1509-1531 Merivale Road, Ottawa, Ontario

Phase Two Environmental Site Assessment Update

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Attention: Mr. Sam Chowieri

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1 Executive Summary

EXP Services Inc. (EXP) was retained by 10198447 Canada Inc. to conduct a Phase Two Environmental Site Assessment (ESA) Update on the property located at 1509 – 1531 Merivale Road in Ottawa, Ontario (hereinafter referred to as the 'Site'). The objective of the investigation was to support the filing of a Record of Site Condition (RSC) in accordance with Ontario Regulation 153/04 (O. Reg.153/04), as amended. It is EXP's understanding that 10198447 Canada Inc. requires the RSC to support the development of a mixed commercial/residential building on the Site.

The subject Site is the Lancaster Mall located on the east side of Merivale Road, just north of Capilano Drive in Ottawa. The Site has an area of approximately 0.91 hectares. The current land use is commercial. At the time of the investigation, the Site was occupied by a single storey multi-tenant commercial mall with an area of 2,578 m^2, which was reportedly constructed in the mid 1950s. There is asphalt covered parking to the east and west of the Site building. The surrounding areas are residential to the east across Kerry Crescent, commercial and residential to the north and south and commercial to the west across Merivale Road.

The results and findings of the Phase Two ESA conducted at the Site are summarized as follows:

1. The general stratigraphy at the Site, as observed in the boreholes, consisted of asphalt, followed by sand and gravel fill underlain by sandy silt over sand and gravel glacial till and limestone bedrock.

2. In January 2019, the depth to groundwater at the Site ranged between approximately 1.17 m and 3.36 m below ground surface. The groundwater elevations ranged between approximately 93.97 m above mean seal level (AMSL) and 92.31 m AMSL. Based on the collected groundwater data groundwater flow in the overburden is inferred to be to the north/northeast.

3. Soil samples were collected and submitted for chemical analysis of petroleum hydrocarbons (PHC), benzene, toluene, ethylbenzene, xylenes (BTEX), volatile organic compounds (VOC), and metals and inorganics. The soil analytical results indicated the PHC, BTEX, VOC, and metals and inorganics concentrations were either measured at concentrations less than their applicable Ontario Ministry of Environment, Conservation and Parks (MECP) Table 3 site condition standards (SCS), or did not exceed their laboratory reported detection limits (RDLs) which were all below the applicable MECP Table 3 SCS.

4. Groundwater samples were collected and submitted for chemical analysis of PHCs, BTEX, VOCs, and metals and inorganics. The groundwater analytical results identified the following exceedances of the applicable MECP Table 3 SCS:

    a. Three (3) groundwater samples collected on September 14th and 15th, 2017 demonstrated measured concentrations of PCH F2 in exceedance of applicable Table 3 SCS (MW206, MW303 and MW311). One (1) groundwater sample also demonstrated a measured concentration of PHC F3 in exceedance of the applicable Table 3 SCS (MW303). These samples were located in the southern portion of the Site, in the area of the former UST excavation and along the southern Site boundary, downgradient from off-Site gasoline service stations.

    b. One (1) groundwater sample demonstrated measured concentrations of chloroform in exceedance of applicable Table 3 SCS (MW305). One (1) groundwater sample demonstrated measured concentrations of cis-1,2-dichloroethylene in exceedance of the applicable Table 3 SCS (MW312). Three (3) groundwater samples demonstrated measured concentrations of tetrachloroethylene in exceedance of the applicable Table 3 SCS (MW305, MW306 and MW312). Two (2) groundwater samples demonstrated measured concentrations of trichloroethylene in exceedance of the Table 3 SCS (MW306 and MW312). One (1)

groundwater sample demonstrated a measured concentration of vinyl chloride in exceedance of the Table 3 SCS (MW312). Exceedances of the VOC related parameters were located in the central and northeastern portion of the Site and are likely attributed to a former and current on-Site dry cleaner. The PHC related parameters are generally located in the southern portion of the Site and are likely attributed to a known former on-Site underground storage tank (UST).

5. Soil vapour samples and sub-slab vapour samples were collected at the Site to determine the potential for risk of indoor air being impacted due to the dissolved VOC impacted groundwater. Four (4) sub-slab vapour probes were installed within the Site building, and five (5) soil vapour probes were installed along the northern and eastern property boundary. The results demonstrated that two (2) of five (5) sub-slab soil vapour samples had tetrachloroethylene (PCE) concentrations that exceeded the applicable modified generic risk assessment (MGRA) Tier 2 Sub-Slab Vapour Criteria (SSVC) for commercial land use. One (1) of five (5) soil vapour samples had vinyl chloride concentrations which exceeded the applicable MGRA Tier 2 Soil Vapour Criteria (SVC) for residential land use.

6. Based on the results of this Phase Two ESA Update, a Risk Assessment (RA) is recommended to further investigate the potential risk of known groundwater and sub-slab/soil vapour exceedances at the Site.

2 Introduction

EXP Services Inc. (EXP) was retained by 10198447 Canada Inc. to conduct a Phase Two Environmental Site Assessment (ESA) Update on the property located at 1509 – 1531 Merivale Road in Ottawa, Ontario (hereinafter referred to as the 'Site'). The objective of the investigation was to support the filing of a Record of Site Condition (RSC) in accordance with Ontario Regulation 153/04 (O. Reg.153/04), as amended. It is EXP's understanding that 10198447 Canada Inc. requires the RSC to support the development of a mixed commercial/residential building on the Site.

This Phase Two ESA Update was conducted in accordance with the Phase Two ESA standard defined by Ontario Regulation 153/04, as amended (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. Limitation of liability, scope of report and third-party reliance are outlined in Section 7 of this report.

The objective of the Phase Two ESA was to further assess the areas of potential environmental concern (APECs) identified in the Phase One ESA completed by EXP, dated March 31, 2020.

2.1 Site Description

The Phase Two Property is the Lancaster Mall located on the east side of Merivale Road, just north of Capilano Drive in Ottawa as shown on Figure 1. The current land use is commercial. The site has an area of approximately 0.91 hectares. At the time of the investigation, the site was occupied by a one storey multi-tenant commercial mall with an area of 2,578 m^2. There is asphalt covered parking to the east and west of the building. The building was reportedly constructed in the mid-1950s. The surrounding areas are residential to the east across Kerry Crescent, commercial and residential to the north and south and commercial to the west across Merivale Road.

A Site Plan is shown on Figure 3. The Phase Two Property is bound by Kerry Street to the east, an oil change facility to the south, Merivale Road to the west and an automobile service garage and a residence to the north. Refer to Figure 3 for the Surrounding Land Use Plan.

The approximate Universal Transverse Mercator (UTM) coordinates for the Site centroid was NAD83 18- 5022883 m N, 442316 m E. The UTM coordinates are based on measurements obtained from Google Earth. The accuracy of the centroid is estimated to range from 10 to 15 m.

2.2 Legal Description and Property Ownership

Details of the Site are as follows:

Municipal Address	1509-1531 Merivale Road, Ottawa, Ontario
Current Land Use	Commercial
Proposed Land Use	Residential
Legal Description	PT BLK A, PL 313132, as in CR609052; LTS 34, 35 & 36, PL 313132, Except the ELY 1 FT as in CR615684; T/W CR615684; S/T CR486816 Nepean
Property Identification Number (PIN) and Assessment Roll Number (ARN)	ARN: 0614-120-540-11900-0000 PIN: 04685-0003 (LT)
Universal Transverse Mercator (UTM) coordinates (appox.)	Zone 18T

	Easting 442313, Northing 5022870
Accuracy Estimate of UTM	10-15 m
Measurement Method	Georeferenced aerial photograph
Site Area	0.89 hectares (2.20 acres)
Property Owners, Owner Contact and Address	10198447 CANADA INC. Contact: Mr. Sam Choweiri Address: 69 rue Jean-Proulx Gatineau, QC, J8Z 1W2

2.3 Current and Proposed future Uses

At the time of the Phase Two ESA Update investigation, the Site was zoned for commercial use and was occupied by a multi-unit commercial plaza. The proposed future use of the Property will be residential and commercial.

2.4 Applicable Site Condition Standards

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

Tables 1 to 9 of MECP (2011a) are summarized as follows:

- Table 1 – applicable to sites where background concentrations must be met (full depth), such as sensitive sites where site-specific criteria have not been derived;
- Table 2 – applicable to sites with potable groundwater and full depth restoration;
- Table 3 – applicable to sites with non-potable groundwater and full depth restoration;
- Table 4 – applicable to sites with potable groundwater and stratified restoration;
- Table 5 – applicable to sites with non-potable groundwater and stratified restoration;
- Table 6 – applicable to sites with potable groundwater and shallow soils;
- Table 7 – applicable to sites with non-potable groundwater and shallow soils;
- Table 8 – applicable to sites with potable groundwater and that are within 30 m of a water body; and,
- Table 9 – applicable to sites with non-potable groundwater and that are within 30 m of a water body.

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

For assessment purposes, EXP selected the MECP (2011) Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition for Residential/Parkland/Institutional Property Use and coarse textured soil. The selection of this category was based on the following factors:

- The Site has an overburden thickness greater than 2 m.
- The Site is not located within 30 m of a surface water body or an area of natural significance.
- The soil at the Site has a pH value between 5 and 9 for surficial soils; and, between 5 and 11 for subsurface soils.
- The property is not located within an area of natural significance; does not include, nor is it adjacent to an area of natural significance, nor is it part of such an area; and, it does not include land that is within 30 m of an area of natural significance, nor is it part of such an area.
- The Site is serviced by the City of Ottawa's water distribution system; and, to the best of EXP's knowledge, all properties within 250 m of the Site are serviced by the municipal water supply (i.e. there are no potable water supply wells located within the Phase One Study Area).
- The predominant soil type on the Site is considered to be coarse textured (as per the soil description identified in the borehole logs in Appendix C).
- The Site proposed land use is commercial and residential.
- There is no intention to carry out a stratified restoration at the Site.

3 Background Information

3.1 Physical Setting

The following physiographic, geological and soil maps were reviewed:

- "Toporama"; Natural Resources Canada. Map 30M11. Scale 1:15,000. 2008.
- Quaternary Geology of Ontario - geology_ll.shp [computer file], Ontario: Ontario Geological Survey, 2000.
- Bedrock Geology of Ontario - geology_ll.shp [computer file], Ontario: Ontario Geological Survey, 2000.

Based on the review of the above maps, the following information was obtained:

- The Site is approximately 83 m above sea level.
- The Site and surrounding areas slope to the northwest towards the Ottawa River.
- The surficial geology of the Site is comprised of till, stone-poor, sandy silt to silty sand textured till on Paleozoic terrain.
- The bedrock in the general area of the Site is part of a group belonging to the Rockliffe Formation on the northern portion of the Site, and the Gull River Formation on the Central and Southern Portion of the Site. A fault transects the Site just north of the Site building.
- According to the MNRF Land Use Natural Heritage map, no woodlands, conservation reserves, provincial parks or natural heritage systems were observed on the Site or within the Phase One study area.

3.2 Previous Environmental Investigations

The following reports were available for review at the time of this Phase Two ESA Update:

- "Site Remediation Program and Limited Phase Investigation, 1509 – 1531 Merivale Road, Nepean, Ontario", dated December 4, 1998 and prepared for Lancaster Shopping Centre Ltd. by John D. Paterson and Associates Limited. The review of the report identified the following pertinent environmental findings;

  - At the time of the investigation, a UST had just been excavated from the ground and taken off of the Site. Hydrocarbon impacted soil was observed in the excavation.
  - Prior to removing the 2,270 litres steel furnace oil UST, 1,250 litres of fuel was pumped from the tanks. There were signs of corrosion and several small holes in the tank. Approximately 440 tonnes of petroleum impacted soil were removed from the site. Free phase hydrocarbons were observed at the bedrock surface at a depth of 2 to 2.2 m. Water and oil was pumped from the excavation prior to backfilling. Three recovery wells were installed within the excavation.
  - Six (6) boreholes were drilled, three (3) along the north property line and three along the south property line to address the presence of existing and former gas stations. Approximately 0.5 m of crushed stone fill was observed above brown sandy silt with some gravel till. Bedrock was observed at depths ranging from 2.30 m to 2.74 m. Groundwater was not observed in the boreholes. No monitoring wells were installed.

- Four soil samples from the remedial excavation were submitted for laboratory analysis of total petroleum hydrocarbons (TPH) and benzene, toluene, ethylbenzene, xylenes (BTEX). The soil results show low to non-detectable concentrations of BTEX. Moderate TPH concentrations were observed in two (20 samples from the remedial excavation. These results indicate that a minor amount of petroleum impact is likely present beneath the building. However, TPH is no longer a test that is used. Petroleum hydrocarbons (PHC) is the current test and therefore the TPH results cannot be directly compared to the current Ontario Ministry of Environment, Conservation and Parks (MECP) site condition standards.
- Paterson recommended monitoring the recovery wells and pumping them out as needed.

- "Follow Up to the Site Remediation Program, 1509 – 1531 Merivale Road, Nepean, Ontario", dated February 16, 1999 and prepared for Lancaster Shopping Centre Ltd. by John D. Paterson and Associates Limited, was provided for review. The review of the report identified the following pertinent environmental findings;

  - A total of 4,135 litres of water were pumped from the three recovery wells on February 5, 1999. Groundwater samples were then collected from recovery well RW3 for laboratory analysis of TPH and BTEX. The results showed low to non-detectable concentrations of BTEX and moderate concentration of TPH (1 mg/L). These TPH results cannot be directly compared to the current PHC site condition standards (SCS), however it indicates some petroleum impact was still present.
  - Paterson concluded that there was no groundwater impact and no further concerns were associated with the groundwater in the area of the remedial excavation. They also concluded that there was a small area of petroleum impacted soil beneath the footing of the east wall of the building that was not anticipated to pose an adverse impact to the subject site or its inhabitants.

- "Phase I Environmental Site Assessment Update and Subsurface Investigation, 1509 – 1531 Merivale Road, Ottawa, Ontario", dated July 20, 2004 and prepared for Lancaster Shopping Centre Ltd. by Paterson Group, was provided for review. The review of the report identified the following pertinent environmental findings;

  - At the time of the Phase I ESA, the Site was occupied by a single-story commercial strip mall building. The mall was reportedly constructed in the early 1950s. At the north and south ends of the mall, the units are two stories high.
  - No above ground storage tanks or USTs were observed on the Site. A dry cleaner was present at 1523A of the plaza. The dry-cleaning unit was less than 5 years old at the time and waste materials were stored in a steel drum that was picked up by a licensed waste contractor. A borehole was drilled in the overburden immediately east of the dry cleaners and a groundwater monitoring well was installed.
  - A groundwater sample was then collected and submitted for analysis of VOCs. Low to non-detectable concentrations of VOC were measured in the sample. Based on a comparison to the MECP Table 3 site condition standards (SCS), only chloroform would have exceeded the SCS, and the chloroform would likely have been from the chlorinated water used during coring of the bedrock. Dry-cleaning chemicals and their breakdown or daughter products (trichloroethylene, dichloroethylene, vinyl chloride) were either not detected or were less than the current SCS, which indicates that the shallow groundwater at that location was not impacted at that time. However, the presence of chloroform may also indicate that the well was not purged sufficiently and that the natural formation water had not completely entered the well during sampling.
  - Paterson concluded that the dry-cleaning operation had not impacted the subject site.

- "Phase I Environmental Site Assessment, 1509 Merivale Road, Ottawa, Ontario", dated August 5, 2011 and prepared for Emilio Binavince by Pinchin Environmental Ltd., was provided for review. The review of the report identified the following pertinent environmental findings;

  - At the time of the Phase I ESA, the Site was occupied by a single-story commercial strip mall building which had a total floor area of approximately 2,487 m^2. The mall was reportedly constructed in the 1950s. At the north and south ends of the mall, the units are two stories high.
  - A dry-cleaners, Crown Cleaners was present in the central part of the building. The dry cleaner used a closed loop system. Any sludge was collected into the bottom of the machine and removed annually by a licensed contractor. Former dry cleaners had been present in the building since at least 1964. Former and current gas stations/automotive servicing stations were identified adjacent to both the north (1507 Merivale Road) and south (1533 Merivale Road) property lines of the Site. A review of fire insurance plans showed that the gas stations had USTs.
  - It was concluded that the dry-cleaners could have impacted the Site. It was also concluded that the former and current gas stations to the north and south of the Site could have impacted the Site. In addition, subsurface impacts at the Site could exceed the MECP SCS. A Phase II ESA was recommended.

- "Phase II Environmental Site Assessment, 1509 Merivale Road, Ottawa, Ontario", dated September 16, 2011 and prepared for 1686971 Ontario Limited by Pinchin Environmental Ltd., was provided for review. The review of the report identified the following pertinent environmental findings;

  - Eight (8) boreholes were drilled to a depth of 3.05 m by Pinchin in 2011. Five wells (MW-1, MW-2, MW-3, MW-6, and MW-8) were installed in the boreholes. MW-1 was drilled west of the dry cleaners and MW-6 was drilled east of the dry cleaners. Boreholes and monitoring wells were drilled at both the north and south property lines to further define the conditions at those locations.
  - A soil sample collected from MW-2 in the southwest corner of the site from a depth of 2.3 m to 2.7 m had a PHC F1 concentration of 547 ug/g which exceeded the MECP Table 3 SCS of 65 ug/g for fine-grained soil. No other VOC or PHC exceedances were measured in the soil samples.
  - Water samples from only three (3) of the five (5) wells were submitted for analysis of VOC and PHC because MW-1 and MW-2 were dry. The three previously installed recovery wells were damaged so no groundwater samples could be collected from them. The groundwater results showed that the concentration of tetrachloroethylene (PCE) from MW6 was 1,010 ug/L, which significantly exceeded the MECP Table 3 SCS of 1.6 ug/L. This monitoring well is located just east of the dry cleaners. Similarly, the daughter product concentrations (TCE and cis-1,2-dichloroethylene) exceeded the MECP Table 3 SCS in the sample from this well. The other two wells that were sampled (MW-3 located at the south property line and MW-8, located at the north property line) had non-detectable concentrations of PHC and VOC.
  - There was no discussion about depth to groundwater or groundwater flow directions. Pinchin noted that further investigation was required to confirm the extent of soil impact in the south part of the site and to define and delineate the VOC impact to groundwater in the east part of the site.

- "Environmental Summary, Lancaster Shopping Centre 1509 – 1531 Merivale Road, Ottawa", dated July 31, 2012 and prepared for 1686971 Ontario Limited by Paterson Group was provided for review. The review of the report identified the following pertinent environmental findings;

- Eight (8) boreholes were drilled to a depth of 3.05 m by Pinchin in 2011. Five wells (MW-1, MW-2, MW-3, MW-6, and MW-8) were installed in the boreholes. MW-1 was drilled west of the dry cleaners and MW-6 was drilled east of the dry cleaners. Boreholes and monitoring wells were drilled at both the north and south property lines to further define the conditions at those locations.
- The groundwater sample that was collected from MW-1, which is located west of the dry cleaners had non-detectable concentrations of VOC. The two groundwater samples collected from MW-6, located east of the dry cleaners, in 2011 and 2012 both exceeded the MECP Table 3 SCS for fine grained soils. The sample from 2012 had concentrations of PCE 1,120 ug/L, continued to exceed the MECP Table 3 SCS of 1.6 ug/L. Similarly, the daughter product concentrations exceeded the MECP Table 3 SCS in the sample from this well.
- Annual groundwater monitoring was recommended. It was stated that the impacts encountered are considered weathered contaminants from historical releases and do not pose any significant risks of continued migration due to residual and dissolved nature of the impacts. Delineation of the impacts was not recommended even though the PCE concentration was 700 times the MECP Table 3 SCS.

- "Environmental Drilling and Groundwater Monitoring, 1509 – 1531 Merivale Road, Ottawa, Ontario", dated August 6, 2015 and prepared for 1686971 Ontario Limited by EXP Services Inc. was reviewed. The review of the report identified the following pertinent environmental findings;

  - Sand and gravel fill was encountered in each borehole to a maximum depth of 1.37 m. Limestone bedrock was encountered at depths ranging from 1.0 to 3.1 m. The shale bedrock was air hammered approximately 2.2 m in the shallow exterior boreholes. MW15-3 was drilled to a depth of 9.14 m. Minor evidence of petroleum impact was observed in borehole MW14-4 located in the former furnace oil remediation excavation near the bedrock surface.
  - The depth to groundwater in the monitoring wells ranged from 0.83 m to 2.39 m below the ground surface. Based on the groundwater elevations, the bedrock groundwater below the Site was calculated to flow to the northeast.
  - Based on the bedrock groundwater elevations, the horizontal hydraulic gradient is estimated at 0.017. Using the calculated hydraulic conductivity for the limestone bedrock of 1.6 x 10-3 cm/s, the average groundwater velocity would be approximately 9.5 m/year in an easterly direction.
  - The groundwater in eight (8) of eleven (11) newly installed monitoring wells has been impacted by VOC. This VOC impact has been vertically delineated on the subject site. However, the VOC impacted groundwater plume likely extends off of the site to the north and east.
  - To determine the presence and concentrations of the relevant BTEX, VOC and/or PHC parameters beneath the floor slab of the dry cleaner, soil gas samples were collected on April 13, 2015. The results showed concentrations of PHC and VOC were significantly less than the MGRA Tier 2 soil gas quality criteria. These results indicate that vapour intrusion of PHC and VOC into the on-site building is not a concern at the Site.
  - It was recommended that a second round of groundwater samples be collected from the property line wells and selected wells to confirm the VOC impacts to groundwater. Additional monitoring wells will be required to delineate the VOC impact off of the Site.
  - It was also recommended that test pits/trenches be excavated in the possible VOC source area to confirm or refute a possible soil source for the VOC impacted groundwater.

- Since the groundwater at the Site had been impacted by PHCs and VOCs, it was recommended that all stakeholders, including the MECP, be involved before deciding on a remedial option.

- "Phase One Environmental Site Assessment Update, 1509 – 1531 Merivale Road, Ottawa, Ontario", dated March 24, 2020 and prepared for 10198447 Canada Inc. by EXP Services Inc. was reviewed. The review of the report identified the following pertinent environmental findings;

  - Based on the Phase I ESA findings, including Site observations, information provided by Site representative, the review of environmental databases, available historical information, and pending the information requested from the Ministry of the Environment, Conservation, and Parks (MECP), the following potentially contaminating activities (PCAs) were identified:
    - **PCA 1:** An active on-Site dry cleaner that has been in operation since at least 1964. This activity is associated with PCA #237 – Operation of Dry Cleaning Equipment (where chemicals are used).
    - **PCA 2:** A former furnace oil UST was located east of the on-Site building. This UST is associated with PCA #28 – Gasoline and Associated Products Stored in Fixed Tanks.
    - **PCA 3:** Imported fill material used in the eastern portion of the Site during UST excavation. This fill is associated with PCA #30 – Fill Material of Unknown Quality.
    - **PCA 4:** A former gasoline station was observed at 1507 Merivale Road, immediately north of the Site, which had one (1) UST on the 1965 FIP. This property is associated with PCA #28 – Gasoline and Associated Products Stored in Fixed Tanks.
    - **PCA 5:** A automotive service station was identified at 1507 Merivale Road, immediately north of the Site. This property is associated with PCA #27 - Garages and Maintenance and Repair of Railcars, Marine Vehicles and Aviation Vehicles.
    - **PCA 6:** A former gasoline station was observed at 1533 Merivale Road, immediately south of the Site, which had one (1) UST on the 1965 FIP. This property is associated with PCA #28 – Gasoline and Associated Products Stored in Fixed Tanks.
    - **PCA 7:** A former Pennzoil oil change and lubrication service station and current breaks and car repair facility was identified at 1533 Merivale Road, immediately south of the Site. This property is associated with PCA #27 - Garages and Maintenance and Repair of Railcars, Marine Vehicles and Aviation Vehicles.
    - **PCA 8:** A former gasoline station was observed at 1537 Merivale Road, 45 m south of the Site, which had one (1) UST on the 1965 FIP. This property is associated with PCA #28 – Gasoline and Associated Products Stored in Fixed Tanks.
    - **PCA 9:** A gasoline spill was identified at 1537 Merivale Road, 45 m south of the Site, according to the EcoLog Report. This property is associated with PCA "Other" – Spills.
    - **PCA 10:** A gasoline station was identified at 1543 Merivale Road, 185 m south of the Site, which has operated as a retail fuel outlet since the 1970s according to the city directory search. This property is associated with PCA #28 – Gasoline and Associated Products Stored in Fixed Tanks.
    - **PCA 11:** A former business was identified at 1541 Merivale Road, 130 m south of the Site, which operated as a dry cleaner from 1990 to 2000 according to the city directory search. This property is associated with PCA #37 – Operation of Dry Cleaning Equipment (where chemicals are used).

- **PCA 12:** A former business was identified at 1545 Merivale Road, 225 m south of the Site, which operated as a retail fuel outlet from 1970 to 1984 according to the city directory search. This property is associated with PCA #28 – Gasoline and Associated Products Stored in Fixed Tanks.
- **PCA 13:** A gasoline spill was identified at 1545 Merivale Road, 225 m south of the Site, according to the EcoLog Report. This property is associated with PCA "Other" – Spills.
- **PCA 14:** A gasoline station was identified at 1548 Merivale Road, 215 m south of the Site, which has operated as a retail fuel outlet since the 1970s according to the city directory search. This property is associated with PCA #28 – Gasoline and Associated Products Stored in Fixed Tanks.
- **PCA 15:** A former business was identified at 1516 Merivale Road, 50 m west of the Site, which operated as a dry cleaner from 1965 to 1975 according to the city directory search. This property is associated with PCA #37 – Operation of Dry Cleaning Equipment (where chemicals are used).
- **PCA 16:** A former gasoline station was observed at 1504 Merivale Road, 85 m north of the Site, which had one (1) UST on the 1965 FIP. This property is associated with PCA #28 – Gasoline and Associated Products Stored in Fixed Tanks.
- **PCA 17:** A former gasoline station was identified at 1493 Merivale Road, 105 m northeast of the Site, which operated as a retail fuel outlet from 1965 to 1970 according to the city directory search. This property is associated with PCA #28 – Gasoline and Associated Products Stored in Fixed Tanks.

Based on the findings of this Phase One ESA Update, EXP recommended a Phase Two ESA be conducted to further investigate the identified PCAs.

4 Scope of Investigation

4.1 Overview of Site Investigation

The objective of the Phase Two ESA Update was to further assess the APECs identified in EXP's (2020) Phase One ESA Update to obtain soil and groundwater data to further characterize the Site to support the filing of a RSC on the MECP's Environmental Brownfield Site Registry.

4.1.1 Scope of Work

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

- Request local utility locating companies (e.g. cable, telephone, gas, hydro, water, sewer and storm water) to mark any underground utilities present at the Site;
- Retain a private utility locating company to mark any underground utilities present in the vicinity of the proposed borehole locations and to clear the individual borehole locations;
- Oversee a licensed drilling company to advance a total of twelve (12) additional boreholes across the Site;
- Instrument all twelve (12) exterior boreholes as groundwater monitoring wells;
- Collect representative soil samples from the boreholes for laboratory analysis of PHCs, BTEX, Metals, and/or VOCs;
- Develop the twelve (12) newly installed groundwater monitoring wells;
- Collect groundwater samples from both the newly installed monitoring wells and some existing monitoring wells for laboratory analysis of PHCs, BTEX, VOCs and/or metals;
- Complete an elevation survey of all newly installed monitoring wells to determine the groundwater flow direction in the groundwater unit(s) identified beneath the Site;
- Collect an updated round of groundwater level measurements across the Site; and,
- Analyze the data and prepare a report of the findings, in accordance with O.Reg.153/04.

4.2 Media Investigated

The Phase Two ESA Update included the investigation of the Site soil and/or groundwater and included consideration of soil and groundwater sampling conducted during EXP's 2016 Phase Two ESA. As there were no surface water bodies on the Site, sediment sampling was not required.

4.3 Phase One Conceptual Site Model

The Phase One Conceptual Site Model (CSM) is incorporated into the Phase Two CSM, presented in Appendix F.

4.4 Deviations from Sampling and Analysis Plan

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

4.5 Impediments

The Site was accessible at the time of the investigation, and no physical impediments were encountered during the field investigation.

5. Investigation Method

5.1 General

The Site investigative activities consisted of the following:

- Borehole drilling to facilitate the collection of soil samples for geologic characterization and/or chemical analysis; and,
- Monitoring well installation for hydrogeologic characterization and the collection of groundwater samples for chemical analysis.

Boreholes were advanced in the topsoil and overburden soils by a licensed drilling company under the full-time supervision of EXP staff. The drilling equipment used to advance the boreholes is described below. No petroleum-based greases or solvents were used during drilling activities.

Monitoring wells were installed in the boreholes by a MECP licensed well contractor in accordance with Ontario Regulation 903/90, as amended (O.Reg. 903) using manufactured well components (i.e. riser pipes and screens) and materials (i.e. sand pack and grout) from documented sources.

The approximate locations of the boreholes and monitoring wells are shown on Figure 6.

5.2 Underground Utilities

Prior to the commencement of drilling activities, the locations of underground utilities including but not limited to cable, telephone, natural gas, electrical lines, water, sewer and storm water conduits were marked out by public locating companies. In addition, a private utility locating service was retained to clear individual borehole locations.

5.3 Borehole Drilling

The fieldwork conducted for the soil investigative portion of the Phase Two ESA Update was carried out between September 2017 and January 2019.

A total of twelve (12) boreholes were advanced at the Site by Strata Soil (a licensed well contractor) under the fulltime supervision of EXP in September 2017 for the purpose of this Phase Two ESA Update, extending to a maximum depth of approximately ~4.6 m below grade. A total of twenty (20) boreholes were advanced across the Site during EXP's 2015 and 2016 Phase Two ESA, which are also relied upon for the purpose of this environmental investigation. The borehole locations will be selected to determine the presence or absence of impacts in the soils and the upper overburden groundwater and to address the APECs outlined in EXPs March 2020 Phase One ESA Update. A summary of the boreholes advanced is provided in Table 2.

EXP continuously monitored the drilling activities to record the physical characteristics of the soil, depth of soil sample collection and total depth of boreholes. Field observations are summarized on the borehole logs provided in Appendix C. Representative soil samples were recovered from the boreholes continuously using acetate liners.

All soil cuttings were stored in drums on the Site.

5.4 Soil: Sampling

The soil sampling conducted in support of this Phase Two ESA Update was undertaken in accordance with the SAAP presented in Appendix A, to ensure that soil quality in the APECs identified in the Phase One ESA was characterized in accordance with O.Reg.153/04.

Soil samples for geologic characterization and chemical analysis were collected on a discrete basis in the overburden materials using acetate liners advanced into the subsurface using a track-mounted direct push drill rig. The soil cores were extruded from the samplers upon retrieval by drilling personnel. Geologic details of the recovered cores were logged by EXP field staff and samples were collected from selected cores for chemical analysis. Field observations are summarized on the borehole logs prepared from the field logs and provided in Appendix C.

Measures were taken in the field and during transport to preserve sample integrity prior to chemical analysis. Recommended volumes of soil samples selected for chemical analysis were collected from the recovered cores into pre-cleaned, laboratory-supplied glass sample jars/vials identified for the specified analytical test group. Samples intended for PHC fractions F1 and VOCs were collected using a laboratory-supplied soil core sampler, placed into the vials containing methanol for preservation purposes and sealed using Teflon lined lids.

Soil samples selected for laboratory analysis were placed in clean coolers containing ice prior to and during transportation to the subcontract laboratory, Bureau Veritas Laboratories Inc. (BV Labs) of Mississauga, Ontario (previously Maxxam Analytics). The samples were transported/submitted within the acceptable holding time to BV Labs following Chain of Custody protocols for chemical analysis.

Decontamination and other protocols were followed during sample collection and handling to minimize the potential for sample cross-contamination. New disposable nitrile gloves were used for the handling and sampling of each retrieved soil core. The sampling equipment (i.e. split spoons) was decontaminated between borehole locations by the drilling contractor using a potable water/phosphate-free detergent solution followed by rinses with potable water and de-ionized water. Wash and rinse waters were collected in sealed, labeled containers. Drill cuttings were placed in labeled, sealed drums upon completion of sampling.

Soil samples submitted for specific chemical analysis were selected on the basis of visual inspection of the recovered cores, TOV readings, sample location and/or depth interval. The rationale for soil sample submission is presented in Table 3.

Soil samples were also collected and submitted for grain size analysis.

Appropriate quality assurance/quality control (QA/QC) samples were collected during soil sampling, including field duplicate samples, as presented in Section 4.14 and Table 3.

5.5 Soil: Field Screening Measurements

Where required for the characterization of volatile parameters, a portion of each soil core was placed in a sealed plastic bag and allowed to reach ambient temperature prior to field screening, using an RKI Eagle II (RKI) device equipped with a Photoionization Detection (PID) instrument, calibrated with isobutylene and hexane gases. The measurements were made by inserting the instrument's probe into the plastic bag while manipulating the sample to ensure volatilization of the soil gases. These readings provide a real-time indication of the relative concentration of combustible vapours encountered in the subsurface during drilling and are used to aid in the assessment of the vertical and horizontal extent of volatile parameter contamination and the selection of soil samples for analysis.

The field screening measurements, in parts per million (ppm) isobutylene and hexane equivalents, are presented on the borehole logs in Appendix C. It should be noted that field measurements are for screening purposes only and the presence/absence of contamination is determined by laboratory analysis.

Each sample was additionally examined for visual, textural and olfactory classification at the time of sampling.

5.6 Groundwater: Monitoring Well Installation

Twelve (12) boreholes were instrumented with monitoring wells at the Site (BH/MW301 to BH/MW312) during this Phase Two ESA Update. Including the original 2016 Phase Two ESA, a total of twenty-four boreholes have been instrumented with monitoring wells at the Site by EXP. 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 licensed well contractor (Strata).

All monitoring wells consisted of a 32 mm diameter PVC screen with a slot size of approximately 0.25 mm (10 slot), and an appropriate length of PVC riser pipe. All pipe connections were factory machined threaded flush couplings. The annular space around the wells was backfilled with sand to an average height of 0.3 m above the top of the screen. A bentonite seal was added from the top of the sand pack to approximately 0.3 m bgs. The monitoring wells were completed with a concrete collar, and flush mount protective well casings at ground surface.

EXP continuously monitored the well installation activities. Well installation details are summarized in Table 4 and on the borehole logs provided in Appendix C.

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

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

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

A summary of the monitoring well completion details are presented in Table 3.

5.7 Groundwater: Monitoring Well Development

Following the installation of monitoring wells, the newly installed monitoring wells were developed to remove fine sediment particles from the sand pack and enhance hydraulic communication with the surrounding formation waters. The new monitoring wells were developed using dedicated low-density polyethylene (LDPE) tubing, equipped with an inertial foot-valve

to disturb the water column and recover groundwater containing dislodged sediment particles. The wells were developed until approximately 3 to 5 well volumes of water were removed and/or until purged dry.

5.8 Groundwater: Purging and Field Measurements of Water Quality Parameters

At least 24 hours following the monitoring well development activities, the depth to groundwater at each monitoring well was measured utilizing an electronic water level meter. The water level measurements were recorded on log sheets or in a bound field book. The water level meter was decontaminated between monitoring well locations.

Prior to collecting groundwater samples, field measurements of water quality parameters were recorded from the monitoring wells utilizing low-flow purging and sampling methodologies. Groundwater was purged from each location using a peristaltic pump and dedicated LDPE tubing. Field measurements of dissolved oxygen concentration, electrical conductivity, oxidation-reduction potential, pH, temperature, turbidity and water levels were recorded at three (3) minute intervals during the purging activities using a pre-calibrated multi probe water quality meter, a turbidity meter and a water level meter. Groundwater was considered to be chemically stable when the pH measurements of three (3) successive readings agreed to within ± 1 pH units, the specific conductance within ± 10%, and the temperature within ± 10%. The multi-meter electrodes were calibrated prior to receipt of the meter by the supplier using in-house reference standards.

All development and purged water was collected and stored on Site in labeled, sealed containers, until properly managed or disposed off-Site.

Equipment used during groundwater monitoring were thoroughly cleaned and decontaminated between wells. Well purging details were recorded on log sheets or in a bound field book.

5.9 Groundwater: Sampling

The groundwater sampling conducted during the completion of this Phase Two ESA Update was undertaken in accordance with the SAAP presented in Appendix A, to ensure that the APECs identified in the Phase One ESA were properly characterized, in accordance with O.Reg.153/04.

Upon completion of purging activities, groundwater samples were collected from monitoring wells. Recommended groundwater sample volumes were collected into pre-cleaned laboratory-supplied vials or bottles provided with analytical test group specific preservatives, as required. The samples were placed in an insulated cooler pre-chilled with ice immediately upon collection. Samples for VOCs and/or PHC F1 analysis were collected in triplicate vials prepared with concentrated sodium bisulphate as a preservative. Each VOC/PHC vial was inverted and inspected for gas bubbles prior to being placed in the cooler to ensure that no head-space was present in the samples. Samples for Inductively Coupled Plasma Mass Spectrometry (ICPMS) metals were collected using disposable 0.45 micron field filters, supplied by Spectra, or laboratory filtered.

All groundwater samples were placed in clean coolers containing ice prior to and during transportation to the subcontract laboratory, BV Labs. The samples were transported/submitted following appropriate holding time requirements following Chain of Custody protocols for chemical analysis.

Decontamination and other protocols were followed during sample collection and handling to minimize the potential for sample cross-contamination. New disposable nitrile gloves were used at each monitoring well location.

Groundwater samples submitted for specific chemical analysis were selected on the basis of sample location and/or depth interval. The rationale for groundwater sample submission is presented in Table 5.

Appropriate QA/QC samples were collected during groundwater sampling, including field duplicate samples and trip blanks, where required, as presented in Table 5.

5.10 Single Well Response Tests

Single well response tests were conducted on one overburden monitoring well (MW11-1), two shallow bedrock monitoring wells (MW15-1 and MW205) and two deeper bedrock monitoring wells (MW207 and MW208) as a part of the original 2016 Phase Two ESA and is relied upon in this Phase Two ESA Update.

5.11 Sediment Sampling

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

5.12 Analytical Testing

The contractual laboratory selected to perform the chemical analyses was BV Labs Inc., of Mississauga, ON (formerly Maxxam Analytics). BV Labs is an accredited laboratory under the Standards Council of Canada/Canadian Association of Environmental Analytical Laboratories (Accredited Laboratory No. 97 and No. A3200, respectively) in accordance with ISO/IEC 17025:2005 – "General Requirements for the Competence of Testing and Calibration Laboratories".

5.13 Residue Management Procedures

The residue materials produced during the borehole drilling, soil sampling programs and monitoring well sampling programs comprised of soil cuttings from drilling activities, decontamination fluids from equipment cleaning, and waters from well development and purging. All soil cuttings were stored in drums on the north central portion of the Site until the material was properly disposed of at an off-Site MECP licensed landfill facility. All development and purged water was collected and stored on-Site in labeled, sealed containers, until disposed of off-Site at a MECP licensed landfill facility.

5.14 Elevation Survey

An elevation survey was conducted to obtain vertical control of all the on-site monitoring wells. The top of casing and ground surface elevation of each newly installed monitoring well location was surveyed relative to a geodetic datum using a high precision GPS unit.

The elevation survey was completed using a high precision global positioning system unit. The survey equipment was calibrated by Spectra personnel prior to use. A summary of the groundwater levels and elevation survey is presented on Table 5.

5.15 Quality Assurance and Quality Control Measures

Quality Control/Quality Assurance measures, as set out in the Sampling and Analysis Plan, were implemented during sample collection, storage and transport to provide accurate data representative of conditions in the surficial fill and upper overburden soils and the water table aquifer. The QA/QC measures included decontamination procedures to minimize the potential for sample cross contamination, the execution of standard operating procedures to collect representative and unbiased samples, the collection of quality control samples to evaluate sample precision and accuracy, and the implementation of measures to preserve sample integrity.

Decontamination protocols were followed during sample collection and handling to minimize the potential for cross-contamination. During the collection of soil samples, split-spoon and duel tube samplers were scraped and decontaminated

between sampling intervals by washing with a potable water/phosphate-free detergent solution followed by a rinse with potable water. New disposable nitrile gloves were used for the handling and collection of samples from each soil core and for sample collection from each borehole.

Soil samples selected for chemical analyses were collected from the retrieved soil cores and placed directly into pre-cleaned, laboratory-supplied glass jars or vials. Sample volumes were consistent with analytical test group requirements as specified by the receiving laboratory.

Groundwater samples were collected into pre-clean laboratory-supplied vials or bottles provided with analytical test group specific preservatives, as required. Recommended analytical test group specific sample volumes were collected as specified by the contractual laboratory. Sample vials for analysis of PHC F1 (BTEX) and VOCs were inspected for the presence of gas bubbles and the presence of head space, where volatiles may partition into.

Measures were followed to preserve sample integrity between collection and receipt by the contractual laboratory. All samples, both soil and groundwater, immediately upon collection were placed in insulated coolers pre-chilled with ice for storage and transport to the contractual laboratory. Samples were received by the contractual laboratory within specific analytical test group holding time requirements.

Documentation procedures were followed to confirm sample identification and tracked sample movement. Each sample was assigned a unique identification ID number, which was recorded along with the date, time of sampling and requested analyses on labels affixed to the sampling containers, and in a bound field notebook. Chain of Custody protocols were followed to track sample handling and movement until receipt by the contractual laboratory. Field QA/QC samples were collected during the soil and groundwater sampling. Duplicate samples were collected to evaluate sampling precision to evaluate the potential for sample cross-contamination during handling and transport.

During the additional soil and groundwater sampling conducting during this Phase Two ESA Update, one (1) duplicate soil sample, BH/MW321-S2, was collected from BH/MW310, and submitted for analysis of PHCs/BTEX, VOCs, and metals and inorganics for QA/QC purposes. One (1) duplicate groundwater sample (BH/MW313) was collected from monitoring well BH/MW311 and submitted for analysis of PHCs/BTEX, VOCs, and metals for QA/QC purposes; one (1) trip blank sample was analyzed for PHCs/BTEX, VOCs, and metals and inorganics.

6. Review and Evaluation

6.1 Geology

The soil investigation conducted at the Site during this Phase Two ESA Update consisted of the advancement of twelve (12) boreholes into the surficial fill material and the underlying native soil to a maximum depth of 4.6 m bgs. Including boreholes advanced during the original 2016 Phase Two ESA, shaly limestone bedrock has been observed to a maximum depth of 10.8 m bgs. The borehole logs describing geologic details of the soil cores recovered during the Site drilling activities conducted during the 2016 Phase Two ESA as well as this Phase Two ESA Update are presented in Appendix C. 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 Site, as observed in the boreholes, consisted of asphalt, followed by sand and gravel fill underlain by sandy silt over sand and gravel glacial till and limestone bedrock. A brief description of the soil stratigraphy at the Site, in order of depth, is summarized in the following sections. The borehole and APECs are shown on Figure 7. Six (6) geologic cross sections (Figures 10A, 11A, 12A, 13A, 14A and 15A) show the stratigraphy across the Site.

6.1.1 Surface Material

The surface material at majority of the boreholes consisted of asphalt, with a thickness of approximately 50 mm.

6.1.2 Fill Material

A layer of fill material was encountered in all boreholes. The thickness of the fill ranged from 1.7 m in BH205 to 2.2 m in BH/MW302 and 303, both located in the area of the former heating oil UST excavation. The fill material generally consisted of brown to grey sand and gravel.

6.1.3 Native Material

The native soil encountered at the Site generally consisted of sandy silt, overlying silty sand and gravel glacial till. The silt till extended to the bedrock surface.

6.1.4 Bedrock

Bedrock was at depths ranging from 2.1 to 2.4 m over 90% of the site. The depth to rock in the northeast corner of the site was 1.1 m. The bedrock consisted of shaly limestone.

Refer to Figure 8 for a representation of the known depths to bedrock across the Site.

6.2 Groundwater: Elevations and Flow Direction

In January 2019, groundwater levels were measured in all available monitoring wells using an electronic water level meter. The depth to overburden groundwater in the shallow monitoring wells ranged between approximately 0.82 m and 2.26 m bgs, with a geometric mean of 1.38 m bgs. The groundwater elevations ranged between approximately 93.44 m above mean seal level (AMSL) and 92.87 m AMSL, with a geometric mean of 93.74 m AMSL. The groundwater elevations in the deeper interval monitoring wells MW15-3, MW207 and MW208 were lower than in the shallow bedrock monitoring wells with geometric mean elevation of 92.87 AMSL.

Based on the collected groundwater data groundwater flow in the overburden is inferred to be to the northeast as shown on Figure 9A. The deeper bedrock groundwater flow direction is the north-northeast (Figure 9B). The groundwater contour plans were constructed using the groundwater elevations collected in January 2019.

6.2.1 Groundwater: Hydraulic Conductivity

Hydraulic conductivity of groundwater at the Site was measured during EXP's 2016 Phase Two ESA by conducting single well response tests on one (1) overburden monitoring well (MW11-1), two shallow bedrock monitoring wells (MW15-1 and MW205), and two deeper bedrock monitoring wells (MW207 and MW208), the approximate horizontal hydraulic conductivity of the overburden material was calculated to be 8.6 x 10-6 m/s. The approximate horizontal hydraulic conductivity of the shallow shale bedrock was calculated to be 2.4 x 10-5 m/s. The approximate horizontal hydraulic conductivity of the deeper shaly limestone bedrock was calculated to be 8.7 x 10-6 m/s.

6.2.2 Groundwater: Horizontal Hydraulic Gradients

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 in the overburden groundwater, based on groundwater measurements collected during EXP's 2016 Phase Two ESA on April 21 and 22, 2016, the average horizontal gradient of 0.008 m/m. The average vertical gradient between the three well pairs was 0.13 downward.

6.3 Soil Texture

The native materials encountered, as discussed in Section 5.1, are comprised of silty sand. Based on the textural descriptions of these materials as inferred from borehole observations, the applicable Site Condition Standards selected to evaluate analytical data was for a coarse textured soil classification.

Grain size analysis performed as part of this Phase Two ESA indicated a coarse soil condition.

6.4 Soil: Field Screening

TOV readings from each sample interval were measured for soil sample selected for BTEX/PHC analysis from all advanced boreholes. Vapour concentrations readings collected during subsurface drilling were measured using the RKI Eagle 2 in ppm calibrated with isobutylene and hexane or equivalent. The vapour readings, in ppm, are provided on the borehole logs in Appendix C.

Soil samples submitted for chemical analysis were selected on the basis of visual inspection of the recovered cores, TOV readings, sample location and/or depth interval. Both hexane and isobutylene readings indicate that there are insignificant volatile particles in the soil vapours.

6.5 Soil Quality

In accordance with the scope of work, chemical analyses were performed on selected soil samples recovered from the boreholes. The selection of representative "worst case" soil samples was based on field screening, visual and/or olfactory evidence of impacts, and the presence of potential water bearing zones. Copies of the laboratory Certificates of Analysis for the analyzed soil samples are provided in Appendix E. A summary of the analytical results for the soil samples, including the locations and depths of each sample, a comparison of concentrations against applicable SCS, and the identification of the potential contaminants of concern, are provided in Appendix D.

6.5.1 Petroleum Hydrocarbons

Eight (8) soil samples, including one (1) QA/QC field duplicate (BH/MW321-S2), were analyzed for PHCs. All parameters in all samples were either measured below the applicable Table 3 SCS or were below the laboratory RDLs. The laboratory reporting detection limits (RDLs) of all parameters were below the Table 3 SCS.

6.5.2 BTEX (Benzene, Toluene, Ethylbenzene, and Xylenes)

Twelve (12) soil samples, including one (1) QA/QC field duplicate (BH/MW321-S2), were analyzed for BTEX. All parameters in all samples were either measured below the applicable Table 3 SCS or were below the laboratory RDLs. The laboratory RDLs of all parameters were below the Table 3 SCS.

6.5.3 Metals and Select Inorganics

Two (2) soil samples were analyzed for metals. All parameters in all samples were either measured below the applicable Table 3 SCS or were below the laboratory RDLs. The laboratory RDLs of all parameters were below the Table 3 SCS.

As shown in Table D.3, five (5) samples were analyzed for salt parameters (EC and SAR). All five (5) of these samples demonstrated concentrations of EC and/or SAR in exceedance of the Table 3 SCS. However, due to recent amendments to O.Reg. 153 which exclude salt related impacts as areas of concern for properties where salt in soil and groundwater can be attributed to the salting of pavement for de-icing purposes, salt parameters are not identified as contaminants of concern at this Site and are not considered further.

6.5.4 Volatile Organic Compounds

Nine (9) soil samples, including one (1) QA/QC field duplicate (BH/MW321-S2), were analyzed for VOCs. The results of the analysis together with the applicable Table 3 SCS are presented in Table D.2 in Appendix D.

All parameters in all samples were either measured below the applicable Table 3 SCS or were below the laboratory RDLs. The laboratory RDLs of all parameters were below the Table 3 SCS.

6.5.5 Soil pH

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). As measured in soil samples collected during EXP's 2016 Phase Two ESA, the reported pH values were 8.85 for surface soils and 7.8 for subsurface soils, which are within the acceptable range to use the Table 3 SCS.

Refer to Table E.3 for a summary of the soil samples analyzed for pH.

6.5.6 Chemical Transformation and Soil Contaminant Source

No chemical constituents were detected in the soil samples.

6.5.7 Evidence of Non-Aqueous Phase Liquid

Inspection of the soil cores retrieved from the boreholes did not indicate the presence of non-aqueous phase liquid (NAPL), staining, or sheen at the time of the Phase Two ESA.

6.6 Groundwater Quality

In accordance with the scope of work, chemical analyses were performed on groundwater samples recovered from the monitoring wells. The selection of groundwater samples was based on location and/or screen depth. Copies of the laboratory Certificates of Analysis for the analyzed groundwater samples are provided in Appendix E. A summary of the analytical results for the groundwater samples, including the locations of each sample, well screen interval depth, a comparison of parameter concentrations against applicable SCS, and the identification of the PCOCs, are provided in Appendix D.

6.6.1 Petroleum Hydrocarbons

Seventeen (17) groundwater samples including one (1) QA/QC field duplicate (BH/MW313) were analyzed for PHCs during this Phase Two ESA Update investigation. The results of the analysis together with the applicable Table 3 SCS are presented in Table D.4 of Appendix D.

Three (3) groundwater samples collected on September 14th and 15th, 2017 demonstrated measured concentrations of PCH F2 in exceedance of applicable Table 3 SCS (MW206, MW303 and MW311). One (1) groundwater sample also demonstrated a measured concentration of PHC F3 in exceedance of the applicable Table 3 SCS (MW303).

All remaining parameters in all samples were either measured below the applicable Table 3 SCS or were below the laboratory RDLs. The laboratory RDLs of all parameters were below the Table 3 SCS.

6.6.2 BTEX (Benzene, Toluene, Ethylbenzene, Xylenes)

Twenty-two (22) groundwater samples including one (1) QA/QC field duplicate (BH/MW313) were analyzed for BTEX. The results of the analysis together with the applicable Table 3 SCS are presented in Table D.4 in Appendix D.

All BTEX parameters in all samples were either measured below the applicable Table 3 SCS or were below the laboratory RDLs. The laboratory RDLs of all parameters were below the Table 3 SCS.

6.6.3 Metals and Select Inorganics

Fourteen (14) groundwater samples were analyzed for either sodium and/or chloride, including three (3) QA/QC field duplicate samples (MW313, MW222 and MW222). Five (5) of these samples demonstrated concentrations of sodium and/or chloride in exceedance of the Table 3 SCS. However, due to recent amendments to O.Reg. 153 which exclude salt related impacts as areas of concern for properties where salt in soil and groundwater can be attributed to the salting of pavement in winter months for de-icing purposes, salt parameters are not identified as contaminants of concern at this Site and are not considered further.

Four (4) groundwater samples were analyzed for lead. No samples were measured in excess of the laboratory RDL. The laboratory RDLs were below the Table 3 SCS.

6.6.4 Volatile Organic Compounds

Eleven (11) groundwater samples were analyzed for VOCs. The results of the analysis together with the applicable Table 3 SCS are presented in Table D.5 in Appendix D.

One (1) groundwater sample demonstrated measured concentrations of chloroform in exceedance of applicable Table 3 SCS (MW305). One (1) groundwater sample demonstrated measured concentrations of cis-1,2-dichloroethylene in exceedance of the applicable Table 3 SCS (MW312). Three (3) groundwater samples demonstrated measured concentrations of tetrachloroethylene in exceedance of the applicable Table 3 SCS (MW305, MW306 and MW312). Two (2) groundwater samples demonstrated measured concentrations of trichloroethylene in exceedance of the Table 3 SCS (MW306 and MW312). One (1) groundwater sample demonstrated a measured concentration of vinyl chloride in exceedance of the Table 3 SCS (MW312).

All remaining parameters in all samples were either measured below the applicable Table 3 SCS or were below the laboratory RDLs. The laboratory RDLs of all parameters were below the Table 3 SCS.

6.6.5 Chemical Transformation and Groundwater Contaminant Source

The organic chemical constituents detected in the groundwater samples comprised PHCs F2 and F3, chloroform, cis-1,2-DCE, PCE, TCE and vinyl chloride. The VOC related impacts were detected across the central and northern portion of the Site, while the PHC related impacts appear to be more localized in the area of the former UST excavation and along the southern property line. The presence of PHC related parameters is likely attributed to the presence of the former on-Site UST; and, the presence of the VOC related parameters is likely attributed to the presence of an on-Site dry cleaning operation.

6.6.6 Evidence of Non-Aqueous Phase Liquid (NAPL)

Inspection of the purged groundwater retrieved from the monitoring wells did not indicate the presence of NAPL, staining, sheen, or odour.

6.7 Sediment Quality

As no surface water body was located on-Site, the Phase Two ESA Update did not include sediment sampling.

6.8 Quality Assurance and Quality Control Measures

Quality assurance and quality control measures were taken during the field activities to meet the objectives of the sampling and quality assurance plan to collect unbiased and representative samples to characterize existing conditions in the overburden and bedrock materials, and water table units at the Site.

Review of field activity documentation indicated that recommended sample volumes were collected from soil and groundwater for each analytical test group into appropriate containers and preserved with proper chemical reagents in accordance with the protocols set out in the “Protocol for Analytical Methods used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act” (MECP, 2004). Samples were preserved at the required temperatures in pre-chilled insulated coolers and met applicable holding time requirements, when relinquished to the receiving laboratory.

Field QA/QC samples were collected during soil and groundwater sampling. A total of one (1) soil and Two (2) groundwater duplicate sample was collected to evaluate sampling precision. One (1) trip blank sample was analyzed for VOCs/BTEX and metals and inorganics. Refer to Tables D.1 – D.6 for a summary of the QA/QC samples collected and submitted for chemical analysis.

The field duplicate sample results were quantitatively evaluated by calculating the relative percent difference (RPD). Assessment of the duplicate soil and groundwater sample showed that the results generally met analytical test group specific acceptance criteria. The overall assessment indicates that the soil and groundwater samples were collected with an acceptable level of precision, and the data is acceptable quality for meeting the objectives of the Phase Two ESA.

The contractual laboratory selected to perform the chemical analyses was Bureau Veritas Laboratories Inc., of Mississauga, ON. BV Labs is an accredited laboratory under the Standards Council of Canada/Canadian Association of Laboratory Accreditation (Accredited Laboratory No. 97 and No. A3200, respectively) in accordance with ISO/IEC 17025:2005 – "General Requirements for the Competence of Testing and Calibration Laboratories". Certificates of Analysis were received from BV Labs reporting the results of all the chemical analyses performed on the submitted soil and groundwater samples. Copies of the Certificates of Analysis are provided in Appendix E. Review of the Certificates of Analysis, prepared by BV Labs, indicates that they were in compliance with the requirements set out under subsection 47(3) of O. Reg. 153/04.

The analytical program conducted by BV Labs included analytical test group specific QA/QC measures to evaluate the accuracy and precision of the analytical results and the efficiency of analyte recovery during solute extraction procedures. The laboratory QA/QC program consisted of the preparation and analysis of laboratory duplicate samples to assess precision and sample homogeneity, method blanks to assess analytical bias, spiked blanks and QC standards to evaluate analyte recovery, matrix spikes to evaluate matrix interferences and surrogate compound recoveries (VOCs only) to evaluate extraction efficiency. The laboratory QA/QC results are presented in the Quality Assurance Report provided in the Certificate of Analysis prepared by BV Labs. The QA/QC results are reported as percent recoveries for matrix spikes, spike blanks and QC standards, relative percent difference for laboratory duplicates and analyte concentrations for method blanks. The QA/QC results were assessed against test group control limits in the case of spiked blanks, matrix spikes and surrogate recoveries and alert criteria in the case of method blanks and laboratory duplicates. Review of the laboratory QA/QC results reported by BV Labs indicated that they were within acceptable control limits or below applicable alert criteria for the sampled media and analytical test groups. Based on the assessment of the QA/QC, the analytical results reported are of acceptable quality and data qualifications are not required.

6.8 Sub-Slab and Soil Vapour Sampling Program

Given the results of the soil and groundwater sampling conducted as part of this Phase Two ESA Update, a soil vapour and sub-slab vapour sampling program was completed for the Site to assess the potential for contaminants in groundwater to migrate to indoor air. The results of this program are detailed under a separate cover*, Sub-Slab and Soil Vapour Sampling Program*, *1509 – 1531 Merivale Road* (EXP, 2019). The results of this sampling program are summarized below.

6.8.1 Objectives and Scope of Work

The scope of work for this sampling included:

- Obtain and review utility locates (Section 3.1).
- Retain a drilling company to install five (5) outdoor soil vapour probes, at depths ranging from approximately 1.22 to 1.52 m below grade (the maximum depth allowable based on groundwater levels at the Site). Install five (5) sub-slab vapour pins inside the Site building using hand-held, electric drilling equipment.
- Collect seven (7) soil vapour samples (including two samples for quality assurance/quality control purposes) in the spring (April-June) of 2016, as well as five (5) soil vapour samples in the winter (January) of 2019. Samples will be collected using 1.4 L Summa canisters over a period of approximately 10 minutes per sample.

- Collect a total of twelve (12) sub-slab vapour samples, over two (2) separate sampling events (each consisting of five sub-slab vapour locations, plus one duplicate sample), using Summa canisters over a period of up to one (1) hour, including one (1) duplicate sample for quality assurance/quality control (QA/QC) purposes.
- Submit soil and sub-slab vapour samples to an accredited laboratory, according to approved methodology, for analysis of chlorinated VOCs (PCE, trichloroethylene, cis/trans-1,2-dichloroethylene, 1,1-dichloroethylene and VC), BTEX (benzene, toluene, ethylbenzene and xylenes), and PHC F1 and PHC F2 parameters.
- To assess the potential for both on-Site soil vapour exceedances, as well as off-Site soil vapour exceedances at the neighboring down-gradient residential properties, analytical results of the soil vapour probe will be compared to the MECP MGRA Tier 2 Approved Model Soil Vapour Criteria (SVC) for residential land use.

The soil vapour probe locations (SV1 to SV5) are shown on Figure 6.

6.8.2 Assessment Criteria

For assessment purposes, soil vapour analytical results were compared against the SVC for residential land use and medium/fine textured soil, obtained from the MGRA Tier 2 Approved Model. Depth of soil vapour probes influences the criteria outlined in the MGRA Tier 2 Approved Model, however the model can only be adjusted to a minimum soil vapour probe depth of 2.58 m bgs. Due to the constraints on soil probe depth at this Site as a result of shallow groundwater levels, probes were required to be installed at shallower depths (1.52 m below ground surface at SV1, SV4 and SV5, 1.22 m below ground surface at SV2 and SV3) than appropriate for a Tier 2 Risk Assessment. Therefore, soil vapour results were conservatively compared against both the SVC at a probe depth of 2.58 m bgs, as well as the SSVC, derived from the HBIAC for residential land use, obtained from the MGRA Tier 2 Approved Model, by applying an attenuation factor of 0.02 for a residential building. It is noted that using sub-slab vapour criteria, derived with the MECP empirical attenuation factors, is a conservative approach relative to calculating a depth-specific SVC.

For assessment purposes, sub-slab vapour analytical results were compared against the calculated SSVC, derived from the HBIAC for industrial/commercial land use, obtained from the MGRA Tier 2 Approved Model, by applying a default attenuation factor of 0.004 for a commercial building.

6.8.3 Results

6.8.4.1 Sub-Slab Vapour Quality

Sub-slab vapour analytical results are summarized in Table D.7 (Appendix D) and the Certificates of Analysis are enclosed in Appendix C.

The concentrations of PHC F1 and F2, and cVOCs in the analyzed sub-slab vapour samples were either not detected or were detected below their applicable industrial/commercial SSVC at SV1, SV3, and SV4. However, concentrations of PCE were identified in exceedance of the applicable SSVC at SSV2 and SSV5 during both the April/May 2016 and January 2019 sampling events. See Figure 6 for the locations of SSV2 and SSV5.

It is noted that vapour intrusion is highly site-specific, as advection or diffusion of vapours is affected by changing source conditions, building conditions, diurnal and seasonal fluctuations, atmospheric conditions and proximity of contaminants.

6.9 Phase Two Conceptual Site Model

This section presents a Phase Two Conceptual Site Model (CSM) providing a narrative, graphical and tabulated description integrating information related to the Site 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 Phase Two CSM was completed in accordance with O. Reg.153/04 as defined by the MECP and is presented in Appendix F.

7. Conclusions

The results and findings of the Phase Two ESA conducted at the Site are summarized as follows:

1. The general stratigraphy at the Site, as observed in the boreholes, consisted of asphalt, followed by sand and gravel fill underlain by sandy silt over sand and gravel glacial till and shaly limestone bedrock.

2. In January 2019, the depth to groundwater at the Site ranged between approximately 1.17 m and 3.36 m below ground surface. The groundwater elevations ranged between approximately 93.97 m above mean seal level (AMSL) and 92.31 m AMSL. Based on the collected groundwater data groundwater flow in the overburden is inferred to be to the north/northeast.

3. Soil samples were collected and submitted for chemical analysis of petroleum hydrocarbons (PHC), benzene, toluene, ethylbenzene, xylenes (BTEX), volatile organic compounds (VOC), and metals and inorganics. The soil analytical results indicated the PHC, BTEX, VOC, and metals and inorganics concentrations were either measured at concentartions less than their applicable Ontario Ministry of Environment, Conservation and Parks (MECP) Table 3 site condition standards (SCS), or did not exceed their laboratory reported detection limits (RDLs) which were all below the applicable MECP Table 3 SCS.

4. Groundwater samples were collected and submitted for chemical analysis of PHCs, BTEX, VOCs, and metals and inorganics. The groundwater analytical results identified the following exceedances of the applicable MECP Table 3 SCS:

    a. Three (3) groundwater samples collected on September 14th and 15th, 2017 demonstrated measured concentrations of PCH F2 in exceedance of applicable Table 3 SCS (MW206, MW303 and MW311). One (1) groundwater sample also demonstrated a measured concentration of PHC F3 in exceedance of the applicable Table 3 SCS (MW303). These samples were located in the southern portion of the Site, in the area of the former UST excavation and along the southern Site boundary, downgradient from off-Site gasoline service stations.

    b. One (1) groundwater sample demonstrated measured concentrations of chloroform in exceedance of applicable Table 3 SCS (MW305). One (1) groundwater sample demonstrated measured concentrations of cis-1,2-dichloroethylene in exceedance of the applicable Table 3 SCS (MW312). Three (3) groundwater samples demonstrated measured concentrations of tetrachloroethylene in exceedance of the applicable Table 3 SCS (MW305, MW306 and MW312). Two (2) groundwater samples demonstrated measured concentrations of trichloroethylene in exceedance of the Table 3 SCS (MW306 and MW312). One (1) groundwater sample demonstrated a measured concentration of vinyl chloride in exceedance of the Table 3 SCS (MW312). Exceedances of the VOC related parameters were located in the central and northeastern portion of the Site and are likely attributed to a former and current on-Site dry cleaner. The PHC related parameters are generally located in the southern portion of the Site and are likely attributed to a known former on-Site underground storage tank (UST).

5. Soil vapour samples and sub-slab vapour samples were collected at the Site to determine the potential for risk of indoor air being impacted due to the dissolved VOC impacted groundwater. Sub-slab vapour probes were installed within the Site building, and soil vapour probes were installed along the northern and eastern property boundary. The results demonstrated that two (2) of five (5) sub-slab soil vapour samples had tetrachloroethylene (PCE) concentrations that exceeded the applicable modified generic risk assessment (MGRA) Tier 2 Sub-Slab Vapour Criteria (SSVC) for commercial

land use. One (1) of five (5) soil vapour samples had vinyl chloride concentrations which exceeded the applicable MGRA Tier 2 Soil Vapour Criteria (SVC) for residential land use.

Based on the results of this Phase Two ESA Update, a Risk Assessment (RA) is recommended to further investigate the potential risk of known groundwater and sub-slab/soil vapour exceedances at the Site.

8. General Limitations

The information presented in this report is based on a limited investigation designed to provide information to support an assessment of the current environmental conditions within the 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. EXP has qualified personnel to provide assistance in regards to any future geotechnical and environmental issues related to this property.

The environmental investigation was carried out to address the intent of applicable provincial Regulations, Guidelines, Policies, Standards, Protocols and Objectives administered by the Ministry of the 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 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 10198447 Canada Inc. 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.

9 Closure

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.

Diana Pedersen, B.Sc.
Environmental Scientist
Environmental Services

Mark McCalla, P.Geo., QPESA
Senior Project Manager
Environmental Services

10 References

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

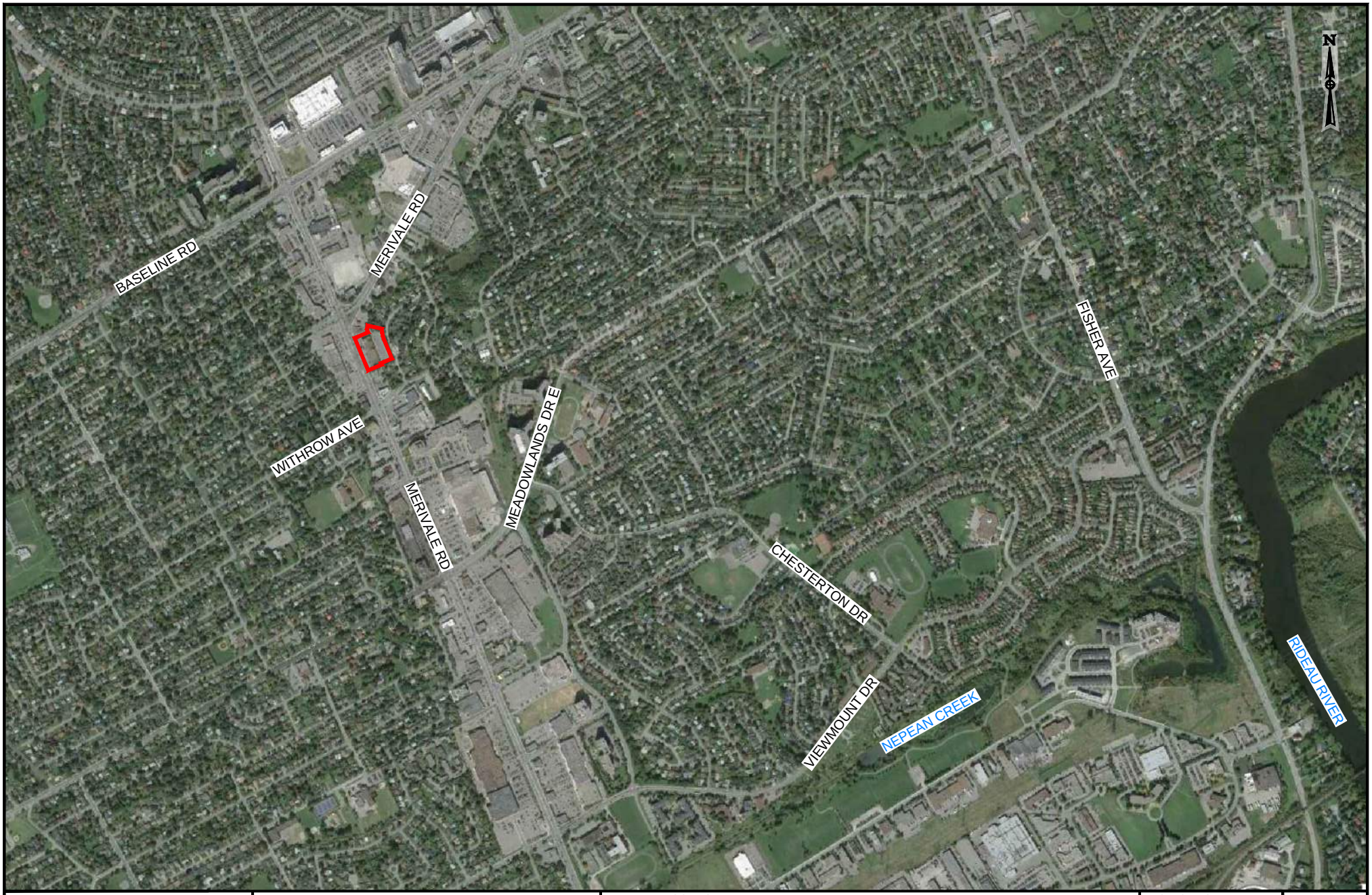
- Environmental Protection Act, R.S.O. 1990, Chapter E.19, as amended, September 2004.
- Ministry of the Environment [MECP] (1996) Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario. Ontario Ministry of the Environment, December 1996.
- MECP (2011a) Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act. Ontario Ministry of the Environment, March 2004, amended as of July 1, 2011.
- MECP (2011) Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act. Ontario Ministry of the Environment, April 15, 20101.
- Occupational Health and Safety Act - Ministry of Labour (MOL).
- Ontario Regulation 153/04, made under the Environmental Protection Act, May 2004, amended.
- Ontario Water Resources Act – R.R.O. 1990, Regulation 903, amended.
- Ontario Geological Survey (2010a) Physiography of Southern Ontario (Scale 1:22,000).
- Topographic Map available at the Natural Resources Canada (NRC) website http://atlas.nrcan.gc.ca/site/english/maps/topo/map
- Ontario Geological Survey (2010b) Surficial geology of Southern Ontario (Scale 1:22,000).
- Ontario Geological Survey (2011) Bedrock geology of Ontario (Scale 1:22,000).

Previous Environmental Investigation Reports include:

- EXP Services Inc., August 6, 2015. Environmental Drilling and Groundwater Monitoring, 1509 – 1531 Merivale Road, Ottawa, Ontario.
- EXP Services Inc., July 27, 2016. Phase One Environmental Site Assessment, 1509 - 1531 Merivale Road, Ottawa, Ontario.
- EXP Services Inc., August 10, 2016. Phase Two Environmental Site Assessment, 1509 - 1531 Merivale Road, Ottawa, Ontario.
- EXP Services Inc., May 31, 2019. Sub-Slab Soil Vapour Sampling Program, 1509 – 1531 Merivale Road, Ottawa, Ontario.
- EXP Services Inc., March 24, 2020. Phase One Environmental Site Assessment Update, 1509-1531 Merivale Road, Ottawa, Ontario.
- John D. Paterson and Associates Limited, December 4, 1998. Site Remediation Program and Limited Investigation, 1509 – 1531 Merivale Road, Nepean, Ontario.
- John D. Paterson and Associates Limited, February 16, 1999. Follow Up to the Site Remediation, 1509 – 1531 Merivale Road, Nepean, Ontario.
- Paterson Group, July 20, 2004. Phase I Environmental Site Assessment 1509 – 1531 Merivale Road, Ottawa, Ontario.
- Paterson Group, July 31, 2012. Environmental Summary, 1509 – 1531 Merivale Road, Ottawa, Ontario.

- Pinchin Environmental Ltd., August 5, 2011. Phase I Environmental Site Assessment 1509 Merivale Road, Ottawa, Ontario.
- Pinchin Environmental Ltd., September 16, 2011. Phase II Environmental Site Assessment 1509 Merivale Road, Ottawa, Ontario.

Figures



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LEGEND:

APPROXIMATE SITE BOUNDARY

SCALE

150 0 150 300 450 600 750m

TITLE AND LOCATION:

SITE LOCATION PLAN

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT UPDATE
1509-1531 MERIVALE ROAD,
OTTAWA, ONTARIO

PROJECT NO.:	DWN.:
OTT-00224605-D0	DP
SCALE:	CK:
AS NOTED	MM
DATE:	FIG. NO.:
APRIL 2020	1

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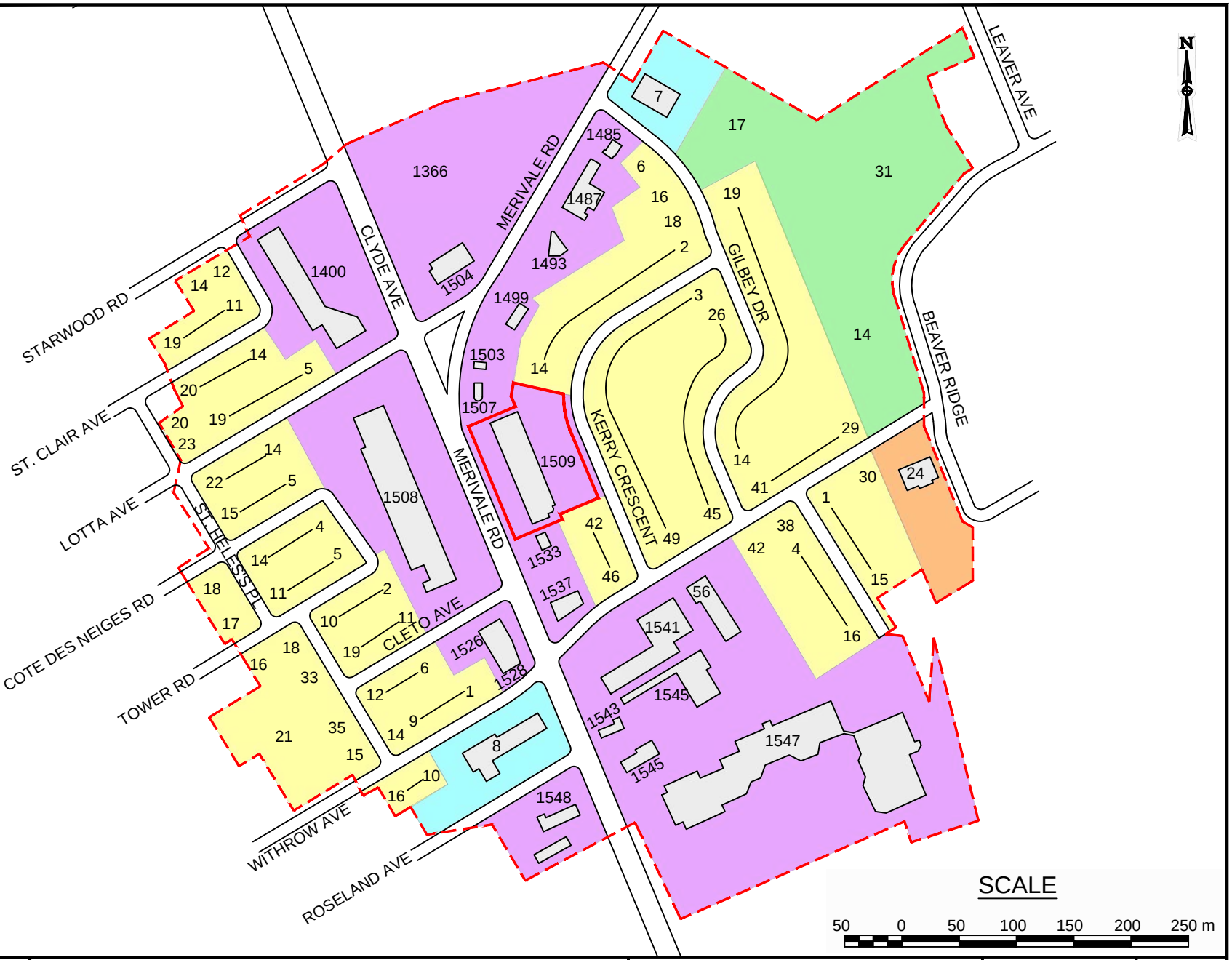

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LEGEND:

- APPROXIMATE SITE BOUNDARY
- PHASE ONE STUDY AREA
- RESIDENTIAL
- COMMERCIAL
- PARK LAND
- INSTITUTIONAL
- COMMUNITY

TITLE AND LOCATION:

SURROUNDING PROPERTY LAND USE

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT UPDATE
1509-1531 MERIVALE ROAD,
OTTAWA, ONTARIO

PROJECT NO.:	DWN.:
OTT-00224605-D0	DP
SCALE: AS NOTED	CK: MM
DATE: APRIL 2020	FIG. NO.: 2

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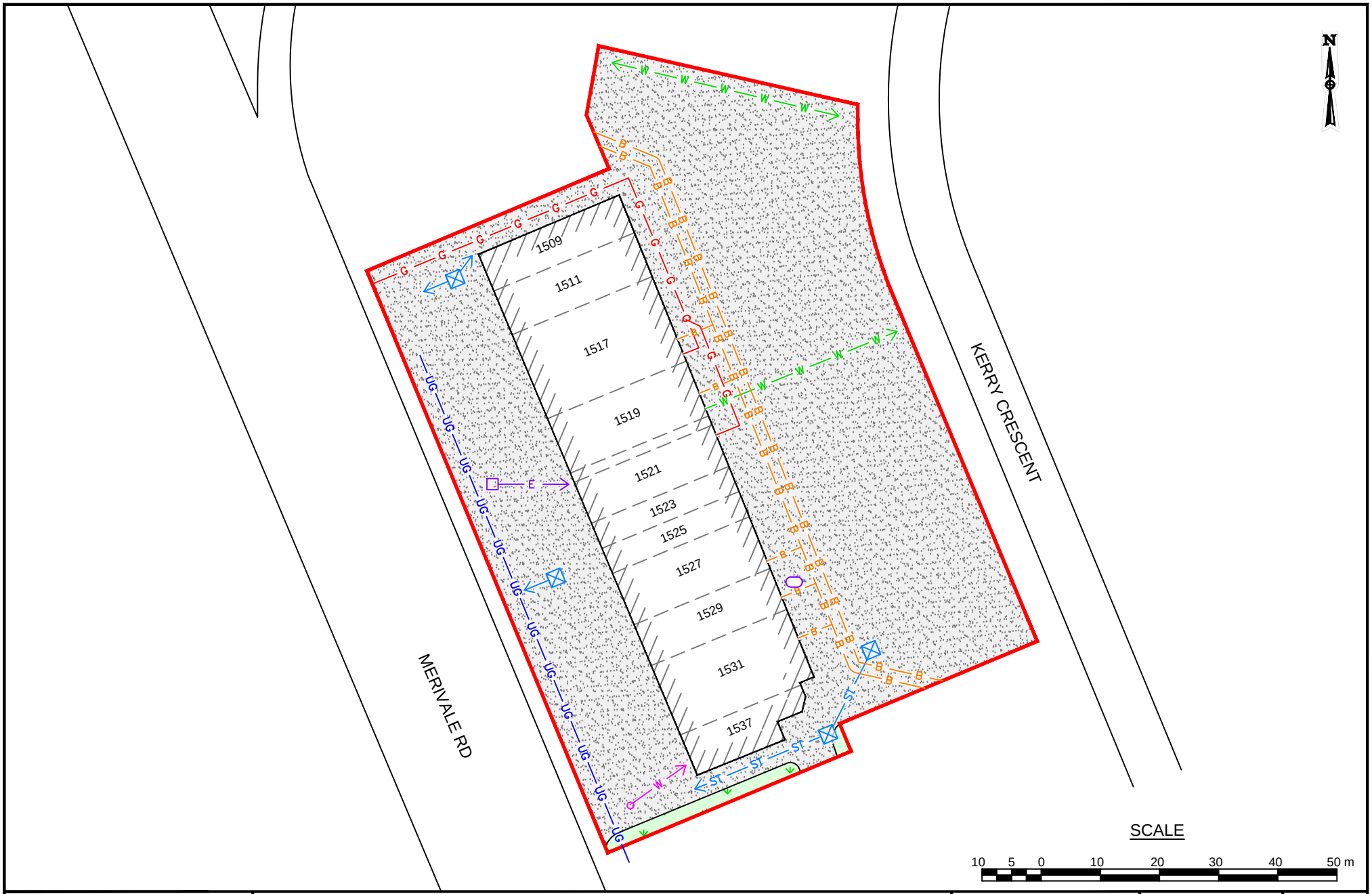

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LEGEND:

- APPROXIMATE SITE BOUNDARY
- BUILDING FOOTPRINT
- LANDSCAPED AREA
- ASPHALT / CONCRETE
- CATCH BASIN
- APPROXIMATE LOCATION OF FORMER UST
- E — ELECTRICITY
- G — GAS SERVICE
- B — BELL LINE
- W — WATER
- W — PREVIOUS WATER LINE
- ST — STORM SEWER
- UG — UNDERGROUND STREET LIGHT CABLE

TITLE AND LOCATION:

SITE PLAN AND UTILITIES

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT UPDATE
1509-1531 MERIVALE ROAD, OTTAWA, ONTARIO

PROJECT NO.:	DWN.:
OTT-00224605-D0	DP
SCALE: AS NOTED	CK: MM
DATE: APRIL 2020	FIG. NO.: 3

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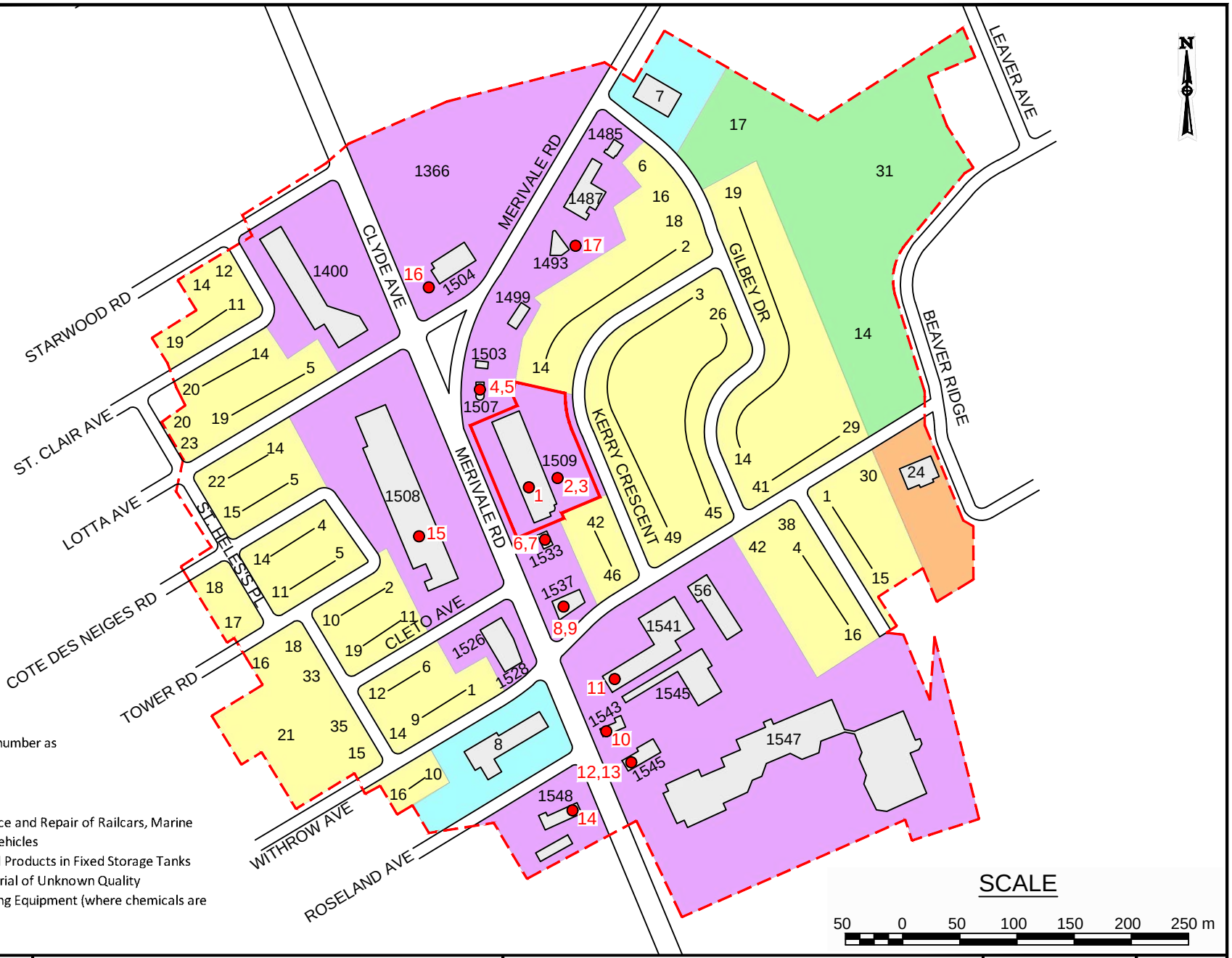

PCA Legend	
PCA ID	PCA O.Reg. 153/04 Number [1]
1	PCA #37
2	PCA #28
3	PCA #30
4	PCA #28
5	PCA #27
6	PCA #28
7	PCA #27
8	PCA #28
9	PCA Other
10	PCA #28
11	PCA #37
12	PCA #28
13	PCA Other
14	PCA #28
15	PCA #37
16	PCA #28
17	PCA #28

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

PCA O.Reg. 153/04 Number Legend:

PCA #27:	Garages and Maintenance and Repair of Railcars, Marine Vehicles, and Aviation Vehicles
PCA #28:	Gasoline and Associated Products in Fixed Storage Tanks
PCA #30:	Importation of Fill Material of Unknown Quality
PCA #37:	Operation of Dry Cleaning Equipment (where chemicals are used)
PCA Other:	Spills

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- APPROXIMATE SITE BOUNDARY
- PHASE I STUDY AREA
- 1 PCA IDENTIFIER
- RESIDENTIAL
- COMMERCIAL
- PARK LAND
- INSTITUTIONAL
- COMMUNITY

TITLE AND LOCATION:

POTENTIALLY CONTAMINATING ACTIVITIES

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT UPDATE
1509-1531 MERIVALE ROAD,
OTTAWA, ONTARIO

PROJECT NO.:	DWN.:
OTT-00224605-D0	DP
SCALE: AS NOTED	CK: MM
DATE: APRIL 2020	FIG. NO.: 4

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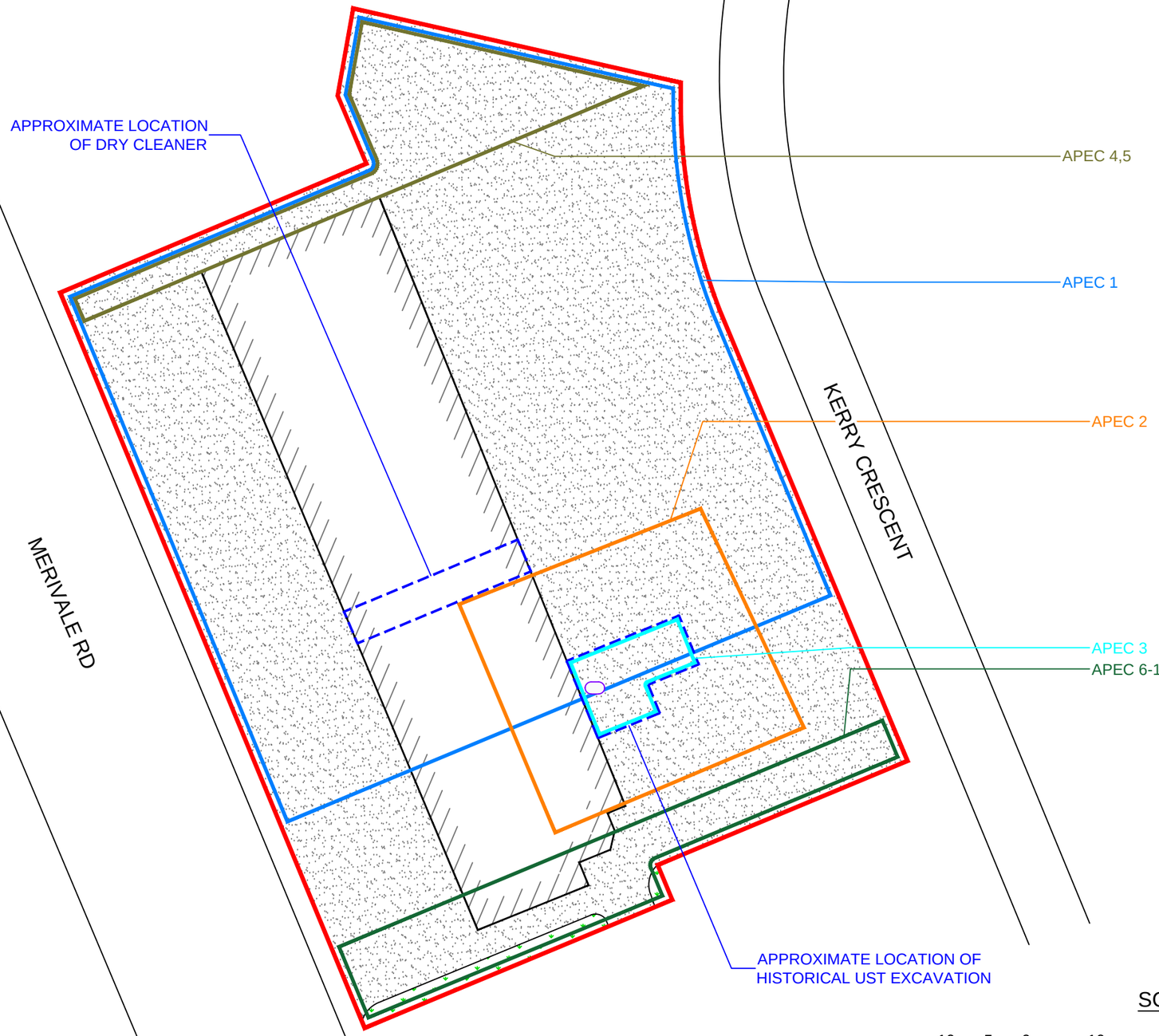

APEC LEGEND		
APEC #	APEC Description	PCA O.Reg. 153/04 Number (1)
1	Dry Cleaners	PCA #37
2	Former heating oil UST	PCA #28
3	Backfill of UST excavation	PCA #30
4	Former gasoline retail fuel outlet and UST	PCA #28
5	Automobile service station	PCA #27
6	Former gasoline retail fuel outlet and UST	PCA #28
7	Automobile service station	PCA #27
8	Former gasoline retail fuel outlet and UST	PCA #28
9	Gasoline spill	PCA Other
10	Former gasoline retail fuel outlet	PCA #28
11	Dry Cleaners	PCA #37
12	Former gasoline retail fuel outlet	PCA #28
13	Furnace oil spill	PCA Other
14	Gasoline retail fuel outlet	PCA #28

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

PCA O.Reg. 153/04 Number Legend:

PCA #27: Garages and Maintenance and Repair of Railcars, Marine Vehicles, and
PCA #28: Gasoline and Associated Products in Fixed Storage Tanks
PCA #30: Importation of Fill Material of Unknown Quality
PCA #37: Operation of Dry Cleaning Equipment (where chemicals are used)
PCA Other: Spills

SCALE

10 5 0 10 20 30 40 50 m

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LEGEND:
- APPROXIMATE SITE BOUNDARY
- BUILDING FOOTPRINT
- LANDSCAPED AREA
- ASPHALT / CONCRETE
- APPROXIMATE LOCATION OF FORMER UST

TITLE AND LOCATION:

AREAS OF POTENTIAL ENVIRONMENTAL CONCERN (APECs)
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT UPDATE
1509-1531 MERIVALE ROAD,
OTTAWA, ONTARIO

PROJECT NO.:	DWN.:
OTT-00224605-D0	DP
SCALE:	CK:
AS NOTED	MM
DATE:	FIG. NO.:
APRIL 2020	5

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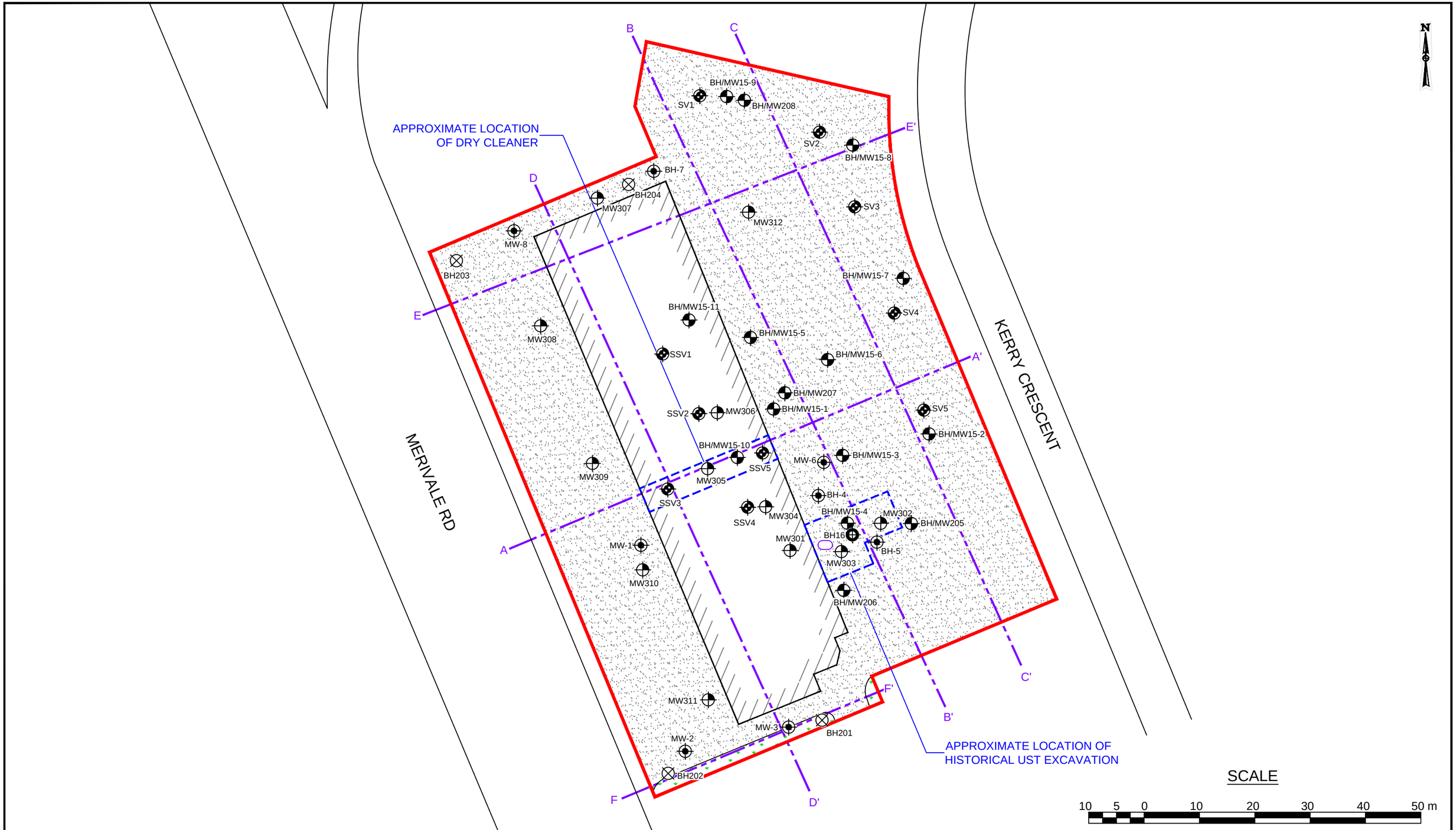

SCALE

10 5 0 10 20 30 40 50 m

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LEGEND:

- APPROXIMATE SITE BOUNDARY
- BUILDING FOOTPRINT
- LANDSCAPED AREA
- ASPHALT / CONCRETE
- APPROXIMATE LOCATION OF FORMER UST
- PINCHIN 2011 BOREHOLE/ MONITORING WELL LOCATION
- EXP BOREHOLE LOCATION (MARCH/JUNE 2015)
- EXP BOREHOLE / MONITORING WELL LOCATION (MARCH/JUNE 2015)
- EXP SOIL / SUB-SLAB VAPOUR PORT LOCATION
- EXP BOREHOLE LOCATION (OCTOBER 2016)
- EXP BOREHOLE LOCATION (SEPTEMBER 2017)

TITLE AND LOCATION:

BOREHOLE / MONITORING WELL / SUB-SLAB VAPOUR / SOIL VAPOUR LOCATION PLAN

PHASE TWO ENVIRONMENTAL SITE
ASSESSMENT UPDATE
1509-1531 MERIVALE ROAD,
OTTAWA, ONTARIO

PROJECT NO.:	DWN.:
OTT-00224605-D0	DP
SCALE: AS NOTED	CK: MM
DATE: APRIL 2020	FIG. NO.: 6

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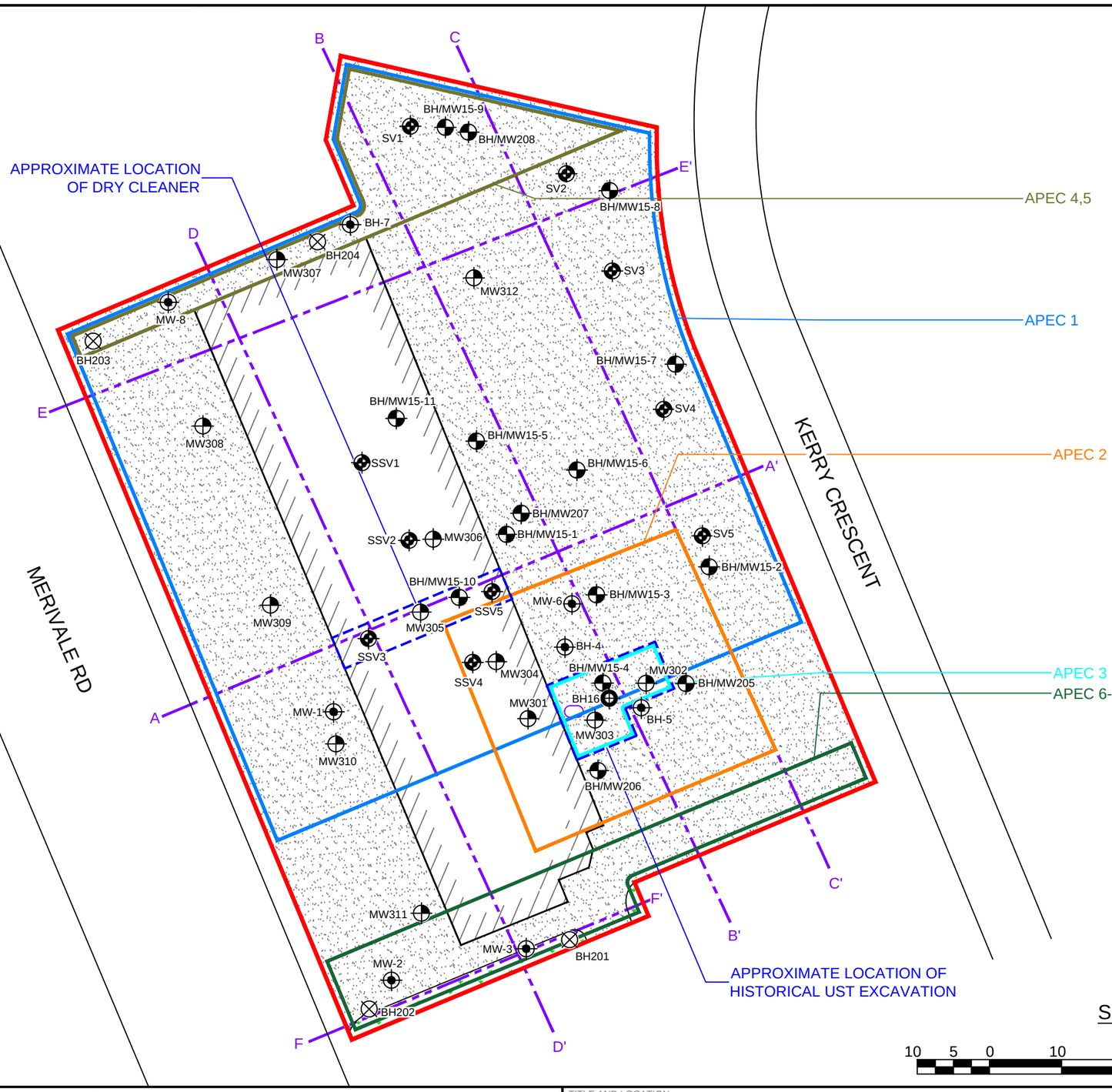

APEC LEGEND		
APEC #	APEC Description	PCA O.Reg. 153/04 Number (1)
1	Dry Cleaners	PCA #37
2	Former heating oil UST	PCA #28
3	Backfill of UST excavation	PCA #30
4	Former gasoline retail fuel outlet and UST	PCA #28
5	Automobile service station	PCA #27
6	Former gasoline retail fuel outlet and UST	PCA #28
7	Automobile service station	PCA #27
8	Former gasoline retail fuel outlet and UST	PCA #28
9	Gasoline spill	PCA Other
10	Former gasoline retail fuel outlet	PCA #28
11	Dry Cleaners	PCA #37
12	Former gasoline retail fuel outlet	PCA #28
13	Furnace oil spill	PCA Other
14	Gasoline retail fuel outlet	PCA #28

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

PCA O.Reg. 153/04 Number Legend:

PCA #27: Garages and Maintenance and Repair of Railcars, Marine Vehicles, and
PCA #28: Gasoline and Associated Products in Fixed Storage Tanks
PCA #30: Importation of Fill Material of Unknown Quality
PCA #37: Operation of Dry Cleaning Equipment (where chemicals are used)
PCA Other: Spills

SCALE

10 5 0 10 20 30 40 50 m

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LEGEND:

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- BUILDING FOOTPRINT
- LANDSCAPED AREA
- ASPHALT / CONCRETE
- APPROXIMATE LOCATION OF FORMER UST
- PINCHIN 2011 BOREHOLE/ MONITORING WELL LOCATION
- EXP BOREHOLE LOCATION (MARCH/JUNE 2015)
- EXP BOREHOLE / MONITORING WELL LOCATION (MARCH/JUNE 2015)
- EXP SOIL / SUB-SLAB VAPOUR PORT LOCATION
- EXP BOREHOLE LOCATION (OCTOBER 2016)
- EXP BOREHOLE LOCATION (SEPTEMBER 2017)

TITLE AND LOCATION:

BOREHOLE / MONITORING WELL / SUB-SLAB VAPOUR / SOIL VAPOUR LOCATION PLAN WITH APECs

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT UPDATE
1509-1531 MERIVALE ROAD,
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PROJECT NO.:	DWN.:
OTT-00224605-D0	DP
SCALE: AS NOTED	CK: MM
DATE: APRIL 2020	FIG. NO.: 7

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DEPTH TO BEDROCK

LESS THAN 2.0m

GREATER THAN 2.0m

Bedrock Depth	Surface Area (sq m)	% Area of Site
Less than 2.0m	2,572	29%
Greater than 2.0m	6,298	71%

