# • 11 Yorkville Partners Inc.

## Phase Two Environmental Site Assessment

**Type of Document**
Final Report

**Project Name**
Phase Two Environmental Site Assessment
11 Yorkville Avenue, Toronto, Ontario

**Project Number**
MRK-00242474-A0

EXP Services Inc.
220 Commerce Valley Drive West, Suite 110
Markham, Ontario L3T 0A8
Canada

**Date Submitted**
February 28, 2018

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**Date Submitted:**
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# Legal Notification

This report was prepared by EXP Services Inc. for the account of **11 Yorkville Partners Inc**.

Any use which a third party makes of this report, 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.

# SUMMARY SHEET

**11 Yorkville Avenue, Toronto, Ontario**

## 1. Site and Adjacent Land Conditions

| | |
|---|---|
| Land Use | Mixed Commercial and Residential Use |
| Date of Soil Sampling | January 25, 26, and 29, 2018 |
| Date of Ground Water Sampling | January 31 and February 5, 2018 |
| Number of Test Holes Drilled | 4 |
| Number of Monitoring Wells Installed | 4 |
| Type of OVM Meter | GasTec pump with 132L tubes to detect trichloroethylene (TCE)<br>RKI Eagle 2 |
| Adjacent Land Use (current) | North – Mixed Residential/Parkland/Commercial/Community Use<br>South – Commercial Use<br>East – Mixed Residential/Commercial Use<br>West – Commercial Use |
| Aquifer Usage in 100 metre Radius | No |

## 2. Site Soil Conditions

| **Stratigraphy** | **Maximum Depths (m)** | **Comments** |
|---|---|---|
| Sand and gravel fill | 2.3 | Brown sand and gravel fill, trace brick, moist, no odour, no staining. |
| Sand | 4.6 | Brown fine sand to silty sand, moist, no odour, no staining. Grey, wet below 3.1 mbgs. |
| Silty clay | 10.6 | Grey silty clay, moist, no odour, no staining. |
| Silty sand | >15.9 | Grey silty sand to sandy silt, moist, no odour, no staining. |

### 3. Ground Water

| | |
|---|---|
| Depth (m) | TH1 – dry (February 5, 2018)<br>TH2 – 3.44 (February 5, 2018)<br>TH3 – 3.22 (January 31, 2018)<br>TH4 – 3.25 (January 31, 2018)<br>MW01 – 4.19 (November 28, 2017)<br>MW02 – 3.34 (November 28, 2017)<br>MW04 – 0.58 (November 28, 2017)<br>BH1 – 20.29 (November 28, 2017)<br>BH15-3S – 3.19 (November 28, 2017)<br>BH15-3 – 17.00 (November 28, 2017) |
| Screened Interval of Monitoring Well(s) (m) | TH1 – 12.8 to 15.8<br>TH2 – 2.4 to 5.5<br>TH3 – 2.7 to 5.8<br>TH4 – 2.9 to 5.9<br>MW01 – 3.1 to 6.1<br>MW02 – 2.1 to 5.2<br>MW04 – 0.6 to 3.1<br>BH1 – 24.2 to 26.6<br>BH15-3S – 2.4 to 5.5<br>BH15-3 – 18.3 to 21.3 |
| Inferred Ground Water Flow Direction | South (inferred) |
| Liquid Petroleum Detected | No |

### 4. Selected Soil and Ground Water Standards

Ontario Regulation (O. Reg.) 153/04 Table 3 Standards (residential/parkland/institutional property use and medium to fine textured soils) are appropriate for this site.

## 5. Analytical Results (Samples exceeding O. Reg. 153/04 Table 3 Standards)

| Location | Medium | Depth (mbgs) | Parameters |
|---|---|---|---|
| TH1 | Soil | 0 to 0.6 | Polycyclic aromatic hydrocarbons (PAHs):<br>• Acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, fluoranthene, indeno(1,2,3-cd)pyrene, and phenanthrene<br><br>Metals:<br>• Lead |
| TH2 | Soil | 0 to 0.6 | PAHs:<br>• Benzo(a)pyrene and fluoranthene |
| | Ground water | 2.4 to 5.5 | Volatile organic compounds (VOCs):<br>• Tetrachloroethylene (PCE) |
| TH3 | Soil | 0 to 0.6 | Metals:<br>• Lead |
| | Ground Water | 2.7 to 5.8 | VOCs:<br>• PCE |
| TH4 | Soil | 0 to 0.6 | PAHs:<br>• Benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenzo(a,h)anthracene, fluoranthene, and indeno(1,2,3-cd)pyrene<br><br>Other Regulated Parameters (ORPs):<br>• Sodium Adsorption Ratio (SAR) |
| | Ground Water | 2.9 to 5.9 | VOCs:<br>• Trichloroethylene (TCE) |
| MW01 | Ground Water | 3.05 to 6.10 | VOCs:<br>PCE |
| MW02 | Ground Water | 2.13 to 5.18 | VOCs:<br>PCE |
| MW04 | Ground Water | 0.61 to 3.05 | VOCs:<br>Vinyl chloride (VC) |

# Executive Summary

The executive summary is a brief synopsis of the report and should not be read in lieu of reading the report in its entirety. EXP Services Inc. (EXP) was retained by 11 Yorkville Partners Inc. to conduct a Phase Two Environmental Site Assessment (ESA) at 11 Yorkville Avenue, which encompasses the properties municipally addressed as 11 to 21 Yorkville Avenue (odd numbers only) and 16 and 18 Cumberland Street in Toronto, Ontario, the "site". The site has an area of approximately 0.33 hectares (0.82 acres).

A Phase One ESA was conducted by EXP (2018) to identify the presence of potentially contaminating activities (PCAs) within 250 metres of the site boundaries. The potential for each PCA to result in an area of potential environmental concern (APEC) was evaluated based on its proximity to the site and on its location relative to the inferred southerly ground water flow direction; twelve APECs were identified. In addition, a Phase II ESA completed in 2016 by Pinchin Ltd. for 21 Yorkville Avenue identified ground water impacted with tetrachloroethylene (PCE), a volatile organic compound (VOC). In accordance with Ontario Regulation (O. Reg.) 153/04, a Phase Two ESA must be completed to evaluate soil and ground water quality within each APEC before a Record of Site Condition (RSC) can be filed for the site.

Given that the site buildings and the underground parking garage at 11 Yorkville Avenue occupy the majority of the footprint of the site, access for drilling equipment was limited. Therefore, the objective of the current Phase Two ESA was to evaluate the quality of fill material and to install ground water monitoring wells within accessible areas to provide additional information regarding the horizontal and vertical extent of VOC-impacted ground water previously identified beneath 21 Yorkville Avenue.

Prior to conducting the Phase Two ESA drilling investigation, EXP collected ground water samples from previously installed monitoring wells (SPL Consultants Limited, 2015; McClymont and Rak Engineers, Inc., 2015; Pinchin Ltd., 2016) on November 28, 2017. The O. Reg. 153/04 Table 3 Standards (Table 3 Standards) for a residential property use and medium to fine textured soil were deemed appropriate for evaluating conditions at the site. The samples were submitted for analysis of petroleum hydrocarbon (PHC) fractions F1 to F4 and VOCs. Ground water samples collected from two locations (MW01 and MW02) exceeded the Table 3 Standard for PCE; one ground water sample (MW04) exceeded the Table 3 Standard for vinyl chloride. The ground water samples were within the Table 3 Standards for PHC fractions F1 to F4.

The current Phase Two ESA conducted by EXP included the advancement of four test holes (TH1 to TH4), all of which were completed as ground water monitoring wells, on January 25, 26, and 29, 2018. Ground water sampling was completed on January 31 and February 5, 2018. Soil samples were analyzed for potential contaminants of concern (pCOCs) including PHC fractions F1 to F4, polycyclic aromatic hydrocarbons (PAHs), VOCs, metals, hydride-forming metals, and other regulated parameters (ORPs). Ground water samples were analyzed for pCOCs including PHC fractions F1 to F4 and VOCs.

