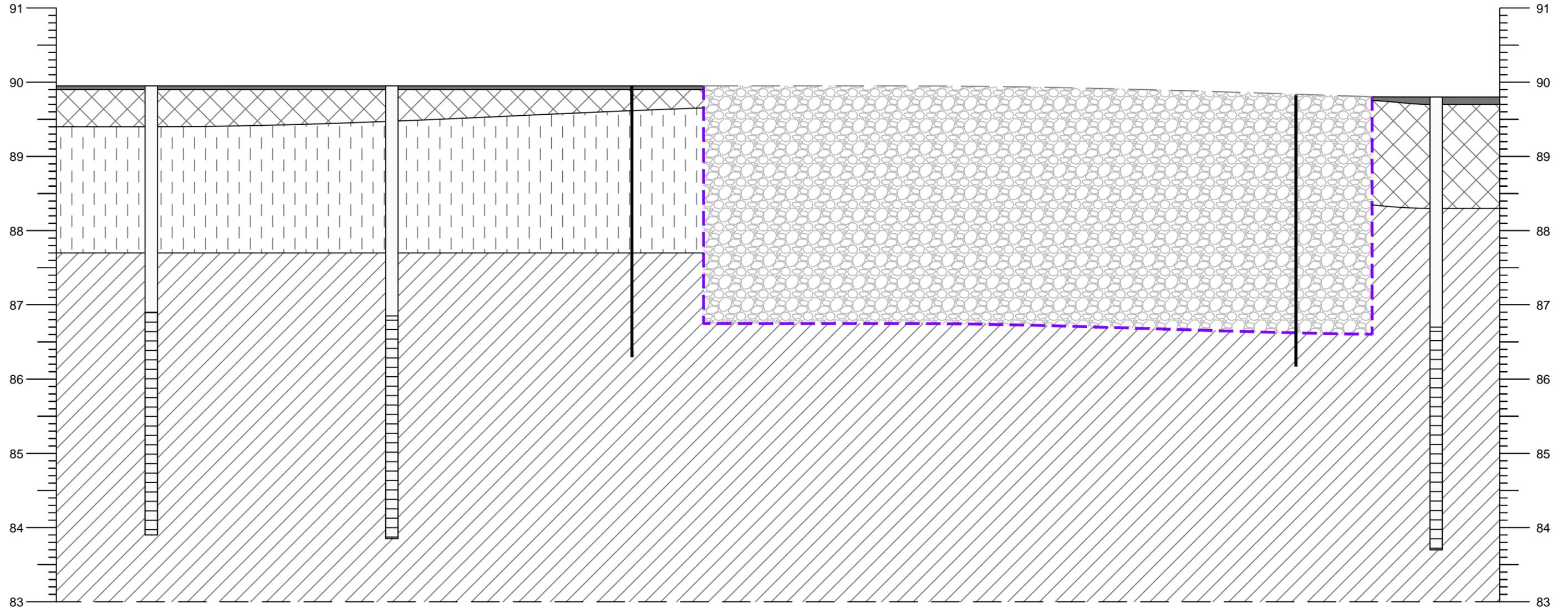
BH2*

BH5*

MW18-2
EL:89.81

A
WEST

A'
EAST



VERTICAL SCALE: AS SHOWN

HORIZONTAL SCALE:



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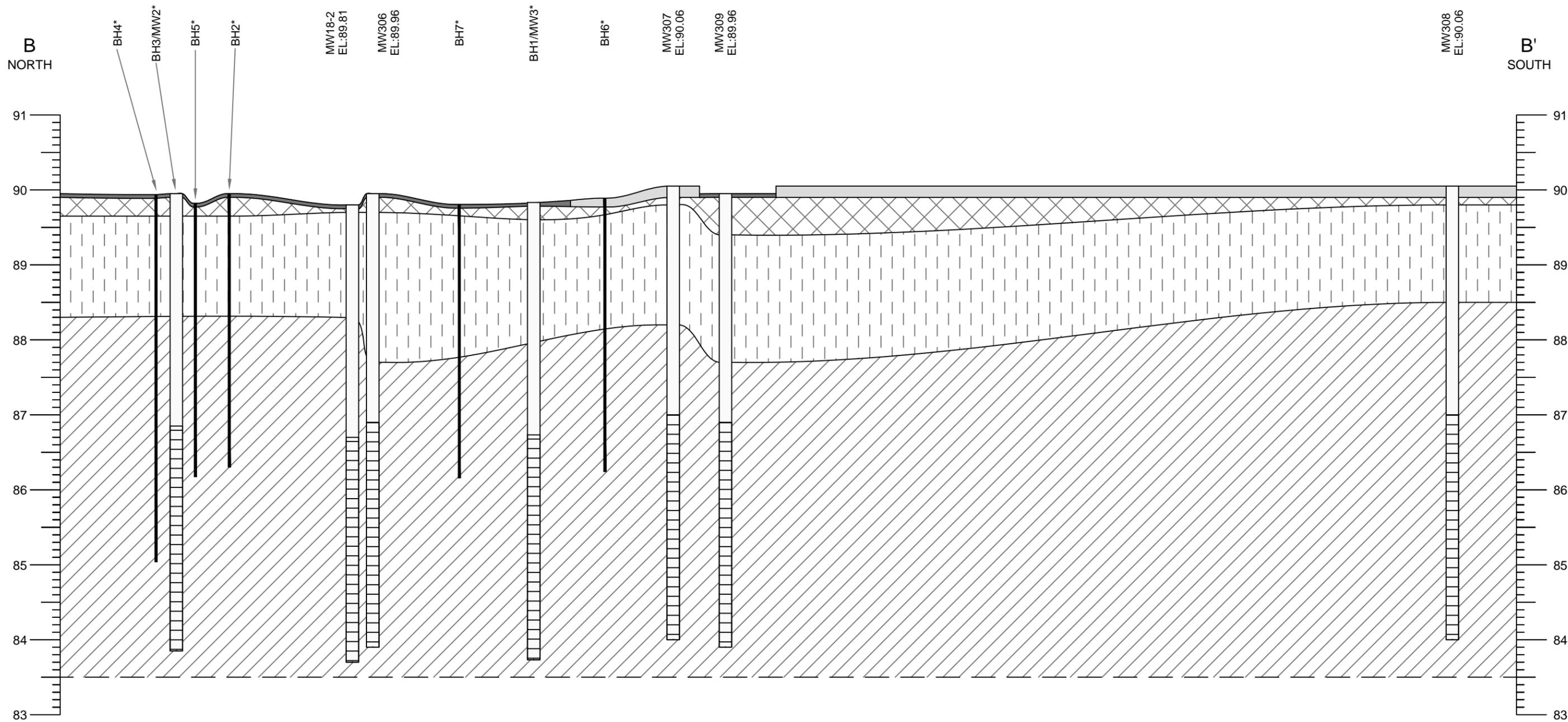
LEGEND:

- ASPHALT
- FILL
- SILTY SAND
- TILL
- CRUSHED STONE
- EXTENT OF EXCAVATION 1 (PHC)

NOTE: BOREHOLE / MONITORING WELL INCLUDED FOR CHEMICAL CHARACTERIZATION ONLY

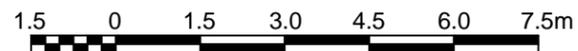
TITLE AND LOCATION:
CROSS SECTION A-A'
POST EXCAVATION
RISK ASSESSMENT
 3025 ALBION ROAD NORTH
 OTTAWA, ONTARIO

JOB NO.:	OTT-00246047-D0	DRAWN BY:	DP
SCALE:	AS NOTED	CHECKED BY:	PV
DATE:	DECEMBER 2018	FIG NO.:	19



VERTICAL SCALE: AS SHOWN

HORIZONTAL SCALE:



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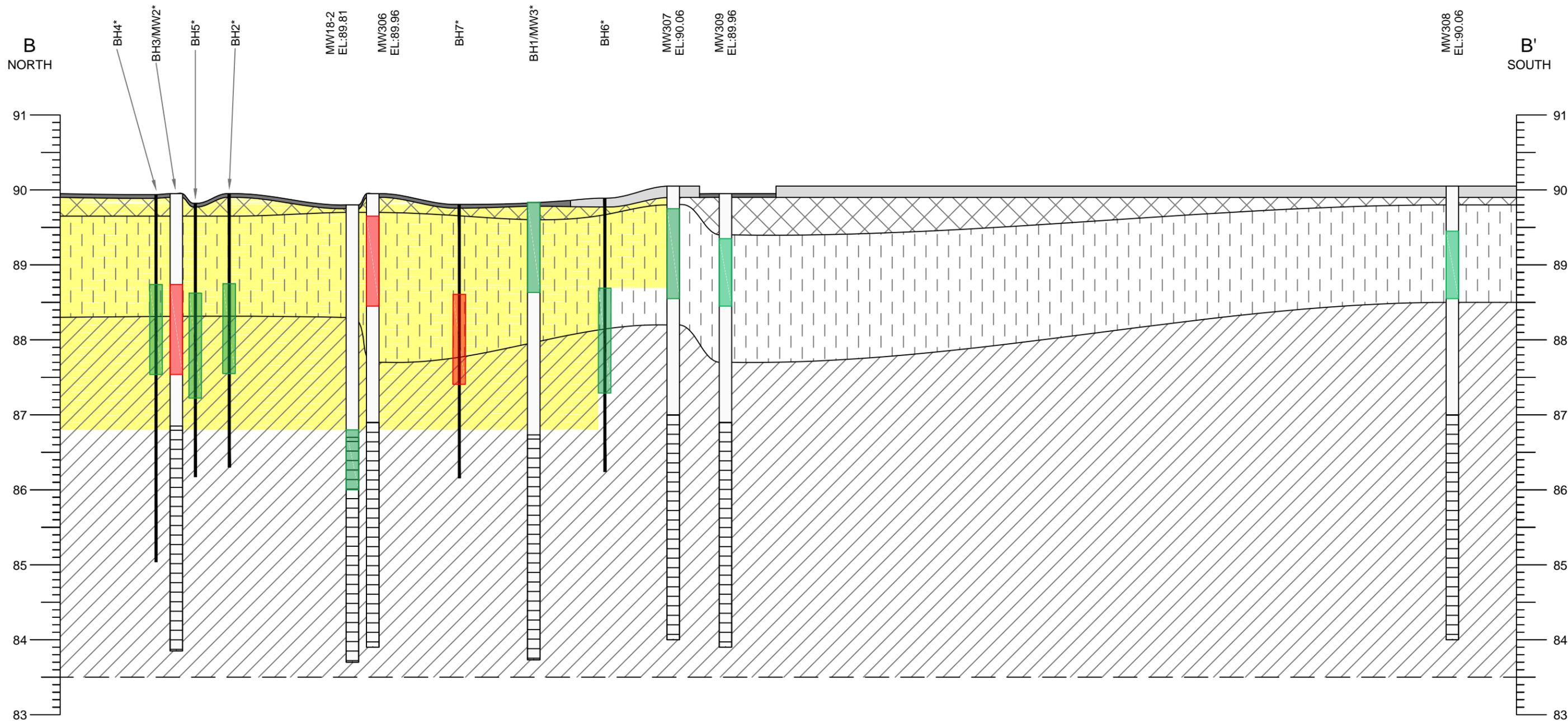
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LEGEND:
 ASPHALT
 CONCRETE
 FILL
 SILTY SAND
 TILL

NOTE: BOREHOLE / MONITORING WELL INCLUDED FOR
 CHEMICAL CHARACTERIZATION ONLY

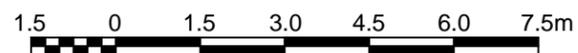
TITLE AND LOCATION:
CROSS SECTION B-B'
 PRE EXCAVATION
 RISK ASSESSMENT
 3025 ALBION ROAD NORTH
 OTTAWA, ONTARIO

JOB NO.:	OTT-00246047-D0	DRAWN BY:	DP
SCALE:	AS NOTED	CHECKED BY:	PV
DATE:	DECEMBER 2018	FIG NO.:	20



VERTICAL SCALE: AS SHOWN

HORIZONTAL SCALE:



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LEGEND:

- ASPHALT
- CONCRETE
- FILL
- SILTY SAND
- TILL

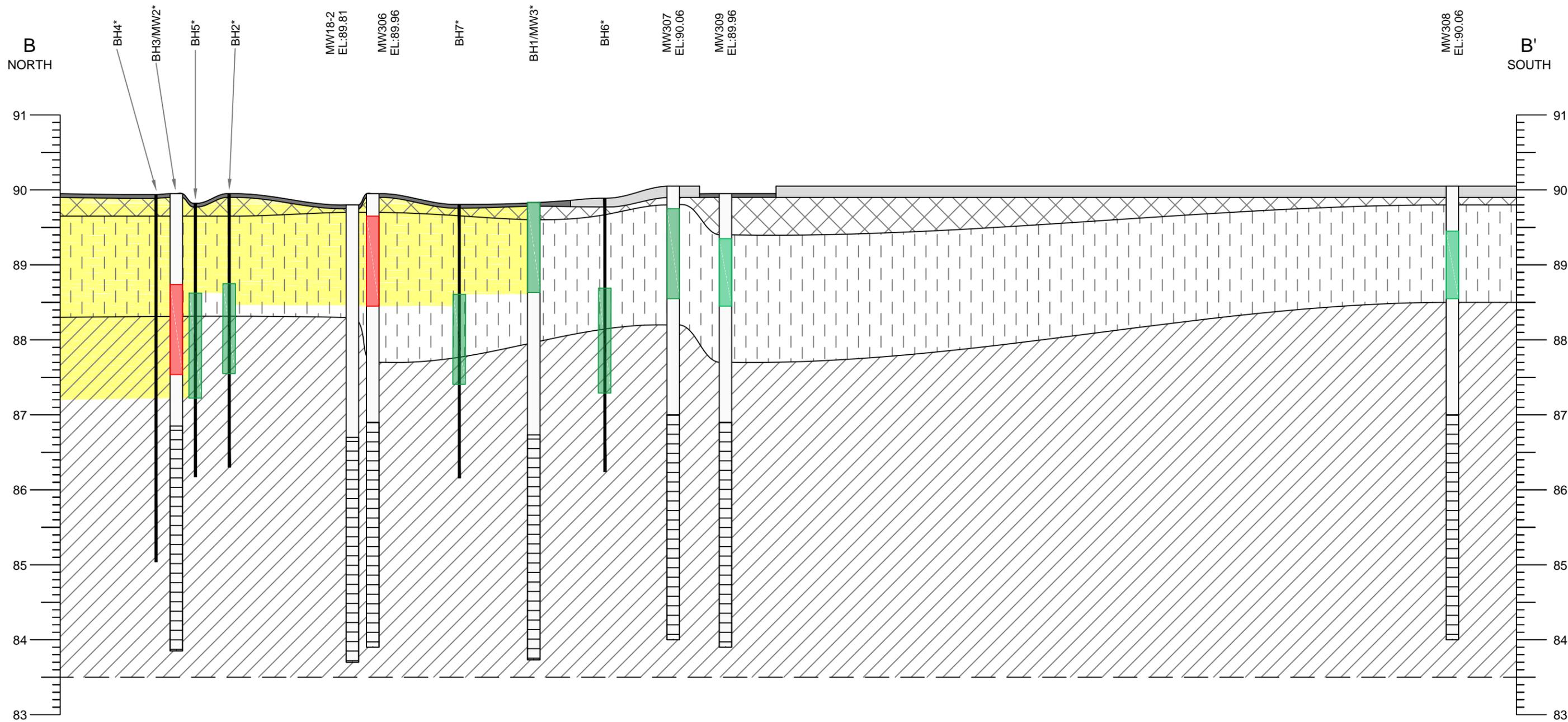
- SAMPLE MEETS TABLE 3 SCS
- SAMPLE EXCEEDS TABLE 3 SCS

NOTE: BOREHOLE / MONITORING WELL INCLUDED FOR CHEMICAL CHARACTERIZATION ONLY

CROSS SECTION B-B' WITH PHCs IMPACTS IMPACTS IN SOIL

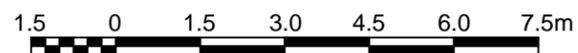
PRE EXCAVATION
 RISK ASSESSMENT
 3025 ALBION ROAD NORTH
 OTTAWA, ONTARIO

JOB NO.: OTT-00246047-D0	DRAWN BY: DP
SCALE: AS NOTED	CHECKED BY: PV
DATE: DECEMBER 2018	FIG NO.: 20A



VERTICAL SCALE: AS SHOWN

HORIZONTAL SCALE:



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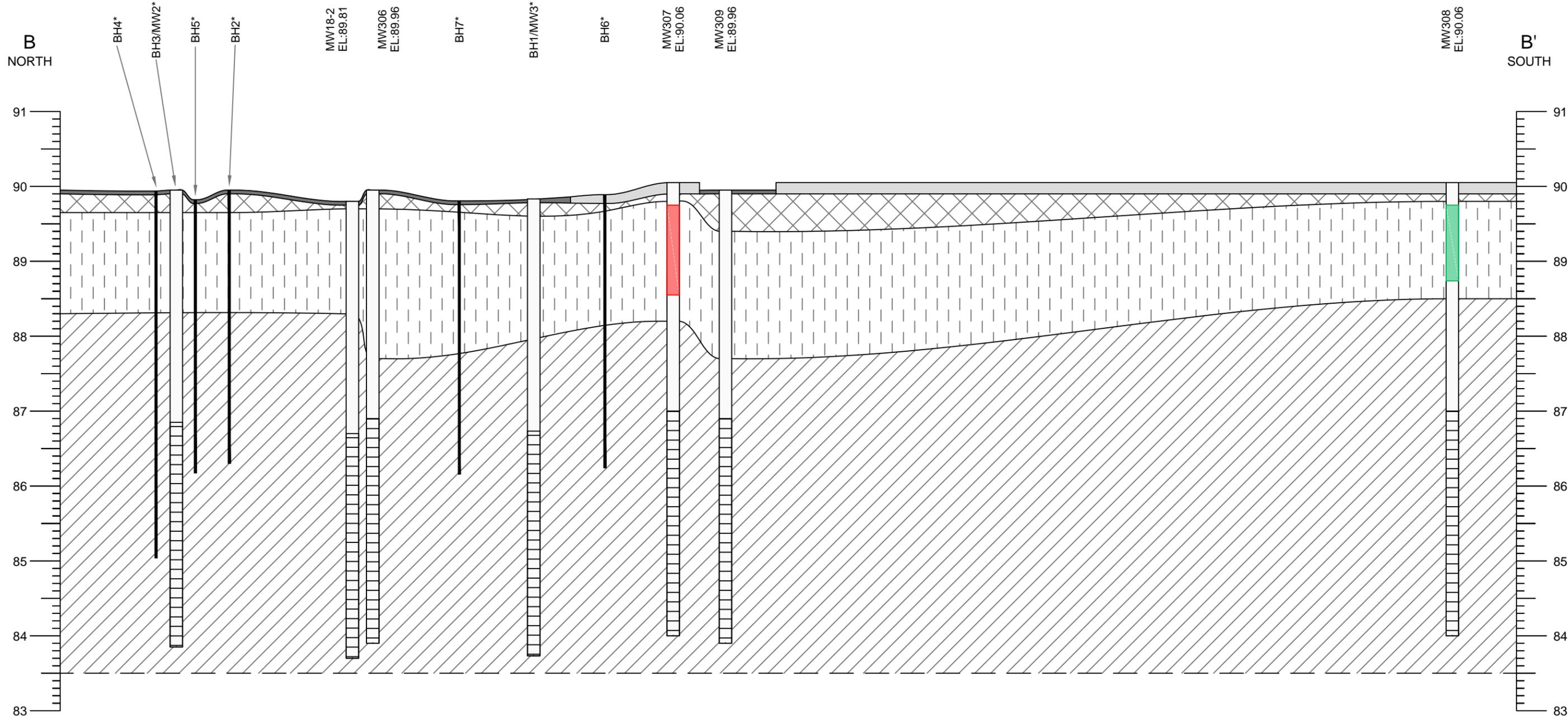
LEGEND:
 [Symbol] ASPHALT
 [Symbol] CONCRETE
 [Symbol] FILL
 [Symbol] SILTY SAND
 [Symbol] TILL

[Green Box] SAMPLE MEETS TABLE 3 SCS
 [Red Box] SAMPLE EXCEEDS TABLE 3 SCS
 [Yellow Box] EXTENT OF IMPACT

NOTE: BOREHOLE / MONITORING WELL INCLUDED FOR CHEMICAL CHARACTERIZATION ONLY

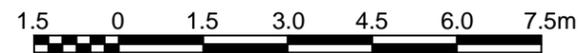
CROSS SECTION B-B' WITH VOCs IMPACTS IMPACTS IN SOIL
 PRE EXCAVATION
 RISK ASSESSMENT
 3025 ALBION ROAD NORTH
 OTTAWA, ONTARIO

JOB NO.: OTT-00246047-D0	DRAWN BY: DP
SCALE: AS NOTED	CHECKED BY: PV
DATE: DECEMBER 2018	FIG NO.: 20B



VERTICAL SCALE: AS SHOWN

HORIZONTAL SCALE:



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LEGEND:

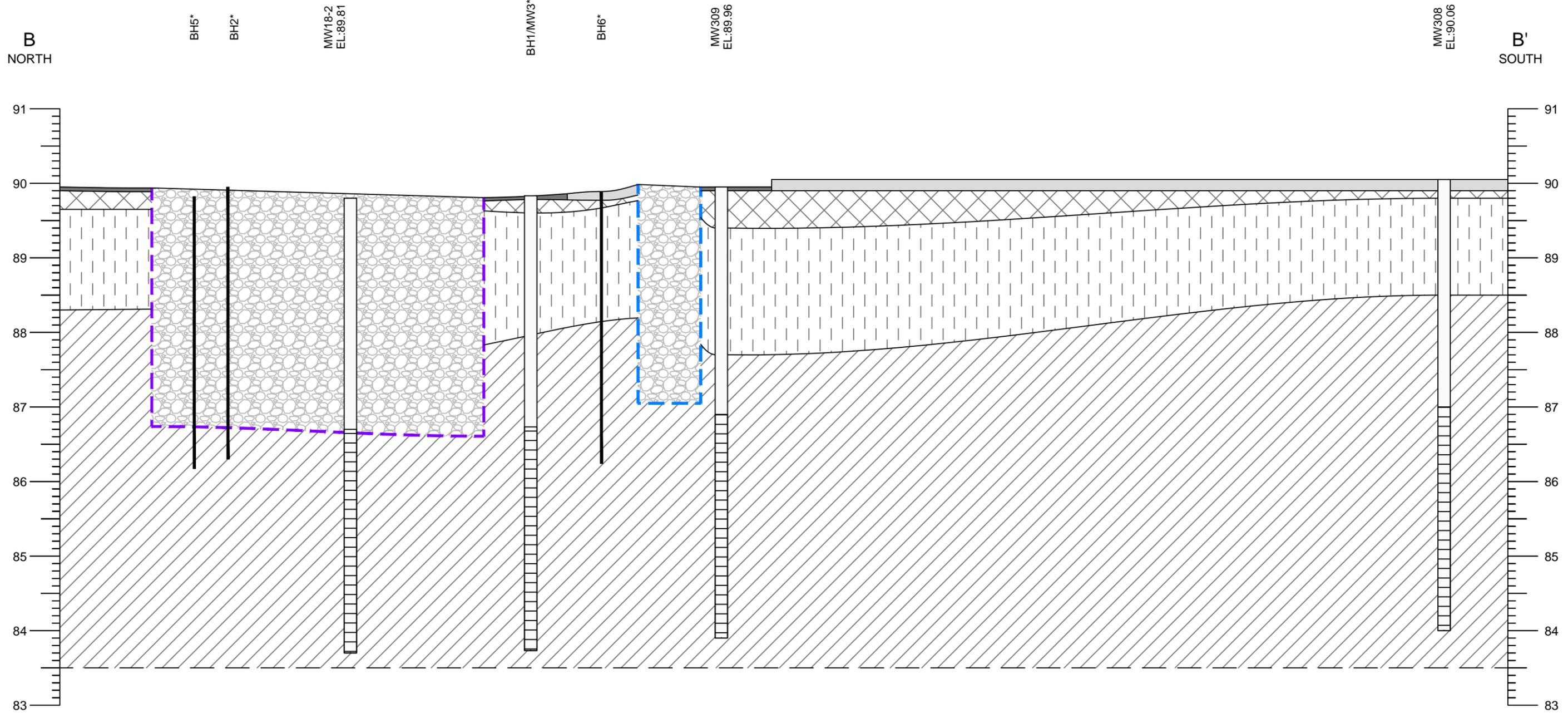
- ASPHALT
- CONCRETE
- FILL
- SILTY SAND
- TILL

- SAMPLE MEETS TABLE 3 SCS
- SAMPLE EXCEEDS TABLE 3 SCS

NOTE: BOREHOLE / MONITORING WELL INCLUDED FOR CHEMICAL CHARACTERIZATION ONLY

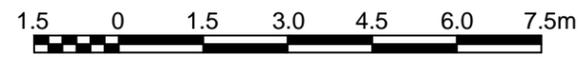
CROSS SECTION B-B' WITH CYANIDE IMPACTS IMPACTS
 IN SOIL
 PRE EXCAVATION
 RISK ASSESSMENT
 3025 ALBION ROAD NORTH
 OTTAWA, ONTARIO

JOB NO.: OTT-00246047-D0	DRAWN BY: DP
SCALE: AS NOTED	CHECKED BY: PV
DATE: DECEMBER 2018	FIG NO.: 20C



VERTICAL SCALE: AS SHOWN

HORIZONTAL SCALE:



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LEGEND:

- ASPHALT
- CONCRETE
- FILL
- SILTY SAND
- TILL
- CRUSHED STONE
- EXTENT OF EXCAVATION 1 (PHC)
- EXTENT OF EXCAVATION 2 (CYANIDE)

NOTE: BOREHOLE / MONITORING WELL INCLUDED FOR CHEMICAL CHARACTERIZATION ONLY

TITLE AND LOCATION:
CROSS SECTION B-B'
POST EXCAVATION
RISK ASSESSMENT
 3025 ALBION ROAD NORTH
 OTTAWA, ONTARIO

JOB NO.:	OTT-00246047-D0	DRAWN BY:	DP
SCALE:	AS NOTED	CHECKED BY:	PV
DATE:	DECEMBER 2018	FIG NO.:	21

B
NORTH

B'
SOUTH

BH5*

BH2*

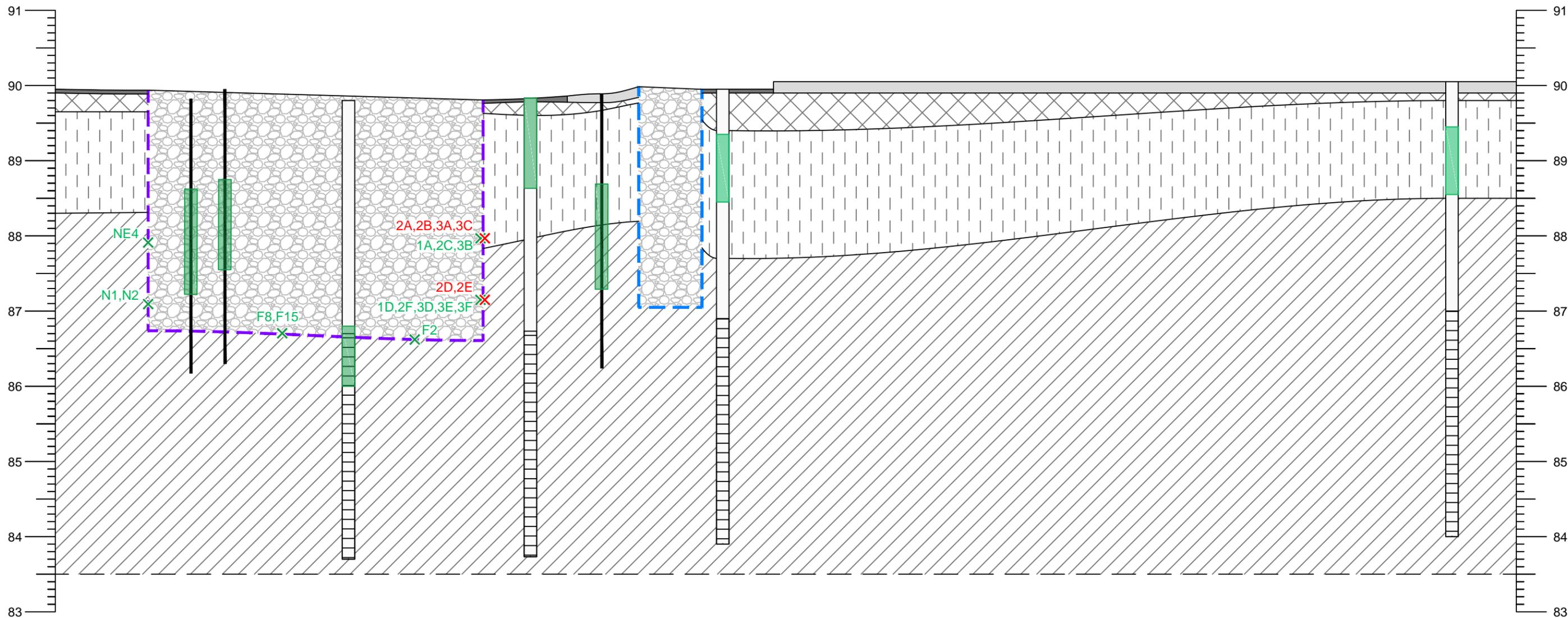
MW18-2
EL:89.81

BH1/MW3*

BH6*

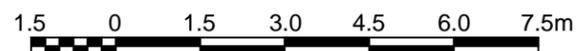
MW309
EL:89.96

MW308
EL:90.06



VERTICAL SCALE: AS SHOWN

HORIZONTAL SCALE:



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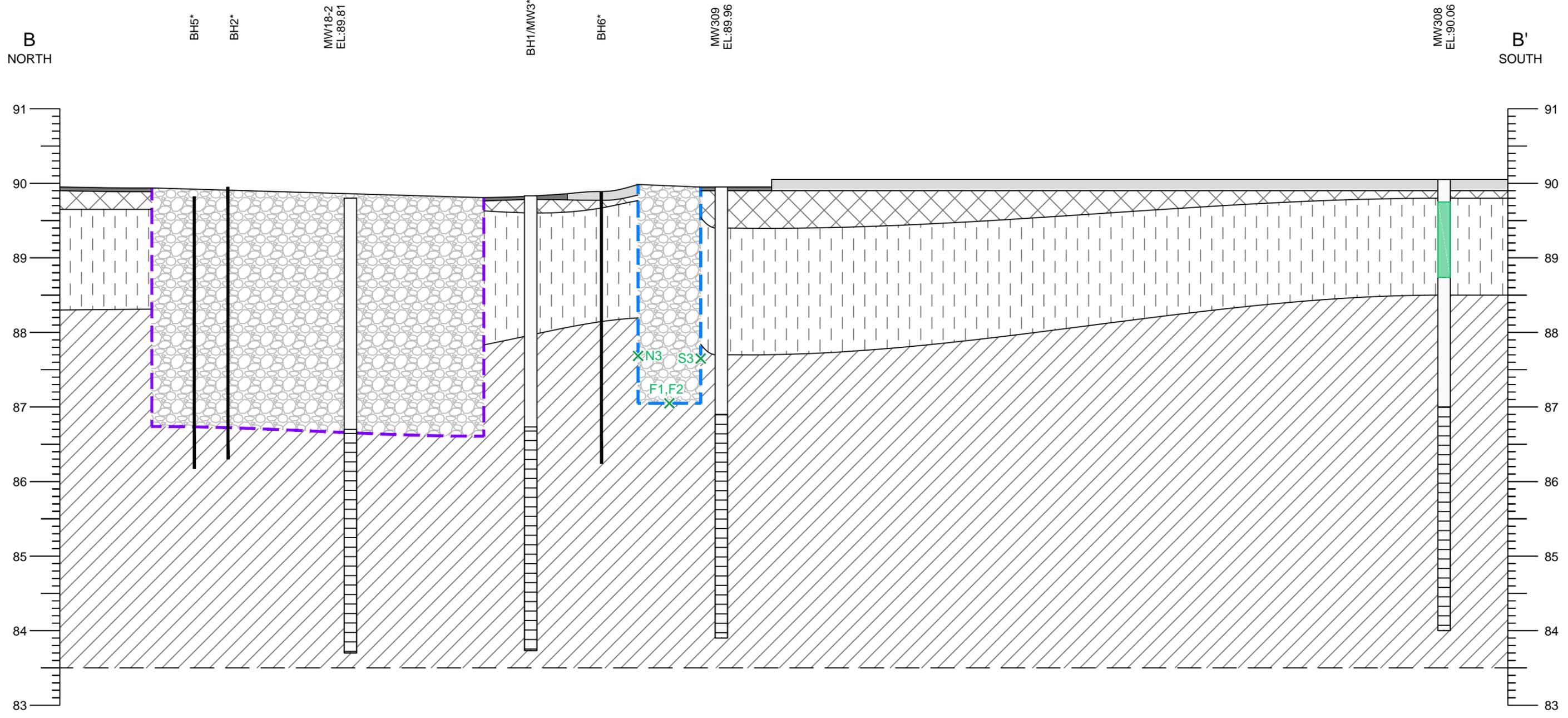
LEGEND:
 ASPHALT
 CONCRETE
 FILL
 SILTY SAND
 TILL
 CRUSHED STONE

--- EXTENT OF EXCAVATION 1 (PHC)
 --- EXTENT OF EXCAVATION 2 (CYANIDE)
 X CONFIRMATORY SAMPLE LOCATION (EXP, 2018)
 X SAMPLE MEETS TABLE 3 SCS
 X SAMPLE EXCEEDS TABLE 3 SCS

NOTE: BOREHOLE / MONITORING WELL INCLUDED FOR CHEMICAL CHARACTERIZATION ONLY

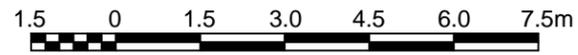
CROSS SECTION B-B' WITH PHCs IMPACTS IMPACTS
 IN SOIL
 POST EXCAVATION
 RISK ASSESSMENT
 3025 ALBION ROAD NORTH
 OTTAWA, ONTARIO

JOB NO.: OTT-00246047-D0	DRAWN BY: DP
SCALE: AS NOTED	CHECKED BY: PV
DATE: DECEMBER 2018	FIG NO.: 21A



VERTICAL SCALE: AS SHOWN

HORIZONTAL SCALE:



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LEGEND:

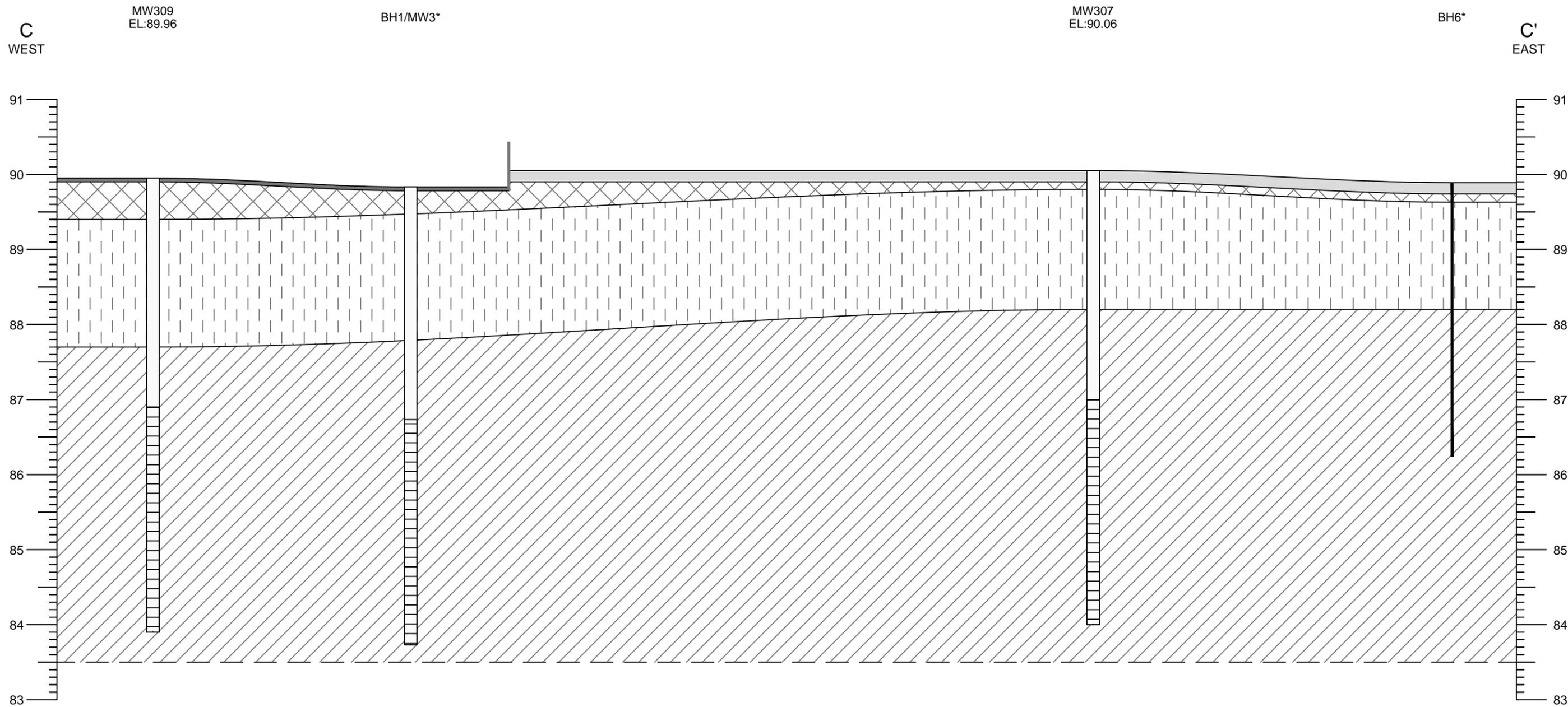
- ASPHALT
- CONCRETE
- FILL
- SILTY SAND
- TILL
- CRUSHED STONE

- EXTENT OF EXCAVATION 1 (PHC)
- EXTENT OF EXCAVATION 2 (CYANIDE)
- CONFIRMATORY SAMPLE LOCATION (EXP, 2018)
- SAMPLE MEETS TABLE 3 SCS

NOTE: BOREHOLE / MONITORING WELL INCLUDED FOR CHEMICAL CHARACTERIZATION ONLY

CROSS SECTION B-B' WITH CYANIDE IMPACTS IN SOIL
 POST EXCAVATION
 RISK ASSESSMENT
 3025 ALBION ROAD NORTH
 OTTAWA, ONTARIO

JOB NO.: OTT-00246047-D0	DRAWN BY: DP
SCALE: AS NOTED	CHECKED BY: PV
DATE: DECEMBER 2018	FIG NO.: 21B



VERTICAL SCALE: AS SHOWN

HORIZONTAL SCALE:



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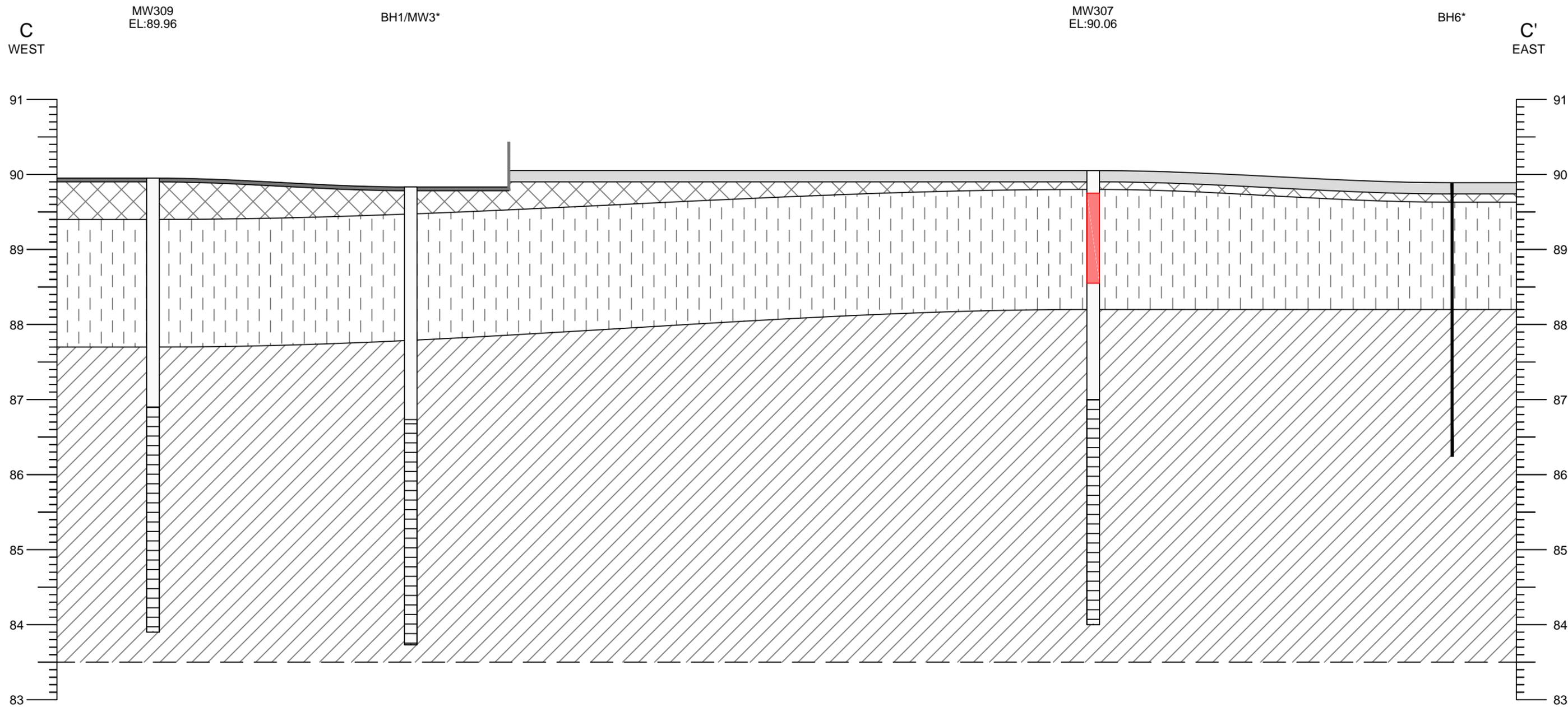
LEGEND:

	ASPHALT
	CONCRETE
	GRAVEL
	SILTY SAND
	TILL

NOTE: BOREHOLE / MONITORING WELL INCLUDED FOR CHEMICAL CHARACTERIZATION ONLY

TITLE AND LOCATION:
CROSS SECTION C-C'
PRE EXCAVATION
RISK ASSESSMENT
 3025 ALBION ROAD NORTH
 OTTAWA, ONTARIO

JOB NO.: OTT-00246047-D0	DRAWN BY: DP
SCALE: AS NOTED	CHECKED BY: PV
DATE: DECEMBER 2018	FIG NO.: 22



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LEGEND:

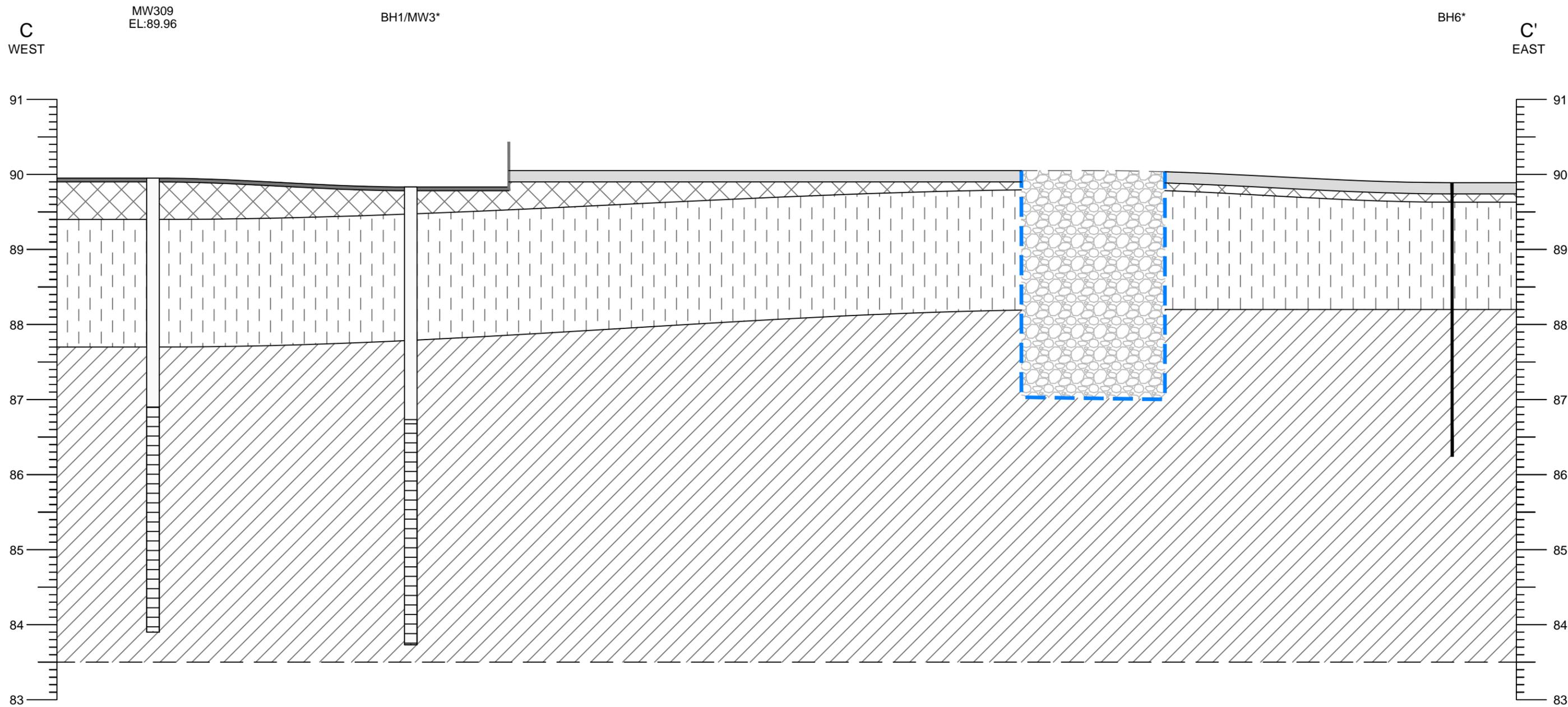
	ASPHALT
	CONCRETE
	GRAVEL
	SILTY SAND
	TILL

- SAMPLE MEETS TABLE 3 SCS
- SAMPLE EXCEEDS TABLE 3 SCS

NOTE: BOREHOLE / MONITORING WELL INCLUDED FOR CHEMICAL CHARACTERIZATION ONLY

**CROSS SECTION C-C' WITH METAL IMPACTS IMPACTS
 IN SOIL
 PRE EXCAVATION
 RISK ASSESSMENT
 3025 ALBION ROAD NORTH
 OTTAWA, ONTARIO**

JOB NO.: OTT-00246047-D0	DRAWN BY: DP
SCALE: AS NOTED	CHECKED BY: PV
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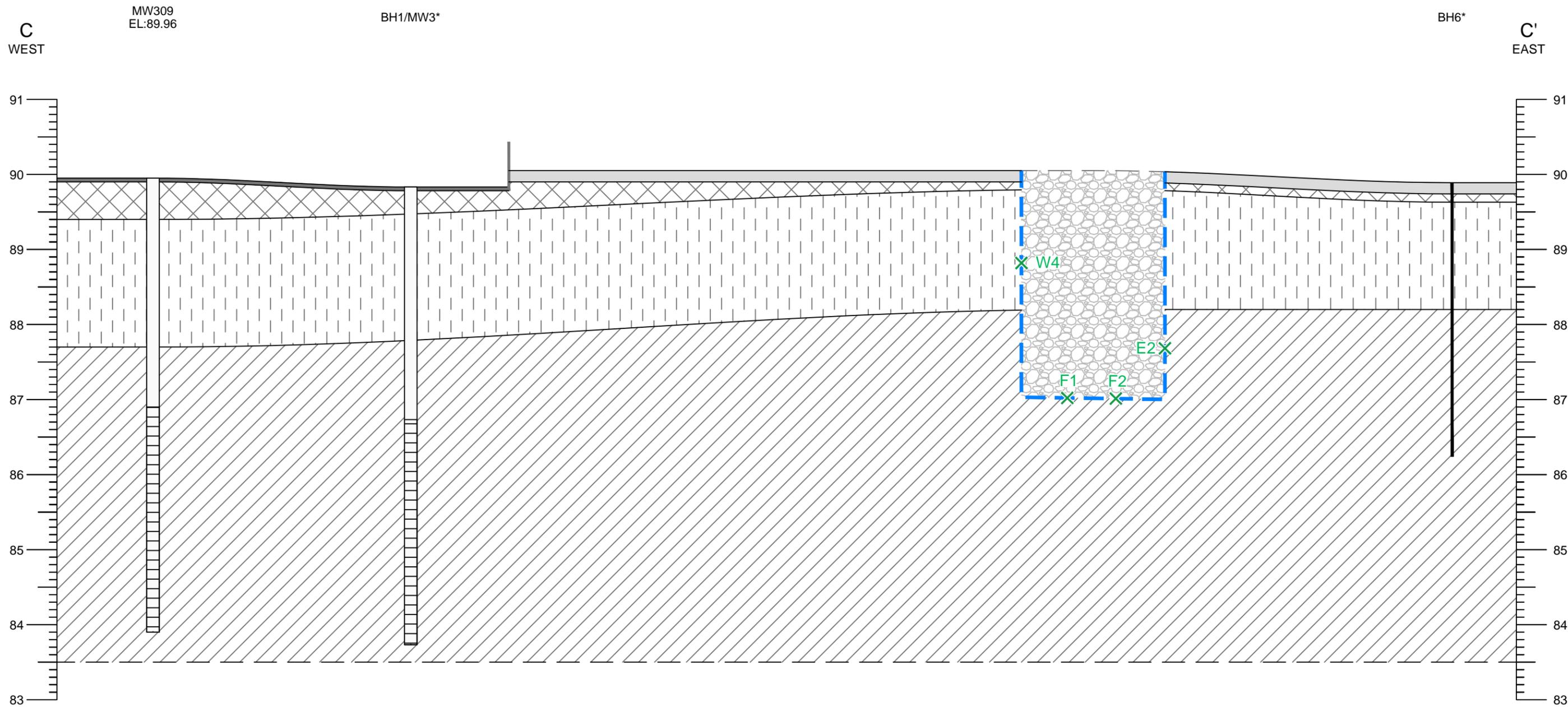
LEGEND:

- ASPHALT
- CONCRETE
- FILL
- SILTY SAND
- TILL
- CRUSHED STONE
- EXTENT OF EXCAVATION 2 (CYANIDE)

NOTE: BOREHOLE / MONITORING WELL INCLUDED FOR CHEMICAL CHARACTERIZATION ONLY

TITLE AND LOCATION:
CROSS SECTION C-C'
POST EXCAVATION
RISK ASSESSMENT
 3025 ALBION ROAD NORTH
 OTTAWA, ONTARIO

JOB NO.: OTT-00246047-D0	DRAWN BY: DP
SCALE: AS NOTED	CHECKED BY: PV
DATE: DECEMBER 2018	FIG NO.: 23



VERTICAL SCALE: AS SHOWN

HORIZONTAL SCALE:



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LEGEND:

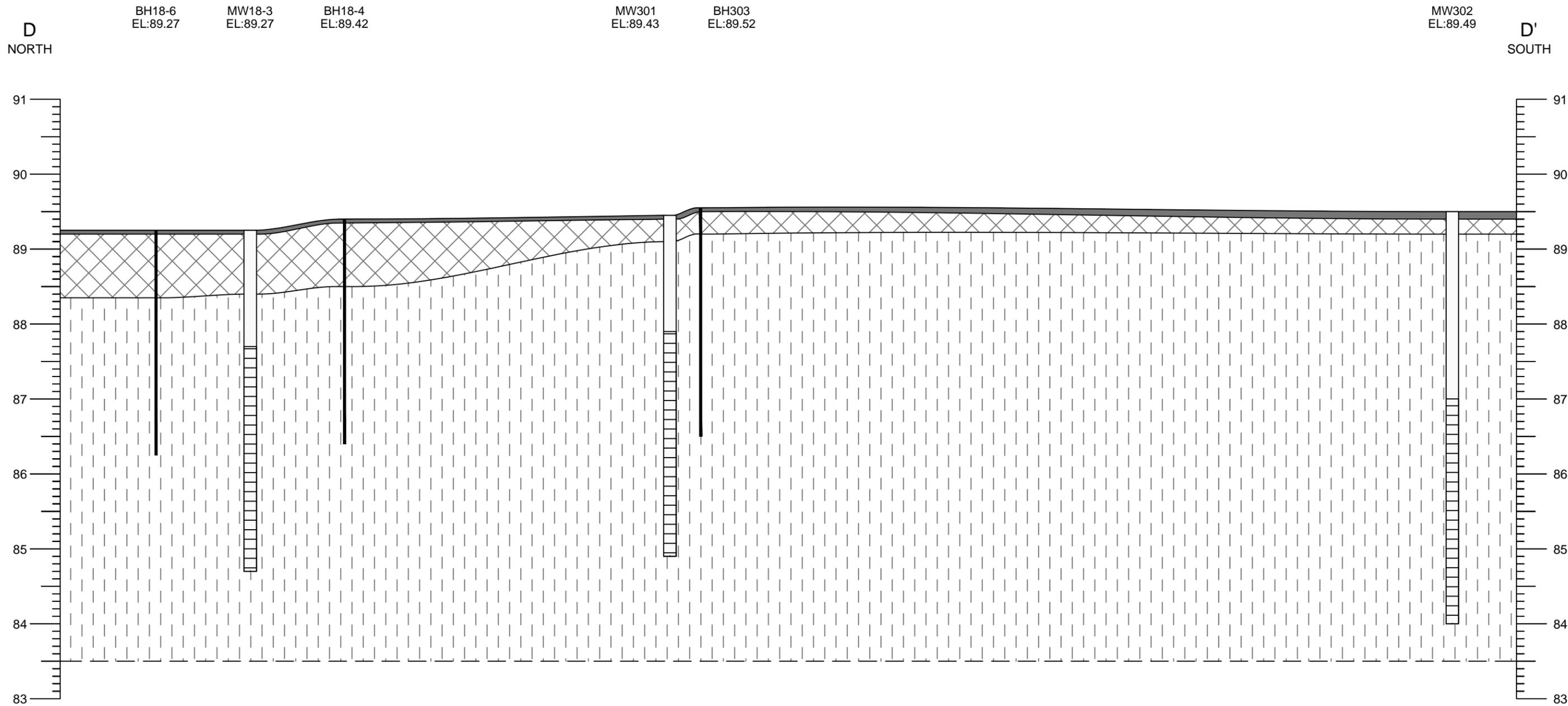
- ASPHALT
- CONCRETE
- FILL
- SILTY SAND
- TILL
- CRUSHED STONE
- EXTENT OF EXCAVATION 2 (CYANIDE)
- CONFIRMATORY SAMPLE LOCATION (EXP, 2018)
- SAMPLE MEETS TABLE 3 SCS

NOTE: BOREHOLE / MONITORING WELL INCLUDED FOR CHEMICAL CHARACTERIZATION ONLY

CROSS SECTION C-C' WITH METAL IMPACTS IN SOIL

POST EXCAVATION
 RISK ASSESSMENT
 3025 ALBION ROAD NORTH
 OTTAWA, ONTARIO

JOB NO.: OTT-00246047-D0	DRAWN BY: DP
SCALE: AS NOTED	CHECKED BY: PV
DATE: DECEMBER 2018	FIG NO.: 23A



VERTICAL SCALE: AS SHOWN

HORIZONTAL SCALE:



X:\DRAWINGS\246000\246000\246047\DMGRAAUG 27 2018\OTT-00246047-D0.dwg

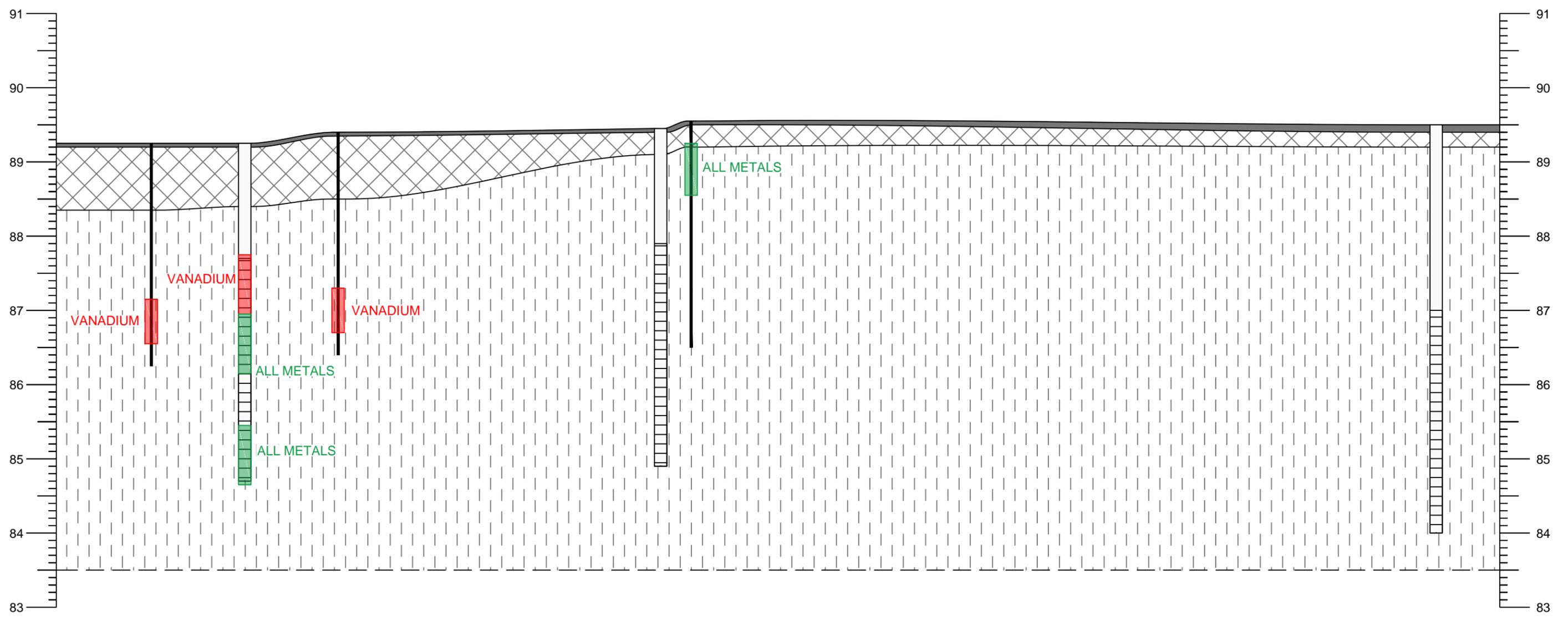
EXP Services Inc.
 t: +1.905.793.9800 | f: +1.905.793.0641
 1595 Clark Boulevard
 Brampton, ON L6T 4V1
 Canada
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LEGEND:
 ASPHALT
 FILL
 SILTY SAND

TITLE AND LOCATION:
CROSS SECTION D-D'
 RISK ASSESSMENT
 3025 ALBION ROAD NORTH
 OTTAWA, ONTARIO

JOB NO.: OTT-00246047-D0	DRAWN BY: DP
SCALE: AS NOTED	CHECKED BY: PV
DATE: DECEMBER 2018	FIG NO.: 24

D NORTH
 BH18-6 EL:89.27 MW18-3 EL:89.27 BH18-4 EL:89.42 MW301 EL:89.43 BH303 EL:89.52 MW302 EL:89.49 D' SOUTH



VERTICAL SCALE: AS SHOWN

HORIZONTAL SCALE:



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LEGEND:

- ASPHALT
- FILL
- SILTY SAND

- SAMPLE MEETS TABLE 3 SCS
- SAMPLE EXCEEDS TABLE 3 SCS

NOTE: NO PLUME IS DEFINED AS VANADIUM IMPACTS ARE CONSIDERED TO BE NATURALLY OCCURRING IN NATIVE SOIL

TITLE: CROSS SECTION D-D' WITH METALS IMPACTS IMPACTS IN SOIL

RISK ASSESSMENT
 3025 ALBION ROAD NORTH
 OTTAWA, ONTARIO

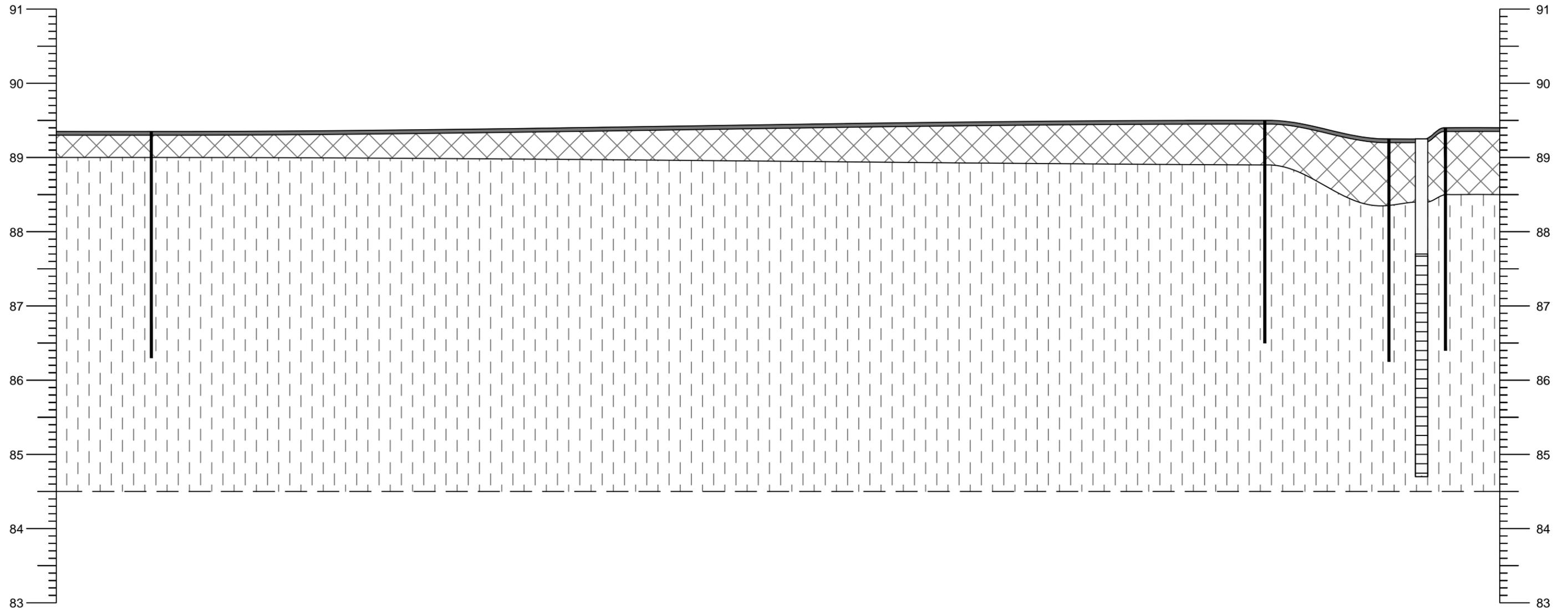
JOB NO.: OTT-00246047-D0	DRAWN BY: DP
SCALE: AS NOTED	CHECKED BY: PV
DATE: DECEMBER 2018	FIG NO.: 24A

BH304
EL:89.34

E
WEST

BH18-5 EL:89.5 BH18-6 EL:89.27 MW18-3 EL:89.27 BH18-4 EL:89.42

E'
EAST



VERTICAL SCALE: AS SHOWN



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LEGEND:

	ASPHALT
	FILL
	SILTY SAND

TITLE AND LOCATION:
CROSS SECTION E-E'
 RISK ASSESSMENT
 3025 ALBION ROAD NORTH
 OTTAWA, ONTARIO

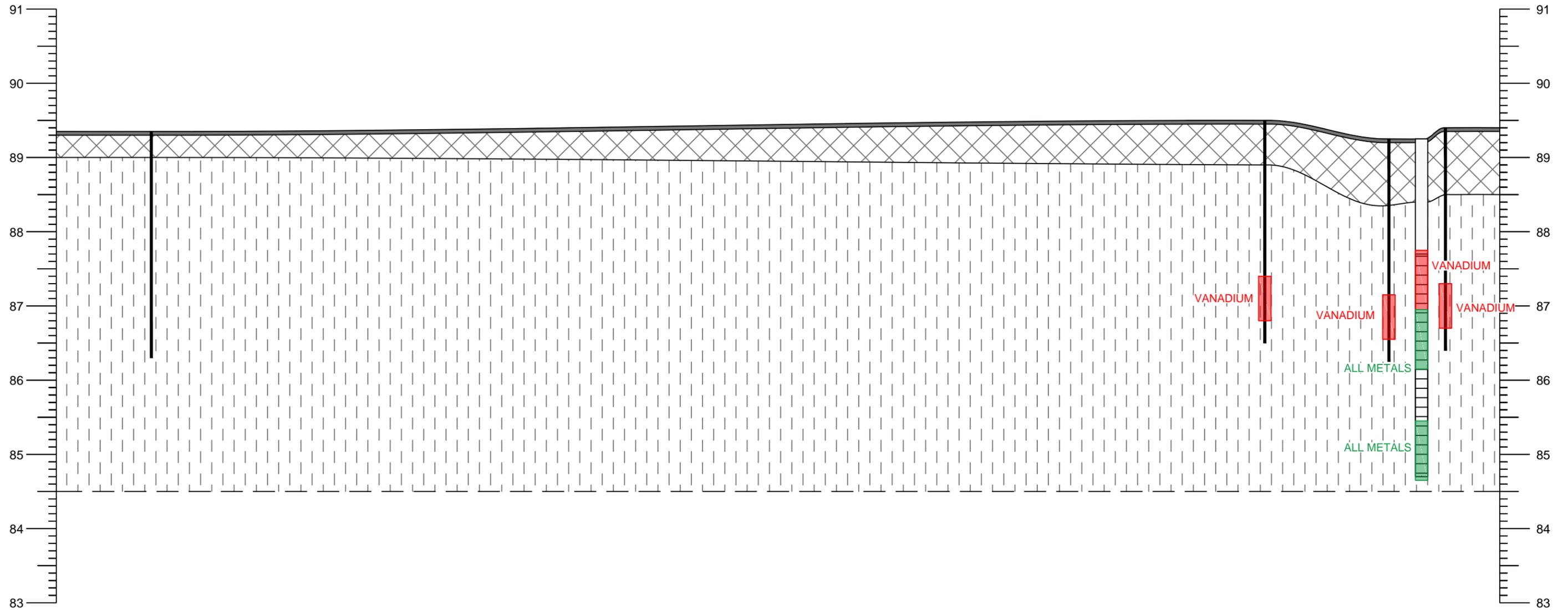
JOB NO.: OTT-00246047-D0	DRAWN BY: DP
SCALE: AS NOTED	CHECKED BY: PV
DATE: DECEMBER 2018	FIG NO.: 25

BH304
EL:89.34

E
WEST

BH18-5 EL:89.5 BH18-6 EL:89.27 MW18-3 EL:89.27 BH18-4 EL:89.42

E'
EAST



VERTICAL SCALE: AS SHOWN



X:\DRAWINGS\246000\246000\246047\DMGRAAUG 27 2018\OTT-00246047-D0.dwg

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LEGEND:

	ASPHALT
	FILL
	SILTY SAND

- SAMPLE MEETS TABLE 3 SCS
- SAMPLE EXCEEDS TABLE 3 SCS

NOTE: NO PLUME IS DEFINED AS VANADIUM IMPACTS ARE CONSIDERED TO BE NATURALLY OCCURRING IN NATIVE SOIL

CROSS SECTION E-E' WITH METALS IMPACTS IN SOIL

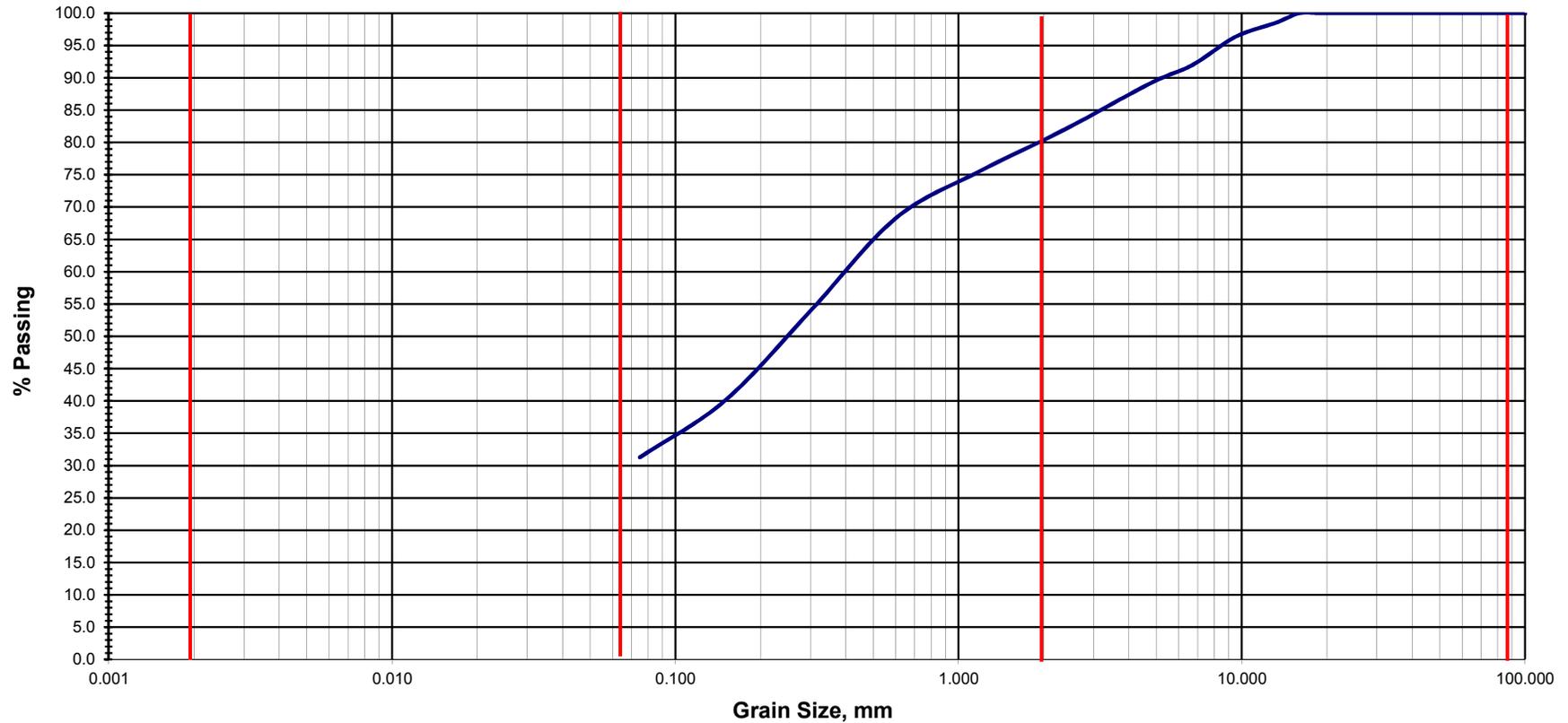
RISK ASSESSMENT
 3025 ALBION ROAD NORTH
 OTTAWA, ONTARIO

JOB NO.: OTT-00246047-D0	DRAWN BY: DP
SCALE: AS NOTED	CHECKED BY: PV
DATE: DECEMBER 2018	FIG NO.: 25A



Method of Test for Sieve Analysis of Aggregate
 MTO Test Method LS - 602, Rev. No. 23

Grain Size Distribution Curve



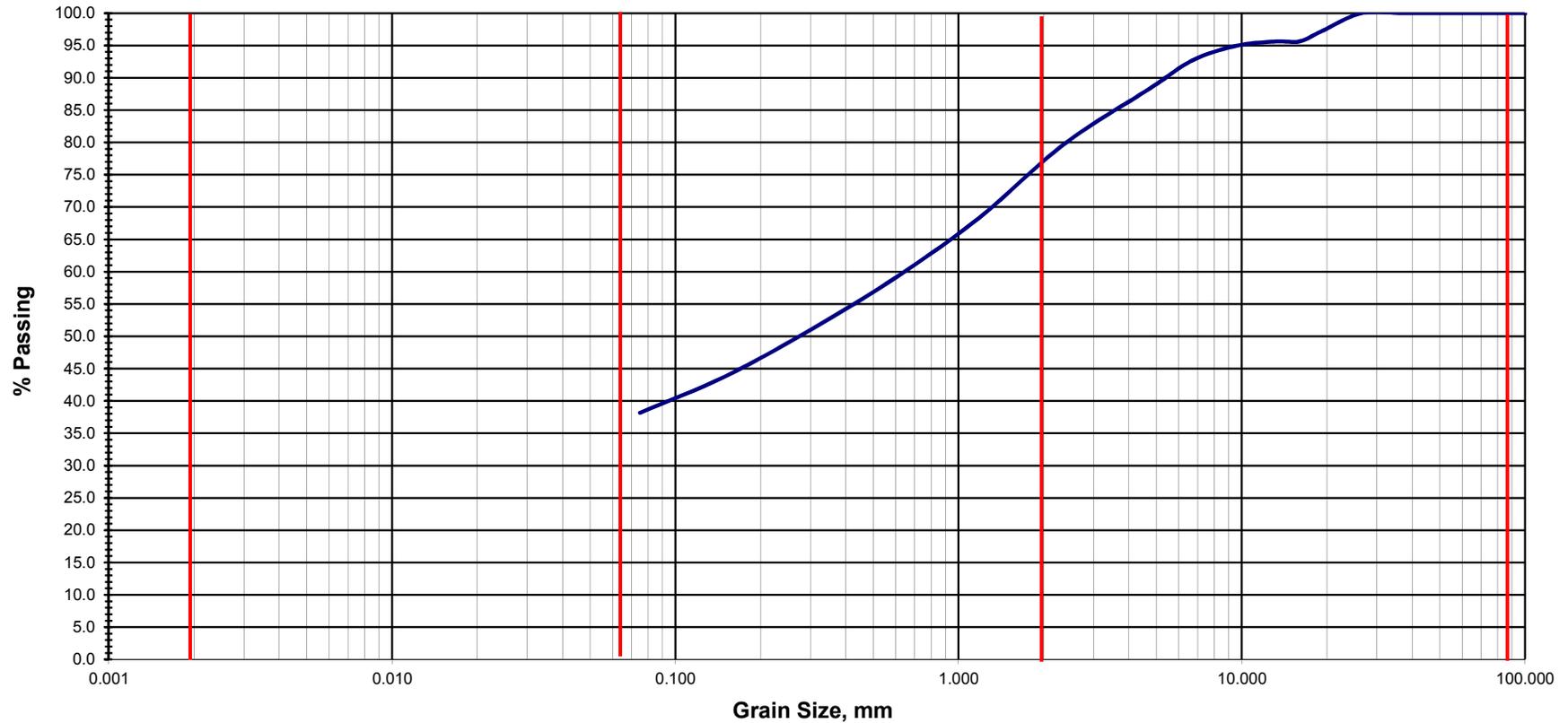
CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	
	SILT			SAND			GRAVEL			
Modified M.I.T. Classification										

exp Project No.:	OTT-228983	Project Name :	PIIESA Hydro Ottawa Sites							
Client :	Cresa Toronto Inc.	Project Location :	3025 Albion Road, Ottawa							
Date Sampled :	October 16, 2015	Borehole/MW #	302 SS1	% Pass 75 um	31.3	Fine Grained				
Sample Description :	Silty Sand and Gravel						Coarse Grained			X



Method of Test for Sieve Analysis of Aggregate
 MTO Test Method LS - 602, Rev. No. 23

Grain Size Distribution Curve



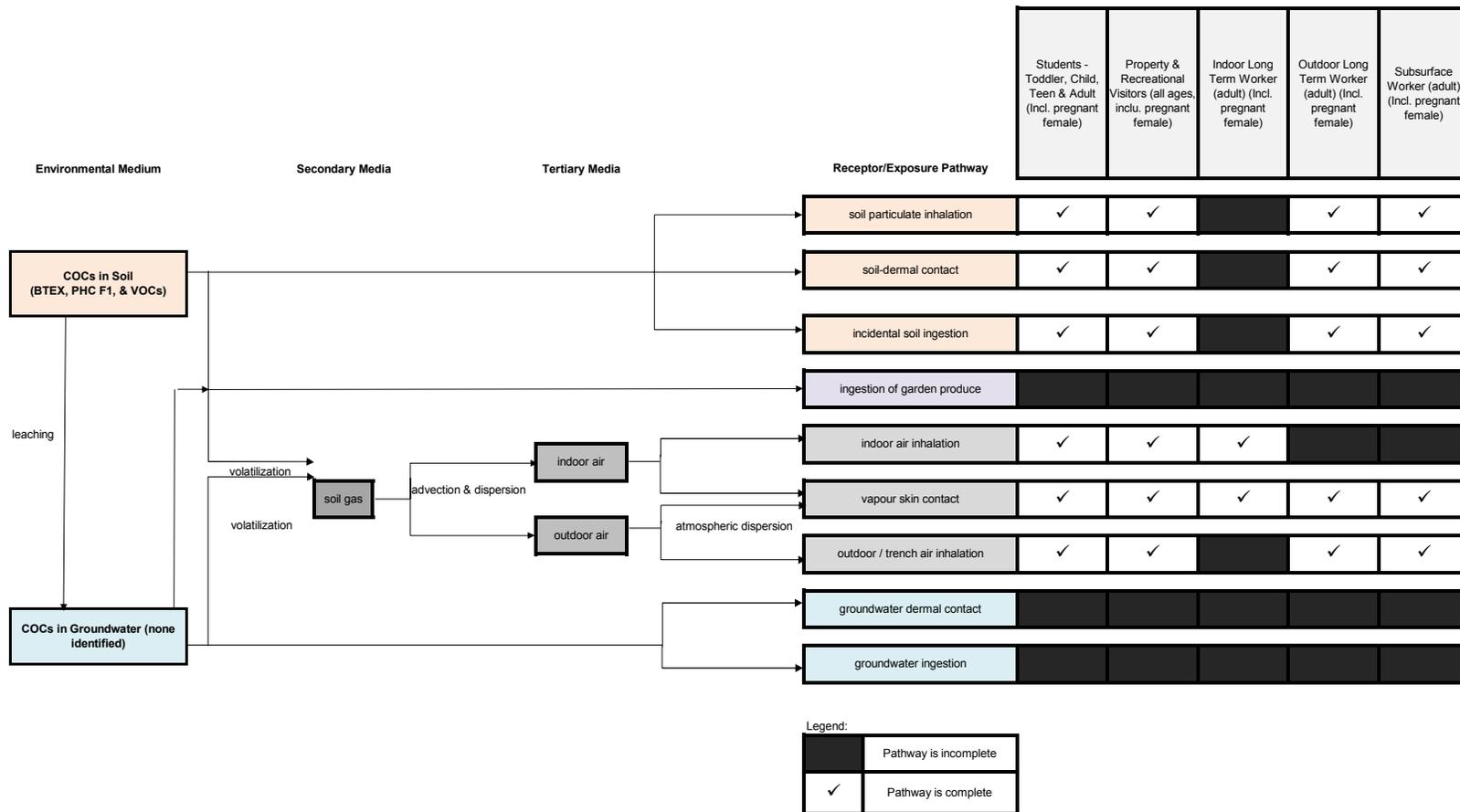
CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	
	SILT			SAND			GRAVEL			
Modified M.I.T. Classification										

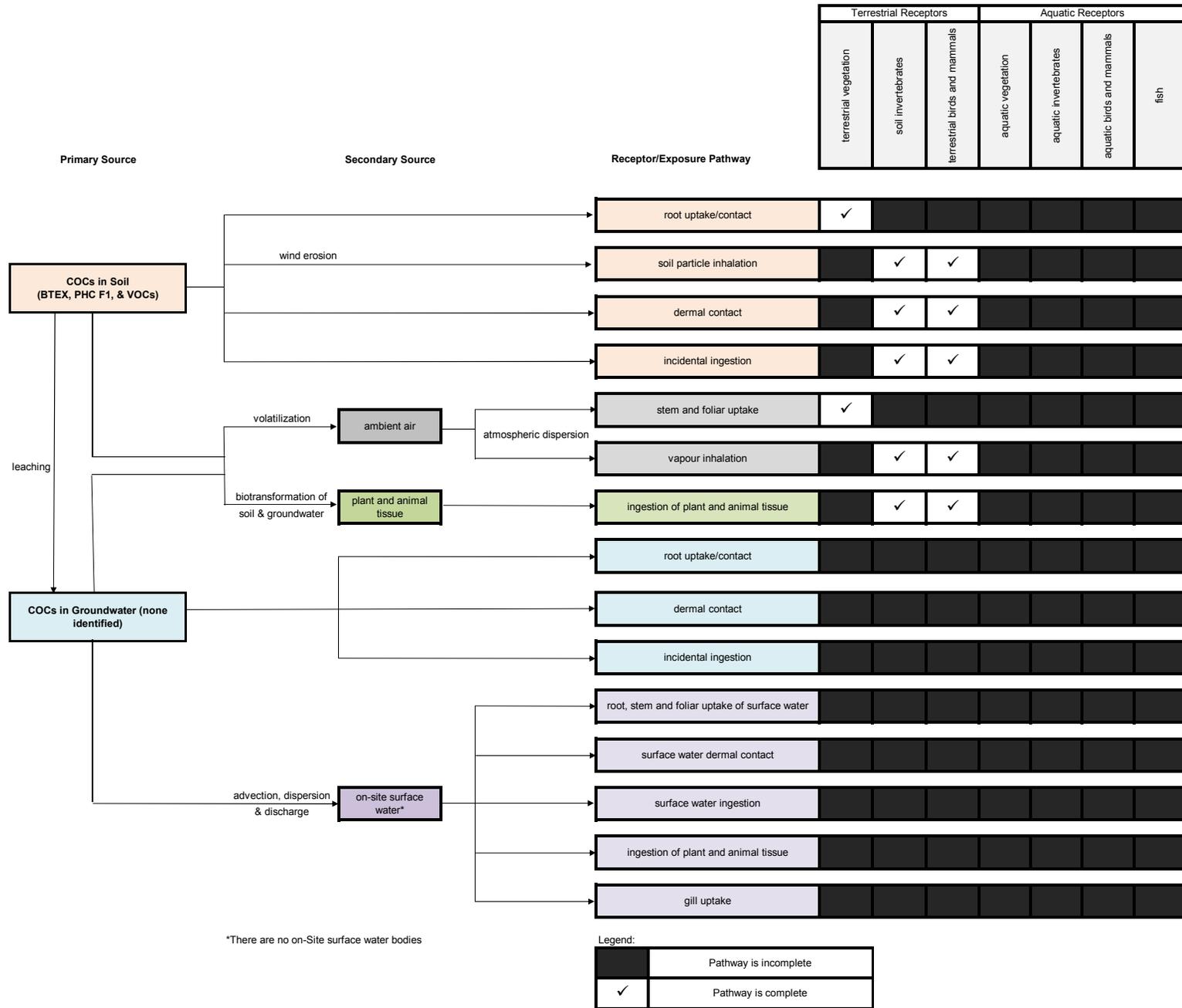
exp Project No.:	OTT-228983	Project Name :	PIIESA Hydro Ottawa Sites							
Client :	Cresa Toronto, Inc.	Project Location :	3025 Albion Road, Ottawa							
Date Sampled :	October 16, 2015	Borehole/MW #	304 SS4	% Pass 75 um	38.2	Fine Grained				
Sample Description :	Silty Sand and Gravel						Coarse Grained	X		

EXP Services Inc.

*Ahlul-Bayt Center Ottawa
Phase Two Environmental Phase Two Property Assessment
3025 Albion Road North, Ottawa, ON
OTT-00246047-B0
December 21, 2018*

Appendix A: Tables





EXP Services Inc.

*Ahlul-Bayt Center Ottawa
Phase Two Environmental Phase Two Property Assessment
3025 Albion Road North, Ottawa, ON
OTT-00246047-B0
December 21, 2018*

Appendix B: Summary of Soil Analytical Data

**TABLE 1 SOIL ANALYTICAL RESULTS ($\mu\text{g/g}$)
PETROLEUM HYDROCARBONS and PCB
3025 Albion Road, Ottawa**

Parameter	MOECC Table 3 ¹	MW301 SS1	MW302 SS2	BH303 SS2	BH304 SS2	MW305 SS1	MW306 SS1*	MW307 SS1	MW308 SS2	MW309 SS1	MW311 SS1
Sample Date (d/m/y)	Institutional	16/10/15	16/10/15	10/162015	16/10/15	19/10/15	19/10/15	19/10/15	19/10/15	19/10/15	19/10/15
Sample Depth (mbgs)		0.3 - 1.5	0.75 - 1.5	1.0 - 1.5	1.0 - 1.5	0.3 - 1.5	0.3 - 1.5	0.3 - 1.5	0.6 - 1.5	0.6 - 1.5	0.5 - 1.5
Benzene	0.21	<0.02	<0.02	<0.02	<0.02	<0.02	9.2	<0.02	<0.02	<0.02	<0.02
Toluene	2.3	<0.02	<0.02	<0.02	<0.02	<0.02	4.9	<0.02	<0.02	<0.02	<0.02
Ethylbenzene	2.1	<0.02	<0.02	<0.02	<0.02	<0.02	13	<0.02	<0.02	<0.02	<0.02
Xylenes	3.1	<0.04	<0.04	<0.04	<0.04	<0.04	44	<0.04	<0.04	<0.04	<0.04
PHC F ₁ (>C ₆ -C ₁₀)	55	<10	<10	<10	<10	<10	420	<10	<10	<10	<10
PHC F ₂ (>C ₁₀ -C ₁₆)	98	<10	<10	<10	<10	<10	100	<10	<10	15	<10
PHC F ₃ (>C ₁₆ -C ₃₄)	300	290	<50	<50	<50	<50	<50	74	<50	<50	<50
PHC F ₄ (>C ₃₄ -C ₅₀)	2800	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Polychlorinated Biphenyls	0.35	0.039	<0.01	<0.01	<0.01	<0.01	NA	NA	NA	NA	<0.01

Parameter	MOECC Table 3 ¹	BH1SS1	BH2SS2	BH3SS2*	BH4SS2	BH5SS2	BH6SS2	BH7SS2	BH8SS1	BH9SS2	BH11SS2
Sample Date (d/m/y)	Institutional	13/02/18	13/02/18	13/02/18	13/02/18	13/02/18	13/02/18	13/02/18	13/02/18	13/02/18	13/02/18
Sample Depth (mbgs)		0.0 - 1.2	1.2 - 2.4	1.2 - 2.4	1.2 - 2.4	1.2 - 2.6	1.2 - 2.6	1.2 - 2.4	0.0 - 1.2	1.2 - 2.4	0.0 - 1.2
Benzene	0.21	<0.02	<0.02	9.15	NA	<0.02	<0.02	<0.02	NA	NA	NA
Toluene	2.3	<0.2	<0.2	2.24	NA	<0.2	<0.2	<0.2	NA	NA	NA
Ethylbenzene	2.1	<0.05	<0.05	18.9	NA	<0.05	<0.05	<0.05	NA	NA	NA
Xylenes	3.1	<0.05	<0.05	31.8	NA	<0.05	<0.05	<0.05	NA	NA	NA
PHC F ₁ (>C ₆ -C ₁₀)	55	<10	<10	200	<10	<10	<10	<10	NA	NA	<10
PHC F ₂ (>C ₁₀ -C ₁₆)	98	<10	<10	<10	<10	<10	<10	<10	NA	NA	<10
PHC F ₃ (>C ₁₆ -C ₃₄)	300	40	<20	<20	20	<20	<20	360	NA	NA	50
PHC F ₄ (>C ₃₄ -C ₅₀)	2800	70	<20	40	90	<20	<20	560	NA	NA	80
Polychlorinated Biphenyls	0.35	NA	<0.02	<0.02	<0.02						

NOTES:

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

Shaded Concentration exceeds MOECC Table 3 soil quality standard.

NA Not analyzed

* Soil from this area removed during remediation July 2018.

**TABLE 1 SOIL ANALYTICAL RESULTS ($\mu\text{g/g}$)
 PETROLEUM HYDROCARBONS and PCB
 3025 Albion Road, Ottawa**

Parameter	MOECC Table 3 ¹	BH12SS1	MW18-1 SS8	MW18-1 SS0	MW18-2 SS4	MW18-3 SS4
Sample Date (d/m/y)	Institutional	13/02/18	28/05/18	Duplicate of	28/05/18	28/05/18
Sample Depth (mbgs)		0.0 - 1.2	5.3 - 6.1	MW18-1 SS8	3.0 - 3.8	1.5 - 2.3
Benzene	0.21	NA	<0.02	<0.02	<0.02	<0.02
Ethylbenzene	2.3	NA	<0.02	<0.02	<0.02	<0.02
Toluene	2.1	NA	<0.02	<0.02	<0.02	<0.02
Xylenes	3.1	NA	<0.04	<0.04	<0.04	<0.04
PHC F ₁ (>C ₆ -C ₁₀)	55	NA	23	19	11	<10
PHC F ₂ (>C ₁₀ -C ₁₆)	98	NA	38	38	41	<10
PHC F ₃ (>C ₁₆ -C ₃₄)	300	NA	<50	<50	<50	<50
PHC F ₄ (>C ₃₄ -C ₅₀)	2800	NA	<50	<50	<50	<50
PCBs	0.35	<0.02	<0.010	<0.010	<0.010	<0.020

NOTES:

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

Shaded Concentration exceeds MOECC Table 3 soil quality standard.

NA Not analyzed

* Soil from this area removed during remediation July 2018.

**TABLE 1 SOIL ANALYTICAL RESULTS ($\mu\text{g/g}$)
PETROLEUM HYDROCARBONS and PCB
3025 Albion Road, Ottawa**

Parameter	MOECC Table 3 ¹	Remedial Excavation at Former UST Location											
		N-1	N-2	E-1	E-2*	S-1*	S-2*	W-1	W-2	F8	F2	E19	E91
Sample Date (d/m/y)	Institutional	28/06/18	28/06/18	28/06/18	28/06/18	28/06/18	28/06/18	28/06/18	28/06/18	28/06/18	28/06/18	04/07/18	Duplicate of
Sample Depth (mbgs)		3	3	3	3	3	3	3	3	3	3.3	3.3	1.2
Benzene	0.21	<0.02	<0.02	<0.02	3.4	2.1	10	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Ethylbenzene	2.3	0.02	<0.02	0.34	4.4	0.50	21	<0.02	<0.02	0.03	<0.02	<0.02	<0.02
Toluene	2.1	0.05	<0.02	0.03	6.6	8.5	74	<0.02	<0.02	0.04	<0.02	<0.02	<0.02
Xylenes	3.1	0.11	<0.04	<0.04	17	2.6	120	<0.04	<0.04	0.07	<0.04	<0.04	<0.04
PHC F ₁ (>C ₆ -C ₁₀)	55	<10	<10	<10	170	27	940	<10	<10	<10	<10	<10	<10
PHC F ₂ (>C ₁₀ -C ₁₆)	98	33	33	<10	79	35	190	24	23	28	43	25	26
PHC F ₃ (>C ₁₆ -C ₃₄)	300	<50	<50	<50	78	<50	<50	<50	<50	<50	<50	<50	<50
PHC F ₄ (>C ₃₄ -C ₅₀)	2800	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50

Parameter	MOECC Table 3 ¹	NE4	F15	Footing 4 *	Footing 5 *	E21	E22	Backfill 1	Backfill 2	Backfill 3	Backfill 4	Backfill 5
		Sample Date (d/m/y)	Institutional	04/07/18	04/07/18	06/07/18	06/07/18	11/07/18	11/07/18	11/07/18	11/07/18	15/08/18
Sample Depth (mbgs)	2.2	3.3		1.8	1.8	2.6	2.6	2.3	2.5	1.5	0.6	0.6
Benzene	0.21	<0.02	<0.02	0.24	1.3	0.03	<0.02	0.03	<0.02	0.04	<0.02	<0.02
Ethylbenzene	2.3	<0.02	<0.02	0.77	2.7	<0.02	<0.02	0.02	<0.02	<0.02	<0.02	<0.02
Toluene	2.1	<0.02	<0.02	0.12	6.9	<0.02	<0.02	0.10	0.08	0.1	0.06	0.04
Xylenes	3.1	<0.04	<0.04	3.2	15	<0.04	<0.04	0.12	0.11	0.10	0.06	0.05
PHC F ₁ (>C ₆ -C ₁₀)	55	<10	<10	13	150	<10	<10	<10	<10	<10	<10	<10
PHC F ₂ (>C ₁₀ -C ₁₆)	98	40	35	<10	24	36	37	<10	<10	<10	<10	<10
PHC F ₃ (>C ₁₆ -C ₃₄)	300	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
PHC F ₄ (>C ₃₄ -C ₅₀)	2800	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50

NOTES:

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

Shaded Concentration exceeds MOECC Table 3 soil quality standard.

NA Not analyzed

* Soil from this area removed during remediation July 2018.

PETROLEUM HYDROCARBONS and PCB
3025 Albion Road, Ottawa

Remedial Excavation at Former UST Location, South Wall Samples

Parameter	MOECC Table 3 ¹	1A	1D	Footing (same location as 2A)	2B	2C	2D	2E	2F	3A	3B	3C
Sample Date (d/m/y)	Institutional	11/07/18	11/07/18	04/07/18	11/07/18	11/07/18	11/07/18	11/07/18	11/07/18	11/07/18	11/07/18	11/07/18
Sample Depth (mbgs)		2.0	2.6	2.0	2.0	2.0	2.6	2.6	2.6	2.0	2.0	2.0
Benzene	0.21	<0.02	<0.02	2.3	0.62	<0.02	3.2	1.7	<0.02	14	<0.02	0.4
Ethylbenzene	2.3	<0.02	<0.02	3.1	2.1	<0.02	2.0	2.0	<0.02	7.8	<0.02	2.8
Toluene	2.1	<0.02	<0.02	0.86	1.4	<0.02	1.6	14	<0.02	6.1	<0.02	3.6
Xylenes	3.1	<0.04	<0.04	10	11	<0.04	2.1	10	<0.04	37	<0.04	17
PHC F ₁ (>C ₆ -C ₁₀)	55	19	19	22	83	12	21	19	19	93	15	120
PHC F ₂ (>C ₁₀ -C ₁₆)	98	30	36	37	42	41	38	40	43	48	35	61
PHC F ₃ (>C ₁₆ -C ₃₄)	300	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
PHC F ₄ (>C ₃₄ -C ₅₀)	2800	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50

Parameter	MOECC Table 3 ¹	3D	3E	3F	3G
Sample Date (d/m/y)	Institutional	11/07/18	11/07/18	11/07/18	Duplicate of 3F
Sample Depth (mbgs)		2.6	2.6	2.6	2.6
Benzene	0.21	0.03	<0.02	<0.02	<0.02
Ethylbenzene	2.3	<0.02	<0.02	<0.02	<0.02
Toluene	2.1	<0.02	<0.02	<0.02	<0.02
Xylenes	3.1	0.12	<0.04	<0.04	<0.04
PHC F ₁ (>C ₆ -C ₁₀)	55	<10	<10	11	12
PHC F ₂ (>C ₁₀ -C ₁₆)	98	42	43	48	45
PHC F ₃ (>C ₁₆ -C ₃₄)	300	<50	<50	<50	<50
PHC F ₄ (>C ₃₄ -C ₅₀)	2800	<50	<50	<50	<50

NOTES:

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

Shaded Concentration exceeds MOECC Table 3 soil quality standard.