SCALE

10 5 0 10 20 30 40 50 m

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- APPROXIMATE SITE BOUNDARY
- BUILDING FOOTPRINT
- LANDSCAPED AREA
- ASPHALT / CONCRETE
- APPROXIMATE LOCATION OF FORMER UST
- BOREHOLE - DEPTH TO INFERRED BEDROCK (m bgs)
- BOREHOLE - DEPTH TO BEDROCK ENCOUNTERED (m bgs)
- OTHER BOREHOLES (NO DATA)

TITLE AND LOCATION:

INTERPOLATED DEPTH TO BEDROCK

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT UPDATE
1509-1531 MERIVALE ROAD,
OTTAWA, ONTARIO

PROJECT NO.:	DWN.:
OTT-00224605-D0	DP
SCALE: AS NOTED	CK: MM
DATE: APRIL 2020	FIG. NO.: 8

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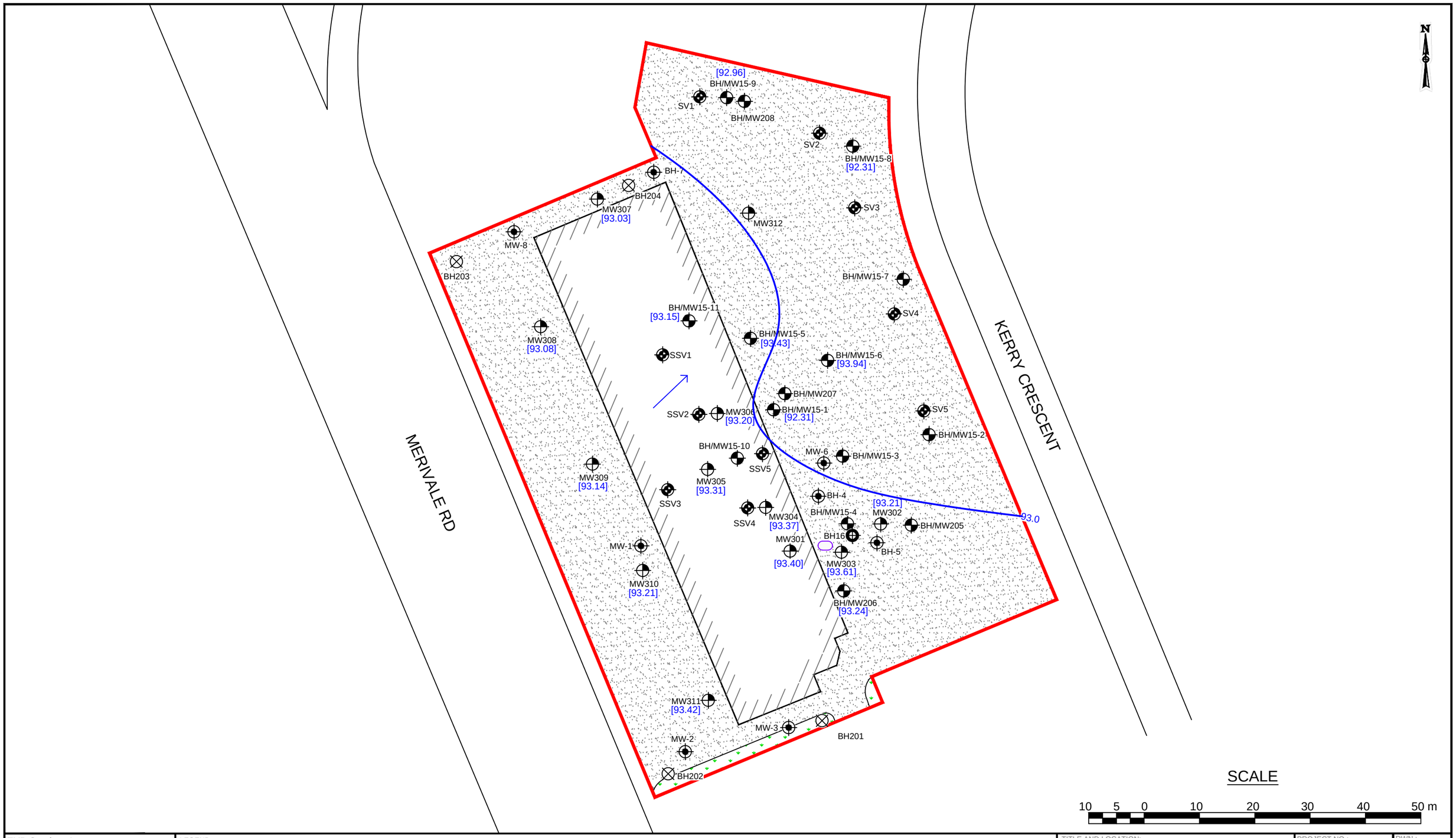

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LEGEND:

- APPROXIMATE SITE BOUNDARY
- BUILDING FOOTPRINT
- LANDSCAPED AREA
- ASPHALT / CONCRETE
- APPROXIMATE LOCATION OF FORMER UST
- PINCHIN 2011 BOREHOLE/ MONITORING WELL LOCATION
- EXP BOREHOLE LOCATION (MARCH/JUNE 2015)
- EXP BOREHOLE / MONITORING WELL LOCATION (MARCH/JUNE 2015)
- EXP SOIL / SUB-SLAB VAPOUR PORT LOCATION
- EXP BOREHOLE LOCATION (OCTOBER 2016)
- EXP BOREHOLE LOCATION (SEPTEMBER 2017)
- GROUNDWATER CONTOURS
- INFERRED GROUNDWATER CONTOURS
- [XX.XX] GROUNDWATER ELEVATION (m asl) AS MEASURED JAUNARY 2019
- GROUNDWATER FLOW DIRECTION

TITLE AND LOCATION:
SHALLOW BEDROCK GROUNDWATER CONTOUR PLAN
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT UPDATE
1509-1531 MERIVALE ROAD,
OTTAWA, ONTARIO

PROJECT NO.:	DWN.:
OTT-00224605-D0	DP
SCALE: AS NOTED	CK: MM
DATE: APRIL 2020	FIG. NO.: 9A

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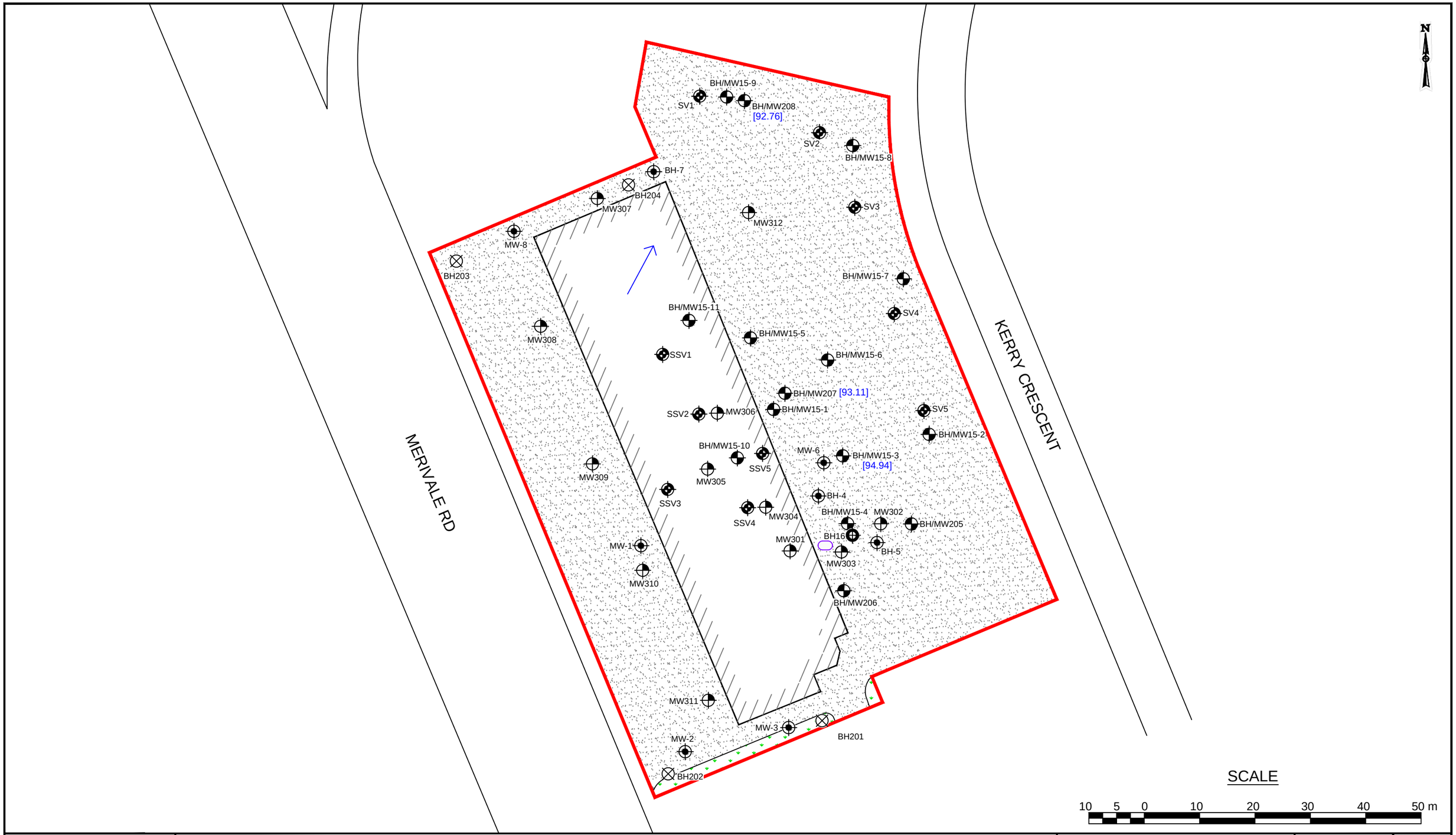

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LEGEND:

- APPROXIMATE SITE BOUNDARY
- BUILDING FOOTPRINT
- LANDSCAPED AREA
- ASPHALT / CONCRETE
- APPROXIMATE LOCATION OF FORMER UST
- PINCHIN 2011 BOREHOLE/ MONITORING WELL LOCATION
- EXP BOREHOLE LOCATION (MARCH/JUNE 2015)
- EXP BOREHOLE / MONITORING WELL LOCATION (MARCH/JUNE 2015)
- EXP SOIL / SUB-SLAB VAPOUR PORT LOCATION
- EXP BOREHOLE LOCATION (OCTOBER 2016)
- EXP BOREHOLE LOCATION (SEPTEMBER 2017)
- [XX.XX] GROUNDWATER ELEVATION (m asl) AS MEASURED JAUNARY 2019
- GROUNDWATER FLOW DIRECTION

TITLE AND LOCATION:

DEEP BEDROCK GROUNDWATER CONTOUR PLAN
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT UPDATE
1509-1531 MERIVALE ROAD,
OTTAWA, ONTARIO

PROJECT NO.:	DWN.:
OTT-00224605-D0	DP
SCALE:	CK:
AS NOTED	MM
DATE:	FIG. NO.:
APRIL 2020	9B

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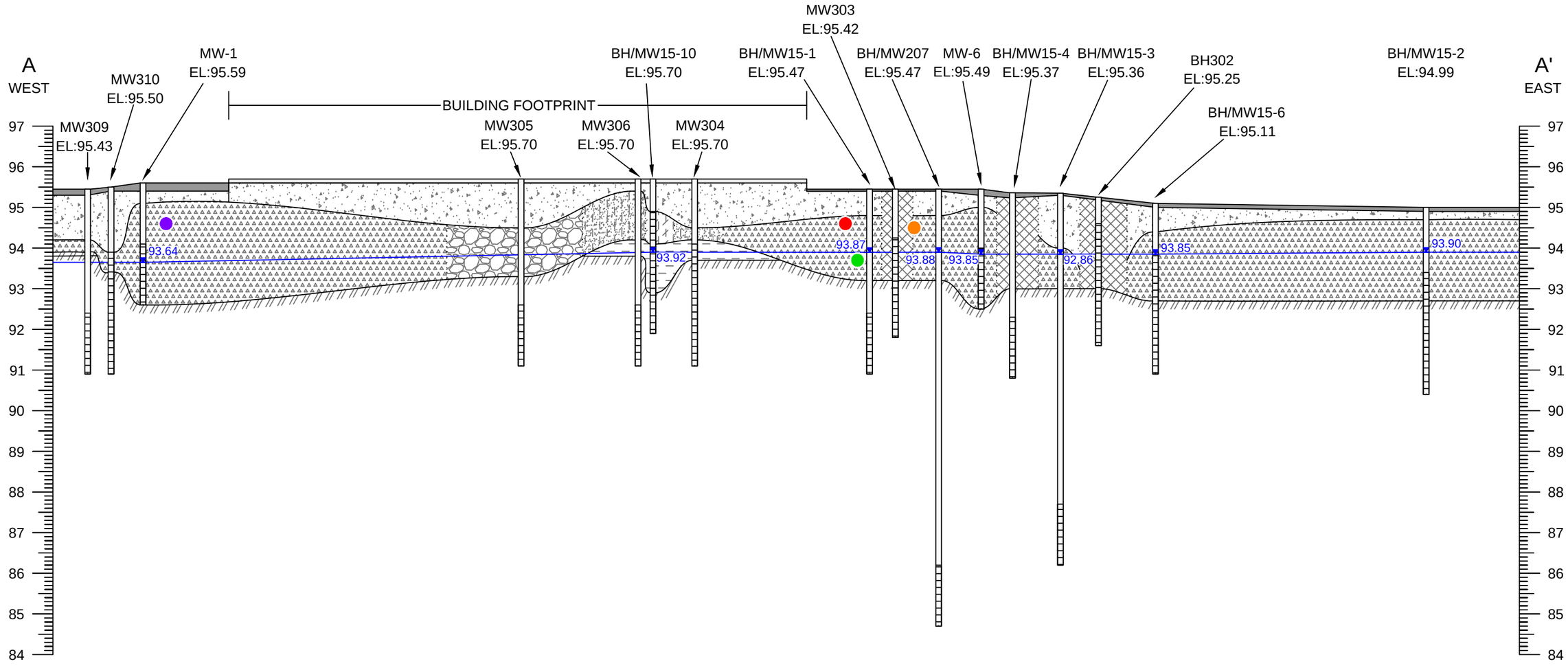

VERTICAL SCALE: AS SHOWN

HORIZONTAL SCALE:

0 2 4 6 8 10 m

NOTE: TRANSITION ZONES BETWEEN STRATIGRAPHIC UNITS ARE APPROXIMATE

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LEGEND:

- ASPHALT
- CONCRETE
- FILL
- SILTY CLAY
- BOULDERS AND COBBLE
- GRAVELLY SAND/ SILTY SANDY GRAVEL
- REWORKED NATIVE/ SAND AND GRAVEL
- SILTY SAND/SANDY SILT
- WEATHERED ROCK
- SHALE BEDROCK
- INFERRED SHALE BEDROCK
- ELECTRICITY
- GAS LINE
- GROUNDWATER LEVEL
- GROUNDWATER ELEVATION AS MEASURED ON APRIL 21/22, 2016
- WATER
- BELL LINE

TITLE AND LOCATION:

GEOLOGICAL CROSS SECTION A-A'

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT UPDATE
1509-1531 MERIVALE ROAD,
OTTAWA, ONTARIO

PROJECT NO.:	DWN.:
OTT-00224605-D0	DP
SCALE: AS NOTED	CK: MM
DATE: APRIL 2020	FIG. NO.: 10A

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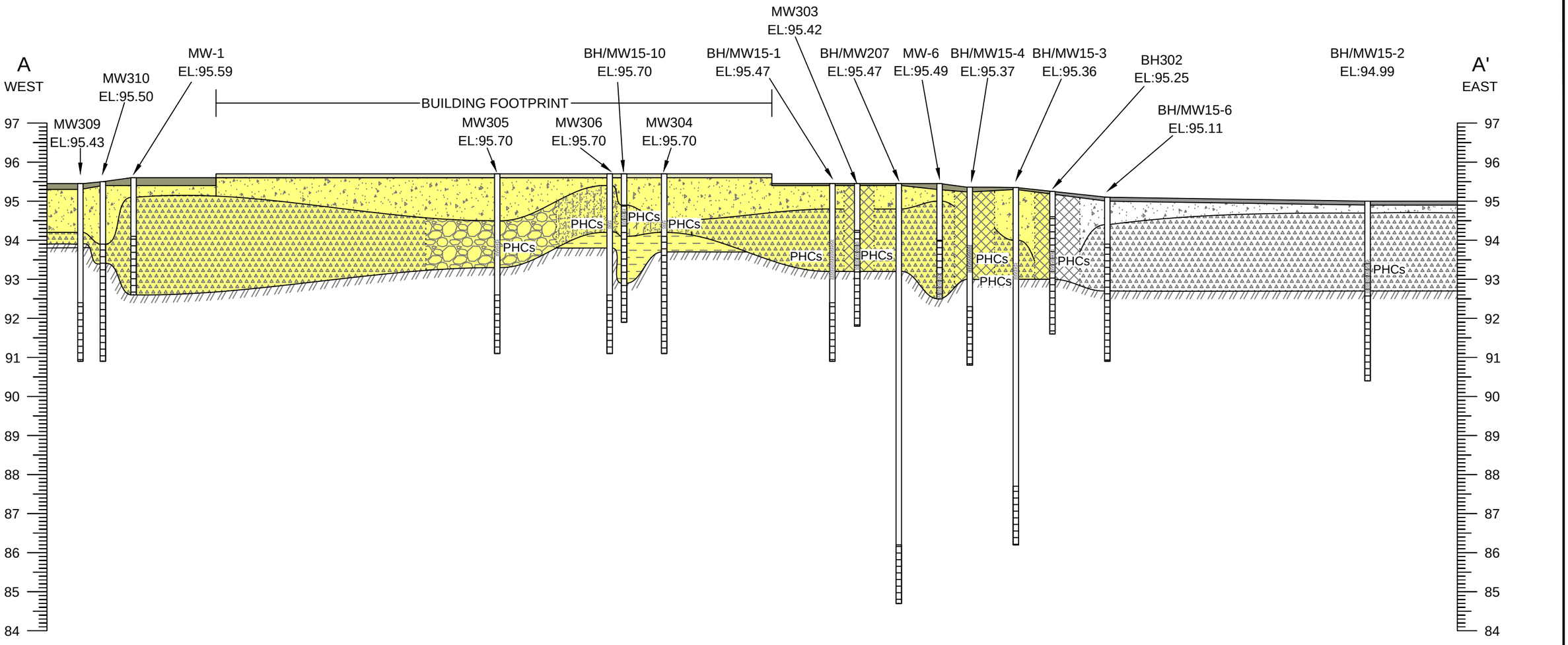

VERTICAL SCALE: AS SHOWN

HORIZONTAL SCALE:

0 2 4 6 8 10 m

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LEGEND:

- ASPHALT
- CONCRETE
- FILL
- SILTY CLAY
- BOULDERS AND COBBLE
- GRAVELLY SAND/ SILTY SANDY GRAVEL
- REWORKED NATIVE/ SAND AND GRAVEL
- SILTY SAND/SANDY SILT
- WEATHERED ROCK
- SHALE BEDROCK
- INFERRED SHALE BEDROCK
- NO IMPACT DETECTED
- IMPACT DETECTED
- APPROXIMATE EXTENT OF IMPACT

TITLE AND LOCATION:

GEOLOGICAL CROSS SECTION A-A' WITH PHC IMPACTS IN SOIL

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT UPDATE
1509-1531 MERIVALE ROAD,
OTTAWA, ONTARIO

PROJECT NO.:	DWN.:
OTT-00224605-D0	DP
SCALE: AS NOTED	CK: MM
DATE: APRIL 2020	FIG. NO.: 10B

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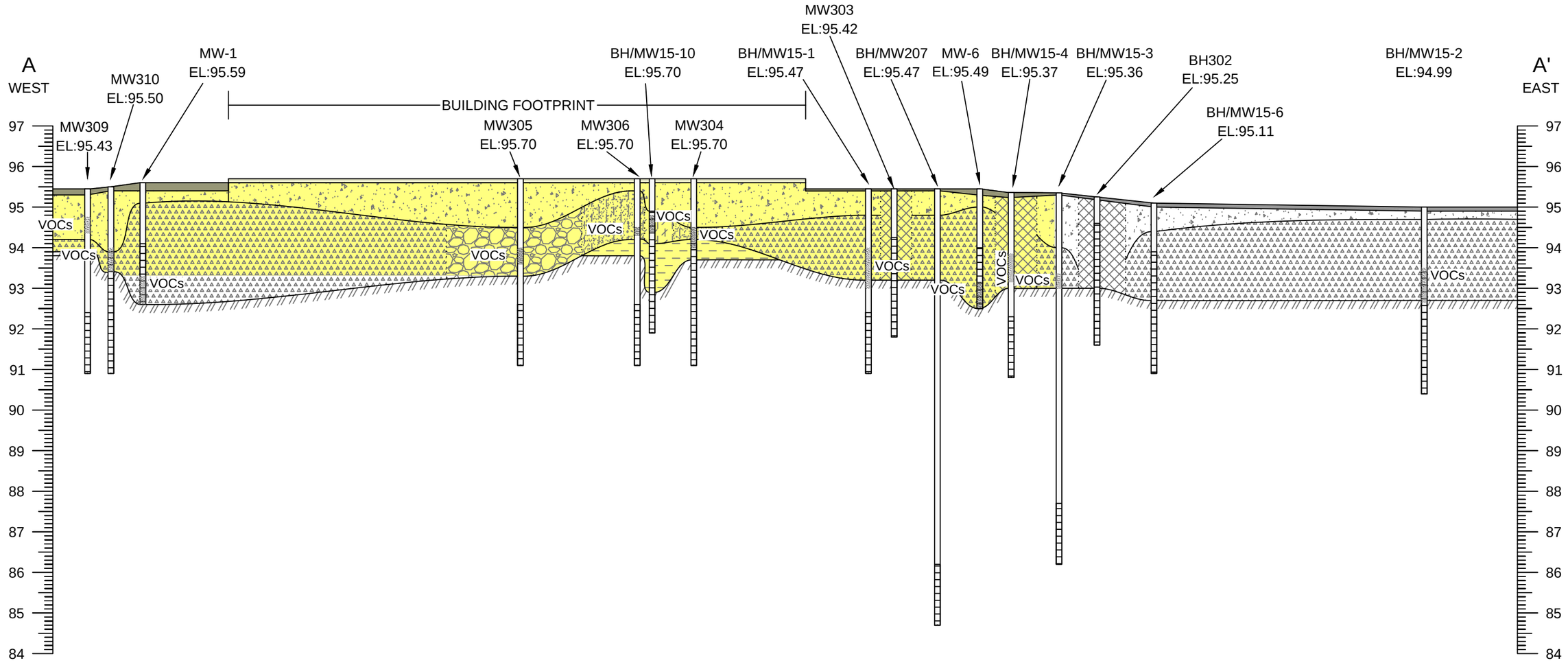

VERTICAL SCALE: AS SHOWN

HORIZONTAL SCALE:

0 2 4 6 8 10 m

NOTE: TRANSITION ZONES BETWEEN STRATIGRAPHIC UNITS ARE APPROXIMATE

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LEGEND:

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- CONCRETE
- FILL
- SILTY CLAY
- BOULDERS AND COBBLE
- GRAVELLY SAND/ SILTY SANDY GRAVEL
- REWORKED NATIVE/ SAND AND GRAVEL
- SILTY SAND/SANDY SILT
- WEATHERED ROCK
- SHALE BEDROCK
- INFERRED SHALE BEDROCK
- NO IMPACT DETECTED
- IMPACT DETECTED
- APPROXIMATE EXTENT OF IMPACT

TITLE AND LOCATION:

GEOLOGICAL CROSS SECTION A-A' WITH VOC IMPACTS IN SOIL

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT UPDATE
1509-1531 MERIVALE ROAD,
OTTAWA, ONTARIO

PROJECT NO.:	DWN.:
OTT-00224605-D0	DP
SCALE:	CK:
AS NOTED	MM
DATE:	FIG. NO.:
APRIL 2020	10C

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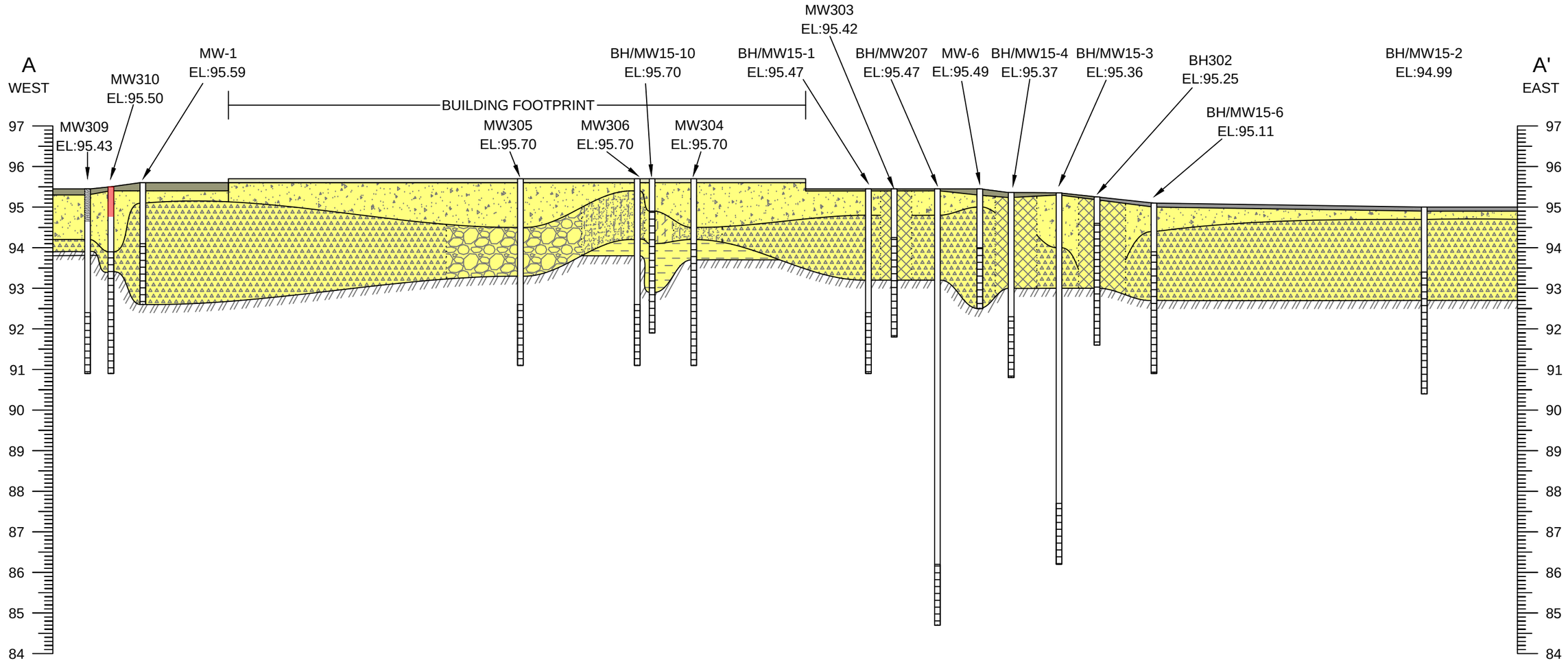

VERTICAL SCALE: AS SHOWN

HORIZONTAL SCALE:

0 2 4 6 8 10 m

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LEGEND:

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- CONCRETE
- FILL
- SILTY CLAY
- BOULDERS AND COBBLE
- GRAVELLY SAND/ SILTY SANDY GRAVEL
- REWORKED NATIVE/ SAND AND GRAVEL
- SILTY SAND/SANDY SILT
- WEATHERED ROCK
- SHALE BEDROCK
- INFERRED SHALE BEDROCK
- NO IMPACT DETECTED
- IMPACT DETECTED
- APPROXIMATE EXTENT OF IMPACT

TITLE AND LOCATION:

GEOLOGICAL CROSS SECTION A-A' WITH EC/SAR IMPACTS IN SOIL

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT UPDATE
1509-1531 MERIVALE ROAD,
OTTAWA, ONTARIO

PROJECT NO.:	DWN.:
OTT-00224605-D0	DP
SCALE:	CK:
AS NOTED	MM
DATE:	FIG. NO.:
APRIL 2020	10D

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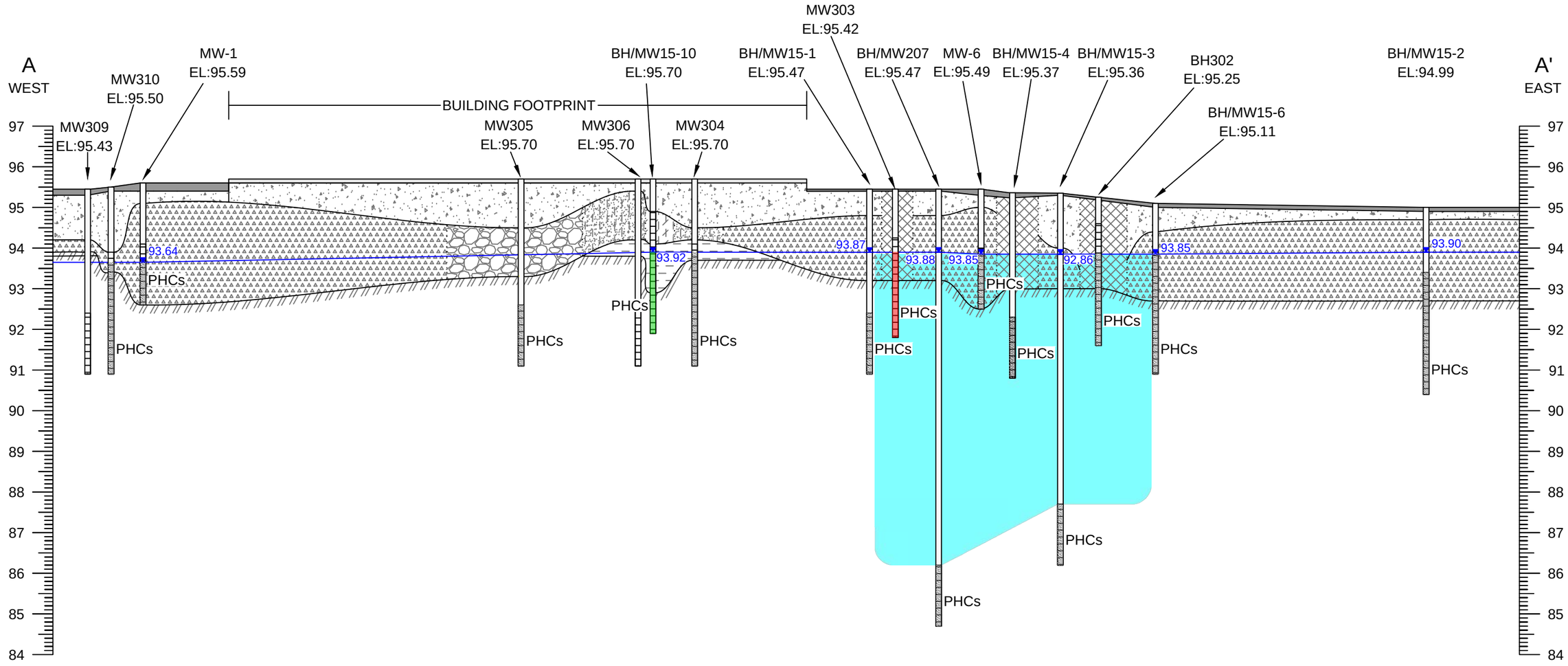

VERTICAL SCALE: AS SHOWN

HORIZONTAL SCALE:

0 2 4 6 8 10 m

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LEGEND:

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- CONCRETE
- FILL
- SILTY CLAY
- BOULDERS AND COBBLE
- GRAVELLY SAND/ SILTY SANDY GRAVEL
- REWORKED NATIVE/ SAND AND GRAVEL
- SILTY SAND/SANDY SILT
- WEATHERED ROCK
- SHALE BEDROCK
- INFERRED SHALE BEDROCK
- GROUNDWATER LEVEL
- GROUNDWATER ELEVATION AS MEASURED ON APRIL 21/22, 2016
- NO IMPACT DETECTED
- IMPACT DETECTED
- APPROXIMATE EXTENT OF IMPACT

TITLE AND LOCATION:

GEOLOGICAL CROSS SECTION A-A' WITH PHC IMPACTS IN GROUNDWATER

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT UPDATE
1509-1531 MERIVALE ROAD,
OTTAWA, ONTARIO

PROJECT NO.:	DWN.:
OTT-00224605-D0	DP
SCALE:	CK:
AS NOTED	MM
DATE:	FIG. NO.:
APRIL 2020	10E

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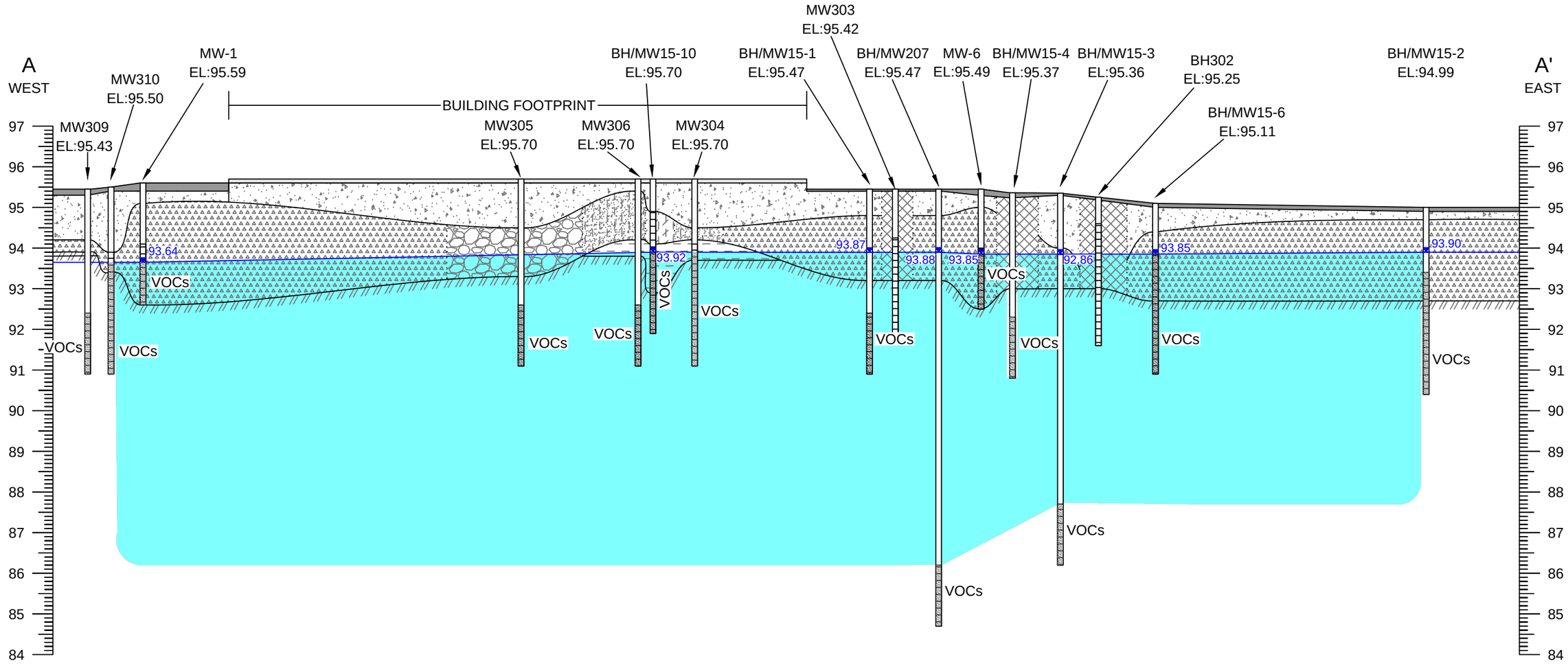

VERTICAL SCALE: AS SHOWN

HORIZONTAL SCALE:

0 2 4 6 8 10 m

NOTE: TRANSITION ZONES BETWEEN STRATIGRAPHIC UNITS ARE APPROXIMATE

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LEGEND:

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- CONCRETE
- FILL
- SILTY CLAY
- BOULDERS AND COBBLE
- GRAVELLY SAND/ SILTY SANDY GRAVEL
- REWORKED NATIVE/ SAND AND GRAVEL
- SILTY SAND/SANDY SILT
- WEATHERED ROCK
- SHALE BEDROCK
- INFERRED SHALE BEDROCK
- GROUNDWATER LEVEL
- GROUNDWATER ELEVATION AS MEASURED ON APRIL 21/22, 2016
- NO IMPACT DETECTED
- IMPACT DETECTED
- APPROXIMATE EXTENT OF IMPACT

TITLE AND LOCATION:

GEOLOGICAL CROSS SECTION A-A' WITH VOC IMPACTS IN GROUNDWATER

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT UPDATE
1509-1531 MERIVALE ROAD,
OTTAWA, ONTARIO

PROJECT NO.:	DWN.:
OTT-00224605-D0	DP
SCALE: AS NOTED	CK: MM
DATE: APRIL 2020	FIG. NO.: 10F

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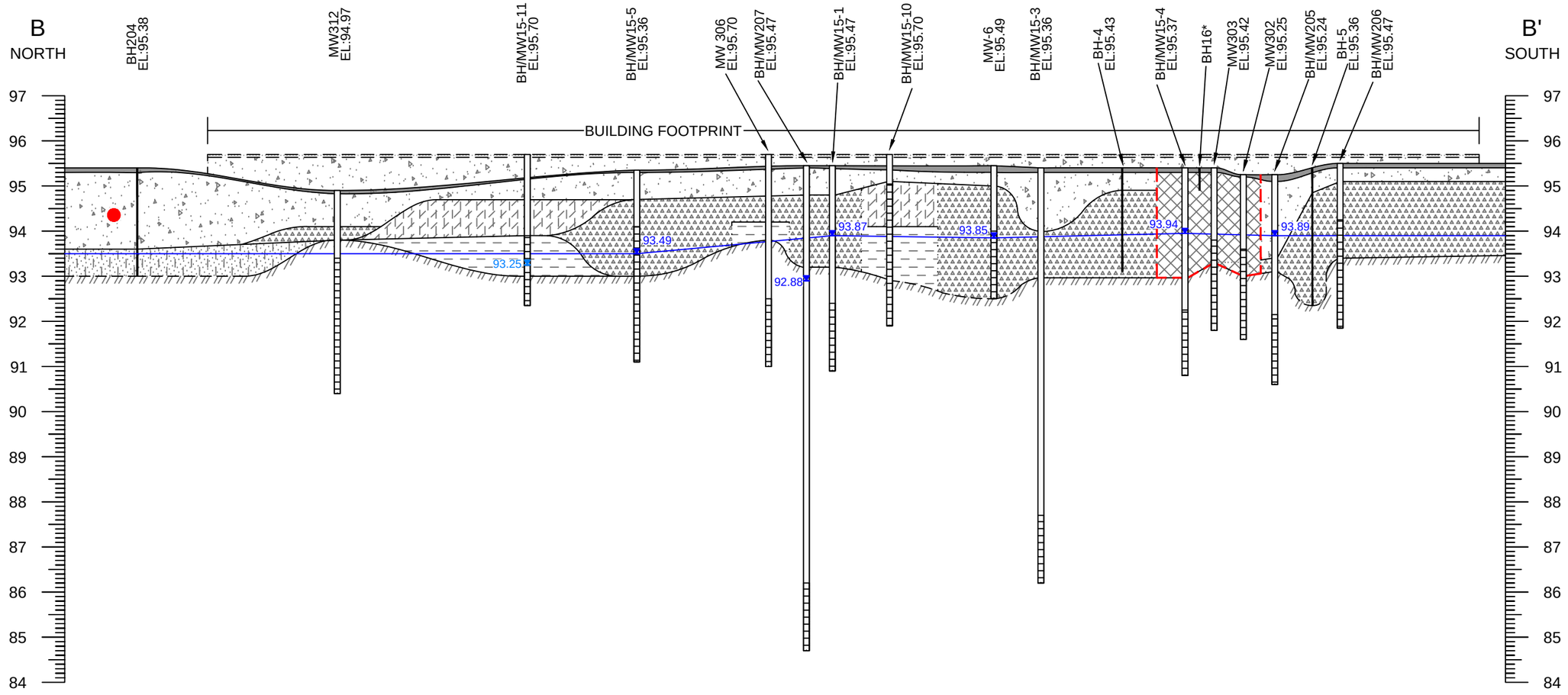

VERTICAL SCALE: AS SHOWN

HORIZONTAL SCALE:

0 5 10 15 20 25 m

NOTE: TRANSITION ZONES BETWEEN STRATIGRAPHIC UNITS ARE APPROXIMATE
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LEGEND:

- ASPHALT
- CONCRETE
- FILL
- SILTY CLAY
- GRAVELLY SAND/ SILTY SANDY GRAVEL
- REWORKED NATIVE/ SAND AND GRAVEL
- SILTY SAND/SANDY SILT
- WEATHERED ROCK
- SHALE BEDROCK
- INFERRED SHALE BEDROCK
- STORM SEWER
- GAS LINE
- APPROXIMATE EXTENT OF 1998 EXCAVATION
- GROUNDWATER LEVEL
- GROUNDWATER ELEVATION AS MEASURED ON APRIL 21/22, 2016

TITLE AND LOCATION:

GEOLOGICAL CROSS SECTION B-B'

PHASE TWO ENVIRONMENTAL SITE
ASSESSMENT UPDATE
1509-1531 MERIVALE ROAD,
OTTAWA, ONTARIO

PROJECT NO.:	DWN.:
OTT-00224605-D0	DP
SCALE:	CK:
AS NOTED	MM
DATE:	FIG. NO.:
APRIL 2020	11A

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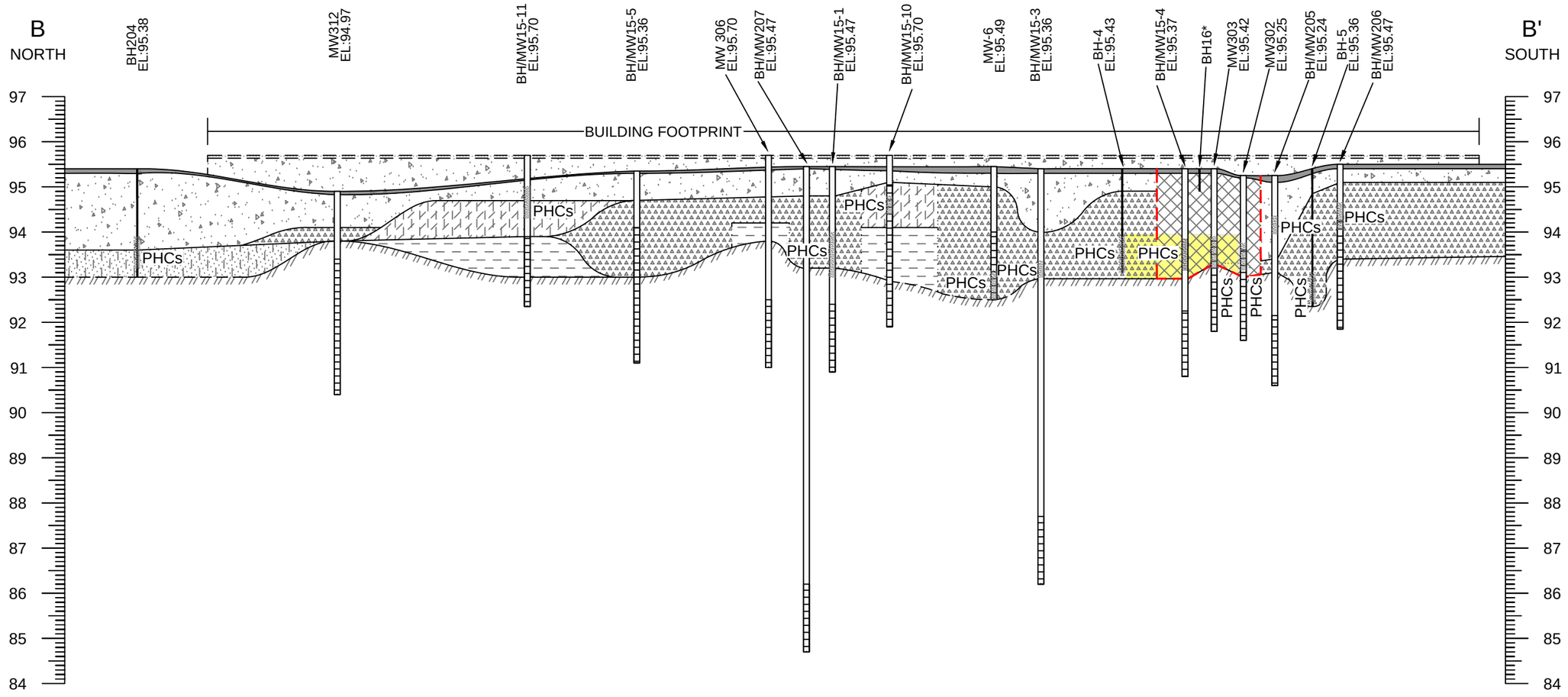

VERTICAL SCALE: AS SHOWN

HORIZONTAL SCALE:

0 5 10 15 20 25 m

NOTE: TRANSITION ZONES BETWEEN STRATIGRAPHIC UNITS ARE APPROXIMATE
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LEGEND:

- ASPHALT
- CONCRETE
- FILL
- SILTY CLAY
- GRAVELLY SAND/ SILTY SANDY GRAVEL
- REWORKED NATIVE/ SAND AND GRAVEL
- SILTY SAND/SANDY SILT
- WEATHERED ROCK
- SHALE BEDROCK
- INFERRED BEDROCK
- NO IMPACT DETECTED
- IMPACT DETECTED
- APPROXIMATE EXTENT OF IMPACT
- APPROXIMATE EXTENT OF 1998 EXCAVATION

TITLE AND LOCATION:

GEOLOGICAL CROSS SECTION B-B' WITH PHC IMPACTS IN SOIL

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT UPDATE
1509-1531 MERIVALE ROAD,
OTTAWA, ONTARIO

PROJECT NO.:	DWN.:
OTT-00224605-D0	DP
SCALE:	CK:
AS NOTED	MM
DATE:	FIG. NO.:
APRIL 2020	11B

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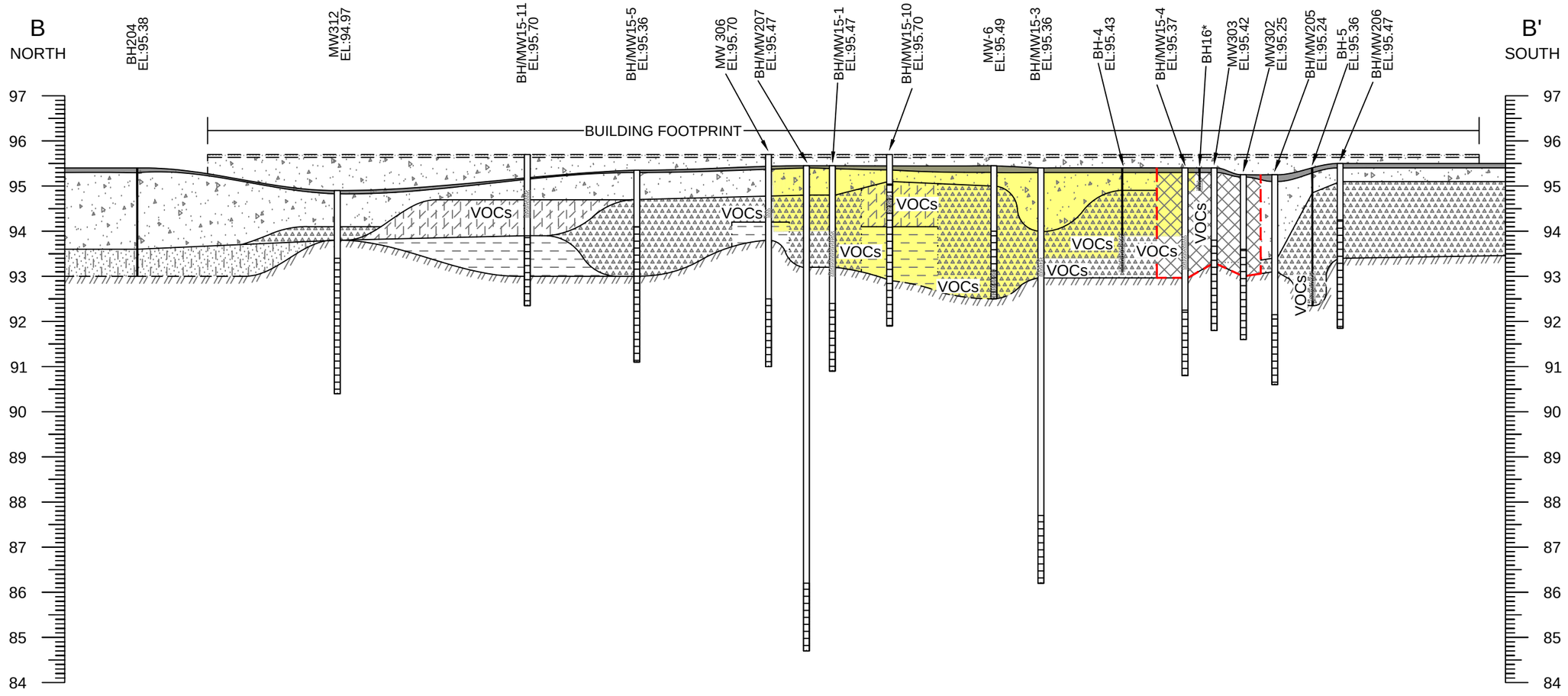

VERTICAL SCALE: AS SHOWN

HORIZONTAL SCALE:

0 5 10 15 20 25 m

NOTE: TRANSITION ZONES BETWEEN STRATIGRAPHIC UNITS ARE APPROXIMATE
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LEGEND:

- ASPHALT
- CONCRETE
- FILL
- SILTY CLAY
- GRAVELLY SAND/ SILTY SANDY GRAVEL
- REWORKED NATIVE/ SAND AND GRAVEL
- SILTY SAND/SANDY SILT
- WEATHERED ROCK
- SHALE BEDROCK
- INFERRED BEDROCK
- NO IMPACT DETECTED
- IMPACT DETECTED
- APPROXIMATE EXTENT OF IMPACT
- APPROXIMATE EXTENT OF 1998 EXCAVATION

TITLE AND LOCATION:

GEOLOGICAL CROSS SECTION B-B' WITH VOC IMPACTS IN SOIL

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT UPDATE
1509-1531 MERIVALE ROAD,
OTTAWA, ONTARIO

PROJECT NO.:	DWN.:
OTT-00224605-D0	DP
SCALE:	CK:
AS NOTED	MM
DATE:	FIG. NO.:
APRIL 2020	11C

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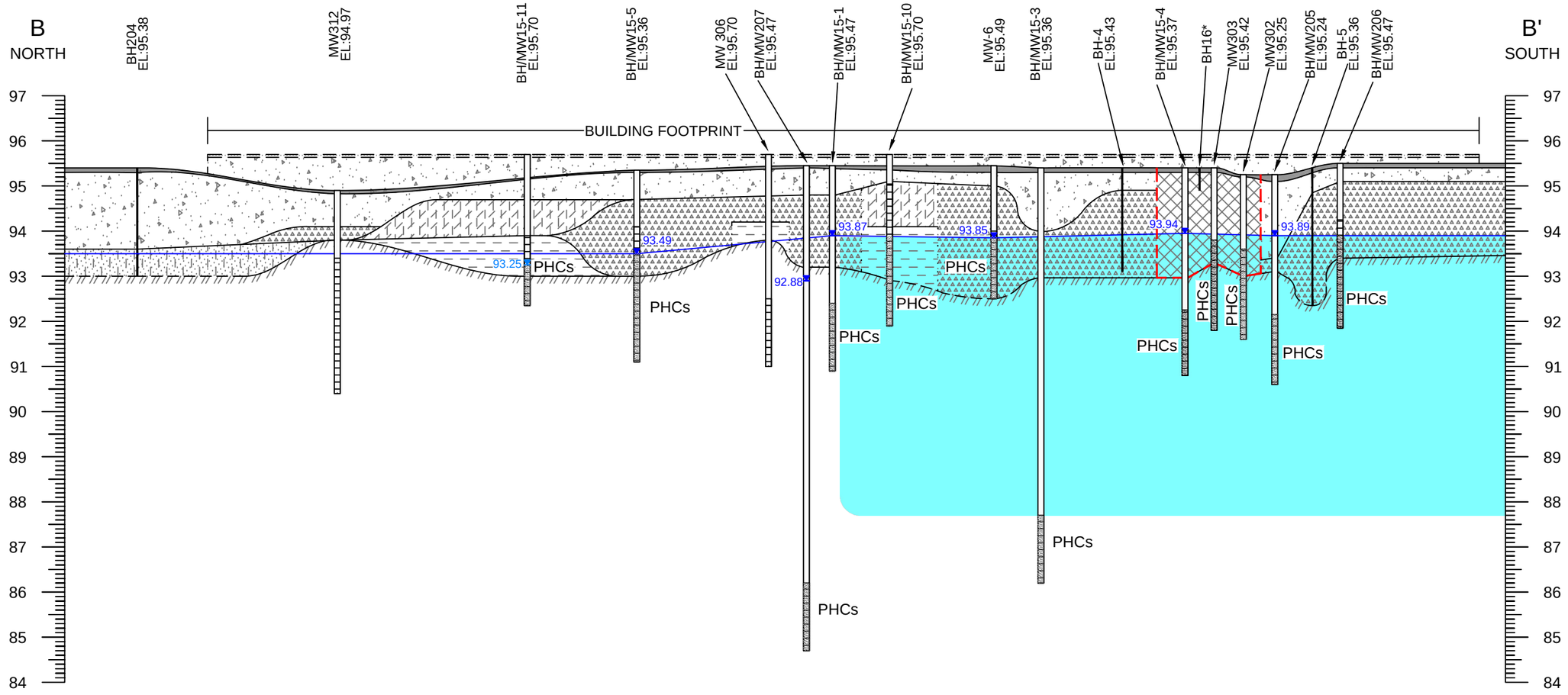

VERTICAL SCALE: AS SHOWN

HORIZONTAL SCALE:

0 5 10 15 20 25 m

NOTE: TRANSITION ZONES BETWEEN STRATIGRAPHIC UNITS ARE APPROXIMATE
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LEGEND:

- ASPHALT
- CONCRETE
- FILL
- SILTY CLAY
- GRAVELLY SAND/ SILTY SANDY GRAVEL
- REWORKED NATIVE/ SAND AND GRAVEL
- SILTY SAND/SANDY SILT
- WEATHERED ROCK
- SHALE BEDROCK
- INFERRED BEDROCK
- NO IMPACT DETECTED
- IMPACT DETECTED
- GROUNDWATER LEVEL
- GROUNDWATER ELEVATION AS MEASURED ON APRIL 21/22, 2016
- APPROXIMATE EXTENT OF IMPACT
- APPROXIMATE EXTENT OF 1998 EXCAVATION

TITLE AND LOCATION:
GEOLOGICAL CROSS SECTION B-B' WITH PHC IMPACTS IN GROUNDWATER
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT UPDATE
1509-1531 MERIVALE ROAD, OTTAWA, ONTARIO

PROJECT NO.:	DWN.:
OTT-00224605-D0	DP
SCALE: AS NOTED	CK: MM
DATE: APRIL 2020	FIG. NO.: 11D

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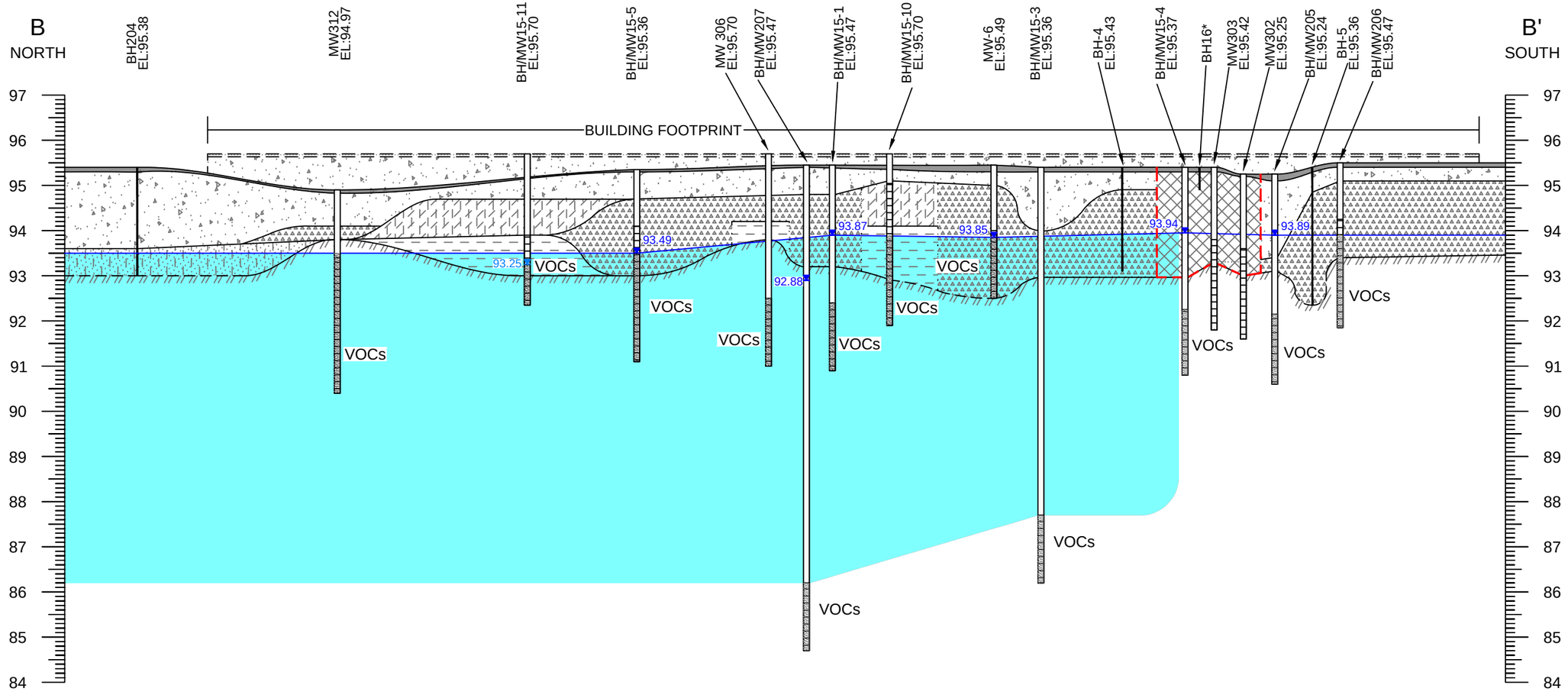

VERTICAL SCALE: AS SHOWN

HORIZONTAL SCALE:

0 5 10 15 20 25 m

NOTE: TRANSITION ZONES BETWEEN STRATIGRAPHIC UNITS ARE APPROXIMATE
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LEGEND:

- ASPHALT
- CONCRETE
- FILL
- SILTY CLAY
- GRAVELLY SAND/ SILTY SANDY GRAVEL
- REWORKED NATIVE/ SAND AND GRAVEL
- SILTY SAND/SANDY SILT
- WEATHERED ROCK
- SHALE BEDROCK
- INFERRED SHALE BEDROCK
- NO IMPACT DETECTED
- IMPACT DETECTED
- GROUNDWATER LEVEL
- GROUNDWATER ELEVATION AS MEASURED ON APRIL 21/22, 2016
- APPROXIMATE EXTENT OF IMPACT
- APPROXIMATE EXTENT OF 1998 EXCAVATION

TITLE AND LOCATION:
GEOLOGICAL CROSS SECTION B-B' WITH VOC IMPACTS IN GROUNDWATER
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT UPDATE
1509-1531 MERIVALE ROAD, OTTAWA, ONTARIO

PROJECT NO.:	DWN.:
OTT-00224605-D0	DP
SCALE: AS NOTED	CK: MM
DATE: APRIL 2020	FIG. NO.: 11E

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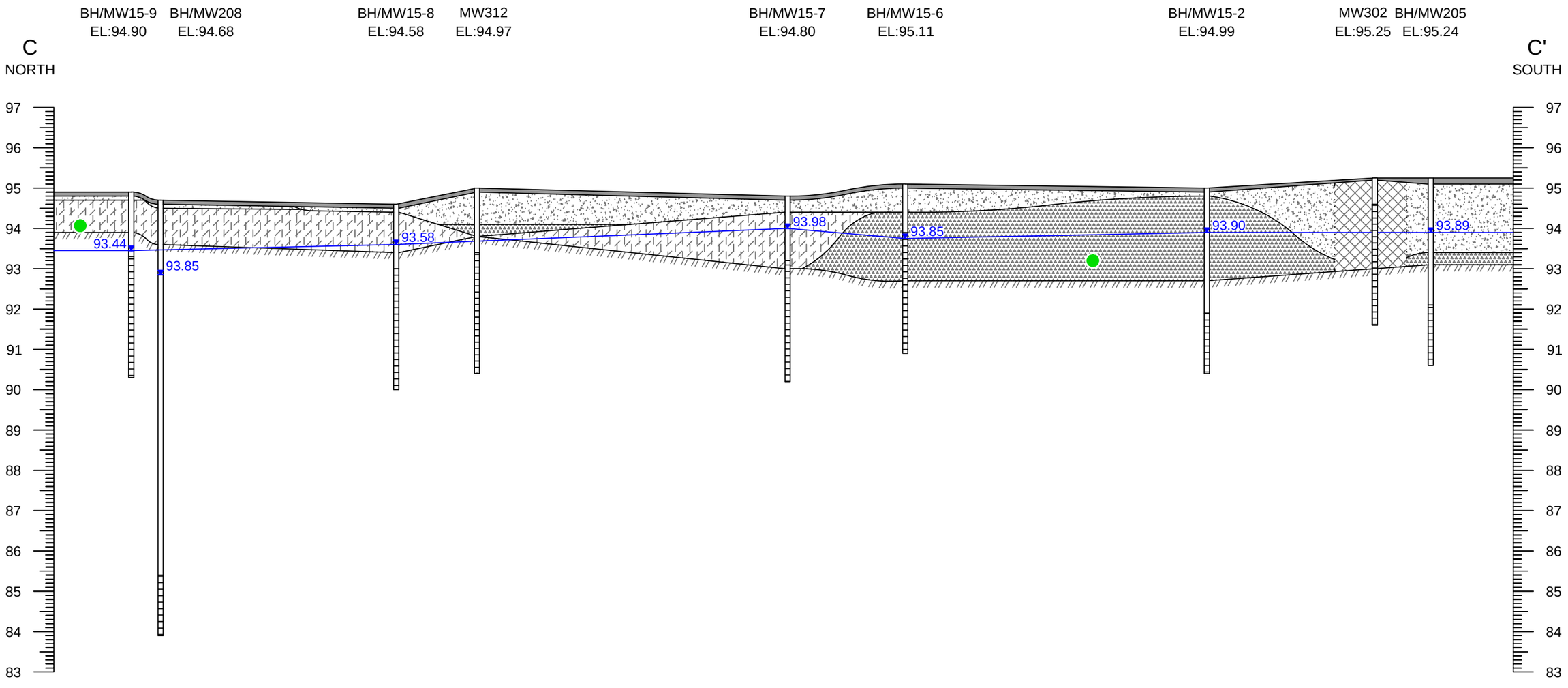

VERTICAL SCALE: AS SHOWN

HORIZONTAL SCALE:

0 5 10 15 20 25 m

NOTE: TRANSITION ZONES BETWEEN STRATIGRAPHIC UNITS ARE APPROXIMATE

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LEGEND:

- ASPHALT
- FILL
- REWORKED NATIVE/ SAND AND GRAVEL
- GRAVELLY SAND/ SILTY SANDY GRAVEL
- SILTY CLAY
- SHALE BEDROCK
- WATER
- GROUNDWATER LEVEL
- GROUNDWATER ELEVATION AS MEASURED ON APRIL 21/22, 2016

TITLE AND LOCATION:

GEOLOGICAL CROSS SECTION C-C'

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT UPDATE
1509-1531 MERIVALE ROAD,
OTTAWA, ONTARIO

PROJECT NO.:	DWN.:
OTT-00224605-D0	DP
SCALE: AS NOTED	CK: MM
DATE: APRIL 2020	FIG. NO.: 12A

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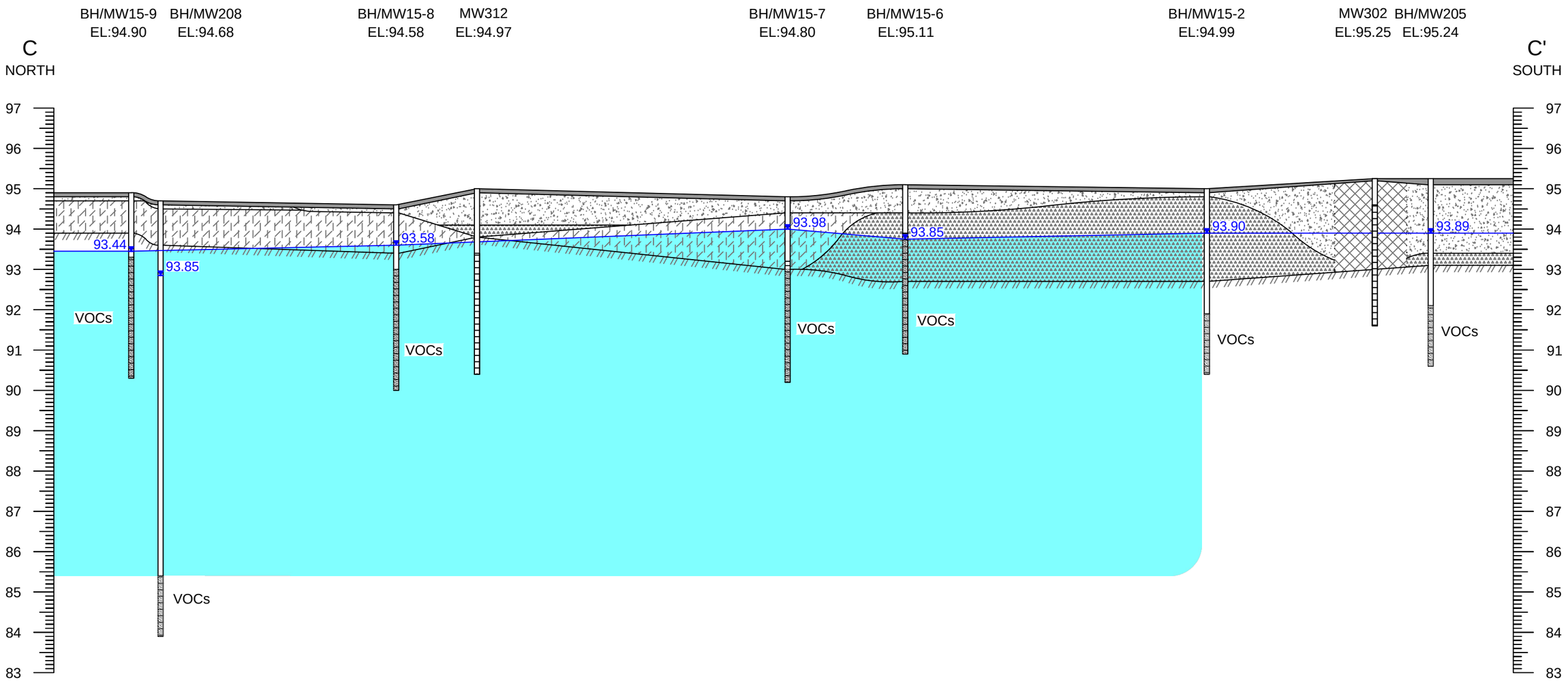

VERTICAL SCALE: AS SHOWN

HORIZONTAL SCALE:

0 5 10 15 20 25 m

NOTE: TRANSITION ZONES BETWEEN STRATIGRAPHIC UNITS ARE APPROXIMATE

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LEGEND:

- ASPHALT
- FILL
- REWORKED NATIVE/ SAND AND GRAVEL
- GRAVELLY SAND/ SILTY SANDY GRA\`
- SILTY CLAY
- SHALE BEDROCK
- SHALE BEDROCK
- INFERRED SHALE BEDROCK
- NO IMPACT DETECTED
- IMPACT DETECTED
- GROUNDWATER LEVEL
- GROUNDWATER ELEVATION AS MEASURED ON APRIL 21/22, 2016
- APPROXIMATE EXTENT OF IMPACT

TITLE AND LOCATION:
GEOLOGICAL CROSS SECTION C-C` WITH VOC IMPACTS IN GROUNDWATER
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT UPDATE
1509-1531 MERIVALE ROAD, OTTAWA, ONTARIO

PROJECT NO.:	DWN.:
OTT-00224605-D0	DP
SCALE:	CK:
AS NOTED	MM
DATE:	FIG. NO.:
APRIL 2020	12B

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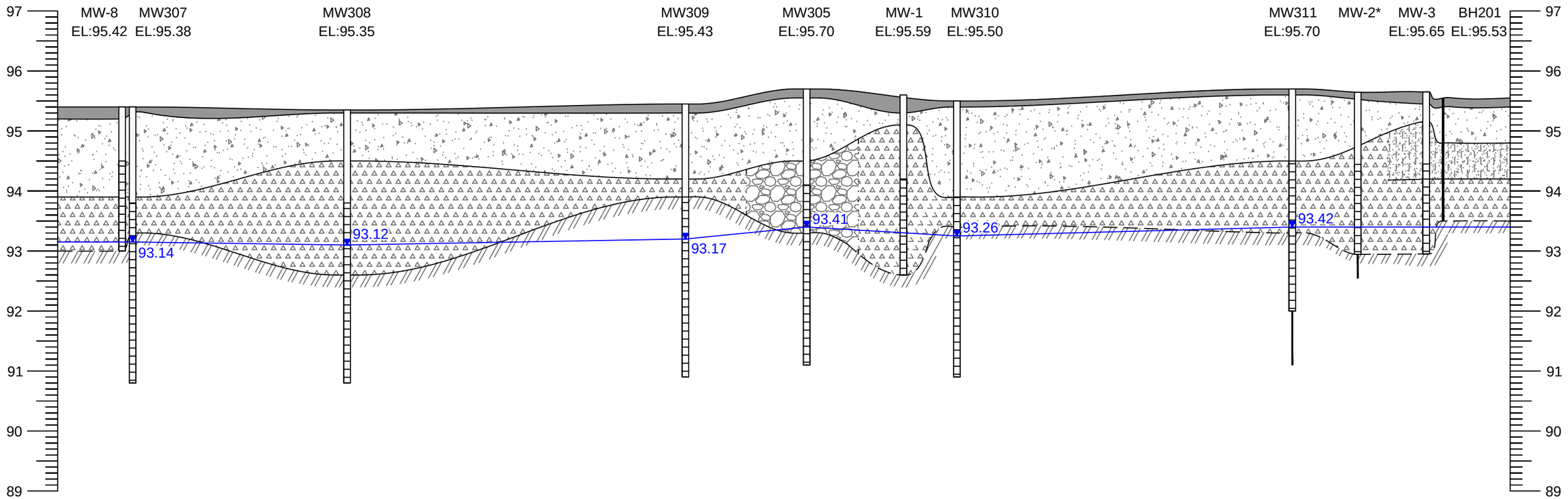
D

NORTH

D'

SOUTH



VERTICAL SCALE: AS SHOWN

HORIZONTAL SCALE:

0 5 10 15 20 25 m

NOTE: TRANSITION ZONES BETWEEN STRATIGRAPHIC UNITS ARE APPROXIMATE

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LEGEND:

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- REWORKED NATIVE/ SAND AND GRAVEL
- GRAVELLY SAND / SILTY SANDY GRAVEL
- BOULDERS AND COBBLE
- SANDY SILT
- SHALE BEDROCK
- INFERRED SHALE BEDROCK
- GROUNDWATER LEVEL
- GROUNDWATER ELEVATION AS MEASURED ON SEPTEMBER 15, 2017

TITLE AND LOCATION:

GEOLOGICAL CROSS SECTION D-D'

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT UPDATE
1509-1531 MERIVALE ROAD, OTTAWA, ONTARIO

PROJECT NO.:	DWN.:
OTT-00224605-D0	DP
SCALE: AS NOTED	CK: MM
DATE: APRIL 2020	FIG. NO.: 13A

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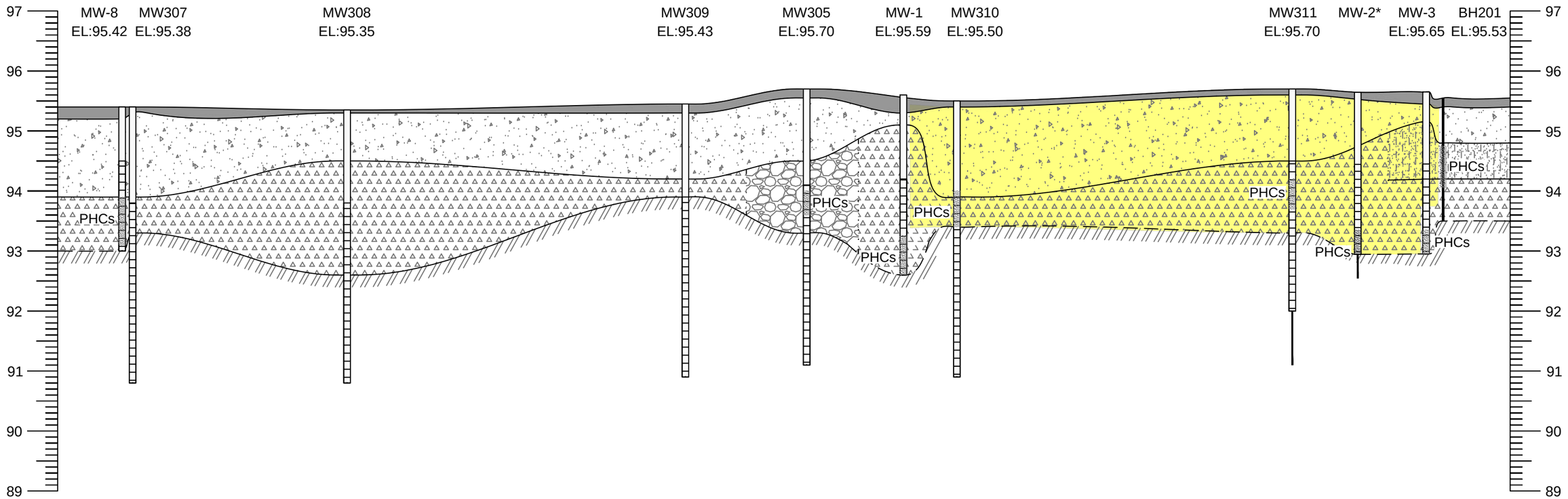
D
NORTH

D'
SOUTH



VERTICAL SCALE: AS SHOWN

HORIZONTAL SCALE:

0 5 10 15 20 25 m

NOTE: TRANSITION ZONES BETWEEN STRATIGRAPHIC UNITS ARE APPROXIMATE

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LEGEND:

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- GRAVELLY SAND / SILTY SANDY GRAVEL
- BOULDERS AND COBBLE
- SANDY SILT
- SHALE BEDROCK
- INFERRED SHALE BEDROCK
- * BOREHOLE/MONITORING WELL INCLUDED FOR CHEMICAL CHARACTERIZATION ONLY.
- NO IMPACT DETECTED
- IMPACT DETECTED
- APPROXIMATE EXTENT OF IMPACT

TITLE AND LOCATION:

GEOLOGICAL CROSS SECTION D-D' WITH PHC IMPACTS IN SOIL

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT UPDATE
1509-1531 MERIVALE ROAD,
OTTAWA, ONTARIO

PROJECT NO.:	DWN.:
OTT-00224605-D0	DP
SCALE: AS NOTED	CK: MM
DATE: APRIL 2020	FIG. NO.: 13B

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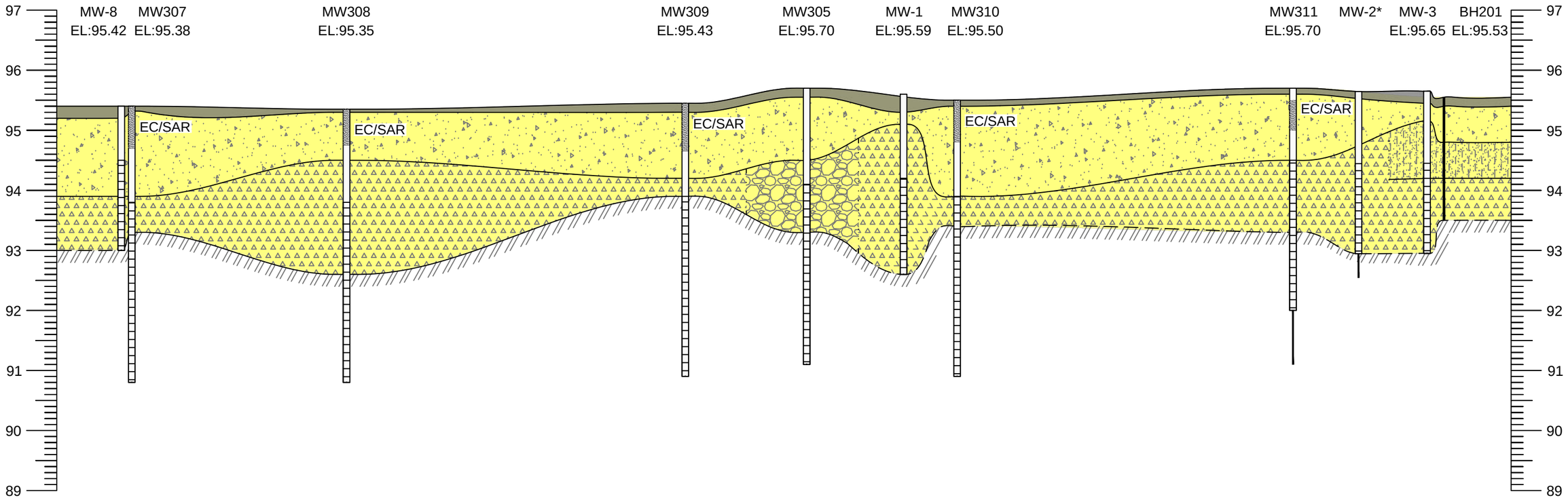
D

NORTH

D'

SOUTH



VERTICAL SCALE: AS SHOWN

HORIZONTAL SCALE:

0 5 10 15 20 25 m

NOTE: TRANSITION ZONES BETWEEN STRATIGRAPHIC UNITS ARE APPROXIMATE

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LEGEND:

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- GRAVELLY SAND / SILTY SANDY GRAVEL
- BOULDERS AND COBBLE
- SANDY SILT
- SHALE BEDROCK
- INFERRED SHALE BEDROCK
- NO IMPACT DETECTED
- IMPACT DETECTED
- APPROXIMATE EXTENT OF IMPACT

TITLE AND LOCATION:

GEOLOGICAL CROSS SECTION D-D' WITH EC/SAR IMPACTS IN SOIL

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT UPDATE
1509-1531 MERIVALE ROAD,
OTTAWA, ONTARIO

PROJECT NO.:	DWN.:
OTT-00224605-D0	DP
SCALE: AS NOTED	CK: MM
DATE: APRIL 2020	FIG. NO.: 13C

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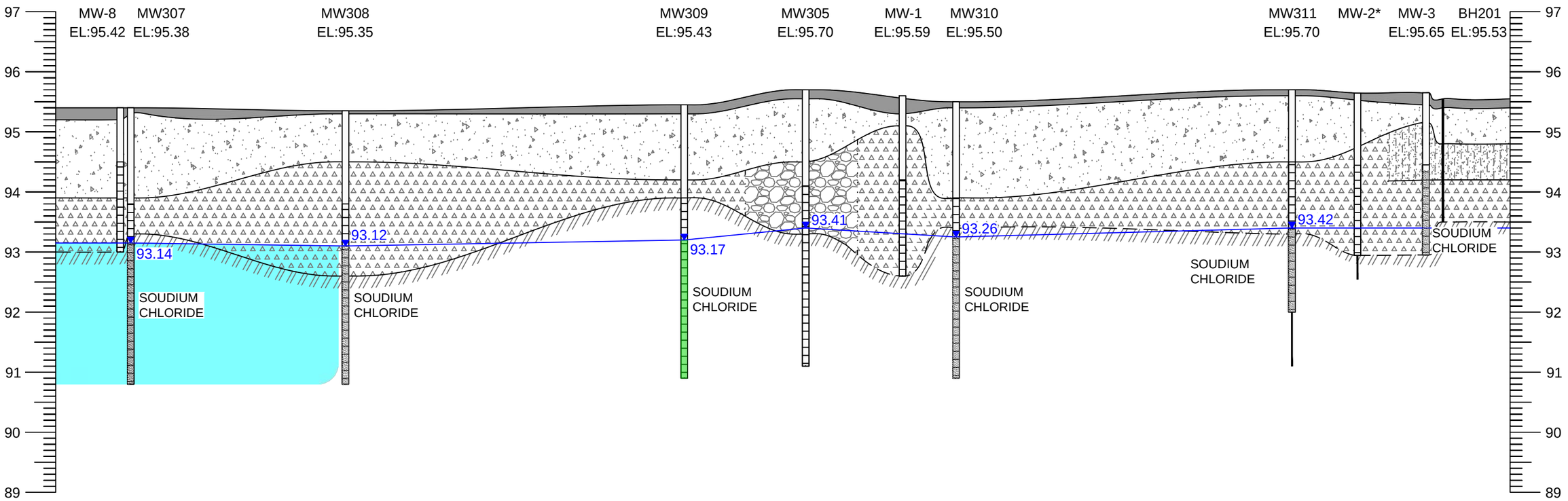
D
NORTH

D'
SOUTH



VERTICAL SCALE: AS SHOWN

HORIZONTAL SCALE:

0 5 10 15 20 25 m

NOTE: TRANSITION ZONES BETWEEN STRATIGRAPHIC UNITS ARE APPROXIMATE

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LEGEND:

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- GRAVELLY SAND / SILTY SANDY GRAVEL
- BOULDERS AND COBBLE*
- SANDY SILT
- SHALE BEDROCK
- INFERRED SHALE BEDROCK
- GROUNDWATER LEVEL
- GROUNDWATER ELEVATION AS MEASURED ON SEPTEMBER 15, 2017
- NO IMPACT DETECTED
- IMPACT DETECTED
- APPROXIMATE EXTENT OF IMPACT

TITLE AND LOCATION:

GEOLOGICAL CROSS SECTION D-D' WITH SODIUM AND CHLORIDE IMPACTS IN GROUNDWATER

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT UPDATE
1509-1531 MERIVALE ROAD,
OTTAWA, ONTARIO

PROJECT NO.:	DWN.:
OTT-00224605-D0	DP
SCALE:	CK:
AS NOTED	MM
DATE:	FIG. NO.:
APRIL 2020	13D

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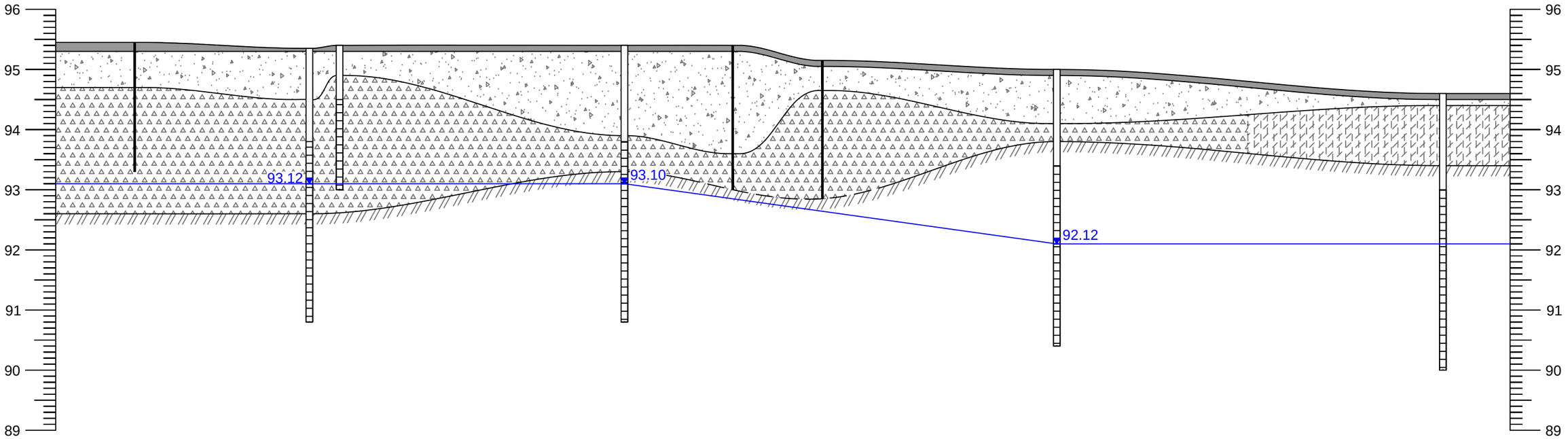
E

WEST

E'

EAST

BH203	MW308	MW-8	MW307	BH204	BH-7	MW312	BH/MW15-8
EL:95.44	EL:95.35	EL:95.42	EL:95.38	EL:95.38	EL:95.17	EL:94.97	EL:94.58



VERTICAL SCALE: AS SHOWN

HORIZONTAL SCALE:

0 4 8 12 16 20 m

NOTE: TRANSITION ZONES BETWEEN STRATIGRAPHIC UNITS ARE APPROXIMATE

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LEGEND:

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- GRAVELLY SAND / SILTY SANDY GRAVEL
- SILTY CLAY
- SHALE BEDROCK
- INFERRED SHALE BEDROCK
- GROUNDWATER LEVEL
- GROUNDWATER ELEVATION AS MEASURED ON SEPTEMBER 15, 2017

TITLE AND LOCATION:

GEOLOGICAL CROSS SECTION E-E'

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT UPDATE
1509-1531 MERIVALE ROAD,
OTTAWA, ONTARIO

PROJECT NO.:	DWN.:
OTT-00224605-D0	DP
SCALE:	CK:
AS NOTED	MM
DATE:	FIG. NO.:
APRIL 2020	14A

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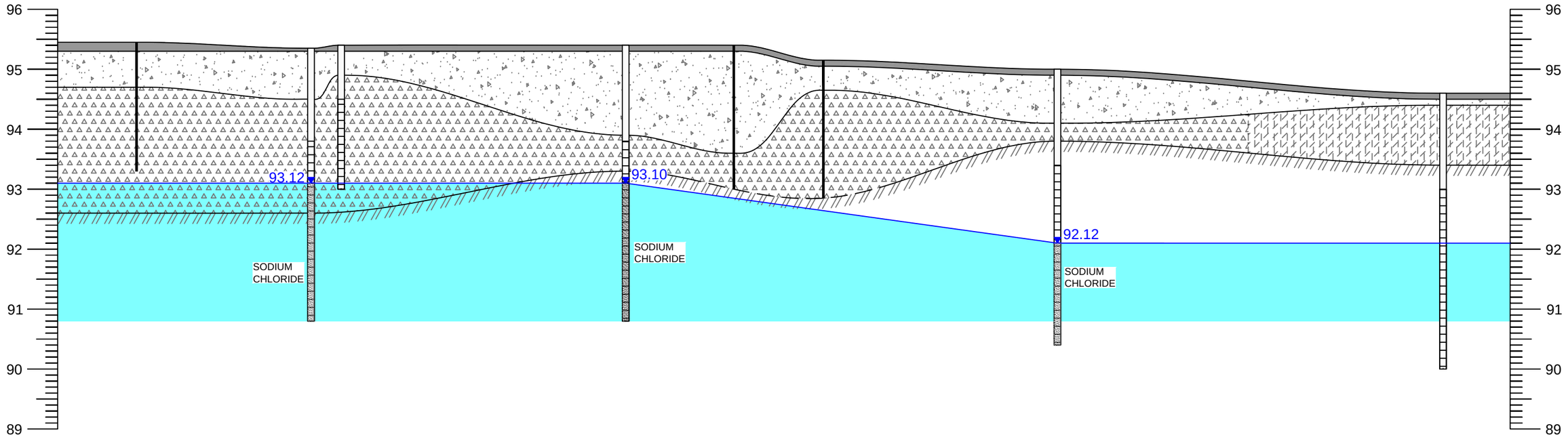
E

WEST

E'

EAST

BH203	MW308	MW-8	MW307	BH204	BH-7	MW312	BH/MW15-8
EL:95.44	EL:95.35	EL:95.42	EL:95.38	EL:95.38	EL:95.17	EL:94.97	EL:94.58



VERTICAL SCALE: AS SHOWN

HORIZONTAL SCALE:

0 4 8 12 16 20 m

NOTE: TRANSITION ZONES BETWEEN STRATIGRAPHIC UNITS ARE APPROXIMATE

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LEGEND:

- ASPHALT
- REWORKED NATIVE/ SAND AND GRAVEL
- GRAVELLY SAND / SILTY SANDY GRAVEL
- SILTY CLAY
- SHALE BEDROCK
- INFERRED SHALE BEDROCK
- GROUNDWATER LEVEL
- GROUNDWATER ELEVATION AS MEASURED ON SEPTEMBER 15, 2017
- NO IMPACT DETECTED
- IMPACT DETECTED
- APPROXIMATE EXTENT OF IMPACT

TITLE AND LOCATION:

GEOLOGICAL CROSS SECTION E-E' WITH SODIUM AND CHLORIDE IN GROUNDWATER

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT UPDATE
1509-1531 MERIVALE ROAD,
OTTAWA, ONTARIO

PROJECT NO.:	DWN.:
OTT-00224605-D0	DP
SCALE:	CK:
AS NOTED	MM
DATE:	FIG. NO.:
APRIL 2020	14B

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F
WEST

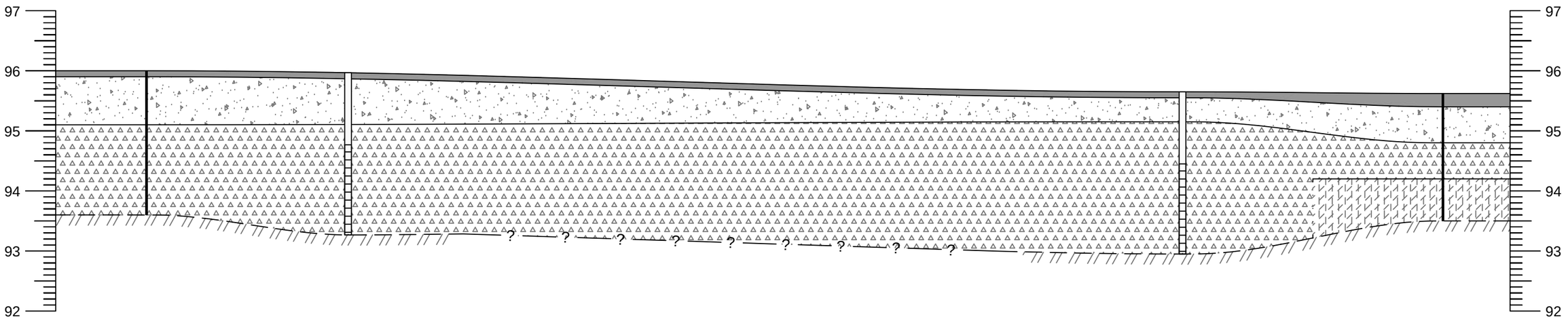
BH202
EL:95.98

MW-2*

MW-3
EL:95.65

BH201
EL:95.53

F'
EAST



VERTICAL SCALE: AS SHOWN

HORIZONTAL SCALE:

0 1 2 3 4 5 m

NOTE: TRANSITION ZONES BETWEEN STRATIGRAPHIC UNITS ARE APPROXIMATE
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LEGEND:

- ASPHALT
- REWORKED NATIVE/ SAND AND GRAVEL
- GRAVELLY SAND / SILTY SANDY GRAVEL
- SANDY SILT
- INFERRED SHALE BEDROCK

TITLE AND LOCATION:

GEOLOGICAL CROSS SECTION F-F'

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT UPDATE
1509-1531 MERIVALE ROAD,
OTTAWA, ONTARIO

PROJECT NO.:	DWN.:
OTT-00224605-D0	DP
SCALE: AS NOTED	CK: MM
DATE: APRIL 2020	FIG. NO.: 15A

X:\2240000\224605\224605\PHASE TWO ESA UPDATE\OTT-00224605-D0.dwg

F
WEST

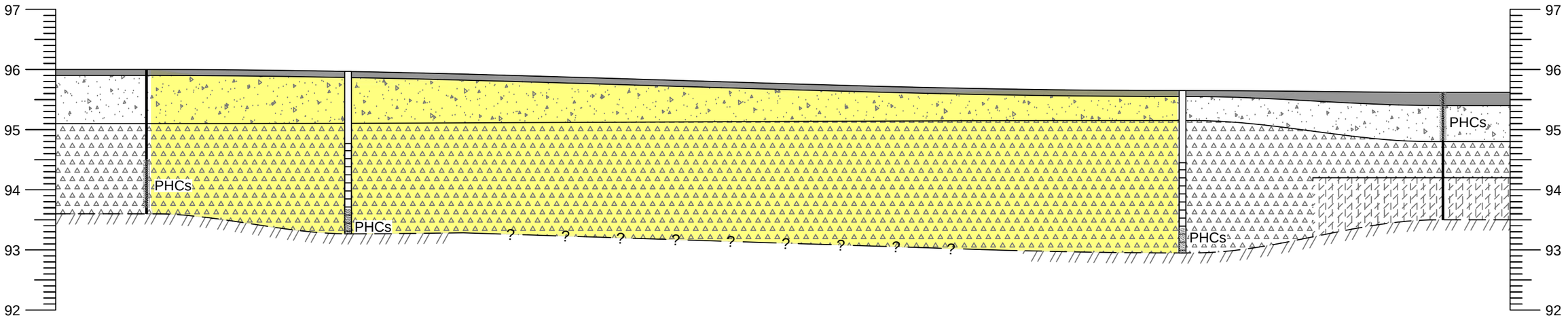
BH202
EL:95.98

MW-2*

MW-3
EL:95.65

BH201
EL:95.53

F'
EAST



VERTICAL SCALE: AS SHOWN

HORIZONTAL SCALE:

0 1 2 3 4 5 m

NOTE: TRANSITION ZONES BETWEEN STRATIGRAPHIC UNITS ARE APPROXIMATE

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LEGEND:

- ASPHALT
- REWORKED NATIVE/ SAND AND GRAVEL
- GRAVELLY SAND / SILTY SANDY GRAVEL
- SANDY SILT
- INFERRED SHALE BEDROCK
- NO IMPACT DETECTED
- IMPACT DETECTED
- APPROXIMATE EXTENT OF IMPACT

TITLE AND LOCATION:

GEOLOGICAL CROSS SECTION E-E' WITH PHC IMPACTS IN SOIL

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT UPDATE
1509-1531 MERIVALE ROAD,
OTTAWA, ONTARIO

PROJECT NO.:	DWN.:
OTT-00224605-D0	DP
SCALE: AS NOTED	CK: MM
DATE: APRIL 2020	FIG. NO.: 15B

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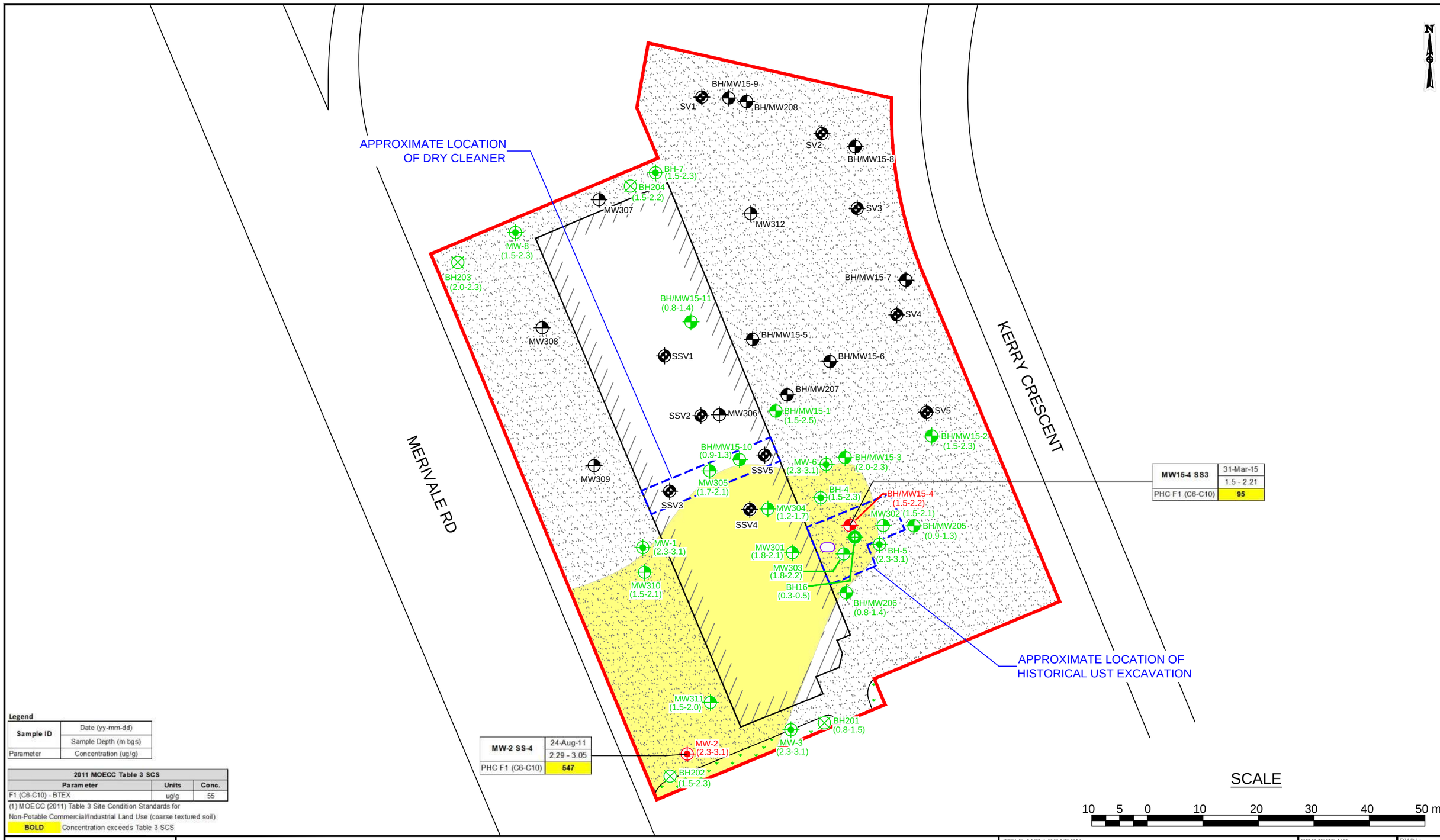

Legend

Sample ID	Date (yy-mm-dd)
	Sample Depth (m bgs)
Parameter	Concentration (ug/g)

2011 MOECC Table 3 SCS

Parameter	Units	Conc.
F1 (C6-C10) - BTEX	ug/g	55

(1) MOECC (2011) Table 3 Site Condition Standards for Non-Potable Commercial/Industrial Land Use (coarse textured soil)

BOLD Concentration exceeds Table 3 SCS

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LEGEND:

- APPROXIMATE SITE BOUNDARY
- BUILDING FOOTPRINT
- LANDSCAPED AREA
- ASPHALT / CONCRETE
- PINCHIN 2011 BOREHOLE/ MONITORING WELL LOCATION
- EXP BOREHOLE LOCATION (MARCH/JUNE 2015)
- EXP BOREHOLE / MONITORING WELL LOCATION (MARCH/JUNE 2015)
- EXP SOIL / SUB-SLAB VAPOUR PORT LOCATION
- EXP BOREHOLE LOCATION (OCTOBER 2016)
- EXP BOREHOLE LOCATION (SEPTEMBER 2017)
- APPROXIMATE LOCATION OF FORMER UST
- NO IMPACT DETECTED
- IMPACT DETECTED
- (X.X-X.X) SOIL SAMPLE DEPTH (m bgs)
- APPROXIMATE EXTENT OF IMPACT

TITLE AND LOCATION:

CONCENTRATIONS OF PHCs IN SOIL

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT UPDATE
1509-1531 MERIVALE ROAD,
OTTAWA, ONTARIO

PROJECT NO.:	DWN.:
OTT-00224605-D0	DP
SCALE:	CK:
AS NOTED	MM
DATE:	FIG. NO.:
APRIL 2020	16

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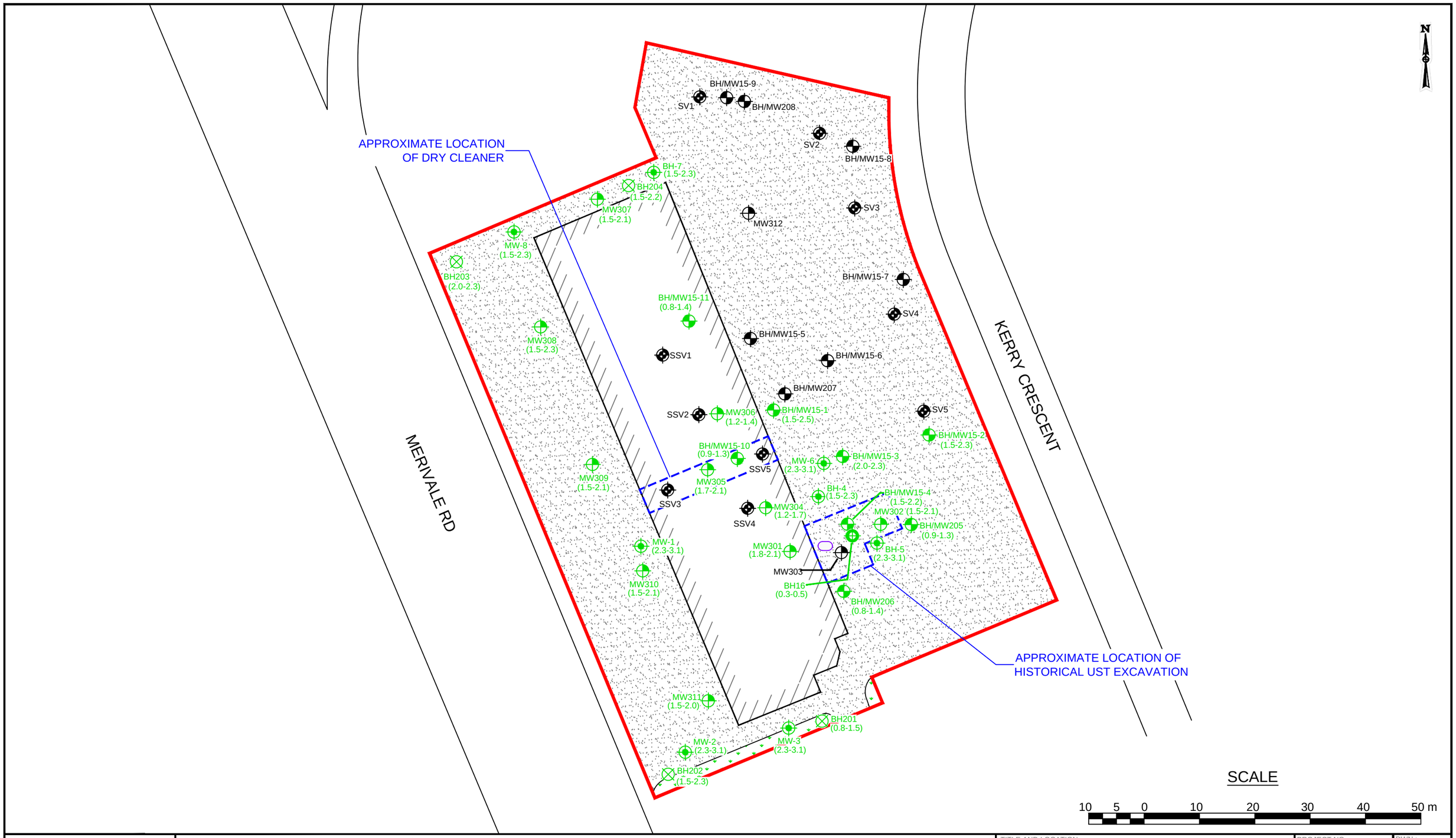