Surficial soil samples collected from three of the four sampling locations were found to exceed the Table 3 Standards for various PAHs, lead, and/or sodium adsorption ratio (SAR). Deeper soil samples analyzed for vertical delineation purposes suggest that these impacts were confined to the fill material. All soil samples analyzed for PHCs and VOCs were within Table 3 Standards.

Ground water samples collected from two locations (TH2 and TH3) exceeded the Table 3 Standard for PCE and one ground water sample (TH4) exceeded the Table 3 Standard for trichloroethylene (TCE). The ground water samples were within the Table 3 Standards for PHC fractions F1 to F4. Monitoring well TH1 was dry at the time of sampling.

Additional characterization of soil and ground water impacts within each APEC will be required following building demolition before an RSC can be filed for the site. The extent of all impacts identified in soil and ground water must be fully delineated, both vertically and horizontally. Soil and ground water in exceedance of the Table 3 Standards must be remediated and/or risk assessed to support the filing of an RSC.

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# 1. Introduction

EXP Services Inc. (EXP) was retained by 11 Yorkville Partners Inc. to conduct a Phase Two Environmental Site Assessment (ESA) at 11 Yorkville Avenue, which encompasses the properties municipally addressed as 11 to 21 Yorkville Avenue (odd numbers only) and 16 and 18 Cumberland Street in Toronto, Ontario. For the purpose of this report, the terms "site" and "Phase Two property" refer collectively to the properties with the municipal addresses referenced above.

Based on the findings of the Phase One ESA conducted by EXP (2018) eight areas of potential environmental concern (APEC) were identified at the site. In addition, a Phase II ESA completed by Pinchin Ltd. for 21 Yorkville Avenue in 2016 identified ground water impacted with tetrachloroethylene (PCE), a volatile organic compound (VOC). In accordance with Ontario Regulation (O. Reg.) 153/04, a Phase Two ESA must be completed to evaluate soil and ground water quality within each APEC before a Record of Site Condition (RSC) can be filed for the site.

Given that the site buildings and the underground parking garage at 11 Yorkville Avenue occupy the majority of the footprint of the site, access for drilling equipment was limited. Therefore, the objective of the current Phase Two ESA was to evaluate the quality of fill material and to install ground water monitoring wells within accessible areas to provide additional information regarding the horizontal and vertical extent of VOC-impacted ground water previously identified beneath 21 Yorkville Avenue.

The Phase Two ESA was conducted in accordance with O. Reg. 153/04 and in accordance with generally accepted professional practices. Subject to this standard of care, EXP makes no express or implied warranties regarding its services and no third-party beneficiaries are intended. Our limitations and use of report are outlined in Appendix A. Tables and Figures referenced throughout the report are provided at the beginning of the Appendices.

## 1.1 Site Description

The Phase Two property is bounded by Yorkville Avenue to the north, a public laneway to the east, Cumberland Street to the south, and a public laneway/27 Yorkville Avenue to the west. The site location is shown on Figure 1. A public laneway transects the central portion of the site. The site measures approximately 0.33 hectares (0.82 acres) in area.

A topographic survey plan of the site was completed by WSP Geomatics Ontario Limited (WSP) and is provided in Appendix B.

## 1.2 Property Ownership

The legal description, property identification number (PIN), and owner of each municipal address encompassed by the Phase Two property are provided in the table below.

**Table 1.2: Phase Two Property Summary**

| Legal Description | PIN | Owner |
|---|---|---|
| **11 Yorkville Avenue**: Lots 7 to 9, Plan 355 except Part 1, 64R15426 | 21197-0142 (LT) | 11 Yorkville Partners Inc. |
| **17 Yorkville Avenue**: Part of Lots 10 and 11, Plan 355 desig. as Part 1, 66R21719 | 21197-0324 (LT) | 11 Yorkville Partners Inc. |
| **19 Yorkville Avenue**: Part of Lot 11, Plan 355 desig. as Part 2, 63R3495 | 21197-0140 (LT) | 11 Yorkville Partners Inc. |
| **21 Yorkville Avenue**: Lot 12, Part of Lot 13, Plan 355 as in CA257819 | 21197-0139 (LT) | 11 Yorkville Partners Inc. |
| **16 Cumberland Street**: Part of Lot 21, Concession 2 FTB as in EM86816 | 21197-0158 (LT) | 11 Yorkville Partners Inc. |
| **18 Cumberland Street**: Part of Lot 21, Concession 2 FTB as in CT637539 | 21197-0159 (LT) | 11 Yorkville Partners Inc. |

EXP was retained to conduct the Phase Two ESA by Ms. Kristy Shortall of 11 Yorkville Partners Inc.

## 1.3 Current and Proposed Future Uses

At the time of the investigation, the site was primarily occupied for mixed commercial and residential use. Several of the site buildings were vacant. The site is intended to be redeveloped as a high-rise residential condominium with commercial use at grade. An RSC will be required to support this transition to a more sensitive land use.

## 1.4 Applicable Site Condition Standard

This site is not considered to be potentially sensitive for the following reasons: there are no areas of natural or scientific interest on or within 30 metres of the site boundaries, bedrock is present at a depth greater than 2.0 metres below ground surface (mbgs), and the pH for soil samples tested is between 5 and 9. The absence of potable water use in the vicinity of the site, grain size analysis and current field observations concerning soil texture support the use of Table 3 Generic Site Condition Standards for a residential/parkland/institutional land use with medium to fine textured soil (Table 3 Standards).

# 2. Background Information

## 2.1 Physical Setting

### 2.1.1 Topography, Geology and Hydrology

The site is located in the physiographic region known as the Iroquois Plain (Chapman and Putnam, 1984). Stratigraphy consists of alternating layers of shallow water deposits of sand and silty sand and deeper water deposits of silt and clay (Sharpe, 1980).

Based on the findings of the current investigation, stratigraphy generally consisted of a layer of sand and gravel fill over a fine sand layer to a depth of 4.6 mbgs, over a silty clay layer to a depth of 10.6 mbgs, over a silty sand/sandy silt layer to a depth greater than 15.9 mbgs. According to the borehole log provided as part of the *Preliminary Geo-Environmental Investigation* report (McClymont & Rak Engineers, Inc. (MCR), 2016), the silty sand/sandy silt layer extended to a depth of 34 mbgs; a clayey silt till layer was encountered immediately overlying the shale bedrock, from approximately 34 to 38 mbgs.

According to the Ontario Geological Survey map of the area, the underlying geology comprises the Georgian Bay Formation, Blue Mountain Formation, Billings Formation, Collingwood Member, and Eastview Member. Bedrock at the site consists of Upper Ordovician shale, limestone, siltstone, and dolostone (Ontario Geological Survey, 1991).

According to the map *Quaternary Geology of Toronto and Surrounding Area*, the bedrock elevation of the site is at approximately 80 metres above sea level (masl), at a depth of approximately 125 mbgs (Sharpe, 1980). In the *Preliminary Geo-Environmental Investigation* conducted by MCR in 2016, shale bedrock was encountered at 38 mbgs.

The topography in the vicinity of the site is relatively flat. Regionally, land slopes south towards Lake Ontario.

Table 1 summarizes the environmental setting and site characteristics. Using $1 \times 10^{-5}$ cm/s for the hydraulic conductivity of silty sand to sandy silt, a gradient of 0.001 m/m, and 33% for effective porosity, Darcy's Law calculations were made to determine the potential ground water flow velocity at the site, as shown in Table 2. The ground water flow velocity was calculated to be approximately $9.56 \times 10^{-3}$ metres (0.9 centimetres) per year in the silty sand to sandy silt.

### 2.1.2 Water Bodies and Areas of Natural Significance

There are no water bodies on the site. The nearest surface water body is the Don River, located approximately 2 kilometres east of the site. The Don River flows south to Lake Ontario.