NA Not analyzed

TABLE 2
SOIL ANALYTICAL RESULTS ($\mu\text{g/g}$)
VOLATILE ORGANIC COMPOUNDS
3025 Albion Road, Ottawa

Parameter	MOECC Table 3 ¹	MW306 SS1*	MW307 SS1	MW307 SS10	MW308 SS2	MW309 SS1
Sample Date (d/m/y)	Institutional	19/10/15	19/10/15	Dup of	19/10/15	19/10/15
Sample Depth (mbgs)		0.3 - 1.5	0.3 - 1.5	MW307 SS10	0.6 - 1.5	0.6 - 1.5
Acetone	16	<2.5	<0.50	<0.50	<0.50	<0.50
Benzene	0.21	9.2	<0.020	<0.020	<0.020	<0.020
Bromodichloromethane	13	<0.25	<0.050	<0.050	<0.050	<0.050
Bromoform	5.4	<0.25	<0.050	<0.050	<0.050	<0.050
Bromomethane	0.05	<0.050	<0.050	<0.050	<0.050	<0.050
Carbon Tetrachloride	0.05	<0.050	<0.050	<0.050	<0.050	<0.050
Chlorobenzene	2.4	<0.25	<0.050	<0.050	<0.050	<0.050
Chloroform	3.1	<0.050	<0.050	<0.050	<0.050	<0.050
Dibromochloromethane	9.4	<0.25	<0.050	<0.050	<0.050	<0.050
1,2-Dichlorobenzene	3.4	<0.25	<0.050	<0.050	<0.050	<0.050
1,3-Dichlorobenzene	4.8	<0.25	<0.050	<0.050	<0.050	<0.050
1,4-Dichlorobenzene	0.083	<0.050	<0.050	<0.050	<0.050	<0.050
Difluorodifluoromethane	16	<0.25	<0.050	<0.050	<0.050	<0.050
1,1-Dichloroethane	3.5	<0.25	<0.050	<0.050	<0.050	<0.050
1,2-Dichloroethane	0.05	<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
Cis-1,2-Dichloroethylene	3.4	<0.25	<0.050	<0.050	<0.050	<0.050
Trans-1,2-Dichloroethylene	0.084	<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
Cis-1,3-Dichloropropylene	0.05	<0.030	<0.030	<0.030	<0.030	<0.030
Trans-1,3-Dichloropropylene		<0.040	<0.040	<0.040	<0.040	<0.040
Ethylbenzene	2.1	13	<0.020	<0.020	<0.020	<0.020
Ethylene Dibromide	0.05	<0.050	<0.050	<0.050	<0.050	<0.050
Hexane	2.8	7.5	<0.050	<0.050	<0.050	<0.050
Methylene Chloride	0.1	<0.050	<0.050	<0.050	<0.050	<0.050
Methyl Ethyl Ketone	16	<2.5	<0.50	<0.50	<0.50	<0.50
Methyl Isobutyl Ketone	1.7	<0.50	<0.50	<0.50	<0.50	<0.50
Methyl-t-Butyl Ether	0.75	<0.25	<0.050	<0.050	<0.050	<0.050
Styrene	0.7	<0.25	<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
1,1,2,2-Tetrachloroethane	0.05	<0.050	<0.050	<0.050	<0.050	<0.050
Tetrachloroethylene	0.28	<0.25	<0.050	<0.050	<0.050	<0.050
Toluene	2.3	4.9	<0.020	<0.020	<0.020	<0.020
1,1,1-Trichloroethane	0.38	<0.25	<0.050	<0.050	<0.050	<0.050
1,1,2-Trichloroethane	0.05	<0.050	<0.050	<0.050	<0.050	<0.050
Trichloroethylene	0.05	<0.050	<0.050	<0.050	<0.050	<0.050
Trichlorofluoromethane	4	<0.25	<0.050	<0.050	<0.050	<0.050
Vinyl Chloride	0.02	<0.020	<0.020	<0.020	<0.020	<0.020
Total Xylenes	3.1	44	<0.020	<0.020	<0.020	<0.020

NOTES:

1 MOECC Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the EPA, April 2011, Table 3 non potable institutional standard

Shaded Concentration exceeds MOECC Table 3 soil quality standard.

NA Not analyzed

* Soil from this area removed during remediation July 2018.

TABLE 2 **SOIL ANALYTICAL RESULTS ($\mu\text{g/g}$)**
VOLATILE ORGANIC COMPOUNDS
3025 Albion Road, Ottawa

Parameter	MOECC Table 3 ¹	BH1SS1	BH2SS2	BH3SS2*	BH5SS2	BH6SS2	BH7SS2
Sample Date (d/m/y)	Institutional	13/02/18	13/02/18	13/02/18	13/02/18	13/02/18	13/02/18
Sample Depth (mbgs)		0.0 - 1.2	1.2 - 2.4	1.2 - 2.4	1.2 - 2.6	1.2 - 2.6	1.2 - 2.4
Acetone	16	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Benzene	0.21	<0.02	<0.02	9.15	<0.02	<0.02	<0.02
Bromodichloromethane	13	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Bromoform	5.4	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Bromomethane	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Carbon Tetrachloride	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorobenzene	2.4	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Chloroform	3.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Dibromochloromethane	9.4	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1,2-Dichlorobenzene	3.4	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1,3-Dichlorobenzene	4.8	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1,4-Dichlorobenzene	0.083	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Difluorodifluoromethane	16	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1,1-Dichloroethane	3.5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1,2-Dichloroethane	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1,1-Dichloroethylene	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Cis-1,2-Dichloroethylene	3.4	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Trans-1,2-Dichloroethylene	0.084	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1,2-Dichloropropane	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Cis-1,3-Dichloropropylene	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Trans-1,3-Dichloropropylene		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Ethylbenzene	2.1	<0.05	<0.05	18.90	<0.05	<0.05	<0.05
Ethylene Dibromide	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Hexane	2.8	<0.05	<0.05	9.78	<0.05	<0.05	<0.05
Methylene Chloride	0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Methyl Ethyl Ketone	16	<0.50	<0.50	9.38	<0.50	<0.50	<0.50
Methyl Isobutyl Ketone	1.7	<0.50	<0.50	2.78	<0.50	<0.50	<0.50
Methyl-t-Butyl Ether	0.75	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Styrene	0.7	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1,1,1,2-Tetrachloroethane	0.058	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1,1,2,2-Tetrachloroethane	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Tetrachloroethylene	0.28	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Toluene	2.3	<0.20	<0.20	2.24	<0.20	<0.20	<0.20
1,1,1-Trichloroethane	0.38	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1,1,2-Trichloroethane	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Trichloroethylene	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Trichlorofluoromethane	4	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Vinyl Chloride	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Total Xylenes	3.1	<0.05	<0.05	31.8	<0.05	<0.05	<0.05

NOTES:

- 1 MOECC Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the EPA, April 2011, Table 3 non potable institutional standard
- Shaded Concentration exceeds MOECC Table 3 soil quality standard.
- NA Not analyzed
- * Soil from this area removed during remediation July 2018.

**TABLE 3 SOIL ANALYTICAL RESULTS ($\mu\text{g/g}$)
METALS
3025 Albion Road, Ottawa**

Parameter	MOECC Table 3 ¹	MW303 SS1	MW304 SS1	MW307 SS1	MW308 SS1
Sample Date (d/m/y)	Institutional	16/10/15	16/10/15	19/10/15	19/10/15
Sample Depth (mbgs)		0.3 - 1.0	0.3 - 0.5	0.3 - 1.5	0.3 - 0.6
Antimony	7.5	<0.20	NA	<0.20	<0.20
Arsenic	18	<1.0	NA	2.8	1.5
Barium	390	21	NA	110	38
Beryllium	4	<0.20	NA	0.95	0.47
Boron	120	<5.0	NA	<5.0	<5.0
Cadmium	1.2	<0.10	NA	<0.10	<0.10
Chromium	160	6.5	NA	24	19
Chromium VI	8	<0.2	NA	<0.2	<0.2
Cobalt	22	2.3	NA	9.2	7.6
Copper	140	4.2	NA	14	12
Lead	120	2.3	NA	12	5.7
Mercury	0.27	<0.50	NA	<0.050	<0.050
Molybdenum	6.9	<0.50	NA	0.96	0.58
Nickel	100	3.8	NA	23	15
Selenium	2.4	<0.50	NA	<0.50	<0.50
Silver	20	<0.20	NA	<0.20	<0.20
Thallium	1	<0.050	NA	0.16	0.092
Uranium	23	0.43	NA	0.95	0.77
Vanadium	86	17	NA	36	31
Zinc	340	8.8	NA	36	24
Sodium Absorption Ratio	5	1.7	NA	2.2	2.9
Cyanide	0.051	<0.01	NA	0.06	0.01
pH	5 - 11	7.49	7.24	7.14	7.46

NOTES:

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

Shaded Concentration exceeds MOECC Table 3 soil quality standard.

N/A Not analyzed

NV no value

**TABLE 3 SOIL ANALYTICAL RESULTS ($\mu\text{g/g}$)
METALS
3025 Albion Road, Ottawa**

Parameter	MOECC Table 3 ¹	BH4SS2	BH10SS1	BH11SS1	MW18-1 SS8	MW18-1 SS0	MW18-2 SS4	MW18-3 SS4
Sample Date (d/m/y)	Institutional	13/02/18	13/02/18	13/02/18	28/05/18	Duplicate of	28/05/18	28/05/18
Sample Depth (mbgs)		1.2 - 2.4	0.0 - 1.2	0.0 - 1.2	5.3 - 6.1	MW18-1 SS8	3.0 - 3.8	1.5 - 2.3
Aluminum	NV	10200	6120	2600	12000	12000	13000	28000
Antimony	7.5	<1	<1	<1	0.30	<0.20	0.20	<0.20
Arsenic	18	7	2	2	6.3	6.1	5.2	<1.0
Barium	390	104	54	15	90	110	110	320
Beryllium	4	NA	NA	NA	0.73	0.71	0.68	0.85
Bismuth	NV	NA	NA	NA	<1.0	<1.0	<1.0	<1.0
Boron (HWS)	1.5	<0.5	<0.5	<0.5	NA	NA	NA	NA
Boron	120	NA	NA	NA	11	10	8.6	<5.0
Cadmium	1.2	NA	NA	NA	0.11	0.11	<0.10	<0.10
Calcium	NV	NA	NA	NA	29000	28000	29000	9700
Chromium	160	43	22	11	22	22	25	97
Cobalt	22	11	5	3	14	14	14	22
Copper	140	24	11	5	32	33	32	44
Iron	NV	NA	NA	NA	30000	29000	29000	46000
Lead	120	15	3	5	17	17	15	7.3
Magnesium	NV				10000	10000	10000	17000
Manganese	NV	590	229	231	490	480	480	620
Mercury	0.3	<0.1	<0.1	<0.1	<0.050	<0.050	<0.050	<0.050
Molybdenum	6.9	4	<1	<1	2.1	1.7	1.3	0.91
Nickel	100	35	12	7	33	33	32	56
Phosphorus	NV	NA	NA	NA	600	610	690	1000
Potassium	NV	NA	NA	NA	2400	2300	2600	10000
Selenium	2.4	1	<1	<1	<0.50	<0.50	<0.50	<0.50
Silver	20	<0.2	<0.2	<0.2	<0.20	<0.20	<0.20	<0.20
Sodium	NV	308	240	764	180	180	270	2200
Strontium	NV	NA	NA	NA	130	130	93	76
Thallium	1	NA	NA	NA	0.16	0.13	0.13	0.42
Tin	NV	6	<5	<5	<1.0	<1.0	<1.0	1.5
Uranium	23	NA	NA	NA	1.1	1.0	0.90	0.70
Vanadium	86	NA	NA	NA	28	27	32	94
Zinc	340	46	26	12	54	56	60	120
pH	5 - 11	NA	NA	NA	8.15	8.19	8.06	7.30

NOTES:

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

Shaded Concentration exceeds MOECC Table 3 soil quality standard.

N/A Not analyzed

NV no value

**TABLE 3 SOIL ANALYTICAL RESULTS ($\mu\text{g/g}$)
METALS
3025 Albion Road, Ottawa**

Parameter	MOECC Table 3 ¹	CN1-2 *	CN 2-2 *	CN 1-4 *	CN1-10 *
Sample Date (d/m/y)	Institutional	23/06/18	23/06/18	23/06/18	Dup of CN4
Sample Depth (mbgs)		0.3	0.6	0.3	0.3
Cyanide	0.051	<0.01	<0.01	<0.01	<0.01

Parameter	MOECC Table 3 ¹	CN north (N3)	CN south (S3)	CN 1	CN east (E2)	CN west (W4)	CN floor 1 (F1)	CN floor 2 (F2)
Sample Date (d/m/y)	Institutional	27/06/18	23/06/18	Dup. of S3	23/06/18	23/06/18	27/06/18	27/06/18
Sample Depth (mbgs)		2.4	2.4	2.4	1.2	2.4	2.9	2.9
Cyanide	0.051	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

Parameter	MOECC Table 3 ¹	MW18-3 SS5	MW18-3 SS7	MW18-4 SS1	MW18-5 SS1	MW18-6 SS1	MW18-10 SS2
Sample Date (d/m/y)	Institutional	28/05/18	28/05/18	28/05/18	28/05/18	28/05/18	Dup of
Sample Depth (mbgs)		2.3 - 3.1	3.8 - 4.6	2.1 - 2.7	2.1 - 2.7	2.1 - 2.7	MW18-6 SS1
Vanadium	86	81	55	120	120	110	120

NOTES:

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

Shaded Concentration exceeds MOECC Table 3 soil quality standard.

N/A Not analyzed

NV no value

* Soil from this area removed during remediation July 2018.

**TABLE 4 SOIL ANALYTICAL RESULTS ($\mu\text{g/g}$)
POLYCYCLIC AROMATIC HYDROCARBONS
3025 Albion Road, Ottawa**

Parameter	MOECC Table 3 ¹	BH4SS2	BH8SS1	BH9SS2	BH10SS1
Sample Date (d/m/y)	Institutional	13/02/18	13/02/18	13/02/18	13/02/18
Sample Depth (mbgs)		1.2 - 2.4	0.0 - 1.2	1.2 - 2.4	0.0 - 1.2
Acenaphthene	7.9	<0.05	<0.05	<0.05	<0.05
Acenaphthylene	0.15	<0.05	<0.05	<0.05	<0.05
Anthracene	0.67	<0.05	<0.05	<0.05	<0.05
Benzo[a]anthracene	0.5	<0.05	<0.05	<0.05	<0.05
Benzo[a]pyrene	0.3	<0.05	<0.05	<0.05	<0.05
Benzo[b]fluoranthene	0.78	<0.05	<0.05	<0.05	<0.05
Benzo[g,h,i]perylene	6.6	<0.05	<0.05	<0.05	<0.05
Benzo[k]fluoranthene	0.78	<0.05	<0.05	<0.05	<0.05
Chrysene	7	<0.05	<0.05	<0.05	<0.05
Dibenzo[a,h]anthracene	0.1	<0.05	<0.05	<0.05	<0.05
Fluoranthene	0.69	<0.05	<0.05	<0.05	<0.05
Fluorene	62.0	<0.05	<0.05	<0.05	<0.05
Indeno[1,2,3-cd]pyrene	0.38	<0.05	<0.05	<0.05	<0.05
Methylnaphthalene (1&2)	0.99	<0.05	<0.05	<0.05	<0.05
Naphthalene	0.6	<0.05	<0.05	<0.05	<0.05
Phenanthrene	6.2	<0.05	<0.05	<0.05	<0.05
Pyrene	78	<0.05	<0.05	<0.05	<0.05

NOTES:

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

1

Shaded Concentration exceeds MOECC Table 3 soil quality standard.

N/A Not analyzed

NV no value

EXP Services Inc.

*Ahlul-Bayt Center Ottawa
Phase Two Environmental Phase Two Property Assessment
3025 Albion Road North, Ottawa, ON
OTT-00246047-B0
December 21, 2018*

Appendix C: Summary of Groundwater Analytical Data



TABLE 5 GROUNDWATER ANALYTICAL RESULTS ($\mu\text{g/L}$)
PHC, BTEX, and PCB
3025 Albion Road, Ottawa

Parameter	MOECC Table 3 ¹	MW301	MW301	MW302	MW302	MW302-1	MW306	MW306
Sample Date (d/m/y)		11/5/15	8/6/18	11/5/15	8/6/18	Duplicate of MW302	11/5/15	8/6/18
Screened Interval		3.0 - 4.5	3.0 - 4.5	2.4 - 5.4	2.4 - 5.4	2.4 - 5.4	3.0 - 6.0	3.0 - 6.0
Benzene	44	<0.20	<0.2	<0.20	<0.2	<0.2	0.24	2.4
Ethylbenzene	2300	0.31	<0.2	0.22	<0.2	<0.2	0.1	<0.2
Toluene	18000	<0.20	<0.2	<0.20	<0.2	<0.2	0.91	<0.2
Xylenes	4200	<0.40	<0.4	<0.40	<0.4	<0.4	0.28	<0.4
PHC F ₁ (C ₆ -C ₁₀)	750	<25	<25	<25	<25	<25	<25	<25
PHC F ₂ (>C ₁₀ -C ₁₆)	150	<100	<100	<100	<100	<100	<100	<100
PHC F ₃ (>C ₁₆ -C ₃₄)	500	<200	<200	<200	<200	<200	<200	280
PHC F ₄ (>C ₃₄ -C ₅₀)	500	<200	<200	<200	<200	<200	<200	340
PCB	15	<0.05	<0.05	<0.05	<0.5	<0.05	N/A	N/A

Parameter	MOECC Table 3 ¹	MW307	MW307	MW308	MW308	MW309	MW1	MW1/BH9
Sample Date (d/m/y)		11/5/15	14/6/18	11/5/15	14/6/18	11/5/15	13/2/18	14/6/18
Screened Interval		3.0 - 6.0	3.0 - 6.0	3.0 - 6.0	3.0 - 6.0	3.0 - 6.0	3.0 - 5.5	3.0 - 5.5
Benzene	44	<0.10	<0.2	<0.10	<0.2	<0.10	<0.5	<0.2
Ethylbenzene	2300	<0.10	<0.2	<0.10	<0.2	<0.10	<0.5	<0.2
Toluene	18000	0.79	<0.2	0.77	<0.2	0.34	<0.5	<0.2
Xylenes	4200	0.19	<0.4	0.17	<0.4	<0.10	<0.5	<0.4
PHC F ₁ (C ₆ -C ₁₀)	750	<25	<25	<25	<25	<25	<20	<25
PHC F ₂ (>C ₁₀ -C ₁₆)	150	<100	<100	<100	<100	<100	<20	<100
PHC F ₃ (>C ₁₆ -C ₃₄)	500	<200	<200	<200	<200	<200	<50	<200
PHC F ₄ (>C ₃₄ -C ₅₀)	500	<200	<200	<200	<200	<200	<50	<200
PCB	15	N/A	NA	N/A	NA	N/A	NA	<0.05

NOTES:

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

1

NV no value in standards

NV

Shaded Concentration exceeds MOECC Table 3 groundwater quality standard.

TABLE 5 GROUNDWATER ANALYTICAL RESULTS ($\mu\text{g/L}$)
PHC, BTEX, and PCB
3025 Albion Road, Ottawa

Parameter	MOECC Table 3 ¹	MW2	MW18-1	MW18-2	MW18-3
Sample Date (d/m/y)		13/2/18	8/6/18	8/6/18	8/6/18
Screened Interval		2.3 - 5.3	4.6 - 7.6	3.0 - 6.0	1.5 - 4.5
Benzene	44	<0.5	<0.2	<0.2	<0.2
Ethylbenzene	2300	<0.5	<0.2	<0.2	<0.2
Toluene	18000	<0.5	<0.2	<0.2	<0.2
Xylenes	4200	<0.5	<0.4	<0.4	<0.4
PHC F ₁ (C ₆ -C ₁₀)	750	<20	<25	<25	<25
PHC F ₂ (>C ₁₀ -C ₁₆)	150	<20	<100	<100	<100
PHC F ₃ (>C ₁₆ -C ₃₄)	500	<50	<200	<200	<200
PHC F ₄ (>C ₃₄ -C ₅₀)	500	<50	<200	<200	<200
PCB	15	NA	<0.05	N/A	<0.05

NOTES:

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

NV no value in standards

Shaded Concentration exceeds MOECC Table 3 groundwater quality standard.

**TABLE 6 GROUNDWATER ANALYTICAL RESULTS ($\mu\text{g/L}$)
VOLATILE ORGANIC COMPOUNDS
3025 Albion Road, Ottawa**

Parameter	MOECC	MW306	MW307	MW308	MW340	MW309	TP-19
Sample Date	Table 3 ¹	11/4/15	11/4/15	11/4/15	Dup of MW308	11/5/15	Trip Blank
Screened Interval		3.0 - 6.0	3.0 - 6.0	3.0 - 6.0	3.0 - 6.0	3.0 - 6.0	
Acetone	130000	<10	<10	<10	<10	<10	<10
Benzene	44	0.24	<0.10	<0.10	<0.10	<0.10	<0.10
Bromodichloromethane	85000	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Bromoform	37000	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Bromomethane	5.8	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Carbon Tetrachloride	0.79	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Chlorobenzene	630	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Chloroform	240	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Dibromochloromethane	82000	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Dichlorodifluoromethane	4400	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,2-Dichlorobenzene	4600	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,3-Dichlorobenzene	9600	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,4-Dichlorobenzene	8	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,1-Dichloroethane	320	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
1,2-Dichloroethane	1.6	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,1-Dichloroethylene	1.6	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Cis-1,2-Dichloroethylene	1.6	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Trans-1,2-Dichloroethylene	1.6	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
1,2-Dichloropropane	16	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Cis-1,3-Dichloropropylene	45	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Trans-1,3-Dichloropropylene		<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Ethylbenzene	2300	0.1	<0.10	<0.10	<0.10	<0.10	<0.10
Ethylene Dibromide	0.25	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Hexane	51	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Methylene Chloride	610	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Methyl Isobutyl Ketone	470000	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Methyl Ethyl Ketone	140000	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Methyl-t-Butyl Ether	190	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Styrene	1300	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,1,1,2-Tetrachloroethane	3.3	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
1,1,2,2-Tetrachloroethane	3.2	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Tetrachloroethylene	1.6	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Toluene	18000	0.91	0.79	0.77	0.7	0.34	<0.20
1,1,1-Trichloroethane	640	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
1,1,2-Trichloroethane	4.7	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Trichloroethylene	1.5	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Trichlorofluoromethane	2500	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Vinyl Chloride	0.5	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Total Xylenes	4200	0.28	0.19	0.17	0.15	<0.10	<0.10

NOTES:

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

NV no value in standards

Shaded Concentration exceeds MOECC Table 3 groundwater quality standard.

TABLE 6 GROUNDWATER ANALYTICAL RESULTS ($\mu\text{g/L}$)
VOLATILE ORGANIC COMPOUNDS
3025 Albion Road, Ottawa

Parameter	MOECC	MW2	MW3				
Sample Date	Table 3 ¹	13/2/18	13/2/18				
Screened Interval		2.3 - 5.3	3.0 - 5.5				
Acetone	130000	<30	<30				
Benzene	44	<0.5	<0.5				
Bromodichloromethane	85000	<0.3	<0.3				
Bromoform	37000	<0.4	<0.4				
Bromomethane	58	<0.5	<0.5				
Carbon Tetrachloride	0.79	<0.2	<0.2				
Chlorobenzene	630	<0.5	<0.5				
Chloroethane	NV	<0.2	<0.2				
Chloroform	240	<0.5	<0.5				
Dibromochloromethane	82000	<0.3	<0.3				
Dichlorodifluoromethane	4400	<0.50	<0.50				
1,2-Dichlorobenzene	4600	<0.4	<0.4				
1,3-Dichlorobenzene	9600	<0.4	<0.4				
1,4-Dichlorobenzene	8	<0.4	<0.4				
1,1-Dichloroethane	320	<0.4	<0.4				
1,2-Dichloroethane	1.6	<0.2	<0.2				
1,1-Dichloroethylene	1.6	<0.5	<0.5				
Cis-1,2-Dichloroethylene	1.6	<0.4	<0.4				
Trans-1,2-Dichloroethylene	1.6	<0.4	<0.4				
1,2-Dichloropropane	16	<0.5	<0.5				
Cis-1,3-Dichloropropylene	45	<0.20	<0.20				
Trans-1,3-Dichloropropylene		<0.20	<0.20				
Ethylbenzene	2300	<0.5	<0.5				
Ethylene Dibromide	0.25	<0.20	<0.20				
Hexane	51	<5	<5				
Methylene Chloride	610	<4.0	<4.0				
Methyl Isobutyl Ketone	470000	<10	<10				
Methyl Ethyl Ketone	140000	<10	<10				
Methyl-t-Butyl Ether	190	<2	<2				
Styrene	1300	<0.5	<0.5				
1,1,1,2-Tetrachloroethane	3.3	<0.5	<0.5				
1,1,1,2,2-Tetrachloroethane	3.2	<0.5	<0.5				
Tetrachloroethylene	1.6	<0.3	<0.3				
Toluene	18000	<0.5	<0.5				
1,1,1-Trichloroethane	640	<0.4	<0.4				
1,1,2-Trichloroethane	4.7	<0.4	<0.4				
Trichloroethylene	1.5	<0.3	<0.3				
Trichlorofluoromethane	2500	<0.5	<0.5				
Vinyl Chloride	0.5	<0.2	<0.2				
Total Xylenes	4200	<0.5	<0.5				

NOTES:

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

NV no value in standards

Shaded Concentration exceeds MOECC Table 3 groundwater quality standard.

**TABLE 7 GROUNDWATER ANALYTICAL RESULTS ($\mu\text{g/L}$)
METALS
3025 Albion Road, Ottawa**

Parameter	MOECC Table 3 ¹	MW301	MW301	MW302	MW302	MW302-1	MW309
Sample Date (d/m/y)		4/11/15	8/6/18	5/11/15	8/6/18	Duplicate of MW302	4/11/15
Screened Interval		3.0 - 4.5	3.0 - 4.5	2.4 - 5.4	2.4 - 5.4	2.4 - 5.4	3.0 - 6.0
Antimony	20000	<0.50	<0.50	<0.5	<0.50	<0.50	1.0
Arsenic	1900	1.0	<1.0	<1.0	2.5	2.5	<1.0
Barium	29000	150	270	110	91	89	150
Beryllium	67	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Boron	45000	140	65	150	59	59	350
Cadmium	2.7	<0.10	0.34	<0.10	<0.10	<0.10	<0.10
Chromium	810	<5.0	<5.0	<5	<5.0	<5.0	<5.0
Chromium VI	140	<0.50	NA	<0.50	NA	NA	<0.50
Cobalt	66	1.2	0.78	1.5	1.1	0.98	0.8
Copper	87	2	2.2	1	<1.0	<1.0	1
Lead	25	<0.5	<0.50	<0.5	<0.50	<0.50	<0.5
Mercury	0.29	<0.1	NA	<0.1	NA	NA	<0.1
Molybdenum	9200	6	0.75	5.4	2.3	2.0	43
Nickel	490	5	2.2	4	1.6	1.5	5
Selenium	63	<2.0	<2.0	<2	<2.0	<2.0	<2.0
Silver	1.5	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Thallium	510	<0.05	<0.050	<0.05	<0.050	<0.050	<0.05
Uranium	420	0.9	13	2.5	0.34	0.32	0.8
Vanadium	250	2.4	0.66	1	2.5	2.4	<0.5
Zinc	1100	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0

NOTES:

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

NV no value in standards

Shaded Concentration exceeds MOECC Table 3 groundwater quality standard.

**TABLE 7 GROUNDWATER ANALYTICAL RESULTS ($\mu\text{g/L}$)
METALS
3025 Albion Road, Ottawa**

Parameter	MOECC Table 3 ¹	MW1/BH9 14/6/18	MW2 13/2/18	MW3 13/2/18	MW306 8/6/18	MW307 14/6/18	MW308 14/6/18	MW308 4/11/15
Sample Date (d/m/y)								
Screened Interval		3.0 - 5.5	2.3 - 5.3	3.0 - 5.5	3.0 - 6.0	3.0 - 6.0	3.0 - 6.0	3.0 - 6.0
Antimony	20000	<0.50	<2	<2	1.3	<0.50	0.64	2.1
Arsenic	1900	<1.0	7.0	<5	2.3	<1.0	<1.0	<1.0
Barium	29000	28	410	3380	580	1200	440	640
Beryllium	67	<0.50	NA	NA	<0.50	<0.50	<0.50	<0.50
Boron	45000	44	220	240	310	250	170	160
Cadmium	2.7	<0.10	0.5	0.5	<0.10	<0.10	<0.10	<0.10
Chromium	810	<5.0	14	17	<5.0	<5.0	<5.0	<5.0
Chromium VI	140	NA	NA	NA	NA	NA	NA	<0.50
Cobalt	66	<0.50	35	3	<0.50	<0.50	<0.50	0.6
Copper	87	1.7	<5	14	1.0	1.1	7.4	<1.0
Lead	25	<0.50	5	18	<0.50	<0.50	<0.50	<0.5
Mercury	0.29	NA	<0.1	<0.1	NA	NA	NA	<0.1
Molybdenum	9200	1.4	40	<20	11	0.87	6.0	70
Nickel	490	1.2	70	<20	1.2	<1.0	4.7	4
Selenium	63	<2.0	<5	<5	<2.0	<2.0	<2.0	<2.0
Silver	1.5	<0.10	<0.5	<0.5	<0.10	<0.10	<0.10	<0.10
Thallium	510	<0.050	NA	NA	<0.050	<0.050	<0.050	<0.050
Uranium	420	0.31	NA	NA	0.96	<0.10	1.2	1.8
Vanadium	250	<0.50	NA	NA	<0.50	<0.50	<0.50	<0.5
Zinc	1100	6.2	740	380	6.5	<5.0	12	<5.0

NOTES:

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

NV no value in standards

Shaded Concentration exceeds MOECC Table 3 groundwater quality standard.

**TABLE 7 GROUNDWATER ANALYTICAL RESULTS ($\mu\text{g/L}$)
METALS
3025 Albion Road, Ottawa**

Parameter	MOECC	MW18-1	MW18-2	MW18-3
Sample Date (d/m/y)	Table 3 ¹	8/6/18	8/6/18	8/6/18
Screened Interval		4.6 - 7.6	3.0 - 6.0	1.5 - 4.5
Antimony	20000	3.9	1.8	<0.50
Arsenic	1900	4.4	<1.0	<1.0
Barium	29000	530	340	170
Beryllium	67	<0.50	<0.50	<0.50
Boron	45000	500	170	84
Cadmium	2.7	<0.10	<0.10	<0.10
Chromium	810	<5.0	<5.0	<5.0
Chromium VI	140	NA	NA	NA
Cobalt	66	<0.50	0.67	2.0
Copper	87	1.5	<1.0	3.4
Lead	25	<0.50	<0.50	<0.50
Mercury	0.29	NA	NA	NA
Molybdenum	9200	42	33	9.5
Nickel	490	<1.0	2.0	3.8
Selenium	63	<2.0	<2.0	<2.0
Silver	1.5	<0.10	<0.10	<0.10
Thallium	510	<0.050	<0.050	<0.050
Uranium	420	0.57	0.55	3.7
Vanadium	250	0.66	<0.50	2.4
Zinc	1100	<5.0	<5.0	<5.0

NOTES:

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

NV no value in standards

Shaded Concentration exceeds MOECC Table 3 groundwater quality standard.

**TABLE 8 GROUNDWATER ANALYTICAL RESULTS ($\mu\text{g/L}$)
POLYCYCLIC AROMATIC HYDROCARBONS
3025 Albion Road, Ottawa**

Parameter	MOECC Table 3 ¹	MW1	MW1	MW2	MW2
Sample Date (d/m/y)		13/2/18	3/4/18	13/2/18	3/4/18
Screened Interval		3.0 - 5.5	3.0 - 5.5	2.3 - 5.3	2.3 - 5.3
Acenaphthene	600	<0.5	>0.05	<0.5	>0.05
Acenaphthylene	1.8	<0.5	<0.05	<0.5	<0.05
Anthracene	2.4	<0.5	<0.05	<0.5	<0.05
Benzo[a]anthracene	4.7	<0.5	<0.05	<0.5	<0.05
Benzo[a]pyrene	0.81	<0.05	<0.01	<0.05	<0.01
Benzo[b]fluoranthene	0.75	<0.2	<0.05	<0.2	<0.05
Benzo[g,h,i]perylene	0.2	<0.5	<0.05	<0.5	<0.05
Benzo[k]fluoranthene	0.4	<0.2	<0.05	<0.2	<0.05
Chrysene	1	<0.2	<0.05	<0.2	<0.05
Dibenzo[a,h]anthracene	0.52	<0.5	<0.05	<0.5	<0.05
Fluoranthene	130	<0.5	<0.05	<0.5	<0.05
Fluorene	400	<0.5	<0.05	<0.5	<0.05
Indeno[1,2,3-cd]pyrene	0.2	<0.5	<0.05	<0.5	<0.05
Methylnaphthalene (1&2)	1800	<0.5	<0.071	<0.5	<0.071
Naphthalene	1400	<0.5	<0.05	<0.5	<0.05
Phenanthrene	580	<0.5	<0.03	<0.5	<0.03
Pyrene	68	<0.5	<0.05	<0.5	<0.05

NOTES:

1

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

NV

no value in standards

Shaded

Concentration exceeds MOECC Table 3 groundwater quality standard.

EXP Services Inc.

*Ahlul-Bayt Center Ottawa
Phase Two Environmental Phase Two Property Assessment
3025 Albion Road North, Ottawa, ON
OTT-00246047-B0
December 21, 2018*

Appendix D: Laboratory Certificates of Analysis



Attention: Mark McCalla

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

Report Date: 2018/10/10
Report #: R5434486
Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B5L2947

Received: 2015/10/19, 16:00

Sample Matrix: Soil
Samples Received: 8

Analyses	Quantity	Date	Date	Laboratory Method	Reference
		Extracted	Analyzed		
Hot Water Extractable Boron (1)	2	2015/10/26	2015/10/26	CAM SOP-00408	R153 Ana. Prot. 2011
1,3-Dichloropropene Sum (1)	5	N/A	2015/10/27		EPA 8260C m
Free (WAD) Cyanide (1)	1	2015/10/22	2015/10/29	CAM SOP-00457	OMOE E3015 m
Free (WAD) Cyanide (1)	1	2015/10/23	2015/10/31	CAM SOP-00457	OMOE E3015 m
Hexavalent Chromium in Soil by IC (1, 2)	2	2015/10/23	2015/10/24	CAM SOP-00436	EPA 3060/7199 m
Petroleum Hydro. CCME F1 & BTEX in Soil (1, 3)	6	N/A	2015/10/24	CAM SOP-00315	CCME PHC-CWS m
Petroleum Hydrocarbons F2-F4 in Soil (1, 4)	6	2015/10/22	2015/10/23	CAM SOP-00316	CCME CWS m
Strong Acid Leachable Metals by ICPMS (1)	2	2015/10/26	2015/10/26	CAM SOP-00447	EPA 6020B m
Moisture (1)	7	N/A	2015/10/23	CAM SOP-00445	Carter 2nd ed 51.2 m
Polychlorinated Biphenyl in Soil (1)	2	2015/10/21	2015/10/22	CAM SOP-00309	EPA 8082A m
pH CaCl ₂ EXTRACT (1)	2	2015/10/26	2015/10/26	CAM SOP-00413	EPA 9045 D m
pH CaCl ₂ EXTRACT (1)	2	2015/10/29	2015/10/29	CAM SOP-00413	EPA 9045 D m
Sodium Adsorption Ratio (SAR) (1)	2	N/A	2015/10/27	CAM SOP-00102	EPA 6010C
Volatile Organic Compounds in Soil (1)	5	N/A	2015/10/22	CAM SOP-00228	EPA 8260C m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 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



Your Project #: OTT-00228983-A
Your C.O.C. #: 534387-03-01

Attention: Mark McCalla

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

Report Date: 2018/10/10
Report #: R5434486
Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B5L2947

Received: 2015/10/19, 16:00

dilution methods.

Results relate to samples tested. When sampling is not conducted by Maxxam, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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) No lab extraction date is given for F1BTEX & VOC samples that are field preserved with methanol. Extraction date is the date sampled unless otherwise stated.
- (4) 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.

Hina Siddiqui, Project Manager –Environmental Customer Service

Email:

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.

RESULTS OF ANALYSES OF SOIL

Maxxam ID		BEO470			BEO470			BEO471			BEO472		
Sampling Date		2015/10/19 08:30			2015/10/19 08:30			2015/10/19 09:30			2015/10/19 10:30		
COC Number		534387-03-01			534387-03-01			534387-03-01			534387-03-01		
	UNITS	MW311 SS1	RDL	QC Batch	MW311 SS1 Lab-Dup	QC Batch	MW305 SS1	QC Batch	MW306 SS1	RDL	QC Batch		

Inorganics													
Moisture	%	12	1.0	4242307			15	4242812	9.4	1.0	4243284		
Available (CaCl2) pH	pH	7.39		4249876	7.44	4249876							
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate													

Maxxam ID		BEO473			BEO474			BEO475					
Sampling Date		2015/10/19 12:00			2015/10/19 14:30			2015/10/19 14:35					
COC Number		534387-03-01			534387-03-01			534387-03-01					
	UNITS	MW309 SS1	RDL	QC Batch	MW308 SS1	RDL	QC Batch	MW308 SS2	RDL	QC Batch			

Calculated Parameters													
Sodium Adsorption Ratio	N/A				2.9			4237144					
Inorganics													
Moisture	%	8.0	1.0	4243284	10	1.0	4243364	12	1.0	4243284			
Available (CaCl2) pH	pH				7.46		4244376	7.30		4249876			
WAD Cyanide (Free)	ug/g				0.01	0.01	4241958						
RDL = Reportable Detection Limit QC Batch = Quality Control Batch													

Maxxam ID		BEO476											
Sampling Date		2015/10/19 13:30											
COC Number		534387-03-01											
	UNITS	MW307 SS1	RDL	QC Batch									
Calculated Parameters													
Sodium Adsorption Ratio	N/A	2.2						4237144					
Inorganics													
Moisture	%	9.8	1.0	4243364									
Available (CaCl2) pH	pH	7.14		4244376									
WAD Cyanide (Free)	ug/g	0.06	0.02	4241259									
RDL = Reportable Detection Limit QC Batch = Quality Control Batch													

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		BEO474	BEO476		
Sampling Date		2015/10/19 14:30	2015/10/19 13:30		
COC Number		534387-03-01	534387-03-01		
	UNITS	MW308 SS1	MW307 SS1	RDL	QC Batch
Inorganics					
Chromium (VI)	ug/g	<0.2	<0.2	0.2	4242614
Metals					
Hot Water Ext. Boron (B)	ug/g	0.076	0.10	0.050	4244569
Acid Extractable Antimony (Sb)	ug/g	<0.20	<0.20	0.20	4244785
Acid Extractable Arsenic (As)	ug/g	1.5	2.8	1.0	4244785
Acid Extractable Barium (Ba)	ug/g	38	110	0.50	4244785
Acid Extractable Beryllium (Be)	ug/g	0.47	0.95	0.20	4244785
Acid Extractable Boron (B)	ug/g	<5.0	<5.0	5.0	4244785
Acid Extractable Cadmium (Cd)	ug/g	<0.10	<0.10	0.10	4244785
Acid Extractable Chromium (Cr)	ug/g	19	24	1.0	4244785
Acid Extractable Cobalt (Co)	ug/g	7.6	9.2	0.10	4244785
Acid Extractable Copper (Cu)	ug/g	12	14	0.50	4244785
Acid Extractable Lead (Pb)	ug/g	5.7	12	1.0	4244785
Acid Extractable Molybdenum (Mo)	ug/g	0.58	0.96	0.50	4244785
Acid Extractable Nickel (Ni)	ug/g	15	23	0.50	4244785
Acid Extractable Selenium (Se)	ug/g	<0.50	<0.50	0.50	4244785
Acid Extractable Silver (Ag)	ug/g	<0.20	<0.20	0.20	4244785
Acid Extractable Thallium (Tl)	ug/g	0.092	0.16	0.050	4244785
Acid Extractable Uranium (U)	ug/g	0.77	0.95	0.050	4244785
Acid Extractable Vanadium (V)	ug/g	31	36	5.0	4244785
Acid Extractable Zinc (Zn)	ug/g	24	36	5.0	4244785
Acid Extractable Mercury (Hg)	ug/g	<0.050	<0.050	0.050	4244785
RDL = Reportable Detection Limit					
QC Batch = Quality Control Batch					

VOLATILE ORGANICS BY GC/MS (SOIL)

Maxxam ID		BEO472		BEO473	BEO475	BEO476	BEO663		
Sampling Date		2015/10/19 10:30		2015/10/19 12:00	2015/10/19 14:35	2015/10/19 13:30	2015/10/19 13:30		
COC Number		534387-03-01		534387-03-01	534387-03-01	534387-03-01	534387-03-01		
	UNITS	MW306 SS1	RDL	MW309 SS1	MW308 SS2	MW307 SS1	MW307 SS10	RDL	QC Batch

Calculated Parameters

1,3-Dichloropropene (cis+trans)	ug/g	<0.050	0.050	<0.050	<0.050	<0.050	<0.050	0.050	4236307
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Volatile Organics

Acetone (2-Propanone)	ug/g	<2.5	2.5	<0.50	<0.50	<0.50	<0.50	0.50	4238673
Benzene	ug/g	9.2	0.10	<0.020	<0.020	<0.020	<0.020	0.020	4238673
Bromodichloromethane	ug/g	<0.25	0.25	<0.050	<0.050	<0.050	<0.050	0.050	4238673
Bromoform	ug/g	<0.25	0.25	<0.050	<0.050	<0.050	<0.050	0.050	4238673
Bromomethane	ug/g	<0.050	0.050	<0.050	<0.050	<0.050	<0.050	0.050	4238673
Carbon Tetrachloride	ug/g	<0.050	0.050	<0.050	<0.050	<0.050	<0.050	0.050	4238673
Chlorobenzene	ug/g	<0.25	0.25	<0.050	<0.050	<0.050	<0.050	0.050	4238673
Chloroform	ug/g	<0.050	0.050	<0.050	<0.050	<0.050	<0.050	0.050	4238673
Dibromochloromethane	ug/g	<0.25	0.25	<0.050	<0.050	<0.050	<0.050	0.050	4238673
1,2-Dichlorobenzene	ug/g	<0.25	0.25	<0.050	<0.050	<0.050	<0.050	0.050	4238673
1,3-Dichlorobenzene	ug/g	<0.25	0.25	<0.050	<0.050	<0.050	<0.050	0.050	4238673
1,4-Dichlorobenzene	ug/g	<0.050	0.050	<0.050	<0.050	<0.050	<0.050	0.050	4238673
Dichlorodifluoromethane (FREON 12)	ug/g	<0.25	0.25	<0.050	<0.050	<0.050	<0.050	0.050	4238673
1,1-Dichloroethane	ug/g	<0.25	0.25	<0.050	<0.050	<0.050	<0.050	0.050	4238673
1,2-Dichloroethane	ug/g	<0.050	0.050	<0.050	<0.050	<0.050	<0.050	0.050	4238673
1,1-Dichloroethylene	ug/g	<0.050	0.050	<0.050	<0.050	<0.050	<0.050	0.050	4238673
cis-1,2-Dichloroethylene	ug/g	<0.25	0.25	<0.050	<0.050	<0.050	<0.050	0.050	4238673
trans-1,2-Dichloroethylene	ug/g	<0.050	0.050	<0.050	<0.050	<0.050	<0.050	0.050	4238673
1,2-Dichloropropane	ug/g	<0.050	0.050	<0.050	<0.050	<0.050	<0.050	0.050	4238673
cis-1,3-Dichloropropene	ug/g	<0.030	0.030	<0.030	<0.030	<0.030	<0.030	0.030	4238673
trans-1,3-Dichloropropene	ug/g	<0.040	0.040	<0.040	<0.040	<0.040	<0.040	0.040	4238673
Ethylbenzene	ug/g	13	0.10	<0.020	<0.020	<0.020	<0.020	0.020	4238673
Ethylene Dibromide	ug/g	<0.050	0.050	<0.050	<0.050	<0.050	<0.050	0.050	4238673
Hexane	ug/g	7.5	0.25	<0.050	<0.050	<0.050	<0.050	0.050	4238673
Methylene Chloride(Dichloromethane)	ug/g	<0.050	0.050	<0.050	<0.050	<0.050	<0.050	0.050	4238673
Methyl Ethyl Ketone (2-Butanone)	ug/g	<2.5	2.5	<0.50	<0.50	<0.50	<0.50	0.50	4238673
Methyl Isobutyl Ketone	ug/g	<0.50	0.50	<0.50	<0.50	<0.50	<0.50	0.50	4238673
Methyl t-butyl ether (MTBE)	ug/g	<0.25	0.25	<0.050	<0.050	<0.050	<0.050	0.050	4238673
Styrene	ug/g	<0.25	0.25	<0.050	<0.050	<0.050	<0.050	0.050	4238673
1,1,1,2-Tetrachloroethane	ug/g	<0.050	0.050	<0.050	<0.050	<0.050	<0.050	0.050	4238673
1,1,1,2,2-Tetrachloroethane	ug/g	<0.050	0.050	<0.050	<0.050	<0.050	<0.050	0.050	4238673
Tetrachloroethylene	ug/g	<0.25	0.25	<0.050	<0.050	<0.050	<0.050	0.050	4238673
Toluene	ug/g	4.9	0.10	<0.020	<0.020	<0.020	<0.020	0.020	4238673

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

VOLATILE ORGANICS BY GC/MS (SOIL)

Maxxam ID		BEO472		BEO473	BEO475	BEO476	BEO663		
Sampling Date		2015/10/19 10:30		2015/10/19 12:00	2015/10/19 14:35	2015/10/19 13:30	2015/10/19 13:30		
COC Number		534387-03-01		534387-03-01	534387-03-01	534387-03-01	534387-03-01		
	UNITS	MW306 SS1	RDL	MW309 SS1	MW308 SS2	MW307 SS1	MW307 SS10	RDL	QC Batch
1,1,1-Trichloroethane	ug/g	<0.25	0.25	<0.050	<0.050	<0.050	<0.050	0.050	4238673
1,1,2-Trichloroethane	ug/g	<0.050	0.050	<0.050	<0.050	<0.050	<0.050	0.050	4238673
Trichloroethylene	ug/g	<0.050	0.050	<0.050	<0.050	<0.050	<0.050	0.050	4238673
Trichlorofluoromethane (FREON 11)	ug/g	<0.25	0.25	<0.050	<0.050	<0.050	<0.050	0.050	4238673
Vinyl Chloride	ug/g	<0.020	0.020	<0.020	<0.020	<0.020	<0.020	0.020	4238673
p+m-Xylene	ug/g	34	0.10	<0.020	<0.020	<0.020	<0.020	0.020	4238673
o-Xylene	ug/g	9.2	0.10	<0.020	<0.020	<0.020	<0.020	0.020	4238673
Total Xylenes	ug/g	44	0.10	<0.020	<0.020	<0.020	<0.020	0.020	4238673
Surrogate Recovery (%)									
4-Bromofluorobenzene	%	104		102	97	98	98		4238673
D10-o-Xylene	%	106		96	95	93	88		4238673
D4-1,2-Dichloroethane	%	83		84	84	84	84		4238673
D8-Toluene	%	103		97	99	98	98		4238673
RDL = Reportable Detection Limit									
QC Batch = Quality Control Batch									

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		BEO470	BEO471			BEO472		BEO473	BEO475		
Sampling Date		2015/10/19 08:30	2015/10/19 09:30			2015/10/19 10:30		2015/10/19 12:00	2015/10/19 14:35		
COC Number		534387-03-01	534387-03-01			534387-03-01		534387-03-01	534387-03-01		
	UNITS	MW311 SS1	MW305 SS1	RDL	QC Batch	MW306 SS1	RDL	MW309 SS1	MW308 SS2	RDL	QC Batch

BTEX & F1 Hydrocarbons											
Benzene	ug/g	<0.020	<0.020	0.020	4242796						
Toluene	ug/g	<0.020	<0.020	0.020	4242796						
Ethylbenzene	ug/g	<0.020	<0.020	0.020	4242796						
o-Xylene	ug/g	<0.020	<0.020	0.020	4242796						
p+m-Xylene	ug/g	<0.040	<0.040	0.040	4242796						
Total Xylenes	ug/g	<0.040	<0.040	0.040	4242796						
F1 (C6-C10)	ug/g	<10	<10	10	4242796	510	50	<10	<10	10	4242796
F1 (C6-C10) - BTEX	ug/g	<10	<10	10	4242796	420	50	<10	<10	10	4242796

F2-F4 Hydrocarbons											
F2 (C10-C16 Hydrocarbons)	ug/g	<10	<10	10	4240775	100	10	15	<10	10	4240775
F3 (C16-C34 Hydrocarbons)	ug/g	<50	<50	50	4240775	<50	50	<50	<50	50	4240775
F4 (C34-C50 Hydrocarbons)	ug/g	<50	<50	50	4240775	<50	50	<50	<50	50	4240775
Reached Baseline at C50	ug/g	Yes	Yes		4240775	Yes		Yes	Yes		4240775

Surrogate Recovery (%)											
1,4-Difluorobenzene	%	104	102		4242796	102		103	103		4242796
4-Bromofluorobenzene	%	97	95		4242796	100		96	95		4242796
D10-Ethylbenzene	%	84	72		4242796	117		76	75		4242796
D4-1,2-Dichloroethane	%	90	91		4242796	90		91	91		4242796
o-Terphenyl	%	91	90		4240775	91		93	93		4240775

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		BEO476		
Sampling Date		2015/10/19 13:30		
COC Number		534387-03-01		
	UNITS	MW307 SS1	RDL	QC Batch
BTEX & F1 Hydrocarbons				
F1 (C6-C10)	ug/g	<10	10	4242796
F1 (C6-C10) - BTEX	ug/g	<10	10	4242796
F2-F4 Hydrocarbons				
F2 (C10-C16 Hydrocarbons)	ug/g	<10	10	4240775
F3 (C16-C34 Hydrocarbons)	ug/g	74	50	4240775
F4 (C34-C50 Hydrocarbons)	ug/g	<50	50	4240775
Reached Baseline at C50	ug/g	Yes		4240775
Surrogate Recovery (%)				
1,4-Difluorobenzene	%	104		4242796
4-Bromofluorobenzene	%	93		4242796
D10-Ethylbenzene	%	83		4242796
D4-1,2-Dichloroethane	%	92		4242796
o-Terphenyl	%	93		4240775
RDL = Reportable Detection Limit				
QC Batch = Quality Control Batch				

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		BEO470	BEO471		
Sampling Date		2015/10/19 08:30	2015/10/19 09:30		
COC Number		534387-03-01	534387-03-01		
	UNITS	MW311 SS1	MW305 SS1	RDL	QC Batch
PCBs					
Aroclor 1242	ug/g	<0.010	<0.010	0.010	4239048
Aroclor 1248	ug/g	<0.010	<0.010	0.010	4239048
Aroclor 1254	ug/g	<0.010	<0.010	0.010	4239048
Aroclor 1260	ug/g	<0.010	<0.010	0.010	4239048
Total PCB	ug/g	<0.010	<0.010	0.010	4239048
Surrogate Recovery (%)					
Decachlorobiphenyl	%	87	93		4239048
RDL = Reportable Detection Limit					
QC Batch = Quality Control Batch					

TEST SUMMARY

Maxxam ID: BEO470
Sample ID: MW311 SS1
Matrix: Soil

Collected: 2015/10/19
Shipped:
Received: 2015/10/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4242796	N/A	2015/10/24	Georgeta Rusu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4240775	2015/10/22	2015/10/23	Zhiyue (Frank) Zhu
Moisture	BAL	4242307	N/A	2015/10/23	Min Yang
Polychlorinated Biphenyl in Soil	GC/ECD	4239048	2015/10/21	2015/10/22	Li Peng
pH CaCl2 EXTRACT	AT	4249876	2015/10/29	2015/10/29	Neil Dassanayake

Maxxam ID: BEO470 Dup
Sample ID: MW311 SS1
Matrix: Soil

Collected: 2015/10/19
Shipped:
Received: 2015/10/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
pH CaCl2 EXTRACT	AT	4249876	2015/10/29	2015/10/29	Neil Dassanayake

Maxxam ID: BEO471
Sample ID: MW305 SS1
Matrix: Soil

Collected: 2015/10/19
Shipped:
Received: 2015/10/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4242796	N/A	2015/10/24	Georgeta Rusu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4240775	2015/10/22	2015/10/23	Zhiyue (Frank) Zhu
Moisture	BAL	4242812	N/A	2015/10/23	Min Yang
Polychlorinated Biphenyl in Soil	GC/ECD	4239048	2015/10/21	2015/10/22	Li Peng

Maxxam ID: BEO472
Sample ID: MW306 SS1
Matrix: Soil

Collected: 2015/10/19
Shipped:
Received: 2015/10/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	4236307	N/A	2015/10/27	Automated Statchk
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4242796	N/A	2015/10/24	Georgeta Rusu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4240775	2015/10/22	2015/10/23	Zhiyue (Frank) Zhu
Moisture	BAL	4243284	N/A	2015/10/23	Jessy Mathew Vinod
Volatile Organic Compounds in Soil	GC/MS	4238673	N/A	2015/10/22	Anna Gabrielyan

Maxxam ID: BEO473
Sample ID: MW309 SS1
Matrix: Soil

Collected: 2015/10/19
Shipped:
Received: 2015/10/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	4236307	N/A	2015/10/27	Automated Statchk
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4242796	N/A	2015/10/24	Georgeta Rusu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4240775	2015/10/22	2015/10/23	Zhiyue (Frank) Zhu
Moisture	BAL	4243284	N/A	2015/10/23	Jessy Mathew Vinod
Volatile Organic Compounds in Soil	GC/MS	4238673	N/A	2015/10/22	Anna Gabrielyan

TEST SUMMARY

Maxxam ID: BEO474
Sample ID: MW308 SS1
Matrix: Soil

Collected: 2015/10/19
Shipped:
Received: 2015/10/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hot Water Extractable Boron	ICP	4244569	2015/10/26	2015/10/26	Suban Kanapathippilai
Free (WAD) Cyanide	TECH	4241958	2015/10/23	2015/10/31	Christine Pham
Hexavalent Chromium in Soil by IC	IC/SPEC	4242614	2015/10/23	2015/10/24	Sally Norouz
Strong Acid Leachable Metals by ICPMS	ICP/MS	4244785	2015/10/26	2015/10/26	Grace Bu
Moisture	BAL	4243364	N/A	2015/10/23	Jessy Mathew Vinod
pH CaCl2 EXTRACT	AT	4244376	2015/10/26	2015/10/26	Neil Dassanayake
Sodium Adsorption Ratio (SAR)	CALC/MET	4237144	N/A	2015/10/27	Automated Statchk

Maxxam ID: BEO475
Sample ID: MW308 SS2
Matrix: Soil

Collected: 2015/10/19
Shipped:
Received: 2015/10/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	4236307	N/A	2015/10/27	Automated Statchk
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4242796	N/A	2015/10/24	Georgeta Rusu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4240775	2015/10/22	2015/10/23	Zhiyue (Frank) Zhu
Moisture	BAL	4243284	N/A	2015/10/23	Jessy Mathew Vinod
pH CaCl2 EXTRACT	AT	4249876	2015/10/29	2015/10/29	Neil Dassanayake
Volatile Organic Compounds in Soil	GC/MS	4238673	N/A	2015/10/22	Anna Gabrielyan

Maxxam ID: BEO476
Sample ID: MW307 SS1
Matrix: Soil

Collected: 2015/10/19
Shipped:
Received: 2015/10/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hot Water Extractable Boron	ICP	4244569	2015/10/26	2015/10/26	Suban Kanapathippilai
1,3-Dichloropropene Sum	CALC	4236307	N/A	2015/10/27	Automated Statchk
Free (WAD) Cyanide	TECH	4241259	2015/10/22	2015/10/29	Christine Pham
Hexavalent Chromium in Soil by IC	IC/SPEC	4242614	2015/10/23	2015/10/24	Sally Norouz
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4242796	N/A	2015/10/24	Georgeta Rusu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4240775	2015/10/22	2015/10/23	Zhiyue (Frank) Zhu
Strong Acid Leachable Metals by ICPMS	ICP/MS	4244785	2015/10/26	2015/10/26	Grace Bu
Moisture	BAL	4243364	N/A	2015/10/23	Jessy Mathew Vinod
pH CaCl2 EXTRACT	AT	4244376	2015/10/26	2015/10/26	Neil Dassanayake
Sodium Adsorption Ratio (SAR)	CALC/MET	4237144	N/A	2015/10/27	Automated Statchk
Volatile Organic Compounds in Soil	GC/MS	4238673	N/A	2015/10/22	Anna Gabrielyan

Maxxam ID: BEO663
Sample ID: MW307 SS10
Matrix: Soil

Collected: 2015/10/19
Shipped:
Received: 2015/10/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	4236307	N/A	2015/10/27	Automated Statchk
Volatile Organic Compounds in Soil	GC/MS	4238673	N/A	2015/10/22	Anna Gabrielyan

GENERAL COMMENTS

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

Package 1	10.0°C
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Revised Report (2018/10/10): Conductivity removed at client's request.

Sample BEO472 [MW306 SS1] : F1/BTEX Analysis: The BTEX results used for the F1-BTEX calculation were obtained from Headspace-GC analysis.

VOC Analysis: Due to high concentrations of target analytes, sample required dilution. Detection limits were adjusted accordingly. In order to meet required regulatory criteria , results for selected compounds (obtained by a separate analysis using an appropriate low dilution) are included in the report.

Sample BEO663 [MW307 SS10] : VOC Analysis: No moisture correction was applied.

Results relate only to the items tested.

QUALITY ASSURANCE REPORT

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4238673	4-Bromofluorobenzene	2015/10/22	103	60 - 140	105	60 - 140	97	%				
4238673	D10-o-Xylene	2015/10/22	103	60 - 130	106	60 - 130	95	%				
4238673	D4-1,2-Dichloroethane	2015/10/22	86	60 - 140	89	60 - 140	94	%				
4238673	D8-Toluene	2015/10/22	105	60 - 140	105	60 - 140	94	%				
4239048	Decachlorobiphenyl	2015/10/22	104	60 - 130	105	60 - 130	102	%				
4240775	o-Terphenyl	2015/10/23	88	60 - 130	90	60 - 130	92	%				
4242796	1,4-Difluorobenzene	2015/10/23	103	60 - 140	102	60 - 140	103	%				
4242796	4-Bromofluorobenzene	2015/10/23	96	60 - 140	97	60 - 140	95	%				
4242796	D10-Ethylbenzene	2015/10/23	82	60 - 140	73	60 - 140	72	%				
4242796	D4-1,2-Dichloroethane	2015/10/23	92	60 - 140	92	60 - 140	93	%				
4238673	1,1,1,2-Tetrachloroethane	2015/10/22	89	60 - 140	90	60 - 130	<0.050	ug/g				
4238673	1,1,1-Trichloroethane	2015/10/22	89	60 - 140	87	60 - 130	<0.050	ug/g				
4238673	1,1,2,2-Tetrachloroethane	2015/10/22	86	60 - 140	90	60 - 130	<0.050	ug/g				
4238673	1,1,2-Trichloroethane	2015/10/22	82	60 - 140	83	60 - 130	<0.050	ug/g				
4238673	1,1-Dichloroethane	2015/10/22	87	60 - 140	85	60 - 130	<0.050	ug/g				
4238673	1,1-Dichloroethylene	2015/10/22	102	60 - 140	97	60 - 130	<0.050	ug/g				
4238673	1,2-Dichlorobenzene	2015/10/22	99	60 - 140	99	60 - 130	<0.050	ug/g				
4238673	1,2-Dichloroethane	2015/10/22	84	60 - 140	85	60 - 130	<0.050	ug/g				
4238673	1,2-Dichloropropane	2015/10/22	87	60 - 140	86	60 - 130	<0.050	ug/g				
4238673	1,3-Dichlorobenzene	2015/10/22	96	60 - 140	92	60 - 130	<0.050	ug/g				
4238673	1,4-Dichlorobenzene	2015/10/22	108	60 - 140	103	60 - 130	<0.050	ug/g				
4238673	Acetone (2-Propanone)	2015/10/22	80	60 - 140	84	60 - 140	<0.50	ug/g				
4238673	Benzene	2015/10/22	93	60 - 140	90	60 - 130	<0.020	ug/g				
4238673	Bromodichloromethane	2015/10/22	92	60 - 140	92	60 - 130	<0.050	ug/g				
4238673	Bromoform	2015/10/22	81	60 - 140	85	60 - 130	<0.050	ug/g				
4238673	Bromomethane	2015/10/22	84	60 - 140	80	60 - 140	<0.050	ug/g				
4238673	Carbon Tetrachloride	2015/10/22	87	60 - 140	85	60 - 130	<0.050	ug/g				
4238673	Chlorobenzene	2015/10/22	110	60 - 140	108	60 - 130	<0.050	ug/g				
4238673	Chloroform	2015/10/22	87	60 - 140	85	60 - 130	<0.050	ug/g				
4238673	cis-1,2-Dichloroethylene	2015/10/22	100	60 - 140	98	60 - 130	<0.050	ug/g				
4238673	cis-1,3-Dichloropropene	2015/10/22	90	60 - 140	88	60 - 130	<0.030	ug/g				

QUALITY ASSURANCE REPORT(CONT'D)

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4238673	Dibromochloromethane	2015/10/22	85	60 - 140	87	60 - 130	<0.050	ug/g				
4238673	Dichlorodifluoromethane (FREON 12)	2015/10/22	97	60 - 140	93	60 - 140	<0.050	ug/g				
4238673	Ethylbenzene	2015/10/22	109	60 - 140	106	60 - 130	<0.020	ug/g				
4238673	Ethylene Dibromide	2015/10/22	84	60 - 140	86	60 - 130	<0.050	ug/g				
4238673	Hexane	2015/10/22	104	60 - 140	99	60 - 130	<0.050	ug/g				
4238673	Methyl Ethyl Ketone (2-Butanone)	2015/10/22	85	60 - 140	90	60 - 140	<0.50	ug/g				
4238673	Methyl Isobutyl Ketone	2015/10/22	90	60 - 140	95	60 - 130	<0.50	ug/g				
4238673	Methyl t-butyl ether (MTBE)	2015/10/22	94	60 - 140	93	60 - 130	<0.050	ug/g				
4238673	Methylene Chloride(Dichloromethane)	2015/10/22	104	60 - 140	103	60 - 130	<0.050	ug/g				
4238673	o-Xylene	2015/10/22	101	60 - 140	100	60 - 130	<0.020	ug/g				
4238673	p+m-Xylene	2015/10/22	93	60 - 140	91	60 - 130	<0.020	ug/g				
4238673	Styrene	2015/10/22	79	60 - 140	80	60 - 130	<0.050	ug/g				
4238673	Tetrachloroethylene	2015/10/22	89	60 - 140	87	60 - 130	<0.050	ug/g				
4238673	Toluene	2015/10/22	107	60 - 140	99	60 - 130	<0.020	ug/g				
4238673	Total Xylenes	2015/10/22					<0.020	ug/g				
4238673	trans-1,2-Dichloroethylene	2015/10/22	92	60 - 140	88	60 - 130	<0.050	ug/g				
4238673	trans-1,3-Dichloropropene	2015/10/22	97	60 - 140	93	60 - 130	<0.040	ug/g				
4238673	Trichloroethylene	2015/10/22	92	60 - 140	89	60 - 130	<0.050	ug/g				
4238673	Trichlorofluoromethane (FREON 11)	2015/10/22	93	60 - 140	90	60 - 130	<0.050	ug/g				
4238673	Vinyl Chloride	2015/10/22	98	60 - 140	93	60 - 130	<0.020	ug/g				
4239048	Aroclor 1242	2015/10/22					<0.010	ug/g	NC	50		
4239048	Aroclor 1248	2015/10/22					<0.010	ug/g	NC	50		
4239048	Aroclor 1254	2015/10/22					<0.010	ug/g	NC	50		
4239048	Aroclor 1260	2015/10/22	85	30 - 130	100	30 - 130	<0.010	ug/g	NC	50		
4239048	Total PCB	2015/10/22	85	30 - 130	100	30 - 130	<0.010	ug/g	NC	50		
4240775	F2 (C10-C16 Hydrocarbons)	2015/10/23	94	50 - 130	92	80 - 120	<10	ug/g	NC	30		
4240775	F3 (C16-C34 Hydrocarbons)	2015/10/23	94	50 - 130	94	80 - 120	<50	ug/g	NC	30		
4240775	F4 (C34-C50 Hydrocarbons)	2015/10/23	95	50 - 130	94	80 - 120	<50	ug/g	NC	30		
4241259	WAD Cyanide (Free)	2015/10/29	96	75 - 125	95	80 - 120	<0.01	ug/g	NC	35		
4241958	WAD Cyanide (Free)	2015/10/31	101	75 - 125	100	80 - 120	<0.01	ug/g	NC	35		
4242307	Moisture	2015/10/23							5.6	20		

QUALITY ASSURANCE REPORT(CONT'D)

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4242614	Chromium (VI)	2015/10/24	89	70 - 130	98	80 - 120	<0.2	ug/g	NC	35	97	80 - 120
4242796	Benzene	2015/10/23	79	60 - 140	81	60 - 140	<0.020	ug/g	13	50		
4242796	Ethylbenzene	2015/10/23	83	60 - 140	80	60 - 140	<0.020	ug/g	2.6	50		
4242796	F1 (C6-C10) - BTEX	2015/10/23					<10	ug/g	NC	30		
4242796	F1 (C6-C10)	2015/10/23	103	60 - 140	83	80 - 120	<10	ug/g	NC	30		
4242796	o-Xylene	2015/10/23	81	60 - 140	83	60 - 140	<0.020	ug/g	NC	50		
4242796	p+m-Xylene	2015/10/23	71	60 - 140	74	60 - 140	<0.040	ug/g	5.0	50		
4242796	Toluene	2015/10/23	75	60 - 140	78	60 - 140	<0.020	ug/g	NC	50		
4242796	Total Xylenes	2015/10/23					<0.040	ug/g	5.0	50		
4242812	Moisture	2015/10/23							0.52	20		
4243284	Moisture	2015/10/23							5.4	20		
4243364	Moisture	2015/10/23							7.4	20		
4244376	Available (CaCl2) pH	2015/10/26			99	97 - 103			2.0	N/A		
4244569	Hot Water Ext. Boron (B)	2015/10/26	101	75 - 125	101	75 - 125	<0.050	ug/g	10	40		
4244785	Acid Extractable Antimony (Sb)	2015/10/26	80	75 - 125	99	80 - 120	<0.20	ug/g	11	30		
4244785	Acid Extractable Arsenic (As)	2015/10/26	NC	75 - 125	101	80 - 120	<1.0	ug/g	7.0	30		
4244785	Acid Extractable Barium (Ba)	2015/10/26	NC	75 - 125	99	80 - 120	<0.50	ug/g	0.17	30		
4244785	Acid Extractable Beryllium (Be)	2015/10/26	102	75 - 125	100	80 - 120	<0.20	ug/g	1.8	30		
4244785	Acid Extractable Boron (B)	2015/10/26	102	75 - 125	100	80 - 120	<5.0	ug/g	0.70	30		
4244785	Acid Extractable Cadmium (Cd)	2015/10/26	101	75 - 125	98	80 - 120	<0.10	ug/g	NC	30		
4244785	Acid Extractable Chromium (Cr)	2015/10/26	NC	75 - 125	101	80 - 120	<1.0	ug/g	1.2	30		
4244785	Acid Extractable Cobalt (Co)	2015/10/26	NC	75 - 125	103	80 - 120	<0.10	ug/g	5.9	30		
4244785	Acid Extractable Copper (Cu)	2015/10/26	NC	75 - 125	106	80 - 120	<0.50	ug/g	0.013	30		
4244785	Acid Extractable Lead (Pb)	2015/10/26	102	75 - 125	102	80 - 120	<1.0	ug/g	2.0	30		
4244785	Acid Extractable Mercury (Hg)	2015/10/26	113	75 - 125	113	80 - 120	<0.050	ug/g	18	30		
4244785	Acid Extractable Molybdenum (Mo)	2015/10/26	99	75 - 125	102	80 - 120	<0.50	ug/g	5.4	30		
4244785	Acid Extractable Nickel (Ni)	2015/10/26	NC	75 - 125	102	80 - 120	<0.50	ug/g	0.15	30		
4244785	Acid Extractable Selenium (Se)	2015/10/26	80	75 - 125	103	80 - 120	<0.50	ug/g	1.1	30		
4244785	Acid Extractable Silver (Ag)	2015/10/26	100	75 - 125	100	80 - 120	<0.20	ug/g	NC	30		
4244785	Acid Extractable Thallium (Tl)	2015/10/26	98	75 - 125	101	80 - 120	<0.050	ug/g	3.3	30		
4244785	Acid Extractable Uranium (U)	2015/10/26	100	75 - 125	101	80 - 120	<0.050	ug/g	3.0	30		

QUALITY ASSURANCE REPORT(CONT'D)

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4244785	Acid Extractable Vanadium (V)	2015/10/26	NC	75 - 125	100	80 - 120	<5.0	ug/g	3.3	30		
4244785	Acid Extractable Zinc (Zn)	2015/10/26	NC	75 - 125	105	80 - 120	<5.0	ug/g	0.46	30		
4249876	Available (CaCl ₂) pH	2015/10/29			100	97 - 103			0.65	N/A		

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.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

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.

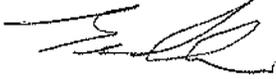
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

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).

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



Cristina Carriere, Scientific Service Specialist



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

19-Oct-15 16:00

Hina Siddiqui
 B51.2947
 J.L. ENV-720

Page 1 of 1

INVOICE TO:
 Company Name: #17455 exp Services Inc
 Attention: Accounts Payable
 Address: 100-2650 Queensview Drive
 Ottawa ON K2B 8H6
 Tel: (613) 688-1889 Fax: (613) 225-7337
 Email: accounting.otawa@exp.com Karen.Burke@exp.com

REPORT TO:
 Company Name: Mark McCata
 Attention: Mark McCata
 Address: [Blank]
 Tel: [Blank] Fax: [Blank]
 Email: mark.mccata@exp.com *mark.mccata@exp.com*

PROJECT INFORMATION:
 Question #: B55505
 P.O. #: [Blank]
 Project: OTT-03228843-A
 Project Name: [Blank]
 Site #: [Blank]
 Sampled By: [Blank]

Barcode & Labels:
 Barcode: B51.2947
 Barcode: C893487-03-01
 Bottle Order #: 334387
 Project Manager: Hina Siddiqui

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

Regulation 153 (DWI)
 Table 1 Freshwater Medium/Fine CCMB Sanitary Sewer Bylaw
 Table 2 Sewer/Storm Coarse Reg 556 Storm Sewer Bylaw
 Table 3 Agri/Other Fine RSC MISA Municipality
 Table 4 PWGO Other

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

Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (pass or fail)	Mutals / Ng / Cr/V	Reg 101 PCBs-Sol	Lead/Chromium	Reg 103 Metals Organic (Sol)	Reg 101 Petroleum Hydrocarbons (Sol)	Reg 101 Metals & Inorganic Pp (Sol)	Nonion Hydrocarbons (Sol)	# of Batches	Comments
1	MW 311 551	Oct 19/15	8:30	SOIL			X		X	X			4	
2	MW 305 551	19/10/15	9:30	SOIL			X		X	X			4	
3	MW 306 551	19/10/15	10:30	SOIL			X		X	X			5	
4	MW 309 551	19/10/15	12:00	SOIL			X		X	X			6	
5	MW 308 551	19/10/15	14:30	SOIL						X			1	
6	MW 308 552	19/10/15	14:35	SOIL			X		X	X			5	
7	MW 307 551	19/10/15	13:30	SOIL			X		X	X	X		5	
8	MW 307 5510	19/10/15	13:30	SOIL					X				1	
9				SOIL										
10				SOIL										

Retention Time (TAT) Required:
 Please provide advance notice for rush projects.
Regular (Standing) TAT:
 Will be applied if rush TAT is not specified.
 Standard TAT is 5-7 working days for most tests.
 Please note: Standard TAT for certain tests such as BOD and Dissolved Phosphorus are + 2 days - contact your Project Manager for details.
Job Specific Rush TAT (if applies to entire submission):
 Date Required: _____ Time Required: _____
 Rush Confirmation Number: _____ (not for use)

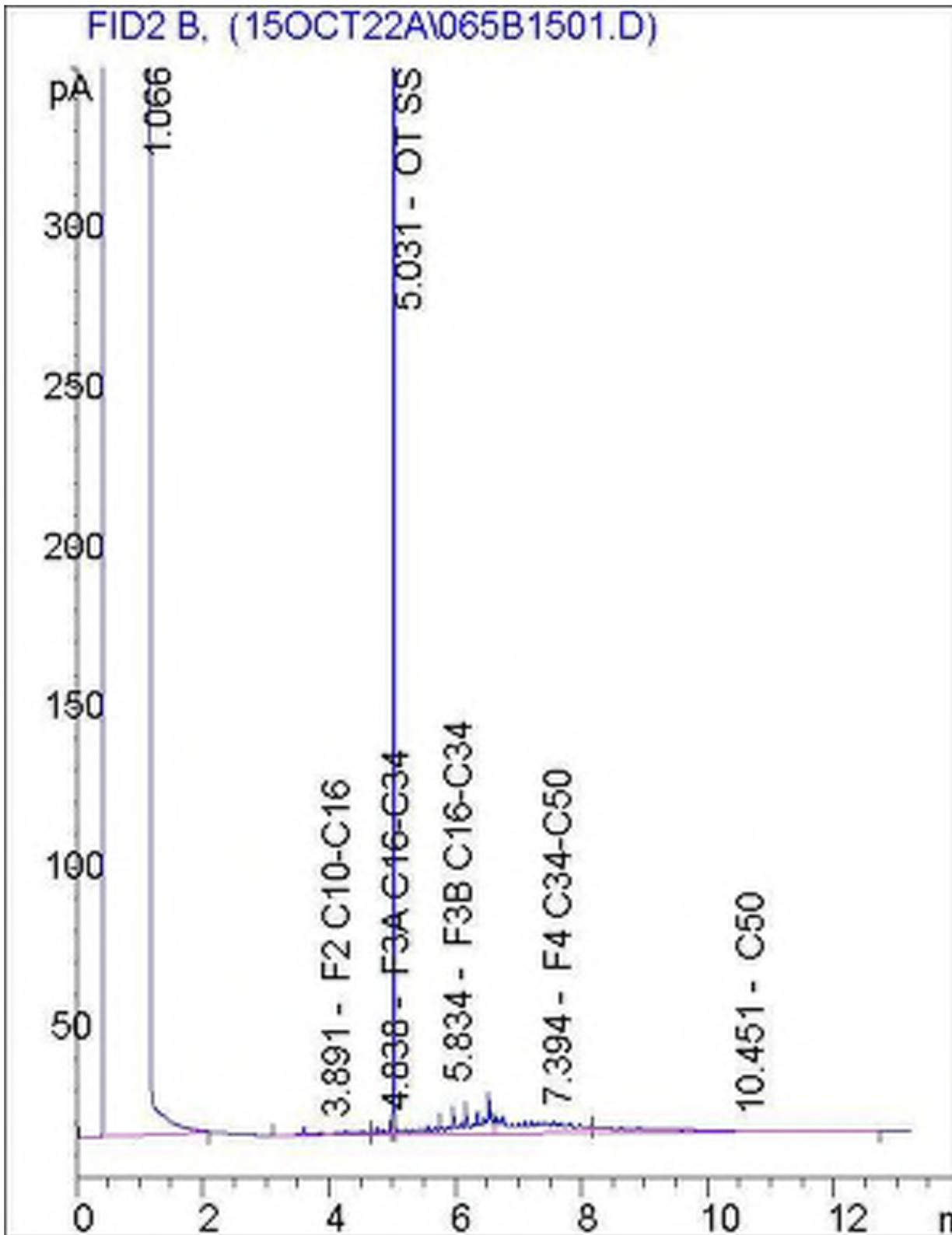
RECEIVED IN OTTAWA

ON ICE

RELINQUISHED BY: (Signature/Print) D. McCata Daniel McCata	Date: (YYMMDD) 15/10/15	Time: 9:55	RECEIVED BY: (Signature/Print) Hina Siddiqui	Date: (YYMMDD) 15/10/15	Time: 16:00	# Jars used and not submitted: 09:20	Laboratory Use Only: Time Sensitive: [Blank] Temperature (°C) on Receipt: 10, 10, 10	Cooling Seal Present: Initial: [Blank]	Yes/No: Yes [Blank] No [X]
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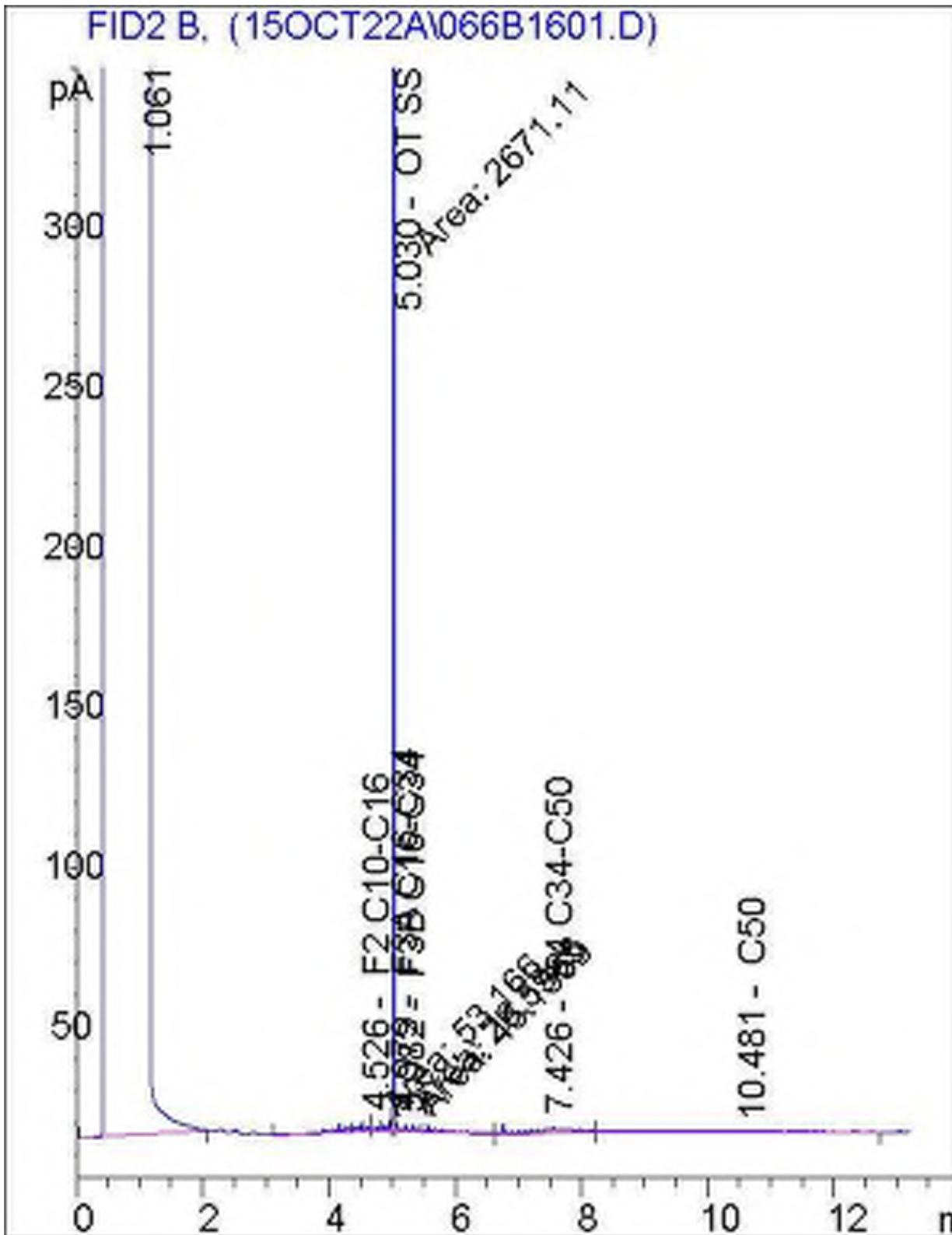
IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS. SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM. White: Maxxim Yellow: Client

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



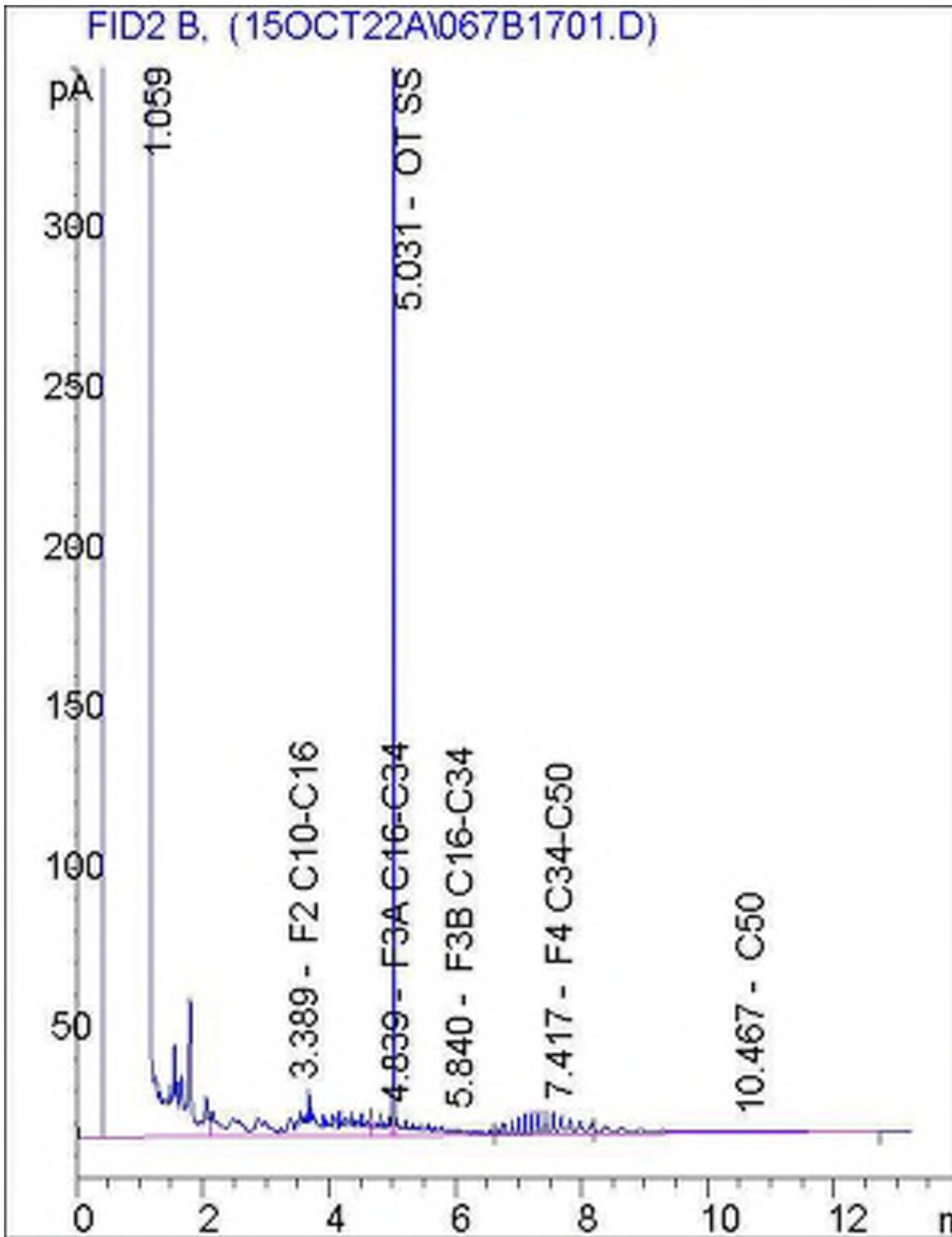
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



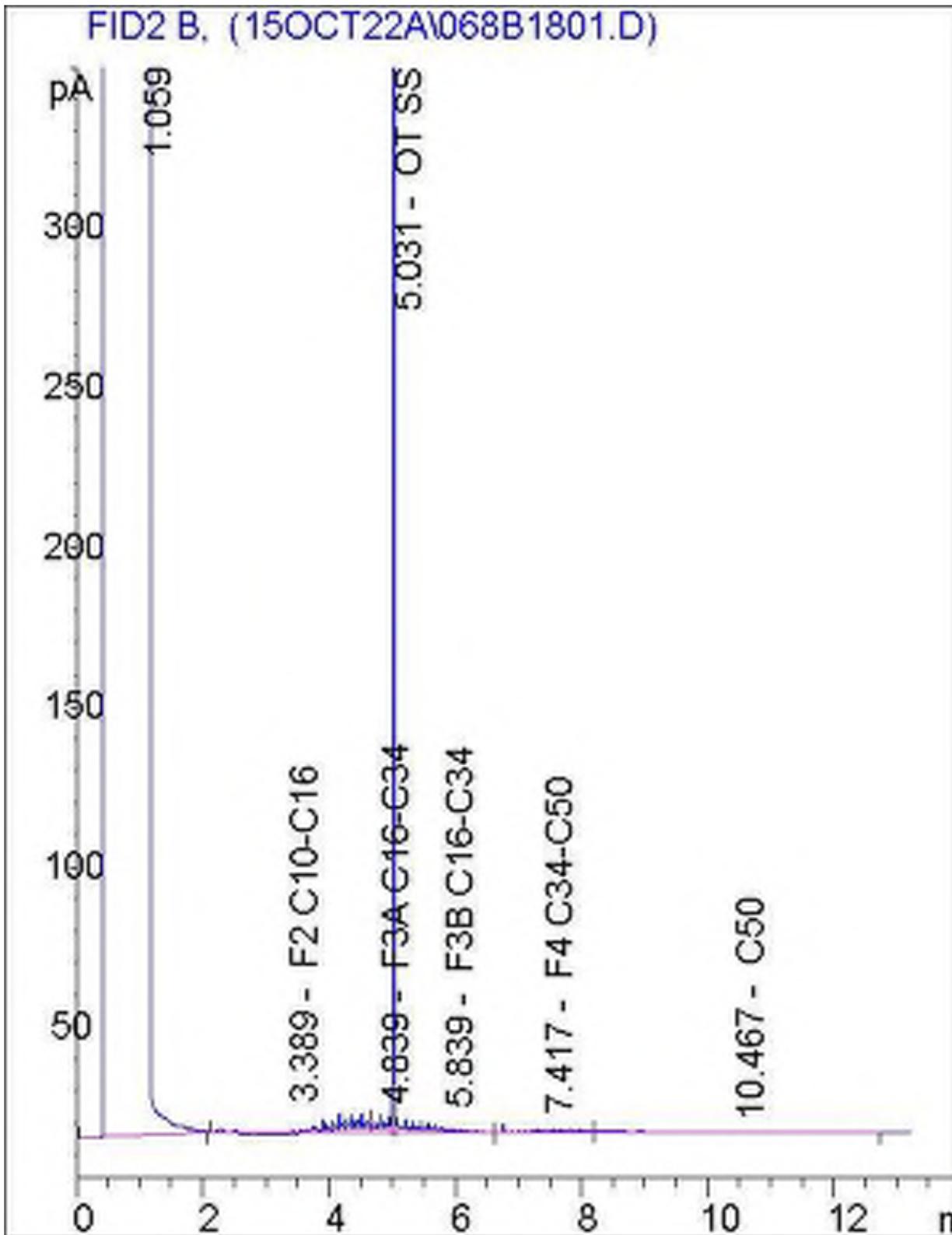
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



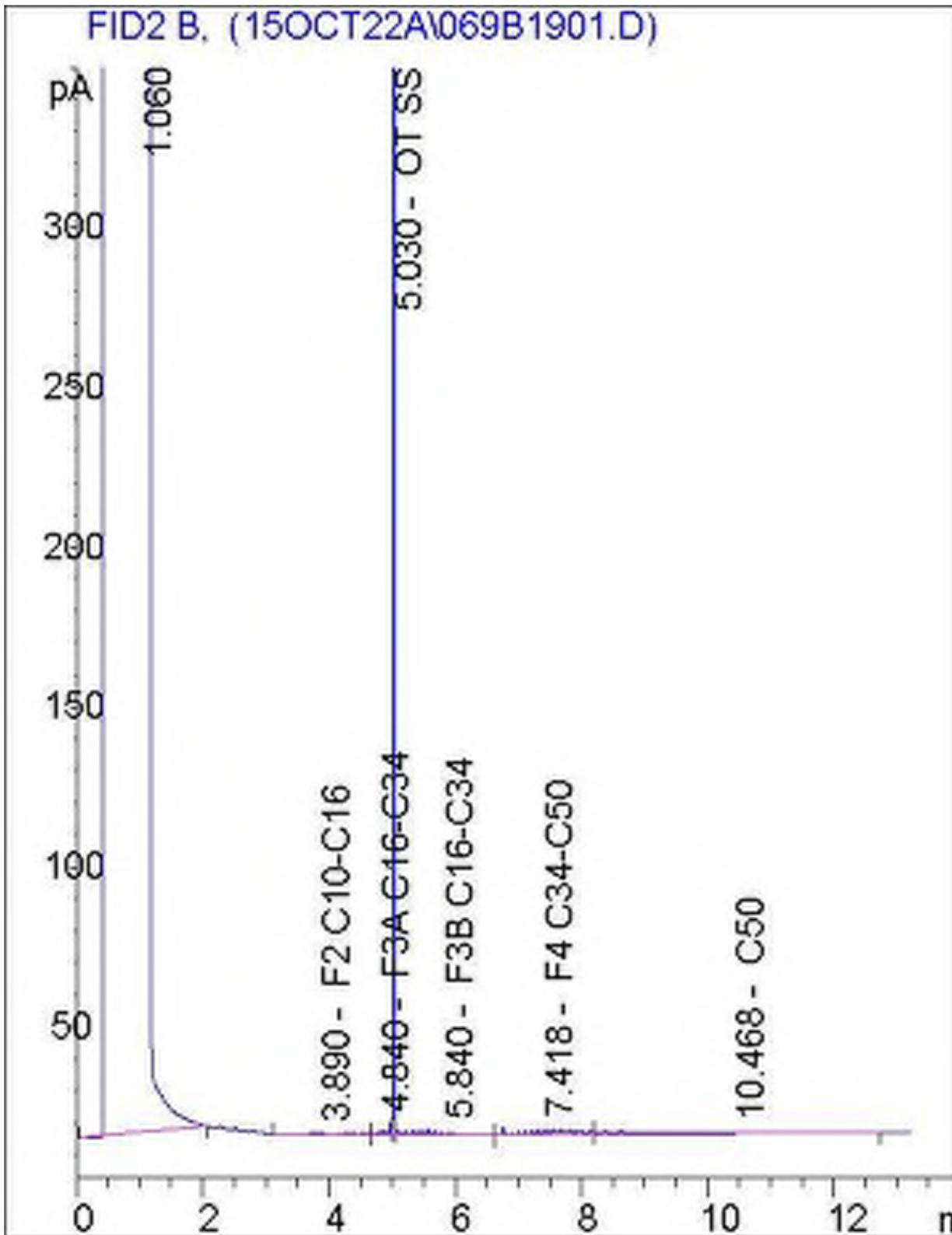
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



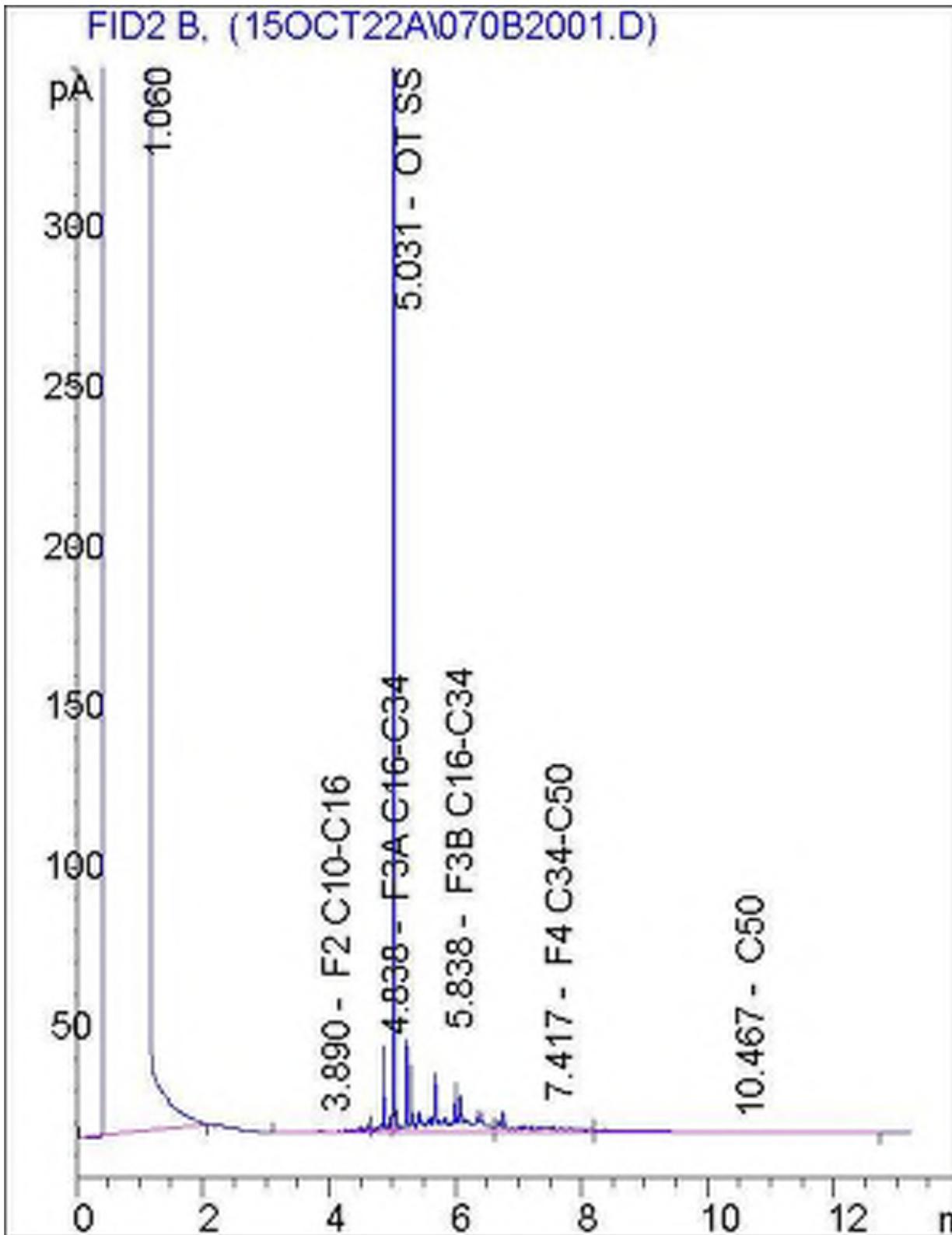
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

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.

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.

Attention: Jeffery O'Banion

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

Report Date: 2018/10/11
Report #: R5436018
Version: 3 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B8C6204

Received: 2018/05/28, 15:20

Sample Matrix: Soil
Samples Received: 7

Analyses	Quantity	Date	Date	Laboratory Method	Reference
		Extracted	Analyzed		
Petroleum Hydro. CCME F1 & BTEX in Soil (2)	5	N/A	2018/05/29	OTT SOP-00002	CCME CWS
Petroleum Hydrocarbons F2-F4 in Soil (3)	3	2018/05/29	2018/05/29	OTT SOP-00001	CCME CWS
Petroleum Hydrocarbons F2-F4 in Soil (3)	2	2018/05/29	2018/05/30	OTT SOP-00001	CCME CWS
Strong Acid Leachable Metals by ICPMS (1)	5	2018/05/30	2018/05/31	CAM SOP-00447	EPA 6020B m
Moisture	5	N/A	2018/05/30	CAM SOP-00445	McKeague 2nd ed 1978
Polychlorinated Biphenyl in Soil (1)	5	2018/05/30	2018/05/30	CAM SOP-00309	EPA 8082A m
pH CaCl2 EXTRACT (1)	7	2018/06/01	2018/06/01	CAM SOP-00413	EPA 9045 D m
Sieve, 75um (1)	2	N/A	2018/05/31	CAM SOP-00467	Carter 2nd ed m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 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.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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.

Your Project #: OTT-00246047-BO
Your C.O.C. #: 666351-01-01

Attention: Jeffery O'Banion

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

Report Date: 2018/10/11
Report #: R5436018
Version: 3 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B8C6204

Received: 2018/05/28, 15:20

- (1) This test was performed by Maxxam Analytics Mississauga
- (2) No lab extraction date is given for F1BTEX & VOC samples that are field preserved with methanol. Extraction date is the date sampled unless otherwise stated.
- (3) All CCME PHC results met required criteria unless otherwise stated in the report. The CWS PHC methods employed by 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.
Jonathan Urben, Senior Project Manager
Email: jurben@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.