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LEGEND:

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- BUILDING FOOTPRINT
- LANDSCAPED AREA
- ASPHALT / CONCRETE
- PINCHIN 2011 BOREHOLE/ MONITORING WELL LOCATION
- EXP BOREHOLE LOCATION (MARCH/JUNE 2015)
- EXP BOREHOLE / MONITORING WELL LOCATION (MARCH/JUNE 2015)
- EXP SOIL / SUB-SLAB VAPOUR PORT LOCATION
- EXP BOREHOLE LOCATION (OCTOBER 2016)
- EXP BOREHOLE LOCATION (SEPTEMBER 2017)
- APPROXIMATE LOCATION OF FORMER UST
- NO IMPACT DETECTED
- (X.X-X.X) SOIL SAMPLE DEPTH (m bgs)

TITLE AND LOCATION:

CONCENTRATIONS OF BTEX IN SOIL

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT UPDATE
1509-1531 MERIVALE ROAD,
OTTAWA, ONTARIO

PROJECT NO.:	DWN.:
OTT-00224605-D0	DP
SCALE:	CK:
AS NOTED	MM
DATE:	FIG. NO.:
APRIL 2020	17

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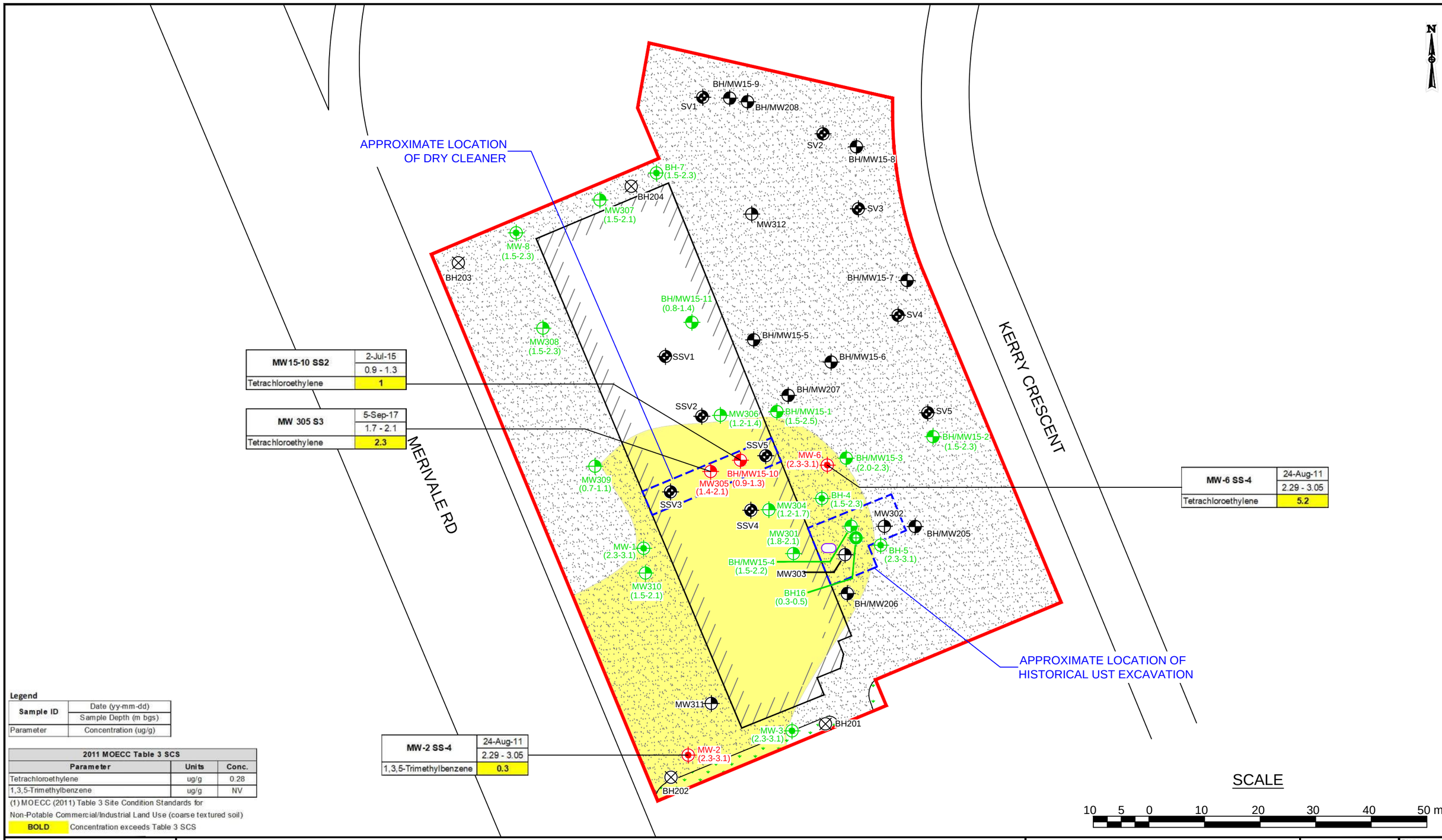

MW15-10 SS2	2-Jul-15
	0.9 - 1.3
Tetrachloroethylene	1

MW 305 S3	5-Sep-17
	1.7 - 2.1
Tetrachloroethylene	2.3

MW-6 SS-4	24-Aug-11
	2.29 - 3.05
Tetrachloroethylene	5.2

MW-2 SS-4	24-Aug-11
	2.29 - 3.05
1,3,5-Trimethylbenzene	0.3

Legend

Sample ID	Date (yy-mm-dd)
	Sample Depth (m bgs)
Parameter	Concentration (ug/g)

2011 MOECC Table 3 SCS		
Parameter	**Units**	**Conc.**
Tetrachloroethylene	ug/g	0.28
1,3,5-Trimethylbenzene	ug/g	NV

(1) MOECC (2011) Table 3 Site Condition Standards for Non-Potable Commercial/Industrial Land Use (coarse textured soil)

BOLD Concentration exceeds Table 3 SCS

SCALE

10 5 0 10 20 30 40 50 m

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LEGEND:

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- BUILDING FOOTPRINT
- LANDSCAPED AREA
- ASPHALT / CONCRETE
- PINCHIN 2011 BOREHOLE/ MONITORING WELL LOCATION
- EXP BOREHOLE LOCATION (MARCH/JUNE 2015)
- EXP BOREHOLE / MONITORING WELL LOCATION (MARCH/JUNE 2015)
- EXP SOIL / SUB-SLAB VAPOUR PORT LOCATION
- EXP BOREHOLE LOCATION (OCTOBER 2016)
- EXP BOREHOLE LOCATION (SEPTEMBER 2017)
- APPROXIMATE LOCATION OF FORMER UST
- NO IMPACT DETECTED
- IMPACT DETECTED
- (X.X-X.X) SOIL SAMPLE DEPTH (m bgs)
- APPROXIMATE EXTENT OF IMPACT

TITLE AND LOCATION:

CONCENTRATIONS OF VOCs IN SOIL

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT UPDATE
1509-1531 MERIVALE ROAD,
OTTAWA, ONTARIO

PROJECT NO.:	DWN.:
OTT-00224605-D0	DP
SCALE:	CK:
AS NOTED	MM
DATE:	FIG. NO.:
APRIL 2020	18

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LEGEND:

- APPROXIMATE SITE BOUNDARY
- BUILDING FOOTPRINT
- LANDSCAPED AREA
- ASPHALT / CONCRETE
- PINCHIN 2011 BOREHOLE/ MONITORING WELL LOCATION
- EXP BOREHOLE LOCATION (MARCH/JUNE 2015)
- EXP BOREHOLE / MONITORING WELL LOCATION (MARCH/JUNE 2015)
- EXP SOIL / SUB-SLAB VAPOUR PORT LOCATION
- EXP BOREHOLE LOCATION (OCTOBER 2016)
- EXP BOREHOLE LOCATION (SEPTEMBER 2017)
- APPROXIMATE LOCATION OF FORMER UST
- NO IMPACT DETECTED
- (X.X-X.X) SOIL SAMPLE DEPTH (m bgs)

TITLE AND LOCATION:

CONCENTRATIONS OF METALS IN SOIL

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT UPDATE
1509-1531 MERIVALE ROAD,
OTTAWA, ONTARIO

PROJECT NO.:	DWN.:
OTT-00224605-D0	DP
SCALE: AS NOTED	CK: MM
DATE: APRIL 2020	FIG. NO.: 19

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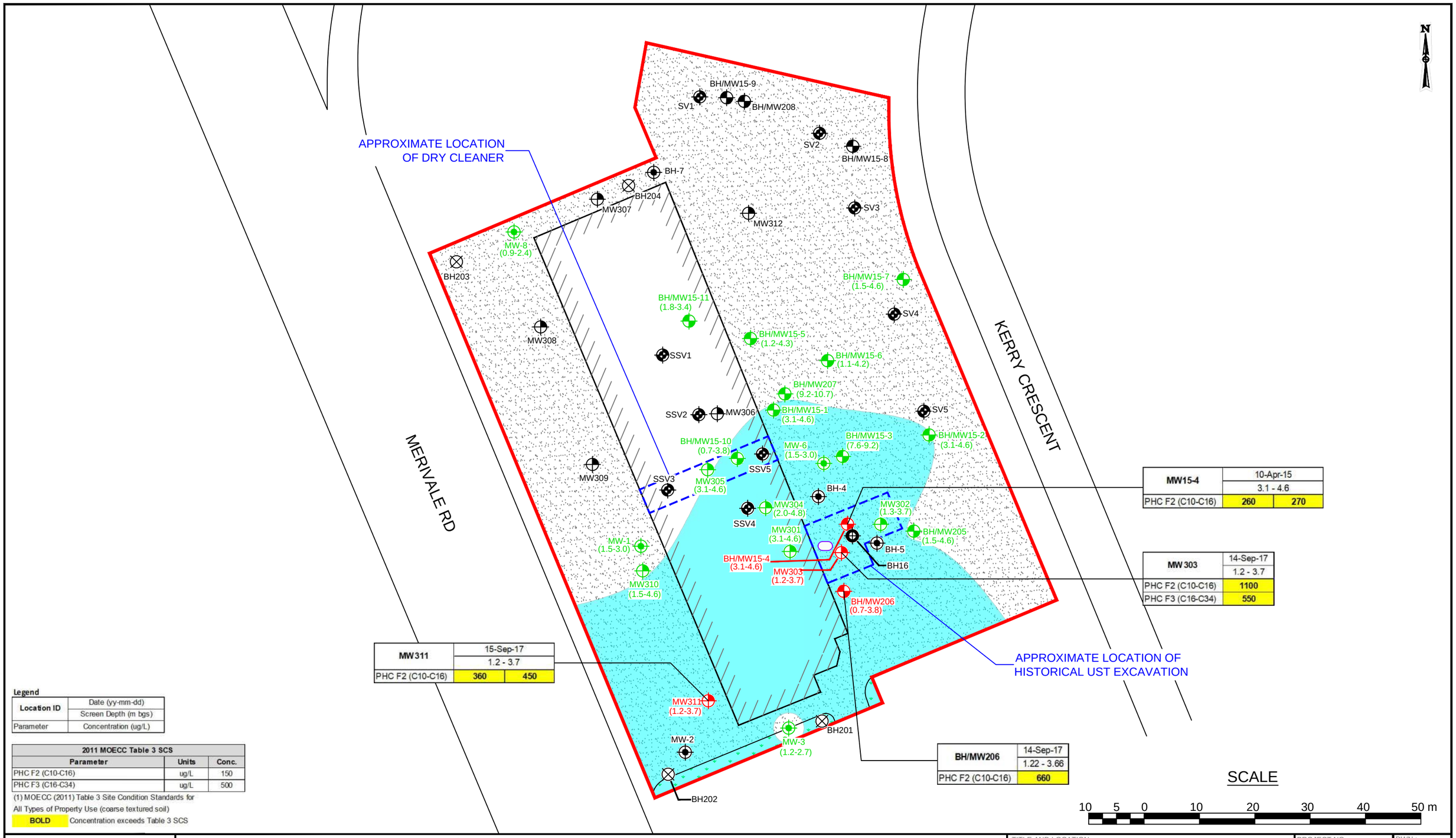

MW15-4	10-Apr-15	
	3.1 - 4.6	
PHC F2 (C10-C16)	260	270

MW 303	14-Sep-17	
	1.2 - 3.7	
PHC F2 (C10-C16)	1100	
PHC F3 (C16-C34)	550	

MW311	15-Sep-17	
	1.2 - 3.7	
PHC F2 (C10-C16)	360	450

BH/MW206	14-Sep-17	
	1.22 - 3.66	
PHC F2 (C10-C16)	660	

Legend

Location ID	Date (yy-mm-dd)
	Screen Depth (m bgs)
Parameter	Concentration (ug/L)

2011 MOECC Table 3 SCS		
Parameter	Units	Conc.
PHC F2 (C10-C16)	ug/L	150
PHC F3 (C16-C34)	ug/L	500

(1) MOECC (2011) Table 3 Site Condition Standards for All Types of Property Use (coarse textured soil)

BOLD Concentration exceeds Table 3 SCS

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LEGEND:

- APPROXIMATE SITE BOUNDARY
- BUILDING FOOTPRINT
- LANDSCAPED AREA
- ASPHALT / CONCRETE
- PINCHIN 2011 BOREHOLE/ MONITORING WELL LOCATION
- EXP BOREHOLE LOCATION (MARCH/JUNE 2015)
- EXP BOREHOLE / MONITORING WELL LOCATION (MARCH/JUNE 2015)
- EXP SOIL / SUB-SLAB VAPOUR PORT LOCATION
- EXP BOREHOLE LOCATION (OCTOBER 2016)
- EXP BOREHOLE LOCATION (SEPTEMBER 2017)
- APPROXIMATE LOCATION OF FORMER UST
- NO IMPACT DETECTED
- IMPACT DETECTED
- (X.X-X.X) WELL SCREEN DEPTH (m bgs)
- APPROXIMATE EXTENT OF IMPACT

TITLE AND LOCATION:

CONCENTRATIONS OF PHCs IN GROUNDWATER

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT UPDATE
1509-1531 MERIVALE ROAD,
OTTAWA, ONTARIO

PROJECT NO.:	DWN.:
OTT-00224605-D0	DP
SCALE:	CK:
AS NOTED	MM
DATE:	FIG. NO.:
APRIL 2020	20

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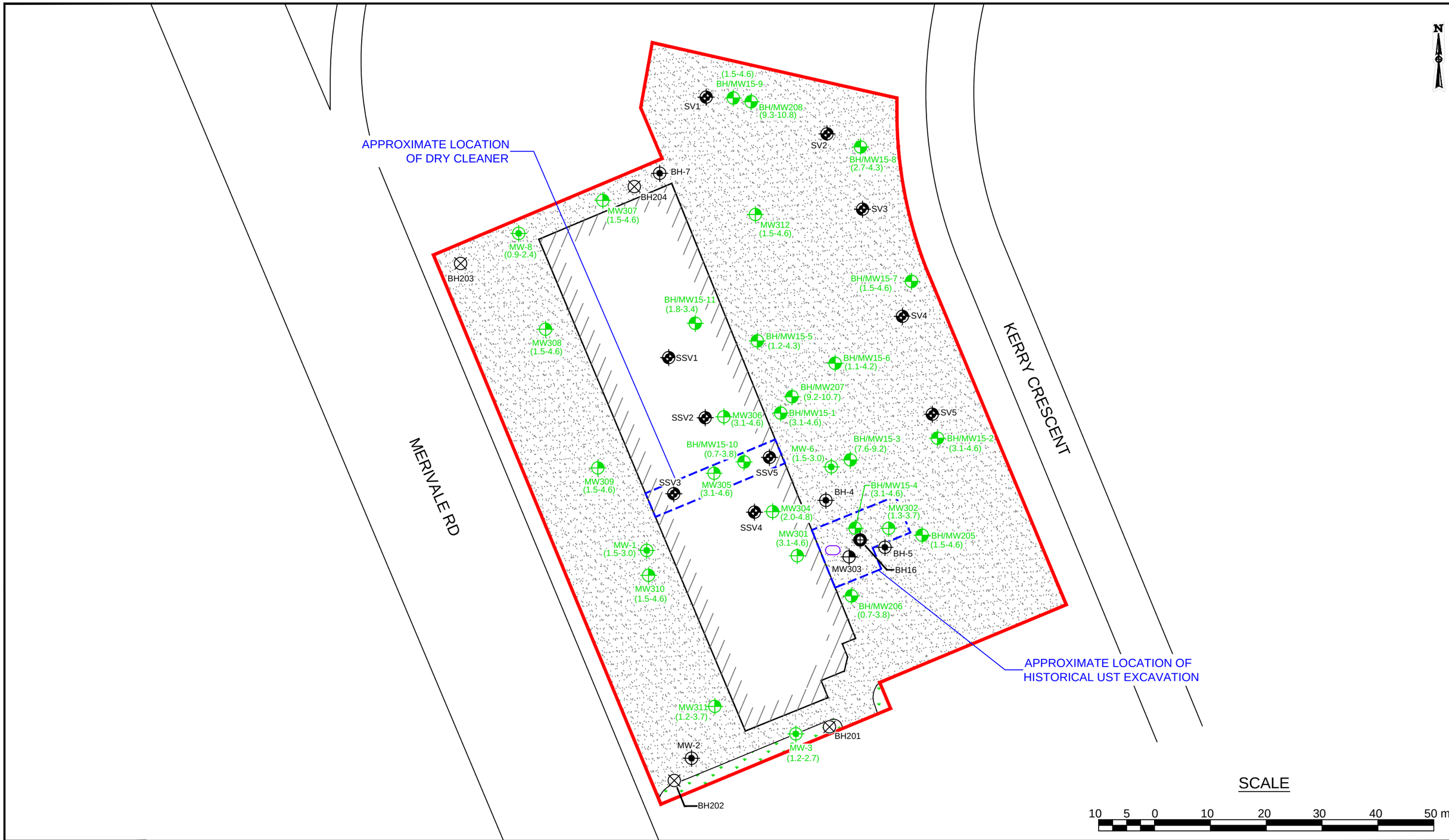

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LEGEND:

- APPROXIMATE SITE BOUNDARY
- BUILDING FOOTPRINT
- LANDSCAPED AREA
- ASPHALT / CONCRETE
- PINCHIN 2011 BOREHOLE/ MONITORING WELL LOCATION
- EXP BOREHOLE LOCATION (MARCH/JUNE 2015)
- EXP BOREHOLE / MONITORING WELL LOCATION (MARCH/JUNE 2015)
- EXP SOIL / SUB-SLAB VAPOUR PORT LOCATION
- EXP BOREHOLE LOCATION (OCTOBER 2016)
- EXP BOREHOLE LOCATION (SEPTEMBER 2017)
- APPROXIMATE LOCATION OF FORMER UST
- NO IMPACT DETECTED

TITLE AND LOCATION:

CONCENTRATIONS OF BTEX IN GROUNDWATER

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT UPDATE
1509-1531 MERIVALE ROAD,
OTTAWA, ONTARIO

PROJECT NO.:	DWN.:
OTT-00224605-D0	DP
SCALE: AS NOTED	CK: MM
DATE: APRIL 2020	FIG. NO.: 21

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MW15-9	7-Jul-15	14-Sep-17
	1.52 - 4.57	
cis-1,2-Dichloroethylene	15	13
Tetrachloroethylene	71	72
Trichloroethylene	16	14

MW312	15-Sep-17
	1.5 - 4.6
1,2-Dichloroethane	<2.0
cis-1,2-Dichloroethylene	150
Ethylene Dibromide	<2.0
Tetrachloroethylene	2.9
Trichloroethylene	73
Vinyl Chloride	4

MW15-11	7-Jul-15	18-Sep-17
	1.83 - 3.35	
Tetrachloroethylene	160	63
Trichloroethylene	2.5	1.8

MW15-1	14-Sep-17	14-Sep-17
	3.1 - 4.6	
cis-1,2-Dichloroethylene	<10	9.8
Tetrachloroethylene	840	760
Trichloroethylene	19	25

MW306	18-Sep-17
	3.1 - 4.6
Tetrachloroethylene	62
Trichloroethylene	1.8

MW305	15-Sep-17
	3.1-4.6
Chloroform	2.8

MW15-10	7-Jul-15	15-Sep-17
	0.76 - 3.81	
Tetrachloroethylene	240	120
Trichloroethylene	2.2	0.86

MW15-8	7-Jul-15
	2.74 - 4.27
cis-1,2-Dichloroethylene	2.6	2.6

MW15-5	7-May-15	21-Apr-16
	1.2 - 4.3	
cis-1,2-Dichloroethylene	5.7	7.7
Tetrachloroethylene	610	620
Trichloroethylene	44	65

MW15-7	8-May-15	7-Jul-15	27-May-16	14-Sep-17
	1.52 - 4.57			
cis-1,2-Dichloroethylene	5.6	8.8	5.2	4
Tetrachloroethylene	600	8.4	4.2	2
Trichloroethylene	46	6.1	2.8	1.8

MW15-6	8-May-15	21-Apr-16	15-Sep-17
	1.1 - 4.2		
cis-1,2-Dichloroethylene	13	2.8	<0.10
Tetrachloroethylene	170	9.2	0.46
Trichloroethylene	17	3.3	<0.10

MW-6	10-Apr-15	22-Apr-16
	1.5 - 3.0	
cis-1,2-Dichloroethylene	16	26
Tetrachloroethylene	320	310
Trichloroethylene	13	18

APPROXIMATE LOCATION OF DRY CLEANER

APPROXIMATE LOCATION OF HISTORICAL UST EXCAVATION

MERIVALE RD

KERRY CRESCENT

BH/MW15-9 (1.5-4.6)
BH/MW208 (9.3-10.8)
SV1
SV2
BH/MW15-8 (2.7-4.3)
BH-7
BH204
MW307 (1.5-4.6)
SV3
MW312 (1.5-4.6)
MW-8 (0.9-2.4)
BH203
BH/MW15-7 (1.5-4.6)
BH/MW15-11 (1.8-3.4)
SV4
MW308 (1.5-4.6)
BH/MW15-5 (1.2-4.3)
SSV1
BH/MW15-6 (1.1-4.2)
BH/MW207 (9.2-10.7)
SSV2
MW306 (3.1-4.6)
BH/MW15-1 (3.1-4.6)
SV5
BH/MW15-10 (0.7-3.8)
BH/MW15-3 (7.6-9.2)
BH/MW15-2 (3.1-4.6)
MW-6 (1.5-3.0)
SSV5
MW309 (1.5-4.6)
MW305 (3.1-4.6)
SSV3
BH-4
MW304 (2.0-4.8)
SSV4
BH/MW15-4 (3.1-4.6)
MW302
BH/MW205 (1.5-4.6)
MW-1 (1.5-3.0)
MW301 (3.1-4.6)
BH-5
MW303
BH16
MW310 (1.5-4.6)
BH/MW206
MW311 (1.2-3.7)
MW-3 (1.2-2.7)
BH201
MW-2
BH202

Legend

Location ID	Date (yy-mm-dd)
	Screen Depth (m bgs)
Parameter	Concentration (ug/L)

2011 MOECC Table 3 SCS		
Parameter	**Units**	**Conc.**
Chloroform	ug/L	2.4
1,2-Dichloroethane	ug/L	1.6
cis-1,2-Dichloroethylene	ug/L	1.6
trans-1,2-Dichloroethylene	ug/L	1.6
Ethylene Dibromide	ug/L	0.25
Tetrachloroethylene	ug/L	1.6
Trichloroethylene	ug/L	1.6
Vinyl Chloride	ug/L	0.5

(1) MOECC (2011) Table 3 Site Condition Standards for All Types of Property Use (coarse textured soil)

BOLD Concentration exceeds Table 3 SCS

BOLD Detection limit exceeds Table 3 SCS

SCALE

10 5 0 10 20 30 40 50 m

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LEGEND:

- APPROXIMATE SITE BOUNDARY
- BUILDING FOOTPRINT
- LANDSCAPED AREA
- ASPHALT / CONCRETE
- PINCHIN 2011 BOREHOLE/ MONITORING WELL LOCATION
- EXP BOREHOLE LOCATION (MARCH/JUNE 2015)
- EXP BOREHOLE / MONITORING WELL LOCATION (MARCH/JUNE 2015)
- EXP SOIL / SUB-SLAB VAPOUR PORT LOCATION
- EXP BOREHOLE LOCATION (OCTOBER 2016)
- EXP BOREHOLE LOCATION (SEPTEMBER 2017)
- APPROXIMATE LOCATION OF FORMER UST
- NO IMPACT DETECTED
- IMPACT DETECTED
- (X.X-X.X) WELL SCREEN DEPTH (m bgs)
- APPROXIMATE EXTENT OF IMPACT

TITLE AND LOCATION:

CONCENTRATIONS OF VOCs IN GROUNDWATER

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT UPDATE
1509-1531 MERIVALE ROAD,
OTTAWA, ONTARIO

PROJECT NO.:	DWN.:
OTT-00224605-D0	DP
SCALE: AS NOTED	CK: MM
DATE: MAY 2019	FIG. NO.: 22

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MW307	15-Sep-17
	1.5 - 4.6
Chloride	2900

BH/MW208	1-Jun-18	Duplicate 1-Jun-18	6-Jun-18	Duplicate 6-Jun-18
	9.3 - 10.8			
Chloride	4900	4500	4300	4500

APPROXIMATE LOCATION OF DRY CLEANER

APPROXIMATE LOCATION OF HISTORICAL UST EXCAVATION

MERIVALE RD

KERRY CRESCENT

BH/MW15-9
SV1
BH/MW208 (9.3-10.8)
SV2
BH/MW15-8
BH-7
BH204
MW307 (1.5-4.6)
MW312 (1.5-4.6)
SV3
MW-8
BH203
BH/MW15-7
BH/MW15-11
SV4
MW308 (1.5-4.6)
BH/MW15-5
SSV1
BH/MW15-6
BH/MW207
SSV2
MW306
BH/MW15-1
SV5
BH/MW15-2
BH/MW15-10
SSV5
MW-6
BH/MW15-3
MW309 (1.5-4.6)
MW305
BH-4
SSV3
BH/MW15-4
MW302
SSV4
MW304
BH/MW205
MW-1
MW301
BH-5
MW303
MW310 (1.2-3.7)
BH16
BH/MW206
MW311 (1.2-3.7)
BH201
MW-2
MW-3 (1.2-2.7)
BH202

Legend

Location ID	Date (yy-mm-dd)
	Screen Depth (m bgs)
Parameter	Concentration (ug/L)

2011 MOECC Table 3 SCS		
Parameter	Units	Conc.
Chloride	mg/L	2,300

(1) MOECC (2011) Table 3 Site Condition Standards for All Types of Property Use (coarse textured soil)

SCALE

10 5 0 10 20 30 40 50 m

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LEGEND:

- APPROXIMATE SITE BOUNDARY
- BUILDING FOOTPRINT
- LANDSCAPED AREA
- ASPHALT / CONCRETE
- PINCHIN 2011 BOREHOLE/ MONITORING WELL LOCATION
- EXP BOREHOLE LOCATION (MARCH/JUNE 2015)
- EXP BOREHOLE / MONITORING WELL LOCATION (MARCH/JUNE 2015)
- EXP SOIL / SUB-SLAB VAPOUR PORT LOCATION
- EXP BOREHOLE LOCATION (OCTOBER 2016)
- EXP BOREHOLE LOCATION (SEPTEMBER 2017)
- APPROXIMATE LOCATION OF FORMER UST
- NO IMPACT DETECTED
- DUE TO THE REGULATORY EXEMPTIONS, SODIUM AND CHLORIDE ARE NOT CONSIDERED COCs AT THIS SITE
- (X.X-X.X) WELL SCREEN DEPTH (m bgs)

TITLE AND LOCATION:
CONCENTRATIONS OF SODIUM AND CHLORIDE IN GROUNDWATER
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT UPDATE
1509-1531 MERIVALE ROAD, OTTAWA, ONTARIO

PROJECT NO.:	DWN.:
OTT-00224605-D0	DP
SCALE: AS NOTED	CK: MM
DATE: APRIL 2020	FIG. NO.: 23

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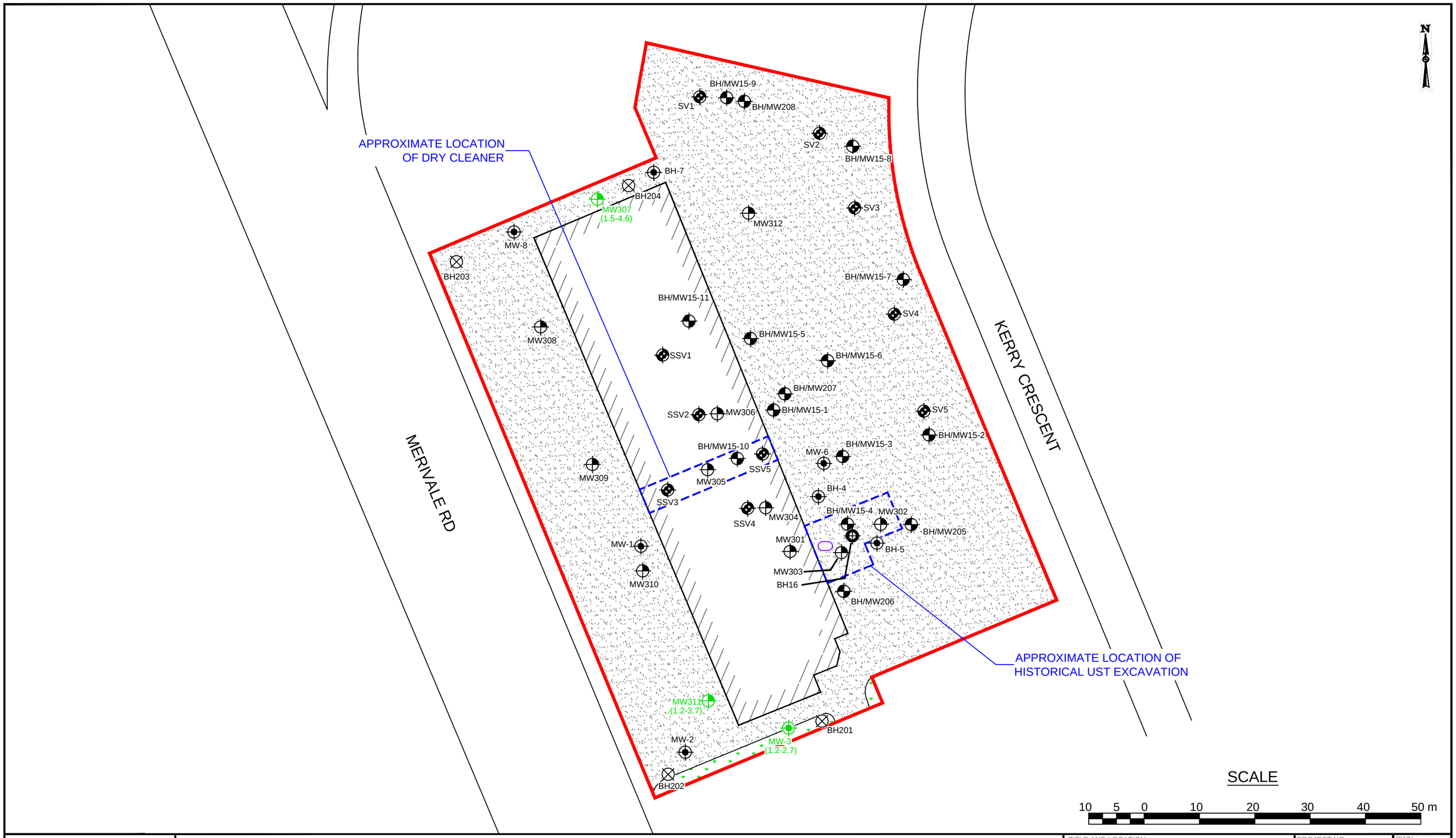

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LEGEND:

- APPROXIMATE SITE BOUNDARY
- BUILDING FOOTPRINT
- LANDSCAPED AREA
- ASPHALT / CONCRETE
- PINCHIN 2011 BOREHOLE/ MONITORING WELL LOCATION
- EXP BOREHOLE LOCATION (MARCH/JUNE 2015)
- EXP BOREHOLE / MONITORING WELL LOCATION (MARCH/JUNE 2015)
- EXP SOIL / SUB-SLAB VAPOUR PORT LOCATION
- EXP BOREHOLE LOCATION (OCTOBER 2016)
- EXP BOREHOLE LOCATION (SEPTEMBER 2017)
- APPROXIMATE LOCATION OF FORMER UST
- NO IMPACT DETECTED
- (X.X-X.X) WELL SCREEN DEPTH (m bgs)

TITLE AND LOCATION:

CONCENTRATIONS OF LEAD IN GROUNDWATER

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT UPDATE
1509-1531 MERIVALE ROAD,
OTTAWA, ONTARIO

PROJECT NO.:	DWN.:
OTT-00224605-D0	DP
SCALE: AS NOTED	CK: MM
DATE: APRIL 2020	FIG. NO.: 24

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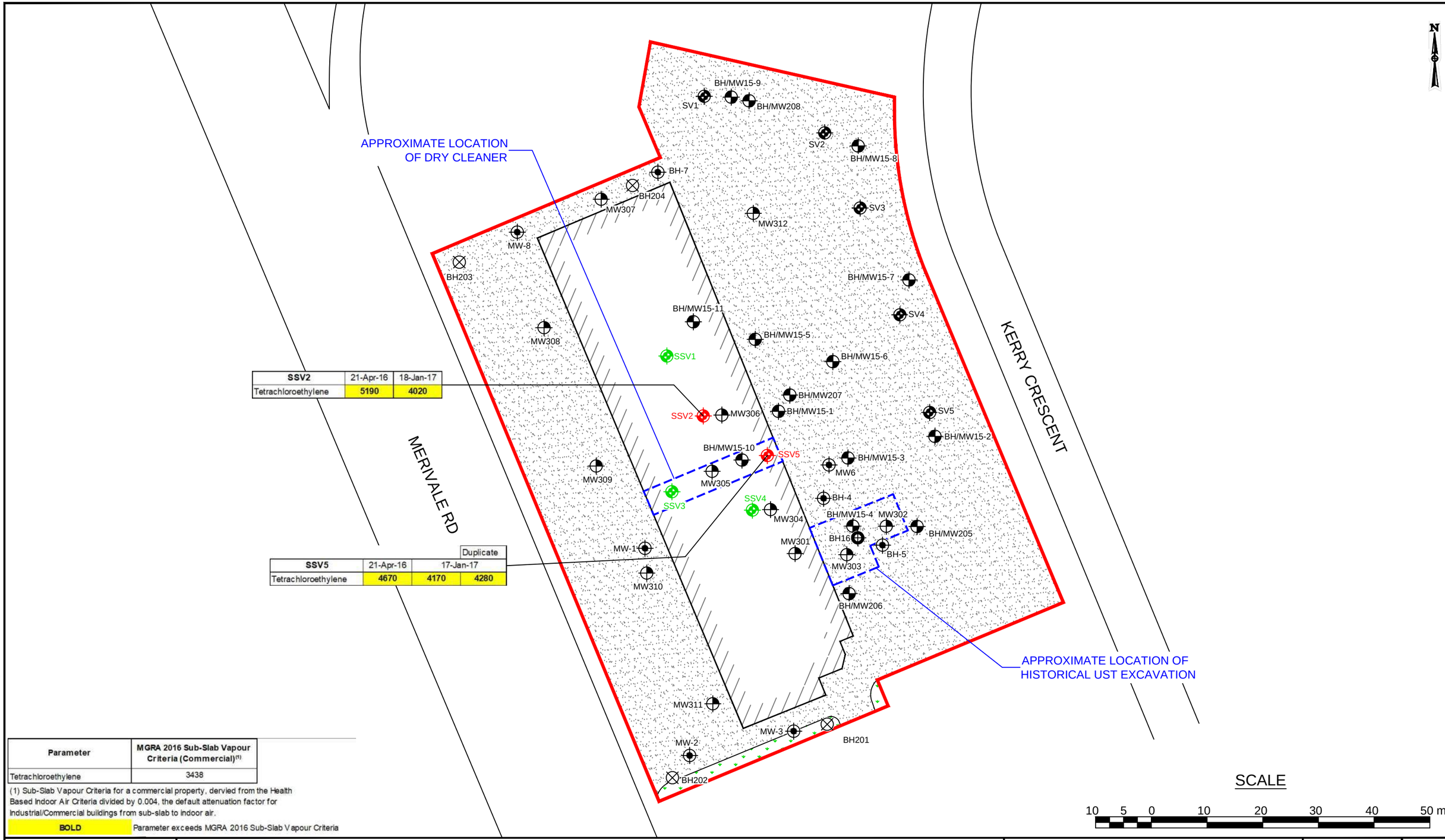

SSV2	21-Apr-16	18-Jan-17
Tetrachloroethylene	**5190**	**4020**

SSV5	21-Apr-16	17-Jan-17	Duplicate
Tetrachloroethylene	**4670**	**4170**	**4280**

Parameter	MGRA 2016 Sub-Slab Vapour Criteria (Commercial)(1)
Tetrachloroethylene	3438

(1) Sub-Slab Vapour Criteria for a commercial property, dervied from the Health Based Indoor Air Criteria divided by 0.004, the default attenuation factor for Industrial/Commercial buildings from sub-slab to indoor air.

BOLD Parameter exceeds MGRA 2016 Sub-Slab Vapour Criteria

SCALE

10 5 0 10 20 30 40 50 m

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LEGEND:

- APPROXIMATE SITE BOUNDARY
- BUILDING FOOTPRINT
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- ASPHALT / CONCRETE
- PINCHIN 2011 BOREHOLE/ MONITORING WELL LOCATION
- EXP BOREHOLE LOCATION (MARCH/JUNE 2015)
- EXP BOREHOLE / MONITORING WELL LOCATION (MARCH/JUNE 2015)
- EXP SOIL / SUB-SLAB VAPOUR PORT LOCATION
- EXP BOREHOLE LOCATION (OCTOBER 2016)
- EXP BOREHOLE LOCATION (SEPTEMBER 2017)
- APPROXIMATE LOCATION OF FORMER UST
- NO IMPACT DETECTED
- IMPACT DETECTED

TITLE AND LOCATION:

CONCENTRATIONS OF CHLORINATED VOCs IN SUB-SLAB VAPOUR

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT UPDATE
1509-1531 MERIVALE ROAD,
OTTAWA, ONTARIO

PROJECT NO.:	DWN.:
OTT-00224605-D0	DP
SCALE: AS NOTED	CK: MM
DATE: APRIL 2020	FIG. NO.: 25

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SV1	21-Apr-16	30-Jan-19
Tetrachloroethylene	612	117
Trichloroethylene	29.5	7.61

SV3	22-Jun-16	Duplicate	24-Jan-19
Vinyl Chloride	153	170	101

APPROXIMATE LOCATION OF DRY CLEANER

APPROXIMATE LOCATION OF HISTORICAL UST EXCAVATION

MERIVALE RD

KERRY CRESCENT

BH/MW15-9, SV1, BH/MW208, SV2, BH/MW15-8, BH-7, BH204, MW307, SV3, MW312, MW-8, BH203, BH/MW15-7, BH/MW15-11, SV4, MW308, BH/MW15-5, SSV1, BH/MW15-6, BH/MW207, SSV2, MW306, BH/MW15-1, SV5, BH/MW15-2, BH/MW15-10, SSV5, BH/MW15-3, MW309, MW305, MW6, SSV3, BH-4, SSV4, MW304, BH/MW15-4, MW302, BH/MW205, BH16, MW301, BH-5, MW-1, MW303, MW310, BH/MW206, MW311, MW-3, BH201, MW-2, BH202

Parameter	MGRA 2016 Soil Vapour Criteria (Residential)(1)	MGRA 2016 Sub-Slab Vapour Criteria (Residential)(2)
Tetrachloroethylene	214	214
Trichloroethylene	13.6	13.6
Vinyl Chloride	6.3	6.3

(1) Soil Vapour Criteria for a residential property, developed using the MECP MGRA Tier 2 Approved Model (November 1, 2016), using the minimum allow able probe depth of 2.58 metres below ground surface.

(2) Sub-Slab Vapour Criteria for a residential property, dervied from the Health Based Indoor Air Criteria divided by 0.02, the default attenuation factor for residential buildings from sub-slab to indoor air.

Bold Concentration is above acceptable Residential Soil Vapour Criteria

Bold Concentration is above acceptable 2016 Residential Sub-Slab Vapour Criteria

SCALE

10 5 0 10 20 30 40 50 m

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LEGEND:

- APPROXIMATE SITE BOUNDARY
- BUILDING FOOTPRINT
- LANDSCAPED AREA
- ASPHALT / CONCRETE
- PINCHIN 2011 BOREHOLE/ MONITORING WELL LOCATION
- EXP BOREHOLE LOCATION (MARCH/JUNE 2015)
- EXP BOREHOLE / MONITORING WELL LOCATION (MARCH/JUNE 2015)
- EXP SOIL / SUB-SLAB VAPOUR PORT LOCATION
- EXP BOREHOLE LOCATION (OCTOBER 2016)
- EXP BOREHOLE LOCATION (SEPTEMBER 2017)
- APPROXIMATE LOCATION OF FORMER UST
- NO IMPACT DETECTED
- IMPACT DETECTED

TITLE AND LOCATION:

CONCENTRATIONS OF CHLORINATED VOCs IN SOIL VAPOUR

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT UPDATE
1509-1531 MERIVALE ROAD,
OTTAWA, ONTARIO

PROJECT NO.:	DWN.:
OTT-00224605-D0	DP
SCALE: AS NOTED	CK: MM
DATE: APRIL 2020	FIG. NO.: 26

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Tables

TABLE 1 - Areas of Potential Environmental Concern

OTT-00224605-D0 - Phase Two Environmental Site Assessment Update

1509-1531 Merivale Road, Ottawa, Ontario

Area of Potential Environmental Concern (APEC)[1]	Location of APEC on Phase One Property	Potentially Contaminating Activity (PCA)[2]	Location of PCA (on-Site or off-Site)	Contaminants of Potential Concern[3]	Media Potentially Impacted (Groundwater, soil and/or sediment)
1: Dry cleaners	North and central portions of the Site	#37: Potential Operation of Dry Cleaning Equipment (where chemicals are used)	on-Site	VOCs	Soil + Groundwater
2: Former heating oil UST	Central/ east portion of the Site	#28: Gasoline and Associated Products Storage in Fixed Tanks	on-Site	PHCs, BTEX	Soil + Groundwater
3. Former backfill of UST excavation	Southeastern portion of the Site (area of UST excavation)	#30: Importation of Fill Material of Unknown Quality	on-Site	Metals	Soil
4. Former gasoline retail outlet and UST	North portion of the Site	#28: Gasoline and Associated Products Storage in Fixed Tanks	1507 Merivale Road	PHCs, BTEX	Soil + Groundwater
5: Automobile service station	North portion of the Site	#27: Garages and Maintenance and Repair of Railcars, Marine Vehicles and Aviation Vehicles	1507 Merivale Road	PHCs, BTEX, VOCs and metals	Groundwater
6: Former gasoline retail outlet and UST	South portion of the Site	#28: Gasoline and Associated Products Storage in Fixed Tanks	1533 Merivale Road	PHCs, BTEX, VOCs and metals	Groundwater
7: Oil changing facility	South portion of the Site	#27: Garages and Maintenance and Repair of Railcars, Marine Vehicles and Aviation Vehicles	1533 Merivale Road	PHCs, BTEX, VOCs and metals	Groundwater
8: Gasoline station	South portion of the Site	#28: Gasoline and Associated Products Storage in Fixed Tanks	1537 Merivale Road	PHCs, BTEX	Groundwater
9: Gasoline spill	South portion of the Site	#Other: Spills (70 L gasoline spill)	1537 Merivale Road	PHCs, BTEX	Groundwater
10: Gasoline station	South portion of the Site	#28: Gasoline and Associated Products Storage in Fixed Tanks	1543 Merivale Road	PHCs, BTEX	Groundwater
11: Former dry cleaners	South portion of the Site	#37: Potential Operation of Dry Cleaning Equipment (where chemicals are used)	1541 Merivale Road	VOCs	Groundwater
12: Gasoline station	South portion of the Site	#28: Gasoline and Associated Products Storage in Fixed Tanks	1545 Merivale Road	PHCs, BTEX	Groundwater
13: Gasoline spill	South portion of the Site	#Other: Spills (250 L furnace oil spill)	1545 Merivale Road	PHCs, BTEX	Groundwater
14: Gasoline station	South portion of the Site	#28: Gasoline and Associated Products Storage in Fixed Tanks	1548 Merivale Road	PHCs, BTEX	Groundwater

Notes:

Volatile Organic Compounds (VOCs); Petroleum Hydrocarbons (PHCs); BTEX (benzene, toluene, ethylbenzene, xylenes)

1. Area of Potential Enviornmental Concern means the area on, in or under a phase one study area where one or more contaminants are potentially present, as determined through the PI ESA, including through,
(a) identification of post or present uses on, in or under the phase one property, and
(b) identification of potentially contaminating activities.

2. Potentially contaminating activity means a use or activity set out in Column A of Table 2 of Schedule D that is occuring or has occurred in a phase one study area

3. When completing this column, identify all contaminants of potential concern using the Method Groups as identified in the "Protocol for in the Assessment of Properties under Part XV.1 of the Environmental Protection Act, March 9, 2004, amended as of July 1, 2011, as specified below:

ABNs	PCBs	Metals	Electrical Conductivity
CPs	PAHs	As, Sb, Se	Cr (VI)
1,4- Dioxane	THMs	Na	Hg
Dioxins/Furans, PCDDs/PCDFs	VOCs	B-HWS	Methyl Mercury
Ocs	BTEX	Cl-	high pH
PHCs	Ca, Mg	CN-	low pH

4. When submitting a record of site condition for filing, a copy of this table must be attached

en français. Pour obtenir de l'aide en francais, veuillez communiquer avec le ministère de l'Environnement au 1-800-461-6290

TABLE 2 - Borehole Log Information

OTT-00224605-D0 - Phase Two Environmental Site Assessment Update

1509-1531 Merivale Road, Ottawa, Ontario

Location ID	Ground Elevation	Depth of BH	Bottom Elevation	Date Drilled	Drilling Contractor
BH/MW301	95.70	4.58	91.12	6-Sep-17	Strata Drilling
BH/MW302	95.25	3.66	91.59	6-Sep-17	Strata Drilling
BH/MW303	95.42	3.66	91.76	6-Sep-17	Strata Drilling
BH/MW304	95.70	4.58	91.12	6-Sep-17	Strata Drilling
BH/MW305	95.70	4.58	91.12	6-Sep-17	Strata Drilling
BH/MW306	95.70	4.58	91.12	7-Sep-17	Strata Drilling
BH/MW307	95.38	4.57	90.81	7-Sep-17	Strata Drilling
BH/MW308	95.35	4.57	90.78	6-Sep-17	Strata Drilling
BH/MW309	95.43	4.57	90.86	6-Sep-17	Strata Drilling
BH/MW310	95.50	4.57	90.93	7-Sep-17	Strata Drilling
BH/MW311	95.70	3.66	92.04	7-Sep-17	Strata Drilling
BH/MW312	94.97	4.57	90.40	7-Sep-17	Strata Drilling

TABLE 3 - Summary of Soil Samples Submitted for Chemical Analysis

OTT-00224605-D0 - Phase Two Environmental Site Assessment Update

1509-1531 Merivale Road, Ottawa, Ontario

Soil Sample ID	Sample Depth Interval (m)	Rationale	Analysis
BH/MW301 S5	1.8 - 2.1	Site Characterization	PHCs, VOCs
BH/MW302 S2	0.8 - 1.2	Surface soil sample for metals	Metals and Inorganics
BH/MW302 S3	1.5 - 2.1	Site Characterization	PHCs, BTEX
BH/MW303 S2	0.7 - 1.4	Surface soil sample for metals	Metals and Inorganics
BH/MW303 S3	1.5 - 2.18	Site Characterization	PHCs, BTEX
BH/MW304 S3	1.2 - 1.7	Site Characterization	PHCs, VOCs
BH/MW305 S3	1.7 - 2.1	Site Characterization	PHCs, VOCs
BH/MW306 S3	1.2 - 1.4	Site Characterization	PHCs, VOCs
BH/MW307 S1	0.0 - 0.7	Salt parameter surface soil analysis	EC/SAR
BH/MW307 S3	1.5 - 2.1	Site Characterization	PHCs, VOCs
BH/MW308 S1	0.0 - 0.6	Salt parameter surface soil analysis	EC/SAR
BH/MW308 S3	1.5 - 2.3	Site Characterization	PHCs, VOCs
BH/MW309 S1	0.0 - 0.8	Salt parameter surface soil analysis	EC/SAR
BH/MW309 S2	0.7 - 1.1	Site Characterization	PHCs, VOCs
BH/MW310 S1	0.0 - 0.7	Salt parameter surface soil analysis	EC/SAR
BH/MW310 S3	1.5 - 2.1	Site Characterization	PHCs, VOCs
BH/MW311 S2	0.2 - 0.7	Salt parameter surface soil analysis	EC/SAR
BH/MW311 S3	1.5 - 2.0	Site Characterization	PHCs, BTEX
BH/MW312 S1	0.0 - 0.1	Salt parameter surface soil analysis	EC/SAR
QA/QC Samples:			
BH/MW321 S2	1.5 - 2.1	Field Duplicate	PHCs, VOCs

TABLE 4 - Monitoring Well Installation Details

OTT-00224605-D0 - Phase Two Environmental Site Assessment Update

1509-1531 Merivale Road, Ottawa, Ontario

Location ID	Ground Elevation (m)	Top of Pipe Elevation (m)	Measured Depth of Top of Screen (m bgs)	Measured Depth of MW (m bgs)	Screen Length (m)	Elevation of Top of Screen (Measured)	Elevation of Bottom of Screen (Measured)	Geologic Units Intercepted by Well Screen	Well Condition
BH/MW301	95.70	95.58	3.10	4.60	1.5	92.60	91.10	Bedrock	Intact
BH/MW302	95.25	95.13	1.20	3.70	2.5	94.05	91.55	Fill/Bedrock	Intact
BH/MW303	95.42	95.37	1.20	3.70	2.5	94.22	91.72	Fill/Bedrock	Intact
BH/MW304	95.70	95.65	2.70	4.70	2.0	93.00	91.00	Bedrock	Intact
BH/MW305	95.70	95.65	3.10	4.60	1.5	92.60	91.10	Bedrock	Intact
BH/MW306	95.70	95.59	3.10	4.60	1.5	92.60	91.10	Bedrock	Intact
BH/MW307	95.38	95.27	1.50	4.60	3.1	93.88	90.78	Overburden/ Bedrock	Intact
BH/MW308	95.35	95.20	1.50	4.60	3.1	93.85	90.75	Overbuden/ Bedrock	Intact
BH/MW309	95.43	95.33	1.50	4.60	3.1	93.93	90.83	Bedrock	Intact
BH/MW310	95.50	95.39	1.50	4.60	3.1	94.00	90.90	Overbuden/ Bedrock	Intact
BH/MW311	95.70	95.59	1.20	3.70	2.5	94.50	92.00	Overbuden/ Bedrock	Intact
BH/MW312	94.97	94.84	1.50	4.60	3.1	93.47	90.37	Bedrock	Intact

TABLE 5 - Summary of Groundwater Samples Submitted for Chemical Analysis

OTT-00224605-D0 - Phase Two Environmental Site Assessment Update

1509-1531 Merivale Road, Ottawa, Ontario

GW Sample ID	Sampling Date	Rationale	Analysis
BH/MW15-1	14-Sep-17	Site characterization	PHCs + BTEX, VOCs
BH/MW15-5	14-Sep-17	Site characterization	VOCs
	26-Jan-18	Confirmatory sample	VOCs
BH/MW15-6	15-Sep-17	Site characterization	VOCs
BH/MW15-7	14-Sep-17	Site characterization	VOCs
BH/MW15-8	14-Sep-17	Site characterization	VOCs
BH/MW15-9	14-Sep-17	Site characterization	VOCs
BH/MW15-10	15-Sep-17	Site characterization	PHCs + BTEX, VOCs
BH/MW15-11	18-Sep-17	Site characterization	VOCs
BH/MW206	14-Sep-17	Site characterization	PHCs + BTEX, VOCs
BH/MW207	14-Sep-17	Site characterization	PHCs + BTEX, VOCs
BH/MW208	1-Jun-18	Site characterization	Chloride
	6-Jun-18	Confirmatory sample	Chloride
BH/MW301	15-Sep-17	Site characterization	PHCs + BTEX, VOCs
BH/MW302	14-Sep-17	Site characterization	PHCs + BTEX
BH/MW303	14-Sep-17	Site characterization	PHCs + BTEX
BH/MW304	15-Sep-17	Site characterization	PHCs + BTEX, VOCs
BH/MW305	15-Sep-17	Site characterization	PHCs + BTEX, VOCs
BH/MW306	18-Sep-17	Site characterization	VOCs
BH/MW307	15-Sep-17	Site characterization	VOCs, Chloride
	29-Nov-17	Site characterization	Sodium, lead
BH/MW308	15-Sep-17	Site characterization	VOCs
	29-Nov-17	Site characterization	Sodium, lead
BH/MW309	15-Sep-17	Site characterization	VOCs
	29-Nov-17	Site characterization	Sodium
BH/MW310	15-Sep-17	Site characterization	PHCs + BTEX, VOCs
BH/MW311	15-Sep-17	Site characterization	PHCs + BTEX, VOCs
	29-Nov-17	Site characterization	1,3,5-Trimethylbenzene, sodium, lead
BH/MW312	15-Sep-17	Site characterization	BTEX
QA/QC Samples:			
MW18-1	26-Jan-18	QA/QC Purposes	VOCs
MW313	15-Sep-17	QA/QC Purposes	PHCs + BTEX, VOCs, chloride
MW222	15-Sep-17	QA/QC Purposes	Chloride
	6-Jun-18	QA/QC Purposes	Chloride

Appendix A – Sample and Analysis Plan

Phase Two ESA 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 Assessment (ESA) Update work for the property located at 1509 – 1531 Merivale Road in Ottawa, Ontario (hereinafter referred to as the 'Site'). The Phase Two ESA Update will be conducted to provide further characterization of the Site subsurface conditions and address the Areas of Potential Environmental Concerns (APECs) outlined in EXP March 2020 Phase One ESA Update to the subsequent filing of a Record of Site Condition (RSC) on the Ontario Ministry of the Environment, Conservation and Parks (MECP) Brownfields Environmental Site Registry, which might be required. 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 Update.

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.

2. Field Sampling Program

The field sampling program was developed to provide for the collection of samples of the surficial and subsurface soil materials for chemical analysis of petroleum hydrocarbons (PHCs), benzene, toluene, ethylbenzene and xylenes (collectively known as 'BTEX'), volatile organic compounds (VOCs), metals and select inorganic parameters in soil and groundwater. The soil sampling media is to consist of the surface soils and upper overburden materials. The soil sampling will be location-specific to assess for the potential presence of PHCs, BTEX, VOCs, and metals / select inorganics based on the identification of areas of potential environmental concern (APECs). Vapour readings will also be collected in the field to determine samples to be submitted for BTEX and PHC F1-F2 analysis. The soil sample intervals will extend from the surface up to a maximum depth of approximately 4.6 meters (m) below grade surface (bgs).

The groundwater sampling will be location-specific to assess for the potential presence of PHCs, BTEX, VOCs, and metals / select inorganics based on the identification of APECs. The monitoring well network will comprise of eight (8) additional monitoring wells.

Vertical control of the boreholes and monitoring wells will be obtained through the completion of an elevation survey with reference to a local structure with a known geodetic elevation. Groundwater flow and direction in the water table aquifer will also be determined through groundwater level measurements and the elevations established from 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;
- Monitoring Well Development;
- Groundwater Level Measurements;
- Elevation Survey;
- Soil vapour sampling; 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 twelve (12) boreholes were advanced at the Site by EXP during this Phase Two ESA Update investigation, up to a maximum depth of approximately ~4.6 m below grade, to provide for the collection of samples of the surficial and overburden materials beneath the Site. The borehole locations will be selected to determine the presence or absence of impacts in the soils and the upper overburden groundwater and to address the APECs outlined in EXPs March 2020 Phase One ESA Update.

Prior to borehole drilling, utility clearances will be obtained from public and private locators, as required. If any uncertainty regarding the location of a buried utility at a borehole location is encountered, hand augering or digging will be performed beforehand to confirm the location of the utility.

Where there is overlying asphalt or concrete, the overlying material will be mechanically cored to provide access to the underlying soil materials. The borehole drilling program will be conducted by a licensed driller under the oversight of EXP field staff. Auger flights 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, 61 cm long, split spoons and hollow stem augers or a 5 cm diameter, 1.5 m long, duel tube sampling system with interior dedicated vinyl sampling tubes. Upon retrieval from the boreholes, the split spoons or vinyl sampling tubes 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. Soil stratigraphy encountered in the boreholes will be texturally, visually and olfactory classified in the field and in the laboratory. Soil samples will be logged for colour, grain size, moisture content, density, structures, texture, staining, and field vapour readings. A Photo-ionization Detector (PID) or GastechtorTM will be utilized to screen the soil samples for Total Organic Vapour (TOV). Representative worst-case soil samples from each borehole will be collected and submitted to a certified laboratory for analysis based on TOV readings, sample depth, visual and/or olfactory field observations.

Recommended volumes of soil samples selected for chemical analysis will be collected into pre-cleaned laboratory-supplied glass sample jars/vials identified for the specified analytical test group. Samples intended for PHC/BTEX and VOCs will be collected using a laboratory-supplied soil core sampler, placed into the vials containing methanol for preservation purposes and sealed using Teflon lined septa lids. The samples will be placed into clean insulated coolers chilled with ice for storage and transport. 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 contractual laboratory within analytical test group holding times under Chain of Custody protocols. New disposable chemical resistant gloves will be used for each soil core to prevent sample cross-contamination.

3.3 Monitoring Well Installation

A total of eight (8) boreholes were instrumented as groundwater monitoring wells installed with 1.5 m long screens intercepting the native overburden material, where the shallow water table aquifer is expected, extending to depths of approximately 4.6 m below grade. 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 screen 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 screen will be backfilled with silica sand, to an average height of 0.6 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 well will be completed with flush-mounted protective steel casings cemented into place.

3.4 Monitoring Well Development

The newly installed monitoring wells will be developed to remove fine sediment particles potentially lodged in the sand pack and well screen to enhance hydraulic communication with the surrounding formation waters. The monitoring wells will be developed using a dedicated low-density polyethylene (LDPE) tubing, equipped with an inertial foot valve to disturb the water column. The wells will be developed until approximately 3 to 5 well volumes of water will be removed and/or until purged dry. 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 measurement will be recorded for the newly installed monitoring well to determine the depth of the water table aquifer beneath the Site. The water level will be measured with respect to the top of the PVC riser pipe by means of an electronic water level meter. The water levels will be recorded on water level log sheets or in a bound field notebook. 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 the newly installed monitoring well location and boreholes. The top of the PVC riser pipe of the monitoring well and ground surface elevation of the monitoring well and borehole locations will be surveyed against an geodetic benchmark, or if unavailable, against a suitable arbitrary benchmark. Elevations measured against a geodetic/arbitrary benchmark will be recorded as meters above mean sea level (m AMSL). The elevation survey will be accurate to within ± 0.3 cm.

3.7 Field Measurements of Water Quality Parameters

Prior to collecting the groundwater sample, field measurements of water quality parameters will be recorded from the monitoring wells utilizing low-flow purging and sampling methodologies. Groundwater will be purged from the monitoring wells using a peristaltic pump and dedicated LDPE tubing. Field measurements of dissolved oxygen concentration, electrical conductivity, oxidation-reduction potential, pH, temperature, turbidity and water levels will be recorded in three (3) minute intervals during the purging activities using a pre-calibrated multi probe water quality meter, a turbidity meter and a water level meter. Generally well purging will continued until the purged water has chemically stabilized as indicated by field parameter measurements and the well head drawdown is maintained within 10 cm for 3 consecutive readings. In the event that the parameters do not stabilize or the well head drawdown is too significant, the groundwater is to recover to approximately 75% of static levels before sampling.

The multi-meter electrodes will be calibrated prior to receipt of the meter by the supplier using in-house pH and conductivity reference standards. All collected purged water will be stored on-Site in labeled, sealed containers. Equipment used during groundwater monitoring will be thoroughly cleaned and decontaminated between wells.

3.8 Groundwater Sampling

Upon completion the field measurements of water quality parameters, groundwater samples will be collected for chemical analysis using the peristaltic pump and dedicated LDPE tubing. 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. Samples for BTEX analysis will be collected in triplicate vials prepared with concentrated hydrochloric acid or an acceptable substitute as a preservative. Each vial will be inverted and inspected for gas bubbles prior to being placed in the cooler to ensure that no head-space is present.

The groundwater sample will be assigned a unique identification number, and the date, time, project number, company name, location and requested analyses will be documented in a bound hard cover notebook. The sample will be submitted to the contractual laboratory within analytical test group holding times under chain of custody protocols. New disposable chemical resistant gloves will be used for each sampling location to prevent sample cross-contamination.

3.9 Soil Vapour Sampling

During EXP's previous Site investigation (2016 Phase Two ESA), soil gas monitors were installed at five (5) locations along the northeast property line and sub-slab soil vapour ports were installed at four (4) locations within the on-Site building. The top of the screen of the soil gas monitors were installed at a minimum depth of 1.0 m from ground surface and the bottom of the screens were installed at least 0.3 m above the water table. The sub-slab soil vapour ports were installed just below the concrete slab (<100 mm) within the building.

To determine the presence and concentrations of the relevant VOC and PHC parameters beneath the floor slab of the building and along the northeast property line, an additional round of soil gas samples are to be collected over approximately a 10 minute period using 2-litre capacity evacuated Summa™ canisters prepared and certified by Bureau Veritas Laboratories, based on USEPA method TO-15. The canisters were equipped with laboratory calibrated mass flow controllers adjusted for a 24 hour sampling period. Each canister and flow controller was assigned a unique sample identification number.

Canister pressures were measured prior to and upon completion of the sampling period using laboratory supplied pressure gauges to ensure that sufficient sample volumes had been collected for chemical analysis. Canister pressures were also measured by the laboratory prior to analysis as a quality assurance measure to check for potential leakage during handling and transport. Furthermore, canister pressures were routinely monitored throughout the sampling period using the pressure gauges attached to the flow controllers.

Sub-slab soil vapour samples were collected from the dry cleaner unit (1525A Merivale Road), the vacant unit in the north part of the building (1517 Merivale Road), The Noodle House (1519 Merivale road), and Odds and Sods (1527 Merivale Road).

The canisters were submitted under Chain of Custody protocol to Bureau Veritas Laboratories (formerly Maxxam Analytics) for analysis of PHC F1, PHC F2, PCE, TCE, 1,1-DCE, cis-1,2-DCE, trans-1,2-DCE, vinyl chloride, as listed in Ontario Regulation 153/04 (as amended). Bureau Veritas is accredited under the Canadian Association for Laboratory Accreditation (CALA). The air quality samples were analyzed by Bureau Veritas using USEPA method EPA TO-15 following method specific QA/QC protocols.

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 are 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 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 was followed during field sampling where non-dedicated sampling equipment is used to prevent sample cross contamination. For the borehole drilling and soil sampling, soil sampling devices are cleaned/decontaminated between sampling intervals and auger flights between borehole locations 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 are decontaminated between monitoring well locations during well development, and purging activities. For hydraulic conductivity tests, the electronic water level meters are decontaminated between sampling locations. All decontamination fluids are collected and stored in sealed, labeled containers.

4.2 Equipment Calibration

All equipment requiring calibration was 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 is checked in the field using analytical grade reagents and re-calibrated as required. For multiple day sampling events, equipment calibration is 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 were 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 control samples were collected to evaluate the accuracy and reproducibility of the field sampling procedures. For groundwater sampling, one (1) field duplicate was collected for every ten (10) samples submitted for chemical analysis. For multiple day sampling events, at least one (1) field duplicate soil and groundwater sample were submitted for chemical analysis. The field duplicate samples were assessed by calculating the relative percent difference and comparing to the analytical test group specific acceptance criteria.

Appendix B – Survey Plan

Plan of Survey of

PART OF LOTS 34, 35 And 36
And
PART OF BLOCK A
REGISTERED PLAN 313132
CITY OF OTTAWA

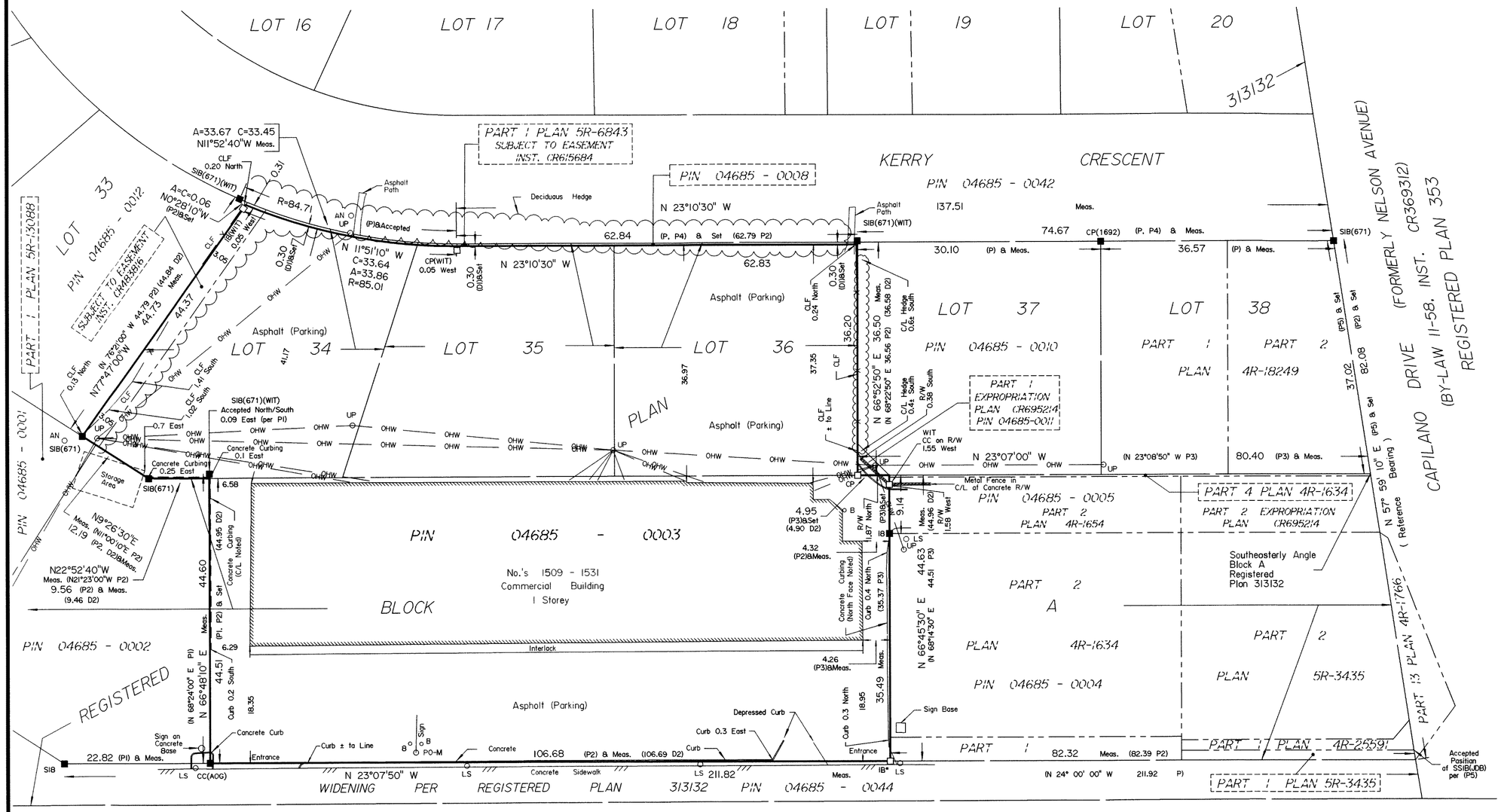
Surveyed by Annis, O'Sullivan, Vollebekk Ltd.

Scale 1 : 500

20 15 10 5 0 10 20 Metres

Metric

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



Surveyor's Certificate

I CERTIFY THAT :

1. This survey and plan are correct and in accordance with the Surveys Act, the Surveyors Act, the Land Titles Act and the regulations made under them.
2. The survey was completed on the 10th day of August, 2016.

August 16/2016 Edward M. Lancaster

Date

Edward M. Lancaster
Ontario Land Surveyor

Notes & Legend

—□—	Denotes	Survey Monument Planted
—■—	•	Survey Monument Found
SIB	•	Standard Iron Bar
SSIB	•	Short Standard Iron Bar
IB	•	Iron Bar
IBØ	•	Round Iron Bar
CC	•	Cut Cross
CP	•	Concrete Pin
*	•	Survey Monument (0.3 long)
(WIT)	•	Witness
(AOG)	•	Annis, O'Sullivan, Vollebekk Ltd.
Meas.	•	Measured
Acc.	•	Accepted
UP	•	Utility Pole
AN	•	Anchor
— ohw —	•	Overhead Wires
BF	•	Board Fence
CLF	•	Chain Link Fence
C/L	•	Centreline
R/W	•	Retaining Wall
(P)	•	Registered Plan 313132
(P1)	•	Plan 5R-13088
(P2)	•	(671) Plan, November 18, 1982
(P3)	•	Plan 4R-1654
(P4)	•	Plan 5R-6843
(P5)	•	Plan 4R-25591
(D1)	•	Inst. CR615684
(D2)	•	Inst. CR609052

Bearings are grid, derived from part of the northerly limit of Capilano Drive, shown to be N 57°59'10" E on Plan 4R-25591.

Site Area = 8897.0 Square Metres

ASSOCIATION OF ONTARIO LAND SURVEYORS
PLAN SUBMISSION FORM
1982288

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

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Job No. 17208-16 Binavince Pt Blk A RP 313132 POS F N

Y:\JOBS\17200-17299\17208-16 Binavince Pt Blk A RP 313132 POS F.dwg, 16/08/2016 4:51:01 PM

Appendix C – Borehole Logs

Explanation of Terms Used on Borehole Records

SOIL DESCRIPTION

Terminology describing common soil genesis:

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

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

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

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

Terminology describing soil structure:

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

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

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

Fissured: material breaks along plane of fracture.

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

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

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

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

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

Homogeneous: same color and appearance throughout.

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

Uniformly Graded: predominantly on grain size.

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

ISSMFE SOIL CLASSIFICATION

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

0.002	0.006	0.02	0.06	0.2	0.6	2.0	6.0	20	60	200

EQUIVALENT GRAIN DIAMETER IN MILLIMETRES

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

UNIFIED SOIL CLASSIFICATION

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

Table a: Percent or Proportion of Soil, Pp

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

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

Table b: Apparent Density of Cohesionless Soil

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

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

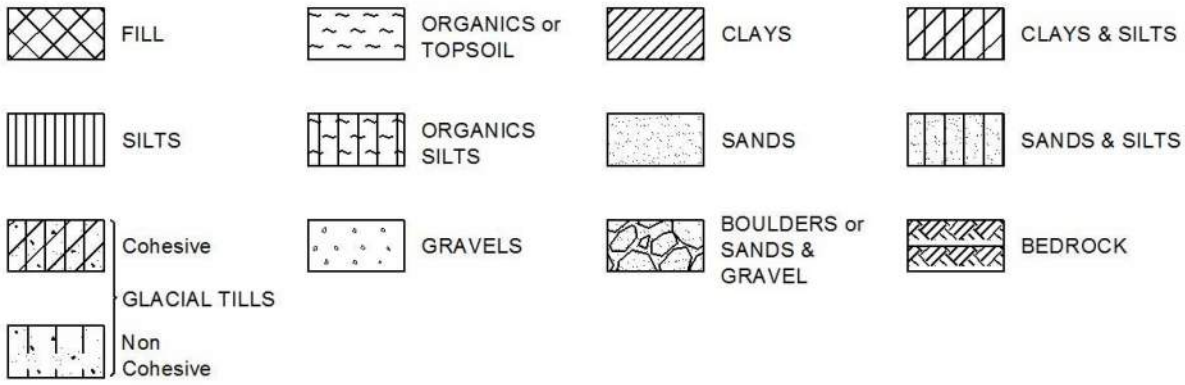
Table c: Consistency of Cohesive Soil

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

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

STRATA PLOT

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



WATER LEVEL MEASUREMENT

Log of Borehole MW15-1

Project No: OTT-00224605-C0

Project: Environmental Drilling and Groundwater Monitoring

Location: 1509 - 1531 Merivale Road, Ottawa

Figure No. 3

Page. 1 of 1

Date Drilled: 3/31/15

Drill Type: Geoprobe

Datum: Geodetic

Logged by: MAD Checked by: MGM

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

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

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic m	Depth
		ASPHALT ~ 50 mm	95.47	0
		SAND AND GRAVEL	95.4	
		Disturbed native soil, grey and brown, moist, no odour	94.8	
		TILL		1
		Gravelly sand, some silt, brown, moist to wet, no odour		
		Refusal at 2.3 m Depth on Bedrock	93.49	2
		SHALE BEDROCK	93.2	
		Dark grey cuttings, brown water in air flushing medium, no odour		3
				4
		Borehole Terminated at 4.6 m Depth	90.9	

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

SAMPLES	Natural Unit Wt. kN/m³
S1	
S2	
S3	

NOTES.
1. Borehole data requires interpretation by exp before use by others
2. A flushmount monitoring well with a 51 mm slotted standpipe was installed in the borehole upon completion
3. Field work supervised by an exp representative
4. See Notes on Sample Descriptions
5. This Figure is to read with exp Services Inc report OTT-00224605-C0

WATER LEVEL RECORDS

Elapsed Time	Water Level (m)	Hole Open To (m)
10 days	1.3	-
April 21, 2016	1.6	

CORE DRILLING RECORD

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

LOG OF BOREHOLE LOGS OF BOREHOLES.GPJ TROW OTTAWA.GDT 10/7/16

Log of Borehole MW15-2

Project No: OTT-00224605-C0

Project: Environmental Drilling and Groundwater Monitoring

Location: 1509 - 1531 Merivale Road, Ottawa

Figure No. 4

Page. 1 of 1

Date Drilled: 3/31/15

Drill Type: Geoprobe

Datum: Geodetic

Logged by: MAD Checked by: MGM

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

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

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic m	Depth
		ASPHALT ~ 50 mm	94.99	0
		SAND AND GRAVEL	94.9	
		Disturbed native soil, grey and brown, moist, no odour	94.7	
		TILL		
		Gravelly sand, some silt, brown, moist, no odour		1
			93.56	
		Refusal at 2.3 m Depth on Bedrock		2
			92.7	
		SHALE BEDROCK		
		Dark grey cuttings, brown water in air flushing medium, no odour		3
				4
			90.4	
		Borehole Terminated at 4.6 m Depth		

Standard Penetration Test N Value: 20 40 60 80

Shear Strength kPa: 50 100 150 200

Combustible Vapour Reading (ppm): 250 500 750

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

SAMPLES	Natural Unit Wt. kN/m³
S1	
S2	
S3	

NOTES

1. Borehole data requires interpretation by exp. before use by others
2. A flushmount monitoring well with a 51 mm slotted standpipe was installed in the borehole upon completion.
3. Field work supervised by an exp representative.
4. See Notes on Sample Descriptions
5. This Figure is to read with exp Services Inc. report OTT-00224605-C0

WATER LEVEL RECORDS

Elapsed Time	Water Level (m)	Hole Open To (m)
10 days	0.8	-
April 21, 2016	1.1	

CORE DRILLING RECORD

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

LOG OF BOREHOLE LOGS OF BOREHOLES.GPJ TROW OTTAWA.GDT 10/7/16

Log of Borehole MW15-3

Project No: OTT-00224605-C0

Project: Environmental Drilling and Groundwater Monitoring

Location: 1509 - 1531 Merivale Road, Ottawa

Figure No. 5

Page. 1 of 1

Date Drilled: 3/31/15

Drill Type: Geoprobe

Datum: Geodetic

Logged by: MAD Checked by: MGM

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

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

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic m	Depth
		ASPHALT ~ 60 mm	95.36	0
		SAND AND GRAVEL	95.3	
		Disturbed native soil, with some gravel, grey and brown, moist, no odour		
			94.0	1
		TILL		
		Gravelly sand, some silt, some shale cobbles present, brown, moist, no odour		
		Refusal at 2.4 m Depth on Bedrock	93.0	2
		SHALE BEDROCK		
		Dark grey cuttings, brown water in air flushing medium, no odour	92.59	3
				4
				5
				6
				7
				8
			86.2	9
		Borehole Terminated at 9.2 m Depth		

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

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

SAMPLES	Natural Unit Wt. kN/m³
S1	
S2	
S3	
S4	

LOG OF BOREHOLE LOGS OF BOREHOLES.GPJ TROW OTTAWA.GDT 10/7/16

NOTES:
1. Borehole data requires interpretation by exp. before use by others
2. A flushmount monitoring well with a 19 mm slotted standpipe was installed in the borehole upon completion.
3. Field work supervised by an exp representative.
4 See Notes on Sample Descriptions
5. This Figure is to read with exp. Services Inc. report OTT-00224605-C0

WATER LEVEL RECORDS

Elapsed Time	Water Level (m)	Hole Open To (m)
10 days	2.1	-
April 21, 2016	2.5	

CORE DRILLING RECORD

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

Log of Borehole MW15-4

Project No: OTT-00224605-C0

Project: Environmental Drilling and Groundwater Monitoring

Location: 1509 - 1531 Merivale Road, Ottawa

Figure No. 6

Page. 1 of 1

Date Drilled: 3/31/15

Drill Type: Geoprobe

Datum: Geodetic

Logged by: MAD Checked by: MGM

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

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

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic m	Depth
		ASPHALT ~ 60 mm	95.37	0
		SAND AND GRAVEL Imported sand and gravel from a commercial pit, with silt and clay, brown to dark brown then grey, moist, no odour	95.3	
			93.63	2
		Refusal at 2.4 m Depth on Bedrock		
		SHALE BEDROCK Dark grey cuttings, brown water in air flushing medium, no odour	93.0	
			90.8	4
		Borehole Terminated at 4.6 m Depth		

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

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

SAMPLES	Natural Unit Wt. kN/m³
S1	
S2	
S3	

NOTES:
1. Borehole data requires interpretation by exp. before use by others
2. A flushmount monitoring well with a 51 mm slotted standpipe was installed in the borehole upon completion.
3. Field work supervised by an exp representative
4. See Notes on Sample Descriptions
5. This Figure is to read with exp. Services Inc. report OTT-00224605-C0

WATER LEVEL RECORDS

Elapsed Time	Water Level (m)	Hole Open To (m)
10 days	1.2	-
April 21, 2016	1.4	

CORE DRILLING RECORD

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

LOG OF BOREHOLE LOGS OF BOREHOLES.GPJ TROW OTTAWA.GDT 10/7/16

Log of Borehole MW15-5

Project No: OTT-00224605-C0

Project: Environmental Drilling and Groundwater Monitoring

Location: 1509 - 1531 Merivale Road, Ottawa

Figure No. 7

Page. 1 of 1

Date Drilled: 4/30/15

Drill Type: Geoprobe

Datum: Geodetic

Logged by: MAD Checked by: MGM

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

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

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic m	Depth
		ASPHALT ~ 60 mm	95.36	0
		SAND AND GRAVEL	95.3	
		Disturbed native soil, grey and brown, moist, no odour		
		(Inferred from MW15-1)	94.7	
		TILL		1
		Gravelly sand, some silt, brown, moist turning moist/wet, no odour		
		(Inferred from MW15-1)		
			93.24	2
		SHALE BEDROCK	93.0	
		Dark grey cuttings, brown water in air flushing medium, no odour		3
				4
			91.1	
		Borehole Terminated at 4.3 m Depth		
		Note: stratigraphy inferred from MW15-1		

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

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

SAMPLES

Natural Unit Wt. kN/m³

NOTES:
1. Borehole data requires interpretation by exp. before use by others
2. A flushmount monitoring well with a 51 mm slotted standpipe was installed in the borehole upon completion.
3. Field work supervised by an exp representative.
4. See Notes on Sample Descriptions
5. This Figure is to read with exp. Services Inc. report OTT-00224605-C0

WATER LEVEL RECORDS

Elapsed Time	Water Level (m)	Hole Open To (m)
8 days	2.1	-
April 21, 2016	1.9	

CORE DRILLING RECORD

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

LOG OF BOREHOLE LOGS OF BOREHOLES.GPJ TROW OTTAWA.GDT 10/7/16

Log of Borehole MW15-6

Project No: OTT-00224605-C0

Project: Environmental Drilling and Groundwater Monitoring

Location: 1509 - 1531 Merivale Road, Ottawa

Figure No. 8

Page. 1 of 1

Date Drilled: 4/30/15

Drill Type: Geoprobe

Datum: Geodetic

Logged by: MAD Checked by: MGM

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

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic m	Depth
		ASPHALT ~ 60 mm	95.11 / 95.0	0
		SAND AND GRAVEL Disturbed native soil, grey and brown, moist, no odour *(Inferred from MW15-1)*	94.4	
		TILL Gravelly sand, some silt, brown, moist turning moist/wet, no odour *(Inferred from MW15-1)*	93.43	1
		SHALE BEDROCK Dark grey cuttings, brown water in air flushing medium, no odour	92.7	2
			90.9	3
		Borehole Terminated at 4.2 m Depth		4
		Note: stratigraphy inferred from MW15-1		

Standard Penetration Test N Value: 20 40 60 80

Shear Strength: 50 100 150 200 kPa

Combustible Vapour Reading (ppm): 250 500 750

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

SAMPLES

Natural Unit Wt. kN/m³

NOTES:
1. Borehole data requires interpretation by exp. before use by others
2. A flushmount monitoring well with a 51 mm slotted standpipe was installed in the borehole upon completion.
3. Field work supervised by an exp representative.
4. See Notes on Sample Descriptions
5. This Figure is to read with exp. Services Inc. report OTT-00224605-C0

WATER LEVEL RECORDS

Elapsed Time	Water Level (m)	Hole Open To (m)
8 days	1.7	-
April 21, 2016	1.3	

CORE DRILLING RECORD

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

LOG OF BOREHOLE LOGS OF BOREHOLES.GPJ TROW OTTAWA.GDT 10/7/16

Log of Borehole MW15-7

Project No: OTT-00224605-C0

Project: Environmental Drilling and Groundwater Monitoring

Location: 1509 - 1531 Merivale Road, Ottawa

Figure No. 9

Page. 1 of 1

Date Drilled: 6/26/15

Drill Type: Geoprobe

Datum: Geodetic

Logged by: DC Checked by: MGM

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

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

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic m	Depth
		ASPHALT ~ 40 mm	94.8 / 94.7	0
		FILL Sand and gravel, grey and brown, moist, no odour	94.4	
		TILL Brown, silty clay, some sand and gravel, moist, no odour	93.47	1
		SHALE BEDROCK Dark grey cuttings, brown water in air flushing medium, no odour	93.0	2
				3
				4
			90.2	
		Borehole Terminated at 4.57 m Depth		

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

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

SAMPLES

Natural Unit Wt. kN/m³

LOG OF BOREHOLE LOGS OF BOREHOLES.GPJ TROW OTTAWA.GDT 10/7/16

NOTES:
1. Borehole data requires interpretation by exp. before use by others
2. A flushmount monitoring well with a 51 mm slotted standpipe was installed in the borehole upon completion.
3. Field work supervised by an exp representative
4. See Notes on Sample Descriptions
5. This Figure is to read with exp Services Inc. report OTT-00224605-C0

WATER LEVEL RECORDS

Elapsed Time	Water Level (m)	Hole Open To (m)
11 days	1.3	
April 21, 2016	0.8	

CORE DRILLING RECORD

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

Log of Borehole MW15-8

Project No: OTT-00224605-C0

Project: Environmental Drilling and Groundwater Monitoring

Location: 1509 - 1531 Merivale Road, Ottawa

Figure No. 10

Page. 1 of 1

Date Drilled: 6/26/15

Drill Type: Geoprobe

Datum: Geodetic

Logged by: DC Checked by: MGM

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

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic m	Depth	Standard Penetration Test N Value / Shear Strength kPa (20 40 60 80 / 50 100 150 200)	Combustible Vapour Reading (ppm) 250 500 750 / Natural Moisture Content % Atterberg Limits (% Dry Weight) 20 40 60	SAMPLES	Natural Unit Wt. kN/m³
		ASPHALT ~ 40 mm	94.58	0				
		SAND AND GRAVEL	94.5					
		Disturbed native soil, brown, moist, no odour	94.4					
		TILL		1				
		Brown, silty clay, some sand and gravel, moist, no odour	93.4					
		SHALE BEDROCK	93.28					
		Dark grey cuttings, brown water in air flushing medium, no odour		2				
				3				
				4				
			90.0					
		Borehole Terminated at 4.57 m Depth						

LOG OF BOREHOLE LOGS OF BOREHOLES.GPJ TROW OTTAWA.GDT 10/7/16

NOTES:
1. Borehole data requires interpretation by exp. before use by others
2. A flushmount monitoring well with a 51 mm slotted standpipe was installed in the borehole upon completion.
3. Field work supervised by an exp representative.
4. See Notes on Sample Descriptions
5. This Figure is to read with exp. Services Inc. report OTT-00224605-C0

WATER LEVEL RECORDS

Elapsed Time	Water Level (m)	Hole Open To (m)
11 days	1.3	
April 21, 2016	1.0	

CORE DRILLING RECORD

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

Log of Borehole MW15-9

Project No: OTT-00224605-C0

Project: Environmental Drilling and Groundwater Monitoring

Location: 1509 - 1531 Merivale Road, Ottawa

Figure No. 11

Page. 1 of 1

Date Drilled: 6/26/15

Drill Type: Geoprobe

Datum: Geodetic

Logged by: DC Checked by: MGM

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

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic m	Depth
		ASPHALT ~ 40 mm	94.9	0
		SAND AND GRAVEL	94.8	
		Disturbed native soil, brown, moist, no odour	94.8	
		TILL		
		Brown, silty clay, some sand and gravel, moist, no odour	93.9	1
▼		**SHALE BEDROCK**		
		Dark grey cuttings, brown water in air flushing medium, no odour	93.21	2
				3
				4
			90.3	
		Borehole Terminated at 4.57 m Depth		

Standard Penetration Test N Value: 20 40 60 80

Shear Strength: 50 100 150 200 kPa

Combustible Vapour Reading (ppm): 250 500 750

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

SAMPLES

Natural Unit Wt. kN/m³

LOG OF BOREHOLE LOGS OF BOREHOLES.GPJ TROW OTTAWA.GDT 10/7/16

NOTES:
1. Borehole data requires interpretation by exp. before use by others
2. A flushmount monitoring well with a 51 mm slotted standpipe was installed in the borehole upon completion.
3. Field work supervised by an exp representative.
4. See Notes on Sample Descriptions
5. This Figure is to read with exp. Services Inc. report OTT-00224605-C0

WATER LEVEL RECORDS

Elapsed Time	Water Level (m)	Hole Open To (m)
11 days	1.7	
April 21, 2016	1.5	

CORE DRILLING RECORD

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

Log of Borehole MW15-10

Project No: OTT-00224605-C0

Project: Environmental Drilling and Groundwater Monitoring

Location: 1509 - 1531 Merivale Road, Ottawa

Figure No. 12

Page. 1 of 1

Date Drilled: 7/2/15

Drill Type: Manual Crew

Datum: Geodetic

Logged by: DC Checked by: MGM

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

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic m	Depth	Standard Penetration Test N Value / Shear Strength kPa	Combustible Vapour Reading (ppm) / Natural Moisture Content % / Atterberg Limits (% Dry Weight)	SAMPLES	Natural Unit Wt kN/m³
		CONCRETE SLAB ~ 100 mm	95.7	0	20 40 60 80 / 50 100 150 200	250 500 750 / 20 40 60		
		SAND AND GRAVEL	95.6					
		Disturbed native soil, brown, moist, no odour	95.1			0/1482	SS1	
		TILL		1		25/4913	SS2	
		Brown, silty clay, some sand and gravel, moist, no odour	94.1			25/1490	SS3	
		WEATHERED ROCK WITH TILL SEAMS						
		Dark grey cuttings, no odour	93.49	2				
		SHALE BEDROCK	92.9	3				
		Dark grey cuttings, no odour						
			91.9					
		Borehole Terminated at 3.8 m Depth						

NOTES:
1. Borehole data requires interpretation by exp. before use by others
2. A flushmount monitoring well with a 32 mm slotted standpipe was installed in the borehole upon completion.
3. Field work supervised by an exp representative.
4. See Notes on Sample Descriptions
5. This Figure is to read with exp. Services Inc. report OTT-00224605-C0

WATER LEVEL RECORDS

Elapsed Time	Water Level (m)	Hole Open To (m)
5 days	2.2	
April 21, 2016	1.8	

CORE DRILLING RECORD

Run No.	Depth (m)	% Rec.	RQD %
1	1.83 - 2.14	55	0
2	2.14 - 2.44	100	0
3	2.44 - 2.75	33	0
4	2.75 - 3.51	93	33
5	3.51 - 3.81	100	71

LOG OF BOREHOLE LOGS OF BOREHOLES.GPJ TROW OTTAWA.GDT 10/7/16

Log of Borehole MW15-11

Project No: OTT-00224605-C0

Project: Environmental Drilling and Groundwater Monitoring

Location: 1509 - 1531 Merivale Road, Ottawa

Figure No. 13

Page. 1 of 1

Date Drilled: 7/2/15

Drill Type: Manual Crew

Datum: Geodetic

Logged by: DC Checked by: MGM

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

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic m	Depth	Standard Penetration Test N Value (20 40 60 80) / Shear Strength kPa (50 100 150 200)	Combustible Vapour Reading (ppm) (250 500 750) / Natural Moisture Content % Atterberg Limits (% Dry Weight) (20 40 60)	SAMPLES	Natural Unit Wt. kN/m³
		CONCRETE SLAB - 100 mm	95.7	0				
		SAND AND GRAVEL	95.6					
		Disturbed native soil, brown, moist, no odour				20/1000	SS1	
			94.6	1		25/1823	SS2	
		TILL Brown, silty clay, some sand and gravel, moist, no odour	93.9					
		WEATHERED ROCK WITH TILL SEAMS Dark grey cuttings, no odour	93.31	2				
		SHALE BEDROCK Dark grey cuttings, no odour	93.0	3				
		Borehole Terminated at 3.7 m Depth	92.0					

NOTES:
1. Borehole data requires interpretation by exp before use by others
2. A flushmount monitoring well with a 32 mm slotted standpipe was installed in the borehole upon completion
3. Field work supervised by an exp representative
4. See Notes on Sample Descriptions
5. This Figure is to read with exp Services Inc report OTT-00224605-C0

WATER LEVEL RECORDS

Elapsed Time	Water Level (m)	Hole Open To (m)
completion April 21, 2016	2.1	-

CORE DRILLING RECORD

Run No.	Depth (m)	% Rec	RQD %
1	1.45 - 1.71	90	44
2	1.71 - 1.83	60	0
3	1.83 - 2.72	43	0
4	2.72 - 3.66	44	0

LOG OF BOREHOLE LOGS OF BOREHOLES.GPJ TROW OTTAWA.GDT 10/7/16

Log of Borehole BH201

Project No: OTT-00224605-C0

Project: Environmental Drilling and Groundwater Monitoring

Location: 1509 - 1531 Merivale Road, Ottawa

Figure No. 14

Page. 1 of 1

Date Drilled: April 14th, 2016

Drill Type: Geoprobe (GM100GT)

Datum: Geodetic

Logged by: MAD Checked by: MGM

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

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic m	Depth	Standard Penetration Test N Value (20 40 60 80) / Shear Strength kPa (50 100 150 200)	Combustible Vapour Reading (ppm) (250 500 750) / Natural Moisture Content % Atterberg Limits (% Dry Weight) (20 40 60)	SAMPLES	Natural Unit Wt. kN/m³
		ASPHALT ~ 50 mm	95.53 95.4	0				
		SAND AND GRAVEL Crushed limestone above fine sand, grey turning brown, moist, no odour	94.8			30 □	S1	
		SANDY SILT WITH ORGANICS Organic layer, roots present, dark brown, moist, no odour	94.2	1		20 □	S2	
		TILL Sand and gravel, shale gravel throughout, grey, wet turning moist, no odour	93.5			20 □	S3	
		Refusal at 2.0 m Depth, Borehole Terminated		2				

LOG OF BOREHOLE LOGS OF BOREHOLES.GPJ TROW OTTAWA.GDT 10/7/16

NOTES:
1. Borehole data requires interpretation by exp. before use by others
2. Borehole was backfilled with hole plug upon completion.
3. Field work supervised by an exp representative.
4. See Notes on Sample Descriptions
5. This Figure is to read with exp. Services Inc. report OTT-00224605-C0

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

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

Log of Borehole BH202

Project No: OTT-00224605-C0

Project: Environmental Drilling and Groundwater Monitoring

Location: 1509 - 1531 Merivale Road, Ottawa

Figure No. 15

Page. 1 of 1

Date Drilled: April 14th, 2016

Drill Type: Geoprobe (GM100GT)

Datum: Geodetic

Logged by: MAD Checked by: MGM

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

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic m	Depth	Standard Penetration Test N Value (20 40 60 80) / Shear Strength kPa (50 100 150 200)	Combustible Vapour Reading (ppm) (250 500 750) / Natural Moisture Content % Atterberg Limits (% Dry Weight) (20 40 60)	SAMPLES	Natural Unit Wt. kN/m³
		ASPHALT ~ 75 mm	95.98	0			S1	
		SAND AND GRAVEL Crushed limestone, grey, moist, no odour	95.9					
			95.1	1		35	S2	
		TILL Grey, sand and gravel, moist turning wet, no odour						
				2		20	S3	
			93.6					
		Refusal at 2.4 m Depth, Borehole Terminated						

NOTES:
1. Borehole data requires interpretation by exp before use by others
2. Borehole was backfilled with hole plug upon completion.
3. Field work supervised by an exp representative
4. See Notes on Sample Descriptions
5. This Figure Is to read with exp. Services Inc. report OTT-00224605-C0

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

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

LOG OF BOREHOLE LOGS OF BOREHOLES.GPJ TROW OTTAWA.GDT 10/7/16

Log of Borehole BH203

Project No: OTT-00224605-C0

Project: Environmental Drilling and Groundwater Monitoring

Location: 1509 - 1531 Merivale Road, Ottawa

Figure No. 16

Page. 1 of 1

Date Drilled: April 14th, 2016

Drill Type: Geoprobe (GM100GT)

Datum: Geodetic

Logged by: MAD Checked by: MGM

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

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic m	Depth	Standard Penetration Test N Value / Shear Strength kPa	Combustible Vapour Reading (ppm) / Natural Moisture Content % / Atterberg Limits (% Dry Weight)	SAMPLES	Natural Unit Wt. kN/m³
		ASPHALT ~ 75 mm	95.44	0	20 40 60 80 / 50 100 150 200	250 500 750 / 20 40 60		
		SAND AND GRAVEL Crushed limestone above fine sand, grey turning brown, moist, no odour	95.3			35	S1	
		TILL Sand and gravel, grey and brown, moist, no odour	94.7	1		20	S2	
						15	S3	
			93.3	2				
		Refusal at 2.1 m Depth, Borehole Terminated						

NOTES
1. Borehole data requires interpretation by exp before use by others
2. Borehole was backfilled with hole plug upon completion
3. Field work supervised by an exp representative
4. See Notes on Sample Descriptions
5. This Figure is to read with exp. Services Inc. report OTT-00224605-C0

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

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

LOG OF BOREHOLE LOGS OF BOREHOLES.GPJ TROW OTTAWA.GDT 10/7/16

Log of Borehole BH204

Project No: OTT-00224605-C0

Project: Environmental Drilling and Groundwater Monitoring

Location: 1509 - 1531 Merivale Road, Ottawa

Figure No. 17

Page. 1 of 1

Date Drilled: April 14th, 2016

Drill Type: Geoprobe (GM100GT)

Datum: Geodetic

Logged by: MAD Checked by: MGM

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

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

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic m	Depth m	Standard Penetration Test N Value / Shear Strength kPa	Combustible Vapour Reading (ppm) / Natural Moisture Content % / Atterberg Limits (% Dry Weight)	SAMPLES	Natural Unit Wt. kN/m³
		ASPHALT ~ 50 mm	95.38		20 40 60 80	250 500 750		
		SAND AND GRAVEL	95.3		Shear Strength 50 100 150 200 kPa	Natural Moisture Content % Atterberg Limits (% Dry Weight) 20 40 60		
		Disturbed native soil, grey/brown, moist, no odour				30 □	S1	
				1		30 □	S2	
			93.6					
		TILL				25 □	S3	
		Brown, sandy silt, with gravel, moist turning wet, no odour	93.0	2				
		Refusal at 2.4 m Depth, Borehole Terminated						

LOG OF BOREHOLE LOGS OF BOREHOLES.GPJ TROW OTTAWA.GDT 10/7/16

NOTES
1. Borehole data requires interpretation by exp before use by others
2. Borehole was backfilled with hole plug upon completion.
3. Field work supervised by an exp representative.
4. See Notes on Sample Descriptions
5. This Figure is to read with exp Services Inc report OTT-00224605-C0

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

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

Log of Borehole BH/MW205

Project No: OTT-00224605-C0

Project: Environmental Drilling and Groundwater Monitoring

Location: 1509 - 1531 Merivale Road, Ottawa

Figure No. 18

Page. 1 of 1

Date Drilled: April 13th, 2016

Drill Type: Geoprobe (GM100GT)

Datum: Geodetic

Logged by: MAD Checked by: MGM

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

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic m	Depth
		ASPHALT ~ 50 mm	95.24	0
		SAND AND GRAVEL	95.1	
		Disturbed native soil, grey and brown, moist, no odour		
		(Inferred from MW15-1)		1
			93.4	
		TILL		
		Gravelly sand, with silt, trace clay, brown with dark grey, moist	93.1	2
		Refusal at 2.1 m Depth on Bedrock		
		SHALE BEDROCK		
		Dark grey cuttings, grey water in air flushing medium, no odour		3
				4
			90.6	
		Borehole Terminated at 4.6 m Depth		

Standard Penetration Test N Value: 20 40 60 80

Shear Strength kPa: 50 100 150 200

Combustible Vapour Reading (ppm): 250 500 750

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

Samples	Natural Unit Wt. kN/m³
S1	
S2	
S3	

LOG OF BOREHOLE LOGS OF BOREHOLES.GPJ TROW OTTAWA.GDT 10/7/16

NOTES

1. Borehole data requires interpretation by exp before use by others
2. A flushmount monitoring well with a 38 mm slotted standpipe was installed in the borehole upon completion.
3. Field work supervised by an exp representative.
4. See Notes on Sample Descriptions
5. This Figure is to read with exp. Services Inc. report OTT-00224605-C0

WATER LEVEL RECORDS

Elapsed Time	Water Level (m)	Hole Open To (m)
April 21, 2016	1.4	

CORE DRILLING RECORD

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

Log of Borehole BH206

Project No: OTT-00224605-C0

Project: Environmental Drilling and Groundwater Monitoring

Location: 1509 - 1531 Merivale Road, Ottawa

Figure No. 19

Page. 1 of 1

Date Drilled: April 13th, 2016

Drill Type: Geoprobe (GM100GT)

Datum: Geodetic

Logged by: MAD Checked by: MGM

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

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic m	DEPTH	Standard Penetration Test N Value / Shear Strength kPa	Combustible Vapour Reading (ppm) / Natural Moisture Content % / Atterberg Limits (% Dry Weight)	SAMPLES	Natural Unit Wt. kN/m³
		ASPHALT ~ 25 mm	95.47	0	20 40 60 80 / 50 100 150 200	250 500 750 / 20 40 60		
		SAND AND GRAVEL Crushed limestone, grey, moist, no odour	95.4					
		TILL Sand and gravel, trace silt, brown with some orange mottling, moist turning wet, no odour	95.1				S1	
				1			S2	
							S3	
			93.4	2				
		Refusal at 2.1 m Depth, Borehole Terminated						

NOTES:
1. Borehole data requires interpretation by exp. before use by others
2. Borehole was backfilled with hole plug upon completion.
3. Field work supervised by an exp representative.
4. See Notes on Sample Descriptions
5. This Figure is to read with exp. Services Inc. report OTT-00224605-C0

WATER LEVEL RECORDS

Elapsed Time	Water Level (m)	Hole Open To (m)

CORE DRILLING RECORD

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

LOG OF BOREHOLE LOGS OF BOREHOLES.GPJ TROW OTTAWA.GDT 10/7/16

Log of Borehole BH/MW207

Project No: OTT-00224605-C0

Project: Environmental Drilling and Groundwater Monitoring

Location: 1509 - 1531 Merivale Road, Ottawa

Figure No. 20

Page 1 of 2

Date Drilled: April 13th, 2016

Drill Type: Geoprobe (GM100GT)

Datum: Geodetic

Logged by: MAD Checked by: MGM

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

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

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic m	Depth
		ASPHALT	95.47	0
		SAND AND GRAVEL	95.4	
		Disturbed native soil, grey and brown, moist, no odour	94.8	
		(Inferred from MW15-1)		
		TILL		1
		Gravelly sand with some silt, brown, moist turning moist/wet, no odour		
		(Inferred from MW15-1)		2
			93.2	
		SHALE BEDROCK		
		Dark grey cuttings with light and dark grey water in air flushing medium, no odour		3
				4
				5
				6
				7
				8
				9
				10

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

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

SAMPLES

Natural Unit Wt. kN/m³

Continued Next Page

NOTES:
1. Borehole data requires interpretation by exp before use by others
2. A flushmount monitoring well with a 38 mm slotted standpipe was installed in the borehole upon completion
3. Field work supervised by an exp representative
4. See Notes on Sample Descriptions
5. This Figure is to read with exp Services Inc. report OTT-00224605-C0