Based on the Ministry of Natural Resources and Forestry's "Make a Map: Natural Heritage Areas" the site is not located within 30 metres of any of the following:

- An area reserved or set apart as a provincial park or conservation reserve under the Provincial Parks and Conservation Reserves Act, 2006;
- An area of natural and scientific interest (life science or earth science) identified by the Ministry of Natural Resources and Forestry as having provincial significance;
- A wetland identified by the Ministry of Natural Resources and Forestry as having provincial significance;
- An area designated as an escarpment natural area or an escarpment protection area by the Niagara Escarpment Plan under the Niagara Escarpment Planning and Development Act;
- An area identified by the Ministry of Natural Resources and Forestry as significant habitat of a threatened or endangered species;
- An area which is habitat of a species that is classified under section 7 of the Endangered Species Act, 2007 as a threatened or endangered species;
- Property within an area designated as a natural core area or natural linkage area within the area to which the Oak Ridges Moraine Conservation Plan under the Oak Ridges Moraine Conservation Act, 2001 applies; and,
- An area set apart as a wilderness area under the Wilderness Areas Act.

The site is not located within 30 metres of a "natural heritage system", "special policy area", or "environmentally significant area" according to Maps 9, 10, and 12, respectively, of the *City of Toronto Official Plan (2015).*

## 2.2 Past Investigations

A summary of environmental reports that were reviewed by EXP is provided below.

**Table 2.2: Previous Reports Summary**

| Date | Report Title | Prepared For | Prepared By | Findings |
|---|---|---|---|---|
| June 1, 2006 | *Phase I Environmental Site Assessment Update – Draft, 11 Yorkville Avenue, Toronto, Ontario* | Cromwell Management Inc. | Jacques Whitford Limited<br><br>Linda Bennett, B.Sc.<br><br>Jason Dobbie, Senior Reviewer | The Phase I ESA Update was conducted for due diligence purposes in support of the planned re-financing of the site with Sun Life Financial. The purpose of the update was to comment on the current condition of the site in relation to a previous assessment conducted in 2001. A copy of the 2001 report was not provided to EXP for review.<br><br>At the time of the Phase I ESA, the site was occupied by a 10-storey commercial/residential building with associated parking areas to the south of the building. An underground parking garage was located under the entire site except for a three-metre-wide strip located along the northern property boundary.<br><br>Based on the historical information reviewed, the site had been occupied by the existing site building |

| Date | Report Title | Prepared For | Prepared By | Findings |
|---|---|---|---|---|
| | | | | since the mid-to-late 1950s. From the mid-to-late 1880s until the mid-to-late 1950s, the site was occupied by residential dwellings. No historical activities which would be considered sources of potential environmental concern were identified through the review of available historical records.<br><br>Except for new tenants in the site building and the construction of a condominium building and associated park to the north of the site (formerly a parking lot and a commercial building), no changes were observed since the previous Phase I ESA was completed in 2001.<br><br>Suspected mould growth was observed on several ceiling tiles in the basement of the building and on drywall surfaces in the interior of the fire pump room. It was recommended that a mould survey be conducted within the basement mechanical rooms. |
| February 13, 2015 | *Phase One Environmental Site Assessment, 11 Yorkville Avenue, Toronto, Ontario* | Bazis Inc. | SPL Consultants Limited (SPL)<br><br>Shawna-Marie Perry, B.Sc.<br><br>Tijana Medencevic, B.A. (Env.)<br><br>David Lewis, P.Eng. | A Phase One ESA was requested for due diligence purposes prior to a potential property transaction.<br><br>At the time of the assessment, the site was occupied by a 10-storey, mid-rise building. The main floor and second floor were occupied by commercial tenants while the upper floors were occupied for residential use. There was one level of underground parking.<br><br>The first developed use of the property, based on a review of city directories, is believed to be residential use beginning in the 1890s.<br><br>Based on the information gathered as part of this assessment, it was determined that there are PCAs associated with the current and historical use of the Phase One property and adjacent properties. PCAs included:<br>• The presence of an aboveground storage tank (AST) on the site, used for fuel storage for the backup generator;<br>• The potential for the importation of fill material of unknown quality to the site;<br>• The potential for electrical conductivity (EC) and sodium adsorption ratio (SAR) impacts to exist in soil adjacent to the roadway and laneway;<br>• The presence of ASTs and USTs, both current and historical, at the east adjacent property and at neighbouring properties to the north; |

| Date | Report Title | Prepared For | Prepared By | Findings |
|---|---|---|---|---|
| | | | | • The historical operation of dry cleaning equipment on an east neighbouring property, at two southwest neighbouring properties, and at west and northwest neighbouring properties; and,<br>• Historical commercial autobody shops located at neighbouring properties.<br><br>Potential contaminants of concern (pCOCs) associated with these PCAs were noted to include metals and inorganics, petroleum hydrocarbons (PHCs), volatile organic compounds (VOCs) and polycyclic aromatic hydrocarbons (PAHs).<br><br>A Phase Two ESA was warranted to evaluate the environmental quality of the soil and ground water at the site. It was noted that an RSC cannot be filed based solely on the findings of the Phase One ESA. |
| February 13, 2015 | *Phase One Environmental Site Assessment, 17 Yorkville Avenue, Toronto, Ontario* | Bazis Inc. | SPL<br><br>Shawna-Marie Perry, B.Sc.<br><br>Tijana Medencevic, B.A. (Env.)<br><br>David Lewis, P.Eng. | A Phase One ESA was requested for due diligence purposes prior to a potential property transaction.<br><br>At the time of the assessment, the Phase One property was occupied by a three-storey building with commercial and residential tenants.<br><br>The first developed use of the property, based on a review of city directories, is believed to be residential use beginning in the 1890s.<br><br>Based on the information gathered as part of this assessment, it was determined that there are PCAs associated with the current and historical use of the Phase One property and adjacent properties. PCAs included:<br>• The potential for the importation of fill material of unknown quality to the site;<br>• The potential for EC and SAR impacts to exist in soil adjacent to the roadway and laneway;<br>• The presence of ASTs and USTs, both current and historical, at the east adjacent property and at neighbouring properties to the north;<br>• The historical operation of dry cleaning equipment at an east neighbouring property, at two southwest neighbouring properties, and at west and northwest neighbouring properties; and,<br>• Historical commercial auto |

| Date | Report Title | Prepared For | Prepared By | Findings |
|---|---|---|---|---|
| | | | | • body shops located at neighbouring properties.<br><br>The pCOCs associated with these PCAs were noted to include metals and inorganics, PHCs, VOCs, and PAHs.<br><br>A Phase Two ESA was warranted to evaluate the environmental quality of soil and ground water at the site. It was noted that an RSC could not be filed based solely on the findings of the Phase One ESA. |
| February 13, 2015 | *Environmental Soil and Groundwater Investigation, 11 & 17 Yorkville Avenue, Toronto, Ontario* | Bazis Inc. | SPL<br><br>Shawna-Marie Perry, B.Sc.<br><br>Tijana Medencevic, B.A. (Env.)<br>David Lewis, P.Eng. | An Environmental Soil and Groundwater Investigation was undertaken to better understand site conditions prior to a potential property transaction. As the access to the site was restricted, sufficient coverage with boreholes and/or monitoring wells to support an O. Reg. 153/04 compliant Phase Two ESA could not be completed.<br><br>PCAs identified in the Phase One ESA included importation of fill material, de-icing activities, storage of gasoline and associated products in USTs (off-site) and the historical operation of dry cleaning equipment (where chemicals are used) on the east and west adjoining properties. The pCOCs as a result of these activities were considered to include PHCs, VOCs, PAHs, metals, and inorganics including EC and SAR.<br><br>A total of four boreholes (BH15-1, BH15-2, BH15-3S and BH15-3D) were advanced to depths between 5.5 and 22 mbgs. At one location in the north portion of the parking garage (BH15-1), refusal was encountered due to a second layer of concrete. The other three boreholes were completed as monitoring wells.<br><br>Soil analytical results were compared to the O.Reg. 153/04 Table 3 Standards for a residential /parkland/institutional property use. SPL noted that the observed grain size of the soil was a mixture of coarse and fine textured; for the assessment, soil was considered to be coarse textured.<br><br>Soil samples were collected from two of the boreholes (BH15-2 and BH15-3D) and submitted to the laboratory for analysis of PHCs, VOCs, PAHs, metals, and inorganics including EC and SAR. Soil samples were found to be within the O. Reg. 153/04 Table 3 Standards for the parameters analyzed. |