RESULTS OF ANALYSES OF SOIL

Maxxam ID		GUL987			GUL987			GUL988		GUL989	
Sampling Date		2018/05/28 12:30			2018/05/28 12:30			2018/05/28 11:00		2018/05/28 13:00	
COC Number		666351-01-01			666351-01-01			666351-01-01		666351-01-01	
	UNITS	MW18-2-4	RDL	QC Batch	MW18-2-4 Lab-Dup	QC Batch	MW18-1-0	MW18-3-4	RDL	QC Batch	

Inorganics										
Moisture	%	12	0.2	5553027			8.9	37	0.2	5553027
Available (CaCl2) pH	pH	8.06		5557685	7.96	5557685	8.19	7.30		5557685
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate										

Maxxam ID		GUL990		GUL991		GUL992		GUL993	
Sampling Date		2018/05/28 09:30		2018/05/28 13:30		2018/05/28		2018/05/28	
COC Number		666351-01-01		666351-01-01		666351-01-01		666351-01-01	
	UNITS	MW18-1-8	COMP	RDL	QC Batch	GRAIN 1	GRAIN 2	RDL	QC Batch

Inorganics										
Moisture	%	8.5	11	0.2	5553027					
Available (CaCl2) pH	pH	8.15	7.99		5557685	8.18	8.20			5557685

Miscellaneous Parameters										
Grain Size	%					FINE	FINE	N/A		5555389
Sieve - #200 (<0.075mm)	%					74	54	1		5555389
Sieve - #200 (>0.075mm)	%					26	46	1		5555389

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		GUL987	GUL988	GUL989	GUL990	GUL991		
Sampling Date		2018/05/28 12:30	2018/05/28 11:00	2018/05/28 13:00	2018/05/28 09:30	2018/05/28 13:30		
COC Number		666351-01-01	666351-01-01	666351-01-01	666351-01-01	666351-01-01		
	UNITS	MW18-2-4	MW18-1-0	MW18-3-4	MW18-1-8	COMP	RDL	QC Batch

Metals								
Acid Extractable Antimony (Sb)	ug/g	0.20	<0.20	<0.20	0.30	0.33	0.20	5555317
Acid Extractable Arsenic (As)	ug/g	5.2	6.1	<1.0	6.3	6.6	1.0	5555317
Acid Extractable Barium (Ba)	ug/g	110	110	320	90	120	0.50	5555317
Acid Extractable Beryllium (Be)	ug/g	0.68	0.71	0.85	0.73	0.68	0.20	5555317
Acid Extractable Boron (B)	ug/g	8.6	10	<5.0	11	8.7	5.0	5555317
Acid Extractable Cadmium (Cd)	ug/g	<0.10	0.11	<0.10	0.11	<0.10	0.10	5555317
Acid Extractable Chromium (Cr)	ug/g	25	22	97	22	23	1.0	5555317
Acid Extractable Cobalt (Co)	ug/g	14	14	22	14	15	0.10	5555317
Acid Extractable Copper (Cu)	ug/g	32	33	44	32	33	0.50	5555317
Acid Extractable Lead (Pb)	ug/g	15	17	7.3	17	17	1.0	5555317
Acid Extractable Molybdenum (Mo)	ug/g	1.3	1.7	0.91	2.1	2.0	0.50	5555317
Acid Extractable Nickel (Ni)	ug/g	32	33	56	33	35	0.50	5555317
Acid Extractable Selenium (Se)	ug/g	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5555317
Acid Extractable Silver (Ag)	ug/g	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5555317
Acid Extractable Thallium (Tl)	ug/g	0.13	0.13	0.42	0.16	0.15	0.050	5555317
Acid Extractable Uranium (U)	ug/g	0.90	1.0	0.70	1.1	0.99	0.050	5555317
Acid Extractable Vanadium (V)	ug/g	32	27	94	28	28	5.0	5555317
Acid Extractable Zinc (Zn)	ug/g	60	56	120	54	56	5.0	5555317
Acid Extractable Mercury (Hg)	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	5555317

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		GUL987	GUL988		GUL989			GUL989		
Sampling Date		2018/05/28 12:30	2018/05/28 11:00		2018/05/28 13:00			2018/05/28 13:00		
COC Number		666351-01-01	666351-01-01		666351-01-01			666351-01-01		
	UNITS	MW18-2-4	MW18-1-0	QC Batch	MW18-3-4	RDL	QC Batch	MW18-3-4 Lab-Dup	RDL	QC Batch
BTEX & F1 Hydrocarbons										
Benzene	ug/g	<0.02	<0.02	5553091	<0.02	0.02	5553091			
Toluene	ug/g	<0.02	<0.02	5553091	<0.02	0.02	5553091			
Ethylbenzene	ug/g	<0.02	<0.02	5553091	<0.02	0.02	5553091			
o-Xylene	ug/g	<0.02	<0.02	5553091	<0.02	0.02	5553091			
p+m-Xylene	ug/g	<0.04	<0.04	5553091	<0.04	0.04	5553091			
Total Xylenes	ug/g	<0.04	<0.04	5553091	<0.04	0.04	5553091			
F1 (C6-C10)	ug/g	11	19	5553091	<10	10	5553091			
F1 (C6-C10) - BTEX	ug/g	11	19	5553091	<10	10	5553091			
F2-F4 Hydrocarbons										
F2 (C10-C16 Hydrocarbons)	ug/g	41	38	5553024	<10	10	5553031	<10	10	5553031
F3 (C16-C34 Hydrocarbons)	ug/g	<50	<50	5553024	<50	50	5553031	<50	50	5553031
F4 (C34-C50 Hydrocarbons)	ug/g	<50	<50	5553024	<50	50	5553031	<50	50	5553031
Reached Baseline at C50	ug/g	Yes	Yes	5553024	Yes		5553031	Yes		5553031
Surrogate Recovery (%)										
1,4-Difluorobenzene	%	100	100	5553091	99		5553091			
4-Bromofluorobenzene	%	100	109	5553091	107		5553091			
D10-Ethylbenzene	%	118	110	5553091	112		5553091			
D4-1,2-Dichloroethane	%	89	89	5553091	88		5553091			
o-Terphenyl	%	115	116	5553024	116		5553031	118		5553031
RDL = Reportable Detection Limit										
QC Batch = Quality Control Batch										
Lab-Dup = Laboratory Initiated Duplicate										

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		GUL990	GUL991		
Sampling Date		2018/05/28 09:30	2018/05/28 13:30		
COC Number		666351-01-01	666351-01-01		
	UNITS	MW18-1-8	COMP	RDL	QC Batch
BTEX & F1 Hydrocarbons					
Benzene	ug/g	<0.02	<0.02	0.02	5553091
Toluene	ug/g	<0.02	<0.02	0.02	5553091
Ethylbenzene	ug/g	<0.02	<0.02	0.02	5553091
o-Xylene	ug/g	0.02	<0.02	0.02	5553091
p+m-Xylene	ug/g	<0.04	<0.04	0.04	5553091
Total Xylenes	ug/g	<0.04	<0.04	0.04	5553091
F1 (C6-C10)	ug/g	23	<10	10	5553091
F1 (C6-C10) - BTEX	ug/g	23	<10	10	5553091
F2-F4 Hydrocarbons					
F2 (C10-C16 Hydrocarbons)	ug/g	38	44	10	5553031
F3 (C16-C34 Hydrocarbons)	ug/g	<50	<50	50	5553031
F4 (C34-C50 Hydrocarbons)	ug/g	<50	<50	50	5553031
Reached Baseline at C50	ug/g	Yes	Yes		5553031
Surrogate Recovery (%)					
1,4-Difluorobenzene	%	101	101		5553091
4-Bromofluorobenzene	%	107	107		5553091
D10-Ethylbenzene	%	110	128		5553091
D4-1,2-Dichloroethane	%	85	90		5553091
o-Terphenyl	%	118	114		5553031
RDL = Reportable Detection Limit					
QC Batch = Quality Control Batch					

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		GUL987	GUL988		GUL989		GUL990	GUL991		
Sampling Date		2018/05/28 12:30	2018/05/28 11:00		2018/05/28 13:00		2018/05/28 09:30	2018/05/28 13:30		
COC Number		666351-01-01	666351-01-01		666351-01-01		666351-01-01	666351-01-01		
	UNITS	MW18-2-4	MW18-1-0	RDL	MW18-3-4	RDL	MW18-1-8	COMP	RDL	QC Batch
PCBs										
Aroclor 1242	ug/g	<0.010	<0.010	0.010	<0.020	0.020	<0.010	<0.010	0.010	5555495
Aroclor 1248	ug/g	<0.010	<0.010	0.010	<0.020	0.020	<0.010	<0.010	0.010	5555495
Aroclor 1254	ug/g	<0.010	<0.010	0.010	<0.020	0.020	<0.010	<0.010	0.010	5555495
Aroclor 1260	ug/g	<0.010	<0.010	0.010	<0.020	0.020	<0.010	<0.010	0.010	5555495
Total PCB	ug/g	<0.010	<0.010	0.010	<0.020	0.020	<0.010	<0.010	0.010	5555495
Surrogate Recovery (%)										
Decachlorobiphenyl	%	101	103		102		99	103		5555495
RDL = Reportable Detection Limit QC Batch = Quality Control Batch										

TEST SUMMARY

Maxxam ID: GUL987
Sample ID: MW18-2-4
Matrix: Soil

Collected: 2018/05/28
Shipped:
Received: 2018/05/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	5553091	N/A	2018/05/29	Fatemeh Habibagahi
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5553024	2018/05/29	2018/05/30	Fatemeh Habibagahi
Strong Acid Leachable Metals by ICPMS	ICP/MS	5555317	2018/05/30	2018/05/31	Daniel Teclu
Moisture	BAL	5553027	N/A	2018/05/30	Fatemeh Habibagahi
Polychlorinated Biphenyl in Soil	GC/ECD	5555495	2018/05/30	2018/05/30	Svitlana Shaula
pH CaCl2 EXTRACT	AT	5557685	2018/06/01	2018/06/01	Gnana Thomas

Maxxam ID: GUL987 Dup
Sample ID: MW18-2-4
Matrix: Soil

Collected: 2018/05/28
Shipped:
Received: 2018/05/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
pH CaCl2 EXTRACT	AT	5557685	2018/06/01	2018/06/01	Gnana Thomas

Maxxam ID: GUL988
Sample ID: MW18-1-0
Matrix: Soil

Collected: 2018/05/28
Shipped:
Received: 2018/05/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	5553091	N/A	2018/05/29	Fatemeh Habibagahi
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5553024	2018/05/29	2018/05/30	Fatemeh Habibagahi
Strong Acid Leachable Metals by ICPMS	ICP/MS	5555317	2018/05/30	2018/05/31	Daniel Teclu
Moisture	BAL	5553027	N/A	2018/05/30	Fatemeh Habibagahi
Polychlorinated Biphenyl in Soil	GC/ECD	5555495	2018/05/30	2018/05/30	Svitlana Shaula
pH CaCl2 EXTRACT	AT	5557685	2018/06/01	2018/06/01	Gnana Thomas

Maxxam ID: GUL989
Sample ID: MW18-3-4
Matrix: Soil

Collected: 2018/05/28
Shipped:
Received: 2018/05/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	5553091	N/A	2018/05/29	Fatemeh Habibagahi
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5553031	2018/05/29	2018/05/29	Liliana Gaburici
Strong Acid Leachable Metals by ICPMS	ICP/MS	5555317	2018/05/30	2018/05/31	Daniel Teclu
Moisture	BAL	5553027	N/A	2018/05/30	Fatemeh Habibagahi
Polychlorinated Biphenyl in Soil	GC/ECD	5555495	2018/05/30	2018/05/30	Svitlana Shaula
pH CaCl2 EXTRACT	AT	5557685	2018/06/01	2018/06/01	Gnana Thomas

Maxxam ID: GUL989 Dup
Sample ID: MW18-3-4
Matrix: Soil

Collected: 2018/05/28
Shipped:
Received: 2018/05/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5553031	2018/05/29	2018/05/29	Liliana Gaburici

TEST SUMMARY

Maxxam ID: GUL990
Sample ID: MW18-1-8
Matrix: Soil

Collected: 2018/05/28
Shipped:
Received: 2018/05/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	5553091	N/A	2018/05/29	Fatemeh Habibagahi
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5553031	2018/05/29	2018/05/29	Liliana Gaburici
Strong Acid Leachable Metals by ICPMS	ICP/MS	5555317	2018/05/30	2018/05/31	Daniel Teclu
Moisture	BAL	5553027	N/A	2018/05/30	Fatemeh Habibagahi
Polychlorinated Biphenyl in Soil	GC/ECD	5555495	2018/05/30	2018/05/30	Svitlana Shaula
pH CaCl2 EXTRACT	AT	5557685	2018/06/01	2018/06/01	Gnana Thomas

Maxxam ID: GUL991
Sample ID: COMP
Matrix: Soil

Collected: 2018/05/28
Shipped:
Received: 2018/05/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	5553091	N/A	2018/05/29	Fatemeh Habibagahi
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5553031	2018/05/29	2018/05/29	Liliana Gaburici
Strong Acid Leachable Metals by ICPMS	ICP/MS	5555317	2018/05/30	2018/05/31	Daniel Teclu
Moisture	BAL	5553027	N/A	2018/05/30	Fatemeh Habibagahi
Polychlorinated Biphenyl in Soil	GC/ECD	5555495	2018/05/30	2018/05/30	Svitlana Shaula
pH CaCl2 EXTRACT	AT	5557685	2018/06/01	2018/06/01	Gnana Thomas

Maxxam ID: GUL992
Sample ID: GRAIN 1
Matrix: Soil

Collected: 2018/05/28
Shipped:
Received: 2018/05/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
pH CaCl2 EXTRACT	AT	5557685	2018/06/01	2018/06/01	Gnana Thomas
Sieve, 75um	SIEV	5555389	N/A	2018/05/31	Chun Yan

Maxxam ID: GUL993
Sample ID: GRAIN 2
Matrix: Soil

Collected: 2018/05/28
Shipped:
Received: 2018/05/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
pH CaCl2 EXTRACT	AT	5557685	2018/06/01	2018/06/01	Gnana Thomas
Sieve, 75um	SIEV	5555389	N/A	2018/05/31	Chun Yan

GENERAL COMMENTS

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

Package 1	12.3°C
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Comments: Custody seal was not present on the cooler.

Revised Report(2018/10/10): List of metals was changed per client's request.

Sample GUL989 [MW18-3-4] : PCB analysis: Detection limits were adjusted for high moisture content.

Results relate only to the items tested.

QUALITY ASSURANCE REPORT

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
5553024	o-Terphenyl	2018/05/29	115	30 - 130	116	30 - 130	112	%				
5553031	o-Terphenyl	2018/05/29	109	30 - 130	110	30 - 130	121	%				
5553091	1,4-Difluorobenzene	2018/05/29	98	60 - 140	100	60 - 140	100	%				
5553091	4-Bromofluorobenzene	2018/05/29	110	60 - 140	113	60 - 140	112	%				
5553091	D10-Ethylbenzene	2018/05/29	101	30 - 130	105	30 - 130	113	%				
5553091	D4-1,2-Dichloroethane	2018/05/29	88	60 - 140	88	60 - 140	91	%				
5555495	Decachlorobiphenyl	2018/05/30	104	60 - 130	98	60 - 130	99	%				
5553024	F2 (C10-C16 Hydrocarbons)	2018/05/30	97	50 - 130	94	80 - 120	<10	ug/g	59 (1)	50		
5553024	F3 (C16-C34 Hydrocarbons)	2018/05/30	97	50 - 130	94	80 - 120	<50	ug/g	60 (1)	50		
5553024	F4 (C34-C50 Hydrocarbons)	2018/05/30	97	50 - 130	94	80 - 120	<50	ug/g	42	50		
5553027	Moisture	2018/05/30							0	50		
5553031	F2 (C10-C16 Hydrocarbons)	2018/05/29	94	50 - 130	98	80 - 120	<10	ug/g	NC	50		
5553031	F3 (C16-C34 Hydrocarbons)	2018/05/29	94	50 - 130	98	80 - 120	<50	ug/g	NC	50		
5553031	F4 (C34-C50 Hydrocarbons)	2018/05/29	94	50 - 130	98	80 - 120	<50	ug/g	NC	50		
5553091	Benzene	2018/05/29	81	60 - 140	86	60 - 140	<0.02	ug/g	NC	50		
5553091	Ethylbenzene	2018/05/29	90	60 - 140	85	60 - 140	<0.02	ug/g	NC	50		
5553091	F1 (C6-C10) - BTEX	2018/05/29					<10	ug/g	NC	50		
5553091	F1 (C6-C10)	2018/05/29	99	60 - 140	100	80 - 120	<10	ug/g	NC	50		
5553091	o-Xylene	2018/05/29	89	60 - 140	92	60 - 140	<0.02	ug/g	NC	50		
5553091	p+m-Xylene	2018/05/29	79	60 - 140	84	60 - 140	<0.04	ug/g	NC	50		
5553091	Toluene	2018/05/29	76	60 - 140	81	60 - 140	<0.02	ug/g	NC	50		
5553091	Total Xylenes	2018/05/29					<0.04	ug/g	NC	50		
5555317	Acid Extractable Antimony (Sb)	2018/06/01	106	75 - 125	105	80 - 120	<0.20	ug/g	NC	30		
5555317	Acid Extractable Arsenic (As)	2018/06/01	100	75 - 125	99	80 - 120	<1.0	ug/g	3.1	30		
5555317	Acid Extractable Barium (Ba)	2018/06/01	93	75 - 125	102	80 - 120	<0.50	ug/g	7.0	30		
5555317	Acid Extractable Beryllium (Be)	2018/06/01	104	75 - 125	104	80 - 120	<0.20	ug/g	4.0	30		
5555317	Acid Extractable Boron (B)	2018/06/01	101	75 - 125	100	80 - 120	<5.0	ug/g	NC	30		
5555317	Acid Extractable Cadmium (Cd)	2018/06/01	105	75 - 125	100	80 - 120	<0.10	ug/g	NC	30		
5555317	Acid Extractable Chromium (Cr)	2018/06/01	99	75 - 125	100	80 - 120	<1.0	ug/g	0.93	30		
5555317	Acid Extractable Cobalt (Co)	2018/06/01	100	75 - 125	99	80 - 120	<0.10	ug/g	9.2	30		
5555317	Acid Extractable Copper (Cu)	2018/06/01	102	75 - 125	99	80 - 120	<0.50	ug/g	14	30		

QUALITY ASSURANCE REPORT(CONT'D)

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
5555317	Acid Extractable Lead (Pb)	2018/06/01	101	75 - 125	101	80 - 120	<1.0	ug/g	25	30		
5555317	Acid Extractable Mercury (Hg)	2018/06/01	105	75 - 125	104	80 - 120	<0.050	ug/g	17	30		
5555317	Acid Extractable Molybdenum (Mo)	2018/06/01	104	75 - 125	100	80 - 120	<0.50	ug/g	NC	30		
5555317	Acid Extractable Nickel (Ni)	2018/06/01	104	75 - 125	102	80 - 120	<0.50	ug/g	5.7	30		
5555317	Acid Extractable Selenium (Se)	2018/06/01	108	75 - 125	102	80 - 120	<0.50	ug/g	NC	30		
5555317	Acid Extractable Silver (Ag)	2018/06/01	102	75 - 125	98	80 - 120	<0.20	ug/g	NC	30		
5555317	Acid Extractable Thallium (Tl)	2018/06/01	103	75 - 125	101	80 - 120	<0.050	ug/g	1.6	30		
5555317	Acid Extractable Uranium (U)	2018/06/01	104	75 - 125	100	80 - 120	<0.050	ug/g	2.7	30		
5555317	Acid Extractable Vanadium (V)	2018/06/01	103	75 - 125	97	80 - 120	<5.0	ug/g	9.0	30		
5555317	Acid Extractable Zinc (Zn)	2018/06/01	NC	75 - 125	101	80 - 120	<5.0	ug/g	3.8	30		
5555389	Sieve - #200 (<0.075mm)	2018/05/31							0.45	20	54	53 - 58
5555389	Sieve - #200 (>0.075mm)	2018/05/31							0.20	20	46	42 - 47
5555495	Aroclor 1242	2018/05/30					<0.010	ug/g	NC	50		
5555495	Aroclor 1248	2018/05/30					<0.010	ug/g	NC	50		
5555495	Aroclor 1254	2018/05/30					<0.010	ug/g	NC	50		
5555495	Aroclor 1260	2018/05/30	118	30 - 130	114	30 - 130	<0.010	ug/g	NC	50		
5555495	Total PCB	2018/05/30	118	30 - 130	114	30 - 130	<0.010	ug/g	NC	50		
5557685	Available (CaCl2) pH	2018/06/01			99	97 - 103			1.3	N/A		

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.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

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).

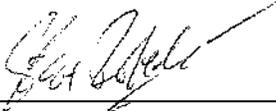
(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

VALIDATION SIGNATURE PAGE

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



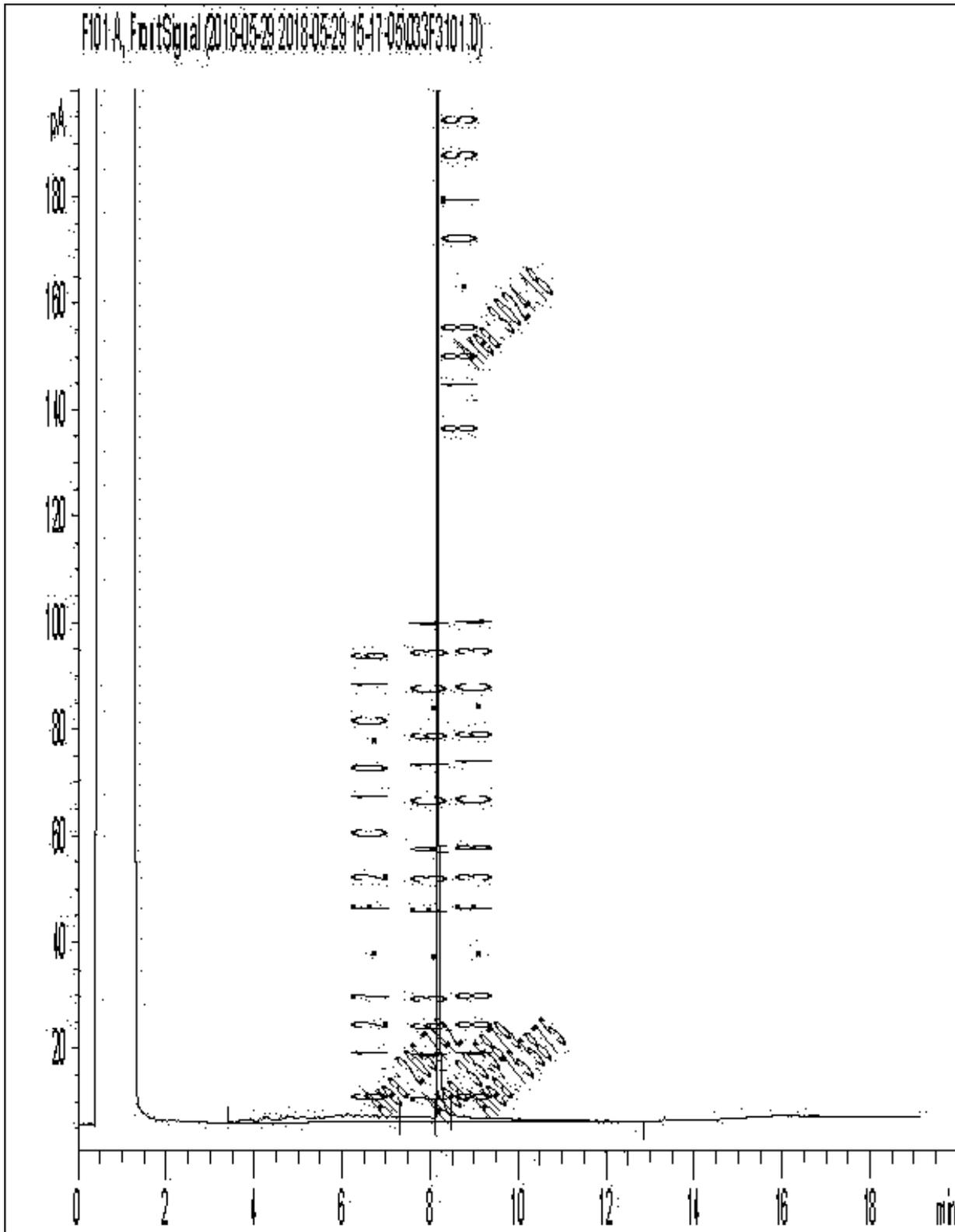
Cristina Carriere, Scientific Service Specialist



Steve Roberts, Ottawa Lab Manager

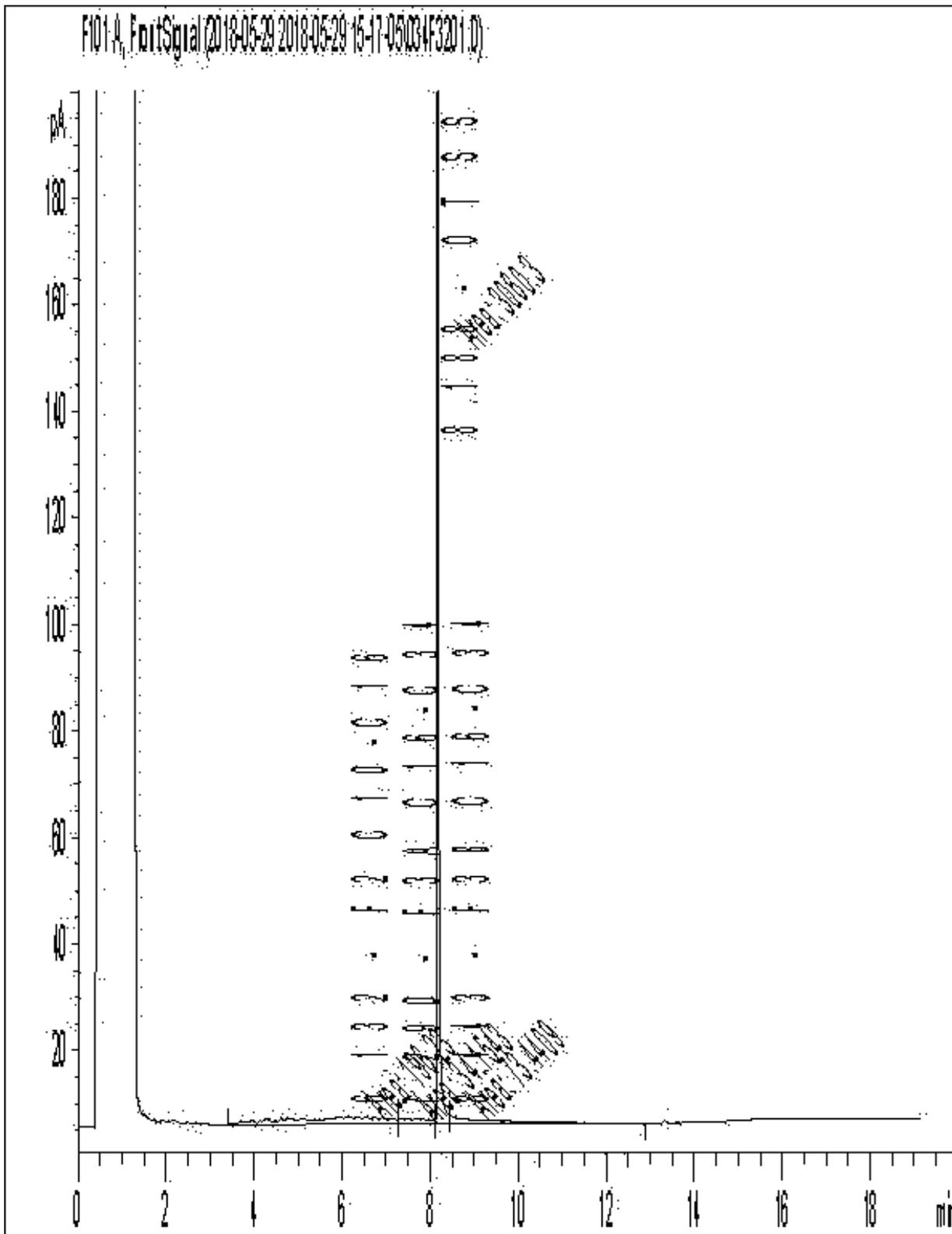
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



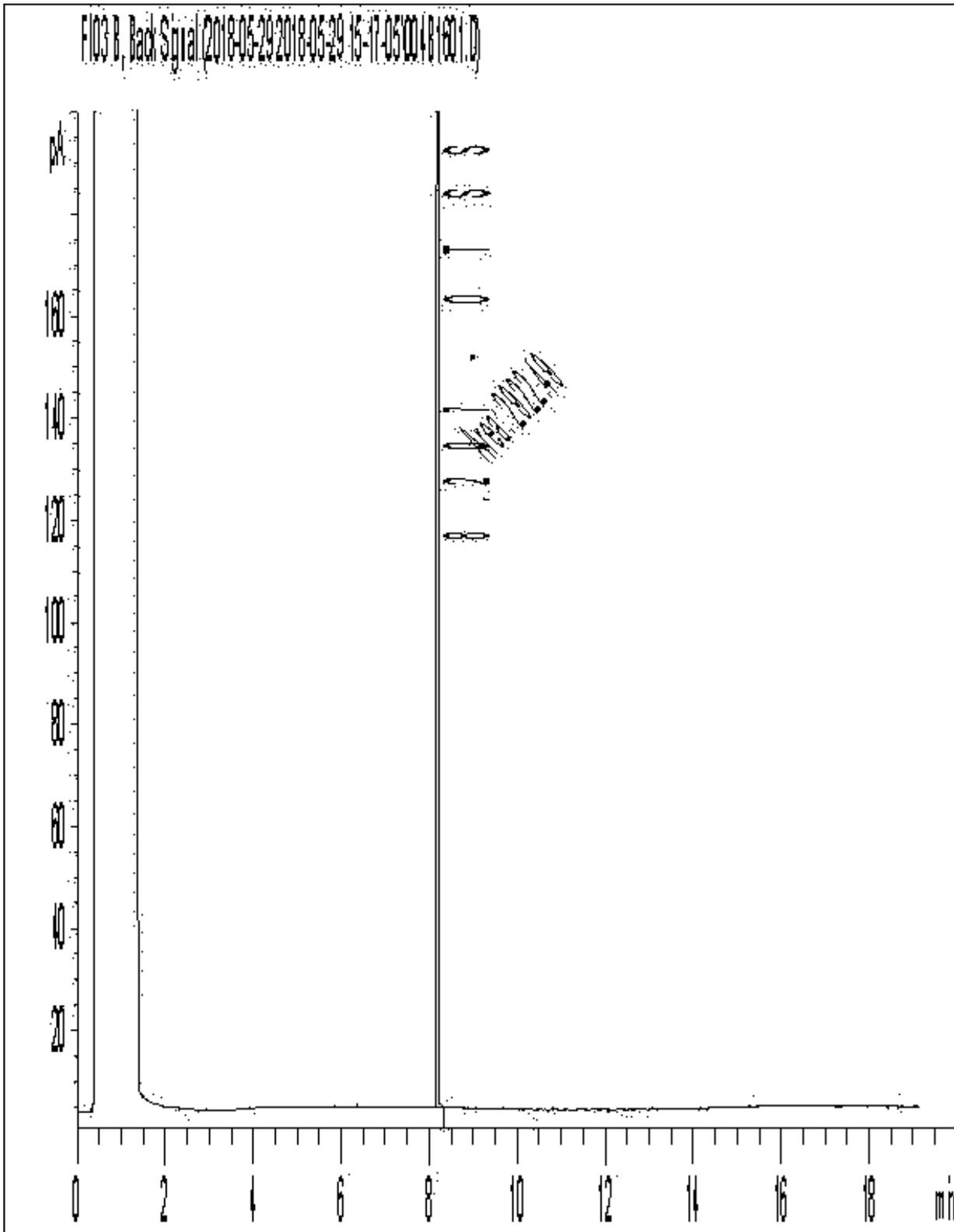
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



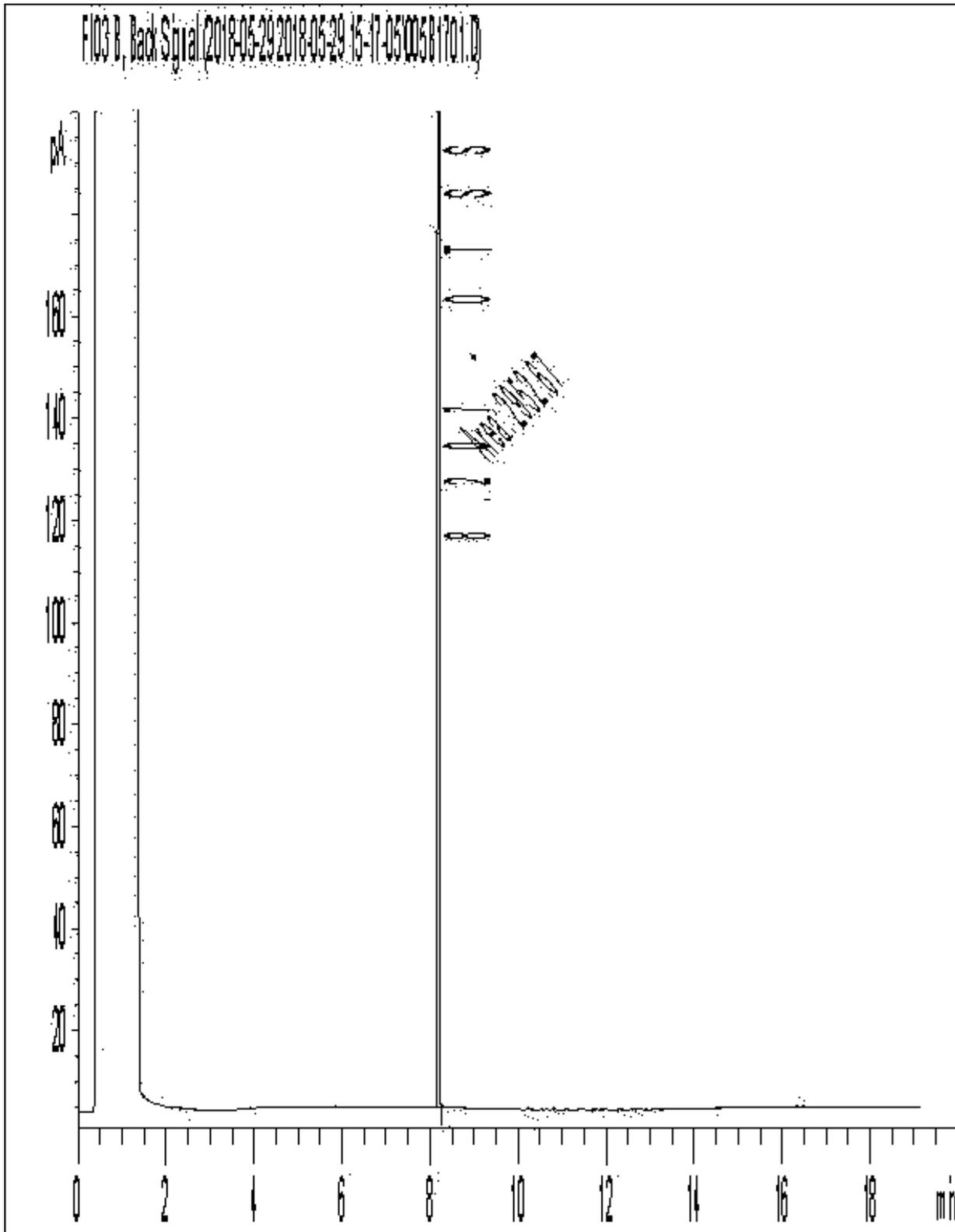
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



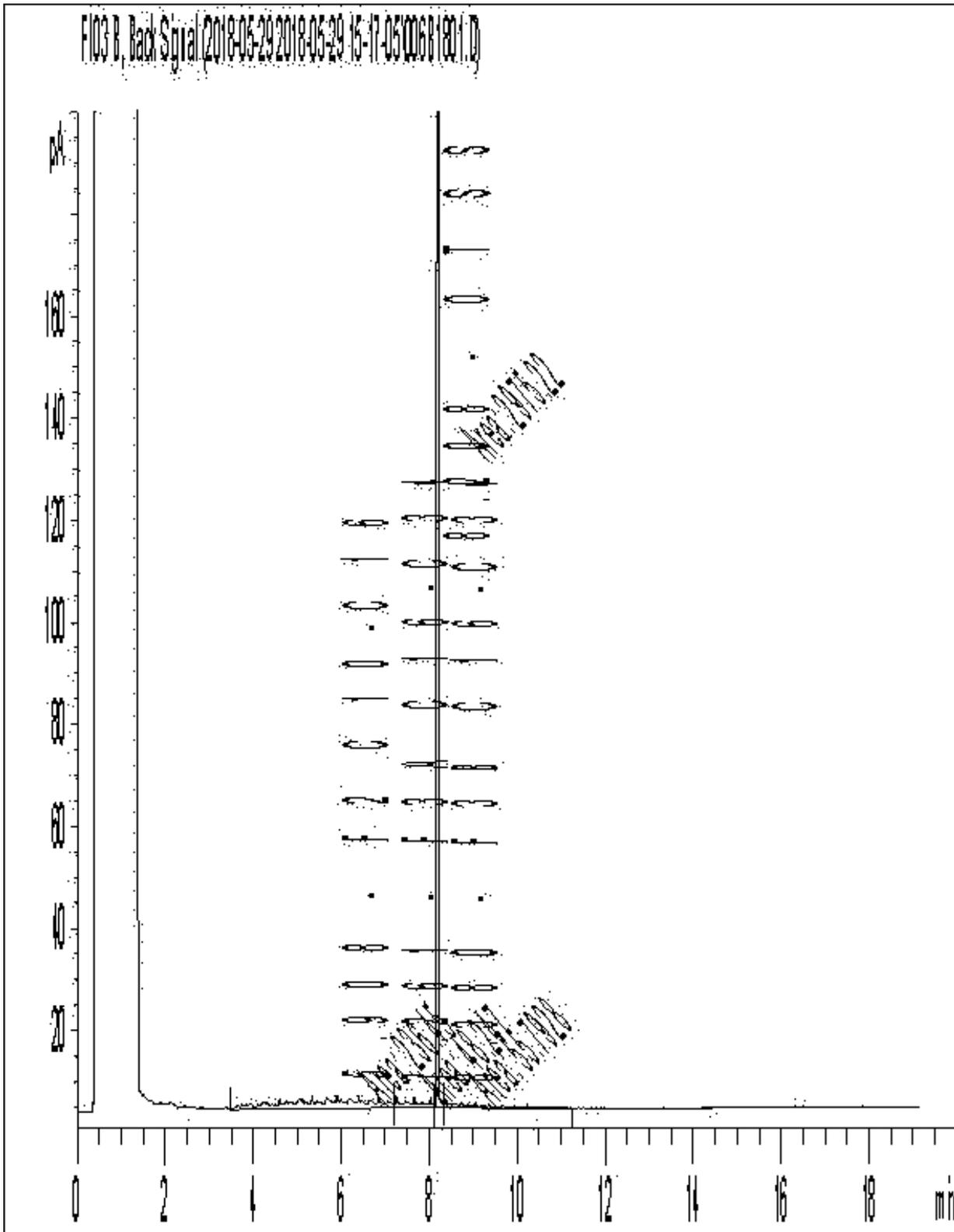
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



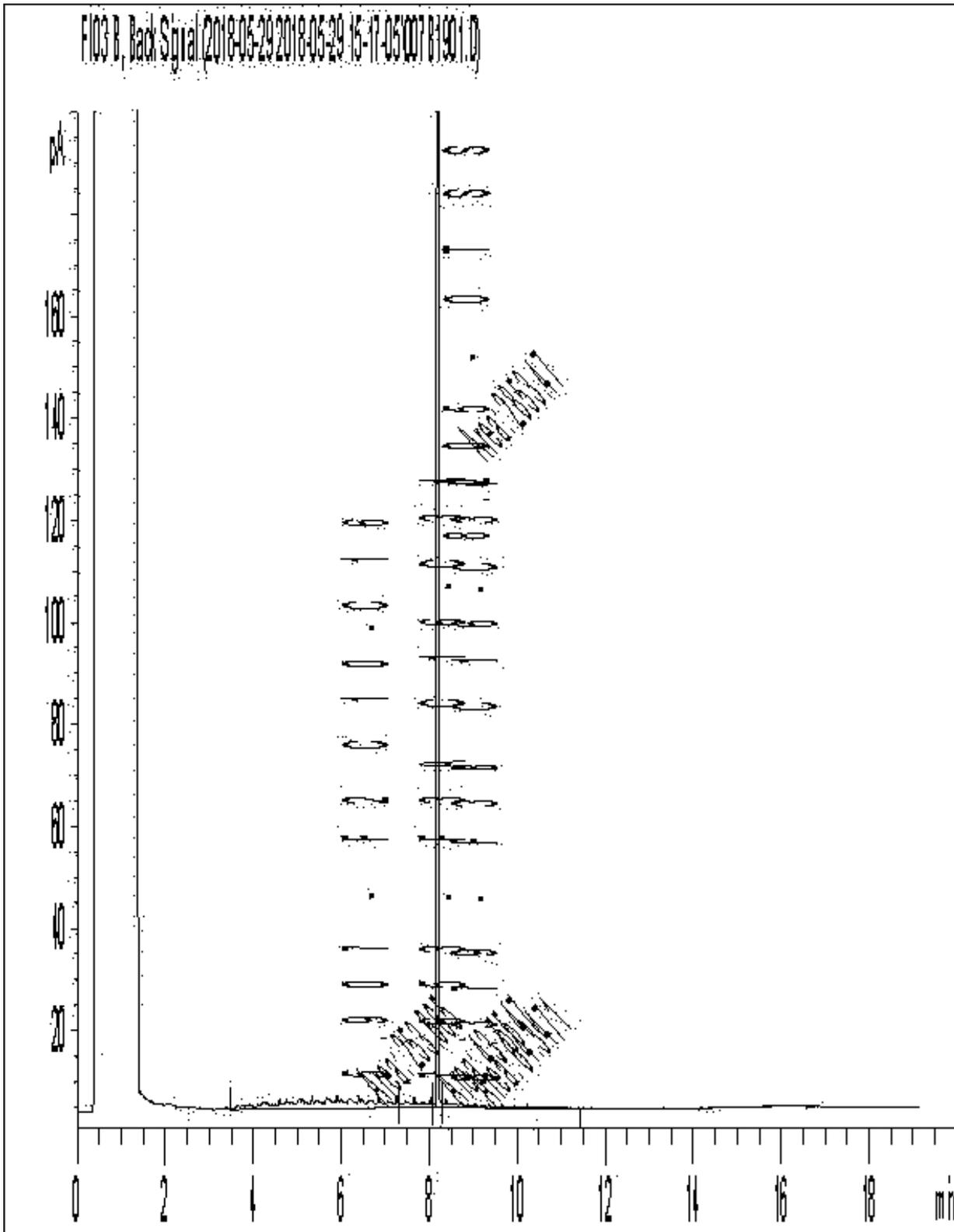
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

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.

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 #: MB807373
 Site Location: OTT-00246047
 Your C.O.C. #: B807373-M060-01-01

Attention: Alisha Williamson

MAXXAM ANALYTICS
 CAMPOBELLO
 6740 CAMPOBELLO ROAD
 MISSISSAUGA, ON
 CANADA L5N 2L8

Report Date: 2018/09/26
 Report #: R2625566
 Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B882902
Received: 2018/09/25, 10:40

Sample Matrix: Soil
 # Samples Received: 2

Analyses	Quantity	Date		Laboratory Method	Analytical Method
		Extracted	Analyzed		
Moisture	2	N/A	2018/09/26	AB SOP-00002	CCME PHC-CWS m
Particle Size by Sieve (Dry) (1)	2	N/A	2018/09/26	AB SOP-00022	ASTM D6913-17 m
Particle Size by Sieve (Grain Size)	2	N/A	2018/09/26	AB WI-00065	Auto Calc
Texture by Hydrometer	2	N/A	2018/09/26	AB SOP-00030	Carter 2nd ed 55.3 m
Texture Class	2	N/A	2018/09/26	AB WI-00065	Auto Calc

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 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.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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) Result indicates % of sample retained on the sieve.

Your Project #: MB807373
Site Location: OTT-00246047
Your C.O.C. #: B807373-M060-01-01

Attention: Alisha Williamson

MAXXAM ANALYTICS
CAMPOBELLO
6740 CAMPOBELLO ROAD
MISSISSAUGA, ON
CANADA L5N 2L8

Report Date: 2018/09/26
Report #: R2625566
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B882902
Received: 2018/09/25, 10:40

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Omran Desouki, Junior Project Manager

Email: ODesouki@maxxam.ca

Phone# (403) 291-3077

=====
This report has been generated and distributed using a secure automated process.

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Maxxam Job #: B882902
Report Date: 2018/09/26

MAXXAM ANALYTICS
Client Project #: MB807373
Site Location: OTT-00246047
Sampler Initials: MAD

RESULTS OF CHEMICAL ANALYSES OF SOIL

Maxxam ID		UK0485	UK0486	UK0486	UK0486		
Sampling Date		2018/09/25 12:00	2018/09/25 12:00	2018/09/25 12:00	2018/09/25 12:00		
COC Number		B807373-M060-01-01	B807373-M060-01-01	B807373-M060-01-01	B807373-M060-01-01		
	UNITS	MW18-3-SS5 (HUU869)	BH18-1-SS4 (HUU875)	BH18-1-SS4 (HUU875) Lab-Dup	BH18-1-SS4 (HUU875) Lab-Dup 2	RDL	QC Batch

Physical Properties							
Sieve - #4 (>4.75mm)	%	<0.20	<0.20 (1)	<0.20	1.4 (2)	0.20	9158656
Sieve - #10 (>2.00mm)	%	6.3	14 (3)	9.5 (2)	8.0 (2)	0.20	9158656
Sieve - #40 (>0.425mm)	%	6.3	20	22	20	0.20	9158656
Sieve - #200 (>0.075mm)	%	23	20	21	22	0.20	9158656
Sieve - Pan	%	65	46	48	49	0.20	9158656

RDL = Reportable Detection Limit
 Lab-Dup = Laboratory Initiated Duplicate
 (1) Duplicate exceeds acceptance criteria due to sample non homogeneity.
 (2) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.
 (3) Duplicate exceeds acceptance criteria due to sample non homogeneity. Reanalysis yields similar results.

Maxxam Job #: B882902
Report Date: 2018/09/26

MAXXAM ANALYTICS
Client Project #: MB807373
Site Location: OTT-00246047
Sampler Initials: MAD

PHYSICAL TESTING (SOIL)

Maxxam ID		UK0485	UK0486			UK0486		
Sampling Date		2018/09/25 12:00	2018/09/25 12:00			2018/09/25 12:00		
COC Number		B807373-M060-01-01	B807373-M060-01-01			B807373-M060-01-01		
	UNITS	MW18-3-SS5 (HUU869)	BH18-1-SS4 (HUU875)	RDL	QC Batch	BH18-1-SS4 (HUU875) Lab-Dup	RDL	QC Batch

Physical Properties								
% sand by hydrometer	%	37	54	2.0	9159420	53	2.0	9159420
% silt by hydrometer	%	20	21	2.0	9159420	21	2.0	9159420
Clay Content	%	43	25	2.0	9159420	26	2.0	9159420
Grain Size	N/A	FINE	COARSE	N/A	9158310			
Texture	N/A	CLAY	SNDY CL LO	N/A	9158315			
Moisture	%	33	9.2	0.30	9158881			

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable

Maxxam Job #: B882902
Report Date: 2018/09/26

MAXXAM ANALYTICS
Client Project #: MB807373
Site Location: OTT-00246047
Sampler Initials: MAD

TEST SUMMARY

Maxxam ID: UK0485
Sample ID: MW18-3-SS5 (HUU869)
Matrix: Soil

Collected: 2018/09/25
Shipped: 2018/09/24
Received: 2018/09/25

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	9158881	N/A	2018/09/26	Maryam Munir
Particle Size by Sieve (Dry)	SIEV	9158656	N/A	2018/09/26	Muhammad Naeem
Particle Size by Sieve (Grain Size)	CALC	9158310	N/A	2018/09/26	Automated Statchk
Texture by Hydrometer	HY	9159420	N/A	2018/09/26	Ahmed Loai
Texture Class	CALC	9158315	N/A	2018/09/26	Harry (Peng) Liang

Maxxam ID: UK0486
Sample ID: BH18-1-SS4 (HUU875)
Matrix: Soil

Collected: 2018/09/25
Shipped: 2018/09/24
Received: 2018/09/25

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	9158881	N/A	2018/09/26	Maryam Munir
Particle Size by Sieve (Dry)	SIEV	9158656	N/A	2018/09/26	Muhammad Naeem
Particle Size by Sieve (Grain Size)	CALC	9158310	N/A	2018/09/26	Report Automation Engine
Texture by Hydrometer	HY	9159420	N/A	2018/09/26	Ahmed Loai
Texture Class	CALC	9158315	N/A	2018/09/26	Harry (Peng) Liang

Maxxam ID: UK0486 Dup
Sample ID: BH18-1-SS4 (HUU875)
Matrix: Soil

Collected: 2018/09/25
Shipped: 2018/09/24
Received: 2018/09/25

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Particle Size by Sieve (Dry)	SIEV	9158656	N/A	2018/09/26	Muhammad Naeem
Texture by Hydrometer	HY	9159420	N/A	2018/09/26	Ahmed Loai

Maxxam ID: UK0486 Dup2
Sample ID: BH18-1-SS4 (HUU875)
Matrix: Soil

Collected: 2018/09/25
Shipped: 2018/09/24
Received: 2018/09/25

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Particle Size by Sieve (Dry)	SIEV	9158656	N/A	2018/09/26	Muhammad Naeem

Maxxam Job #: B882902
Report Date: 2018/09/26

MAXXAM ANALYTICS
Client Project #: MB807373
Site Location: OTT-00246047
Sampler Initials: MAD

GENERAL COMMENTS

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

Package 1	2.3°C
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Sample UK0486 [BH18-1-SS4 (HUU875)] : SNDY CL LO = SANDY CLAY LOAM

Results relate only to the items tested.

Maxxam Job #: B882902
Report Date: 2018/09/26

QUALITY ASSURANCE REPORT

MAXXAM ANALYTICS
Client Project #: MB807373
Site Location: OTT-00246047
Sampler Initials: MAD

QC Batch	Parameter	Date	Method Blank		RPD		QC Standard	
			Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
9158656	Sieve - #10 (>2.00mm)	2018/09/26			35 (1)	30		
9158656	Sieve - #200 (>0.075mm)	2018/09/26			4.2	30	97	75 - 125
9158656	Sieve - #4 (>4.75mm)	2018/09/26			NC	30		
9158656	Sieve - #40 (>0.425mm)	2018/09/26			8.6	30		
9158656	Sieve - Pan	2018/09/26			2.9	30	101	75 - 125
9158881	Moisture	2018/09/26	<0.30	%	0	20		
9159420	% sand by hydrometer	2018/09/26			2.6	30	104	81 - 119
9159420	% silt by hydrometer	2018/09/26			3.1	30	98	85 - 115
9159420	Clay Content	2018/09/26			3.1	30	104	82 - 118

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

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

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

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).

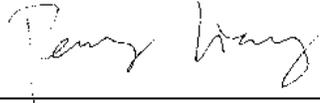
(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

Maxxam Job #: B882902
Report Date: 2018/09/26

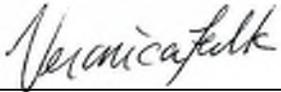
MAXXAM ANALYTICS
Client Project #: MB8O7373
Site Location: OTT-00246047
Sampler Initials: MAD

VALIDATION SIGNATURE PAGE

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



Harry (Peng) Liang, Senior Analyst



Veronica Falk, B.Sc., P.Chem., QP, Scientific Specialist, Organics

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Your Project #: OTT-00228983
Your C.O.C. #: 102806

Attention: Mark Devlin

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

Report Date: 2018/04/06
Report #: R5067865
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B873821

Received: 2018/04/03, 16:10

Sample Matrix: Water
Samples Received: 2

Analyses	Quantity	Date		Laboratory Method	Reference
		Extracted	Analyzed		
Methylnaphthalene Sum (1)	2	N/A	2018/04/06	CAM SOP-00301	EPA 8270D m
PAH Compounds in Water by GC/MS (SIM) (1)	2	2018/04/05	2018/04/06	CAM SOP-00318	EPA 8270D m

Remarks:

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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.

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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.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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

Your Project #: OTT-00228983
Your C.O.C. #: 102806

Attention: Mark Devlin

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

Report Date: 2018/04/06
Report #: R5067865
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B873821
Received: 2018/04/03, 16:10

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Jonathan Urben, Senior Project Manager
Email: jurben@maxxam.ca
Phone# (613) 274-0573

=====
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SEMI-VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		GJO443	GJO444		
Sampling Date		2018/04/03 13:00	2018/04/03 11:30		
COC Number		102806	102806		
	UNITS	MW1	MW2	RDL	QC Batch
Calculated Parameters					
Methylnaphthalene, 2-(1-)	ug/L	<0.071	<0.071	0.071	5468870
Polyaromatic Hydrocarbons					
Acenaphthene	ug/L	<0.050	<0.050	0.050	5471431
Acenaphthylene	ug/L	<0.050	<0.050	0.050	5471431
Anthracene	ug/L	<0.050	<0.050	0.050	5471431
Benzo(a)anthracene	ug/L	<0.050	<0.050	0.050	5471431
Benzo(a)pyrene	ug/L	<0.010	<0.010	0.010	5471431
Benzo(b/j)fluoranthene	ug/L	<0.050	<0.050	0.050	5471431
Benzo(g,h,i)perylene	ug/L	<0.050	<0.050	0.050	5471431
Benzo(k)fluoranthene	ug/L	<0.050	<0.050	0.050	5471431
Chrysene	ug/L	<0.050	<0.050	0.050	5471431
Dibenz(a,h)anthracene	ug/L	<0.050	<0.050	0.050	5471431
Fluoranthene	ug/L	<0.050	<0.050	0.050	5471431
Fluorene	ug/L	<0.050	<0.050	0.050	5471431
Indeno(1,2,3-cd)pyrene	ug/L	<0.050	<0.050	0.050	5471431
1-Methylnaphthalene	ug/L	<0.050	<0.050	0.050	5471431
2-Methylnaphthalene	ug/L	<0.050	<0.050	0.050	5471431
Naphthalene	ug/L	<0.050	<0.050	0.050	5471431
Phenanthrene	ug/L	<0.030	<0.030	0.030	5471431
Pyrene	ug/L	<0.050	<0.050	0.050	5471431
Surrogate Recovery (%)					
D10-Anthracene	%	96	98		5471431
D14-Terphenyl (FS)	%	94	102		5471431
D8-Acenaphthylene	%	92	91		5471431
RDL = Reportable Detection Limit QC Batch = Quality Control Batch					

TEST SUMMARY

Maxxam ID: GJO443
Sample ID: MW1
Matrix: Water

Collected: 2018/04/03
Shipped:
Received: 2018/04/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5468870	N/A	2018/04/06	Automated Statchk
PAH Compounds in Water by GC/MS (SIM)	GC/MS	5471431	2018/04/05	2018/04/06	Floyd Mayede

Maxxam ID: GJO444
Sample ID: MW2
Matrix: Water

Collected: 2018/04/03
Shipped:
Received: 2018/04/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5468870	N/A	2018/04/06	Automated Statchk
PAH Compounds in Water by GC/MS (SIM)	GC/MS	5471431	2018/04/05	2018/04/06	Floyd Mayede

GENERAL COMMENTS

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

Package 1	5.7°C
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Cooler custody seal was present and intact.

Results relate only to the items tested.

QUALITY ASSURANCE REPORT

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5471431	D10-Anthracene	2018/04/05	101	50 - 130	107	50 - 130	104	%		
5471431	D14-Terphenyl (FS)	2018/04/05	109	50 - 130	109	50 - 130	107	%		
5471431	D8-Acenaphthylene	2018/04/05	97	50 - 130	95	50 - 130	92	%		
5471431	1-Methylnaphthalene	2018/04/05	99	50 - 130	105	50 - 130	<0.050	ug/L	5.8	30
5471431	2-Methylnaphthalene	2018/04/05	85	50 - 130	90	50 - 130	<0.050	ug/L	NC	30
5471431	Acenaphthene	2018/04/05	102	50 - 130	100	50 - 130	<0.050	ug/L	3.5	30
5471431	Acenaphthylene	2018/04/05	95	50 - 130	92	50 - 130	<0.050	ug/L	NC	30
5471431	Anthracene	2018/04/05	93	50 - 130	98	50 - 130	<0.050	ug/L	NC	30
5471431	Benzo(a)anthracene	2018/04/05	99	50 - 130	96	50 - 130	<0.050	ug/L	NC	30
5471431	Benzo(a)pyrene	2018/04/05	96	50 - 130	95	50 - 130	<0.010	ug/L	NC	30
5471431	Benzo(b/j)fluoranthene	2018/04/05	93	50 - 130	97	50 - 130	<0.050	ug/L	NC	30
5471431	Benzo(g,h,i)perylene	2018/04/05	92	50 - 130	93	50 - 130	<0.050	ug/L	NC	30
5471431	Benzo(k)fluoranthene	2018/04/05	92	50 - 130	92	50 - 130	<0.050	ug/L	NC	30
5471431	Chrysene	2018/04/05	97	50 - 130	96	50 - 130	<0.050	ug/L	NC	30
5471431	Dibenz(a,h)anthracene	2018/04/05	101	50 - 130	100	50 - 130	<0.050	ug/L	NC	30
5471431	Fluoranthene	2018/04/05	109	50 - 130	113	50 - 130	<0.050	ug/L	NC	30
5471431	Fluorene	2018/04/05	98	50 - 130	97	50 - 130	<0.050	ug/L	5.4	30
5471431	Indeno(1,2,3-cd)pyrene	2018/04/05	97	50 - 130	97	50 - 130	<0.050	ug/L	NC	30
5471431	Naphthalene	2018/04/05	97	50 - 130	97	50 - 130	<0.050	ug/L	1.8	30
5471431	Phenanthrene	2018/04/05	98	50 - 130	101	50 - 130	<0.030	ug/L	0.97	30
5471431	Pyrene	2018/04/05	110	50 - 130	107	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 (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

VALIDATION SIGNATURE PAGE

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

Cristina Carriere

Cristina Carriere, Scientific Service Specialist

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Your Project #: OTT-00246047-B0
Your C.O.C. #: 667506-01-01

Attention: Jeffery O'Banion

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

Report Date: 2018/06/15

Report #: R5242760

Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B8E0266

Received: 2018/06/08, 15:35

Sample Matrix: Water
Samples Received: 8

Analyses	Date		Laboratory Method	Reference
	Quantity	Date Extracted		
Petroleum Hydro. CCME F1 & BTEX in Water (1)	8	N/A	2018/06/14 CAM SOP-00315	CCME PHC-CWS m
Petroleum Hydrocarbons F2-F4 in Water (1, 2)	8	2018/06/14	2018/06/14 CAM SOP-00316	CCME PHC-CWS m
Dissolved Metals by ICPMS (1)	6	N/A	2018/06/13 CAM SOP-00447	EPA 6020B m
Dissolved Metals by ICPMS (1)	2	N/A	2018/06/15 CAM SOP-00447	EPA 6020B m
Polychlorinated Biphenyl in Water (1)	5	2018/06/13	2018/06/13 CAM SOP-00309	EPA 8082A m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 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.

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.

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.

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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 reported using validated cold solvent extraction instead of Soxhlet extraction.



Your Project #: OTT-00246047-B0
Your C.O.C. #: 667506-01-01

Attention: Jeffery O'Banion

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

Report Date: 2018/06/15
Report #: R5242760
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B8E0266
Received: 2018/06/08, 15:35

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Jonathan Urben, Senior Project Manager
Email: jurben@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.

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		GXN128	GXN129	GXN130	GXN131	GXN132	GXN133		
Sampling Date		2018/06/08 09:00	2018/06/08 10:30	2018/06/08 11:30	2018/06/08 11:45	2018/06/08 12:30	2018/06/08 13:30		
COC Number		667506-01-01	667506-01-01	667506-01-01	667506-01-01	667506-01-01	667506-01-01		
	UNITS	MW18-3	MW301	MW302	MW302-1	MW18-1	MW306	RDL	QC Batch

Metals									
Dissolved Antimony (Sb)	ug/L	<0.50	<0.50	<0.50	<0.50	3.9	1.3	0.50	5575838
Dissolved Arsenic (As)	ug/L	<1.0	<1.0	2.5	2.5	4.4	2.3	1.0	5575838
Dissolved Barium (Ba)	ug/L	170	270	91	89	530	580	2.0	5575838
Dissolved Beryllium (Be)	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5575838
Dissolved Boron (B)	ug/L	84	65	59	59	500	310	10	5575838
Dissolved Cadmium (Cd)	ug/L	<0.10	0.34	<0.10	<0.10	<0.10	<0.10	0.10	5575838
Dissolved Chromium (Cr)	ug/L	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	5575838
Dissolved Cobalt (Co)	ug/L	2.0	0.78	1.1	0.98	<0.50	<0.50	0.50	5575838
Dissolved Copper (Cu)	ug/L	3.4	2.2	<1.0	<1.0	1.5	1.0	1.0	5575838
Dissolved Lead (Pb)	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5575838
Dissolved Molybdenum (Mo)	ug/L	9.5	0.75	2.3	2.0	42	11	0.50	5575838
Dissolved Nickel (Ni)	ug/L	3.8	2.2	1.6	1.5	<1.0	1.2	1.0	5575838
Dissolved Selenium (Se)	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	5575838
Dissolved Silver (Ag)	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	5575838
Dissolved Thallium (Tl)	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	5575838
Dissolved Uranium (U)	ug/L	3.7	13	0.34	0.32	0.57	0.96	0.10	5575838
Dissolved Vanadium (V)	ug/L	2.4	0.66	2.5	2.4	0.66	<0.50	0.50	5575838
Dissolved Zinc (Zn)	ug/L	<5.0	<5.0	<5.0	<5.0	<5.0	6.5	5.0	5575838

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		GXN134		GXN135		
Sampling Date		2018/06/08 14:10		2018/06/08 15:00		
COC Number		667506-01-01		667506-01-01		
	UNITS	MW18-2	QC Batch	MW309	RDL	QC Batch
Metals						
Dissolved Antimony (Sb)	ug/L	1.8	5575842	<0.50	0.50	5575838
Dissolved Arsenic (As)	ug/L	<1.0	5575842	<1.0	1.0	5575838
Dissolved Barium (Ba)	ug/L	340	5575842	230	2.0	5575838
Dissolved Beryllium (Be)	ug/L	<0.50	5575842	<0.50	0.50	5575838
Dissolved Boron (B)	ug/L	170	5575842	350	10	5575838
Dissolved Cadmium (Cd)	ug/L	<0.10	5575842	<0.10	0.10	5575838
Dissolved Chromium (Cr)	ug/L	<5.0	5575842	<5.0	5.0	5575838
Dissolved Cobalt (Co)	ug/L	0.67	5575842	<0.50	0.50	5575838
Dissolved Copper (Cu)	ug/L	<1.0	5575842	<1.0	1.0	5575838
Dissolved Lead (Pb)	ug/L	<0.50	5575842	<0.50	0.50	5575838
Dissolved Molybdenum (Mo)	ug/L	33	5575842	13	0.50	5575838
Dissolved Nickel (Ni)	ug/L	2.0	5575842	1.6	1.0	5575838
Dissolved Selenium (Se)	ug/L	<2.0	5575842	<2.0	2.0	5575838
Dissolved Silver (Ag)	ug/L	<0.10	5575842	<0.10	0.10	5575838
Dissolved Thallium (Tl)	ug/L	<0.050	5575842	<0.050	0.050	5575838
Dissolved Uranium (U)	ug/L	0.55	5575842	1.0	0.10	5575838
Dissolved Vanadium (V)	ug/L	<0.50	5575842	<0.50	0.50	5575838
Dissolved Zinc (Zn)	ug/L	<5.0	5575842	<5.0	5.0	5575838
RDL = Reportable Detection Limit						
QC Batch = Quality Control Batch						

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		GXN128	GXN129	GXN130	GXN131	GXN132	GXN133		
Sampling Date		2018/06/08 09:00	2018/06/08 10:30	2018/06/08 11:30	2018/06/08 11:45	2018/06/08 12:30	2018/06/08 13:30		
COC Number		667506-01-01	667506-01-01	667506-01-01	667506-01-01	667506-01-01	667506-01-01		
	UNITS	MW18-3	MW301	MW302	MW302-1	MW18-1	MW306	RDL	QC Batch

BTEX & F1 Hydrocarbons

Benzene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	2.4	0.20	5578216
Toluene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5578216
Ethylbenzene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5578216
o-Xylene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5578216
p+m-Xylene	ug/L	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	0.40	5578216
Total Xylenes	ug/L	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	0.40	5578216
F1 (C6-C10)	ug/L	<25	<25	<25	<25	<25	<25	25	5578216
F1 (C6-C10) - BTEX	ug/L	<25	<25	<25	<25	<25	<25	25	5578216

F2-F4 Hydrocarbons

F2 (C10-C16 Hydrocarbons)	ug/L	<100	<100	<100	<100	<100	<100	100	5580821
F3 (C16-C34 Hydrocarbons)	ug/L	<200	<200	<200	<200	<200	280	200	5580821
F4 (C34-C50 Hydrocarbons)	ug/L	<200	<200	<200	<200	<200	340	200	5580821
Reached Baseline at C50	ug/L	Yes	Yes	Yes	Yes	Yes	No		5580821

Surrogate Recovery (%)

1,4-Difluorobenzene	%	100	105	104	103	107	105		5578216
4-Bromofluorobenzene	%	99	95	93	94	97	97		5578216
D10-Ethylbenzene	%	82	89	88	89	90	90		5578216
D4-1,2-Dichloroethane	%	104	98	96	96	98	98		5578216
o-Terphenyl	%	98	96	102	101	101	103		5580821

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		GXN134	GXN135		
Sampling Date		2018/06/08 14:10	2018/06/08 15:00		
COC Number		667506-01-01	667506-01-01		
	UNITS	MW18-2	MW309	RDL	QC Batch
BTEX & F1 Hydrocarbons					
Benzene	ug/L	<0.20	<0.20	0.20	5578216
Toluene	ug/L	<0.20	<0.20	0.20	5578216
Ethylbenzene	ug/L	<0.20	<0.20	0.20	5578216
o-Xylene	ug/L	<0.20	<0.20	0.20	5578216
p+m-Xylene	ug/L	<0.40	<0.40	0.40	5578216
Total Xylenes	ug/L	<0.40	<0.40	0.40	5578216
F1 (C6-C10)	ug/L	<25	<25	25	5578216
F1 (C6-C10) - BTEX	ug/L	<25	<25	25	5578216
F2-F4 Hydrocarbons					
F2 (C10-C16 Hydrocarbons)	ug/L	<100	<100	100	5580821
F3 (C16-C34 Hydrocarbons)	ug/L	<200	<200	200	5580821
F4 (C34-C50 Hydrocarbons)	ug/L	<200	<200	200	5580821
Reached Baseline at C50	ug/L	Yes	Yes		5580821
Surrogate Recovery (%)					
1,4-Difluorobenzene	%	112	115		5578216
4-Bromofluorobenzene	%	94	92		5578216
D10-Ethylbenzene	%	98	96		5578216
D4-1,2-Dichloroethane	%	94	94		5578216
o-Terphenyl	%	100	101		5580821
RDL = Reportable Detection Limit					
QC Batch = Quality Control Batch					

POLYCHLORINATED BIPHENYLS BY GC-ECD (WATER)

Maxxam ID		GXN128	GXN129		GXN130		GXN131	GXN132		
Sampling Date		2018/06/08 09:00	2018/06/08 10:30		2018/06/08 11:30		2018/06/08 11:45	2018/06/08 12:30		
COC Number		667506-01-01	667506-01-01		667506-01-01		667506-01-01	667506-01-01		
	UNITS	MW18-3	MW301	RDL	MW302	RDL	MW302-1	MW18-1	RDL	QC Batch
PCBs										
Aroclor 1242	ug/L	<0.05	<0.05	0.05	<0.5	0.5	<0.05	<0.05	0.05	5577911
Aroclor 1248	ug/L	<0.05	<0.05	0.05	<0.5	0.5	<0.05	<0.05	0.05	5577911
Aroclor 1254	ug/L	<0.05	<0.05	0.05	<0.5	0.5	<0.05	<0.05	0.05	5577911
Aroclor 1260	ug/L	<0.05	<0.05	0.05	<0.5	0.5	<0.05	<0.05	0.05	5577911
Total PCB	ug/L	<0.05	<0.05	0.05	<0.5	0.5	<0.05	<0.05	0.05	5577911
Surrogate Recovery (%)										
Decachlorobiphenyl	%	92	98		101		74	101		5577911
RDL = Reportable Detection Limit QC Batch = Quality Control Batch										

TEST SUMMARY

Maxxam ID: GXN128
Sample ID: MW18-3
Matrix: Water

Collected: 2018/06/08
Shipped:
Received: 2018/06/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	5578216	N/A	2018/06/14	Ravinder Gaidhu
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	5580821	2018/06/14	2018/06/14	Zhiyue (Frank) Zhu
Dissolved Metals by ICPMS	ICP/MS	5575838	N/A	2018/06/13	Thao Nguyen
Polychlorinated Biphenyl in Water	GC/ECD	5577911	2018/06/13	2018/06/13	Sarah Huang

Maxxam ID: GXN129
Sample ID: MW301
Matrix: Water

Collected: 2018/06/08
Shipped:
Received: 2018/06/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	5578216	N/A	2018/06/14	Ravinder Gaidhu
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	5580821	2018/06/14	2018/06/14	Zhiyue (Frank) Zhu
Dissolved Metals by ICPMS	ICP/MS	5575838	N/A	2018/06/13	Thao Nguyen
Polychlorinated Biphenyl in Water	GC/ECD	5577911	2018/06/13	2018/06/13	Sarah Huang

Maxxam ID: GXN130
Sample ID: MW302
Matrix: Water

Collected: 2018/06/08
Shipped:
Received: 2018/06/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	5578216	N/A	2018/06/14	Ravinder Gaidhu
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	5580821	2018/06/14	2018/06/14	Zhiyue (Frank) Zhu
Dissolved Metals by ICPMS	ICP/MS	5575838	N/A	2018/06/15	Thao Nguyen
Polychlorinated Biphenyl in Water	GC/ECD	5577911	2018/06/13	2018/06/13	Sarah Huang

Maxxam ID: GXN131
Sample ID: MW302-1
Matrix: Water

Collected: 2018/06/08
Shipped:
Received: 2018/06/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	5578216	N/A	2018/06/14	Ravinder Gaidhu
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	5580821	2018/06/14	2018/06/14	Zhiyue (Frank) Zhu
Dissolved Metals by ICPMS	ICP/MS	5575838	N/A	2018/06/15	Thao Nguyen
Polychlorinated Biphenyl in Water	GC/ECD	5577911	2018/06/13	2018/06/13	Sarah Huang

Maxxam ID: GXN132
Sample ID: MW18-1
Matrix: Water

Collected: 2018/06/08
Shipped:
Received: 2018/06/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	5578216	N/A	2018/06/14	Ravinder Gaidhu
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	5580821	2018/06/14	2018/06/14	Zhiyue (Frank) Zhu
Dissolved Metals by ICPMS	ICP/MS	5575838	N/A	2018/06/13	Thao Nguyen
Polychlorinated Biphenyl in Water	GC/ECD	5577911	2018/06/13	2018/06/13	Sarah Huang

TEST SUMMARY

Maxxam ID: GXN133
Sample ID: MW306
Matrix: Water

Collected: 2018/06/08
Shipped:
Received: 2018/06/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	5578216	N/A	2018/06/14	Ravinder Gaidhu
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	5580821	2018/06/14	2018/06/14	Zhiyue (Frank) Zhu
Dissolved Metals by ICPMS	ICP/MS	5575838	N/A	2018/06/13	Thao Nguyen

Maxxam ID: GXN134
Sample ID: MW18-2
Matrix: Water

Collected: 2018/06/08
Shipped:
Received: 2018/06/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	5578216	N/A	2018/06/14	Ravinder Gaidhu
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	5580821	2018/06/14	2018/06/14	Zhiyue (Frank) Zhu
Dissolved Metals by ICPMS	ICP/MS	5575842	N/A	2018/06/13	Arefa Dabhad

Maxxam ID: GXN135
Sample ID: MW309
Matrix: Water

Collected: 2018/06/08
Shipped:
Received: 2018/06/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	5578216	N/A	2018/06/14	Ravinder Gaidhu
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	5580821	2018/06/14	2018/06/14	Zhiyue (Frank) Zhu
Dissolved Metals by ICPMS	ICP/MS	5575838	N/A	2018/06/13	Thao Nguyen

GENERAL COMMENTS

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

Package 1	17.0°C
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Custody seal was not present on the cooler.

Sample GXN130 [MW302] : PCB Analysis: Due to the nature of the sample matrix, a smaller portion of the sample was extracted. DLs were adjusted accordingly.

Results relate only to the items tested.

QUALITY ASSURANCE REPORT

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5577911	Decachlorobiphenyl	2018/06/13	121	60 - 130	88	60 - 130	110	%		
5578216	1,4-Difluorobenzene	2018/06/14	105	70 - 130	103	70 - 130	103	%		
5578216	4-Bromofluorobenzene	2018/06/14	98	70 - 130	97	70 - 130	97	%		
5578216	D10-Ethylbenzene	2018/06/14	83	70 - 130	93	70 - 130	90	%		
5578216	D4-1,2-Dichloroethane	2018/06/14	98	70 - 130	93	70 - 130	98	%		
5580821	o-Terphenyl	2018/06/14	100	60 - 130	101	60 - 130	98	%		
5575838	Dissolved Antimony (Sb)	2018/06/13	101	80 - 120	105	80 - 120	<0.50	ug/L	NC	20
5575838	Dissolved Arsenic (As)	2018/06/13	93	80 - 120	96	80 - 120	<1.0	ug/L	NC	20
5575838	Dissolved Barium (Ba)	2018/06/13	93	80 - 120	97	80 - 120	<2.0	ug/L	6.8	20
5575838	Dissolved Beryllium (Be)	2018/06/13	95	80 - 120	96	80 - 120	<0.50	ug/L	NC	20
5575838	Dissolved Boron (B)	2018/06/13	94	80 - 120	95	80 - 120	<10	ug/L	4.7	20
5575838	Dissolved Cadmium (Cd)	2018/06/13	94	80 - 120	99	80 - 120	<0.10	ug/L	NC	20
5575838	Dissolved Chromium (Cr)	2018/06/13	92	80 - 120	96	80 - 120	<5.0	ug/L	NC	20
5575838	Dissolved Cobalt (Co)	2018/06/13	91	80 - 120	97	80 - 120	<0.50	ug/L	7.0	20
5575838	Dissolved Copper (Cu)	2018/06/13	92	80 - 120	99	80 - 120	<1.0	ug/L	0.014	20
5575838	Dissolved Lead (Pb)	2018/06/13	89	80 - 120	95	80 - 120	<0.50	ug/L	NC	20
5575838	Dissolved Molybdenum (Mo)	2018/06/13	99	80 - 120	101	80 - 120	<0.50	ug/L	NC	20
5575838	Dissolved Nickel (Ni)	2018/06/13	89	80 - 120	96	80 - 120	<1.0	ug/L	6.1	20
5575838	Dissolved Selenium (Se)	2018/06/13	95	80 - 120	100	80 - 120	<2.0	ug/L	NC	20
5575838	Dissolved Silver (Ag)	2018/06/13	79 (1)	80 - 120	99	80 - 120	<0.10	ug/L	NC	20
5575838	Dissolved Thallium (Tl)	2018/06/13	89	80 - 120	94	80 - 120	<0.050	ug/L	NC	20
5575838	Dissolved Uranium (U)	2018/06/13	97	80 - 120	101	80 - 120	<0.10	ug/L	2.9	20
5575838	Dissolved Vanadium (V)	2018/06/13	95	80 - 120	98	80 - 120	<0.50	ug/L	NC	20
5575838	Dissolved Zinc (Zn)	2018/06/13	92	80 - 120	97	80 - 120	<5.0	ug/L	NC	20
5575842	Dissolved Antimony (Sb)	2018/06/13	99	80 - 120	99	80 - 120	<0.50	ug/L		
5575842	Dissolved Arsenic (As)	2018/06/13	95	80 - 120	96	80 - 120	<1.0	ug/L	NC	20
5575842	Dissolved Barium (Ba)	2018/06/13	98	80 - 120	99	80 - 120	<2.0	ug/L	1.6	20
5575842	Dissolved Beryllium (Be)	2018/06/13	89	80 - 120	92	80 - 120	<0.50	ug/L		
5575842	Dissolved Boron (B)	2018/06/13	93	80 - 120	85	80 - 120	<10	ug/L	4.8	20
5575842	Dissolved Cadmium (Cd)	2018/06/13	97	80 - 120	97	80 - 120	<0.10	ug/L	NC	20
5575842	Dissolved Chromium (Cr)	2018/06/13	90	80 - 120	93	80 - 120	<5.0	ug/L	NC	20

QUALITY ASSURANCE REPORT(CONT'D)

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5575842	Dissolved Cobalt (Co)	2018/06/13	96	80 - 120	97	80 - 120	<0.50	ug/L		
5575842	Dissolved Copper (Cu)	2018/06/13	91	80 - 120	94	80 - 120	<1.0	ug/L	2.6	20
5575842	Dissolved Lead (Pb)	2018/06/13	91	80 - 120	93	80 - 120	<0.50	ug/L	NC	20
5575842	Dissolved Molybdenum (Mo)	2018/06/13	97	80 - 120	94	80 - 120	<0.50	ug/L		
5575842	Dissolved Nickel (Ni)	2018/06/13	93	80 - 120	97	80 - 120	<1.0	ug/L		
5575842	Dissolved Selenium (Se)	2018/06/13	97	80 - 120	94	80 - 120	<2.0	ug/L		
5575842	Dissolved Silver (Ag)	2018/06/13	96	80 - 120	94	80 - 120	<0.10	ug/L		
5575842	Dissolved Thallium (Tl)	2018/06/13	92	80 - 120	94	80 - 120	<0.050	ug/L		
5575842	Dissolved Uranium (U)	2018/06/13	93	80 - 120	94	80 - 120	<0.10	ug/L		
5575842	Dissolved Vanadium (V)	2018/06/13	90	80 - 120	92	80 - 120	<0.50	ug/L		
5575842	Dissolved Zinc (Zn)	2018/06/13	94	80 - 120	95	80 - 120	<5.0	ug/L	NC	20
5577911	Aroclor 1242	2018/06/13					<0.05	ug/L	NC	30
5577911	Aroclor 1248	2018/06/13					<0.05	ug/L	NC	30
5577911	Aroclor 1254	2018/06/13					<0.05	ug/L	NC	30
5577911	Aroclor 1260	2018/06/13	118	60 - 130	83	60 - 130	<0.05	ug/L	NC	30
5577911	Total PCB	2018/06/13	118	60 - 130	83	60 - 130	<0.05	ug/L	NC	40
5578216	Benzene	2018/06/14	87	70 - 130	99	70 - 130	<0.20	ug/L	NC	30
5578216	Ethylbenzene	2018/06/14	79	70 - 130	91	70 - 130	<0.20	ug/L	NC	30
5578216	F1 (C6-C10) - BTEX	2018/06/14					<25	ug/L	NC	30
5578216	F1 (C6-C10)	2018/06/14	79	70 - 130	92	70 - 130	<25	ug/L	NC	30
5578216	o-Xylene	2018/06/14	80	70 - 130	92	70 - 130	<0.20	ug/L	NC	30
5578216	p+m-Xylene	2018/06/14	76	70 - 130	89	70 - 130	<0.40	ug/L	NC	30
5578216	Toluene	2018/06/14	80	70 - 130	93	70 - 130	<0.20	ug/L	NC	30
5578216	Total Xylenes	2018/06/14					<0.40	ug/L	NC	30
5580821	F2 (C10-C16 Hydrocarbons)	2018/06/14	101	50 - 130	101	60 - 130	<100	ug/L	NC	30
5580821	F3 (C16-C34 Hydrocarbons)	2018/06/14	107	50 - 130	109	60 - 130	<200	ug/L	NC	30

QUALITY ASSURANCE REPORT(CONT'D)

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5580821	F4 (C34-C50 Hydrocarbons)	2018/06/14	105	50 - 130	107	60 - 130	<200	ug/L	NC	30

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

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

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

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

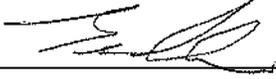
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

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

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

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

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.



INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name: #17498 exp Services Inc	Company Name: Accounts Payable	Quotation #: B45998	Maxxam Job #:	Stream 2	Order #:	667506	667506
Address: 100-2650 Queensview Drive Ottawa ON K2B 8H6	Address: Jeffrey O'Banion	P.O. #:	Project:	OTT-00246047-B0	Project Manager:	Jonathan Urban	
Tel: (613) 686-1899 Fax: (613) 225-7337	Tel: Jeffrey.O'Banion@exp.com Fax:	Site #:	Sampled By:	Jeff C.	Barcode: C4057506-01-01		

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY					ANALYSIS REQUESTED (PLEASE BE SPECIFIC)				Turnaround Time (TAT) Required: Please provide advance notice for rush projects	
Regulation 153 (2011)			Other Regulations		Field Filtered (please circle):				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 DOO and Dissolved Metals 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: _____ (not req for #)	
<input type="checkbox"/> Table 1	<input type="checkbox"/> Res/Park	<input type="checkbox"/> Medium/Fine	<input type="checkbox"/> CCME	<input type="checkbox"/> Sanitary Sewer Bylaw	<input checked="" type="checkbox"/> Mercury (Hg / Cr-V)	<input type="checkbox"/> 0. Reg 153 Petroleum Hydrocarbons (Water)	<input type="checkbox"/> 0. Reg 153 Dissolved ICPMS Metals (Water)	<input type="checkbox"/> 0. Reg 153 PCBs (Water)		
<input type="checkbox"/> Table 2	<input checked="" type="checkbox"/> Ind/Comm	<input type="checkbox"/> Coarse	<input type="checkbox"/> Reg 558	<input type="checkbox"/> Storm Sewer Bylaw					* # of bottles	
<input checked="" type="checkbox"/> Table 3	<input type="checkbox"/> Agri/Other	<input type="checkbox"/> For RSC	<input type="checkbox"/> MISA	<input type="checkbox"/> Municipality					Comments	
<input type="checkbox"/> Table			<input type="checkbox"/> PNVO	<input type="checkbox"/> Other					on ice	
Include Criteria on Certificate of Analysis (Y/N)?									RECEIVED IN OTTAWA	
Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix					08-Jun-18 15:35 Jonathan Urban B8E0266 GID ENV-1355	
1	MW18-3	06.06.2018	4:00am	GW	✓	✓	✓	✓		
2	MW301		10:30am	GW	✓	✓	✓			
3	MW302		11:30am	GW	✓	✓	✓			
4	MW302-1		11:45am	GW	✓	✓	✓			
5	MW18-1		12:30pm	GW	✓	✓	✓			
6	MW306		1:30pm	GW	✓	✓	✓			
7	MW18-2		2:10	GW	✓	✓	✓			
8	MW309		3:00pm	GW	✓	✓	✓			

* RELINQUISHED BY: (Signature/Print)	Date: (YYMMDD)	Time	RECEIVED BY: (Signature/Print)	Date: (YYMMDD)	Time	# Jars used and not submitted	Laboratory Use Only		
<i>[Signature]</i>	18.06.18	3:35	<i>[Signature]</i>	20/06/18	15:35		Time Sensitive	Temperature (°C) on Receipt	Custody Seal Present
				20/06/18	10:56			17, 17, 17	Intact

* 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.

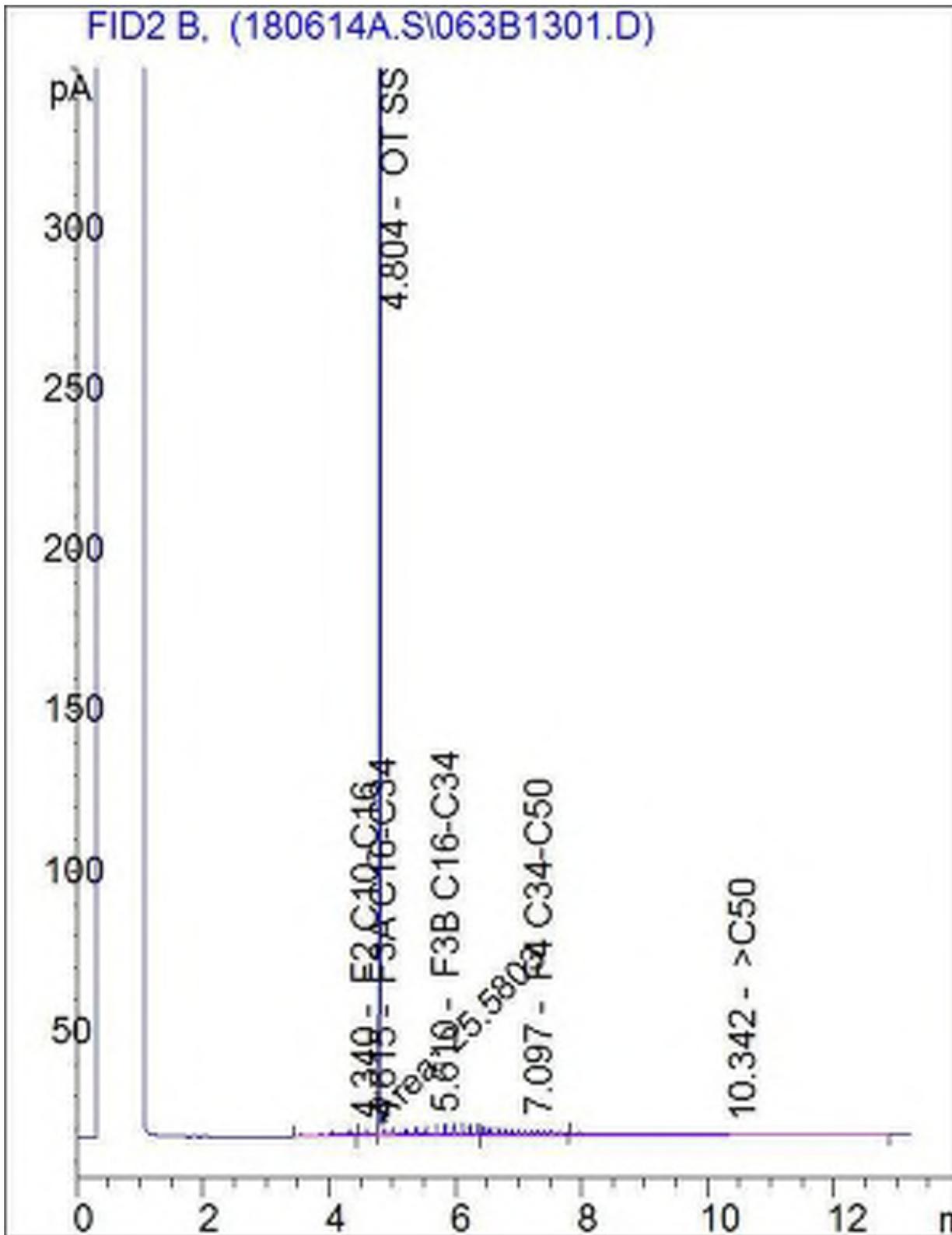
** SAMPLE CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT HTTP://MAXXAM.CAMP/CONTENT/UPLOADS/ONTARIO-COC.PDF.