WATER LEVEL RECORDS

Elapsed Time	Water Level (m)	Hole Open To (m)
April 21, 2016	2.6	

CORE DRILLING RECORD

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

LOG OF BOREHOLE LOGS OF BOREHOLES.GPJ TROW OTTAWA.GDT 10/7/16

Log of Borehole BH/MW207

Project No: OTT-00224605-C0

Project: Environmental Drilling and Groundwater Monitoring

Figure No. 20

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic m	Depth
		SHALE BEDROCK	85.47	10
		Dark grey cuttings with light and dark grey water in air flushing medium, no odour *(continued)*	84.7	
		Borehole Terminated at 10.8 m Depth		

Standard Penetration Test N Value: 20 40 60 80

Shear Strength kPa: 50 100 150 200

Combustible Vapour Reading (ppm): 250 500 750

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

SAMPLES

Natural Unit Wt. kN/m³

NOTES:
1. Borehole data requires interpretation by exp before use by others
2. A flushmount monitoring well with a 38 mm slotted standpipe was installed in the borehole upon completion.
3. Field work supervised by an exp representative.
4. See Notes on Sample Descriptions
5. This Figure is to read with exp. Services Inc. report OTT-00224605-C0

WATER LEVEL RECORDS

Elapsed Time	Water Level (m)	Hole Open To (m)
April 21, 2016	2.6	

CORE DRILLING RECORD

Run No	Depth (m)	% Rec	RQD %

LOG OF BOREHOLE LOGS OF BOREHOLES.GPJ TROW OTTAWA.GDT 10/7/16

Log of Borehole BH/MW208

Project No: OTT-00224605-C0

Project: Environmental Drilling and Groundwater Monitoring

Location: 1509 - 1531 Merivale Road, Ottawa

Figure No. 21

Page. 1 of 2

Date Drilled: April 13th, 2016

Drill Type: Geoprobe (GM100GT)

Datum: Geodetic

Logged by: MAD Checked by: MGM

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

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic m	Depth
		ASPHALT	94.68	0
		SAND AND GRAVEL	94.6	
		Disturbed native soil, grey and brown, moist, no odour	94.5	
		(Inferred from MW15-1)		
		TILL	93.6	1
		Brown, silty clay, some sand and gravel, moist, no odour		
		(Inferred from MW15-9)		
		SHALE BEDROCK		2
		Dark grey cuttings with light and dark grey water in air flushing medium, no odour		3
				4
				5
				6
				7
				8
				9
				10

Standard Penetration Test N Value: 20 40 60 80

Shear Strength: 50 100 150 200 kPa

Combustible Vapour Reading (ppm): 250 500 750

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

SAMPLES

Natural Unit Wt. kN/m³

Continued Next Page

NOTES:
1. Borehole data requires interpretation by exp. before use by others
2. A flushmount monitoring well with a 38 mm slotted standpipe was installed in the borehole upon completion.
3. Field work supervised by an exp representative.
4. See Notes on Sample Descriptions
5. This Figure is to read with exp. Services Inc. report OTT-00224605-C0

WATER LEVEL RECORDS

Elapsed Time	Water Level (m)	Hole Open To (m)
April 21, 2016	1.8	

CORE DRILLING RECORD

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

LOG OF BOREHOLE LOGS OF BOREHOLES.GPJ TROW OTTAWA.GDT 10/7/16

Log of Borehole BH/MW208

Project No: OTT-00224605-C0

Project: Environmental Drilling and Groundwater Monitoring

Figure No. 21

Page. 2 of 2

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic m	Depth	Standard Penetration Test N Value 20 40 60 80 / Shear Strength kPa 50 100 150 200	Combustible Vapour Reading (ppm) 250 500 750 / Natural Moisture Content % Atterberg Limits (% Dry Weight) 20 40 60	SAMPLES	Natural Unit Wt. kN/m³
		SHALE BEDROCK	84.68	10				
		Dark grey cuttings with light and dark grey water in air flushing medium, no odour *(continued)*						
			83.9					
		Borehole Terminated at 10.8 m Depth						

NOTES:
1. Borehole data requires interpretation by exp. before use by others
2. A flushmount monitoring well with a 38 mm slotted standpipe was installed in the borehole upon completion.
3. Field work supervised by an exp representative.
4. See Notes on Sample Descriptions
5. This Figure is to read with exp. Services Inc. report OTT-00224605-C0

WATER LEVEL RECORDS

Elapsed Time	Water Level (m)	Hole Open To (m)
April 21, 2016	1.8	

CORE DRILLING RECORD

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

LOG OF BOREHOLE LOGS OF BOREHOLES.GPJ TROW OTTAWA.GDT 10/7/16

Log of Borehole BH16-1

Project No: OTT-00224605-C0

Project: Environmental Drilling and Groundwater Monitoring

Location: 1509 - 1531 Merivale Road, Ottawa

Figure No. 27

Page. 1 of 1

Date Drilled: 10/11/16

Drill Type: Manual Crew

Datum: Geodetic

Logged by: MAD Checked by: MGM

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

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic m	Depth m	Standard Penetration Test N Value / Shear Strength kPa	Combustible Vapour Reading (ppm) / Natural Moisture Content % / Atterberg Limits (% Dry Weight)	SAMPLES	Natural Unit Wt. kN/m³
		ASPHALT - 60 mm	95.37	0	20 40 60 80 / 50 100 150 200	250 500 750 / 20 40 60		
		SAND AND GRAVEL Crushed limestone, grey, moist, no odour	95.3			0	⊠	
		SAND AND GRAVEL Imported sand and gravel from a commercial pit, with silt and clay, brown to dark brown then grey, moist, no odour	95.1					
		End of Borehole	94.9					

NOTES:
1. Borehole data requires interpretation by exp. before use by others
2.
3. Field work supervised by an exp representative.
4. See Notes on Sample Descriptions
5. This Figure is to read with exp. Services Inc. report OTT-00224605-C0

WATER LEVEL RECORDS

Elapsed Time	Water Level (m)	Hole Open To (m)

CORE DRILLING RECORD

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

LOG OF BOREHOLE LOGS OF BOREHOLES.GPJ TROW OTTAWA.GDT 10/12/16

Log of Borehole SV1

Project No: OTT-00224605-C0

Project: Environmental Drilling and Groundwater Monitoring

Location: 1509 - 1531 Merivale Road, Ottawa

Figure No. 22

Page. 1 of 1

Date Drilled: April 14th, 2016

Drill Type: Geoprobe (GM100GT)

Datum: Geodetic

Logged by: MAD Checked by: MGM

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

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic m	Depth
		ASPHALT	94.94	0
		SAND AND GRAVEL	94.8	
		Disturbed native soil, brown, moist, no odour	94.7	
		GLACIAL TILL		1
		Brown, silty clay, some sand and gravel, moist, no odour		
		(Inferred from MW15-9)	93.4	
		Borehole Terminated at 1.5 m Depth	93.54	

Standard Penetration Test N Value: 20 40 60 80

Shear Strength kPa: 50 100 150 200

Combustible Vapour Reading (ppm): 250 500 750

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

SAMPLES

Natural Unit Wt. kN/m³

LOG OF BOREHOLE LOGS OF BOREHOLES.GPJ TROW OTTAWA.GDT 10/7/16

NOTES:
1. Borehole data requires interpretation by exp before use by others
2. A stainless steel soil vapour probe with 6 mm diameter tubing was installed in the borehole upon completion.
3. Field work supervised by an exp representative.
4. See Notes on Sample Descriptions
5. This Figure is to read with exp. Services Inc. report OTT-00224605-C0

WATER LEVEL RECORDS

Elapsed Time	Water Level (m)	Hole Open To (m)

CORE DRILLING RECORD

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

Log of Borehole SV2

Project No: OTT-00224605-C0

Project: Environmental Drilling and Groundwater Monitoring

Location: 1509 - 1531 Merivale Road, Ottawa

Figure No. 23

Page. 1 of 1

Date Drilled: April 14th, 2016

Drill Type: Geoprobe (GM100GT)

Datum: Geodetic

Logged by: MAD Checked by: MGM

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

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic m	Depth m	Standard Penetration Test N Value 20 40 60 80 / Shear Strength 50 100 150 200 kPa	Combustible Vapour Reading (ppm) 250 500 750 / Natural Moisture Content % Atterberg Limits (% Dry Weight) 20 40 60	SAMPLES	Natural Unit Wt. kN/m³
		ASPHALT	94.62	0				
		SAND AND GRAVEL Disturbed native soil, brown, moist, no odour	94.5 / 94.4					
▼		**GLACIAL TILL** Brown, silty clay, some sand and gravel, moist, no odour *(Inferred from MW15-8)*	93.4	1				
		Borehole Terminated at 1.2 m Depth	93.52					

NOTES:
1. Borehole data requires interpretation by exp. before use by others
2. A stainless steel soil vapour probe with 6 mm diameter tubing was installed in the borehole upon completion.
3. Field work supervised by an exp representative.
4. See Notes on Sample Descriptions
5. This Figure is to read with exp. Services Inc. report OTT-00224605-C0

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

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

LOG OF BOREHOLE LOGS OF BOREHOLES.GPJ TROW OTTAWA.GDT 10/7/16

Log of Borehole SV3

Project No: OTT-00224605-C0

Project: Environmental Drilling and Groundwater Monitoring

Location: 1509 - 1531 Merivale Road, Ottawa

Figure No. 24

Page. 1 of 1

Date Drilled: April 14th, 2016

Drill Type: Geoprobe (GM100GT)

Datum: Geodetic

Logged by: MAD Checked by: MGM

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

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic m	Depth
		ASPHALT	94.79	0
		SAND AND GRAVEL	94.7	
		Disturbed native soil, brown, moist, no odour	94.4	
		GLACIAL TILL		1
		Brown, silty clay, some sand and gravel, moist, no odour		
		(Inferred from MW15-7 and MW15-8)	93.3	
		Borehole Terminated at 1.5 m Depth		

Standard Penetration Test N Value: 20 40 60 80

Shear Strength: 50 100 150 200 kPa

Combustible Vapour Reading (ppm): 250 500 750

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

SAMPLES

Natural Unit Wt. kN/m³

NOTES:
1. Borehole data requires interpretation by exp. before use by others
2. A stainless steel soil vapour probe with 6 mm diameter tubing was installed in the borehole upon completion.
3. Field work supervised by an exp representative.
4. See Notes on Sample Descriptions
5. This Figure is to read with exp. Services Inc. report OTT-00224605-C0

WATER LEVEL RECORDS

Elapsed Time	Water Level (m)	Hole Open To (m)

CORE DRILLING RECORD

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

LOG OF BOREHOLE LOGS OF BOREHOLES.GPJ TROW OTTAWA.GDT 10/7/16

Log of Borehole SV4

Project No: OTT-00224605-C0

Project: Environmental Drilling and Groundwater Monitoring

Location: 1509 - 1531 Merivale Road, Ottawa

Figure No. 25

Page 1 of 1

Date Drilled: April 14th, 2016

Drill Type: Geoprobe (GM100GT)

Datum: Geodetic

Logged by: MAD Checked by: MGM

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

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic m	Depth
		ASPHALT	94.98	0
		SAND AND GRAVEL	94.9	
		Disturbed native soil, brown, moist, no odour	94.5	
		GLACIAL TILL		1
		Brown, silty clay, some sand and gravel, moist turning wet, no odour		
		(Inferred from MW15-7)	93.5	
		Borehole Terminated at 1.5 m Depth		

Standard Penetration Test N Value: 20 40 60 80

Shear Strength kPa: 50 100 150 200

Combustible Vapour Reading (ppm): 250 500 750

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

SAMPLES

Natural Unit Wt. kN/m³

NOTES:
1. Borehole data requires interpretation by exp. before use by others
2. A stainless steel soil vapour probe with 6 mm diameter tubing was installed in the borehole upon completion.
3. Field work supervised by an exp representative.
4. See Notes on Sample Descriptions
5. This Figure is to read with exp. Services Inc. report OTT-00224605-C0

WATER LEVEL RECORDS

Elapsed Time	Water Level (m)	Hole Open To (m)

CORE DRILLING RECORD

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

LOG OF BOREHOLE LOGS OF BOREHOLES.GPJ TROW OTTAWA.GDT 10/7/16

Log of Borehole SV5

Project No: OTT-00224605-C0

Project: Environmental Drilling and Groundwater Monitoring

Location: 1509 - 1531 Merivale Road, Ottawa

Figure No. 26

Page. 1 of 1

Date Drilled: April 14th, 2016

Drill Type: Geoprobe (GM100GT)

Datum: Geodetic

Logged by: MAD Checked by: MGM

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

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

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic m	Depth m	Standard Penetration Test N Value / Shear Strength kPa (20 40 60 80 / 50 100 150 200)	Combustible Vapour Reading (ppm) 250 500 750 / Natural Moisture Content % Atterberg Limits (% Dry Weight) 20 40 60	SAMPLES	Natural Unit Wt. kN/m³
		ASPHALT	95.02	0				
		SAND AND GRAVEL	94.9					
		Disturbed native soil, brown, moist, no odour	94.7					
▼		**GRAVELLY SAND WITH SOME SILT** Brown, moist turning wet, no odour *(Inferred from MW15-2)*	93.98	1				
		Borehole Terminated at 1.5 m Depth	93.5					

NOTES
1. Borehole data requires interpretation by exp before use by others
2. A stainless steel soil vapour probe with 6 mm diameter tubing was installed in the borehole upon completion
3. Field work supervised by an exp representative
4. See Notes on Sample Descriptions
5. This Figure is to read with exp Services Inc report OTT-00224605-C0

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

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

LOG OF BOREHOLE LOGS OF BOREHOLES.GPJ TROW OTTAWA.GDT 10/7/16

Log of Borehole MW301

Project No: OTT-00224605-C0

Project: Environmental Drilling and Groundwater Monitoring

Location: 1509 - 1531 Merivale Road, Ottawa

Figure No. 27

Page. 1 of 1

Date Drilled: 9/6/17

Drill Type: Geoprobe

Datum: Geodetic

Logged by: JO Checked by: MGM

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

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

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic m	Depth	Standard Penetration Test N Value / Shear Strength kPa	Combustible Vapour Reading (ppm) / Natural Moisture Content % / Atterberg Limits (% Dry Weight)	SAMPLES	Natural Unit Wt. kN/m³
		FILL Silt to fine sand, light brown, some gravel with rock fragments, moist, no odour	95.7	0	20 40 60 80 / 50 100 150 200	250 500 750 / 20 40 60	S1	
				1			S2	
			93.7	2			S3 S4	
▽		**BEDROCK** Grey, shaley limestone, no odour	93.4				S4	
				3				
			91.1	4				
		Borehole Terminated at 4.58 m						

LOG OF BOREHOLE LOGS OF BOREHOLES.GPJ TROW OTTAWA.GDT 1/12/18

NOTES:
1. Borehole data requires interpretation by exp. before use by others
2. A flushmount monitoring well with a 51 mm slotted standpipe was installed in the borehole upon completion.
3. Field work supervised by an exp representative.
4. See Notes on Sample Descriptions
5. This Figure is to read with exp. Services Inc. report OTT-00224605-C0

WATER LEVEL RECORDS		
Elapsed Time	Water Level (m)	Hole Open To (m)
September 14, 2017	2.3	

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

Log of Borehole MW302

Project No: OTT-00224605-C0

Project: Environmental Drilling and Groundwater Monitoring

Location: 1509 - 1531 Merivale Road, Ottawa

Figure No. 28

Page. 1 of 1

Date Drilled: 9/6/17

Drill Type: Geoprobe

Datum: Geodetic

Logged by: JO Checked by: MGM

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

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

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic m	Depth	Standard Penetration Test N Value / Shear Strength kPa	Combustible Vapour Reading (ppm) / Natural Moisture Content % / Atterberg Limits (% Dry Weight)	SAMPLES	Natural Unit Wt. kN/m³
		ASPHALT 50 mm	95.25 / 95.2	0	20 40 60 80 / 50 100 150 200	250 500 750 / 20 40 60		
		FILL Grey and brown, sand and gravel to sand with some gravel, moist, no odour		1		0	S1	
						0	S2	
				2		35	S3	
			93.24					
		BEDROCK Grey, shaley limestone, no odour	93.0	3				
			91.6					
		Borehole Terminated at 3.66 m						

LOG OF BOREHOLE LOGS OF BOREHOLES.GPJ TROW OTTAWA.GDT 1/12/18

NOTES:
1. Borehole data requires interpretation by exp. before use by others
2. A flushmount monitoring well with a 51 mm slotted standpipe was installed in the borehole upon completion.
3. Field work supervised by an exp representative.
4. See Notes on Sample Descriptions
5. This Figure is to read with exp. Services Inc. report OTT-00224605-C0

WATER LEVEL RECORDS

Elapsed Time	Water Level (m)	Hole Open To (m)
September 14, 2017	2.0	

CORE DRILLING RECORD

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

Log of Borehole MW303

Project No: OTT-00224605-C0

Project: Environmental Drilling and Groundwater Monitoring

Location: 1509 - 1531 Merivale Road, Ottawa

Figure No. 29

Page. 1 of 1

Date Drilled: 9/6/17

Drill Type: Geoprobe

Datum: Geodetic

Logged by: JO Checked by: MGM

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

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

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic m	Depth
		ASPHALT 50 mm	95.42 / 95.4	0
		FILL Grey and brown, sand and gravel to sand with some gravel, moist, no odour		1
			93.62	
			93.3	2
		BEDROCK Grey, shaley limestone, no odour		3
			91.8	
		Borehole Terminated at 3.66 m		

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

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

SAMPLES: S1, S2, S3

Natural Unit Wt. kN/m³

NOTES:
1. Borehole data requires interpretation by exp. before use by others
2. A flushmount monitoring well with a 51 mm slotted standpipe was installed in the borehole upon completion.
3. Field work supervised by an exp representative.
4. See Notes on Sample Descriptions
5. This Figure is to read with exp. Services Inc. report OTT-00224605-C0

WATER LEVEL RECORDS

Elapsed Time	Water Level (m)	Hole Open To (m)
September 14, 2017	1.8	

CORE DRILLING RECORD

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

LOG OF BOREHOLE LOGS OF BOREHOLES.GPJ TROW OTTAWA.GDT 1/12/18

Log of Borehole MW304

Project No: OTT-00224605-C0

Project: Environmental Drilling and Groundwater Monitoring

Location: 1509 - 1531 Merivale Road, Ottawa

Figure No. 30

Page. 1 of 1

Date Drilled: 9/6/17

Drill Type: Geoprobe

Datum: Geodetic

Logged by: JO Checked by: MGM

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

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

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic m	Depth	Standard Penetration Test N Value / Shear Strength kPa	Combustible Vapour Reading (ppm) / Natural Moisture Content % / Atterberg Limits (% Dry Weight)	SAMPLES	Natural Unit Wt. kN/m³
		FILL Silt with fine sand and clay, some gravel with rock fragments, moist, no odour	95.7	0	20 40 60 80 / 50 100 150 200	250 500 750 / 20 40 60	S1	
						0	S2	
			94.5	1				
		SILT Dark brown, sandy silt with some gravel, dry, no odour	94.2			0	S3	
		BEDROCK Grey, shaley limestone, no odour	93.45	2				
				3				
				4				
			91.1					
		Borehole Terminated at 4.58 m						

LOG OF BOREHOLE LOGS OF BOREHOLES.GPJ TROW OTTAWA.GDT 1/12/18

NOTES:
1. Borehole data requires interpretation by exp. before use by others
2. A flushmount monitoring well with a 51 mm slotted standpipe was installed in the borehole upon completion.
3. Field work supervised by an exp representative.
4. See Notes on Sample Descriptions
5. This Figure is to read with exp. Services Inc. report OTT-00224605-C0

WATER LEVEL RECORDS		
Elapsed Time	Water Level (m)	Hole Open To (m)
September 14, 2017	2.3	

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

Log of Borehole MW305

Project No: OTT-00224605-C0

Project: Environmental Drilling and Groundwater Monitoring

Location: 1509 - 1531 Merivale Road, Ottawa

Figure No. 31

Page. 1 of 1

Date Drilled: 9/6/17

Drill Type: Geoprobe

Datum: Geodetic

Logged by: JO Checked by: MGM

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

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

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic m	Depth	Standard Penetration Test N Value / Shear Strength kPa	Combustible Vapour Reading (ppm) / Natural Moisture Content % / Atterberg Limits (% Dry Weight)	SAMPLES	Natural Unit Wt. kN/m³
		FILL Silt with fine sand and clay, some gravel, rusty mottling, moist, no odour	95.7	0	20 40 60 80 / 50 100 150 200	250 500 750 / 20 40 60	S1	
			94.5	1			S2	
		Boulders and Cobbles Rock fragments with brown, silty fine sanddry, no odour	93.3	2			S3	
		BEDROCK Grey, shaley limestone, no odour	93.41	3				
			91.1	4				
		Borehole Terminated at 4.58 m						

LOG OF BOREHOLE LOGS OF BOREHOLES.GPJ TROW OTTAWA.GDT 1/12/18

NOTES:
1. Borehole data requires interpretation by exp. before use by others
2. A flushmount monitoring well with a 51 mm slotted standpipe was installed in the borehole upon completion.
3. Field work supervised by an exp representative.
4. See Notes on Sample Descriptions
5. This Figure is to read with exp. Services Inc. report OTT-00224605-C0

WATER LEVEL RECORDS

Elapsed Time	Water Level (m)	Hole Open To (m)
September 14, 2017	2.3	

CORE DRILLING RECORD

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

Log of Borehole MW306

Project No: OTT-00224605-C0

Project: Environmental Drilling and Groundwater Monitoring

Location: 1509 - 1531 Merivale Road, Ottawa

Figure No. 32

Page. 1 of 1

Date Drilled: 9/6/17

Drill Type: Geoprobe

Datum: Geodetic

Logged by: JO Checked by: MGM

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

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

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic m	Depth	Standard Penetration Test N Value / Shear Strength kPa	Combustible Vapour Reading (ppm) / Natural Moisture Content % / Atterberg Limits (% Dry Weight)	SAMPLES	Natural Unit Wt. kN/m³
		FILL Grey crushed stone, with silt and fine sand, moist, no odour	95.7 / 95.4	0	20 40 60 80 / 50 100 150 200	250 500 750 / 20 40 60	S1	
		SILT Brown, silt with fine sand, occasional gravel, dry to moist, no odour		1			S2	
			94.2				S3	
		BEDROCK Grey, shaley limestone, no odour		2				
			93.18	3				
				4				
			91.1					
		Borehole Terminated at 4.58 m						

LOG OF BOREHOLE LOGS OF BOREHOLES.GPJ TROW OTTAWA.GDT 1/12/18

NOTES:
1. Borehole data requires interpretation by exp. before use by others
2. A flushmount monitoring well with a 51 mm slotted standpipe was installed in the borehole upon completion.
3. Field work supervised by an exp representative.
4. See Notes on Sample Descriptions
5. This Figure is to read with exp. Services Inc. report OTT-00224605-C0

WATER LEVEL RECORDS

Elapsed Time	Water Level (m)	Hole Open To (m)
September 14, 2017	2.5	

CORE DRILLING RECORD

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

Log of Borehole MW307

Project No: OTT-00224605-C0

Project: Environmental Drilling and Groundwater Monitoring

Location: 1509 - 1531 Merivale Road, Ottawa

Figure No. 33

Page. 1 of 1

Date Drilled: 9/7/17

Drill Type: Geoprobe

Datum: Geodetic

Logged by: JO Checked by: MGM

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

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

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic m	Depth	Standard Penetration Test N Value / Shear Strength kPa	Combustible Vapour Reading (ppm) / Natural Moisture Content % / Atterberg Limits (% Dry Weight)	SAMPLES	Natural Unit Wt. kN/m³
		ASPHALT 50 mm	95.38 / 95.3	0	20 40 60 80 / 50 100 150 200	250 500 750 / 20 40 60		
		FILL Grey and brown, sand and gravel to sand with some gravel, moist, no odour				0	S1	
				1		20	S2	
			93.9					
		SAND AND GRAVEL Grey and brown, some silt, moist, no odour	93.3			15	S3	
▼		**BEDROCK** Grey, shaley limestone, no odour	93.11	2				
				3				
				4				
			90.8					
		Borehole Terminated at 4.57m						

NOTES:
1. Borehole data requires interpretation by exp. before use by others
2. A flushmount monitoring well with a 51 mm slotted standpipe was installed in the borehole upon completion.
3. Field work supervised by an exp representative.
4. See Notes on Sample Descriptions
5. This Figure is to read with exp. Services Inc. report OTT-00224605-C0

WATER LEVEL RECORDS		
Elapsed Time	Water Level (m)	Hole Open To (m)
September 14, 2017	2.3	

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

LOG OF BOREHOLE LOGS OF BOREHOLES.GPJ TROW OTTAWA.GDT 1/12/18

Log of Borehole MW308

Project No: OTT-00224605-C0

Project: Environmental Drilling and Groundwater Monitoring

Location: 1509 - 1531 Merivale Road, Ottawa

Figure No. 34

Page. 1 of 1

Date Drilled: 9/6/17

Drill Type: Geoprobe

Datum: Geodetic

Logged by: JO Checked by: MGM

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

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

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic m	Depth
		ASPHALT 50 mm	95.35 / 95.3	0
		FILL Grey and brown, sand and gravel to sand with some gravel, moist, no odour	94.5	
		SAND AND GRAVEL Grey and brown, some silt, moist, no odour		1
			93.12	2
			92.7	
		BEDROCK Grey, shaley limestone, no odour		3
				4
			90.8	
		Borehole Terminated at 4.57m		

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

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

SAMPLES	Natural Unit Wt. kN/m³	Combustible Vapour Reading (ppm)	Natural Moisture Content % / Atterberg Limits (% Dry Weight)
S1		0	
S2		0	
S3		60	
S3		5	

NOTES:
1. Borehole data requires interpretation by exp. before use by others
2. A flushmount monitoring well with a 51 mm slotted standpipe was installed in the borehole upon completion.
3. Field work supervised by an exp representative.
4. See Notes on Sample Descriptions
5. This Figure is to read with exp. Services Inc. report OTT-00224605-C0

WATER LEVEL RECORDS

Elapsed Time	Water Level (m)	Hole Open To (m)
September 14, 2017	2.2	

CORE DRILLING RECORD

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

LOG OF BOREHOLE LOGS OF BOREHOLES.GPJ TROW OTTAWA.GDT 1/12/18

Log of Borehole MW309

Project No: OTT-00224605-C0

Project: Environmental Drilling and Groundwater Monitoring

Location: 1509 - 1531 Merivale Road, Ottawa

Figure No. 35

Page. 1 of 1

Date Drilled: 9/6/17

Drill Type: Geoprobe

Datum: Geodetic

Logged by: JO Checked by: MGM

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

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

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic m	Depth
		ASPHALT 50 mm	95.43 / 95.4	0
		FILL Grey and brown, sand and gravel to sand with some gravel, moist, no odour		
			94.2	1
		SAND AND GRAVEL Grey and brown, some silt, moist, no odour	93.9	
		BEDROCK Grey, shaley limestone, no odour		2
			93.17	
				3
				4
			90.9	
		Borehole Terminated at 4.57m		

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

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

SAMPLES	Natural Unit Wt. kN/m³
S1	
S2	

NOTES:
1. Borehole data requires interpretation by exp. before use by others
2. A flushmount monitoring well with a 51 mm slotted standpipe was installed in the borehole upon completion.
3. Field work supervised by an exp representative.
4. See Notes on Sample Descriptions
5. This Figure is to read with exp. Services Inc. report OTT-00224605-C0

WATER LEVEL RECORDS

Elapsed Time	Water Level (m)	Hole Open To (m)
September 14, 2017	2.3	

CORE DRILLING RECORD

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

LOG OF BOREHOLE LOGS OF BOREHOLES.GPJ TROW OTTAWA.GDT 1/12/18

Log of Borehole MW310

Project No: OTT-00224605-C0

Project: Environmental Drilling and Groundwater Monitoring

Location: 1509 - 1531 Merivale Road, Ottawa

Figure No. 36

Page. 1 of 1

Date Drilled: 9/7/17

Drill Type: Geoprobe

Datum: Geodetic

Logged by: JO Checked by: MGM

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

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

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic m	Depth	Standard Penetration Test N Value (20 40 60 80) / Shear Strength kPa (50 100 150 200)	Combustible Vapour Reading (ppm) (250 500 750) / Natural Moisture Content % Atterberg Limits (% Dry Weight) (20 40 60)	SAMPLES	Natural Unit Wt. kN/m³
		ASPHALT 50 mm	95.5	0		0	S1	
		FILL Grey and brown, sand and gravel to sand with some gravel, moist, no odour		1		0	S2	
			93.9					
		SAND AND GRAVEL Grey and brown, some silt, moist, no odour	93.4	2		15	S3	
		BEDROCK Grey, shaley limestone, no odour	93.25	3				
				4				
			90.9					
		Borehole Terminated at 4.57m						

LOG OF BOREHOLE LOGS OF BOREHOLES.GPJ TROW OTTAWA.GDT 1/12/18

NOTES:
1. Borehole data requires interpretation by exp. before use by others
2. A flushmount monitoring well with a 51 mm slotted standpipe was installed in the borehole upon completion.
3. Field work supervised by an exp representative.
4. See Notes on Sample Descriptions
5. This Figure is to read with exp. Services Inc. report OTT-00224605-C0

WATER LEVEL RECORDS		
Elapsed Time	Water Level (m)	Hole Open To (m)
September 14, 2017	2.3	

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

Log of Borehole MW311

Project No: OTT-00224605-C0

Project: Environmental Drilling and Groundwater Monitoring

Location: 1509 - 1531 Merivale Road, Ottawa

Figure No. 37

Page. 1 of 1

Date Drilled: 9/7/17

Drill Type: Geoprobe

Datum: Geodetic

Logged by: JO Checked by: MGM

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

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

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic m	Depth
		ASPHALT 50 mm	95.7	0
		FILL Grey and brown, sand and gravel to sand with some gravel, moist, no odour	95.7	
			94.5	1
		SAND AND GRAVEL Grey and brown, some silt, moist, no odour		
			93.3 93.41	2
		BEDROCK Grey, shaley limestone, no odour		
			92.0	3
		Borehole Terminated at 3.66m		

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

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

0
10
30

SAMPLES	Natural Unit Wt. kN/m³
S1	
S2	
S3	

NOTES:
1. Borehole data requires interpretation by exp. before use by others
2. A flushmount monitoring well with a 51 mm slotted standpipe was installed in the borehole upon completion.
3. Field work supervised by an exp representative.
4. See Notes on Sample Descriptions
5. This Figure is to read with exp. Services Inc. report OTT-00224605-C0

WATER LEVEL RECORDS

Elapsed Time	Water Level (m)	Hole Open To (m)
September 14, 2017	2.3	

CORE DRILLING RECORD

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

LOG OF BOREHOLE LOGS OF BOREHOLES.GPJ TROW OTTAWA.GDT 1/12/18

Log of Borehole MW312

Project No: OTT-00224605-C0

Project: Environmental Drilling and Groundwater Monitoring

Location: 1509 - 1531 Merivale Road, Ottawa

Figure No. 38

Page. 1 of 1

Date Drilled: 9/7/17

Drill Type: Geoprobe

Datum: Geodetic

Logged by: JO Checked by: MGM

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

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

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic m	Depth	Standard Penetration Test N Value / Shear Strength kPa	Combustible Vapour Reading (ppm) / Natural Moisture Content % / Atterberg Limits (% Dry Weight)	SAMPLES	Natural Unit Wt. kN/m³
			94.97	0	20 40 60 80 / 50 100 150 200 kPa	250 500 750 / 20 40 60		
		ASPHALT 50 mm	94.9			10	S1	
		FILL Grey and brown, sand and gravel to sand with some gravel, moist, no odour	94.2			10	S2	
		SAND AND GRAVEL Grey and brown, some silt, moist, no odour	93.8	1				
		BEDROCK Grey, shaley limestone, no odour		2				
▼			92.11	3				
				4				
			90.4					
		Borehole Terminated at 4.57m						

LOG OF BOREHOLE LOGS OF BOREHOLES.GPJ TROW OTTAWA.GDT 1/12/18

NOTES:
1. Borehole data requires interpretation by exp. before use by others
2. A flushmount monitoring well with a 51 mm slotted standpipe was installed in the borehole upon completion.
3. Field work supervised by an exp representative.
4. See Notes on Sample Descriptions
5. This Figure is to read with exp. Services Inc. report OTT-00224605-C0

WATER LEVEL RECORDS

Elapsed Time	Water Level (m)	Hole Open To (m)
September 14, 2017	2.9	

CORE DRILLING RECORD

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

Appendix D – Analytical Tables

SOIL ANALYTICAL RESULTS:
Table D.1 - Petroleum Hydrocarbons (PHCs) in Soil

Location	MECP (2011) Table 3: Full Depth Generic SCS in a Non-Potable Groundwater Condition Residential/Parkland/Institutional Land Use (coarse textured soil)	MW-1	MW-2	MW-3	BH-4	BH-5	MW-6	BH-7
Sample ID		MW-1 SS-4	MW-2 SS-4	MW-3 SS-4	BH-4 SS-3	BH-5 SS4	MW-6 SS-4	BH-7 SS-3
Lab ID		-	-	-	-	-	-	-
Sampling Date		24-Aug-11	24-Aug-11	24-Aug-11	24-Aug-11	24-Aug-11	24-Aug-11	24-Aug-11
Soil Sample Depth (m)		2.29 - 3.05	2.29 - 3.05	2.29 - 3.05	1.52 - 2.29	2.29 - 3.05	2.29 - 3.05	1.52 - 2.29
Consultant		Pinchin	Pinchin	Pinchin	Pinchin	Pinchin	Pinchin	Pinchin
Laboratory		Paracel	Paracel	Paracel	Paracel	Paracel	Paracel	Paracel
Date of Analysis		-	-	-	-	-	-	-
Certificate of Analysis Number		-	-	-	-	-	-	-
Benzene	0.21	<0.002	0.07	<0.002	<0.002	<0.002	<0.002	<0.002
Toluene	2.3	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Ethylbenzene	2	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Xylenes (total)	3.1	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
PHC F1 (C6-C10)	55	<10	**547**	<10	<10	<10	<10	<10
PHC F1 (C6-C10) - BTEX	55	<10	**547**	<10	<10	<10	<10	<10
PHC F2 (C10-C16)	98	<10	36	<10	<10	<10	<10	<10
PHC F3 (C16-C34)	300	<10	<10	<10	<10	<10	<10	<10
PHC F4 (C34-C50)	2800	<10	<10	<10	<10	<10	<10	<10
Reached baseline at C50?	NV	-	-	-	-	-	-	-
PHC F4 (C34-C50)-gravimetric	2800	-	-	-	-	-	-	-

All soil concentrations reported in μg/g.
'<' = Parameter below detection limit, as indicated
'NV'= No value
'-' = Not Analyzed
Bold Concentration exceeds MECP (2011) SCS.

SOIL ANALYTICAL RESULTS:
Table D.1 - Petroleum Hydrocarbons (PHCs) in Soil

Location	MECP (2011) Table 3: Full Depth Generic SCS in a Non-Potable Groundwater Condition Residential/Parkland/Institutional Land Use (coarse textured soil)	MW-8	MW15-1	MW15-2	MW15-3	MW15-4		MW15-10
Sample ID		MW-8 SS-3	MW15-1 SS3	MW15-2 SS3	MW15-3 SS4	MW15-4 SS3	MW15-4 SS4 (Dup of MW15-4 SS3)	MW15-10 SS2
Lab ID		-	AAR842	AAR843	AAR844	AAR845	AAR846	AOE543
Sampling Date		24-Aug-11	31-Mar-15	31-Mar-15	31-Mar-15	31-Mar-15		2-Jul-15
Soil Sample Depth (m)		1.52 - 2.29	1.5 - 2.47	1.5 - 2.34	2.0 - 2.34	1.5 - 2.21		0.9 - 1.3
Consultant		Pinchin	EXP	EXP	EXP	EXP		EXP
Laboratory		Paracel	Maxxam	Maxxam	Maxxam	Maxxam		Maxxam
Date of Analysis		-	1/2-Apr-15	1/2-Apr-15	1/2-Apr-15	1/2-Apr-15		7/8-Jul-15
Certificate of Analysis Number		-	B556333	B556333	B556333	B556333		B5C9283
Benzene	0.21	<0.002	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Toluene	2.3	<0.002	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Ethylbenzene	2	<0.002	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Xylenes (total)	3.1	<0.002	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
PHC F1 (C6-C10)	55	<10	<10	<10	<10	**95**	37	<10
PHC F1 (C6-C10) - BTEX	55	<10	<10	<10	<10	**95**	37	<10
PHC F2 (C10-C16)	98	<10	<10	<10	<10	28	23	<10
PHC F3 (C16-C34)	300	<10	<10	<10	<10	38	49	<50
PHC F4 (C34-C50)	2800	<10	<10	<10	<10	24	<10	<50
Reached baseline at C50?	NV	-	YES	YES	YES	YES	YES	YES
PHC F4 (C34-C50)-gravimetric	2800	-	-	-	-	-	-	-

All soil concentrations reported in µg/g.
'<' = Parameter below detection limit, as indicated
'NV'= No value
'-' = Not Analyzed
Bold Concentration exceeds MECP (2011) SCS.

SOIL ANALYTICAL RESULTS:
Table D.1 - Petroleum Hydrocarbons (PHCs) in Soil

Location	MECP (2011) Table 3: Full Depth Generic SCS in a Non-Potable Groundwater Condition Residential/Parkland/Institutional Land Use (coarse textured soil)	MW15-11	BH201	BH202	BH203	BH204	BH/MW205	
Sample ID		MW15-11 SS2	BH201 S2	BH202 S3	BH203 S3	BH204 S3	BH/MW205 - S2	BH/MW205 S4 (Dup of MW205 S2)
Lab ID		ANX095	CES586	CES587	CES588	CES589	CES576	CES577
Sampling Date		30-Jun-15	14-Apr-16	14-Apr-16	14-Apr-16	14-Apr-16	13-Apr-16	
Soil Sample Depth (m)		0.8 - 1.4	1.5 - 2.47	1.5 - 2.34	2.0 - 2.34	1.5 - 2.21	0.9 - 1.3	
Consultant		EXP	EXP	EXP	EXP	EXP	EXP	
Laboratory		Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	
Date of Analysis		2/4-Jul-15	18-Apr-16	18-Apr-16	18-Apr-16	18-Apr-16	18-Apr-16	
Certificate of Analysis Number		B5C7806	B674851	B674851	B674851	B674851	B674851	
Benzene	0.21	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Toluene	2.3	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Ethylbenzene	2	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Xylenes (total)	3.1	<0.020	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040
PHC F1 (C6-C10)	55	<10	<10	<10	<10	<10	<10	<10
PHC F1 (C6-C10) - BTEX	55	<10	<10	<10	<10	<10	<10	<10
PHC F2 (C10-C16)	98	<10	<10	<10	<10	<10	<10	<10
PHC F3 (C16-C34)	300	<50	<50	<50	<50	<50	<50	<50
PHC F4 (C34-C50)	2800	<50	<50	<50	<50	<50	<50	<50
Reached baseline at C50?	NV	YES	YES	YES	YES	YES	YES	YES
PHC F4 (C34-C50)-gravimetric	2800	-	-	-	-	-	-	-

All soil concentrations reported in µg/g.
'<' = Parameter below detection limit, as indicated
'NV'= No value
'-' = Not Analyzed
Bold Concentration exceeds MECP (2011) SCS.

SOIL ANALYTICAL RESULTS:
Table D.1 - Petroleum Hydrocarbons (PHCs) in Soil

Location	MECP (2011) Table 3: Full Depth Generic SCS in a Non-Potable Groundwater Condition Residential/Parkland/Institutional Land Use (coarse textured soil)	BH/MW206	BH16-1	MW301	MW302	MW303	MW304	MW305
Sample ID		BH206 S2	BH16-1	MW 301 S5	BH/MW302-S3	BH/MW303-S3	MW 304 S3	MW 305 S3
Lab ID		CES575	DFM974	FCK181	FCC220	FCC222	FCK182	FCK183
Sampling Date		13-Apr-16	11-Oct-16	6-Sep-17	6-Sep-17	6-Sep-17	6-Sep-17	5-Sep-17
Soil Sample Depth (m)		0.8 - 1.4	0.3-0.5	1.8 - 2.1	1.5 - 2.1	1.5 - 2.18	1.2 - 1.7	1.7 - 2.1
Consultant		EXP	EXP	EXP	EXP	EXP	EXP	EXP
Laboratory		Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam
Date of Analysis		18-Apr-16	14/15-Oct-16	14/15-Sep-17	12-Sep-17	12-Sep-17	14/15-Sep-17	14/15-Sep-17
Certificate of Analysis Number		B674851	B6L8887	B7J8008	B7J6395	B7J6395	B7J8008	B7J8008
Benzene	0.21	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Toluene	2.3	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Ethylbenzene	2	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Xylenes (total)	3.1	<0.040	<0.020	<0.020	<0.040	<0.040	<0.020	<0.020
PHC F1 (C6-C10)	55	<10	<10	<10	<10	<10	<10	<10
PHC F1 (C6-C10) - BTEX	55	<10	<10	<10	<10	<10	<10	<10
PHC F2 (C10-C16)	98	<10	<10	<10	16	10	<10	<10
PHC F3 (C16-C34)	300	<50	<50	<50	220	<50	<50	<50
PHC F4 (C34-C50)	2800	<50	<50	<50	120	<50	<50	<50
Reached baseline at C50?	NV	YES	YES	YES	NO	YES	YES	YES
PHC F4 (C34-C50)-gravimetric	2800	-	-	-	320	-	-	-

All soil concentrations reported in µg/g.
'<' = Parameter below detection limit, as indicated
'NV'= No value
'-' = Not Analyzed
Bold Concentration exceeds MECP (2011) SCS.

SOIL ANALYTICAL RESULTS:
Table D.1 - Petroleum Hydrocarbons (PHCs) in Soil

Location	MECP (2011) Table 3: Full Depth Generic SCS in a Non-Potable Groundwater Condition Residential/Parkland/Institutional Land Use (coarse textured soil)	MW306	MW307	MW308	MW309	MW310		MW311
Sample ID		MW 306 S3	MW307-S3	MW308-S3	MW309-S2	MW310-S3	MW321-S2 (Dup of MW310 S3)	BH/MW311-S3
Lab ID		FCK184	FCC224	FCC226	FCC228	FCC230	FCC231	FCC233
Sampling Date		7-Sep-17	7-Sep-17	6-Sep-17	6-Sep-17	7-Sep-17		7-Sep-17
Soil Sample Depth (m)		1.2 - 1.4	1.5 - 2.1	1.5 - 2.3	0.7 - 1.1	1.5 - 2.1		1.5 - 2.0
Consultant		EXP	EXP	EXP	EXP	EXP		EXP
Laboratory		Maxxam	Maxxam	Maxxam	Maxxam	Maxxam		Maxxam
Date of Analysis		14/15-Sep-17	13-Sep-17	13-Sep-17	13-Sep-17	13-Sep-17		12-Sep-17
Certificate of Analysis Number		B7J8008	B7J6395	B7J6395	B7J6395	B7J6395		B7J6395
Benzene	0.21	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Toluene	2.3	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Ethylbenzene	2	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Xylenes (total)	3.1	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.040
PHC F1 (C6-C10)	55	-	-	-	-	<10	<10	<10
PHC F1 (C6-C10) - BTEX	55	-	-	-	-	<10	<10	<10
PHC F2 (C10-C16)	98	-	-	-	-	<10	<10	<10
PHC F3 (C16-C34)	300	-	-	-	-	50	140	<50
PHC F4 (C34-C50)	2800	-	-	-	-	59	180	<50
Reached baseline at C50?	NV	-	-	-	-	NO	NO	YES
PHC F4 (C34-C50)-gravimetric	2800	-	-	-	-	220	430	-

All soil concentrations reported in µg/g.
'<' = Parameter below detection limit, as indicated
'NV'= No value
'-' = Not Analyzed
Bold Concentration exceeds MECP (2011) SCS.

SOIL ANALYTICAL RESULTS:
Table D.2 - Volatile Organic Compounds (VOCs) in Soil

Location ID	MECP (2011) Table 3: Full Depth Generic SCS in a Non-Potable Groundwater Condition Residential/Parkland/Institutional Land Use (coarse textured soil)	MECP (2011) Table 3: Full Depth Generic SCS in a Non-Potable Groundwater Condition Residential/Parkland/Institutional	MW-1	MW-2	MW-3	BH-4	BH-5	MW-6	BH-7	MW-8
Sample ID			MW-1 SS-4	MW-2 SS-4	MW-3 SS-4	BH-4 SS-3	BH-5 SS-4	MW-6 SS-4	BH-7 SS-3	MW-8 SS-3
Lab ID			-	-	-	-	-	-	-	-
Sampling Date			24-Aug-11	24-Aug-11	24-Aug-11	24-Aug-11	24-Aug-11	24-Aug-11	24-Aug-11	24-Aug-11
Soil Sample Depth (m)			2.29 - 3.05	2.29 - 3.05	2.29 - 3.05	1.52 - 2.29	2.29 - 3.05	2.29 - 3.05	1.52 - 2.29	1.52 - 2.29
Consultant			Pinchin	Pinchin	Pinchin	Pinchin	Pinchin	Pinchin	Pinchin	Pinchin
Laboratory			Paracel	Paracel	Paracel	Paracel	Paracel	Paracel	Paracel	Paracel
Date of Analysis			-	-	-	-	-	-	-	-
Certificate of Analysis Number			-	-	-	-	-	-	-	-
Acetone	16	#N/A	-	-	-	-	-	-	-	-
Benzene	0.21	#N/A	<0.002	0.07	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Bromodichloromethane	13	#N/A	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Bromoform	0.27	#N/A	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Bromomethane	0.05	#N/A	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Carbon Tetrachloride	0.05	#N/A	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Chlorobenzene	2.4	#N/A	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Chloroethane	NV		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Chloroform	0.05	#N/A	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Chloromethane	NV		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Dibromochloromethane	9.4	#N/A	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
1,2-Dichlorobenzene	3.4	#N/A	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
1,3-Dichlorobenzene	4.8	#N/A	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
1,4-Dichlorobenzene	0.083	#N/A	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Dichlorodifluoromethane	16	#N/A	-	-	-	-	-	-	-	-
1,1-Dichloroethane	3.5	#N/A	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
1,2-Dichloroethane	0.05	#N/A	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
1,1-Dichloroethylene	0.05	#N/A	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
cis-1,2-Dichloroethylene	3.4	#N/A	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
trans-1,2-Dichloroethylene	0.084	#N/A	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
1,2-Dichloroethylene, total	NV		<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
1,2-Dichloropropane	0.05	#N/A	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
cis-1,3-Dichloropropene	0.05	#N/A	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
trans-1,3-Dichloropropene	0.05	#N/A	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
1,3-Dichloropropene, total	NV		<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Ethylbenzene	2	#N/A	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Ethylene Dibromide (1,2-Dibromoethane)	0.05	#N/A	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Hexane (n)	2.8	#N/A	-	-	-	-	-	-	-	-
Methylene chloride (Dichloromethane)	0.1	#N/A	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Methyl ethyl ketone (2-Butanone)	16	#N/A	-	-	-	-	-	-	-	-
Methyl Isobutyl Ketone	1.7	#N/A	-	-	-	-	-	-	-	-
Methyl t-butyl ether (MTBE)	0.75	#N/A	-	-	-	-	-	-	-	-
Styrene	0.7	#N/A	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
1,1,1,2-Tetrachloroethane	0.058	#N/A	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
1,1,2,2-Tetrachloroethane	0.05	#N/A	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Tetrachloroethylene	0.28	#N/A	<0.002	<0.002	<0.002	<0.002	<0.002	5.2	<0.002	<0.002
Toluene	2.3	#N/A	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
1,1,1-Trichloroethane	0.38	#N/A	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
1,1,2-Trichloroethane	0.05	#N/A	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Trichloroethylene	0.061	#N/A	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Trichlorofluoromethane	4	#N/A	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
1,3,5-Trimethylbenzene	NV		<0.003	**0.3**	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Vinyl Chloride	0.02	#N/A	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
m-Xylene + p-Xylene	NV	#N/A	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
o-Xylene	NV	#N/A	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Xylenes (total)	3.1	#N/A	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002

All soil concentrations reported in µg/g.
'<' = Parameter below detection limit, as indicated
'NV'= No value
Bold Concentration exceeds MECP (2011) SCS.
'-' = Not Analyzed

SOIL ANALYTICAL RESULTS:
Table D.2 - Volatile Organic Compounds (VOCs) in Soil

Location ID		MECP (2011) Table 3: Full Depth Generic SCS in a Non-Potable Groundwater Condition Residential/Parkland/Institutional Land Use (coarse textured soil)	MW15-1	MW15-2	MW15-3	MW15-4		MW15-10	MW15-11	BH201
Sample ID	MECP (2011) Table 3: Full Depth Generic SCS in a Non-Potable Groundwater Condition Residential/Parkland/Institutional Land Use (coarse textured soil)		BH1-S3	BH2-S3	BH3-S4	BH4-S3	BH4-S4 (Dup of BH4 S3)	BH15-10 SS2	BH15-11 SS2	BH201 S2
Lab ID			AAR842	AAR843	AAR844	AAR845	AAR846	AOE543	ANX095	CES586
Sampling Date			31-Mar-15	31-Mar-15	31-Mar-15	31-Mar-15		2-Jul-15	30-Jun-15	14-Apr-16
Soil Sample Depth (m)			1.5 - 2.47	1.5 - 2.34	2.0 - 2.34	1.5 - 2.21		0.9 - 1.3	0.8 - 1.4	1.5 - 2.47
Consultant			EXP	EXP	EXP	EXP		EXP	EXP	EXP
Laboratory			Maxxam	Maxxam	Maxxam	Maxxam		Maxxam	Maxxam	Maxxam
Date of Analysis			1-Apr-15	1-Apr-15	1-Apr-15	1-Apr-15		7-Jul-15	3-Jul-15	18-Apr-16
Certificate of Analysis Number			B556333	B556333	B556333	B556333		B5C9283	B5C7806	B674851
Acetone	16	#N/A	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-
Benzene	0.21	#N/A	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Bromodichloromethane	13	#N/A	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	-
Bromoform	0.27	#N/A	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	-
Bromomethane	0.05	#N/A	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	-
Carbon Tetrachloride	0.05	#N/A	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	-
Chlorobenzene	2.4	#N/A	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	-
Chloroethane	NV		-	-	-	-	-	-	-	-
Chloroform	0.05	#N/A	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	-
Chloromethane	NV		-	-	-	-	-	-	-	-
Dibromochloromethane	9.4	#N/A	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	-
1,2-Dichlorobenzene	3.4	#N/A	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	-
1,3-Dichlorobenzene	4.8	#N/A	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	-
1,4-Dichlorobenzene	0.083	#N/A	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	-
Dichlorodifluoromethane	16	#N/A	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	-
1,1-Dichloroethane	3.5	#N/A	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	-
1,2-Dichloroethane	0.05	#N/A	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	-
1,1-Dichloroethylene	0.05	#N/A	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	-
cis-1,2-Dichloroethylene	3.4	#N/A	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	-
trans-1,2-Dichloroethylene	0.084	#N/A	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	-
1,2-Dichloroethylene, total	NV		-	-	-	-	-	-	-	-
1,2-Dichloropropane	0.05	#N/A	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	-
cis-1,3-Dichloropropene	0.05	#N/A	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	-
trans-1,3-Dichloropropene	0.05	#N/A	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	-
1,3-Dichloropropene, total	NV		<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	-
Ethylbenzene	2	#N/A	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Ethylene Dibromide (1,2-Dibromoethane)	0.05	#N/A	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	-
Hexane (n)	2.8	#N/A	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	-
Methylene chloride (Dichloromethane)	0.1	#N/A	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	-
Methyl ethyl ketone (2-Butanone)	16	#N/A	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-
Methyl Isobutyl Ketone	1.7	#N/A	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-
Methyl t-butyl ether (MTBE)	0.75	#N/A	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	-
Styrene	0.7	#N/A	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	-
1,1,1,2-Tetrachloroethane	0.058	#N/A	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	-
1,1,2,2-Tetrachloroethane	0.05	#N/A	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	-
Tetrachloroethylene	0.28	#N/A	0.19	<0.050	<0.050	<0.050	<0.050	1.0	0.055	-
Toluene	2.3	#N/A	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
1,1,1-Trichloroethane	0.38	#N/A	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	-
1,1,2-Trichloroethane	0.05	#N/A	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	-
Trichloroethylene	0.061	#N/A	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	-
Trichlorofluoromethane	4	#N/A	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	-
1,3,5-Trimethylbenzene	NV		-	-	-	-	-	-	-	-
Vinyl Chloride	0.02	#N/A	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	-
m-Xylene + p-Xylene	NV	#N/A	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.040
o-Xylene	NV	#N/A	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Xylenes (total)	3.1	#N/A	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.040

All soil concentrations reported in µg/g.
'<' = Parameter below detection limit, as indicated
'NV'= No value
Bold Concentration exceeds MECP (2011) SCS.
'-' = Not Analyzed

SOIL ANALYTICAL RESULTS:
Table D.2 - Volatile Organic Compounds (VOCs) in Soil

Location ID	MECP (2011) Table 3: Full Depth Generic SCS in a Non-Potable Groundwater Condition Residential/Parkland/Institutional Land Use (coarse textured soil)	MECP (2011) Table 3: Full Depth Generic SCS in a Non-Potable Groundwater Condition	BH202	BH203	BH204	BH/MW205		BH/MW206	BH16-1	MW301
Sample ID			BH202 S3	BH203 S3	BH204 S3	BH/MW205 - S2	BH/MW205 S4 (Dup of MW205 S2)	BH206 S2	BH16-1	MW 301 S5
Lab ID			CES587	CES588	CES589	CES576	CES577	CES575	DFM974	FCK181
Sampling Date			14-Apr-16	14-Apr-16	14-Apr-16	13-Apr-16		13-Apr-16	11-Oct-16	6-Sep-17
Soil Sample Depth (m)			1.5 - 2.34	2.0 - 2.34	1.5 - 2.21	0.9 - 1.3		0.8 - 1.4	0.3 - 0.5	1.8 - 2.1
Consultant			EXP	EXP	EXP	EXP		EXP	EXP	EXP
Laboratory			Maxxam	Maxxam	Maxxam	Maxxam		Maxxam	Maxxam	Maxxam
Date of Analysis			18-Apr-16	18-Apr-16	18-Apr-16	18-Apr-16		18-Apr-16	15-Oct-16	14/15-Sep-17
Certificate of Analysis Number			B674851	B674851	B674851	B674851		B674851	B6L8887	B7J8008
Acetone	16	#N/A	-	-	-	-	-	-	<0.50	<0.50
Benzene	0.21	#N/A	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Bromodichloromethane	13	#N/A	-	-	-	-	-	-	<0.050	<0.050
Bromoform	0.27	#N/A	-	-	-	-	-	-	<0.050	<0.050
Bromomethane	0.05	#N/A	-	-	-	-	-	-	<0.050	<0.050
Carbon Tetrachloride	0.05	#N/A	-	-	-	-	-	-	<0.050	<0.050
Chlorobenzene	2.4	#N/A	-	-	-	-	-	-	<0.050	<0.050
Chloroethane	NV		-	-	-	-	-	-	-	-
Chloroform	0.05	#N/A	-	-	-	-	-	-	<0.050	<0.050
Chloromethane	NV		-	-	-	-	-	-	-	-
Dibromochloromethane	9.4	#N/A	-	-	-	-	-	-	<0.050	<0.050
1,2-Dichlorobenzene	3.4	#N/A	-	-	-	-	-	-	<0.050	<0.050
1,3-Dichlorobenzene	4.8	#N/A	-	-	-	-	-	-	<0.050	<0.050
1,4-Dichlorobenzene	0.083	#N/A	-	-	-	-	-	-	<0.050	<0.050
Dichlorodifluoromethane	16	#N/A	-	-	-	-	-	-	<0.050	<0.050
1,1-Dichloroethane	3.5	#N/A	-	-	-	-	-	-	<0.050	<0.050
1,2-Dichloroethane	0.05	#N/A	-	-	-	-	-	-	<0.050	<0.050
1,1-Dichloroethylene	0.05	#N/A	-	-	-	-	-	-	<0.050	<0.050
cis-1,2-Dichloroethylene	3.4	#N/A	-	-	-	-	-	-	<0.050	<0.050
trans-1,2-Dichloroethylene	0.084	#N/A	-	-	-	-	-	-	<0.050	<0.050
1,2-Dichloroethylene, total	NV		-	-	-	-	-	-	-	-
1,2-Dichloropropane	0.05	#N/A	-	-	-	-	-	-	<0.050	<0.050
cis-1,3-Dichloropropene	0.05	#N/A	-	-	-	-	-	-	<0.030	<0.030
trans-1,3-Dichloropropene	0.05	#N/A	-	-	-	-	-	-	<0.040	<0.040
1,3-Dichloropropene, total	NV		-	-	-	-	-	-	-	<0.050
Ethylbenzene	2	#N/A	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Ethylene Dibromide (1,2-Dibromoethane)	0.05	#N/A	-	-	-	-	-	-	<0.050	<0.050
Hexane (n)	2.8	#N/A	-	-	-	-	-	-	<0.050	<0.050
Methylene chloride (Dichloromethane)	0.1	#N/A	-	-	-	-	-	-	<0.050	<0.050
Methyl ethyl ketone (2-Butanone)	16	#N/A	-	-	-	-	-	-	<0.50	<0.50
Methyl Isobutyl Ketone	1.7	#N/A	-	-	-	-	-	-	<0.50	<0.50
Methyl t-butyl ether (MTBE)	0.75	#N/A	-	-	-	-	-	-	<0.050	<0.050
Styrene	0.7	#N/A	-	-	-	-	-	-	<0.050	<0.050
1,1,1,2-Tetrachloroethane	0.058	#N/A	-	-	-	-	-	-	<0.050	<0.050
1,1,2,2-Tetrachloroethane	0.05	#N/A	-	-	-	-	-	-	<0.050	<0.050
Tetrachloroethylene	0.28	#N/A	-	-	-	-	-	-	<0.050	0.069
Toluene	2.3	#N/A	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
1,1,1-Trichloroethane	0.38	#N/A	-	-	-	-	-	-	<0.050	<0.050
1,1,2-Trichloroethane	0.05	#N/A	-	-	-	-	-	-	<0.050	<0.050
Trichloroethylene	0.061	#N/A	-	-	-	-	-	-	<0.050	<0.050
Trichlorofluoromethane	4	#N/A	-	-	-	-	-	-	<0.050	<0.050
1,3,5-Trimethylbenzene	NV		-	-	-	-	-	-	-	-
Vinyl Chloride	0.02	#N/A	-	-	-	-	-	-	<0.020	<0.020
m-Xylene + p-Xylene	NV	#N/A	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.020	<0.020
o-Xylene	NV	#N/A	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Xylenes (total)	3.1	#N/A	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.020	<0.020

All soil concentrations reported in µg/g.
'<' = Parameter below detection limit, as indicated
'NV'= No value
Bold Concentration exceeds MECP (2011) SCS.
'-' = Not Analyzed

SOIL ANALYTICAL RESULTS:
Table D.2 - Volatile Organic Compounds (VOCs) in Soil

Location ID		MOECC (2011) Table 3: Full Depth Generic SCS in a Non-Potable Groundwater Condition Residential/Parkland/Institutional	MW302	MW303	MW304	MW305	MW306	MW307	MW308
Sample ID	MECP (2011) Table 3: Full Depth Generic SCS in a Non-Potable Groundwater Condition Residential/Parkland/Institutional Land Use (coarse textured soil)		BH/MW302-S3	BH/MW303-S3	MW 304 S3	MW 305 S3	MW 306 S3	MW307-S3	MW308-S3
Lab ID			FCC220	FCC222	FCK182	FCK183	FCK184	FCC224	FCC226
Sampling Date			6-Sep-17	6-Sep-17	6-Sep-17	5-Sep-17	7-Sep-17	7-Sep-17	6-Sep-17
Soil Sample Depth (m)			1.5 - 2.1	1.5 - 2.18	1.2 - 1.7	1.7 - 2.1	1.2 - 1.4	1.5 - 2.1	1.5 - 2.3
Consultant			EXP	EXP	EXP	EXP	EXP	EXP	EXP
Laboratory			Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam
Date of Analysis			12-Sep-17	12-Sep-17	14/15-Sep-17	14/15-Sep-17	14/15-Sep-17	13-Sep-17	13-Sep-17
Certificate of Analysis Number			B7J6395	B7J6395	B7J8008	B7J8008	B7J8008	B7J6395	B7J6395
Acetone	16	#N/A	-	-	<0.50	<0.50	<0.50	<0.50	<0.50
Benzene	0.21	#N/A	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Bromodichloromethane	13	#N/A	-	-	<0.050	<0.050	<0.050	<0.050	<0.050
Bromoform	0.27	#N/A	-	-	<0.050	<0.050	<0.050	<0.050	<0.050
Bromomethane	0.05	#N/A	-	-	<0.050	<0.050	<0.050	<0.050	<0.050
Carbon Tetrachloride	0.05	#N/A	-	-	<0.050	<0.050	<0.050	<0.050	<0.050
Chlorobenzene	2.4	#N/A	-	-	<0.050	<0.050	<0.050	<0.050	<0.050
Chloroethane	NV		-	-	-	-	-	-	-
Chloroform	0.05	#N/A	-	-	<0.050	<0.050	<0.050	<0.050	<0.050
Chloromethane	NV		-	-	-	-	-	-	-
Dibromochloromethane	9.4	#N/A	-	-	<0.050	<0.050	<0.050	<0.050	<0.050
1,2-Dichlorobenzene	3.4	#N/A	-	-	<0.050	<0.050	<0.050	<0.050	<0.050
1,3-Dichlorobenzene	4.8	#N/A	-	-	<0.050	<0.050	<0.050	<0.050	<0.050
1,4-Dichlorobenzene	0.083	#N/A	-	-	<0.050	<0.050	<0.050	<0.050	<0.050
Dichlorodifluoromethane	16	#N/A	-	-	<0.050	<0.050	<0.050	<0.050	<0.050
1,1-Dichloroethane	3.5	#N/A	-	-	<0.050	<0.050	<0.050	<0.050	<0.050
1,2-Dichloroethane	0.05	#N/A	-	-	<0.050	<0.050	<0.050	<0.050	<0.050
1,1-Dichloroethylene	0.05	#N/A	-	-	<0.050	<0.050	<0.050	<0.050	<0.050
cis-1,2-Dichloroethylene	3.4	#N/A	-	-	<0.050	<0.050	<0.050	<0.050	<0.050
trans-1,2-Dichloroethylene	0.084	#N/A	-	-	<0.050	<0.050	<0.050	<0.050	<0.050
1,2-Dichloroethylene, total	NV		-	-	-	-	-	-	-
1,2-Dichloropropane	0.05	#N/A	-	-	<0.050	<0.050	<0.050	<0.050	<0.050
cis-1,3-Dichloropropene	0.05	#N/A	-	-	<0.030	<0.030	<0.030	<0.030	<0.030
trans-1,3-Dichloropropene	0.05	#N/A	-	-	<0.040	<0.040	<0.040	<0.040	<0.040
1,3-Dichloropropene, total	NV		-	-	<0.050	<0.050	<0.050	<0.050	<0.050
Ethylbenzene	2	#N/A	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Ethylene Dibromide (1,2-Dibromoethane)	0.05	#N/A	-	-	<0.050	<0.050	<0.050	<0.050	<0.050
Hexane (n)	2.8	#N/A	-	-	<0.050	<0.050	<0.050	<0.050	<0.050
Methylene chloride (Dichloromethane)	0.1	#N/A	-	-	<0.050	<0.050	<0.050	<0.050	<0.050
Methyl ethyl ketone (2-Butanone)	16	#N/A	-	-	<0.50	<0.50	<0.50	<0.50	<0.50
Methyl Isobutyl Ketone	1.7	#N/A	-	-	<0.50	<0.50	<0.50	<0.50	<0.50
Methyl t-butyl ether (MTBE)	0.75	#N/A	-	-	<0.050	<0.050	<0.050	<0.050	<0.050
Styrene	0.7	#N/A	-	-	<0.050	<0.050	<0.050	<0.050	<0.050
1,1,1,2-Tetrachloroethane	0.058	#N/A	-	-	<0.050	<0.050	<0.050	<0.050	<0.050
1,1,2,2-Tetrachloroethane	0.05	#N/A	-	-	<0.050	<0.050	<0.050	<0.050	<0.050
Tetrachloroethylene	0.28	#N/A	-	-	0.19	2.3	0.23	0.23	<0.050
Toluene	2.3	#N/A	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
1,1,1-Trichloroethane	0.38	#N/A	-	-	<0.050	<0.050	<0.050	<0.050	<0.050
1,1,2-Trichloroethane	0.05	#N/A	-	-	<0.050	<0.050	<0.050	<0.050	<0.050
Trichloroethylene	0.061	#N/A	-	-	<0.050	<0.050	<0.050	<0.050	<0.050
Trichlorofluoromethane	4	#N/A	-	-	<0.050	<0.050	<0.050	<0.050	<0.050
1,3,5-Trimethylbenzene	NV		-	-	-	-	-	-	-
Vinyl Chloride	0.02	#N/A	-	-	<0.020	<0.020	<0.020	<0.020	<0.020
m-Xylene + p-Xylene	NV	#N/A	<0.040	<0.040	<0.020	<0.020	<0.020	<0.020	<0.020
o-Xylene	NV	#N/A	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Xylenes (total)	3.1	#N/A	<0.040	<0.040	<0.020	<0.020	<0.020	<0.020	<0.020

All soil concentrations reported in µg/g.
'<' = Parameter below detection limit, as indicated
'NV'= No value
Bold Concentration exceeds MECP (2011) SCS.
'-' = Not Analyzed

SOIL ANALYTICAL RESULTS:
Table D.2 - Volatile Organic Compounds (VOCs) in Soil

Location ID		MECP (2011) Table 3: Full Depth Generic SCS in a Non-Potable Groundwater Condition Residential/Parkland/Institutional Land Use	MW309	MW310		MW311
Sample ID			MW309-S2	MW310-S3	MW321-S2 (Dup of MW310-S3)	BH/MW311-S3
Lab ID			FCC228	FCC230	FCC231	FCC233
Sampling Date			6-Sep-17	7-Sep-17	7-Sep-17	7-Sep-17
Soil Sample Depth (m)		(coarse textured soil)	0.7 - 1.1	1.5 - 2.1		1.5 - 2.0
Consultant			EXP	EXP		EXP
Laboratory			Maxxam	Maxxam		Maxxam
Date of Analysis			13-Sep-17	13-Sep-17		12-Sep-17
Certificate of Analysis Number			B7J6395	B7J6395		B7J6395
Acetone	16	#N/A	<0.50	<0.50	<0.50	-
Benzene	0.21	#N/A	<0.020	<0.020	<0.020	<0.020
Bromodichloromethane	13	#N/A	<0.050	<0.050	<0.050	-
Bromoform	0.27	#N/A	<0.050	<0.050	<0.050	-
Bromomethane	0.05	#N/A	<0.050	<0.050	<0.050	-
Carbon Tetrachloride	0.05	#N/A	<0.050	<0.050	<0.050	-
Chlorobenzene	2.4	#N/A	<0.050	<0.050	<0.050	-
Chloroethane	NV		-	-	-	-
Chloroform	0.05	#N/A	<0.050	<0.050	<0.050	-
Chloromethane	NV		-	-	-	-
Dibromochloromethane	9.4	#N/A	<0.050	<0.050	<0.050	-
1,2-Dichlorobenzene	3.4	#N/A	<0.050	<0.050	<0.050	-
1,3-Dichlorobenzene	4.8	#N/A	<0.050	<0.050	<0.050	-
1,4-Dichlorobenzene	0.083	#N/A	<0.050	<0.050	<0.050	-
Dichlorodifluoromethane	16	#N/A	<0.050	<0.050	<0.050	-
1,1-Dichloroethane	3.5	#N/A	<0.050	<0.050	<0.050	-
1,2-Dichloroethane	0.05	#N/A	<0.050	<0.050	<0.050	-
1,1-Dichloroethylene	0.05	#N/A	<0.050	<0.050	<0.050	-
cis-1,2-Dichloroethylene	3.4	#N/A	<0.050	<0.050	<0.050	-
trans-1,2-Dichloroethylene	0.084	#N/A	<0.050	<0.050	<0.050	-
1,2-Dichloroethylene, total	NV		-	-	-	-
1,2-Dichloropropane	0.05	#N/A	<0.050	<0.050	<0.050	-
cis-1,3-Dichloropropene	0.05	#N/A	<0.030	<0.030	<0.030	-
trans-1,3-Dichloropropene	0.05	#N/A	<0.040	<0.040	<0.040	-
1,3-Dichloropropene, total	NV		<0.050	<0.050	<0.050	-
Ethylbenzene	2	#N/A	<0.020	<0.020	<0.020	<0.020
Ethylene Dibromide (1,2-Dibromoethane)	0.05	#N/A	<0.050	<0.050	<0.050	-
Hexane (n)	2.8	#N/A	<0.050	<0.050	<0.050	-
Methylene chloride (Dichloromethane)	0.1	#N/A	<0.050	<0.050	<0.050	-
Methyl ethyl ketone (2-Butanone)	16	#N/A	<0.50	<0.50	<0.50	-
Methyl Isobutyl Ketone	1.7	#N/A	<0.50	<0.50	<0.50	-
Methyl t-butyl ether (MTBE)	0.75	#N/A	<0.050	<0.050	<0.050	-
Styrene	0.7	#N/A	<0.050	<0.050	<0.050	-
1,1,1,2-Tetrachloroethane	0.058	#N/A	<0.050	<0.050	<0.050	-
1,1,2,2-Tetrachloroethane	0.05	#N/A	<0.050	<0.050	<0.050	-
Tetrachloroethylene	0.28	#N/A	<0.050	<0.050	<0.050	-
Toluene	2.3	#N/A	<0.020	<0.020	<0.020	<0.020
1,1,1-Trichloroethane	0.38	#N/A	<0.050	<0.050	<0.050	-
1,1,2-Trichloroethane	0.05	#N/A	<0.050	<0.050	<0.050	-
Trichloroethylene	0.061	#N/A	<0.050	<0.050	<0.050	-
Trichlorofluoromethane	4	#N/A	<0.050	<0.050	<0.050	-
1,3,5-Trimethylbenzene	NV		-	-	-	-
Vinyl Chloride	0.02	#N/A	<0.020	<0.020	<0.020	-
m-Xylene + p-Xylene	NV	#N/A	<0.020	<0.020	<0.020	<0.040
o-Xylene	NV	#N/A	<0.020	<0.020	<0.020	<0.020
Xylenes (total)	3.1	#N/A	<0.020	<0.020	<0.020	<0.040

All soil concentrations reported in µg/g.
'<' = Parameter below detection limit, as indicated
'NV'= No value
Bold Concentration exceeds MECP (2011) SCS.
'-' = Not Analyzed

SOIL ANALYTICAL RESULTS:
Table D.3 - Metals & Inorganics in Soil

Location	MECP(2011) Table 3: Full Depth Generic SCS in a Non-Potable Groundwater Condition Residential/Parkland/Institutional Use (coarse textured soil)	MW15-1	MW15-2	MW15-3	MW15-4		BH201	BH202
Sample ID		MW15-1 SS3 (BH1 S3)	MW15-2 SS3 (BH2 S3)	MW15-3 SS4 (BH3 S4)	MW15-4 SS3 (BH4 S3)	MW15-4 SS4 (Dup of MW15-4 SS3)	BH201-S2	BH202-S3
Lab ID		AAR842	AAR843	AAR844	AAR845	AAR846	CES586	CES587
Sampling Date		31-Mar-15	31-Mar-15	31-Mar-15	31-Mar-15		14-Apr-16	14-Apr-16
Soil Sample Depth (m)		1.5 - 2.47	1.5 - 2.34	2.0 - 2.34	1.5 - 2.21		1.5 - 2.47	1.5 - 2.34
Consultant		EXP	EXP	EXP	EXP		EXP	EXP
Laboratory		Maxxam	Maxxam	Maxxam	Maxxam		Maxxam	Maxxam
Date of Analysis		20-Apr-15	1/2-Apr-15	1/2-Apr-15	20-Apr-15	1/2-Apr-15	19-Apr-16	19-Apr-16
Certificate of Analysis Number		B556333	B556333	B556333	B556333	B556333	B674851	B674851
Antimony	7.5	-	-	-	-	-	-	-
Arsenic	18	-	-	-	-	-	-	-
Barium	390	-	-	-	-	-	-	-
Beryllium	4	-	-	-	-	-	-	-
Boron	120	-	-	-	-	-	-	-
Cadmium	1.2	-	-	-	-	-	-	-
Chromium	160	-	-	-	-	-	-	-
Cobalt	22	-	-	-	-	-	-	-
Copper	140	-	-	-	-	-	-	-
Lead	120	-	-	-	-	-	6	3
Molybdenum	6.9	-	-	-	-	-	-	-
Nickel	100	-	-	-	-	-	-	-
Selenium	2.4	-	-	-	-	-	-	-
Silver	20	-	-	-	-	-	-	-
Thallium	1	-	-	-	-	-	-	-
Uranium	23	-	-	-	-	-	-	-
Vanadium	86	-	-	-	-	-	-	-
Zinc	340	-	-	-	-	-	-	-
Sodium Adsorption Ratio	5	-	-	-	-	-	-	-
Conductivity (mS/cm)	0.7	-	-	-	-	-	-	-
pH (pH units)	5-9 (surface soil); 5-11 (subsurface soil)	7.82	-	-	7.52	-	-	-
Moisture (%)	NV	9.9	11	7.5	15	17	33	5.1

All soil concentrations reported in µg/g.
'<' = Parameter below detection limit, as indicated
'NV'= No value
'-' = Not Analyzed
Due to amendments to O.Reg 153/04, deicing related parameters are not retained as COCs.
Bold Concentration exceeds MECP (2011) SCS.

SOIL ANALYTICAL RESULTS:
Table D.3 - Metals & Inorganics in Soil

Location	MECP(2011) Table 3: Full Depth Generic SCS in a Non-Potable Groundwater Condition Residential/Parkland/Institutional Use (coarse textured soil)	BH203	BH204	BH/MW205		BH/MW206	BH16-1
Sample ID		BH203-S3	BH204-S3	BH/MW205 S2	BH/MW205 S4 (Dup of MW205 S2)	BH/MW206 S2	BH16-1
Lab ID		CES588	CES589	CES576	CES577	CES575	DFM974
Sampling Date		14-Apr-16	14-Apr-16	13-Apr-16		13-Apr-16	11-Oct-16
Soil Sample Depth (m)		2.0 - 2.34	1.5 - 2.21	0.9 - 1.3		0.8 - 1.4	0.3 - 0.5
Consultant		EXP	EXP	EXP		EXP	EXP
Laboratory		Maxxam	Maxxam	Maxxam		Maxxam	Maxxam
Date of Analysis		19-Apr-16	19-Apr-16	19-Apr-16	18-Apr-16	18-Apr-16	13/14-Oct-16
Certificate of Analysis Number		B674851	B674851	B674851		B674851	B6L8887
Antimony	7.5	-	-	-	-	-	<0.20
Arsenic	18	-	-	-	-	-	2.2
Barium	390	-	-	-	-	-	110
Beryllium	4	-	-	-	-	-	0.29
Boron	120	-	-	-	-	-	8.6
Cadmium	1.2	-	-	-	-	-	<0.10
Chromium	160	-	-	-	-	-	14
Cobalt	22	-	-	-	-	-	5.7
Copper	140	-	-	-	-	-	10
Lead	120	6	2	-	-	-	5.2
Molybdenum	6.9	-	-	-	-	-	0.68
Nickel	100	-	-	-	-	-	11
Selenium	2.4	-	-	-	-	-	<0.50
Silver	20	-	-	-	-	-	<0.20
Thallium	1	-	-	-	-	-	0.11
Uranium	23	-	-	-	-	-	0.43
Vanadium	86	-	-	-	-	-	17
Zinc	340	-	-	-	-	-	13
Sodium Adsorption Ratio	5	-	-	-	-	-	-
Conductivity (mS/cm)	0.7	-	-	-	-	-	-
pH (pH units)	5-9 (surface soil); 5-11 (subsurface soil)	-	7.70	7.11	-	-	-
Moisture (%)	NV	13	16	18	18	13	4.2

All soil concentrations reported in µg/g.
'<' = Parameter below detection limit, as indicated
'NV'= No value
'-' = Not Analyzed
Due to amendments to O.Reg 153/04, deicing related parameters are not retained as COCs.
Bold Concentration exceeds MECP (2011) SCS.

SOIL ANALYTICAL RESULTS:
Table D.3 - Metals & Inorganics in Soil

Location	MECP(2011) Table 3: Full Depth Generic SCS in a Non-Potable Groundwater Condition Residential/Parkland/Institutional Use (coarse textured soil)	BH/MW302		BH/MW303		BH/MW307		BH/MW308	
Sample ID		MW302-S2	BH/MW302-S3	MW303-S2	BH/MW303-S3	MW307-S1	MW307-S3	MW308-S1	MW308-S3
Lab ID		FCC219	FCC220	FCC221	FCC222	FCC223	FCC224	FCC225	FCC226
Sampling Date		6-Sep-17	6-Sep-17	6-Sep-17	6-Sep-17	7-Sep-17	7-Sep-17	6-Sep-17	6-Sep-17
Soil Sample Depth (m)		0.8 - 1.2	1.5 - 2.1	0.7 - 1.4	1.5 - 2.18	0.0 - 0.7	1.5 - 2.1	0.0 - 0.6	1.5 - 2.3
Consultant		EXP	EXP	EXP	EXP	EXP	EXP	EXP	EXP
Laboratory		Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam
Date of Analysis		12/13-Sep-17	12/13-Sep-17	12/13-Sep-17	12/13-Sep-17	12/13-Sep-17	13-Sep-17	12/13-Sep-17	13-Sep-17
Certificate of Analysis Number		B7J6395	B7J6395	B7J6395	B7J6395	B7J6395	B7J6395	B7J6395	B7J6395
Antimony	7.5	<0.20	-	<0.20	-	-	-	-	-
Arsenic	18	1.4	-	1.7	-	-	-	-	-
Barium	390	140	-	110	-	-	-	-	-
Beryllium	4	0.45	-	0.39	-	-	-	-	-
Boron	120	7.1	-	7.9	-	-	-	-	-
Cadmium	1.2	0.21	-	0.11	-	-	-	-	-
Chromium	160	19	-	18	-	-	-	-	-
Cobalt	22	6.4	-	6.1	-	-	-	-	-
Copper	140	15	-	14	-	-	-	-	-
Lead	120	12	-	11	-	-	-	-	-
Molybdenum	6.9	<0.50	-	0.53	-	-	-	-	-
Nickel	100	13	-	13	-	-	-	-	-
Selenium	2.4	<0.50	-	<0.50	-	-	-	-	-
Silver	20	<0.20	-	<0.20	-	-	-	-	-
Thallium	1	0.15	-	0.14	-	-	-	-	-
Uranium	23	0.58	-	0.53	-	-	-	-	-
Vanadium	86	26	-	24	-	-	-	-	-
Zinc	340	36	-	28	-	-	-	-	-
Sodium Adsorption Ratio	5	-	-	-	-	2.8	-	**15**	-
Conductivity (mS/cm)	0.7	-	-	-	-	**1.6**	-	0.45	-
pH (pH units)	5-9 (surface soil); 5-11 (subsurface soil)	-	-	-	-	-	-	-	-
Moisture (%)	NV	-	13	-	12	-	7.4	-	17

All soil concentrations reported in μg/g.
'<' = Parameter below detection limit, as indicated
'NV'= No value
'-' = Not Analyzed
Due to amendments to O.Reg 153/04, deicing related parameters are not retained as COCs.
Bold Concentration exceeds MECP (2011) SCS.

SOIL ANALYTICAL RESULTS:
Table D.3 - Metals & Inorganics in Soil

Location		BH/MW309		BH/MW310			BH/MW311		BH/MW312
Sample ID	MECP(2011) Table 3: Full Depth Generic SCS in a Non-Potable Groundwater Condition Residential/Parkland/Institutional Use (coarse textured soil)	MW309-S1	MW309-S2	MW310-S1	MW310-S3	MW321-S2 (Dup of MW310 S3)	MW311-S2	BH/MW311-S3	MW312-S1
Lab ID		FCC227	FCC228	FCC229	FCC230	FCC231	FCC232	FCC233	FCC234
Sampling Date		6-Sep-17	6-Sep-17	7-Sep-17	7-Sep-17		7-Sep-17	7-Sep-17	7-Sep-17
Soil Sample Depth (m)		0.0 - 0.8	0.7 - 1.1	0.0 - 0.7	1.5 - 2.1		0.2 - 0.7	1.5 - 2.0	0.0 - 0.1
Consultant		EXP	EXP	EXP	EXP		EXP	EXP	EXP
Laboratory		Maxxam	Maxxam	Maxxam	Maxxam		Maxxam	Maxxam	Maxxam
Date of Analysis		12/13-Sep-17	13-Sep-17	12/13-Sep-17	13-Sep-17		12/13-Sep-17	12/13-Sep-17	12/13-Sep-17
Certificate of Analysis Number		B7J6395	B7J6395	B7J6395	B7J6395		B7J6395	B7J6395	B7J6395
Antimony	7.5	-	-	-	-	-	-	-	-
Arsenic	18	-	-	-	-	-	-	-	-
Barium	390	-	-	-	-	-	-	-	-
Beryllium	4	-	-	-	-	-	-	-	-
Boron	120	-	-	-	-	-	-	-	-
Cadmium	1.2	-	-	-	-	-	-	-	-
Chromium	160	-	-	-	-	-	-	-	-
Cobalt	22	-	-	-	-	-	-	-	-
Copper	140	-	-	-	-	-	-	-	-
Lead	120	-	-	-	-	-	-	-	-
Molybdenum	6.9	-	-	-	-	-	-	-	-
Nickel	100	-	-	-	-	-	-	-	-
Selenium	2.4	-	-	-	-	-	-	-	-
Silver	20	-	-	-	-	-	-	-	-
Thallium	1	-	-	-	-	-	-	-	-
Uranium	23	-	-	-	-	-	-	-	-
Vanadium	86	-	-	-	-	-	-	-	-
Zinc	340	-	-	-	-	-	-	-	-
Sodium Adsorption Ratio	5	**15**	-	**24**	-	-	**18**	-	1
Conductivity (mS/cm)	0.7	**2.7**	-	**1.6**	-	-	**0.99**	-	0.26
pH (pH units)	5-9 (surface soil); 5-11 (subsurface soil)	-	-	-	-	-	-	-	-
Moisture (%)	NV	-	10	-	11	8.7	-	7.9	-

All soil concentrations reported in µg/g.
'<' = Parameter below detection limit, as indicated
'NV'= No value
'-' = Not Analyzed
Due to amendments to O.Reg 153/04, deicing related parameters are not retained as COCs.
Bold Concentration exceeds MECP (2011) SCS.

GROUNDWATER ANALYTICAL RESULTS:
Table D.4 - Petroleum Hydrocarbons (PHCs) in Groundwater

Location	MECP (2011) Table 3: Full Depth Generic SCS in a Non-Potable Groundwater Condition Residential/Parkland/Institutional Land Use (coarse textured soil)	MECP (2011) Table 7: Full Depth Generic SCS for Shallow Soils in a Non-Potable Groundwater Condition Residential/Parkland/Institutional Land Use (coarse textured soil)	MW-1	MW-3	MW-6	
Sample ID			MW11-1	MW11-3	MW11-6	
Lab ID			ACD937	ACD865	ABZ026	CFY449
Sampling Date			10-Apr-15	10-Apr-15	10-Apr-15	22-Apr-16
Screen Depth Interval (m)			1.5-3.0	1.2 - 2.7	1.5 - 3.0	
Consultant			EXP	EXP	EXP	EXP
Laboratory			Maxxam	Maxxam	Maxxam	Maxxam
Date of Analysis			15/17-Apr-15	15/17-Apr-15	14/15-Apr-15	26-Apr-16
Certificate of Analysis Number			B563666	B563666	B563666	B681325
Benzene	44	0.5	<0.10	<0.20	<10	<0.20
Toluene	18000	320	<0.20	<0.20	<20	<0.20
Ethylbenzene	2300	54	<0.10	<0.20	<10	<0.20
m-Xylene + p-Xylene	NV	NV	<0.10	<0.20	<10	<0.20
o-Xylene	NV	NV	<0.10	<0.20	<10	<0.20
Xylenes (total)	4200	72	<0.10	<0.20	<10	<0.20
PHC F1 (C6-C10)	750	420	<25	<25	<25	-
PHC F1 (C6-C10) - BTEX	750	420	<25	<25	<25	-
PHC F2 (C10-C16)	150	150	<100	<100	<100	-
PHC F3 (C16-C34)	500	500	<100	<100	<100	-
PHC F4 (C34-C50)	500	500	<100	<100	<100	-
Reached baseline at C50?	NV	NV	YES	YES	YES	-
PHC F4 (C34-C50)-gravimetric	500	500	-	-	-	-

(1) Result reported was due to chlorinated compounds eluting inside the F1 range.
All groundwater concentrations reported in µg/L.
'<' = Parameter below detection limit, as indicated
'NV'= No value
'-' = Not Analyzed
Bold Concentration exceeds MECP (2011) Table 3 & 7 SCS.

GROUNDWATER ANALYTICAL RESULTS:
Table D.4 - Petroleum Hydrocarbons (PHCs) in Groundwater

Location	MECP (2011) Table 3: Full Depth Generic SCS in a Non-Potable Groundwater Condition Residential/Parkland/Institutional Land Use (coarse textured soil)	MECP (2011) Table 7: Full Depth Generic SCS for Shallow Soils in a Non-Potable Groundwater Condition Residential/Parkland/Institutional Land Use (coarse textured soil)	MW15-1		MW15-2	MW15-3		MW15-4		MW15-5		
Sample ID			MW15-1		MW15-2	MW15-3		MW15-4	MW15-5 (Dup of MW15-4)	MW15-5		
Lab ID			ABZ022	FDA818	ACD768	ABZ023	CFW570	ABZ024	ABZ025	AGE827	CFW567	FDA819
Sampling Date			10-Apr-15	14-Sep-17	10-Apr-15	10-Apr-15	21-Apr-16	10-Apr-15		8-May-15	21-Apr-16	15-Sep-17
Screen Depth Interval (m)			3.1-4.6		3.1-4.6	7.6-9.2		3.1-4.6		1.2-4.3		
Consultant			EXP	EXP	EXP	EXP	EXP	EXP		EXP	EXP	EXP
Laboratory			Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam		Maxxam	Maxxam	Maxxam
Date of Analysis			15/17-Apr-15	14/15-Sep-17	15/17-Apr-15	14/15-Apr-15	26/27-Apr-16	15/17-Apr-15		13/14-May-15	26/27-Apr-16	19/20-Sep-17
Certificate of Analysis Number			B563666	B7K1578	B563666	B563666	B680859	B563666		B586655	B680859	B7K1578
Benzene	44	0.5	<10	<0.40	<0.10	<0.10	<0.20	0.16	0.15	<1.0	<0.40	<0.10
Toluene	18000	320	<20	<0.40	<0.20	<0.20	<0.20	<0.20	<0.20	<2.0	<0.40	<0.20
Ethylbenzene	2300	54	<10	<0.40	<0.10	<0.10	<0.20	<0.10	<0.10	<1.0	<0.40	<0.10
m-Xylene + p-Xylene	NV	NV	<10	<0.40	<0.10	<0.10	<0.20	<0.10	<0.10	<1.0	<0.40	<0.10
o-Xylene	NV	NV	<10	<0.40	<0.10	<0.10	<0.20	<0.10	<0.10	<1.0	<0.40	<0.10
Xylenes (total)	4200	72	<10	<0.40	<0.10	<0.10	<0.20	<0.10	<0.10	<1.0	<0.40	<0.10
PHC F1 (C6-C10)	750	420	150	170 (1)	<25	<25	-	<25	<25	79	160	-
PHC F1 (C6-C10) - BTEX	750	420	150	170	<25	<25	-	<25	<25	79	160	-
PHC F2 (C10-C16)	150	150	<100	<100	<100	<100	-	**260**	**270**	<100	<100	-
PHC F3 (C16-C34)	500	500	<100	<200	<100	<100	-	<100	<100	<100	<200	-
PHC F4 (C34-C50)	500	500	<100	<200	<100	<100	-	<100	<100	<100	<200	-
Reached baseline at C50?	NV	NV	YES	YES	YES	YES	-	YES	YES	YES	YES	-
PHC F4 (C34-C50)-gravimetric	500	500	-	-	-	-	-	-	-	-	-	-

(1) Result reported was due to chlorinated compounds eluting inside the F1 range.
All groundwater concentrations reported in µg/L.
'<' = Parameter below detection limit, as indicated
'NV'= No value
'-' = Not Analyzed
Bold Concentration exceeds MECP (2011) Table 3 & 7 SCS.

GROUNDWATER ANALYTICAL RESULTS:
Table D.4 - Petroleum Hydrocarbons (PHCs) in Groundwater

Location	MECP (2011) Table 3: Full Depth Generic SCS in a Non-Potable Groundwater Condition Residential/Parkland/Institutional Land Use (coarse textured soil)	MECP (2011) Table 7: Full Depth Generic SCS for Shallow Soils in a Non-Potable Groundwater Condition Residential/Parkland/Institutional Land Use (coarse textured soil)	MW15-6			MW15-7				MW15-8		
Sample ID			MW15-6			MW15-7				MW15-8	MW15-12 (Dup of MW15-8)	MW15-8
Lab ID			AGE828	CFW568	FDH367	AGE829	AOU519	CKY707	FDA820	AOU520	AOU524	FDH368
Sampling Date			8-May-15	21-Apr-16	15-Sep-17	8-May-15	7-Jul-15	27-May-16	14-Sep-17	7-Jul-15		15-Sep-17
Screen Depth Interval (m)			1.1-4.2			1.52-4.57				2.74-4.27		
Consultant			EXP	EXP	EXP	EXP	EXP	EXP	EXP	EXP		EXP
Laboratory			Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam		Maxxam
Date of Analysis			13-May-15	26/27-Apr-16	20/21-Sep-17	13-May-15	9/13-Jul-15	31-May-16	19/20-Sep-17	9/13-Jul-15		20/21-Sep-17
Certificate of Analysis Number			B586655	B680859	B7K2764	B586655	B5D2173	B6A8093	B7K1578	B5D2173		B7K2764
Benzene	44	0.5	<1.0	<0.20	<0.10	<1.0	0.14	<0.20	<0.50	<0.10	<0.10	<0.10
Toluene	18000	320	<2.0	<0.20	<0.20	<2.0	<0.20	<0.20	<1.0	<0.20	<0.20	<0.20
Ethylbenzene	2300	54	<1.0	<0.20	<0.10	<1.0	<0.10	<0.20	<0.50	<0.10	<0.10	<0.10
m-Xylene + p-Xylene	NV	NV	<1.0	<0.20	<0.10	<1.0	<0.10	<0.20	<0.50	<0.10	<0.10	<0.10
o-Xylene	NV	NV	<1.0	<0.20	<0.10	<1.0	<0.10	<0.20	<0.50	<0.10	<0.10	<0.10
Xylenes (total)	4200	72	<1.0	<0.20	<0.10	<1.0	<0.10	<0.20	<0.50	<0.10	<0.10	<0.10
PHC F1 (C6-C10)	750	420	<25	-	-	100	-	-	-	-	-	-
PHC F1 (C6-C10) - BTEX	750	420	<25	-	-	100	-	-	-	-	-	-
PHC F2 (C10-C16)	150	150	<100	-	-	<100	-	-	-	-	-	-
PHC F3 (C16-C34)	500	500	<100	-	-	<100	-	-	-	-	-	-
PHC F4 (C34-C50)	500	500	<100	-	-	<100	-	-	-	-	-	-
Reached baseline at C50?	NV	NV	YES	-	-	YES	-	-	-	-	-	-
PHC F4 (C34-C50)-gravimetric	500	500	-	-	-	-	-	-	-	-	-	-

(1) Result reported was due to chlorinated compounds eluting inside the F1 range.
All groundwater concentrations reported in µg/L.
'<' = Parameter below detection limit, as indicated
'NV'= No value
'-' = Not Analyzed
Bold Concentration exceeds MECP (2011) Table 3 & 7 SCS.

GROUNDWATER ANALYTICAL RESULTS:
Table D.4 - Petroleum Hydrocarbons (PHCs) in Groundwater

Location	MECP (2011) Table 3: Full Depth Generic SCS in a Non-Potable Groundwater Condition Residential/Parkland/Institutional Land Use (coarse textured soil)	MECP (2011) Table 7: Full Depth Generic SCS for Shallow Soils in a Non-Potable Groundwater Condition Residential/Parkland/Institutional Land Use (coarse textured soil)	MW15-9		MW15-10		MW15-11		BH/MW205	BH/MW206	BH/MW207		
Sample ID			MW15-9		MW15-10		MW15-11		BH/MW205	MW206	BH/MW207	BH/MW209 (Dup of BH/MW207)	BH/MW207
Lab ID			AOU521	FDA821	AOU522	FDH366	AOU523	FDO219	CFY451	FDA816	CFW569	CFW571	FDA817
Sampling Date			7-Jul-15	14-Sep-17	7-Jul-15	15-Sep-17	7-Jul-15	18-Sep-17	22-Apr-16	14-Sep-17	21-Apr-16		14-Sep-17
Screen Depth Interval (m)			1.52-4.57		0.7-3.8		1.83-3.35		1.52-4.57	1.22 - 3.66	9.3 - 10.8		
Consultant			EXP	EXP	EXP	EXP	EXP	EXP	EXP	EXP	EXP		EXP
Laboratory			Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam		Maxxam
Date of Analysis			9/13-Jul-15	19/20-Sep-17	11-Jul-15	19/21/22-Sep-17	9/13-Jul-15		27/28-Apr-16	14/15-Sep-17	26/27-Apr-16		19/20-Sep-17
Certificate of Analysis Number			B5D2173	B7K1578	B5D2173	B7K2764	B5D2173	B7K3897	B681325	B7K1578	B680859		B7K1578
Benzene	44	0.5	0.1	<0.25	<0.10	<0.20	<0.10	<0.25	<0.20	0.29	<0.20	<0.20	<0.20
Toluene	18000	320	<0.20	<0.50	<0.20	<0.20	<0.20	<0.50	<0.20	<0.20	<0.20	<0.20	<0.20
Ethylbenzene	2300	54	<0.10	<0.25	<0.10	<0.20	<0.10	<0.25	<0.20	<0.20	<0.20	<0.20	<0.20
m-Xylene + p-Xylene	NV	NV	<0.10	<0.25	<0.10	<0.20	<0.10	<0.25	<0.20	<0.20	<0.20	<0.20	<0.20
o-Xylene	NV	NV	<0.10	<0.25	<0.10	<0.20	<0.10	<0.25	<0.20	<0.20	<0.20	<0.20	<0.20
Xylenes (total)	4200	72	<0.10	<0.25	<0.10	<0.20	<0.10	<0.25	<0.20	<0.20	<0.20	<0.20	<0.20
PHC F1 (C6-C10)	750	420	-	-	<25	28 (1)	<25	-	<25	<25	-	-	<25
PHC F1 (C6-C10) - BTEX	750	420	-	-	<25	28	<25	-	<25	<25	-	-	<25
PHC F2 (C10-C16)	150	150	-	-	<100	<100	<100	-	<100	**660**	-	-	<100
PHC F3 (C16-C34)	500	500	-	-	<200	<200	<200	-	<200	<200	-	-	<200
PHC F4 (C34-C50)	500	500	-	-	<200	<200	<200	-	<200	<200	-	-	<200
Reached baseline at C50?	NV	NV	-	-	YES	YES	YES	-	YES	YES	-	-	YES
PHC F4 (C34-C50)-gravimetric	500	500	-	-	-	-	-	-	-	-	-	-	-

(1) Result reported was due to chlorinated compounds eluting inside the F1 range.
All groundwater concentrations reported in µg/L.
'<' = Parameter below detection limit, as indicated
'NV'= No value
'-' = Not Analyzed
Bold Concentration exceeds MECP (2011) Table 3 & 7 SCS.

GROUNDWATER ANALYTICAL RESULTS:
Table D.4 - Petroleum Hydrocarbons (PHCs) in Groundwater

Location	MECP (2011) Table 3: Full Depth Generic SCS in a Non-Potable Groundwater Condition Residential/Parkland/Institutional Land Use (coarse textured soil)	MECP (2011) Table 7: Full Depth Generic SCS for Shallow Soils in a Non-Potable Groundwater Condition Residential/Parkland/Institutional Land Use (coarse textured soil)	BH/MW208	MW301	MW 302	MW 303	MW304	MW305	MW306	MW307	MW 308
Sample ID			BH/MW208	MW301	MW 302	MW 303	MW304	MW305	MW306	MW307	MW 308
Lab ID			CFW566	FDH380	FDA814	FDA815	FDH381	FDH382	FDO218	FDH369	FDH370
Sampling Date			21-Apr-16	15-Sep-17	14-Sep-17	14-Sep-17	15-Sep-17	15-Sep-17	18-Sep-17	15-Sep-17	15-Sep-17
Screen Depth Interval (m)			9.3 - 10.8	3.1 - 4.6	1.2 - 3.7	1.2 - 3.7	2.7 - 4.7	3.1-4.6	3.1 - 4.6	1.5 - 4.6	1.5 - 4.6
Consultant			EXP	EXP	EXP	EXP	EXP	EXP	EXP	EXP	EXP
Laboratory			Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam
Date of Analysis			26/27-Apr-16	19/21/22-Sep-17	19/21-Sep-17	19/21-Sep-17	19/21/22-Sep-17	19/21/22-Sep-17	22-Sep-17	20/21-Sep-17	20/21-Sep-17
Certificate of Analysis Number			B680859	B7K2764	B7K1578	B7K1578	B7K2764	B7K2764	B7K3897	B7K2764	B7K2764
Benzene	44	0.5	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.25	<0.10	<0.10
Toluene	18000	320	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.50	<0.20	<0.20
Ethylbenzene	2300	54	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.25	<0.10	<0.10
m-Xylene + p-Xylene	NV	NV	<0.20	<0.20	<0.40	<0.40	<0.20	<0.20	<0.25	<0.10	<0.10
o-Xylene	NV	NV	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.25	<0.10	<0.10
Xylenes (total)	4200	72	<0.20	<0.20	<0.40	<0.40	<0.20	<0.20	<0.25	<0.10	<0.10
PHC F1 (C6-C10)	750	420	-	<25	<25	<25	<25	26	-	-	-
PHC F1 (C6-C10) - BTEX	750	420	-	<25	<25	<25	<25	26	-	-	-
PHC F2 (C10-C16)	150	150	-	<100	<100	**1100**	<100	<100	-	-	-
PHC F3 (C16-C34)	500	500	-	<200	<200	**550**	<200	<200	-	-	-
PHC F4 (C34-C50)	500	500	-	<200	<200	<200	<200	<200	-	-	-
Reached baseline at C50?	NV	NV	-	YES	YES	YES	YES	YES	-	-	-
PHC F4 (C34-C50)-gravimetric	500	500	-	-	-	-	-	-	-	-	-

(1) Result reported was due to chlorinated compounds eluting inside the F1 range.
All groundwater concentrations reported in µg/L.
'<' = Parameter below detection limit, as indicated
'NV'= No value
'-' = Not Analyzed
Bold Concentration exceeds MECP (2011) Table 3 & 7 SCS.

GROUNDWATER ANALYTICAL RESULTS:
Table D.4 - Petroleum Hydrocarbons (PHCs) in Groundwater

Location	MECP (2011) Table 3: Full Depth Generic SCS in a Non-Potable Groundwater Condition Residential/Parkland/Institutional Land Use (coarse textured soil)	MECP (2011) Table 7: Full Depth Generic SCS for Shallow Soils in a Non-Potable Groundwater Condition Residential/Parkland/Institutional Land Use (coarse textured soil)	MW309	MW310	MW311		MW312	-	-	-	-	-
Sample ID			MW309	MW310	MW311	MW313 (Dup of MW311)	MW312	Trip Blank	Trip Blank	Trip Blank	Trip Blank	Trip Blank
Lab ID			FDH371	FDH372	FDH374	FDH375	FDH373	ABZ027	AGE830	A0U525	CFY452	FDH383
Sampling Date			15-Sep-17	15-Sep-17	15-Sep-17		15-Sep-17	10-Apr-15	8-May-15	22-Jun-15	22-Apr-16	15-Sep-17
Screen Depth Interval (m)			1.5 - 4.6	1.5 - 4.6	1.2 - 3.7		1.5 - 4.6	-	-	-	-	-
Consultant			EXP	EXP	EXP		EXP	EXP	EXP	EXP	EXP	EXP
Laboratory			Maxxam	Maxxam	Maxxam		Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam
Date of Analysis			20/21-Sep-17	19/21/22-Sep-17	20/21-Sep-17		20/21-Sep-17	14/15-Apr-15	13-May-15	9/13-Jul-15	26-Apr-16	19/21/22-Sep-17
Certificate of Analysis Number			B7K2764	B7K2764	B7K2764		B7K2764	B563666	B586655	B5D2173	B681325	B7K2764
Benzene	44	0.5	<0.10	<0.20	<0.20	<0.20	1	<0.10	<0.10	<0.10	<0.20	<0.20
Toluene	18000	320	<0.20	<0.20	<0.20	<0.20	<2.0	<0.20	<0.20	<0.20	<0.20	<0.20
Ethylbenzene	2300	54	<0.10	<0.20	1.7	1.7	<1.0	<0.10	<0.10	<0.10	<0.20	<0.20
m-Xylene + p-Xylene	NV	NV	<0.10	<0.20	5	5	<1.0	<0.10	<0.10	<0.10	<0.20	<0.20
o-Xylene	NV	NV	<0.10	<0.20	0.76	0.64	<1.0	<0.10	<0.10	<0.10	<0.20	<0.40
Xylenes (total)	4200	72	<0.10	<0.20	5.7	5.6	<1.0	<0.10	<0.10	<0.10	<0.20	<0.40
PHC F1 (C6-C10)	750	420	-	<25	79	84	-	-	-	-	-	<25
PHC F1 (C6-C10) - BTEX	750	420	-	<25	72	76	-	-	-	-	-	<25
PHC F2 (C10-C16)	150	150	-	<100	**360**	**450**	-	-	-	-	-	<100
PHC F3 (C16-C34)	500	500	-	<200	<200	<200	-	-	-	-	-	<200
PHC F4 (C34-C50)	500	500	-	<200	<200	<200	-	-	-	-	-	<200
Reached baseline at C50?	NV	NV	-	YES	YES	YES	-	-	-	-	-	YES
PHC F4 (C34-C50)-gravimetric	500	500	-	-	-	-	-	-	-	-	-	-

(1) Result reported was due to chlorinated compounds eluting inside the F1 range.
All groundwater concentrations reported in µg/L.
'<' = Parameter below detection limit, as indicated
'NV'= No value
'-' = Not Analyzed
Bold Concentration exceeds MECP (2011) Table 3 & 7 SCS.