| Date | Report Title | Prepared For | Prepared By | Findings |
|---|---|---|---|---|
| | | | | EXP noted that the soil samples analyzed for EC and SAR were collected relatively deep (from 3.1 to 3.7 mbgs in both locations) and would not be representative of shallow soil conditions. Similarly, the soil samples analyzed for VOCs were also collected quite deep, from 6.1 to 6.7 mbgs at BH15-2 and from 21.3 to 21.9 mbgs at BH15-3. The rationale for the depth of the VOC samples was to provide "vertical delineation"; additional information to support this rationale was not provided.<br><br>Ground water samples were collected from two monitoring wells (BH15-3 and BH15-3S) and submitted to the laboratory for analysis of PHCs, VOCs, PAHs and metals and inorganics. Ground water samples were found to be within the O. Reg. 153/04 Table 3 Standards for the parameters analyzed.<br><br>SPL noted that elevated concentrations of PCE, toluene, and xylene, within an order of magnitude of the Standards, were detected in both monitoring wells. It is possible that a source of VOCs is present in the vicinity of the site and that the concentration of VOCs in ground water may increase closer to the source location. There is the potential for VOC concentrations in ground water to exceed the O. Reg. 153/04 Table 3 Standards in areas that were inaccessible at the time of drilling.<br><br>A Phase Two ESA, conducted in accordance with O. Reg. 153/04, and remedial activities (if applicable) would be required to support the filing of an RSC for the site. |
| February 17, 2015 | *Designated Substances and Hazardous Materials Survey, 11 Yorkville Avenue, Toronto, Ontario* | Bazis Inc. | SPL<br><br>Glenn Wood, Ph.D., CIH, ROH | A Designated Substances and Hazardous Materials Survey was conducted for due diligence purposes prior to a potential property transaction.<br><br>A summary of the findings is as follows:<br>• None of the homogeneous building material samples collected and submitted for laboratory analysis were identified as asbestos-containing;<br>• Detectable concentrations of lead were identified in five of the seven paint samples submitted for laboratory analysis;<br>• Although no samples were analyzed for mercury, mercury is suspected to be present in liquid-filled reservoirs in thermostats, as a gas |

| Date | Report Title | Prepared For | Prepared By | Findings |
|---|---|---|---|---|
| | | | | in fluorescent light tubes, and as a bactericide or stabilizer in paints and caulking;<br>• Crystalline silica was assumed to be present in brick, concrete, asphalt cement, and mortar;<br>• Significant water damage was observed within the northern rooms in the basement. Visible mould growth was not observed, however, it is expected to be present on all porous materials (i.e. drywall) near the source of water intrusion; and,<br>• Visible mould growth was observed in the vacant unit on the west side of the first floor.<br><br>It was noted that destructive testing was not conducted at the time of the site investigation. Based on the reported date of building construction, asbestos-containing materials may be present within inaccessible wall and ceiling cavities throughout the building. It was recommended that further investigation be conducted prior to renovation/demolition.<br><br>It was recommended that special precautions be taken when disturbing any concrete or painted surfaces, given the presence of silica, lead and potentially arsenic. The presence of mercury within assembled units is not considered a hazard provided that the assembled units remain sealed and intact. Contractors should be warned of the presence of mould and every precaution should be taken to prevent airborne exposure to workers. |
| September 29, 2015 | *Phase I Environmental Site Assessment, 16 Cumberland Street, Toronto, Ontario* | KingSett Capital | Pinchin Ltd. (Pinchin)<br><br>Ashleigh Henderson, B.A., Dip.Env.Tech.<br><br>Jason Dobbie, A.Sc.T. | The purpose of the Phase I ESA was to identify sources of potential environmental concern prior to the potential acquisition of the site.<br><br>At the time of the assessment, the site was developed with a two-storey, multi-tenant commercial building.<br><br>Based on the results of the Phase I ESA, the following were identified as sources of potential environmental concern:<br>• From at least 1947 until at least 1972, Dodge Chemical Co., a chemical manufacturing operation, occupied 26 to 28 Cumberland Street;<br>• From at least 1895 until at least 1939, J. Townsend Livery/Townsend Livery Limited occupied 21 to 25 Yorkville Avenue as a repair garage with a machine shop; |

| Date | Report Title | Prepared For | Prepared By | Findings |
|---|---|---|---|---|
| | | | | • From at least 1962 until at least 1981/1982, Parkers Dye Works Cleaners Ltd., a cleaning and pressing operation, occupied 21 to 29 Yorkville Avenue; and,<br>• From at least 1957 to at least 1972, 22 to 24 Cumberland Street was occupied by an automotive repair garage.<br><br>Pinchin also notes that there are known ground water impacts (PCE and TCE) in the vicinity of the site. The source of this information is not specified in the report. No additional details are provided.<br><br>A soil vapour assessment was recommended to determine if there are any risks to the occupants of the site building. |
| September 30, 2015 | *Soil Vapour Assessment, 16 Cumberland Street, Toronto, Ontario* | KingSett Capital | Pinchin<br><br>Kathryn Matheson, M.Env.Sc.<br><br>John Goodin, M.Sc., C.Chem., QPRA | A soil vapour assessment was conducted to assess the potential for chlorinated VOCs within the subsurface to impact indoor air within the site building. The soil vapour assessment was intended to satisfy the client's due diligence requirements in relation to the potential acquisition of the site.<br><br>Two sub-slab vapour pins were installed below the concrete slab in the basement of the site building. The sub-slab vapour samples were collected from the newly installed pins for laboratory analysis of PCE and its degradation products.<br><br>Indoor air concentrations were estimated from the measured sub-slab vapour concentrations by applying the Ministry of the Environment and Climate Change (MOECC) default attenuation factor of 0.004 for an industrial/commercial property use.<br><br>Based on the soil vapour assessment, the estimated indoor air concentrations of all parameters analyzed were below the MOECC Health Based Indoor Air Criteria (HBIAC) for a commercial/industrial property use. No further assessment work was recommended. |
| November 18, 2015 | *Phase I Environmental Site Assessment, 21-25 Yorkville Avenue, Toronto, Ontario* | Stikeman Elliott LLP | Golder Associates Ltd. (Golder)<br><br>Valentina Ulloa, B.Sc. | The Phase I ESA was conducted in advance of a potential property transaction.<br><br>The site was comprised of a rectangular-shaped parcel of land, approximately 824 $m^2$ in area. At the time of the assessment, the site was owned by 173458 Canada Inc. and was developed with a four-storey building (one storey is partially below |

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| | | | David Smyth, P.Geo., QPESA | grade). The building was primarily occupied by Marvel Beauty School; Rest Nest Float Club (a spa) occupied a portion of the first floor. The basement was vacant but was formerly occupied by The School of Makeup Art.<br><br>The original site building was reportedly constructed in the late 1800s; however, an insurance report indicated that the site building was constructed in 1960. The most recent renovation was reportedly in 1989 when the site building was expanded 10 metres to the north and the third floor was added.<br><br>Based on a review of city directories, former occupants of the site include Townsend's Livery from 1920 to 1940; Swayze Trailer & Body Works, Machine Repairs Unlimited, and Table Manufacturing in the 1950s; and, Ontario Automobile Co. Ltd. from 1955 until the 1960s. In addition, the site and adjacent building to the west (27 to 29 Yorkville Avenue) were occupied by Parker's Dye Works & Cleaners from 1965 until 1980.<br><br>FIPs show two 2,273 L (500 gallon) storage tanks on the north side of the site when it was occupied by Townsend Livery (FIP dated 1943) and Parkers Dye Works Cleaners Ltd. (FIP dated 1965). Based on the EcoLog ERIS report, these two gasoline tanks were installed in 1919 and 1927. The unknown historical chemical management practices associated with the cleaners and fuel management at the site were identified as sources of potential environmental concern.<br><br>Toronto Fire Station No. 312, located approximately 15 metres north of the site at 34 Yorkville Avenue, was listed as having one active, single-walled UST, installed in 1990 with a capacity of 2,273 L. Based on the location and proximity to the site, the presence of this active UST was identified as a source of potential environmental concern for the site.<br><br>Aspen Cleaners was formerly located at 852 Yonge Street, located approximately 90 metres northeast of the site on the northwest corner of Yonge Street and Yorkville Avenue. Aspen Cleaners was registered as a generator of halogenated solvents from 1986 to 1998. Based on proximity to the site and the generation of wastes over 12 years, the presence of a former dry cleaning facility was |