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

White: Maxxam Yellow: Client

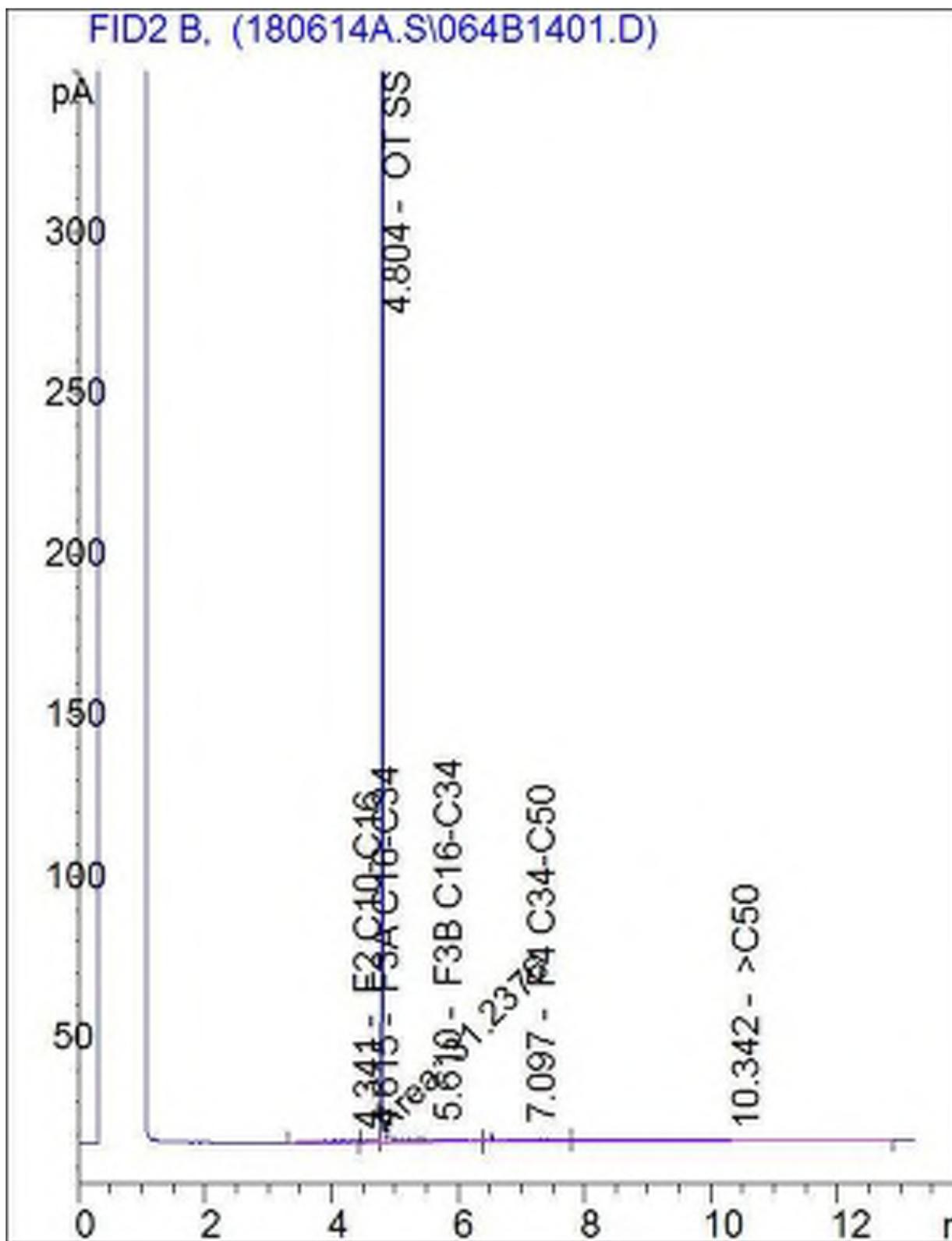
7/8/11

Petroleum Hydrocarbons F2-F4 in Water Chromatogram



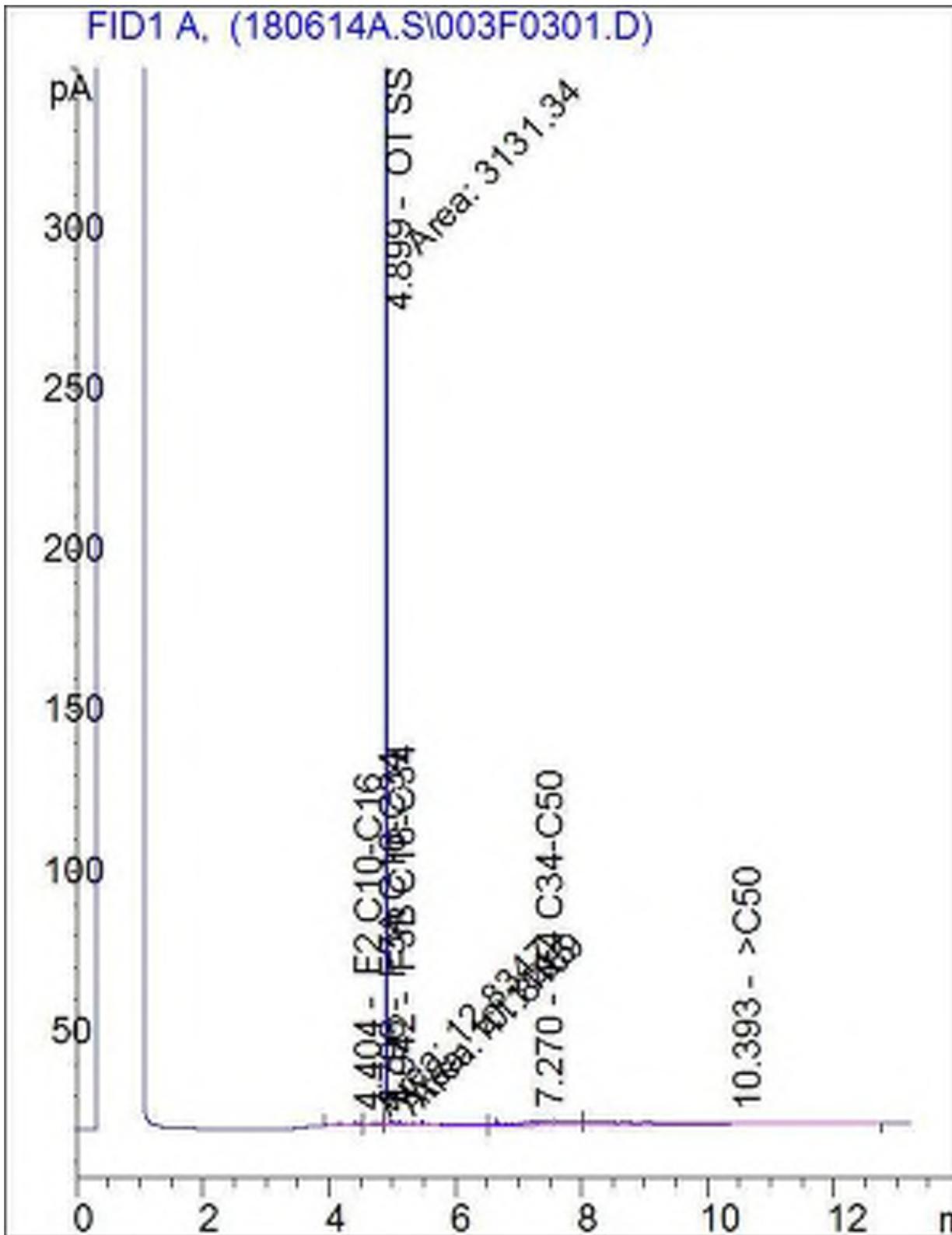
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Petroleum Hydrocarbons F2-F4 in Water Chromatogram



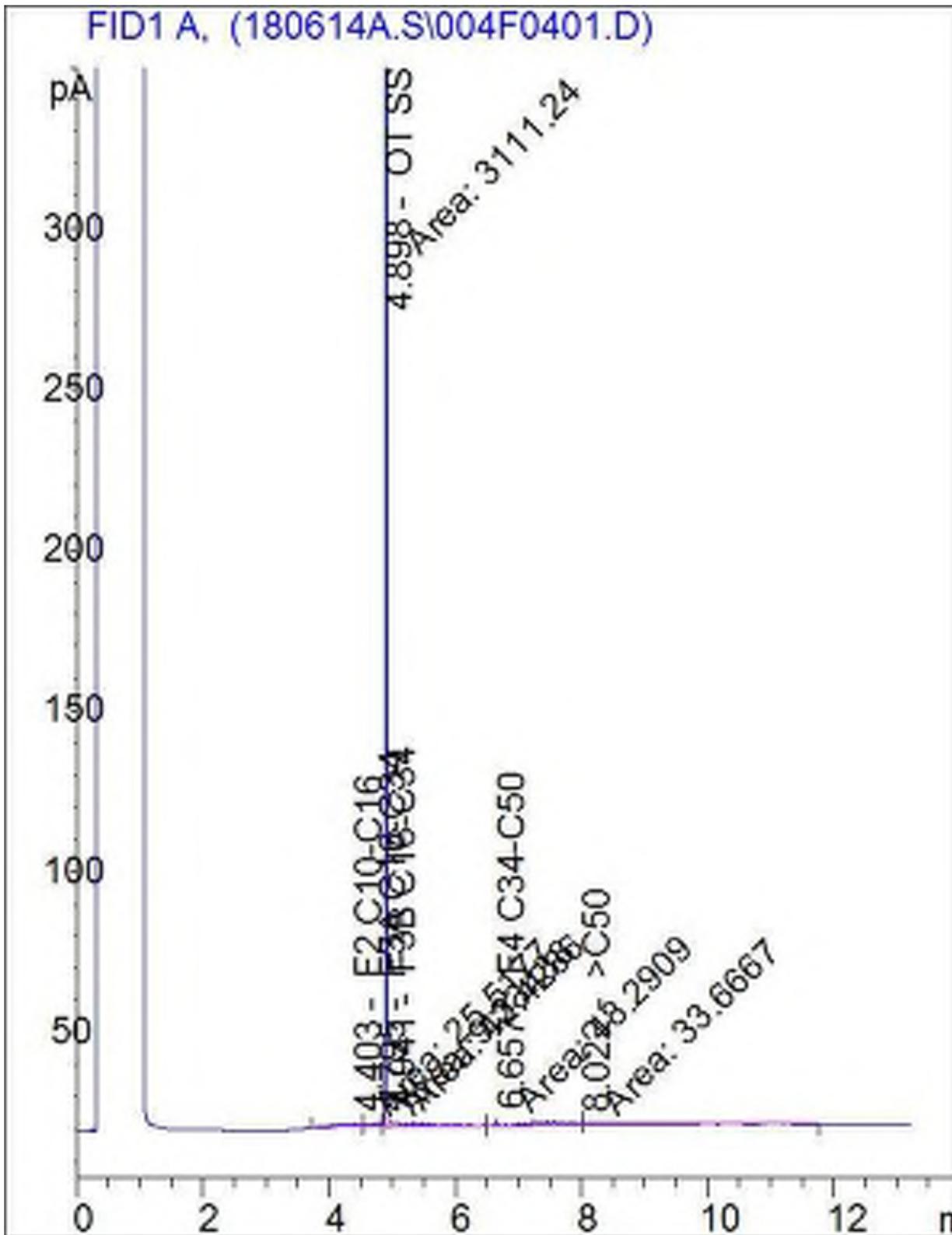
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Petroleum Hydrocarbons F2-F4 in Water Chromatogram



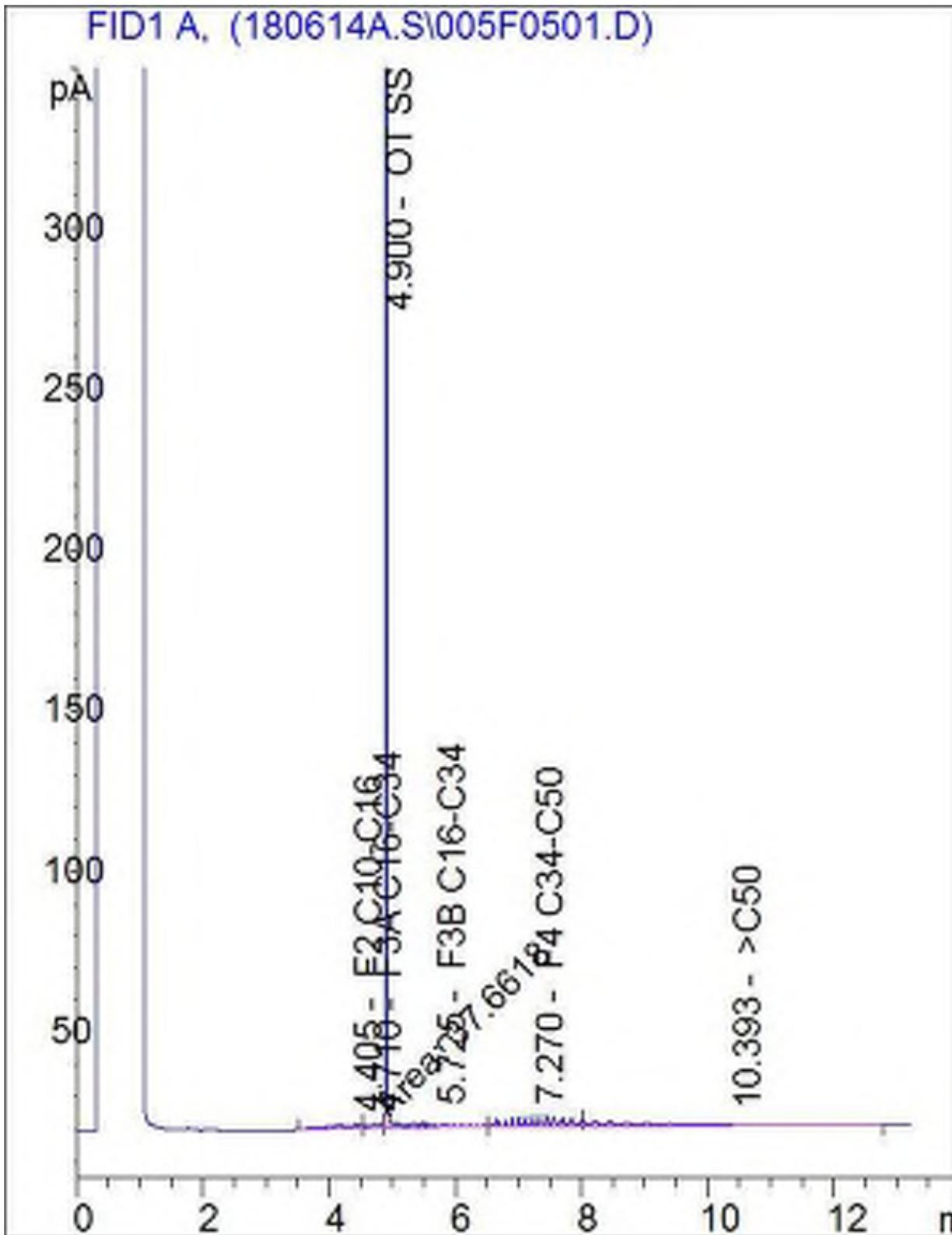
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Petroleum Hydrocarbons F2-F4 in Water Chromatogram



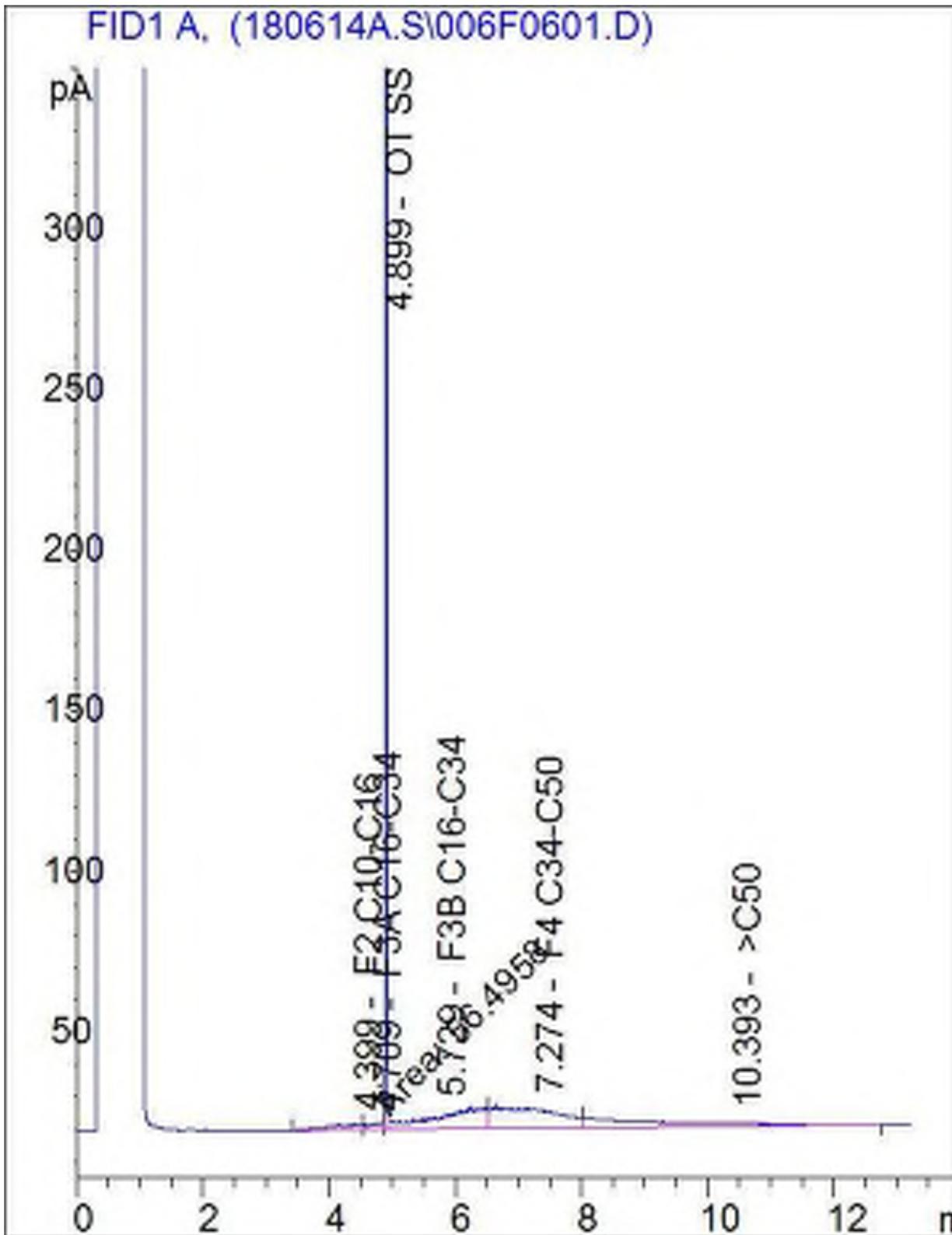
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Petroleum Hydrocarbons F2-F4 in Water Chromatogram



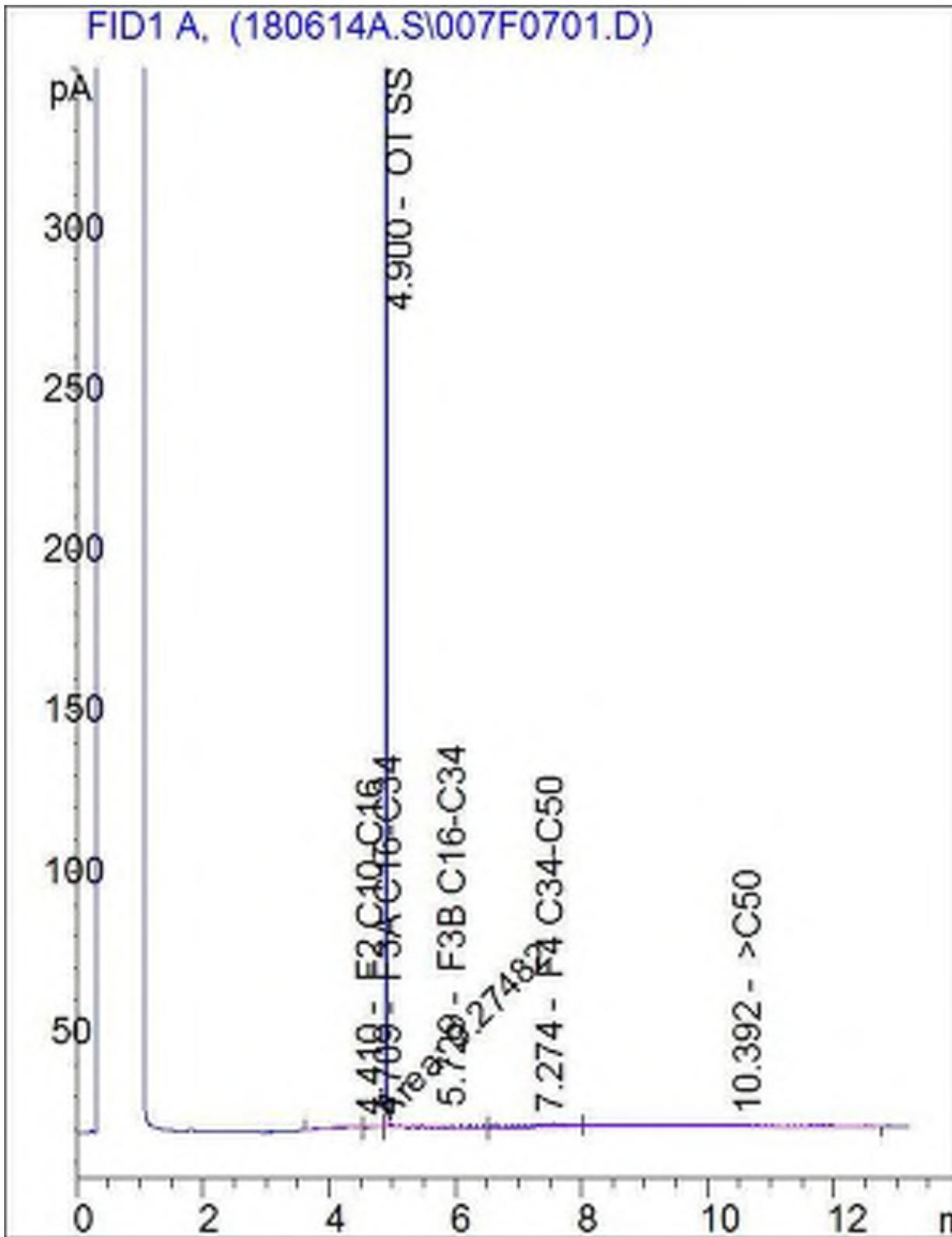
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Petroleum Hydrocarbons F2-F4 in Water Chromatogram



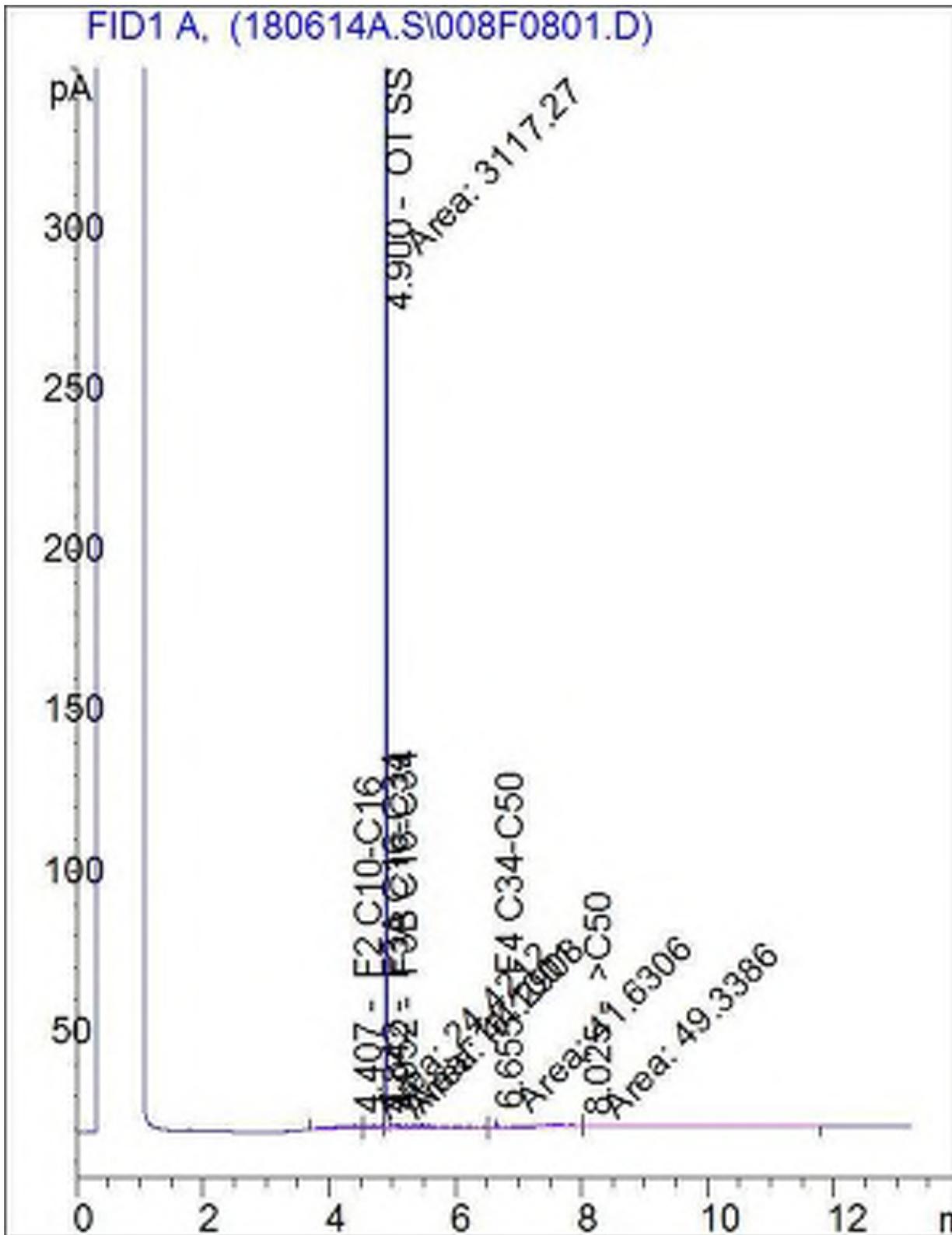
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

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.

Petroleum Hydrocarbons F2-F4 in Water Chromatogram



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

Your Project #: OTT-00246047-B0
Your C.O.C. #: 668499-01-01

Attention: Jeffery O'Banion

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

Report Date: 2018/06/25

Report #: R5265583

Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B8E6238

Received: 2018/06/14, 15:35

Sample Matrix: Water
Samples Received: 4

Analyses	Quantity	Date		Laboratory Method	Reference
		Extracted	Analyzed		
Petroleum Hydro. CCME F1 & BTEX in Water (1)	4	N/A	2018/06/22	CAM SOP-00315	CCME PHC-CWS m
Petroleum Hydrocarbons F2-F4 in Water (1, 2)	3	2018/06/20	2018/06/21	CAM SOP-00316	CCME PHC-CWS m
Dissolved Metals by ICPMS (1)	3	N/A	2018/06/19	CAM SOP-00447	EPA 6020B m
Polychlorinated Biphenyl in Water (1)	1	2018/06/19	2018/06/20	CAM SOP-00309	EPA 8082A m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 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.

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.

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.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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 reported using validated cold solvent extraction instead of Soxhlet extraction.

Your Project #: OTT-00246047-B0
Your C.O.C. #: 668499-01-01

Attention: Jeffery O'Banion

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

Report Date: 2018/06/25
Report #: R5265583
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B8E6238
Received: 2018/06/14, 15:35

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Jonathan Urben, Senior Project Manager
Email: jurben@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.

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		GYU427	GYU428	GYU429		
Sampling Date		2018/06/14 09:00	2018/06/14 10:00	2018/06/14 11:30		
COC Number		668499-01-01	668499-01-01	668499-01-01		
	UNITS	MW307	MW308	MW1/BH9	RDL	QC Batch
Metals						
Dissolved Antimony (Sb)	ug/L	<0.50	0.64	<0.50	0.50	5586114
Dissolved Arsenic (As)	ug/L	<1.0	<1.0	<1.0	1.0	5586114
Dissolved Barium (Ba)	ug/L	1200	440	28	2.0	5586114
Dissolved Beryllium (Be)	ug/L	<0.50	<0.50	<0.50	0.50	5586114
Dissolved Boron (B)	ug/L	250	170	44	10	5586114
Dissolved Cadmium (Cd)	ug/L	<0.10	<0.10	<0.10	0.10	5586114
Dissolved Chromium (Cr)	ug/L	<5.0	<5.0	<5.0	5.0	5586114
Dissolved Cobalt (Co)	ug/L	<0.50	<0.50	<0.50	0.50	5586114
Dissolved Copper (Cu)	ug/L	1.1	7.4	1.7	1.0	5586114
Dissolved Lead (Pb)	ug/L	<0.50	<0.50	<0.50	0.50	5586114
Dissolved Molybdenum (Mo)	ug/L	0.87	6.0	1.4	0.50	5586114
Dissolved Nickel (Ni)	ug/L	<1.0	4.7	1.2	1.0	5586114
Dissolved Selenium (Se)	ug/L	<2.0	<2.0	<2.0	2.0	5586114
Dissolved Silver (Ag)	ug/L	<0.10	<0.10	<0.10	0.10	5586114
Dissolved Thallium (Tl)	ug/L	<0.050	<0.050	<0.050	0.050	5586114
Dissolved Uranium (U)	ug/L	<0.10	1.2	0.31	0.10	5586114
Dissolved Vanadium (V)	ug/L	<0.50	<0.50	<0.50	0.50	5586114
Dissolved Zinc (Zn)	ug/L	<5.0	12	6.2	5.0	5586114
RDL = Reportable Detection Limit						
QC Batch = Quality Control Batch						

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		GYU427			GYU427			GYU428	GYU429		
Sampling Date		2018/06/14 09:00			2018/06/14 09:00			2018/06/14 10:00	2018/06/14 11:30		
COC Number		668499-01-01			668499-01-01			668499-01-01	668499-01-01		
	UNITS	MW307	RDL	QC Batch	MW307 Lab-Dup	RDL	QC Batch	MW308	MW1/BH9	RDL	QC Batch

BTEX & F1 Hydrocarbons											
Benzene	ug/L	<0.20	0.20	5590776	<0.20	0.20	5590776	<0.20	<0.20	0.20	5590776
Toluene	ug/L	<0.20	0.20	5590776	<0.20	0.20	5590776	<0.20	<0.20	0.20	5590776
Ethylbenzene	ug/L	<0.20	0.20	5590776	<0.20	0.20	5590776	<0.20	<0.20	0.20	5590776
o-Xylene	ug/L	<0.20	0.20	5590776	<0.20	0.20	5590776	<0.20	<0.20	0.20	5590776
p+m-Xylene	ug/L	<0.40	0.40	5590776	<0.40	0.40	5590776	<0.40	<0.40	0.40	5590776
Total Xylenes	ug/L	<0.40	0.40	5590776	<0.40	0.40	5590776	<0.40	<0.40	0.40	5590776
F1 (C6-C10)	ug/L	<25	25	5590776	<25	25	5590776	<25	<25	25	5590776
F1 (C6-C10) - BTEX	ug/L	<25	25	5590776	<25	25	5590776	<25	<25	25	5590776

F2-F4 Hydrocarbons											
F2 (C10-C16 Hydrocarbons)	ug/L	<100	100	5590630				<100	<100	100	5590630
F3 (C16-C34 Hydrocarbons)	ug/L	<200	200	5590630				<200	<200	200	5590630
F4 (C34-C50 Hydrocarbons)	ug/L	<200	200	5590630				<200	<200	200	5590630
Reached Baseline at C50	ug/L	Yes		5590630				Yes	Yes		5590630

Surrogate Recovery (%)											
1,4-Difluorobenzene	%	101		5590776	104		5590776	102	102		5590776
4-Bromofluorobenzene	%	102		5590776	99		5590776	101	102		5590776
D10-Ethylbenzene	%	95		5590776	89		5590776	101	97		5590776
D4-1,2-Dichloroethane	%	106		5590776	108		5590776	103	103		5590776
o-Terphenyl	%	100		5590630				100	101		5590630

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

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		GYU430		
Sampling Date				
COC Number		668499-01-01		
	UNITS	TRIP BLANK	RDL	QC Batch
BTEX & F1 Hydrocarbons				
Benzene	ug/L	<0.20	0.20	5590776
Toluene	ug/L	<0.20	0.20	5590776
Ethylbenzene	ug/L	<0.20	0.20	5590776
o-Xylene	ug/L	<0.20	0.20	5590776
p+m-Xylene	ug/L	<0.40	0.40	5590776
Total Xylenes	ug/L	<0.40	0.40	5590776
Surrogate Recovery (%)				
1,4-Difluorobenzene	%	103		5590776
4-Bromofluorobenzene	%	100		5590776
D10-Ethylbenzene	%	99		5590776
D4-1,2-Dichloroethane	%	103		5590776
RDL = Reportable Detection Limit				
QC Batch = Quality Control Batch				

POLYCHLORINATED BIPHENYLS BY GC-ECD (WATER)

Maxxam ID		GYU429		
Sampling Date		2018/06/14 11:30		
COC Number		668499-01-01		
	UNITS	MW1/BH9	RDL	QC Batch
PCBs				
Aroclor 1242	ug/L	<0.05	0.05	5587951
Aroclor 1248	ug/L	<0.05	0.05	5587951
Aroclor 1254	ug/L	<0.05	0.05	5587951
Aroclor 1260	ug/L	<0.05	0.05	5587951
Total PCB	ug/L	<0.05	0.05	5587951
Surrogate Recovery (%)				
Decachlorobiphenyl	%	76		5587951
RDL = Reportable Detection Limit QC Batch = Quality Control Batch				

TEST SUMMARY

Maxxam ID: GYU427
Sample ID: MW307
Matrix: Water

Collected: 2018/06/14
Shipped:
Received: 2018/06/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	5590776	N/A	2018/06/22	Abdikarim Ali
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	5590630	2018/06/20	2018/06/21	Zhiyue (Frank) Zhu
Dissolved Metals by ICPMS	ICP/MS	5586114	N/A	2018/06/19	Thao Nguyen

Maxxam ID: GYU427 Dup
Sample ID: MW307
Matrix: Water

Collected: 2018/06/14
Shipped:
Received: 2018/06/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	5590776	N/A	2018/06/24	Abdikarim Ali

Maxxam ID: GYU428
Sample ID: MW308
Matrix: Water

Collected: 2018/06/14
Shipped:
Received: 2018/06/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	5590776	N/A	2018/06/22	Abdikarim Ali
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	5590630	2018/06/20	2018/06/21	Zhiyue (Frank) Zhu
Dissolved Metals by ICPMS	ICP/MS	5586114	N/A	2018/06/19	Thao Nguyen

Maxxam ID: GYU429
Sample ID: MW1/BH9
Matrix: Water

Collected: 2018/06/14
Shipped:
Received: 2018/06/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	5590776	N/A	2018/06/22	Abdikarim Ali
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	5590630	2018/06/20	2018/06/21	Zhiyue (Frank) Zhu
Dissolved Metals by ICPMS	ICP/MS	5586114	N/A	2018/06/19	Thao Nguyen
Polychlorinated Biphenyl in Water	GC/ECD	5587951	2018/06/19	2018/06/20	Svitlana Shaula

Maxxam ID: GYU430
Sample ID: TRIP BLANK
Matrix: Water

Collected:
Shipped:
Received: 2018/06/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	5590776	N/A	2018/06/22	Abdikarim Ali

GENERAL COMMENTS

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

Package 1	15.3°C
-----------	--------

Results relate only to the items tested.

QUALITY ASSURANCE REPORT

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5587951	Decachlorobiphenyl	2018/06/20	79	60 - 130	80	60 - 130	74	%		
5590630	o-Terphenyl	2018/06/20	104	60 - 130	103	60 - 130	100	%		
5590776	1,4-Difluorobenzene	2018/06/22	104	70 - 130	101	70 - 130	93	%		
5590776	4-Bromofluorobenzene	2018/06/22	100	70 - 130	103	70 - 130	105	%		
5590776	D10-Ethylbenzene	2018/06/22	93	70 - 130	95	70 - 130	111	%		
5590776	D4-1,2-Dichloroethane	2018/06/22	110	70 - 130	107	70 - 130	110	%		
5586114	Dissolved Antimony (Sb)	2018/06/19	101	80 - 120	105	80 - 120	<0.50	ug/L		
5586114	Dissolved Arsenic (As)	2018/06/19	92	80 - 120	98	80 - 120	<1.0	ug/L	1.2	20
5586114	Dissolved Barium (Ba)	2018/06/19	93	80 - 120	101	80 - 120	<2.0	ug/L	0.34	20
5586114	Dissolved Beryllium (Be)	2018/06/19	95	80 - 120	101	80 - 120	<0.50	ug/L		
5586114	Dissolved Boron (B)	2018/06/19	94	80 - 120	101	80 - 120	<10	ug/L		
5586114	Dissolved Cadmium (Cd)	2018/06/19	94	80 - 120	100	80 - 120	<0.10	ug/L		
5586114	Dissolved Chromium (Cr)	2018/06/19	91	80 - 120	98	80 - 120	<5.0	ug/L	NC	20
5586114	Dissolved Cobalt (Co)	2018/06/19	90	80 - 120	98	80 - 120	<0.50	ug/L		
5586114	Dissolved Copper (Cu)	2018/06/19	95	80 - 120	101	80 - 120	<1.0	ug/L	NC	20
5586114	Dissolved Lead (Pb)	2018/06/19	87	80 - 120	96	80 - 120	<0.50	ug/L	NC	20
5586114	Dissolved Molybdenum (Mo)	2018/06/19	98	80 - 120	102	80 - 120	<0.50	ug/L		
5586114	Dissolved Nickel (Ni)	2018/06/19	88	80 - 120	98	80 - 120	<1.0	ug/L		
5586114	Dissolved Selenium (Se)	2018/06/19	92	80 - 120	97	80 - 120	<2.0	ug/L		
5586114	Dissolved Silver (Ag)	2018/06/19	91	80 - 120	98	80 - 120	<0.10	ug/L		
5586114	Dissolved Thallium (Tl)	2018/06/19	88	80 - 120	96	80 - 120	<0.050	ug/L		
5586114	Dissolved Uranium (U)	2018/06/19	89	80 - 120	97	80 - 120	<0.10	ug/L		
5586114	Dissolved Vanadium (V)	2018/06/19	94	80 - 120	101	80 - 120	<0.50	ug/L		
5586114	Dissolved Zinc (Zn)	2018/06/19	88	80 - 120	98	80 - 120	<5.0	ug/L	NC	20
5587951	Aroclor 1242	2018/06/20					<0.5	ug/L		
5587951	Aroclor 1248	2018/06/20					<0.5	ug/L		
5587951	Aroclor 1254	2018/06/20					<0.5	ug/L		
5587951	Aroclor 1260	2018/06/20	87	60 - 130	99	60 - 130	<0.5	ug/L		
5587951	Total PCB	2018/06/20	87	60 - 130	99	60 - 130	<0.5	ug/L	NC	40
5590630	F2 (C10-C16 Hydrocarbons)	2018/06/21	115	50 - 130	106	60 - 130	<100	ug/L	5.9	30
5590630	F3 (C16-C34 Hydrocarbons)	2018/06/21	104	50 - 130	104	60 - 130	<200	ug/L	26	30

QUALITY ASSURANCE REPORT(CONT'D)

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5590630	F4 (C34-C50 Hydrocarbons)	2018/06/21	104	50 - 130	102	60 - 130	<200	ug/L	NC	30
5590776	Benzene	2018/06/24	111	70 - 130	104	70 - 130	<0.20	ug/L	NC	30
5590776	Ethylbenzene	2018/06/24	94	70 - 130	92	70 - 130	<0.20	ug/L	NC	30
5590776	F1 (C6-C10) - BTEX	2018/06/24					<25	ug/L	NC	30
5590776	F1 (C6-C10)	2018/06/24	90	70 - 130	79	70 - 130	<25	ug/L	NC	30
5590776	o-Xylene	2018/06/24	94	70 - 130	93	70 - 130	<0.20	ug/L	NC	30
5590776	p+m-Xylene	2018/06/24	94	70 - 130	92	70 - 130	<0.40	ug/L	NC	30
5590776	Toluene	2018/06/24	90	70 - 130	86	70 - 130	<0.20	ug/L	NC	30
5590776	Total Xylenes	2018/06/24					<0.40	ug/L	NC	30

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

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

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

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

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

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

VALIDATION SIGNATURE PAGE

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

Cristina Carriere

Cristina Carriere, Scientific Service 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.

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name: #17498 exp Services Inc		Company Name: Jeffery O'Banion		Question #: B45968 Stream 2		Maxxam Job #:	
Attention: Accounts Payable		Attention: Jeffery O'Banion		P.O. #:		Bottle Order #:	
Address: 100-2050 Queensview Drive		Address:		Project: OTT-00246047-80		COC #:	
City: Ottawa ON K2B 8H6		City:		Project Name:		Project Manager:	
Tel: (613) 688-1699 Fax: (613) 226-7337		Tel:		Site #:		Jonathan Urban	
Email: aaccounting.ottawa@exp.com; Karen.Burke@exp.com		Email: Jeffery.O'Banion@exp.com		Sampled By: Jeff O.		C4688499-01-01	

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

Regulation 153 (2011) <input type="checkbox"/> Table 1 <input type="checkbox"/> Pesticide <input type="checkbox"/> Medium/Fine <input type="checkbox"/> Table 2 <input checked="" type="checkbox"/> Ind/Comm <input type="checkbox"/> Coarse <input type="checkbox"/> Table 3 <input type="checkbox"/> Agri/Other <input type="checkbox"/> For RBC <input type="checkbox"/> Table		Other Regulations <input type="checkbox"/> OCME <input type="checkbox"/> Sanitary Sewer Bylaw <input type="checkbox"/> Reg 558 <input type="checkbox"/> Storm Sewer Bylaw <input type="checkbox"/> WSA Municipality <input type="checkbox"/> PWOD <input type="checkbox"/> Other		Special Instructions	
--	--	--	--	-----------------------------	--

Sample Barcode Label	Sample Location Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please specify)	PHC/BTEX	Metals (please specify)	PCB	BTEX	Turnaround Time (TAT) Required	Comments
1	MW307	14.06.2018	9:00 am	GW	Maxxam / CVI	✓	✓	✓	✓	Regular (Standard) TAT	on ice
2	MW308		10:00 am			✓	✓	✓	✓	Standard TAT = 5-7 working days for most tests.	
3	MW1/BH9					✓	✓	✓	✓	Special note: Standard TAT for certain tests such as BOD and Dissolved Oxygen are + 5 days - contact your Project Manager for details.	
4	Isip Blank					✓			✓	Two Specific Wash TAT (if applies to entire submission)	
5										Date Required: _____ Time Required: _____	
6										Flush Confirmation Number: _____ (not for B)	
7										# of Batches: _____	
8										14-Jun-18 15:35	
9										Jonathan Urban	
10										B8E6238	

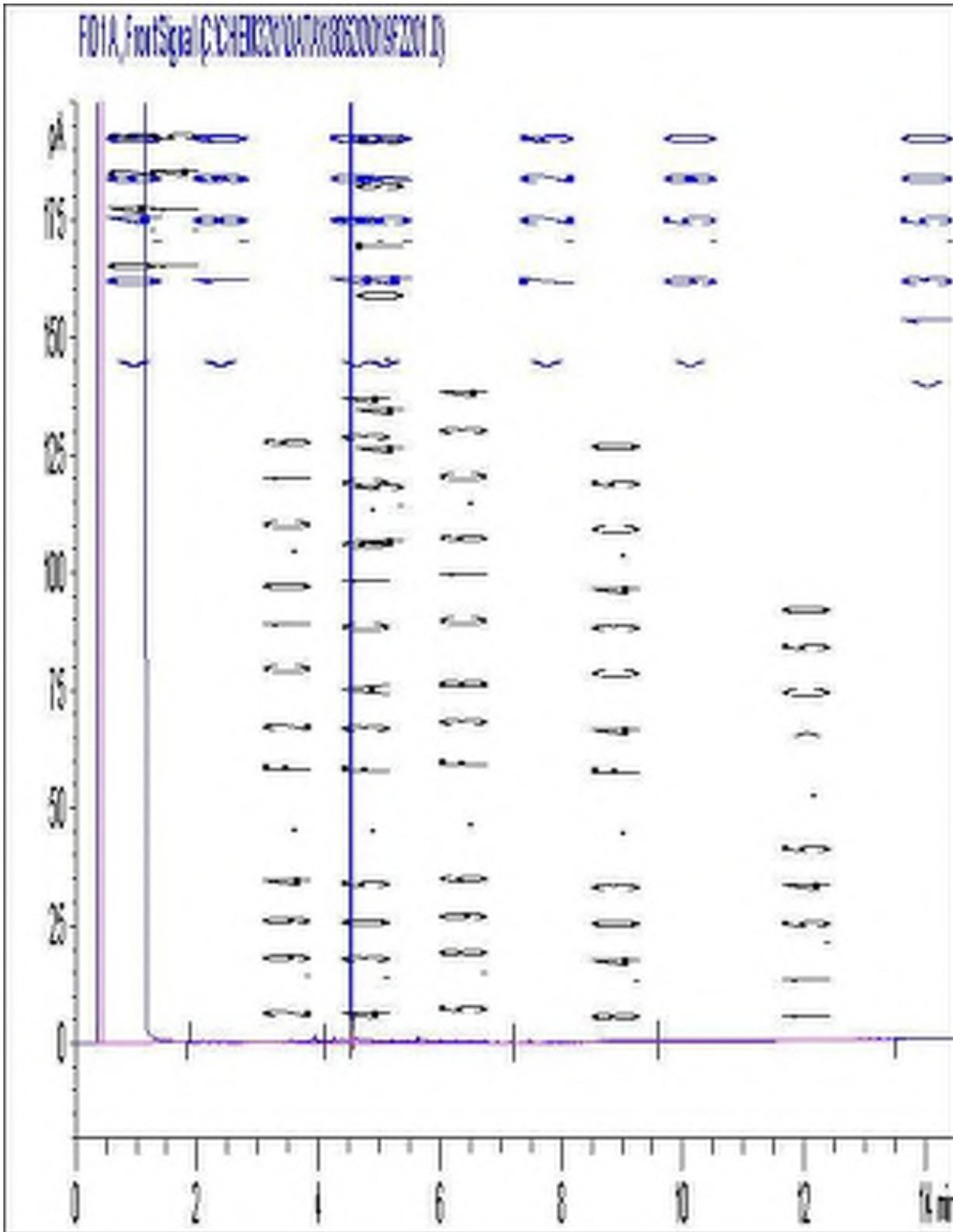
RECEIVED IN OTTAWA

* RELINQUISHED BY: (Signature/Print)	Date: (YYMMDD)	Time	RECEIVED BY: (Signature/Print)	Date: (YYMMDD)	Time	# jars used and not submitted	Laboratory Use Only		
<i>[Signature]</i>	18.06.18	5:35 pm	<i>[Signature]</i>	18/06/18	15:35		Time Sensitive	Temperature (°C) on Receipt	Custody Seal Present
								13, 19, 15	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.
 ** 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

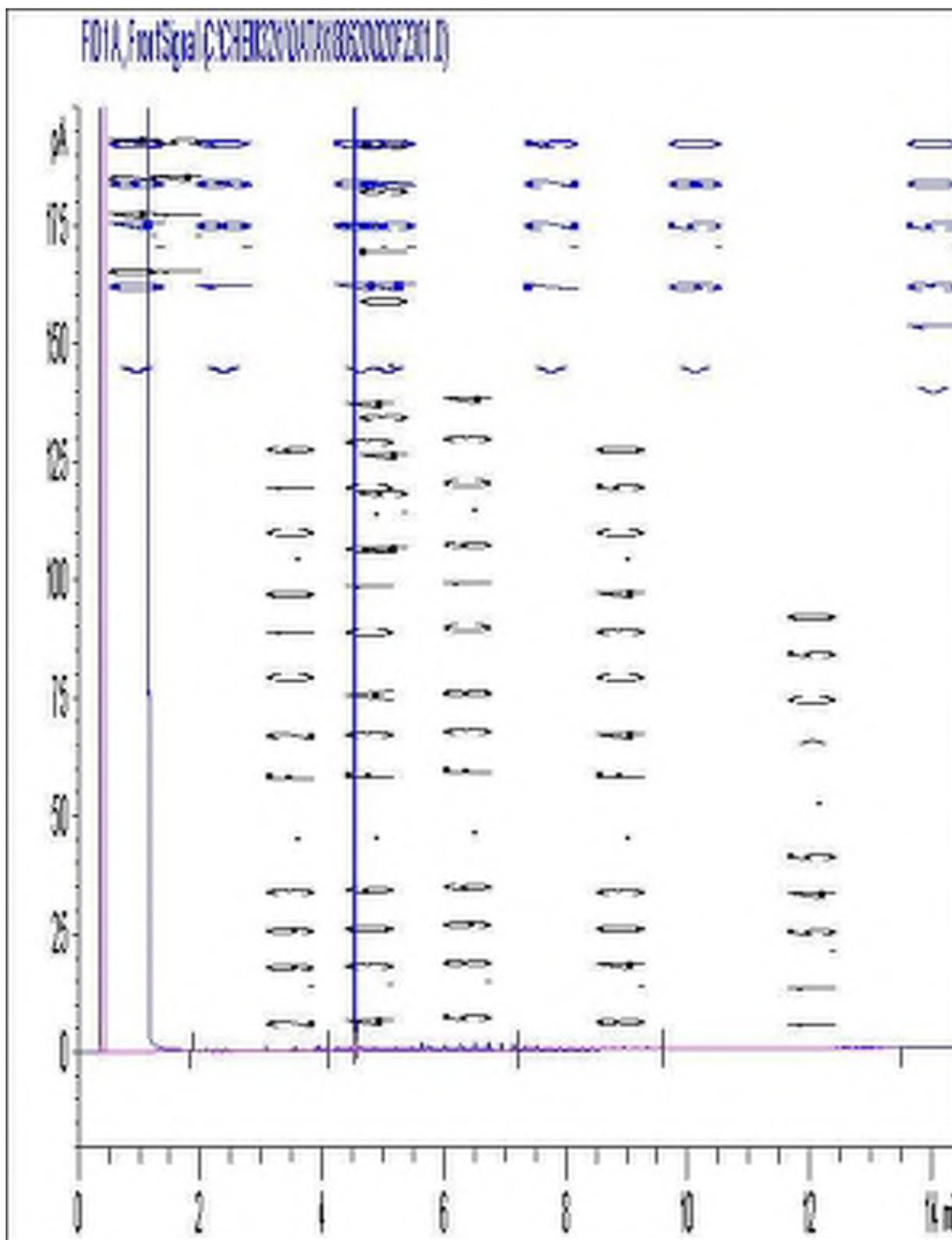
Maxxam Analytics International Corporation c/o Maxxam Analytics
[Signature] 4/4/4
 2018/06/18 09:00

Petroleum Hydrocarbons F2-F4 in Water Chromatogram



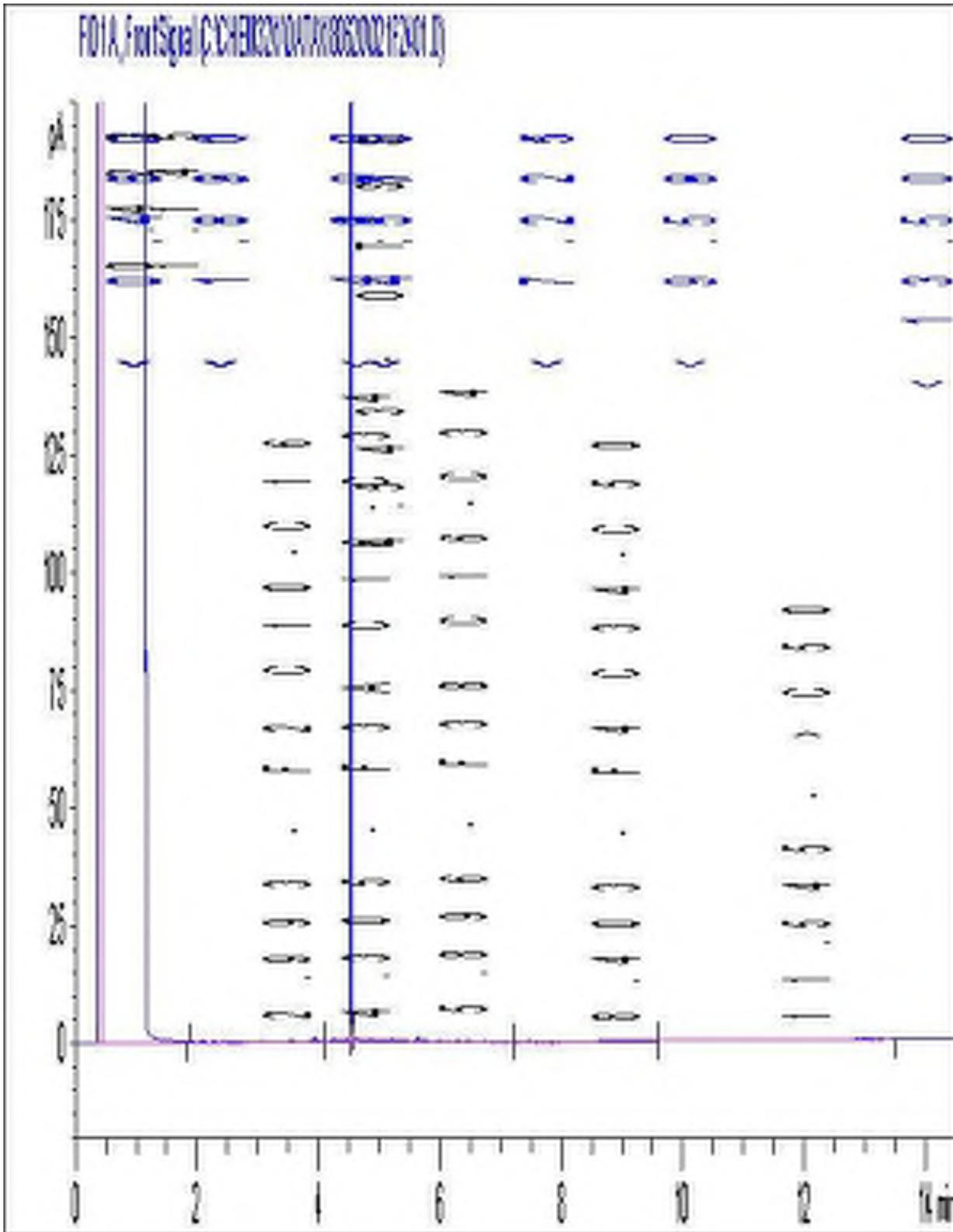
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

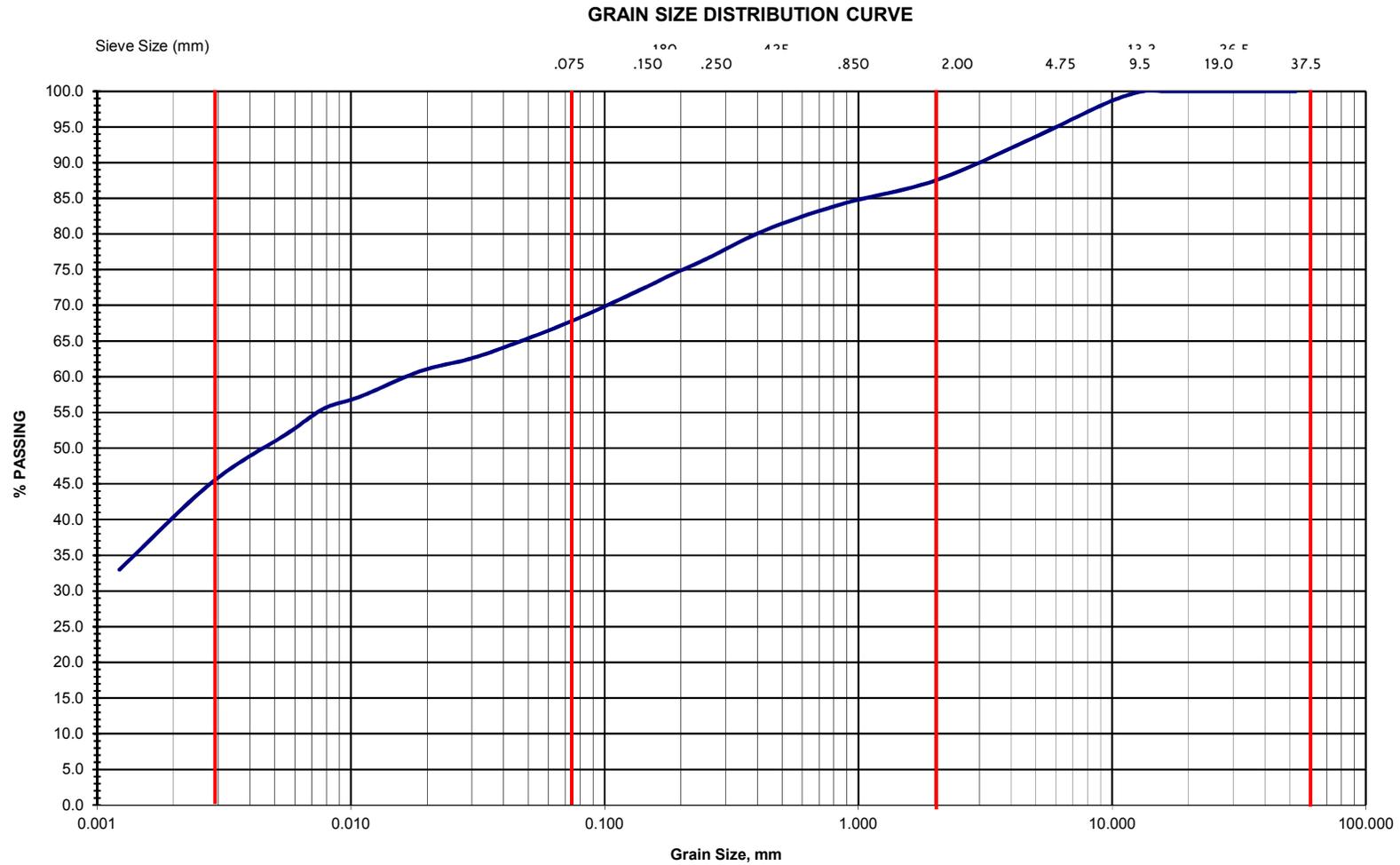


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

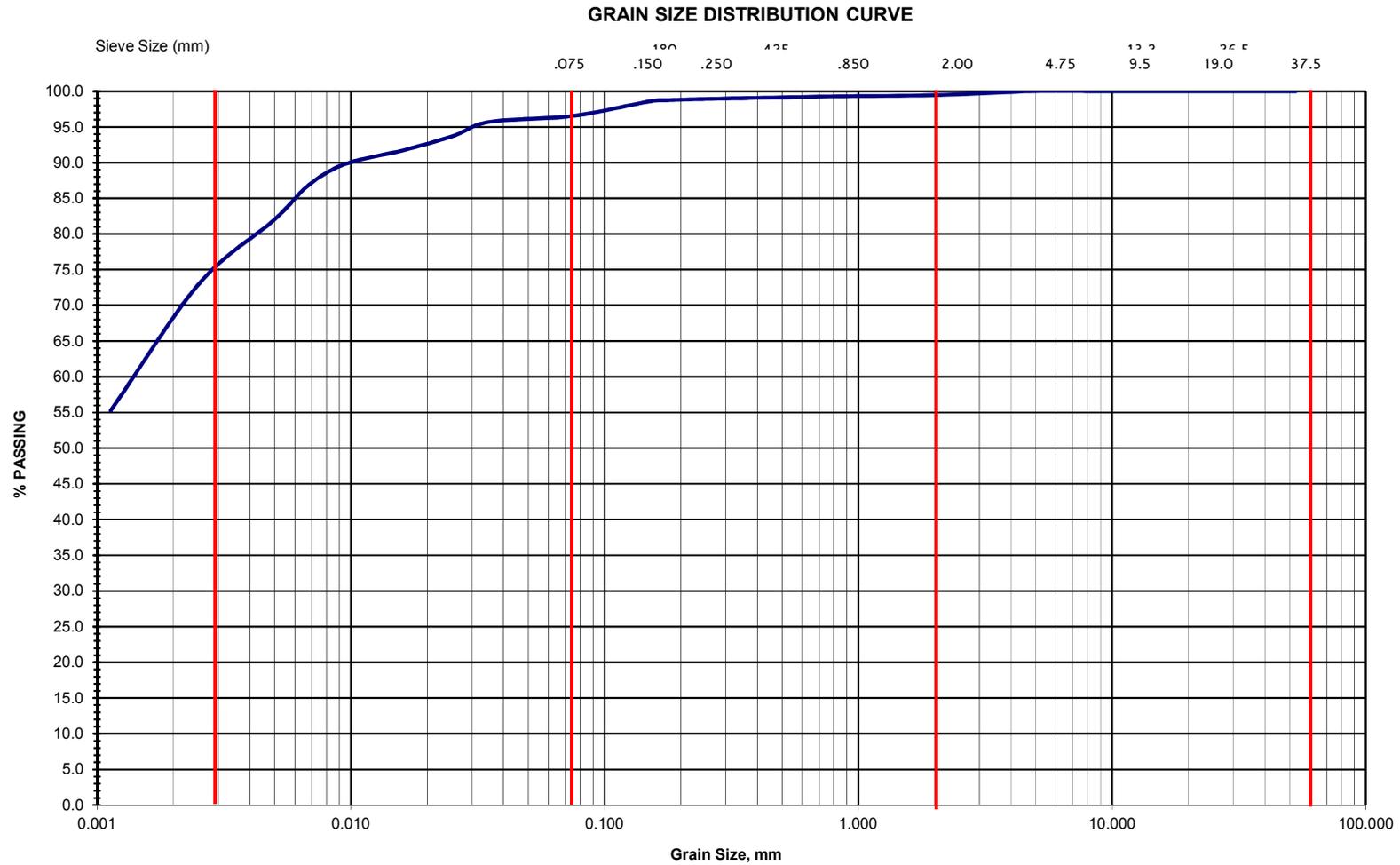


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.



CLAY	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE
	SILT			SAND			GRAVEL		
Modified M.I.T. Classification									

PROJECT :	OTGE00019319B	NAME & LOCATION:	Ottawa Hydro, 3025 Albion Road, Ottawa				
DATE SAMPLED:	April 8, 2008	BOREHOLE No.:	BH # 1	SAMPLE No.:	SS 2	DEPTH (m):	0.8 to 1.2 m
SAMPLE DESCRIPTION:	Silty clay, with sand, trace gravel						



CLAY	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE
	SILT			SAND			GRAVEL		
Modified M.I.T. Classification									

PROJECT :	OTGE00019319B	NAME & LOCATION:	Ottawa Hydro, 3025 Albion Road, Ottawa	
DATE SAMPLED:	April 8, 2008	BOREHOLE No.:	BH # 4	SAMPLE No.:
SAMPLE DESCRIPTION:	Clay, some silt			

EXP Services Inc.

*Ahlul-Bayt Center Ottawa
Phase Two Environmental Phase Two Property Assessment
3025 Albion Road North, Ottawa, ON
OTT-00246047-B0
December 21, 2018*

Appendix E: 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.

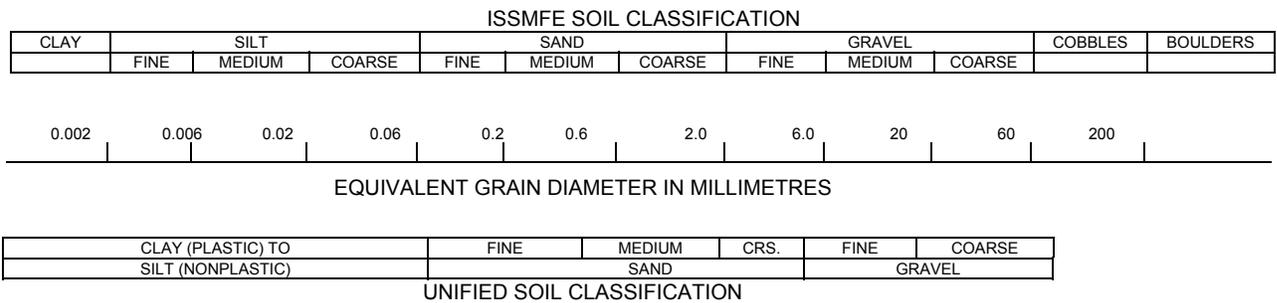
Seam: a thin, confined layer of soil having different particle size, texture, or color from materials above and below.

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.



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	$5 \leq Pp \leq 10\%$
Little	$15 \leq Pp \leq 25\%$
Some	$30 \leq Pp \leq 45\%$
Mostly	$50 \leq Pp \leq 100\%$

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	$5 \leq N < 10$
Compact	$10 \leq N < 30$
Dense	$30 \leq N < 50$
Very Dense	$50 \leq N$

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:

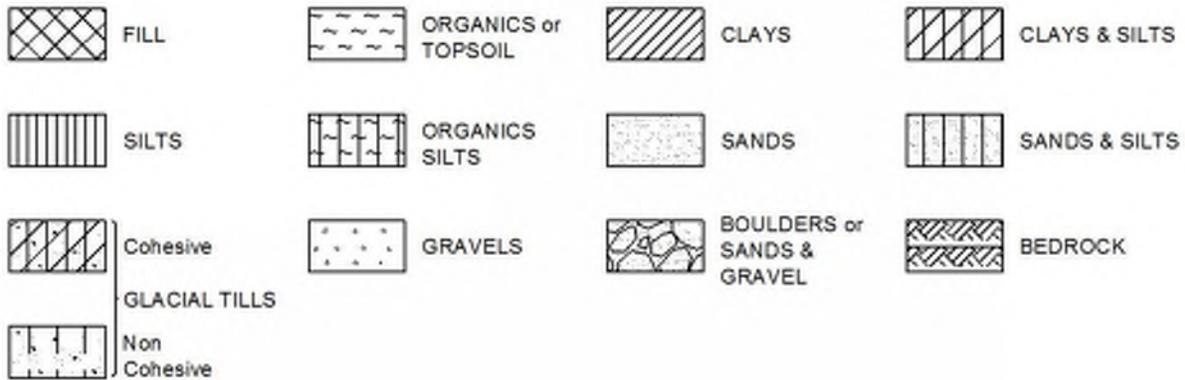
Table c: Consistency of Cohesive Soil

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 MW18-1



Project No: OTT-00246047-A0

Figure No. 11

Project: Phase Two Environmental Site Assessment

Page. 1 of 2

Location: 3025 Albion Road North, Ottawa, Ontario

Date Drilled: 5/28/18

Split Spoon Sample

Combustible Vapour Reading

Drill Type: Geoprobe GM100GT

Auger Sample

Natural Moisture Content

SPT (N) Value

Atterberg Limits

Datum: Geodetic

Dynamic Cone Test

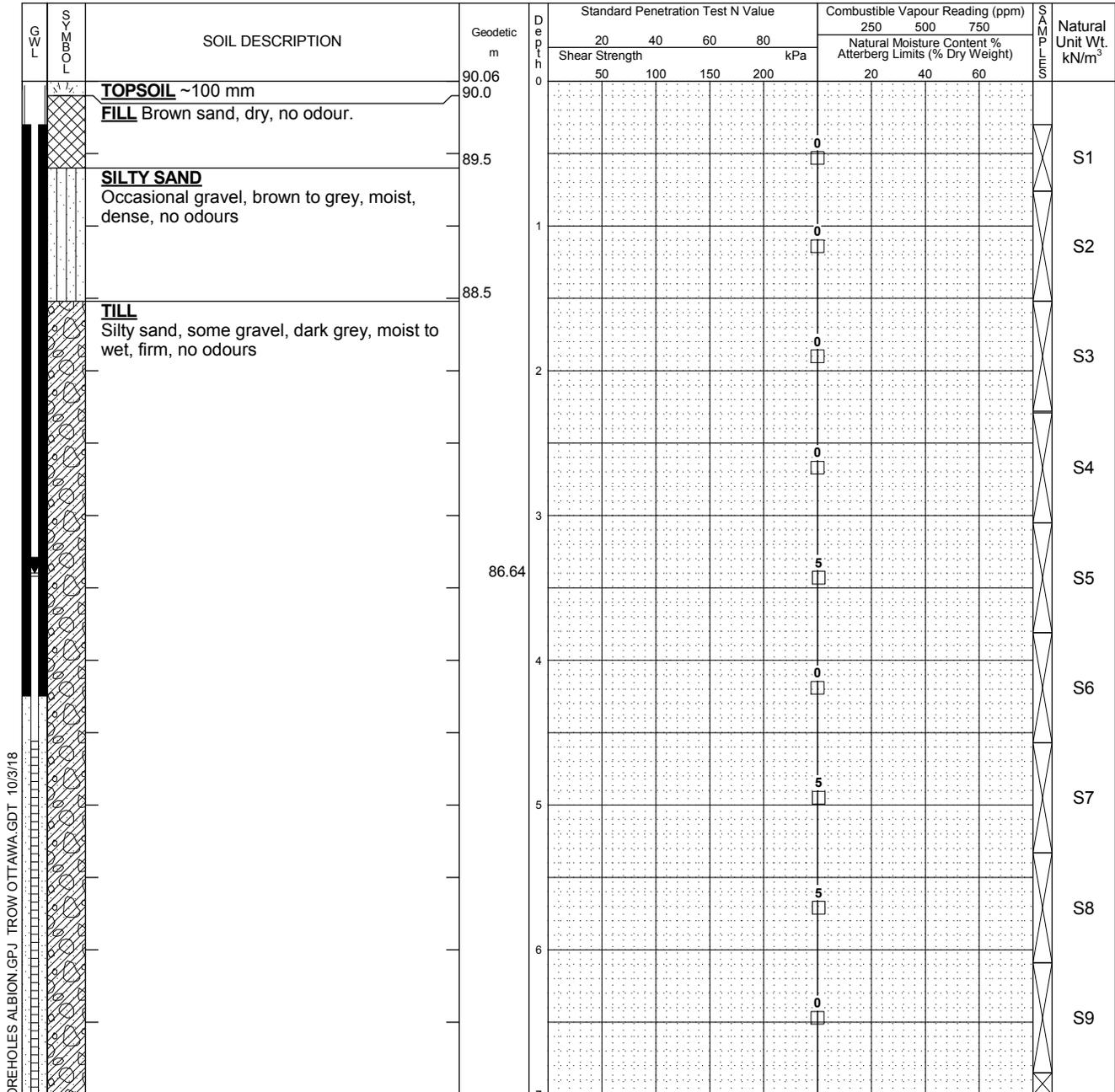
Undrained Triaxial at % Strain at Failure

Shelby Tube

Shear Strength by Penetrometer Test

Logged by: JO Checked by: MGM

Shear Strength by Vane Test



Continued Next Page

LOG OF BOREHOLE LOGS OF BOREHOLES ALBION.GPJ TROW OTTAWA.GDT 10/3/18

NOTES:

- Borehole data requires interpretation by EXP before use by others
- A flushmount monitoring well with a 38 mm slotted standpipe was installed in the borehole upon completion.
- Field work supervised by an exp representative.
- See Notes on Sample Descriptions
- Log to be read with EXP Report OTT-00246047-A0

WATER LEVEL RECORDS

Elapsed Time	Water Level (m)	Hole Open To (m)
June 2018	3.4	

CORE DRILLING RECORD

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

Log of Borehole MW18-1



Project No: OTT-00246047-A0

Figure No. 11

Project: Phase Two Environmental Site Assessment

Page. 2 of 2

LOG	SOIL LOG	SOIL DESCRIPTION	Geodetic m	Depth m	Standard Penetration Test N Value				Combustible Vapour Reading (ppm)			Natural Unit Wt. kN/m ³	
					20	40	60	80	250	500	750		
					Shear Strength kPa				Natural Moisture Content % Atterberg Limits (% Dry Weight)				
					50	100	150	200	0	20	40	60	
		TILL Silty sand, some gravel, dark grey, moist to wet, firm, no odours (<i>continued</i>)	83.06	7									S10
		Borehole Terminated at 7.62 m Depth	82.4										

LOG OF BOREHOLE LOGS OF BOREHOLES ALBION.GPJ TROW OTTAWA.GDT 10/3/18

- NOTES:
- Borehole data requires interpretation by EXP before use by others
 - A flushmount monitoring well with a 38 mm slotted standpipe was installed in the borehole upon completion.
 - Field work supervised by an exp representative.
 - See Notes on Sample Descriptions
 - Log to be read with EXP Report OTT-00246047-A0

WATER LEVEL RECORDS		
Elapsed Time	Water Level (m)	Hole Open To (m)
June 2018	3.4	

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

Log of Borehole MW18-2



Project No: OTT-00246047-A0
 Project: Phase Two Environmental Site Assessment
 Location: 3025 Albion Road North, Ottawa, Ontario
 Date Drilled: 5/28/18
 Drill Type: Geoprobe GM100GT
 Datum: Geodetic
 Logged by: JO Checked by: MGM

Figure No. 12
 Page. 1 of 1

- 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

G W L	S O I L D E S C R I P T I O N	Geodetic m	D e p t h m	Standard Penetration Test N Value				Combustible Vapour Reading (ppm)			S O I L T E S T S	Natural Unit Wt. kN/m ³
				Shear Strength				Natural Moisture Content % Atterberg Limits (% Dry Weight)				
				20	40	60	80	250	500	750		
	ASPHALT ~60 mm	89.81	0									
	FILL Occasional gravel, brown to grey, moist, dense, no odours	89.8										
			1									S1
	TILL Silty sand, some gravel, dark grey, moist to wet, firm, no odours	88.3										
			2									S2
			3									S3
		86.98										
			4									S4
			5									S5
			6									S6
												S7
		83.7	6									
Borehole Terminated at 6.1 m Depth												

LOG OF BOREHOLE LOGS OF BOREHOLES ALBION GPJ TROW OTTAWA.GDT 10/3/18

- NOTES:
- Borehole data requires interpretation by EXP before use by others
 - A flushmount monitoring well with a 38 mm slotted standpipe was installed in the borehole upon completion.
 - Field work supervised by an exp representative.
 - See Notes on Sample Descriptions
 - Log to be read with EXP Report OTT-00246047-A0

WATER LEVEL RECORDS		
Elapsed Time	Water Level (m)	Hole Open To (m)
June 2018	2.8	

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

Log of Borehole BH18-4



Project No: OTT-00246047-A0
 Project: Phase Two Environmental Site Assessment
 Location: 3025 Albion Road North, Ottawa, Ontario
 Date Drilled: 9/20/18
 Drill Type: Geoprobe GM100GT
 Datum: Geodetic
 Logged by: MD Checked by: MGM

Figure No. 14
 Page. 1 of 1

- 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	SOIL	SOIL DESCRIPTION	Geodetic m	Depth m	Standard Penetration Test N Value				Combustible Vapour Reading (ppm)			Natural Unit Wt. kN/m ³
					kPa				Natural Moisture Content % Atterberg Limits (% Dry Weight)			
					20	40	60	80	250	500	750	
		ASPHALT ~60 mm FILL Brown, sand and silt, trace clay and gravel, dry to moist, no odours.	89.42 89.4	0								
		SILTY SAND Brown to grey, moist, dense, no odours	88.5	1								
		SILTY CLAY grey, moist to wet, firm, no odours	87.9	2								S1
		Borehole Terminated at 3.05 m Depth	86.4	3								

LOG OF BOREHOLE LOGS OF BOREHOLES ALBION.GPJ TROW OTTAWA.GDT 10/3/18

- NOTES:
1. Borehole data requires interpretation by EXP before use by others
 2. The borehole was backfilled upon completion
 3. Field work supervised by an exp representative.
 4. See Notes on Sample Descriptions
 5. Log to be read with EXP Report OTT-00246047-A0

WATER LEVEL RECORDS		
Elapsed Time	Water Level (m)	Hole Open To (m)

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

Log of Borehole BH18-5



Project No: OTT-00246047-A0
 Project: Phase Two Environmental Site Assessment
 Location: 3025 Albion Road North, Ottawa, Ontario
 Date Drilled: 9/20/18
 Drill Type: Geoprobe GM100GT
 Datum: Geodetic
 Logged by: MD Checked by: MGM

Figure No. 15
 Page. 1 of 1

- 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

G W L	S O I L	SOIL DESCRIPTION	Geodetic m	D e p t h	Standard Penetration Test N Value				Combustible Vapour Reading (ppm)			S O I L	Natural Unit Wt. kN/m ³
					Shear Strength				Natural Moisture Content % Atterberg Limits (% Dry Weight)				
					20	40	60	80	250	500	750		
		ASPHALT ~60 mm	89.5	0									
		FILL Brown, sand and silt, trace clay and gravel, dry to moist, no odours.	89.5										
		SILTY SAND Brown to grey, moist, dense, no odours	88.9	1									
		SILTY CLAY grey, moist to wet, firm, no odours	88.0	2									S1
		Borehole Terminated at 3.05 m Depth	86.5	3									

LOG OF BOREHOLE LOGS OF BOREHOLES ALBION.GPJ TROW OTTAWA.GDT 10/3/18

- NOTES:
- Borehole data requires interpretation by EXP before use by others
 - The borehole was backfilled upon completion
 - Field work supervised by an exp representative.
 - See Notes on Sample Descriptions
 - Log to be read with EXP Report OTT-00246047-A0

WATER LEVEL RECORDS		
Elapsed Time	Water Level (m)	Hole Open To (m)

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

Log of Borehole BH18-6



Project No: OTT-00246047-A0

Figure No. 16

Project: Phase Two Environmental Site Assessment

Page. 1 of 1

Location: 3025 Albion Road North, Ottawa, Ontario

Date Drilled: 9/20/18

Split Spoon Sample

Combustible Vapour Reading

Drill Type: Geoprobe GM100GT

Auger Sample

Natural Moisture Content

SPT (N) Value

Atterberg Limits

Datum: Geodetic

Dynamic Cone Test

Undrained Triaxial at % Strain at Failure

Shelby Tube

Shear Strength by Penetrometer Test

Logged by: MD Checked by: MGM

Shear Strength by Vane Test

GWL	SOIL SYMBOL	SOIL DESCRIPTION	Geodetic m	Depth	Standard Penetration Test N Value				Combustible Vapour Reading (ppm)			Natural Unit Wt. kN/m ³
					20	40	60	80	250	500	750	
					Shear Strength kPa				Natural Moisture Content % Atterberg Limits (% Dry Weight)			
		ASPHALT ~60 mm	4.57	0								
		FILL Brown, sand and silt, trace clay and gravel, dry to moist, no odours.	4.5									
		SILTY SAND Brown to grey, moist, dense, no odours	3.5	1								
		SILTY CLAY grey, moist to wet, firm, no odours	3.1	2								S1
		Borehole Terminated at 3.05 m Depth	1.5	3								

LOG OF BOREHOLE LOGS OF BOREHOLES ALBION.GPJ TROW OTTAWA.GDT 10/3/18

- NOTES:
- Borehole data requires interpretation by EXP before use by others
 - The borehole was backfilled upon completion
 - Field work supervised by an exp representative.
 - See Notes on Sample Descriptions
 - Log to be read with EXP Report OTT-00246047-A0

WATER LEVEL RECORDS		
Elapsed Time	Water Level (m)	Hole Open To (m)

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

Log of Borehole MW301



Project No: OTT-00246047-A0

Figure No. 1

Project: Phase Two Environmental Site Assessment

Page. 1 of 1

Location: 3025 Albion Road North, Ottawa, Ontario

Date Drilled: 10/16/15

Split Spoon Sample

Combustible Vapour Reading

Drill Type: Geoprobe GM100GT

Auger Sample

Natural Moisture Content

SPT (N) Value

Atterberg Limits

Datum: Geodetic

Dynamic Cone Test

Undrained Triaxial at

Shelby Tube

% Strain at Failure

Logged by: DC Checked by: MGM

Shear Strength by

Penetrometer Test

Vane Test

G W L	S O I L D E S C R I P T I O N	Geodetic m	D e p t h m	Standard Penetration Test N Value				Combustible Vapour Reading (ppm)			S O I L T E M P E R A T U R E	Natural Unit Wt. kN/m ³
				Shear Strength				Natural Moisture Content % Atterberg Limits (% Dry Weight)				
				20	40	60	80	250	500	750		
	ASPHALT ~60 mm	89.43	0									
	GRAVEL	89.4										
	SILTY SAND Occasional gravel, brown to grey, moist, dense, no odours	89.1					5					S1
			1				0					S2
	SILTY CLAY grey, moist to wet, firm, no odours	87.9					0					S3
		87.9	2				0					S3
			3									
			4				0					S4
		84.9										
Borehole Terminated at 4.6m Depth												

LOG OF BOREHOLE LOGS OF BOREHOLES ALBION.GPJ TROW OTTAWA.GDT 10/3/18

- NOTES:
- Borehole data requires interpretation by EXP before use by others
 - A flushmount monitoring well with a 38 mm slotted standpipe was installed in the borehole upon completion.
 - Field work supervised by an exp representative.
 - See Notes on Sample Descriptions
 - Log to be read with EXP Report OTT-00246047-A0

WATER LEVEL RECORDS		
Elapsed Time	Water Level (m)	Hole Open To (m)
Nov 4, 2015	1.5	
June 2018	1.3	

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

Log of Borehole MW302



Project No: OTT-00246047-A0

Figure No. 2

Project: Phase Two Environmental Site Assessment

Page. 1 of 1

Location: 3025 Albion Road North, Ottawa, Ontario

Date Drilled: 10/16/15

Split Spoon Sample

Combustible Vapour Reading

Drill Type: Geoprobe GM100GT

Auger Sample

Natural Moisture Content

SPT (N) Value

Atterberg Limits

Datum: Geodetic

Dynamic Cone Test

Undrained Triaxial at % Strain at Failure

Shelby Tube

Shear Strength by Penetrometer Test

Logged by: DC Checked by: MGM

Shear Strength by Vane Test

GWL	SOIL DESCRIPTION	Geodetic m	Depth	Standard Penetration Test N Value				Combustible Vapour Reading (ppm)			Natural Unit Wt. kN/m ³
				Shear Strength				250	500	750	
				20	40	60	80	Natural Moisture Content % Atterberg Limits (% Dry Weight)			
	ASPHALT ~60 mm	89.49	0								
	GRAVEL	89.4									
	SILTY SAND Occasional gravel, brown to grey, moist, dense, no odours	89.2									S1
			1								S2
		88.05									
	8 cm sand and gravel lense		2								S3
	SILTY CLAY grey, moist to wet, firm, no odours	87.4									S4
			3								
			4								S5
			5								S6
		84.0									
	Borehole Terminated at 5.5m Depth										

LOG OF BOREHOLE LOGS OF BOREHOLES ALBION.GPJ TROW OTTAWA.GDT 10/3/18

- NOTES:
- Borehole data requires interpretation by EXP before use by others
 - A flushmount monitoring well with a 38 mm slotted standpipe was installed in the borehole upon completion.
 - Field work supervised by an exp representative.
 - See Notes on Sample Descriptions
 - Log to be read with EXP Report OTT-00246047-A0

WATER LEVEL RECORDS		
Elapsed Time	Water Level (m)	Hole Open To (m)
Nov 4, 2015	1.4	
June 2018	1.4	

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

Log of Borehole BH303



Project No: OTT-00246047-A0
 Project: Phase Two Environmental Site Assessment
 Location: 3025 Albion Road North, Ottawa, Ontario
 Date Drilled: 10/16/15
 Drill Type: Geoprobe GM100GT
 Datum: Geodetic
 Logged by: DC Checked by: MGM

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

GWL	SOIL LOG	SOIL DESCRIPTION	Geodetic m	Depth	Standard Penetration Test N Value				Combustible Vapour Reading (ppm)			Natural Unit Wt. kN/m ³
					Shear Strength kPa				Natural Moisture Content %			
					20	40	60	80	250	500	750	
		ASPHALT ~60 mm	89.52	0								
		GRAVEL	89.5									
		SAND medium grained, brown, moist, firm, no odours	89.2									S1
		SILTY SAND grey, moist to wet, firm, no odours	88.3	1								S2
		SILTY CLAY grey, moist to wet, firm, no odours	88.0									
				2								S3
				3								
		Borehole Terminated at 3.05m Depth	86.5									

LOG OF BOREHOLE LOGS OF BOREHOLES ALBION.GPJ TROW OTTAWA.GDT 10/3/18

- NOTES:
- Borehole data requires interpretation by EXP before use by others
 - The borehole was backfilled upon completion
 - Field work supervised by an exp representative.
 - See Notes on Sample Descriptions
 - Log to be read with EXP Report OTT-00246047-A0

WATER LEVEL RECORDS		
Elapsed Time	Water Level (m)	Hole Open To (m)

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

Log of Borehole BH304



Project No: OTT-00246047-A0

Figure No. 4

Project: Phase Two Environmental Site Assessment

Page. 1 of 1

Location: 3025 Albion Road North, Ottawa, Ontario

Date Drilled: 10/16/15

Split Spoon Sample

Combustible Vapour Reading

Drill Type: Geoprobe GM100GT

Auger Sample

Natural Moisture Content

SPT (N) Value

Atterberg Limits

Datum: Geodetic

Dynamic Cone Test

Undrained Triaxial at % Strain at Failure

Shelby Tube

Shear Strength by Penetrometer Test

Logged by: DC Checked by: MGM

Shear Strength by Vane Test

GWL	SOIL DESCRIPTION	Geodetic m	Depth m	Standard Penetration Test N Value				Combustible Vapour Reading (ppm)			Natural Unit Wt. kN/m ³
				Shear Strength				Natural Moisture Content % Atterberg Limits (% Dry Weight)			
				20	40	60	80	250	500	750	
	ASPHALT ~60 mm	89.34	0								
	GRAVEL	89.3									
	SILTY SAND occasional gravel, moist to wet, firm, no odours	89.0									S1
			1								S2
	SILTY CLAY grey, moist to wet, firm, no odours	87.8									S3
			2								
			3								
	Borehole Terminated at 3.05m Depth	86.3									

LOG OF BOREHOLE LOGS OF BOREHOLES ALBION.GPJ TROW OTTAWA.GDT 10/3/18

- NOTES:
- Borehole data requires interpretation by EXP before use by others
 - The borehole was backfilled upon completion
 - Field work supervised by an exp representative.
 - See Notes on Sample Descriptions
 - Log to be read with EXP Report OTT-00246047-A0

WATER LEVEL RECORDS		
Elapsed Time	Water Level (m)	Hole Open To (m)

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

Log of Borehole BH305



Project No: OTT-00246047-A0
 Project: Phase Two Environmental Site Assessment
 Location: 3025 Albion Road North, Ottawa, Ontario
 Date Drilled: 10/16/15
 Drill Type: Geoprobe GM100GT
 Datum: Geodetic
 Logged by: DC Checked by: MGM

Figure No. 5
 Page. 1 of 1

- 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	SOIL DESCRIPTION	Geodetic m	Depth	Standard Penetration Test N Value				Combustible Vapour Reading (ppm)			Natural Unit Wt. kN/m ³
				Shear Strength kPa				Natural Moisture Content %			
				20	40	60	80	250	500	750	
	ASPHALT ~60 mm	89.5	0								
	GRAVEL	89.4									
	SILTY CLAY occasional gravel, brown to grey, moist to wet, firm, no odours	89.2									
			1								S1
			2								S2
			3								S3
	Borehole Terminated at 3.05m Depth	86.5									

LOG OF BOREHOLE LOGS OF BOREHOLES ALBION.GPJ TROW OTTAWA.GDT 10/3/18

- NOTES:
- Borehole data requires interpretation by EXP before use by others
 - The borehole was backfilled upon completion
 - Field work supervised by an exp representative.
 - See Notes on Sample Descriptions
 - Log to be read with EXP Report OTT-00246047-A0

WATER LEVEL RECORDS		
Elapsed Time	Water Level (m)	Hole Open To (m)

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

Log of Borehole MW306



Project No: OTT-00246047-A0
 Project: Phase Two Environmental Site Assessment
 Location: 3025 Albion Road North, Ottawa, Ontario
 Date Drilled: 10/16/15
 Drill Type: Geoprobe GM100GT
 Datum: Geodetic
 Logged by: DC Checked by: MGM

Figure No. 6
 Page. 1 of 1

- 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 SOMYS L	SOIL DESCRIPTION	Geodetic m	Depth m	Standard Penetration Test N Value				Combustible Vapour Reading (ppm)			Natural Unit Wt. kN/m ³
				Shear Strength				Natural Moisture Content % Atterberg Limits (% Dry Weight)			
				20	40	60	80	250	500	750	
	ASPHALT ~60 mm	89.96	0								
	GRAVEL	89.9									
	SILTY SAND some clay and gravel, brown, moist, dense, slight PHC odours	89.7									
			1								S1A
											S1
			2								S2
		87.7									
	TILL Silty clay with rocks, grey, moist to wet, firm, no odours	87.35									S3
			3								
			4								S4
			5								
											S5
		83.9	6								
	Borehole Terminated at 6.1m Depth										

LOG OF BOREHOLE LOGS OF BOREHOLES ALBION GPJ TROW OTTAWA.GDT 10/3/18

- NOTES:
- Borehole data requires interpretation by EXP before use by others
 - A flushmount monitoring well with a 38 mm slotted standpipe was installed in the borehole upon completion.
 - Field work supervised by an exp representative.
 - See Notes on Sample Descriptions
 - Log to be read with EXP Report OTT-00246047-A0

WATER LEVEL RECORDS		
Elapsed Time	Water Level (m)	Hole Open To (m)
Nov 4, 2015	2.6	
June 2018	2.0	

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

Log of Borehole MW307



Project No: OTT-00246047-A0

Figure No. 7

Project: Phase Two Environmental Site Assessment

Page. 1 of 1

Location: 3025 Albion Road North, Ottawa, Ontario

Date Drilled: 10/16/15

Split Spoon Sample

Combustible Vapour Reading

Drill Type: Geoprobe GM100GT

Auger Sample

Natural Moisture Content

SPT (N) Value

Atterberg Limits

Datum: Geodetic

Dynamic Cone Test

Undrained Triaxial at % Strain at Failure

Shelby Tube

Shear Strength by Penetrometer Test

Logged by: DC Checked by: MGM

Shear Strength by Vane Test

G W L	S O I L D E S C R I P T I O N	Geodetic m	D e p t h m	Standard Penetration Test N Value				Combustible Vapour Reading (ppm)			S O I L T E S T R E S S E S	Natural Unit Wt. kN/m ³
				Shear Strength				Natural Moisture Content % Atterberg Limits (% Dry Weight)				
				20	40	60	80	250	500	750		
	CONCRETE 150 mm	90.06	0									
	GRAVEL	89.9										
	SILTY SAND occasional gravel, brown, moist, dense, no odours	89.8										
			1					0				S1
		88.87										
	TILL Silty clay with rocks, grey, moist to wet, firm, no odours	88.2	2					5				S2
			3					0				S3
			4					0				S4
			5					0				S5
		84.0	6					0				
	Borehole Terminated at 6.1m Depth											

LOG OF BOREHOLE LOGS OF BOREHOLES ALBION GPJ TROW OTTAWA.GDT 10/3/18

- NOTES:
- Borehole data requires interpretation by EXP before use by others
 - A flushmount monitoring well with a 38 mm slotted standpipe was installed in the borehole upon completion.
 - Field work supervised by an exp representative.
 - See Notes on Sample Descriptions
 - Log to be read with EXP Report OTT-00246047-A0

WATER LEVEL RECORDS		
Elapsed Time	Water Level (m)	Hole Open To (m)
Nov 4, 2015	1.2	
June 2018	0.9	

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

Log of Borehole MW308



Project No: OTT-00246047-A0

Figure No. 8

Project: Phase Two Environmental Site Assessment

Page. 1 of 1

Location: 3025 Albion Road North, Ottawa, Ontario

Date Drilled: 10/16/15

Split Spoon Sample

Combustible Vapour Reading

Drill Type: Geoprobe GM100GT

Auger Sample

Natural Moisture Content

SPT (N) Value

Atterberg Limits

Datum: Geodetic

Dynamic Cone Test

Undrained Triaxial at

Shelby Tube

% Strain at Failure

Logged by: DC Checked by: MGM

Shear Strength by

Shear Strength by

Vane Test

GWL	SOIL DESCRIPTION	Geodetic m	Depth	Standard Penetration Test N Value				Combustible Vapour Reading (ppm)			Natural Unit Wt. kN/m ³
				Shear Strength				250	500	750	
				20	40	60	80	Natural Moisture Content % Atterberg Limits (% Dry Weight)			
	CONCRETE 150 mm	90.06	0								
	GRAVEL	89.9									
	SILTY SAND occasional gravel, brown, moist, dense, no odours	89.8									S1
			1								S2
	TILL Silty clay with rocks, grey, moist to wet, firm, no odours	88.5									S3
			2								S4
			3								S5
		86.87	4								
			5								
			6								
	Borehole Terminated at 6.1m Depth	84.0									

LOG OF BOREHOLE LOGS OF BOREHOLES ALBION GPJ TROW OTTAWA.GDT 10/3/18

- NOTES:
- Borehole data requires interpretation by EXP before use by others
 - A flushmount monitoring well with a 38 mm slotted standpipe was installed in the borehole upon completion.
 - Field work supervised by an exp representative.
 - See Notes on Sample Descriptions
 - Log to be read with EXP Report OTT-00246047-A0

WATER LEVEL RECORDS		
Elapsed Time	Water Level (m)	Hole Open To (m)
Nov 4, 2015	3.2	
June 2018	2.3	

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

Log of Borehole MW309



Project No: OTT-00246047-A0

Figure No. 9

Project: Phase Two Environmental Site Assessment

Page. 1 of 1

Location: 3025 Albion Road North, Ottawa, Ontario

Date Drilled: 10/16/15

Split Spoon Sample

Combustible Vapour Reading

Drill Type: Geoprobe GM100GT

Auger Sample

Natural Moisture Content

SPT (N) Value

Atterberg Limits

Datum: Geodetic

Dynamic Cone Test

Undrained Triaxial at

Shelby Tube

% Strain at Failure

Logged by: DC Checked by: MGM

Shear Strength by

Penetrometer Test

Vane Test

GWL S O M Y S L	SOIL DESCRIPTION	Geodetic m	Depth m	Standard Penetration Test N Value				Combustible Vapour Reading (ppm)			Natural Unit Wt. kN/m ³
				kPa				250	500	750	
				20	40	60	80	Natural Moisture Content % Atterberg Limits (% Dry Weight)			
	ASPHALT GRAVEL	89.96 89.9	0								
	SILTY SAND occasional gravel, brown, moist, dense, no odours	89.4	1								S1
			2								S2
	TILL Silty clay with rocks, grey, moist to wet, firm, no odours	87.7 87.35	3								S3
			4								S4
			5								S5
	Borehole Terminated at 6.1m Depth	83.9	6								

LOG OF BOREHOLE LOGS OF BOREHOLES ALBION GPJ TROW OTTAWA.GDT 10/3/18

- NOTES:
- Borehole data requires interpretation by EXP before use by others
 - A flushmount monitoring well with a 38 mm slotted standpipe was installed in the borehole upon completion.
 - Field work supervised by an exp representative.
 - See Notes on Sample Descriptions
 - Log to be read with EXP Report OTT-00246047-A0

WATER LEVEL RECORDS		
Elapsed Time	Water Level (m)	Hole Open To (m)
Nov 4, 2015	2.6	
June 2018	3.3	

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

Log of Borehole BH311



Project No: OTT-00246047-A0

Figure No. 10

Project: Phase Two Environmental Site Assessment

Page. 1 of 1

Location: 3025 Albion Road North, Ottawa, Ontario

Date Drilled: 10/16/15

Split Spoon Sample

Combustible Vapour Reading

Drill Type: Geoprobe GM100GT

Auger Sample

Natural Moisture Content

SPT (N) Value

Atterberg Limits

Datum: Geodetic

Dynamic Cone Test

Undrained Triaxial at % Strain at Failure

Shelby Tube

Shear Strength by Penetrometer Test

Logged by: DC Checked by: MGM

Shear Strength by Vane Test

GWL	SOIL DESCRIPTION	Geodetic m	Depth	Standard Penetration Test N Value				Combustible Vapour Reading (ppm)			Natural Unit Wt. kN/m ³
				Shear Strength kPa				250	500	750	
				20	40	60	80	Natural Moisture Content % Atterberg Limits (% Dry Weight)			
	ASPHALT ~50 mm	89.26	0								
	GRAVEL	89.2									
	SILTY SAND trace clay and occasional gravel, moist to wet, firm, no odours some black staining in top 1.5m	89.0									
			1								
			2								
			3								
	Borehole Terminated at 3.05m Depth	86.2									

LOG OF BOREHOLE LOGS OF BOREHOLES ALBION.GPJ TROW OTTAWA.GDT 10/3/18

- NOTES:
- Borehole data requires interpretation by EXP before use by others
 - The borehole was backfilled upon completion
 - Field work supervised by an exp representative.
 - See Notes on Sample Descriptions
 - Log to be read with EXP Report OTT-00246047-A0

WATER LEVEL RECORDS		
Elapsed Time	Water Level (m)	Hole Open To (m)

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

EXP Services Inc.

*Ahlul-Bayt Center Ottawa
Phase Two Environmental Phase Two Property Assessment
3025 Albion Road North, Ottawa, ON
OTT-00246047-B0
December 21, 2018*

Appendix F: 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 925 Ralph Hennessy Avenue in Ottawa, Ontario (hereinafter referred to as the 'site'). The SAAP presents the procedures and measures that will be undertaken during field investigative activities to characterize the site conditions and meet the data quality objectives of the Phase Two ESA.

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

2 Field Sampling Program

The field sampling program was developed to provide for the collection of samples of the soil and groundwater for chemical analysis of petroleum hydrocarbons (PHC), benzene, toluene, ethylbenzene and xylenes (collectively known as 'BTEX') and metals. The soil sampling media is to consist of the overburden materials (depths up to 6 m of overburden beneath site). The soil sampling will be location-specific to assess for the potential presence of PHC, BTEX, metals, PAH and organochlorine pesticides based on the identification of potential areas of potential environmental concern identified in a Phase One ESA completed by EXP in 2018. Vapour readings will also be taken in the field to determine samples to be submitted for BTEX and PHC F1-F2 analysis.

Each of the groundwater samples will be submitted for analysis of PHC and BTEX. The monitoring well network is to comprise of one existing well and three piezometers.

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 fourteen (14) boreholes are proposed to be advanced at the site, up to a maximum overburden depth of approximately 6.1 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 direct push 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 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 one 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 3 to 5 m below grade. Three piezometers will also be installed. The monitoring wells will be constructed using 51 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 well 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 well and piezometers 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 and piezometer 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 well for chemical analysis. The well will be sampled using a "low flow" technique whereby the wells are continuously purged using an electric pump (equipped with dedicated tubing) and parameters within the purged water are monitored using a groundwater chemistry multi-meter at 3 minute intervals. These parameters include: pH, conductivity, temperature, and salinity. Once these parameters are found to deviate less than 10% over three testing events, equilibrium is deemed to have occurred and a sample of the groundwater will be collected. The purge water will also be continuously monitored for visual and olfactory evidence of petroleum and solvent impact (sheen and odour).

Recommended groundwater sample volumes will be collected into pre-clean laboratory-supplied vials or bottles provided with analytical test group specific preservatives, as required. The samples will be placed in an insulated cooler chilled with ice for storage and transport. Each 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.

EXP Services Inc.

*Ahlul-Bayt Center Ottawa
Phase Two Environmental Phase Two Property Assessment
3025 Albion Road North, Ottawa, ON
OTT-00246047-B0
December 21, 2018*

Appendix G: Remediation Summary





December 18, 2018

Mr. Akram Farhat
Ahlul-Bayt Center Ottawa
200 Baribeau Street
Ottawa, ON K1L 7R6

Via Email:
habib@royalpage.ca

Dear Mr. Farhat:

**Re: OTT-00246047-B0 Soil Remediation Report
3025 Albion Road North, Ottawa, Ontario**

1. Introduction

EXP Services Inc. (EXP) was retained by Ahlul-Bayt Center Ottawa and Hydro Ottawa to conduct a Remedial Excavation and Confirmatory Sampling Program at 3025 Albion Road North in Ottawa, Ontario. The Phase Two property location is shown on Figure 1 in Appendix A.

2. Site Description

The Phase Two property is a rectangular shaped parcel of land that has the municipal address 3025 Albion Road North, in Ottawa, Ontario. The Phase Two property is located south of Walkley Road and east of Kitchener Avenue. At the time of the investigation, the Phase Two property was used as offices, parking areas and equipment storage warehouse for Hydro Ottawa. The municipal address consists of three parcels however, this Phase I ESA included Parcel 1 in the assessment. Based on a review of historical aerial photographs, chain of title information, historical maps, and other records, the Phase Two property was first developed for commercial use in 1956 with the development of the current building in the west half of the Phase Two property.

3. Background and Objectives

EXP recently completed a Phase One and Two Environmental Site Assessment (ESA) at the Phase Two property in support of property redevelopment. Based on the results of the Phase Two ESA, elevated concentrations of petroleum hydrocarbons (PHC), including benzene, toluene, ethylbenzene, xylenes (BTEX) and cyanide were detected above the Ministry of the Environment, Conservation and Parks (MECP) Table 3 Site Condition Standards (SCS) in the soil at the Phase Two property (Figure 3). The identified impacts are associated with a former underground storage tank and dispensing pumps located in the northwest part of the Phase Two property and a former on-site vehicle service garage in the north part of the building.

The objective of the Remedial Excavation and Confirmatory Sampling Program was to remediate all identified soil impacts on the Phase Two property to support the filing of a Record of Site Condition (RSC) with the MECP.

The Remedial Excavation and Confirmatory Sampling Program was conducted in accordance with O. Reg. 153/04 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. EXP's limitations and use of report are outlined in Appendix A. Tables and Figures referenced throughout the report are provided at the beginning of the Appendices.

4. Current and Proposed Future Uses

The land is currently owned and used by Hydro Ottawa as an office building and associated parking areas, and indoor parking for large service trucks and equipment storage areas.

It is understood that the larger development property is intended for institutional use. An RSC will be required to support the intended transition to a more sensitive land use on the development property.

5. Applicable Site Condition Standards

The assessment criteria, Site Condition Standards (SCS), applicable to a given site in Ontario are established under subsection 168.4(1) of the Environmental Protection Act. Tabulated generic criteria are provided in "*Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act*" ("the SGWS Standards"), MECP, May 2011. These criteria, which came into force on July 1, 2011, are based on site sensitivity (sensitive or non-sensitive), groundwater use (potable or non-potable), property use (residential, parkland, institutional, commercial, industrial, community and agricultural/other), soil type (coarse or medium to fine textured) and restoration depth (full or stratified restoration). In addition, site specific criteria may be established on the basis of the findings of a Risk Assessment carried out in accordance with Part IX and Schedule C of O. Reg. 153/04, as amended.

For assessment purposes, EXP selected the MECP Table 3 SCS for Institutional Property Use in a non-potable groundwater situation with coarse-textured soil.

The selection of this category was based on the following factors:

- the Phase Two property is not considered a sensitive site;
- the best of EXP's knowledge, the Phase Two property and surrounding area (within 250 m of the Site) are serviced by the City of Ottawa municipal water supply;
- the Phase Two property is not located in an area designated in a municipal official plan as a well-head protection area or other designation identified by the municipality for the protection of groundwater;
- the intended land use of the Phase Two property is institutional;
- the predominant soil type on the Phase Two property is considered to be coarse-textured (refer to the 75-micron sieve analysis in the Certificates of Analysis - Appendix D); and,
- there is no intention to carry out a stratified restoration at the Phase Two property.

6. Remedial Actions

The soil excavation activities were completed by Drain-All. The remedial actions were monitored by EXP on a part-time basis between June 23 and July 11, 2018.

A total of approximately 949 metric tonnes of cyanide and petroleum impacted soil was excavated and transported off Phase Two property to the Green for Life landfill in Moose Creek, a licensed landfill. The bills of lading from the licensed landfill are provided in Appendix B.

There were two remedial excavations: at the former gasoline UST and pump island north of the garage, within the service garage to remove cyanide impacted soil (Figure 2). During the course of the remedial

excavation activities, no soil was treated on the Phase Two property and no soils were reused on the Site. This remediation approach did not introduce any contaminants or substances into the subsurface.

6.1 Excavation #1 – Former UST and Pump Island

The final PHC excavation measured approximately 11 m wide and 15 m long, with an average depth of approximately 3.3 m below ground surface (bgs). The extent of the petroleum impacted soil excavation is shown on Figure 3 in Appendix A. Approximately 940 metric tonnes of petroleum impacted soil was removed from this area.

6.2 Excavation #2 – Service Garage Area

The final cyanide excavation measured approximately 2.0 m wide and 3.0 m long, with a depth of approximately 2.9 mbgs. The extent of the cyanide impacted soil excavation is shown on Figure 3 in Appendix A. Approximately 9 metric tonnes of cyanide impacted soil was removed from this area.

6.3 Description of Ground Water Treatment Activities

No groundwater remediation was conducted. Approximately 58,275 litres of groundwater were removed from the Phase Two property. Previous groundwater samples collected from the monitoring wells in the area showed low concentrations of the analyzed parameters indicating that the groundwater was not impacted. The excavation was dewatered on several occasions to allow excavation and backfilling. The water was removed from the Phase Two property by a licensed waste contractor (Drain All).

6.4 Description of Sediment Treatment Activities

As no sediment was present beneath the Phase Two property, no sediment removal or treatment activities were required or conducted.

6.5 Free Flowing Product

No free-flowing product was identified during the Phase Two or remediation efforts.

7. Confirmatory Sampling and Analysis

7.1 Toxicity Characteristic Leaching Procedure (TCLP)

The remediation contractor supplied the TCLP as per Ontario Regulation (O.Reg.) 558 to the MECP licensed non-hazardous landfill.

7.2 Confirmatory Soil Sampling Methodology

EXP conducted confirmatory soil sampling from the floor and sidewalls (where applicable) of the excavations in accordance with confirmatory sampling requirements as outlined in Ontario Regulation 153/04, as amended.