GROUNDWATER ANALYTICAL RESULTS:
Table D.5 - Volatile Organic Compounds (VOCs) in Groundwater

Location	MECP (2011) Table 3: Full Depth Generic SCS in a Non-Potable Groundwater Condition All Types of Land Use (coarse textured soil)	MECP (2011) Table 7: Full Depth Generic SCS for Shallow Soils in a Non-Potable Groundwater Condition All Types of Land Use (coarse textured soil)	MW-1	MW-3	MW-6	
Sample ID			MW11-1	MW11-3	MW11-6	
Lab ID			ACD937	CFY450	ABZ026	CFY449
Sampling Date			10-Apr-15	22-Apr-16	10-Apr-15	22-Apr-16
Screen Depth Interval (m)			1.5-3.0	1.2 - 2.7	1.5 - 3.0	
Consultant			EXP	EXP	EXP	EXP
Laboratory			Maxxam	Maxxam	Maxxam	Maxxam
Date of Analysis			14/15-Apr-15	26-Apr-16	14/15-Apr-15	26-Apr-16
Certificate of Analysis Number			B563666	B681325	B563666	B681325
Acetone	130000	100000	<10	<10	<1000	<10
Benzene	44	0.5	<0.10	<0.20	<10	<0.20
Bromodichloromethane	85000	67000	<0.10	<0.50	<10	<0.50
Bromoform	380	5	<0.20	<1.0	<20	<1.0
Bromomethane	5.6	0.89	<0.50	<0.50	**<50**	<0.50
Carbon Tetrachloride	0.79	0.2	<0.10	<0.20	**<10**	<0.20
Chlorobenzene	630	140	<0.10	<0.20	<10	<0.20
Chloroethane	NV	NV	-	-	-	-
Chloroform	2.4	2	0.2	<0.20	**<10**	0.59
Chloromethane	NV	NV	-	-	-	-
Dibromochloromethane	82000	65000	<0.20	<0.50	<20	<0.50
1,2-Dichlorobenzene	4600	150	<0.20	<0.50	<20	<0.50
1,3-Dichlorobenzene	9600	7600	<0.20	<0.50	<20	<0.50
1,4-Dichlorobenzene	8	0.5	<0.20	<0.50	**<20**	<0.50
Dichlorodifluoromethane	4400	3500	<0.50	<1.0	<50	<1.0
1,1-Dichloroethane	320	11	<0.10	<0.20	<10	<0.20
1,2-Dichloroethane	1.6	0.5	<0.20	<0.50	**<20**	<0.50
1,1-Dichloroethylene	1.6	0.5	<0.10	<0.20	**<10**	<0.20
cis-1,2-Dichloroethylene	1.6	1.6	<0.10	<0.50	**16**	**26**
trans-1,2-Dichloroethylene	1.6	1.6	<0.10	<0.50	**<10**	0.61
1,2-Dichloropropane	16	0.58	<0.10	<0.20	<10	<0.20
cis-1,3-Dichloropropene	5.2	0.5	<0.20	<0.30	**<20**	<0.30
trans-1,3-Dichloropropene	5.2	0.5	<0.20	<0.40	**<20**	<0.40
1,3-Dichloropropene(cis+trans)	5.2	0.5	<0.28	<0.50	**<28**	<0.50
Ethylbenzene	2300	54	<0.10	<0.20	<10	<0.20
Ethylene Dibromide (1,2-Dibromoethane)	0.25	0.2	<0.20	<0.20	**<20**	<0.20
Hexane (n)	51	5	<0.50	<1.0	<50	<1.0
Methylene chloride (Dichloromethane)	610	26	<0.50	<2.0	<50	<2.0
Methyl ethyl ketone (2-Butanone)	470000	21000	<5.0	<10	<500	<10
Methyl Butyl Ketone (2-Hexanone)	NV	NV	-	-	-	-
Methyl Isobutyl Ketone	140000	5200	<5.0	<5.0	<500	<5.0
Methyl t-butyl ether (MTBE)	190	15	<0.20	<0.50	<20	<0.50
Styrene	1300	43	<0.20	<0.50	<20	<0.50
1,1,1,2-Tetrachloroethane	3.3	1.1	<0.10	<0.50	**<10**	<0.50
1,1,2,2-Tetrachloroethane	3.2	0.5	<0.20	<0.50	**<20**	<0.50
Tetrachloroethylene	1.6	0.5	0.53	<0.20	**320**	**310**
Toluene	18000	320	<0.20	<0.20	<20	<0.20
1,2,4-Trichlorobenzene	180	3	-	-	-	-
1,1,1-Trichloroethane	640	23	<0.10	<0.20	<10	<0.20
1,1,2-Trichloroethane	4.7	0.5	<0.20	<0.50	**<20**	<0.50
Trichloroethylene	1.6	0.5	<0.10	<0.20	**13**	**18**
Trichlorofluoromethane	2500	2000	<0.20	<0.50	<20	<0.50
1,2,4-Trimethylbenzene	NV	NV	-	-	-	-
1,3,5-Trimethylbenzene	NV	NV	-	-	-	-
Vinyl Chloride	0.5	0.5	<0.20	<0.20	**<20**	<0.20
m-Xylene + p-Xylene	NV	NV	<0.10	<0.20	<10	<0.20
o-Xylene	NV	NV	<0.10	<0.20	<10	<0.20
Xylenes (total)	4200	72	<0.10	<0.20	<10	<0.20

(1) Data collected prior to 2011 is included in these tables for demonstration purposes only, and is not considered for delineation purposes.
All groundwater concentrations reported in µg/L.
'<' = Parameter below detection limit, as indicated
'NV'= No value
'-' = Not Analyzed
Bold Concentration exceeds MECP (2011) Table 3 SCS.
Bold Non-detect but detection limit exceeds the MECP (2011) Table 3 SCS.

GROUNDWATER ANALYTICAL RESULTS:
Table D.5 - Volatile Organic Compounds (VOCs) in Groundwater

Location	MECP (2011) Table 3: Full Depth Generic SCS in a Non-Potable Groundwater Condition All Types of Land Use (coarse textured soil)	MW15-1		MW15-2	MW15-3		MW15-4	
Sample ID		MW15-1		MW15-2	MW15-3		MW15-4	MW15-5 (Dup of MW15-4)
Lab ID		ABZ022	FDA818	ACD768	ABZ023	CFW570	ABZ024	ABZ025
Sampling Date		10-Apr-15	14-Sep-17	10-Apr-15	10-Apr-15	21-Apr-16	10-Apr-15	
Screen Depth Interval (m)		3.1-4.6		3.1-4.6	7.6-9.2		3.1-4.6	
Consultant		EXP	EXP	EXP	EXP	EXP	EXP	
Laboratory		Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	
Date of Analysis		14/15-Apr-15	19/20-Sep-17	14/15-Apr-15	14/15-Apr-15	26/27-Apr-16	14/15-Apr-15	
Certificate of Analysis Number		B563666	B7K1578	B563666	B563666	B680859	B563666	
Acetone	130000	<1000	<20	<10	<10	<10	<10	<10
Benzene	44	<10	<0.40	<0.10	<0.10	<0.20	0.16	0.15
Bromodichloromethane	85000	<10	<1.0	<0.10	<0.10	<0.50	<0.10	<0.10
Bromoform	380	<20	<2.0	<0.20	<0.20	<1.0	<0.20	<0.20
Bromomethane	5.6	**<50**	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50
Carbon Tetrachloride	0.79	**<10**	<0.40	<0.10	<0.10	<0.20	<0.10	<0.10
Chlorobenzene	630	<10	<0.40	<0.10	<0.10	<0.20	<0.10	<0.10
Chloroethane	NV	-	-	-	-	-	-	-
Chloroform	2.4	**<10**	<0.40	<0.10	<0.10	<0.20	<0.10	<0.10
Chloromethane	NV	-	-	-	-	-	-	-
Dibromochloromethane	82000	<20	<1.0	<0.20	<0.20	<0.50	<0.20	<0.20
1,2-Dichlorobenzene	4600	<20	<1.0	<0.20	<0.20	<0.50	<0.20	<0.20
1,3-Dichlorobenzene	9600	<20	<1.0	<0.20	<0.20	<0.50	<0.20	<0.20
1,4-Dichlorobenzene	8	**<20**	<1.0	<0.20	<0.20	<0.50	<0.20	<0.20
Dichlorodifluoromethane	4400	<50	<2.0	<0.50	<0.50	<1.0	<0.50	<0.50
1,1-Dichloroethane	320	<10	<0.40	<0.10	<0.10	<0.20	<0.10	<0.10
1,2-Dichloroethane	1.6	**<20**	<1.0	<0.20	<0.20	<0.50	<0.20	<0.20
1,1-Dichloroethylene	1.6	**<10**	<0.40	<0.10	<0.10	<0.20	<0.10	<0.10
cis-1,2-Dichloroethylene	1.6	**<10**	**9.8**	<0.10	<0.10	<0.50	<0.10	<0.10
trans-1,2-Dichloroethylene	1.6	**<10**	<1.0	<0.10	<0.10	<0.50	<0.10	<0.10
1,2-Dichloropropane	16	**<10**	<0.40	<0.10	<0.10	<0.20	<0.10	<0.10
cis-1,3-Dichloropropene	5.2	**<20**	<0.60	<0.20	<0.20	<0.30	<0.20	<0.20
trans-1,3-Dichloropropene	5.2	**<20**	<0.80	<0.20	<0.20	<0.40	<0.20	<0.20
1,3-Dichloropropene(cis+trans)	5.2	**<28**	<1.0	<0.28	<0.28	<0.50	<0.28	<0.28
Ethylbenzene	2300	<10	<0.40	<0.10	<0.10	<0.20	<0.10	<0.10
Ethylene Dibromide (1,2-Dibromoethane)	0.25	**<20**	**<0.40**	<0.20	<0.20	<0.20	<0.20	<0.20
Hexane (n)	51	<50	<2.0	<0.50	<0.50	<1.0	<0.50	<0.50
Methylene chloride (Dichloromethane)	610	<50	<4.0	<0.50	<0.50	<2.0	<0.50	<0.50
Methyl ethyl ketone (2-Butanone)	470000	<500	<20	<5.0	<5.0	<10	<5.0	<5.0
Methyl Butyl Ketone (2-Hexanone)	NV	-	-	-	-	-	-	-
Methyl Isobutyl Ketone	140000	<500	<10	<5.0	<5.0	<5.0	<5.0	<5.0
Methyl t-butyl ether (MTBE)	190	<20	<1.0	<0.20	<0.20	<0.50	<0.20	<0.20
Styrene	1300	<20	<1.0	<0.20	<0.20	<0.50	<0.20	<0.20
1,1,1,2-Tetrachloroethane	3.3	**<10**	<1.0	<0.10	<0.10	<0.50	<0.10	<0.10
1,1,2,2-Tetrachloroethane	3.2	**<20**	<1.0	<0.20	<0.20	<0.50	<0.20	<0.20
Tetrachloroethylene	1.6	**840**	**760**	<0.10	<0.10	<0.20	<0.10	<0.10
Toluene	18000	<20	<0.40	<0.20	<0.20	<0.20	<0.20	<0.20
1,2,4-Trichlorobenzene	180	-	<0.40	-	-	-	-	-
1,1,1-Trichloroethane	640	<10	<0.40	<0.10	<0.10	<0.20	<0.10	<0.10
1,1,2-Trichloroethane	4.7	**<20**	<1.0	<0.20	<0.20	<0.50	<0.20	<0.20
Trichloroethylene	1.6	**19**	**25**	<0.10	<0.10	<0.20	<0.10	<0.10
Trichlorofluoromethane	2500	<20	<1.0	<0.20	<0.20	<0.50	<0.20	<0.20
1,2,4-Trimethylbenzene	NV	-	-	-	-	-	-	-
1,3,5-Trimethylbenzene	NV	-	-	-	-	-	-	-
Vinyl Chloride	0.5	**<20**	<0.40	<0.20	<0.20	<0.20	<0.20	<0.20
m-Xylene + p-Xylene	NV	<10	<0.40	<0.10	<0.10	<0.20	<0.10	<0.10
o-Xylene	NV	<10	<0.40	<0.10	<0.10	<0.20	<0.10	<0.10
Xylenes (total)	4200	<10	<0.40	<0.10	<0.10	<0.20	<0.10	<0.10

(1) Data collected prior to 2011 is included in these tables for demo
All groundwater concentrations reported in µg/L.
'<' = Parameter below detection limit, as indicated
'NV'= No value
'-' = Not Analyzed
Bold Concentration exceeds MECP (2011) Table 3 SCS.
Bold Non-detect but detection limit exceeds the MECP (2011) Tabl

GROUNDWATER ANALYTICAL RESULTS:
Table D.5 - Volatile Organic Compounds (VOCs) in Groundwater

Location		MW15-5					MW15-6			MW15-7			
Sample ID	MECP (2011) Table 3: Full Depth Generic SCS in a Non-Potable Groundwater Condition All Types of Land Use (coarse textured soil)	MW15-5				MW18-1 (Dup of MW15-5)	MW15-6			MW15-7			
Lab ID		AGE827	CFW567	FDA819	FZG283	FZG284	AGE828	CFW568	FDH367	AGE829	AOU519	CKY707	FDA820
Sampling Date		7-May-15	21-Apr-16	14-Sep-17	26-Jan-18	26-Jan-18	8-May-15	21-Apr-16	15-Sep-17	8-May-15	7-Jul-15	27-May-16	14-Sep-17
Screen Depth Interval (m)				1.2-4.3				1.1-4.2			1.52-4.57		
Consultant		EXP	EXP	EXP	EXP	EXP	EXP	EXP	EXP	EXP	EXP	EXP	EXP
Laboratory		Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam
Date of Analysis		13-May-15	26/27-Apr-16	19/20-Sep-17	29-Jan-18	29-Jan-18	13-May-15	26/27-Apr-16	20/21-Sep-17	13-May-15	9/13-Jul-15	31-May-16	19/20-Sep-17
Certificate of Analysis Number		B586655	B680859	B7K1578	R4958809	R4958809	B586655	B680859	B7K2764	B586655	B5D2173	B6A8093	B7K1578
Acetone	130000	<100	<20	<500	<250	<250	<100	<10	<10	<100	<10	<10	<50
Benzene	44	<1.0	<0.40	<5.0	<0.20	<0.20	<1.0	<0.20	<0.10	<1.0	0.14	<0.20	<0.50
Bromodichloromethane	85000	<1.0	<1.0	<5.0	<13	<13	<1.0	<0.50	<0.10	<1.0	<0.10	<0.50	<0.50
Bromoform	380	<2.0	<2.0	<10	<1.0	<1.0	<2.0	<1.0	<0.20	<2.0	<0.20	<1.0	<1.0
Bromomethane	5.6	<5.0	<1.0	**<25**	<0.50	<0.50	<5.0	<0.50	<0.50	<5.0	<0.50	<0.50	<2.5
Carbon Tetrachloride	0.79	**<1.0**	<0.40	**<5.0**	<0.20	<0.20	**<1.0**	<0.20	<0.10	**<1.0**	<0.10	<0.20	<0.50
Chlorobenzene	630	<1.0	<0.40	<5.0	<5.0	<5.0	<1.0	<0.20	<0.10	<1.0	<0.10	<0.20	<0.50
Chloroethane	NV	-	-	-	-	-	-	-	-	-	-	-	-
Chloroform	2.4	<1.0	<0.40	**<5.0**	0.41	0.39	<1.0	<0.20	<0.10	<1.0	<0.10	<0.20	<0.50
Chloromethane	NV	-	-	-	-	-	-	-	-	-	-	-	-
Dibromochloromethane	82000	<2.0	<1.0	<10	<13	<13	<2.0	<0.50	<0.20	<2.0	<0.20	<0.50	<1.0
1,2-Dichlorobenzene	4600	<2.0	<1.0	<10	<0.50	<0.50	<2.0	<0.50	<0.20	<2.0	<0.20	<0.50	<1.0
1,3-Dichlorobenzene	9600	<2.0	<1.0	<10	<13	<13	<2.0	<0.50	<0.20	<2.0	<0.20	<0.50	<1.0
1,4-Dichlorobenzene	8	<2.0	<1.0	<10	<0.50	<0.50	<2.0	<0.50	<0.20	<2.0	<0.20	<0.50	<1.0
Dichlorodifluoromethane	4400	<5.0	<2.0	<25	<25	<25	<5.0	<1.0	<0.50	<5.0	<0.50	<1.0	<2.5
1,1-Dichloroethane	320	<1.0	<0.40	<5.0	<5.0	<5.0	<1.0	<0.20	<0.10	<1.0	<0.10	<0.20	<0.50
1,2-Dichloroethane	1.6	**<2.0**	<1.0	**<10**	<0.50	<0.50	**<2.0**	<0.50	<0.20	**<2.0**	<0.20	<0.50	<1.0
1,1-Dichloroethylene	1.6	<1.0	<0.40	**<5.0**	<0.20	<0.20	<1.0	<0.20	<0.10	<1.0	<0.10	<0.20	<0.50
cis-1,2-Dichloroethylene	1.6	**5.7**	**7.7**	**7.6**	**5.9**	**6**	**13**	**2.8**	<0.10	**5.6**	**8.8**	**5.2**	**4**
trans-1,2-Dichloroethylene	1.6	<1.0	<1.0	**<5.0**	<0.50	<0.50	<1.0	<0.50	<0.10	<1.0	<0.10	<0.50	<0.50
1,2-Dichloropropane	16	<1.0	<0.40	<5.0	<0.20	<0.20	<1.0	<0.20	<0.10	<1.0	<0.10	0.25	<0.50
cis-1,3-Dichloropropene	5.2	<2.0	<0.60	**<10**	<0.30	<0.30	<2.0	<0.30	<0.20	<2.0	<0.20	<0.30	<1.0
trans-1,3-Dichloropropene	5.2	<2.0	<0.80	**<10**	<0.40	<0.40	<2.0	<0.40	<0.20	<2.0	<0.20	<0.40	<1.0
1,3-Dichloropropene(cis+trans)	5.2	<2.8	<1.0	**<14**	<0.5	<0.5	<2.8	<0.50	<0.28	<2.8	<0.28	<0.50	<1.4
Ethylbenzene	2300	<1.0	<0.40	<5.0	<0.20	<0.20	<1.0	<0.20	<0.10	<1.0	<0.10	<0.20	<0.50
Ethylene Dibromide (1,2-Dibromoethane)	0.25	**<2.0**	<0.20	**<10**	<0.20	<0.20	**<2.0**	<0.20	<0.20	**<2.0**	<0.20	<0.20	**<1.0**
Hexane (n)	51	<5.0	<2.0	<25	<1.0	<1.0	<5.0	<1.0	<0.50	<5.0	<0.50	<1.0	<2.5
Methylene chloride (Dichloromethane)	610	<5.0	<4.0	<25	<2.0	<2.0	<5.0	<2.0	<0.50	<5.0	<0.50	<2.0	<2.5
Methyl ethyl ketone (2-Butanone)	470000	<50	<20	<250	<250	<250	<50	<10	<5.0	<50	<5.0	<10	<25
Methyl Butyl Ketone (2-Hexanone)	NV	-	-	-	-	-	-	-	-	-	-	-	-
Methyl Isobutyl Ketone	140000	<50	<10	<250	<130	<130	<50	<5.0	<5.0	<50	<5.0	<5.0	<25
Methyl t-butyl ether (MTBE)	190	<2.0	<1.0	<10	<13	<13	<2.0	<0.50	<0.20	<2.0	<0.20	<0.50	<1.0
Styrene	1300	<2.0	<1.0	<10	<0.50	<0.50	<2.0	<0.50	<0.20	<2.0	<0.20	<0.50	<1.0
1,1,1,2-Tetrachloroethane	3.3	<1.0	<1.0	**<10**	<0.50	<0.50	<1.0	<0.50	<0.20	<1.0	<0.10	<0.50	<1.0
1,1,2,2-Tetrachloroethane	3.2	<2.0	<1.0	**<10**	<0.50	<0.50	<2.0	<0.50	<0.20	<2.0	<0.20	<0.50	<1.0
Tetrachloroethylene	1.6	**610**	**620**	**810**	**710**	**740**	**170**	**9.2**	0.46	**600**	**8.4**	**4.2**	**2**
Toluene	18000	<2.0	<0.40	<10	<5.0	<5.0	<2.0	<0.20	<0.20	<2.0	<0.20	<0.20	<1.0
1,2,4-Trichlorobenzene	180	-	-	-	-	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	640	<1.0	<0.40	<5.0	<5.0	<5.0	<1.0	<0.20	<0.10	<1.0	<0.10	<0.20	<0.50
1,1,2-Trichloroethane	4.7	<2.0	<1.0	**<10**	<0.50	<0.50	<2.0	<0.50	<0.20	<2.0	<0.20	<0.50	<1.0
Trichloroethylene	1.6	**44**	**65**	**110**	**90**	**91**	**17**	**3.3**	<0.10	**46**	**6.1**	**2.8**	**1.8**
Trichlorofluoromethane	2500	<2.0	<1.0	<10	<13	<13	<2.0	<0.50	<0.20	<2.0	<0.20	<0.50	<1.0
1,2,4-Trimethylbenzene	NV	-	-	-	-	-	-	-	-	-	-	-	-
1,3,5-Trimethylbenzene	NV	-	-	-	-	-	-	-	-	-	-	-	-
Vinyl Chloride	0.5	**<2.0**	<0.40	**<10**	<0.20	<0.20	**<2.0**	<0.20	<0.20	**<2.0**	<0.20	<0.20	**<1.0**
m-Xylene + p-Xylene	NV	<1.0	<0.40	<5.0	<5.0	<5.0	<1.0	<0.20	<0.10	<1.0	<0.10	<0.20	<0.50
o-Xylene	NV	<1.0	<0.40	<5.0	<5.0	<5.0	<1.0	<0.20	<0.10	<1.0	<0.10	<0.20	<0.50
Xylenes (total)	4200	<1.0	<0.40	<5.0	<5.0	<5.0	<1.0	<0.20	<0.10	<1.0	<0.10	<0.20	<0.50

(1) Data collected prior to 2011 is included in these tables for demo
All groundwater concentrations reported in µg/L.
'<' = Parameter below detection limit, as indicated
'NV'= No value
'-' = Not Analyzed
Bold Concentration exceeds MECP (2011) Table 3 SCS.
Bold Non-detect but detection limit exceeds the MECP (2011) Tabl

GROUNDWATER ANALYTICAL RESULTS:
Table D.5 - Volatile Organic Compounds (VOCs) in Groundwater

Location		MW15-8			MW15-9		MW15-10	
Sample ID	MECP (2011) Table 3: Full Depth Generic SCS in a Non-Potable Groundwater Condition All Types of Land Use (coarse textured soil)	MW15-8	MW15-12 (Dup of MW15-8)	MW15-8	MW15-9		MW15-10	
Lab ID		AOU520	AOU524	FDH368	AOU521	FDA821	AOU522	FDH366
Sampling Date		7-Jul-15		15-Sep-17	7-Jul-15	14-Sep-17	7-Jul-15	15-Sep-17
Screen Depth Interval (m)		2.74-4.27			1.52-4.57		0.76-3.81	
Consultant		EXP		EXP	EXP	EXP	EXP	EXP
Laboratory		Maxxam		Maxxam	Maxxam	Maxxam	Maxxam	Maxxam
Date of Analysis		9/13-Jul-15		20/21-Sep-17	9/13-Jul-15	19/20-Sep-17	9/13-Jul-15	19/20-Sep-17
Certificate of Analysis Number		B5D2173		B7K2764	B5D2173	B7K1578	B5D2173	B7K2764
Acetone	130000	<10	<10	<10	<10	<25	<10	<10
Benzene	44	<0.10	<0.10	<0.10	0.10	<0.25	<0.10	<0.20
Bromodichloromethane	85000	<0.10	<0.10	<0.10	<0.10	<0.25	<0.10	<0.50
Bromoform	380	<0.20	<0.20	<0.20	<0.20	<0.50	<0.20	<1.0
Bromomethane	5.6	<0.50	<0.50	<0.50	<0.50	<1.3	<0.50	<0.50
Carbon Tetrachloride	0.79	<0.10	<0.10	<0.10	<0.10	<0.25	<0.10	<0.20
Chlorobenzene	630	<0.10	<0.10	<0.10	<0.10	<0.25	<0.10	<0.20
Chloroethane	NV	-	-	-	-	-	-	-
Chloroform	2.4	<0.10	<0.10	<0.10	0.35	<0.25	0.6	1.9
Chloromethane	NV	-	-	-	-	-	-	-
Dibromochloromethane	82000	<0.20	<0.20	<0.20	<0.20	<0.50	<0.20	<0.50
1,2-Dichlorobenzene	4600	<0.20	<0.20	<0.20	<0.20	<0.50	<0.20	<0.50
1,3-Dichlorobenzene	9600	<0.20	<0.20	<0.20	<0.20	<0.50	<0.20	<0.50
1,4-Dichlorobenzene	8	<0.20	<0.20	<0.20	<0.20	<0.50	<0.20	<0.50
Dichlorodifluoromethane	4400	<0.50	<0.50	<0.50	<0.50	<1.3	<0.50	<1.0
1,1-Dichloroethane	320	<0.10	<0.10	<0.10	<0.10	<0.25	<0.10	<0.20
1,2-Dichloroethane	1.6	<0.20	<0.20	<0.20	<0.20	<0.50	<0.20	<0.50
1,1-Dichloroethylene	1.6	<0.10	<0.10	<0.10	<0.10	<0.25	<0.10	<0.20
cis-1,2-Dichloroethylene	1.6	**2.6**	**2.6**	<0.10	**15**	**13**	0.47	<0.50
trans-1,2-Dichloroethylene	1.6	<0.10	<0.10	<0.10	0.25	<0.25	<0.10	<0.50
1,2-Dichloropropane	16	<0.10	<0.10	<0.10	<0.10	<0.25	<0.10	<0.20
cis-1,3-Dichloropropene	5.2	<0.20	<0.20	<0.20	<0.20	<0.50	<0.20	<0.30
trans-1,3-Dichloropropene	5.2	<0.20	<0.20	<0.20	<0.20	<0.50	<0.20	<0.40
1,3-Dichloropropene(cis+trans)	5.2	<0.28	<0.28	<0.28	<0.28	<0.71	<0.28	<0.50
Ethylbenzene	2300	<0.10	<0.10	<0.10	<0.10	<0.25	<0.10	<0.20
Ethylene Dibromide (1,2-Dibromoethane)	0.25	<0.20	<0.20	<0.20	<0.20	**<0.50**	<0.20	<0.20
Hexane (n)	51	<0.50	<0.50	<0.50	<0.50	<1.3	<0.50	<1.0
Methylene chloride (Dichloromethane)	610	<0.50	<0.50	<0.50	<0.50	<1.3	<0.50	<2.0
Methyl ethyl ketone (2-Butanone)	470000	<5.0	<5.0	<5.0	<5.0	<13	<5.0	<10
Methyl Butyl Ketone (2-Hexanone)	NV	-	-	-	-	-	-	-
Methyl Isobutyl Ketone	140000	<5.0	<5.0	<5.0	<5.0	<13	<5.0	<5.0
Methyl t-butyl ether (MTBE)	190	<0.20	<0.20	<0.20	<0.20	<0.50	<0.20	<0.50
Styrene	1300	<0.20	<0.20	<0.20	<0.20	<0.50	<0.20	<0.50
1,1,1,2-Tetrachloroethane	3.3	<0.10	<0.10	<0.20	<0.10	<0.50	<0.10	<0.50
1,1,2,2-Tetrachloroethane	3.2	<0.20	<0.20	<0.20	<0.20	<0.50	<0.20	<0.50
Tetrachloroethylene	1.6	0.93	0.81	<0.10	**71**	**72**	**240**	**120**
Toluene	18000	<0.20	<0.20	<0.20	<0.20	<0.50	<0.20	<0.20
1,2,4-Trichlorobenzene	180	-	-	-	-	-		-
1,1,1-Trichloroethane	640	<0.10	<0.10	<0.10	<0.10	<0.25	<0.10	<0.20
1,1,2-Trichloroethane	4.7	<0.20	<0.20	<0.20	<0.20	<0.50	<0.20	<0.50
Trichloroethylene	1.6	0.99	0.92	<0.10	**16**	**14**	**2.2**	0.86
Trichlorofluoromethane	2500	<0.20	<0.20	<0.20	<0.20	<0.50	<0.20	<0.50
1,2,4-Trimethylbenzene	NV	-	-	-	-	-	-	-
1,3,5-Trimethylbenzene	NV	-	-	-	-	-	-	-
Vinyl Chloride	0.5	<0.20	<0.20	<0.20	<0.20	<0.50	<0.20	<0.20
m-Xylene + p-Xylene	NV	<0.10	<0.10	<0.10	<0.10	<0.25	<0.10	<0.20
o-Xylene	NV	<0.10	<0.10	<0.10	<0.10	<0.25	<0.10	<0.20
Xylenes (total)	4200	<0.10	<0.10	<0.10	<0.10	<0.25	<0.10	<0.20

(1) Data collected prior to 2011 is included in these tables for demo
All groundwater concentrations reported in µg/L.
'<' = Parameter below detection limit, as indicated
'NV'= No value
'-' = Not Analyzed
Bold Concentration exceeds MECP (2011) Table 3 SCS.
Bold Non-detect but detection limit exceeds the MECP (2011) Tabl

GROUNDWATER ANALYTICAL RESULTS:
Table D.5 - Volatile Organic Compounds (VOCs) in Groundwater

Location	MECP (2011) Table 3: Full Depth Generic SCS in a Non-Potable Groundwater Condition All Types of Land Use (coarse textured soil)	MW15-11		BH/MW205	MW206	BH/MW207			BH/MW208
Sample ID		MW15-11		BH/MW205	MW206	BH/MW207	BH/MW209 (Dup of BH/MW207)	BH/MW207	BH/MW208
Lab ID		AOU523	FDO219	CFY451	FDA816	CFW569	CFW571	FDA817	CFW566
Sampling Date		7-Jul-15	18-Sep-17	22-Apr-16	14-Sep-17	21-Apr-16		14-Sep-17	21-Apr-16
Screen Depth Interval (m)		1.83-3.35		1.52-4.57	1.22 - 3.66	9.3 - 10.8			9.3 - 10.8
Consultant		EXP	EXP	EXP	EXP	EXP		EXP	EXP
Laboratory		Maxxam	Maxxam	Maxxam	Maxxam	Maxxam		Maxxam	Maxxam
Date of Analysis		9/13-Jul-15		26-Apr-16	19/20-Sep-17	26/27-Apr-16		19/20-Sep-17	26/27-Apr-16
Certificate of Analysis Number		B5D2173	B7K3897	B681325	B7K1578	B680859		B7K1578	B680859
Acetone	130000	<10	<25	<10	<10	<10	<10	<10	<10
Benzene	44	<0.10	<0.25	<0.20	0.29	<0.20	<0.20	<0.20	<0.20
Bromodichloromethane	85000	<0.10	<0.25	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Bromoform	380	<0.20	<0.50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bromomethane	5.6	<0.50	<1.3	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Carbon Tetrachloride	0.79	<0.10	<0.25	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Chlorobenzene	630	<0.10	<0.25	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Chloroethane	NV	-	-	-	-	-	-	-	-
Chloroform	2.4	0.47	0.56	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Chloromethane	NV	-	-	-	-	-	-	-	-
Dibromochloromethane	82000	<0.20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,2-Dichlorobenzene	4600	<0.20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,3-Dichlorobenzene	9600	<0.20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,4-Dichlorobenzene	8	<0.20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Dichlorodifluoromethane	4400	<0.50	<1.3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethane	320	<0.10	<0.25	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,2-Dichloroethane	1.6	<0.20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1-Dichloroethylene	1.6	<0.10	<0.25	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
cis-1,2-Dichloroethylene	1.6	0.49	1.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
trans-1,2-Dichloroethylene	1.6	<0.10	<0.25	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,2-Dichloropropane	16	<0.10	<0.25	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
cis-1,3-Dichloropropene	5.2	<0.20	<0.50	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
trans-1,3-Dichloropropene	5.2	<0.20	<0.50	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
1,3-Dichloropropene(cis+trans)	5.2	<0.28	<0.71	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Ethylbenzene	2300	<0.10	<0.25	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Ethylene Dibromide (1,2-Dibromoethane)	0.25	<0.20	**<0.50**	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Hexane (n)	51	<0.50	<1.3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Methylene chloride (Dichloromethane)	610	<0.50	<1.3	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Methyl ethyl ketone (2-Butanone)	470000	<5.0	<13	<10	<10	<10	<10	<10	<10
Methyl Butyl Ketone (2-Hexanone)	NV	-	-	-	-	-	-	-	-
Methyl Isobutyl Ketone	140000	<5.0	<13	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Methyl t-butyl ether (MTBE)	190	<0.20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Styrene	1300	<0.20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1,1,2-Tetrachloroethane	3.3	<0.10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1,2,2-Tetrachloroethane	3.2	<0.20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Tetrachloroethylene	1.6	**160**	**63**	<0.20	<0.20	0.37	0.38	0.5	<0.20
Toluene	18000	<0.20	<0.50	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,2,4-Trichlorobenzene	180	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	640	<0.10	<0.25	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,1,2-Trichloroethane	4.7	<0.20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Trichloroethylene	1.6	**2.5**	**1.8**	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Trichlorofluoromethane	2500	<0.20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,2,4-Trimethylbenzene	NV	-	-	-	-	-	-	-	-
1,3,5-Trimethylbenzene	NV	-	-	-	-	-	-	-	-
Vinyl Chloride	0.5	<0.20	<0.50	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
m-Xylene + p-Xylene	NV	<0.10	<0.25	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
o-Xylene	NV	<0.10	<0.25	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Xylenes (total)	4200	<0.10	<0.25	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20

(1) Data collected prior to 2011 is included in these tables for demo
All groundwater concentrations reported in µg/L.
'<' = Parameter below detection limit, as indicated
'NV'= No value
'-' = Not Analyzed
Bold Concentration exceeds MECP (2011) Table 3 SCS.
Bold Non-detect but detection limit exceeds the MECP (2011) Table

GROUNDWATER ANALYTICAL RESULTS:
Table D.5 - Volatile Organic Compounds (VOCs) in Groundwater

Location	MECP (2011) Table 3: Full Depth Generic SCS in a Non-Potable Groundwater Condition All Types of Land Use (coarse textured soil)	MW301	MW 302	MW 303	MW304	MW305	MW306	MW307	MW 308	MW309
Sample ID		MW301	MW 302	MW 303	MW304	MW305	MW306	MW307	MW 308	MW309
Lab ID		FDH380	FDA814	FDA815	FDH381	FDH382	FDO218	FDH369	FDH370	FDH371
Sampling Date		15-Sep-17	14-Sep-17	14-Sep-17	15-Sep-17	15-Sep-17	18-Sep-17	15-Sep-17	15-Sep-17	15-Sep-17
Screen Depth Interval (m)		3.1 - 4.6	1.2 - 3.7	1.2 - 3.7	2.7 - 4.7	3.1-4.6	3.1 - 4.6	1.5 - 4.6	1.5 - 4.6	1.5 - 4.6
Consultant		EXP	EXP	EXP	EXP	EXP	EXP	EXP	EXP	EXP
Laboratory		Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam
Date of Analysis		20/21-Sep-17	19/21-Sep-17	19/21-Sep-17	20/21-Sep-17	20/21-Sep-17	22-Sep-17	20/21-Sep-17	20/21-Sep-17	20/21-Sep-17
Certificate of Analysis Number		B7K2764	B7K1578	B7K1578	B7K2764	B7K2764	B7K3897	B7K2764	B7K2764	B7K2764
Acetone	130000	<10	-	-	<10	<10	<25	<10	<10	<10
Benzene	44	<0.20	<0.20	<0.20	<0.20	<0.20	<0.25	<0.10	<0.10	<0.10
Bromodichloromethane	85000	<0.50	-	-	<0.50	<0.50	<0.25	<0.10	<0.10	<0.10
Bromoform	380	<1.0	-	-	<1.0	<1.0	<0.50	<0.20	<0.20	<0.20
Bromomethane	5.6	<0.50	-	-	<0.50	<0.50	<1.3	<0.50	<0.50	<0.50
Carbon Tetrachloride	0.79	<0.20	-	-	<0.20	<0.20	<0.25	<0.10	<0.10	<0.10
Chlorobenzene	630	<0.20	-	-	<0.20	<0.20	<0.25	<0.10	<0.10	<0.10
Chloroethane	NV	-	-	-	-	-	-	-	-	-
Chloroform	2.4	0.84	-	-	2.0	**2.8**	0.56	<0.10	<0.10	<0.10
Chloromethane	NV	-	-	-	-	-	-	-	-	-
Dibromochloromethane	82000	<0.50	-	-	<0.50	<0.50	<0.50	<0.20	<0.20	<0.20
1,2-Dichlorobenzene	4600	<0.50	-	-	<0.50	<0.50	<0.50	<0.20	<0.20	<0.20
1,3-Dichlorobenzene	9600	<0.50	-	-	<0.50	<0.50	<0.50	<0.20	<0.20	<0.20
1,4-Dichlorobenzene	8	<0.50	-	-	<0.50	<0.50	<0.50	<0.20	<0.20	<0.20
Dichlorodifluoromethane	4400	<1.0	-	-	<1.0	<1.0	<1.3	<0.50	<0.50	<0.50
1,1-Dichloroethane	320	<0.20	-	-	<0.20	<0.20	<0.25	<0.10	<0.10	<0.10
1,2-Dichloroethane	1.6	<0.50	-	-	<0.50	<0.50	<0.50	<0.20	<0.20	0.29
1,1-Dichloroethylene	1.6	<0.20	-	-	<0.20	<0.20	<0.25	<0.10	<0.10	<0.10
cis-1,2-Dichloroethylene	1.6	<0.50	-	-	<0.50	<0.50	1.3	<0.10	<0.10	<0.10
trans-1,2-Dichloroethylene	1.6	<0.50	-	-	<0.50	<0.50	<0.25	<0.10	<0.10	<0.10
1,2-Dichloropropane	16	<0.20	-	-	<0.20	<0.20	<0.25	<0.10	<0.10	<0.10
cis-1,3-Dichloropropene	5.2	<0.30	-	-	<0.30	<0.30	<0.50	<0.20	<0.20	<0.20
trans-1,3-Dichloropropene	5.2	<0.40	-	-	<0.40	<0.40	<0.50	<0.20	<0.20	<0.20
1,3-Dichloropropene(cis+trans)	5.2	<0.50	-	-	<0.50	<0.50	<0.71	<0.28	<0.28	<0.28
Ethylbenzene	2300	<0.20	<0.20	<0.20	<0.20	<0.20	<0.25	<0.10	<0.10	<0.10
Ethylene Dibromide (1,2-Dibromoethane)	0.25	<0.20	-	-	<0.20	<0.20	**<0.50**	<0.20	<0.20	<0.20
Hexane (n)	51	<1.0	-	-	<1.0	<1.0	<1.3	<0.50	<0.50	<0.50
Methylene chloride (Dichloromethane)	610	<2.0	-	-	<2.0	<2.0	<1.3	<0.50	<0.50	<0.50
Methyl ethyl ketone (2-Butanone)	470000	<10	-	-	<10	<10	<13	<5.0	<5.0	<5.0
Methyl Butyl Ketone (2-Hexanone)	NV	-	-	-	-	-	-	-	-	-
Methyl Isobutyl Ketone	140000	<5.0	-	-	<5.0	<5.0	<13	<5.0	<5.0	<5.0
Methyl t-butyl ether (MTBE)	190	<0.50	-	-	<0.50	<0.50	<0.50	<0.20	<0.20	<0.20
Styrene	1300	<0.50	-	-	<0.50	<0.50	<0.50	<0.20	<0.20	<0.20
1,1,1,2-Tetrachloroethane	3.3	<0.50	-	-	<0.50	<0.50	<0.50	<0.20	<0.20	<0.20
1,1,2,2-Tetrachloroethane	3.2	<0.50	-	-	<0.50	<0.50	<0.50	<0.20	<0.20	<0.20
Tetrachloroethylene	1.6	<0.20	-	-	0.96	**110**	**62**	0.31	0.3	<0.10
Toluene	18000	<0.20	<0.20	<0.20	<0.20	<0.20	<0.50	<0.20	<0.20	<0.20
1,2,4-Trichlorobenzene	180	-	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	640	<0.20	-	-	<0.20	<0.20	<0.25	<0.10	<0.10	<0.10
1,1,2-Trichloroethane	4.7	<0.50	-	-	<0.50	<0.50	<0.50	<0.20	<0.20	<0.20
Trichloroethylene	1.6	<0.20	-	-	<0.20	1.6	**1.8**	<0.10	<0.10	<0.10
Trichlorofluoromethane	2500	<0.50	-	-	<0.50	<0.50	<0.50	<0.20	<0.20	<0.20
1,2,4-Trimethylbenzene	NV	-	-	-	-	-	-	-	-	-
1,3,5-Trimethylbenzene	NV	-	-	-	-	-	-	-	-	-
Vinyl Chloride	0.5	<0.20	-	-	<0.20	<0.20	<0.50	<0.20	<0.20	<0.20
m-Xylene + p-Xylene	NV	<0.20	<0.40	<0.40	<0.20	<0.20	<0.25	<0.10	<0.10	<0.10
o-Xylene	NV	<0.20	<0.20	<0.20	<0.20	<0.20	<0.25	<0.10	<0.10	<0.10
Xylenes (total)	4200	<0.20	<0.40	<0.40	<0.20	<0.20	<0.25	<0.10	<0.10	<0.10

(1) Data collected prior to 2011 is included in these tables for demo
All groundwater concentrations reported in µg/L.
'<' = Parameter below detection limit, as indicated
'NV'= No value
'-' = Not Analyzed
Bold Concentration exceeds MECP (2011) Table 3 SCS.
Bold Non-detect but detection limit exceeds the MECP (2011) Tabl

GROUNDWATER ANALYTICAL RESULTS:
Table D.5 - Volatile Organic Compounds (VOCs) in Groundwater

Location	MECP (2011) Table 3: Full Depth Generic SCS in a Non-Potable Groundwater Condition All Types of Land Use (coarse textured soil)	MW310	MW311			MW312	-	-	-	-
Sample ID		MW310	MW311	MW313 (Dup of MW311)	MW311	MW312	Trip Blank	Trip Blank	Trip Blank	Trip Blank
Lab ID		FDH372	FDH374	FDH375	FQP336	FDH373	ABZ027	AGE830	CFY452	FDH383
Sampling Date		15-Sep-17	15-Sep-17		29-Nov-17	15-Sep-17	10-Apr-15	8-May-15	22-Apr-16	15-Sep-17
Screen Depth Interval (m)		1.5 - 4.6	1.2 - 3.7			1.5 - 4.6	-	-	-	-
Consultant		EXP	EXP		EXP	EXP	EXP	EXP	EXP	EXP
Laboratory		Maxxam	Maxxam		Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam
Date of Analysis		20/21-Sep-17	20/21-Sep-17		1-Dec-17	20/21-Sep-17	14/15-Apr-15	13-May-15	26-Apr-16	20/21-Sep-17
Certificate of Analysis Number		B7K2764	B7K2764		B7Q9138	B7K2764	B563666	B586655	B681325	B7K2764
Acetone	130000	<10	<10	<10	-	<100	<10	<10	<10	<10
Benzene	44	<0.20	<0.20	<0.20	-	1	<0.10	<0.10	<0.20	<0.10
Bromodichloromethane	85000	<0.50	<0.50	<0.50	-	<0.50	<0.10	<0.10	<0.50	<0.10
Bromoform	380	<1.0	<1.0	<1.0	-	<1.0	<0.20	<0.20	<1.0	<0.20
Bromomethane	5.6	<0.50	<0.50	<0.50	-	<0.50	<0.50	<0.50	<0.50	<0.50
Carbon Tetrachloride	0.79	<0.20	<0.20	<0.20	-	<0.20	<0.10	<0.10	<0.20	<0.10
Chlorobenzene	630	<0.20	<0.20	<0.20	-	<0.20	<0.10	<0.10	<0.20	<0.10
Chloroethane	NV	-	-	-	-	-	-	-	-	-
Chloroform	2.4	<0.20	<0.20	<0.20	-	<1.0	<0.10	<0.10	<0.20	<0.10
Chloromethane	NV	-	-	-	-	-	-	-	-	-
Dibromochloromethane	82000	<0.50	<0.50	<0.50	-	<2.0	<0.20	<0.20	<0.50	<0.20
1,2-Dichlorobenzene	4600	<0.50	<0.50	<0.50	-	<2.0	<0.20	<0.20	<0.50	<0.20
1,3-Dichlorobenzene	9600	<0.50	<0.50	<0.50	-	<2.0	<0.20	<0.20	<0.50	<0.20
1,4-Dichlorobenzene	8	<0.50	<0.50	<0.50	-	<2.0	<0.20	<0.20	<0.50	<0.20
Dichlorodifluoromethane	4400	<1.0	<1.0	<1.0	-	<5.0	<0.50	<0.50	<1.0	<0.50
1,1-Dichloroethane	320	<0.20	<0.20	<0.20	-	<1.0	<0.10	<0.10	<0.20	<0.10
1,2-Dichloroethane	1.6	<0.50	<0.50	<0.50	-	**<2.0**	<0.20	<0.20	<0.50	<0.20
1,1-Dichloroethylene	1.6	<0.20	<0.20	<0.20	-	<1.0	<0.10	<0.10	<0.20	<0.10
cis-1,2-Dichloroethylene	1.6	<0.50	<0.50	<0.50	-	**150**	<0.10	<0.10	<0.50	<0.10
trans-1,2-Dichloroethylene	1.6	<0.50	<0.50	<0.50	-	<1.0	<0.10	<0.10	<0.50	<0.10
1,2-Dichloropropane	16	<0.20	<0.20	<0.20	-	<1.0	<0.10	<0.10	<0.20	<0.10
cis-1,3-Dichloropropene	5.2	<0.30	<0.30	<0.30	-	<2.0	<0.20	<0.20	<0.30	<0.20
trans-1,3-Dichloropropene	5.2	<0.40	<0.40	<0.40	-	<2.0	<0.20	<0.20	<0.40	<0.20
1,3-Dichloropropene(cis+trans)	5.2	<0.50	<0.50	<0.50	-	<2.8	<0.28	<0.28	<0.50	<0.28
Ethylbenzene	2300	<0.20	1.7	1.7	-	<1.0	<0.10	<0.10	<0.20	<0.10
Ethylene Dibromide (1,2-Dibromoethane)	0.25	<0.20	<0.20	<0.20	-	**<2.0**	<0.20	<0.20	<0.20	<0.20
Hexane (n)	51	<1.0	<1.0	<1.0	-	<5.0	<0.50	<0.50	<1.0	<0.50
Methylene chloride (Dichloromethane)	610	<2.0	<2.0	<2.0	-	<5.0	<0.50	<0.50	<2.0	<0.50
Methyl ethyl ketone (2-Butanone)	470000	<10	<10	<10	-	<50	<5.0	<5.0	<10	<5.0
Methyl Butyl Ketone (2-Hexanone)	NV	-	-	-	-	-	-	-	-	-
Methyl Isobutyl Ketone	140000	<5.0	<5.0	<5.0	-	<50	<5.0	<5.0	<5.0	<5.0
Methyl t-butyl ether (MTBE)	190	<0.50	<0.50	<0.50	-	<2.0	<0.20	<0.20	<0.50	<0.20
Styrene	1300	<0.50	<0.50	<0.50	-	<2.0	<0.20	<0.20	<0.50	<0.20
1,1,1,2-Tetrachloroethane	3.3	<0.50	<0.50	<0.50	-	<2.0	<0.10	<0.10	<0.50	<0.20
1,1,2,2-Tetrachloroethane	3.2	<0.50	<0.50	<0.50	-	<2.0	<0.20	<0.20	<0.50	<0.20
Tetrachloroethylene	1.6	0.38	0.47	0.49	-	**2.9**	<0.10	<0.10	<0.20	<0.10
Toluene	18000	<0.20	<0.20	<0.20	-	<2.0	<0.20	<0.20	<0.20	<0.20
1,2,4-Trichlorobenzene	180	-	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	640	<0.20	<0.20	<0.20	-	<1.0	<0.10	<0.10	<0.20	<0.10
1,1,2-Trichloroethane	4.7	<0.50	<0.50	<0.50	-	<2.0	<0.20	<0.20	<0.50	<0.20
Trichloroethylene	1.6	<0.20	<0.20	<0.20	-	**73**	<0.10	<0.10	<0.20	<0.10
Trichlorofluoromethane	2500	<0.50	<0.50	<0.50	-	<2.0	<0.20	<0.20	<0.50	<0.20
1,2,4-Trimethylbenzene	NV	-	-	-	-	-	-	-	-	-
1,3,5-Trimethylbenzene	NV	-	-	-	<0.40	-	-	-	-	-
Vinyl Chloride	0.5	<0.20	<0.20	<0.20	-	**4**	<0.20	<0.20	<0.20	<0.20
m-Xylene + p-Xylene	NV	<0.20	5	5	-	<1.0	<0.10	<0.10	<0.20	<0.10
o-Xylene	NV	<0.20	0.76	0.64	-	<1.0	<0.10	<0.10	<0.20	<0.10
Xylenes (total)	4200	<0.20	5.7	5.6	-	<1.0	<0.10	<0.10	<0.20	<0.10

(1) Data collected prior to 2011 is included in these tables for demo
All groundwater concentrations reported in µg/L.
'<' = Parameter below detection limit, as indicated
'NV'= No value
'-' = Not Analyzed
Bold Concentration exceeds MECP (2011) Table 3 SCS.
Bold Non-detect but detection limit exceeds the MECP (2011) Table

GROUNDWATER ANALYTICAL RESULTS:
Table D.6 - Metals & Inorganics in Groundwater

Location	MECP (2011) Table 3: Full Depth Generic SCS in a Non-Potable Groundwater Condition All Types of Land Use (coarse textured soil)	MECP (2011) Table 7: Full Depth Generic SCS for Shallow Soils in a Non-Potable Groundwater Condition All Types of Land Use (coarse textured soil)	MW-3	MW307		MW308	
Sample ID			MW-3	MW307		MW308	
Lab ID			CFY450	FDH369	FQP333	FDH370	FQP334
Sampling Date			22-Apr-16	15-Sep-17	29-Nov-17	15-Sep-17	29-Nov-17
Screen Depth Interval (m)			1.2 - 2.7	1.5 - 4.6		1.5 - 4.6	
Consultant			EXP	EXP	EXP	EXP	EXP
Laboratory			Maxxam	Maxxam	Maxxam	Maxxam	Maxxam
Date of Analysis			28-Apr-16	21-Sep-17	1-Dec-17	21-Sep-17	1-Dec-17
Certificate of Analysis Number			B681325	B7K2764	B7Q9138	B7K2764	B7Q9138
Chloride (Dissolved) (mg/L)	2,300	1,800	-	**2900**	-	**2300**	-
Sodium (mg/L)	2,300	1,800	-	-	1,600	-	1,600
Lead	25	20	<0.50	-	<0.50	-	<0.50

All groundwater concentrations reported in µg/L unless otherwise noted
'<' = Parameter below detection limit, as indicated
'NV'= No value
'-' = Not Analyzed
Due to amendments to O.Reg 153/04, deicing related parameters are not retained as COCs.
Bold Concentration exceeds MECP (2011) Table 3 SCS.

GROUNDWATER ANALYTICAL RESULTS:
Table D.6 - Metals & Inorganics in Groundwater

Location	MECP (2011) Table 3: Full Depth Generic SCS in a Non-Potable Groundwater Condition All Types of Land Use (coarse textured soil)	MECP (2011) Table 7: Full Depth Generic SCS for Shallow Soils in a Non-Potable Groundwater Condition All Types of Land Use (coarse textured soil)	MW309		MW310	MW311		MW313 (Dup of MW311)	MW312	MW208				-
Sample ID			MW309		MW310	MW311		MW313 (Dup of MW311)	MW312	MW208	MW222 (Dup of MW2018)	MW208	MW222 (Dup of MW2018)	TRIP BLANK
Lab ID			FDH371	FQP335	FDH372	FDH374	FQP336	FDH375	FDH373	GVQ763	GVQ764	GWN965	GWN965	FDH383
Sampling Date			15-Sep-17	29-Nov-17	15-Sep-17	15-Sep-17	29-Nov-17	15-Sep-17	15-Sep-17	1-Jun-18	1-Jun-18	6-Jun-18	6-Jun-18	15-Sep-17
Screen Depth Interval (m)			1.5 - 4.6		1.5 - 4.6	1.2 - 3.7		1.2 - 3.7	1.5 - 4.6	9.3 - 10.8				-
Consultant			EXP	EXP	EXP	EXP	EXP	EXP	EXP	EXP	EXP	EXP	EXP	EXP
Laboratory			Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam
Date of Analysis			21-Sep-17	1-Dec-17	21-Sep-17	21-Sep-17	1-Dec-17	21-Sep-17	21-Sep-17	4-Jun-18	4-Jun-18	7-Jun-18	7-Jun-18	21-Sep-17
Certificate of Analysis Number			B7K2764	B7Q9138	B7K2764	B7K2764	B7Q9138	B7K2764	B7K2764	B8D1518	B8D1518	B8D5633	B8D5633	B7K2764
Chloride (Dissolved) (mg/L)	2,300	1,800	**1900**	-	1400	1300	-	1300	460	**4900**	**4500**	**4300**	**4500**	<1.0
Sodium (mg/L)	2,300	1,800	-	1,200	-	-	770	-	-	-	-	-	-	-
Lead	25	20	-	-	-	-	<0.50	-	-	-	-	-	-	-

All groundwater concentrations reported in µg/L unless otherwise noted
'<' = Parameter below detection limit, as indicated
'NV'= No value
'-' = Not Analyzed
Due to amendments to O.Reg 153/04, deicing related parameters are not retained as COCs.
Bold Concentration exceeds MECP (2011) Table 3 SCS.

SUB-SLAB VAPOUR ANALYTICAL RESULTS:

Table D.7 - Sub-Slab Vapour Results

Sample Location	MECP (2016) Health Based Indoor Air Criteria (Commercial land use)(1)	2016 Sub-Slab Vapour Criteria (Commercial land use)(2)	SSV1		SSV2		SSV3		SSV4		SSV5		DUP (Field duplicate of SSV5)
Sampling Date			26-May-16	17-Jan-19	21-Apr-16	18-Jan-19	20-Apr-16	18-Jan-19	21-Apr-16	18-Jan-19	21-Apr-16	17-Jan-19	17-Jan-19
Laboratory ID			CKZ467	IWN654	CFY707	IWN655	CFY705	IWN656	CFY708	IWN657	CFY706	IWN658	IWN659
Canister Number			1355	SX0856	1004	SX0978	2081	SX1403	2542	SX0612	1366	SX2178	SX0827
PHC F1 - BTEX	8,540	2,135,000	213	24	4,700	3,420	846	485	2,140	1,660	3,540	4,870	4,500
PHC F2	1610	402,500	81.8	22.1	<20	86.0	<20	24.7	<20	48	53	97	89
1,1-Dichloroethylene	50.1	12,514	<0.396	<0.396	<1.59	<0.793	<1.59	<0.396	<1.59	<0.793	<1.59	<1.98	<1.98
cis-1,2-Dichloroethylene	107.0	26,750	<0.396	<0.396	<1.59	<0.793	<1.59	<0.396	<1.59	<0.793	<1.59	<1.98	<1.98
trans-1,2-Dichloroethylene	42.9	10,725	<0.793	<0.793	<3.17	<1.59	<3.17	<0.793	<3.17	<1.59	<3.17	<3.96	<3.96
Tetrachloroethylene	13.8	3,438	201	23	**5,190**	**4,020**	1,150	583	2,800	1,680	**4,670**	**4,170**	**4,280**
Trichloroethylene	0.40	100	0.539	<0.537	<2.15	1.59	<2.15	<0.537	<2.15	<1.07	<2.15	2.84	3.30
Vinyl chloride	0.41	102	<0.256	<0.256	<1.02	<0.511	<1.02	<0.256	<1.02	<0.511	<1.02	<1.28	<1.28

(1) Ministry of the Environment, Conservation and Parks (MECP) "Modified Generic Risk Assessment Tier 2 Approved Model" (November 1, 2016) Health Based Indoor Air Criteria for Industrial/Commercial land use (Non-Potable Groundwater Condition)

(2) Sub-Slab Vapour Criteria dervied from the Health Based Indoor Air Criteria divided by 0.004, the default attenuation factor for Industrial/Commercial buildings from sub-slab to indoor air.

Bold Concentration is above acceptable 2016 Industrial/Commercial Sub-Slab Vapour Criteria

Analyses performed by Maxxam

All soil vapour concentrations reported in $\mu g/m^3$

SOIL VAPOUR ANALYTICAL RESULTS

Table D.8 - Soil Vapour Results

Sample Location	MGRA 2016 Soil Vapour Criteria (Residential land use)[1]	MECP (2016) Health Based Indoor Air Criteria[2]	MGRA 2016 Sub-Slab Vapour Criteria (Residential land use)[3]	North		East					Northeast				
Sample ID				SV1		SV4	Dup2 (Dup of SV4)	SV4	SV5		SV2		SV3	Dup3 (Dup of SV3)	SV3
Sampling Date				21-Apr-16	30-Jan-19	26-May-16	26-May-16	30-Jan-19	26-May-16	30-Jan-19	21-Apr-16	30-Jan-19	22-Jun-16	22-Jun-16	24-Jan-19
Laboratory ID				CFY703	IWN660	CKZ469	CKZ471	IWN663	CKZ470	IWN664	CFY704	IWN661	COW896	COW897	IWN662
Canister Number				2409	SX0721	2064	2390	SX0915	2078	SX0886	1903	SX2110	1248	1388	SX1496
PHC F1 - BTEX	125,000	2490	124,500	1,060	186	419	406	120	6,670	208	1,930	62.9	12,500	13,000	2,260
PHC F2	23,500	471	23,550	628	10.6	895	944	31.1	5,960	25.7	530	<5.0	5,390	5,370	269
1,1-Dichloroethylene	730	14.6	730	<0.396	<0.396	0.52	0.48	<0.396	<0.396	<0.396	<0.396	<0.396	<0.396	<0.396	<0.793
cis-1,2-Dichloroethylene	1,560	31.3	1,565	<0.396	<0.396	6.46	6.79	<0.396	<0.396	<0.396	0.498	<0.396	15.8	17.8	<0.793
trans-1,2-Dichloroethylene	626	12.5	625	<0.793	<0.793	<0.793	<0.793	2.59	<0.793	<0.793	<0.793	<0.793	<1.98	<1.98	10.1
Tetrachloroethylene	214	4.28	214	**612**	117	5.69	4.25	5.83	<0.678	0.794	24.6	23.4	27.6	19.9	2.04
Trichloroethylene	13.6	0.271	13.6	**29.5**	7.6	2.13	2.1	<0.537	<0.537	<0.537	5.54	4.74	4.88	4.92	<1.07
Vinyl chloride	6.3	0.126	6.3	<0.256	<0.256	2.07	2.2	<0.256	<0.256	<0.256	<0.256	<0.256	**153**	**170**	**101**

(1) Soil Vapour Criteria developed using the Ministry of the Environment, Conservation and Parks (MECP) "Modified Generic Risk Assessment Tier 2 Approved Model" (November 1, 2016), using the minimum allowable probe depth of 2.58 m bgs.

(2) MECP "Modified Generic Risk Assessment Tier 2 Approved Model" (November 1, 2016) Health Based Indoor Air Criteria for Residential land use (Non-Potable Groundwater Condition)

(3) Sub-Slab Vapour Criteria dervied from the Health Based Indoor Air Criteria divided by 0.02, the default attenuation factor for Residential buildings from sub-slab to indoor air.

Bold Concentration is above acceptable Residential Soil Vapour Criteria

Bold Concentration is above acceptable 2016 Residential Sub-Slab Vapour Criteria

Analyses performed by Maxxam

All soil vapour concentrations reported in $\mu g/m^3$

Appendix E – Certificate of Analysis

Your Project #: OTT-00224605-C

Attention:Mark Devlin

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

Your C.O.C. #: 627767-01-01, 627767-02-01, 627767-03-01

Report Date: 2017/09/14
Report #: R4701432
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7J6395
Received: 2017/09/08, 11:10

Sample Matrix: Soil
Samples Received: 17

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
1,3-Dichloropropene Sum (1)	4	N/A	2017/09/13		EPA 8260C m
1,3-Dichloropropene Sum (1)	2	N/A	2017/09/14		EPA 8260C m
Conductivity (1)	6	2017/09/13	2017/09/13	CAM SOP-00414	OMOE E3530 v1 m
Petroleum Hydro. CCME F1 & BTEX in Soil (1, 2)	3	N/A	2017/09/12	CAM SOP-00315	CCME PHC-CWS m
Petroleum Hydrocarbons F2-F4 in Soil (1, 3)	5	2017/09/12	2017/09/12	CAM SOP-00316	CCME CWS m
F4G (CCME Hydrocarbons Gravimetric) (1)	3	2017/09/14	2017/09/14	CAM SOP-00316	CCME PHC-CWS m
Strong Acid Leachable Metals by ICPMS (1)	2	2017/09/13	2017/09/13	CAM SOP-00447	EPA 6020B m
Moisture (1)	8	N/A	2017/09/12	CAM SOP-00445	Carter 2nd ed 51.2 m
Sodium Adsorption Ratio (SAR) (1)	6	N/A	2017/09/13	CAM SOP-00102	EPA 6010C
SAR - ICP Metals (1)	6	2017/09/13	2017/09/13	CAM SOP-00408	EPA 6010D m
Volatile Organic Compounds and F1 PHCs (1)	2	N/A	2017/09/13	CAM SOP-00230	EPA 8260C m
Volatile Organic Compounds in Soil (1)	4	N/A	2017/09/13	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.

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.

Your Project #: OTT-00224605-C

Attention:Mark Devlin

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

Your C.O.C. #: 627767-01-01, 627767-02-01, 627767-03-01

Report Date: 2017/09/14
Report #: R4701432
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7J6395
Received: 2017/09/08, 11:10

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) 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

Christine Gripton
Senior Project Manager
14 Sep 2017 16:47:09

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

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

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

Maxxam Job #: B7J6395
Report Date: 2017/09/14

exp Services Inc
Client Project #: OTT-00224605-C
Sampler Initials: MAD

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			FCC219	FCC221		
Sampling Date			2017/09/06 16:00	2017/09/06 13:00		
COC Number			627767-01-01	627767-01-01		
	UNITS	**Criteria**	**MW302-S2**	**MW303-S2**	**RDL**	**QC Batch**
Metals						
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	0.20	5161508
Acid Extractable Arsenic (As)	ug/g	**18**	1.4	1.7	1.0	5161508
Acid Extractable Barium (Ba)	ug/g	**390**	140	110	0.50	5161508
Acid Extractable Beryllium (Be)	ug/g	**4**	0.45	0.39	0.20	5161508
Acid Extractable Boron (B)	ug/g	**120**	7.1	7.9	5.0	5161508
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	0.21	0.11	0.10	5161508
Acid Extractable Chromium (Cr)	ug/g	**160**	19	18	1.0	5161508
Acid Extractable Cobalt (Co)	ug/g	**22**	6.4	6.1	0.10	5161508
Acid Extractable Copper (Cu)	ug/g	**140**	15	14	0.50	5161508
Acid Extractable Lead (Pb)	ug/g	**120**	12	11	1.0	5161508
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	0.53	0.50	5161508
Acid Extractable Nickel (Ni)	ug/g	**100**	13	13	0.50	5161508
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	0.50	5161508
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	0.20	5161508
Acid Extractable Thallium (Tl)	ug/g	**1**	0.15	0.14	0.050	5161508
Acid Extractable Uranium (U)	ug/g	**23**	0.58	0.53	0.050	5161508
Acid Extractable Vanadium (V)	ug/g	**86**	26	24	5.0	5161508
Acid Extractable Zinc (Zn)	ug/g	**340**	36	28	5.0	5161508

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

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

Maxxam Job #: B7J6395
Report Date: 2017/09/14

exp Services Inc
Client Project #: OTT-00224605-C
Sampler Initials: MAD

O.REG 153 PETROLEUM HYDROCARBONS (SOIL)

Maxxam ID			FCC220	FCC222	FCC233		
Sampling Date			2017/09/06 16:00	2017/09/06 13:00	2017/09/07 09:30		
COC Number			627767-01-01	627767-01-01	627767-02-01		
	UNITS	**Criteria**	**MW302-S3**	**MW303-S3**	**MW311-S3**	**RDL**	**QC Batch**
Inorganics							
Moisture	%	-	13	12	7.9	1.0	5159394
BTEX & F1 Hydrocarbons							
Benzene	ug/g	**0.21**	<0.020	<0.020	<0.020	0.020	5159049
Toluene	ug/g	**2.3**	<0.020	<0.020	<0.020	0.020	5159049
Ethylbenzene	ug/g	**2**	<0.020	<0.020	<0.020	0.020	5159049
o-Xylene	ug/g	**-**	<0.020	<0.020	<0.020	0.020	5159049
p+m-Xylene	ug/g	**-**	<0.040	<0.040	<0.040	0.040	5159049
Total Xylenes	ug/g	**3.1**	<0.040	<0.040	<0.040	0.040	5159049
F1 (C6-C10)	ug/g	**55**	<10	<10	<10	10	5159049
F1 (C6-C10) - BTEX	ug/g	**55**	<10	<10	<10	10	5159049
F2-F4 Hydrocarbons							
F2 (C10-C16 Hydrocarbons)	ug/g	**98**	16	10	<10	10	5160090
F3 (C16-C34 Hydrocarbons)	ug/g	**300**	220	<50	<50	50	5160090
F4 (C34-C50 Hydrocarbons)	ug/g	**2800**	120	<50	<50	50	5160090
Reached Baseline at C50	ug/g	**-**	No	Yes	Yes		5160090
Surrogate Recovery (%)							
1,4-Difluorobenzene	%	**-**	101	101	100		5159049
4-Bromofluorobenzene	%	**-**	99	100	99		5159049
D10-Ethylbenzene	%	**-**	88	95	84		5159049
D4-1,2-Dichloroethane	%	**-**	97	97	97		5159049
o-Terphenyl	%	**-**	94	90	93		5160090

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

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

Maxxam ID			FCC230	FCC231		
Sampling Date			2017/09/07 07:30	2017/09/07 08:00		
COC Number			627767-02-01	627767-02-01		
	UNITS	**Criteria**	**MW310-S3**	**MW321-S2**	**RDL**	**QC Batch**
Inorganics						
Moisture	%	-	11	8.7	1.0	5159394
Calculated Parameters						
1,3-Dichloropropene (cis+trans)	ug/g	**0.05**	<0.050	<0.050	0.050	5157803
Volatile Organics						
Acetone (2-Propanone)	ug/g	**16**	<0.50	<0.50	0.50	5159358
Benzene	ug/g	**0.21**	<0.020	<0.020	0.020	5159358
Bromodichloromethane	ug/g	**13**	<0.050	<0.050	0.050	5159358
Bromoform	ug/g	**0.27**	<0.050	<0.050	0.050	5159358
Bromomethane	ug/g	**0.05**	<0.050	<0.050	0.050	5159358
Carbon Tetrachloride	ug/g	**0.05**	<0.050	<0.050	0.050	5159358
Chlorobenzene	ug/g	**2.4**	<0.050	<0.050	0.050	5159358
Chloroform	ug/g	**0.05**	<0.050	<0.050	0.050	5159358
Dibromochloromethane	ug/g	**9.4**	<0.050	<0.050	0.050	5159358
1,2-Dichlorobenzene	ug/g	**3.4**	<0.050	<0.050	0.050	5159358
1,3-Dichlorobenzene	ug/g	**4.8**	<0.050	<0.050	0.050	5159358
1,4-Dichlorobenzene	ug/g	**0.083**	<0.050	<0.050	0.050	5159358
Dichlorodifluoromethane (FREON 12)	ug/g	**16**	<0.050	<0.050	0.050	5159358
1,1-Dichloroethane	ug/g	**3.5**	<0.050	<0.050	0.050	5159358
1,2-Dichloroethane	ug/g	**0.05**	<0.050	<0.050	0.050	5159358
1,1-Dichloroethylene	ug/g	**0.05**	<0.050	<0.050	0.050	5159358
cis-1,2-Dichloroethylene	ug/g	**3.4**	<0.050	<0.050	0.050	5159358
trans-1,2-Dichloroethylene	ug/g	**0.084**	<0.050	<0.050	0.050	5159358
1,2-Dichloropropane	ug/g	**0.05**	<0.050	<0.050	0.050	5159358
cis-1,3-Dichloropropene	ug/g	**0.05**	<0.030	<0.030	0.030	5159358
trans-1,3-Dichloropropene	ug/g	**0.05**	<0.040	<0.040	0.040	5159358
Ethylbenzene	ug/g	**2**	<0.020	<0.020	0.020	5159358
Ethylene Dibromide	ug/g	**0.05**	<0.050	<0.050	0.050	5159358
Hexane	ug/g	**2.8**	<0.050	<0.050	0.050	5159358
Methylene Chloride(Dichloromethane)	ug/g	**0.1**	<0.050	<0.050	0.050	5159358
Methyl Ethyl Ketone (2-Butanone)	ug/g	**16**	<0.50	<0.50	0.50	5159358
Methyl Isobutyl Ketone	ug/g	**1.7**	<0.50	<0.50	0.50	5159358

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

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

Maxxam ID			FCC230	FCC231		
Sampling Date			2017/09/07 07:30	2017/09/07 08:00		
COC Number			627767-02-01	627767-02-01		
	UNITS	**Criteria**	**MW310-S3**	**MW321-S2**	**RDL**	**QC Batch**
Methyl t-butyl ether (MTBE)	ug/g	**0.75**	<0.050	<0.050	0.050	5159358
Styrene	ug/g	**0.7**	<0.050	<0.050	0.050	5159358
1,1,1,2-Tetrachloroethane	ug/g	**0.058**	<0.050	<0.050	0.050	5159358
1,1,2,2-Tetrachloroethane	ug/g	**0.05**	<0.050	<0.050	0.050	5159358
Tetrachloroethylene	ug/g	**0.28**	<0.050	<0.050	0.050	5159358
Toluene	ug/g	**2.3**	<0.020	<0.020	0.020	5159358
1,1,1-Trichloroethane	ug/g	**0.38**	<0.050	<0.050	0.050	5159358
1,1,2-Trichloroethane	ug/g	**0.05**	<0.050	<0.050	0.050	5159358
Trichloroethylene	ug/g	**0.061**	<0.050	<0.050	0.050	5159358
Trichlorofluoromethane (FREON 11)	ug/g	**4**	<0.050	<0.050	0.050	5159358
Vinyl Chloride	ug/g	**0.02**	<0.020	<0.020	0.020	5159358
p+m-Xylene	ug/g	-	<0.020	<0.020	0.020	5159358
o-Xylene	ug/g	-	<0.020	<0.020	0.020	5159358
Total Xylenes	ug/g	**3.1**	<0.020	<0.020	0.020	5159358
F1 (C6-C10)	ug/g	**55**	<10	<10	10	5159358
F1 (C6-C10) - BTEX	ug/g	**55**	<10	<10	10	5159358
F2-F4 Hydrocarbons						
F2 (C10-C16 Hydrocarbons)	ug/g	**98**	<10	<10	10	5160090
F3 (C16-C34 Hydrocarbons)	ug/g	**300**	50	140	50	5160090
F4 (C34-C50 Hydrocarbons)	ug/g	**2800**	59	180	50	5160090
Reached Baseline at C50	ug/g	-	No	No		5160090
Surrogate Recovery (%)						
o-Terphenyl	%	-	90	91		5160090
4-Bromofluorobenzene	%	-	95	87		5159358
D10-o-Xylene	%	-	90	87		5159358
D4-1,2-Dichloroethane	%	-	96	98		5159358
D8-Toluene	%	-	95	97		5159358

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

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Maxxam Job #: B7J6395
Report Date: 2017/09/14

exp Services Inc
Client Project #: OTT-00224605-C
Sampler Initials: MAD

O.REG 153 VOCS BY HS (SOIL)

Maxxam ID			FCC224	FCC224	FCC226	FCC228	FCC236		
Sampling Date			2017/09/07 11:00	2017/09/07 11:00	2017/09/06 09:00	2017/09/06 10:30	2017/09/06		
COC Number			627767-01-01	627767-01-01	627767-01-01	627767-02-01	627767-03-01		
	UNITS	**Criteria**	**MW307-S3**	**MW307-S3 Lab-Dup**	**MW308-S3**	**MW309-S2**	**TRIP BLANK**	**RDL**	**QC Batch**
Inorganics									
Moisture	%	-	7.4	7.1	17	10		1.0	5159440
Calculated Parameters									
1,3-Dichloropropene (cis+trans)	ug/g	**0.05**	<0.050		<0.050	<0.050	<0.050	0.050	5157803
Volatile Organics									
Acetone (2-Propanone)	ug/g	**16**	<0.50		<0.50	<0.50	<0.50	0.50	5159448
Benzene	ug/g	**0.21**	<0.020		<0.020	<0.020	<0.020	0.020	5159448
Bromodichloromethane	ug/g	**13**	<0.050		<0.050	<0.050	<0.050	0.050	5159448
Bromoform	ug/g	**0.27**	<0.050		<0.050	<0.050	<0.050	0.050	5159448
Bromomethane	ug/g	**0.05**	<0.050		<0.050	<0.050	<0.050	0.050	5159448
Carbon Tetrachloride	ug/g	**0.05**	<0.050		<0.050	<0.050	<0.050	0.050	5159448
Chlorobenzene	ug/g	**2.4**	<0.050		<0.050	<0.050	<0.050	0.050	5159448
Chloroform	ug/g	**0.05**	<0.050		<0.050	<0.050	<0.050	0.050	5159448
Dibromochloromethane	ug/g	**9.4**	<0.050		<0.050	<0.050	<0.050	0.050	5159448
1,2-Dichlorobenzene	ug/g	**3.4**	<0.050		<0.050	<0.050	<0.050	0.050	5159448
1,3-Dichlorobenzene	ug/g	**4.8**	<0.050		<0.050	<0.050	<0.050	0.050	5159448
1,4-Dichlorobenzene	ug/g	**0.083**	<0.050		<0.050	<0.050	<0.050	0.050	5159448
Dichlorodifluoromethane (FREON 12)	ug/g	**16**	<0.050		<0.050	<0.050	<0.050	0.050	5159448
1,1-Dichloroethane	ug/g	**3.5**	<0.050		<0.050	<0.050	<0.050	0.050	5159448
1,2-Dichloroethane	ug/g	**0.05**	<0.050		<0.050	<0.050	<0.050	0.050	5159448
1,1-Dichloroethylene	ug/g	**0.05**	<0.050		<0.050	<0.050	<0.050	0.050	5159448
cis-1,2-Dichloroethylene	ug/g	**3.4**	<0.050		<0.050	<0.050	<0.050	0.050	5159448
trans-1,2-Dichloroethylene	ug/g	**0.084**	<0.050		<0.050	<0.050	<0.050	0.050	5159448
1,2-Dichloropropane	ug/g	**0.05**	<0.050		<0.050	<0.050	<0.050	0.050	5159448
cis-1,3-Dichloropropene	ug/g	**0.05**	<0.030		<0.030	<0.030	<0.030	0.030	5159448
trans-1,3-Dichloropropene	ug/g	**0.05**	<0.040		<0.040	<0.040	<0.040	0.040	5159448
Ethylbenzene	ug/g	**2**	<0.020		<0.020	<0.020	<0.020	0.020	5159448
Ethylene Dibromide	ug/g	**0.05**	<0.050		<0.050	<0.050	<0.050	0.050	5159448
Hexane	ug/g	**2.8**	<0.050		<0.050	<0.050	<0.050	0.050	5159448
Methylene Chloride(Dichloromethane)	ug/g	**0.1**	<0.050		<0.050	<0.050	<0.050	0.050	5159448
Methyl Ethyl Ketone (2-Butanone)	ug/g	**16**	<0.50		<0.50	<0.50	<0.50	0.50	5159448

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

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Maxxam Job #: B7J6395
Report Date: 2017/09/14

exp Services Inc
Client Project #: OTT-00224605-C
Sampler Initials: MAD

O.REG 153 VOCS BY HS (SOIL)

Maxxam ID			FCC224	FCC224	FCC226	FCC228	FCC236		
Sampling Date			2017/09/07 11:00	2017/09/07 11:00	2017/09/06 09:00	2017/09/06 10:30	2017/09/06		
COC Number			627767-01-01	627767-01-01	627767-01-01	627767-02-01	627767-03-01		
	UNITS	**Criteria**	**MW307-S3**	**MW307-S3 Lab-Dup**	**MW308-S3**	**MW309-S2**	**TRIP BLANK**	**RDL**	**QC Batch**
Methyl Isobutyl Ketone	ug/g	**1.7**	<0.50		<0.50	<0.50	<0.50	0.50	5159448
Methyl t-butyl ether (MTBE)	ug/g	**0.75**	<0.050		<0.050	<0.050	<0.050	0.050	5159448
Styrene	ug/g	**0.7**	<0.050		<0.050	<0.050	<0.050	0.050	5159448
1,1,1,2-Tetrachloroethane	ug/g	**0.058**	<0.050		<0.050	<0.050	<0.050	0.050	5159448
1,1,2,2-Tetrachloroethane	ug/g	**0.05**	<0.050		<0.050	<0.050	<0.050	0.050	5159448
Tetrachloroethylene	ug/g	**0.28**	0.23		<0.050	<0.050	<0.050	0.050	5159448
Toluene	ug/g	**2.3**	<0.020		<0.020	<0.020	<0.020	0.020	5159448
1,1,1-Trichloroethane	ug/g	**0.38**	<0.050		<0.050	<0.050	<0.050	0.050	5159448
1,1,2-Trichloroethane	ug/g	**0.05**	<0.050		<0.050	<0.050	<0.050	0.050	5159448
Trichloroethylene	ug/g	**0.061**	<0.050		<0.050	<0.050	<0.050	0.050	5159448
Trichlorofluoromethane (FREON 11)	ug/g	**4**	<0.050		<0.050	<0.050	<0.050	0.050	5159448
Vinyl Chloride	ug/g	**0.02**	<0.020		<0.020	<0.020	<0.020	0.020	5159448
p+m-Xylene	ug/g	-	<0.020		<0.020	<0.020	<0.020	0.020	5159448
o-Xylene	ug/g	-	<0.020		<0.020	<0.020	<0.020	0.020	5159448
Total Xylenes	ug/g	**3.1**	<0.020		<0.020	<0.020	<0.020	0.020	5159448
Surrogate Recovery (%)									
4-Bromofluorobenzene	%	-	95		95	92	91		5159448
D10-o-Xylene	%	-	85		91	90	90		5159448
D4-1,2-Dichloroethane	%	-	97		98	99	98		5159448
D8-Toluene	%	-	96		97	99	100		5159448

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

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Report Date: 2017/09/14

exp Services Inc
Client Project #: OTT-00224605-C
Sampler Initials: MAD

RESULTS OF ANALYSES OF SOIL

Maxxam ID			FCC223	FCC225	FCC227	FCC229	FCC232		
Sampling Date			2017/09/07 11:00	2017/09/06 09:00	2017/09/06 10:30	2017/09/07 07:30	2017/09/07 09:30		
COC Number			627767-01-01	627767-01-01	627767-02-01	627767-02-01	627767-02-01		
	UNITS	**Criteria**	**MW307-S1**	**MW308-S1**	**MW309-S1**	**MW310-S1**	**MW311-S2**	**RDL**	**QC Batch**
Calculated Parameters									
Sodium Adsorption Ratio	N/A	**5.0**	2.8	**15**	**15**	**24**	**18**		5157863
Inorganics									
Conductivity	mS/cm	**0.7**	**1.6**	0.45	**2.7**	**1.6**	**0.99**	0.002	5161512
Metals									
Soluble Calcium (Ca)	mg/L	-	155	3.6	86.0	13.5	8.9	0.5	5161509
Soluble Magnesium (Mg)	mg/L	-	32.3	<0.5	5.5	1.4	1.3	0.5	5161509
Soluble Sodium (Na)	mg/L	-	146	104	542	346	222	5	5161509

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

Maxxam ID			FCC234		
Sampling Date			2017/09/07 12:00		
COC Number			627767-03-01		
	UNITS	**Criteria**	**MW312-S1**	**RDL**	**QC Batch**
Calculated Parameters					
Sodium Adsorption Ratio	N/A	**5.0**	1.0		5157863
Inorganics					
Conductivity	mS/cm	**0.7**	0.26	0.002	5161512
Metals					
Soluble Calcium (Ca)	mg/L	-	29.1	0.5	5161509
Soluble Magnesium (Mg)	mg/L	-	3.6	0.5	5161509
Soluble Sodium (Na)	mg/L	-	22	5	5161509

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

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Maxxam Job #: B7J6395
Report Date: 2017/09/14

exp Services Inc
Client Project #: OTT-00224605-C
Sampler Initials: MAD

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID			FCC220	FCC230	FCC231		
Sampling Date			2017/09/06 16:00	2017/09/07 07:30	2017/09/07 08:00		
COC Number			627767-01-01	627767-02-01	627767-02-01		
	UNITS	**Criteria**	**MW302-S3**	**MW310-S3**	**MW321-S2**	**RDL**	**QC Batch**
F2-F4 Hydrocarbons							
F4G-sg (Grav. Heavy Hydrocarbons)	ug/g	**2800**	320	220	430	100	5163737

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

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Maxxam Job #: B7J6395
Report Date: 2017/09/14

exp Services Inc
Client Project #: OTT-00224605-C
Sampler Initials: MAD

TEST SUMMARY

Maxxam ID: FCC219
Sample ID: MW302-S2
Matrix: Soil

Collected: 2017/09/06
Shipped:
Received: 2017/09/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	5161508	2017/09/13	2017/09/13	Viviana Canzonieri

Maxxam ID: FCC220
Sample ID: MW302-S3
Matrix: Soil

Collected: 2017/09/06
Shipped:
Received: 2017/09/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	5159049	N/A	2017/09/12	Georgeta Rusu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5160090	2017/09/12	2017/09/12	Zhiyue (Frank) Zhu
F4G (CCME Hydrocarbons Gravimetric)	BAL	5163737	2017/09/14	2017/09/14	Debra Deslandes
Moisture	BAL	5159394	N/A	2017/09/12	Gargi Gireesh

Maxxam ID: FCC221
Sample ID: MW303-S2
Matrix: Soil

Collected: 2017/09/06
Shipped:
Received: 2017/09/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	5161508	2017/09/13	2017/09/13	Viviana Canzonieri

Maxxam ID: FCC222
Sample ID: MW303-S3
Matrix: Soil

Collected: 2017/09/06
Shipped:
Received: 2017/09/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	5159049	N/A	2017/09/12	Georgeta Rusu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5160090	2017/09/12	2017/09/12	Zhiyue (Frank) Zhu
Moisture	BAL	5159394	N/A	2017/09/12	Gargi Gireesh

Maxxam ID: FCC223
Sample ID: MW307-S1
Matrix: Soil

Collected: 2017/09/07
Shipped:
Received: 2017/09/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Conductivity	AT	5161512	2017/09/13	2017/09/13	Neil Dassanayake
Sodium Adsorption Ratio (SAR)	CALC/MET	5157863	N/A	2017/09/13	Automated Statchk
SAR - ICP Metals	ICP	5161509	2017/09/13	2017/09/13	Jolly John

Maxxam ID: FCC224
Sample ID: MW307-S3
Matrix: Soil

Collected: 2017/09/07
Shipped:
Received: 2017/09/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	5157803	N/A	2017/09/13	Automated Statchk
Moisture	BAL	5159440	N/A	2017/09/12	Min Yang
Volatile Organic Compounds in Soil	GC/MS	5159448	N/A	2017/09/13	Anna Gabrielyan

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TEST SUMMARY

Maxxam ID: FCC224 Dup
Sample ID: MW307-S3
Matrix: Soil

Collected: 2017/09/07
Shipped:
Received: 2017/09/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	5159440	N/A	2017/09/12	Min Yang

Maxxam ID: FCC225
Sample ID: MW308-S1
Matrix: Soil

Collected: 2017/09/06
Shipped:
Received: 2017/09/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Conductivity	AT	5161512	2017/09/13	2017/09/13	Neil Dassanayake
Sodium Adsorption Ratio (SAR)	CALC/MET	5157863	N/A	2017/09/13	Automated Statchk
SAR - ICP Metals	ICP	5161509	2017/09/13	2017/09/13	Jolly John

Maxxam ID: FCC226
Sample ID: MW308-S3
Matrix: Soil

Collected: 2017/09/06
Shipped:
Received: 2017/09/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	5157803	N/A	2017/09/13	Automated Statchk
Moisture	BAL	5159440	N/A	2017/09/12	Min Yang
Volatile Organic Compounds in Soil	GC/MS	5159448	N/A	2017/09/13	Anna Gabrielyan

Maxxam ID: FCC227
Sample ID: MW309-S1
Matrix: Soil

Collected: 2017/09/06
Shipped:
Received: 2017/09/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Conductivity	AT	5161512	2017/09/13	2017/09/13	Neil Dassanayake
Sodium Adsorption Ratio (SAR)	CALC/MET	5157863	N/A	2017/09/13	Automated Statchk
SAR - ICP Metals	ICP	5161509	2017/09/13	2017/09/13	Jolly John

Maxxam ID: FCC228
Sample ID: MW309-S2
Matrix: Soil

Collected: 2017/09/06
Shipped:
Received: 2017/09/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	5157803	N/A	2017/09/14	Automated Statchk
Moisture	BAL	5159440	N/A	2017/09/12	Min Yang
Volatile Organic Compounds in Soil	GC/MS	5159448	N/A	2017/09/13	Anna Gabrielyan

Maxxam ID: FCC229
Sample ID: MW310-S1
Matrix: Soil

Collected: 2017/09/07
Shipped:
Received: 2017/09/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Conductivity	AT	5161512	2017/09/13	2017/09/13	Neil Dassanayake
Sodium Adsorption Ratio (SAR)	CALC/MET	5157863	N/A	2017/09/13	Automated Statchk
SAR - ICP Metals	ICP	5161509	2017/09/13	2017/09/13	Jolly John

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Maxxam Job #: B7J6395
Report Date: 2017/09/14

exp Services Inc
Client Project #: OTT-00224605-C
Sampler Initials: MAD

TEST SUMMARY

Maxxam ID: FCC230
Sample ID: MW310-S3
Matrix: Soil

Collected: 2017/09/07
Shipped:
Received: 2017/09/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	5157803	N/A	2017/09/13	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5160090	2017/09/12	2017/09/12	Zhiyue (Frank) Zhu
F4G (CCME Hydrocarbons Gravimetric)	BAL	5163737	2017/09/14	2017/09/14	Debra Deslandes
Moisture	BAL	5159394	N/A	2017/09/12	Gargi Gireesh
Volatile Organic Compounds and F1 PHCs	GC/MSFD	5159358	N/A	2017/09/13	Manpreet Sarao

Maxxam ID: FCC231
Sample ID: MW321-S2
Matrix: Soil

Collected: 2017/09/07
Shipped:
Received: 2017/09/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	5157803	N/A	2017/09/13	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5160090	2017/09/12	2017/09/12	Zhiyue (Frank) Zhu
F4G (CCME Hydrocarbons Gravimetric)	BAL	5163737	2017/09/14	2017/09/14	Debra Deslandes
Moisture	BAL	5159394	N/A	2017/09/12	Gargi Gireesh
Volatile Organic Compounds and F1 PHCs	GC/MSFD	5159358	N/A	2017/09/13	Manpreet Sarao

Maxxam ID: FCC232
Sample ID: MW311-S2
Matrix: Soil

Collected: 2017/09/07
Shipped:
Received: 2017/09/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Conductivity	AT	5161512	2017/09/13	2017/09/13	Neil Dassanayake
Sodium Adsorption Ratio (SAR)	CALC/MET	5157863	N/A	2017/09/13	Automated Statchk
SAR - ICP Metals	ICP	5161509	2017/09/13	2017/09/13	Jolly John

Maxxam ID: FCC233
Sample ID: MW311-S3
Matrix: Soil

Collected: 2017/09/07
Shipped:
Received: 2017/09/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	5159049	N/A	2017/09/12	Georgeta Rusu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5160090	2017/09/12	2017/09/12	Zhiyue (Frank) Zhu
Moisture	BAL	5159394	N/A	2017/09/12	Gargi Gireesh

Maxxam ID: FCC234
Sample ID: MW312-S1
Matrix: Soil

Collected: 2017/09/07
Shipped:
Received: 2017/09/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Conductivity	AT	5161512	2017/09/13	2017/09/13	Neil Dassanayake
Sodium Adsorption Ratio (SAR)	CALC/MET	5157863	N/A	2017/09/13	Automated Statchk
SAR - ICP Metals	ICP	5161509	2017/09/13	2017/09/13	Jolly John

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Maxxam Job #: B7J6395
Report Date: 2017/09/14

exp Services Inc
Client Project #: OTT-00224605-C
Sampler Initials: MAD

TEST SUMMARY

Maxxam ID: FCC236
Sample ID: TRIP BLANK
Matrix: Soil

Collected: 2017/09/06
Shipped:
Received: 2017/09/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	5157803	N/A	2017/09/14	Automated Statchk
Volatile Organic Compounds in Soil	GC/MS	5159448	N/A	2017/09/13	Anna Gabrielyan

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GENERAL COMMENTS

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

Package 1	9.0°C

Sample FCC220 [MW302-S3] : F1/BTEX Analysis: Greater than 10g of soil was submitted in the field preserved vial. This significantly exceeds the protocol specification of approximately 5g. Additional methanol was added to the vial to ensure extraction efficiency.

Sample FCC231 [MW321-S2] : VOCF1 Analysis: Greater than 10g of soil was submitted in the field preserved vial. This significantly exceeds the protocol specification of approximately 5g. Additional methanol was added to the vial to ensure extraction efficiency.

Sample FCC233 [MW311-S3] : F1/BTEX Analysis: Greater than 10g of soil was submitted in the field preserved vial. This significantly exceeds the protocol specification of approximately 5g. Additional methanol was added to the vial to ensure extraction efficiency.

Results relate only to the items tested.

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Maxxam Job #: B7J6395
Report Date: 2017/09/14

QUALITY ASSURANCE REPORT

exp Services Inc
Client Project #: OTT-00224605-C
Sampler Initials: MAD

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5159049	1,4-Difluorobenzene	2017/09/11	101	60 - 140	99	60 - 140	101	%		
5159049	4-Bromofluorobenzene	2017/09/11	101	60 - 140	101	60 - 140	98	%		
5159049	D10-Ethylbenzene	2017/09/11	93	60 - 140	84	60 - 140	87	%		
5159049	D4-1,2-Dichloroethane	2017/09/11	97	60 - 140	97	60 - 140	97	%		
5159358	4-Bromofluorobenzene	2017/09/13	103	60 - 140	104	60 - 140	93	%		
5159358	D10-o-Xylene	2017/09/13	107	60 - 130	92	60 - 130	89	%		
5159358	D4-1,2-Dichloroethane	2017/09/13	95	60 - 140	93	60 - 140	100	%		
5159358	D8-Toluene	2017/09/13	102	60 - 140	103	60 - 140	95	%		
5159448	4-Bromofluorobenzene	2017/09/12	96	60 - 140	98	60 - 140	97	%		
5159448	D10-o-Xylene	2017/09/12	100	60 - 130	91	60 - 130	98	%		
5159448	D4-1,2-Dichloroethane	2017/09/12	101	60 - 140	97	60 - 140	98	%		
5159448	D8-Toluene	2017/09/12	102	60 - 140	102	60 - 140	96	%		
5160090	o-Terphenyl	2017/09/12	92	60 - 130	89	60 - 130	89	%		
5159049	Benzene	2017/09/11	94	60 - 140	92	60 - 140	<0.020	ug/g	NC	50
5159049	Ethylbenzene	2017/09/11	96	60 - 140	94	60 - 140	<0.020	ug/g	NC	50
5159049	F1 (C6-C10) - BTEX	2017/09/11					<10	ug/g	NC	30
5159049	F1 (C6-C10)	2017/09/11	99	60 - 140	94	80 - 120	<10	ug/g	NC	30
5159049	o-Xylene	2017/09/11	98	60 - 140	97	60 - 140	<0.020	ug/g	NC	50
5159049	p+m-Xylene	2017/09/11	96	60 - 140	93	60 - 140	<0.040	ug/g	NC	50
5159049	Toluene	2017/09/11	97	60 - 140	95	60 - 140	<0.020	ug/g	NC	50
5159049	Total Xylenes	2017/09/11					<0.040	ug/g	NC	50
5159358	1,1,1,2-Tetrachloroethane	2017/09/13	100	60 - 140	98	60 - 130	<0.050	ug/g	NC	50
5159358	1,1,1-Trichloroethane	2017/09/13	91	60 - 140	88	60 - 130	<0.050	ug/g	NC	50
5159358	1,1,2,2-Tetrachloroethane	2017/09/13	107	60 - 140	108	60 - 130	<0.050	ug/g	NC	50
5159358	1,1,2-Trichloroethane	2017/09/13	89	60 - 140	87	60 - 130	<0.050	ug/g	NC	50
5159358	1,1-Dichloroethane	2017/09/13	95	60 - 140	91	60 - 130	<0.050	ug/g	NC	50
5159358	1,1-Dichloroethylene	2017/09/13	100	60 - 140	95	60 - 130	<0.050	ug/g	NC	50
5159358	1,2-Dichlorobenzene	2017/09/13	92	60 - 140	88	60 - 130	<0.050	ug/g	NC	50
5159358	1,2-Dichloroethane	2017/09/13	102	60 - 140	100	60 - 130	<0.050	ug/g	NC	50
5159358	1,2-Dichloropropane	2017/09/13	88	60 - 140	86	60 - 130	<0.050	ug/g	NC	50
5159358	1,3-Dichlorobenzene	2017/09/13	96	60 - 140	92	60 - 130	<0.050	ug/g	NC	50

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5159358	1,4-Dichlorobenzene	2017/09/13	102	60 - 140	93	60 - 130	<0.050	ug/g	NC	50
5159358	Acetone (2-Propanone)	2017/09/13	79	60 - 140	84	60 - 140	<0.50	ug/g	NC	50
5159358	Benzene	2017/09/13	97	60 - 140	93	60 - 130	<0.020	ug/g	NC	50
5159358	Bromodichloromethane	2017/09/13	90	60 - 140	88	60 - 130	<0.050	ug/g	NC	50
5159358	Bromoform	2017/09/13	98	60 - 140	99	60 - 130	<0.050	ug/g	NC	50
5159358	Bromomethane	2017/09/13	96	60 - 140	94	60 - 140	<0.050	ug/g	NC	50
5159358	Carbon Tetrachloride	2017/09/13	93	60 - 140	89	60 - 130	<0.050	ug/g	NC	50
5159358	Chlorobenzene	2017/09/13	94	60 - 140	91	60 - 130	<0.050	ug/g	NC	50
5159358	Chloroform	2017/09/13	91	60 - 140	88	60 - 130	<0.050	ug/g	NC	50
5159358	cis-1,2-Dichloroethylene	2017/09/13	95	60 - 140	92	60 - 130	<0.050	ug/g	NC	50
5159358	cis-1,3-Dichloropropene	2017/09/13	83	60 - 140	83	60 - 130	<0.030	ug/g	NC	50
5159358	Dibromochloromethane	2017/09/13	97	60 - 140	96	60 - 130	<0.050	ug/g	NC	50
5159358	Dichlorodifluoromethane (FREON 12)	2017/09/13	87	60 - 140	89	60 - 140	<0.050	ug/g	NC	50
5159358	Ethylbenzene	2017/09/13	94	60 - 140	91	60 - 130	<0.020	ug/g	NC	50
5159358	Ethylene Dibromide	2017/09/13	99	60 - 140	99	60 - 130	<0.050	ug/g	NC	50
5159358	F1 (C6-C10) - BTEX	2017/09/13					<10	ug/g	NC	30
5159358	F1 (C6-C10)	2017/09/13	101	60 - 140	91	80 - 120	<10	ug/g	NC	30
5159358	Hexane	2017/09/13	99	60 - 140	95	60 - 130	<0.050	ug/g	NC	50
5159358	Methyl Ethyl Ketone (2-Butanone)	2017/09/13	82	60 - 140	86	60 - 140	<0.50	ug/g	NC	50
5159358	Methyl Isobutyl Ketone	2017/09/13	85	60 - 140	87	60 - 130	<0.50	ug/g	NC	50
5159358	Methyl t-butyl ether (MTBE)	2017/09/13	92	60 - 140	90	60 - 130	<0.050	ug/g	NC	50
5159358	Methylene Chloride(Dichloromethane)	2017/09/13	100	60 - 140	97	60 - 130	<0.050	ug/g	NC	50
5159358	o-Xylene	2017/09/13	94	60 - 140	92	60 - 130	<0.020	ug/g	NC	50
5159358	p+m-Xylene	2017/09/13	97	60 - 140	94	60 - 130	<0.020	ug/g	NC	50
5159358	Styrene	2017/09/13	96	60 - 140	94	60 - 130	<0.050	ug/g	NC	50
5159358	Tetrachloroethylene	2017/09/13	95	60 - 140	90	60 - 130	<0.050	ug/g	NC	50
5159358	Toluene	2017/09/13	93	60 - 140	89	60 - 130	<0.020	ug/g	NC	50
5159358	Total Xylenes	2017/09/13					<0.020	ug/g	NC	50
5159358	trans-1,2-Dichloroethylene	2017/09/13	98	60 - 140	92	60 - 130	<0.050	ug/g	NC	50
5159358	trans-1,3-Dichloropropene	2017/09/13	85	60 - 140	86	60 - 130	<0.040	ug/g	NC	50
5159358	Trichloroethylene	2017/09/13	95	60 - 140	91	60 - 130	<0.050	ug/g	NC	50

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5159358	Trichlorofluoromethane (FREON 11)	2017/09/13	97	60 - 140	93	60 - 130	<0.050	ug/g	NC	50
5159358	Vinyl Chloride	2017/09/13	78	60 - 140	93	60 - 130	<0.020	ug/g	NC	50
5159394	Moisture	2017/09/12							4.6	20
5159440	Moisture	2017/09/12							4.1	20
5159448	1,1,1,2-Tetrachloroethane	2017/09/13	108	60 - 140	110	60 - 130	<0.050	ug/g	NC	50
5159448	1,1,1-Trichloroethane	2017/09/13	97	60 - 140	99	60 - 130	<0.050	ug/g	NC	50
5159448	1,1,2,2-Tetrachloroethane	2017/09/13	101	60 - 140	101	60 - 130	<0.050	ug/g	NC	50
5159448	1,1,2-Trichloroethane	2017/09/13	103	60 - 140	100	60 - 130	<0.050	ug/g	NC	50
5159448	1,1-Dichloroethane	2017/09/13	106	60 - 140	107	60 - 130	<0.050	ug/g	NC	50
5159448	1,1-Dichloroethylene	2017/09/13	106	60 - 140	110	60 - 130	<0.050	ug/g	NC	50
5159448	1,2-Dichlorobenzene	2017/09/13	95	60 - 140	97	60 - 130	<0.050	ug/g	NC	50
5159448	1,2-Dichloroethane	2017/09/13	95	60 - 140	94	60 - 130	<0.050	ug/g	NC	50
5159448	1,2-Dichloropropane	2017/09/13	97	60 - 140	99	60 - 130	<0.050	ug/g	NC	50
5159448	1,3-Dichlorobenzene	2017/09/13	97	60 - 140	102	60 - 130	<0.050	ug/g	NC	50
5159448	1,4-Dichlorobenzene	2017/09/13	94	60 - 140	100	60 - 130	<0.050	ug/g	NC	50
5159448	Acetone (2-Propanone)	2017/09/13	108	60 - 140	92	60 - 140	<0.50	ug/g	NC	50
5159448	Benzene	2017/09/13	105	60 - 140	107	60 - 130	<0.020	ug/g	NC	50
5159448	Bromodichloromethane	2017/09/13	97	60 - 140	99	60 - 130	<0.050	ug/g	NC	50
5159448	Bromoform	2017/09/13	110	60 - 140	112	60 - 130	<0.050	ug/g	NC	50
5159448	Bromomethane	2017/09/13	106	60 - 140	106	60 - 140	<0.050	ug/g	NC	50
5159448	Carbon Tetrachloride	2017/09/13	101	60 - 140	103	60 - 130	<0.050	ug/g	NC	50
5159448	Chlorobenzene	2017/09/13	95	60 - 140	98	60 - 130	<0.050	ug/g	NC	50
5159448	Chloroform	2017/09/13	98	60 - 140	99	60 - 130	<0.050	ug/g	NC	50
5159448	cis-1,2-Dichloroethylene	2017/09/13	97	60 - 140	100	60 - 130	<0.050	ug/g	NC	50
5159448	cis-1,3-Dichloropropene	2017/09/13	89	60 - 140	92	60 - 130	<0.030	ug/g	NC	50
5159448	Dibromochloromethane	2017/09/13	106	60 - 140	107	60 - 130	<0.050	ug/g	NC	50
5159448	Dichlorodifluoromethane (FREON 12)	2017/09/13	105	60 - 140	108	60 - 140	<0.050	ug/g	NC	50
5159448	Ethylbenzene	2017/09/13	89	60 - 140	96	60 - 130	<0.020	ug/g	NC	50
5159448	Ethylene Dibromide	2017/09/13	103	60 - 140	102	60 - 130	<0.050	ug/g	NC	50
5159448	Hexane	2017/09/13	108	60 - 140	112	60 - 130	<0.050	ug/g	NC	50
5159448	Methyl Ethyl Ketone (2-Butanone)	2017/09/13	104	60 - 140	96	60 - 140	<0.50	ug/g	NC	50

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5159448	Methyl Isobutyl Ketone	2017/09/13	94	60 - 140	96	60 - 130	<0.50	ug/g	NC	50
5159448	Methyl t-butyl ether (MTBE)	2017/09/13	92	60 - 140	93	60 - 130	<0.050	ug/g	NC	50
5159448	Methylene Chloride(Dichloromethane)	2017/09/13	97	60 - 140	97	60 - 130	<0.050	ug/g	NC	50
5159448	o-Xylene	2017/09/13	87	60 - 140	93	60 - 130	<0.020	ug/g	NC	50
5159448	p+m-Xylene	2017/09/13	89	60 - 140	97	60 - 130	<0.020	ug/g	NC	50
5159448	Styrene	2017/09/13	86	60 - 140	94	60 - 130	<0.050	ug/g	NC	50
5159448	Tetrachloroethylene	2017/09/13	95	60 - 140	99	60 - 130	<0.050	ug/g	NC	50
5159448	Toluene	2017/09/13	91	60 - 140	94	60 - 130	<0.020	ug/g	NC	50
5159448	Total Xylenes	2017/09/13					<0.020	ug/g	NC	50
5159448	trans-1,2-Dichloroethylene	2017/09/13	100	60 - 140	105	60 - 130	<0.050	ug/g	NC	50
5159448	trans-1,3-Dichloropropene	2017/09/13	98	60 - 140	98	60 - 130	<0.040	ug/g	NC	50
5159448	Trichloroethylene	2017/09/13	95	60 - 140	99	60 - 130	<0.050	ug/g	NC	50
5159448	Trichlorofluoromethane (FREON 11)	2017/09/13	100	60 - 140	102	60 - 130	<0.050	ug/g	NC	50
5159448	Vinyl Chloride	2017/09/13	103	60 - 140	107	60 - 130	<0.020	ug/g	NC	50
5160090	F2 (C10-C16 Hydrocarbons)	2017/09/12	102	50 - 130	96	80 - 120	<10	ug/g	NC	30
5160090	F3 (C16-C34 Hydrocarbons)	2017/09/12	98	50 - 130	93	80 - 120	<50	ug/g	NC	30
5160090	F4 (C34-C50 Hydrocarbons)	2017/09/12	100	50 - 130	95	80 - 120	<50	ug/g	NC	30
5161508	Acid Extractable Antimony (Sb)	2017/09/13	99	75 - 125	102	80 - 120	<0.20	ug/g	NC	30
5161508	Acid Extractable Arsenic (As)	2017/09/13	102	75 - 125	101	80 - 120	<1.0	ug/g	22	30
5161508	Acid Extractable Barium (Ba)	2017/09/13	86	75 - 125	102	80 - 120	<0.50	ug/g	12	30
5161508	Acid Extractable Beryllium (Be)	2017/09/13	100	75 - 125	100	80 - 120	<0.20	ug/g	15	30
5161508	Acid Extractable Boron (B)	2017/09/13	98	75 - 125	99	80 - 120	<5.0	ug/g		
5161508	Acid Extractable Cadmium (Cd)	2017/09/13	100	75 - 125	99	80 - 120	<0.10	ug/g	24	30
5161508	Acid Extractable Chromium (Cr)	2017/09/13	87	75 - 125	97	80 - 120	<1.0	ug/g	31 (1)	30
5161508	Acid Extractable Cobalt (Co)	2017/09/13	95	75 - 125	97	80 - 120	<0.10	ug/g	10	30
5161508	Acid Extractable Copper (Cu)	2017/09/13	95	75 - 125	97	80 - 120	<0.50	ug/g	12	30
5161508	Acid Extractable Lead (Pb)	2017/09/13	93	75 - 125	100	80 - 120	<1.0	ug/g	15	30
5161508	Acid Extractable Molybdenum (Mo)	2017/09/13	99	75 - 125	98	80 - 120	<0.50	ug/g	NC	30
5161508	Acid Extractable Nickel (Ni)	2017/09/13	90	75 - 125	100	80 - 120	<0.50	ug/g	18	30
5161508	Acid Extractable Selenium (Se)	2017/09/13	101	75 - 125	104	80 - 120	<0.50	ug/g	NC	30
5161508	Acid Extractable Silver (Ag)	2017/09/13	96	75 - 125	96	80 - 120	<0.20	ug/g	NC	30

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5161508	Acid Extractable Thallium (Tl)	2017/09/13	96	75 - 125	99	80 - 120	<0.050	ug/g	NC	30
5161508	Acid Extractable Uranium (U)	2017/09/13	94	75 - 125	97	80 - 120	<0.050	ug/g	16	30
5161508	Acid Extractable Vanadium (V)	2017/09/13	83	75 - 125	96	80 - 120	<5.0	ug/g	19	30
5161508	Acid Extractable Zinc (Zn)	2017/09/13	NC	75 - 125	91	80 - 120	<5.0	ug/g	18	30
5161509	Soluble Calcium (Ca)	2017/09/13			101	80 - 120	<0.5	mg/L	0.89	30
5161509	Soluble Magnesium (Mg)	2017/09/13			97	80 - 120	<0.5	mg/L	0.61	30
5161509	Soluble Sodium (Na)	2017/09/13			98	80 - 120	<5	mg/L	0.77	30
5161512	Conductivity	2017/09/13			100	90 - 110	<0.002	mS/cm	1.1	10
5163737	F4G-sg (Grav. Heavy Hydrocarbons)	2017/09/14	98	65 - 135	99	65 - 135	<100	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 (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.