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| | | | | identified as a source of potential environmental concern for the site.<br><br>Based on the findings of the Phase I ESA, further assessment of soil and ground water quality was recommended. |
| January 21, 2016 | *Phase II Environmental Site Assessment, 21-25 Yorkville Avenue, Toronto, Ontario* | KingSett Capital | Pinchin<br><br>Brittany Bertrand, B.Eng., EIT<br><br>Robert Tossell, M.Sc., P.Geo. (Limited) | The objective of the Phase II ESA was to address sources of potential environmental concern identified by the Phase I ESA (Golder, 2015) prior to a potential real estate transaction.<br><br>The Phase II ESA included the advancement of five boreholes, all of which were completed as ground water monitoring wells.<br><br>The boreholes were advanced to a maximum depth of 6.1 metres below the floor slab. Stratigraphy generally consisted of fine-grained, moist, brown sand to a depth of approximately 1.0 metre beneath the basement floor slab. The sand was underlain by moist, grey clay with trace silt that extended to the maximum borehole completion depth. The depth to the ground water table ranged from 0.439 metres at monitoring well MW04 to 5.325 metres at monitoring well MW01.<br><br>Select “worst-case” soil samples were submitted for laboratory analysis of PHC fractions F1 to F4, VOCs, PAHs, and metals. Ground water samples collected from the newly installed wells were submitted for laboratory analysis of PHC fractions F1 to F4, VOCs, and metals.<br><br>The O. Reg. 153/04 Table 3 Standards for an industrial/commercial/community land use and medium to fine texture soil were applied to the site.<br><br>The soil samples submitted for analysis of PHC fractions F1 to F4, VOCs, PAHs, and/or metals were within the O. Reg. 153/04 Table 3 Standards.<br><br>Ground water samples were submitted from monitoring wells MW01, MW02, and MW04; monitoring wells MW03 and MW05 were dry at the time of sampling. The samples collected from monitoring wells MW01 and MW02 had concentrations of one or more VOC parameters that exceeded the O. Reg. 153/04 Table 3 Standards. The ground water samples submitted for analysis of PHC fractions F1 to F4 and metals were within the O. Reg. 153/04 Table 3 Standards. |

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| | | | | Based on the findings of the Phase II ESA, VOC-impacted ground water was identified on the south portion of the site. It was understood that the site was intended to be part of a potential redevelopment. Pinchin recommended that additional assessment and/or remediation work be completed at the time of the planned redevelopment. |
| January 26, 2016 | *Sub Slab Vapour Assessment, 21 to 25 Yorkville Avenue, Toronto, Ontario* | KingSett Capital | Pinchin<br><br>Kathryn Matheson, M.Env.Sc.<br><br>Stephanie James, B.Sc.<br><br>John Goodin, M.Sc., C.Chem., QPRA | A soil vapour assessment was conducted to assess the potential for chlorinated VOCs within the subsurface to impact indoor air within the site building. The soil vapour assessment was intended to satisfy the client's due diligence requirements prior to the potential acquisition of the site.<br><br>Three sub-slab vapour pins were installed below the concrete slab in the basement of the site building. The sub-slab vapour samples were collected from the newly installed pins, following leak-testing and purging, for laboratory analysis of PCE and its degradation products.<br><br>Indoor air concentrations were estimated from the measured sub-slab vapour concentrations by applying the MOECC default attenuation factor of 0.004 for an industrial/commercial property use.<br><br>Based on the soil vapour assessment, the estimated indoor air concentrations of all parameters analyzed were below the MOECC HBIAC for a commercial/industrial property use. No further assessment work was recommended. |
| March 4, 2016 | *Preliminary Geo-Environmental Investigation, 19 Yorkville Avenue, Toronto, Ontario* | Bazis International Inc. | MCR<br><br>Jeremy Bobro, M.Sc. | The preliminary geo-environmental assessment was conducted for due diligence purposes.<br><br>At the time of the investigation, the site was occupied by a five-storey commercial office building with one basement level under the north portion of the site.<br><br>One borehole (BH1) was advanced in the rear parking area behind the building; the borehole was completed as a monitoring well. The borehole was advanced to a depth of 38.15 mbgs and terminated in weathered shale bedrock.<br><br>Two soil samples and one ground water sample were collected and submitted for analysis of PHC fractions F1 to F4, VOCs, PAHs, polychlorinated |

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| | | | | biphenyls (PCBs), and metals and inorganic parameters.<br><br>Soil and ground water analytical results were compared to the O. Reg. 153/04 Table 3 Standards for a residential/parkland/institutional land use for coarse-textured soil.<br><br>The surficial soil sample (BH1-SS1) was found to exceed the O. Reg. 153/04 Table 3 Standards for various PAH parameters. The deeper soil sample submitted from the upper native soil was within the O. Reg. 153/04 Table 3 Standards for all parameters analyzed. Ground water quality was within the O. Reg. 153/04 Table 3 Standards for all parameters analyzed.<br><br>One ground water sample was also submitted for laboratory analysis of the suite of parameters provided in the *Toronto Municipal Code, Chapter 681, Sewers By-law*. The sample exceeded both the storm and sanitary sewer criteria for one or more of the following parameters: total suspended solids (TSS), various metals, total PAHs, and nonylphenol.<br><br>A Phase One ESA, a Phase Two ESA including additional sampling and analysis, and a remediation program in accordance with O. Reg. 153/04 would be required before an RSC could be filed for the property. |
| February 26, 2018 | *Phase One Environmental Site Assessment, 11 Yorkville Avenue, Toronto, Ontario* | 11 Yorkville Partners Inc. | EXP Services Inc.<br><br>Leah Whittaker, B.Sc.<br><br>Carla Reynolds, P.Biol., P. Geo. (Limited), $QP_{ESA}$ | The objective of the Phase One ESA was to support the filing of an RSC in accordance with O. Reg. 153/04.<br><br>PCAs were identified based on a review of the FIPs, chain of title, EcoLog ERIS report, municipal directory search, aerial photographs, and on the site reconnaissance. The potential for each PCA to result in an APEC was evaluated based on its proximity to the site and on its location relative to the inferred southerly ground water flow direction. PCAs at properties located upgradient to the north, or immediately cross-gradient to the east and west of the site were considered to result in an APEC at the site.<br><br>Six PCAs (S1 to S6), considered to contribute to APECs, were identified on the Phase One property:<br>• S1, S2, S3 – (28) Gasoline and Associated Products Storage in Fixed Tanks;<br>• S4 – (10) Commercial Autobody Shops; |

| Date | Report Title | Prepared For | Prepared By | Findings |
|---|---|---|---|---|
| | | | | • S5 – (30) Importation of Fill Material of Unknown Quality; and,<br>• S6 – (37) Operation of Dry Cleaning Equipment (where chemicals are used).<br><br>Sixteen PCAs (S7 to S22), considered to contribute to APECs, were identified at surrounding properties within the Phase One Study Area:<br>• S7 – (8) Chemical manufacturing, processing and bulk storage;<br>• S8 – (10) Commercial Autobody Shops;<br>• S9 to S13 – (37) Operation of Dry Cleaning Equipment (where chemicals are used).<br>• S14 – (10) Commercial Autobody Shops;<br>• S15 to S21 – (28) Gasoline and Associated Products Storage in Fixed Tanks; and,<br>• S22 – (37) Operation of Dry Cleaning Equipment (where chemicals are used).<br><br>Twelve APECs were identified.<br><br>In accordance with O. Reg. 153/04, a Phase Two ESA must be completed to evaluate soil and ground water quality within the APECs before an RSC can be filed for the site. |