Prior to soil sample submission, a field screening process was utilized to determine the 'worst case' soil sample. Soil samples were collected from the walls and excavation floor. The soil was then placed in sealed "zip-lock" plastic bags and allowed to reach ambient temperature prior to field screening with a gas detector (Eagle). The gas detector was calibrated with 100 ppm hexane reference gas prior to use. The vapour 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 an indication of

the relative concentration of volatile organic soil vapours present in the soil. The 'worst case' soil sample was then submitted for analysis.

It should be noted that in instances where confirmatory samples did not meet the applicable MECP SCS, the impacted area was excavated vertically in 0.5 metre lifts and laterally to the closest clean sample and re-sampled for the parameters which exceeded. This process was repeated until clean results were obtained.

7.3 Confirmatory Floor and Wall Samples

Floor and sidewall samples were collected from the base of the excavation (as per O.Reg 153/04, as amended) and screened with the gas detector to determine the 'worse case' sample. Select 'worst case' samples were subsequently submitted to Maxxam Analytics Inc. (Maxxam) for analysis of the applicable contaminants of concern. A total of three (3) confirmatory floor samples, twenty-four (24) sidewall samples, and two (2) duplicate samples were analyzed from depths ranging from 1.2 m to 3.3 mbgs from the petroleum excavation (Figure 4). A total of two (2) confirmatory floor samples, four (4) sidewall samples, and one (1) duplicate sample were analyzed from depths ranging from 1.2 m to 2.9 mbgs from the cyanide excavation (Figure 9).

The confirmatory soil sample locations from the petroleum excavation are shown on Figures 4 to 6 and the laboratory certificates of analysis are provided in Appendix D. Photographs of the excavation work are found in Appendix F.

During the course of the excavation, select confirmatory samples were found to be above the applicable MECP Table 3 SCS for select parameters. When such an occurrence was encountered, the impacted area was further excavated and re-sampled for the parameters which exceeded. This process was repeated until clean results were obtained.

There were several soil samples from the south wall of the petroleum excavation that exceeded the MECP Table 3 SCS. They were located beneath the footing of the building. Horizontal boreholes were excavated at six locations along the south wall of the excavation. Soil samples were collected from the directly below the footing (sample A and D), 0.4 m into the wall of the excavation (B and E) and at 0.7 m into the soil beneath the footing (C and E).

8. Soil Analytical Results Summary

In accordance with the scope of work, chemical analyses were performed on 'worst case' soil samples recovered from the excavation. Analytical results of soil samples collected from the floor and sidewalls of the excavation are summarized in Tables 2 and 3, Appendix C and the Certificates of Analysis are provided in Appendix D. Based on the analytical results, all final confirmatory samples from the cyanide excavation had concentrations of the analyzed parameters that were less than the MECP Table 3 SCS. There were several soil samples (Footing, 2B, 2D, 2E, 3A, and 3C) from the south wall of the petroleum excavation that had concentrations of PHC F1 and/or benzene, toluene and xylenes exceeded the MECP Table 3 SCS. They were located beneath the footing of the building and therefore could not be removed without potentially damaging the building. A Modified Generic Risk Assessment (MGRA) was conducted to address the soil exceedances of the generic MECP Table 3 SCS.

9. Quality Assurance and Quality Control Results

A total of three blind duplicate soil samples were collected analyzed for BTEX, PHC, and/or cyanide as in the original samples.

Soil Sample	Field Duplicate Soil Sample	Parameters Analyzed
E19	E91	PHC and BTEX
3F	3G	PHC and BTEX
CN South (S3)	CN1	Cyanide

The precision of the analytical results can be expressed by the relative percent difference (RPD) between the original sample and the duplicate sample. The equation used to determine the RPD is provided below.

$$\text{RPD} = 2 \times ((S-D)/(S+D)) \times 100$$

Where, S = concentration of the original sample
 D = concentration of the duplicate sample

RPDs can only be calculated if the concentration of both the duplicate sample and the original sample are above the analytical reporting detection limit (RDL). For soil samples, the alert limit criteria for the field duplicate RPD is >100%.

The calculated RPD between the duplicate samples and the original samples for soil was below 100% for all of the parameters analyzed.

Maxxam did not provide any comments or remarks on the Certificates of Analysis regarding the validity of the results for any of the samples analyzed. Laboratory Certificates of Analysis are included in Appendix C. Details of the QA/QC program and RPD results are presented in Appendix D.

10. Soil Importation and Backfilling

The excavation was partly backfilled on July 11, 2018 and completed on August 9 and 10, 2018. Imported crushed stone (Granular B Type II) was placed in the bottom 1.5 m of the excavation in 0.3 m lifts and compacted to a depth of 1.5 m from ground surface using the excavator bucket. Then the next 1.5 m of the excavation was backfilled with crushed stone and then the last 0.3 m of the excavation was backfilled with Granular A. The backfill material was imported from the Tomlinson quarry in Ottawa. A total of 5 backfill samples were collected and submitted for analysis of BTEX and PHC. The analyzed parameters in the backfill samples were less than the MECP Table 3 SCS. Imported soil used for re-grading was assessed in accordance with the frequency requirements for soil imported to an RSC site, and met the SCS for all parameters.

EXP was on the Phase Two property to conduct compaction testing. The results of the compaction testing are found in Appendix E.

11. Conclusions

Based on the soil remediation activities completed at the Phase Two property and the analytical test results, the following summary and conclusions are provided:

- Intermediate soil sampling was iteratively conducted as the excavations progressed, and final confirmatory sampling was completed at the finished floor elevation across the extent of the excavation at a frequency indicated by O. Reg. 153/04 Schedule E, Table 3, *Minimum Confirmation Sampling*

Requirements for Excavation. Soil samples were analyzed for PHC and BTEX in Excavation #1 and cyanide in Excavation #2.

- A total of approximately 949 metric tonnes of impacted soil that exceeded the MECP Table 3 SCS were excavated and transported an off-site licensed landfill.
- All final confirmatory side wall and floor samples from the cyanide excavation were determined to be within the MECP Table 3 SCS for an institutional property use with coarse textured soil. No further environmental work related to these impacts is required.
- All final confirmatory side wall (east, west and north) and floor samples from the petroleum hydrocarbon excavation were determined to be within the MECP Table 3 SCS for an institutional property use with coarse textured soil. However, soil located below the footing of the building on the south wall was found to be impacted with PHC and BTEX. A MGRA is being completed to address these residual impacts.
- The excavations were backfilled with Granular B Type II and Granular A (approximately 950 cubic meters) imported from the Tomlinson's quarry in Ottawa. Imported soil used for re-grading was assessed in accordance with the frequency requirements for soil imported to an RSC site, and met the SCS for all parameters.

12. 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 subject property. The conclusions and recommendations presented in this report reflect Site 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.

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. 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.

This report was prepared for the exclusive use of Ahlul-Bayt Center Ottawa and Hydro Ottawa and may not be reproduced in whole or in part, without the prior written consent of EXP, or used or relied upon in whole or in part by other parties for any purposes whatsoever. Any use which a third party makes of this report, or any part thereof, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. EXP

Services Inc. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

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.

Yours truly,



Mark McCalla, P. Geo.
Senior Geoscientist
Earth & Environment
EXP Services Inc.



Robert Renaud, M.Sc., P. Geo.
Senior Geoscientist
Earth & Environment
EXP Services Inc.

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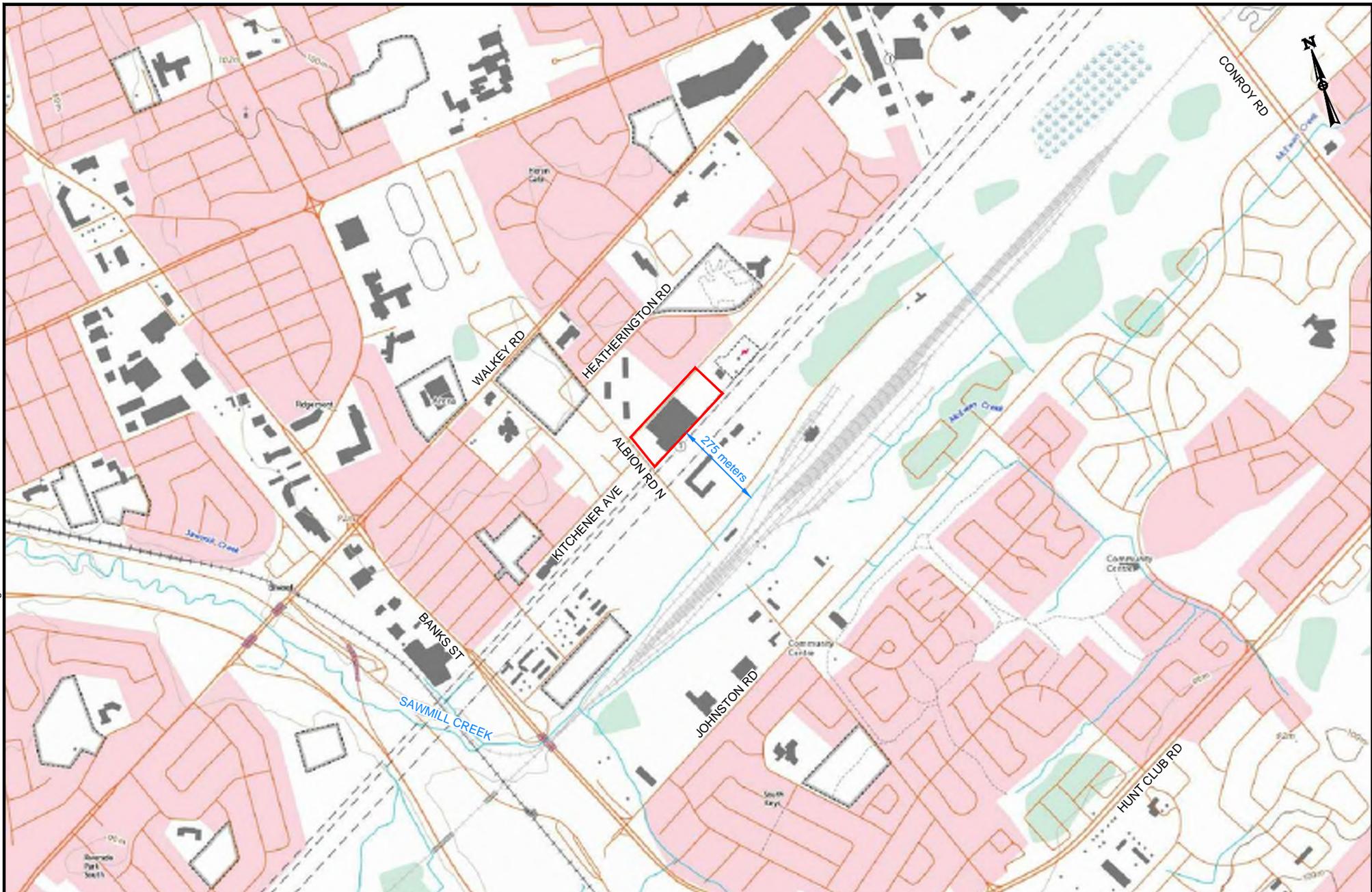
Attachments: Appendix A – Figures
Appendix B – Landfill Weigh Bills
Appendix C – Analytical Summary Tables
Appendix D – Laboratory Certificates of Analysis
Appendix E – Compaction Results
Appendix F – Photographs

EXP Services Inc.

*ABCO
Soil Remediation Report
3025 Albion Road North, Ottawa Ontario
OTT-00246047-B0
December 18, 2018*

Appendix A – Figures





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- BUILDINGS • EARTH & ENVIRONMENT • ENERGY •
- INDUSTRIAL • INFRASTRUCTURE • SUSTAINABILITY •

LEGEND:
— APPROXIMATE SITE BOUNDARY

SCALE



TITLE AND LOCATION:

SITE LOCATION PLAN
 RISK ASSESSMENT
 3025 ALBION ROAD NORTH
 OTTAWA, ONTARIO

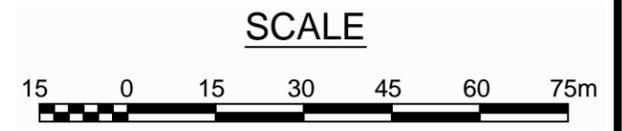
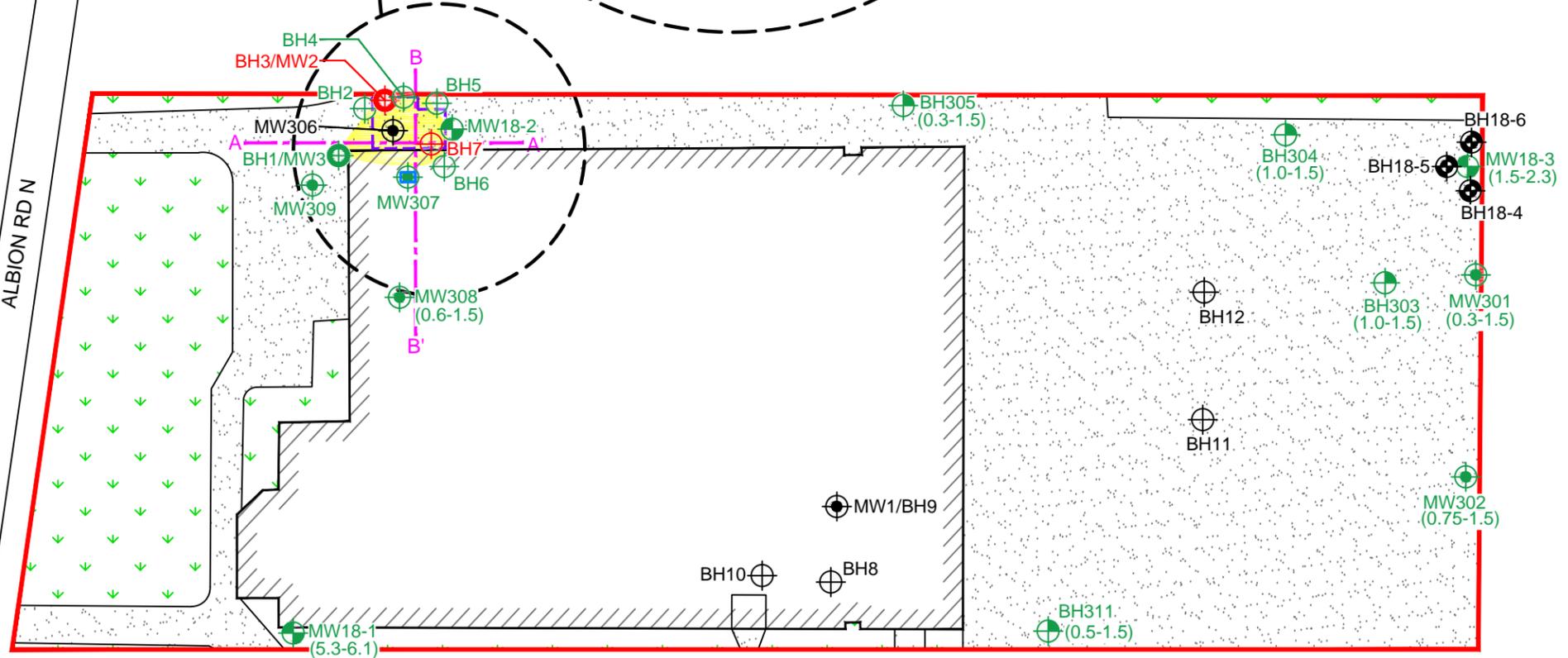
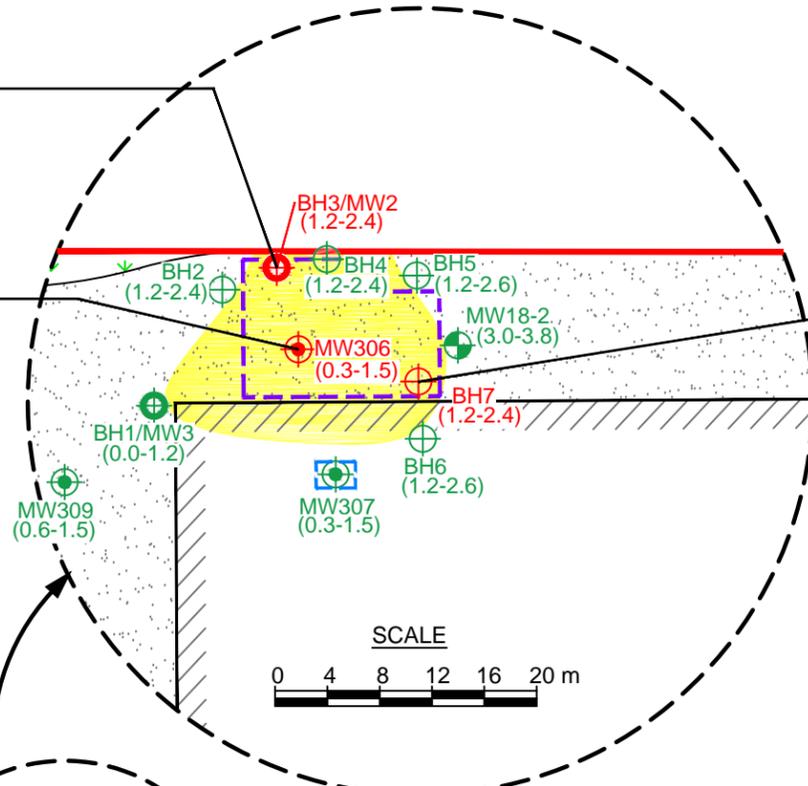
PROJECT NO.:	DWN.:
OTT-00246047-D0	DP
SCALE:	CK:
AS NOTED	PV
DATE:	FIG. NO.:
DECEMBER 2018	1



BH3 SS2*	
Parameter	13/02/18
Benzene	9.15
Ethylbenzene	18.9
Xylenes	31.8
PHC F ₁ (>C ₆ -C ₁₀)	200

MW306 SS1*	
Parameter	19/10/15
Benzene	9.2
Toluene	4.9
Ethylbenzene	13
Xylenes	44
PHC F ₁ (>C ₆ -C ₁₀)	420
PHC F ₂ (>C ₁₀ -C ₁₆)	100

BH7 SS2	
Parameter	13/02/18
PHC F ₃ (>C ₁₉ -C ₃₄)	360



Legend

BH1	Date
Parameter	Sample Depth (m bgs)
Parameter	Concentration (µg/g)

Parameter	MECP Table 3 SCS (µg/g)
Benzene	0.21
Toluene	2.3
Ethylbenzene	2
Xylenes	3.1
PHC F ₁ (>C ₆ -C ₁₀)	55
PHC F ₂ (>C ₁₀ -C ₁₆)	98
PHC F ₃ (>C ₁₆ -C ₃₄)	300

MECP Table 3 SCS = Ministry of the Environment, Conservation and Parks Table 3 Full Depth Generic Site Condition Standards in a Non-Potable Groundwater Condition (residential/parkland/institutional land use) with coarse textured soil.

Bold Parameter exceeds Table 3 SCS.

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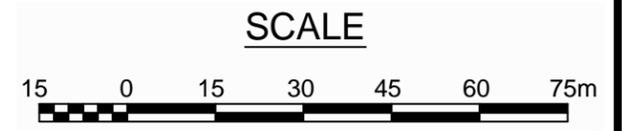
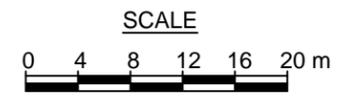
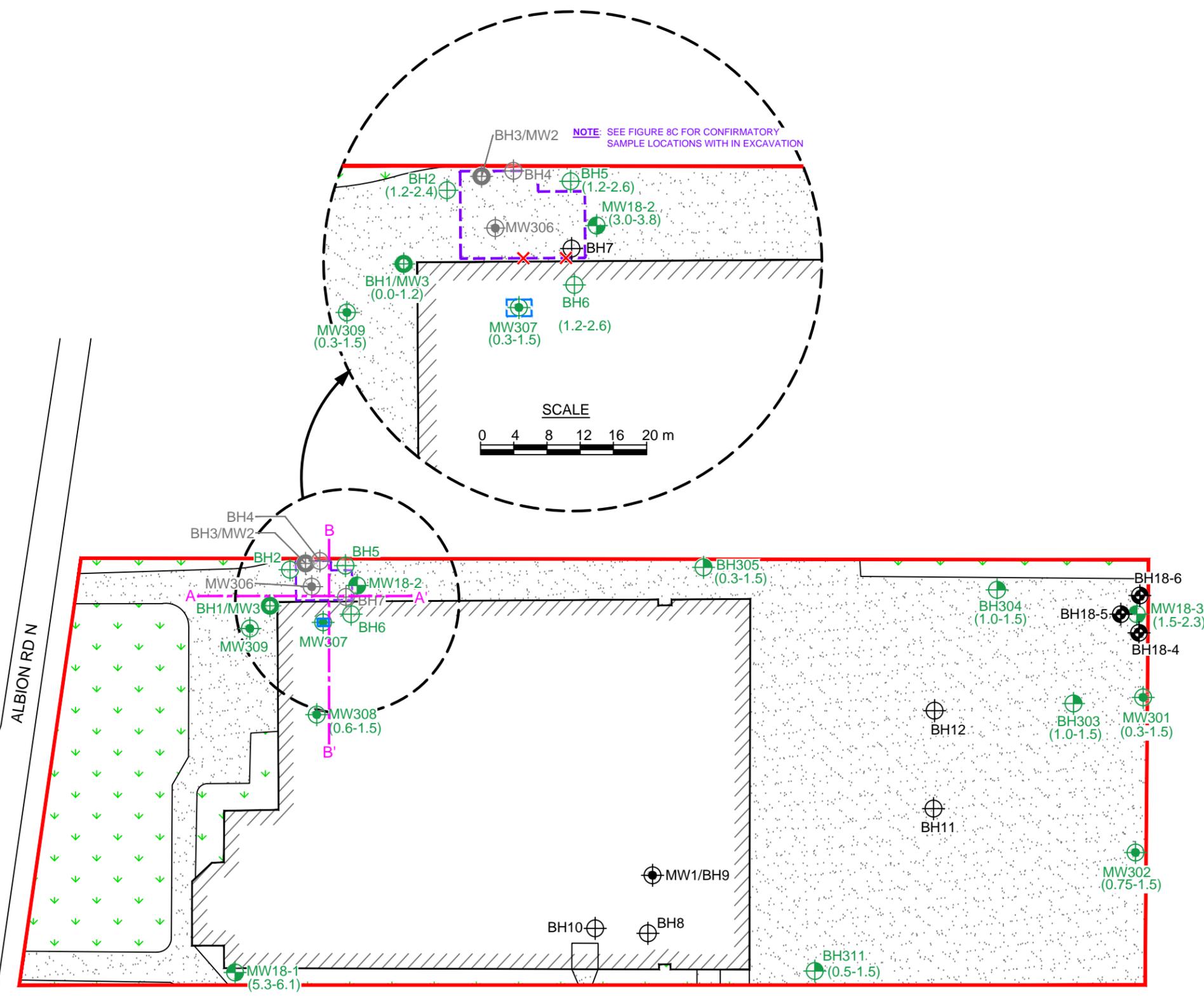
LEGEND:

- APPROXIMATE SITE BOUNDARY
- EXTENT OF EXCAVATION 1 (PHC)
- EXTENT OF EXCAVATION 2 (CYANIDE)
- ⊕ BOREHOLE LOCATION (ENVIRO-EXPERTS, 2018)
- ⊕ BOREHOLE / MONITORING WELL LOCATION (ENVIRO-EXPERTS, 2018)
- ⊕ BOREHOLE LOCATION (EXP, 2016)
- ⊕ BOREHOLE LOCATION (EXP, 2018)
- ⊕ BOREHOLE / MONITORING WELL LOCATION (EXP, 2016)
- ⊕ BOREHOLE / MONITORING WELL LOCATION (EXP, 2018)
- (X.X-X.X) SAMPLE DEPTH (mbgs)
- ⊕ SAMPLE MEETS TABLE 3 SCS
- ⊕ SAMPLE EXCEEDS TABLE 3 SCS
- EXTENT OF IMPACT

TITLE AND LOCATION:
PHC AND BTEX IMPACTS IN SOIL
 PRE REMEDIATION
 RISK ASSESSMENT
 3025 ALBION ROAD NORTH
 OTTAWA, ONTARIO

JOB NO.: OTT-00246047-D0	DRAWN BY: DP
SCALE: AS NOTED	CHECKED BY: PV
DATE: DECEMBER 2018	FIG NO.: 2

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Legend

BH1	Date
Parameter	Sample Depth (m bgs)
	Concentration (µg/g)
Parameter	MECP Table 3 SCS (µg/g)
Benzene	0.21
Toluene	2.3
Ethylbenzene	2
Xylenes	3.1
PHC F ₁ (>C ₆ -C ₁₃)	55
PHC F ₂ (>C ₁₂ -C ₁₉)	98
PHC F ₃ (>C ₁₂ -C ₃₄)	300

MECP Table 3 SCS = Ministry of the Environment, Conservation and Parks Table 3 Full Depth Generic Site Condition Standards in a Non-Potable Groundwater Condition (residential/parkland/institutional land use) with coarse textured soil.

Bold Parameter exceeds Table 3 SCS.

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LEGEND:

APPROXIMATE SITE BOUNDARY	EXTENT OF EXCAVATION 1 (PHC)	BOREHOLE LOCATION (ENVIRO-EXPERTS, 2018)	SAMPLE MEETS TABLE 3 SCS
EXTENT OF EXCAVATION 2 (CYANIDE)	BOREHOLE LOCATION (EXP, 2016)	BOREHOLE / MONITORING WELL LOCATION (ENVIRO-EXPERTS, 2018)	SAMPLE EXCEEDS TABLE 3 SCS
BUILDING FOOTPRINT	BOREHOLE LOCATION (EXP, 2018)	BOREHOLE / MONITORING WELL REMOVED DURING EXCAVATION	EXCAVATION WALL SAMPLE WHICH STILL EXCEEDS TABLE 3 SCS
LANDSCAPED AREA	BOREHOLE / MONITORING WELL LOCATION (EXP, 2016)	BOREHOLE / MONITORING WELL LOCATION (EXP, 2018)	
ASPHALT / CONCRETE			

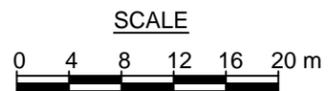
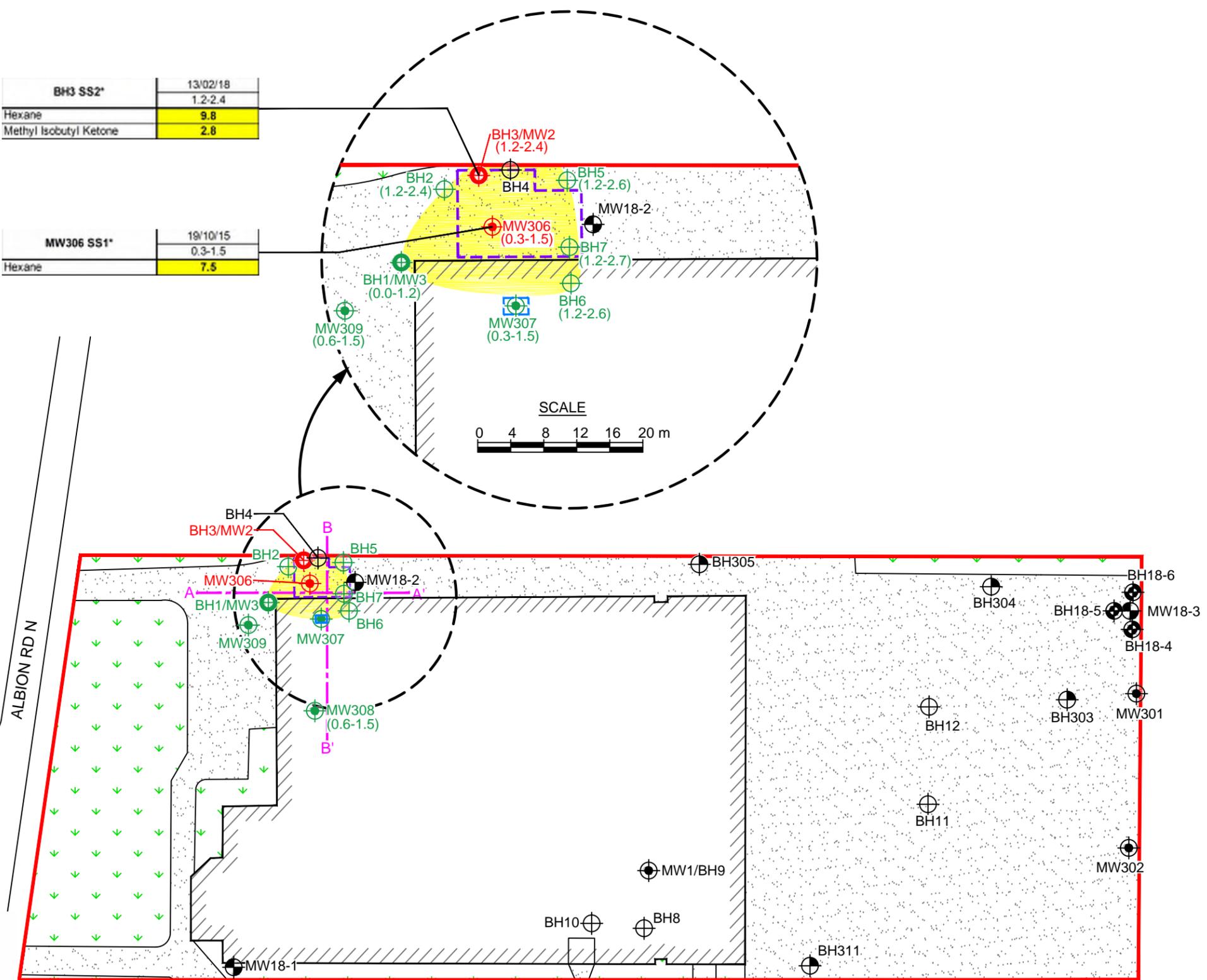
TITLE AND LOCATION: PHC AND BTEX IMPACTS IN SOIL POST REMEDIATION RISK ASSESSMENT 3025 ALBION ROAD NORTH OTTAWA, ONTARIO	JOB NO.: OTT-00246047-D0	DRAWN BY: DP
	SCALE: AS NOTED	CHECKED BY: PV
	DATE: DECEMBER 2018	FIG NO.: 3

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BH3 SS2*	13/02/18
	1.2-2.4
Hexane	9.8
Methyl Isobutyl Ketone	2.8

MW306 SS1*	19/10/15
	0.3-1.5
Hexane	7.5



Parameter	MECP Table 3 SCS (µg/g)
Hexane	2.8
Methyl Isobutyl Ketone	1.7

MECP Table 3 SCS = Ministry of the Environment, Conservation and Parks Table 3 Full Depth Generic Site Condition Standards in a Non-Potable Groundwater Condition (residential/parkland/institutional land use) with coarse textured soil.

Bold Parameter exceeds Table 3 SCS.

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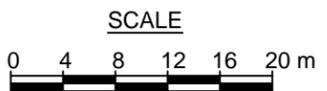
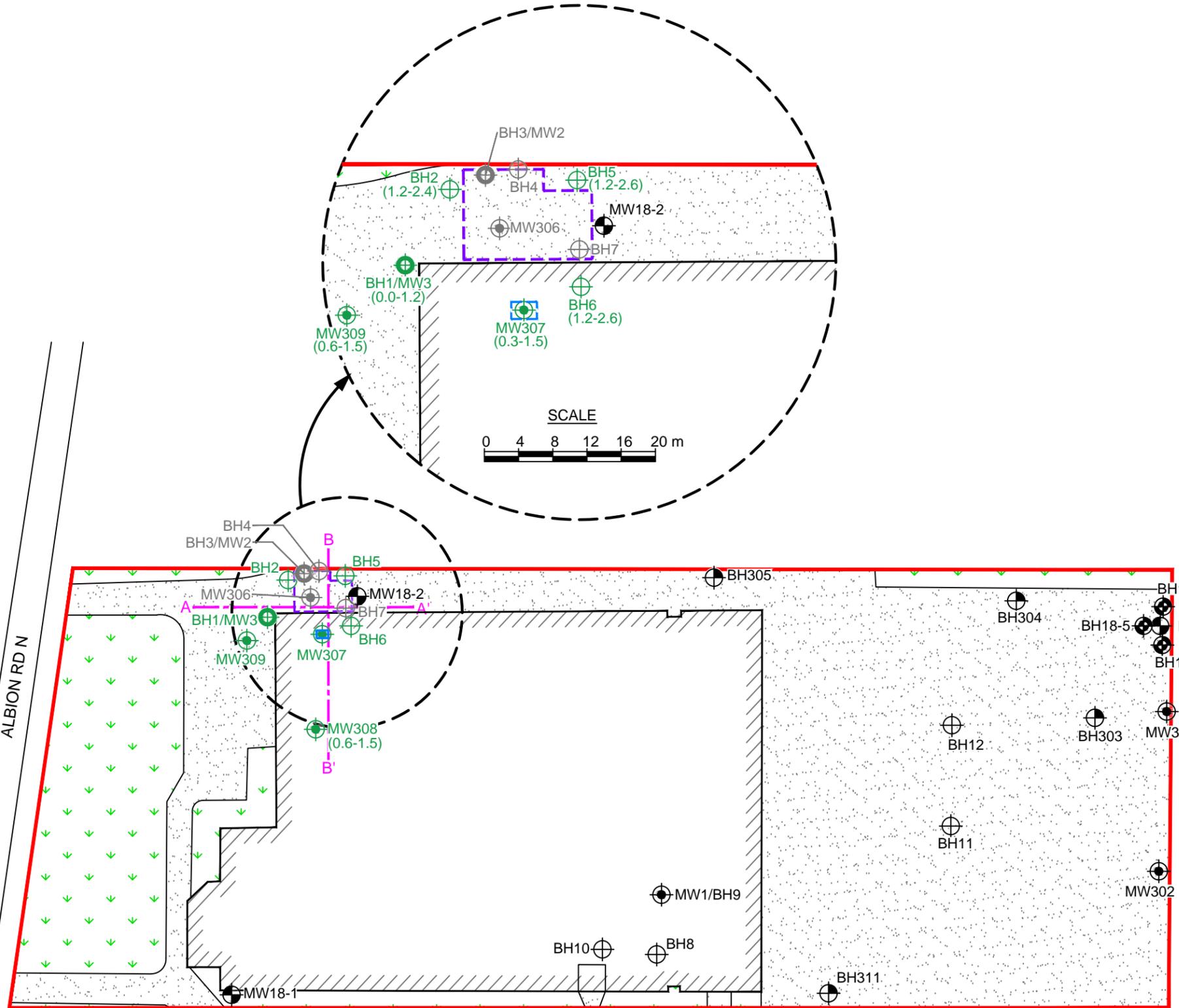
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LEGEND:

- APPROXIMATE SITE BOUNDARY
- EXTENT OF EXCAVATION 1 (PHC)
- EXTENT OF EXCAVATION 2 (CYANIDE)
- BUILDING FOOTPRINT
- LANDSCAPED AREA
- ASPHALT / CONCRETE
- BOREHOLE LOCATION (ENVIRO-EXPERTS, 2018)
- BOREHOLE / MONITORING WELL LOCATION (ENVIRO-EXPERTS, 2018)
- BOREHOLE LOCATION (EXP, 2016)
- BOREHOLE / MONITORING WELL LOCATION (EXP, 2016)
- BOREHOLE LOCATION (EXP, 2018)
- BOREHOLE / MONITORING WELL LOCATION (EXP, 2018)
- (X.X-X.X) SAMPLE DEPTH (mbgs)
- SAMPLE MEETS TABLE 3 SCS
- SAMPLE EXCEEDS TABLE 3 SCS
- EXTENT OF IMPACT

TITLE AND LOCATION:
VOC (NOT INCLUDING BTEX)
IMPACTS IN SOIL
 PRE REMEDIATION
 RISK ASSESSMENT
 3025 ALBION ROAD NORTH
 OTTAWA, ONTARIO

JOB NO.: OTT-00246047-D0	DRAWN BY: DP
SCALE: AS NOTED	CHECKED BY: PV
DATE: DECEMBER 2018	FIG NO.: 5



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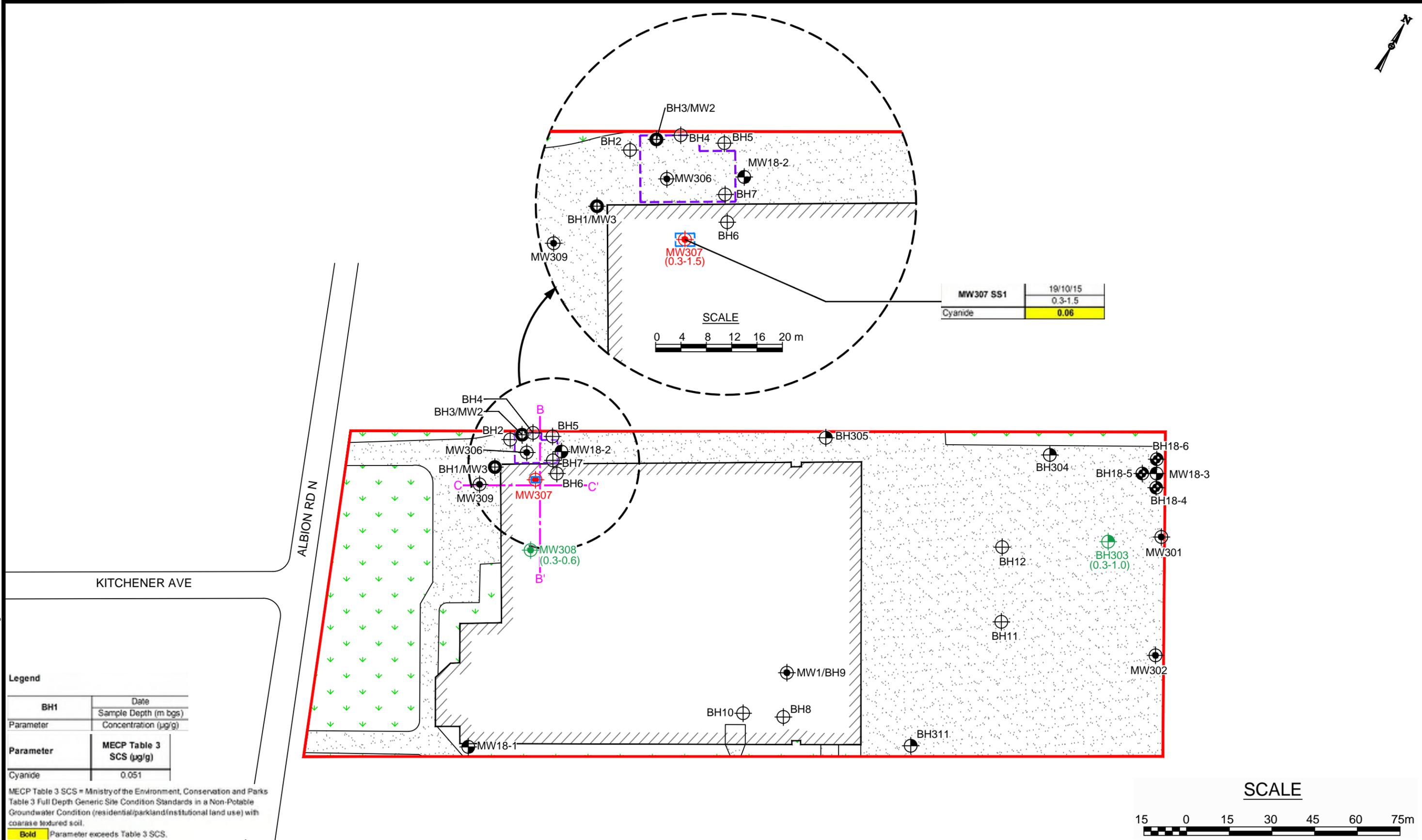
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LEGEND:	
	APPROXIMATE SITE BOUNDARY
	BUILDING FOOTPRINT
	LANDSCAPED AREA
	ASPHALT / CONCRETE
	EXTENT OF EXCAVATION 1 (PHC)
	EXTENT OF EXCAVATION 2 (CYANIDE)
	BOREHOLE LOCATION (EXP, 2016)
	BOREHOLE / MONITORING WELL LOCATION (EXP, 2016)
	BOREHOLE / MONITORING WELL LOCATION (EXP, 2018)
	BOREHOLE / MONITORING WELL LOCATION (ENVIRO-EXPERTS, 2018)
	(X.X-X.X) SAMPLE DEPTH (mbgs)
	SAMPLE MEETS TABLE 3 SCS
	SAMPLE EXCEEDS TABLE 3 SCS
	BOREHOLE / MONITORING WELL REMOVED DURING EXCAVATION

TITLE AND LOCATION:
VOC (NOT INCLUDING BTEX)
IMPACTS IN SOIL
POST REMEDIATION
RISK ASSESSMENT
 3025 ALBION ROAD NORTH
 OTTAWA, ONTARIO

JOB NO.: OTT-00246047-D0	DRAWN BY: DP
SCALE: AS NOTED	CHECKED BY: PV
DATE: DECEMBER 2018	FIG NO.: 6



X:\DRAWINGS\246000\246000\246047\DMCRAAUG 27 2018\18\10\TT-00246047-D0.dwg

Legend

BH1	Date
Parameter	Sample Depth (m bgs)
	Concentration (µg/g)

Parameter	MECP Table 3 SCS (µg/g)
Cyanide	0.051

MECP Table 3 SCS = Ministry of the Environment, Conservation and Parks Table 3 Full Depth Generic Site Condition Standards in a Non-Potable Groundwater Condition (residential/parkland/institutional land use) with coarse textured soil.
Bold Parameter exceeds Table 3 SCS.

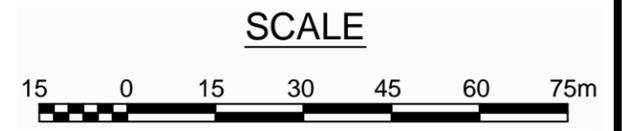
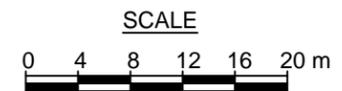
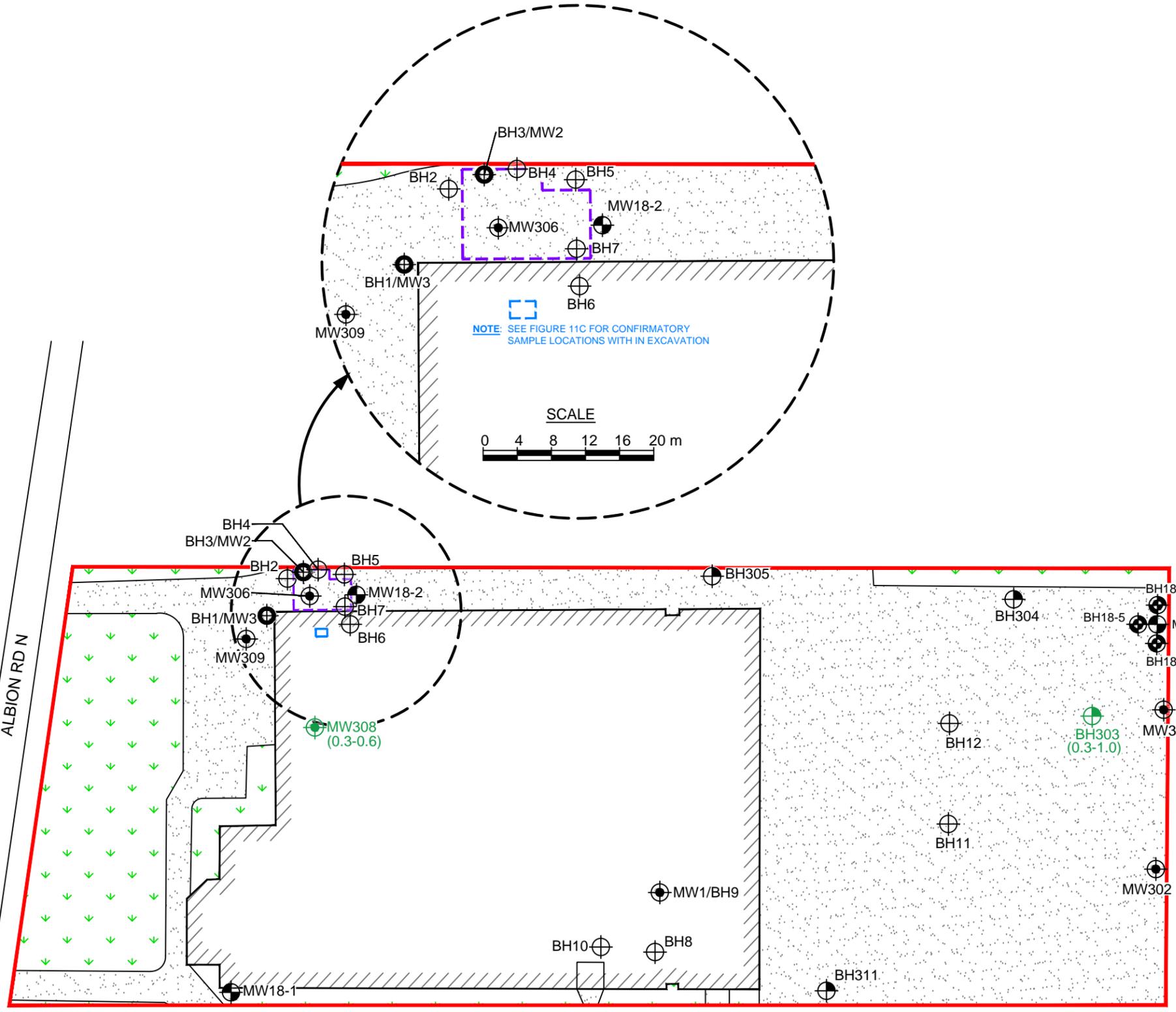


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- LEGEND:**
- APPROXIMATE SITE BOUNDARY
 - EXTENT OF EXCAVATION 1 (PHC)
 - EXTENT OF EXCAVATION 2 (CYANIDE)
 - BUILDING FOOTPRINT
 - LANDSCAPED AREA
 - ASPHALT / CONCRETE
 - BOREHOLE LOCATION (ENVIRO-EXPERTS, 2018)
 - BOREHOLE / MONITORING WELL LOCATION (ENVIRO-EXPERTS, 2018)
 - BOREHOLE LOCATION (EXP, 2016)
 - BOREHOLE / MONITORING WELL LOCATION (EXP, 2016)
 - BOREHOLE LOCATION (EXP, 2018)
 - BOREHOLE / MONITORING WELL LOCATION (EXP, 2018)
 - (X.X-X.X) SAMPLE DEPTH (mbgs)
 - SAMPLE MEETS TABLE 3 SCS
 - SAMPLE EXCEEDS TABLE 3 SCS

TITLE AND LOCATION:
CYANIDE IMPACTS IN SOIL
 PRE REMEDIATION
 RISK ASSESSMENT
 3025 ALBION ROAD NORTH
 OTTAWA, ONTARIO

JOB NO.:	OTT-00246047-D0	DRAWN BY:	DP
SCALE:	AS NOTED	CHECKED BY:	PV
DATE:	DECEMBER 2018	FIG NO.:	7



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Legend

BH1	Date
Parameter	Sample Depth (m bgs)
	Concentration (µg/g)

Parameter	MECP Table 3 SCS (µg/g)
Cyanide	0.051

MECP Table 3 SCS = Ministry of the Environment, Conservation and Parks Table 3 Full Depth Generic Site Condition Standards in a Non-Potable Groundwater Condition (residential/parkland/institutional land use) with coarse textured soil.
Bold Parameter exceeds Table 3 SCS.

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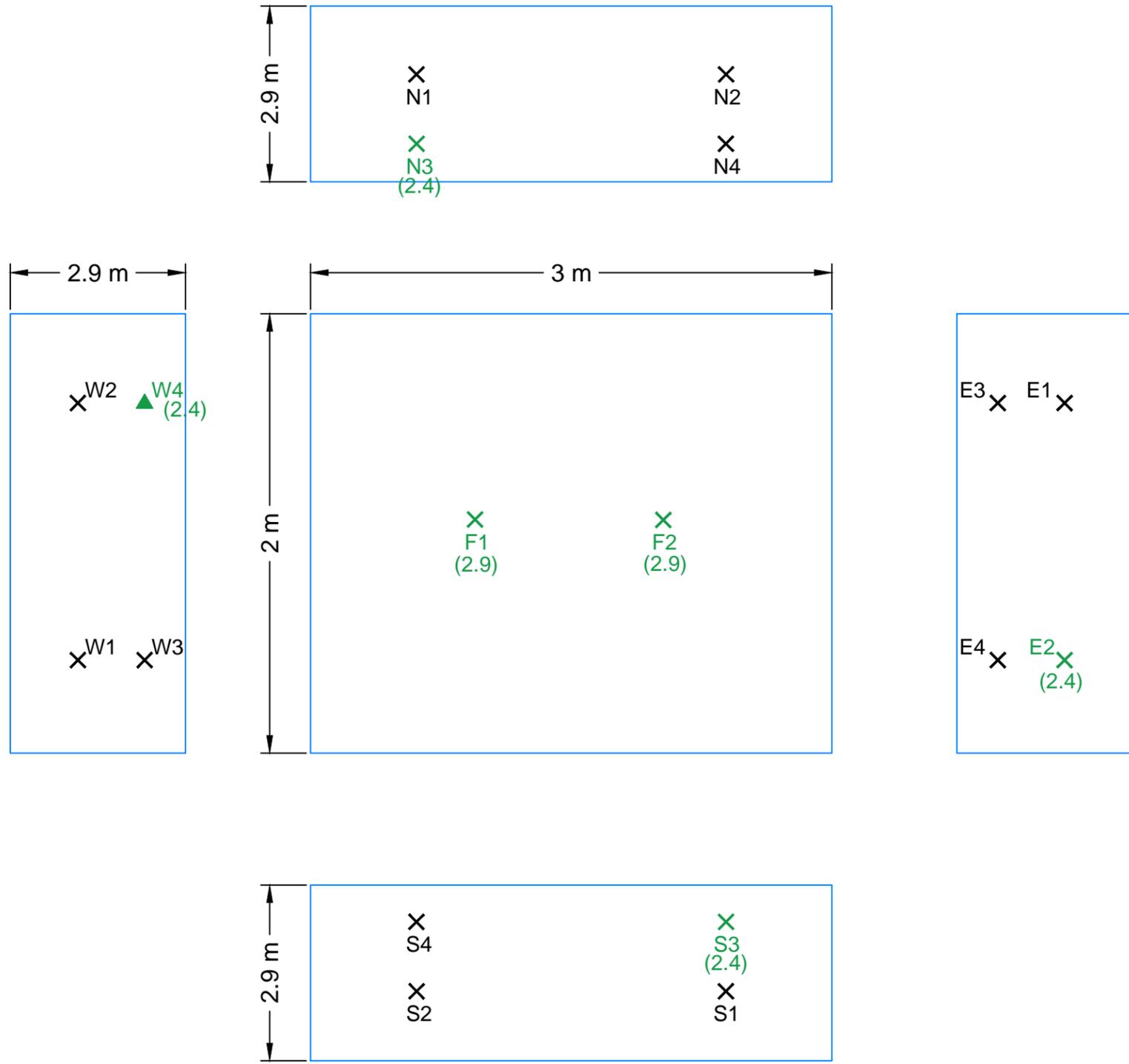
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LEGEND:		BOREHOLE LOCATION (ENVIRO-EXPERTS, 2018)		SAMPLE DEPTH (mbgs)	
	APPROXIMATE SITE BOUNDARY		BOREHOLE / MONITORING WELL LOCATION (ENVIRO-EXPERTS, 2018)		SAMPLE MEETS TABLE 3 SCS
	EXTENT OF EXCAVATION 1 (PHC)		BOREHOLE / MONITORING WELL LOCATION (EXP, 2016)		SAMPLE EXCEEDS TABLE 3 SCS
	EXTENT OF EXCAVATION 2 (CYANIDE)		BOREHOLE LOCATION (EXP, 2018)		
	BUILDING FOOTPRINT		BOREHOLE / MONITORING WELL LOCATION (EXP, 2016)		
	LANDSCAPED AREA		BOREHOLE / MONITORING WELL LOCATION (EXP, 2018)		
	ASPHALT / CONCRETE				

TITLE AND LOCATION:
CYANIDE IMPACTS IN SOIL
 POST REMEDIATION
 RISK ASSESSMENT
 3025 ALBION ROAD NORTH
 OTTAWA, ONTARIO

JOB NO.:	OTT-00246047-D0	DRAWN BY:	DP
SCALE:	AS NOTED	CHECKED BY:	PV
DATE:	DECEMBER 2018	FIG NO.:	8



Legend

BH1	Date
Parameter	Concentration (µg/g)
Parameter	MECP Table 3 SCS (µg/g)
Cyanide	0.051

MECP Table 3 SCS = Ministry of the Environment, Conservation and Parks Table 3 Full Depth Generic Site Condition Standards in a Non-Potable Groundwater Condition (residential/parkland/institutional land use) with coarse textured soil.

Parameter exceeds Table 3 SCS.



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- LEGEND:**
- ✕ SAMPLE COLLECTED AND SCREENED FOR VAPOUR READING BUT NOT SUBMITTED FOR ANALYSIS
 - ▲ SAMPLE COLLECTED AND SUBMITTED FOR ANALYSIS

- ✕ SAMPLE EXCEEDS TABLE 3 SCS
- NOTE: RESULTS FOR SOIL WHICH WAS REMOVED DURING THE REMEDIATION IS NOT ILLUSTRATED

TITLE AND LOCATION:
CYANIDE IMPACTED SOIL EXCAVATION
 POST EXCAVATION
 RISK ASSESSMENT
 3025 ALBION ROAD NORTH
 OTTAWA, ONTARIO

JOB NO.: OTT-00246047-D0	DRAWN BY: DP
SCALE: AS NOTED	CHECKED BY: PV
DATE: DECEMBER 2018	FIG NO: 9

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EXP Services Inc.

ABCO

Soil Remediation Report
3025 Albion Road North, Ottawa Ontario

OTT-00246047-B0

December 18, 2018

Appendix B – Landfill Weigh Bills





GFL ENVIRONMENTAL - Moose Creek
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001001 - DRAIN-ALL LTD.
 1611 LIVERPOOL COURT
 OTTAWA, ON K1B 4L1

Contract/Contrat: 20182030 - ALBION RD / DRAIN-ALL

REPRINT

Ticket: MO-27779 Veighmaster/Operateur: SAMANTHA HORT

Date/Entrée Date/Sortie
 25-Jun-2018 9:06 am 25-Jun-2018 9:39 am

Project: 20182030 - ALBION RD / DRAIN-ALL
 Reference/Référence: DRAIN ALL 4014
 BOL/No. de Commande:

INBOUND
 GROSS WEIGHT/BRUT 34,610.00 kg Scale In
 TARE WEIGHT/TARE VEHICULE 17,170.00 kg Scale Out
 NET WEIGHT/NET 17,440.00 kg

<u>Quantity/Quantité</u>	<u>Unit/Unité</u>	<u>Description/Description</u>	<u>Rate/Tarif</u>	<u>Extension/Extension</u>	<u>Tax/Taxe</u>	<u>Total/Total</u>
17.44	MT	SOIL: C				
1.00		MISC CHARGE				
1.00		ANALYSIS: F1-F4				
1.00		ANALYSIS: TCLP				

Signature: _____

H.S.T # 84188 4893RT0001



GFL ENVIRONMENTAL - Moose Creek
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 Moose Creek, ON K0C 1W0
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001001 - DRAIN-ALL LTD.
 1611 LIVERPOOL COURT
 OTTAWA, ON K1B 4L1

Contract/Contrat: 20182030 - ALBION RD / DRAIN-ALL

REPRINT

Ticket: MO-27781 Veighmaster/Operateur: SAMANTHA HORT

Date/Entrée Date/Sortie
 25-Jun-2018 10:43 am 25-Jun-2018 10:49 am

Project: 20182030 - ALBION RD / DRAIN-ALL
 Reference/Référence: CAVANAGH 161
 BOL/No. de Commande:

INBOUND
 GROSS WEIGHT/BRUT 43,490.00 kg Man. WT
 TARE WEIGHT/TARE VEHICULE 13,930.00 kg Man. WT
 NET WEIGHT/NET 29,560.00 kg

<u>Quantity/Quantité</u>	<u>Unit/Unité</u>	<u>Description/Description</u>	<u>Rate/Tarif</u>	<u>Extension/Extension</u>	<u>Tax/Taxe</u>	<u>Total/Total</u>
29.56	MT	SOIL: C				

Signature: _____

H.S.T # 84188 4893RT0001



GFL ENVIRONMENTAL - Moose Creek
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 Moose Creek, ON K0C 1W0
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 1611 LIVERPOOL COURT
 OTTAWA, ON K1B 4L1

20182030 - ALBION RD / DRAIN-ALL

REPRINT

Ticket: MO-27782 Veighmaster/Operateur: SAMANTHA HORT

<u>Date/Entrée</u>	<u>Date/Sortie</u>
25-Jun-2018 12:29 pm	25-Jun-2018 12:53 pm

Project: 20182030 - ALBION RD / DRAIN-ALL
 DRAIN ALL 4014

	INBOUND	
	35,180.00	Man. WT
	17,130.00	Man. WT
	18,050.00	

<u>Quantity/Quantité</u>	<u>Unit/Unité</u>	<u>Description/Description</u>	<u>Rate/Tarif</u>	<u>Extension/Extension</u>	<u>Tax/Taxe</u>	<u>Total/Total</u>
18.05	MT	SOIL: C				

Signature: _____

H.S.T # 84188 4893RT0001



GFL ENVIRONMENTAL - Moose Creek
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 Moose Creek, ON K0C 1W0
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 1611 LIVERPOOL COURT
 OTTAWA, ON K1B 4L1

20182030 - ALBION RD / DRAIN-ALL

REPRINT

Ticket: MO-27783 Veighmaster/Operateur: SAMANTHA HORT

<u>Date/Entrée</u>	<u>Date/Sortie</u>
25-Jun-2018 12:52 pm	25-Jun-2018 12:59 pm

Project: 20182030 - ALBION RD / DRAIN-ALL
 CAVANAGH 161

	INBOUND	
	32,820.00	Man. WT
	13,900.00	Man. WT
	18,920.00	

<u>Quantity/Quantité</u>	<u>Unit/Unité</u>	<u>Description/Description</u>	<u>Rate/Tarif</u>	<u>Extension/Extension</u>	<u>Tax/Taxe</u>	<u>Total/Total</u>
18.92	MT	SOIL: C				

Signature: _____

H.S.T # 84188 4893RT0001



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 Moose Creek, ON K0C 1W0
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20182030 - ALBION RD / DRAIN-ALL

REPRINT

Ticket: MO-27802 Veighmaster/Operateur: SAMANTHA HORT

<u>Date/Entrée</u>	<u>Date/Sortie</u>
26-Jun-2018 10:30 am	26-Jun-2018 10:48 am

Project: 20182030 - ALBION RD / DRAIN-ALL
 MAURICE YELLE 103-13

	INBOUND	
	45,870.00	Man. WT
	14,580.00	Man. WT
	31,290.00	

<u>Quantity/Quantité</u>	<u>Unit/Unité</u>	<u>Description/Description</u>	<u>Rate/Tarif</u>	<u>Extension/Extension</u>	<u>Tax/Taxe</u>	<u>Total/Total</u>
31.29	MT	SOIL: C				

Signature: _____

H.S.T # 84188 4893RT0001



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 Moose Creek, ON K0C 1W0
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 1611 LIVERPOOL COURT
 OTTAWA, ON K1B 4L1

20182030 - ALBION RD / DRAIN-ALL

REPRINT

Ticket: MO-27807 Veighmaster/Operateur: SAMANTHA HORT

<u>Date/Entrée</u>	<u>Date/Sortie</u>
26-Jun-2018 11:09 am	26-Jun-2018 11:20 am

Project: 20182030 - ALBION RD / DRAIN-ALL
 MAURICE YELLE 102-13

	INBOUND	
	41,670.00	Man. WT
	14,460.00	Man. WT
	27,210.00	

<u>Quantity/Quantité</u>	<u>Unit/Unité</u>	<u>Description/Description</u>	<u>Rate/Tarif</u>	<u>Extension/Extension</u>	<u>Tax/Taxe</u>	<u>Total/Total</u>
27.21	MT	SOIL: C				

Signature: _____

H.S.T # 84188 4893RT0001



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 Moose Creek, ON K0C 1W0
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 OTTAWA, ON K1B 4L1

20182030 - ALBION RD / DRAIN-ALL

REPRINT

Ticket: MO-27815 Veighmaster/Operateur: SAMANTHA HORT

Date/Entrée Date/Sortie
 26-Jun-2018 1:03 pm 26-Jun-2018 1:13 pm

Project: 20182030 - ALBION RD / DRAIN-ALL
 MAURICE YELLE 103-13

INBOUND
 35,680.00 Man. WT
 14,400.00 Man. WT
 21,280.00

<u>Quantity/Quantité</u>	<u>Unit/Unité</u>	<u>Description/Description</u>	<u>Rate/Tarif</u>	<u>Extension/Extension</u>	<u>Tax/Taxe</u>	<u>Total/Total</u>
21.28	MT	SOIL: C				

Signature: _____

H.S.T # 84188 4893RT0001



GFL ENVIRONMENTAL - Moose Creek
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 Moose Creek, ON K0C 1W0
 PH:(613) 538-4880 FX:(613) 538-4882

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 1611 LIVERPOOL COURT
 OTTAWA, ON K1B 4L1

20182030 - ALBION RD / DRAIN-ALL

REPRINT

Ticket: MO-27818 Veighmaster/Operateur: SAMANTHA HORT

Date/Entrée Date/Sortie
 26-Jun-2018 1:23 pm 26-Jun-2018 1:33 pm

Project: 20182030 - ALBION RD / DRAIN-ALL
 MAURICE YELLE 102-13

INBOUND
 38,180.00 Man. WT
 14,360.00 Man. WT
 23,820.00

<u>Quantity/Quantité</u>	<u>Unit/Unité</u>	<u>Description/Description</u>	<u>Rate/Tarif</u>	<u>Extension/Extension</u>	<u>Tax/Taxe</u>	<u>Total/Total</u>
23.82	MT	SOIL: C				

Signature: _____

H.S.T # 84188 4893RT0001



GFL ENVIRONMENTAL - Moose Creek
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 Moose Creek, ON K0C 1W0
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 1611 LIVERPOOL COURT
 OTTAWA, ON K1B 4L1

20182030 - ALBION RD / DRAIN-ALL

REPRINT

Ticket: MO-27823 Veighmaster/Operateur: SAMANTHA HORT

Date/Entrée Date/Sortie
 26-Jun-2018 2:00 pm 26-Jun-2018 2:07 pm

Project: 20182030 - ALBION RD / DRAIN-ALL
 PML 11

INBOUND
 33,490.00 Man. WT
 12,880.00 Man. WT
 20,610.00

<u>Quantity/Quantité</u>	<u>Unit/Unité</u>	<u>Description/Description</u>	<u>Rate/Tarif</u>	<u>Extension/Extension</u>	<u>Tax/Taxe</u>	<u>Total/Total</u>
20.61	MT	SOIL: C				

Signature: _____

H.S.T # 84188 4893RT0001



GFL ENVIRONMENTAL - Moose Creek
 17335 Allaire Road
 Moose Creek, ON K0C 1W0
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 1611 LIVERPOOL COURT
 OTTAWA, ON K1B 4L1

20182030 - ALBION RD / DRAIN-ALL

REPRINT

Ticket: MO-27834 Veighmaster/Operateur: SAMANTHA HORT

Date/Entrée Date/Sortie
 26-Jun-2018 3:24 pm 26-Jun-2018 3:46 pm

Project: 20182030 - ALBION RD / DRAIN-ALL
 MAURICE YELLE 103-13

INBOUND
 33,320.00 Man. WT
 14,430.00 Man. WT
 18,890.00

<u>Quantity/Quantité</u>	<u>Unit/Unité</u>	<u>Description/Description</u>	<u>Rate/Tarif</u>	<u>Extension/Extension</u>	<u>Tax/Taxe</u>	<u>Total/Total</u>
18.89	MT	SOIL: C				

Signature: _____

H.S.T # 84188 4893RT0001



GFL ENVIRONMENTAL - Moose Creek
 17335 Allaire Road
 Moose Creek, ON K0C 1W0
 PH:(613) 538-4880 FX:(613) 538-4882

001001 - DRAIN-ALL LTD.
 1611 LIVERPOOL COURT
 OTTAWA, ON K1B 4L1

20182030 - ALBION RD / DRAIN-ALL

REPRINT

Ticket: MO-27836 Veighmaster/Operateur: SAMANTHA HORT

Date/Entrée Date/Sortie
 26-Jun-2018 3:45 pm 26-Jun-2018 3:56 pm

Project: 20182030 - ALBION RD / DRAIN-ALL
 MAURICE YELLE 102-13

INBOUND
 32,620.00 Man. WT
 14,350.00 Man. WT
 18,270.00

<u>Quantity/Quantité</u>	<u>Unit/Unité</u>	<u>Description/Description</u>	<u>Rate/Tarif</u>	<u>Extension/Extension</u>	<u>Tax/Taxe</u>	<u>Total/Total</u>
18.27	MT	SOIL: C				

Signature: _____

H.S.T # 84188 4893RT0001



GFL ENVIRONMENTAL - Moose Creek
 17335 Allaire Road
 Moose Creek, ON K0C 1W0
 PH:(613) 538-4880 FX:(613) 538-4882

001001 - DRAIN-ALL LTD.
 1611 LIVERPOOL COURT
 OTTAWA, ON K1B 4L1

20182030 - ALBION RD / DRAIN-ALL

REPRINT

Ticket: MO-27869 Veighmaster/Operateur: SAMANTHA HORT

Date/Entrée Date/Sortie
 27-Jun-2018 11:10 am 27-Jun-2018 11:19 am

Project: 20182030 - ALBION RD / DRAIN-ALL
 MAURICE YELLE 103-13

INBOUND
 37,240.00 Man. WT
 14,520.00 Man. WT
 22,720.00

<u>Quantity/Quantité</u>	<u>Unit/Unité</u>	<u>Description/Description</u>	<u>Rate/Tarif</u>	<u>Extension/Extension</u>	<u>Tax/Taxe</u>	<u>Total/Total</u>
22.72	MT	SOIL: C				

Signature: _____

H.S.T # 84188 4893RT0001



GFL ENVIRONMENTAL - Moose Creek
 17335 Allaire Road
 Moose Creek, ON K0C 1W0
 PH:(613) 538-4880 FX:(613) 538-4882

001001 - DRAIN-ALL LTD.
 1611 LIVERPOOL COURT
 OTTAWA, ON K1B 4L1

20182030 - ALBION RD / DRAIN-ALL

REPRINT

Ticket: MO-27872 Veighmaster/Operateur: SAMANTHA HORT

<u>Date/Entrée</u>	<u>Date/Sortie</u>
27-Jun-2018 11:27 am	27-Jun-2018 11:36 am

Project: 20182030 - ALBION RD / DRAIN-ALL
 JOHN SWEEPING 15-195

	INBOUND	
	36,750.00	Man. WT
	14,430.00	Man. WT
	22,320.00	

<u>Quantity/Quantité</u>	<u>Unit/Unité</u>	<u>Description/Description</u>	<u>Rate/Tarif</u>	<u>Extension/Extension</u>	<u>Tax/Taxe</u>	<u>Total/Total</u>
22.32	MT	SOIL: C				

Signature: _____

H.S.T # 84188 4893RT0001



GFL ENVIRONMENTAL - Moose Creek
 17335 Allaire Road
 Moose Creek, ON K0C 1W0
 PH:(613) 538-4880 FX:(613) 538-4882

001001 - DRAIN-ALL LTD.
 1611 LIVERPOOL COURT
 OTTAWA, ON K1B 4L1

20182030 - ALBION RD / DRAIN-ALL

REPRINT

Ticket: MO-27874 Veighmaster/Operateur: SAMANTHA HORT

<u>Date/Entrée</u>	<u>Date/Sortie</u>
27-Jun-2018 11:41 am	27-Jun-2018 11:53 am

Project: 20182030 - ALBION RD / DRAIN-ALL
 MAURICE YELLE 102-13

	INBOUND	
	35,350.00	Man. WT
	14,520.00	Man. WT
	20,830.00	

<u>Quantity/Quantité</u>	<u>Unit/Unité</u>	<u>Description/Description</u>	<u>Rate/Tarif</u>	<u>Extension/Extension</u>	<u>Tax/Taxe</u>	<u>Total/Total</u>
20.83	MT	SOIL: C				

Signature: _____

H.S.T # 84188 4893RT0001



GFL ENVIRONMENTAL - Moose Creek
 17335 Allaire Road
 Moose Creek, ON K0C 1W0
 PH:(613) 538-4880 FX:(613) 538-4882

001001 - DRAIN-ALL LTD.
 1611 LIVERPOOL COURT
 OTTAWA, ON K1B 4L1

20182030 - ALBION RD / DRAIN-ALL

REPRINT

Ticket: MO-27883 Veighmaster/Operateur: SAMANTHA HORT

Date/Entrée Date/Sortie
 27-Jun-2018 1:31 pm 27-Jun-2018 1:39 pm

Project: 20182030 - ALBION RD / DRAIN-ALL
 MAURICE YELLE 103-13

INBOUND
 36,920.00 Man. WT
 14,450.00 Man. WT
 22,470.00

<u>Quantity/Quantité</u>	<u>Unit/Unité</u>	<u>Description/Description</u>	<u>Rate/Tarif</u>	<u>Extension/Extension</u>	<u>Tax/Taxe</u>	<u>Total/Total</u>
22.47	MT	SOIL: C				

Signature: _____

H.S.T # 84188 4893RT0001



GFL ENVIRONMENTAL - Moose Creek
 17335 Allaire Road
 Moose Creek, ON K0C 1W0
 PH:(613) 538-4880 FX:(613) 538-4882

001001 - DRAIN-ALL LTD.
 1611 LIVERPOOL COURT
 OTTAWA, ON K1B 4L1

20182030 - ALBION RD / DRAIN-ALL

REPRINT

Ticket: MO-27885 Veighmaster/Operateur: SAMANTHA HORT

Date/Entrée Date/Sortie
 27-Jun-2018 1:48 pm 27-Jun-2018 1:57 pm

Project: 20182030 - ALBION RD / DRAIN-ALL
 JOHN SWEEPING 15-195

INBOUND
 34,770.00 Man. WT
 14,380.00 Man. WT
 20,390.00

<u>Quantity/Quantité</u>	<u>Unit/Unité</u>	<u>Description/Description</u>	<u>Rate/Tarif</u>	<u>Extension/Extension</u>	<u>Tax/Taxe</u>	<u>Total/Total</u>
20.39	MT	SOIL: C				

Signature: _____

H.S.T # 84188 4893RT0001



GFL ENVIRONMENTAL - Moose Creek
 17335 Allaire Road
 Moose Creek, ON K0C 1W0
 PH:(613) 538-4880 FX:(613) 538-4882

001001 - DRAIN-ALL LTD.
 1611 LIVERPOOL COURT
 OTTAWA, ON K1B 4L1

20182030 - ALBION RD / DRAIN-ALL

REPRINT

Ticket: MO-27889 Veighmaster/Operateur: SAMANTHA HORT

Date/Entrée Date/Sortie
 27-Jun-2018 2:10 pm 27-Jun-2018 2:20 pm

Project: 20182030 - ALBION RD / DRAIN-ALL
 MAURICE YELLE 102-13

INBOUND
 38,010.00 Man. WT
 14,400.00 Man. WT
 23,610.00

<u>Quantity/Quantité</u>	<u>Unit/Unité</u>	<u>Description/Description</u>	<u>Rate/Tarif</u>	<u>Extension/Extension</u>	<u>Tax/Taxe</u>	<u>Total/Total</u>
23.61	MT	SOIL: C				

Signature: _____

H.S.T # 84188 4893RT0001



GFL ENVIRONMENTAL - Moose Creek
 17335 Allaire Road
 Moose Creek, ON K0C 1W0
 PH:(613) 538-4880 FX:(613) 538-4882

001001 - DRAIN-ALL LTD.
 1611 LIVERPOOL COURT
 OTTAWA, ON K1B 4L1

20182030 - ALBION RD / DRAIN-ALL

REPRINT

Ticket: MO-27894 Veighmaster/Operateur: SAMANTHA HORT

Date/Entrée Date/Sortie
 27-Jun-2018 2:25 pm 27-Jun-2018 2:44 pm

Project: 20182030 - ALBION RD / DRAIN-ALL
 DRAIN ALL 462

INBOUND
 28,910.00 Man. WT
 16,530.00 Man. WT
 12,380.00

<u>Quantity/Quantité</u>	<u>Unit/Unité</u>	<u>Description/Description</u>	<u>Rate/Tarif</u>	<u>Extension/Extension</u>	<u>Tax/Taxe</u>	<u>Total/Total</u>
12.38	MT	SOIL: C				

Signature: _____

H.S.T # 84188 4893RT0001



GFL ENVIRONMENTAL - Moose Creek
 17335 Allaire Road
 Moose Creek, ON K0C 1W0
 PH:(613) 538-4880 FX:(613) 538-4882

001001 - DRAIN-ALL LTD.
 1611 LIVERPOOL COURT
 OTTAWA, ON K1B 4L1

20182030 - ALBION RD / DRAIN-ALL

REPRINT

Ticket: MO-27900 Veighmaster/Operateur: SAMANTHA HORT

<u>Date/Entrée</u>	<u>Date/Sortie</u>
27-Jun-2018 3:31 pm	27-Jun-2018 3:46 pm

Project: 20182030 - ALBION RD / DRAIN-ALL
 MAURICE YELLE 103-13

	INBOUND	
	35,960.00	Man. WT
	14,450.00	Man. WT
	21,510.00	

<u>Quantity/Quantité</u>	<u>Unit/Unité</u>	<u>Description/Description</u>	<u>Rate/Tarif</u>	<u>Extension/Extension</u>	<u>Tax/Taxe</u>	<u>Total/Total</u>
21.51	MT	SOIL: C				

Signature: _____

H.S.T # 84188 4893RT0001



GFL ENVIRONMENTAL - Moose Creek
 17335 Allaire Road
 Moose Creek, ON K0C 1W0
 PH:(613) 538-4880 FX:(613) 538-4882

001001 - DRAIN-ALL LTD.
 1611 LIVERPOOL COURT
 OTTAWA, ON K1B 4L1

20182030 - ALBION RD / DRAIN-ALL

REPRINT

Ticket: MO-27903 Veighmaster/Operateur: SAMANTHA HORT

<u>Date/Entrée</u>	<u>Date/Sortie</u>
27-Jun-2018 3:49 pm	27-Jun-2018 3:59 pm

Project: 20182030 - ALBION RD / DRAIN-ALL
 JOHN SWEEPING 15-195

	INBOUND	
	37,450.00	Man. WT
	14,300.00	Man. WT
	23,150.00	

<u>Quantity/Quantité</u>	<u>Unit/Unité</u>	<u>Description/Description</u>	<u>Rate/Tarif</u>	<u>Extension/Extension</u>	<u>Tax/Taxe</u>	<u>Total/Total</u>
23.15	MT	SOIL: C				

Signature: _____

H.S.T # 84188 4893RT0001



GFL ENVIRONMENTAL - Moose Creek
 17335 Allaire Road
 Moose Creek, ON K0C 1W0
 PH:(613) 538-4880 FX:(613) 538-4882

001001 - DRAIN-ALL LTD.
 1611 LIVERPOOL COURT
 OTTAWA, ON K1B 4L1

20182030 - ALBION RD / DRAIN-ALL

REPRINT

Ticket: MO-27905 Veighmaster/Operateur: SAMANTHA HORT

<u>Date/Entrée</u>	<u>Date/Sortie</u>
27-Jun-2018 4:20 pm	27-Jun-2018 4:29 pm

Project: 20182030 - ALBION RD / DRAIN-ALL
 MAURICE YELLE 102-13

	INBOUND	
	35,550.00	Man. WT
	14,330.00	Man. WT
	21,220.00	

<u>Quantity/Quantité</u>	<u>Unit/Unité</u>	<u>Description/Description</u>	<u>Rate/Tarif</u>	<u>Extension/Extension</u>	<u>Tax/Taxe</u>	<u>Total/Total</u>
21.22	MT	SOIL: C				

Signature: _____

H.S.T # 84188 4893RT0001



GFL ENVIRONMENTAL - Moose Creek
 17335 Allaire Road
 Moose Creek, ON K0C 1W0
 PH:(613) 538-4880 FX:(613) 538-4882

001001 - DRAIN-ALL LTD.
 1611 LIVERPOOL COURT
 OTTAWA, ON K1B 4L1

20182030 - ALBION RD / DRAIN-ALL

REPRINT

Ticket: MO-27930 Veighmaster/Operateur: SAMANTHA HORT

<u>Date/Entrée</u>	<u>Date/Sortie</u>
28-Jun-2018 9:54 am	28-Jun-2018 10:13 am

Project: 20182030 - ALBION RD / DRAIN-ALL
 DRAIN ALL 462

	INBOUND	
	33,900.00	Man. WT
	16,650.00	Man. WT
	17,250.00	

<u>Quantity/Quantité</u>	<u>Unit/Unité</u>	<u>Description/Description</u>	<u>Rate/Tarif</u>	<u>Extension/Extension</u>	<u>Tax/Taxe</u>	<u>Total/Total</u>
17.25	MT	SOIL: C				

Signature: _____

H.S.T # 84188 4893RT0001



GFL ENVIRONMENTAL - Moose Creek
 17335 Allaire Road
 Moose Creek, ON K0C 1W0
 PH:(613) 538-4880 FX:(613) 538-4882

001001 - DRAIN-ALL LTD.
 1611 LIVERPOOL COURT
 OTTAWA, ON K1B 4L1

20182030 - ALBION RD / DRAIN-ALL

REPRINT

Ticket: MO-27937 Veighmaster/Operateur: SAMANTHA HORT

<u>Date/Entrée</u>	<u>Date/Sortie</u>
28-Jun-2018 11:12 am	28-Jun-2018 11:18 am

Project: 20182030 - ALBION RD / DRAIN-ALL
 MAURICE YELLE 103-13

	INBOUND	
	38,440.00	Man. WT
	14,520.00	Man. WT
	23,920.00	

<u>Quantity/Quantité</u>	<u>Unit/Unité</u>	<u>Description/Description</u>	<u>Rate/Tarif</u>	<u>Extension/Extension</u>	<u>Tax/Taxe</u>	<u>Total/Total</u>
23.92	MT	SOIL: C				

Signature: _____

H.S.T # 84188 4893RT0001



GFL ENVIRONMENTAL - Moose Creek
 17335 Allaire Road
 Moose Creek, ON K0C 1W0
 PH:(613) 538-4880 FX:(613) 538-4882

001001 - DRAIN-ALL LTD.
 1611 LIVERPOOL COURT
 OTTAWA, ON K1B 4L1

20182030 - ALBION RD / DRAIN-ALL

REPRINT

Ticket: MO-27939 Veighmaster/Operateur: SAMANTHA HORT

<u>Date/Entrée</u>	<u>Date/Sortie</u>
28-Jun-2018 11:22 am	28-Jun-2018 11:30 am

Project: 20182030 - ALBION RD / DRAIN-ALL
 JOHN SWEEPING 15-195

	INBOUND	
	39,570.00	Man. WT
	14,460.00	Man. WT
	25,110.00	

<u>Quantity/Quantité</u>	<u>Unit/Unité</u>	<u>Description/Description</u>	<u>Rate/Tarif</u>	<u>Extension/Extension</u>	<u>Tax/Taxe</u>	<u>Total/Total</u>
25.11	MT	SOIL: C				

Signature: _____

H.S.T # 84188 4893RT0001



GFL ENVIRONMENTAL - Moose Creek
 17335 Allaire Road
 Moose Creek, ON K0C 1W0
 PH:(613) 538-4880 FX:(613) 538-4882

001001 - DRAIN-ALL LTD.
 1611 LIVERPOOL COURT
 OTTAWA, ON K1B 4L1

20182030 - ALBION RD / DRAIN-ALL

REPRINT

Ticket: MO-27940 Veighmaster/Operateur: SAMANTHA HORT

<u>Date/Entrée</u>	<u>Date/Sortie</u>
28-Jun-2018 11:34 am	28-Jun-2018 11:45 am

Project: 20182030 - ALBION RD / DRAIN-ALL
 MAURICE YELLE 102-13

	INBOUND	
	39,160.00	Man. WT
	14,440.00	Man. WT
	24,720.00	

<u>Quantity/Quantité</u>	<u>Unit/Unité</u>	<u>Description/Description</u>	<u>Rate/Tarif</u>	<u>Extension/Extension</u>	<u>Tax/Taxe</u>	<u>Total/Total</u>
24.72	MT	SOIL: C				

Signature: _____

H.S.T # 84188 4893RT0001



GFL ENVIRONMENTAL - Moose Creek
 17335 Allaire Road
 Moose Creek, ON K0C 1W0
 PH:(613) 538-4880 FX:(613) 538-4882

001001 - DRAIN-ALL LTD.
 1611 LIVERPOOL COURT
 OTTAWA, ON K1B 4L1

20182030 - ALBION RD / DRAIN-ALL

REPRINT

Ticket: MO-27953 Veighmaster/Operateur: SAMANTHA HORT

<u>Date/Entrée</u>	<u>Date/Sortie</u>
28-Jun-2018 1:23 pm	28-Jun-2018 1:32 pm

Project: 20182030 - ALBION RD / DRAIN-ALL
 MAURICE YELLE 103-13

	INBOUND	
	38,650.00	Man. WT
	14,480.00	Man. WT
	24,170.00	

<u>Quantity/Quantité</u>	<u>Unit/Unité</u>	<u>Description/Description</u>	<u>Rate/Tarif</u>	<u>Extension/Extension</u>	<u>Tax/Taxe</u>	<u>Total/Total</u>
24.17	MT	SOIL: C				

Signature: _____

H.S.T # 84188 4893RT0001



GFL ENVIRONMENTAL - Moose Creek
 17335 Allaire Road
 Moose Creek, ON K0C 1W0
 PH:(613) 538-4880 FX:(613) 538-4882

001001 - DRAIN-ALL LTD.
 1611 LIVERPOOL COURT
 OTTAWA, ON K1B 4L1

20182030 - ALBION RD / DRAIN-ALL

REPRINT

Ticket: MO-27954 Veighmaster/Operateur: SAMANTHA HORT

Date/Entrée Date/Sortie
 28-Jun-2018 1:37 pm 28-Jun-2018 1:47 pm

Project: 20182030 - ALBION RD / DRAIN-ALL
 JOHN SWEEPING 15-195

INBOUND
 40,180.00 Man. WT
 14,400.00 Man. WT
 25,780.00

<u>Quantity/Quantité</u>	<u>Unit/Unité</u>	<u>Description/Description</u>	<u>Rate/Tarif</u>	<u>Extension/Extension</u>	<u>Tax/Taxe</u>	<u>Total/Total</u>
25.78	MT	SOIL: C				

Signature: _____

H.S.T # 84188 4893RT0001



GFL ENVIRONMENTAL - Moose Creek
 17335 Allaire Road
 Moose Creek, ON K0C 1W0
 PH:(613) 538-4880 FX:(613) 538-4882

001001 - DRAIN-ALL LTD.
 1611 LIVERPOOL COURT
 OTTAWA, ON K1B 4L1

20182030 - ALBION RD / DRAIN-ALL

REPRINT

Ticket: MO-27960 Veighmaster/Operateur: SAMANTHA HORT

Date/Entrée Date/Sortie
 28-Jun-2018 2:29 pm 28-Jun-2018 2:36 pm

Project: 20182030 - ALBION RD / DRAIN-ALL
 MAURICE YELLE 102-13

INBOUND
 38,460.00 Man. WT
 14,350.00 Man. WT
 24,110.00

<u>Quantity/Quantité</u>	<u>Unit/Unité</u>	<u>Description/Description</u>	<u>Rate/Tarif</u>	<u>Extension/Extension</u>	<u>Tax/Taxe</u>	<u>Total/Total</u>
24.11	MT	SOIL: C				

Signature: _____

H.S.T # 84188 4893RT0001



GFL ENVIRONMENTAL - Moose Creek
 17335 Allaire Road
 Moose Creek, ON K0C 1W0
 PH:(613) 538-4880 FX:(613) 538-4882

001001 - DRAIN-ALL LTD.
 1611 LIVERPOOL COURT
 OTTAWA, ON K1B 4L1

20182030 - ALBION RD / DRAIN-ALL

REPRINT

Ticket: MO-27971 Veighmaster/Operateur: SAMANTHA HORT

Date/Entrée Date/Sortie
 28-Jun-2018 3:44 pm 28-Jun-2018 4:09 pm

Project: 20182030 - ALBION RD / DRAIN-ALL
 MAURICE YELLE 103-13

INBOUND
 38,900.00 Man. WT
 14,420.00 Man. WT
 24,480.00

<u>Quantity/Quantité</u>	<u>Unit/Unité</u>	<u>Description/Description</u>	<u>Rate/Tarif</u>	<u>Extension/Extension</u>	<u>Tax/Taxe</u>	<u>Total/Total</u>
24.48	MT	SOIL: C				

Signature: _____

H.S.T # 84188 4893RT0001



GFL ENVIRONMENTAL - Moose Creek
 17335 Allaire Road
 Moose Creek, ON K0C 1W0
 PH:(613) 538-4880 FX:(613) 538-4882

001001 - DRAIN-ALL LTD.
 1611 LIVERPOOL COURT
 OTTAWA, ON K1B 4L1

20182030 - ALBION RD / DRAIN-ALL

REPRINT

Ticket: MO-27973 Veighmaster/Operateur: SAMANTHA HORT

Date/Entrée Date/Sortie
 28-Jun-2018 4:31 pm 28-Jun-2018 4:39 pm

Project: 20182030 - ALBION RD / DRAIN-ALL
 MAURICE YELLE 102-13

INBOUND
 40,490.00 Man. WT
 14,320.00 Man. WT
 26,170.00

<u>Quantity/Quantité</u>	<u>Unit/Unité</u>	<u>Description/Description</u>	<u>Rate/Tarif</u>	<u>Extension/Extension</u>	<u>Tax/Taxe</u>	<u>Total/Total</u>
26.17	MT	SOIL: C				

Signature: _____

H.S.T # 84188 4893RT0001



GFL ENVIRONMENTAL - Moose Creek
17335 Allaire Road
Moose Creek, ON K0C 1W0
PH:(613) 538-4880 FX:(613) 538-4882

001001 - DRAIN-ALL LTD.
1611 LIVERPOOL COURT
OTTAWA, ON K1B 4L1

20182030 - ALBION RD / DRAIN-ALL

REPRINT

Ticket: MO-27975 Veighmaster/Operateur: SAMANTHA HORT

<u>Date/Entrée</u>	<u>Date/Sortie</u>
28-Jun-2018 4:46 pm	28-Jun-2018 4:53 pm

Project: 20182030 - ALBION RD / DRAIN-ALL
JOHN SWEEPING 15-195

INBOUND	
40,340.00	Man. WT
14,360.00	Man. WT
25,980.00	

<u>Quantity/Quantité</u>	<u>Unit/Unité</u>	<u>Description/Description</u>	<u>Rate/Tarif</u>	<u>Extension/Extension</u>	<u>Tax/Taxe</u>	<u>Total/Total</u>
25.98	MT	SOIL: C				

Signature: _____

H.S.T # 84188 4893RT0001

A. Site Information and History

Site Name: DRAIN-ALL	Contact: FARIDUN EBRAHIMI
Address: 2705 STEVENAGE DR	Telephone: 613-739-1070 Ext: 302
	Fax: 613-739-5971
City: OTTAWA	Cell:
Province: ON	Email: FARIDUN.EBRAHIMI@DRAINALL.COM
Country: CANADA	Postal Code: K1G 3N2
# Source Areas: 001	

Land Use Designation

Active Site
 Agricultural Site
 Residential / Institutional Site
 Industrial / Commercial Site
 Emergency Spill

Current Activities: LEAKING FUEL
 Past Activities: COLLECTED SOIL
 Waste Origin: SOIL CONTAMINATED WITH FUEL

B. Broker / Consultant Information

Company: DRAIN-ALL	Contact:
Address: 2705 STEVENAGE DRIVE	Telephone: Ext:
	Fax:
City: OTTAWA	Cell:
Province: ONTARIO	Email:
Country: Canada	* Contact information specific to this project
Postal Code: K1G 3N2	

C. Project Summary

Total Receptions: 43	Total Tonnage: 949.530	Receiving Period: 2018-06-25 to 2018-07-11
Soil Type Tonnage >	AB: 0.000 BC: 0.000 C: 949.530 D+: 0.000	
	EKM: 0.000 EKS: 0.000 T: 0.000	
TPH Conc: 314	Status: COMPLETED	
Source: GASOLINE	Description:	

Invoice to >

Company: DRAIN-ALL	Contact: FARIDUN EBRAHIMI
Address: 2705 STEVENAGE DRIVE	Telephone: 613-739-1070 Ext: 302
	Fax: 613-739-5971
City: OTTAWA	Cell: 613-314-5978
Province: ONTARIO	Email: FARIDUN.EBRAHIMI@drainall.com
Country: Canada	
Postal Code: K1G 3N2	

Purchase Order: ON0456601

D. Receptions for Period

Receiving Period: 2018-06-25 to 2018-07-11

Number of Receptions: 43

Net Tonnes in Period: 949.530

Soil Type Tonnage in Period> AB: 0.000
EKM: 0.000

BC: 0.000
EKS: 0.000

C: 949.530
D+: 0.000
T: 0.000

Received	Transporter and Unit No.	Scale Ticket	Soil Type	Gross	Tare	Net Tonnes
2018-07-11	MAURICE YELLE 98-11	28316	C	24.140	13.350	10.790
2018-07-11	JOHN SWEEPING 15-195	28313	C	31.840	14.410	17.430
2018-07-11	MAURICE YELLE 117-18	28312	C	37.010	14.000	23.010
2018-07-11	MAURICE YELLE 98-11	28307	C	37.890	13.420	24.470
2018-07-11	JOHN SWEEPING 15-195	28305	C	35.700	14.460	21.240
2018-07-06	MAURICE-YELLE 98-11	28190	C	40.530	19.310	21.220
2018-07-06	MAURICE YELLE 103-13	28189	C	40.110	19.960	20.150
2018-07-05	MAURICE YELLE 98-11	28150	C	30.490	13.420	17.070
2018-07-05	MAURICE YELLE 103-13	28149	C	36.760	14.430	22.330
2018-07-04	MAURICE YELLE 103-13	28131	C	40.310	14.440	25.870
2018-07-04	JOHN SWEEPING 15-195	28118	C	42.420	14.360	28.060
2018-07-04	MAURICE YELLE 103-13	28114	C	34.770	14.510	20.260
2018-06-28	JOHN SWEEPING 15-195	27975	C	40.340	14.360	25.980
2018-06-28	MAURICE YELLE 102-13	27973	C	40.490	14.320	26.170
2018-06-28	MAURICE YELLE 103-13	27971	C	38.900	14.420	24.480
2018-06-28	MAURICE YELLE 102-13	27960	C	38.460	14.350	24.110
2018-06-28	JOHN SWEEPING 15-195	27954	C	40.180	14.400	25.780
2018-06-28	MAURICE YELLE 103-13	27953	C	38.650	14.480	24.170
2018-06-28	MAURICE YELLE 102-13	27940	C	39.160	14.440	24.720
2018-06-28	JOHN SWEEPING 15-195	27939	C	39.570	14.460	25.110
2018-06-28	MAURICE YELLE 103-13	27937	C	38.440	14.520	23.920
2018-06-28	DRAIN ALL 462	27930	C	33.900	16.650	17.250
2018-06-27	MAURICE YELLE 102-13	27905	C	35.550	14.330	21.220
2018-06-27	JOHN SWEEPING 15-195	27903	C	37.450	14.300	23.150
2018-06-27	MAURICE YELLE 103-13	27900	C	35.960	14.450	21.510
2018-06-27	DRAIN ALL 462	27894	C	28.910	16.530	12.380
2018-06-27	MAURICE YELLE 102-13	27889	C	38.010	14.400	23.610
2018-06-27	JOHN SWEEPING 15-195	27885	C	34.770	14.380	20.390
2018-06-27	MAURICE YELLE 103-13	27883	C	36.920	14.450	22.470
2018-06-27	MAURICE YELLE 102-13	27874	C	35.350	14.520	20.830
2018-06-27	JOHN SWEEPING 15-195	27872	C	36.750	14.430	22.320
2018-06-27	MAURICE YELLE 103-13	27869	C	37.240	14.520	22.720
2018-06-26	MAURICE YELLE 102-13	27836	C	32.620	14.350	18.270
2018-06-26	MAURICE YELLE 103-13	27834	C	33.320	14.430	18.890
2018-06-26	PML 11	27823	C	33.490	12.880	20.610
2018-06-26	MAURICE YELLE 102-13	27818	C	38.180	14.360	23.820
2018-06-26	MAURICE YELLE 103-13	27815	C	35.680	14.400	21.280
2018-06-26	MAURICE YELLE 102-13	27807	C	41.670	14.460	27.210
2018-06-26	MAURICE YELLE 103-13	27802	C	45.870	14.580	31.290
2018-06-25	CAVANAGH 161	27783	C	32.820	13.900	18.920
2018-06-25	DRAIN ALL 4014	27782	C	35.180	17.130	18.050
2018-06-25	CAVANAGH 161	27781	C	43.490	13.930	29.560
2018-06-25	DRAIN ALL 4014	27779	C	34.610	17.170	17.440
						949.530

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5597 Power Road, Ottawa, Ontario K1G 3N4 www.tomlinsongroup.com

CUSTOMER SERVICE: 613-822-1250

H.S.T. No. 894238963

GROSS 35739 kg	SOLD TO FLP 1027 DEATH HILL LTD.		WEIGHT PERSON MT-8023	TICKET # 40659157
TARE 14460 kg	DELIVER TO FIB QUARRY 3325 A RD 			DATE/TIME Jul 25/10 10:48 AM
NET 21279 kg	PRODUCT CODE 2E	PRODUCT 50mm Gran B P Limestone	CUSTOMER # DRAGL	P.O. # 087007
	TRUCKER I.D. # YEL103	TRUCK YELLE # 103-10		LOCATION 0023

Today's AC 00 To Date: 636.92



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5597 Power Road, Ottawa, Ontario K1G 3N4 www.tomlinsongroup.com

CUSTOMER SERVICE: 613-822-1250

H.S.T. No. 894238963

GROSS 35660 kg	SOLD TO FLP 1027 DEATH HILL LTD.		WEIGHT PERSON MT-8023	TICKET # 40659157
TARE 14400 kg	DELIVER TO FIB QUARRY 3325 A RD 			DATE/TIME Jul 25/10 10:48 AM
NET 21260 kg	PRODUCT CODE 2E	PRODUCT 50mm Gran B P Limestone	CUSTOMER # DRAGL	P.O. # 087007
	TRUCKER I.D. # YEL103	TRUCK YELLE # 103-10		LOCATION 0023

Today's AC 17 To Date: 637.09



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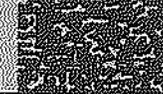
TOMLINSON

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CUSTOMER SERVICE: 613-822-1250

H.S.T. No. 894238963

GROSS 35400 kg	SOLD TO BLE BLEIN DRAIN-ALL LTD.		WEIGHT PERSON WT-8872	TICKET # 40560071
TARE 14400 kg	DELIVER TO FOR QUARRY 3025 OLDFIELD			DATE/TIME Jul 26/10 07:40 AM
NET 21000 kg	PRODUCT CODE 00	PRODUCT 30mm Grain B 31 Limestone	CUSTOMER # DRALL	P.O. # 087507
	TRUCKER I.D. # YEL103	TRUCK YELLE # 103-13		LOCATION 0923

Today's Total To Date: 334.00

Ref

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5597 Power Road, Ottawa, Ontario K1G 3N4 www.tomlinsongroup.com

CUSTOMER SERVICE: 613-822-1250

H.S.T. No. 894238963

GROSS 35400 kg	SOLD TO BLE BLEIN DRAIN-ALL LTD.		WEIGHT PERSON WT-8872	TICKET # 40560071
TARE 14400 kg	DELIVER TO FOR QUARRY 3025 OLDFIELD			DATE/TIME Jul 26/10 07:40 AM
NET 21000 kg	PRODUCT CODE 00	PRODUCT 30mm Grain B 31 Limestone	CUSTOMER # DRALL	P.O. # 087507
	TRUCKER I.D. # YEL103	TRUCK YELLE # 103-13		LOCATION 0923

Today's Total To Date: 372.01

J.P.P

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H.S.T. No. B94238963

CUSTOMER SERVICE: 613-822-1250

TARE	SOFTO	WEIGHT PERSON	TICKET #
1.330 kg	1000	1000	1000000000
NET	PRODUCT CODE	PRODUCT	CUSTOMER #
21.510 kg	1000	1000	1000
TRUCKER ID: #	TRUCK	TRUCK	TRUCK
1000	1000	1000	1000

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74.55 kg Driver 1000110

TOMLINSON

FOUNDED ON STRENGTH GUIDED BY VISION
 5597 Power Road, Ottawa, Ontario K1G 3N4 www.tomlinsongroup.com

CUSTOMER SERVICE: 613-822-1250

H.S.T. No. 894288963

GROSS

NET

DELIVER TO

WEIGHT PERSON

TICKET #

10000 10000 10000 10000

10000 10000

10000 10000

TARE

DELIVER TO

WEIGHT PERSON

TICKET #

10000 10000

10000 10000

10000 10000

10000 10000

NET

PRODUCT CODE

PRODUCT

CUSTOMER #

PO #

10000 10000

10000 10000

10000 10000

10000 10000

10000 10000

10000 10000

10000 10000

10000 10000

10000 10000

10000 10000

10000 10000 10000 10000

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 5597 Power Road, Ottawa, Ontario K1G 3N4 www.tomlinsongroup.com

H.S.T. No. 8942389863

CUSTOMER SERVICE: 613-822-1250

GROSS

SOLD TO

WEIGHT PERSON

TICKET #

10120 10

10120 10

10120 10

40004774

TARE

DELIVER TO

DATE/TIME

60200 10

10120 10

10120 10

11:00 AM

NET

PRODUCT CODE

PRODUCT

CUSTOMER #

P.O. #

2300 10

10120 10

10120 10

10120 10

10120 10

TRUCKER ID #

TRUCK

10120 10

10120 10

10120 10

TRUCKER ID #

TRUCK

10120 10

10120 10

10120 10

Today's Shipment To Date: 001.00

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[Signature]

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H.S.T. No. 894238963

CUSTOMER SERVICE: 613-822-1250

GROSS

SOLD TO

WEIGHT PERSON

TICKET #

25640 44

NAME: STEVEN GUY LITZ

401-5023

48664698

TAPE

DELIVER TO

DATE/TIME

14780 44

FOR: MERRINS

DATE: 10-19
 TIME: 10:02 AM

NET

PRODUCT CODE

PRODUCT

CUSTOMER #

P.O. #

14025 44

TRUCKERID. #

TRUCK

000001

007447

14025 44

TRUCKERID. #

TRUCK

000001

007447

14025 44

TRUCKERID. #

TRUCK

000001

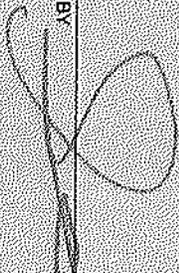
007447

TRUCKER TO DATE: 04.11

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TOMLINSON

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 5597 Power Road, Ottawa, Ontario K1G 3N4 www.tomlinsongroup.com

H.S.T. No. 894238966

CUSTOMER SERVICE: 613-822-1250

NET	PRODUCT CODE	PRODUCT	CUSTOMER #	PO #	LOCATION
14.57	TRUCKERTID # 0011	TRUCK	000011	002407	0001
14.57	TRUCKERTID # 0011	TRUCK	000011	002407	0001

GROSS: 14.57
 SOLD TO: 000011
 WEIGHT PERSON: 000011
 TICKET #

TARE: 0000
 DELIVER TO: 000011
 DATE/TIME: 0000 00:00

14.57 TO DATE

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DRIVER'S INITIALS

EXP Services Inc.