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

Maxxam Job #: B7J6395
Report Date: 2017/09/14

exp Services Inc
Client Project #: OTT-00224605-C
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).

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.

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

Maxxam — Maxxam Analytics International Corporation o/a Maxxam Analytics
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08-Sep-17 11:10
Alison Cameron
B7J6395
PS4 ENV-808

Page 1 of 3

INVOICE TO:
Company Name: #17497 exp Services Inc
Attention: Accounts Payable
Address: 100-2650 Queensview Drive, Ottawa ON K2B 8H6
Tel: (613) 688-1899 x Fax: (613) 225-7337 x
Email: accounting.ottawa@exp.com; Karen.Burke@exp.com;

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

PROJECT INFORMATION:
Quotation #: B46066
P.O. #:
Project: OTT-00224605-C
Project Name:
Site #:
Sampled By: MAD

Laboratory Use Only: Bottle Order #: 627767; Project Manager: Alison Cameron; C#627767-01-01

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

Regulation 153 (2011): Table 3 [X], Res/Park [X], Coarse [X]; Table 1, Table 2, Table, Medium/Fine, Ind/Comm, Agri/Other, For RSC

Other Regulations: CCME, Reg 558, MISA, PWQO, Other; Sanitary Sewer Bylaw, Storm Sewer Bylaw, Municipality

Special Instructions:

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

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

Turnaround Time (TAT) Required: Please provide advance notice for rush projects
Regular (Standard) TAT: [X]
(will be applied if Rush TAT is not specified)
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.
Job Specific Rush TAT (if applies to entire submission)
Date Required: Time Required:
Rush Confirmation Number: (call lab for #)

#	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	PHC/BTEX	VOC	Metals (ICP)	EC/SAR	(Hold)	# of Bottles	Comments
1		MW302-S2	Sept 6 2017	4:00pm	S				X			1	
2		MW302-S3	Sept 6 2017	4:00pm	S		X					3	
3		MW303-S2	Sept 6 2017	1:00pm	S				X			1	
4		MW303-S3	Sept 6 2017	1:00pm	S		X					3	
5		MW307-S1	Sept 7 2017	11:00am	S					X		1	
6		MW307-S3	Sept 7 2017	11:00am	S			X				3	
7		MW307-S3	Sept 7 2017	11:00am	S					X	X	1	
8		MW308-S1	Sept 6 2017	9:00am	S					X		1	
9		MW308-S3	Sept 6 2017	9:00am	S			X				3	
10		MW308-S3	Sept 6 2017	9:00am	S					X	X	1	ON Ice

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RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Mark Devlin	17/09/08	11:10am	Carmen Tamayo	2017/09/08	11:10	
			PARAMJEET SINGH	2017/09/08	22:55	

Laboratory Use Only: Time Sensitive; Temperature (°C) on Receipt: 10, 9, 8; Custody Seal Present / Intact: Yes / No

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

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

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

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CHAIN OF CUSTODY RECORD

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#17497 exp Services Inc	Company Name:		Quotation #:	B46066	Maxxam Job #:	Bottle Order #: 627767
Attention:	Accounts Payable	Attention:	Mark Devlin / Mark McCalla	P.O. #:			
Address:	100-2650 Queensview Drive, Ottawa ON K2B 8H6	Address:		Project:	OTT-00224605-C		
Tel:	(613) 688-1899 x Fax: (613) 225-7337 x	Tel:	Fax:	Project Name:		COC #: C#627767-02-01	Project Manager: Alison Cameron
Email:	accounting.ottawa@exp.com; Karen.Burke@exp.com;	Email:	mark.devlin@exp.com	Site #:			
				Sampled By:	MAD		

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

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

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

Special Instructions

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

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

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

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

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

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

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	PHC/BTEX	VOC	Metals (CCME)	EC/SAR	(Hold)	# of Bottles	Comments
1		MW309-S1	Sept 6 2017	10:30am	S				X		1	
2		MW309-S2	Sept 6 2017	10:30am	S		X				3	
3		MW309-S2	Sept 6 2017	10:30am	S				X	X	1	
4		MW310-S1	Sept 7 2017	7:30am	S				X		1	
5		MW310-S3	Sept 7 2017	7:30am	S	X	X				3	
6		MW310-S3	Sept 7 2017	7:30am	S				X	X	1	
7		MW321-S2	Sept 7 2017	8:00am	S	X	X				3	
8		MW311-S2	Sept 7 2017	9:30am	S				X		1	
9		MW311-S3	Sept 7 2017	9:30am	S	X					3	
10		MW311-S3	Sept 7 2017	9:30am	S				X	X	1	ON Fce

RECEIVED IN OTTAWA

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted	Laboratory Use Only			
Mark Devlin	17/09/08	11:10am		2017/09/08	11:10		Time Sensitive	Temperature (°C) on Rece: 10, 9, 8	Custody Seal Present	Yes ☒ / No
Mark Devlin			Project PARAMJEET SINGH	2017/09/08	22:55				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.CA/WP-CONTENT/UPLOADS/ONTARIO-COC.PDF.

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

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CHAIN OF CUSTODY RECORD

Page 3 of 3

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#17497 exp Services Inc	Company Name:		Quotation #:	B46066	Maxxam Job #:	Bottle Order #:
Attention:	Accounts Payable	Attention:	Mark Devlin / Mark McCalla	P.O. #:			627767
Address:	100-2650 Queensview Drive Ottawa ON K2B 8H6	Address:		Project:	OTT-00224605-C	COC #:	Project Manager:
Tel:	(613) 688-1899 x Fax: (613) 225-7337 x	Tel:		Project Name:		C#627767-03-01	Alison Cameron
Email:	accounting.ottawa@exp.com; Karen.Burke@exp.com;	Email:	mark.devlin@exp.com / mark.mccalla@exp.com	Site #:			
				Sampled By:	MAD		

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

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

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

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

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

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

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

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

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered	EC/SAR	(Hold)	VOC	# of Bottles	Comments
1		~~MW12~~									
2		MW312-S1	Sept 7 2017	12:00 pm	S		X			1	
3		MW312-S2	Sept 7 2017	12:00	S		X	X		1	
4		Trip Blank	Sept 6 2017	—	S				X	1	
5											
6											
7											
8											
9											
10											ON RE

RECEIVED IN OTTAWA

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Mark Devlin	17/09/08	11:10	[illegible]	2017/09/08	11:10	
Mark Devlin			Navjeet PARAMJEET SINGH	2017/09/08	22:55	

Laboratory Use Only				
Time Sensitive	Temperature (°C) on Recei	Custody Seal Present	Yes	No
~~11/9/8~~	10, 9, 8	Intact	X	

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.

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

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

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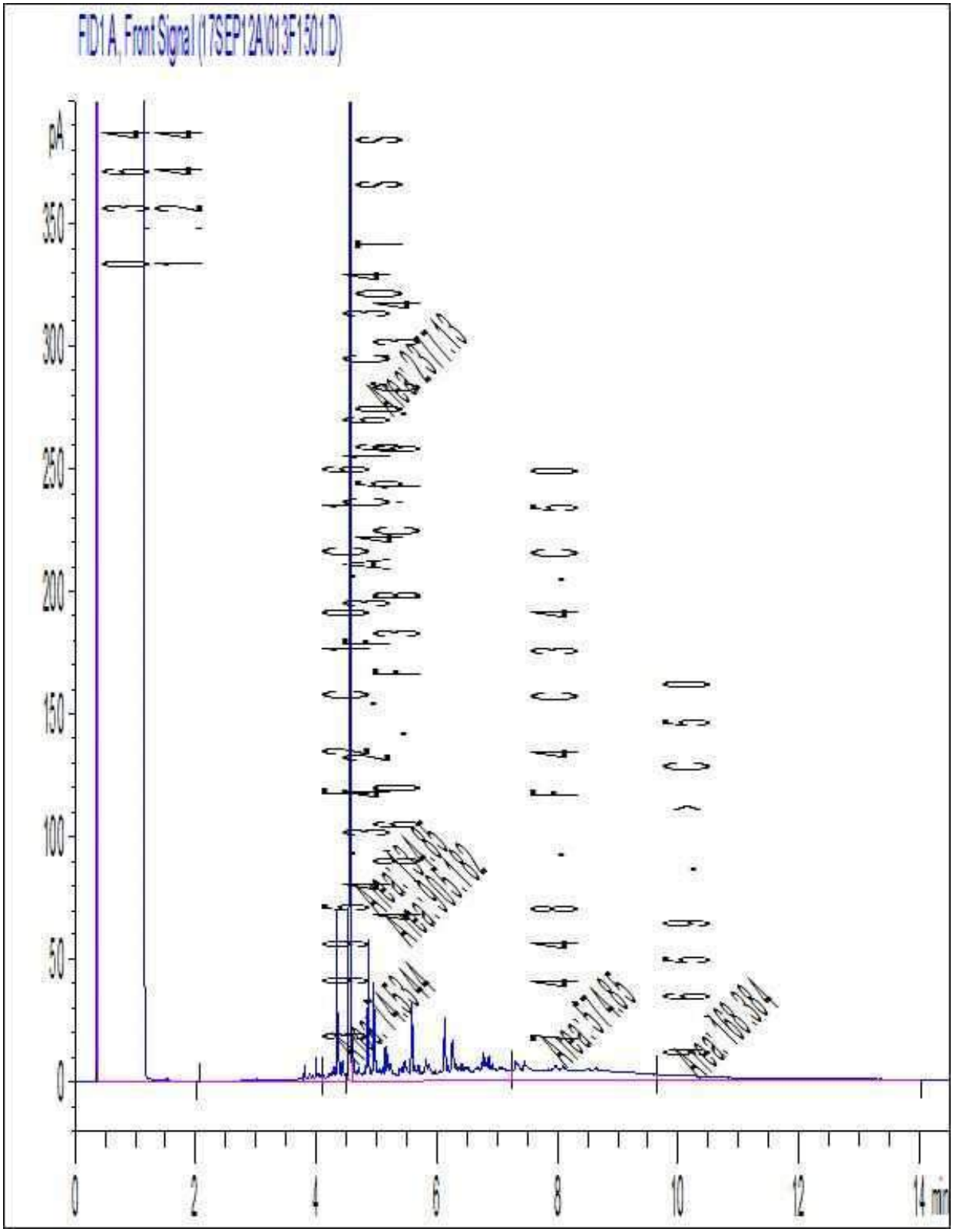
Maxxam Job #: B7J6395
Report Date: 2017/09/14
Maxxam Sample: FCC220

exp Services Inc
Client Project #: OTT-00224605-C
Client ID: MW302-S3

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

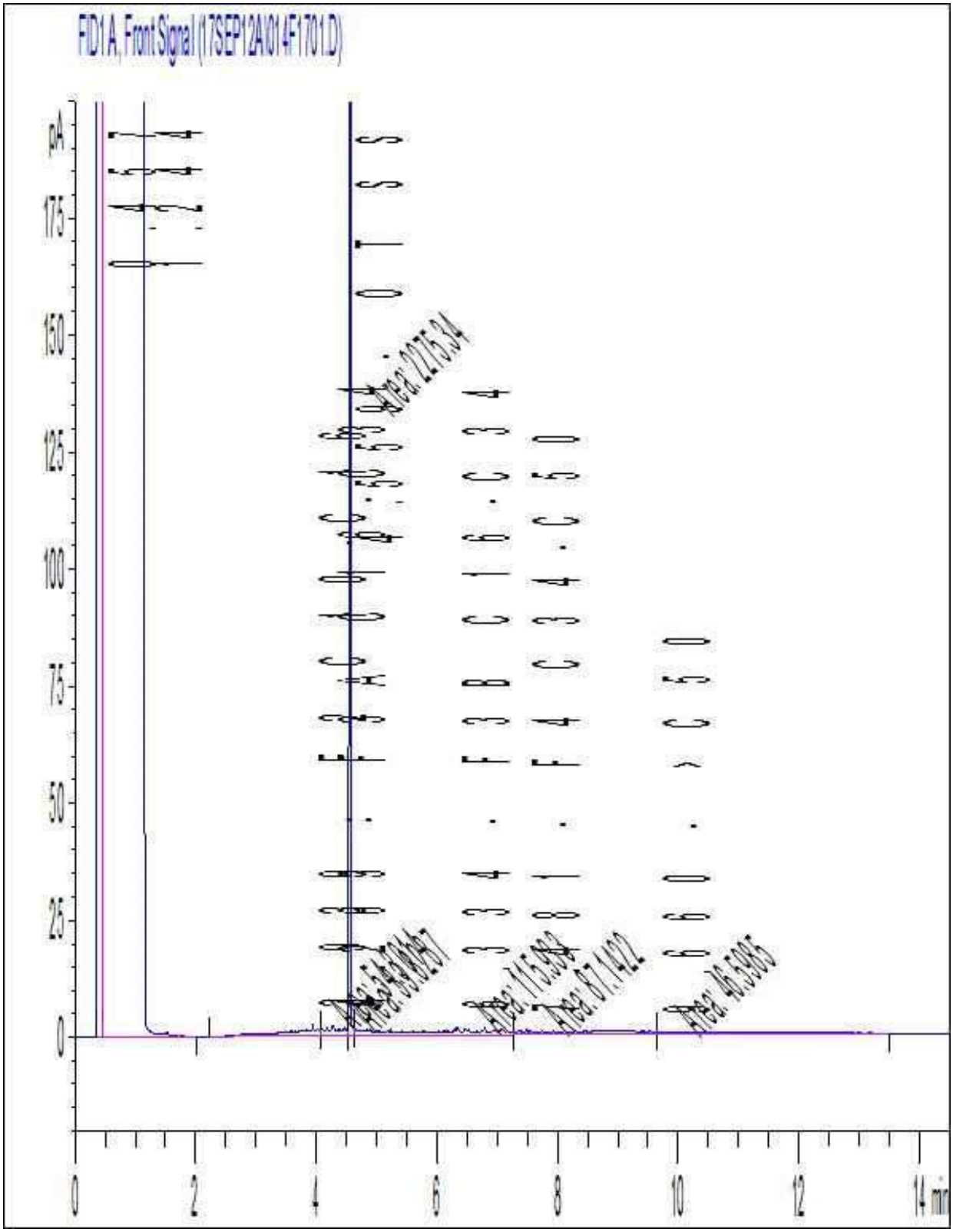


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B7J6395
Report Date: 2017/09/14
Maxxam Sample: FCC222

exp Services Inc
Client Project #: OTT-00224605-C
Client ID: MW303-S3

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

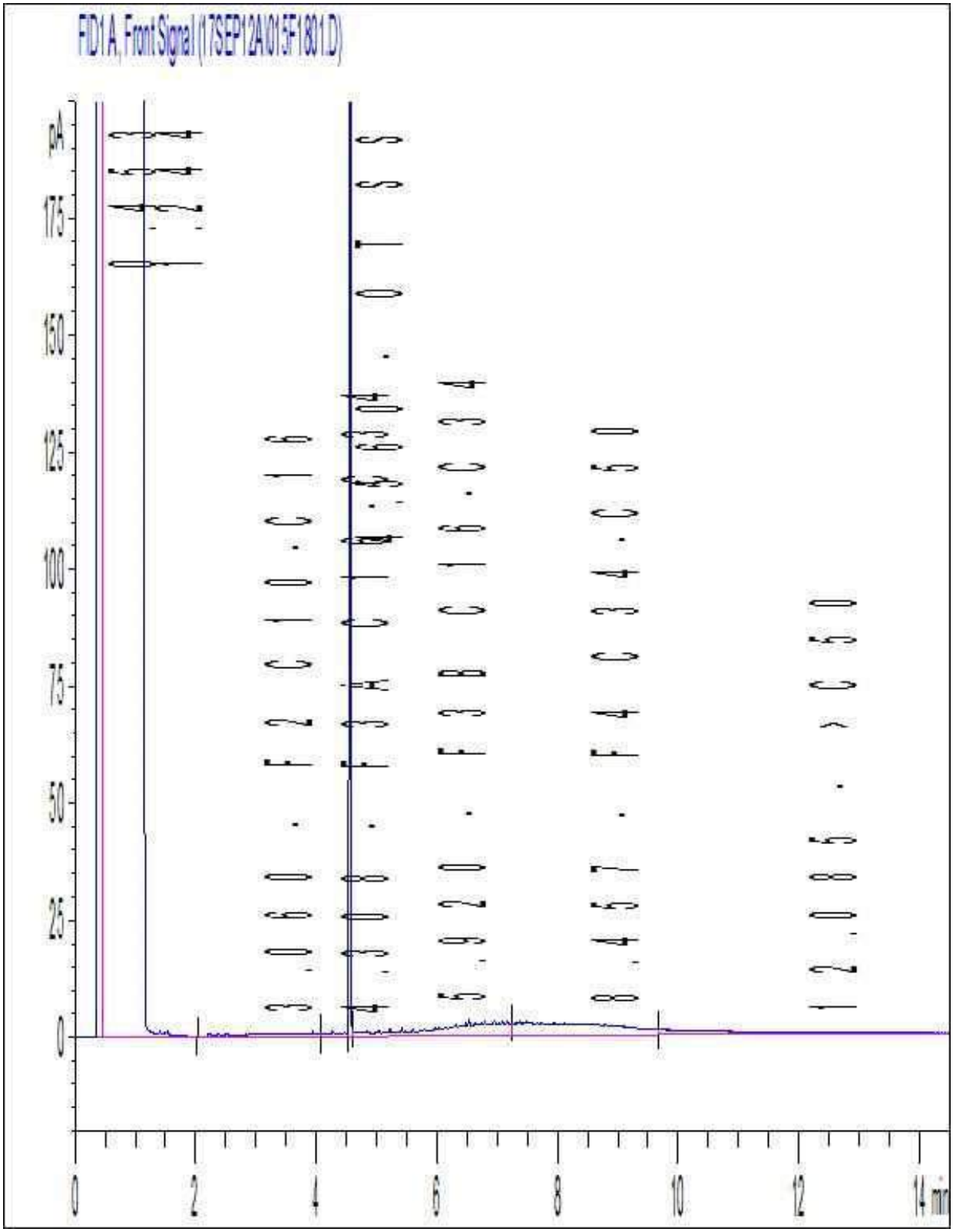


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B7J6395
Report Date: 2017/09/14
Maxxam Sample: FCC230

exp Services Inc
Client Project #: OTT-00224605-C
Client ID: MW310-S3

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

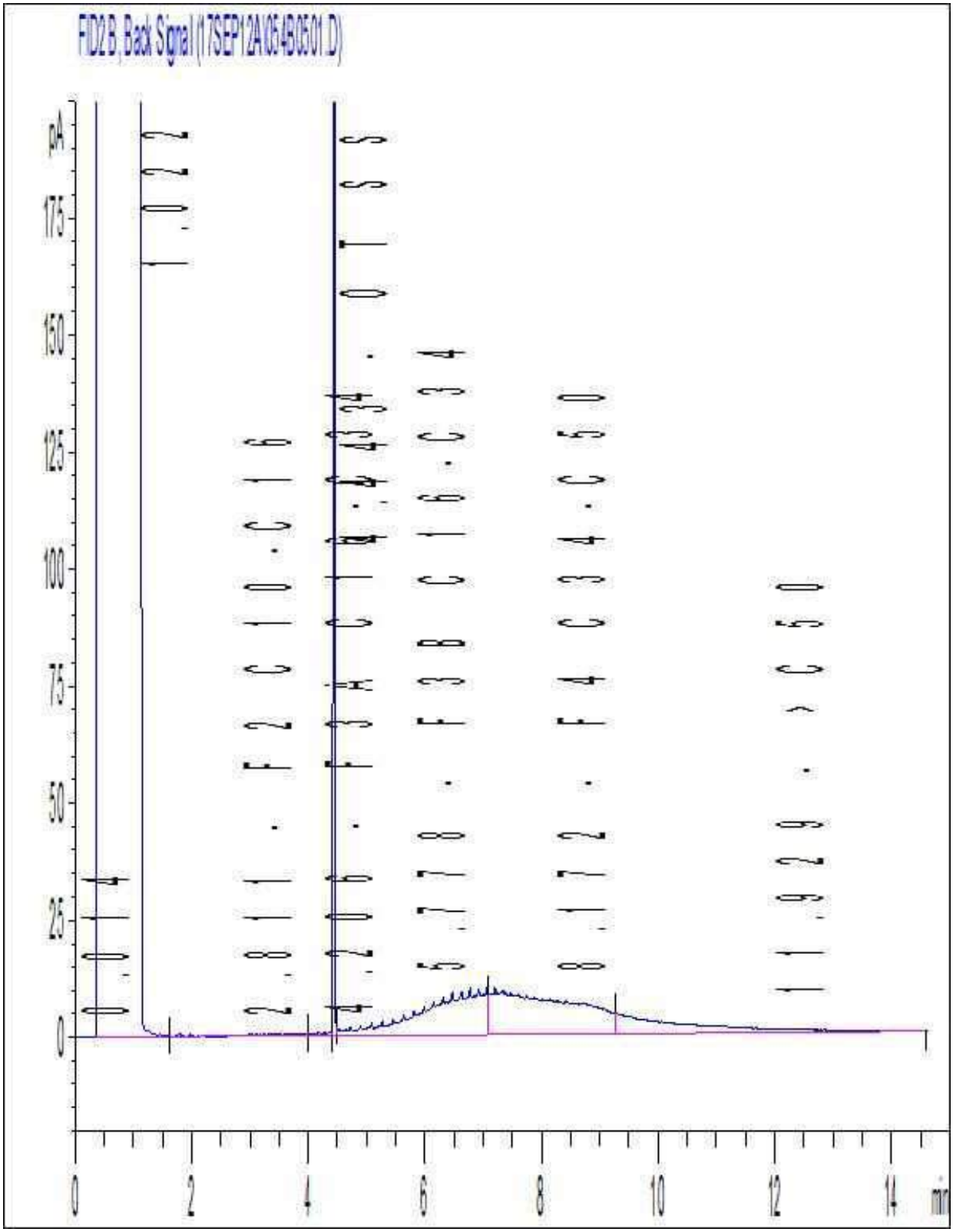


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B7J6395
Report Date: 2017/09/14
Maxxam Sample: FCC231

exp Services Inc
Client Project #: OTT-00224605-C
Client ID: MW321-S2

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

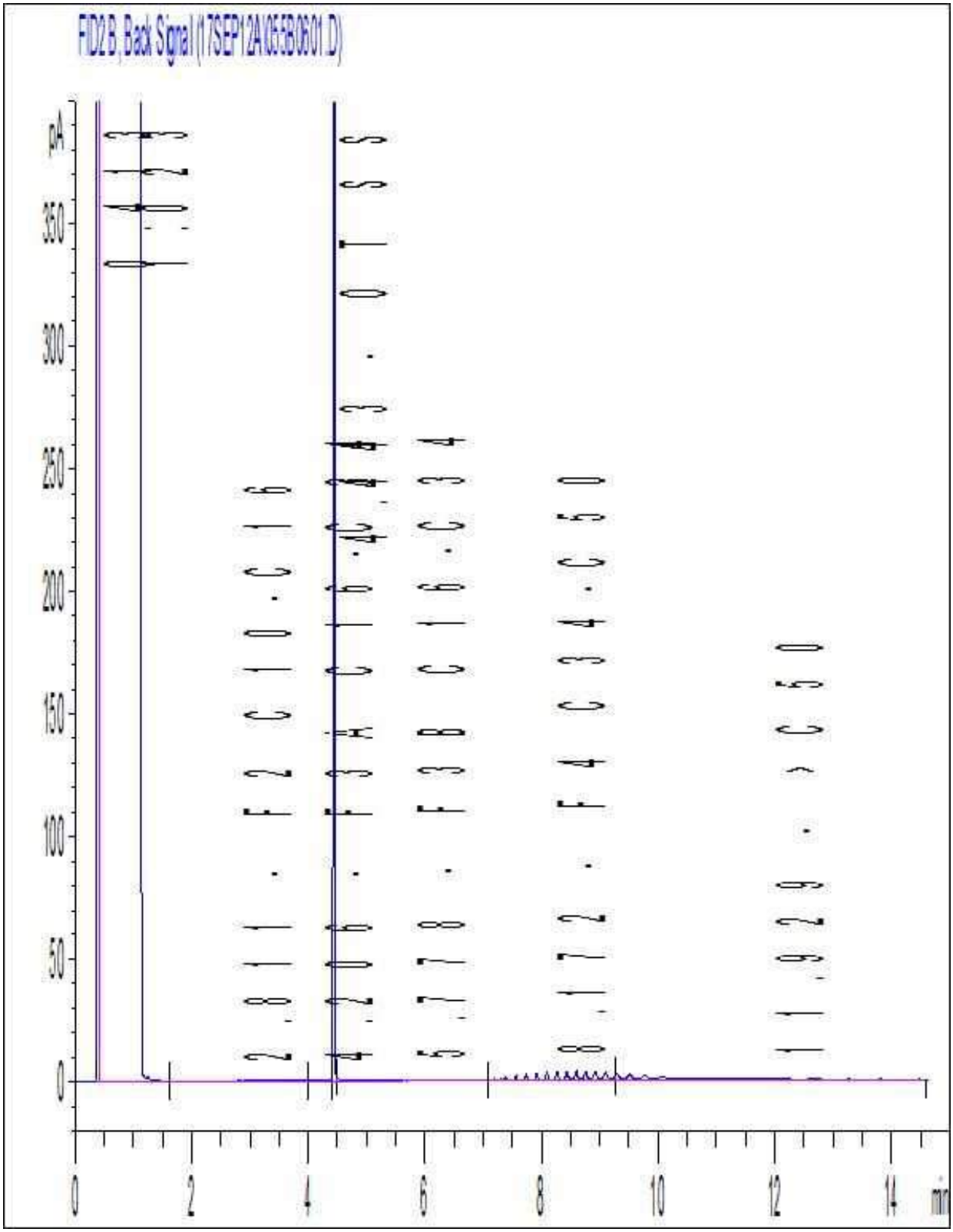


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B7J6395
Report Date: 2017/09/14
Maxxam Sample: FCC233

exp Services Inc
Client Project #: OTT-00224605-C
Client ID: MW311-S3

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



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

Maxxam
A Bureau Veritas Group Company

Your Project #: OTT-00224605-C
Site Location: 1509 MERIVALE
Your C.O.C. #: 627303-03-01, 98341

Attention:Jeffery O'Banion

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

Report Date: 2017/09/15
Report #: R4706582
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7J8008
Received: 2017/09/12, 09:40

Sample Matrix: Soil
Samples Received: 4

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
1,3-Dichloropropene Sum (1)	4	N/A	2017/09/15		EPA 8260C m
Petroleum Hydrocarbons F2-F4 in Soil (2)	3	2017/09/14	2017/09/15	OTT SOP-00001	CCME CWS
Moisture	3	N/A	2017/09/15	CAM SOP-00445	McKeague 2nd ed 1978
Moisture (1)	1	N/A	2017/09/14	CAM SOP-00445	Carter 2nd ed 51.2 m
Volatile Organic Compounds and F1 PHCs (1)	3	N/A	2017/09/14	CAM SOP-00230	EPA 8260C m
Volatile Organic Compounds in Soil (1)	1	N/A	2017/09/15	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.

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.

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.

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

Your Project #: OTT-00224605-C
Site Location: 1509 MERIVALE
Your C.O.C. #: 627303-03-01, 98341

Attention:Jeffery O'Banion

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

Report Date: 2017/09/15
Report #: R4706582
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7J8008
Received: 2017/09/12, 09:40

Encryption Key

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

Maxxam Job #: B7J8008
Report Date: 2017/09/15

exp Services Inc
Client Project #: OTT-00224605-C
Site Location: 1509 MERIVALE
Sampler Initials: JB

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

Maxxam ID		FCK181	FCK181	FCK182	FCK183		
Sampling Date		2017/09/06 13:00	2017/09/06 13:00	2017/09/06 07:15	2017/09/05 17:30		
COC Number		627303-03-01	627303-03-01	627303-03-01	627303-03-01		
	UNITS	**MW 301 S5**	**MW 301 S5 Lab-Dup**	**MW 304 S3**	**MW 305 S3**	**RDL**	**QC Batch**
Inorganics							
Moisture	%	8.1		7.7	8.2	0.2	5164123
Calculated Parameters							
1,3-Dichloropropene (cis+trans)	ug/g	<0.050		<0.050	<0.050	0.050	5160559
Volatile Organics							
Acetone (2-Propanone)	ug/g	<0.50	<0.50	<0.50	<0.50	0.50	5161988
Benzene	ug/g	<0.020	<0.020	<0.020	<0.020	0.020	5161988
Bromodichloromethane	ug/g	<0.050	<0.050	<0.050	<0.050	0.050	5161988
Bromoform	ug/g	<0.050	<0.050	<0.050	<0.050	0.050	5161988
Bromomethane	ug/g	<0.050	<0.050	<0.050	<0.050	0.050	5161988
Carbon Tetrachloride	ug/g	<0.050	<0.050	<0.050	<0.050	0.050	5161988
Chlorobenzene	ug/g	<0.050	<0.050	<0.050	<0.050	0.050	5161988
Chloroform	ug/g	<0.050	<0.050	<0.050	<0.050	0.050	5161988
Dibromochloromethane	ug/g	<0.050	<0.050	<0.050	<0.050	0.050	5161988
1,2-Dichlorobenzene	ug/g	<0.050	<0.050	<0.050	<0.050	0.050	5161988
1,3-Dichlorobenzene	ug/g	<0.050	<0.050	<0.050	<0.050	0.050	5161988
1,4-Dichlorobenzene	ug/g	<0.050	<0.050	<0.050	<0.050	0.050	5161988
Dichlorodifluoromethane (FREON 12)	ug/g	<0.050	<0.050	<0.050	<0.050	0.050	5161988
1,1-Dichloroethane	ug/g	<0.050	<0.050	<0.050	<0.050	0.050	5161988
1,2-Dichloroethane	ug/g	<0.050	<0.050	<0.050	<0.050	0.050	5161988
1,1-Dichloroethylene	ug/g	<0.050	<0.050	<0.050	<0.050	0.050	5161988
cis-1,2-Dichloroethylene	ug/g	<0.050	<0.050	<0.050	<0.050	0.050	5161988
trans-1,2-Dichloroethylene	ug/g	<0.050	<0.050	<0.050	<0.050	0.050	5161988
1,2-Dichloropropane	ug/g	<0.050	<0.050	<0.050	<0.050	0.050	5161988
cis-1,3-Dichloropropene	ug/g	<0.030	<0.030	<0.030	<0.030	0.030	5161988
trans-1,3-Dichloropropene	ug/g	<0.040	<0.040	<0.040	<0.040	0.040	5161988
Ethylbenzene	ug/g	<0.020	<0.020	<0.020	<0.020	0.020	5161988
Ethylene Dibromide	ug/g	<0.050	<0.050	<0.050	<0.050	0.050	5161988
Hexane	ug/g	<0.050	<0.050	<0.050	<0.050	0.050	5161988
Methylene Chloride(Dichloromethane)	ug/g	<0.050	<0.050	<0.050	<0.050	0.050	5161988
Methyl Ethyl Ketone (2-Butanone)	ug/g	<0.50	<0.50	<0.50	<0.50	0.50	5161988
Methyl Isobutyl Ketone	ug/g	<0.50	<0.50	<0.50	<0.50	0.50	5161988
Methyl t-butyl ether (MTBE)	ug/g	<0.050	<0.050	<0.050	<0.050	0.050	5161988

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

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Maxxam Job #: B7J8008
Report Date: 2017/09/15

exp Services Inc
Client Project #: OTT-00224605-C
Site Location: 1509 MERIVALE
Sampler Initials: JB

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

Maxxam ID		FCK181	FCK181	FCK182	FCK183		
Sampling Date		2017/09/06 13:00	2017/09/06 13:00	2017/09/06 07:15	2017/09/05 17:30		
COC Number		627303-03-01	627303-03-01	627303-03-01	627303-03-01		
	UNITS	**MW 301 S5**	**MW 301 S5 Lab-Dup**	**MW 304 S3**	**MW 305 S3**	**RDL**	**QC Batch**
Styrene	ug/g	<0.050	<0.050	<0.050	<0.050	0.050	5161988
1,1,1,2-Tetrachloroethane	ug/g	<0.050	<0.050	<0.050	<0.050	0.050	5161988
1,1,2,2-Tetrachloroethane	ug/g	<0.050	<0.050	<0.050	<0.050	0.050	5161988
Tetrachloroethylene	ug/g	0.069	0.074	0.19	2.3	0.050	5161988
Toluene	ug/g	<0.020	<0.020	<0.020	<0.020	0.020	5161988
1,1,1-Trichloroethane	ug/g	<0.050	<0.050	<0.050	<0.050	0.050	5161988
1,1,2-Trichloroethane	ug/g	<0.050	<0.050	<0.050	<0.050	0.050	5161988
Trichloroethylene	ug/g	<0.050	<0.050	<0.050	<0.050	0.050	5161988
Trichlorofluoromethane (FREON 11)	ug/g	<0.050	<0.050	<0.050	<0.050	0.050	5161988
Vinyl Chloride	ug/g	<0.020	<0.020	<0.020	<0.020	0.020	5161988
p+m-Xylene	ug/g	<0.020	<0.020	<0.020	<0.020	0.020	5161988
o-Xylene	ug/g	<0.020	<0.020	<0.020	<0.020	0.020	5161988
Total Xylenes	ug/g	<0.020	<0.020	<0.020	<0.020	0.020	5161988
F1 (C6-C10)	ug/g	<10	<10	<10	<10	10	5161988
F1 (C6-C10) - BTEX	ug/g	<10	<10	<10	<10	10	5161988
F2-F4 Hydrocarbons							
F2 (C10-C16 Hydrocarbons)	ug/g	<10		<10	<10	10	5164140
F3 (C16-C34 Hydrocarbons)	ug/g	<50		<50	<50	50	5164140
F4 (C34-C50 Hydrocarbons)	ug/g	<50		<50	<50	50	5164140
Reached Baseline at C50	ug/g	Yes		Yes	Yes		5164140
Surrogate Recovery (%)							
o-Terphenyl	%	83		83	84		5164140
4-Bromofluorobenzene	%	94	100	98	98		5161988
D10-o-Xylene	%	99	104	93	103		5161988
D4-1,2-Dichloroethane	%	81	94	93	103		5161988
D8-Toluene	%	89	94	101	94		5161988

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

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Maxxam Job #: B7J8008
Report Date: 2017/09/15

exp Services Inc
Client Project #: OTT-00224605-C
Site Location: 1509 MERIVALE
Sampler Initials: JB

O.REG 153 VOCS BY HS (SOIL)

Maxxam ID		FCK184	FCK184		
Sampling Date		2017/09/07 12:30	2017/09/07 12:30		
COC Number		627303-03-01	627303-03-01		
	UNITS	**MW 306 S3**	**MW 306 S3 Lab-Dup**	**RDL**	**QC Batch**
Calculated Parameters					
1,3-Dichloropropene (cis+trans)	ug/g	<0.050		0.050	5160558
Volatile Organics					
Acetone (2-Propanone)	ug/g	<0.50	<0.50	0.50	5163851
Benzene	ug/g	<0.020	<0.020	0.020	5163851
Bromodichloromethane	ug/g	<0.050	<0.050	0.050	5163851
Bromoform	ug/g	<0.050	<0.050	0.050	5163851
Bromomethane	ug/g	<0.050	<0.050	0.050	5163851
Carbon Tetrachloride	ug/g	<0.050	<0.050	0.050	5163851
Chlorobenzene	ug/g	<0.050	<0.050	0.050	5163851
Chloroform	ug/g	<0.050	<0.050	0.050	5163851
Dibromochloromethane	ug/g	<0.050	<0.050	0.050	5163851
1,2-Dichlorobenzene	ug/g	<0.050	<0.050	0.050	5163851
1,3-Dichlorobenzene	ug/g	<0.050	<0.050	0.050	5163851
1,4-Dichlorobenzene	ug/g	<0.050	<0.050	0.050	5163851
Dichlorodifluoromethane (FREON 12)	ug/g	<0.050	<0.050	0.050	5163851
1,1-Dichloroethane	ug/g	<0.050	<0.050	0.050	5163851
1,2-Dichloroethane	ug/g	<0.050	<0.050	0.050	5163851
1,1-Dichloroethylene	ug/g	<0.050	<0.050	0.050	5163851
cis-1,2-Dichloroethylene	ug/g	<0.050	<0.050	0.050	5163851
trans-1,2-Dichloroethylene	ug/g	<0.050	<0.050	0.050	5163851
1,2-Dichloropropane	ug/g	<0.050	<0.050	0.050	5163851
cis-1,3-Dichloropropene	ug/g	<0.030	<0.030	0.030	5163851
trans-1,3-Dichloropropene	ug/g	<0.040	<0.040	0.040	5163851
Ethylbenzene	ug/g	<0.020	<0.020	0.020	5163851
Ethylene Dibromide	ug/g	<0.050	<0.050	0.050	5163851
Hexane	ug/g	<0.050	<0.050	0.050	5163851
Methylene Chloride(Dichloromethane)	ug/g	<0.050	<0.050	0.050	5163851
Methyl Ethyl Ketone (2-Butanone)	ug/g	<0.50	<0.50	0.50	5163851
Methyl Isobutyl Ketone	ug/g	<0.50	<0.50	0.50	5163851
Methyl t-butyl ether (MTBE)	ug/g	<0.050	<0.050	0.050	5163851
Styrene	ug/g	<0.050	<0.050	0.050	5163851
1,1,1,2-Tetrachloroethane	ug/g	<0.050	<0.050	0.050	5163851

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

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Maxxam Job #: B7J8008
Report Date: 2017/09/15

exp Services Inc
Client Project #: OTT-00224605-C
Site Location: 1509 MERIVALE
Sampler Initials: JB

O.REG 153 VOCS BY HS (SOIL)

Maxxam ID		FCK184	FCK184		
Sampling Date		2017/09/07 12:30	2017/09/07 12:30		
COC Number		627303-03-01	627303-03-01		
	UNITS	**MW 306 S3**	**MW 306 S3 Lab-Dup**	**RDL**	**QC Batch**
1,1,2,2-Tetrachloroethane	ug/g	<0.050	<0.050	0.050	5163851
Tetrachloroethylene	ug/g	0.23	0.24	0.050	5163851
Toluene	ug/g	<0.020	<0.020	0.020	5163851
1,1,1-Trichloroethane	ug/g	<0.050	<0.050	0.050	5163851
1,1,2-Trichloroethane	ug/g	<0.050	<0.050	0.050	5163851
Trichloroethylene	ug/g	<0.050	<0.050	0.050	5163851
Trichlorofluoromethane (FREON 11)	ug/g	<0.050	<0.050	0.050	5163851
Vinyl Chloride	ug/g	<0.020	<0.020	0.020	5163851
p+m-Xylene	ug/g	<0.020	<0.020	0.020	5163851
o-Xylene	ug/g	<0.020	<0.020	0.020	5163851
Total Xylenes	ug/g	<0.020	<0.020	0.020	5163851
Surrogate Recovery (%)					
4-Bromofluorobenzene	%	97	97		5163851
D10-o-Xylene	%	85	85		5163851
D4-1,2-Dichloroethane	%	105	99		5163851
D8-Toluene	%	91	92		5163851

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

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

Maxxam Job #: B7J8008
Report Date: 2017/09/15

exp Services Inc
Client Project #: OTT-00224605-C
Site Location: 1509 MERIVALE
Sampler Initials: JB

RESULTS OF ANALYSES OF SOIL

Maxxam ID		FCK184		
Sampling Date		2017/09/07		
COC Number		98341		
	UNITS	**MW 306 S3**	**RDL**	**QC Batch**
Inorganics				
Moisture	%	9.1	1.0	5165338

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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

Maxxam Job #: B7J8008
Report Date: 2017/09/15

exp Services Inc
Client Project #: OTT-00224605-C
Site Location: 1509 MERIVALE
Sampler Initials: JB

TEST SUMMARY

Maxxam ID: FCK181
Sample ID: MW 301 S5
Matrix: Soil

Collected: 2017/09/06
Shipped:
Received: 2017/09/12

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	5160559	N/A	2017/09/15	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5164140	2017/09/14	2017/09/15	Arezoo Habibagahi
Moisture	BAL	5164123	N/A	2017/09/15	Liliana Gaburici
Volatile Organic Compounds and F1 PHCs	GC/MSFD	5161988	N/A	2017/09/14	Manpreet Sarao

Maxxam ID: FCK181 Dup
Sample ID: MW 301 S5
Matrix: Soil

Collected: 2017/09/06
Shipped:
Received: 2017/09/12

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Volatile Organic Compounds and F1 PHCs	GC/MSFD	5161988	N/A	2017/09/14	Manpreet Sarao

Maxxam ID: FCK182
Sample ID: MW 304 S3
Matrix: Soil

Collected: 2017/09/06
Shipped:
Received: 2017/09/12

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	5160559	N/A	2017/09/15	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5164140	2017/09/14	2017/09/15	Arezoo Habibagahi
Moisture	BAL	5164123	N/A	2017/09/15	Liliana Gaburici
Volatile Organic Compounds and F1 PHCs	GC/MSFD	5161988	N/A	2017/09/14	Manpreet Sarao

Maxxam ID: FCK183
Sample ID: MW 305 S3
Matrix: Soil

Collected: 2017/09/05
Shipped:
Received: 2017/09/12

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	5160559	N/A	2017/09/15	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5164140	2017/09/14	2017/09/15	Arezoo Habibagahi
Moisture	BAL	5164123	N/A	2017/09/15	Liliana Gaburici
Volatile Organic Compounds and F1 PHCs	GC/MSFD	5161988	N/A	2017/09/14	Manpreet Sarao

Maxxam ID: FCK184
Sample ID: MW 306 S3
Matrix: Soil

Collected: 2017/09/07
Shipped:
Received: 2017/09/12

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	5160558	N/A	2017/09/15	Automated Statchk
Moisture	BAL	5165338	N/A	2017/09/14	Min Yang
Volatile Organic Compounds in Soil	GC/MS	5163851	N/A	2017/09/15	Blair Gannon

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Maxxam Job #: B7J8008
Report Date: 2017/09/15

exp Services Inc
Client Project #: OTT-00224605-C
Site Location: 1509 MERIVALE
Sampler Initials: JB

TEST SUMMARY

Maxxam ID: FCK184 Dup
Sample ID: MW 306 S3
Matrix: Soil

Collected: 2017/09/07
Shipped:
Received: 2017/09/12

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Volatile Organic Compounds in Soil	GC/MS	5163851	N/A	2017/09/15	Blair Gannon

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Maxxam Job #: B7J8008
Report Date: 2017/09/15

exp Services Inc
Client Project #: OTT-00224605-C
Site Location: 1509 MERIVALE
Sampler Initials: JB

GENERAL COMMENTS

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

Package 1	8.0°C

Sample FCK182 [MW 304 S3] : VOCF1 Analysis: Greater than 10g of soil was submitted in the field preserved vial. This significantly exceeds the protocol specification of approximately 5g. Additional methanol was added to the vial to ensure extraction efficiency.

Results relate only to the items tested.

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Maxxam Job #: B7J8008
Report Date: 2017/09/15

QUALITY ASSURANCE REPORT

exp Services Inc
Client Project #: OTT-00224605-C
Site Location: 1509 MERIVALE
Sampler Initials: JB

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5161988	4-Bromofluorobenzene	2017/09/14	109	60 - 140	110	60 - 140	99	%		
5161988	D10-o-Xylene	2017/09/14	112	60 - 130	100	60 - 130	94	%		
5161988	D4-1,2-Dichloroethane	2017/09/14	91	60 - 140	91	60 - 140	90	%		
5161988	D8-Toluene	2017/09/14	110	60 - 140	100	60 - 140	94	%		
5163851	4-Bromofluorobenzene	2017/09/15	108	60 - 140	111	60 - 140	100	%		
5163851	D10-o-Xylene	2017/09/15	96	60 - 130	106	60 - 130	87	%		
5163851	D4-1,2-Dichloroethane	2017/09/15	92	60 - 140	101	60 - 140	111	%		
5163851	D8-Toluene	2017/09/15	110	60 - 140	107	60 - 140	89	%		
5164140	o-Terphenyl	2017/09/15	84	30 - 130	89	30 - 130	89	%		
5161988	1,1,1,2-Tetrachloroethane	2017/09/14	95	60 - 140	93	60 - 130	<0.050	ug/g	NC	50
5161988	1,1,1-Trichloroethane	2017/09/14	84	60 - 140	88	60 - 130	<0.050	ug/g	NC	50
5161988	1,1,2,2-Tetrachloroethane	2017/09/14	105	60 - 140	102	60 - 130	<0.050	ug/g	NC	50
5161988	1,1,2-Trichloroethane	2017/09/14	87	60 - 140	80	60 - 130	<0.050	ug/g	NC	50
5161988	1,1-Dichloroethane	2017/09/14	85	60 - 140	83	60 - 130	<0.050	ug/g	NC	50
5161988	1,1-Dichloroethylene	2017/09/14	87	60 - 140	87	60 - 130	<0.050	ug/g	NC	50
5161988	1,2-Dichlorobenzene	2017/09/14	88	60 - 140	86	60 - 130	<0.050	ug/g	NC	50
5161988	1,2-Dichloroethane	2017/09/14	96	60 - 140	92	60 - 130	<0.050	ug/g	NC	50
5161988	1,2-Dichloropropane	2017/09/14	81	60 - 140	79	60 - 130	<0.050	ug/g	NC	50
5161988	1,3-Dichlorobenzene	2017/09/14	90	60 - 140	91	60 - 130	<0.050	ug/g	NC	50
5161988	1,4-Dichlorobenzene	2017/09/14	96	60 - 140	93	60 - 130	<0.050	ug/g	NC	50
5161988	Acetone (2-Propanone)	2017/09/14	79	60 - 140	84	60 - 140	<0.50	ug/g	NC	50
5161988	Benzene	2017/09/14	90	60 - 140	88	60 - 130	<0.020	ug/g	NC	50
5161988	Bromodichloromethane	2017/09/14	85	60 - 140	82	60 - 130	<0.050	ug/g	NC	50
5161988	Bromoform	2017/09/14	101	60 - 140	98	60 - 130	<0.050	ug/g	NC	50
5161988	Bromomethane	2017/09/14	93	60 - 140	93	60 - 140	<0.050	ug/g	NC	50
5161988	Carbon Tetrachloride	2017/09/14	85	60 - 140	86	60 - 130	<0.050	ug/g	NC	50
5161988	Chlorobenzene	2017/09/14	90	60 - 140	88	60 - 130	<0.050	ug/g	NC	50
5161988	Chloroform	2017/09/14	84	60 - 140	93	60 - 130	<0.050	ug/g	NC	50
5161988	cis-1,2-Dichloroethylene	2017/09/14	91	60 - 140	108	60 - 130	<0.050	ug/g	NC	50
5161988	cis-1,3-Dichloropropene	2017/09/14	101	60 - 140	79	60 - 130	<0.030	ug/g	NC	50
5161988	Dibromochloromethane	2017/09/14	95	60 - 140	92	60 - 130	<0.050	ug/g	NC	50

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Maxxam Job #: B7J8008
Report Date: 2017/09/15

QUALITY ASSURANCE REPORT(CONT'D)

exp Services Inc
Client Project #: OTT-00224605-C
Site Location: 1509 MERIVALE
Sampler Initials: JB

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5161988	Dichlorodifluoromethane (FREON 12)	2017/09/14	75	60 - 140	76	60 - 140	<0.050	ug/g	NC	50
5161988	Ethylbenzene	2017/09/14	89	60 - 140	88	60 - 130	<0.020	ug/g	NC	50
5161988	Ethylene Dibromide	2017/09/14	99	60 - 140	94	60 - 130	<0.050	ug/g	NC	50
5161988	F1 (C6-C10) - BTEX	2017/09/14					<10	ug/g	NC	30
5161988	F1 (C6-C10)	2017/09/14	100	60 - 140	91	80 - 120	<10	ug/g	NC	30
5161988	Hexane	2017/09/14	95	60 - 140	86	60 - 130	<0.050	ug/g	NC	50
5161988	Methyl Ethyl Ketone (2-Butanone)	2017/09/14	82	60 - 140	103	60 - 140	<0.50	ug/g	NC	50
5161988	Methyl Isobutyl Ketone	2017/09/14	104	60 - 140	80	60 - 130	<0.50	ug/g	NC	50
5161988	Methyl t-butyl ether (MTBE)	2017/09/14	98	60 - 140	85	60 - 130	<0.050	ug/g	NC	50
5161988	Methylene Chloride(Dichloromethane)	2017/09/14	104	60 - 140	93	60 - 130	<0.050	ug/g	NC	50
5161988	o-Xylene	2017/09/14	90	60 - 140	93	60 - 130	<0.020	ug/g	NC	50
5161988	p+m-Xylene	2017/09/14	92	60 - 140	91	60 - 130	<0.020	ug/g	NC	50
5161988	Styrene	2017/09/14	94	60 - 140	96	60 - 130	<0.050	ug/g	NC	50
5161988	Tetrachloroethylene	2017/09/14	90	60 - 140	89	60 - 130	<0.050	ug/g	6.7	50
5161988	Toluene	2017/09/14	93	60 - 140	85	60 - 130	<0.020	ug/g	NC	50
5161988	Total Xylenes	2017/09/14					<0.020	ug/g	NC	50
5161988	trans-1,2-Dichloroethylene	2017/09/14	101	60 - 140	90	60 - 130	<0.050	ug/g	NC	50
5161988	trans-1,3-Dichloropropene	2017/09/14	110	60 - 140	80	60 - 130	<0.040	ug/g	NC	50
5161988	Trichloroethylene	2017/09/14	92	60 - 140	90	60 - 130	<0.050	ug/g	NC	50
5161988	Trichlorofluoromethane (FREON 11)	2017/09/14	98	60 - 140	92	60 - 130	<0.050	ug/g	NC	50
5161988	Vinyl Chloride	2017/09/14	80	60 - 140	81	60 - 130	<0.020	ug/g	NC	50
5163851	1,1,1,2-Tetrachloroethane	2017/09/15	88	60 - 140	110	60 - 130	<0.050	ug/g	NC	50
5163851	1,1,1-Trichloroethane	2017/09/15	74	60 - 140	99	60 - 130	<0.050	ug/g	NC	50
5163851	1,1,2,2-Tetrachloroethane	2017/09/15	90	60 - 140	112	60 - 130	<0.050	ug/g	NC	50
5163851	1,1,2-Trichloroethane	2017/09/15	85	60 - 140	106	60 - 130	<0.050	ug/g	NC	50
5163851	1,1-Dichloroethane	2017/09/15	80	60 - 140	107	60 - 130	<0.050	ug/g	NC	50
5163851	1,1-Dichloroethylene	2017/09/15	82	60 - 140	110	60 - 130	<0.050	ug/g	NC	50
5163851	1,2-Dichlorobenzene	2017/09/15	86	60 - 140	101	60 - 130	<0.050	ug/g	NC	50
5163851	1,2-Dichloroethane	2017/09/15	93	60 - 140	122	60 - 130	<0.050	ug/g	NC	50
5163851	1,2-Dichloropropane	2017/09/15	75	60 - 140	100	60 - 130	<0.050	ug/g	NC	50
5163851	1,3-Dichlorobenzene	2017/09/15	87	60 - 140	101	60 - 130	<0.050	ug/g	NC	50

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Maxxam Job #: B7J8008
Report Date: 2017/09/15

QUALITY ASSURANCE REPORT(CONT'D)

exp Services Inc
Client Project #: OTT-00224605-C
Site Location: 1509 MERIVALE
Sampler Initials: JB

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5163851	1,4-Dichlorobenzene	2017/09/15	88	60 - 140	102	60 - 130	<0.050	ug/g	NC	50
5163851	Acetone (2-Propanone)	2017/09/15	82	60 - 140	104	60 - 140	<0.50	ug/g	NC	50
5163851	Benzene	2017/09/15	79	60 - 140	106	60 - 130	<0.020	ug/g	NC	50
5163851	Bromodichloromethane	2017/09/15	79	60 - 140	102	60 - 130	<0.050	ug/g	NC	50
5163851	Bromoform	2017/09/15	90	60 - 140	113	60 - 130	<0.050	ug/g	NC	50
5163851	Bromomethane	2017/09/15	80	60 - 140	107	60 - 140	<0.050	ug/g	NC	50
5163851	Carbon Tetrachloride	2017/09/15	73	60 - 140	98	60 - 130	<0.050	ug/g	NC	50
5163851	Chlorobenzene	2017/09/15	82	60 - 140	105	60 - 130	<0.050	ug/g	NC	50
5163851	Chloroform	2017/09/15	77	60 - 140	101	60 - 130	<0.050	ug/g	NC	50
5163851	cis-1,2-Dichloroethylene	2017/09/15	77	60 - 140	103	60 - 130	<0.050	ug/g	NC	50
5163851	cis-1,3-Dichloropropene	2017/09/15	76	60 - 140	100	60 - 130	<0.030	ug/g	NC	50
5163851	Dibromochloromethane	2017/09/15	87	60 - 140	109	60 - 130	<0.050	ug/g	NC	50
5163851	Dichlorodifluoromethane (FREON 12)	2017/09/15	81	60 - 140	116	60 - 140	<0.050	ug/g	NC	50
5163851	Ethylbenzene	2017/09/15	79	60 - 140	103	60 - 130	<0.020	ug/g	NC	50
5163851	Ethylene Dibromide	2017/09/15	87	60 - 140	112	60 - 130	<0.050	ug/g	NC	50
5163851	Hexane	2017/09/15	76	60 - 140	118	60 - 130	<0.050	ug/g	NC	50
5163851	Methyl Ethyl Ketone (2-Butanone)	2017/09/15	84	60 - 140	112	60 - 140	<0.50	ug/g	NC	50
5163851	Methyl Isobutyl Ketone	2017/09/15	85	60 - 140	120	60 - 130	<0.50	ug/g	NC	50
5163851	Methyl t-butyl ether (MTBE)	2017/09/15	82	60 - 140	99	60 - 130	<0.050	ug/g	NC	50
5163851	Methylene Chloride(Dichloromethane)	2017/09/15	73	60 - 140	95	60 - 130	<0.050	ug/g	NC	50
5163851	o-Xylene	2017/09/15	82	60 - 140	108	60 - 130	<0.020	ug/g	NC	50
5163851	p+m-Xylene	2017/09/15	83	60 - 140	110	60 - 130	<0.020	ug/g	NC	50
5163851	Styrene	2017/09/15	84	60 - 140	113	60 - 130	<0.050	ug/g	NC	50
5163851	Tetrachloroethylene	2017/09/15	76	60 - 140	97	60 - 130	<0.050	ug/g	3.7	50
5163851	Toluene	2017/09/15	82	60 - 140	107	60 - 130	<0.020	ug/g	NC	50
5163851	Total Xylenes	2017/09/15					<0.020	ug/g	NC	50
5163851	trans-1,2-Dichloroethylene	2017/09/15	78	60 - 140	104	60 - 130	<0.050	ug/g	NC	50
5163851	trans-1,3-Dichloropropene	2017/09/15	87	60 - 140	110	60 - 130	<0.040	ug/g	NC	50
5163851	Trichloroethylene	2017/09/15	75	60 - 140	99	60 - 130	<0.050	ug/g	NC	50
5163851	Trichlorofluoromethane (FREON 11)	2017/09/15	77	60 - 140	105	60 - 130	<0.050	ug/g	NC	50
5163851	Vinyl Chloride	2017/09/15	79	60 - 140	108	60 - 130	<0.020	ug/g	NC	50

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Maxxam Job #: B7J8008
Report Date: 2017/09/15

QUALITY ASSURANCE REPORT(CONT'D)

exp Services Inc
Client Project #: OTT-00224605-C
Site Location: 1509 MERIVALE
Sampler Initials: JB

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5164123	Moisture	2017/09/15							1.6	50
5164140	F2 (C10-C16 Hydrocarbons)	2017/09/15	90	50 - 130	94	80 - 120	<10	ug/g	NC	50
5164140	F3 (C16-C34 Hydrocarbons)	2017/09/15	90	50 - 130	94	80 - 120	<50	ug/g	NC	50
5164140	F4 (C34-C50 Hydrocarbons)	2017/09/15	90	50 - 130	94	80 - 120	<50	ug/g	NC	50
5165338	Moisture	2017/09/14							4.4	20

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).

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exp Services Inc
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Site Location: 1509 MERIVALE
Sampler Initials: JB

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.

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CHAIN OF CUSTODY RECORD

Page of

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#17497 exp Services Inc	Company Name:		Quotation #:	B46066	Maxxam Job #:	Bottle Order #:
Attention:	Accounts Payable	Attention:	Jeffery O'Banion	P.O. #:			627303
Address:	100-2650 Queensview Drive Ottawa ON K2B 8H6	Address:		Project:	OTT-00224605-C	COC #:	Project Manager:
Tel:	(613) 688-1899 x Fax: (613) 225-7337 x	Tel:	Fax:	Project Name:	1509 Merivale	C#627303-03-01	Alison Cameron
Email:	accounting.ottawa@exp.com; Karen.Burke@exp.com;	Email:	Jeffery.O'Banion@exp.com	Site #:			
				Sampled By:			

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

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

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

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

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

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

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O.Reg 153 Petroleum Hydrocarbons (Soil)	O.Reg 153 VOCs by HS (Soil)	BTEX	# of Bottles	Comments
1		MW301 55	09.06.2017	1:00pm	SOIL		✓	✓	✓	3	
2		MW304 53	09.06.2017	7:15pm	SOIL		✓	✓	✓	3	
3		MW305 53	09.05.2017	5:30pm	SOIL		✓	✓	✓	2	
4		MW306 53	09.07.2017	12:30pm	SOIL			✓		2	
5					SOIL						
6					SOIL						
7											
8											
9											
10											ON Jar

12-Sep-17 09:40
Alison Cameron
B7J8008
KIV OTT 001

RECEIVED IN OTTAWA

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted	Laboratory Use Only			
	17/09/12	9:40am		2017/09/12	9:46		Time Sensitive	Temperature (°C) on Recei: 6, 8, 8	Custody Seal Present / Intact	Yes / No: X

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

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

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

White: Maxxa Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam
A Bureau Veritas Group Company

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

CHAIN OF CUSTODY RECORD 098341

Page ____ of ____

Invoice Information	Report Information (if differs from invoice)	Project Information (where applicable)	Turnaround Time (TAT) Required
Company Name:	Company Name: exp. Services	Quotation #:	[X] Regular TAT (5-7 days) Most analyses
Contact Name:	Contact Name: Jeff O'Banion	P.O. #/ AFE#:	PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS
Address:	Address:	Project #:	Rush TAT (Surcharges will be applied)
		Site Location:	[ ] 1 Day [ ] 2 Days [ ] 3-4 Days
Phone: Fax:	Phone: 613.897.7647 Fax:	Site #:	
Email:	Email: jeffery.obanion@exp.com	Sampled By:	Date Required:

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

Rush Confirmation #:

Regulation 153

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

Other Regulations

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

Include Criteria on Certificate of Analysis: Y / N

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

LABORATORY USE ONLY

CUSTODY SEAL Y / N: Present N, Intact N
COOLER TEMPERATURES: 10, 10, 9

COOLING MEDIA PRESENT: (Y) / N

	SAMPLE IDENTIFICATION	DATE SAMPLED (YYYY/MM/DD)	TIME SAMPLED (HH:MM)	MATRIX	# OF CONTAINERS SUBMITTED	FIELD FILTERED (CIRCLE) Metals / Hg / CrVI	BTEX/ PHC F1	PHCs F2 - F4	VOCs	REG 153 METALS & INORGANICS	REG 153 ICPMS METALS	REG 153 METALS (Hg, Cr VI, ICPMS Metals, HWS - B)	HOLD- DO NOT ANALYZE	COMMENTS
1	MW306 S3	2017.09.07		Soil					✓					This sample goes with job # B7J8008
2														
3														
4														
5														
6														
7														
8														
9														ON Ice
10														

12-Sep-17 09:40
Alison Cameron
B7J8008
KIV OTT 001

RECEIVED IN OTTAWA

RELINQUISHED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	MAXXAM JOB #
	2017.09.13	4:50		2017/09/13	16.50	

Unless otherwise agreed to in writing, work submitted on this Chain of Custody is subject to Maxxam's standard Terms and Conditions. Signing of this Chain of Custody document is acknowledgment and acceptance of our terms which are available for viewing at www.maxxam.ca/terms. Sample container, preservation, hold time and packages information can be viewed at http://maxxam.ca/wp-content/uploads/Ontario-COC.pdf.

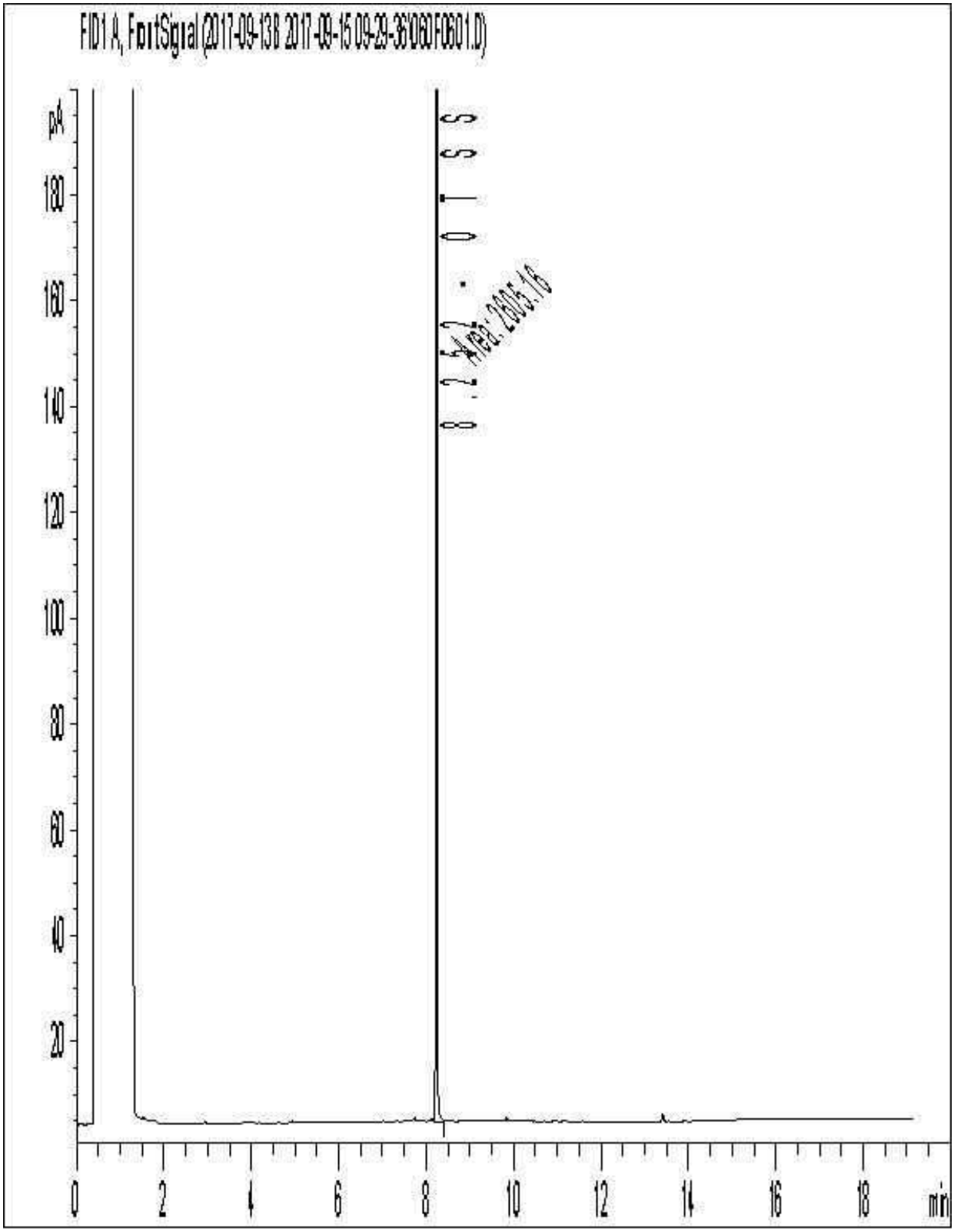
COC-1004 (03/17)

White: Maxxam ~ Yellow: Client

Maxxam Job #: B7J8008
Report Date: 2017/09/15
Maxxam Sample: FCK181

exp Services Inc
Client Project #: OTT-00224605-C
Project name: 1509 MERIVALE
Client ID: MW 301 S5

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

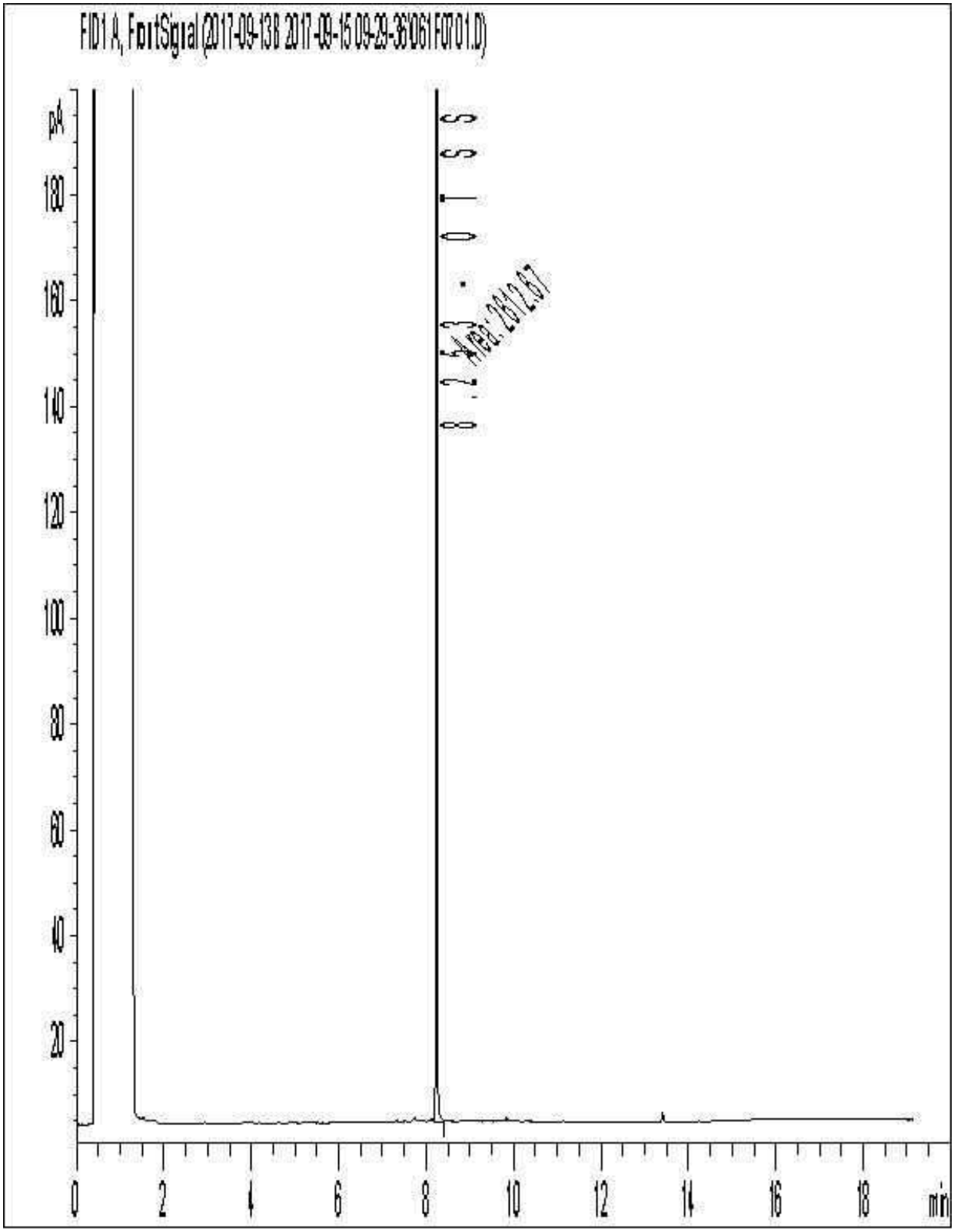


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B7J8008
Report Date: 2017/09/15
Maxxam Sample: FCK182

exp Services Inc
Client Project #: OTT-00224605-C
Project name: 1509 MERIVALE
Client ID: MW 304 S3

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

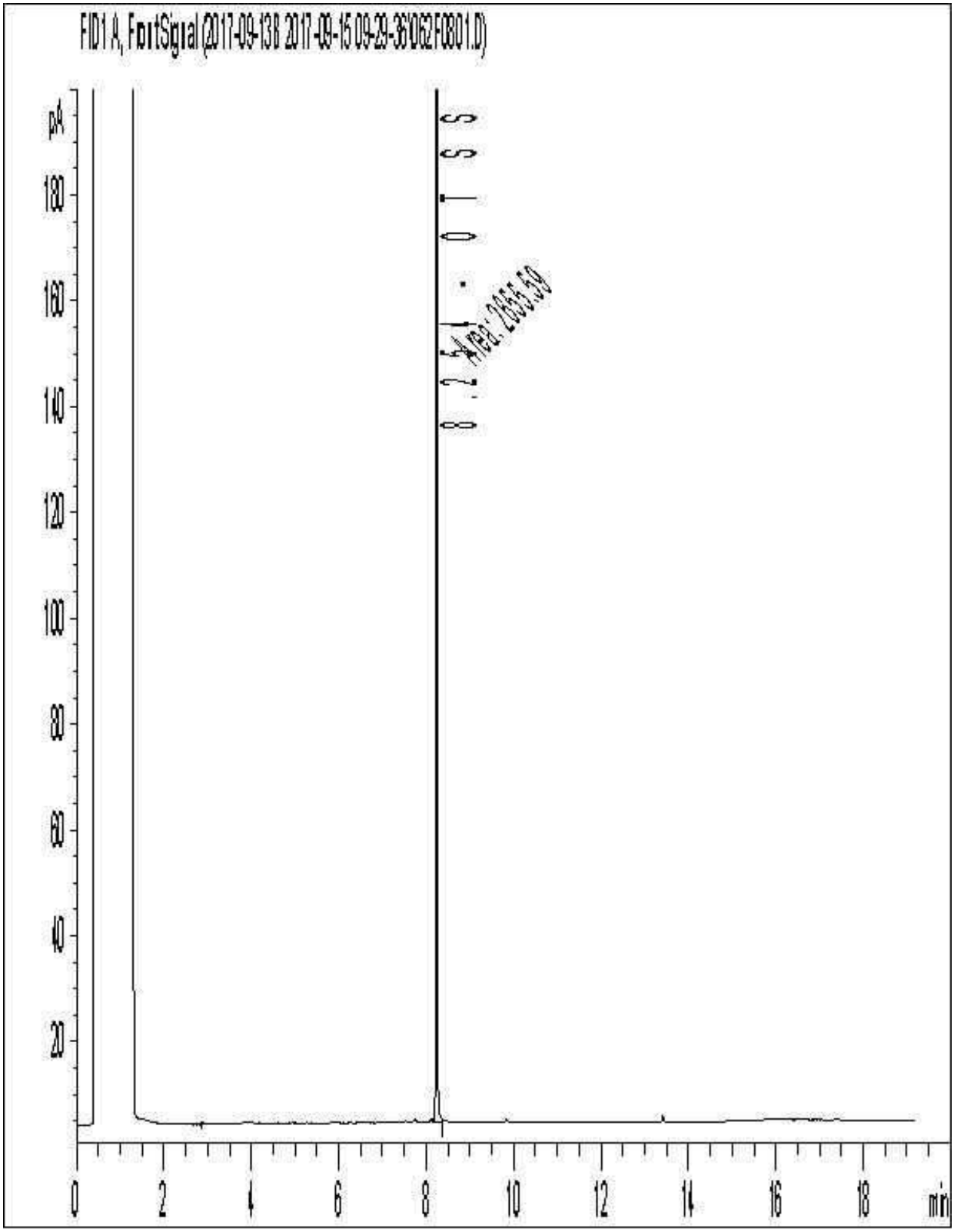


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B7J8008
Report Date: 2017/09/15
Maxxam Sample: FCK183

exp Services Inc
Client Project #: OTT-00224605-C
Project name: 1509 MERIVALE
Client ID: MW 305 S3

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



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

Maxxam
A Bureau Veritas Group Company

Your Project #: OTT-00224605
Your C.O.C. #: 628860-03-01

Attention:Jeffery O'Banion

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

Report Date: 2017/09/21
Report #: R4725881
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7K1578
Received: 2017/09/14, 15:55

Sample Matrix: Water
Samples Received: 8

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
1,3-Dichloropropene Sum (1)	5	N/A	2017/09/20		EPA 8260C m
1,3-Dichloropropene Sum (1)	1	N/A	2017/09/21		EPA 8260C m
Petroleum Hydro. CCME F1 & BTEX in Water	2	N/A	2017/09/21	OTT SOP-00002	CCME CWS
Petroleum Hydrocarbons F2-F4 in Water (2)	5	2017/09/18	2017/09/19	OTT SOP-00001	CCME Hydrocarbons
Volatile Organic Compounds and F1 PHCs (1)	3	N/A	2017/09/20	CAM SOP-00230	EPA 8260C m
Volatile Organic Compounds in Water (1)	3	N/A	2017/09/19	CAM SOP-00226	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.

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.

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.

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

Your Project #: OTT-00224605
Your C.O.C. #: 628860-03-01

Attention:Jeffery O'Banion

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

Report Date: 2017/09/21
Report #: R4725881
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7K1578
Received: 2017/09/14, 15:55

Encryption Key

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

Maxxam Job #: B7K1578
Report Date: 2017/09/21

exp Services Inc
Client Project #: OTT-00224605
Sampler Initials: JO

O.REG 153 PETROLEUM HYDROCARBONS (WATER)

Maxxam ID		FDA814	FDA815		
Sampling Date		2017/09/14 10:15	2017/09/14 11:00		
COC Number		628860-03-01	628860-03-01		
	UNITS	**MW 302**	**MW 303**	**RDL**	**QC Batch**
BTEX & F1 Hydrocarbons					
Benzene	ug/L	<0.20	<0.20	0.20	5170534
Toluene	ug/L	<0.20	<0.20	0.20	5170534
Ethylbenzene	ug/L	<0.20	<0.20	0.20	5170534
o-Xylene	ug/L	<0.20	<0.20	0.20	5170534
p+m-Xylene	ug/L	<0.40	<0.40	0.40	5170534
Total Xylenes	ug/L	<0.40	<0.40	0.40	5170534
F1 (C6-C10)	ug/L	<25	<25	25	5170534
F1 (C6-C10) - BTEX	ug/L	<25	<25	25	5170534
F2-F4 Hydrocarbons					
F2 (C10-C16 Hydrocarbons)	ug/L	<100	1100	100	5168981
F3 (C16-C34 Hydrocarbons)	ug/L	<200	550	200	5168981
F4 (C34-C50 Hydrocarbons)	ug/L	<200	<200	200	5168981
Reached Baseline at C50	ug/L	Yes	Yes		5168981
Surrogate Recovery (%)					
1,4-Difluorobenzene	%	103	96		5170534
4-Bromofluorobenzene	%	93	110		5170534
D10-Ethylbenzene	%	92	110		5170534
D4-1,2-Dichloroethane	%	106	97		5170534
o-Terphenyl	%	98	103		5168981

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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

Maxxam Job #: B7K1578
Report Date: 2017/09/21

exp Services Inc
Client Project #: OTT-00224605
Sampler Initials: JO

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

Maxxam ID		FDA819		FDA820		FDA821		
Sampling Date		2017/09/14 13:00		2017/09/14 14:15		2017/09/14 15:45		
COC Number		628860-03-01		628860-03-01		628860-03-01		
	UNITS	**MW15-5**	**RDL**	**MW15-7**	**RDL**	**MW15-9**	**RDL**	**QC Batch**
Calculated Parameters								
1,3-Dichloropropene (cis+trans)	ug/L	<14	14	<1.4	1.4	<0.71	0.71	5166518

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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

Maxxam ID		FDA816	FDA817		FDA818		
Sampling Date		2017/09/14 11:25	2017/09/14 11:45		2017/09/14 12:00		
COC Number		628860-03-01	628860-03-01		628860-03-01		
	UNITS	**MW 206**	**MW 207**	**RDL**	**MW 15-1**	**RDL**	**QC Batch**
Calculated Parameters							
1,3-Dichloropropene (cis+trans)	ug/L	<0.50	<0.50	0.50	<1.0	1.0	5166518
Volatile Organics							
Acetone (2-Propanone)	ug/L	<10	<10	10	<20	20	5168203
Benzene	ug/L	0.29	<0.20	0.20	<0.40	0.40	5168203
Bromodichloromethane	ug/L	<0.50	<0.50	0.50	<1.0	1.0	5168203
Bromoform	ug/L	<1.0	<1.0	1.0	<2.0	2.0	5168203
Bromomethane	ug/L	<0.50	<0.50	0.50	<1.0	1.0	5168203
Carbon Tetrachloride	ug/L	<0.20	<0.20	0.20	<0.40	0.40	5168203
Chlorobenzene	ug/L	<0.20	<0.20	0.20	<0.40	0.40	5168203
Chloroform	ug/L	<0.20	<0.20	0.20	<0.40	0.40	5168203
Dibromochloromethane	ug/L	<0.50	<0.50	0.50	<1.0	1.0	5168203
1,2-Dichlorobenzene	ug/L	<0.50	<0.50	0.50	<1.0	1.0	5168203
1,3-Dichlorobenzene	ug/L	<0.50	<0.50	0.50	<1.0	1.0	5168203
1,4-Dichlorobenzene	ug/L	<0.50	<0.50	0.50	<1.0	1.0	5168203
Dichlorodifluoromethane (FREON 12)	ug/L	<1.0	<1.0	1.0	<2.0	2.0	5168203
1,1-Dichloroethane	ug/L	<0.20	<0.20	0.20	<0.40	0.40	5168203
1,2-Dichloroethane	ug/L	<0.50	<0.50	0.50	<1.0	1.0	5168203
1,1-Dichloroethylene	ug/L	<0.20	<0.20	0.20	<0.40	0.40	5168203
cis-1,2-Dichloroethylene	ug/L	<0.50	<0.50	0.50	9.8	1.0	5168203
trans-1,2-Dichloroethylene	ug/L	<0.50	<0.50	0.50	<1.0	1.0	5168203
1,2-Dichloropropane	ug/L	<0.20	<0.20	0.20	<0.40	0.40	5168203
cis-1,3-Dichloropropene	ug/L	<0.30	<0.30	0.30	<0.60	0.60	5168203
trans-1,3-Dichloropropene	ug/L	<0.40	<0.40	0.40	<0.80	0.80	5168203
Ethylbenzene	ug/L	<0.20	<0.20	0.20	<0.40	0.40	5168203
Ethylene Dibromide	ug/L	<0.20	<0.20	0.20	<0.40	0.40	5168203
Hexane	ug/L	<1.0	<1.0	1.0	<2.0	2.0	5168203
Methylene Chloride(Dichloromethane)	ug/L	<2.0	<2.0	2.0	<4.0	4.0	5168203
Methyl Ethyl Ketone (2-Butanone)	ug/L	<10	<10	10	<20	20	5168203
Methyl Isobutyl Ketone	ug/L	<5.0	<5.0	5.0	<10	10	5168203
Methyl t-butyl ether (MTBE)	ug/L	<0.50	<0.50	0.50	<1.0	1.0	5168203
Styrene	ug/L	<0.50	<0.50	0.50	<1.0	1.0	5168203
1,1,1,2-Tetrachloroethane	ug/L	<0.50	<0.50	0.50	<1.0	1.0	5168203
1,1,2,2-Tetrachloroethane	ug/L	<0.50	<0.50	0.50	<1.0	1.0	5168203
Tetrachloroethylene	ug/L	<0.20	0.50	0.20	760	0.40	5168203
Toluene	ug/L	<0.20	<0.20	0.20	<0.40	0.40	5168203

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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

Maxxam Job #: B7K1578
Report Date: 2017/09/21

exp Services Inc
Client Project #: OTT-00224605
Sampler Initials: JO

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

Maxxam ID		FDA816	FDA817		FDA818		
Sampling Date		2017/09/14 11:25	2017/09/14 11:45		2017/09/14 12:00		
COC Number		628860-03-01	628860-03-01		628860-03-01		
	UNITS	**MW 206**	**MW 207**	**RDL**	**MW 15-1**	**RDL**	**QC Batch**
1,1,1-Trichloroethane	ug/L	<0.20	<0.20	0.20	<0.40	0.40	5168203
1,1,2-Trichloroethane	ug/L	<0.50	<0.50	0.50	<1.0	1.0	5168203
Trichloroethylene	ug/L	<0.20	<0.20	0.20	25	0.40	5168203
Trichlorofluoromethane (FREON 11)	ug/L	<0.50	<0.50	0.50	<1.0	1.0	5168203
Vinyl Chloride	ug/L	<0.20	<0.20	0.20	<0.40	0.40	5168203
p+m-Xylene	ug/L	<0.20	<0.20	0.20	<0.40	0.40	5168203
o-Xylene	ug/L	<0.20	<0.20	0.20	<0.40	0.40	5168203
Total Xylenes	ug/L	<0.20	<0.20	0.20	<0.40	0.40	5168203
F1 (C6-C10)	ug/L	<25	<25	25	170 (1)	50	5168203
F1 (C6-C10) - BTEX	ug/L	<25	<25	25	170	50	5168203
F2-F4 Hydrocarbons							
F2 (C10-C16 Hydrocarbons)	ug/L	660	<100	100	<100	100	5168981
F3 (C16-C34 Hydrocarbons)	ug/L	<200	<200	200	<200	200	5168981
F4 (C34-C50 Hydrocarbons)	ug/L	<200	<200	200	<200	200	5168981
Reached Baseline at C50	ug/L	Yes	Yes		Yes		5168981
Surrogate Recovery (%)							
o-Terphenyl	%	94	93		89		5168981
4-Bromofluorobenzene	%	90	89		88		5168203
D4-1,2-Dichloroethane	%	112	107		109		5168203
D8-Toluene	%	92	93		88		5168203

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Result reported was due to chlorinated compounds eluting inside the F1 range.

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O.REG 153 VOCS (WATER)

Maxxam ID		FDA819		FDA820		FDA821		
Sampling Date		2017/09/14 13:00		2017/09/14 14:15		2017/09/14 15:45		
COC Number		628860-03-01		628860-03-01		628860-03-01		
	UNITS	**MW15-5**	**RDL**	**MW15-7**	**RDL**	**MW15-9**	**RDL**	**QC Batch**
Volatile Organics								
Acetone (2-Propanone)	ug/L	<500	500	<50	50	<25	25	5168193
Benzene	ug/L	<5.0	5.0	<0.50	0.50	<0.25	0.25	5168193
Bromodichloromethane	ug/L	<5.0	5.0	<0.50	0.50	<0.25	0.25	5168193
Bromoform	ug/L	<10	10	<1.0	1.0	<0.50	0.50	5168193
Bromomethane	ug/L	<25	25	<2.5	2.5	<1.3	1.3	5168193
Carbon Tetrachloride	ug/L	<5.0	5.0	<0.50	0.50	<0.25	0.25	5168193
Chlorobenzene	ug/L	<5.0	5.0	<0.50	0.50	<0.25	0.25	5168193
Chloroform	ug/L	<5.0	5.0	<0.50	0.50	<0.25	0.25	5168193
Dibromochloromethane	ug/L	<10	10	<1.0	1.0	<0.50	0.50	5168193
1,2-Dichlorobenzene	ug/L	<10	10	<1.0	1.0	<0.50	0.50	5168193
1,3-Dichlorobenzene	ug/L	<10	10	<1.0	1.0	<0.50	0.50	5168193
1,4-Dichlorobenzene	ug/L	<10	10	<1.0	1.0	<0.50	0.50	5168193
Dichlorodifluoromethane (FREON 12)	ug/L	<25	25	<2.5	2.5	<1.3	1.3	5168193
1,1-Dichloroethane	ug/L	<5.0	5.0	<0.50	0.50	<0.25	0.25	5168193
1,2-Dichloroethane	ug/L	<10	10	<1.0	1.0	<0.50	0.50	5168193
1,1-Dichloroethylene	ug/L	<5.0	5.0	<0.50	0.50	<0.25	0.25	5168193
cis-1,2-Dichloroethylene	ug/L	7.6	5.0	4.0	0.50	13	0.25	5168193
trans-1,2-Dichloroethylene	ug/L	<5.0	5.0	<0.50	0.50	<0.25	0.25	5168193
1,2-Dichloropropane	ug/L	<5.0	5.0	<0.50	0.50	<0.25	0.25	5168193
cis-1,3-Dichloropropene	ug/L	<10	10	<1.0	1.0	<0.50	0.50	5168193
trans-1,3-Dichloropropene	ug/L	<10	10	<1.0	1.0	<0.50	0.50	5168193
Ethylbenzene	ug/L	<5.0	5.0	<0.50	0.50	<0.25	0.25	5168193
Ethylene Dibromide	ug/L	<10	10	<1.0	1.0	<0.50	0.50	5168193
Hexane	ug/L	<25	25	<2.5	2.5	<1.3	1.3	5168193
Methylene Chloride(Dichloromethane)	ug/L	<25	25	<2.5	2.5	<1.3	1.3	5168193
Methyl Ethyl Ketone (2-Butanone)	ug/L	<250	250	<25	25	<13	13	5168193
Methyl Isobutyl Ketone	ug/L	<250	250	<25	25	<13	13	5168193
Methyl t-butyl ether (MTBE)	ug/L	<10	10	<1.0	1.0	<0.50	0.50	5168193
Styrene	ug/L	<10	10	<1.0	1.0	<0.50	0.50	5168193
1,1,1,2-Tetrachloroethane	ug/L	<10	10	<1.0	1.0	<0.50	0.50	5168193
1,1,2,2-Tetrachloroethane	ug/L	<10	10	<1.0	1.0	<0.50	0.50	5168193
Tetrachloroethylene	ug/L	810	5.0	2.0	0.50	72	0.25	5168193
Toluene	ug/L	<10	10	<1.0	1.0	<0.50	0.50	5168193
1,1,1-Trichloroethane	ug/L	<5.0	5.0	<0.50	0.50	<0.25	0.25	5168193
1,1,2-Trichloroethane	ug/L	<10	10	<1.0	1.0	<0.50	0.50	5168193

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: B7K1578
Report Date: 2017/09/21

exp Services Inc
Client Project #: OTT-00224605
Sampler Initials: JO

O.REG 153 VOCS (WATER)

Maxxam ID		FDA819		FDA820		FDA821		
Sampling Date		2017/09/14 13:00		2017/09/14 14:15		2017/09/14 15:45		
COC Number		628860-03-01		628860-03-01		628860-03-01		
	UNITS	**MW15-5**	**RDL**	**MW15-7**	**RDL**	**MW15-9**	**RDL**	**QC Batch**
Trichloroethylene	ug/L	110	5.0	1.8	0.50	14	0.25	5168193
Trichlorofluoromethane (FREON 11)	ug/L	<10	10	<1.0	1.0	<0.50	0.50	5168193
Vinyl Chloride	ug/L	<10	10	<1.0	1.0	<0.50	0.50	5168193
p+m-Xylene	ug/L	<5.0	5.0	<0.50	0.50	<0.25	0.25	5168193
o-Xylene	ug/L	<5.0	5.0	<0.50	0.50	<0.25	0.25	5168193
Total Xylenes	ug/L	<5.0	5.0	<0.50	0.50	<0.25	0.25	5168193
Surrogate Recovery (%)								
4-Bromofluorobenzene	%	102		102		101		5168193
D4-1,2-Dichloroethane	%	109		110		111		5168193
D8-Toluene	%	96		96		95		5168193

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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

Maxxam Job #: B7K1578
Report Date: 2017/09/21

exp Services Inc
Client Project #: OTT-00224605
Sampler Initials: JO

TEST SUMMARY

Maxxam ID: FDA814
Sample ID: MW 302
Matrix: Water

Collected: 2017/09/14
Shipped:
Received: 2017/09/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	5170534	N/A	2017/09/21	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	5168981	2017/09/18	2017/09/19	Arezoo Habibagahi

Maxxam ID: FDA815
Sample ID: MW 303
Matrix: Water

Collected: 2017/09/14
Shipped:
Received: 2017/09/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	5170534	N/A	2017/09/21	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	5168981	2017/09/18	2017/09/19	Arezoo Habibagahi

Maxxam ID: FDA816
Sample ID: MW 206
Matrix: Water

Collected: 2017/09/14
Shipped:
Received: 2017/09/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	5166518	N/A	2017/09/20	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	5168981	2017/09/18	2017/09/19	Arezoo Habibagahi
Volatile Organic Compounds and F1 PHCs	GC/MSFD	5168203	N/A	2017/09/20	Yang (Philip) Yu

Maxxam ID: FDA817
Sample ID: MW 207
Matrix: Water

Collected: 2017/09/14
Shipped:
Received: 2017/09/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	5166518	N/A	2017/09/20	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	5168981	2017/09/18	2017/09/19	Arezoo Habibagahi
Volatile Organic Compounds and F1 PHCs	GC/MSFD	5168203	N/A	2017/09/20	Yang (Philip) Yu

Maxxam ID: FDA818
Sample ID: MW 15-1
Matrix: Water

Collected: 2017/09/14
Shipped:
Received: 2017/09/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	5166518	N/A	2017/09/21	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	5168981	2017/09/18	2017/09/19	Arezoo Habibagahi
Volatile Organic Compounds and F1 PHCs	GC/MSFD	5168203	N/A	2017/09/20	Yang (Philip) Yu

Maxxam ID: FDA819
Sample ID: MW15-5
Matrix: Water

Collected: 2017/09/14
Shipped:
Received: 2017/09/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	5166518	N/A	2017/09/20	Automated Statchk
Volatile Organic Compounds in Water	P&T/MS	5168193	N/A	2017/09/19	Dina Wang

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Maxxam Job #: B7K1578
Report Date: 2017/09/21

exp Services Inc
Client Project #: OTT-00224605
Sampler Initials: JO

TEST SUMMARY

Maxxam ID: FDA820
Sample ID: MW15-7
Matrix: Water

Collected: 2017/09/14
Shipped:
Received: 2017/09/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	5166518	N/A	2017/09/20	Automated Statchk
Volatile Organic Compounds in Water	P&T/MS	5168193	N/A	2017/09/19	Dina Wang

Maxxam ID: FDA821
Sample ID: MW15-9
Matrix: Water

Collected: 2017/09/14
Shipped:
Received: 2017/09/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	5166518	N/A	2017/09/20	Automated Statchk
Volatile Organic Compounds in Water	P&T/MS	5168193	N/A	2017/09/19	Dina Wang

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Maxxam Job #: B7K1578
Report Date: 2017/09/21

exp Services Inc
Client Project #: OTT-00224605
Sampler Initials: JO

GENERAL COMMENTS

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

Package 1	12.0°C

VOC Water Analysis: Due to high concentrations of target analytes, some samples required dilution. The detection limits were adjusted accordingly.

Sample FDA818 [MW 15-1] : VOCF1 Analysis: Due to high concentrations of target analytes, sample required dilution. Detection limits were adjusted accordingly.

Sample FDA820 [MW15-7] : VOC Water Analysis: Due to foaming, sample required dilution. The detection limits were adjusted accordingly.

Results relate only to the items tested.

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Maxxam Job #: B7K1578
Report Date: 2017/09/21

QUALITY ASSURANCE REPORT

exp Services Inc
Client Project #: OTT-00224605
Sampler Initials: JO

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5168193	4-Bromofluorobenzene	2017/09/19	104	70 - 130	102	70 - 130	99	%		
5168193	D4-1,2-Dichloroethane	2017/09/19	106	70 - 130	101	70 - 130	102	%		
5168193	D8-Toluene	2017/09/19	100	70 - 130	100	70 - 130	99	%		
5168203	4-Bromofluorobenzene	2017/09/19	97	70 - 130	96	70 - 130	89	%		
5168203	D4-1,2-Dichloroethane	2017/09/19	102	70 - 130	100	70 - 130	107	%		
5168203	D8-Toluene	2017/09/19	108	70 - 130	109	70 - 130	93	%		
5168981	o-Terphenyl	2017/09/18	99	30 - 130	109	30 - 130	92	%		
5170534	1,4-Difluorobenzene	2017/09/20	100	70 - 130	105	70 - 130	100	%		
5170534	4-Bromofluorobenzene	2017/09/20	105	70 - 130	109	70 - 130	101	%		
5170534	D10-Ethylbenzene	2017/09/20	116	70 - 130	104	70 - 130	97	%		
5170534	D4-1,2-Dichloroethane	2017/09/20	102	70 - 130	101	70 - 130	101	%		
5168193	1,1,1,2-Tetrachloroethane	2017/09/19	95	70 - 130	109	70 - 130	<0.20	ug/L	NC	30
5168193	1,1,1-Trichloroethane	2017/09/19	84	70 - 130	99	70 - 130	<0.10	ug/L	NC	30
5168193	1,1,2,2-Tetrachloroethane	2017/09/19	98	70 - 130	104	70 - 130	<0.20	ug/L	NC	30
5168193	1,1,2-Trichloroethane	2017/09/19	91	70 - 130	100	70 - 130	<0.20	ug/L	NC	30
5168193	1,1-Dichloroethane	2017/09/19	90	70 - 130	105	70 - 130	<0.10	ug/L	NC	30
5168193	1,1-Dichloroethylene	2017/09/19	96	70 - 130	113	70 - 130	<0.10	ug/L	NC	30
5168193	1,2-Dichlorobenzene	2017/09/19	85	70 - 130	98	70 - 130	<0.20	ug/L	NC	30
5168193	1,2-Dichloroethane	2017/09/19	91	70 - 130	101	70 - 130	<0.20	ug/L	NC	30
5168193	1,2-Dichloropropane	2017/09/19	84	70 - 130	96	70 - 130	<0.10	ug/L	NC	30
5168193	1,3-Dichlorobenzene	2017/09/19	85	70 - 130	101	70 - 130	<0.20	ug/L	NC	30
5168193	1,4-Dichlorobenzene	2017/09/19	85	70 - 130	101	70 - 130	<0.20	ug/L	NC	30
5168193	Acetone (2-Propanone)	2017/09/19	95	60 - 140	99	60 - 140	<10	ug/L	NC	30
5168193	Benzene	2017/09/19	88	70 - 130	101	70 - 130	<0.10	ug/L	NC	30
5168193	Bromodichloromethane	2017/09/19	88	70 - 130	100	70 - 130	<0.10	ug/L	NC	30
5168193	Bromoform	2017/09/19	102	70 - 130	112	70 - 130	<0.20	ug/L	NC	30
5168193	Bromomethane	2017/09/19	98	60 - 140	117	60 - 140	<0.50	ug/L	NC	30
5168193	Carbon Tetrachloride	2017/09/19	88	70 - 130	102	70 - 130	<0.10	ug/L	NC	30
5168193	Chlorobenzene	2017/09/19	87	70 - 130	100	70 - 130	<0.10	ug/L	NC	30
5168193	Chloroform	2017/09/19	86	70 - 130	99	70 - 130	<0.10	ug/L	NC	30
5168193	cis-1,2-Dichloroethylene	2017/09/19	86	70 - 130	100	70 - 130	<0.10	ug/L	NC	30

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5168193	cis-1,3-Dichloropropene	2017/09/19	85	70 - 130	98	70 - 130	<0.20	ug/L	NC	30
5168193	Dibromochloromethane	2017/09/19	96	70 - 130	107	70 - 130	<0.20	ug/L	NC	30
5168193	Dichlorodifluoromethane (FREON 12)	2017/09/19	100	60 - 140	124	60 - 140	<0.50	ug/L	NC	30
5168193	Ethylbenzene	2017/09/19	84	70 - 130	99	70 - 130	<0.10	ug/L	NC	30
5168193	Ethylene Dibromide	2017/09/19	96	70 - 130	105	70 - 130	<0.20	ug/L	NC	30
5168193	Hexane	2017/09/19	99	70 - 130	124	70 - 130	<0.50	ug/L	NC	30
5168193	Methyl Ethyl Ketone (2-Butanone)	2017/09/19	93	60 - 140	94	60 - 140	<5.0	ug/L	NC	30
5168193	Methyl Isobutyl Ketone	2017/09/19	97	70 - 130	95	70 - 130	<5.0	ug/L	NC	30
5168193	Methyl t-butyl ether (MTBE)	2017/09/19	90	70 - 130	94	70 - 130	<0.20	ug/L	NC	30
5168193	Methylene Chloride(Dichloromethane)	2017/09/19	82	70 - 130	95	70 - 130	<0.50	ug/L	NC	30
5168193	o-Xylene	2017/09/19	87	70 - 130	99	70 - 130	<0.10	ug/L	NC	30
5168193	p+m-Xylene	2017/09/19	88	70 - 130	103	70 - 130	<0.10	ug/L	NC	30
5168193	Styrene	2017/09/19	88	70 - 130	102	70 - 130	<0.20	ug/L	NC	30
5168193	Tetrachloroethylene	2017/09/19	83	70 - 130	98	70 - 130	<0.10	ug/L	NC	30
5168193	Toluene	2017/09/19	84	70 - 130	98	70 - 130	<0.20	ug/L	NC	30
5168193	Total Xylenes	2017/09/19					<0.10	ug/L	NC	30
5168193	trans-1,2-Dichloroethylene	2017/09/19	91	70 - 130	106	70 - 130	<0.10	ug/L	NC	30
5168193	trans-1,3-Dichloropropene	2017/09/19	91	70 - 130	103	70 - 130	<0.20	ug/L	NC	30
5168193	Trichloroethylene	2017/09/19	86	70 - 130	100	70 - 130	<0.10	ug/L	NC	30
5168193	Trichlorofluoromethane (FREON 11)	2017/09/19	96	70 - 130	114	70 - 130	<0.20	ug/L	NC	30
5168193	Vinyl Chloride	2017/09/19	97	70 - 130	115	70 - 130	<0.20	ug/L	NC	30
5168203	1,1,1,2-Tetrachloroethane	2017/09/20	109	70 - 130	107	70 - 130	<0.50	ug/L	NC	30
5168203	1,1,1-Trichloroethane	2017/09/20	95	70 - 130	95	70 - 130	<0.20	ug/L	NC	30
5168203	1,1,2,2-Tetrachloroethane	2017/09/20	113	70 - 130	110	70 - 130	<0.50	ug/L	NC	30
5168203	1,1,2-Trichloroethane	2017/09/20	103	70 - 130	100	70 - 130	<0.50	ug/L	NC	30
5168203	1,1-Dichloroethane	2017/09/20	109	70 - 130	107	70 - 130	<0.20	ug/L	NC	30
5168203	1,1-Dichloroethylene	2017/09/20	110	70 - 130	108	70 - 130	<0.20	ug/L	NC	30
5168203	1,2-Dichlorobenzene	2017/09/20	96	70 - 130	94	70 - 130	<0.50	ug/L	NC	30
5168203	1,2-Dichloroethane	2017/09/20	114	70 - 130	110	70 - 130	<0.50	ug/L	NC	30
5168203	1,2-Dichloropropane	2017/09/20	101	70 - 130	99	70 - 130	<0.20	ug/L	NC	30
5168203	1,3-Dichlorobenzene	2017/09/20	95	70 - 130	93	70 - 130	<0.50	ug/L	NC	30

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5168203	1,4-Dichlorobenzene	2017/09/20	94	70 - 130	92	70 - 130	<0.50	ug/L	NC	30
5168203	Acetone (2-Propanone)	2017/09/20	116	60 - 140	107	60 - 140	<10	ug/L	NC	30
5168203	Benzene	2017/09/20	107	70 - 130	104	70 - 130	<0.20	ug/L	NC	30
5168203	Bromodichloromethane	2017/09/20	99	70 - 130	97	70 - 130	<0.50	ug/L	NC	30
5168203	Bromoform	2017/09/20	111	70 - 130	107	70 - 130	<1.0	ug/L	NC	30
5168203	Bromomethane	2017/09/20	115	60 - 140	109	60 - 140	<0.50	ug/L	NC	30
5168203	Carbon Tetrachloride	2017/09/20	95	70 - 130	95	70 - 130	<0.20	ug/L	NC	30
5168203	Chlorobenzene	2017/09/20	98	70 - 130	95	70 - 130	<0.20	ug/L	NC	30
5168203	Chloroform	2017/09/20	99	70 - 130	98	70 - 130	<0.20	ug/L	NC	30
5168203	cis-1,2-Dichloroethylene	2017/09/20	100	70 - 130	97	70 - 130	<0.50	ug/L	NC	30
5168203	cis-1,3-Dichloropropene	2017/09/20	86	70 - 130	81	70 - 130	<0.30	ug/L	NC	30
5168203	Dibromochloromethane	2017/09/20	109	70 - 130	106	70 - 130	<0.50	ug/L	NC	30
5168203	Dichlorodifluoromethane (FREON 12)	2017/09/20	127	60 - 140	127	60 - 140	<1.0	ug/L	NC	30
5168203	Ethylbenzene	2017/09/20	92	70 - 130	91	70 - 130	<0.20	ug/L	NC	30
5168203	Ethylene Dibromide	2017/09/20	113	70 - 130	108	70 - 130	<0.20	ug/L	NC	30
5168203	F1 (C6-C10) - BTEX	2017/09/20					<25	ug/L	NC	30
5168203	F1 (C6-C10)	2017/09/20	103	60 - 140	101	60 - 140	<25	ug/L	NC	30
5168203	Hexane	2017/09/20	114	70 - 130	113	70 - 130	<1.0	ug/L	NC	30
5168203	Methyl Ethyl Ketone (2-Butanone)	2017/09/20	122	60 - 140	113	60 - 140	<10	ug/L	NC	30
5168203	Methyl Isobutyl Ketone	2017/09/20	108	70 - 130	102	70 - 130	<5.0	ug/L	NC	30
5168203	Methyl t-butyl ether (MTBE)	2017/09/20	96	70 - 130	94	70 - 130	<0.50	ug/L	NC	30
5168203	Methylene Chloride(Dichloromethane)	2017/09/20	115	70 - 130	112	70 - 130	<2.0	ug/L	NC	30
5168203	o-Xylene	2017/09/20	94	70 - 130	92	70 - 130	<0.20	ug/L	NC	30
5168203	p+m-Xylene	2017/09/20	95	70 - 130	92	70 - 130	<0.20	ug/L	NC	30
5168203	Styrene	2017/09/20	97	70 - 130	95	70 - 130	<0.50	ug/L	NC	30
5168203	Tetrachloroethylene	2017/09/20	96	70 - 130	95	70 - 130	<0.20	ug/L	NC	30
5168203	Toluene	2017/09/20	103	70 - 130	101	70 - 130	<0.20	ug/L	NC	30
5168203	Total Xylenes	2017/09/20					<0.20	ug/L	NC	30
5168203	trans-1,2-Dichloroethylene	2017/09/20	103	70 - 130	100	70 - 130	<0.50	ug/L	NC	30
5168203	trans-1,3-Dichloropropene	2017/09/20	96	70 - 130	89	70 - 130	<0.40	ug/L	NC	30
5168203	Trichloroethylene	2017/09/20	94	70 - 130	92	70 - 130	<0.20	ug/L	NC	30

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5168203	Trichlorofluoromethane (FREON 11)	2017/09/20	105	70 - 130	105	70 - 130	<0.50	ug/L	NC	30
5168203	Vinyl Chloride	2017/09/20	119	70 - 130	116	70 - 130	<0.20	ug/L	NC	30
5168981	F2 (C10-C16 Hydrocarbons)	2017/09/18	100	50 - 130	113	80 - 120	<100	ug/L	NC	50
5168981	F3 (C16-C34 Hydrocarbons)	2017/09/18	100	50 - 130	113	80 - 120	<200	ug/L	NC	50
5168981	F4 (C34-C50 Hydrocarbons)	2017/09/18	100	50 - 130	113	80 - 120	<200	ug/L	NC	50
5170534	Benzene	2017/09/20	101	70 - 130	88	70 - 130	<0.20	ug/L	NC	40
5170534	Ethylbenzene	2017/09/20	104	70 - 130	97	70 - 130	<0.20	ug/L	11	40
5170534	F1 (C6-C10) - BTEX	2017/09/20					<25	ug/L	NC	40
5170534	F1 (C6-C10)	2017/09/20	104	70 - 130	99	70 - 130	<25	ug/L	NC	40
5170534	o-Xylene	2017/09/20	101	70 - 130	95	70 - 130	<0.20	ug/L	NC	40
5170534	p+m-Xylene	2017/09/20	97	70 - 130	94	70 - 130	<0.40	ug/L	13	40
5170534	Toluene	2017/09/20	99	70 - 130	92	70 - 130	<0.20	ug/L	NC	40
5170534	Total Xylenes	2017/09/20					<0.40	ug/L	13	40

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

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

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

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

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

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

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Maxxam Job #: B7K1578
Report Date: 2017/09/21

exp Services Inc
Client Project #: OTT-00224605
Sampler Initials: JO

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

Paul Rubinato, Analyst, Maxxam Analytics

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

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CHAIN OF CUSTODY RECORD

Maxxam
A Bureau Veritas Group Company

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

Page of

INVOICE TO:

Company Name: #17497 exp Services Inc
Attention: Accounts Payable
Address: 100-2650 Queensview Drive
Ottawa ON K2B 8H6
Tel: (613) 688-1899 x Fax: (613) 225-7337 x
Email: accounting.ottawa@exp.com; Karen.Burke@exp.com;

REPORT TO:

Company Name:
Attention: Jeffery O'Banion
Address:
Tel: Fax:
Email: Jeffery.O'Banion@exp.com

PROJECT INFORMATION:

Quotation #: B46066
P.O. #:
Project: OTT-00224605
Project Name:
Site #:
Sampled By: Jeff O.