# 3. Scope of Investigation

## 3.1 Overview of Site Investigation

The investigation included the following activities:

- Preparation of a site-specific Health and Safety Plan;
- Requesting, obtaining, and reviewing public utility locates prior to the Phase Two investigation field work;
- Retaining a subcontractor to locate on-site private utility locates prior to the Phase Two investigation field work;
- Inspecting soil and ground water conditions by advancing four test holes across the site, and installing ground water monitors in all four of the test holes;
- Field screening of all recovered soil samples for the presence of environmental impact (i.e. petroleum vapours, chemical staining, or odours);
- Submitting selected soil samples for laboratory analysis of the potential contaminants of concern (pCOCs);

- Monitoring and measuring ground water levels in the monitoring wells to determine ground water elevations and ground water flow direction;
- Submitting ground water samples from each of the newly installed and previously installed monitoring wells for laboratory analysis of the potential COCs;
- Conducting soil and ground water sampling in accordance with the MOE *Guidance on Sampling and Analytical Methods for Use at Contaminated Site in Ontario*, dated December 1996;
- Following Standard Operating Procedures (SOPs), and Quality Assurance and Quality Control (QA/QC) measures to ensure defined quality standards were met;
- Determining the appropriate SCS in accordance with O. Reg. 153/04 and comparing the results of the soil and ground water analyses to these Standards; and,
- Documenting the results of the investigation.

EXP has confirmed neither the completeness nor the accuracy of any of the records that were obtained or of any of the statements made by others.

EXP personnel who conducted assessment work for this project included Ms. Carla Reynolds ($QP_{ESA}$), Ms. Leah Whittaker, and Mr. Ajay Jayalath. An outline of their qualifications is provided in Appendix C.

## 3.2 Media Investigated

Given that the site buildings and the underground parking garage at 11 Yorkville Avenue occupy the majority of the footprint of the site, access for drilling equipment was limited. Therefore, the objective of the current Phase Two ESA was to evaluate the quality of fill material and to install ground water monitoring wells within accessible areas to provide additional information regarding the horizontal and vertical extent of VOC-impacted ground water previously identified beneath 21 Yorkville Avenue.

Soil samples at four locations across the site were collected and analyzed for PHC fractions F1 to F4, PAHs, VOCs, metals, hydride-forming metals, and other regulated parameters (ORPs). Ground water samples at three locations were properly collected and analyzed for PHC fractions F1 to F4 and VOCs. One monitoring well (TH1) was dry at the time of sampling.

No sediment was present at the Phase Two property.

## 3.3 Phase One Conceptual Site Model

The Phase One property encompasses the properties municipally addressed as 11 to 21 Yorkville Avenue (odd numbers only) and 16 and 18 Cumberland Street in Toronto, Ontario. The site is bounded by Yorkville Avenue to the north, a public laneway to the east, Cumberland Street to the south, and a public laneway/27 Yorkville Avenue to the west. A public laneway

transects the central portion of the site. The site measures approximately 0.33 hectares (0.82 acres) in area. The site location is shown on Figure 1.

None of the site addresses were listed in the 1875 municipal directory; many of the site addresses were listed in the 1885 municipal directory. The earliest available FIP for the site was dated 1884. As of 1884, the properties municipally addressed as 11 to 17 Yorkville Avenue and 16 and 18 Cumberland Street were developed. The configuration of the structures suggests that they were occupied for residential use. The portion of the site municipally addressed as 19 to 21 Yorkville Avenue was shown to be vacant and undeveloped in 1884.

At the time of the Phase One ESA site visit, the site buildings were occupied for a mixture of commercial and residential use. The building at 21 Yorkville Avenue was vacant.

The properties on the north side of Yorkville Avenue were occupied by a fire station, a public library, and as public park space. The property immediately west of the site along Yorkville Avenue was vacant, but was previously occupied as a multi-tenant commercial building and the property immediately west of the site along Cumberland Street was occupied by a restaurant and as offices. The property east of the site (formerly 836 to 848 Yonge Street) was being developed as a high-rise condominium. The properties east of the site from 826 to 834 Yonge Street are occupied by various tenants for commercial use. The properties along the north side of Cumberland Street (12 to 14 Cumberland Street and 20 to 32 Cumberland Street) were occupied for mixed commercial and residential use. The property south of the site, south of Cumberland Street, is occupied by a shopping mall (Cumberland Terrace).

### 3.3.1 Potentially Contaminating Activities and Areas of Potential Environmental Concern

Six PCAs (S1 to S6), considered to contribute to APECs, were identified on the Phase One property:

- S1, S2, S3 – (28) Gasoline and Associated Products Storage in Fixed Tanks;
- S4 – (10) Commercial Autobody Shops;
- S5 – (30) Importation of Fill Material of Unknown Quality; and,
- S6 – (37) Operation of Dry Cleaning Equipment (where chemicals are used).

Sixteen PCAs (S7 to S22), considered to contribute to APECs, were identified within the Phase One Study Area:

- S7 – (8) Chemical manufacturing, processing and bulk storage;
- S8 – (10) Commercial Autobody Shops;
- S9 to S13 – (37) Operation of Dry Cleaning Equipment (where chemicals are used).
- S14 – (10) Commercial Autobody Shops;
- S15 to S21 – (28) Gasoline and Associated Products Storage in Fixed Tanks; and,
- S22 – (37) Operation of Dry Cleaning Equipment (where chemicals are used).

The number presented in brackets beside each PCA is associated with the PCA number in Table 2, Schedule D of O. Reg. 153/04.

All other PCAs (S23 through S64) within the Phase One Study Area are considered *de minimis,* and do not contribute to an APEC on-site. Based on the inferred southerly ground water flow direction, PCAs S23 through S64 are located downgradient of the site, or cross-gradient and sufficiently distant from the site, that the risks associated with these potential sources are considered *de minimis*.

The locations of the PCAs are shown on Figure 2A. The locations of the APECs are shown on Figure 2B. All PCAs, considered to contribute to an APEC, are summarized in Table 3.3.1.

**Table 3.3.1: Areas of Potential Environmental Concern**

| Area of Potential Environmental Concern | Location of Area of Potential Environmental Concern on RSC Property | Potentially Contaminating Activity[1] | Location of PCA (on-site or off-site) | Contaminants of potential concern | Media potentially impacted (ground water, soil and/or sediment) |
|---|---|---|---|---|---|
| A1 | East central portion of the site | S1: (28) Gasoline and Associated Products Storage in Fixed Tanks | On-site | PHCs<br>BTEX | Soil and ground water |
| A2 | | S2: (28) Gasoline and Associated Products Storage in Fixed Tanks | On-site | | |
| B1 | Northwest portion of the site | S3: (28) Gasoline and Associated Products Storage in Fixed Tanks | On-site | PHCs<br>BTEX | Soil and ground water |
| B2 | | S4: (10) Commercial Autobody Shops | On-site | PHCs<br>VOCs including BTEX<br>PAHs<br>Metals | |
| C | Central portion of site, north of public laneway | S5: (30) Importation of Fill Material of Unknown Quality | On-site | PAHs<br>Metals<br>As, Sb, Se<br>B-HWS, Hg, CN-EC<br>SAR | Soil and ground water |