*ABCO
Soil Remediation Report
3025 Albion Road North, Ottawa Ontario
OTT-00246047-B0
December 18, 2018*

Appendix C – Analytical Summary Tables



**TABLE 1 SOIL ANALYTICAL RESULTS ($\mu\text{g/g}$)
PETROLEUM HYDROCARBONS and PCB
3025 Albion Road, Ottawa**

Parameter	MECP Table 3 ¹	Remedial Excavation at Former UST Location											
		N-1	N-2	E-1	E-2*	S-1*	S-2*	W-1	W-2	F8	F2	E19	E91
Sample Date (d/m/y)	Institutional	28/06/18	28/06/18	28/06/18	28/06/18	28/06/18	28/06/18	28/06/18	28/06/18	28/06/18	28/06/18	04/07/18	Duplicate of
Sample Depth (mbgs)		3	3	3	3	3	3	3	3	3	3.3	3.3	1.2
Benzene	0.21	<0.02	<0.02	<0.02	3.4	2.1	10	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Ethylbenzene	2.3	0.02	<0.02	0.34	4.4	0.50	21	<0.02	<0.02	0.03	<0.02	<0.02	<0.02
Toluene	2.1	0.05	<0.02	0.03	6.6	8.5	74	<0.02	<0.02	0.04	<0.02	<0.02	<0.02
Xylenes	3.1	0.11	<0.04	<0.04	17	2.6	120	<0.04	<0.04	0.07	<0.04	<0.04	<0.04
PHC F ₁ (>C ₆ -C ₁₀)	55	<10	<10	<10	170	27	940	<10	<10	<10	<10	<10	<10
PHC F ₂ (>C ₁₀ -C ₁₆)	98	33	33	<10	79	35	190	24	23	28	43	25	26
PHC F ₃ (>C ₁₆ -C ₃₄)	300	<50	<50	<50	78	<50	<50	<50	<50	<50	<50	<50	<50
PHC F ₄ (>C ₃₄ -C ₅₀)	2800	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50

Parameter	MECP Table 3 ¹	NE4	F15	Footing 4 *	Footing 5 *	E21	E22	Backfill 1	Backfill 2	Backfill 3	Backfill 4	Backfill 5
		Sample Date (d/m/y)	Institutional	04/07/18	04/07/18	06/07/18	06/07/18	11/07/18	11/07/18	11/07/18	11/07/18	15/08/18
Sample Depth (mbgs)	2.2	3.3		1.8	1.8	2.6	2.6	2.3	2.5	1.5	0.6	0.6
Benzene	0.21	<0.02	<0.02	0.24	1.3	0.03	<0.02	0.03	<0.02	0.04	<0.02	<0.02
Ethylbenzene	2.3	<0.02	<0.02	0.77	2.7	<0.02	<0.02	0.02	<0.02	<0.02	<0.02	<0.02
Toluene	2.1	<0.02	<0.02	0.12	6.9	<0.02	<0.02	0.10	0.08	0.1	0.06	0.04
Xylenes	3.1	<0.04	<0.04	3.2	15	<0.04	<0.04	0.12	0.11	0.10	0.06	0.05
PHC F ₁ (>C ₆ -C ₁₀)	55	<10	<10	13	150	<10	<10	<10	<10	<10	<10	<10
PHC F ₂ (>C ₁₀ -C ₁₆)	98	40	35	<10	24	36	37	<10	<10	<10	<10	<10
PHC F ₃ (>C ₁₆ -C ₃₄)	300	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
PHC F ₄ (>C ₃₄ -C ₅₀)	2800	<50	<50	<50	<50	<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 institutional standards.

Shaded Concentration exceeds MECP Table 3 soil quality standard.

NA Not analyzed

* Soil from this area removed during remediation July 2018.

**TABLE 1 SOIL ANALYTICAL RESULTS ($\mu\text{g/g}$)
PETROLEUM HYDROCARBONS and PCB
3025 Albion Road, Ottawa**

Parameter	MECP Table 3 ¹	Remedial Excavation at Former UST Location, South Wall Samples										
		1A	1D	Footing (same location as 2A)	2B	2C	2D	2E	2F	3A	3B	3C
Sample Date (d/m/y)	Institutional	11/07/18	11/07/18	04/07/18	11/07/18	11/07/18	11/07/18	11/07/18	11/07/18	11/07/18	11/07/18	11/07/18
Sample Depth (mbgs)		2.0	2.6	2.0	2.0	2.0	2.6	2.6	2.6	2.0	2.0	2.0
Benzene	0.21	<0.02	<0.02	2.3	0.62	<0.02	3.2	1.7	<0.02	14	<0.02	0.4
Ethylbenzene	2.3	<0.02	<0.02	3.1	2.1	<0.02	2.0	2.0	<0.02	7.8	<0.02	2.8
Toluene	2.1	<0.02	<0.02	0.86	1.4	<0.02	1.6	14	<0.02	6.1	<0.02	3.6
Xylenes	3.1	<0.04	<0.04	10	11	<0.04	2.1	10	<0.04	37	<0.04	17
PHC F ₁ (>C ₆ -C ₁₀)	55	19	19	22	83	12	21	19	19	93	15	120
PHC F ₂ (>C ₁₀ -C ₁₆)	98	30	36	37	42	41	38	40	43	48	35	61
PHC F ₃ (>C ₁₆ -C ₃₄)	300	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
PHC F ₄ (>C ₃₄ -C ₅₀)	2800	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50

Parameter	MECP Table 3 ¹	3D	3E	3F	3G
Sample Date (d/m/y)	Institutional	11/07/18	11/07/18	11/07/18	Duplicate of 3F
Sample Depth (mbgs)		2.6	2.6	2.6	
Benzene	0.21	0.03	<0.02	<0.02	<0.02
Ethylbenzene	2.3	<0.02	<0.02	<0.02	<0.02
Toluene	2.1	<0.02	<0.02	<0.02	<0.02
Xylenes	3.1	0.12	<0.04	<0.04	<0.04
PHC F ₁ (>C ₆ -C ₁₀)	55	<10	<10	11	12
PHC F ₂ (>C ₁₀ -C ₁₆)	98	42	43	48	45
PHC F ₃ (>C ₁₆ -C ₃₄)	300	<50	<50	<50	<50
PHC F ₄ (>C ₃₄ -C ₅₀)	2800	<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 institutional standards.

Shaded Concentration exceeds MECP Table 3 soil quality standard.

NA Not analyzed

**TABLE 2 SOIL ANALYTICAL RESULTS ($\mu\text{g/g}$)
METALS
3025 Albion Road, Ottawa**

Parameter	MECP Table 3 ¹	CN1-2 *	CN 2-2 *	CN 1-4 *	CN1-10 *
Sample Date (d/m/y)	Institutional	23/06/18	23/06/18	23/06/18	Dup of CN4
Sample Depth (mbgs)		0.3	0.6	0.3	0.3
Cyanide	0.051	<0.01	<0.01	<0.01	<0.01

Parameter	MECP Table 3 ¹	CN north (N3)	CN south (S3)	CN 1	CN east (E2)	CN west (W4)	CN floor 1 (F1)	CN floor 2 (F2)
Sample Date (d/m/y)	Institutional	27/06/18	23/06/18	Dup. of S3	23/06/18	23/06/18	27/06/18	27/06/18
Sample Depth (mbgs)		2.4	2.4	2.4	1.2	2.4	2.9	2.9
Cyanide	0.051	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

Parameter	MECP Table 3 ¹	MW18-3 SS5	MW18-3 SS7	MW18-4 SS1	MW18-5 SS1	MW18-6 SS1	MW18-10 SS2
Sample Date (d/m/y)	Institutional	28/05/18	28/05/18	28/05/18	28/05/18	28/05/18	Dup of
Sample Depth (mbgs)		2.3 - 3.1	3.8 - 4.6	2.1 - 2.7	2.1 - 2.7	2.1 - 2.7	MW18-6 SS1
Vanadium	86	81	55	120	120	110	120

NOTES:

- 1 MECP Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the EPA, April 2011, Table 3 non potable institutional standards.
- Shaded Concentration exceeds MECP Table 3 soil quality standard.
- N/A Not analyzed
- NV no value
- * Soil from this area removed during remediation July 2018.

EXP Services Inc.

*ABCO
Soil Remediation Report
3025 Albion Road North, Ottawa Ontario
OTT-00246047-B0
December 18, 2018*

Appendix D – Laboratory Certificates of Analysis



Your Project #: OTT-00246047
 Site Location: ALBION RD
 Your C.O.C. #: 102666

Attention: Jeffery O'Banion

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

Report Date: 2018/07/20
 Report #: R5304171
 Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B8G0221

Received: 2018/06/28, 14:59

Sample Matrix: Soil
 # Samples Received: 10

Analyses	Quantity	Date		Laboratory Method	Reference
		Extracted	Analyzed		
Petroleum Hydro. CCME F1 & BTEX in Soil (1)	9	N/A	2018/06/28	OTT SOP-00002	CCME CWS
Petroleum Hydro. CCME F1 & BTEX in Soil (1)	1	N/A	2018/06/29	OTT SOP-00002	CCME CWS
Petroleum Hydrocarbons F2-F4 in Soil (2)	10	2018/06/28	2018/06/29	OTT SOP-00001	CCME CWS
Moisture	10	N/A	2018/06/29	CAM SOP-00445	McKeague 2nd ed 1978

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 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.

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.

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.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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) No lab extraction date is given for F1BTEX & VOC samples that are field preserved with methanol. Extraction date is the date sampled unless otherwise stated.

(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 reported using validated cold solvent extraction instead of Soxhlet extraction.

Your Project #: OTT-00246047
Site Location: ALBION RD
Your C.O.C. #: 102666

Attention: Jeffery O'Banion

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

Report Date: 2018/07/20
Report #: R5304171
Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B8G0221
Received: 2018/06/28, 14:59

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Jonathan Urben, Senior Project Manager
Email: jurben@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.

RESULTS OF ANALYSES OF SOIL

Maxxam ID		HBW469	HBW470	HBW471	HBW472	HBW473	HBW474	HBW475		
Sampling Date		2018/06/28 14:00								
COC Number		102666	102666	102666	102666	102666	102666	102666		
	UNITS	N-1	N-2	E-1	E-2	S-1	S-2	W-1	RDL	QC Batch

Inorganics										
Moisture	%	8.8	9.6	7.4	6.8	8.1	7.4	9.9	0.2	5604604
RDL = Reportable Detection Limit QC Batch = Quality Control Batch										

Maxxam ID		HBW476	HBW477	HBW478		
Sampling Date		2018/06/28 14:00	2018/06/28 14:00	2018/06/28 14:00		
COC Number		102666	102666	102666		
	UNITS	W-2	F8	F2	RDL	QC Batch

Inorganics						
Moisture	%	11	9.2	9.2	0.2	5604604
RDL = Reportable Detection Limit QC Batch = Quality Control Batch						

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		HBW469	HBW470			HBW470			HBW471	HBW472		
Sampling Date		2018/06/28 14:00	2018/06/28 14:00			2018/06/28 14:00			2018/06/28 14:00	2018/06/28 14:00		
COC Number		102666	102666			102666			102666	102666		
	UNITS	N-1	N-2	RDL	QC Batch	N-2 Lab-Dup	RDL	QC Batch	E-1	E-2	RDL	QC Batch

BTEX & F1 Hydrocarbons

Benzene	ug/g	<0.02	<0.02	0.02	5604464	<0.02	0.02	5604464	<0.02	3.4	0.02	5604464
Toluene	ug/g	0.05	<0.02	0.02	5604464	<0.02	0.02	5604464	0.03	6.6	0.02	5604464
Ethylbenzene	ug/g	0.02	<0.02	0.02	5604464	<0.02	0.02	5604464	0.34	4.4	0.02	5604464
o-Xylene	ug/g	0.03	<0.02	0.02	5604464	<0.02	0.02	5604464	<0.02	3.7	0.02	5604464
p+m-Xylene	ug/g	0.08	<0.04	0.04	5604464	<0.04	0.04	5604464	<0.04	14	0.04	5604464
Total Xylenes	ug/g	0.11	<0.04	0.04	5604464	<0.04	0.04	5604464	<0.04	17	0.04	5604464
F1 (C6-C10)	ug/g	<10	<10	10	5604464	<10	10	5604464	<10	170	10	5604464
F1 (C6-C10) - BTEX	ug/g	<10	<10	10	5604464	<10	10	5604464	<10	140	10	5604464

F2-F4 Hydrocarbons

F2 (C10-C16 Hydrocarbons)	ug/g	33	33	10	5604567				<10	79	10	5604567
F3 (C16-C34 Hydrocarbons)	ug/g	<50	<50	50	5604567				<50	78	50	5604567
F4 (C34-C50 Hydrocarbons)	ug/g	<50	<50	50	5604567				<50	<50	50	5604567
Reached Baseline at C50	ug/g	Yes	Yes		5604567				Yes	Yes		5604567

Surrogate Recovery (%)

1,4-Difluorobenzene	%	82	78		5604464	79		5604464	84	83		5604464
4-Bromofluorobenzene	%	113	118		5604464	113		5604464	118	118		5604464
D10-Ethylbenzene	%	110	111		5604464	116		5604464	111	128		5604464
D4-1,2-Dichloroethane	%	93	85		5604464	88		5604464	89	87		5604464
o-Terphenyl	%	110	106		5604567				109	106		5604567

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

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		HBW473		HBW474		HBW475	HBW476	HBW477	HBW478		
Sampling Date		2018/06/28 14:00		2018/06/28 14:00		2018/06/28 14:00	2018/06/28 14:00	2018/06/28 14:00	2018/06/28 14:00		
COC Number		102666		102666		102666	102666	102666	102666		
	UNITS	S-1	RDL	S-2	RDL	W-1	W-2	F8	F2	RDL	QC Batch
BTEX & F1 Hydrocarbons											
Benzene	ug/g	2.1	0.02	10	0.2	<0.02	<0.02	<0.02	<0.02	0.02	5604464
Toluene	ug/g	8.5	0.02	74	0.2	<0.02	<0.02	0.04	<0.02	0.02	5604464
Ethylbenzene	ug/g	0.50	0.02	21	0.2	<0.02	<0.02	0.03	<0.02	0.02	5604464
o-Xylene	ug/g	0.89	0.02	35	0.2	<0.02	<0.02	<0.02	<0.02	0.02	5604464
p+m-Xylene	ug/g	1.7	0.04	86	0.4	<0.04	<0.04	0.07	<0.04	0.04	5604464
Total Xylenes	ug/g	2.6	0.04	120	0.4	<0.04	<0.04	0.07	<0.04	0.04	5604464
F1 (C6-C10)	ug/g	27	10	940	100	<10	<10	<10	<10	10	5604464
F1 (C6-C10) - BTEX	ug/g	13	10	710	100	<10	<10	<10	<10	10	5604464
F2-F4 Hydrocarbons											
F2 (C10-C16 Hydrocarbons)	ug/g	35	10	190	10	24	23	28	43	10	5604567
F3 (C16-C34 Hydrocarbons)	ug/g	<50	50	<50	50	<50	<50	<50	<50	50	5604567
F4 (C34-C50 Hydrocarbons)	ug/g	<50	50	<50	50	<50	<50	<50	<50	50	5604567
Reached Baseline at C50	ug/g	Yes		Yes		Yes	Yes	Yes	Yes		5604567
Surrogate Recovery (%)											
1,4-Difluorobenzene	%	86		77		84	84	80	87		5604464
4-Bromofluorobenzene	%	119		118		111	112	113	117		5604464
D10-Ethylbenzene	%	117		NC		110	110	109	109		5604464
D4-1,2-Dichloroethane	%	91		80		89	91	87	97		5604464
o-Terphenyl	%	113		99		109	111	114	107		5604567
RDL = Reportable Detection Limit											
QC Batch = Quality Control Batch											

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		HBW478		
Sampling Date		2018/06/28 14:00		
COC Number		102666		
	UNITS	F2 Lab-Dup	RDL	QC Batch
F2-F4 Hydrocarbons				
F2 (C10-C16 Hydrocarbons)	ug/g	48	10	5604567
F3 (C16-C34 Hydrocarbons)	ug/g	<50	50	5604567
F4 (C34-C50 Hydrocarbons)	ug/g	<50	50	5604567
Reached Baseline at C50	ug/g	Yes		5604567
Surrogate Recovery (%)				
o-Terphenyl	%	109		5604567
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate				

TEST SUMMARY

Maxxam ID: HBW469
Sample ID: N-1
Matrix: Soil

Collected: 2018/06/28
Shipped:
Received: 2018/06/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	5604464	N/A	2018/06/28	Fatemeh Habibagahi
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5604567	2018/06/28	2018/06/29	Mariana Vascan
Moisture	BAL	5604604	N/A	2018/06/29	Fatemeh Habibagahi

Maxxam ID: HBW470
Sample ID: N-2
Matrix: Soil

Collected: 2018/06/28
Shipped:
Received: 2018/06/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	5604464	N/A	2018/06/28	Fatemeh Habibagahi
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5604567	2018/06/28	2018/06/29	Mariana Vascan
Moisture	BAL	5604604	N/A	2018/06/29	Fatemeh Habibagahi

Maxxam ID: HBW470 Dup
Sample ID: N-2
Matrix: Soil

Collected: 2018/06/28
Shipped:
Received: 2018/06/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	5604464	N/A	2018/06/28	Fatemeh Habibagahi

Maxxam ID: HBW471
Sample ID: E-1
Matrix: Soil

Collected: 2018/06/28
Shipped:
Received: 2018/06/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	5604464	N/A	2018/06/28	Fatemeh Habibagahi
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5604567	2018/06/28	2018/06/29	Mariana Vascan
Moisture	BAL	5604604	N/A	2018/06/29	Fatemeh Habibagahi

Maxxam ID: HBW472
Sample ID: E-2
Matrix: Soil

Collected: 2018/06/28
Shipped:
Received: 2018/06/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	5604464	N/A	2018/06/28	Fatemeh Habibagahi
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5604567	2018/06/28	2018/06/29	Mariana Vascan
Moisture	BAL	5604604	N/A	2018/06/29	Fatemeh Habibagahi

Maxxam ID: HBW473
Sample ID: S-1
Matrix: Soil

Collected: 2018/06/28
Shipped:
Received: 2018/06/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	5604464	N/A	2018/06/28	Fatemeh Habibagahi
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5604567	2018/06/28	2018/06/29	Mariana Vascan

TEST SUMMARY

Maxxam ID: HBW473
Sample ID: S-1
Matrix: Soil

Collected: 2018/06/28
Shipped:
Received: 2018/06/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	5604604	N/A	2018/06/29	Fatemeh Habibagahi

Maxxam ID: HBW474
Sample ID: S-2
Matrix: Soil

Collected: 2018/06/28
Shipped:
Received: 2018/06/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	5604464	N/A	2018/06/29	Fatemeh Habibagahi
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5604567	2018/06/28	2018/06/29	Mariana Vascan
Moisture	BAL	5604604	N/A	2018/06/29	Fatemeh Habibagahi

Maxxam ID: HBW475
Sample ID: W-1
Matrix: Soil

Collected: 2018/06/28
Shipped:
Received: 2018/06/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	5604464	N/A	2018/06/28	Fatemeh Habibagahi
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5604567	2018/06/28	2018/06/29	Mariana Vascan
Moisture	BAL	5604604	N/A	2018/06/29	Fatemeh Habibagahi

Maxxam ID: HBW476
Sample ID: W-2
Matrix: Soil

Collected: 2018/06/28
Shipped:
Received: 2018/06/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	5604464	N/A	2018/06/28	Fatemeh Habibagahi
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5604567	2018/06/28	2018/06/29	Mariana Vascan
Moisture	BAL	5604604	N/A	2018/06/29	Fatemeh Habibagahi

Maxxam ID: HBW477
Sample ID: F8
Matrix: Soil

Collected: 2018/06/28
Shipped:
Received: 2018/06/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	5604464	N/A	2018/06/28	Fatemeh Habibagahi
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5604567	2018/06/28	2018/06/29	Mariana Vascan
Moisture	BAL	5604604	N/A	2018/06/29	Fatemeh Habibagahi

Maxxam ID: HBW478
Sample ID: F2
Matrix: Soil

Collected: 2018/06/28
Shipped:
Received: 2018/06/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	5604464	N/A	2018/06/28	Fatemeh Habibagahi
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5604567	2018/06/28	2018/06/29	Mariana Vascan

Maxxam Job #: B8G0221
Report Date: 2018/07/20

exp Services Inc
Client Project #: OTT-00246047
Site Location: ALBION RD
Sampler Initials: JO

TEST SUMMARY

Maxxam ID: HBW478
Sample ID: F2
Matrix: Soil

Collected: 2018/06/28
Shipped:
Received: 2018/06/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	5604604	N/A	2018/06/29	Fatemeh Habibagahi

Maxxam ID: HBW478 Dup
Sample ID: F2
Matrix: Soil

Collected: 2018/06/28
Shipped:
Received: 2018/06/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5604567	2018/06/28	2018/06/29	Mariana Vascan

GENERAL COMMENTS

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

Package 1	13.3°C
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Cooler custody seal was present and intact.

Revised Report (2018/07/20): Client sample IDs changed as per client request.

Sample HBW474 [S-2] : F1/BTEX Analysis: Sample was diluted due to high concentration of target compounds. Reporting limits were adjusted accordingly.

F1/BTEX Analysis: The extraction surrogate recovery is above reporting limit due to Matrix interferences.

Results relate only to the items tested.

QUALITY ASSURANCE REPORT

exp Services Inc
Client Project #: OTT-00246047
Site Location: ALBION RD
Sampler Initials: JO

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5604464	1,4-Difluorobenzene	2018/06/28	76	60 - 140	74	60 - 140	79	%		
5604464	4-Bromofluorobenzene	2018/06/28	117	60 - 140	111	60 - 140	117	%		
5604464	D10-Ethylbenzene	2018/06/28	117	30 - 130	101	30 - 130	105	%		
5604464	D4-1,2-Dichloroethane	2018/06/28	90	60 - 140	89	60 - 140	97	%		
5604567	o-Terphenyl	2018/06/28	107	30 - 130	118	30 - 130	99	%		
5604464	Benzene	2018/06/28	80	60 - 140	83	60 - 140	<0.02	ug/g	NC	50
5604464	Ethylbenzene	2018/06/28	83	60 - 140	88	60 - 140	<0.02	ug/g	NC	50
5604464	F1 (C6-C10) - BTEX	2018/06/28					<10	ug/g	NC	50
5604464	F1 (C6-C10)	2018/06/28	107	60 - 140	101	80 - 120	<10	ug/g	NC	50
5604464	o-Xylene	2018/06/28	84	60 - 140	98	60 - 140	<0.02	ug/g	NC	50
5604464	p+m-Xylene	2018/06/28	82	60 - 140	84	60 - 140	<0.04	ug/g	NC	50
5604464	Toluene	2018/06/28	82	60 - 140	83	60 - 140	<0.02	ug/g	NC	50
5604464	Total Xylenes	2018/06/28					<0.04	ug/g	NC	50
5604567	F2 (C10-C16 Hydrocarbons)	2018/06/29	97	50 - 130	90	80 - 120	<10	ug/g	12	50
5604567	F3 (C16-C34 Hydrocarbons)	2018/06/29	97	50 - 130	90	80 - 120			NC	50
5604567	F4 (C34-C50 Hydrocarbons)	2018/06/29	97	50 - 130	90	80 - 120	<50	ug/g	NC	50
5604604	Moisture	2018/06/29							8.3	50

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

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

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

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

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

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

VALIDATION SIGNATURE PAGE

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



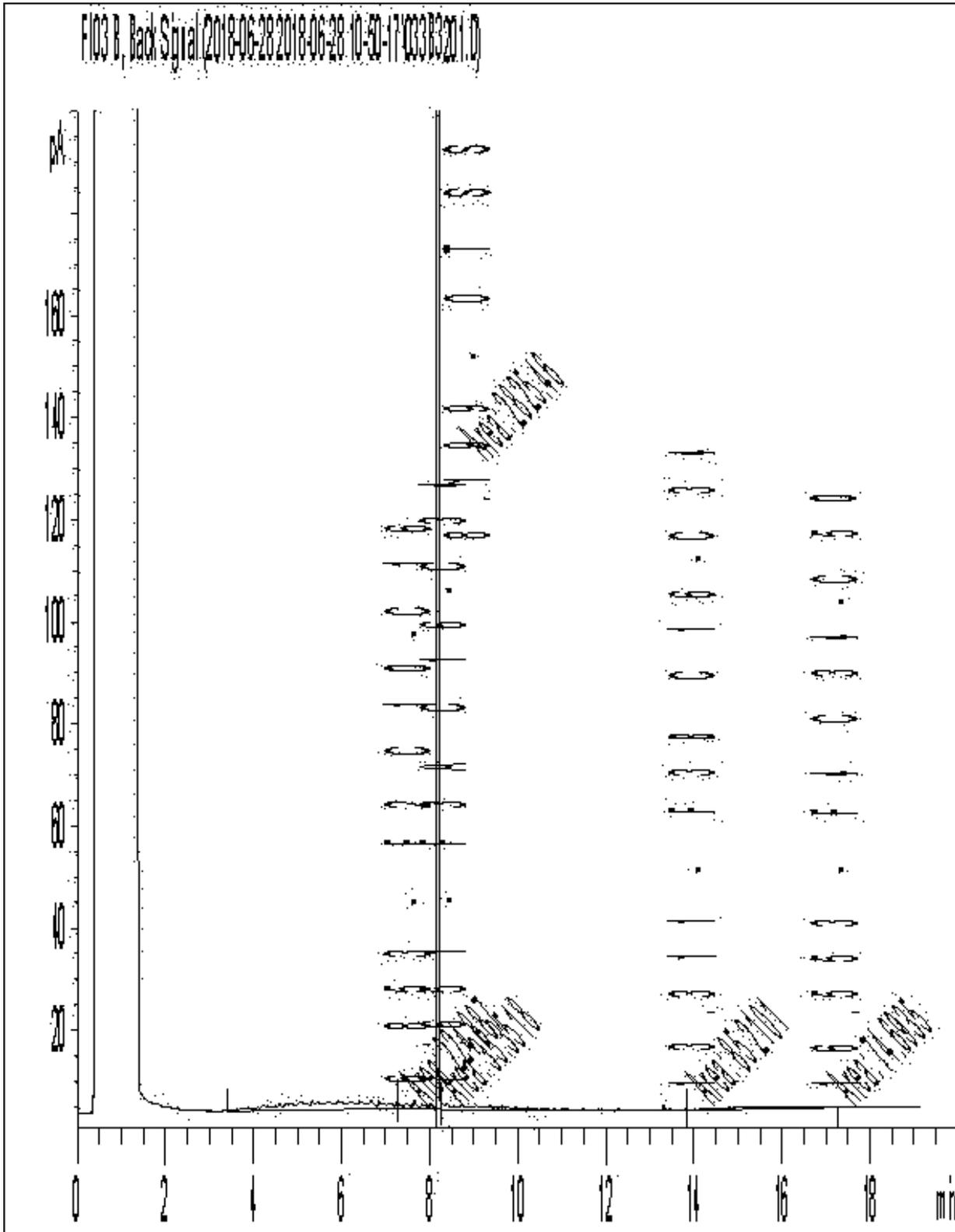
Liliana Gaburici, VOC Lab

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.

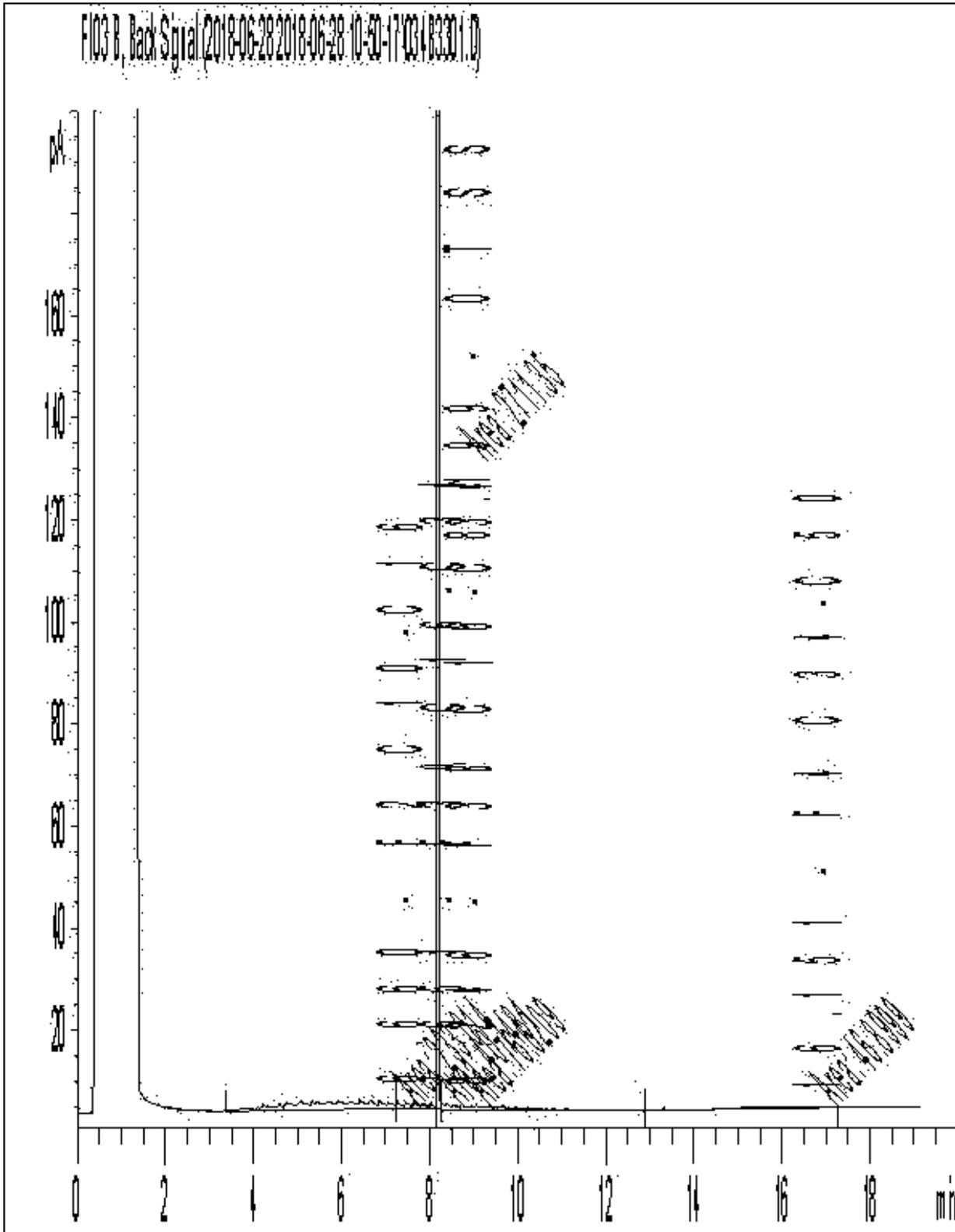
Invoice Information		Report Information (if differs from invoice)		Project Information (where applicable)		Turnaround Time (TAT) Required	
Company Name: Exp	Company Name:	Company Name: SAME	Company Name:	Quotation #: 017-0246047	Quotation #:	<input type="checkbox"/> Regular TAT (5-7 days) Rush analyses <input type="checkbox"/> Rush TAT (Surcharges will be applied) <input checked="" type="checkbox"/> 1 Day <input type="checkbox"/> 2 Days <input type="checkbox"/> 3-4 Days ASAP	
Contact Name: Jeff O	Contact Name:	Contact Name: SAME	Contact Name:	P.O. #/ A/E/C:	P.O. #/ A/E/C:	<input type="checkbox"/> 1 Day <input type="checkbox"/> 2 Days <input type="checkbox"/> 3-4 Days ASAP	
Address: Ottawa	Address:	Address: SAME	Address:	Project #:	Project #:	<input checked="" type="checkbox"/> 1 Day <input type="checkbox"/> 2 Days <input type="checkbox"/> 3-4 Days ASAP	
Phone: 613-688-1899	Phone:	Phone:	Phone:	Site Location: Albion Rd	Site Location:	<input type="checkbox"/> 1 Day <input type="checkbox"/> 2 Days <input type="checkbox"/> 3-4 Days ASAP	
Email: Jeffrey.O'Brien@maxxam.com	Email:	Email:	Email:	Site #:	Site #:	<input type="checkbox"/> 1 Day <input type="checkbox"/> 2 Days <input type="checkbox"/> 3-4 Days ASAP	
Date Required:		Date Required:		Date Required:		Date Required:	
<p>FOR REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION, MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY.</p>							
Regulation 153 <input type="checkbox"/> Table 1 <input type="checkbox"/> Res/Park <input type="checkbox"/> Med/Fine <input type="checkbox"/> Table 2 <input checked="" type="checkbox"/> Inv/Comm <input type="checkbox"/> Coarse <input checked="" type="checkbox"/> Table 3 <input type="checkbox"/> Agric/Other <input type="checkbox"/> Table 4 FOR RSC (PLEASE CIRCLE) Y / N		Other Regulations <input type="checkbox"/> CCME <input type="checkbox"/> Sanitary Sewer Bylaw <input type="checkbox"/> MISA <input type="checkbox"/> Storm Sewer Bylaw <input type="checkbox"/> PWCCL <input type="checkbox"/> Region <input type="checkbox"/> OBM (Storage) <input type="checkbox"/> REC 535 (MIN. 3 DAY TAT REQUIRED)		Analyte Requested (List analytes in this section)		LABORATORY USE ONLY CUSTODY SEAL Y / N Present Initial Y Y (2, 15, 13) COOLING MEDIA PRESENT (Y / N) (Y) N COMMENTS	
<p>SAMPLES MUST BE KEPT COOL (2-10 °C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM</p>							
SAMPLE IDENTIFICATION	DATE SAMPLED (YYYYMMDD)	TIME SAMPLED (HH:MM)	ANALYSIS	RESIDUALS (GROSS) (mg/L) (Pb, Cu, Zn)	RESIDUALS (NET) (mg/L) (Pb, Cu, Zn)	RESIDUALS (GROSS) (mg/L) (Pb, Cu, Zn)	RESIDUALS (NET) (mg/L) (Pb, Cu, Zn)
1. N-1	2018.06.28	2:59 PM	S-3	✓	✓		
2. N-2							
3. E-1							
4. E-2							
5. S-1							
6. S-2							
7. L-1							
8. W-2							
9. Floor N							
10. Floor S							
RELINQUISHED BY (Signature/Print)	DATE (YYYYMMDD)	TIME (HH:MM)	RECEIVED BY (Signature/Print)	DATE (YYYYMMDD)	TIME (HH:MM)	RECEIVED IN OTTAWA ON Rec 28-Jun-18 14:59 Jonathan Urban B8G0221 KIV OTT 001	
Jeff O	2018.06.28	2:59 PM	Kevin Jones	2018.06.28	14:59		

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://www.maxxam.ca/wp-content/uploads/Ontario-COC.pdf>.

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

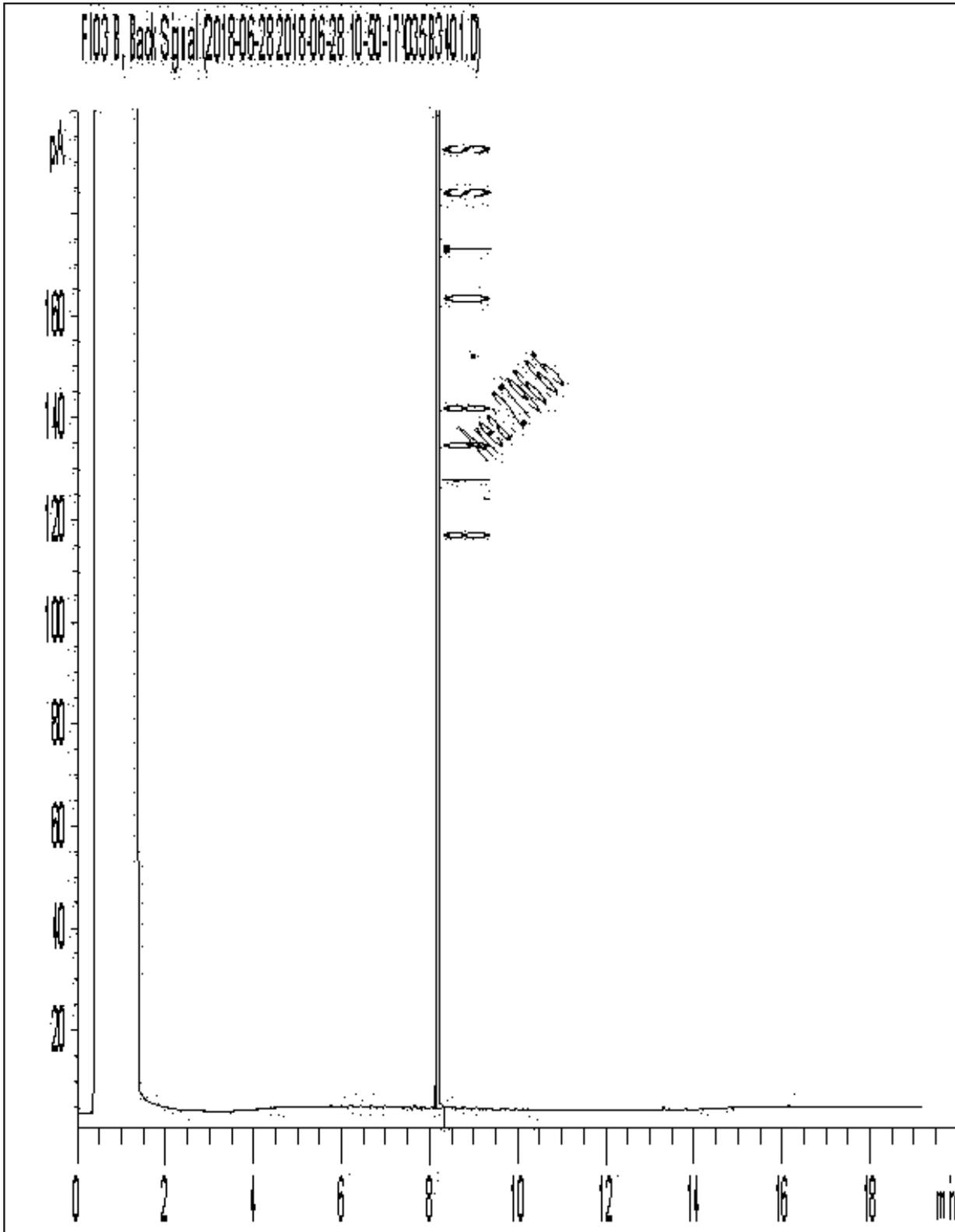


Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



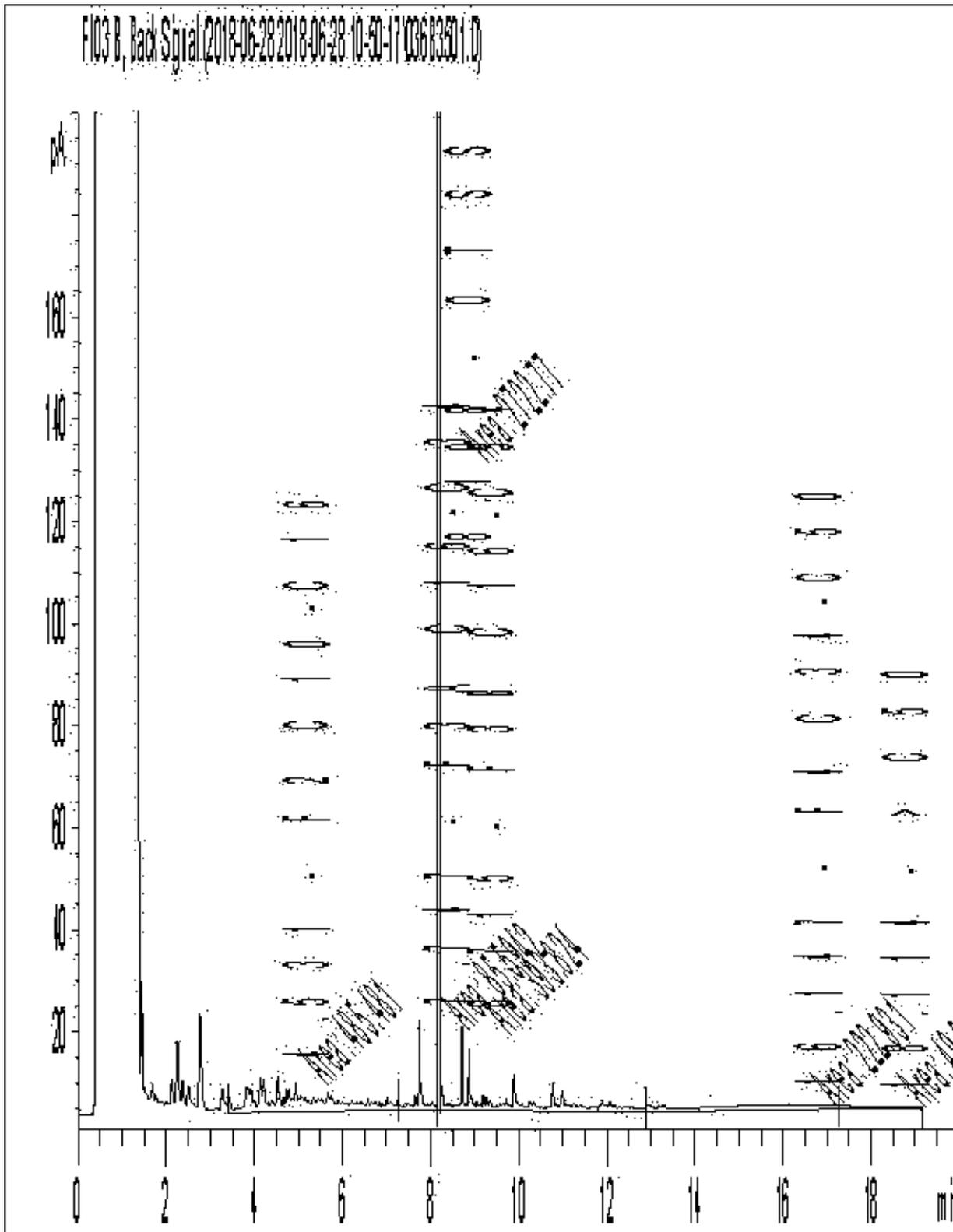
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



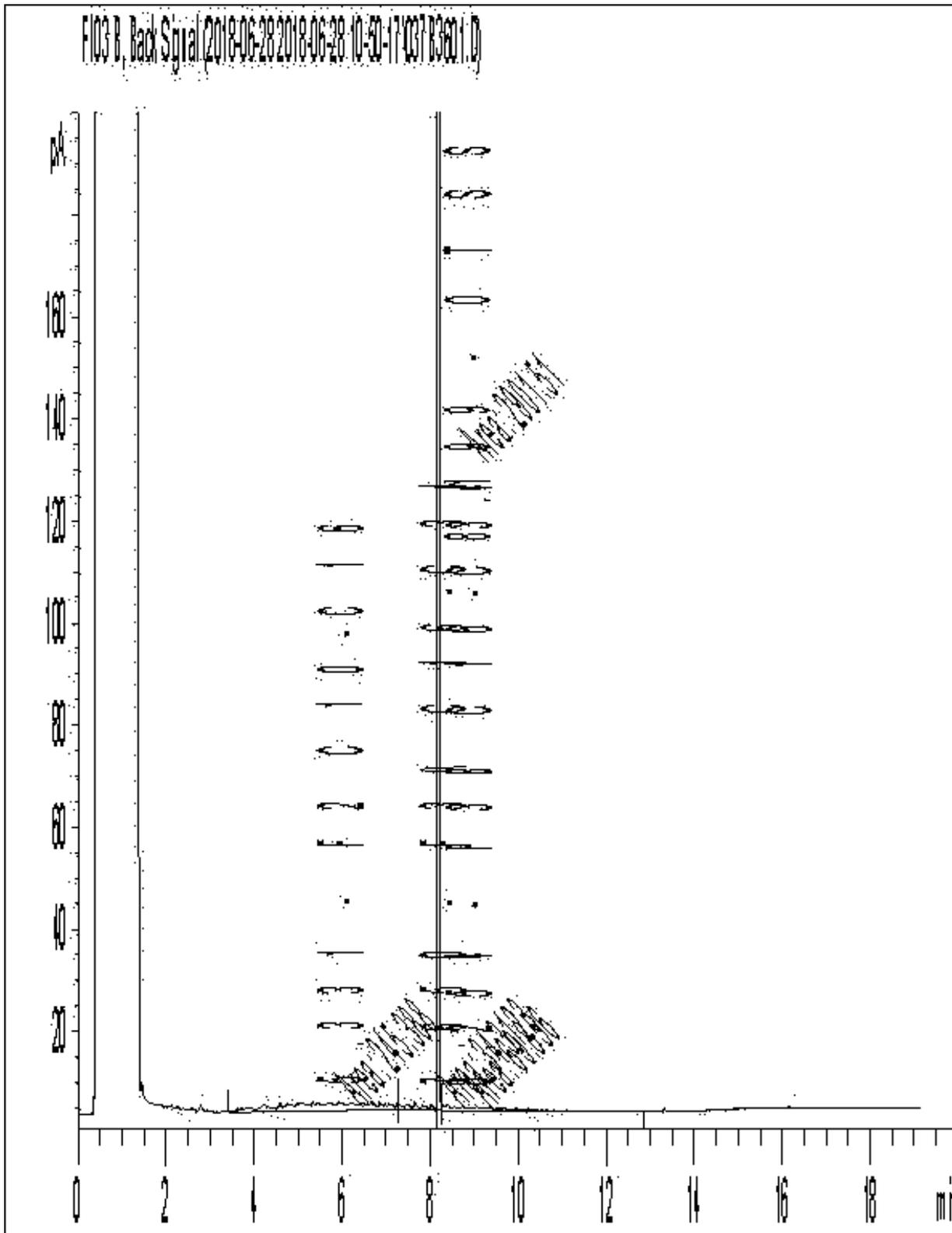
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



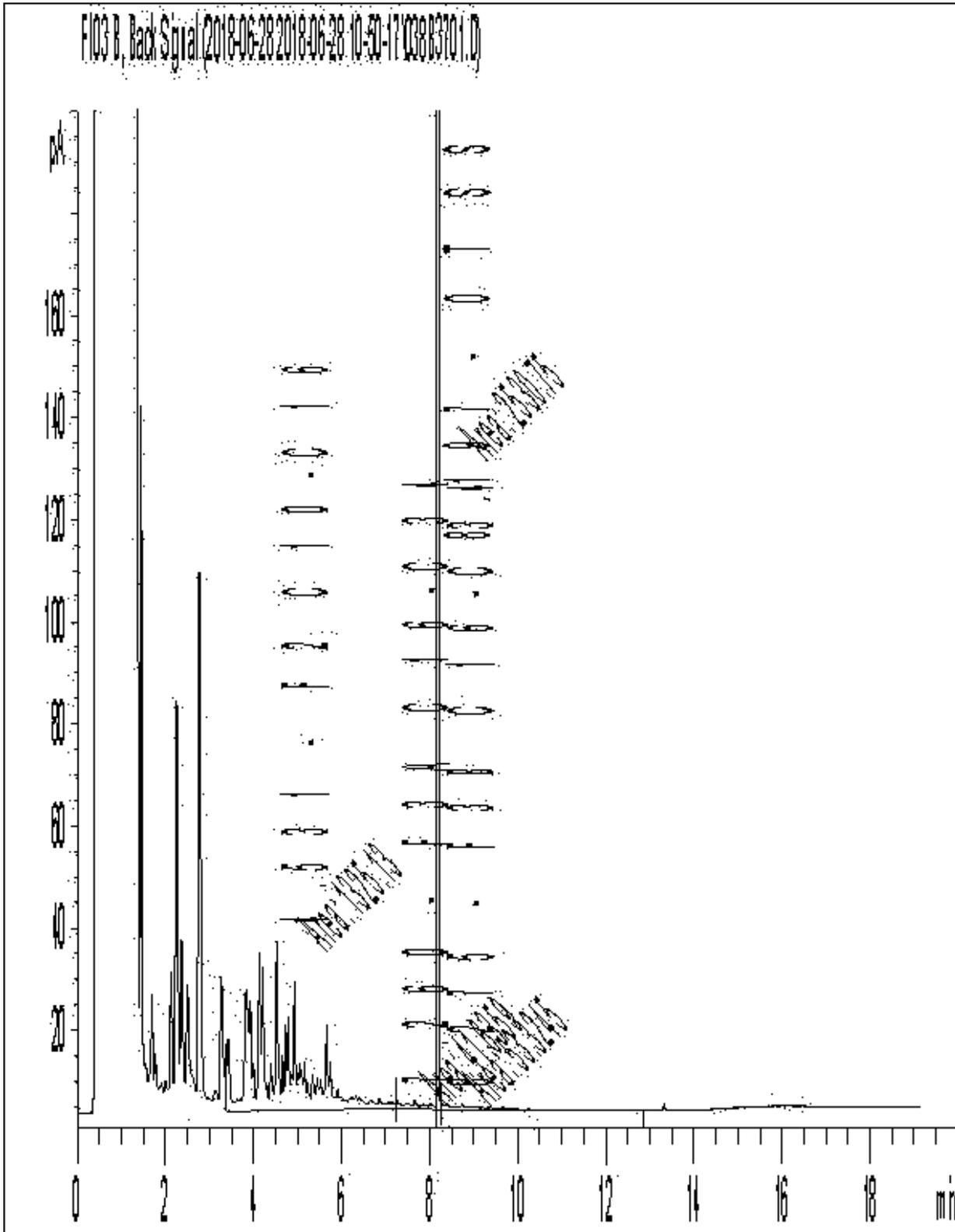
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



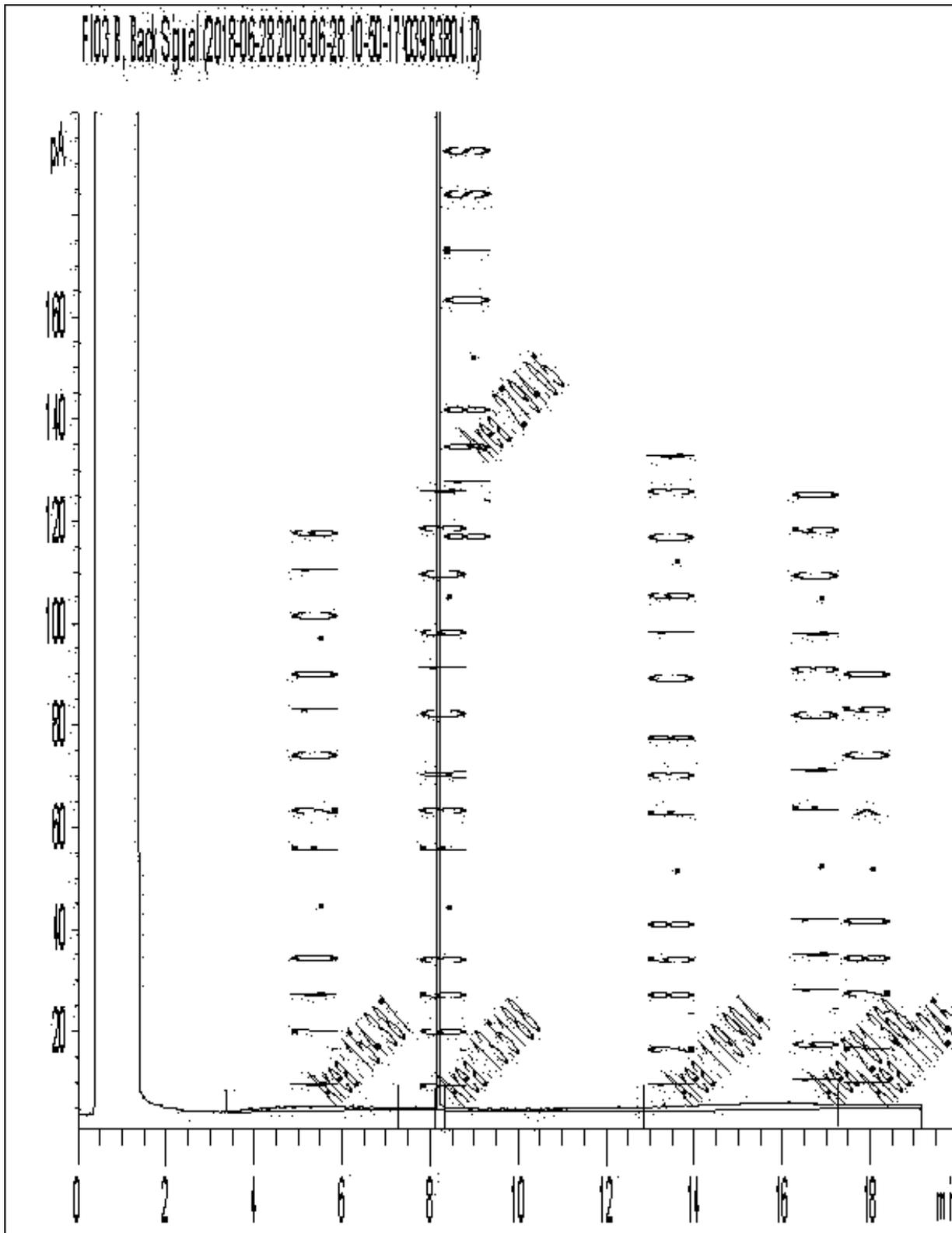
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



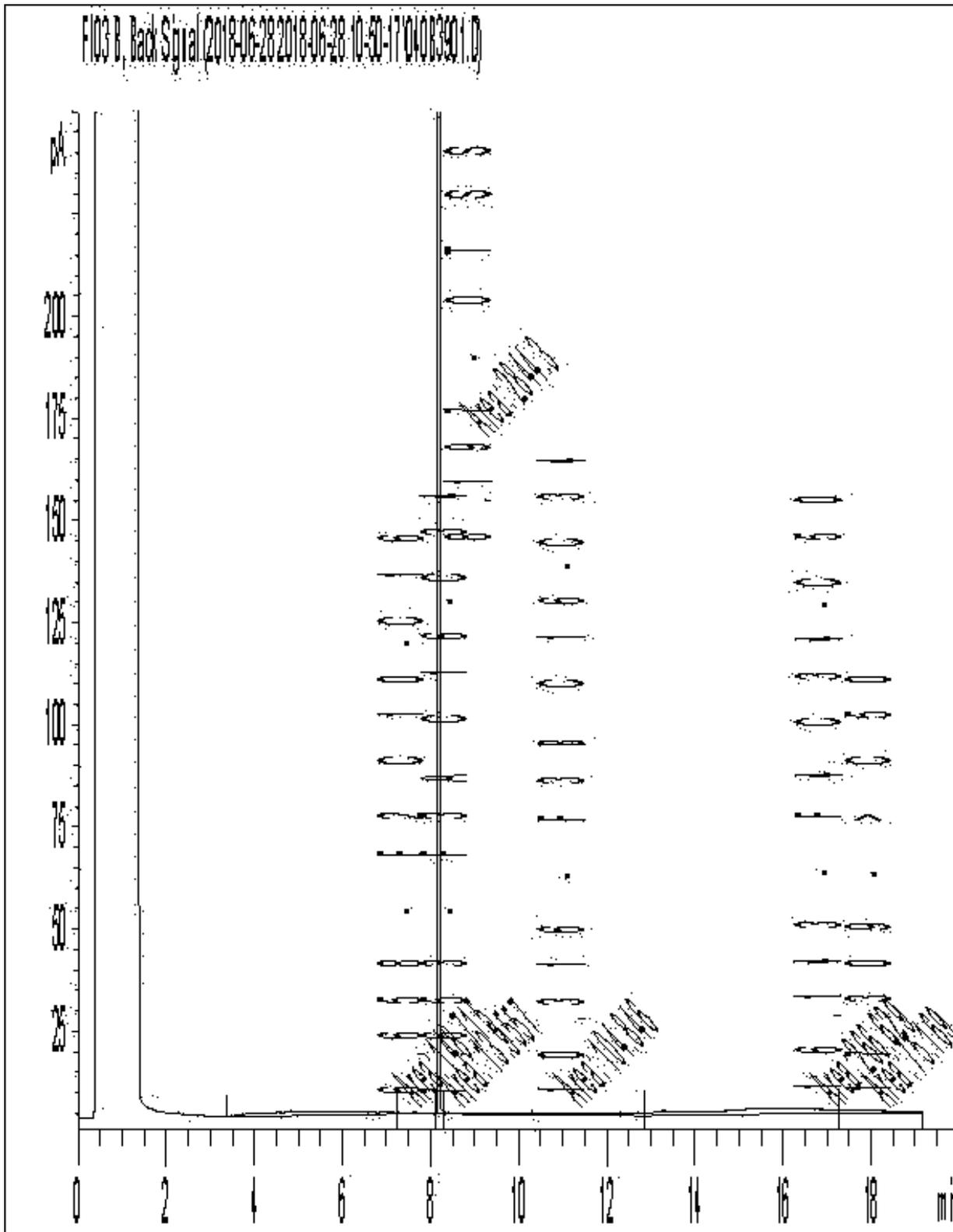
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



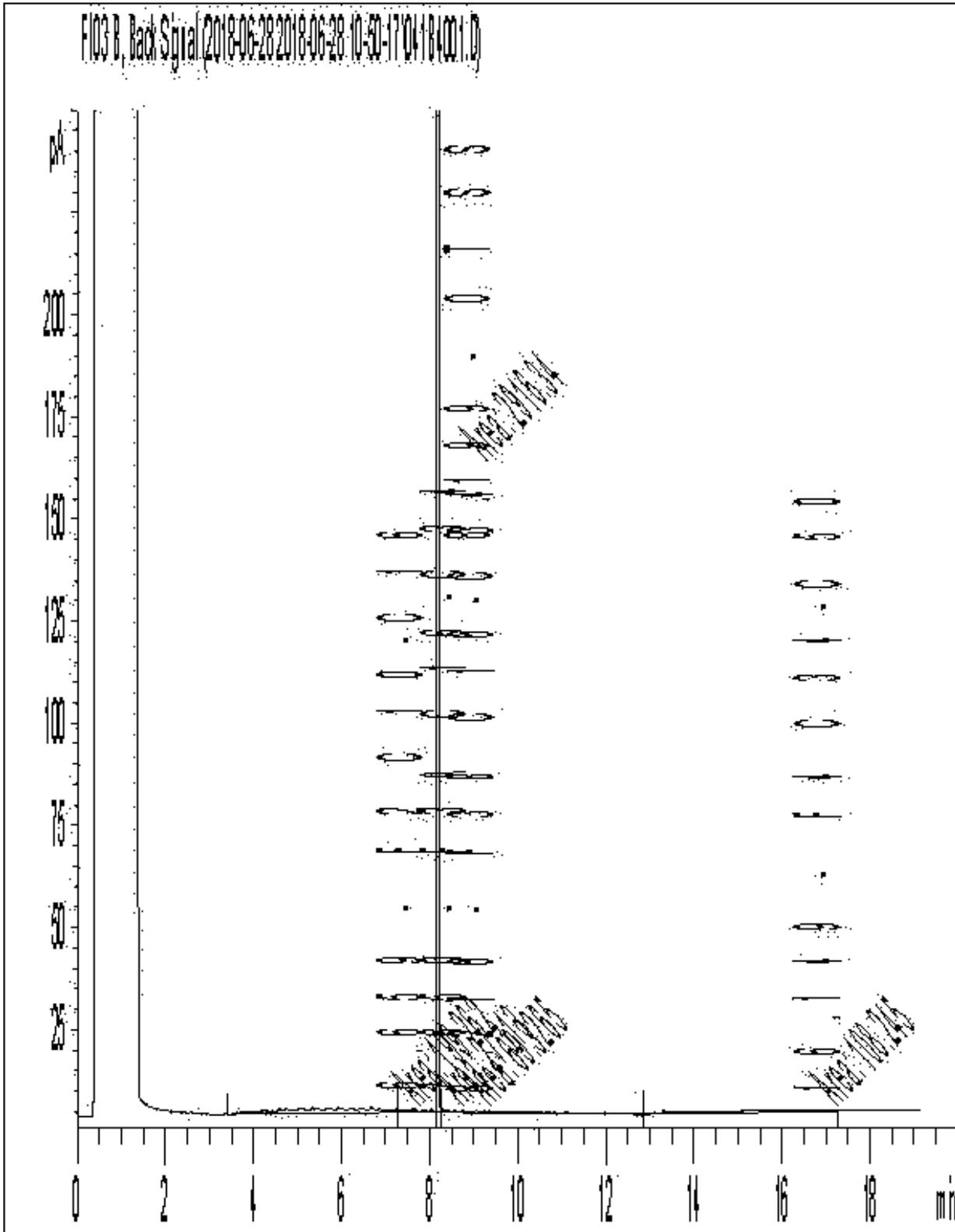
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



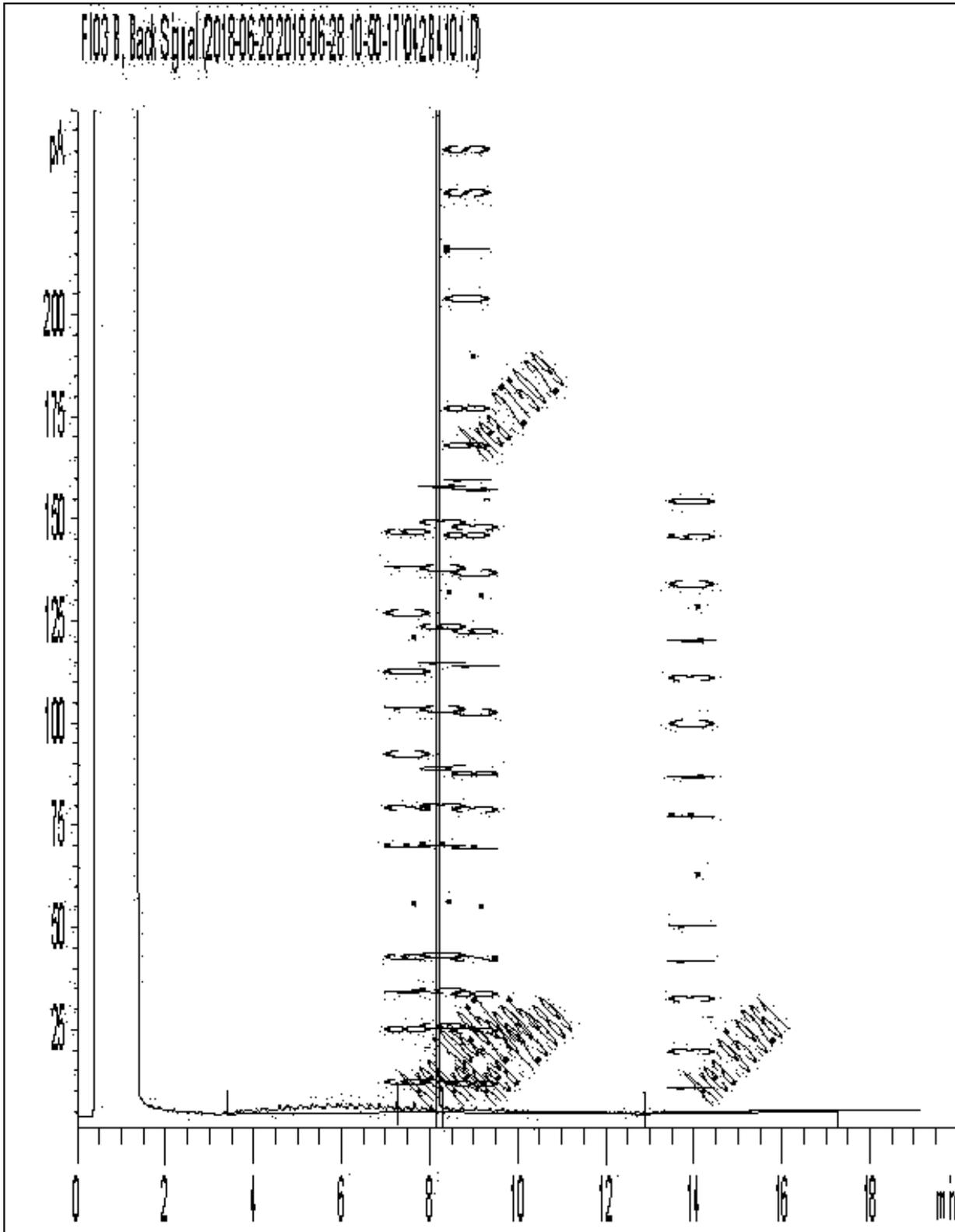
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



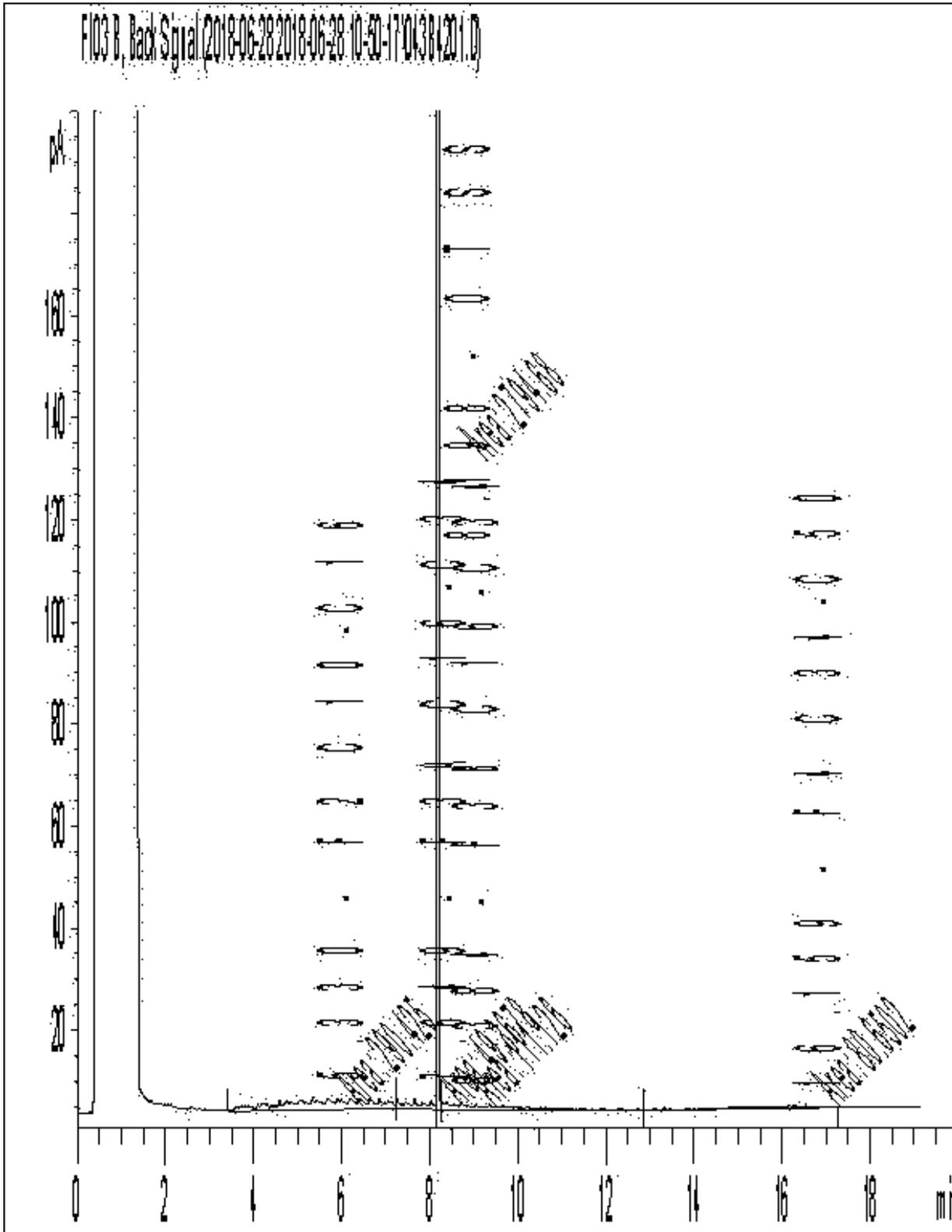
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

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.

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-00246047
 Site Location: ALBION
 Your C.O.C. #: 102661

Attention: Jeffery O'Banion

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

Report Date: 2018/07/06
 Report #: R5283347
 Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B8G5146
Received: 2018/07/04, 16:25

Sample Matrix: Soil
 # Samples Received: 5

Analyses	Quantity	Date		Laboratory Method	Reference
		Extracted	Analyzed		
Petroleum Hydro. CCME F1 & BTEX in Soil (1)	5	N/A	2018/07/05	OTT SOP-00002	CCME CWS
Petroleum Hydrocarbons F2-F4 in Soil (2)	1	2018/07/05	2018/07/05	OTT SOP-00001	CCME CWS
Petroleum Hydrocarbons F2-F4 in Soil (2)	4	2018/07/05	2018/07/06	OTT SOP-00001	CCME CWS
Moisture	5	N/A	2018/07/06	CAM SOP-00445	McKeague 2nd ed 1978

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 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.

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.

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.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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) No lab extraction date is given for F1BTEX & VOC samples that are field preserved with methanol. Extraction date is the date sampled unless otherwise stated.
- (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 reported using validated cold solvent extraction instead of Soxhlet extraction.

Your Project #: OTT-00246047
Site Location: ALBION
Your C.O.C. #: 102661

Attention: Jeffery O'Banion

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

Report Date: 2018/07/06
Report #: R5283347
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B8G5146
Received: 2018/07/04, 16:25

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Jonathan Urben, Senior Project Manager
Email: jurben@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.

RESULTS OF ANALYSES OF SOIL

Maxxam ID		HCY769	HCY769	HCY770	HCY771	HCY772	HCY773		
Sampling Date		2018/07/04 16:00	2018/07/04 16:00	2018/07/04 16:00	2018/07/04 16:00	2018/07/04 16:00	2018/07/04 16:00		
COC Number		102661	102661	102661	102661	102661	102661		
	UNITS	E19	E19 Lab-Dup	E91	NE4	F15	FOOTING	RDL	QC Batch

Inorganics									
Moisture	%	8.9	9.0	8.9	7.5	8.1	7.9	0.2	5613467
RDL = Reportable Detection Limit									
QC Batch = Quality Control Batch									
Lab-Dup = Laboratory Initiated Duplicate									

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		HCY769	HCY770	HCY770	HCY771	HCY772	HCY773		
Sampling Date		2018/07/04 16:00	2018/07/04 16:00	2018/07/04 16:00	2018/07/04 16:00	2018/07/04 16:00	2018/07/04 16:00		
COC Number		102661	102661	102661	102661	102661	102661		
	UNITS	E19	E91	E91 Lab-Dup	NE4	F15	FOOTING	RDL	QC Batch
BTEX & F1 Hydrocarbons									
Benzene	ug/g	<0.02	<0.02	<0.02	<0.02	<0.02	2.3	0.02	5613532
Toluene	ug/g	<0.02	<0.02	<0.02	<0.02	<0.02	0.86	0.02	5613532
Ethylbenzene	ug/g	<0.02	<0.02	<0.02	<0.02	<0.02	3.1	0.02	5613532
o-Xylene	ug/g	<0.02	<0.02	<0.02	<0.02	<0.02	1.5	0.02	5613532
p+m-Xylene	ug/g	<0.04	<0.04	<0.04	<0.04	<0.04	8.8	0.04	5613532
Total Xylenes	ug/g	<0.04	<0.04	<0.04	<0.04	<0.04	10	0.04	5613532
F1 (C6-C10)	ug/g	<10	<10	<10	<10	<10	39	10	5613532
F1 (C6-C10) - BTEX	ug/g	<10	<10	<10	<10	<10	22	10	5613532
F2-F4 Hydrocarbons									
F2 (C10-C16 Hydrocarbons)	ug/g	25	26	25	40	35	37	10	5613457
F3 (C16-C34 Hydrocarbons)	ug/g	<50	<50	<50	<50	<50	<50	50	5613457
F4 (C34-C50 Hydrocarbons)	ug/g	<50	<50	<50	<50	<50	<50	50	5613457
Reached Baseline at C50	ug/g	Yes	Yes	Yes	Yes	Yes	Yes		5613457
Surrogate Recovery (%)									
1,4-Difluorobenzene	%	106	104	104	114	116	103		5613532
4-Bromofluorobenzene	%	96	100	96	97	96	101		5613532
D10-Ethylbenzene	%	97	96	104	100	103	105		5613532
D4-1,2-Dichloroethane	%	112	110	111	120	119	106		5613532
o-Terphenyl	%	94	93	95	89	94	94		5613457
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate									

TEST SUMMARY

Maxxam ID: HCY769
Sample ID: E19
Matrix: Soil

Collected: 2018/07/04
Shipped:
Received: 2018/07/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	5613532	N/A	2018/07/05	Fatemeh Habibagahi
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5613457	2018/07/05	2018/07/05	Mariana Vascan
Moisture	BAL	5613467	N/A	2018/07/06	Fatemeh Habibagahi

Maxxam ID: HCY769 Dup
Sample ID: E19
Matrix: Soil

Collected: 2018/07/04
Shipped:
Received: 2018/07/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	5613467	N/A	2018/07/06	Fatemeh Habibagahi

Maxxam ID: HCY770
Sample ID: E91
Matrix: Soil

Collected: 2018/07/04
Shipped:
Received: 2018/07/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	5613532	N/A	2018/07/05	Fatemeh Habibagahi
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5613457	2018/07/05	2018/07/06	Mariana Vascan
Moisture	BAL	5613467	N/A	2018/07/06	Fatemeh Habibagahi

Maxxam ID: HCY770 Dup
Sample ID: E91
Matrix: Soil

Collected: 2018/07/04
Shipped:
Received: 2018/07/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	5613532	N/A	2018/07/05	Fatemeh Habibagahi
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5613457	2018/07/05	2018/07/06	Mariana Vascan

Maxxam ID: HCY771
Sample ID: NE4
Matrix: Soil

Collected: 2018/07/04
Shipped:
Received: 2018/07/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	5613532	N/A	2018/07/05	Fatemeh Habibagahi
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5613457	2018/07/05	2018/07/06	Mariana Vascan
Moisture	BAL	5613467	N/A	2018/07/06	Fatemeh Habibagahi

Maxxam ID: HCY772
Sample ID: F15
Matrix: Soil

Collected: 2018/07/04
Shipped:
Received: 2018/07/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	5613532	N/A	2018/07/05	Fatemeh Habibagahi
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5613457	2018/07/05	2018/07/06	Mariana Vascan
Moisture	BAL	5613467	N/A	2018/07/06	Fatemeh Habibagahi

Maxxam Job #: B8G5146
Report Date: 2018/07/06

exp Services Inc
Client Project #: OTT-00246047
Site Location: ALBION
Sampler Initials: JO

TEST SUMMARY

Maxxam ID: HCY773
Sample ID: FOOTING
Matrix: Soil

Collected: 2018/07/04
Shipped:
Received: 2018/07/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	5613532	N/A	2018/07/05	Fatemeh Habibagahi
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5613457	2018/07/05	2018/07/06	Mariana Vascan
Moisture	BAL	5613467	N/A	2018/07/06	Fatemeh Habibagahi

GENERAL COMMENTS

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

Package 1	18.7°C
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Cooler custody seal was present and intact.

Results relate only to the items tested.

QUALITY ASSURANCE REPORT

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5613457	o-Terphenyl	2018/07/05	96	30 - 130	103	30 - 130	100	%		
5613532	1,4-Difluorobenzene	2018/07/05	104	60 - 140	116	60 - 140	115	%		
5613532	4-Bromofluorobenzene	2018/07/05	92	60 - 140	100	60 - 140	102	%		
5613532	D10-Ethylbenzene	2018/07/05	92	30 - 130	85	30 - 130	97	%		
5613532	D4-1,2-Dichloroethane	2018/07/05	108	60 - 140	116	60 - 140	117	%		
5613457	F2 (C10-C16 Hydrocarbons)	2018/07/06	81	50 - 130	86	80 - 120	<10	ug/g	2.6	50
5613457	F3 (C16-C34 Hydrocarbons)	2018/07/06	81	50 - 130	83	80 - 120	<50	ug/g	NC	50
5613457	F4 (C34-C50 Hydrocarbons)	2018/07/06	81	50 - 130	83	80 - 120	<50	ug/g	NC	50
5613467	Moisture	2018/07/06							1.1	50
5613532	Benzene	2018/07/05	84	60 - 140	90	60 - 140	<0.02	ug/g	NC	50
5613532	Ethylbenzene	2018/07/05	87	60 - 140	87	60 - 140	<0.02	ug/g	NC	50
5613532	F1 (C6-C10) - BTEX	2018/07/05					<10	ug/g	NC	50
5613532	F1 (C6-C10)	2018/07/05	108	60 - 140	95	80 - 120	<10	ug/g	NC	50
5613532	o-Xylene	2018/07/05	97	60 - 140	93	60 - 140	<0.02	ug/g	NC	50
5613532	p+m-Xylene	2018/07/05	87	60 - 140	83	60 - 140	<0.04	ug/g	NC	50
5613532	Toluene	2018/07/05	84	60 - 140	91	60 - 140	<0.02	ug/g	NC	50
5613532	Total Xylenes	2018/07/05					<0.04	ug/g	NC	50

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

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

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

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

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

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

VALIDATION SIGNATURE PAGE

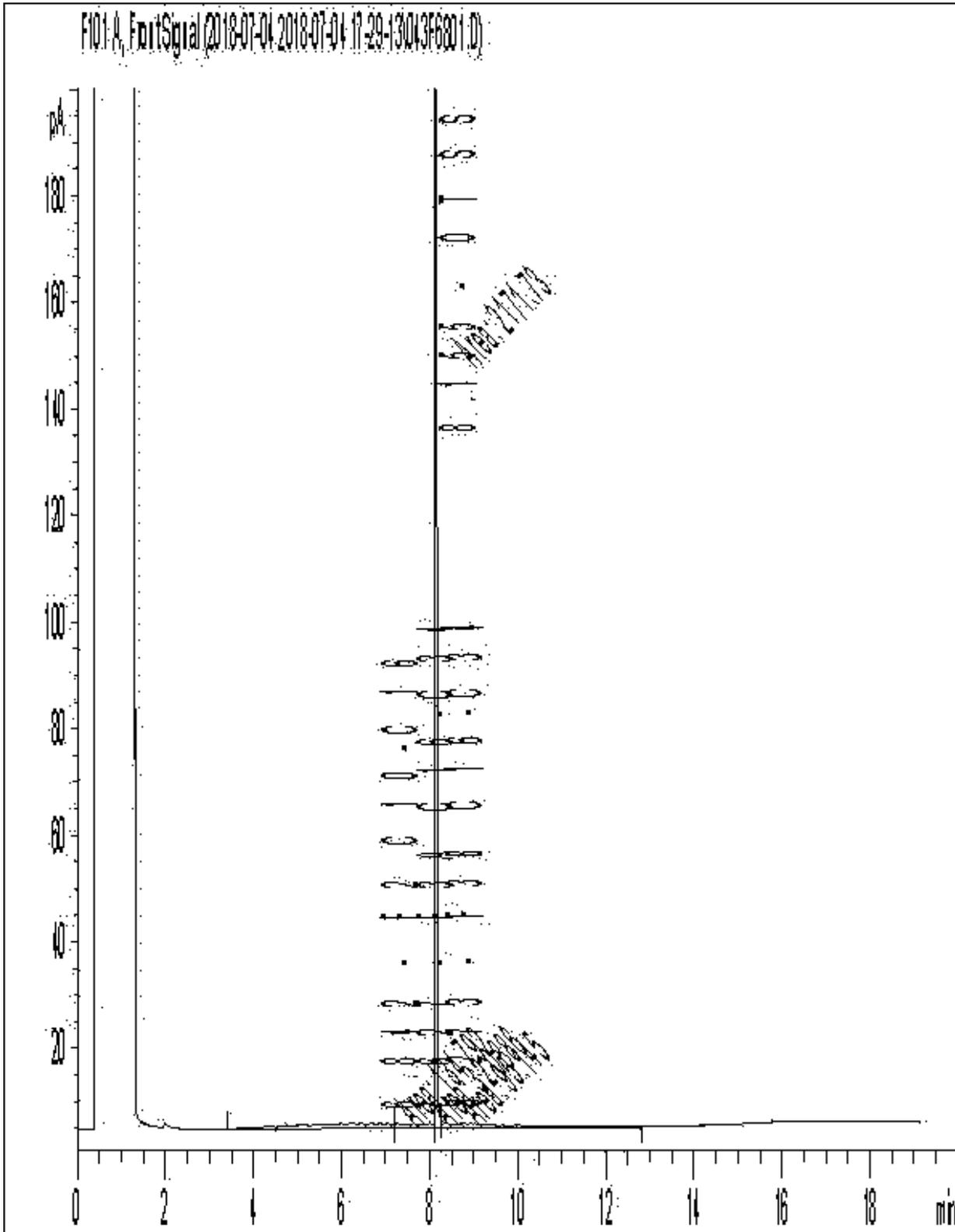
The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Liliana Gaburici, VOC Lab

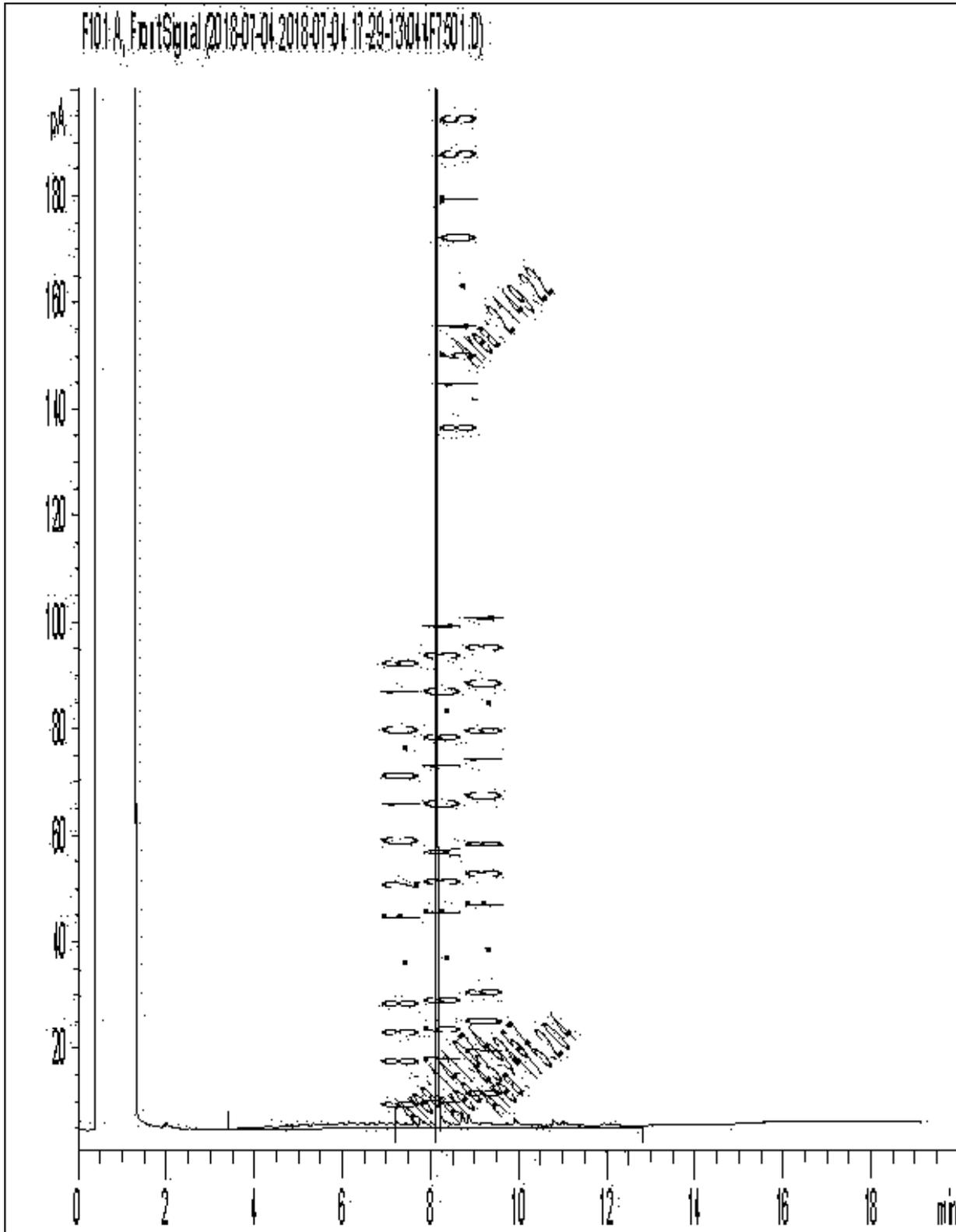
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Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



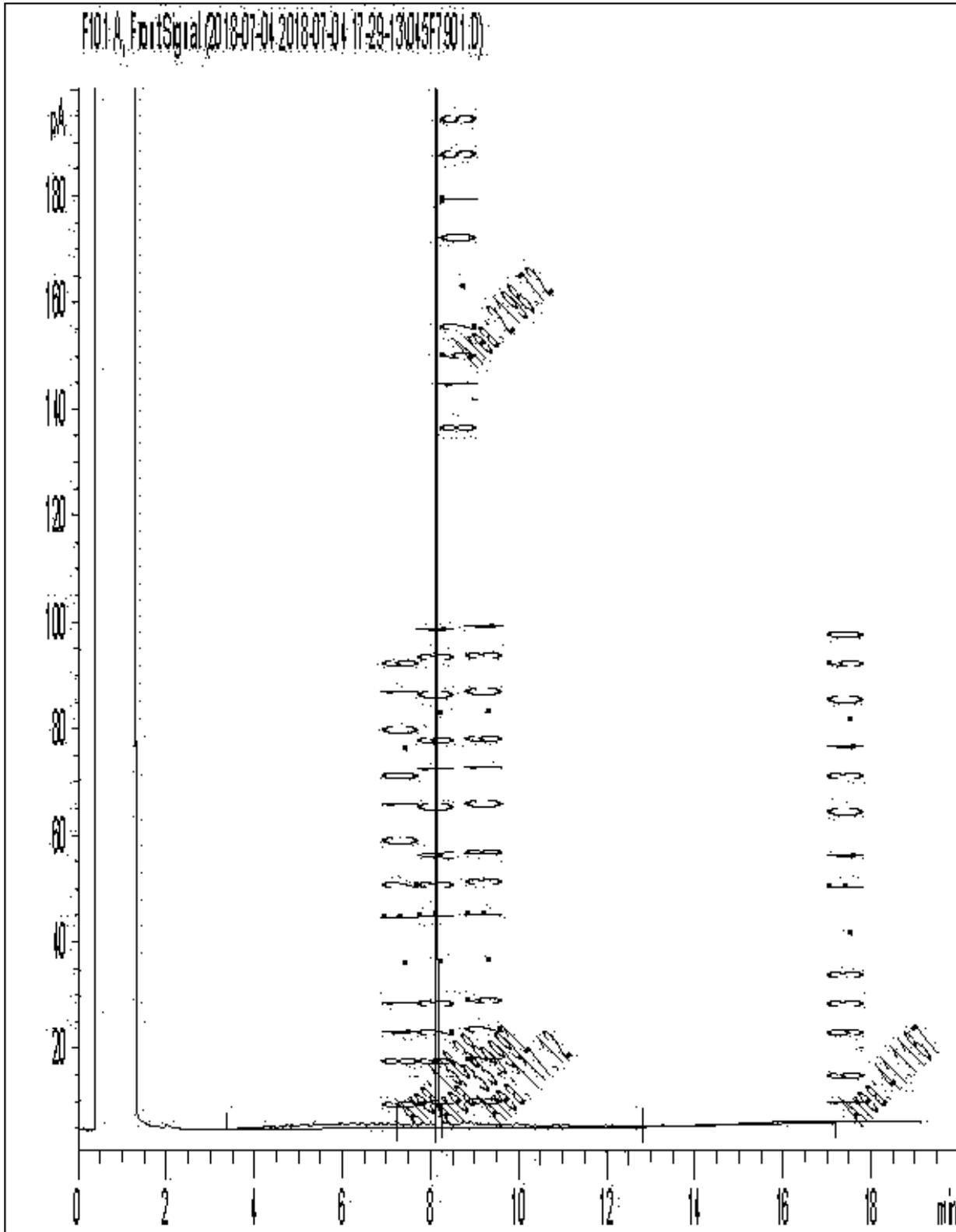
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



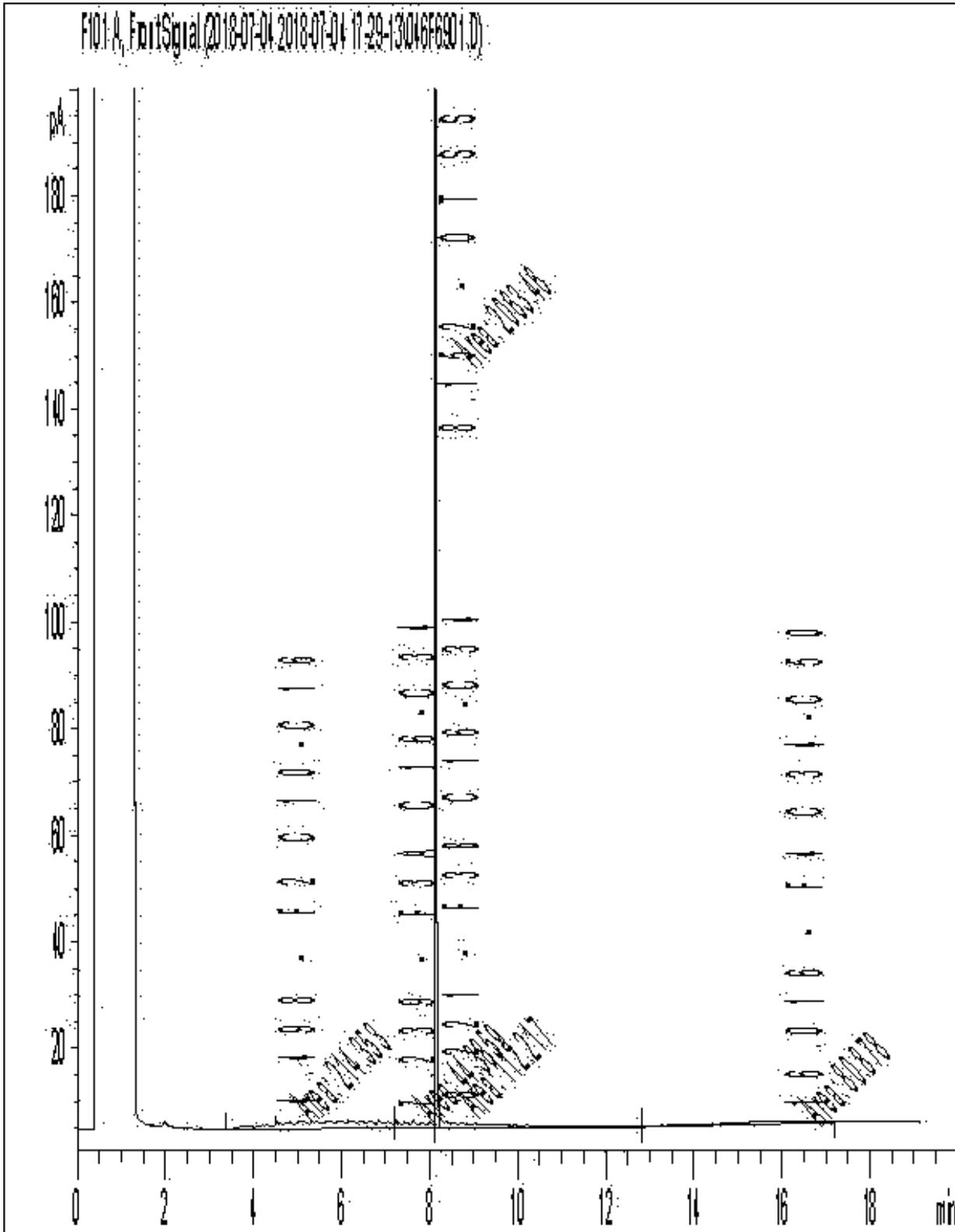
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

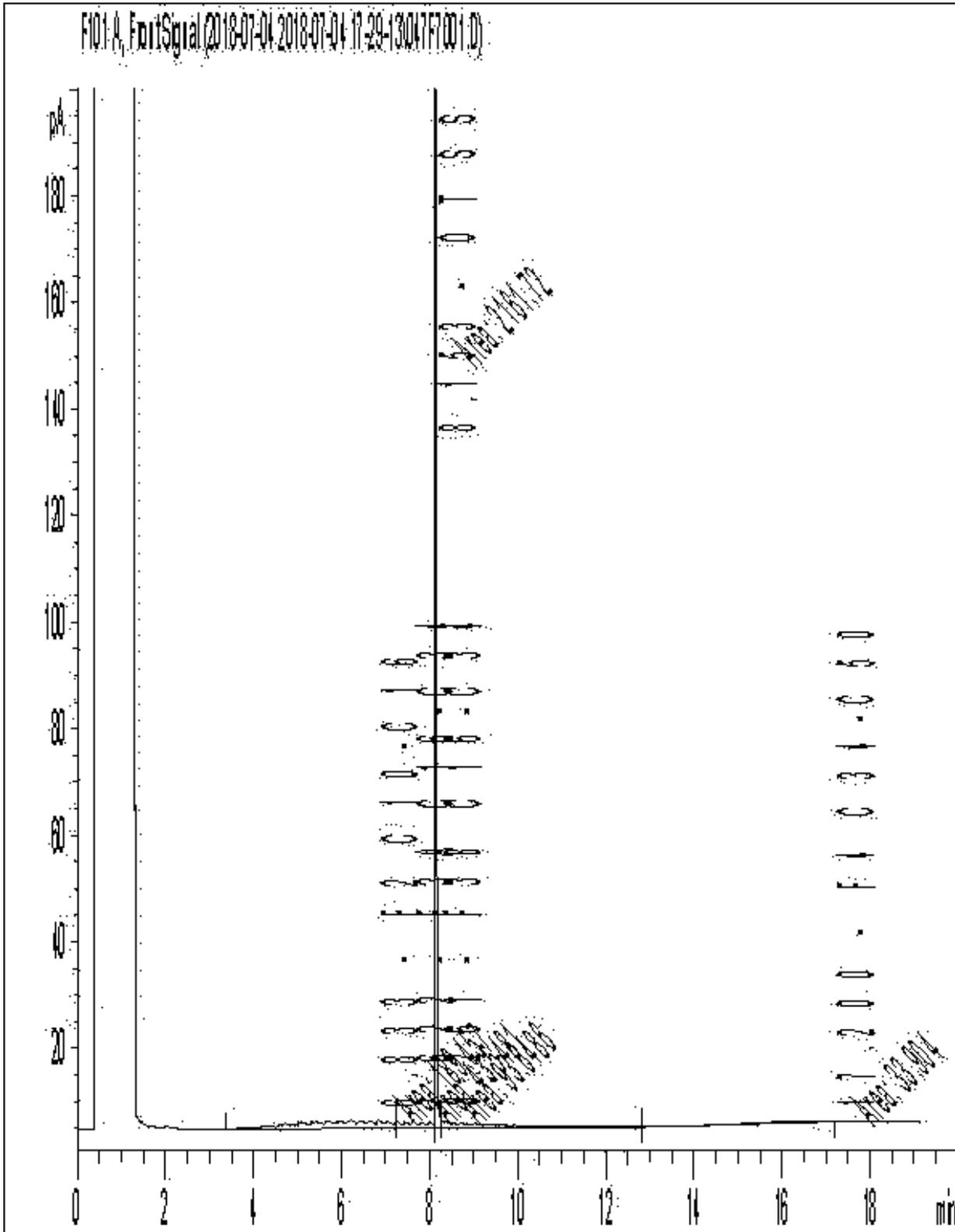


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

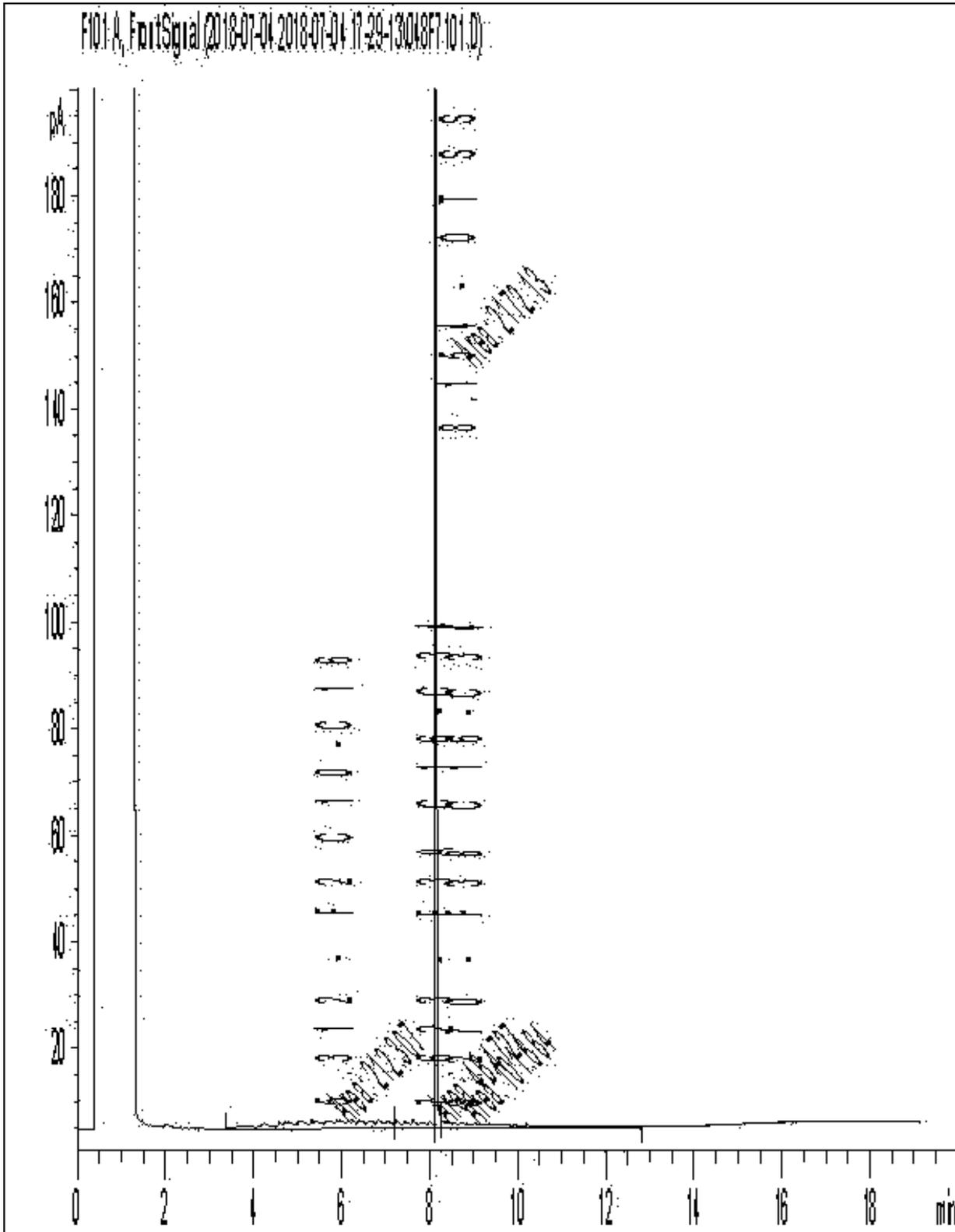


Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



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

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-00246047
 Site Location: ALBION
 Your C.O.C. #: 102667

Attention: Jeffery O'Banion

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

Report Date: 2018/07/09
 Report #: R5286648
 Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B8G7658
Received: 2018/07/06, 11:45

Sample Matrix: Soil
 # Samples Received: 2

Analyses	Quantity	Date		Laboratory Method	Reference
		Extracted	Analyzed		
Petroleum Hydro. CCME F1 & BTEX in Soil (1)	2	N/A	2018/07/09	OTT SOP-00002	CCME CWS
Petroleum Hydrocarbons F2-F4 in Soil (2)	2	2018/07/06	2018/07/07	OTT SOP-00001	CCME CWS
Moisture	2	N/A	2018/07/06	CAM SOP-00445	McKeague 2nd ed 1978

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 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.