Laboratory Use Only:

Maxxam Job #:
Bottle Order #: 628860
COC #: C#628860-03-01
Project Manager: Alison Cameron

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

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

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

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

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

Other Regulations
☐ CCME ☐ Sanitary Sewer Bylaw
☐ Reg 558. ☐ Storm Sewer Bylaw
☐ MISA Municipality
☐ PWQO
☐ Other

Special Instructions

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

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

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	O.Reg 153 Petroleum Hydrocarbons (Water)	O.Reg 153 VOCs (Water)	O.Reg 153 VOCs by HS & F1-F4 (Water)	Chloride by Automated Colourimetry	# of Bottles	Comments
1		MW302	09.14.2017	10:15	GW	✓					
2		MW303		11:00		✓					
3		MW206		11:25		✓	✓				RECEIVED IN OTTAWA
4		MW207		11:45		✓	✓				
5		MW15-1		12:00		✓	✓				
6		MW15-5		1:00			✓				
7		MW15-7		2:15			✓				on ice
8		MW15-9		3:45			✓				ignore Trip Blanks
9											please process job
10											

14-Sep-17 15:55
Alison Cameron
B7K1578
KIV OTT 001

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
	17.09.14	5:15pm	Mariana Bascon	2017/09/14	15:55	

Laboratory Use Only

Time Sensitive	Temperature (°C) on Recei	Custody Seal	Yes	No
	12, 12, 12	Present		
		Intact		

White: Maxxa Yellow: Client

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

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

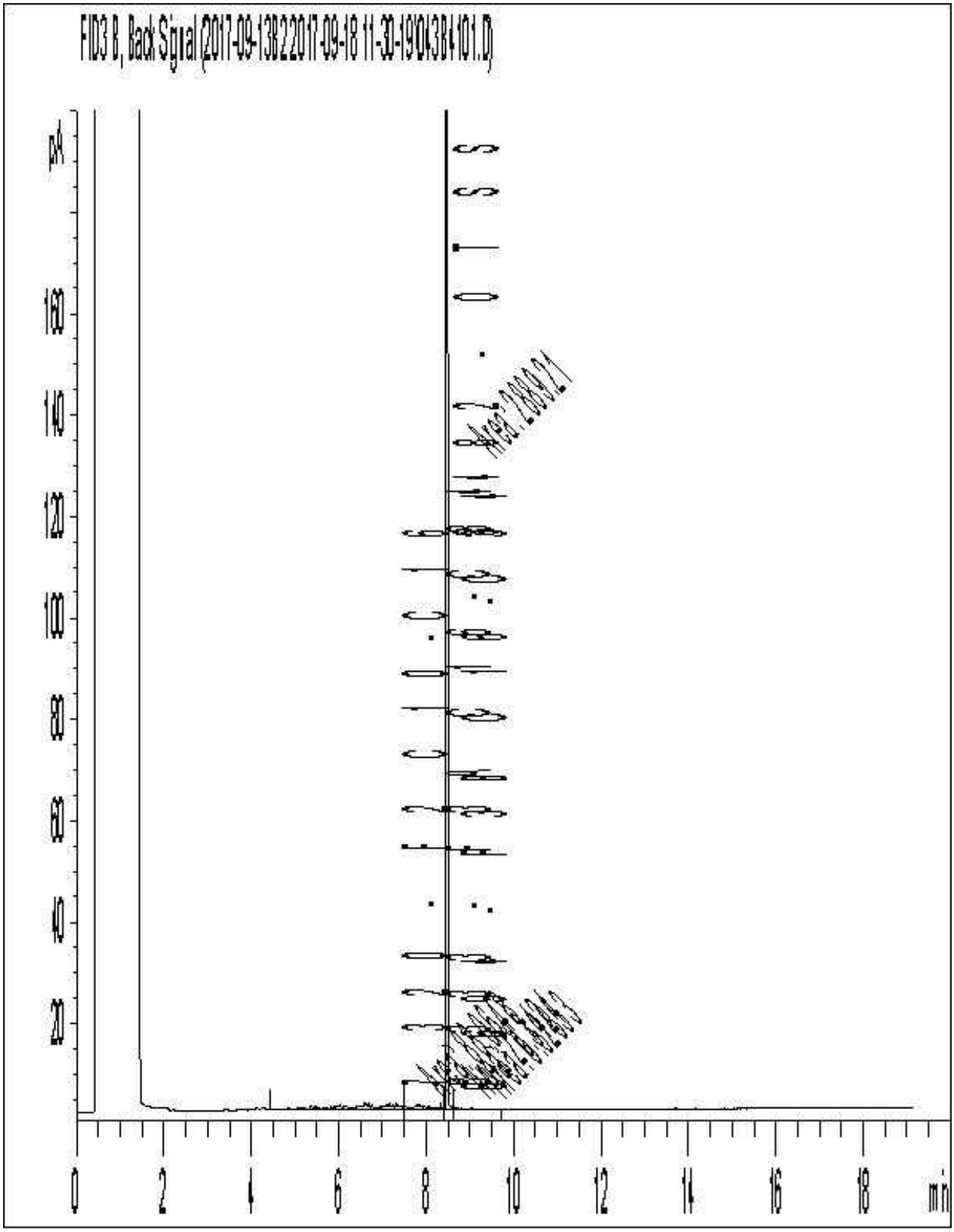
SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B7K1578
Report Date: 2017/09/21
Maxxam Sample: FDA814

exp Services Inc
Client Project #: OTT-00224605
Client ID: MW 302

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

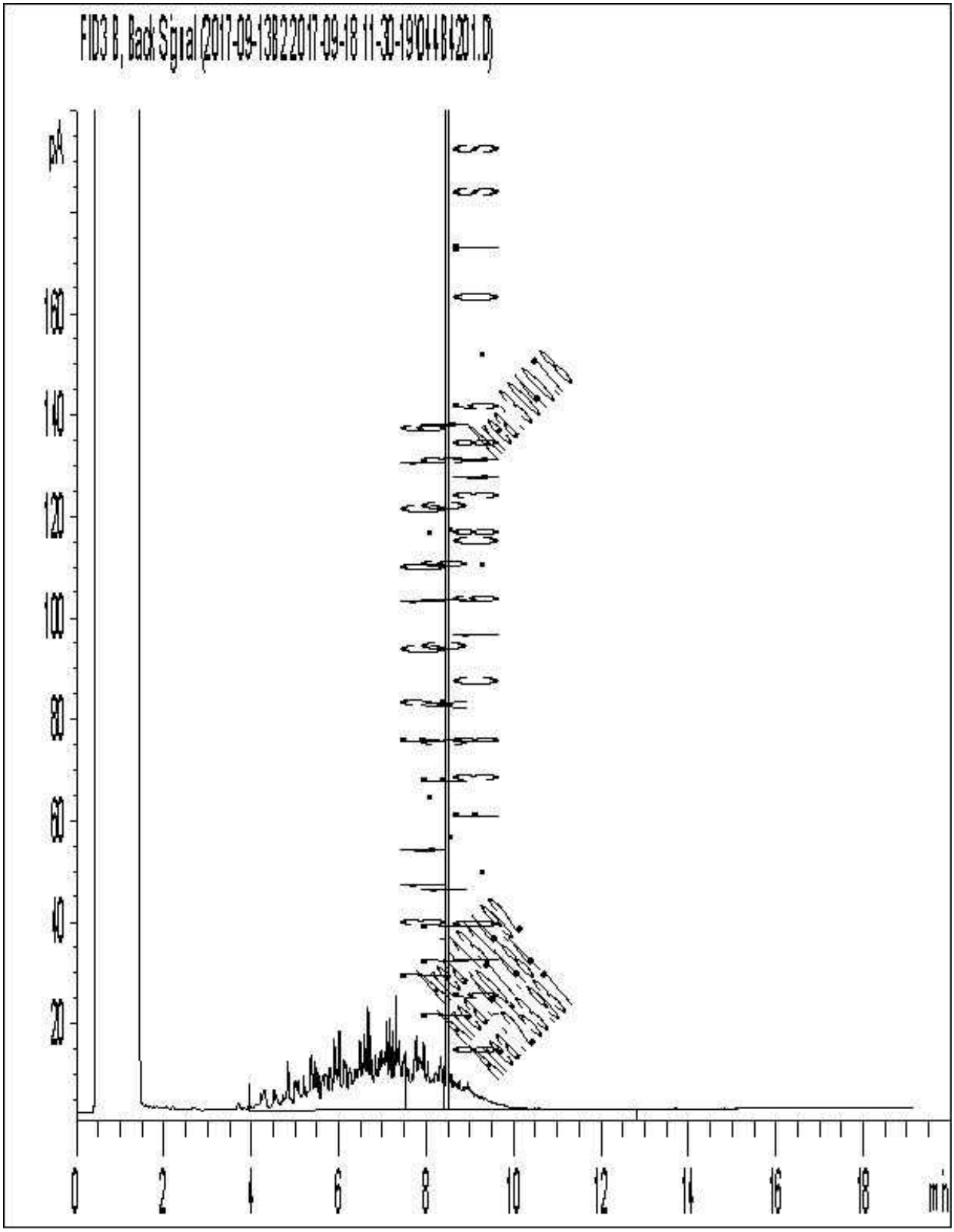


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B7K1578
Report Date: 2017/09/21
Maxxam Sample: FDA815

exp Services Inc
Client Project #: OTT-00224605
Client ID: MW 303

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

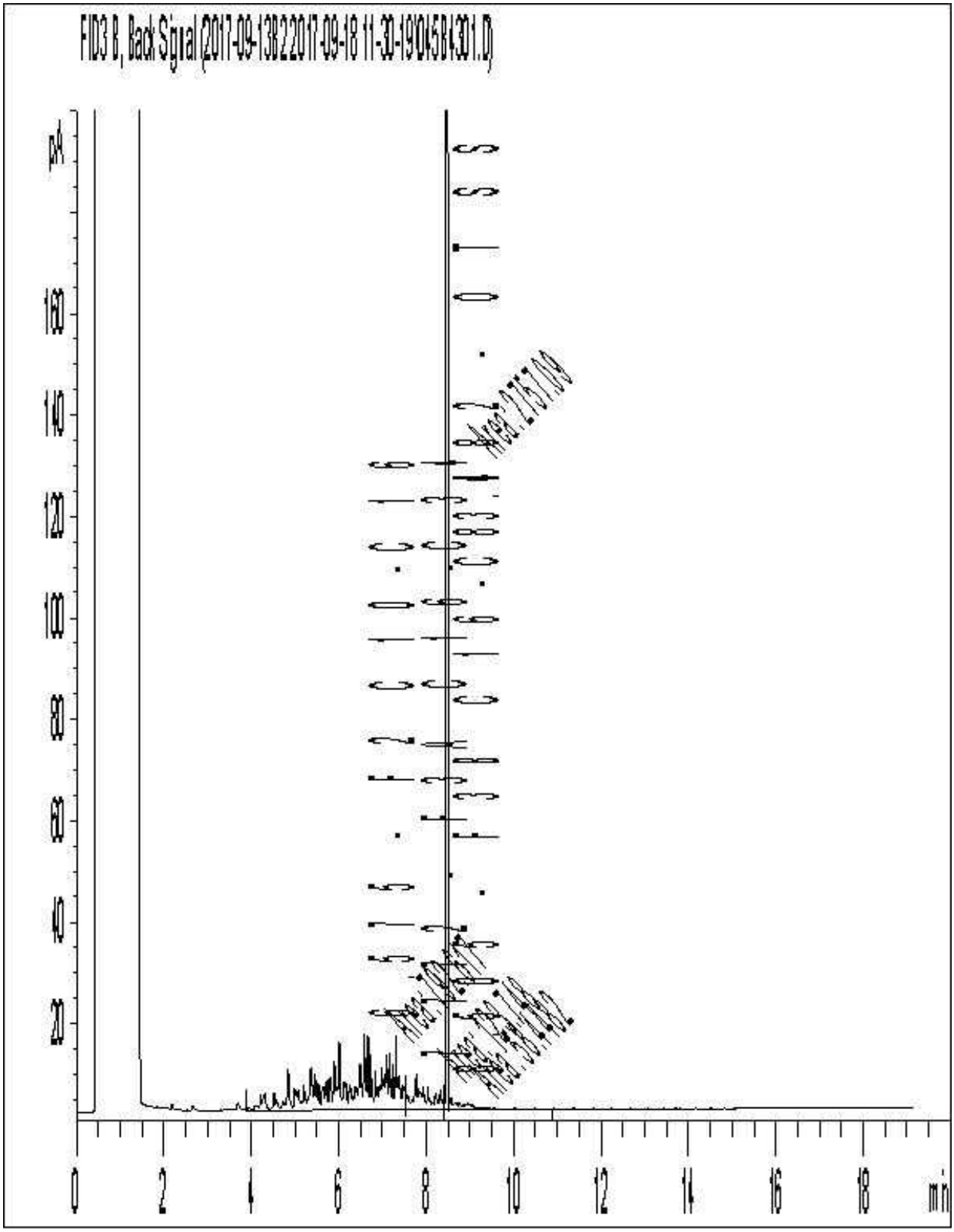


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B7K1578
Report Date: 2017/09/21
Maxxam Sample: FDA816

exp Services Inc
Client Project #: OTT-00224605
Client ID: MW 206

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

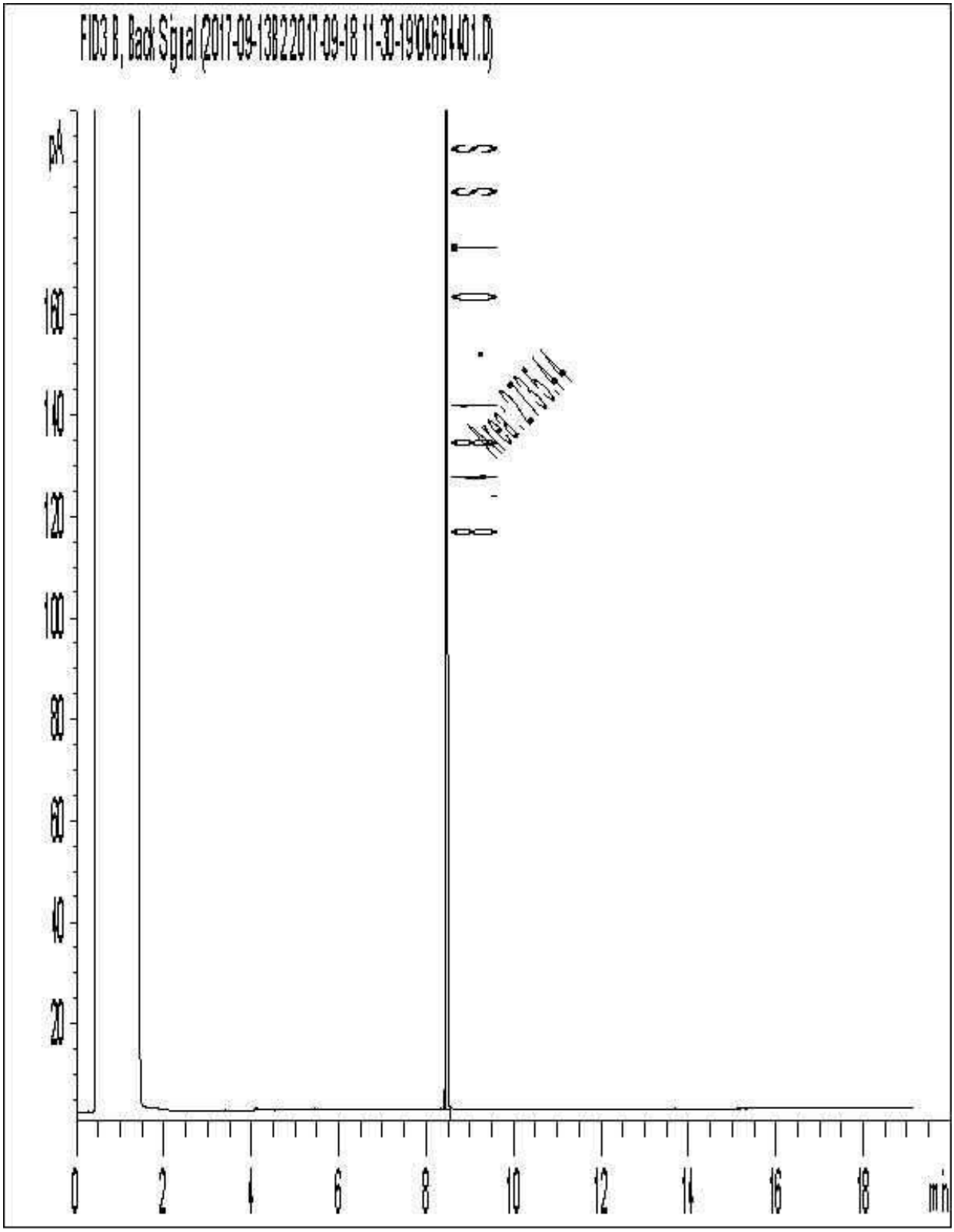


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B7K1578
Report Date: 2017/09/21
Maxxam Sample: FDA817

exp Services Inc
Client Project #: OTT-00224605
Client ID: MW 207

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

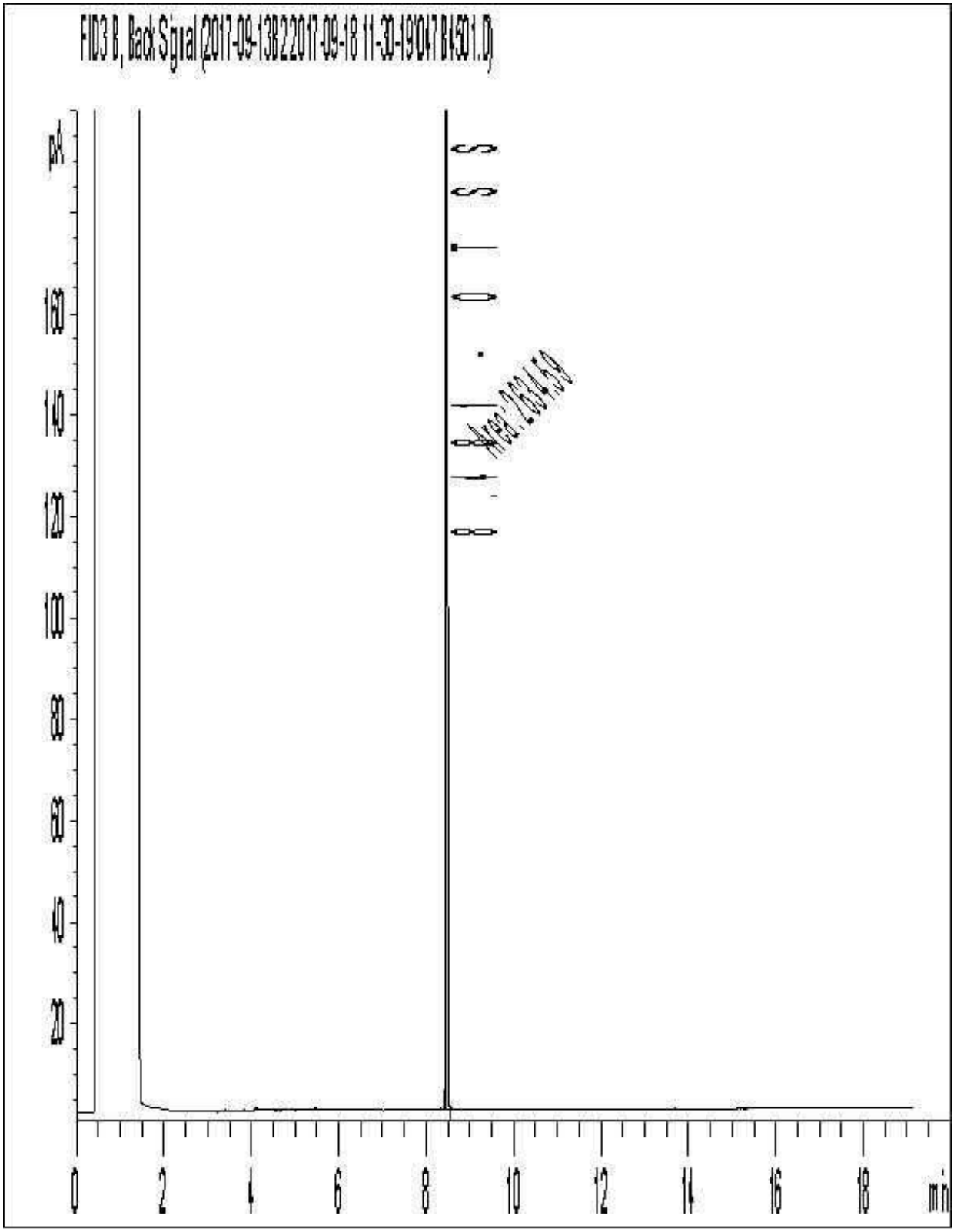


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B7K1578
Report Date: 2017/09/21
Maxxam Sample: FDA818

exp Services Inc
Client Project #: OTT-00224605
Client ID: MW 15-1

Petroleum Hydrocarbons F2-F4 in Water Chromatogram



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

Maxxam
A Bureau Veritas Group Company

Your Project #: OTT-00224605
Your C.O.C. #: 628860-02-01, 628860-01-01

Attention:Jeffery O'Banion

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

Report Date: 2017/09/22
Report #: R4726864
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7K2764
Received: 2017/09/15, 17:20

Sample Matrix: Water
Samples Received: 14

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
1,3-Dichloropropene Sum (1)	7	N/A	2017/09/21		EPA 8260C m
1,3-Dichloropropene Sum (1)	7	N/A	2017/09/22		EPA 8260C m
Chloride by Automated Colourimetry (1)	8	N/A	2017/09/21	CAM SOP-00463	EPA 325.2 m
Petroleum Hydro. CCME F1 & BTEX in Water	1	N/A	2017/09/22	OTT SOP-00002	CCME CWS
Petroleum Hydrocarbons F2-F4 in Water (2)	7	2017/09/18	2017/09/19	OTT SOP-00001	CCME Hydrocarbons
Petroleum Hydrocarbons F2-F4 in Water (2)	1	2017/09/19	2017/09/19	OTT SOP-00001	CCME Hydrocarbons
Volatile Organic Compounds and F1 PHCs (1)	7	N/A	2017/09/21	CAM SOP-00230	EPA 8260C m
Volatile Organic Compounds in Water (1)	7	N/A	2017/09/20	CAM SOP-00226	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.

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.

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.

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

Your Project #: OTT-00224605
Your C.O.C. #: 628860-02-01, 628860-01-01

Attention:Jeffery O'Banion

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

Report Date: 2017/09/22
Report #: R4726864
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7K2764
Received: 2017/09/15, 17:20

Encryption Key

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

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

Maxxam Job #: B7K2764
Report Date: 2017/09/22

exp Services Inc
Client Project #: OTT-00224605
Sampler Initials: JB

RESULTS OF ANALYSES OF WATER

Maxxam ID		FDH369		FDH370		FDH371	FDH372	FDH372		
Sampling Date		2017/09/15		2017/09/15		2017/09/15	2017/09/15	2017/09/15		
COC Number		628860-02-01		628860-02-01		628860-02-01	628860-02-01	628860-02-01		
	UNITS	**MW307**	**RDL**	**MW308**	**RDL**	**MW309**	**MW310**	**MW310 Lab-Dup**	**RDL**	**QC Batch**
Inorganics										
Dissolved Chloride (Cl)	mg/L	2900	30	2300	25	1900	1400	1300	20	5174501

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

Maxxam ID		FDH373		FDH374	FDH375		FDH383		
Sampling Date		2017/09/15		2017/09/15	2017/09/15		2017/09/15		
COC Number		628860-02-01		628860-02-01	628860-02-01		628860-01-01		
	UNITS	**MW312**	**RDL**	**MW311**	**MW313**	**RDL**	**TRIP BLANK**	**RDL**	**QC Batch**
Inorganics									
Dissolved Chloride (Cl)	mg/L	460	5.0	1300	1300	15	<1.0	1.0	5174501

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B7K2764
Report Date: 2017/09/22

exp Services Inc
Client Project #: OTT-00224605
Sampler Initials: JB

O.REG 153 PETROLEUM HYDROCARBONS (WATER)

Maxxam ID		FDH383		
Sampling Date		2017/09/15		
COC Number		628860-01-01		
	UNITS	**TRIP BLANK**	**RDL**	**QC Batch**
BTEX & F1 Hydrocarbons				
Benzene	ug/L	<0.20	0.20	5173727
Toluene	ug/L	<0.20	0.20	5173727
Ethylbenzene	ug/L	<0.20	0.20	5173727
o-Xylene	ug/L	<0.20	0.20	5173727
p+m-Xylene	ug/L	<0.40	0.40	5173727
Total Xylenes	ug/L	<0.40	0.40	5173727
F1 (C6-C10)	ug/L	<25	25	5173727
F1 (C6-C10) - BTEX	ug/L	<25	25	5173727
F2-F4 Hydrocarbons				
F2 (C10-C16 Hydrocarbons)	ug/L	<100	100	5171049
F3 (C16-C34 Hydrocarbons)	ug/L	<200	200	5171049
F4 (C34-C50 Hydrocarbons)	ug/L	<200	200	5171049
Reached Baseline at C50	ug/L	Yes		5171049
Surrogate Recovery (%)				
1,4-Difluorobenzene	%	95		5173727
4-Bromofluorobenzene	%	106		5173727
D10-Ethylbenzene	%	109		5173727
D4-1,2-Dichloroethane	%	93		5173727
o-Terphenyl	%	95		5171049

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B7K2764
Report Date: 2017/09/22

exp Services Inc
Client Project #: OTT-00224605
Sampler Initials: JB

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

Maxxam ID		FDH366	FDH372	FDH372	FDH374	FDH375		
Sampling Date		2017/09/15	2017/09/15	2017/09/15	2017/09/15	2017/09/15		
COC Number		628860-02-01	628860-02-01	628860-02-01	628860-02-01	628860-02-01		
	UNITS	**MW15-10**	**MW310**	**MW310 Lab-Dup**	**MW311**	**MW313**	**RDL**	**QC Batch**
Calculated Parameters								
1,3-Dichloropropene (cis+trans)	ug/L	<0.50	<0.50		<0.50	<0.50	0.50	5168826
Volatile Organics								
Acetone (2-Propanone)	ug/L	<10	<10	<10	10	<10	10	5155174
Benzene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5155174
Bromodichloromethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5155174
Bromoform	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	5155174
Bromomethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5155174
Carbon Tetrachloride	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5155174
Chlorobenzene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5155174
Chloroform	ug/L	1.9	<0.20	<0.20	<0.20	<0.20	0.20	5155174
Dibromochloromethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5155174
1,2-Dichlorobenzene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5155174
1,3-Dichlorobenzene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5155174
1,4-Dichlorobenzene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5155174
Dichlorodifluoromethane (FREON 12)	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	5155174
1,1-Dichloroethane	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5155174
1,2-Dichloroethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5155174
1,1-Dichloroethylene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5155174
cis-1,2-Dichloroethylene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5155174
trans-1,2-Dichloroethylene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5155174
1,2-Dichloropropane	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5155174
cis-1,3-Dichloropropene	ug/L	<0.30	<0.30	<0.30	<0.30	<0.30	0.30	5155174
trans-1,3-Dichloropropene	ug/L	<0.40	<0.40	<0.40	<0.40	<0.40	0.40	5155174
Ethylbenzene	ug/L	<0.20	<0.20	<0.20	1.7	1.7	0.20	5155174
Ethylene Dibromide	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5155174
Hexane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	5155174
Methylene Chloride(Dichloromethane)	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	5155174
Methyl Ethyl Ketone (2-Butanone)	ug/L	<10	<10	<10	<10	<10	10	5155174
Methyl Isobutyl Ketone	ug/L	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	5155174
Methyl t-butyl ether (MTBE)	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5155174
Styrene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5155174
1,1,1,2-Tetrachloroethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5155174
1,1,2,2-Tetrachloroethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5155174
Tetrachloroethylene	ug/L	120	0.38	0.40	0.47	0.49	0.20	5155174
Toluene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5155174

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

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

Maxxam Job #: B7K2764
Report Date: 2017/09/22

exp Services Inc
Client Project #: OTT-00224605
Sampler Initials: JB

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

Maxxam ID		FDH366	FDH372	FDH372	FDH374	FDH375		
Sampling Date		2017/09/15	2017/09/15	2017/09/15	2017/09/15	2017/09/15		
COC Number		628860-02-01	628860-02-01	628860-02-01	628860-02-01	628860-02-01		
	UNITS	**MW15-10**	**MW310**	**MW310 Lab-Dup**	**MW311**	**MW313**	**RDL**	**QC Batch**
1,1,1-Trichloroethane	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5155174
1,1,2-Trichloroethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5155174
Trichloroethylene	ug/L	0.86	<0.20	<0.20	<0.20	<0.20	0.20	5155174
Trichlorofluoromethane (FREON 11)	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5155174
Vinyl Chloride	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5155174
p+m-Xylene	ug/L	<0.20	<0.20	<0.20	5.0	5.0	0.20	5155174
o-Xylene	ug/L	<0.20	<0.20	<0.20	0.76	0.64	0.20	5155174
Total Xylenes	ug/L	<0.20	<0.20	<0.20	5.7	5.6	0.20	5155174
F1 (C6-C10)	ug/L	28 (1)	<25	<25	79	84	25	5155174
F1 (C6-C10) - BTEX	ug/L	28	<25	<25	72	76	25	5155174
F2-F4 Hydrocarbons								
F2 (C10-C16 Hydrocarbons)	ug/L	<100	<100		360	450	100	5168983
F3 (C16-C34 Hydrocarbons)	ug/L	<200	<200		<200	<200	200	5168983
F4 (C34-C50 Hydrocarbons)	ug/L	<200	<200		<200	<200	200	5168983
Reached Baseline at C50	ug/L	Yes	Yes		Yes	Yes		5168983
Surrogate Recovery (%)								
o-Terphenyl	%	87	89		89	89		5168983
4-Bromofluorobenzene	%	90	91	90	91	91		5155174
D4-1,2-Dichloroethane	%	116	115	113	115	115		5155174
D8-Toluene	%	97	97	98	97	96		5155174

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
(1) Result reported was due to chlorinated compounds eluting inside the F1 range.

Maxxam Job #: B7K2764
Report Date: 2017/09/22

exp Services Inc
Client Project #: OTT-00224605
Sampler Initials: JB

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

Maxxam ID		FDH380	FDH381	FDH382		
Sampling Date		2017/09/15	2017/09/15	2017/09/15		
COC Number		628860-01-01	628860-01-01	628860-01-01		
	UNITS	**MW301**	**MW304**	**MW305**	**RDL**	**QC Batch**
Calculated Parameters						
1,3-Dichloropropene (cis+trans)	ug/L	<0.50	<0.50	<0.50	0.50	5168826
Volatile Organics						
Acetone (2-Propanone)	ug/L	<10	<10	<10	10	5155174
Benzene	ug/L	<0.20	<0.20	<0.20	0.20	5155174
Bromodichloromethane	ug/L	<0.50	<0.50	<0.50	0.50	5155174
Bromoform	ug/L	<1.0	<1.0	<1.0	1.0	5155174
Bromomethane	ug/L	<0.50	<0.50	<0.50	0.50	5155174
Carbon Tetrachloride	ug/L	<0.20	<0.20	<0.20	0.20	5155174
Chlorobenzene	ug/L	<0.20	<0.20	<0.20	0.20	5155174
Chloroform	ug/L	0.84	2.0	2.8	0.20	5155174
Dibromochloromethane	ug/L	<0.50	<0.50	<0.50	0.50	5155174
1,2-Dichlorobenzene	ug/L	<0.50	<0.50	<0.50	0.50	5155174
1,3-Dichlorobenzene	ug/L	<0.50	<0.50	<0.50	0.50	5155174
1,4-Dichlorobenzene	ug/L	<0.50	<0.50	<0.50	0.50	5155174
Dichlorodifluoromethane (FREON 12)	ug/L	<1.0	<1.0	<1.0	1.0	5155174
1,1-Dichloroethane	ug/L	<0.20	<0.20	<0.20	0.20	5155174
1,2-Dichloroethane	ug/L	<0.50	<0.50	<0.50	0.50	5155174
1,1-Dichloroethylene	ug/L	<0.20	<0.20	<0.20	0.20	5155174
cis-1,2-Dichloroethylene	ug/L	<0.50	<0.50	<0.50	0.50	5155174
trans-1,2-Dichloroethylene	ug/L	<0.50	<0.50	<0.50	0.50	5155174
1,2-Dichloropropane	ug/L	<0.20	<0.20	<0.20	0.20	5155174
cis-1,3-Dichloropropene	ug/L	<0.30	<0.30	<0.30	0.30	5155174
trans-1,3-Dichloropropene	ug/L	<0.40	<0.40	<0.40	0.40	5155174
Ethylbenzene	ug/L	<0.20	<0.20	<0.20	0.20	5155174
Ethylene Dibromide	ug/L	<0.20	<0.20	<0.20	0.20	5155174
Hexane	ug/L	<1.0	<1.0	<1.0	1.0	5155174
Methylene Chloride(Dichloromethane)	ug/L	<2.0	<2.0	<2.0	2.0	5155174
Methyl Ethyl Ketone (2-Butanone)	ug/L	<10	<10	<10	10	5155174
Methyl Isobutyl Ketone	ug/L	<5.0	<5.0	<5.0	5.0	5155174
Methyl t-butyl ether (MTBE)	ug/L	<0.50	<0.50	<0.50	0.50	5155174
Styrene	ug/L	<0.50	<0.50	<0.50	0.50	5155174
1,1,1,2-Tetrachloroethane	ug/L	<0.50	<0.50	<0.50	0.50	5155174
1,1,2,2-Tetrachloroethane	ug/L	<0.50	<0.50	<0.50	0.50	5155174
Tetrachloroethylene	ug/L	<0.20	0.96	110	0.20	5155174
Toluene	ug/L	<0.20	<0.20	<0.20	0.20	5155174
1,1,1-Trichloroethane	ug/L	<0.20	<0.20	<0.20	0.20	5155174

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: B7K2764
Report Date: 2017/09/22

exp Services Inc
Client Project #: OTT-00224605
Sampler Initials: JB

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

Maxxam ID		FDH380	FDH381	FDH382		
Sampling Date		2017/09/15	2017/09/15	2017/09/15		
COC Number		628860-01-01	628860-01-01	628860-01-01		
	UNITS	**MW301**	**MW304**	**MW305**	**RDL**	**QC Batch**
1,1,2-Trichloroethane	ug/L	<0.50	<0.50	<0.50	0.50	5155174
Trichloroethylene	ug/L	<0.20	<0.20	1.6	0.20	5155174
Trichlorofluoromethane (FREON 11)	ug/L	<0.50	<0.50	<0.50	0.50	5155174
Vinyl Chloride	ug/L	<0.20	<0.20	<0.20	0.20	5155174
p+m-Xylene	ug/L	<0.20	<0.20	<0.20	0.20	5155174
o-Xylene	ug/L	<0.20	<0.20	<0.20	0.20	5155174
Total Xylenes	ug/L	<0.20	<0.20	<0.20	0.20	5155174
F1 (C6-C10)	ug/L	<25	<25	26	25	5155174
F1 (C6-C10) - BTEX	ug/L	<25	<25	26	25	5155174
F2-F4 Hydrocarbons						
F2 (C10-C16 Hydrocarbons)	ug/L	<100	<100	<100	100	5168983
F3 (C16-C34 Hydrocarbons)	ug/L	<200	<200	<200	200	5168983
F4 (C34-C50 Hydrocarbons)	ug/L	<200	<200	<200	200	5168983
Reached Baseline at C50	ug/L	Yes	Yes	Yes		5168983
Surrogate Recovery (%)						
o-Terphenyl	%	89	89	90		5168983
4-Bromofluorobenzene	%	89	91	91		5155174
D4-1,2-Dichloroethane	%	115	115	115		5155174
D8-Toluene	%	97	96	95		5155174

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B7K2764
Report Date: 2017/09/22

exp Services Inc
Client Project #: OTT-00224605
Sampler Initials: JB

O.REG 153 VOCS (WATER)

Maxxam ID		FDH367	FDH368	FDH369	FDH370	FDH371		
Sampling Date		2017/09/15	2017/09/15	2017/09/15	2017/09/15	2017/09/15		
COC Number		628860-02-01	628860-02-01	628860-02-01	628860-02-01	628860-02-01		
	UNITS	**MW15-6**	**MW15-8**	**MW307**	**MW308**	**MW309**	**RDL**	**QC Batch**
Calculated Parameters								
1,3-Dichloropropene (cis+trans)	ug/L	<0.28	<0.28	<0.28	<0.28	<0.28	0.28	5168826
Volatile Organics								
Acetone (2-Propanone)	ug/L	<10	<10	<10	<10	<10	10	5162263
Benzene	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	5162263
Bromodichloromethane	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	5162263
Bromoform	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5162263
Bromomethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5162263
Carbon Tetrachloride	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	5162263
Chlorobenzene	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	5162263
Chloroform	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	5162263
Dibromochloromethane	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5162263
1,2-Dichlorobenzene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5162263
1,3-Dichlorobenzene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5162263
1,4-Dichlorobenzene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5162263
Dichlorodifluoromethane (FREON 12)	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5162263
1,1-Dichloroethane	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	5162263
1,2-Dichloroethane	ug/L	<0.20	<0.20	<0.20	<0.20	0.29	0.20	5162263
1,1-Dichloroethylene	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	5162263
cis-1,2-Dichloroethylene	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	5162263
trans-1,2-Dichloroethylene	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	5162263
1,2-Dichloropropane	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	5162263
cis-1,3-Dichloropropene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5162263
trans-1,3-Dichloropropene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5162263
Ethylbenzene	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	5162263
Ethylene Dibromide	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5162263
Hexane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5162263
Methylene Chloride(Dichloromethane)	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5162263
Methyl Ethyl Ketone (2-Butanone)	ug/L	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	5162263
Methyl Isobutyl Ketone	ug/L	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	5162263
Methyl t-butyl ether (MTBE)	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5162263
Styrene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5162263
1,1,1,2-Tetrachloroethane	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5162263
1,1,2,2-Tetrachloroethane	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5162263
Tetrachloroethylene	ug/L	0.46	<0.10	0.31	0.30	<0.10	0.10	5162263
Toluene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5162263
1,1,1-Trichloroethane	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	5162263

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: B7K2764
Report Date: 2017/09/22

exp Services Inc
Client Project #: OTT-00224605
Sampler Initials: JB

O.REG 153 VOCS (WATER)

Maxxam ID		FDH367	FDH368	FDH369	FDH370	FDH371		
Sampling Date		2017/09/15	2017/09/15	2017/09/15	2017/09/15	2017/09/15		
COC Number		628860-02-01	628860-02-01	628860-02-01	628860-02-01	628860-02-01		
	UNITS	**MW15-6**	**MW15-8**	**MW307**	**MW308**	**MW309**	**RDL**	**QC Batch**
1,1,2-Trichloroethane	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5162263
Trichloroethylene	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	5162263
Trichlorofluoromethane (FREON 11)	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5162263
Vinyl Chloride	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5162263
p+m-Xylene	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	5162263
o-Xylene	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	5162263
Total Xylenes	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	5162263
Surrogate Recovery (%)								
4-Bromofluorobenzene	%	101	103	103	101	99		5162263
D4-1,2-Dichloroethane	%	106	107	107	106	105		5162263
D8-Toluene	%	96	96	96	96	95		5162263

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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O.REG 153 VOCS (WATER)

Maxxam ID		FDH373		FDH383		
Sampling Date		2017/09/15		2017/09/15		
COC Number		628860-02-01		628860-01-01		
	UNITS	**MW312**	**RDL**	**TRIP BLANK**	**RDL**	**QC Batch**
Calculated Parameters						
1,3-Dichloropropene (cis+trans)	ug/L	<2.8	2.8	<0.28	0.28	5168826
Volatile Organics						
Acetone (2-Propanone)	ug/L	<100	100	<10	10	5162263
Benzene	ug/L	1.0	1.0	<0.10	0.10	5162263
Bromodichloromethane	ug/L	<1.0	1.0	<0.10	0.10	5162263
Bromoform	ug/L	<2.0	2.0	<0.20	0.20	5162263
Bromomethane	ug/L	<5.0	5.0	<0.50	0.50	5162263
Carbon Tetrachloride	ug/L	<1.0	1.0	<0.10	0.10	5162263
Chlorobenzene	ug/L	<1.0	1.0	<0.10	0.10	5162263
Chloroform	ug/L	<1.0	1.0	<0.10	0.10	5162263
Dibromochloromethane	ug/L	<2.0	2.0	<0.20	0.20	5162263
1,2-Dichlorobenzene	ug/L	<2.0	2.0	<0.20	0.20	5162263
1,3-Dichlorobenzene	ug/L	<2.0	2.0	<0.20	0.20	5162263
1,4-Dichlorobenzene	ug/L	<2.0	2.0	<0.20	0.20	5162263
Dichlorodifluoromethane (FREON 12)	ug/L	<5.0	5.0	<0.50	0.50	5162263
1,1-Dichloroethane	ug/L	<1.0	1.0	<0.10	0.10	5162263
1,2-Dichloroethane	ug/L	<2.0	2.0	<0.20	0.20	5162263
1,1-Dichloroethylene	ug/L	<1.0	1.0	<0.10	0.10	5162263
cis-1,2-Dichloroethylene	ug/L	150	1.0	<0.10	0.10	5162263
trans-1,2-Dichloroethylene	ug/L	<1.0	1.0	<0.10	0.10	5162263
1,2-Dichloropropane	ug/L	<1.0	1.0	<0.10	0.10	5162263
cis-1,3-Dichloropropene	ug/L	<2.0	2.0	<0.20	0.20	5162263
trans-1,3-Dichloropropene	ug/L	<2.0	2.0	<0.20	0.20	5162263
Ethylbenzene	ug/L	<1.0	1.0	<0.10	0.10	5162263
Ethylene Dibromide	ug/L	<2.0	2.0	<0.20	0.20	5162263
Hexane	ug/L	<5.0	5.0	<0.50	0.50	5162263
Methylene Chloride(Dichloromethane)	ug/L	<5.0	5.0	<0.50	0.50	5162263
Methyl Ethyl Ketone (2-Butanone)	ug/L	<50	50	<5.0	5.0	5162263
Methyl Isobutyl Ketone	ug/L	<50	50	<5.0	5.0	5162263
Methyl t-butyl ether (MTBE)	ug/L	<2.0	2.0	<0.20	0.20	5162263
Styrene	ug/L	<2.0	2.0	<0.20	0.20	5162263
1,1,1,2-Tetrachloroethane	ug/L	<2.0	2.0	<0.20	0.20	5162263
1,1,2,2-Tetrachloroethane	ug/L	<2.0	2.0	<0.20	0.20	5162263
Tetrachloroethylene	ug/L	2.9	1.0	<0.10	0.10	5162263
Toluene	ug/L	<2.0	2.0	<0.20	0.20	5162263
1,1,1-Trichloroethane	ug/L	<1.0	1.0	<0.10	0.10	5162263

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B7K2764
Report Date: 2017/09/22

exp Services Inc
Client Project #: OTT-00224605
Sampler Initials: JB

O.REG 153 VOCS (WATER)

Maxxam ID		FDH373		FDH383		
Sampling Date		2017/09/15		2017/09/15		
COC Number		628860-02-01		628860-01-01		
	UNITS	**MW312**	**RDL**	**TRIP BLANK**	**RDL**	**QC Batch**
1,1,2-Trichloroethane	ug/L	<2.0	2.0	<0.20	0.20	5162263
Trichloroethylene	ug/L	73	1.0	<0.10	0.10	5162263
Trichlorofluoromethane (FREON 11)	ug/L	<2.0	2.0	<0.20	0.20	5162263
Vinyl Chloride	ug/L	4.0	2.0	<0.20	0.20	5162263
p+m-Xylene	ug/L	<1.0	1.0	<0.10	0.10	5162263
o-Xylene	ug/L	<1.0	1.0	<0.10	0.10	5162263
Total Xylenes	ug/L	<1.0	1.0	<0.10	0.10	5162263
Surrogate Recovery (%)						
4-Bromofluorobenzene	%	100		100		5162263
D4-1,2-Dichloroethane	%	104		102		5162263
D8-Toluene	%	98		99		5162263

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B7K2764
Report Date: 2017/09/22

exp Services Inc
Client Project #: OTT-00224605
Sampler Initials: JB

TEST SUMMARY

Maxxam ID: FDH366
Sample ID: MW15-10
Matrix: Water

Collected: 2017/09/15
Shipped:
Received: 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	5168826	N/A	2017/09/22	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	5168983	2017/09/18	2017/09/19	Arezoo Habibagahi
Volatile Organic Compounds and F1 PHCs	GC/MSFD	5155174	N/A	2017/09/21	Denis Reid

Maxxam ID: FDH367
Sample ID: MW15-6
Matrix: Water

Collected: 2017/09/15
Shipped:
Received: 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	5168826	N/A	2017/09/21	Automated Statchk
Volatile Organic Compounds in Water	P&T/MS	5162263	N/A	2017/09/20	Dina Wang

Maxxam ID: FDH368
Sample ID: MW15-8
Matrix: Water

Collected: 2017/09/15
Shipped:
Received: 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	5168826	N/A	2017/09/21	Automated Statchk
Volatile Organic Compounds in Water	P&T/MS	5162263	N/A	2017/09/20	Dina Wang

Maxxam ID: FDH369
Sample ID: MW307
Matrix: Water

Collected: 2017/09/15
Shipped:
Received: 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	5168826	N/A	2017/09/21	Automated Statchk
Chloride by Automated Colourimetry	KONE	5174501	N/A	2017/09/21	Alina Dobreanu
Volatile Organic Compounds in Water	P&T/MS	5162263	N/A	2017/09/20	Dina Wang

Maxxam ID: FDH370
Sample ID: MW308
Matrix: Water

Collected: 2017/09/15
Shipped:
Received: 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	5168826	N/A	2017/09/21	Automated Statchk
Chloride by Automated Colourimetry	KONE	5174501	N/A	2017/09/21	Alina Dobreanu
Volatile Organic Compounds in Water	P&T/MS	5162263	N/A	2017/09/20	Dina Wang

Maxxam ID: FDH371
Sample ID: MW309
Matrix: Water

Collected: 2017/09/15
Shipped:
Received: 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	5168826	N/A	2017/09/21	Automated Statchk
Chloride by Automated Colourimetry	KONE	5174501	N/A	2017/09/21	Alina Dobreanu
Volatile Organic Compounds in Water	P&T/MS	5162263	N/A	2017/09/20	Dina Wang

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Report Date: 2017/09/22

exp Services Inc
Client Project #: OTT-00224605
Sampler Initials: JB

TEST SUMMARY

Maxxam ID: FDH372
Sample ID: MW310
Matrix: Water

Collected: 2017/09/15
Shipped:
Received: 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	5168826	N/A	2017/09/22	Automated Statchk
Chloride by Automated Colourimetry	KONE	5174501	N/A	2017/09/21	Alina Dobreanu
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	5168983	2017/09/18	2017/09/19	Arezoo Habibagahi
Volatile Organic Compounds and F1 PHCs	GC/MSFD	5155174	N/A	2017/09/21	Denis Reid

Maxxam ID: FDH372 Dup
Sample ID: MW310
Matrix: Water

Collected: 2017/09/15
Shipped:
Received: 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chloride by Automated Colourimetry	KONE	5174501	N/A	2017/09/21	Alina Dobreanu
Volatile Organic Compounds and F1 PHCs	GC/MSFD	5155174	N/A	2017/09/21	Denis Reid

Maxxam ID: FDH373
Sample ID: MW312
Matrix: Water

Collected: 2017/09/15
Shipped:
Received: 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	5168826	N/A	2017/09/21	Automated Statchk
Chloride by Automated Colourimetry	KONE	5174501	N/A	2017/09/21	Alina Dobreanu
Volatile Organic Compounds in Water	P&T/MS	5162263	N/A	2017/09/20	Dina Wang

Maxxam ID: FDH374
Sample ID: MW311
Matrix: Water

Collected: 2017/09/15
Shipped:
Received: 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	5168826	N/A	2017/09/22	Automated Statchk
Chloride by Automated Colourimetry	KONE	5174501	N/A	2017/09/21	Alina Dobreanu
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	5168983	2017/09/18	2017/09/19	Arezoo Habibagahi
Volatile Organic Compounds and F1 PHCs	GC/MSFD	5155174	N/A	2017/09/21	Denis Reid

Maxxam ID: FDH375
Sample ID: MW313
Matrix: Water

Collected: 2017/09/15
Shipped:
Received: 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	5168826	N/A	2017/09/22	Automated Statchk
Chloride by Automated Colourimetry	KONE	5174501	N/A	2017/09/21	Alina Dobreanu
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	5168983	2017/09/18	2017/09/19	Arezoo Habibagahi
Volatile Organic Compounds and F1 PHCs	GC/MSFD	5155174	N/A	2017/09/21	Denis Reid

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Maxxam Job #: B7K2764
Report Date: 2017/09/22

exp Services Inc
Client Project #: OTT-00224605
Sampler Initials: JB

TEST SUMMARY

Maxxam ID: FDH380
Sample ID: MW301
Matrix: Water

Collected: 2017/09/15
Shipped:
Received: 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	5168826	N/A	2017/09/22	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	5168983	2017/09/18	2017/09/19	Arezoo Habibagahi
Volatile Organic Compounds and F1 PHCs	GC/MSFD	5155174	N/A	2017/09/21	Denis Reid

Maxxam ID: FDH381
Sample ID: MW304
Matrix: Water

Collected: 2017/09/15
Shipped:
Received: 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	5168826	N/A	2017/09/22	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	5168983	2017/09/18	2017/09/19	Arezoo Habibagahi
Volatile Organic Compounds and F1 PHCs	GC/MSFD	5155174	N/A	2017/09/21	Denis Reid

Maxxam ID: FDH382
Sample ID: MW305
Matrix: Water

Collected: 2017/09/15
Shipped:
Received: 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	5168826	N/A	2017/09/22	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	5168983	2017/09/18	2017/09/19	Arezoo Habibagahi
Volatile Organic Compounds and F1 PHCs	GC/MSFD	5155174	N/A	2017/09/21	Denis Reid

Maxxam ID: FDH383
Sample ID: TRIP BLANK
Matrix: Water

Collected: 2017/09/15
Shipped:
Received: 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	5168826	N/A	2017/09/21	Automated Statchk
Chloride by Automated Colourimetry	KONE	5174501	N/A	2017/09/21	Alina Dobreanu
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	5173727	N/A	2017/09/22	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	5171049	2017/09/19	2017/09/19	Arezoo Habibagahi
Volatile Organic Compounds in Water	P&T/MS	5162263	N/A	2017/09/20	Dina Wang

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GENERAL COMMENTS

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

Package 1	9.7°C

Sample FDH373 [MW312] : VOC Analysis: Due to high concentrations of target analytes, sample required dilution. Detection limits were adjusted accordingly.

Results relate only to the items tested.

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Maxxam Job #: B7K2764
Report Date: 2017/09/22

QUALITY ASSURANCE REPORT

exp Services Inc
Client Project #: OTT-00224605
Sampler Initials: JB

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5155174	4-Bromofluorobenzene	2017/09/21	94	70 - 130	95	70 - 130	90	%		
5155174	D4-1,2-Dichloroethane	2017/09/21	113	70 - 130	108	70 - 130	109	%		
5155174	D8-Toluene	2017/09/21	102	70 - 130	104	70 - 130	98	%		
5162263	4-Bromofluorobenzene	2017/09/20	104	70 - 130	104	70 - 130	99	%		
5162263	D4-1,2-Dichloroethane	2017/09/20	104	70 - 130	105	70 - 130	104	%		
5162263	D8-Toluene	2017/09/20	100	70 - 130	101	70 - 130	98	%		
5168983	o-Terphenyl	2017/09/19	94	30 - 130	92	30 - 130	90	%		
5171049	o-Terphenyl	2017/09/19	99	30 - 130	104	30 - 130	100	%		
5173727	1,4-Difluorobenzene	2017/09/21	96	70 - 130	94	70 - 130	100	%		
5173727	4-Bromofluorobenzene	2017/09/21	114	70 - 130	115	70 - 130	104	%		
5173727	D10-Ethylbenzene	2017/09/21	91	70 - 130	112	70 - 130	90	%		
5173727	D4-1,2-Dichloroethane	2017/09/21	99	70 - 130	104	70 - 130	95	%		
5155174	1,1,1,2-Tetrachloroethane	2017/09/21	101	70 - 130	107	70 - 130	<0.50	ug/L	NC	30
5155174	1,1,1-Trichloroethane	2017/09/21	92	70 - 130	100	70 - 130	<0.20	ug/L	NC	30
5155174	1,1,2,2-Tetrachloroethane	2017/09/21	111	70 - 130	109	70 - 130	<0.50	ug/L	NC	30
5155174	1,1,2-Trichloroethane	2017/09/21	112	70 - 130	112	70 - 130	<0.50	ug/L	NC	30
5155174	1,1-Dichloroethane	2017/09/21	106	70 - 130	113	70 - 130	<0.20	ug/L	NC	30
5155174	1,1-Dichloroethylene	2017/09/21	107	70 - 130	118	70 - 130	<0.20	ug/L	NC	30
5155174	1,2-Dichlorobenzene	2017/09/21	89	70 - 130	94	70 - 130	<0.50	ug/L	NC	30
5155174	1,2-Dichloroethane	2017/09/21	106	70 - 130	106	70 - 130	<0.50	ug/L	NC	30
5155174	1,2-Dichloropropane	2017/09/21	128	70 - 130	101	70 - 130	<0.20	ug/L	NC	30
5155174	1,3-Dichlorobenzene	2017/09/21	90	70 - 130	96	70 - 130	<0.50	ug/L	NC	30
5155174	1,4-Dichlorobenzene	2017/09/21	87	70 - 130	94	70 - 130	<0.50	ug/L	NC	30
5155174	Acetone (2-Propanone)	2017/09/21	122	60 - 140	113	60 - 140	<10	ug/L	NC	30
5155174	Benzene	2017/09/21	100	70 - 130	107	70 - 130	<0.20	ug/L	NC	30
5155174	Bromodichloromethane	2017/09/21	123	70 - 130	104	70 - 130	<0.50	ug/L	NC	30
5155174	Bromoform	2017/09/21	102	70 - 130	101	70 - 130	<1.0	ug/L	NC	30
5155174	Bromomethane	2017/09/21	113	60 - 140	121	60 - 140	<0.50	ug/L	NC	30
5155174	Carbon Tetrachloride	2017/09/21	91	70 - 130	99	70 - 130	<0.20	ug/L	NC	30
5155174	Chlorobenzene	2017/09/21	91	70 - 130	97	70 - 130	<0.20	ug/L	NC	30
5155174	Chloroform	2017/09/21	102	70 - 130	108	70 - 130	<0.20	ug/L	NC	30

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5155174	cis-1,2-Dichloroethylene	2017/09/21	98	70 - 130	102	70 - 130	<0.50	ug/L	NC	30
5155174	cis-1,3-Dichloropropene	2017/09/21	88	70 - 130	89	70 - 130	<0.30	ug/L	NC	30
5155174	Dibromochloromethane	2017/09/21	124	70 - 130	101	70 - 130	<0.50	ug/L	NC	30
5155174	Dichlorodifluoromethane (FREON 12)	2017/09/21	120	60 - 140	133	60 - 140	<1.0	ug/L	NC	30
5155174	Ethylbenzene	2017/09/21	81	70 - 130	89	70 - 130	<0.20	ug/L	NC	30
5155174	Ethylene Dibromide	2017/09/21	108	70 - 130	107	70 - 130	<0.20	ug/L	NC	30
5155174	F1 (C6-C10) - BTEX	2017/09/21					<25	ug/L	NC	30
5155174	F1 (C6-C10)	2017/09/21	98	60 - 140	101	60 - 140	<25	ug/L	NC	30
5155174	Hexane	2017/09/21	97	70 - 130	109	70 - 130	<1.0	ug/L	NC	30
5155174	Methyl Ethyl Ketone (2-Butanone)	2017/09/21	112	60 - 140	104	60 - 140	<10	ug/L	NC	30
5155174	Methyl Isobutyl Ketone	2017/09/21	97	70 - 130	94	70 - 130	<5.0	ug/L	NC	30
5155174	Methyl t-butyl ether (MTBE)	2017/09/21	92	70 - 130	93	70 - 130	<0.50	ug/L	NC	30
5155174	Methylene Chloride(Dichloromethane)	2017/09/21	96	70 - 130	99	70 - 130	<2.0	ug/L	NC	30
5155174	o-Xylene	2017/09/21	83	70 - 130	90	70 - 130	<0.20	ug/L	NC	30
5155174	p+m-Xylene	2017/09/21	82	70 - 130	90	70 - 130	<0.20	ug/L	NC	30
5155174	Styrene	2017/09/21	81	70 - 130	87	70 - 130	<0.50	ug/L	NC	30
5155174	Tetrachloroethylene	2017/09/21	77	70 - 130	98	70 - 130	<0.20	ug/L	3.3	30
5155174	Toluene	2017/09/21	90	70 - 130	97	70 - 130	<0.20	ug/L	NC	30
5155174	Total Xylenes	2017/09/21					<0.20	ug/L	NC	30
5155174	trans-1,2-Dichloroethylene	2017/09/21	100	70 - 130	109	70 - 130	<0.50	ug/L	NC	30
5155174	trans-1,3-Dichloropropene	2017/09/21	94	70 - 130	94	70 - 130	<0.40	ug/L	NC	30
5155174	Trichloroethylene	2017/09/21	91	70 - 130	99	70 - 130	<0.20	ug/L	NC	30
5155174	Trichlorofluoromethane (FREON 11)	2017/09/21	104	70 - 130	114	70 - 130	<0.50	ug/L	NC	30
5155174	Vinyl Chloride	2017/09/21	108	70 - 130	120	70 - 130	<0.20	ug/L	NC	30
5162263	1,1,1,2-Tetrachloroethane	2017/09/21	112	70 - 130	113	70 - 130	<0.20	ug/L	NC	30
5162263	1,1,1-Trichloroethane	2017/09/21	99	70 - 130	96	70 - 130	<0.10	ug/L	NC	30
5162263	1,1,2,2-Tetrachloroethane	2017/09/21	111	70 - 130	116	70 - 130	<0.20	ug/L	NC	30
5162263	1,1,2-Trichloroethane	2017/09/21	104	70 - 130	109	70 - 130	<0.20	ug/L	NC	30
5162263	1,1-Dichloroethane	2017/09/21	102	70 - 130	102	70 - 130	<0.10	ug/L	NC	30
5162263	1,1-Dichloroethylene	2017/09/21	108	70 - 130	104	70 - 130	<0.10	ug/L	NC	30
5162263	1,2-Dichlorobenzene	2017/09/21	100	70 - 130	100	70 - 130	<0.20	ug/L	NC	30

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5162263	1,2-Dichloroethane	2017/09/21	102	70 - 130	104	70 - 130	<0.20	ug/L	NC	30
5162263	1,2-Dichloropropane	2017/09/21	98	70 - 130	98	70 - 130	<0.10	ug/L	NC	30
5162263	1,3-Dichlorobenzene	2017/09/21	103	70 - 130	101	70 - 130	<0.20	ug/L	NC	30
5162263	1,4-Dichlorobenzene	2017/09/21	102	70 - 130	100	70 - 130	<0.20	ug/L	NC	30
5162263	Acetone (2-Propanone)	2017/09/21	99	60 - 140	103	60 - 140	<10	ug/L	NC	30
5162263	Benzene	2017/09/21	101	70 - 130	100	70 - 130	<0.10	ug/L	3.9	30
5162263	Bromodichloromethane	2017/09/21	103	70 - 130	103	70 - 130	<0.10	ug/L	NC	30
5162263	Bromoform	2017/09/21	118	70 - 130	123	70 - 130	<0.20	ug/L	NC	30
5162263	Bromomethane	2017/09/21	107	60 - 140	105	60 - 140	<0.50	ug/L	NC	30
5162263	Carbon Tetrachloride	2017/09/21	102	70 - 130	101	70 - 130	<0.10	ug/L	NC	30
5162263	Chlorobenzene	2017/09/21	102	70 - 130	102	70 - 130	<0.10	ug/L	NC	30
5162263	Chloroform	2017/09/21	100	70 - 130	99	70 - 130	<0.10	ug/L	NC	30
5162263	cis-1,2-Dichloroethylene	2017/09/21	99	70 - 130	98	70 - 130	<0.10	ug/L	NC	30
5162263	cis-1,3-Dichloropropene	2017/09/21	100	70 - 130	99	70 - 130	<0.20	ug/L	NC	30
5162263	Dibromochloromethane	2017/09/21	112	70 - 130	116	70 - 130	<0.20	ug/L	NC	30
5162263	Dichlorodifluoromethane (FREON 12)	2017/09/21	103	60 - 140	103	60 - 140	<0.50	ug/L	NC	30
5162263	Ethylbenzene	2017/09/21	101	70 - 130	100	70 - 130	<0.10	ug/L	3.3	30
5162263	Ethylene Dibromide	2017/09/21	108	70 - 130	113	70 - 130	<0.20	ug/L	NC	30
5162263	Hexane	2017/09/21	114	70 - 130	109	70 - 130	<0.50	ug/L	NC	30
5162263	Methyl Ethyl Ketone (2-Butanone)	2017/09/21	99	60 - 140	104	60 - 140	<5.0	ug/L	NC	30
5162263	Methyl Isobutyl Ketone	2017/09/21	104	70 - 130	107	70 - 130	<5.0	ug/L	NC	30
5162263	Methyl t-butyl ether (MTBE)	2017/09/21	96	70 - 130	100	70 - 130	<0.20	ug/L	NC	30
5162263	Methylene Chloride(Dichloromethane)	2017/09/21	92	70 - 130	92	70 - 130	<0.50	ug/L	NC	30
5162263	o-Xylene	2017/09/21	101	70 - 130	102	70 - 130	<0.10	ug/L	1.9	30
5162263	p+m-Xylene	2017/09/21	105	70 - 130	104	70 - 130	<0.10	ug/L	3.1	30
5162263	Styrene	2017/09/21	105	70 - 130	104	70 - 130	<0.20	ug/L	NC	30
5162263	Tetrachloroethylene	2017/09/21	99	70 - 130	98	70 - 130	<0.10	ug/L	NC	30
5162263	Toluene	2017/09/21	100	70 - 130	98	70 - 130	<0.20	ug/L	NC	30
5162263	Total Xylenes	2017/09/21					<0.10	ug/L	3.1	30
5162263	trans-1,2-Dichloroethylene	2017/09/21	103	70 - 130	98	70 - 130	<0.10	ug/L	NC	30
5162263	trans-1,3-Dichloropropene	2017/09/21	107	70 - 130	109	70 - 130	<0.20	ug/L	NC	30

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5162263	Trichloroethylene	2017/09/21	101	70 - 130	96	70 - 130	<0.10	ug/L	NC	30
5162263	Trichlorofluoromethane (FREON 11)	2017/09/21	106	70 - 130	105	70 - 130	<0.20	ug/L	NC	30
5162263	Vinyl Chloride	2017/09/21	103	70 - 130	100	70 - 130	<0.20	ug/L	NC	30
5168983	F2 (C10-C16 Hydrocarbons)	2017/09/19	94	50 - 130	96	80 - 120	<100	ug/L	2.2	50
5168983	F3 (C16-C34 Hydrocarbons)	2017/09/19	94	50 - 130	96	80 - 120	<200	ug/L	NC	50
5168983	F4 (C34-C50 Hydrocarbons)	2017/09/19	94	50 - 130	96	80 - 120	<200	ug/L	NC	50
5171049	F2 (C10-C16 Hydrocarbons)	2017/09/20	109	50 - 130	105	80 - 120	<100	ug/L	NC	50
5171049	F3 (C16-C34 Hydrocarbons)	2017/09/20	109	50 - 130	105	80 - 120	<200	ug/L	NC	50
5171049	F4 (C34-C50 Hydrocarbons)	2017/09/20	109	50 - 130	105	80 - 120	<200	ug/L	NC	50
5173727	Benzene	2017/09/21	77	70 - 130	92	70 - 130	<0.20	ug/L	NC	40
5173727	Ethylbenzene	2017/09/21	89	70 - 130	104	70 - 130	<0.20	ug/L	11	40
5173727	F1 (C6-C10) - BTEX	2017/09/21					<25	ug/L	9.2	40
5173727	F1 (C6-C10)	2017/09/21	99	70 - 130	91	70 - 130	<25	ug/L	9.3	40
5173727	o-Xylene	2017/09/21	88	70 - 130	105	70 - 130	<0.20	ug/L	NC	40
5173727	p+m-Xylene	2017/09/21	87	70 - 130	99	70 - 130	<0.40	ug/L	16	40
5173727	Toluene	2017/09/21	92	70 - 130	98	70 - 130	<0.20	ug/L	NC	40
5173727	Total Xylenes	2017/09/21					<0.40	ug/L	16	40
5174501	Dissolved Chloride (Cl)	2017/09/21	NC	80 - 120	102	80 - 120	<1.0	mg/L	3.3	20

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

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

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

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

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

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

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

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Maxxam Job #: B7K2764
Report Date: 2017/09/22

exp Services Inc
Client Project #: OTT-00224605
Sampler Initials: JB

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

Paul Rubinato, Analyst, Maxxam Analytics

Steve Roberts, Ottawa Lab Manager

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

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

CHAIN OF CUSTODY RECORD

Page of

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:	
Company Name:	#17497 exp Services Inc	Company Name:		Quotation #:	B46066
Attention:	Accounts Payable	Attention:	Jeffery O'Banion	P.O. #:	
Address:	100-2650 Queensview Drive, Ottawa ON K2B 8H6	Address:		Project:	OTT-00224605
				Project Name:	
Tel:	(613) 688-1899 x	Tel:		Site #:	
Fax:	(613) 225-7337 x	Fax:			
Email:	accounting.ottawa@exp.com; Karen.Burke@exp.com;	Email:	Jeffery.O'Banion@exp.com	Sampled By:	Jeff O.

Laboratory Use Only:

Maxxam Job #:	Bottle Order #:
	628860
COC #: C#628860-02-01	Project Manager: Alison Cameron

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

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

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

Special Instructions

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

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

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

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

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

#	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O.Reg 153 Petroleum Hydrocarbons (Water)	O.Reg 153 VOCs (Water)	O.Reg 153 VOCs by HS & F1-F4 (Water)	Chloride by Automated Colourimetry	# of Bottles	Comments
1		MW15-10	09.15.2017	AM	GW		✓	✓				
2		MW15-6		AM				✓				
3		MW15-8		AM				✓				
4		MW307		AM				✓		✓		
5		MW308		AM				✓		✓		
6		MW309		PM				✓		✓		
7		MW310		PM			✓	✓		✓		
8		MW312		PM				✓		✓		
9		MW311		PM			✓	✓		✓		
10		MW313		PM			✓	✓		✓		ON ice

RECEIVED IN OTTAWA

15-Sep-17 17:20
Alison Cameron
B7K2764
KIV OTT 001

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted	Time Sensitive	Temperature (°C) on Recei	Custody Seal	Yes	No
[signature]	17.09.15	5:15	[signature]	2017/09/15	17:20			10, 9, 10	Present		✓
									Intact		✓

Laboratory Use Only

White: Maxxam Yellow: Client

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

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

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

Maxxam Analytics International Corporation o/a Maxxam Analytics

CHAIN OF CUSTODY RECORD

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

INVOICE TO:
Company Name: #17497 exp Services Inc
Attention: Accounts Payable
Address: 100-2650 Queensview Drive, Ottawa ON K2B 8H6
Tel: (613) 688-1899 x Fax: (613) 225-7337 x
Email: accounting.ottawa@exp.com; Karen.Burke@exp.com;

REPORT TO:
Company Name:
Attention: Jeffery O'Banion
Address:
Tel: Fax:
Email: Jeffery.O'Banion@exp.com

PROJECT INFORMATION:
Quotation #: B46066
P.O. #: OTT-00224605
Project:
Project Name:
Site #:
Sampled By: Jeff G.

Laboratory Use Only:
Maxxam Job #:
Bottle Order #: 628860
COC #: C#628860-01-01
Project Manager: Alison Cameron

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

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

Other Regulations
☐ CCME ☐ Sanitary Sewer Bylaw
☐ Reg 558 ☐ Storm Sewer Bylaw
☐ MISA Municipality ___
☐ PWQO
☐ Other ___

Special Instructions

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

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O.Reg 153 Petroleum Hydrocarbons (Water)	O.Reg 153 VOCs (Water)	O.Reg 153 VOCs by HS & F1-F4 (Water)	Chloride by Automated Colourimetry	# of Bottles	Comments
1		MW301	09.15.2017	PM	GW		✓	✓				
2		MW304		PM			✓	✓				
3		MW305		PM			✓	✓		✓		
4		Trip Blank					✓	✓				
5												
6												
7												
8												
9												
10												

15-Sep-17 17:20
Alison Cameron
B7K2764
KTV OTT-001

RECEIVED IN OTTAWA

ON SC

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

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

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

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
	09.15.2017	5:15		2017/09/15	17:20	

Laboratory Use Only

Time Sensitive	Temperature (°C) on Recei	Custody Seal	Yes	No
	10, 9, 10	Present		
		Intact		

White: Maxxa Yellow: Client

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

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

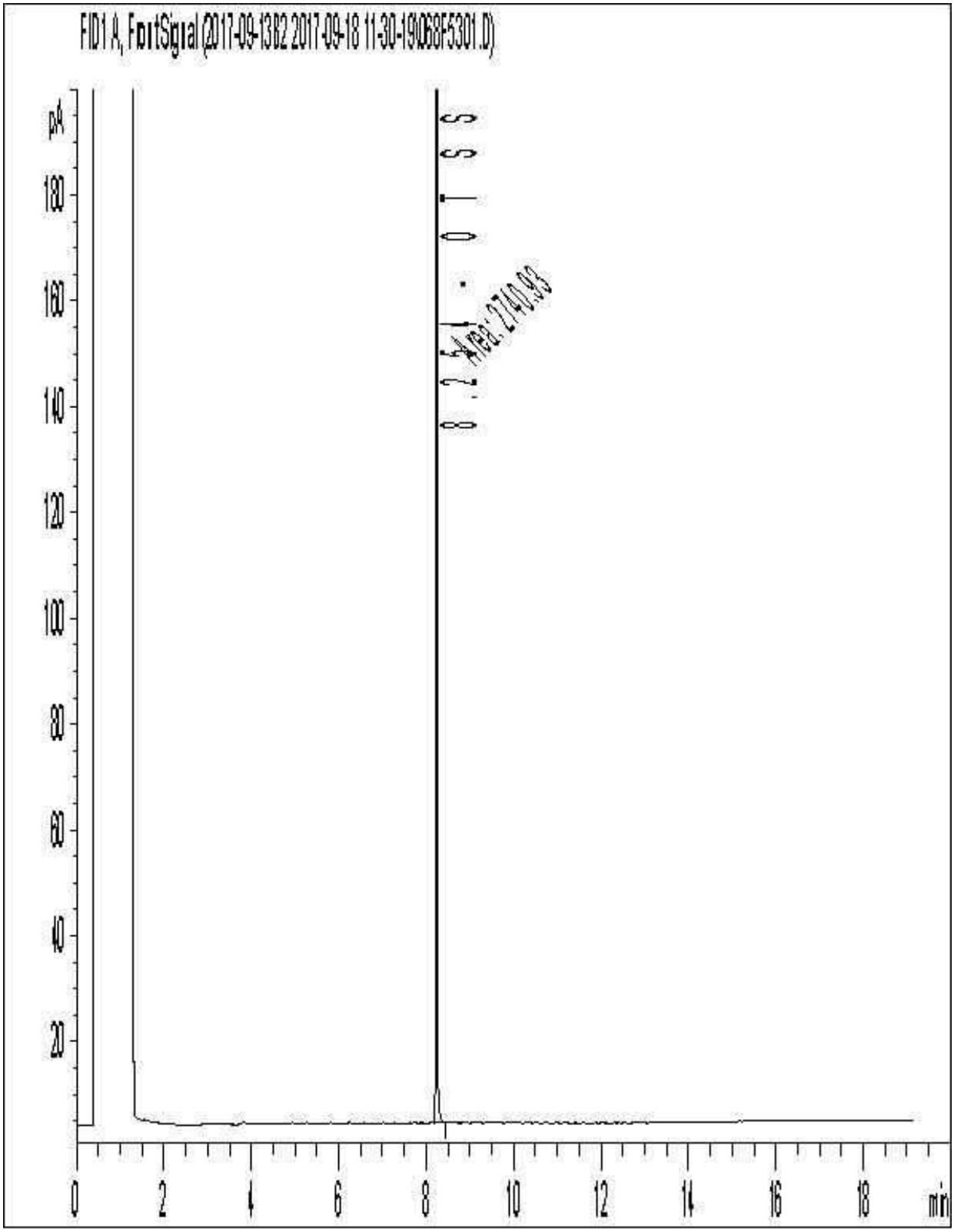
SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B7K2764
Report Date: 2017/09/22
Maxxam Sample: FDH366

exp Services Inc
Client Project #: OTT-00224605
Client ID: MW15-10

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

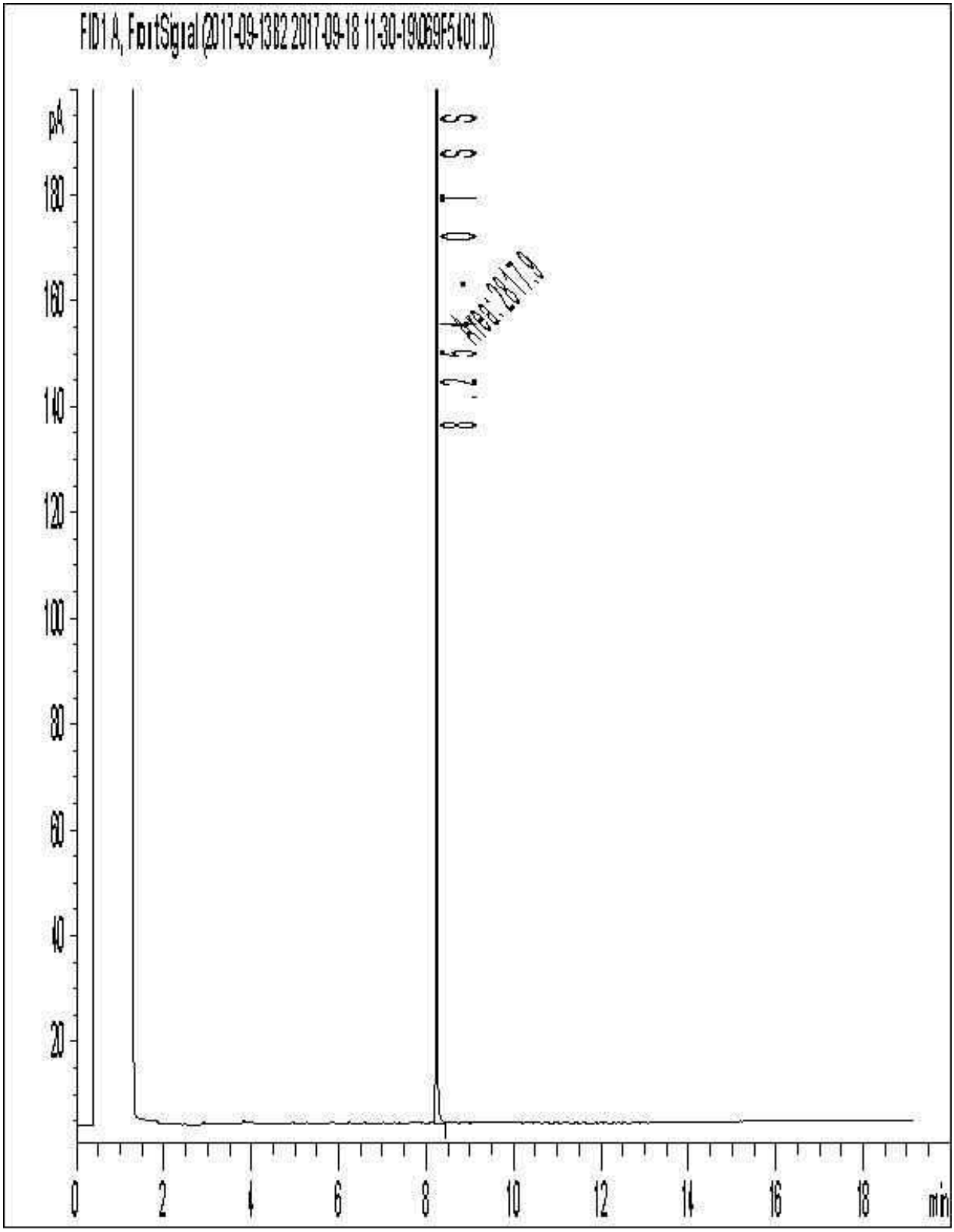


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B7K2764
Report Date: 2017/09/22
Maxxam Sample: FDH372

exp Services Inc
Client Project #: OTT-00224605
Client ID: MW310

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

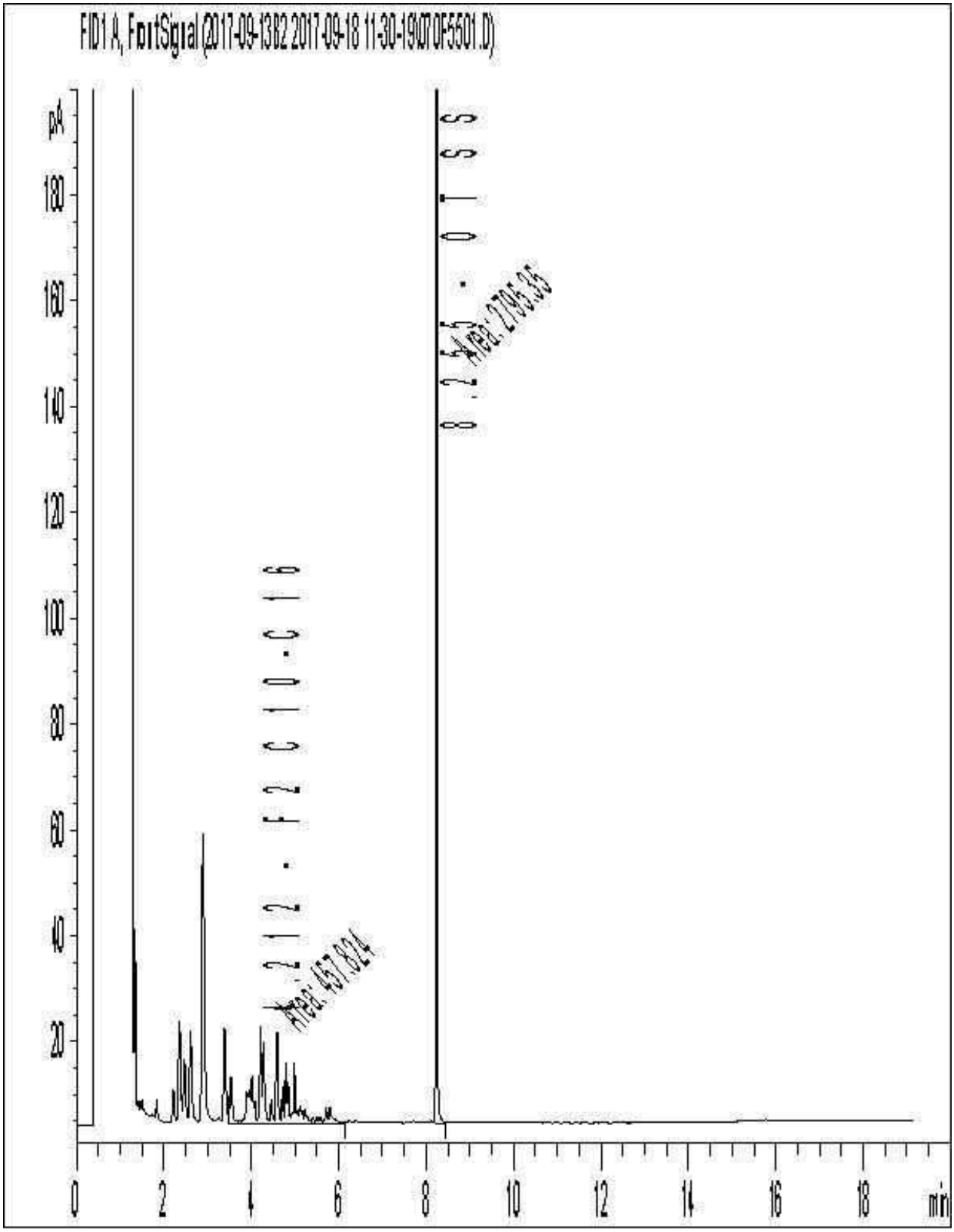


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B7K2764
Report Date: 2017/09/22
Maxxam Sample: FDH374

exp Services Inc
Client Project #: OTT-00224605
Client ID: MW311

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

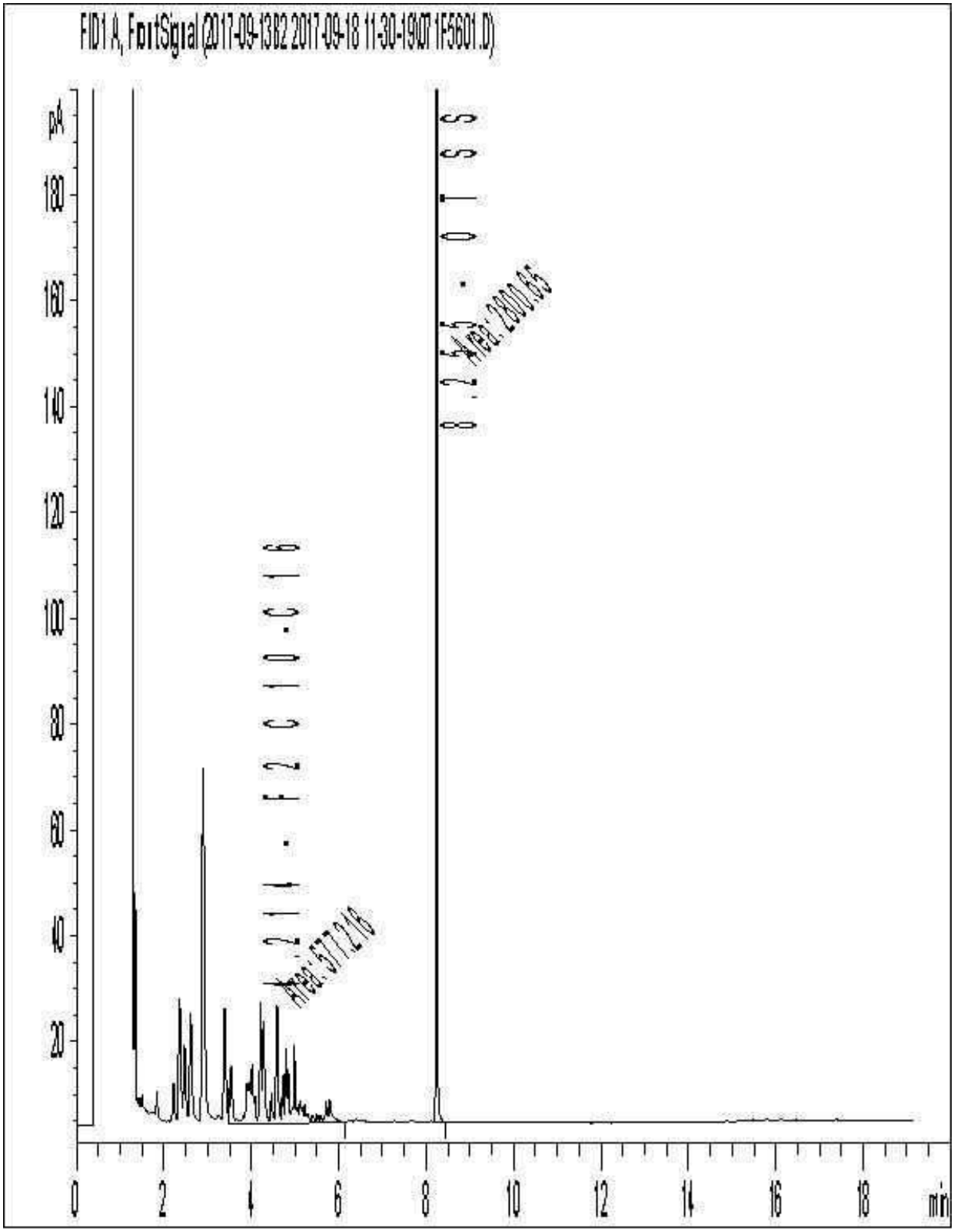


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B7K2764
Report Date: 2017/09/22
Maxxam Sample: FDH375

exp Services Inc
Client Project #: OTT-00224605
Client ID: MW313

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

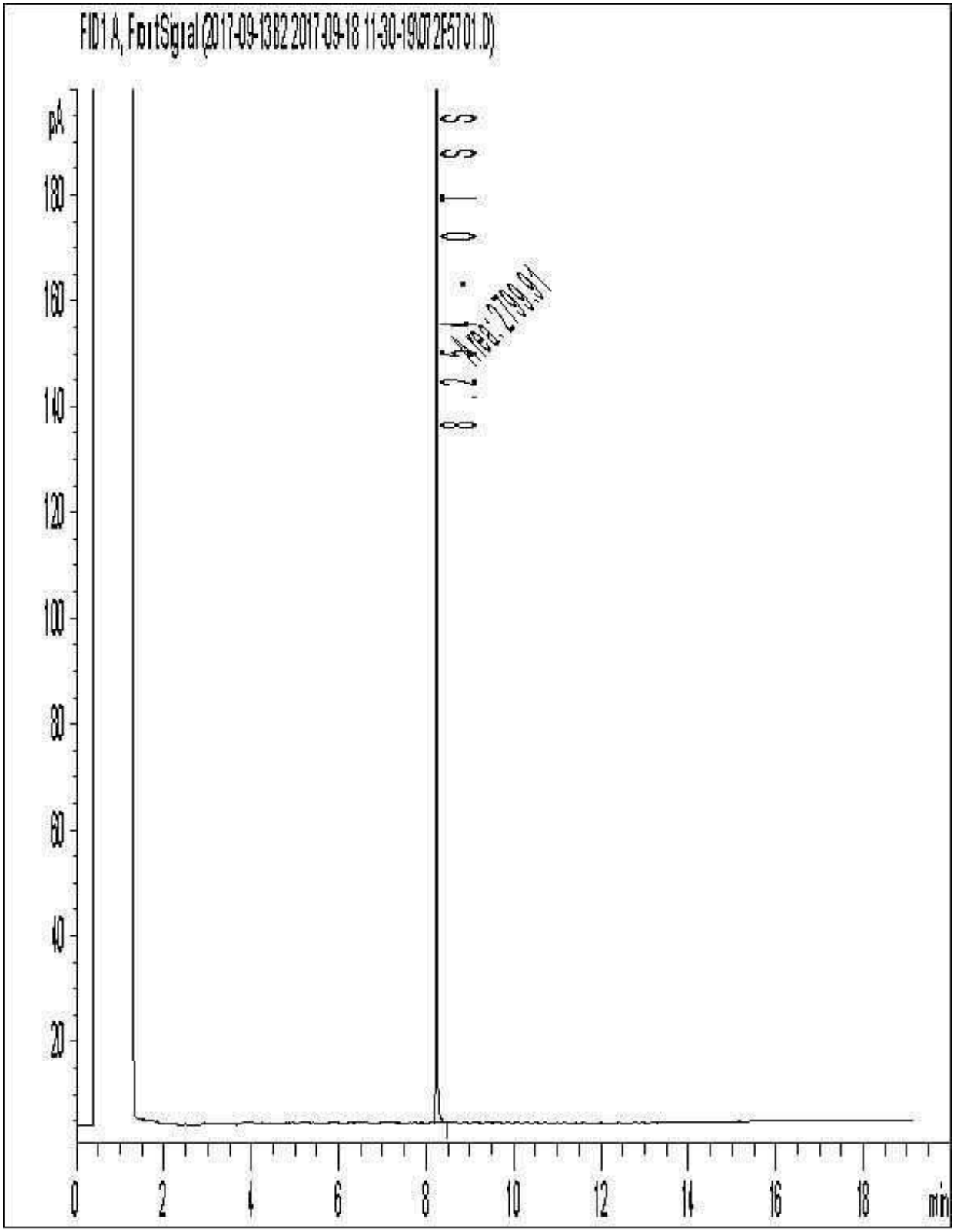


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B7K2764
Report Date: 2017/09/22
Maxxam Sample: FDH380

exp Services Inc
Client Project #: OTT-00224605
Client ID: MW301

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

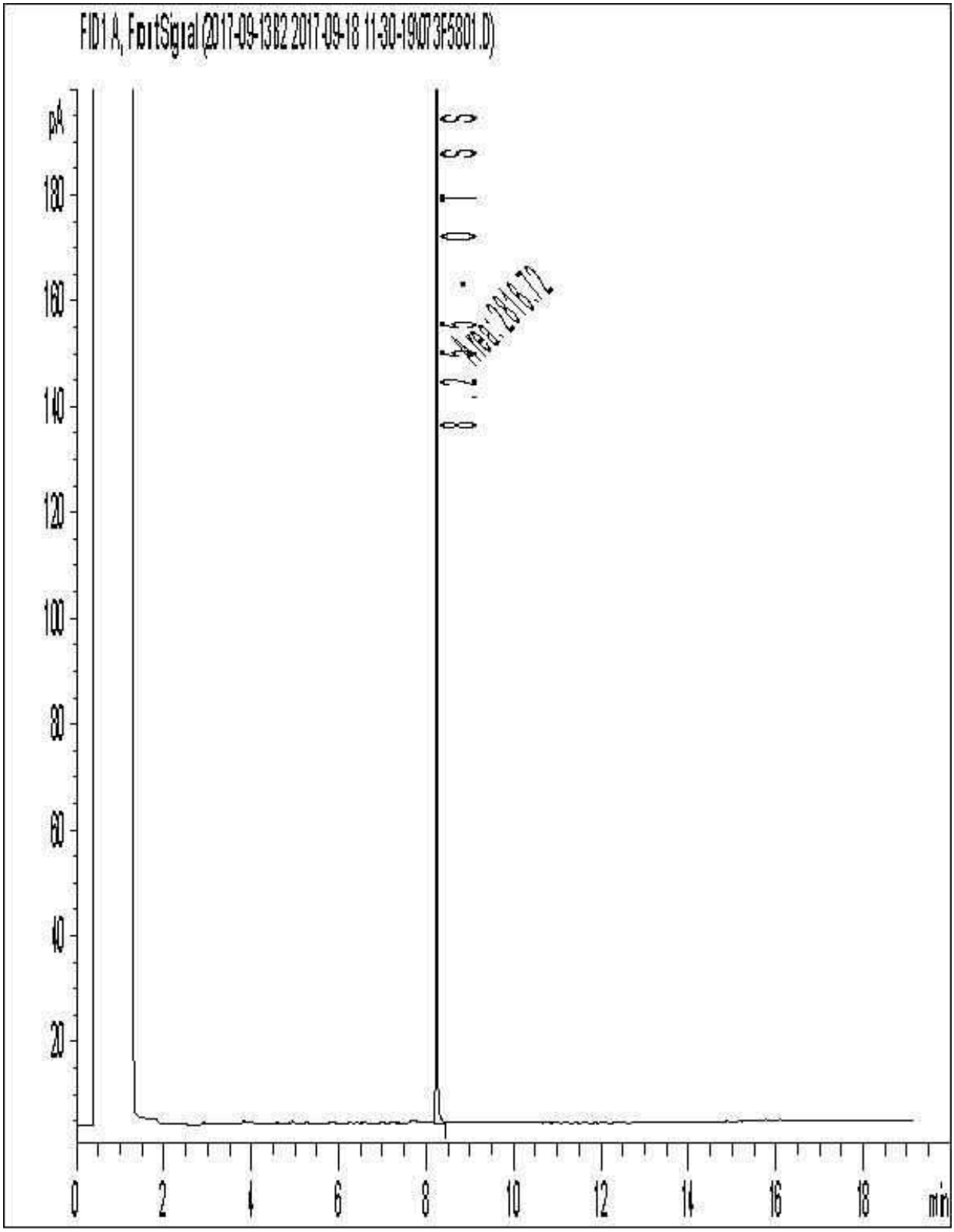


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B7K2764
Report Date: 2017/09/22
Maxxam Sample: FDH381

exp Services Inc
Client Project #: OTT-00224605
Client ID: MW304

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

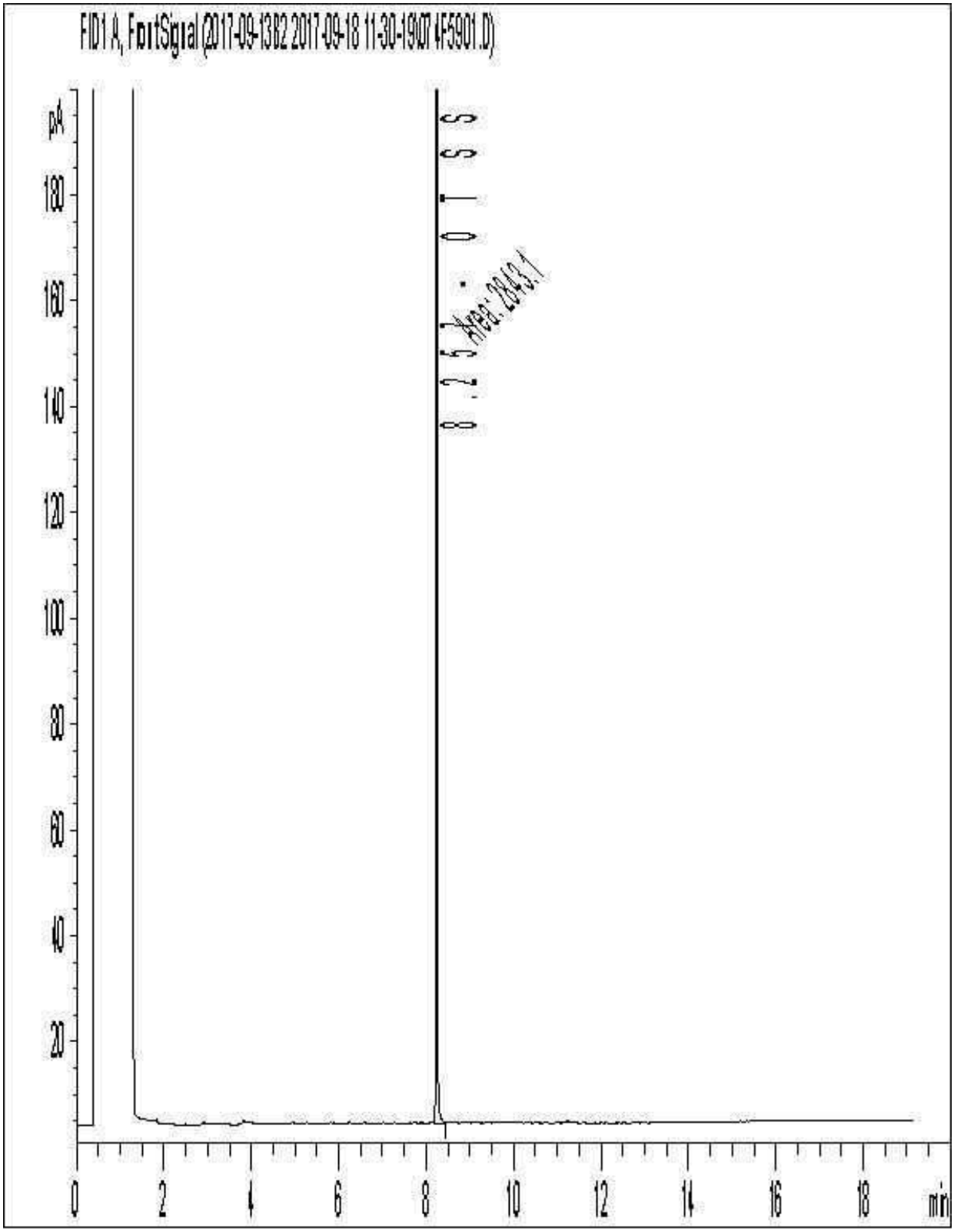


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B7K2764
Report Date: 2017/09/22
Maxxam Sample: FDH382

exp Services Inc
Client Project #: OTT-00224605
Client ID: MW305

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

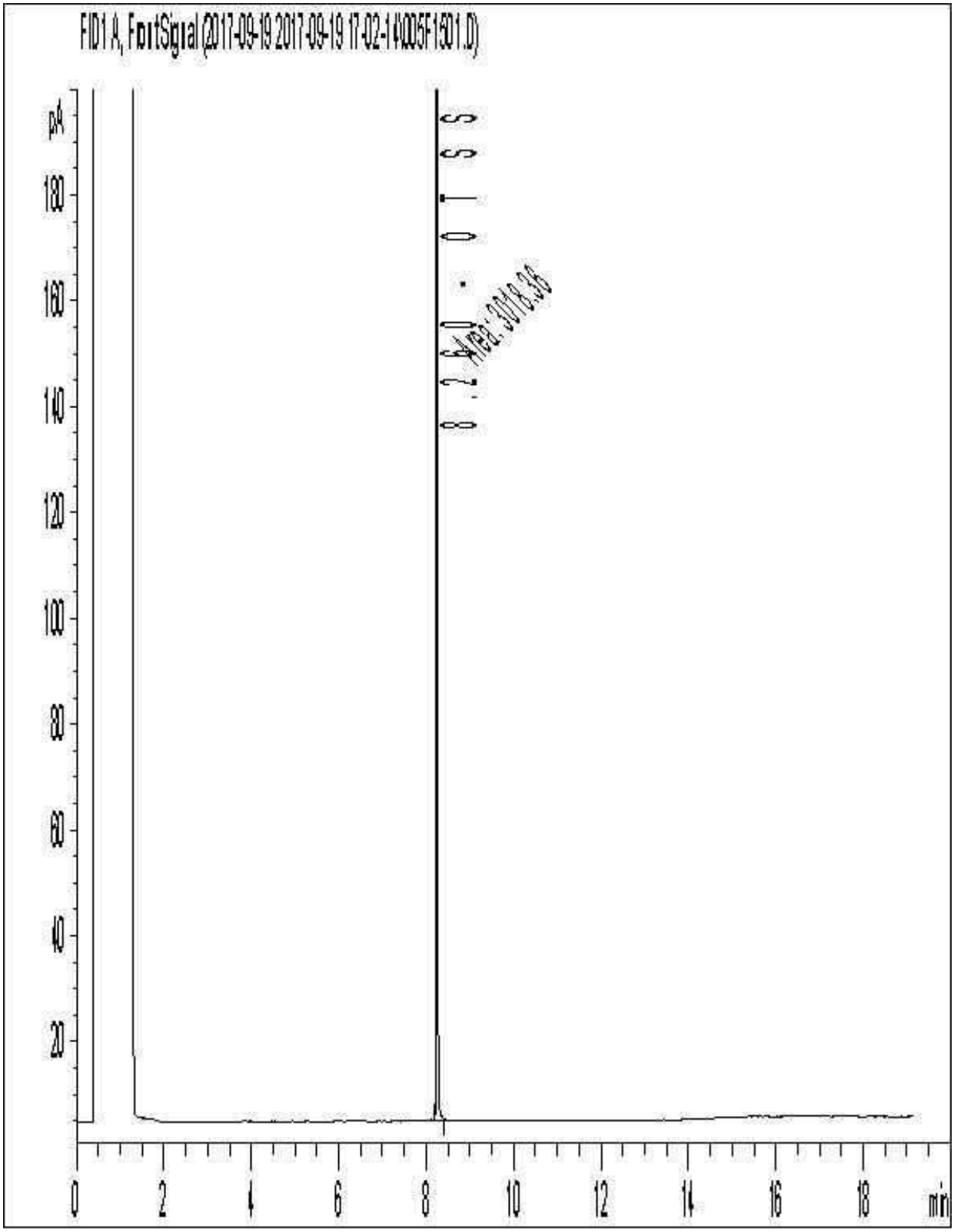


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B7K2764
Report Date: 2017/09/22
Maxxam Sample: FDH383

exp Services Inc
Client Project #: OTT-00224605
Client ID: TRIP BLANK

Petroleum Hydrocarbons F2-F4 in Water Chromatogram



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

Maxxam
A Bureau Veritas Group Company

Your Project #: OTT-00224605
Your C.O.C. #: 628860-04-01

Attention:Jeffery O'Banion

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

Report Date: 2017/09/25
Report #: R4733241
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7K3897
Received: 2017/09/18, 15:50

Sample Matrix: Water
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
1,3-Dichloropropene Sum (1)	2	N/A	2017/09/22		EPA 8260C m
Volatile Organic Compounds in Water (1)	2	N/A	2017/09/22	CAM SOP-00226	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.