| Area of Potential Environmental Concern | Location of Area of Potential Environmental Concern on RSC Property | Potentially Contaminating Activity[1] | Location of PCA (on-site or off-site) | Contaminants of potential concern | Media potentially impacted (ground water, soil and/or sediment) |
|---|---|---|---|---|---|
| D1 | Western portion of the site | S6: (37) Operation of Dry Cleaning Equipment (where chemicals and used) | On-site | VOCs | Soil and ground water |
| D2 | | S7: (8) Chemical Manufacturing, Processing, and Bulk Storage | On-site | PHCs<br>VOCs<br>PAHs<br>Metals<br>As, Sb, Se<br>B-HWS, Hg, CN- | |
| E | Central portion of site, north of public laneway | S8: (10) Commercial Autobody Shops | Off-site | PHCs<br>VOCs including BTEX<br>PAHs<br>Metals | Ground water |
| F1 | Eastern portion of the site | S9: (37) Operation of Dry Cleaning Equipment (where chemicals and used) | Off-site | VOCs | Ground water |
| | | S10: (37) Operation of Dry Cleaning Equipment (where chemicals and used) | Off-site | | |
| | | S11: (37) Operation of Dry Cleaning Equipment (where chemicals and used) | Off-site | | |
| | | S12: (37) Operation of Dry Cleaning Equipment (where chemicals and used) | Off-site | | |
| | | S13: (37) Operation of Dry Cleaning Equipment (where chemicals and used) | Off-site | | |
| F2 | | S14: (10) Commercial Autobody Shops | Off-site | PHCs<br>VOCs including BTEX<br>PAHs<br>Metals | |
| G | Northern portion of the site | S15: (28) Gasoline and Associated Products Storage in Fixed Tanks | Off-site | PHCs<br>BTEX | Ground Water |
| | | S16: (28) Gasoline and Associated Products Storage in Fixed Tanks | Off-site | | |

| Area of Potential Environmental Concern | Location of Area of Potential Environmental Concern on RSC Property | Potentially Contaminating Activity[1] | Location of PCA (on-site or off-site) | Contaminants of potential concern | Media potentially impacted (ground water, soil and/or sediment) |
|---|---|---|---|---|---|
| | | S17: (28) Gasoline and Associated Products Storage in Fixed Tanks | Off-site | | |
| | | S18: (28) Gasoline and Associated Products Storage in Fixed Tanks | Off-site | | |
| | | S19: (28) Gasoline and Associated Products Storage in Fixed Tanks | Off-site | | |
| | | S20: (28) Gasoline and Associated Products Storage in Fixed Tanks | Off-site | | |
| | | S21: (28) Gasoline and Associated Products Storage in Fixed Tanks | Off-site | | |
| H | Western portion of the site | S22: (37) Operation of Dry Cleaning Equipment (where chemicals and used) | Off-site | VOCs | Ground water |

[1] The number presented in brackets is the PCA number listed in Table 2, Schedule D of O. Reg. 153/04.

PHCs = petroleum hydrocarbons
PAHs = polycyclic aromatic hydrocarbons
BTEX = benzene, toluene, ethylbenzene, xylenes
VOCs = volatile organic compounds
As, Se, Sb = arsenic, selenium, antimony
Hg = mercury
$CN^-$ = free cyanide
CrVI = hexavalent chromium
HWS-B = hot water-soluble boron
EC and SAR = electrical conductivity and sodium adsorption ratio

APEC A1 - S1: (28) Gasoline and Associated Products Storage in Fixed Tanks – A double-wall, steel AST with a capacity of 935 litres was observed in the basement of 11 Yorkville Avenue. The AST contains diesel for the operation of the back-up generator. The pCOCs associated with the presence of the tank at 11 Yorkville Avenue include PHCs and benzene, toluene, ethylbenzene, and xylenes (BTEX) in soil and ground water.

APEC A2 – S2: (28) Gasoline and Associated Products Storage in Fixed Tanks – A historical tank was registered at 11 Yorkville Avenue with a permit dated 1920. The tank was associated with a public garage, located on the south portion of the property. The contents of the tank were not specified. The pCOCs associated with the historical presence of a tank at the rear of 11 Yorkville Avenue include PHCs and BTEX in soil and ground water.

APEC B1 – S3: (28) Gasoline and Associated Products Storage in Fixed Tanks – Two gasoline USTs, each with a capacity of approximately 2,273 litres, were shown to be located in the roadway immediately north of 21 to 25 Yorkville Avenue on FIPs dated 1939, 1943, and 1965. In municipal directories dated 1905, 1915, 1925 and 1935 and on FIPs dated 1939 and 1943, 21 to 25 Yorkville Avenue was shown to be occupied by "Townsend Livery Limited", as a garage. The pCOCs associated with the historical USTs at 21 Yorkville Avenue include PHCs and BTEX in soil and ground water.

APEC B2 – S4: (10) Commercial Autobody Shops – In the 1940s, 21 Yorkville Avenue was occupied by "Swayze Trailer and Body Works". The pCOCs associated with the historical operation of an autobody shop at 21 Yorkville Avenue include PHCs, VOCs including BTEX, PAHs, and metals.

APEC C – S5: (30) Importation of Fill Material of Unknown Quality – The potential for fill material of unknown quality to exist on the site, to the north of the public laneway, was identified based on borehole logs provided as part of previous investigations. According to the borehole logs provided by SPL as part of the *Environmental Soil & Groundwater Investigation* report, a layer of silty sand to sand fill up to 2.4 metres thick was encountered beneath the ground surface. This fill layer was noted to contain trace clay and trace brick fragments. Based on the borehole log provided as part of the *Preliminary Geo-Environmental Investigation* report conducted by MCR (2016), a 1.5-metre-thick layer of sand and gravel fill with trace brick, coal, asphalt, and concrete pieces was encountered beneath the asphalt. The pCOCs associated with fill material of unknown quality include PHCs, VOCs, PAHs, metals, hydride-forming metals, hot water soluble boron, mercury, free cyanide, EC, and SAR.

APEC D1 – S6: (37) Operation of Dry Cleaning Equipment (where chemicals are used) – In the 1965 FIP, 21 and 25 Yorkville Avenue (along with the adjacent 27 Yorkville Avenue) are occupied by "Parkers Dye Works and Cleaners Ltd" for cleaning, dying and pressing. The pCOCs associated with the historical operation of a dry cleaner at 21 to 25 Yorkville Avenue include VOCs in soil and ground water.

APEC D2 – S7: (8) Chemical Manufacturing, Processing and Bulk Storage – In the 1965 FIP, 26 and 28 Cumberland Street are shown to be occupied by a chemical manufacturer. In the 1957 and 1972 street directories, 26 and 28 Cumberland Street are listed as being occupied by Dodge Chemical Co. Ltd. The pCOCs associated with the historical chemical manufacturing activities include PHCs, VOCs, PAHs, metals, hydride-forming metals, hot water soluble boron, mercury and free cyanide.

APEC E – S8: (10) Commercial Autobody Shops – In the 1925 municipal directory, 26 and 28 Cumberland Street is shown to be occupied by "Crown Jas, garage". In the 1939 and 1943 FIPs, 26 and 28 Cumberland Street is shown to be occupied by "Sussex Auto Body". In the 1957 and 1972 street directory listings, 22 Cumberland Street is listed as being occupied by Toronto Auto Collision Repairs. The pCOCs associated with the historical operation of a garage and autobody shop at 22 to 28 Cumberland Street include PHCs, VOCs including BTEX, PAHs, and metals in ground water.

APEC F1 – S9 to S13: (37) Operation of Dry Cleaning Equipment (where chemicals are used) – Based on the findings of the records review, historical dry cleaning operations were identified at 860 Yonge Street (per 1939 and 1943 FIP), 852 Yonge Street (EcoLog ERIS report), 9 Yorkville Avenue (1995 and 2002 municipal directories), 846 Yonge Street (1957 municipal directory), and 807 to 809 Yonge Street (1935, 1945, and 1972 municipal directory). The pCOCs associated with the historical operation of a dry cleaner at these five properties include VOCs in ground water.

APEC F2 – S14: (10) Commercial Autobody Shops – According to the 1945 and 1957 municipal directories, 5 Yorkville Avenue was historically occupied by Bayside Body and Fender Repairs. The pCOCs associated with the historical autobody shop include PHCs, VOCs including BTEX, PAHs, and metals in ground water.