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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.

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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) No lab extraction date is given for F1BTEX & VOC samples that are field preserved with methanol. Extraction date is the date sampled unless otherwise stated.

(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 reported using validated cold solvent extraction instead of Soxhlet extraction.

Your Project #: OTT-00246047
Site Location: ALBION
Your C.O.C. #: 102667

Attention: Jeffery O'Banion

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

Report Date: 2018/07/09
Report #: R5286648
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B8G7658
Received: 2018/07/06, 11:45

Encryption Key

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Jonathan Urben, Senior Project Manager
Email: jurben@maxxam.ca
Phone# (613) 274-0573

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RESULTS OF ANALYSES OF SOIL

Maxxam ID		HDN029	HDN030		
Sampling Date		2018/07/06 11:15	2018/07/06 11:15		
COC Number		102667	102667		
	UNITS	FOOTING 4	FOOTING 5	RDL	QC Batch
Inorganics					
Moisture	%	12	9.2	0.2	5615901
RDL = Reportable Detection Limit					
QC Batch = Quality Control Batch					

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		HDN029			HDN029			HDN030		
Sampling Date		2018/07/06 11:15			2018/07/06 11:15			2018/07/06 11:15		
COC Number		102667			102667			102667		
	UNITS	FOOTING 4	RDL	QC Batch	FOOTING 4 Lab-Dup	RDL	QC Batch	FOOTING 5	RDL	QC Batch
BTEX & F1 Hydrocarbons										
Benzene	ug/g	0.24	0.02	5616673	0.21	0.02	5616673	1.3	0.02	5616673
Toluene	ug/g	0.12	0.02	5616673	0.09	0.02	5616673	6.9	0.02	5616673
Ethylbenzene	ug/g	0.77	0.02	5616673	0.60	0.02	5616673	2.7	0.02	5616673
o-Xylene	ug/g	0.90	0.02	5616673	0.68	0.02	5616673	4.6	0.02	5616673
p+m-Xylene	ug/g	2.3	0.04	5616673	1.7	0.04	5616673	10	0.04	5616673
Total Xylenes	ug/g	3.2	0.04	5616673	2.3	0.04	5616673	15	0.04	5616673
F1 (C6-C10)	ug/g	17	10	5616673	14	10	5616673	180	10	5616673
F1 (C6-C10) - BTEX	ug/g	13	10	5616673	11	10	5616673	150	10	5616673
F2-F4 Hydrocarbons										
F2 (C10-C16 Hydrocarbons)	ug/g	<10	10	5615892				24	10	5615892
F3 (C16-C34 Hydrocarbons)	ug/g	<50	50	5615892				<50	50	5615892
F4 (C34-C50 Hydrocarbons)	ug/g	<50	50	5615892				<50	50	5615892
Reached Baseline at C50	ug/g	Yes		5615892				Yes		5615892
Surrogate Recovery (%)										
1,4-Difluorobenzene	%	110		5616673	111		5616673	109		5616673
4-Bromofluorobenzene	%	97		5616673	94		5616673	99		5616673
D10-Ethylbenzene	%	91		5616673	102		5616673	115		5616673
D4-1,2-Dichloroethane	%	124		5616673	123		5616673	119		5616673
o-Terphenyl	%	91		5615892				87		5615892
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate										

TEST SUMMARY

Maxxam ID: HDN029
Sample ID: FOOTING 4
Matrix: Soil

Collected: 2018/07/06
Shipped:
Received: 2018/07/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	5616673	N/A	2018/07/09	Fatemeh Habibagahi
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5615892	2018/07/06	2018/07/07	Mariana Vascan
Moisture	BAL	5615901	N/A	2018/07/06	Samantha Arachchige

Maxxam ID: HDN029 Dup
Sample ID: FOOTING 4
Matrix: Soil

Collected: 2018/07/06
Shipped:
Received: 2018/07/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	5616673	N/A	2018/07/09	Fatemeh Habibagahi

Maxxam ID: HDN030
Sample ID: FOOTING 5
Matrix: Soil

Collected: 2018/07/06
Shipped:
Received: 2018/07/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	5616673	N/A	2018/07/09	Fatemeh Habibagahi
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5615892	2018/07/06	2018/07/07	Mariana Vascan
Moisture	BAL	5615901	N/A	2018/07/06	Samantha Arachchige

GENERAL COMMENTS

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

Package 1	15.7°C
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Cooler custody seal was present and intact.

PETROLEUM HYDROCARBONS (CCME)

Petroleum Hydro. CCME F1 & BTEX in Soil: F1/BTEX Analysis: Matrix spiked recoveries were not calculated (NC) due to high concentration of target compounds in the parent sample.

Results relate only to the items tested.

QUALITY ASSURANCE REPORT

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5615892	o-Terphenyl	2018/07/07	84	30 - 130	93	30 - 130	103	%		
5616673	1,4-Difluorobenzene	2018/07/09	111	60 - 140	111	60 - 140	112	%		
5616673	4-Bromofluorobenzene	2018/07/09	93	60 - 140	96	60 - 140	97	%		
5616673	D10-Ethylbenzene	2018/07/09	101	30 - 130	92	30 - 130	85	%		
5616673	D4-1,2-Dichloroethane	2018/07/09	123	60 - 140	127	60 - 140	131	%		
5615892	F2 (C10-C16 Hydrocarbons)	2018/07/07	98	50 - 130	80	80 - 120	<10	ug/g	NC	50
5615892	F3 (C16-C34 Hydrocarbons)	2018/07/07	98	50 - 130	98	80 - 120	<50	ug/g	NC	50
5615892	F4 (C34-C50 Hydrocarbons)	2018/07/07	98	50 - 130	80	80 - 120	<50	ug/g	NC	50
5615901	Moisture	2018/07/06							1.2	50
5616673	Benzene	2018/07/09	NC	60 - 140	91	60 - 140	<0.02	ug/g	15	50
5616673	Ethylbenzene	2018/07/09	NC	60 - 140	88	60 - 140	<0.02	ug/g	25	50
5616673	F1 (C6-C10) - BTEX	2018/07/09					<10	ug/g	15	50
5616673	F1 (C6-C10)	2018/07/09	NC	60 - 140	82	80 - 120	<10	ug/g	18	50
5616673	o-Xylene	2018/07/09	NC	60 - 140	96	60 - 140	<0.02	ug/g	28	50
5616673	p+m-Xylene	2018/07/09	NC	60 - 140	87	60 - 140	<0.04	ug/g	32	50
5616673	Toluene	2018/07/09	NC	60 - 140	92	60 - 140	<0.02	ug/g	21	50
5616673	Total Xylenes	2018/07/09					<0.04	ug/g	31	50

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

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

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

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

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

NC (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)

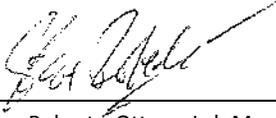
NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

VALIDATION SIGNATURE PAGE

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



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.

Invoice Information		Report Information (if differs from invoice)			Project Information (where applicable)			Turnaround Time (TAT) Required	
Company Name: <u>Exp</u>	Company Name: <u> </u>	Quotation #: <u>017-00246072</u>	Regular TAT (5-7 days) Most analyses <input type="checkbox"/>		Project #:			Rush TAT (Surcharges will be applied)	
Contact Name: <u>Jeff O</u>	Contact Name: <u> </u>	P.O. #/ A/E/C: <u>Street 3</u>	PLEASE PROVIDE 24 HOURS NOTICE FOR RUSH PROJECTS			Rush TAT (Surcharges will be applied)			
Address: <u>Alham</u>	Address: <u> </u>	Project #: <u>Albion</u>	<input checked="" type="checkbox"/> 1 Day <input type="checkbox"/> 2 Days <input type="checkbox"/> 3-4 Days			Date Required: <u>ASAP</u>			
Phone: <u>613 600 1899</u>	Phone: <u> </u>	Site Location: <u> </u>	Sampled By: <u>JCF</u>			Date Required: <u> </u>			
Email: <u>Jeffery.O'Brien@exp.ca</u>	Email: <u>Mark.McCalla@exp.com</u>	Site #:	Flush Confirmation #:			LABORATORY USE ONLY			
Regulation 253		Other Regulations			Analysis Requested			CUSTODY SEAL	
<input type="checkbox"/> Table 1	<input type="checkbox"/> Res/Mark	<input type="checkbox"/> Med/ Fine	<input type="checkbox"/> CCME	<input type="checkbox"/> Sanitary Sewer Bylaw				Present	Intact
<input type="checkbox"/> Table 2	<input checked="" type="checkbox"/> Fine/Comm	<input type="checkbox"/> Coarse	<input type="checkbox"/> MISA	<input type="checkbox"/> Storm Sewer Bylaw				<u>Y</u>	<u>Y</u>
<input checked="" type="checkbox"/> Table 3	<input type="checkbox"/> Agri/ Other		<input type="checkbox"/> HWLD	<input type="checkbox"/> Region				<u>15</u>	<u>15</u>
<input type="checkbox"/> Table			<input type="checkbox"/> Other (Specify)	<input type="checkbox"/> REG 550 (MUL 3 DAY TAT REQUIRED)				<u>17</u>	
FOR RSC (PLEASE CIRCLE) <u>Y / N</u>								COOLER TEMPERATURES	
Include Criteria on Certificate of Analysis: <u>Y / N</u>								COOLING MEDIA PRESENT: <u>(C)</u> <input type="checkbox"/>	
SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM									
SAMPLE IDENTIFICATION		DATE SAMPLED (YYYY/MM/DD)	TIME SAMPLED (HH:MM)	ANALYST	FOR CONSULTING SAMPLES	FOR STORED SAMPLES	FOR 15 MINUTE	FOR 30 MINUTE	FOR 15 MINUTE
1	<u>Footings 4</u>	<u>28.07.06</u>	<u>11:15am</u>	<u>S</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2	<u>Footings 5</u>	<u>1</u>	<u>11:15am</u>	<u>S</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3									
4									
5									
6									
7									
8									
9									
10									
RELINQUISHED BY: (Signature/Print)		DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	MAXXAM JOB #		
<u>Jeff O.</u>		<u>2018.07.06</u>	<u>11:45am</u>	<u>Kevin Jensen</u>	<u>2018.07.06</u>	<u>11:45</u>	<u>15-15-16</u>		

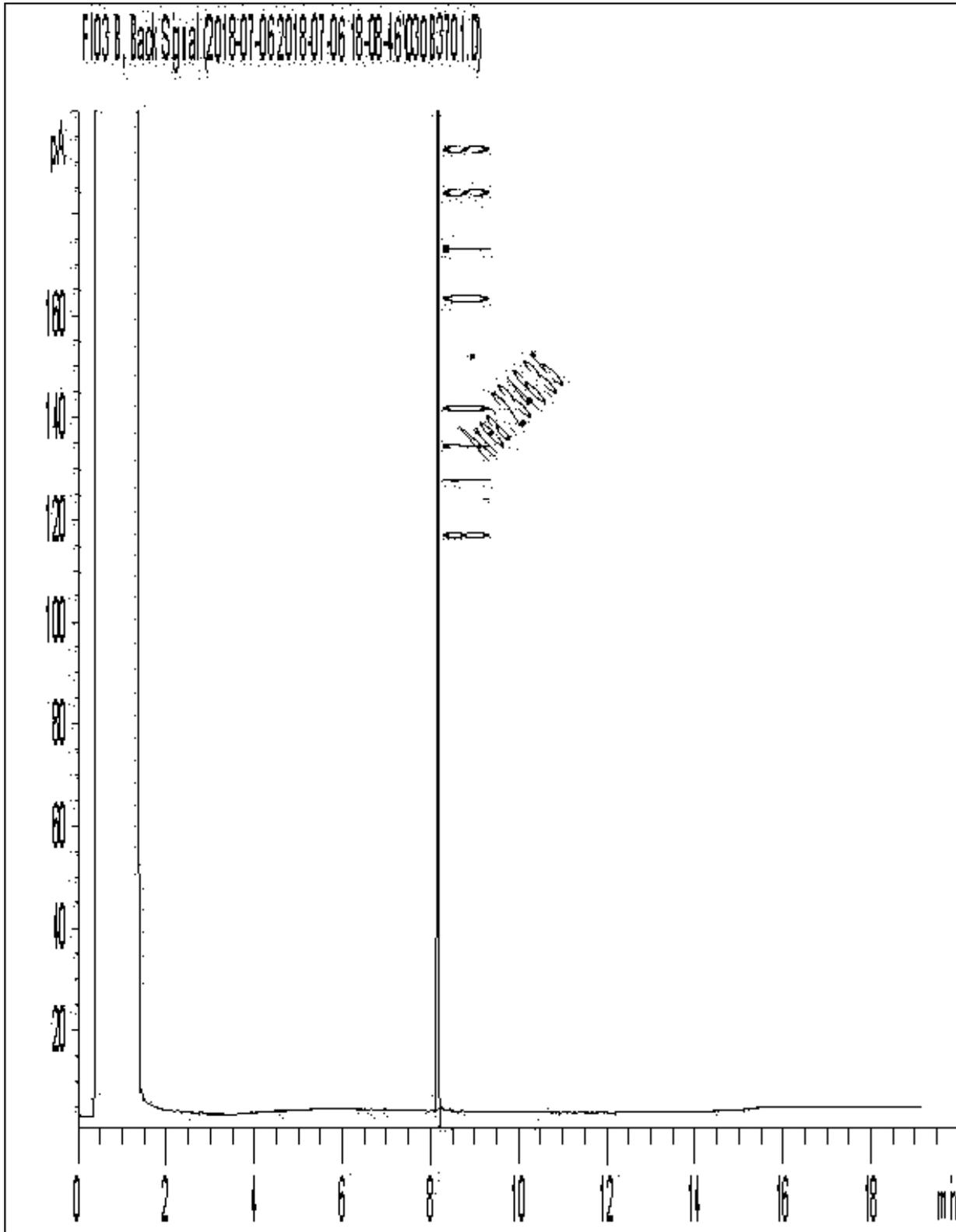
RECEIVED OTTAWA

06-Jul-18 11:45
 Jonathan Urban
 B8G7658
 KIV OTTAWA

ON SC

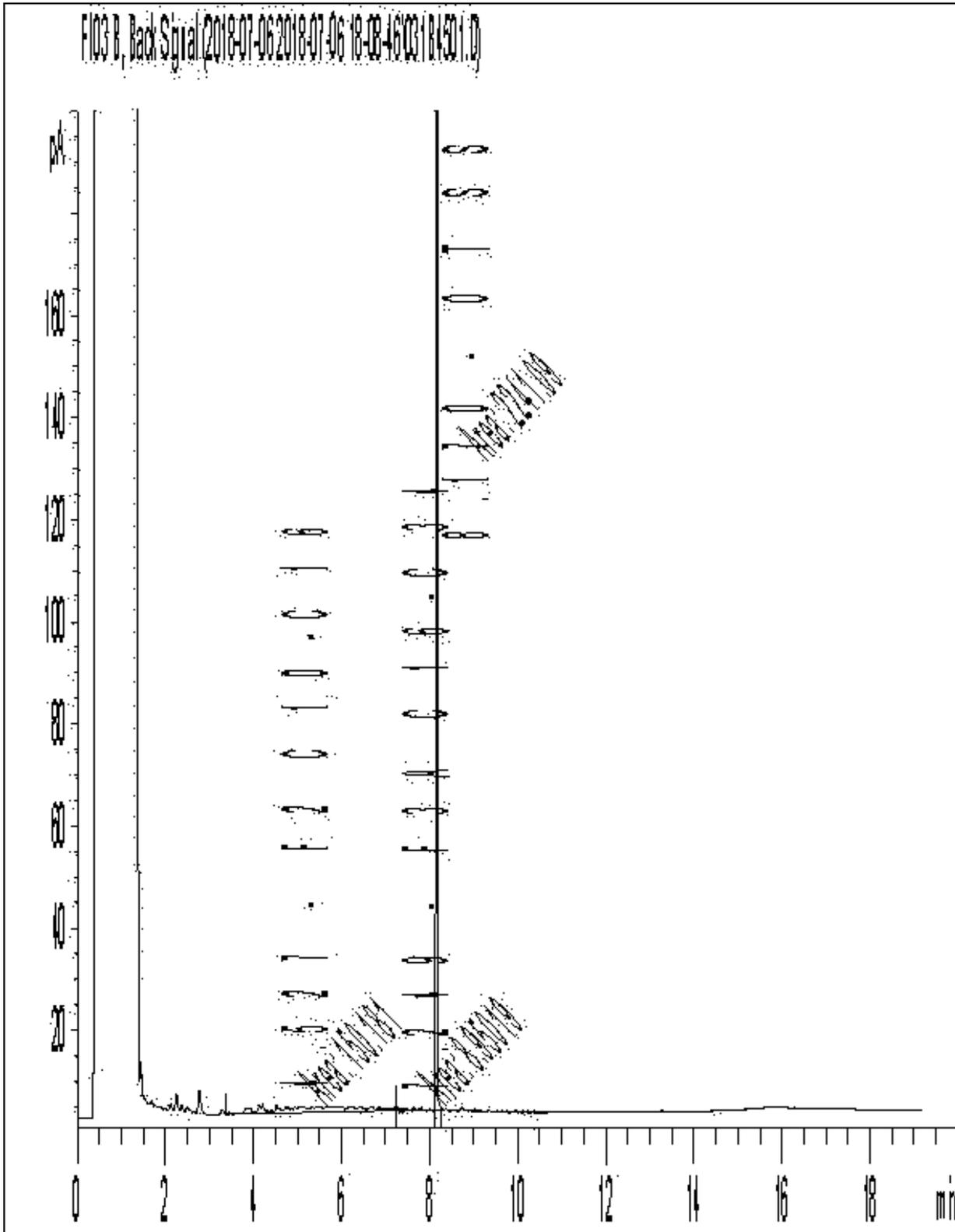
Unless otherwise agreed to in writing, work submitted on this Chain of Custody is subject to Maxxam's standard Terms and Conditions. Signing of this Chain of Custody document is acknowledgment and acceptance of our terms which are available for viewing at www.maxxam.ca/terms. Sample container, preservation, hold time and packaging information can be viewed at <http://www.maxxam.ca/wp-content/uploads/Ontario-COC.pdf>.

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.

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.

Attention: Mark McCalla

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

Report Date: 2018/07/17

Report #: R5299837

Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B8H3647

Received: 2018/07/11, 17:30

Sample Matrix: Soil
Samples Received: 13

Analyses	Quantity	Date		Laboratory Method	Reference
		Extracted	Analyzed		
Petroleum Hydro. CCME F1 & BTEX in Soil (1)	9	N/A	2018/07/12	OTT SOP-00002	CCME CWS
Petroleum Hydro. CCME F1 & BTEX in Soil (1)	2	N/A	2018/07/13	OTT SOP-00002	CCME CWS
Petroleum Hydro. CCME F1 & BTEX in Soil (1)	2	N/A	2018/07/16	OTT SOP-00002	CCME CWS
Petroleum Hydrocarbons F2-F4 in Soil (2)	2	2018/07/12	2018/07/12	OTT SOP-00001	CCME CWS
Petroleum Hydrocarbons F2-F4 in Soil (2)	9	2018/07/12	2018/07/13	OTT SOP-00001	CCME CWS
Petroleum Hydrocarbons F2-F4 in Soil (2)	2	2018/07/16	2018/07/16	OTT SOP-00001	CCME CWS
Moisture	11	N/A	2018/07/13	CAM SOP-00445	McKeague 2nd ed 1978
Moisture	2	N/A	2018/07/17	CAM SOP-00445	McKeague 2nd ed 1978

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 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.

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.

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.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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) No lab extraction date is given for F1BTEX & VOC samples that are field preserved with methanol. Extraction date is the date sampled unless otherwise stated.
- (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 reported using validated cold solvent extraction instead of Soxhlet extraction.

Your Project #: OTT-00246047-C0
Your C.O.C. #: 673384-02-01

Attention: Mark McCalla

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

Report Date: 2018/07/17
Report #: R5299837
Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B8H3647
Received: 2018/07/11, 17:30

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Jonathan Urben, Senior Project Manager
Email: jurben@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.

RESULTS OF ANALYSES OF SOIL

Maxxam ID		HET747	HET747	HET748	HET749		HET750		
Sampling Date		2018/07/11 12:00	2018/07/11 12:00	2018/07/11 12:00	2018/07/11 12:00		2018/07/11 12:00		
COC Number		673384-02-01	673384-02-01	673384-02-01	673384-02-01		673384-02-01		
	UNITS	1A	1A Lab-Dup	1D	2B	QC Batch	2C	RDL	QC Batch

Inorganics									
Moisture	%	8.2	8.0	7.4	8.3	5625272	7.6	0.2	5630544
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate									

Maxxam ID		HET750		HET751	HET752		HET753		
Sampling Date		2018/07/11 12:00		2018/07/11 12:00	2018/07/11 12:00		2018/07/11 12:00		
COC Number		673384-02-01		673384-02-01	673384-02-01		673384-02-01		
	UNITS	2C Lab-Dup	QC Batch	2D	2E	QC Batch	2F	RDL	QC Batch

Inorganics									
Moisture	%	8.0	5630544	8.6	8.7	5625272	8.1	0.2	5630544
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate									

Maxxam ID		HET754	HET755	HET756	HET757	HET758	HET759		
Sampling Date		2018/07/11 12:00	2018/07/11 12:00	2018/07/11 12:00	2018/07/11 12:00	2018/07/11 12:00	2018/07/11 12:00		
COC Number		673384-02-01	673384-02-01	673384-02-01	673384-02-01	673384-02-01	673384-02-01		
	UNITS	3A	3B	BACKFILL-1	BACKFILL-2	E21	E22	RDL	QC Batch

Inorganics									
Moisture	%	7.9	8.2	1.5	0.9	7.0	8.4	0.2	5625272
RDL = Reportable Detection Limit QC Batch = Quality Control Batch									

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		HET747			HET747			HET748		
Sampling Date		2018/07/11 12:00			2018/07/11 12:00			2018/07/11 12:00		
COC Number		673384-02-01			673384-02-01			673384-02-01		
	UNITS	1A	RDL	QC Batch	1A Lab-Dup	RDL	QC Batch	1D	RDL	QC Batch
BTEX & F1 Hydrocarbons										
Benzene	ug/g	<0.02	0.02	5625589	<0.02	0.02	5625589	<0.02	0.02	5625589
Toluene	ug/g	<0.02	0.02	5625589	<0.02	0.02	5625589	<0.02	0.02	5625589
Ethylbenzene	ug/g	<0.02	0.02	5625589	<0.02	0.02	5625589	<0.02	0.02	5625589
o-Xylene	ug/g	<0.02	0.02	5625589	<0.02	0.02	5625589	<0.02	0.02	5625589
p+m-Xylene	ug/g	<0.04	0.04	5625589	<0.04	0.04	5625589	<0.04	0.04	5625589
Total Xylenes	ug/g	<0.04	0.04	5625589	<0.04	0.04	5625589	<0.04	0.04	5625589
F1 (C6-C10)	ug/g	19	10	5625589	23	10	5625589	19	10	5625589
F1 (C6-C10) - BTEX	ug/g	19	10	5625589	23	10	5625589	19	10	5625589
F2-F4 Hydrocarbons										
F2 (C10-C16 Hydrocarbons)	ug/g	30	10	5625266				36	10	5625266
F3 (C16-C34 Hydrocarbons)	ug/g	<50	50	5625266				<50	50	5625266
F4 (C34-C50 Hydrocarbons)	ug/g	<50	50	5625266				<50	50	5625266
Reached Baseline at C50	ug/g	Yes		5625266				Yes		5625266
Surrogate Recovery (%)										
1,4-Difluorobenzene	%	113		5625589	112		5625589	112		5625589
4-Bromofluorobenzene	%	99		5625589	101		5625589	104		5625589
D10-Ethylbenzene	%	122		5625589	126		5625589	107		5625589
D4-1,2-Dichloroethane	%	111		5625589	115		5625589	115		5625589
o-Terphenyl	%	84		5625266				85		5625266
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate										

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		HET748			HET749		HET750		
Sampling Date		2018/07/11 12:00			2018/07/11 12:00		2018/07/11 12:00		
COC Number		673384-02-01			673384-02-01		673384-02-01		
	UNITS	1D Lab-Dup	RDL	QC Batch	2B	QC Batch	2C	RDL	QC Batch
BTEX & F1 Hydrocarbons									
Benzene	ug/g				0.62	5625589	<0.02	0.02	5630580
Toluene	ug/g				1.4	5625589	<0.02	0.02	5630580
Ethylbenzene	ug/g				2.1	5625589	<0.02	0.02	5630580
o-Xylene	ug/g				3.4	5625589	<0.02	0.02	5630580
p+m-Xylene	ug/g				8.0	5625589	<0.04	0.04	5630580
Total Xylenes	ug/g				11	5625589	<0.04	0.04	5630580
F1 (C6-C10)	ug/g				99	5625589	12	10	5630580
F1 (C6-C10) - BTEX	ug/g				83	5625589	12	10	5630580
F2-F4 Hydrocarbons									
F2 (C10-C16 Hydrocarbons)	ug/g	37	10	5625266	42	5625266	41	10	5630536
F3 (C16-C34 Hydrocarbons)	ug/g	<50	50	5625266	<50	5625266	<50	50	5630536
F4 (C34-C50 Hydrocarbons)	ug/g	<50	50	5625266	<50	5625266	<50	50	5630536
Reached Baseline at C50	ug/g	Yes		5625266	Yes	5625266	Yes		5630536
Surrogate Recovery (%)									
1,4-Difluorobenzene	%				112	5625589	120		5630580
4-Bromofluorobenzene	%				102	5625589	99		5630580
D10-Ethylbenzene	%				103	5625589	102		5630580
D4-1,2-Dichloroethane	%				111	5625589	116		5630580
o-Terphenyl	%	82		5625266	85	5625266	97		5630536
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate									

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		HET750			HET751			HET752			HET753		
Sampling Date		2018/07/11 12:00			2018/07/11 12:00			2018/07/11 12:00			2018/07/11 12:00		
COC Number		673384-02-01			673384-02-01			673384-02-01			673384-02-01		
	UNITS	2C Lab-Dup	RDL	QC Batch	2D	2E	QC Batch	2F	RDL	QC Batch			
BTEX & F1 Hydrocarbons													
Benzene	ug/g	<0.02	0.02	5630580	3.2	1.7	5625589	<0.02	0.02	5630580			
Toluene	ug/g	<0.02	0.02	5630580	1.6	14	5625589	<0.02	0.02	5630580			
Ethylbenzene	ug/g	<0.02	0.02	5630580	0.37	2.0	5625589	<0.02	0.02	5630580			
o-Xylene	ug/g	<0.02	0.02	5630580	0.65	3.7	5625589	<0.02	0.02	5630580			
p+m-Xylene	ug/g	<0.04	0.04	5630580	1.5	6.7	5625589	<0.04	0.04	5630580			
Total Xylenes	ug/g	<0.04	0.04	5630580	2.1	10	5625589	<0.04	0.04	5630580			
F1 (C6-C10)	ug/g	14	10	5630580	28	47	5625589	19	10	5630580			
F1 (C6-C10) - BTEX	ug/g	14	10	5630580	21	19	5625589	19	10	5630580			
F2-F4 Hydrocarbons													
F2 (C10-C16 Hydrocarbons)	ug/g				38	40	5625266	43	10	5630536			
F3 (C16-C34 Hydrocarbons)	ug/g				<50	<50	5625266	<50	50	5630536			
F4 (C34-C50 Hydrocarbons)	ug/g				<50	<50	5625266	<50	50	5630536			
Reached Baseline at C50	ug/g				Yes	Yes	5625266	Yes		5630536			
Surrogate Recovery (%)													
1,4-Difluorobenzene	%	112		5630580	112	109	5625589	116		5630580			
4-Bromofluorobenzene	%	100		5630580	101	96	5625589	112		5630580			
D10-Ethylbenzene	%	101		5630580	122	108	5625589	102		5630580			
D4-1,2-Dichloroethane	%	112		5630580	116	106	5625589	114		5630580			
o-Terphenyl	%				86	83	5625266	101		5630536			
RDL = Reportable Detection Limit													
QC Batch = Quality Control Batch													
Lab-Dup = Laboratory Initiated Duplicate													

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		HET753			HET754	HET755	HET756	HET757		
Sampling Date		2018/07/11 12:00			2018/07/11 12:00	2018/07/11 12:00	2018/07/11 12:00	2018/07/11 12:00		
COC Number		673384-02-01			673384-02-01	673384-02-01	673384-02-01	673384-02-01		
	UNITS	2F Lab-Dup	RDL	QC Batch	3A	3B	BACKFILL-1	BACKFILL-2	RDL	QC Batch

BTEX & F1 Hydrocarbons

Benzene	ug/g				14	<0.02	0.03	<0.02	0.02	5625589
Toluene	ug/g				6.1	<0.02	0.10	0.08	0.02	5625589
Ethylbenzene	ug/g				7.8	<0.02	0.02	<0.02	0.02	5625589
o-Xylene	ug/g				10	<0.02	0.03	0.03	0.02	5625589
p+m-Xylene	ug/g				27	<0.04	0.09	0.08	0.04	5625589
Total Xylenes	ug/g				37	<0.04	0.12	0.11	0.04	5625589
F1 (C6-C10)	ug/g				160	15	<10	<10	10	5625589
F1 (C6-C10) - BTEX	ug/g				93	15	<10	<10	10	5625589

F2-F4 Hydrocarbons

F2 (C10-C16 Hydrocarbons)	ug/g	43	10	5630536	48	35	<10	<10	10	5625266
F3 (C16-C34 Hydrocarbons)	ug/g	<50	50	5630536	<50	<50	<50	<50	50	5625266
F4 (C34-C50 Hydrocarbons)	ug/g	<50	50	5630536	<50	<50	<50	58	50	5625266
Reached Baseline at C50	ug/g	Yes		5630536	Yes	Yes	Yes	Yes		5625266

Surrogate Recovery (%)

1,4-Difluorobenzene	%				110	111	112	112		5625589
4-Bromofluorobenzene	%				100	93	98	91		5625589
D10-Ethylbenzene	%				NC	124	129	93		5625589
D4-1,2-Dichloroethane	%				114	107	115	118		5625589
o-Terphenyl	%	102		5630536	85	89	81	81		5625266

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

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		HET758	HET759		
Sampling Date		2018/07/11 12:00	2018/07/11 12:00		
COC Number		673384-02-01	673384-02-01		
	UNITS	E21	E22	RDL	QC Batch
BTEX & F1 Hydrocarbons					
Benzene	ug/g	0.03	<0.02	0.02	5625589
Toluene	ug/g	<0.02	<0.02	0.02	5625589
Ethylbenzene	ug/g	<0.02	<0.02	0.02	5625589
o-Xylene	ug/g	<0.02	<0.02	0.02	5625589
p+m-Xylene	ug/g	<0.04	<0.04	0.04	5625589
Total Xylenes	ug/g	<0.04	<0.04	0.04	5625589
F1 (C6-C10)	ug/g	<10	<10	10	5625589
F1 (C6-C10) - BTEX	ug/g	<10	<10	10	5625589
F2-F4 Hydrocarbons					
F2 (C10-C16 Hydrocarbons)	ug/g	36	37	10	5625266
F3 (C16-C34 Hydrocarbons)	ug/g	<50	<50	50	5625266
F4 (C34-C50 Hydrocarbons)	ug/g	<50	<50	50	5625266
Reached Baseline at C50	ug/g	Yes	Yes		5625266
Surrogate Recovery (%)					
1,4-Difluorobenzene	%	111	112		5625589
4-Bromofluorobenzene	%	98	97		5625589
D10-Ethylbenzene	%	99	105		5625589
D4-1,2-Dichloroethane	%	111	109		5625589
o-Terphenyl	%	88	90		5625266
RDL = Reportable Detection Limit					
QC Batch = Quality Control Batch					

TEST SUMMARY

Maxxam ID: HET747
Sample ID: 1A
Matrix: Soil

Collected: 2018/07/11
Shipped:
Received: 2018/07/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	5625589	N/A	2018/07/12	Fatemeh Habibagahi
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5625266	2018/07/12	2018/07/12	Mariana Vascan
Moisture	BAL	5625272	N/A	2018/07/13	Samantha Arachchige

Maxxam ID: HET747 Dup
Sample ID: 1A
Matrix: Soil

Collected: 2018/07/11
Shipped:
Received: 2018/07/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	5625589	N/A	2018/07/12	Fatemeh Habibagahi
Moisture	BAL	5625272	N/A	2018/07/13	Samantha Arachchige

Maxxam ID: HET748
Sample ID: 1D
Matrix: Soil

Collected: 2018/07/11
Shipped:
Received: 2018/07/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	5625589	N/A	2018/07/12	Fatemeh Habibagahi
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5625266	2018/07/12	2018/07/12	Mariana Vascan
Moisture	BAL	5625272	N/A	2018/07/13	Samantha Arachchige

Maxxam ID: HET748 Dup
Sample ID: 1D
Matrix: Soil

Collected: 2018/07/11
Shipped:
Received: 2018/07/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5625266	2018/07/12	2018/07/12	Mariana Vascan

Maxxam ID: HET749
Sample ID: 2B
Matrix: Soil

Collected: 2018/07/11
Shipped:
Received: 2018/07/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	5625589	N/A	2018/07/12	Fatemeh Habibagahi
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5625266	2018/07/12	2018/07/13	Mariana Vascan
Moisture	BAL	5625272	N/A	2018/07/13	Samantha Arachchige

Maxxam ID: HET750
Sample ID: 2C
Matrix: Soil

Collected: 2018/07/11
Shipped:
Received: 2018/07/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	5630580	N/A	2018/07/16	Fatemeh Habibagahi
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5630536	2018/07/16	2018/07/16	Mariana Vascan
Moisture	BAL	5630544	N/A	2018/07/17	Samantha Arachchige

TEST SUMMARY

Maxxam ID: HET750 Dup
Sample ID: 2C
Matrix: Soil

Collected: 2018/07/11
Shipped:
Received: 2018/07/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	5630580	N/A	2018/07/16	Fatemeh Habibagahi
Moisture	BAL	5630544	N/A	2018/07/17	Samantha Arachchige

Maxxam ID: HET751
Sample ID: 2D
Matrix: Soil

Collected: 2018/07/11
Shipped:
Received: 2018/07/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	5625589	N/A	2018/07/12	Fatemeh Habibagahi
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5625266	2018/07/12	2018/07/13	Mariana Vascan
Moisture	BAL	5625272	N/A	2018/07/13	Samantha Arachchige

Maxxam ID: HET752
Sample ID: 2E
Matrix: Soil

Collected: 2018/07/11
Shipped:
Received: 2018/07/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	5625589	N/A	2018/07/12	Fatemeh Habibagahi
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5625266	2018/07/12	2018/07/13	Mariana Vascan
Moisture	BAL	5625272	N/A	2018/07/13	Samantha Arachchige

Maxxam ID: HET753
Sample ID: 2F
Matrix: Soil

Collected: 2018/07/11
Shipped:
Received: 2018/07/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	5630580	N/A	2018/07/16	Fatemeh Habibagahi
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5630536	2018/07/16	2018/07/16	Mariana Vascan
Moisture	BAL	5630544	N/A	2018/07/17	Samantha Arachchige

Maxxam ID: HET753 Dup
Sample ID: 2F
Matrix: Soil

Collected: 2018/07/11
Shipped:
Received: 2018/07/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5630536	2018/07/16	2018/07/16	Mariana Vascan

Maxxam ID: HET754
Sample ID: 3A
Matrix: Soil

Collected: 2018/07/11
Shipped:
Received: 2018/07/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	5625589	N/A	2018/07/12	Fatemeh Habibagahi
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5625266	2018/07/12	2018/07/13	Mariana Vascan
Moisture	BAL	5625272	N/A	2018/07/13	Samantha Arachchige

TEST SUMMARY

Maxxam ID: HET755
Sample ID: 3B
Matrix: Soil

Collected: 2018/07/11
Shipped:
Received: 2018/07/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	5625589	N/A	2018/07/13	Fatemeh Habibagahi
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5625266	2018/07/12	2018/07/13	Mariana Vascan
Moisture	BAL	5625272	N/A	2018/07/13	Samantha Arachchige

Maxxam ID: HET756
Sample ID: BACKFILL-1
Matrix: Soil

Collected: 2018/07/11
Shipped:
Received: 2018/07/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	5625589	N/A	2018/07/12	Fatemeh Habibagahi
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5625266	2018/07/12	2018/07/13	Mariana Vascan
Moisture	BAL	5625272	N/A	2018/07/13	Samantha Arachchige

Maxxam ID: HET757
Sample ID: BACKFILL-2
Matrix: Soil

Collected: 2018/07/11
Shipped:
Received: 2018/07/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	5625589	N/A	2018/07/13	Fatemeh Habibagahi
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5625266	2018/07/12	2018/07/13	Mariana Vascan
Moisture	BAL	5625272	N/A	2018/07/13	Samantha Arachchige

Maxxam ID: HET758
Sample ID: E21
Matrix: Soil

Collected: 2018/07/11
Shipped:
Received: 2018/07/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	5625589	N/A	2018/07/12	Fatemeh Habibagahi
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5625266	2018/07/12	2018/07/13	Mariana Vascan
Moisture	BAL	5625272	N/A	2018/07/13	Samantha Arachchige

Maxxam ID: HET759
Sample ID: E22
Matrix: Soil

Collected: 2018/07/11
Shipped:
Received: 2018/07/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	5625589	N/A	2018/07/12	Fatemeh Habibagahi
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5625266	2018/07/12	2018/07/13	Mariana Vascan
Moisture	BAL	5625272	N/A	2018/07/13	Samantha Arachchige

GENERAL COMMENTS

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

Package 1	7.0°C
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Report Revised [2018/07/17]: F1/BTEX and F2-F4 included on report samples 2C and 2F.

Sample HET754 [3A] : F1/BTEX Analysis: The extraction surrogate recovery is above reporting limit due to Matrix interferences.

Results relate only to the items tested.

QUALITY ASSURANCE REPORT

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5625266	o-Terphenyl	2018/07/12	95	30 - 130	91	30 - 130	89	%		
5625589	1,4-Difluorobenzene	2018/07/12	112	60 - 140	107	60 - 140	115	%		
5625589	4-Bromofluorobenzene	2018/07/12	102	60 - 140	103	60 - 140	99	%		
5625589	D10-Ethylbenzene	2018/07/12	105	30 - 130	85	30 - 130	87	%		
5625589	D4-1,2-Dichloroethane	2018/07/12	108	60 - 140	110	60 - 140	117	%		
5630536	o-Terphenyl	2018/07/16	107	30 - 130	110	30 - 130	107	%		
5630580	1,4-Difluorobenzene	2018/07/16	111	60 - 140	123	60 - 140	103	%		
5630580	4-Bromofluorobenzene	2018/07/16	104	60 - 140	112	60 - 140	107	%		
5630580	D10-Ethylbenzene	2018/07/16	110	30 - 130	86	30 - 130	88	%		
5630580	D4-1,2-Dichloroethane	2018/07/16	104	60 - 140	130	60 - 140	108	%		
5625266	F2 (C10-C16 Hydrocarbons)	2018/07/12	86	50 - 130	86	80 - 120	<10	ug/g	2.1	50
5625266	F3 (C16-C34 Hydrocarbons)	2018/07/12	86	50 - 130	86	80 - 120	<50	ug/g	NC	50
5625266	F4 (C34-C50 Hydrocarbons)	2018/07/12	86	50 - 130	86	80 - 120	<50	ug/g	NC	50
5625272	Moisture	2018/07/13							2.5	50
5625589	Benzene	2018/07/12	91	60 - 140	90	60 - 140	<0.02	ug/g	NC	50
5625589	Ethylbenzene	2018/07/12	92	60 - 140	87	60 - 140	<0.02	ug/g	NC	50
5625589	F1 (C6-C10) - BTEX	2018/07/12					<10	ug/g	20	50
5625589	F1 (C6-C10)	2018/07/12	68	60 - 140	89	80 - 120	<10	ug/g	20	50
5625589	o-Xylene	2018/07/12	98	60 - 140	93	60 - 140	<0.02	ug/g	NC	50
5625589	p+m-Xylene	2018/07/12	94	60 - 140	89	60 - 140	<0.04	ug/g	NC	50
5625589	Toluene	2018/07/12	97	60 - 140	90	60 - 140	<0.02	ug/g	NC	50
5625589	Total Xylenes	2018/07/12					<0.04	ug/g	NC	50
5630536	F2 (C10-C16 Hydrocarbons)	2018/07/16	79	50 - 130	80	80 - 120	<10	ug/g	0.047	50
5630536	F3 (C16-C34 Hydrocarbons)	2018/07/16	79	50 - 130	80	80 - 120	<50	ug/g	NC	50
5630536	F4 (C34-C50 Hydrocarbons)	2018/07/16	79	50 - 130	80	80 - 120	<50	ug/g	NC	50
5630544	Moisture	2018/07/17							5.1	50
5630580	Benzene	2018/07/16	87	60 - 140	102	60 - 140	<0.02	ug/g	NC	50
5630580	Ethylbenzene	2018/07/16	90	60 - 140	97	60 - 140	<0.02	ug/g	NC	50
5630580	F1 (C6-C10) - BTEX	2018/07/16					<10	ug/g	13	50
5630580	F1 (C6-C10)	2018/07/16	114	60 - 140	86	80 - 120	<10	ug/g	13	50
5630580	o-Xylene	2018/07/16	100	60 - 140	101	60 - 140	<0.02	ug/g	NC	50

QUALITY ASSURANCE REPORT(CONT'D)

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5630580	p+m-Xylene	2018/07/16	89	60 - 140	88	60 - 140	<0.04	ug/g	NC	50
5630580	Toluene	2018/07/16	92	60 - 140	90	60 - 140	<0.02	ug/g	NC	50
5630580	Total Xylenes	2018/07/16					<0.04	ug/g	NC	50

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

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

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

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

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

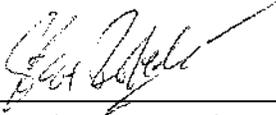
NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

VALIDATION SIGNATURE PAGE

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



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.

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name: #17497 exp Services Inc		Company Name: Mark McCalla / Mark Beuth		Question #: B46056 Stream 2		Maxxam Job #: 072384	
Attention: Accounts Payable		Attention: Mark McCalla / Mark Beuth		P.O. #: OTT-00246047-C0		Bottle Order #: 072384	
Address: 100-2650 Queensview Drive Ottawa ON K2B 8H6		Address:		Project:		COC #: Project Manager:	
Tel: (613) 688-1099 Fax: (613) 225-7397		Tel: (613) 225-9940 Ext: 243 Fax:		Project Name:		Jonathan Urban	
Email: accounting.ottawa@exp.com; karon.burke@exp.com		Email: mark.mccalla@exp.com; mark.beuth@exp.com		Sewer:		C#073384-01-01	
Accepted By: [Signature]		Accepted By: [Signature]		Accepted By: [Signature]			

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY					ANALYSIS REQUESTED (PLEASE BE SPECIFIC)										Turnaround Time (TAT) Required						
Regulation 153 (2011)			Other Regulations		Special Instructions	Field Filtered (please circle)	Nitrile / High Co-yl	Dishes 1st Paragraph Hygiene (Self)	TAT												
<input type="checkbox"/> Table 1	<input type="checkbox"/> Res/Pack	<input type="checkbox"/> Medium/Flow	<input type="checkbox"/> CCME	<input type="checkbox"/> Sanitary Sewer Bylaw																	
<input type="checkbox"/> Table 2	<input type="checkbox"/> Low/Stream	<input type="checkbox"/> Canals	<input type="checkbox"/> Reg 599	<input type="checkbox"/> Storm Sewer Bylaw																	
<input checked="" type="checkbox"/> Table 3	<input type="checkbox"/> Agri/Other	<input checked="" type="checkbox"/> For RSC	<input type="checkbox"/> MISA	Municipality																	
<input type="checkbox"/> Taste			<input type="checkbox"/> P/VOO	Other																	
Include Criteria on Certificate of Analysis (Y/N)?																					
Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix																	
1	Backfill-2	July 11 2018	12:00	Soil			X														
2	E21	↓	↓	↓			X														
3	E22	↓	↓	↓			X														
4																					
5																					
6																					
7																					
8																					
9																					
10																					

Plans & provide advance notice for each project

Regular (Standard) TAT:
 Will be applied if Spec TAT is not specified.
 Standard TAT = 5-7 Working days for most tests.
 Please note: Standard TAT for certain tests such as BOD and Dissolved Fluoride are + 5 days - contact your Project Manager for details.

For Specific Rush TAT or special analysis submission
 Note Required: [Signature] Time Required: [Signature]
 Rush Confirmation Number: [Signature] (call for W)

11-Jul-18 17:30
 Jonathan Urban
 613 688 1099
 B8H3647
 KTY OTT.001
 on ice

RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	* JTS used and not submitted	Laboratory Use Only			
[Signature]	18/07/11	5:25pm	[Signature]	2018/02/11	17:25		Time Sensitive	Temperature (°C) on Receipt	Custody Seal Present	Yes/No
[Signature]								7.5, 9	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.

** 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 (20°) COOL (4-10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

White: Maxxam Yellow: Client

VOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name: #17497 - exp Services Inc	Company Name: Mark McCalla / Mark Davlin	Quotation #: B40066	Maxxam Job #:	Batch Order #:	Barcode: 873364		
Attention: Accounts Payable	Attention: Mark McCalla / Mark Davlin	P.O. #:	CDC #:	Project Manager:	Barcode: Jonathan Urban		
Address: 100-2650 Queensview Drive	Address:	Project: OTT-00246047-C0	CDC #:	Project Manager:	Barcode: Jonathan Urban		
City: Ottawa ON K2B 8H6	City:	Project Name:	CDC #:	Project Manager:	Barcode: Jonathan Urban		
Tel: (613) 688-1899 Fax: (613) 225-7337	Tel: (613) 225-9940 Ext: 243 Fax:	Site #:	CDC #:	Project Manager:	Barcode: Jonathan Urban		
Email: accounting.ottawa@exp.com; Karen.Burke@exp.com	Email: mark.mccalla@exp.com; Mark.Davlin@exp.com	Sampled By: M.A.B.	CDC #:	Project Manager:	Barcode: Jonathan Urban		

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	
<input type="checkbox"/> Table 1	<input type="checkbox"/> Res/Pipe	<input checked="" type="checkbox"/> Medium/Feet	<input type="checkbox"/> CCME	<input type="checkbox"/> Sanitary Sewer Bylaw	Field Filtered (please check) Metals (ppb): Ory O Ring - See Public Health Documents (ppm) 7.5x Hold
<input type="checkbox"/> Table 2	<input checked="" type="checkbox"/> No/Conn	<input type="checkbox"/> System	<input type="checkbox"/> Reg 55F	<input type="checkbox"/> Storm Sewer Bylaw	
<input checked="" type="checkbox"/> Table 3	<input type="checkbox"/> Agri-Other	<input checked="" type="checkbox"/> For RBC	<input type="checkbox"/> MISA	Municipality:	
<input type="checkbox"/> Table			<input type="checkbox"/> PWSO		
Other: <input type="checkbox"/>					

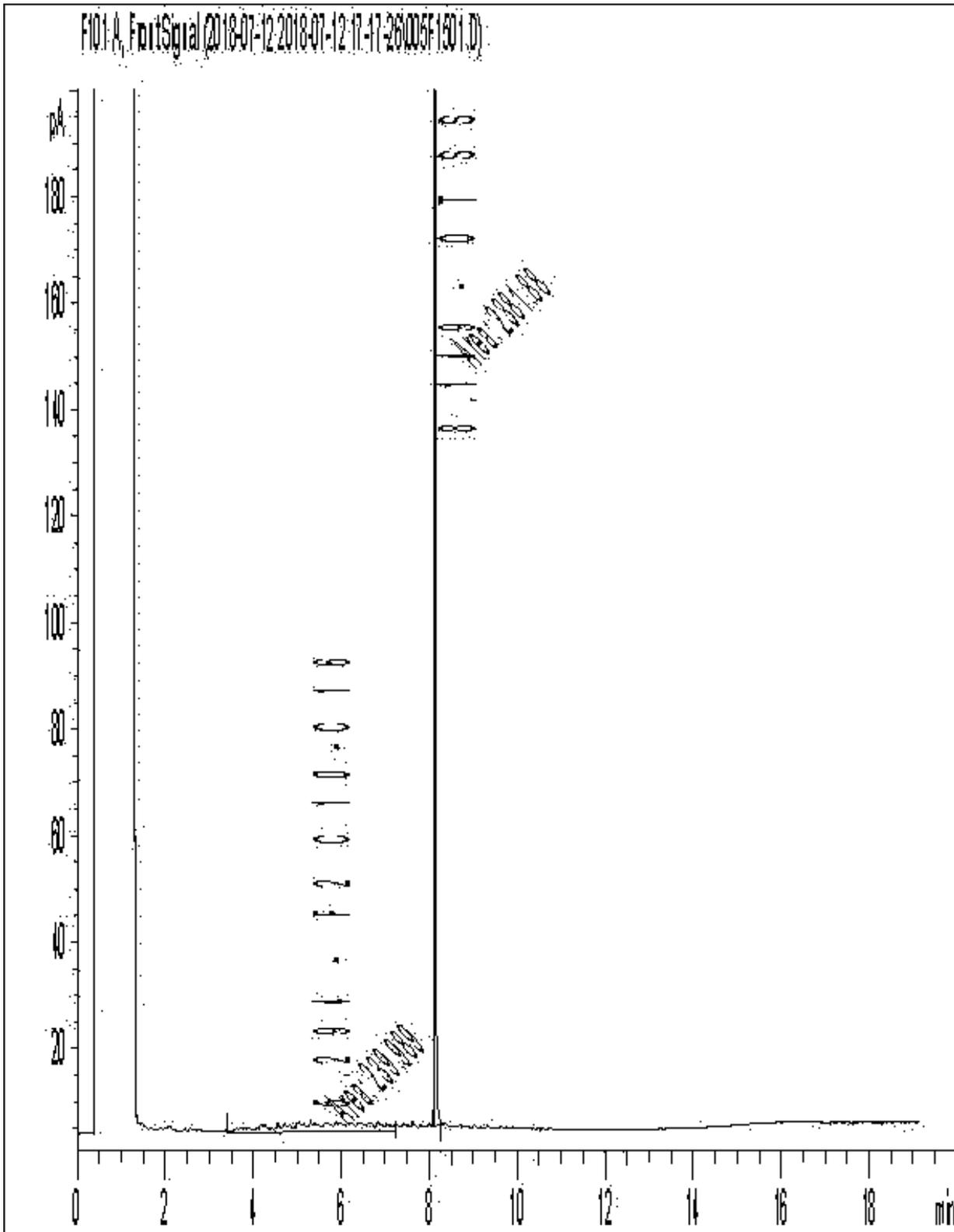
Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please check)	Metals (ppb): Ory	O Ring - See Public Health Documents (ppm)	Analysis Requested (Please Be Specific)	Turnaround Time (TAT) Required
1	IA	July 11 2018	12:00	Soil	X				Regular (Standard) TAT: <input type="checkbox"/> Please note: Standard TAT for certain tests such as BOD and Dissolved Oxygen are 5 days - consult your Project Manager for details. Job Specific TAT (if applies to entire submission): Date Received: July 11, 2018 Time Required: 17:30 Rush Confirmation Number: (Call Lab for B)
2	ID								
3	2B								
4	2C					X			Please hold this sample
5	2D								
6	2E								on ice
7	2F					X			
8	3A								
9	3B								
10	Backfill-1				X				

11-Jul-18 17:30
Jonathan Urban
B8H3647
KTY OTT, ONT.

* RELINQUISHED BY: (Signature/Print) Mark Davlin	Date: (YY/MM/DD) 18/07/18	Time 5:20pm	RECEIVED BY: (Signature/Print) Tim Campbell	Date: (YY/MM/DD) 2018/07/18	Time 17:30	# (are used and not submitted)	Laboratory Use Only
							Time Sensitive: Temperature (°C) on Receipt: 7.5, 9
							Custody Seal Present: <input checked="" type="checkbox"/> Intact: <input checked="" type="checkbox"/>

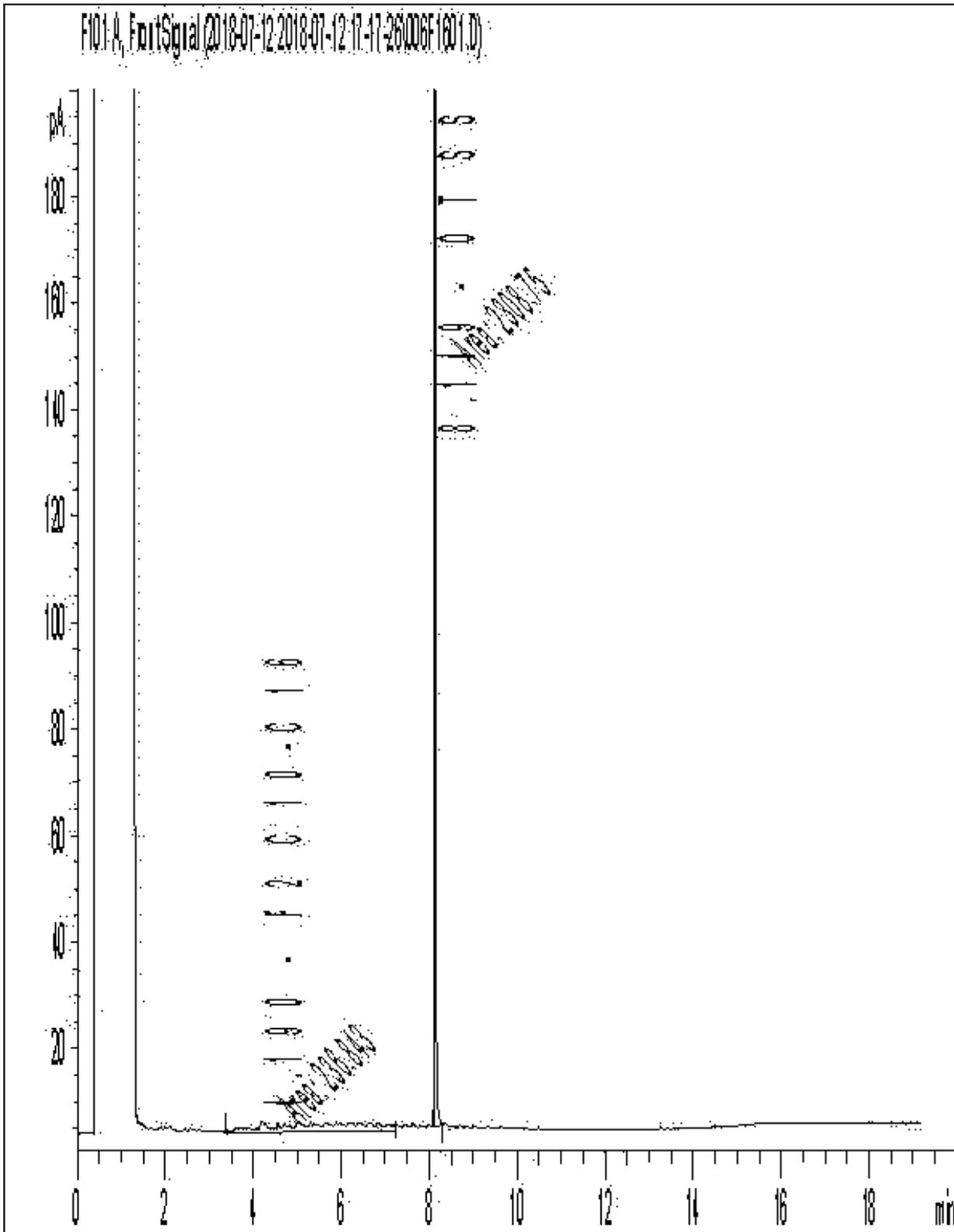
* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS AN ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.
* IT IS THE RESPONSIBILITY 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/WWP-CONTENT/UPLOADS/ONTARIO-COC.PDF.
* SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM.
White: Maxxam Yellow: Client

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



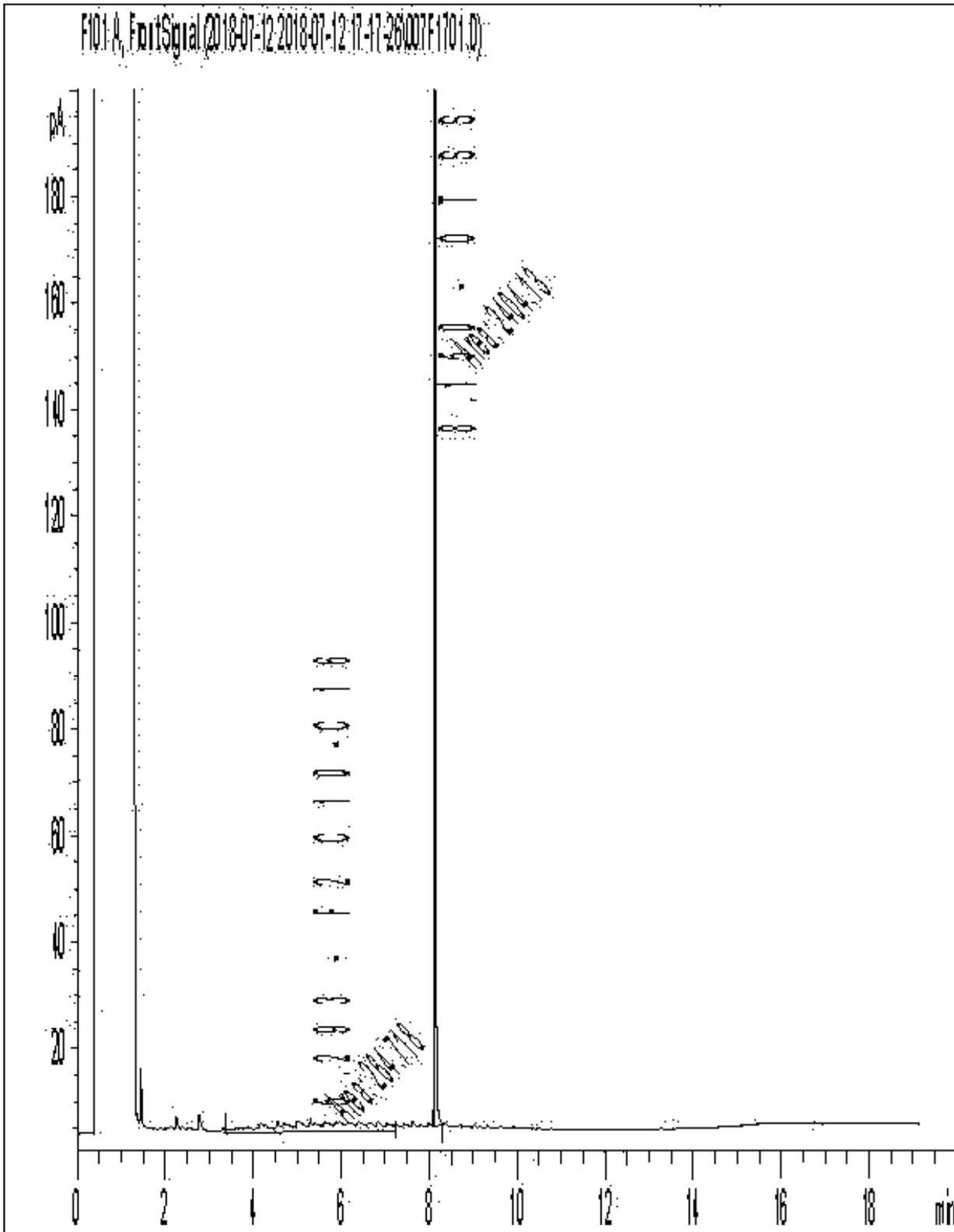
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



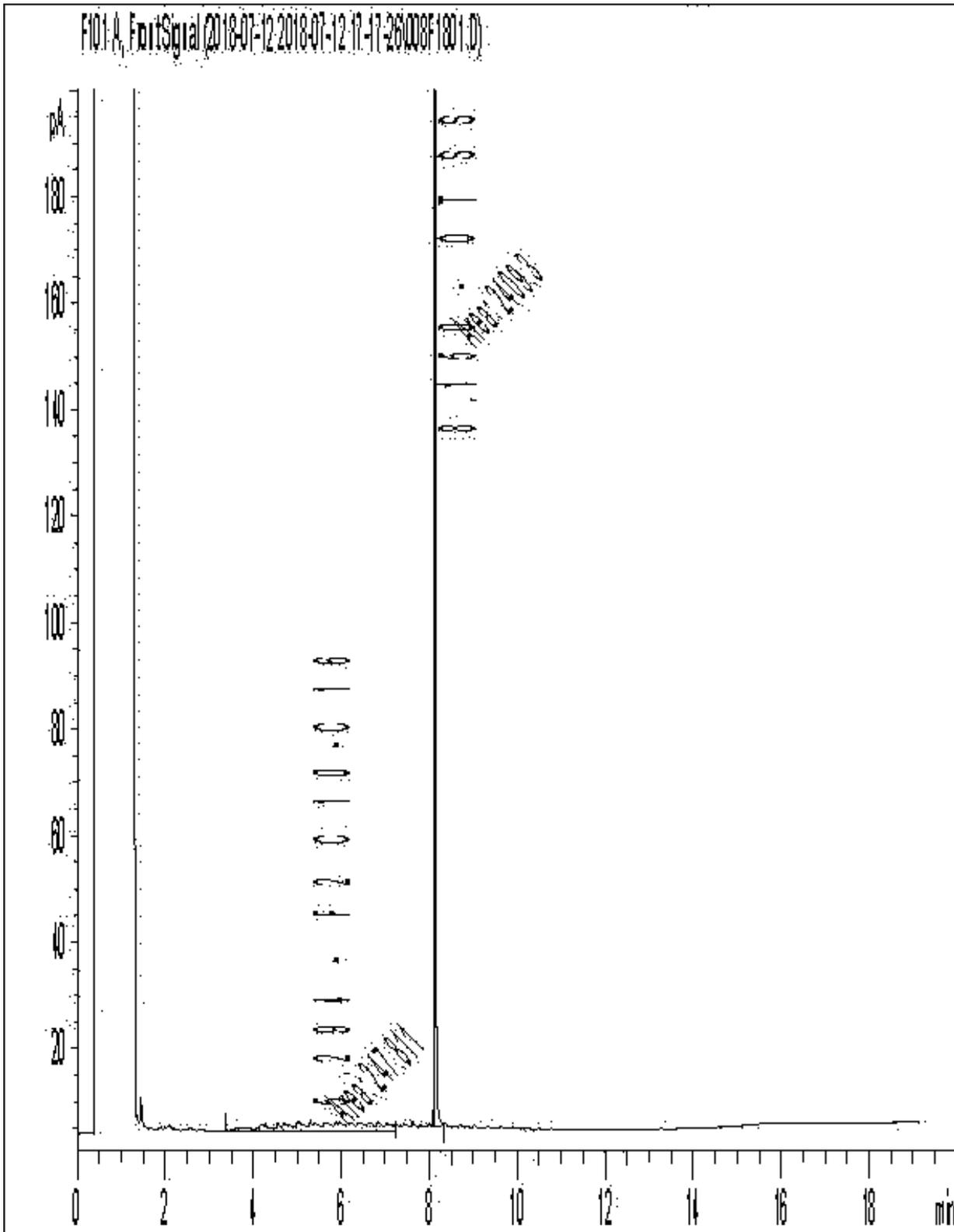
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



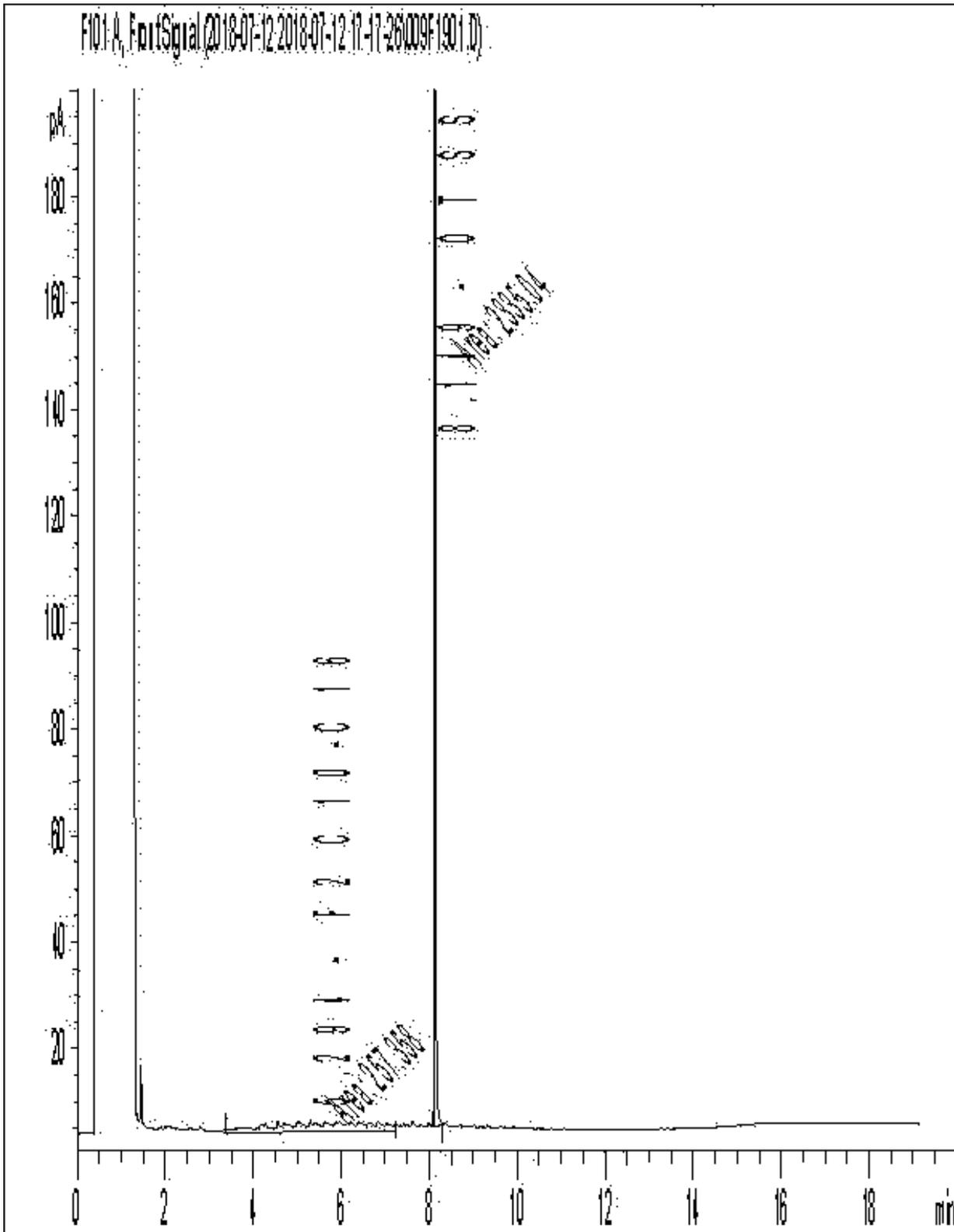
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



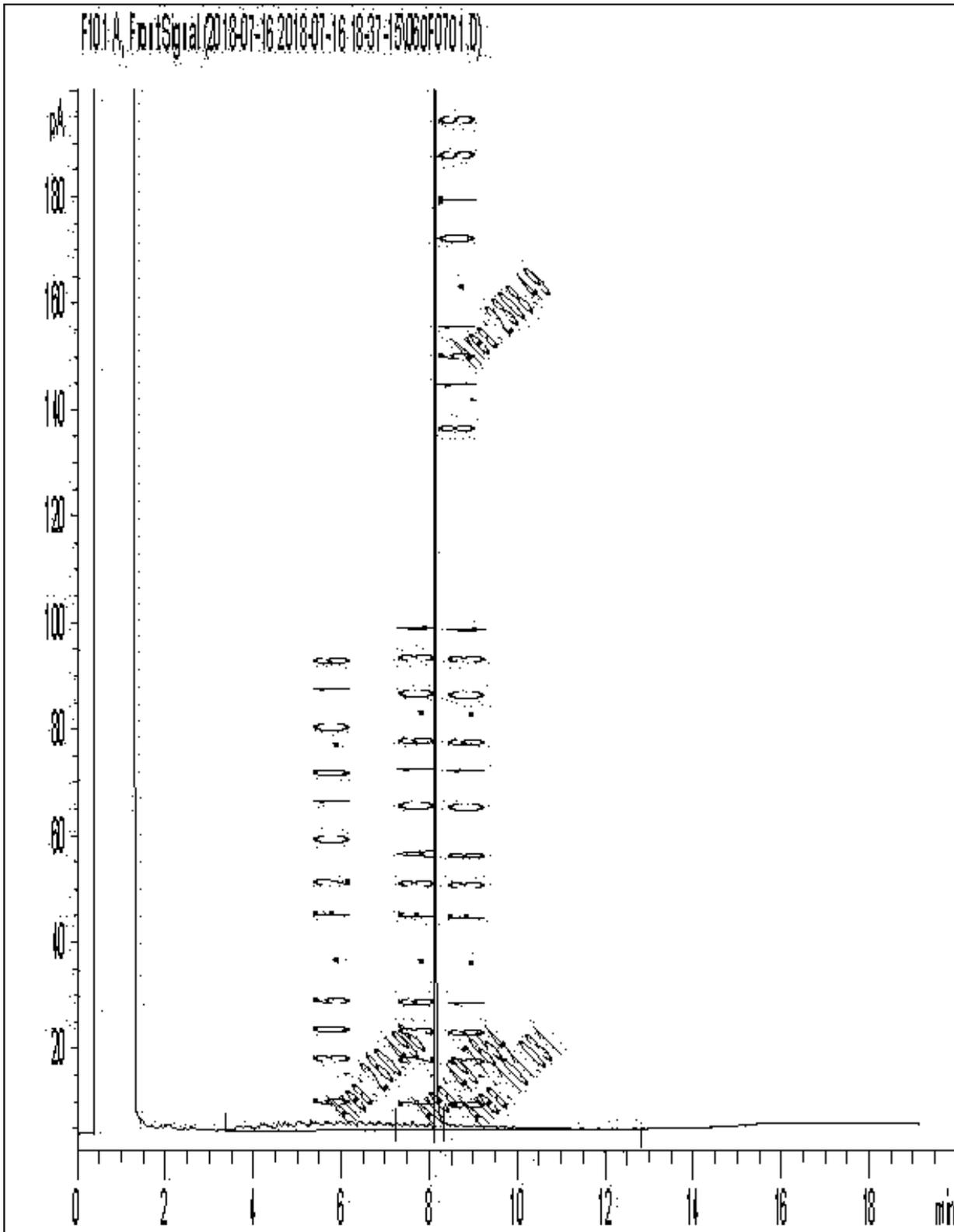
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



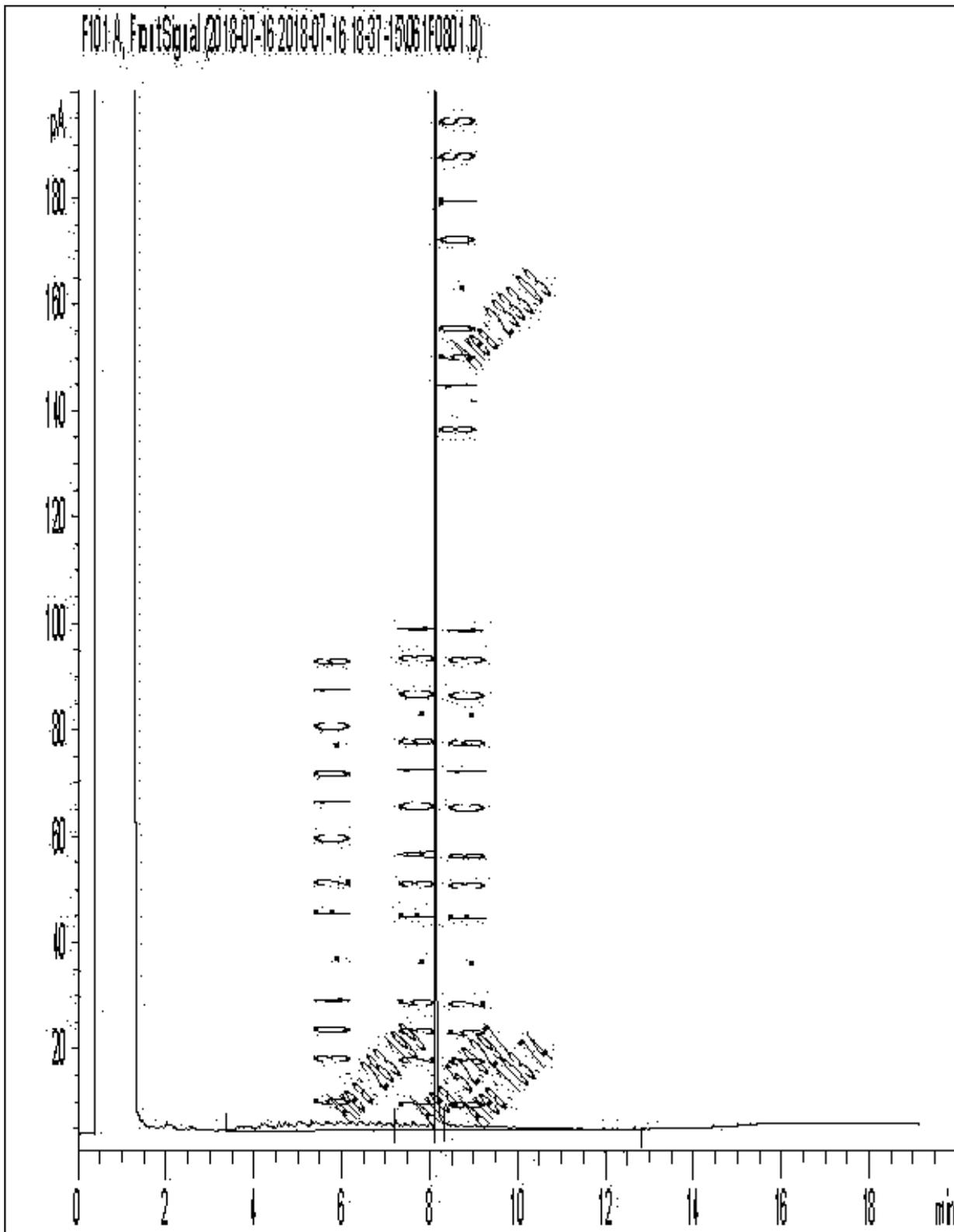
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



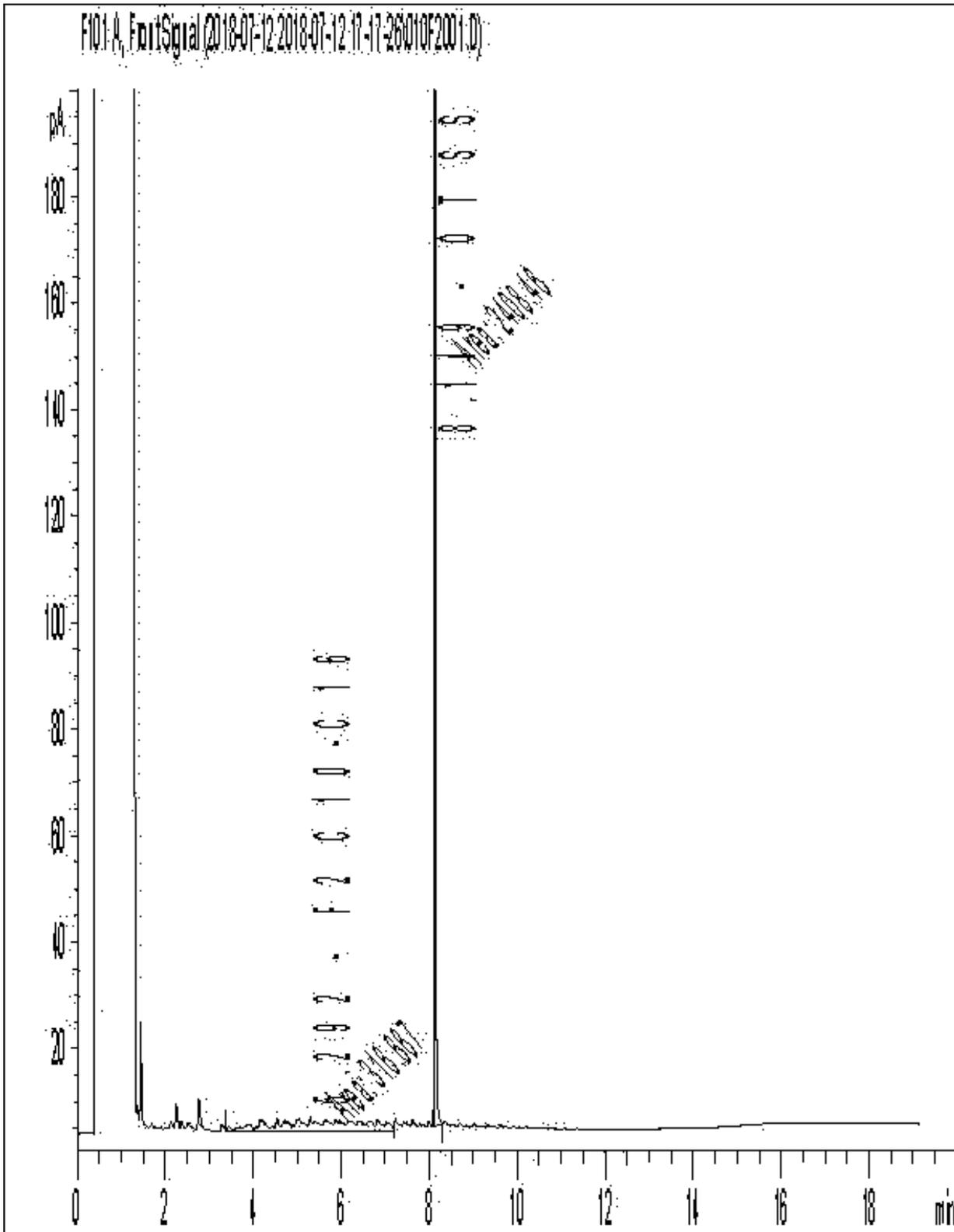
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



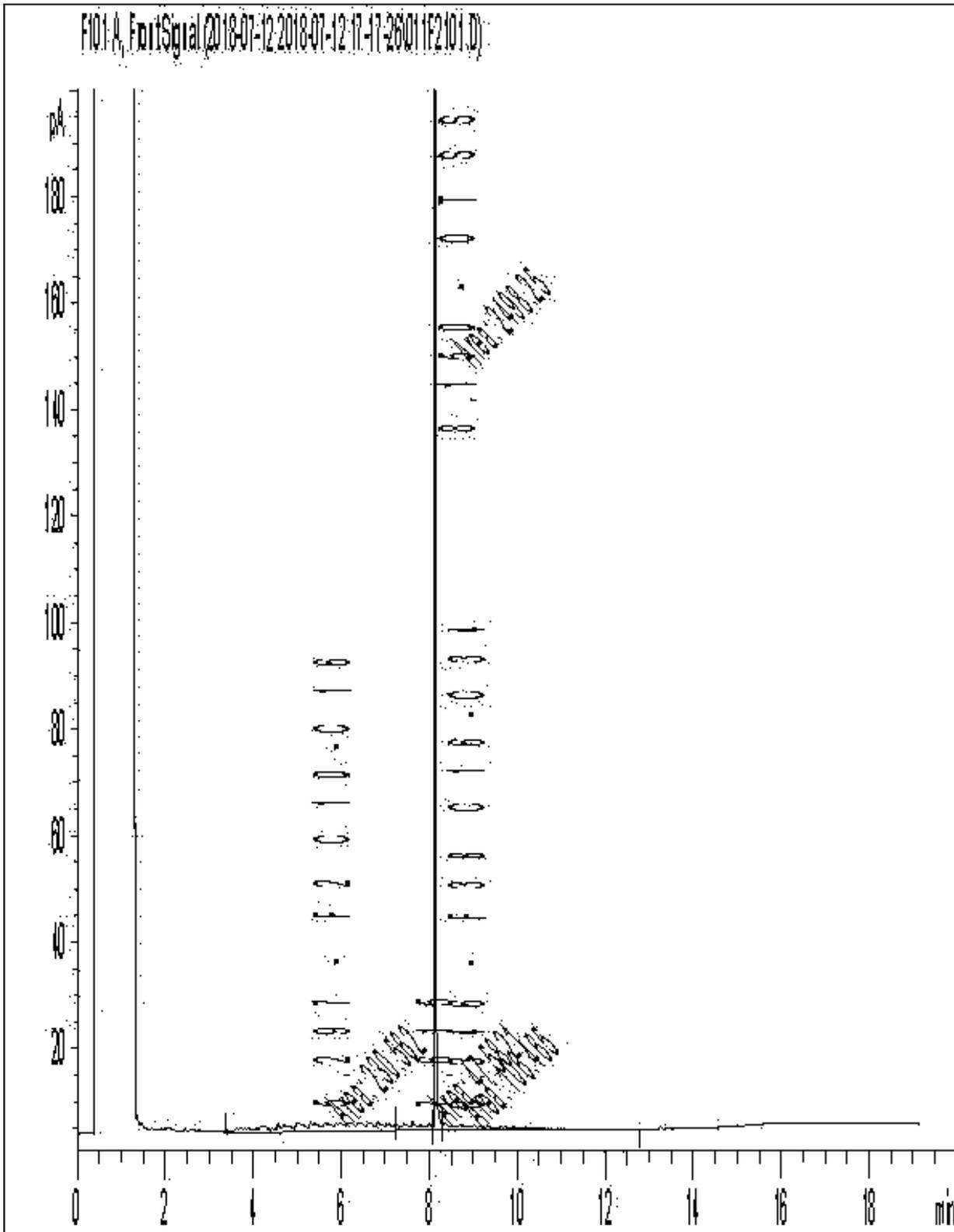
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

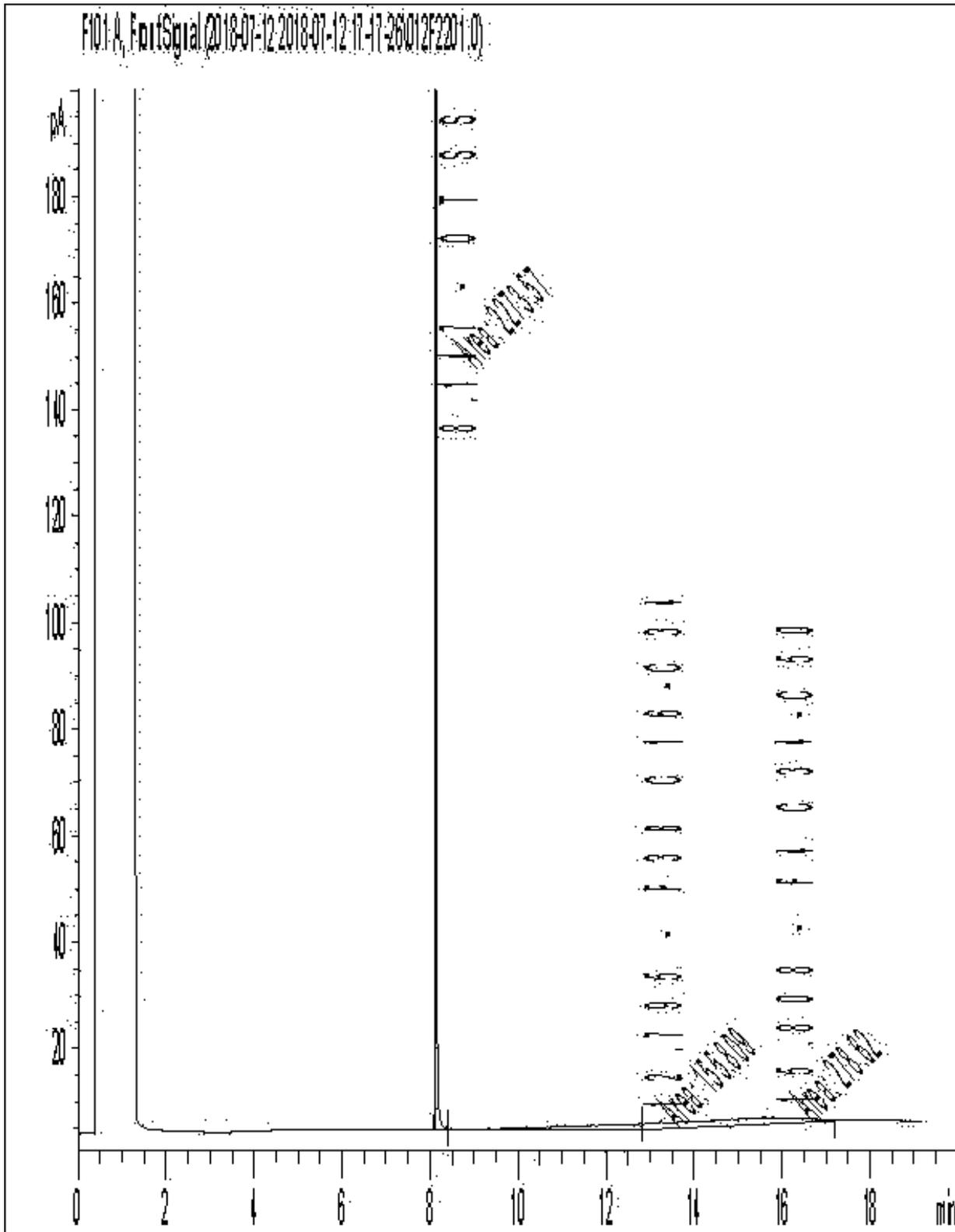


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

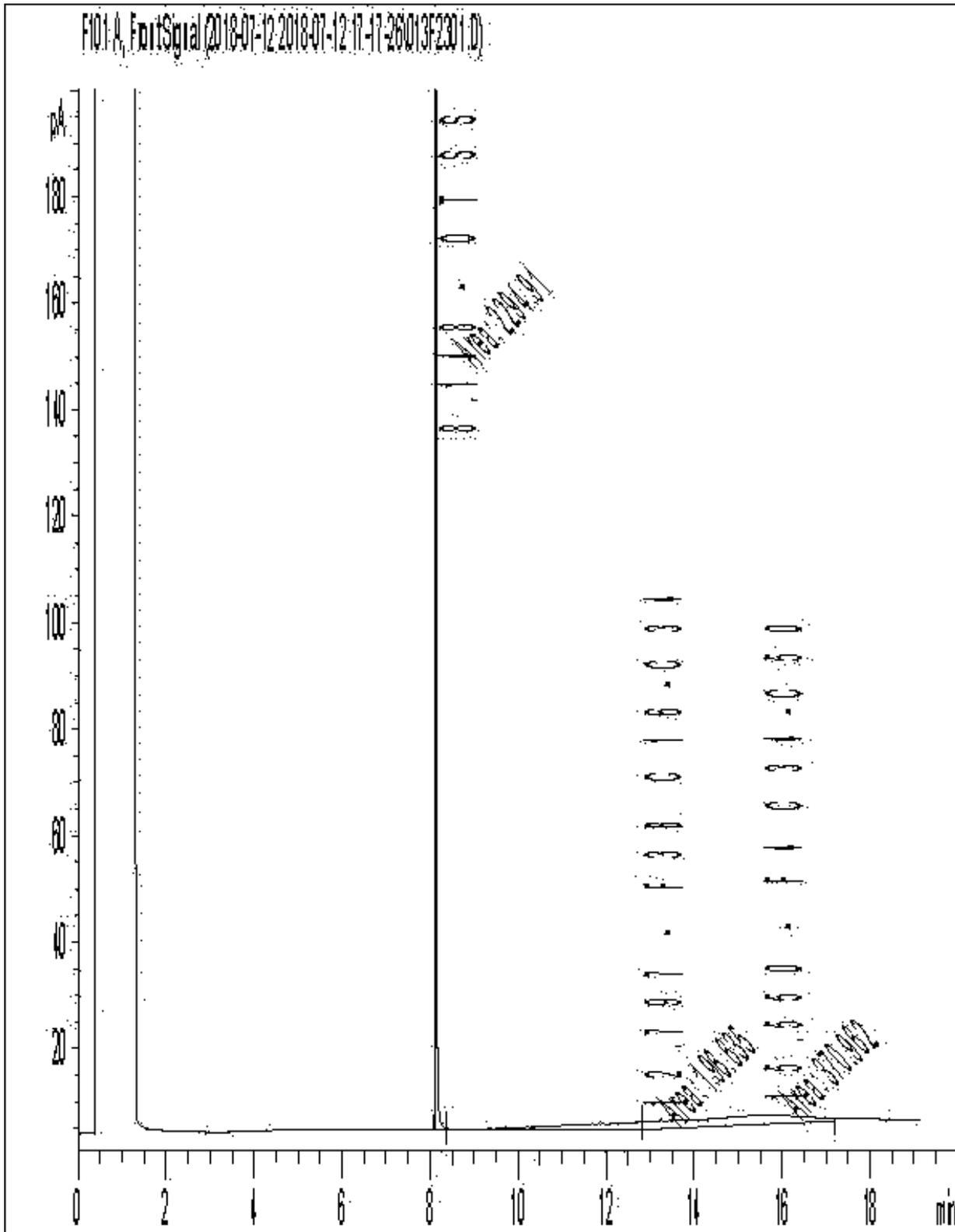


Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



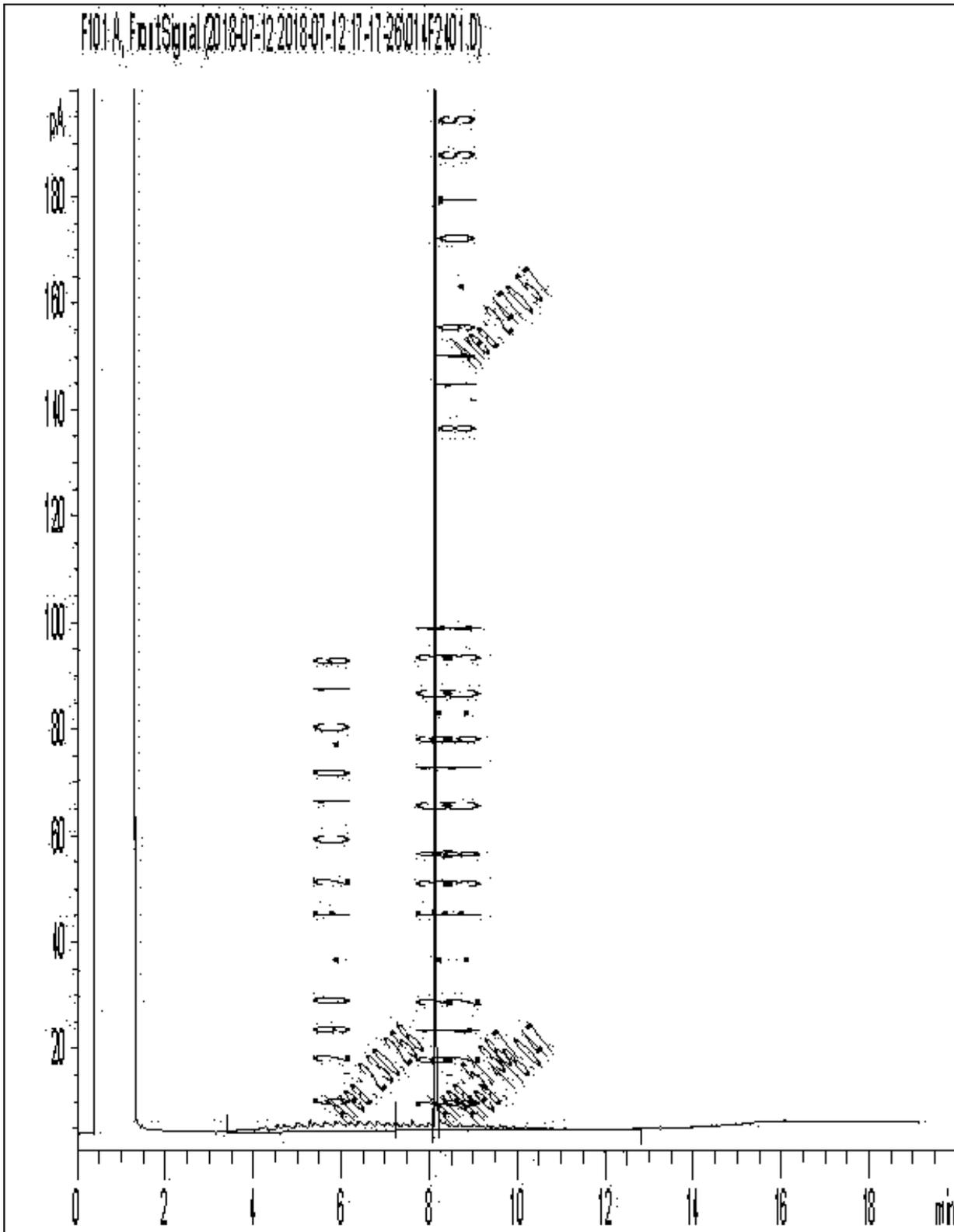
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



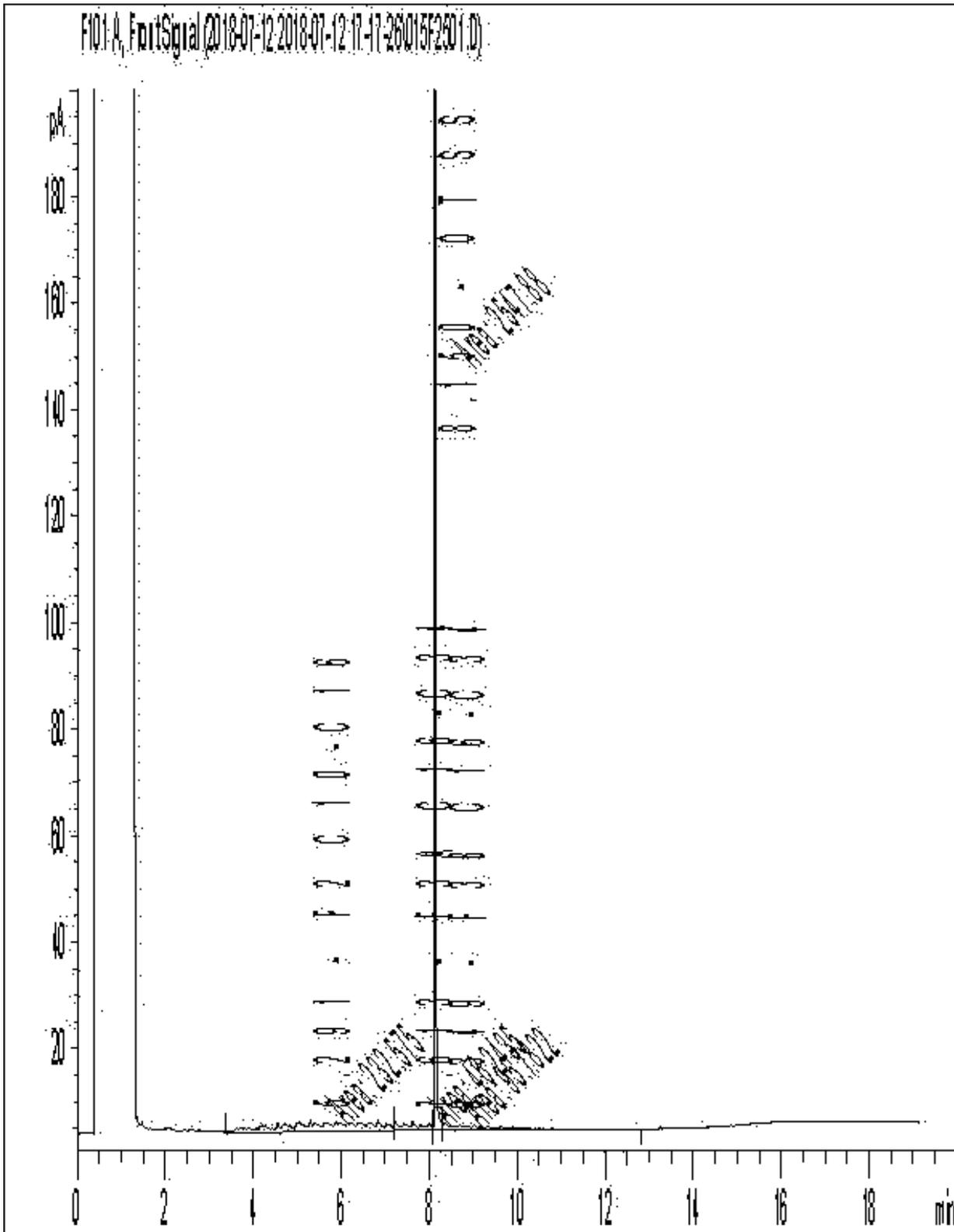
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

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.