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.

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

Encryption Key

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

==========

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

Maxxam Job #: B7K3897
Report Date: 2017/09/25

exp Services Inc
Client Project #: OTT-00224605

O.REG 153 VOCS (WATER)

Maxxam ID		FDO218	FDO219		
Sampling Date		2017/09/18 14:30	2017/09/18 15:15		
COC Number		628860-04-01	628860-04-01		
	UNITS	**MW306**	**MW15-11**	**RDL**	**QC Batch**
Calculated Parameters					
1,3-Dichloropropene (cis+trans)	ug/L	<0.71	<0.71	0.71	5170654
Volatile Organics					
Acetone (2-Propanone)	ug/L	<25	<25	25	5169438
Benzene	ug/L	<0.25	<0.25	0.25	5169438
Bromodichloromethane	ug/L	<0.25	<0.25	0.25	5169438
Bromoform	ug/L	<0.50	<0.50	0.50	5169438
Bromomethane	ug/L	<1.3	<1.3	1.3	5169438
Carbon Tetrachloride	ug/L	<0.25	<0.25	0.25	5169438
Chlorobenzene	ug/L	<0.25	<0.25	0.25	5169438
Chloroform	ug/L	0.56	0.56	0.25	5169438
Dibromochloromethane	ug/L	<0.50	<0.50	0.50	5169438
1,2-Dichlorobenzene	ug/L	<0.50	<0.50	0.50	5169438
1,3-Dichlorobenzene	ug/L	<0.50	<0.50	0.50	5169438
1,4-Dichlorobenzene	ug/L	<0.50	<0.50	0.50	5169438
Dichlorodifluoromethane (FREON 12)	ug/L	<1.3	<1.3	1.3	5169438
1,1-Dichloroethane	ug/L	<0.25	<0.25	0.25	5169438
1,2-Dichloroethane	ug/L	<0.50	<0.50	0.50	5169438
1,1-Dichloroethylene	ug/L	<0.25	<0.25	0.25	5169438
cis-1,2-Dichloroethylene	ug/L	1.3	1.5	0.25	5169438
trans-1,2-Dichloroethylene	ug/L	<0.25	<0.25	0.25	5169438
1,2-Dichloropropane	ug/L	<0.25	<0.25	0.25	5169438
cis-1,3-Dichloropropene	ug/L	<0.50	<0.50	0.50	5169438
trans-1,3-Dichloropropene	ug/L	<0.50	<0.50	0.50	5169438
Ethylbenzene	ug/L	<0.25	<0.25	0.25	5169438
Ethylene Dibromide	ug/L	<0.50	<0.50	0.50	5169438
Hexane	ug/L	<1.3	<1.3	1.3	5169438
Methylene Chloride(Dichloromethane)	ug/L	<1.3	<1.3	1.3	5169438
Methyl Ethyl Ketone (2-Butanone)	ug/L	<13	<13	13	5169438
Methyl Isobutyl Ketone	ug/L	<13	<13	13	5169438
Methyl t-butyl ether (MTBE)	ug/L	<0.50	<0.50	0.50	5169438
Styrene	ug/L	<0.50	<0.50	0.50	5169438
1,1,1,2-Tetrachloroethane	ug/L	<0.50	<0.50	0.50	5169438
1,1,2,2-Tetrachloroethane	ug/L	<0.50	<0.50	0.50	5169438
Tetrachloroethylene	ug/L	62	63	0.25	5169438
Toluene	ug/L	<0.50	<0.50	0.50	5169438

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B7K3897
Report Date: 2017/09/25

exp Services Inc
Client Project #: OTT-00224605

O.REG 153 VOCS (WATER)

Maxxam ID		FDO218	FDO219		
Sampling Date		2017/09/18 14:30	2017/09/18 15:15		
COC Number		628860-04-01	628860-04-01		
	UNITS	**MW306**	**MW15-11**	**RDL**	**QC Batch**
1,1,1-Trichloroethane	ug/L	<0.25	<0.25	0.25	5169438
1,1,2-Trichloroethane	ug/L	<0.50	<0.50	0.50	5169438
Trichloroethylene	ug/L	1.8	1.8	0.25	5169438
Trichlorofluoromethane (FREON 11)	ug/L	<0.50	<0.50	0.50	5169438
Vinyl Chloride	ug/L	<0.50	<0.50	0.50	5169438
p+m-Xylene	ug/L	<0.25	<0.25	0.25	5169438
o-Xylene	ug/L	<0.25	<0.25	0.25	5169438
Total Xylenes	ug/L	<0.25	<0.25	0.25	5169438
Surrogate Recovery (%)					
4-Bromofluorobenzene	%	98	98		5169438
D4-1,2-Dichloroethane	%	107	106		5169438
D8-Toluene	%	96	96		5169438

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B7K3897
Report Date: 2017/09/25

exp Services Inc
Client Project #: OTT-00224605

TEST SUMMARY

Maxxam ID: FDO218
Sample ID: MW306
Matrix: Water

Collected: 2017/09/18
Shipped:
Received: 2017/09/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	5170654	N/A	2017/09/22	Automated Statchk
Volatile Organic Compounds in Water	P&T/MS	5169438	N/A	2017/09/22	Dina Wang

Maxxam ID: FDO219
Sample ID: MW15-11
Matrix: Water

Collected: 2017/09/18
Shipped:
Received: 2017/09/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	5170654	N/A	2017/09/22	Automated Statchk
Volatile Organic Compounds in Water	P&T/MS	5169438	N/A	2017/09/22	Dina Wang

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

GENERAL COMMENTS

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

Package 1	18.7°C

All 40mL vials for VOC analysis contained visible sediment.

VOC Analysis: Due to high concentrations of target analytes, sample required dilution. Detection limits were adjusted accordingly.

Results relate only to the items tested.

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Maxxam Job #: B7K3897
Report Date: 2017/09/25

QUALITY ASSURANCE REPORT

exp Services Inc
Client Project #: OTT-00224605

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5169438	4-Bromofluorobenzene	2017/09/22	102	70 - 130	102	70 - 130	99	%		
5169438	D4-1,2-Dichloroethane	2017/09/22	102	70 - 130	103	70 - 130	102	%		
5169438	D8-Toluene	2017/09/22	101	70 - 130	101	70 - 130	99	%		
5169438	1,1,1,2-Tetrachloroethane	2017/09/22	110	70 - 130	113	70 - 130	<0.20	ug/L	NC	30
5169438	1,1,1-Trichloroethane	2017/09/22	97	70 - 130	100	70 - 130	<0.10	ug/L	NC	30
5169438	1,1,2,2-Tetrachloroethane	2017/09/22	107	70 - 130	111	70 - 130	<0.20	ug/L	NC	30
5169438	1,1,2-Trichloroethane	2017/09/22	103	70 - 130	106	70 - 130	<0.20	ug/L	NC	30
5169438	1,1-Dichloroethane	2017/09/22	101	70 - 130	103	70 - 130	<0.10	ug/L	NC	30
5169438	1,1-Dichloroethylene	2017/09/22	103	70 - 130	107	70 - 130	<0.10	ug/L	NC	30
5169438	1,2-Dichlorobenzene	2017/09/22	98	70 - 130	101	70 - 130	<0.20	ug/L	NC	30
5169438	1,2-Dichloroethane	2017/09/22	99	70 - 130	103	70 - 130	<0.20	ug/L	NC	30
5169438	1,2-Dichloropropane	2017/09/22	95	70 - 130	98	70 - 130	<0.10	ug/L	NC	30
5169438	1,3-Dichlorobenzene	2017/09/22	99	70 - 130	102	70 - 130	<0.20	ug/L	NC	30
5169438	1,4-Dichlorobenzene	2017/09/22	98	70 - 130	102	70 - 130	<0.20	ug/L	NC	30
5169438	Acetone (2-Propanone)	2017/09/22	96	60 - 140	98	60 - 140	<10	ug/L	NC	30
5169438	Benzene	2017/09/22	99	70 - 130	101	70 - 130	<0.10	ug/L	27	30
5169438	Bromodichloromethane	2017/09/22	100	70 - 130	104	70 - 130	<0.10	ug/L	NC	30
5169438	Bromoform	2017/09/22	113	70 - 130	118	70 - 130	<0.20	ug/L	NC	30
5169438	Bromomethane	2017/09/22	94	60 - 140	96	60 - 140	<0.50	ug/L	NC	30
5169438	Carbon Tetrachloride	2017/09/22	100	70 - 130	104	70 - 130	<0.10	ug/L	NC	30
5169438	Chlorobenzene	2017/09/22	99	70 - 130	103	70 - 130	<0.10	ug/L	NC	30
5169438	Chloroform	2017/09/22	98	70 - 130	101	70 - 130	<0.10	ug/L	NC	30
5169438	cis-1,2-Dichloroethylene	2017/09/22	97	70 - 130	100	70 - 130	<0.10	ug/L	NC	30
5169438	cis-1,3-Dichloropropene	2017/09/22	91	70 - 130	94	70 - 130	<0.20	ug/L	NC	30
5169438	Dibromochloromethane	2017/09/22	110	70 - 130	113	70 - 130	<0.20	ug/L	NC	30
5169438	Dichlorodifluoromethane (FREON 12)	2017/09/22	94	60 - 140	104	60 - 140	<0.50	ug/L	NC	30
5169438	Ethylbenzene	2017/09/22	98	70 - 130	101	70 - 130	<0.10	ug/L	NC	30
5169438	Ethylene Dibromide	2017/09/22	105	70 - 130	109	70 - 130	<0.20	ug/L	NC	30
5169438	Hexane	2017/09/22	86	70 - 130	99	70 - 130	<0.50	ug/L	NC	30
5169438	Methyl Ethyl Ketone (2-Butanone)	2017/09/22	95	60 - 140	98	60 - 140	<5.0	ug/L	NC	30
5169438	Methyl Isobutyl Ketone	2017/09/22	96	70 - 130	101	70 - 130	<5.0	ug/L	NC	30
5169438	Methyl t-butyl ether (MTBE)	2017/09/22	91	70 - 130	94	70 - 130	<0.20	ug/L	NC	30

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5169438	Methylene Chloride(Dichloromethane)	2017/09/22	89	70 - 130	92	70 - 130	<0.50	ug/L	NC	30
5169438	o-Xylene	2017/09/22	99	70 - 130	102	70 - 130	<0.10	ug/L	NC	30
5169438	p+m-Xylene	2017/09/22	101	70 - 130	105	70 - 130	<0.10	ug/L	29	30
5169438	Styrene	2017/09/22	102	70 - 130	106	70 - 130	<0.20	ug/L	NC	30
5169438	Tetrachloroethylene	2017/09/22	95	70 - 130	99	70 - 130	<0.10	ug/L	NC	30
5169438	Toluene	2017/09/22	97	70 - 130	100	70 - 130	<0.20	ug/L	5.3	30
5169438	Total Xylenes	2017/09/22					<0.10	ug/L	29	30
5169438	trans-1,2-Dichloroethylene	2017/09/22	97	70 - 130	101	70 - 130	<0.10	ug/L	NC	30
5169438	trans-1,3-Dichloropropene	2017/09/22	96	70 - 130	101	70 - 130	<0.20	ug/L	NC	30
5169438	Trichloroethylene	2017/09/22	96	70 - 130	99	70 - 130	<0.10	ug/L	NC	30
5169438	Trichlorofluoromethane (FREON 11)	2017/09/22	102	70 - 130	107	70 - 130	<0.20	ug/L	NC	30
5169438	Vinyl Chloride	2017/09/22	100	70 - 130	103	70 - 130	<0.20	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).

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Maxxam Job #: B7K3897
Report Date: 2017/09/25

exp Services Inc
Client Project #: OTT-00224605

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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Maxxam — A Bureau Veritas Group Company

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

CHAIN OF CUSTODY RECORD

Page of

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#17497 exp Services Inc	Company Name:		Quotation #:	B46066	Maxxam Job #:	Bottle Order #:
Attention:	Accounts Payable	Attention:	Jeffery O'Banion	P.O. #:			628860
Address:	100-2650 Queensview Drive	Address:		Project:	OTT-00224605	COC #:	Project Manager:
	Ottawa ON K2B 8H6			Project Name:		C#628860-04-01	Alison Cameron
Tel:	(613) 688-1899 x Fax: (613) 225-7337 x	Tel:	Fax:	Site #:			
Email:	accounting.ottawa@exp.com; Karen.Burke@exp.com;	Email:	Jeffery.O'Banion@exp.com	Sampled By:			

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

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

Other Regulations: CCME; Reg 558; MISA; PWQO; Other; Sanitary Sewer Bylaw; Storm Sewer Bylaw; Municipality

Special Instructions

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

ANALYSIS REQUESTED (PLEASE BE SPECIFIC): Field Filtered (please circle): Metals / Hg / Cr VI; O.Reg 153 Petroleum Hydrocarbons (Water); O.Reg 153 VOCs (Water); O.Reg 153 VOCs by HS & F1-F4 (Water); Chloride by Automated Colourimetry

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

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

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

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered	Metals / Hg / Cr VI	O.Reg 153 PHC (Water)	O.Reg 153 VOCs (Water)	O.Reg 153 VOCs by HS & F1-F4 (Water)	Chloride	# of Bottles	Comments
1		MW306	09.18.2017	2:30pm	GW				✓				18-Sep-17 15:50 Alison Cameron B7K3897 SEL ENV-1138
2		MW15-11	09.18.2017	3:15pm	|				✓				
3													
4													
5													RECEIVED IN OTTAWA
6													
7													
8													On ice
9													
10													

RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
[signature]	17/09/18	3:50	Mariana Vascan / Vascan	2017/09/18	15:50	
			Tanvir Tanvir	2017/09/18	22:35	

Laboratory Use Only: Time Sensitive; Temperature (°C) on Receipt: 20, 18, 18; Custody Seal Present: Yes; Intact: Yes

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

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

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

White: Maxxam Yellow: Client

15/12/15

Maxxam Analytics International Corporation o/a Maxxam Analytics

Your Project #: OTT-00224605-C
Site Location: MERIVALE RD
Your C.O.C. #: 102616

Attention: Mark Devlin

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

Report Date: 2018/01/30
Report #: R4958809
Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B819557
Received: 2018/01/26, 13:10

Sample Matrix: Water
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
1,3-Dichloropropene Sum (1)	2	N/A	2018/01/29		EPA 8260C m
Volatile Organic Compounds in Water (1)	2	N/A	2018/01/29	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.

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.

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

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Fatemeh Habibagahi, Project Manager Assistant
Email: FHabibagahi@maxxam.ca
Phone# (613) 274-0573
==========
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Maxxam Job #: B819557
Report Date: 2018/01/30

exp Services Inc
Client Project #: OTT-00224605-C
Site Location: MERIVALE RD
Sampler Initials: MAD

O.REG 153 VOCS BY HS (WATER)

Maxxam ID			FZG283	FZG284		
Sampling Date			2018/01/26 12:30	2018/01/26 13:00		
COC Number			102616	102616		
	UNITS	**Criteria**	**MW15-5**	**MW18-1**	**RDL**	**QC Batch**
Calculated Parameters						
1,3-Dichloropropene (cis+trans)	ug/L	**0.5**	<0.50	<0.50	0.50	5371175
Volatile Organics						
Acetone (2-Propanone)	ug/L	**100000**	<250	<250	250	5372389
Benzene	ug/L	**0.5**	<0.20	<0.20	0.20	5372389
Bromodichloromethane	ug/L	**67000**	<13	<13	13	5372389
Bromoform	ug/L	**5**	<1.0	<1.0	1.0	5372389
Bromomethane	ug/L	**0.89**	<0.50	<0.50	0.50	5372389
Carbon Tetrachloride	ug/L	**0.2**	<0.20	<0.20	0.20	5372389
Chlorobenzene	ug/L	**140**	<5.0	<5.0	5.0	5372389
Chloroform	ug/L	**2**	0.41	0.39	0.20	5372389
Dibromochloromethane	ug/L	**65000**	<13	<13	13	5372389
1,2-Dichlorobenzene	ug/L	**150**	<0.50	<0.50	0.50	5372389
1,3-Dichlorobenzene	ug/L	**7600**	<13	<13	13	5372389
1,4-Dichlorobenzene	ug/L	**0.5**	<0.50	<0.50	0.50	5372389
Dichlorodifluoromethane (FREON 12)	ug/L	**3500**	<25	<25	25	5372389
1,1-Dichloroethane	ug/L	**11**	<5.0	<5.0	5.0	5372389
1,2-Dichloroethane	ug/L	**0.5**	<0.50	<0.50	0.50	5372389
1,1-Dichloroethylene	ug/L	**0.5**	<0.20	<0.20	0.20	5372389
cis-1,2-Dichloroethylene	ug/L	**1.6**	**5.9**	**6.0**	0.50	5372389
trans-1,2-Dichloroethylene	ug/L	**1.6**	<0.50	<0.50	0.50	5372389
1,2-Dichloropropane	ug/L	**0.58**	<0.20	<0.20	0.20	5372389
cis-1,3-Dichloropropene	ug/L	**0.5**	<0.30	<0.30	0.30	5372389
trans-1,3-Dichloropropene	ug/L	**0.5**	<0.40	<0.40	0.40	5372389
Ethylbenzene	ug/L	**54**	<0.20	<0.20	0.20	5372389
Ethylene Dibromide	ug/L	**0.2**	<0.20	<0.20	0.20	5372389
Hexane	ug/L	**5**	<1.0	<1.0	1.0	5372389
Methylene Chloride(Dichloromethane)	ug/L	**26**	<2.0	<2.0	2.0	5372389
Methyl Ethyl Ketone (2-Butanone)	ug/L	**21000**	<250	<250	250	5372389
Methyl Isobutyl Ketone	ug/L	**5200**	<130	<130	130	5372389
Methyl t-butyl ether (MTBE)	ug/L	**15**	<13	<13	13	5372389

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 7: Generic Site Condition Standards for Shallow Soils in a Non-Potable Ground Water Condition

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Maxxam Job #: B819557
Report Date: 2018/01/30

exp Services Inc
Client Project #: OTT-00224605-C
Site Location: MERIVALE RD
Sampler Initials: MAD

O.REG 153 VOCS BY HS (WATER)

Maxxam ID			FZG283	FZG284		
Sampling Date			2018/01/26 12:30	2018/01/26 13:00		
COC Number			102616	102616		
	UNITS	**Criteria**	**MW15-5**	**MW18-1**	**RDL**	**QC Batch**
Styrene	ug/L	**43**	<0.50	<0.50	0.50	5372389
1,1,1,2-Tetrachloroethane	ug/L	**1.1**	<0.50	<0.50	0.50	5372389
1,1,2,2-Tetrachloroethane	ug/L	**0.5**	<0.50	<0.50	0.50	5372389
Tetrachloroethylene	ug/L	**0.5**	**710**	**740**	5.0	5372389
Toluene	ug/L	**320**	<5.0	<5.0	5.0	5372389
1,1,1-Trichloroethane	ug/L	**23**	<5.0	<5.0	5.0	5372389
1,1,2-Trichloroethane	ug/L	**0.5**	<0.50	<0.50	0.50	5372389
Trichloroethylene	ug/L	**0.5**	**90**	**91**	5.0	5372389
Trichlorofluoromethane (FREON 11)	ug/L	**2000**	<13	<13	13	5372389
Vinyl Chloride	ug/L	**0.5**	<0.20	<0.20	0.20	5372389
p+m-Xylene	ug/L	**-**	<5.0	<5.0	5.0	5372389
o-Xylene	ug/L	**-**	<5.0	<5.0	5.0	5372389
Total Xylenes	ug/L	**72**	<5.0	<5.0	5.0	5372389
Surrogate Recovery (%)						
4-Bromofluorobenzene	%	**-**	94	93		5372389
D4-1,2-Dichloroethane	%	**-**	101	97		5372389
D8-Toluene	%	**-**	97	99		5372389

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 7: Generic Site Condition Standards for Shallow Soils in a Non-Potable Ground Water Condition

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

Maxxam Job #: B819557
Report Date: 2018/01/30

exp Services Inc
Client Project #: OTT-00224605-C
Site Location: MERIVALE RD
Sampler Initials: MAD

TEST SUMMARY

Maxxam ID: FZG283
Sample ID: MW15-5
Matrix: Water

Collected: 2018/01/26
Shipped:
Received: 2018/01/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	5371175	N/A	2018/01/29	Automated Statchk
Volatile Organic Compounds in Water	GC/MS	5372389	N/A	2018/01/29	Manpreet Sarao

Maxxam ID: FZG284
Sample ID: MW18-1
Matrix: Water

Collected: 2018/01/26
Shipped:
Received: 2018/01/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	5371175	N/A	2018/01/29	Automated Statchk
Volatile Organic Compounds in Water	GC/MS	5372389	N/A	2018/01/29	Manpreet Sarao

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Maxxam Job #: B819557
Report Date: 2018/01/30

exp Services Inc
Client Project #: OTT-00224605-C
Site Location: MERIVALE RD
Sampler Initials: MAD

GENERAL COMMENTS

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

Package 1	4.7°C

Revised Report (2018/01/30): Requested regulatory criteria have been updated as per client request.

Sample FZG283 [MW15-5] : VOC Analysis: Due to high concentrations of target analytes, sample required dilution. Detection limits were adjusted accordingly. In order to meet required regulatory criteria or to achieve lower reporting limits, results for selected compounds (obtained by a separate analysis using an appropriate low dilution) are included in the report.

Sample FZG284 [MW18-1] : VOC Analysis: Due to high concentrations of target analytes, sample required dilution. Detection limits were adjusted accordingly. In order to meet required regulatory criteria or to achieve lower reporting limits, results for selected compounds (obtained by a separate analysis using an appropriate low dilution) are included in the report.

Results relate only to the items tested.

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Maxxam Job #: B819557
Report Date: 2018/01/30

QUALITY ASSURANCE REPORT

exp Services Inc
Client Project #: OTT-00224605-C
Site Location: MERIVALE RD
Sampler Initials: MAD

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5372389	4-Bromofluorobenzene	2018/01/29	98	70 - 130	97	70 - 130	97	%		
5372389	D4-1,2-Dichloroethane	2018/01/29	101	70 - 130	99	70 - 130	99	%		
5372389	D8-Toluene	2018/01/29	100	70 - 130	102	70 - 130	98	%		
5372389	1,1,1,2-Tetrachloroethane	2018/01/29	91	70 - 130	96	70 - 130	<0.50	ug/L	NC	30
5372389	1,1,1-Trichloroethane	2018/01/29	87	70 - 130	93	70 - 130	<0.20	ug/L	NC	30
5372389	1,1,2,2-Tetrachloroethane	2018/01/29	94	70 - 130	98	70 - 130	<0.50	ug/L	NC	30
5372389	1,1,2-Trichloroethane	2018/01/29	93	70 - 130	96	70 - 130	<0.50	ug/L	NC	30
5372389	1,1-Dichloroethane	2018/01/29	90	70 - 130	95	70 - 130	<0.20	ug/L	NC	30
5372389	1,1-Dichloroethylene	2018/01/29	90	70 - 130	96	70 - 130	<0.20	ug/L	NC	30
5372389	1,2-Dichlorobenzene	2018/01/29	88	70 - 130	93	70 - 130	<0.50	ug/L	NC	30
5372389	1,2-Dichloroethane	2018/01/29	86	70 - 130	89	70 - 130	<0.50	ug/L	NC	30
5372389	1,2-Dichloropropane	2018/01/29	90	70 - 130	94	70 - 130	<0.20	ug/L	NC	30
5372389	1,3-Dichlorobenzene	2018/01/29	90	70 - 130	95	70 - 130	<0.50	ug/L	NC	30
5372389	1,4-Dichlorobenzene	2018/01/29	90	70 - 130	95	70 - 130	<0.50	ug/L	NC	30
5372389	Acetone (2-Propanone)	2018/01/29	72	60 - 140	90	60 - 140	<10	ug/L	NC	30
5372389	Benzene	2018/01/29	87	70 - 130	92	70 - 130	<0.20	ug/L	NC	30
5372389	Bromodichloromethane	2018/01/29	91	70 - 130	95	70 - 130	<0.50	ug/L	3.9	30
5372389	Bromoform	2018/01/29	94	70 - 130	98	70 - 130	<1.0	ug/L	NC	30
5372389	Bromomethane	2018/01/29	92	60 - 140	98	60 - 140	<0.50	ug/L	NC	30
5372389	Carbon Tetrachloride	2018/01/29	88	70 - 130	95	70 - 130	<0.20	ug/L	NC	30
5372389	Chlorobenzene	2018/01/29	90	70 - 130	95	70 - 130	<0.20	ug/L	NC	30
5372389	Chloroform	2018/01/29	91	70 - 130	95	70 - 130	<0.20	ug/L	1.3	30
5372389	cis-1,2-Dichloroethylene	2018/01/29	91	70 - 130	95	70 - 130	<0.50	ug/L	NC	30
5372389	cis-1,3-Dichloropropene	2018/01/29	92	70 - 130	94	70 - 130	<0.30	ug/L	NC	30
5372389	Dibromochloromethane	2018/01/29	94	70 - 130	98	70 - 130	<0.50	ug/L	NC	30
5372389	Dichlorodifluoromethane (FREON 12)	2018/01/29	91	60 - 140	108	60 - 140	<1.0	ug/L	NC	30
5372389	Ethylbenzene	2018/01/29	88	70 - 130	95	70 - 130	<0.20	ug/L	NC	30
5372389	Ethylene Dibromide	2018/01/29	91	70 - 130	94	70 - 130	<0.20	ug/L	NC	30
5372389	Hexane	2018/01/29	87	70 - 130	94	70 - 130	<1.0	ug/L	NC	30
5372389	Methyl Ethyl Ketone (2-Butanone)	2018/01/29	83	60 - 140	98	60 - 140	<10	ug/L	NC	30
5372389	Methyl Isobutyl Ketone	2018/01/29	88	70 - 130	94	70 - 130	<5.0	ug/L	NC	30

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Maxxam Job #: B819557
Report Date: 2018/01/30

QUALITY ASSURANCE REPORT(CONT'D)

exp Services Inc
Client Project #: OTT-00224605-C
Site Location: MERIVALE RD
Sampler Initials: MAD

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5372389	Methyl t-butyl ether (MTBE)	2018/01/29	86	70 - 130	90	70 - 130	<0.50	ug/L	NC	30
5372389	Methylene Chloride(Dichloromethane)	2018/01/29	93	70 - 130	96	70 - 130	<2.0	ug/L	NC	30
5372389	o-Xylene	2018/01/29	85	70 - 130	92	70 - 130	<0.20	ug/L	NC	30
5372389	p+m-Xylene	2018/01/29	87	70 - 130	94	70 - 130	<0.20	ug/L	NC	30
5372389	Styrene	2018/01/29	87	70 - 130	94	70 - 130	<0.50	ug/L	NC	30
5372389	Tetrachloroethylene	2018/01/29	88	70 - 130	94	70 - 130	<0.20	ug/L	1.1	30
5372389	Toluene	2018/01/29	86	70 - 130	92	70 - 130	<0.20	ug/L	NC	30
5372389	Total Xylenes	2018/01/29					<0.20	ug/L	NC	30
5372389	trans-1,2-Dichloroethylene	2018/01/29	90	70 - 130	95	70 - 130	<0.50	ug/L	NC	30
5372389	trans-1,3-Dichloropropene	2018/01/29	95	70 - 130	96	70 - 130	<0.40	ug/L	NC	30
5372389	Trichloroethylene	2018/01/29	86	70 - 130	91	70 - 130	<0.20	ug/L	0.28	30
5372389	Trichlorofluoromethane (FREON 11)	2018/01/29	85	70 - 130	93	70 - 130	<0.50	ug/L	NC	30
5372389	Vinyl Chloride	2018/01/29	90	70 - 130	100	70 - 130	<0.20	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).

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Maxxam Job #: B819557
Report Date: 2018/01/30

exp Services Inc
Client Project #: OTT-00224605-C
Site Location: MERIVALE RD
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).

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.

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

Maxxam
A Bureau Veritas Group Company

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

CHAIN OF CUSTODY RECORD

102616 Page 1 of 1

Invoice Information		Report Information (if differs from invoice)		Project Information (where applicable)		Turnaround Time (TAT) Required
Company Name:	EXP Services (Ottawa)	Company Name:		Quotation #:		☐ Regular TAT (5-7 days) Most analyses
Contact Name:	Mark Devlin/Mark McCalla	Contact Name:	Mark Devlin/Mark McCalla	P.O. #/ AFE#:		PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS
Address:	100-2650 Queensview Dr. Ottawa	Address:		Project #:	OTT-00224605-C	Rush TAT (Surcharges will be applied) ☒ 1 Day ☐ 2 Days ☐ 3-4 Days
				Site Location:	Merivale Rd.	
Phone:	(613) 688 1899 Fax:	Phone:	Fax:	Site #:		Date Required:
Email:		Email:		Sampled By:	MAD	Rush Confirmation #:

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

Regulation 153: ☐ Table 1 ☐ Res/Park ☐ Med/ Fine ☒ Table 2 ☒ Ind/Comm ☒ Coarse ☐ Table 3 ☐ Agri/ Other ☐ Table ____

FOR RSC (PLEASE CIRCLE) (Y) / N

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

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

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

Analysis Requested

	SAMPLE IDENTIFICATION	DATE SAMPLED (YYYY/MM/DD)	TIME SAMPLED (HH:MM)	MATRIX	# OF CONTAINERS SUBMITTED	FIELD FILTERED (CIRCLE) Metals / Hg / CrVI	BTEX/ PHC F1	PHCs F2 - F4	VOCs	REG 153 METALS & INORGANICS	REG 153 ICPMS METALS	REG 153 METALS (Hg, Cr VI, ICPMS Metals, HWS - B)							HOLD- DO NOT ANALYZE
1	MW15-5	2018/01/26	12:30pm	GW	3				X										
2	MW18-1	2018/01/26	1:00pm	GW	3				X										
3																			
4																			
5																			
6																			
7																			
8																			
9																			
10																			

26-Jan-18 13:10
Fatemeh Habibagahi
B819557
KIV OTT-001

LABORATORY USE ONLY

CUSTODY SEAL (Y) / N		COOLER TEMPERATURES
Present	Intact	
Y	Y	4, 5, 5

COOLING MEDIA PRESENT: Y / N

COMMENTS

Please ~~sample~~ run sample by headspace (refer to email) voc + (pluss) - W required

On ice

RELINQUISHED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)
[signature] Mark Devlin	2018/01/26	1:10pm	MP [signature] Mariana Soares	2018/01/26	13:10

RECEIVED IN OTTAWA
MAXXAM JOB #

Unless otherwise agreed to in writing, work submitted on this Chain of Custody is subject to Maxxam's standard Terms and Conditions. Signing of this Chain of Custody document is acknowledgment and acceptance of our terms which are available for viewing at www.maxxam.ca/terms. Sample container, preservation, hold time and packages information can be viewed at http://maxxam.ca/wp-content/uploads/Ontario-COC.pdf.

COC-1004 (03/17)

White: Maxxam - Yellow: Client

Maxxam
A Bureau Veritas Group Company

Your Project #: OTT-00224605
Site Location: MERIVALE
Your C.O.C. #: 633993-03-01

Attention: Jeffery O'Banion

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

Report Date: 2018/06/04
Report #: R5204666
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B8D1518
Received: 2018/06/01, 11:45

Sample Matrix: Water
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Chloride by Automated Colourimetry (1)	2	N/A	2018/06/04	CAM SOP-00463	EPA 325.2 m

Remarks:

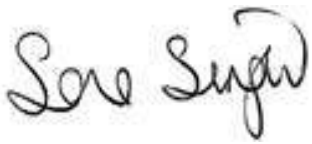
Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

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

Encryption Key



Sara Singh
Senior Project Manager
05 Jun 2018 13:31:58

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.

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

Maxxam Job #: B8D1518
Report Date: 2018/06/04

exp Services Inc
Client Project #: OTT-00224605
Site Location: MERIVALE
Sampler Initials: JO

RESULTS OF ANALYSES OF WATER

Maxxam ID		GVQ763	GVQ764		
Sampling Date		2018/06/01 12:00	2018/06/01 12:30		
COC Number		633993-03-01	633993-03-01		
	UNITS	**MW 208**	**MW 222**	**RDL**	**QC Batch**
Inorganics					
Dissolved Chloride (Cl)	mg/L	4900	4500	40	5561638

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B8D1518
Report Date: 2018/06/04

exp Services Inc
Client Project #: OTT-00224605
Site Location: MERIVALE
Sampler Initials: JO

TEST SUMMARY

Maxxam ID: GVQ763
Sample ID: MW 208
Matrix: Water

Collected: 2018/06/01
Shipped:
Received: 2018/06/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chloride by Automated Colourimetry	KONE	5561638	N/A	2018/06/04	Deonarine Ramnarine

Maxxam ID: GVQ764
Sample ID: MW 222
Matrix: Water

Collected: 2018/06/01
Shipped:
Received: 2018/06/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chloride by Automated Colourimetry	KONE	5561638	N/A	2018/06/04	Deonarine Ramnarine

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

Maxxam Job #: B8D1518
Report Date: 2018/06/04

exp Services Inc
Client Project #: OTT-00224605
Site Location: MERIVALE
Sampler Initials: JO

GENERAL COMMENTS

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

Package 1	18.7°C

Results relate only to the items tested.

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

Maxxam Job #: B8D1518
Report Date: 2018/06/04

QUALITY ASSURANCE REPORT

exp Services Inc
Client Project #: OTT-00224605
Site Location: MERIVALE
Sampler Initials: JO

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5561638	Dissolved Chloride (Cl)	2018/06/04	86	80 - 120	104	80 - 120	<1.0	mg/L	0.24	20

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.

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Maxxam Job #: B8D1518
Report Date: 2018/06/04

exp Services Inc
Client Project #: OTT-00224605
Site Location: MERIVALE
Sampler Initials: JO

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

CHAIN OF CUSTODY RECORD

Page of

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#17497 exp Services Inc	Company Name:	SAME	Quotation #:	B46066 Stream 2	Maxxam Job #:	Bottle Order #:
Attention:	Accounts Payable	Attention:		P.O. #:			633993
Address:	100-2650 Queensview Drive Ottawa ON K2B 8H6	Address:		Project:	OTT-00224605	COC #:	Project Manager:
Tel:	(613) 688-1899 x Fax: (613) 225-7337 x	Tel:		Project Name:	Merivale	C#633993-03-01	Alison Cameron
Email:	accounting.ottawa@exp.com; Karen.Burke@exp.com;	Email:	Jeffrey.o'brien@exp.com	Site #:			
				Sampled By:	Jeff O.		

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

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

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

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

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

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

Job Specific Rush TAT (if applies to entire submission) 48hr.
Date Required: Jun 03.06.2018 Time Required: 5pm
Rush Confirmation Number: ___ *(call lab for #)*

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	Reg 153 Petroleum Hydrocarbons (PHC)	Chloride	# of Bottles	Comments
1		MW208	01.06.2018	2:00pm	GW			✓	1	Rush 48 hr
2		MW 222	01.06.2018	12:30pm	GW			✓		
3										
4										
5										
6										
7										
8										
9										On ice
10										

01-Jun-18 11:45
Alison Cameron
B8D1518
KIV OTT 001

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted	Laboratory Use Only				
Jeff O.	18.06.01	11:45am	Mariana Lasca Rama	2018/06/01	11:45		Time Sensitive	Temperature (°C) on Recei	Custody Seal	Yes	No
								18, 18, 7.0	Present	✓	
									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.CA/WP-CONTENT/UPLOADS/ONTARIO-COC.PDF.

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

White: Maxxa Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam
A Bureau Veritas Group Company

Your Project #: OTT-00224605-CO
Your C.O.C. #: 102989

Attention: Mark McCalla

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

Report Date: 2018/06/07
Report #: R5219991
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B8D5633
Received: 2018/06/06, 10:00

Sample Matrix: Water
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Chloride by Automated Colourimetry (1)	2	N/A	2018/06/07	CAM SOP-00463	EPA 325.2 m

Remarks:

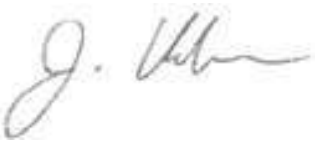
Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

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

Encryption Key



Jonathan Urben
Senior Project Manager
07 Jun 2018 16:27:03

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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Maxxam Job #: B8D5633
Report Date: 2018/06/07

exp Services Inc
Client Project #: OTT-00224605-CO
Sampler Initials: MM

RESULTS OF ANALYSES OF WATER

Maxxam ID		GWN965	GWN966		
Sampling Date		2018/06/06 09:40	2018/06/06 09:40		
COC Number		102989	102989		
	UNITS	**MW 208**	**MW 222**	**RDL**	**QC Batch**
Inorganics					
Dissolved Chloride (Cl)	mg/L	4300	4500	60	5567622

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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

Maxxam Job #: B8D5633
Report Date: 2018/06/07

exp Services Inc
Client Project #: OTT-00224605-CO
Sampler Initials: MM

TEST SUMMARY

Maxxam ID: GWN965
Sample ID: MW 208
Matrix: Water

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

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chloride by Automated Colourimetry	KONE	5567622	N/A	2018/06/07	Alina Dobreanu

Maxxam ID: GWN966
Sample ID: MW 222
Matrix: Water

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

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chloride by Automated Colourimetry	KONE	5567622	N/A	2018/06/07	Alina Dobreanu

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

Maxxam Job #: B8D5633
Report Date: 2018/06/07

exp Services Inc
Client Project #: OTT-00224605-CO
Sampler Initials: MM

GENERAL COMMENTS

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

Package 1	12.0°C

Custody seal was not present on the cooler.

Results relate only to the items tested.

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

Maxxam Job #: B8D5633
Report Date: 2018/06/07

QUALITY ASSURANCE REPORT

exp Services Inc
Client Project #: OTT-00224605-CO
Sampler Initials: MM

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5567622	Dissolved Chloride (Cl)	2018/06/07	97	80 - 120	101	80 - 120	<1.0	mg/L	1.2	20

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.

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

Maxxam Job #: B8D5633
Report Date: 2018/06/07

exp Services Inc
Client Project #: OTT-00224605-CO
Sampler Initials: MM

VALIDATION SIGNATURE PAGE

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

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

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Maxxam
A Bureau Veritas Group Company

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

CHAIN OF CUSTODY RECORD 102989

Page ____ of ____

Invoice Information	Report Information (if differs from invoice)	Project Information (where applicable)	Turnaround Time (TAT) Required
Company Name: EXP Services Inc.	Company Name:	Quotation #:	☐ Regular TAT (5-7 days) Most analyses
Contact Name: MARK MCCALLA	Contact Name:	P.O. #/ AFE#:	PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS
Address: 2650 Queensview Dr. Ottawa	Address:	Project #: OTT-00224605-C0	Rush TAT (Surcharges will be applied)
Phone: 613 688-1899 Fax:	Phone: Fax:	Site Location: STREAM 2	☒ 1 Day ☐ 2 Days ☐ 3-4 Days
Email: mark.mccalla@exp.com	Email:	Site #:	Date Required:
		Sampled By:	Rush Confirmation #:

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

Regulation 153
☐ Table 1 ☒ Res/Park ☐ Med/ Fine
☐ Table 2 ☐ Ind/Comm ☒ Coarse
☐ Table 3 ☐ Agri/ Other
☐ Table ____
FOR RSC (PLEASE CIRCLE) Y / N

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

Include Criteria on Certificate of Analysis: Y / N

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

Analysis Requested

LABORATORY USE ONLY
CUSTODY SEAL Y / N (Present / Intact)
COOLER TEMPERATURES: N / N / 12,12,12
COOLING MEDIA PRESENT: Y / (N)

	SAMPLE IDENTIFICATION	DATE SAMPLED (YYYY/MM/DD)	TIME SAMPLED (HH:MM)	MATRIX	# OF CONTAINERS SUBMITTED	FIELD FILTERED (CIRCLE) Metals / Hg / CrVI	BTEX/ PHC F1	PHCs F2 - F4	VOCs	REG 153 METALS & INORGANICS	REG 153 ICPMS METALS	REG 153 METALS (Hg, Cr VI, ICPMS Metals, HWS - B)	Chloride	HOLD- DO NOT ANALYZE	COMMENTS
1	MW 208	2018/06/06	9:40	W	1	F							X		
2	MW 222	"	"	"	1	F							X		
3															
4															
5															
6															
7															
8															
9															
10															

06-Jun-18 10:00
Jonathan Urben
B8D5633
KIV OTT 001

RECEIVED IN OTTAWA

RELINQUISHED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	MAXXAM JOB #
Mark McCalla	2018/06/06	10:00	Ian Campbell	2018-06-06	10:00	

Unless otherwise agreed to in writing, work submitted on this Chain of Custody is subject to Maxxam's standard Terms and Conditions. Signing of this Chain of Custody document is acknowledgment and acceptance of our terms which are available for viewing at www.maxxam.ca/terms. Sample container, preservation, hold time and packages information can be viewed at http://maxxam.ca/wp-content/uploads/Ontario-COC.pdf.

COC-1004 (03/17)

White: Maxxam ~ Yellow: Client

Maxxam
A Bureau Veritas Group Company

Your Project #: OTT-00224605-C
Site Location: MERIVALE RD
Your C.O.C. #: 102616

Attention: Mark Devlin

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

Report Date: 2018/01/30
Report #: R4958809
Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B819557
Received: 2018/01/26, 13:10

Sample Matrix: Water
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
1,3-Dichloropropene Sum (1)	2	N/A	2018/01/29		EPA 8260C m
Volatile Organic Compounds in Water (1)	2	N/A	2018/01/29	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.

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

Encryption Key

Fatemeh Habibagahi
Project Manager Assistant
30 Jan 2018 13:36:42

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Fatemeh Habibagahi, Project Manager Assistant
Email: FHabibagahi@maxxam.ca
Phone# (613) 274-0573

==========

Maxxam Job #: B819557
Report Date: 2018/01/30

exp Services Inc
Client Project #: OTT-00224605-C
Site Location: MERIVALE RD
Sampler Initials: MAD

O.REG 153 VOCS BY HS (WATER)

Maxxam ID			FZG283	FZG284		
Sampling Date			2018/01/26 12:30	2018/01/26 13:00		
COC Number			102616	102616		
	UNITS	**Criteria**	**MW15-5**	**MW18-1**	**RDL**	**QC Batch**
Calculated Parameters						
1,3-Dichloropropene (cis+trans)	ug/L	**0.5**	<0.50	<0.50	0.50	5371175
Volatile Organics						
Acetone (2-Propanone)	ug/L	**100000**	<250	<250	250	5372389
Benzene	ug/L	**0.5**	<0.20	<0.20	0.20	5372389
Bromodichloromethane	ug/L	**67000**	<13	<13	13	5372389
Bromoform	ug/L	**5**	<1.0	<1.0	1.0	5372389
Bromomethane	ug/L	**0.89**	<0.50	<0.50	0.50	5372389
Carbon Tetrachloride	ug/L	**0.2**	<0.20	<0.20	0.20	5372389
Chlorobenzene	ug/L	**140**	<5.0	<5.0	5.0	5372389
Chloroform	ug/L	**2**	0.41	0.39	0.20	5372389
Dibromochloromethane	ug/L	**65000**	<13	<13	13	5372389
1,2-Dichlorobenzene	ug/L	**150**	<0.50	<0.50	0.50	5372389
1,3-Dichlorobenzene	ug/L	**7600**	<13	<13	13	5372389
1,4-Dichlorobenzene	ug/L	**0.5**	<0.50	<0.50	0.50	5372389
Dichlorodifluoromethane (FREON 12)	ug/L	**3500**	<25	<25	25	5372389
1,1-Dichloroethane	ug/L	**11**	<5.0	<5.0	5.0	5372389
1,2-Dichloroethane	ug/L	**0.5**	<0.50	<0.50	0.50	5372389
1,1-Dichloroethylene	ug/L	**0.5**	<0.20	<0.20	0.20	5372389
cis-1,2-Dichloroethylene	ug/L	**1.6**	**5.9**	**6.0**	0.50	5372389
trans-1,2-Dichloroethylene	ug/L	**1.6**	<0.50	<0.50	0.50	5372389
1,2-Dichloropropane	ug/L	**0.58**	<0.20	<0.20	0.20	5372389
cis-1,3-Dichloropropene	ug/L	**0.5**	<0.30	<0.30	0.30	5372389
trans-1,3-Dichloropropene	ug/L	**0.5**	<0.40	<0.40	0.40	5372389
Ethylbenzene	ug/L	**54**	<0.20	<0.20	0.20	5372389
Ethylene Dibromide	ug/L	**0.2**	<0.20	<0.20	0.20	5372389
Hexane	ug/L	**5**	<1.0	<1.0	1.0	5372389
Methylene Chloride(Dichloromethane)	ug/L	**26**	<2.0	<2.0	2.0	5372389
Methyl Ethyl Ketone (2-Butanone)	ug/L	**21000**	<250	<250	250	5372389
Methyl Isobutyl Ketone	ug/L	**5200**	<130	<130	130	5372389
Methyl t-butyl ether (MTBE)	ug/L	**15**	<13	<13	13	5372389

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 7: Generic Site Condition Standards for Shallow Soils in a Non-Potable Ground Water Condition

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

Maxxam Job #: B819557
Report Date: 2018/01/30

exp Services Inc
Client Project #: OTT-00224605-C
Site Location: MERIVALE RD
Sampler Initials: MAD

O.REG 153 VOCS BY HS (WATER)

Maxxam ID			FZG283	FZG284		
Sampling Date			2018/01/26 12:30	2018/01/26 13:00		
COC Number			102616	102616		
	UNITS	**Criteria**	**MW15-5**	**MW18-1**	**RDL**	**QC Batch**
Styrene	ug/L	**43**	<0.50	<0.50	0.50	5372389
1,1,1,2-Tetrachloroethane	ug/L	**1.1**	<0.50	<0.50	0.50	5372389
1,1,2,2-Tetrachloroethane	ug/L	**0.5**	<0.50	<0.50	0.50	5372389
Tetrachloroethylene	ug/L	**0.5**	**710**	**740**	5.0	5372389
Toluene	ug/L	**320**	<5.0	<5.0	5.0	5372389
1,1,1-Trichloroethane	ug/L	**23**	<5.0	<5.0	5.0	5372389
1,1,2-Trichloroethane	ug/L	**0.5**	<0.50	<0.50	0.50	5372389
Trichloroethylene	ug/L	**0.5**	**90**	**91**	5.0	5372389
Trichlorofluoromethane (FREON 11)	ug/L	**2000**	<13	<13	13	5372389
Vinyl Chloride	ug/L	**0.5**	<0.20	<0.20	0.20	5372389
p+m-Xylene	ug/L	**-**	<5.0	<5.0	5.0	5372389
o-Xylene	ug/L	**-**	<5.0	<5.0	5.0	5372389
Total Xylenes	ug/L	**72**	<5.0	<5.0	5.0	5372389
Surrogate Recovery (%)						
4-Bromofluorobenzene	%	**-**	94	93		5372389
D4-1,2-Dichloroethane	%	**-**	101	97		5372389
D8-Toluene	%	**-**	97	99		5372389

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 7: Generic Site Condition Standards for Shallow Soils in a Non-Potable Ground Water Condition

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

Maxxam Job #: B819557
Report Date: 2018/01/30

exp Services Inc
Client Project #: OTT-00224605-C
Site Location: MERIVALE RD
Sampler Initials: MAD

TEST SUMMARY

Maxxam ID: FZG283
Sample ID: MW15-5
Matrix: Water

Collected: 2018/01/26
Shipped:
Received: 2018/01/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	5371175	N/A	2018/01/29	Automated Statchk
Volatile Organic Compounds in Water	GC/MS	5372389	N/A	2018/01/29	Manpreet Sarao

Maxxam ID: FZG284
Sample ID: MW18-1
Matrix: Water

Collected: 2018/01/26
Shipped:
Received: 2018/01/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	5371175	N/A	2018/01/29	Automated Statchk
Volatile Organic Compounds in Water	GC/MS	5372389	N/A	2018/01/29	Manpreet Sarao

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Maxxam Job #: B819557
Report Date: 2018/01/30

exp Services Inc
Client Project #: OTT-00224605-C
Site Location: MERIVALE RD
Sampler Initials: MAD

GENERAL COMMENTS

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

Package 1	4.7°C

Revised Report (2018/01/30): Requested regulatory criteria have been updated as per client request.

Sample FZG283 [MW15-5] : VOC Analysis: Due to high concentrations of target analytes, sample required dilution. Detection limits were adjusted accordingly. In order to meet required regulatory criteria or to achieve lower reporting limits, results for selected compounds (obtained by a separate analysis using an appropriate low dilution) are included in the report.

Sample FZG284 [MW18-1] : VOC Analysis: Due to high concentrations of target analytes, sample required dilution. Detection limits were adjusted accordingly. In order to meet required regulatory criteria or to achieve lower reporting limits, results for selected compounds (obtained by a separate analysis using an appropriate low dilution) are included in the report.

Results relate only to the items tested.

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Maxxam Job #: B819557
Report Date: 2018/01/30

QUALITY ASSURANCE REPORT

exp Services Inc
Client Project #: OTT-00224605-C
Site Location: MERIVALE RD
Sampler Initials: MAD

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5372389	4-Bromofluorobenzene	2018/01/29	98	70 - 130	97	70 - 130	97	%		
5372389	D4-1,2-Dichloroethane	2018/01/29	101	70 - 130	99	70 - 130	99	%		
5372389	D8-Toluene	2018/01/29	100	70 - 130	102	70 - 130	98	%		
5372389	1,1,1,2-Tetrachloroethane	2018/01/29	91	70 - 130	96	70 - 130	<0.50	ug/L	NC	30
5372389	1,1,1-Trichloroethane	2018/01/29	87	70 - 130	93	70 - 130	<0.20	ug/L	NC	30
5372389	1,1,2,2-Tetrachloroethane	2018/01/29	94	70 - 130	98	70 - 130	<0.50	ug/L	NC	30
5372389	1,1,2-Trichloroethane	2018/01/29	93	70 - 130	96	70 - 130	<0.50	ug/L	NC	30
5372389	1,1-Dichloroethane	2018/01/29	90	70 - 130	95	70 - 130	<0.20	ug/L	NC	30
5372389	1,1-Dichloroethylene	2018/01/29	90	70 - 130	96	70 - 130	<0.20	ug/L	NC	30
5372389	1,2-Dichlorobenzene	2018/01/29	88	70 - 130	93	70 - 130	<0.50	ug/L	NC	30
5372389	1,2-Dichloroethane	2018/01/29	86	70 - 130	89	70 - 130	<0.50	ug/L	NC	30
5372389	1,2-Dichloropropane	2018/01/29	90	70 - 130	94	70 - 130	<0.20	ug/L	NC	30
5372389	1,3-Dichlorobenzene	2018/01/29	90	70 - 130	95	70 - 130	<0.50	ug/L	NC	30
5372389	1,4-Dichlorobenzene	2018/01/29	90	70 - 130	95	70 - 130	<0.50	ug/L	NC	30
5372389	Acetone (2-Propanone)	2018/01/29	72	60 - 140	90	60 - 140	<10	ug/L	NC	30
5372389	Benzene	2018/01/29	87	70 - 130	92	70 - 130	<0.20	ug/L	NC	30
5372389	Bromodichloromethane	2018/01/29	91	70 - 130	95	70 - 130	<0.50	ug/L	3.9	30
5372389	Bromoform	2018/01/29	94	70 - 130	98	70 - 130	<1.0	ug/L	NC	30
5372389	Bromomethane	2018/01/29	92	60 - 140	98	60 - 140	<0.50	ug/L	NC	30
5372389	Carbon Tetrachloride	2018/01/29	88	70 - 130	95	70 - 130	<0.20	ug/L	NC	30
5372389	Chlorobenzene	2018/01/29	90	70 - 130	95	70 - 130	<0.20	ug/L	NC	30
5372389	Chloroform	2018/01/29	91	70 - 130	95	70 - 130	<0.20	ug/L	1.3	30
5372389	cis-1,2-Dichloroethylene	2018/01/29	91	70 - 130	95	70 - 130	<0.50	ug/L	NC	30
5372389	cis-1,3-Dichloropropene	2018/01/29	92	70 - 130	94	70 - 130	<0.30	ug/L	NC	30
5372389	Dibromochloromethane	2018/01/29	94	70 - 130	98	70 - 130	<0.50	ug/L	NC	30
5372389	Dichlorodifluoromethane (FREON 12)	2018/01/29	91	60 - 140	108	60 - 140	<1.0	ug/L	NC	30
5372389	Ethylbenzene	2018/01/29	88	70 - 130	95	70 - 130	<0.20	ug/L	NC	30
5372389	Ethylene Dibromide	2018/01/29	91	70 - 130	94	70 - 130	<0.20	ug/L	NC	30
5372389	Hexane	2018/01/29	87	70 - 130	94	70 - 130	<1.0	ug/L	NC	30
5372389	Methyl Ethyl Ketone (2-Butanone)	2018/01/29	83	60 - 140	98	60 - 140	<10	ug/L	NC	30
5372389	Methyl Isobutyl Ketone	2018/01/29	88	70 - 130	94	70 - 130	<5.0	ug/L	NC	30

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Maxxam Job #: B819557
Report Date: 2018/01/30

QUALITY ASSURANCE REPORT(CONT'D)

exp Services Inc
Client Project #: OTT-00224605-C
Site Location: MERIVALE RD
Sampler Initials: MAD

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5372389	Methyl t-butyl ether (MTBE)	2018/01/29	86	70 - 130	90	70 - 130	<0.50	ug/L	NC	30
5372389	Methylene Chloride(Dichloromethane)	2018/01/29	93	70 - 130	96	70 - 130	<2.0	ug/L	NC	30
5372389	o-Xylene	2018/01/29	85	70 - 130	92	70 - 130	<0.20	ug/L	NC	30
5372389	p+m-Xylene	2018/01/29	87	70 - 130	94	70 - 130	<0.20	ug/L	NC	30
5372389	Styrene	2018/01/29	87	70 - 130	94	70 - 130	<0.50	ug/L	NC	30
5372389	Tetrachloroethylene	2018/01/29	88	70 - 130	94	70 - 130	<0.20	ug/L	1.1	30
5372389	Toluene	2018/01/29	86	70 - 130	92	70 - 130	<0.20	ug/L	NC	30
5372389	Total Xylenes	2018/01/29					<0.20	ug/L	NC	30
5372389	trans-1,2-Dichloroethylene	2018/01/29	90	70 - 130	95	70 - 130	<0.50	ug/L	NC	30
5372389	trans-1,3-Dichloropropene	2018/01/29	95	70 - 130	96	70 - 130	<0.40	ug/L	NC	30
5372389	Trichloroethylene	2018/01/29	86	70 - 130	91	70 - 130	<0.20	ug/L	0.28	30
5372389	Trichlorofluoromethane (FREON 11)	2018/01/29	85	70 - 130	93	70 - 130	<0.50	ug/L	NC	30
5372389	Vinyl Chloride	2018/01/29	90	70 - 130	100	70 - 130	<0.20	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).

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Maxxam Job #: B819557
Report Date: 2018/01/30

exp Services Inc
Client Project #: OTT-00224605-C
Site Location: MERIVALE RD
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).

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.

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

Maxxam
A Bureau Veritas Group Company

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

CHAIN OF CUSTODY RECORD

102616 Page 1 of 1

Invoice Information		Report Information (if differs from invoice)		Project Information (where applicable)		Turnaround Time (TAT) Required
Company Name:	EXP Services (Ottawa)	Company Name:		Quotation #:		Regular TAT (5-7 days) Most analyses
Contact Name:	Mark Devlin/Mark McCalla	Contact Name:	Mark Devlin/Mark McCalla	P.O. #/ AFE#:		PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS
Address:	100-2650 Queensview Dr. Ottawa	Address:		Project #:	OTT-00224605-C	Rush TAT (Surcharges will be applied): [X] 1 Day [ ] 2 Days [ ] 3-4 Days
				Site Location:	Merivale Rd.	
Phone:	(613) 688 1899 Fax:	Phone:	Fax:	Site #:		Date Required:
Email:		Email:		Sampled By:	MAD	Rush Confirmation #:

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

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

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

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

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

LABORATORY USE ONLY

CUSTODY SEAL (Y) / N Present	Intact	COOLER TEMPERATURES
Y	Y	4, 5, 5

COOLING MEDIA PRESENT: Y / N

	SAMPLE IDENTIFICATION	DATE SAMPLED (YYYY/MM/DD)	TIME SAMPLED (HH:MM)	MATRIX	# OF CONTAINERS SUBMITTED	FIELD FILTERED (CIRCLE) Metals / Hg / CrVI	BTEX/ PHC F1	PHCs F2 - F4	VOCs	REG 153 METALS & INORGANICS	REG 153 ICPMS METALS	REG 153 METALS (Hg, Cr VI, ICPMS Metals, HWS - B)							HOLD- DO NOT ANALYZE
1	MW15-5	2018/01/26	12:30pm	GW	3				X										
2	MW18-1	2018/01/26	1:00pm	GW	3				X										
3																			
4																			
5																			
6																			
7																			
8																			
9																			
10																			

COMMENTS: Please ~~sample~~ run sample by headspace (refer to email) voc + (pl...s) - W required

On ice

26-Jan-18 13:10
Fatemeh Habibagahi
B819557
KIV OTT-001

RELINQUISHED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)
Mark Devlin	2018/01/26	1:10pm	MD / Mariana Sonan Forzan	2018/01/26	13:10

RECEIVED IN OTTAWA
MAXXAM JOB #

COC-1004 (03/17)

White: Maxxam – Yellow: Client

Appendix F – Phase II Conceptual Site Model

Phase Two Conceptual Site Model – 1509 – 1531 Merivale Road, Ottawa, Ontario

1. Introduction

This section presents the Phase Two Conceptual Site Model (P2CSM) providing a narrative, graphical and tabulated description integrating information related to the Site 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 Environment, Conservation, and Parks (MECP).

The Site consists of one (1) parcel of land with a municipal address of 1509-1531 Merivale Road, in the City of Ottawa, Ontario. The Site is situated within a mixed commercial and residential area of Ottawa and is located on the east side of Merivale Road, west of Kerry Crescent. Refer to Figure 1 for the Site Location Plan, and Figure 2 for the Surrounding Property Land Use Plan.

The Site is currently developed with a multi-tenant commercial building (Lancaster Mall). The Site is occupied by asphalt parking located to the east and west of the building and sparse vegetation located along the southern and eastern property boundaries.

Refer to Table 1 for the Site identification information.

Table 1: Site Identification Information

Municipal Address	1509-1531 Merivale Road, Ottawa, Ontario
Current Land Use	Commercial
Proposed Land Use	Residential
Legal Description	PT BLK A, PL 313132, as in CR609052; LTS 34, 35 & 36, PL 313132, Except the ELY 1 FT as in CR615684; T/W CR615684; S/T CR486816 Nepean
Property Identification Number (PIN) and Assessment Roll Number (ARN)	ARN: 0614-120-540-11900-0000 PIN: 04685-0003 (LT)
Universal Transverse Mercator (UTM) coordinates (appox.)	Zone 18T Easting 442313, Northing 5022870
Accuracy Estimate of UTM	10-15 m
Measurement Method	Georeferenced aerial photograph
Site Area	0.89 hectares (2.20 acres)
Property Owners, Owner Contact and Address	10198447 CANADA INC. Contact: Mr. Sam Choweiri Address: 69 rue Jean-Proulx

	Gatineau, QC, J8Z 1W2

2. Potentially Contaminating Activities & Areas of Potential Environmental Concern

2.1 Potentially Contaminating Activities

A Phase One ESA Update, in accordance with O.Reg.153/04, was conducted by EXP in March 2020 for the Phase One Property. Several potentially contaminating activities (PCAs) were identified on-Site and within 250 m from the Phase One Property site boundaries. All PCAs that were identified within 250 m property are shown on Figure 4. Each PCA was further evaluated to determine if the activity may be contributing to an area of potential environmental concern (APEC) at the Phase One Property.

The QP determined that select PCAs may contribute to an APEC for the property, while several PCAs were determined to not contribute to an APEC at the Phase One Property/Site due to various factors including, but not limited to, relative distance to the Phase One Property/Site, orientation to the Phase One Property/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 2: Potentially Contaminating Activities in the Phase One Study Area

PCA Identifier	Address	Location of Activity (in relation to Site)[1]	Potentially Contaminating Activity (PCA)[2]	Description and Approximate timeline that PCA occurred	Contribution to APEC at the Site
On-Site					
1	1509 – 1531 Merivale Road	On-Site	PCA #37 – Operation of Dry Cleaning Equipment (where chemicals used)	Based on various sources and the site visit, a dry cleaners has operated at the site since at at least 1964.	Confirmed - Previous investigations have identified groundwater impacted with VOC.
2	1509 – 1531 Merivale Road	On-Site	PCA #28 – Gasoline and Associated Products Stored in Fixed Tanks	Based on previous reports, there was a furnace oil UST on the Site that was removed in 1998. Impacted soil and groundwater was removed from the area.	Confirmed - Previous investigations have identified soil impacted with PHC.
3	1509 – 1531 Merivale Road	On-Site	PCA #30: Importation of Fill Material of Unknown Quality	Based on previous reports, there was a furnace oil UST on the Site that was removed in 1998. Impacted soil and groundwater was removed from the area and was backfilled with soil of unknown quality.	Possible - Given that this PCA is located on the Site, it was considered possible that this PCA has contributed or may contribute to an APEC.
Off-Site					

PCA Identifier	Address	Location of Activity (in relation to Site)[1]	Potentially Contaminating Activity (PCA)[2]	Description and Approximate timeline that PCA occurred	Contribution to APEC at the Site
4	1507 Merivale Road	5 m north	PCA #28 – Gasoline and Associated Products Stored in Fixed Tanks	According to the 1965 FIP, this was a gasoline retail outlet and a UST was located on this property.	Yes, given the close proximity to the Site.
5	1507 Merivale Road	5 m north	PCA #27 – Garages and Maintenance and Repair of Railcars, Marine Vehicles, and Aviation Vehicles	Based on the Phase One Site visit, the property is used as an automobile repair garage.	Yes, given the close proximity to the Site.
6	1533 Merivale Road	5 m south	PCA #28 – Gasoline and Associated Products Stored in Fixed Tanks	According to the 1965 FIP, this was a gasoline retail outlet and a UST was located on this property.	Yes, given the close proximity to the Site.
7	1533 Merivale Road	5 m south	PCA #27 – Garages and Maintenance and Repair of Railcars, Marine Vehicles, and Aviation Vehicles	According to the EcoLog ERIS report, this property was formerly occupied by a Pennzoil Ten Minute Oil Change Facility. Based on the Phase One Site visit, this property is now a Jiffy Lube automotive servicing centre.	Possible - Given that this PCA neighbours the Site to the north, it was considered possible that this PCA has contributed or may contribute to an APEC.
8	1537 Merivale Road	45 m south	PCA #28 – Gasoline and Associated Products Stored in Fixed Tanks, PCA "Other" - Known Impacts in Soil.	According to the 1965 FIP, this was a gasoline retail outlet and a UST was located on this property. Air photos show this site was decommissioned after 2010.	Possible - Given that this PCA neighbours the Site to the north, it was considered possible that this PCA has contributed or may contribute to an APEC.
9	1537 Merivale Road	45 m south	PCA "Other" - Spills and Leaks	70 L of gasoline to the ground in 2004	Possible - Given that this PCA neighbours the Site to the south, it was considered possible that this PCA has contributed or may contribute to an APEC.
10	1543 Merivale Road	165 m south	PCA #28 – Gasoline and Associated Products Stored in Fixed Tanks	According to the city directories and Ecolog ERIS report, this has been a gasoline retail outlet from 1970 to the present.	Possible - Given that this PCA neighbours the Site to the south, it was considered possible that this PCA has contributed or may contribute to an APEC.
11	1541 Merivale Road	130 south	PCA #37 – Operation of Dry Cleaning Equipment (where chemicals used)	According to the city directory search this was a dry cleaners between 1990 and 2000.	Possible - Given that this PCA is approximatley 45 m to the south, it was considered possible that this PCA has contributed or may contribute to an APEC.
12	1545 Merivale Road	200 m south	PCA #28 – Gasoline and Associated Products Stored in Fixed Tanks	According to the city directory search, this was a retail fuel outlet between 1970 and 1984.	Unlikely - Given the distance , it was considered unlikley that this PCA has contributed or may contribute to an APEC.

PCA Identifier	Address	Location of Activity (in relation to Site)[1]	Potentially Contaminating Activity (PCA)[2]	Description and Approximate timeline that PCA occurred	Contribution to APEC at the Site
13	1545 Merivale Road	200 m south	PCA "Other" - Spills and Leaks	250 L of furnace oil to the ground due to a leak from an underground storage tank	Unlikely - Given the separation distance between this PCA and the Site, it was considered unlikley that this PCA has contributed or may contribute to an APEC.
14	1548 Merivale Road	215 m south	PCA #28 – Gasoline and Associated Products Stored in Fixed Tanks	According to the aerials, site visit and Ecolog ERIS report, this has been a gasoline retail outlet from 1970 to the present.	Unlikely - Given the distance and that the operation was only in place for a short period of time, it was considered unlikley that this PCA has contributed or may contribute to an APEC.
15	1516 Merivale Road	50 m west	PCA #37 – Operation of Dry Cleaning Equipment (where chemicals used)	According to the city directory search, this was a retail fuel outlet between 1965 and 1975.	Unlikely - Given the distance and that the operation was only in place for a short period of time, it was considered unlikley that this PCA has contributed or may contribute to an APEC.
16	1504 Merivale Road	85 m north	PCA #28 – Gasoline and Associated Products Stored in Fixed Tanks	According to the 1965 FIP, this property was occupied by a gasoline station with one (1) UST.	Unlikely - Given the distance , it was considered unlikley that this PCA has contributed or may contribute to an APEC.
17	1493 Merivale Road	105 m northeast	PCA #28 – Gasoline and Associated Products Stored in Fixed Tanks	According to the City Directories, this property was a retail fuel outlet from 1965 to 1970.	Unlikely - Given the separation distance between this PCA and the Site, it was considered unlikley that this PCA has contributed or may contribute to an APEC.

(1 a) Distances are approximately only. 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 had occurred in a phase one study area

2.2 Areas of Potential Environmental Concern

Based on the evaluation of the PCAs located within the Phase One Study Area, areas of potential environmental concern (APECs) were identified, as presented in Figure 5, and summarized in Table 3 below.

Table 3: Areas of Potential Environmental Concern (APECs)

Area of Potential Environmental Concern (APEC)	Location of APEC on Phase One Property	Potentially Contaminating Activity (PCA)[1]	Location of PCA (on-Site or off-Site)	Contaminants of Potential Concern	Media Potentially Impacted (Groundwater, soil and/or sediment)
1: Dry cleaners	Central portion of the Site	#37: Potential Operation of Dry Cleaning Equipment (where chemicals are used)	on-Site	VOCs	Soil + Groundwater

Area of Potential Environmental Concern (APEC)	Location of APEC on Phase One Property	Potentially Contaminating Activity (PCA)[1]	Location of PCA (on-Site or off-Site)	Contaminants of Potential Concern	Media Potentially Impacted (Groundwater, soil and/or sediment)
2: Former heating oil UST	Central/ east portion of the Site	#28: Gasoline and Associated Products Storage in Fixed Tanks	on-Site	PHCs, BTEX	Soil + Groundwater
3. Former backfill of UST excavation	Southeastern portion of the Site (area of UST excavation)	#30: Importation of Fill Material of Unknown Quality	on-Site	Metals	Soil
4: Former gasoline retail outlet and UST	North portion of the Site	#28: Gasoline and Associated Products Storage in Fixed Tanks	1507 Merivale Road	PHCs, BTEX, VOCs and metals	Groundwater
5: Automobile service station	North portion of the Site	#27: Garages and Maintenance and Repair of Railcars, Marine Vehicles and Aviation Vehicles	1507 Merivale Road	PHCs, BTEX, VOCs and metals	Groundwater
6: Former gasoline retail outlet and UST	South portion of the Site	#28: Gasoline and Associated Products Storage in Fixed Tanks	1533 Merivale Road	PHCs, BTEX, VOCs and metals	Groundwater
7: Oil changing facility	South portion of the Site	#27: Garages and Maintenance and Repair of Railcars, Marine Vehicles and Aviation Vehicles	1533 Merivale Road	PHCs, BTEX, VOCs and metals	Groundwater
8: Gasoline station	South portion of the Site	#28: Gasoline and Associated Products Storage in Fixed Tanks	1537 Merivale Road	PHCs, BTEX	Groundwater
9: Gasoline spill	South portion of the Site	#Other: Spills (70 L gasoline spill)	1537 Merivale Road	PHCs, BTEX	Groundwater
10: Gasoline station	South portion of the Site	#28: Gasoline and Associated Products Storage in Fixed Tanks	1543 Merivale Road	PHCs, BTEX	Groundwater
11: Former dry cleaners	South portion of the Site	#37: Potential Operation of Dry Cleaning Equipment (where chemicals are used)	1541 Merivale Road	VOCs	Groundwater
12: Gasoline station	South portion of the Site	#28: Gasoline and Associated Products Storage in Fixed Tanks	1545 Merivale Road	PHCs, BTEX	Groundwater
13: Gasoline spill	South portion of the Site	#Other: Spills (250 L furnace oil spill)	1545 Merivale Road	PHCs, BTEX	Groundwater
14: Gasoline station	South portion of the Site	#28: Gasoline and Associated Products Storage in Fixed Tanks	1548 Merivale Road	PHCs, BTEX	Groundwater

Notes:

(1) Area of Potential Environmental Concern means the area on, in or under a phase one study area where one or more contaminants are potentially present, as determined through the PI ESA, including through (a) identification of post or present uses on, in or under the phase one property, and (b) identification of potentially contaminating activities.

(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.

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

BTEX = benzene, toluene, ethylbenzene, xylenes; PHC = petroleum hydrocarbon; VOC = volatile organic compound; EC/SAR = electrical conductivity/sodium absorption ratio.

*Chloride has been removed for consideration as a COPC

Refer to Figure 5 for the location of APECs on the Site. Boreholes/monitoring wells advanced on the Site to investigate the identified APECs are shown on Figures 6.

2.3 Underground Utilities

Two (2) water lines are located on the Site. One line runs northwest to southeast along the northern property boundary. The second water line enters the Site on the eastern property boundary and enters the east side of the property building.

One (1) gas line enters the Site at the northwestern property boundary and extends eastwards where it then extends southwards along the eastern side of the building. The gas line then splits, one end of the line enters the Site building on the east and the second line extends southwards before also entering the Site building on the east.

Two (2) Bell lines are located on the Site, the lines enter on the northern property boundary and run alongside each other to the southern property boundary.

One (1) underground street light cable is located on the property, it enters on the southern property boundary where is extends northwards.

One (1) storm water sewer line is located on the property to the south of the Site building. The storm sewer line is connected to two (2) catch basins.

One (1) old water line is located on the property in the southwestern portion of the Site and enters the Site building.

One (1) electricity line is located in the western portion of the Site, the electricity line is connected to a sign, it then extends eastwards and enters the Site building on the east.

Refer to Figure 3 for the Underground Utilities Plan.

3. Physical Site Description

3.1 Geological and Hydrogeological Conditions

The Site and surrounding areas are dominated by till, stone-poor, sandy silt to silty sand textured till on Paleozoic terrain.

The bedrock in the general area of the Site is part of a group belonging to the Rockcliffe Formation on the northern portion of the Site, and the Gull River Formation on the Central and Southern Portion of the Site. A fault transects the Site just north of the site building.

The Site and surrounding areas slope to the north / northwest, towards the Ottawa River. Nepean Creek is located approximately 1.75 km south of the Site, the Rideau River is located approximately 2.5 km east of the Site and the Ottawa River is located approximately 4.1 km northwest of the Site. While the inferred regional groundwater flow direction is to the south based on the location and distance of Nepean Creek to the Site, results of the groundwater monitoring conducted during EXP's Phase Two ESA Update suggest that the groundwater flow direction is actually to the north-northeast, towards the Rideau River. EXP notes that the direction of localized groundwater flow may be influenced by disturbed soil (fill), underground utilities and/or underground building structures in the area. As such, the measured groundwater flow direction may not be representative of the regional area.

According to the MNRF Land Use Natural Heritage map, no woodlands, conservation reserves, provincial parks or natural heritage systems were observed on the Site or within the Phase One study area.

The soil investigation conducted at the Site during this Phase Two ESA Update consisted of the advancement of twelve (12) boreholes into the surficial fill material and the underlying native soil to a maximum depth of 4.6 m bgs. Including boreholes advanced during the original 2016 Phase Two ESA, shale limestone bedrock has been observed to a maximum depth of 10.8 m bgs. The borehole logs describing geologic details of the soil cores recovered during the Site drilling activities conducted during the 2016 Phase Two ESA as well as this Phase Two ESA Update are presented in Appendix C. 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 Site, as observed in the boreholes, consisted of asphalt, followed by sand and gravel fill underlain by sandy silt over sand and gravel glacial till and limestone bedrock. A brief description of the soil stratigraphy at the Site, in order of depth, is summarized in the following sections.

6.1.1 Surface Material

The surface material at majority of the boreholes consisted of asphalt, with a thickness of approximately 50 mm.

6.1.2 Fill Material

A layer of fill material was encountered in all boreholes. The thickness of the fill ranged from 1.7 m in BH205 to 2.2 m in BH/MW302 and 303, both located in the area of the former heating oil UST excavation. The fill material generally consisted of brown to grey sand and gravel.

6.1.3 Native Material

The native soil encountered at the Site generally consisted of sandy silt, overlying silty sand and gravel glacial till. The silt till extended to the bedrock surface.

6.1.4 Bedrock

Bedrock was at depths ranging from 2.1 to 2.4 m over 90% of the site. The depth to rock in the northeast corner of the site was 1.1 m. The bedrock consisted of shale limestone.

3.2 Hydrogeology

Based on the groundwater contour map delineated for the Site, the regional groundwater is anticipated to flow in a north-northeasterly direction. Based on the static water level data collected in January 2019, the groundwater flow direction across the site is northeast. Refer to Table 4 for the Site hydrogeology characteristics based on groundwater monitoring observations. The minimum depth to groundwater at the Site is 1.17 m bgs. Refer to Figures 9A and 9B for visual representations of groundwater contours, elevations and inferred flow directions for both the shallow bedrock groundwater and the deep bedrock groundwater.

Table 4: Site Hydrogeology Characteristics

Descriptor	Shallow Bedrock/Overburden Contour	Deep Bedrock Contour
Depth to Groundwater	1.17 m bgs	1.92 m bgs
Groundwater Elevation	93.97 m asl	93.11 m asl
Direction of Groundwater Flow	North-northeast	Northeast
Horizontal Hydraulic Gradient	0.015 m/m	0.028 m/m
Aquifer Hydraulic Conductivity	2.83×10^{-5} m/s	1.26×10^{-5} m/s

m bgs - Meters below ground surface

m asl – meters above sea level

*Shallow bedrock/overburden groundwater and bedrock groundwater are considered as a single water bearing unit, as EXP has established that since no confining layer was identified within bedrock the (2) two groundwater units are hydraulically connected.

3.3 Site Sensitivity

The Site 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 Site is sensitive, as presented in Table 5.

Table 5: Site Sensitivity

Sensitivity	Classification	Does Sensitivity Apply to Site?
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 site condition in relation to the property as specified in Schedule A, it is appropriate to apply this section to the property	No
Section 43.1 applies if	(i) property is a shallow soil property	No
	(ii) property includes all or part of a water body or is adjacent to a water body or includes land that is within 30 m of a water body	No

3.3.1 Remediation and Management Activities

3.3.1.1 Underground Furnace Oil Tank Excavation

On November 9, 1998 one (1) 2,270 litre underground heating oil tank was removed from the Site by George. W. Drummond Ltd. Prior to the tank removal, 1,250 litres of oil were removed from the tank by Drain-All Ltd. Once the underground storage tank (UST) had been excavated and removed from the Site, John D. Paterson and Associates conducted a Site inspection which identified the presence of petroleum hydrocarbon contamination in soil at the base and walls of the tank excavation. A small test hole was excavated at the base of the excavation and shortly after liquid phase petroleum hydrocarbons were observed.

The remediation program was carried out from November 12 to 17, 1998 and petroleum hydrocarbon contaminated soils were excavated and removed from the Site. A total of 440.48 tonnes of contaminated soil were removed. The excavation extended down to the bedrock surface which was located at approximately 2.1 to 2.2 metres below grade. When the bedrock surface was stripped of soil it was observed that small quantities of liquid phase petroleum hydrocarbons were present in the bedrock fractures. Over a two-day period, 150 mm of water accumulated at the base of the excavation which had a thin layer of free product on the surface. Prior to backfilling the excavation, the free product and water were removed from the excavation and disposed of by a licensed waste contractor.

In order to ensure that all of the free product had been removed from the excavation area, three (3) recovery wells were installed. The recovery wells were installed into the bedrock surface at depths ranging from 2.72 to 2.8 meters below ground surface (bgs). In addition to the recovery wells, a thin layer of 20 mm clear gravel was placed at the base of the excavation and around the wells to allow contaminants to flow freely to the recovery wells.

The excavation was backfilled with segregated clean soil and sand, gravel fill up to the underside of the asphalt. John D. Paterson and Associates were not present on the Site for all of the backfilling operations and compaction testing was not requested.

A total of four (4) soil samples were collected from the excavation and were submitted for chemical analysis of total petroleum hydrocarbons (TPH) and BTEX. One (1) sample from the west wall of the excavation (G7) exceeded the MECP Cleanup Criteria for TPHs. This area of contamination could not be excavated without endangering the structural integrity of the building, and therefore some TPH impacted soil remains at the Site. It was noted that there may have been a small quantity of liquid phase petroleum hydrocarbons present at the base of the remediation excavation and in the area of the recovery wells since the groundwater table is located at a depth equal to the upper surface of the bedrock.

On February 5, 1999, the recovery wells were pumped out by Sewer Matic Environmental Services Inc. and following this, groundwater samples were recovered for laboratory analysis. In total 4,135 litres were removed from the recovery wells disposed of as contaminated liquid waste. The groundwater samples were submitted for chemical analysis of BTEX and TPH, the analytical results were all below the MECP guidelines for the subject Site.

Current conditions at the Site are such that there is no free product present, however there are some exceedances of petroleum hydrocarbons (PHCs) in soil and groundwater in the area of the former UST.

3.4 Land Use

It is understood that the Site is intended to be further developed for residential / commercial land use.

4. Contaminants of Concern

For assessment purposes, EXP selected the MECP (2011) Table 3: Full Depth Generic Site condition Standards in a Non-Potable Ground Water Condition for Residential/Parkland/Institutional Property Use and coarse textured soil was considered applicable for determining contaminants of concern (COCs), based on the rationale presented in Table 6.

Table 6: Site specific Condition

Description	Site Specific Condition
Section 41 Site Sensitivity	Not applicable • The soil at the Site has pH values between 5 and 9 for surficial soil; and, between 5 and 11 for subsurface soil. (Refer to Table 5 for further details). • The Site is not located within a Significant Area, and/or located adjacent to an area of natural significance/an environmentally sensitive area.
Section 43.1 Site Sensitivity	Not applicable • 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, Nepean Creek, is located 1.75 km southeast of the Site.
Ground Water	Non-Potable • The Site and surrounding properties within 250 m of the Site are supplied by a municipal drinking water system. • No potable water wells are located on the Site or within 250 m of the Site.
Land Use	Residential/Parkland/Institutional • The proposed future use of the Site is for mixed commercial and residential use.
Soil Texture	• The predominant texture of soils at the Site is considered to be coarse textured, based on soil characteristics identified in the borehole logs.

A chemical constituent was selected as a COC if it was detected in soil or groundwater samples obtained from the Site at a concentration in excess of the applicable Table 3 SCS.

Based on the Table 3 SCS exceedances identified during this Phase Two ESA Update and historically, the following are considered COCs:

Soil

PHCs – F1

VOCs – Tetrachloroethylene and 1,3,5-trimethylbenzene

It is noted that salt related parameters were identified in both soil (electrical conductivity and sodium adsorption ratio) and groundwater (sodium and chloride) in exceedance of the applicable Table 3 SCS and therefore assessed as a potential COC at the Site. However, due to recent amendments to O.Reg. 153 which exclude salt related impacts as areas of concern for properties where salt in soil and groundwater can be attributed to the salting of pavement for de-icing purposes, salt parameters are not identified as contaminants of concern at this Site and are not considered further.

Groundwater

PHCs – F2 and F3

VOCs – Chloroform, cis-1,2-dichloroethylene, tetrachloroethylene, trichloroethylene, and vinyl chloride

Metals and Inorganics – Chlorinate

4.1 Soil and Groundwater Impacts

A chemical constituent was selected as a COC if it was detected in soil or groundwater samples obtained from the Site at a concentration in excess of the applicable Table 3 SCS.

Soil samples were submitted for the analysis of metals and select inorganics, petroleum hydrocarbons (PHCs), benzene, toluene, ethylbenzene and xylenes (BTEX), and/or volatile organic compounds (VOCs). While no exceedances of the MECP Table 3 SCS were identified in soil during this Phase Two ESA Update investigation, historical soil data reviewed as part of this Phase Two ESA Update identified some parameters were measured above the Table 3 SCS. The following COCs were identified:

Table 7: Delineation of Soil Impacts

Parameter Group and Media	Parameters	Horizontal Delineation	Associated Drawings	Vertical Delineation	Associated Drawings
PHCs	F1	Southern portion of the Site, area of the former UST excavation	16	Clean sample obtained in gravelly sand ~2.3 m bgs (MW15-3) and ~3.1 m bgs (MW-6)	10B, 11B, 13B, 15B
VOCs	Tetrachloroethylene and 1,3,5-trimethylbenzene	Central portion of the Site, in the area of the dry-cleaners and along the southern Site boundary	18	Impacts assumed to extend to bedrock	10C, 11C

All remaining tested parameters for PAHs, PHC, metals and select inorganics, and VOC in the soil samples were either non-detected or detected below their applicable MECP (2011) Table 3 SCS.

Groundwater samples were submitted for the analysis of metals and select inorganics, petroleum hydrocarbons (PHCs), benzene, toluene, ethylbenzene and xylenes (BTEX), and/or volatile organic compounds (VOCs). Some parameters were measured above the Table 3 SCS, and the following COCs were identified:

Table 8: Delineation of Groundwater Impacts

Parameter Group and Media	Parameters	Horizontal Delineation	Associated Drawings	Vertical Delineation	Associated Drawings
PHCs	F2 and F3	Southern portion of the Site, in the area of the former UST excavation and along the	21	Clean sample obtained in bedrock unit ~7.6 m below grade (MW15-3) and ~9.2 m below grade (BH/MW207)	10E, 11D

		southern Site boundary			
VOCs	Chloroform, cis-1,2-dichloroethylene, tetrachloroethylene, trichloroethylene and vinyl chloride	Central portion of the Site, extending northeast to the northeastern property boundary	23	Clean sample obtained in bedrock unit ~7.6 m below grade (MW15-3), ~9.15 m below grade (BH/MW207) and ~9.3 m below grade (BH/MW208)	10F, 11E, 12B

All remaining tested parameters for PHC, metals and select inorganics, and VOC in the groundwater samples were either non-detected or detected below their applicable MECP (2011) Table 3 SCS.

4.2 Contaminant Fate and Transport

4.2.1 Soil Media

The exceedance of the PHC parameters (PHC F1) are likely associated with on-Site activities within APEC #2, PCA#28 Gasoline and Associated Products Storage in Fixed Tanks, as a result of the former heating oil UST previously removed from the Site. The exceedance of the VOC parameters (PCE and 1,3,5-TMB) are likely associated with APEC #1, PCA #37 Operation of Dry Cleaning Equipment (where chemicals are used), as a result of the dry cleaners located on the Site.

4.2.2 Groundwater Media

The exceedance of the PHC parameters (PHC F2 and F3) are likely associated with on-Site activities within APEC #2, PCA#28 Gasoline and Associated Products Storage in Fixed Tanks, as a result of the former heating oil UST previously removed from the Site. The exceedance of the VOC parameters (PCE and 1,3,5-TMB) are likely associated with APEC #1, PCA #37 Operation of Dry Cleaning Equipment (where chemicals are used), as a result of the dry cleaners located on the Site.

4.2.2 Preferential Pathways

The preferential pathways for contaminants present in soil and groundwater media, include various underground utilities, building footings and subsurface features.

Underground utilities were identified at the Site. As such, there is a potential for underground utilities to affect the distribution and transport of groundwater and soil vapour contaminants located on the Site.

Details on the preferential pathways for the impacts are summarized in Table 9.

Table 9: Preferential Pathways

Anything known about migration of the contaminants present on, in or under the phase two property at a concentration greater than the applicable site condition standard away from any area of potential environmental concern,	Current utilities may affect groundwater and soil vapour migration. Future utilities may affect groundwater and soil vapour migration. Current and future building footings may affect groundwater and soil vapour and migration.

including the identification of any preferential pathways.	

4.2.3 Climatic Conditions

It is noted that climatic or meteorological conditions may influence the distribution and migration of COCs at the Site. Seasonal fluctuations in groundwater due to cyclical increases and decreases in precipitation can affect groundwater recharge. Groundwater levels may be elevated in the spring and fall due to snow melt and/or increases in precipitation; and, groundwater levels may be lowered in the winter and summer due to snow storage and/or increased evaporation. Such fluctuations can increase the vertical distribution of COCs in the capillary zone, as well as alter the direction of groundwater flow paths based on changes in infiltration rates. 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.

4.2.4 Soil Vapour Migration

Given the presence of volatile COCs in groundwater, vapour intrusion is a potential contaminant transport mechanism for volatile COCs in groundwater. 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 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 residential buildings due to building depressurization. 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.

Details on soil vapour migration are summarized in Table 10.

Table 10: Soil Vapour Migration

If applicable, information concerning soil vapour intrusion of the contaminants into buildings including,	There is a potential for soil vapors to be present within the subsurface (sourced from groundwater); to migrate along preferential pathways such as underground utility services; and, eventually to migrate into the atmosphere or overlying buildings.
1. relevant construction features of a building, such as a basement or crawl space,	The Site is currently developed with five (5) commercial buildings (multi-storey commercial buildings with basements). The proposed future development plans consist of multi-storey residential / commercial building. Residential units are planned to be constructed on the upper floors, while commercial operations will occupy the main floors and basements. Soil vapours may contact the building slab and migrate through cracks in the basement or floor.
2. building heating, ventilating and air conditioning design and operation, and	HVAC units are equipped to the roof tops of each individual building. HVAC units were in good condition and operating correctly at the time of EXPs Phase One Site visit.

3. subsurface utilities	Underground utilities could affect soil vapour migration, given that several lines are currently connected to the on-Site buildings.

5 Exposure Pathways

5.1 Human Health Receptors and Exposure Pathways

The Site is proposed to be redeveloped for residential / commercial purposes. Based on future residential land use of the Site, the receptors that are anticipated to be present include property residents and visitors/trespassers (all ages), indoor long-term workers (adult (i.e., maintenance worker, concierge) and outdoor long-term workers (adult (i.e., landscaper). Subsurface (construction) workers are also considered potential receptors where future utilities or site renovations are planned.

Groundwater at the Site is considered non-potable. Drinking water for the City of Ottawa is municipally serviced. The minimum depth to groundwater at the Site is 1.17 m bgs. Sub-surface structures are expected to be present on-Site after development.

The potentially complete on-Site human health receptor exposure pathways for the future residential land use are presented in Table 11.

Table 11: Human Health Conceptual Exposure Model

Scenario	Receptor	Exposure Pathways
Property Residents	Adult (including pregnant female), Teen, Child, Toddler, Infant	• Soil ingestion, dermal contact, and particulate inhalation; • Ingestion of garden produce; • Indoor air inhalation, vapour skin contact, and outdoor air inhalation.
Property Visitors	Adult (including pregnant female), Teen, Child, Toddler, Infant	• Soil ingestion, dermal contact, and particulate inhalation; • Ingestion of garden produce; • Indoor air inhalation, vapour skin contact, and outdoor air inhalation.
Indoor Long-term Worker	Adult (including pregnant female)	• Indoor air inhalation and vapour skin contact.
Outdoor Long-term Worker	Adult (including pregnant female)	• Soil ingestion, dermal contact, and particulate inhalation; • Vapour skin contact and outdoor air inhalation.
Subsurface Worker	Adult (including pregnant female)	• Soil ingestion, dermal contact, and particulate inhalation; • Vapour skin contact and outdoor/trench air inhalation.

Refer to Appendix G for the human health conceptual exposure model.

5.2 Ecological Receptors and Exposure Pathways

The Site is proposed to be developed as residential / commercial lands. The Site is located in an urban environment capable of supporting select terrestrial ecological receptors. There are no on-Site waterbodies. The nearest waterbody is Nepean Creek, located approximately 1.75 km southeast of the Site. Consistent with the MECP (2011b), the potential on-Site ecological receptors include those found within urban environments including 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.

The shallowest depth to groundwater measured on-Site relative to the ground surface was 1.17 m bgs. The direction of groundwater flow was determined to be towards the north/northeast, towards the Rideau River. As the minimum depth to groundwater is determined to be 1.17 m bgs, the direct contact pathways for ecological receptors (i.e. root uptake/contact for terrestrial plants, and dermal contact and ingestion for terrestrial mammals/birds) are considered to be complete for the Site.

Refer to Appendix G for the Ecological Conceptual Exposure Model.

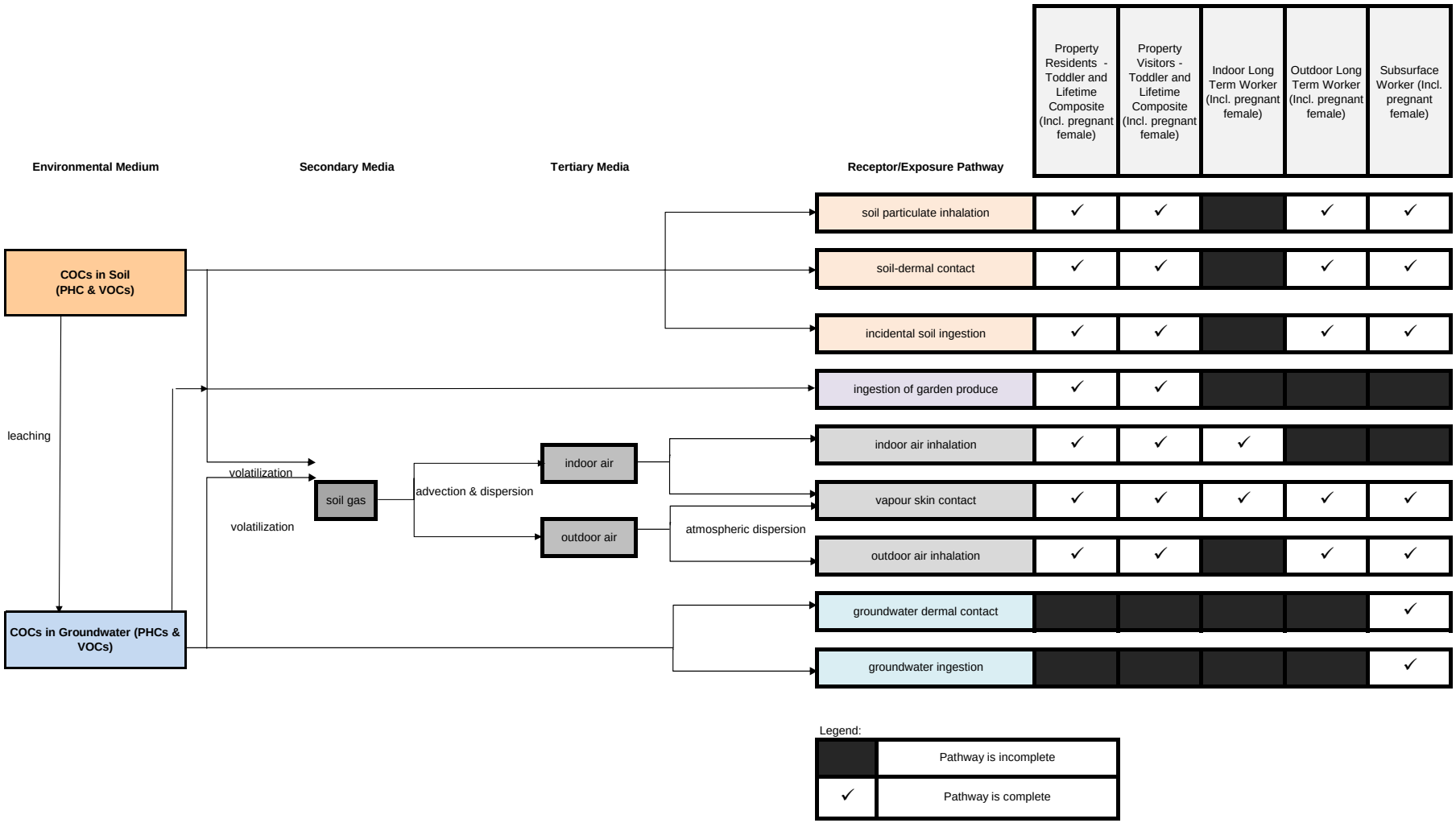
The MECP evaluates exposure to aquatic receptors at properties within 5 km of a surface waterbody. COCs in soil may leach to groundwater and be discharged to surface water bodies within proximity of the Site. Given the distance to Lake Ontario is within ~1 km of the Site, off-Site aquatic receptors are also considered. Aquatic receptors include aquatic vegetation, aquatic invertebrates, and fish.

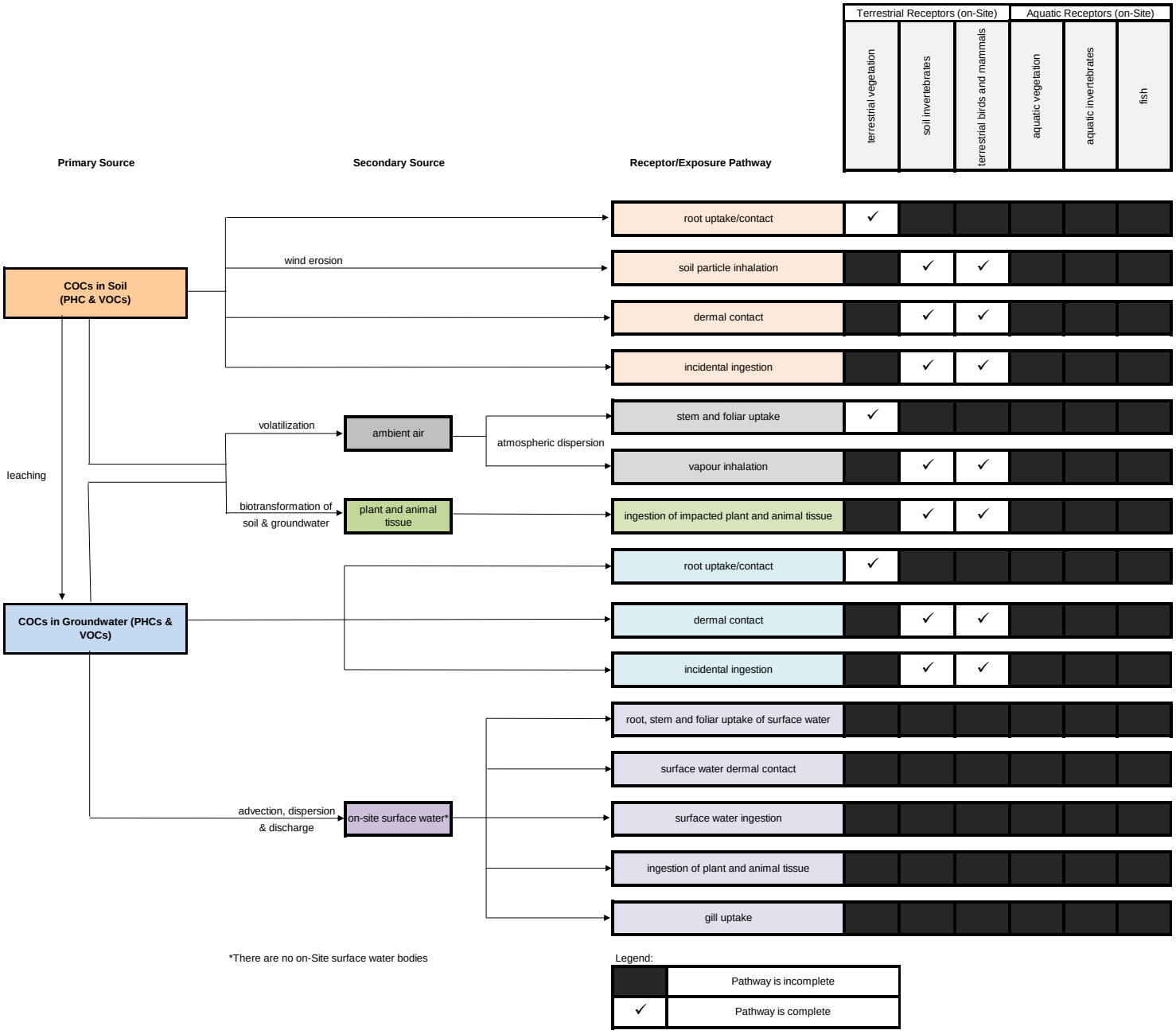
The potentially complete off-Site ecological receptor exposure pathways for Lake Ontario are presented in Table 12.

Table 12: Ecological Off-Site Conceptual Model

Primary Source	Secondary Source	Receptor	Exposure Route
Impacted Soil or Groundwater	Surface water (*via Groundwater Discharge*)	Aquatic Vegetation	Root, Stem and Foliar Uptake of Surface Water
		Aquatic Invertebrates	Surface Water Dermal Contact, Ingestion, and Gill Uptake
		Fish	Surface Water Dermal Contact, Ingestion, Gill Uptake and Ingestion of Impacted Plant and Animal Tissue
	Sediment (*via Sedimentation in Surface Water*)	Aquatic Vegetation	Root Uptake and Contact
		Aquatic Invertebrates	Dermal Contact and Incidental Ingestion
		Fish	Dermal Contact, Incidental Ingestion, and Ingestion of Impacted Plant and Animal Tissue

Appendix G – Conceptual Exposure Model


Environmental Medium
Secondary Media
Tertiary Media
Receptor/Exposure Pathway
Property Residents - Toddler and Lifetime Composite (Incl. pregnant female)
Property Visitors - Toddler and Lifetime Composite (Incl. pregnant female)
Indoor Long Term Worker (Incl. pregnant female)
Outdoor Long Term Worker (Incl. pregnant female)
Subsurface Worker (Incl. pregnant female)
COCs in Soil (PHC & VOCs)
COCs in Groundwater (PHCs & VOCs)
leaching
volatilization
volatilization
soil gas
advection & dispersion
indoor air
outdoor air
atmospheric dispersion
soil particulate inhalation
soil-dermal contact
incidental soil ingestion
ingestion of garden produce
indoor air inhalation
vapour skin contact
outdoor air inhalation
groundwater dermal contact
groundwater ingestion
Legend:
Pathway is incomplete
Pathway is complete


Terrestrial Receptors (on-Site)
Aquatic Receptors (on-Site)
terrestrial vegetation
soil invertebrates
terrestrial birds and mammals
aquatic vegetation
aquatic invertebrates
fish
Primary Source
Secondary Source
Receptor/Exposure Pathway
COCs in Soil (PHC & VOCs)
COCs in Groundwater (PHCs & VOCs)
leaching
wind erosion
volatilization
ambient air
atmospheric dispersion
biotransformation of soil & groundwater
plant and animal tissue
advection, dispersion & discharge
on-site surface water*
root uptake/contact
soil particle inhalation
dermal contact
incidental ingestion
stem and foliar uptake
vapour inhalation
ingestion of impacted plant and animal tissue
root uptake/contact
dermal contact
incidental ingestion
root, stem and foliar uptake of surface water
surface water dermal contact
surface water ingestion
ingestion of plant and animal tissue
gill uptake
*There are no on-Site surface water bodies
Legend:
Pathway is incomplete
Pathway is complete