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-00246047
 Site Location: ALBION
 Your C.O.C. #: 102822

Attention: Jeffery O'Banion

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

Report Date: 2018/07/13
 Report #: R5294862
 Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B8H3910

Received: 2018/07/12, 12:00

Sample Matrix: Soil
 # Samples Received: 5

Analyses	Date		Laboratory Method	Reference
	Quantity	Date Analyzed		
Petroleum Hydro. CCME F1 & BTEX in Soil (1)	3	N/A	2018/07/12 OTT SOP-00002	CCME CWS
Petroleum Hydro. CCME F1 & BTEX in Soil (1)	2	N/A	2018/07/13 OTT SOP-00002	CCME CWS
Petroleum Hydrocarbons F2-F4 in Soil (2)	2	2018/07/12	2018/07/12 OTT SOP-00001	CCME CWS
Petroleum Hydrocarbons F2-F4 in Soil (2)	3	2018/07/12	2018/07/13 OTT SOP-00001	CCME CWS
Moisture	5	N/A	2018/07/13 CAM SOP-00445	McKeague 2nd ed 1978

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 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.

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.

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.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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) No lab extraction date is given for F1BTEX & VOC samples that are field preserved with methanol. Extraction date is the date sampled unless otherwise stated.

(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 reported using validated cold solvent extraction instead of Soxhlet extraction.

Your Project #: OTT-00246047
Site Location: ALBION
Your C.O.C. #: 102822

Attention: Jeffery O'Banion

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

Report Date: 2018/07/13
Report #: R5294862
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B8H3910
Received: 2018/07/12, 12:00

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Jonathan Urben, Senior Project Manager
Email: jurben@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.

RESULTS OF ANALYSES OF SOIL

Maxxam ID		HEU900	HEU900	HEU901	HEU902	HEU903	HEU904		
Sampling Date		2018/07/12 11:00	2018/07/12 11:00	2018/07/12 11:00	2018/07/12 11:00	2018/07/12 11:00	2018/07/12 11:00		
COC Number		102822	102822	102822	102822	102822	102822		
	UNITS	3C	3C Lab-Dup	3D	3E	3F	3G	RDL	QC Batch

Inorganics									
Moisture	%	8.0	8.4	7.8	8.9	8.6	7.9	0.2	5625590
RDL = Reportable Detection Limit									
QC Batch = Quality Control Batch									
Lab-Dup = Laboratory Initiated Duplicate									

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		HEU900	HEU901			HEU901			HEU902	HEU903		
Sampling Date		2018/07/12 11:00	2018/07/12 11:00			2018/07/12 11:00			2018/07/12 11:00	2018/07/12 11:00		
COC Number		102822	102822			102822			102822	102822		
	UNITS	3C	3D	RDL	QC Batch	3D Lab-Dup	RDL	QC Batch	3E	3F	RDL	QC Batch

BTEX & F1 Hydrocarbons												
Benzene	ug/g	0.40	0.03	0.02	5625589				<0.02	<0.02	0.02	5625589
Toluene	ug/g	3.6	<0.02	0.02	5625589				<0.02	<0.02	0.02	5625589
Ethylbenzene	ug/g	2.8	<0.02	0.02	5625589				<0.02	<0.02	0.02	5625589
o-Xylene	ug/g	5.1	0.04	0.02	5625589				<0.02	<0.02	0.02	5625589
p+m-Xylene	ug/g	12	0.08	0.04	5625589				<0.04	<0.04	0.04	5625589
Total Xylenes	ug/g	17	0.12	0.04	5625589				<0.04	<0.04	0.04	5625589
F1 (C6-C10)	ug/g	140	<10	10	5625589				<10	11	10	5625589
F1 (C6-C10) - BTEX	ug/g	120	<10	10	5625589				<10	11	10	5625589

F2-F4 Hydrocarbons												
F2 (C10-C16 Hydrocarbons)	ug/g	61	42	10	5625593	39	10	5625593	43	48	10	5625593
F3 (C16-C34 Hydrocarbons)	ug/g	<50	<50	50	5625593	<50	50	5625593	<50	<50	50	5625593
F4 (C34-C50 Hydrocarbons)	ug/g	<50	<50	50	5625593	<50	50	5625593	<50	<50	50	5625593
Reached Baseline at C50	ug/g	Yes	Yes		5625593	Yes		5625593	Yes	Yes		5625593

Surrogate Recovery (%)												
1,4-Difluorobenzene	%	112	112		5625589				113	114		5625589
4-Bromofluorobenzene	%	101	100		5625589				102	104		5625589
D10-Ethylbenzene	%	113	101		5625589				104	114		5625589
D4-1,2-Dichloroethane	%	112	117		5625589				117	117		5625589
o-Terphenyl	%	79	83		5625593	83		5625593	81	84		5625593

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

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		HEU904		
Sampling Date		2018/07/12 11:00		
COC Number		102822		
	UNITS	3G	RDL	QC Batch
BTEX & F1 Hydrocarbons				
Benzene	ug/g	<0.02	0.02	5625589
Toluene	ug/g	<0.02	0.02	5625589
Ethylbenzene	ug/g	<0.02	0.02	5625589
o-Xylene	ug/g	<0.02	0.02	5625589
p+m-Xylene	ug/g	<0.04	0.04	5625589
Total Xylenes	ug/g	<0.04	0.04	5625589
F1 (C6-C10)	ug/g	12	10	5625589
F1 (C6-C10) - BTEX	ug/g	12	10	5625589
F2-F4 Hydrocarbons				
F2 (C10-C16 Hydrocarbons)	ug/g	45	10	5625593
F3 (C16-C34 Hydrocarbons)	ug/g	<50	50	5625593
F4 (C34-C50 Hydrocarbons)	ug/g	<50	50	5625593
Reached Baseline at C50	ug/g	Yes		5625593
Surrogate Recovery (%)				
1,4-Difluorobenzene	%	113		5625589
4-Bromofluorobenzene	%	101		5625589
D10-Ethylbenzene	%	107		5625589
D4-1,2-Dichloroethane	%	114		5625589
o-Terphenyl	%	82		5625593
RDL = Reportable Detection Limit				
QC Batch = Quality Control Batch				

TEST SUMMARY

Maxxam ID: HEU900
Sample ID: 3C
Matrix: Soil

Collected: 2018/07/12
Shipped:
Received: 2018/07/12

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	5625589	N/A	2018/07/12	Fatemeh Habibagahi
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5625593	2018/07/12	2018/07/12	Mariana Vascan
Moisture	BAL	5625590	N/A	2018/07/13	Samantha Arachchige

Maxxam ID: HEU900 Dup
Sample ID: 3C
Matrix: Soil

Collected: 2018/07/12
Shipped:
Received: 2018/07/12

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	5625590	N/A	2018/07/13	Samantha Arachchige

Maxxam ID: HEU901
Sample ID: 3D
Matrix: Soil

Collected: 2018/07/12
Shipped:
Received: 2018/07/12

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	5625589	N/A	2018/07/12	Fatemeh Habibagahi
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5625593	2018/07/12	2018/07/12	Mariana Vascan
Moisture	BAL	5625590	N/A	2018/07/13	Samantha Arachchige

Maxxam ID: HEU901 Dup
Sample ID: 3D
Matrix: Soil

Collected: 2018/07/12
Shipped:
Received: 2018/07/12

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5625593	2018/07/12	2018/07/13	Mariana Vascan

Maxxam ID: HEU902
Sample ID: 3E
Matrix: Soil

Collected: 2018/07/12
Shipped:
Received: 2018/07/12

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	5625589	N/A	2018/07/12	Fatemeh Habibagahi
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5625593	2018/07/12	2018/07/13	Mariana Vascan
Moisture	BAL	5625590	N/A	2018/07/13	Samantha Arachchige

Maxxam ID: HEU903
Sample ID: 3F
Matrix: Soil

Collected: 2018/07/12
Shipped:
Received: 2018/07/12

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	5625589	N/A	2018/07/13	Fatemeh Habibagahi
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5625593	2018/07/12	2018/07/13	Mariana Vascan
Moisture	BAL	5625590	N/A	2018/07/13	Samantha Arachchige

Maxxam Job #: B8H3910
Report Date: 2018/07/13

exp Services Inc
Client Project #: OTT-00246047
Site Location: ALBION
Sampler Initials: JO

TEST SUMMARY

Maxxam ID: HEU904
Sample ID: 3G
Matrix: Soil

Collected: 2018/07/12
Shipped:
Received: 2018/07/12

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	5625589	N/A	2018/07/13	Fatemeh Habibagahi
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5625593	2018/07/12	2018/07/13	Mariana Vascan
Moisture	BAL	5625590	N/A	2018/07/13	Samantha Arachchige

GENERAL COMMENTS

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

Package 1	25.3°C
-----------	--------

Results relate only to the items tested.

QUALITY ASSURANCE REPORT

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5625589	1,4-Difluorobenzene	2018/07/12	112	60 - 140	107	60 - 140	115	%		
5625589	4-Bromofluorobenzene	2018/07/12	102	60 - 140	103	60 - 140	99	%		
5625589	D10-Ethylbenzene	2018/07/12	105	30 - 130	85	30 - 130	87	%		
5625589	D4-1,2-Dichloroethane	2018/07/12	108	60 - 140	110	60 - 140	117	%		
5625593	o-Terphenyl	2018/07/12	82	30 - 130	85	30 - 130	86	%		
5625589	Benzene	2018/07/12	91	60 - 140	90	60 - 140	<0.02	ug/g	NC	50
5625589	Ethylbenzene	2018/07/12	92	60 - 140	87	60 - 140	<0.02	ug/g	NC	50
5625589	F1 (C6-C10) - BTEX	2018/07/12					<10	ug/g	20	50
5625589	F1 (C6-C10)	2018/07/12	68	60 - 140	89	80 - 120	<10	ug/g	20	50
5625589	o-Xylene	2018/07/12	98	60 - 140	93	60 - 140	<0.02	ug/g	NC	50
5625589	p+m-Xylene	2018/07/12	94	60 - 140	89	60 - 140	<0.04	ug/g	NC	50
5625589	Toluene	2018/07/12	97	60 - 140	90	60 - 140	<0.02	ug/g	NC	50
5625589	Total Xylenes	2018/07/12					<0.04	ug/g	NC	50
5625590	Moisture	2018/07/13							4.9	50
5625593	F2 (C10-C16 Hydrocarbons)	2018/07/13	91	50 - 130	91	80 - 120	<10	ug/g	8.7	50
5625593	F3 (C16-C34 Hydrocarbons)	2018/07/13	91	50 - 130	91	80 - 120	<50	ug/g	NC	50
5625593	F4 (C34-C50 Hydrocarbons)	2018/07/13	91	50 - 130	91	80 - 120	<50	ug/g	NC	50

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

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

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

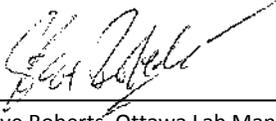
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

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

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

VALIDATION SIGNATURE PAGE

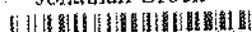
The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



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.

Invoice Information		Report Information (if differs from invoice)				Project Information (where applicable)				Turnaround Time (TAT) Required											
Company Name: <u>Exp. O.</u>		Company Name: _____				Quotation #: <u>stream 2</u>				<input type="checkbox"/> Regular TAT (5-7 days) Most analyses <input type="checkbox"/> Rush TAT (Duties will be applied)											
Contact Name: <u>Jeff O.</u>		Contact Name: _____				P.O. #/ A/E #: _____				<input checked="" type="checkbox"/> 1 Day <input type="checkbox"/> 2 Days <input type="checkbox"/> 3-4 Days											
Address: <u>Ontario</u>		Address: _____				Project #: <u>OTT-00246017</u>				Date Required: _____											
Phone: <u>613-689-1888</u>		Phone: _____ Fax: _____				Site Location: <u>Albion</u>				Rush Confirmation #:											
Email: <u>Jeffrey.O.barron@exp.com</u>		Email: <u>Mark.McCalla@exp.com</u>				Site #: _____				LABORATORY USE ONLY											
MID-REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY																					
Regulation 153 <input type="checkbox"/> Table 1 <input type="checkbox"/> Res/Park <input type="checkbox"/> Mod/Fine <input type="checkbox"/> Table 2 <input checked="" type="checkbox"/> Res/Comm <input type="checkbox"/> Coarse <input checked="" type="checkbox"/> Table 3 <input type="checkbox"/> Agri/Other <input type="checkbox"/> Table _____ FOR HSC (PLEASE CIRCLE) Y / N		Other Regulations <input type="checkbox"/> CCME <input type="checkbox"/> Sanitary Sewer Bylaw <input type="checkbox"/> MISA <input type="checkbox"/> Storm Sewer Bylaw <input type="checkbox"/> PWOD <input type="checkbox"/> Region _____ <input type="checkbox"/> Other (Specify) _____ <input type="checkbox"/> REG 558 (MIN. 3 DAY TAT REQUIRED)		Analysis Requested (Check appropriate boxes)				CUSTODY SEAL <input checked="" type="checkbox"/> Present <input type="checkbox"/> Intact COOLER TEMPERATURES <u>27, 27, 28</u>		COOLING MEDIA PRESENT: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N COMMENTS											
Include Criteria on Certificate of Analysis: Y / N																					
SAMPLES MUST BE KEPT COOL (10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM																					
SAMPLE IDENTIFICATION		DATE SAMPLED (YYYY/MM/DD)	TIME SAMPLED (HH:MM)	MATRIX	NOT CONTAMINATED	RESISTANCE TO OXIDATION	PHENOL	PHENOL	PHENOL	PHENOL	PHENOL	PHENOL	PHENOL	PHENOL	PHENOL	PHENOL	PHENOL	PHENOL	PHENOL	PHENOL	PHENOL
1	3C	2018.07.12	11:50am	S	3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
2	3D	1	1	1	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
3	3E	1	1	1	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
4	3F	1	1	1	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
5	3G	1	1	1	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
6																					
7																					
8																					
9																					
10																					

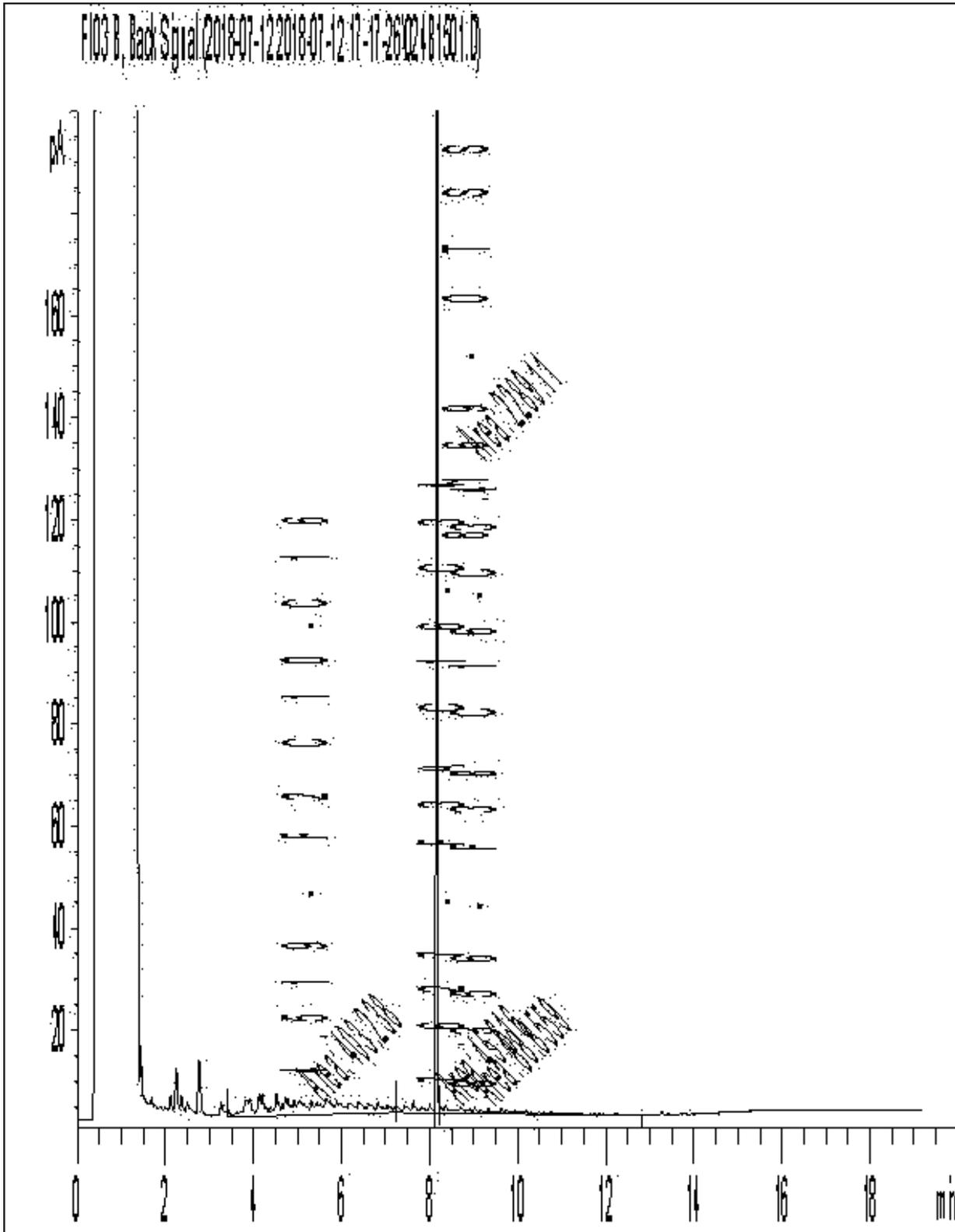
12-Jul-18 12:00
 Jonathan Urben

 B8H3910
 KIV OTT-001

OK ICE
 RECEIVED IN OFFICE

RETRIEVED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	MAXXAM JOB #
<u>WJC</u>	<u>2018.07.12</u>	<u>11:55</u>	<u>Serge Legar</u>	<u>2018/07/12</u>	<u>12:00</u>	
<u>Jeff O.</u>						

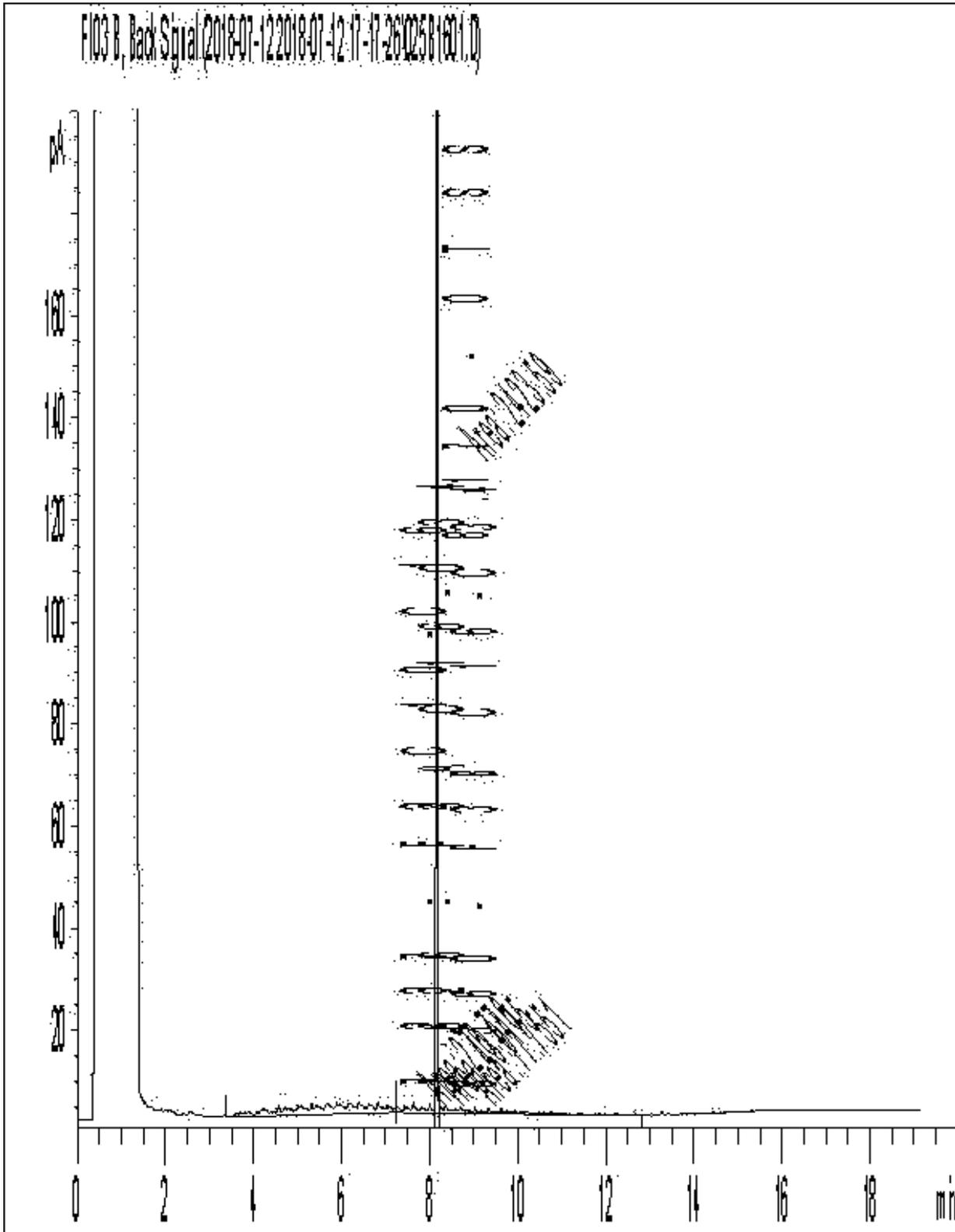
Unless otherwise agreed to in writing, work submitted on this Chain of Custody is subject to Maxxam's standard Terms and Conditions. Signing of this Chain of Custody document is acknowledgment and acceptance of our terms which are available for viewing at www.maxxam.ca/terms. Sample container, preservation, hold time and packages information can be viewed at <http://www.maxxam.ca/wp-content/uploads/Ontario-COC.pdf>.

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



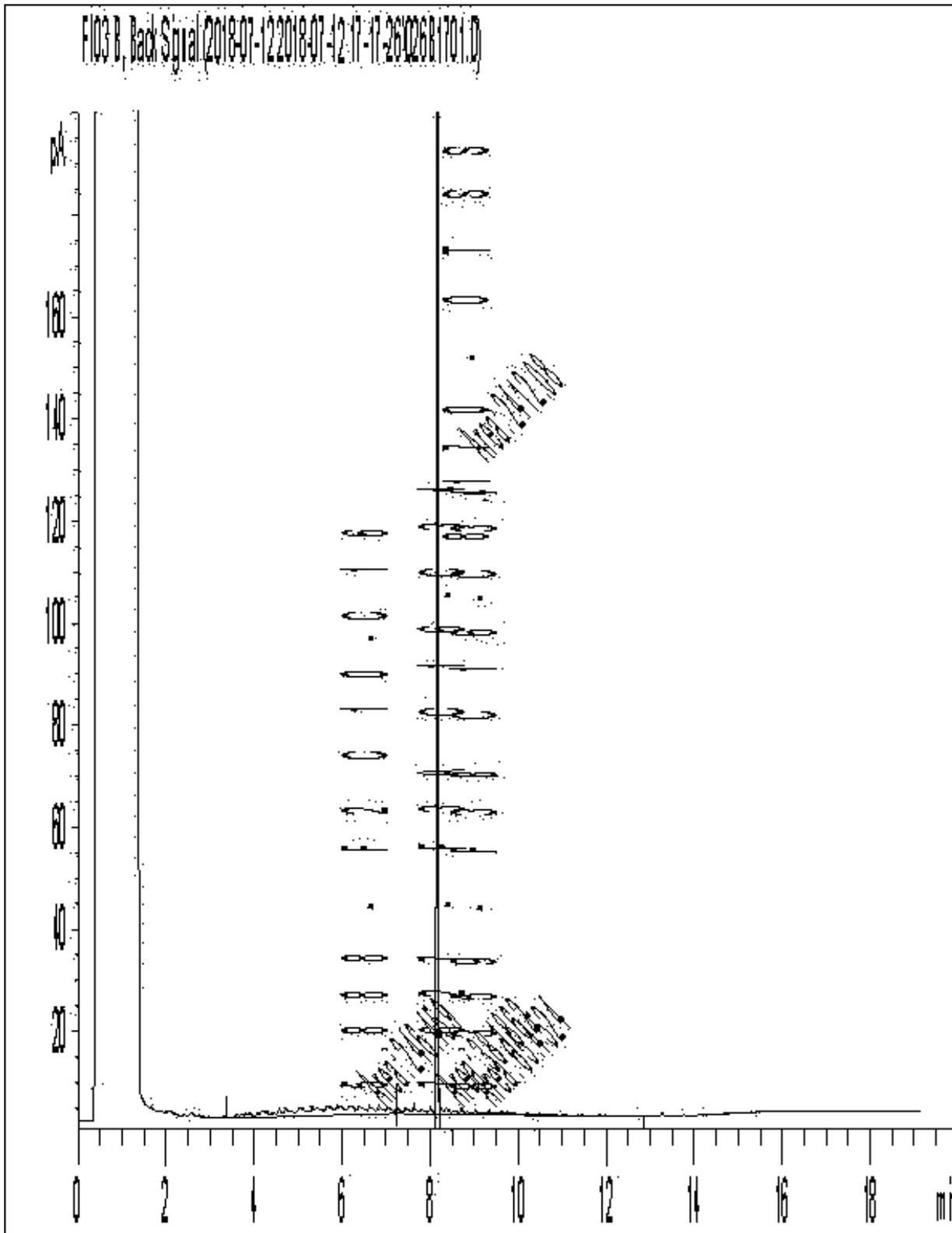
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



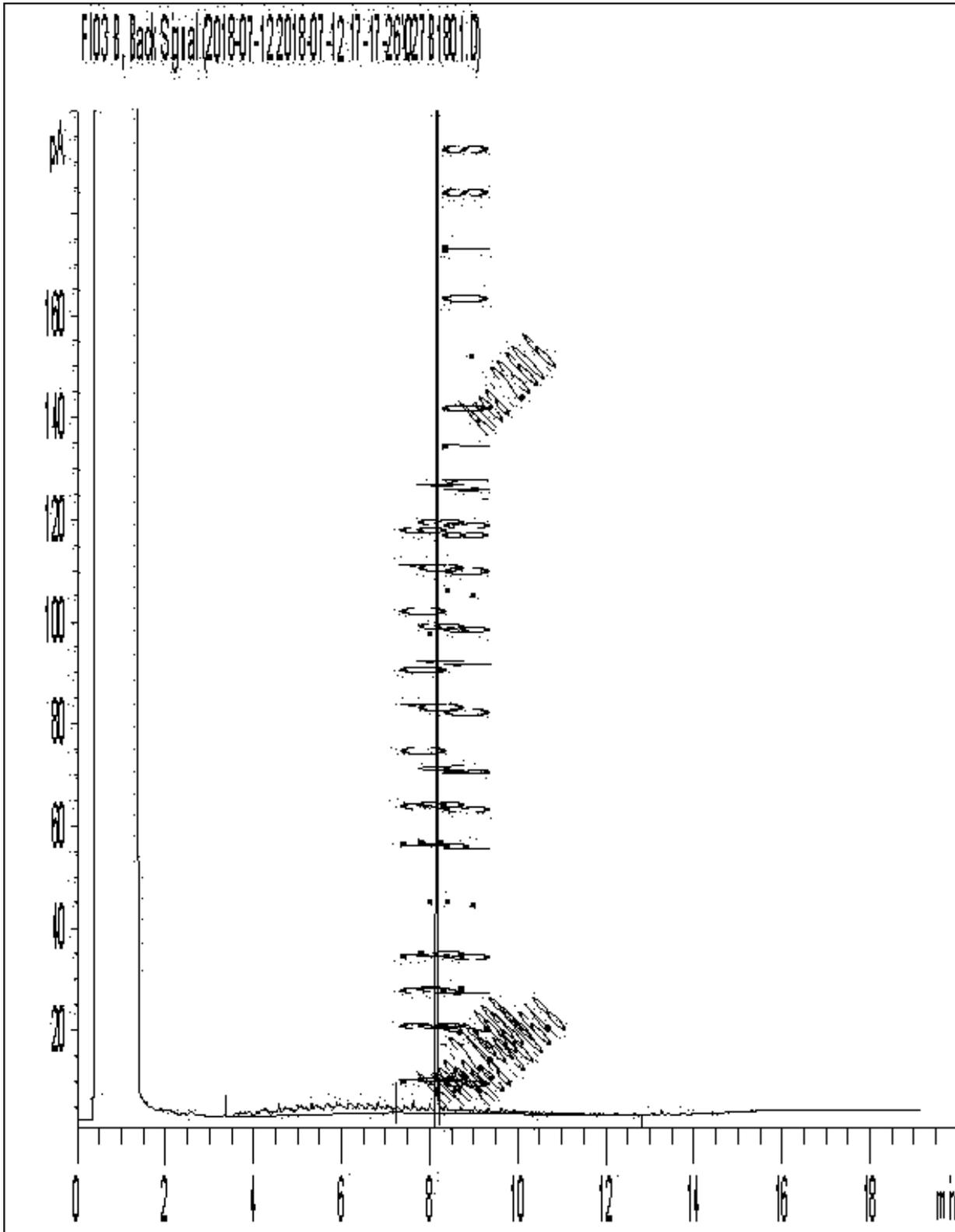
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



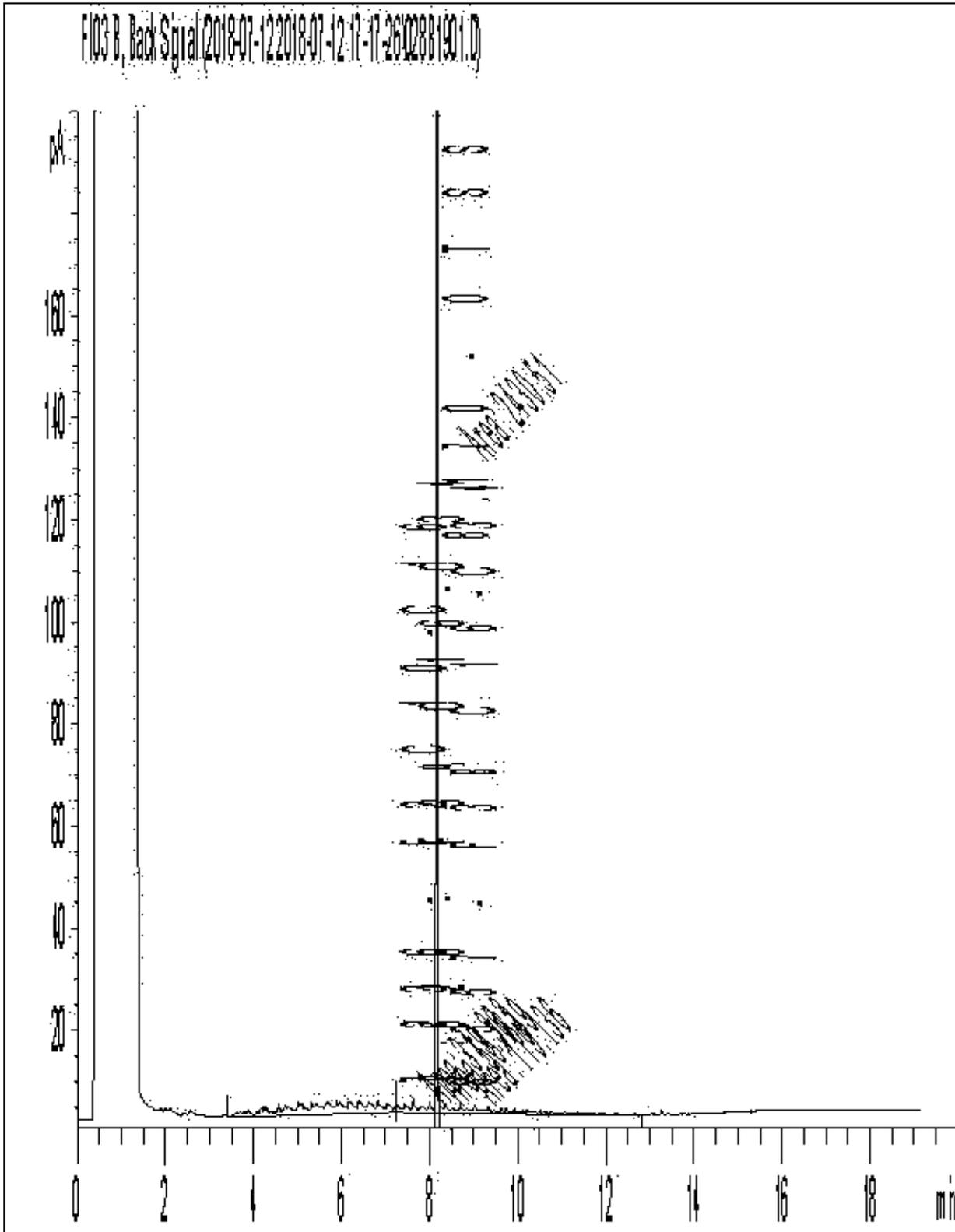
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



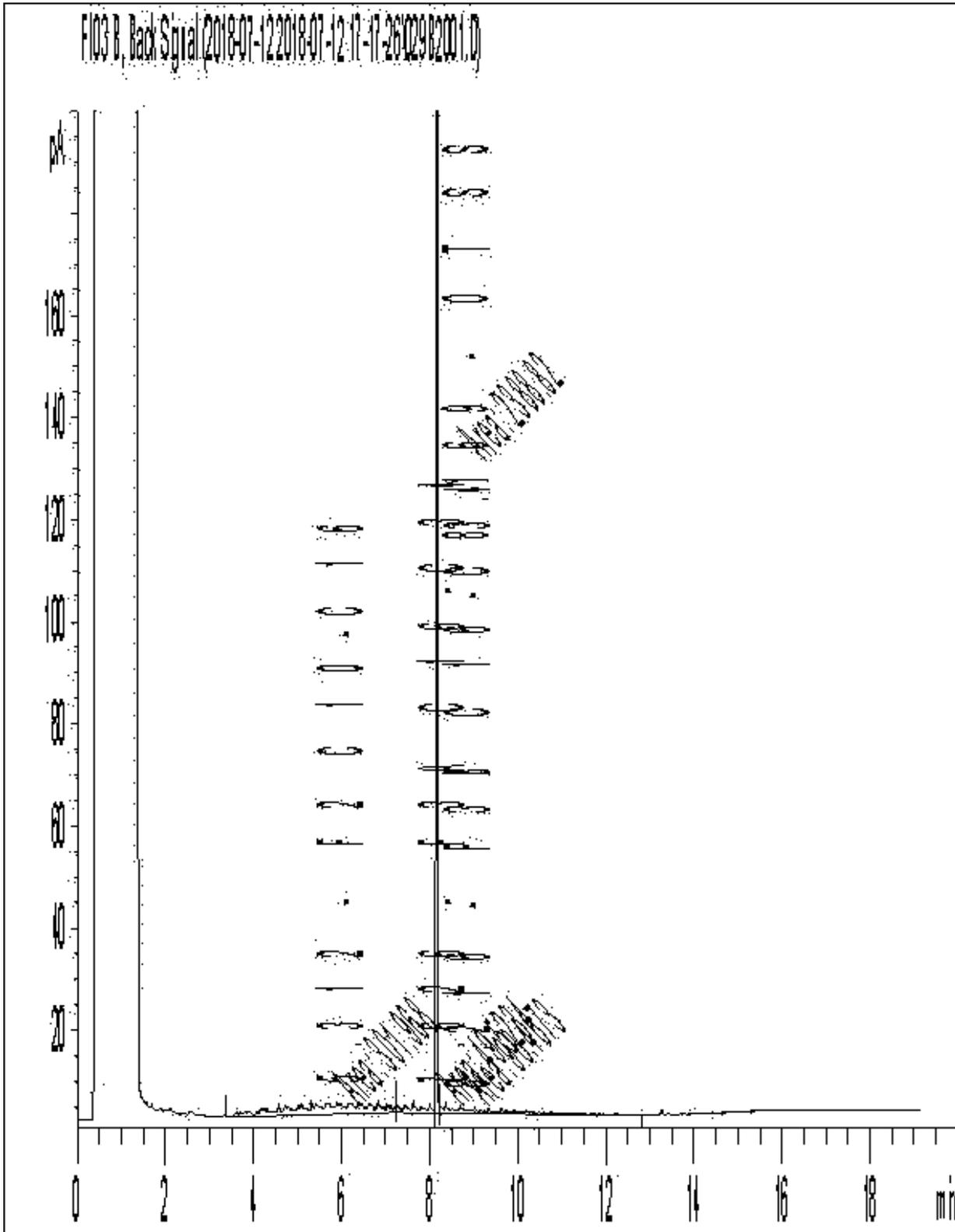
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

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.

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-00246047
Your C.O.C. #: 102665

Attention: Mark McCalla

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

Report Date: 2018/06/29
Report #: R5273503
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B8F9541

Received: 2018/06/27, 17:15

Sample Matrix: Soil
Samples Received: 7

Analyses	Quantity	Date	Date	Laboratory Method	Reference
		Extracted	Analyzed		
Free (WAD) Cyanide (1)	7	2018/06/28	2018/06/29	CAM SOP-00457	OMOE E3015 m
Moisture (1)	7	N/A	2018/06/28	CAM SOP-00445	Carter 2nd ed 51.2 m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 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.

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.

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.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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

Your Project #: OTT-00246047
Your C.O.C. #: 102665

Attention: Mark McCalla

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

Report Date: 2018/06/29
Report #: R5273503
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B8F9541
Received: 2018/06/27, 17:15

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Jonathan Urben, Senior Project Manager
Email: jurben@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.

RESULTS OF ANALYSES OF SOIL

Maxxam ID		HBR990			HBR990			HBR991	HBR992	HBR993		
Sampling Date		2018/06/27 16:00			2018/06/27 16:00			2018/06/27 16:00	2018/06/27 16:00	2018/06/27 16:00		
COC Number		102665			102665			102665	102665	102665		
	UNITS	CN-NORTH	RDL	QC Batch	CN-NORTH Lab-Dup	RDL	QC Batch	CN-SOUTH	CN-EAST	CN-WEST	RDL	QC Batch

Inorganics

Moisture	%	8.9	1.0	5603856				14	9.0	11	1.0	5603856
WAD Cyanide (Free)	ug/g	<0.01	0.01	5605156	<0.01	0.01	5605156	<0.01	<0.01	<0.01	0.01	5605156

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

Lab-Dup = Laboratory Initiated Duplicate

Maxxam ID		HBR994	HBR995	HBR996		
Sampling Date		2018/06/27 16:00	2018/06/27 16:00	2018/06/27 16:00		
COC Number		102665	102665	102665		
	UNITS	CN-FLOOR1	CN-FLOOR2	CN 1	RDL	QC Batch

Inorganics

Moisture	%	9.3	9.1	13	1.0	5603856
WAD Cyanide (Free)	ug/g	<0.01	<0.01	<0.01	0.01	5605156

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

TEST SUMMARY

Maxxam ID: HBR990
Sample ID: CN-NORTH
Matrix: Soil

Collected: 2018/06/27
Shipped:
Received: 2018/06/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Free (WAD) Cyanide	TECH	5605156	2018/06/28	2018/06/29	Louise Harding
Moisture	BAL	5603856	N/A	2018/06/28	Prgya Panchal

Maxxam ID: HBR990 Dup
Sample ID: CN-NORTH
Matrix: Soil

Collected: 2018/06/27
Shipped:
Received: 2018/06/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Free (WAD) Cyanide	TECH	5605156	2018/06/28	2018/06/29	Louise Harding

Maxxam ID: HBR991
Sample ID: CN-SOUTH
Matrix: Soil

Collected: 2018/06/27
Shipped:
Received: 2018/06/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Free (WAD) Cyanide	TECH	5605156	2018/06/28	2018/06/29	Louise Harding
Moisture	BAL	5603856	N/A	2018/06/28	Prgya Panchal

Maxxam ID: HBR992
Sample ID: CN-EAST
Matrix: Soil

Collected: 2018/06/27
Shipped:
Received: 2018/06/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Free (WAD) Cyanide	TECH	5605156	2018/06/28	2018/06/29	Louise Harding
Moisture	BAL	5603856	N/A	2018/06/28	Prgya Panchal

Maxxam ID: HBR993
Sample ID: CN-WEST
Matrix: Soil

Collected: 2018/06/27
Shipped:
Received: 2018/06/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Free (WAD) Cyanide	TECH	5605156	2018/06/28	2018/06/29	Louise Harding
Moisture	BAL	5603856	N/A	2018/06/28	Prgya Panchal

Maxxam ID: HBR994
Sample ID: CN-FLOOR1
Matrix: Soil

Collected: 2018/06/27
Shipped:
Received: 2018/06/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Free (WAD) Cyanide	TECH	5605156	2018/06/28	2018/06/29	Louise Harding
Moisture	BAL	5603856	N/A	2018/06/28	Prgya Panchal

TEST SUMMARY

Maxxam ID: HBR995
Sample ID: CN-FLOOR2
Matrix: Soil

Collected: 2018/06/27
Shipped:
Received: 2018/06/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Free (WAD) Cyanide	TECH	5605156	2018/06/28	2018/06/29	Louise Harding
Moisture	BAL	5603856	N/A	2018/06/28	Prgya Panchal

Maxxam ID: HBR996
Sample ID: CN 1
Matrix: Soil

Collected: 2018/06/27
Shipped:
Received: 2018/06/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Free (WAD) Cyanide	TECH	5605156	2018/06/28	2018/06/29	Louise Harding
Moisture	BAL	5603856	N/A	2018/06/28	Prgya Panchal

GENERAL COMMENTS

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

Package 1	22.0°C
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The samples were received at the laboratory on the sampling date with no cooling media present, at a temperature above 10 C.

Results relate only to the items tested.

QUALITY ASSURANCE REPORT

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5603856	Moisture	2018/06/28							1.3	20
5605156	WAD Cyanide (Free)	2018/06/29	104	75 - 125	100	80 - 120	<0.01	ug/g	NC	35

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.

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

VALIDATION SIGNATURE PAGE

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

Cristina Carriere

Cristina Carriere, Scientific Service 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.



6740 Campbell Rd, Mississauga, Ontario L5W 2L8
 Phone: 905-817-5700 Fax: 905-817-5775 Toll Free: 800-363-6266
 CAM-100-0113/L3

CHAIN OF CUSTODY RECORD

102665

Page ___ of ___

Invoice Information Company Name: <u>Exp</u> Contact Name: <u>Jeff O'banian</u> Address: <u>Ottawa</u> Phone: <u>613-688-1899</u> Email: <u>jeffery.o'banian@exp.com</u>		Report Information (if differs from invoice) Company Name: <u>GAMIZ</u> Contact Name: <u>[Signature]</u> Address: <u>[Blank]</u> Phone: <u>[Blank]</u> Email: <u>Mark.McCalla@exp.com</u>		Project Information (where applicable) Quotation #: <u>[Blank]</u> P.O. #/ A/E/R: <u>[Blank]</u> Project #: <u>071-00246047</u> Site Location: <u>[Blank]</u> Site #: <u>[Blank]</u> Sampled By: <u>Jeff O.</u>		Turnaround Time (TAT) Required <input type="checkbox"/> Regular TAT (5-7 days) Most analyses PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS Rush TAT (Surcharges will be applied) <input checked="" type="checkbox"/> 1 Day <input type="checkbox"/> 2 Days <input type="checkbox"/> 3-4 Days Date Required: <u>ASAP</u>	
MODE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXAM DRINKING WATER CHAIN OF CUSTODY						Rush Configuration #: <input type="checkbox"/>	
Regulation L53 <input type="checkbox"/> Table 1 <input type="checkbox"/> Res/Park <input type="checkbox"/> Med/ Fine <input type="checkbox"/> Table 2 <input checked="" type="checkbox"/> Res/Comm <input type="checkbox"/> Cruise <input type="checkbox"/> Table 3 <input type="checkbox"/> Agri/ Other <input type="checkbox"/> Table _____ FOR ISC (PLEASE CIRCLE) Y / N		Other Regulations <input type="checkbox"/> CCME <input type="checkbox"/> Sanitary Sewer Bylaw <input type="checkbox"/> MISA <input type="checkbox"/> Storm Sewer Bylaw <input type="checkbox"/> PWQO <input type="checkbox"/> Region <input type="checkbox"/> Other (Specify): _____ <input type="checkbox"/> REG 558 (MIN. 3 DAY TAT REQUIRED)		Analysis Requested # OF CONTAINERS SUBMITTED FELS (FEDERAL COLIST) (MIN. 1 PER CONT.) BOD (5 DAY) PH (25 °C) NH ₃ NH ₄ NH ₄ N NH ₄ N (WAD) NH ₄ N (WAD)		LABORATORY USE ONLY CUSTOMER SEAL Present: <u>0/1</u> Missing: _____ COOLER TEMPERATURES _____ _____ _____ COOLING MEDIA PRESENT: <u>Y @</u> COMMENTS	
Include Criteria on Certificate of Analysis: Y / N						SAMPLES MUST BE KEPT COOL (< 30 °C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXAM	
SAMPLE IDENTIFICATION		DATE SAMPLED (YYYY/MM/DD)	TIME SAMPLED (HH:MM)	MARKS	# OF CONTAINERS SUBMITTED	REG. DO NOT ANNOTE	
1	CN - North	2018.06.27	4:00pm	S	1		
2	CN - South						
3	CN - East						
4	CN - West						
5	CN - Floor 1						
6	CN - Floor 2						
7	CN 1						
8							
9							
10							
RELEASED BY (Signature/Print) <u>[Signature]</u> Jeff O.		DATE (YYYY/MM/DD) 2018.06.27	TIME (HH:MM) 5:15	RECEIVED BY (Signature/Print) <u>[Signature]</u> Jonathan Urban		DATE (YYYY/MM/DD) 2018/06/27	TIME (HH:MM) 17:15

SAME DAY
 SAMPLE
 RUN ANALYSIS
 ASAP

27-Jun-18 17:15

Jonathan Urban
 B8F9541
 J.L ENV-1108

5/10/17

Attention: Mark Devlin

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

Report Date: 2018/08/20
Report #: R5364160
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B8K8641

Received: 2018/08/15, 14:55

Sample Matrix: Soil
Samples Received: 3

Analyses	Date		Laboratory Method	Reference
	Quantity	Extracted		
Petroleum Hydro. CCME F1 & BTEX in Soil (1)	3	N/A	2018/08/16 OTT SOP-00002	CCME CWS
Petroleum Hydrocarbons F2-F4 in Soil (2)	3	2018/08/16	2018/08/19 OTT SOP-00001	CCME CWS
Moisture	3	N/A	2018/08/20 CAM SOP-00445	McKeague 2nd ed 1978

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 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.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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) No lab extraction date is given for F1BTEX & VOC samples that are field preserved with methanol. Extraction date is the date sampled unless otherwise stated.

(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 reported using validated cold solvent extraction instead of Soxhlet extraction.

Your Project #: OTT-00246047-4
Your C.O.C. #: 587852-01-01

Attention: Mark Devlin

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

Report Date: 2018/08/20
Report #: R5364160
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B8K8641
Received: 2018/08/15, 14:55

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Jonathan Urben, Senior Project Manager
Email: jurben@maxxam.ca
Phone# (613) 274-0573

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O.REG 153 PETROLEUM HYDROCARBONS (SOIL)

Maxxam ID		HME683			HME683			HME684		
Sampling Date		2018/08/15 09:00			2018/08/15 09:00			2018/08/15 09:00		
COC Number		587852-01-01			587852-01-01			587852-01-01		
	UNITS	BACKFILL-3	RDL	QC Batch	BACKFILL-3 Lab-Dup	RDL	QC Batch	BACKFILL-4	RDL	QC Batch
Inorganics										
Moisture	%	4.0	0.2	5684141	4.1	0.2	5684141	4.0	0.2	5684141
BTEX & F1 Hydrocarbons										
Benzene	ug/g	0.04	0.02	5681992				<0.02	0.02	5681992
Toluene	ug/g	0.10	0.02	5681992				0.06	0.02	5681992
Ethylbenzene	ug/g	<0.02	0.02	5681992				<0.02	0.02	5681992
o-Xylene	ug/g	0.02	0.02	5681992				<0.02	0.02	5681992
p+m-Xylene	ug/g	0.07	0.04	5681992				0.06	0.04	5681992
Total Xylenes	ug/g	0.10	0.04	5681992				0.06	0.04	5681992
F1 (C6-C10)	ug/g	<10	10	5681992				<10	10	5681992
F1 (C6-C10) - BTEX	ug/g	<10	10	5681992				<10	10	5681992
F2-F4 Hydrocarbons										
F2 (C10-C16 Hydrocarbons)	ug/g	<10	10	5682994				<10	10	5682994
F3 (C16-C34 Hydrocarbons)	ug/g	<50	50	5682994				<50	50	5682994
F4 (C34-C50 Hydrocarbons)	ug/g	<50	50	5682994				<50	50	5682994
Reached Baseline at C50	ug/g	Yes		5682994				Yes		5682994
Surrogate Recovery (%)										
1,4-Difluorobenzene	%	95		5681992				98		5681992
4-Bromofluorobenzene	%	113		5681992				103		5681992
D10-Ethylbenzene	%	95		5681992				106		5681992
D4-1,2-Dichloroethane	%	94		5681992				98		5681992
o-Terphenyl	%	81		5682994				78		5682994
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate										

O.REG 153 PETROLEUM HYDROCARBONS (SOIL)

Maxxam ID		HME684			HME685		
Sampling Date		2018/08/15 09:00			2018/08/15 09:00		
COC Number		587852-01-01			587852-01-01		
	UNITS	BACKFILL-4 Lab-Dup	RDL	QC Batch	BACKFILL-5	RDL	QC Batch
Inorganics							
Moisture	%				2.3	0.2	5684141
BTEX & F1 Hydrocarbons							
Benzene	ug/g	<0.02	0.02	5681992	<0.02	0.02	5681992
Toluene	ug/g	0.06	0.02	5681992	0.04	0.02	5681992
Ethylbenzene	ug/g	<0.02	0.02	5681992	<0.02	0.02	5681992
o-Xylene	ug/g	<0.02	0.02	5681992	<0.02	0.02	5681992
p+m-Xylene	ug/g	0.05	0.04	5681992	0.05	0.04	5681992
Total Xylenes	ug/g	0.05	0.04	5681992	0.05	0.04	5681992
F1 (C6-C10)	ug/g	<10	10	5681992	<10	10	5681992
F1 (C6-C10) - BTEX	ug/g	<10	10	5681992	<10	10	5681992
F2-F4 Hydrocarbons							
F2 (C10-C16 Hydrocarbons)	ug/g	<10	10	5682994	<10	10	5682994
F3 (C16-C34 Hydrocarbons)	ug/g	<50	50	5682994	<50	50	5682994
F4 (C34-C50 Hydrocarbons)	ug/g	<50	50	5682994	<50	50	5682994
Reached Baseline at C50	ug/g	Yes		5682994	Yes		5682994
Surrogate Recovery (%)							
1,4-Difluorobenzene	%	94		5681992	95		5681992
4-Bromofluorobenzene	%	112		5681992	118		5681992
D10-Ethylbenzene	%	105		5681992	105		5681992
D4-1,2-Dichloroethane	%	96		5681992	101		5681992
o-Terphenyl	%	79		5682994	80		5682994
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate							

TEST SUMMARY

Maxxam ID: HME683
Sample ID: BACKFILL-3
Matrix: Soil

Collected: 2018/08/15
Shipped:
Received: 2018/08/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	5681992	N/A	2018/08/16	Fatemeh Habibagahi
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5682994	2018/08/16	2018/08/19	Mariana Vascan
Moisture	BAL	5684141	N/A	2018/08/20	Samantha Arachchige

Maxxam ID: HME683 Dup
Sample ID: BACKFILL-3
Matrix: Soil

Collected: 2018/08/15
Shipped:
Received: 2018/08/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	5684141	N/A	2018/08/20	Samantha Arachchige

Maxxam ID: HME684
Sample ID: BACKFILL-4
Matrix: Soil

Collected: 2018/08/15
Shipped:
Received: 2018/08/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	5681992	N/A	2018/08/16	Fatemeh Habibagahi
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5682994	2018/08/16	2018/08/19	Mariana Vascan
Moisture	BAL	5684141	N/A	2018/08/20	Samantha Arachchige

Maxxam ID: HME684 Dup
Sample ID: BACKFILL-4
Matrix: Soil

Collected: 2018/08/15
Shipped:
Received: 2018/08/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	5681992	N/A	2018/08/16	Fatemeh Habibagahi
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5682994	2018/08/16	2018/08/19	Mariana Vascan

Maxxam ID: HME685
Sample ID: BACKFILL-5
Matrix: Soil

Collected: 2018/08/15
Shipped:
Received: 2018/08/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	5681992	N/A	2018/08/16	Fatemeh Habibagahi
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5682994	2018/08/16	2018/08/19	Mariana Vascan
Moisture	BAL	5684141	N/A	2018/08/20	Samantha Arachchige

GENERAL COMMENTS

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

Package 1	19.3°C
-----------	--------

Results relate only to the items tested.

QUALITY ASSURANCE REPORT

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5681992	1,4-Difluorobenzene	2018/08/16	96	60 - 140	100	60 - 140	100	%		
5681992	4-Bromofluorobenzene	2018/08/16	114	60 - 140	117	60 - 140	115	%		
5681992	D10-Ethylbenzene	2018/08/16	102	30 - 130	96	30 - 130	86	%		
5681992	D4-1,2-Dichloroethane	2018/08/16	95	60 - 140	96	60 - 140	98	%		
5682994	o-Terphenyl	2018/08/19	86	30 - 130	99	30 - 130	87	%		
5681992	Benzene	2018/08/16	65	60 - 140	76	60 - 140	<0.02	ug/g	NC	50
5681992	Ethylbenzene	2018/08/16	82	60 - 140	91	60 - 140	<0.02	ug/g	NC	50
5681992	F1 (C6-C10) - BTEX	2018/08/16					<10	ug/g	NC	50
5681992	F1 (C6-C10)	2018/08/16	94	60 - 140	95	80 - 120	<10	ug/g	NC	50
5681992	o-Xylene	2018/08/16	75	60 - 140	79	60 - 140	<0.02	ug/g	NC	50
5681992	p+m-Xylene	2018/08/16	85	60 - 140	92	60 - 140	<0.04	ug/g	14	50
5681992	Toluene	2018/08/16	91	60 - 140	102	60 - 140	<0.02	ug/g	2.9	50
5681992	Total Xylenes	2018/08/16					<0.04	ug/g	14	50
5682994	F2 (C10-C16 Hydrocarbons)	2018/08/19	80	50 - 130	94	80 - 120	<10	ug/g	NC	50
5682994	F3 (C16-C34 Hydrocarbons)	2018/08/19	80	50 - 130	94	80 - 120	<50	ug/g	NC	50
5682994	F4 (C34-C50 Hydrocarbons)	2018/08/19	80	50 - 130	94	80 - 120	<50	ug/g	NC	50
5684141	Moisture	2018/08/20							2.5	50

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

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

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

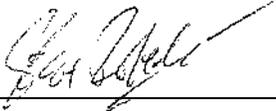
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

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

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

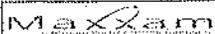
VALIDATION SIGNATURE PAGE

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



Maxxam Analytica International Corporation aka Maxxam Analytica
 8740 Carleton Place Road, Mississauga, Ontario Canada L4R 2V4 Tel: (905) 817-9700 Toll-free: 800-463-6266 Fax: (905) 817-9777 www.maxxam.ca

CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name: #17497 - exp Services-Int		Company Name: Mark Devlin / Mark McCalla		Question #: 028006		Maxxam Job #:	
Attention: Accounts Payable		Address: [Handwritten]		P.O. #: OTT-00214007-01		Bottle Order #:	
Address: 100-2650 Queensview Drive		Address: [Handwritten]		Project: [Handwritten]		COC #:	
City: Ottawa ON K2B 8H8		City: [Handwritten]		Project Name: [Handwritten]		Project Manager:	
Tel: (613) 688-1899 Fax: (613) 225-7337		Tel: [Handwritten]		Site #: [Handwritten]		Maxxam Logo	
Email: accounting.ottawa@exp.com; Karen.Burke@exp.com		Email: mark.devlin@exp.com; mark.mcCalla@exp.com		Sample By: MAB		Barcode (4387652-81-01)	

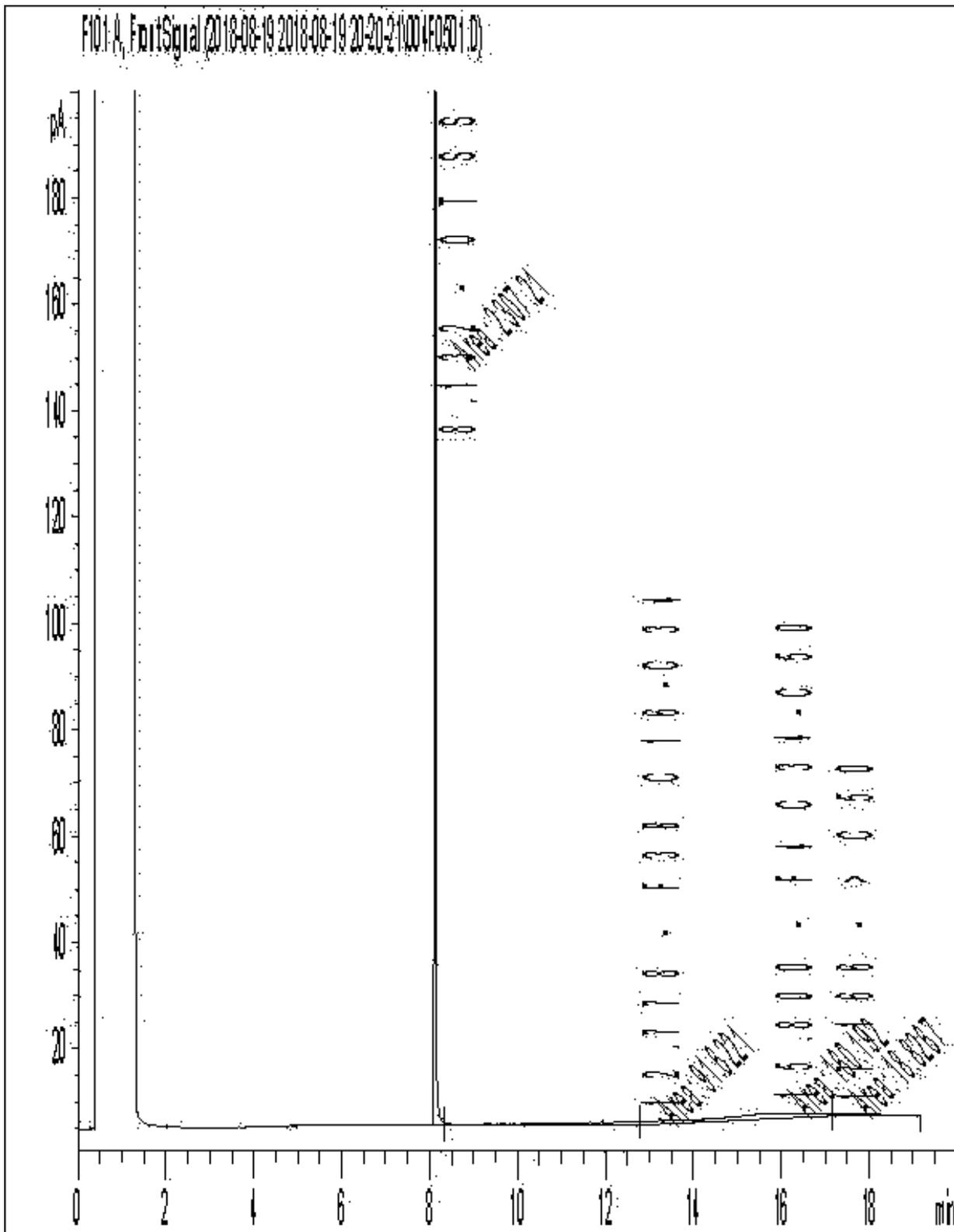
NOT REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY					ANALYSIS REQUESTED (PLEASE BE SPECIFIC)								Turnaround Time (TAT) Requested:			
Regulation 153 (2011)		Other Regulations		Special Instructions	Freeb Filtered (please circle)	Metals (µg/L or µg/l)	OCBAs (µg/L)	PCBs (µg/L)	PFOS and PFOA (µg/L)	PCBs (µg/L)	OC Pentachloro (µg/L)	Phenol (µg/L)	Phenol (µg/L)	Phenol (µg/L)	Regular (Standard) TAT:	Rush:
<input checked="" type="checkbox"/> Table 1	<input type="checkbox"/> Res/Park	<input type="checkbox"/> Medium Fine	<input type="checkbox"/> OCME	<input type="checkbox"/> Sanitary Sewer Bylaw											(will be applied if rush TAT is not specified)	<input checked="" type="checkbox"/>
<input type="checkbox"/> Table 2	<input type="checkbox"/> Ind/Com	<input type="checkbox"/> Coarse	<input type="checkbox"/> Bag 668	<input type="checkbox"/> Storm Sewer Bylaw											Standard TAT = 5-7 Working days for most tests.	<input type="checkbox"/>
<input type="checkbox"/> Table 3	<input type="checkbox"/> High/Drain	<input type="checkbox"/> For RSC	<input type="checkbox"/> MISA	Municipality											Please note: Increased TAT for certain tests such as BOD and Dissolved Oxygen are 7 days - contact your Project Manager for details.	<input type="checkbox"/>
<input type="checkbox"/> Table 6			<input type="checkbox"/> PWQO												Job Specific Rush TAT (if applies to entire submission)	<input type="checkbox"/>
Include Criteria on Certificate of Analysis (Y/N)?															Date Required:	Time Required:
Sample Barcode Label	Site(s) (Location) Identification	Date Sampled	Time Sampled	Matrix											Rush Completion Number:	Ref. Lab. No.:
1	Backfill-3	Aug 15 2014	9:00am	Soil											3	on ice
2	Backfill-4	↓	↓	↓											3	RECEIVED IN OTTAWA
3	Backfill-5	↓	↓	↓											3	
4																
5																
6																
7																
8																
9																
10																

15-Aug-18 14:55
 Jonathan Urban
 8111 RIVER ROAD UNIT 101 MISSISSAUGA ONTARIO L4V 1R3
 B8K8641
 PIV OTTAWA

RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	R Jars used and not submitted	Laboratory Use Only		
[Handwritten Signature]	8/15/15	3:30pm	[Handwritten Signature]	2018/08/15	14:55		Time Sensitive:	Temperature (°C) on Receipt:	Custody Seal
[Handwritten Signature]								19,20,19	Present
									Yes
									No

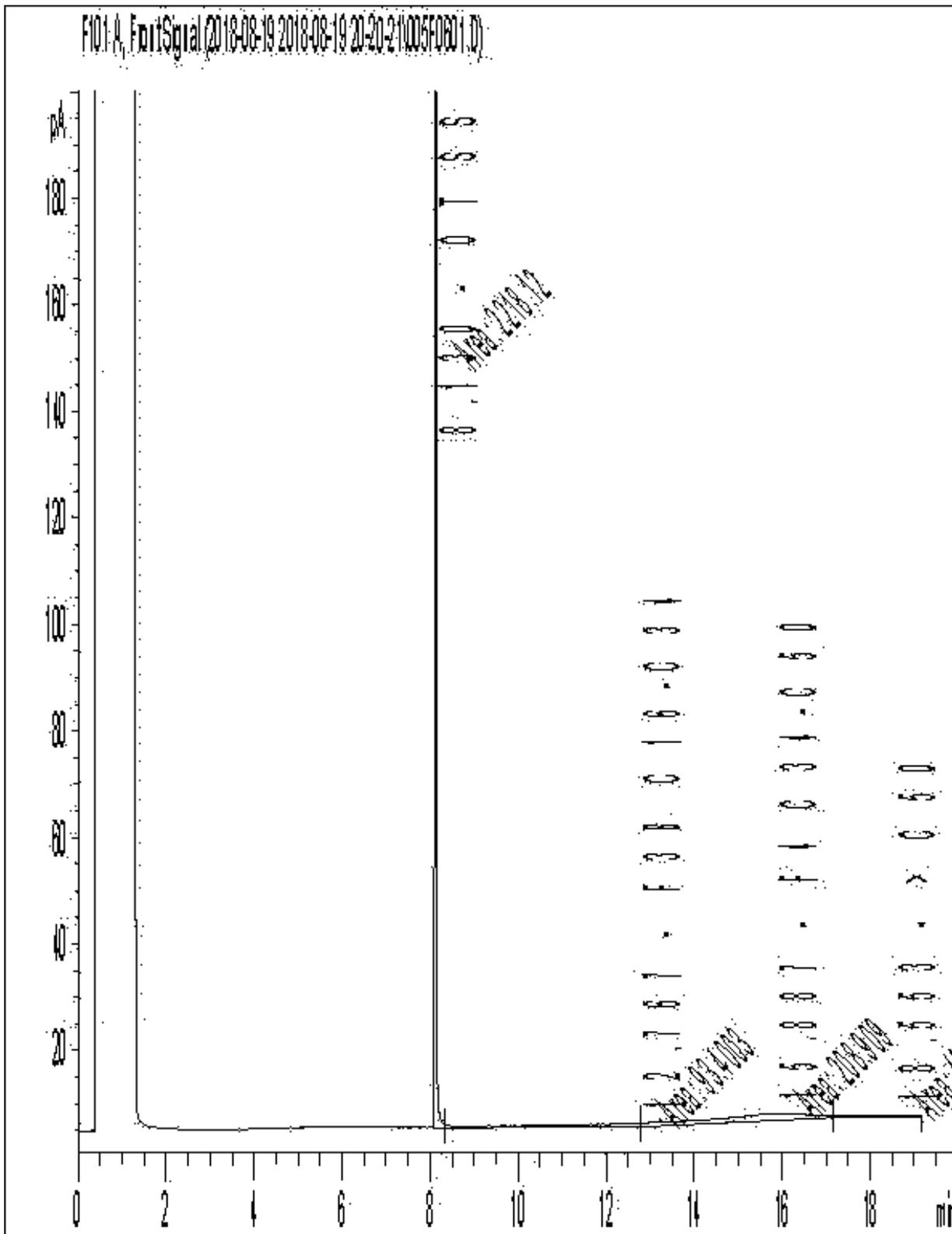
* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL DELAYS. SAMPLES MUST BE KEPT COOL (2-4°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM. White - Maxxam Yellow - Client

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



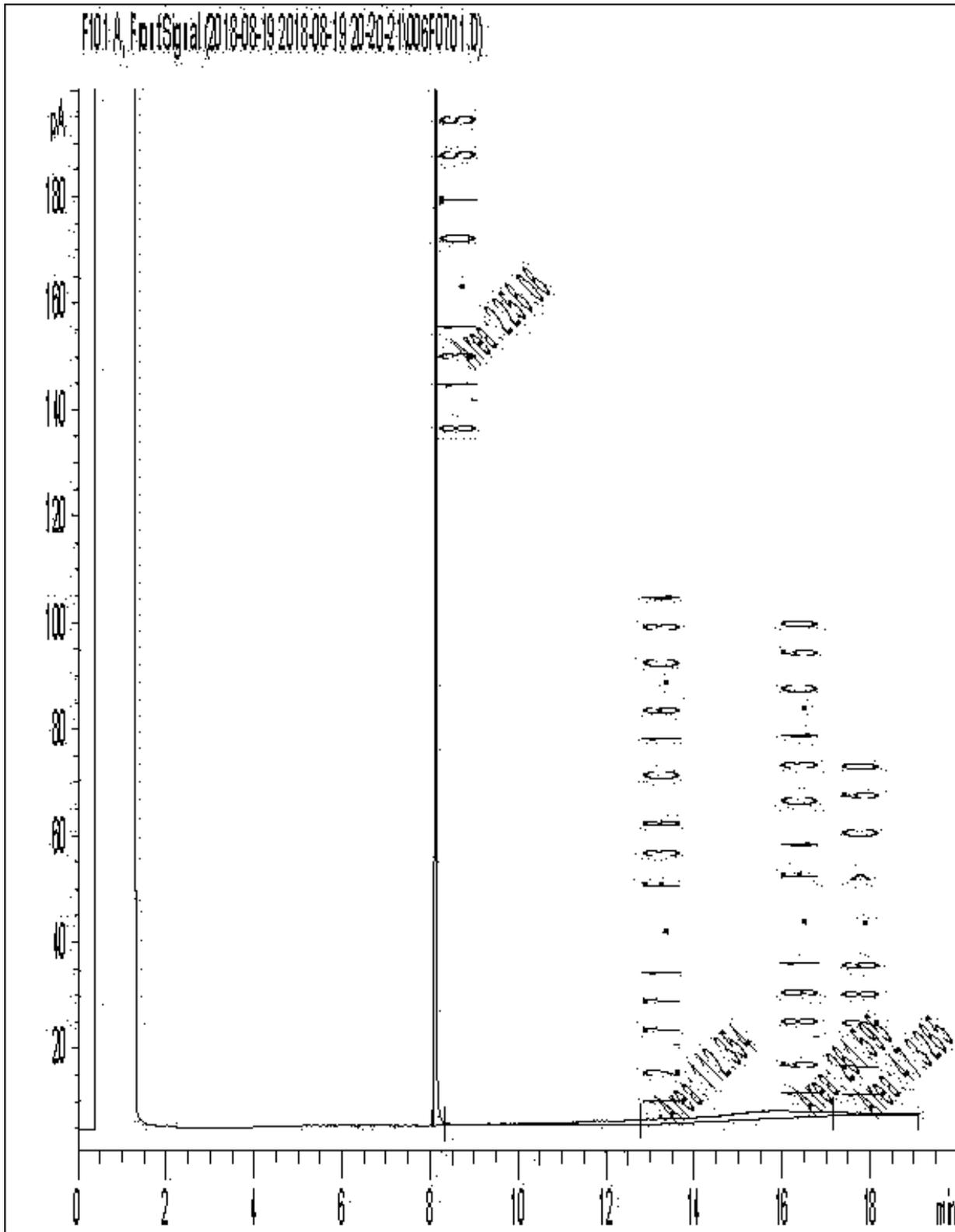
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



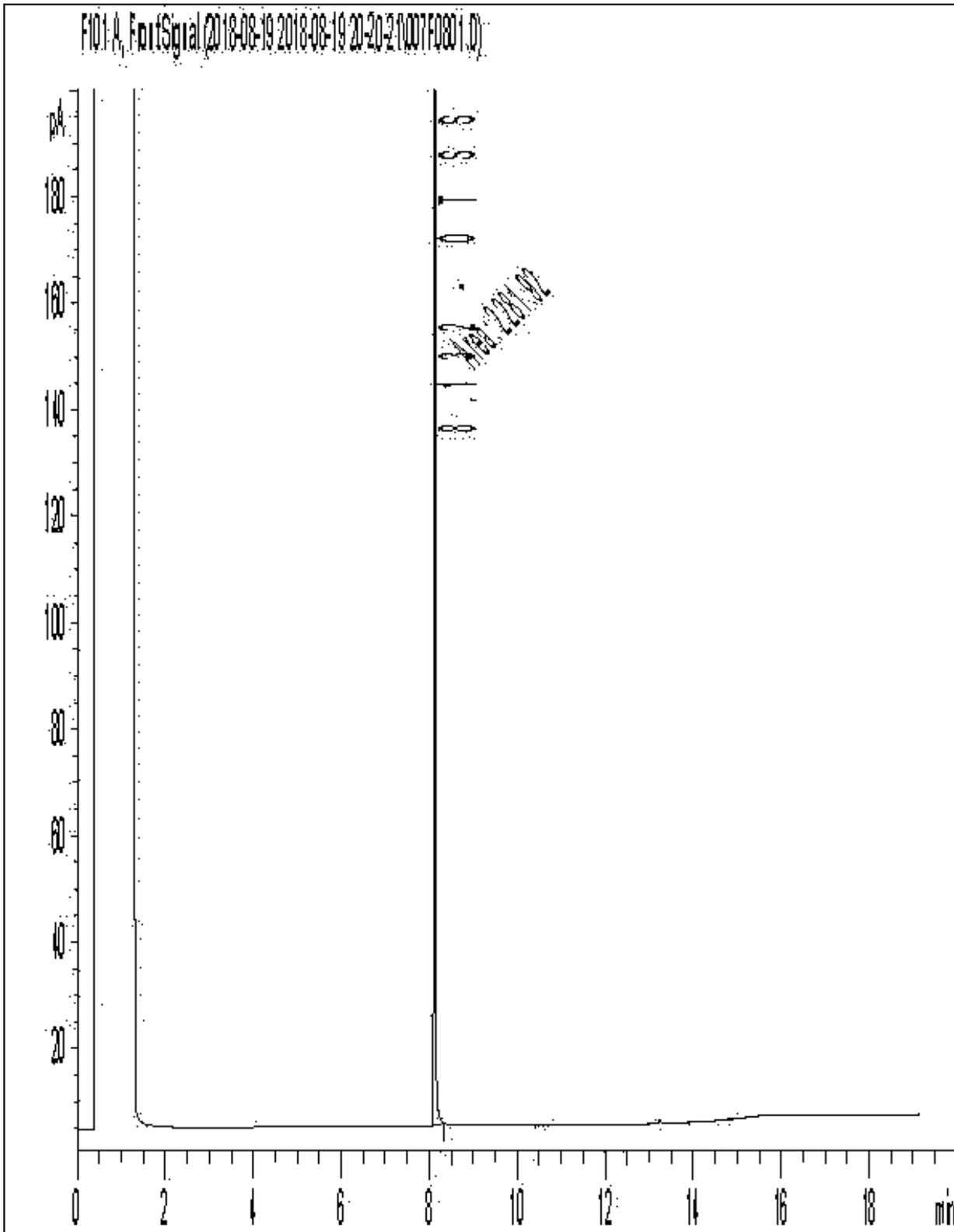
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

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.

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.

EXP Services Inc.

ABCO
Soil Remediation Report
3025 Albion Road North, Ottawa Ontario
OTT-00246047-B0
December 18, 2018

Appendix E – Compaction Results





100-2650 Queensview Drive,
Ottawa, ON K2B 8H6
Tel: (613) 688-1899
Fax: (613) 225-7337

In Situ Nuclear Density Summary Sheet

Project No.: OTT-00246047 Date Tested: August 15, 2018 Report No.: CP-1
Project Name: Hydro Ottawa Albion rd Contractor: Aman Ali Ltd
Project Location: 3025 Albion rd, Ottawa, ON

Type of Material Tested:

- | | | |
|--|--|---|
| 1 <input checked="" type="checkbox"/> Subgrade | 6 <input checked="" type="checkbox"/> Granular Subbase | 10 <input type="checkbox"/> Retaining Wall Backfill |
| 2 <input type="checkbox"/> Trench Backfill | 7 <input type="checkbox"/> Granular Base | 11 <input type="checkbox"/> Embankment Fill |
| 3 <input type="checkbox"/> Engineered Fill | 8 <input type="checkbox"/> Binder Asphalt | 12 <input type="checkbox"/> Backfill Adjacent to Foundation |
| 4 <input type="checkbox"/> Underfloor Fill | 9 <input type="checkbox"/> Surface Asphalt | |
| 5 <input checked="" type="checkbox"/> Other (describe) | | |

G. B. Subgrade for South West entrance road from 4' below grade to 6" below grade

Material Description:

	Opt. M/C %	Reference Density (kg/m ³)	Estimated	Lab
A <u>G. B.</u>	<u>7.3</u>	<u>2290</u>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
B <u>(DU TO MLASON)</u>			<input type="checkbox"/>	<input type="checkbox"/>

Test Method:

- Direct Transmission
 Backscatter

Proctor Method

- Standard
 Modified

SPECIFIED AND IN-SITU COMPACTION (%)

	Specified	Range Achieved
Material A	<u>98%</u>	<u>98.2 - 102.0</u>
Material B		

Weather: Sunny +26°C

Compaction Equipment: plate tamper

Comments

- Preliminary Report left on site with: Aman Ali Ltd
- Generally meets specification Soil moisture content requires adjustment
- Generally below specification Sample(s) obtained for laboratory analysis/no. of samples _____
- Additional Compaction recommended Asphalt flushing/bleeding noted
- Contact exp for retesting Asphalt surface segregation/cracking noted
- Other: exp conducted several compaction tests on G. B. material at the indicated location. All test results are satisfactory

Warning: Nuclear results are considered as approximate estimates of in situ density conditions at the test elevation and locations indicated. Results based on estimated reference densities are subject to change after actual laboratory density values are obtained. Asphalt densities by nuclear gauge may be higher or lower than the actual density determined by asphalt cores.

Technician: Adolphe Hruwa Quality Assurance Supervisor: [Signature]

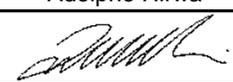
Sheet No: _____



Summary of In-Place Density Test Results On Granular Material

Project No.: OTT-00246047-A0	Date Tested: August 15, 2018	Report No.
Project Name: Hydro Ottawa Albion Road		CP-1
Project Location: 3025 Albion Road, Ottawa, ON	Material: Granular B II	Page
Element: Subbase for Southwest Entrance Road	Source: RWT - Rideau Quarry	2 of 2
Area Tested: 1.2m Below Grade to 0.15m Below Grade		

Test No.	Location and Elev of Test	Material	In-Place Reading			Lab Value	% Comp.	Comment
			Wet Density kg/m ³	Dry Density kg/m ³	Moisture Content (%)	Proctor Value kg/m ³		
T1	Southwest Entrance, 1.2m Below Grade	GB II	2420	2275	6.4	2290	99.3	Pass
T2	Southwest Entrance, 1.2m Below Grade	"	2428	2311	5.1	2290	100.9	Pass
T3	Southwest Entrance, 0.9m Below Grade	"	2405	2295	4.8	2290	100.2	Pass
T4	Southwest Entrance, 0.9m Below Grade	"	2344	2256	3.9	2290	98.5	Pass
T5	Southwest Entrance, 0.9m Below Grade	"	2462	2331	5.6	2290	101.8	Pass
T6	Southwest Entrance, 0.6m Below Grade	"	2471	2336	5.8	2290	102.0	Pass
T7	Southwest Entrance, 0.6m Below Grade	"	2445	2331	4.9	2290	101.8	Pass
T8	Southwest Entrance, 0.6m Below Grade	"	2403	2297	4.6	2290	100.3	Pass
T9	Southwest Entrance, 0.3m Below Grade	"	2396	2265	5.8	2290	98.9	Pass
T10	Southwest Entrance, 0.3m Below Grade	"	2348	2249	4.4	2290	98.2	Pass
T11	Southwest Entrance, 0.3m Below Grade	"	2391	2285	4.6	2290	99.8	Pass
T12	Southwest Entrance, 0.3m Below Grade	"	2370	2251	5.3	2290	98.3	Pass

Notes	Tested By: <u>Adolphe Hirwa</u> Reviewed By: <u></u> Ismail Taki, P.Eng
Required Compaction: 98%	



100-2650 Queensview Drive,
Ottawa, ON K2B 8H6
Tel: (613) 688-1899
Fax: (613) 225-7337

In Situ Nuclear Density Summary Sheet

Project No.: OTT-00246097AD Date Tested: August 16, 2018 Report No.: CP-2

Project Name: Hydro Ottawa Albion rd Contractor: Drain All Ltd

Project Location: 30-25 Albion rd, Ottawa, ON

Type of Material Tested:

- | | | |
|---|---|---|
| 1 <input type="checkbox"/> Subgrade | 6 <input type="checkbox"/> Granular Subbase | 10 <input type="checkbox"/> Retaining Wall Backfill |
| 2 <input type="checkbox"/> Trench Backfill | 7 <input checked="" type="checkbox"/> Granular Base | 11 <input type="checkbox"/> Embankment Fill |
| 3 <input type="checkbox"/> Engineered Fill | 8 <input type="checkbox"/> Binder Asphalt | 12 <input type="checkbox"/> Backfill Adjacent to Foundation |
| 4 <input type="checkbox"/> Underfloor Fill | 9 <input type="checkbox"/> Surface Asphalt | |
| 5 <input checked="" type="checkbox"/> Other (describe) <u>G-A. Base South West entrance</u> | | |

Material Description:

	Opt. M/C %	Reference Density (kg/m ³)	Estimated	Lab
A <u>G-A.</u>	<u>7-8</u>	<u>2240</u>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
B <u>(RWT)</u>			<input type="checkbox"/>	<input type="checkbox"/>

Test Method:

- Direct Transmission
 Backscatter

Proctor Method

- Standard
 Modified

SPECIFIED AND IN-SITU COMPACTION (%)

	Specified	Range Achieved
Material A	<u>100</u>	<u>100.2 - 100.9</u>
Material B		

Weather: Sunny + 21°C

Compaction Equipment: Steel plate

Comments

- Preliminary Report left on site with: Drain All Ltd.
- Generally meets specification Soil moisture content requires adjustment
- Generally below specification Sample(s) obtained for laboratory analysis/no. of samples _____
- Additional Compaction recommended Asphalt flushing/bleeding noted
- Contact exp for retesting Asphalt surface segregation/cracking noted
- Other: exp conducted several compaction test on G-A material. All test results are satisfactory

Warning: Nuclear results are considered as approximate estimates of in situ density conditions at the test elevation and locations indicated. Results based on estimated reference densities are subject to change after actual laboratory density values are obtained. Asphalt densities by nuclear gauge may be higher or lower than the actual density determined by asphalt cores.

Technician: Adolphe Hiron Quality Assurance Supervisor: [Signature]

Sheet No: _____



Summary of In-Place Density Test Results On Granular Material

Project No.: OTT-00246047-A0	Date Tested: August 16, 2018	Report No.
Project Name: Hydro Ottawa Albion Road		CP-2
Project Location: 3025 Albion Road, Ottawa, ON	Material: Granular A	Page
Element: Base for Southwest Entrance Road	Source: RWT - Rideau Quarry	2 of 3
Area Tested: See Sketch on Page 3		

Test No.	Location and Elev of Test	Material	In-Place Reading			Lab Value	% Comp.	Comment
			Wet Density kg/m ³	Dry Density kg/m ³	Moisture Content (%)	Proctor Value kg/m ³		
T1	Granular Base for Southwest Entrance, See Sketch on Page 3	GA	2341	2247	4.2	2240	100.3	Pass
T2	Granular Base for Southwest Entrance, See Sketch on Page 3	"	2344	2260	3.7	2240	100.9	Pass
T3	Granular Base for Southwest Entrance, See Sketch on Page 3	"	2332	2244	3.9	2240	100.2	Pass
T4	Granular Base for Southwest Entrance, See Sketch on Page 3	"	2325	2247	3.5	2240	100.3	Pass
T5	Granular Base for Southwest Entrance, See Sketch on Page 3	"	2343	2251	4.1	2240	100.5	Pass
T6	Granular Base for Southwest Entrance, See Sketch on Page 3	"	2332	2247	3.8	2240	100.3	Pass

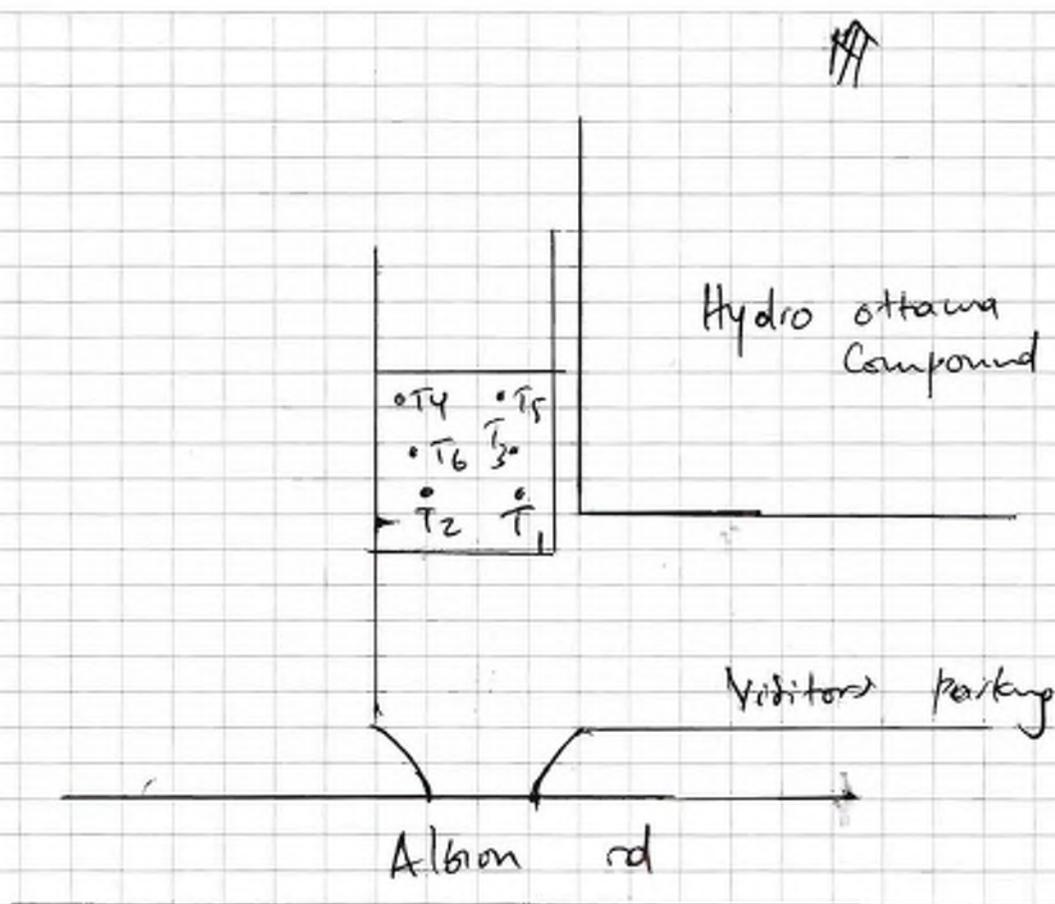
Notes	Tested By: <u>Adolphe Hirwa</u> Reviewed By: <u></u> Ismail Taki, P.Eng
Required Compaction: 100%	



100-2650 Queensview Drive,
Ottawa, ON K2B 8H6
Tel: (613) 688-1899
Fax: (613) 225-7337

In Situ Nuclear Density Summary Sheet

Project No.: 246027 Date Tested: August 16, 2018 Report No.: _____
Project Name: Hydro Ottawa Albion rd Contractor: Brown All Ltd
Project Location: 3025 Albion rd Page: _____ of _____



* Not to scale

Technician:

Adolphe Humeau

Project Manager:

[Signature]

EXP Services Inc.

ABCO

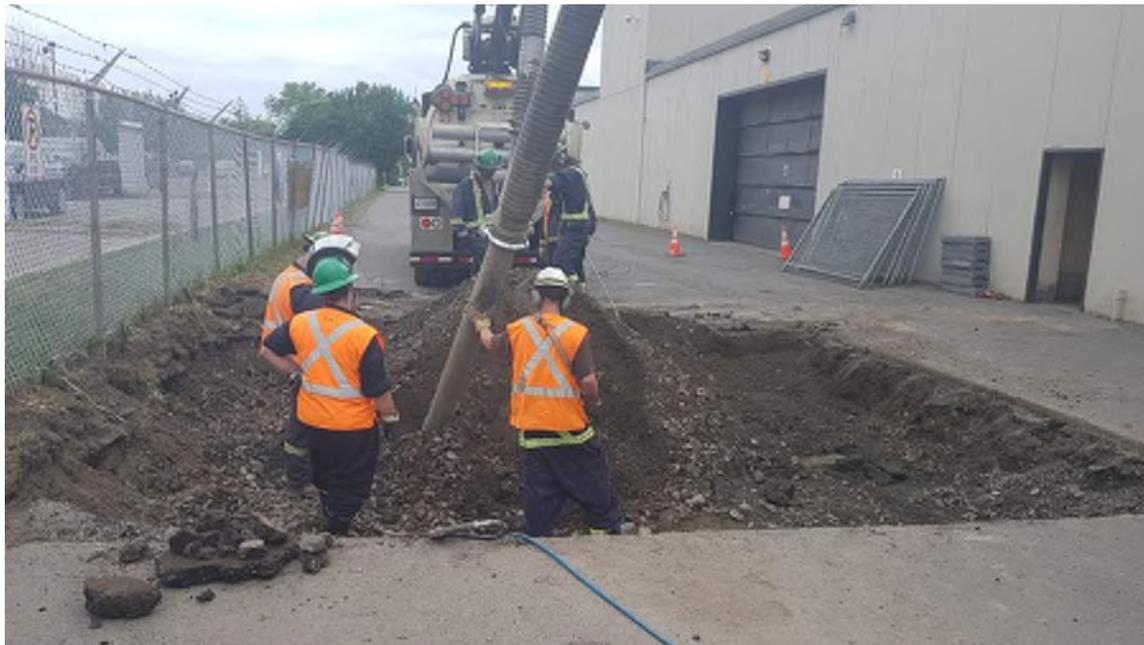
Soil Remediation Report
3025 Albion Road North, Ottawa Ontario

OTT-00246047-B0

December 18, 2018

Appendix F – Photographs





Photograph No. 1

View of the initial excavation on first day of excavating, June 23, 2018



Photograph No. 2

View of the excavation looking west, note grey impacted soil and groundwater



Photograph No. 3

View of excavation looking north on June 28, 2018



Photograph No. 4

Excavation looking west on June 28, 2018



Photograph No. 5

View of excavation, looking east on June 26, 2018



Photograph No. 6

Excavation on July 5, 2018



Photograph No. 7

View of the impacted soil in south part of excavation



Photograph No. 8

Start of backfilling in north half of excavation on July 5, 2018



Photograph No. 9

Partly backfilled excavation on July 11, 2018



Photograph No. 10

Digging probe holes in south wall of excavation



Photograph No. 11

Partly backfilled excavation on July 11, 2018



Photograph No. 12

Final backfilling of excavation on August 15, 2018



Photograph No. 13

Cyanide remedial excavation on June 28, 2018



Photograph No. 14

Cyanide remedial excavation

EXP Services Inc.

*Ahlul-Bayt Center Ottawa
Phase Two Environmental Phase Two Property Assessment
3025 Albion Road North, Ottawa, ON
OTT-00246047-B0
December 21, 2018*

Appendix H: Survey Plan