APEC G – S15 to S21: (28) Gasoline and Associated Products Storage in Fixed Tanks – Based on the findings of the records review, historical USTs were identified at 34 Yorkville Avenue (EcoLog ERIS report) and 890 Yonge Street (EcoLog ERIS report). Historical service stations with USTs were identified at 34 to 38 Yorkville Avenue (1939 and 1943 FIPs; 1945 to 1995 municipal directories), 880 Yonge Street/1 Davenport Road (1939, 1943, and 1965 FIPs; 1945 and 1957 municipal directories), 745 Church Street/835 Yonge Street (EcoLog ERIS report), 837 Yonge Street (1965 FIP), and 32 Davenport Road (1939 and 1943 FIP; EcoLog ERIS report). The pCOCs associated with the historical USTs and service stations at these five properties include PHCs and BTEX in ground water.

APEC H – S22: (37) Operation of Dry Cleaning Equipment (where chemicals are used) – According to the 1935 municipal directory and the 1939 FIP, 40 Yorkville Avenue was historically occupied by Ford Cleaners Limited. The pCOCs associated with the historical operation of a dry cleaner include VOCs in ground water.

The locations of the PCAs are shown on Figure 2A. The locations of the APECs are shown on Figure 2B.

### 3.3.2 Subsurface Structures and Utilities

Natural gas is supplied by Enbridge. Hydro is supplied by Toronto Hydro. Natural gas and hydro are supplied underground via either Yorkville Avenue or Cumberland Street.

The buildings are all serviced by municipal water and sewers. The City of Toronto obtains its potable water from Lake Ontario.

Storm water catch basins were observed in the roadways along both Yorkville Avenue and Cumberland Street.

Given the depth to the ground water table, measured to range from 0.44 to 5.33 mbgs beneath 21 Yorkville Avenue (Pinchin, 2016), there is the potential for ground water flow direction to be

influenced by the basements of the site structures and underground utilities. These may create preferential flow pathways by which impacted ground water can migrate.

### 3.3.3 Physical Setting

The site is located in the physiographic region known as the Iroquois Plain (Chapman and Putnam, 1984). Stratigraphy consists of alternating layers of shallow water deposits of sand and silty sand and deeper water deposits of silt and clay (Sharpe, 1980). Based on the borehole log provided as part of the *Preliminary Geo-Environmental Investigation* report (MCR, 2016), stratigraphy generally consisted of a silty sand layer to a depth of 4 mbgs, over a silty clay layer to a depth of 12 mbgs, over a silty sand/sandy silt layer to 34 mbgs. A clayey silt till layer was encountered immediately overlying the shale bedrock, from approximately 34 to 38 mbgs.

According to the Ontario Geological Survey map of the area, the underlying geology comprises the Georgian Bay Formation, Blue Mountain Formation, Billings Formation, Collingwood Member, and Eastview Member. Bedrock at the site consists of Upper Ordovician shale, limestone, siltstone, and dolostone (Ontario Geological Survey, 1991).

According to the map *Quaternary Geology of Toronto and Surrounding Area*, the bedrock elevation of the site is at approximately 80 metres above sea level (masl), at a depth of approximately 36 mbgs (Sharpe, 1980). This is generally consistent with what was reported in the *Preliminary Geo-Environmental Investigation* (MCR, 2016) where shale bedrock was encountered at 38 mbgs.

There are no water bodies on the site. The nearest surface water body is the Don River, located approximately 2 kilometres east of the site. The Don River flows south to Lake Ontario.

The investigation undertaken by EXP with respect to this report and any conclusions or recommendations made in this report reflect EXP's judgement based on the site conditions observed at the time of the site inspection on the date(s) set out in this report and on information available at the time of preparation of this report. EXP has confirmed neither the completeness nor the accuracy of the records that were provided by others; as such, the historical records review is identified as a potential source of uncertainty during the investigation. The CSM is developed using multiple lines of evidence, searches and source information to make every reasonable attempt to ensure that findings of environmental significance are captured.

Any uncertainty or absence of information in the records review, interviews, and site reconnaissance components of the Phase One investigation are not anticipated to materially affect the validity of the CSM or Phase One conclusions.

### 3.4 Deviations from Sampling and Analysis Plan

The sampling and analysis plan is outlined in Section 4 of this report and is provided in Appendix D.

Monitoring well TH1 was dry at the time of sampling; no ground water sample was collected. There were no other deviations from the sampling and analysis plan.

### 3.5 Impediments

Given that the site buildings and the underground parking garage at 11 Yorkville Avenue occupy the majority of the footprint of the site, access for drilling equipment was limited. Therefore, test holes were advanced in the rear parking areas of 19 Yorkville Avenue and 16 Cumberland Street.

Additional characterization of soil and ground water impacts within each of the APECs will be required following building demolition before an RSC can be filed for the site.

## 4. Investigative Method

### 4.1 General

EXP performed the Phase Two ESA following the requirements of O. Reg. 153/04, *Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario* (MOECC, 1996), and in accordance with generally accepted professional practices.

EXP followed SOPs and QA/QC measures to ensure defined quality standards were met; there were no deviations from the associated SOPs.

### 4.2 Drilling and Excavating

The drilling investigation was conducted on January 25, 26, and 29, 2018. Pontil Drilling (Pontil) was contracted by EXP to advance four test holes (TH1 to TH4) within the Phase Two property boundaries. Test holes TH1, TH3, and TH4 were advanced using a CME-55 track-mounted drill rig equipped with a split spoon sampling system. Test hole TH2 was advanced using a CME-45 truck-mounted drill rig equipped with a split spoon sampling system. Test hole TH1 was advanced to a depth of 18.9 mbgs; test holes TH2, TH3, and TH4 were advanced to a maximum depth of 5.9 mbgs.

The locations of the test holes are shown in Figure 3.

## 4.3 Soil: Sampling

Proper field sampling procedures as documented in *Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario* (MOECC, 1996), including decontamination of sampling equipment, were followed to minimize the potential for cross-contamination.

Soil samples were collected as the drilling progressed and were examined for geologic information and for physical evidence of chemical impact. Worst-case soil samples were selected from each test hole for laboratory analysis of the pCOCs. The soil samples selected for laboratory analysis were immediately placed into laboratory prepared glass jars, labelled, and stored in a cooler with ice at less than 10˚C. A deeper soil sample was collected, preserved, and submitted for analysis for vertical delineation purposes if the worst-case soil sample was found to exceed the Table 3 Standards for any of the parameters analyzed. Field duplicate soil samples were collected from TH1 and from TH2 for QA/QC purposes (discussed in Section 4.12).

The geology observed within TH1 to TH4 was generally 5 centimetres of asphalt over a layer of sand and gravel fill over a fine sand layer to a depth of 4.6 mbgs, over a silty clay layer to a depth of 10.6 mbgs, over a silty sand/sandy silt layer to a depth greater than 15.9 mbgs. No petroleum staining was observed in any of the soil samples. No liquid petroleum was observed.

The test hole logs are provided in Appendix E.

## 4.4 Field Screening Measurements

At each test hole, readings of TCE concentrations in the soil samples collected during the drilling investigation were measured using a Gastec GV-110-S manual pump, where soil recovery was sufficient to obtain a measurement. The Gastec pumps use inline factory calibrated disposable gas sampling tubes. Colourimetric readings are obtained from the demarcated glass tubes, which are replaced as necessary. Precision of the sampling tube, measured by maximum allowable deviation in colour demarcation, is less than 10%, though may range depending on the sampling tube. Accuracy as measurable by the indicability of the sampling tube is ±25%. Readings for soil samples were obtained using Gastec TCE tubes (Model #132L, 1 to 70 ppm range). The detection limit for the 132L TCE tube is 0.4 ppm, with a reported precision of 10% for the 1 to 5 ppm range and 5% for the 5 to 25 ppm range.

TCE vapour readings were non-detectable (<1 ppm) in all soil samples where there was sufficient recovery to perform vapour measurements.

If the concentration of TCE was found to be non-detectable, readings of the petroleum vapour concentrations in the soil samples were then measured using a RKI Instruments Eagle 2, where there was sufficient recovery. This instrument is designed to detect and measure concentrations of combustible gas in the atmosphere. It is equipped with two ranges of measurement, reading concentrations in parts per million by volume (ppmv) or in percentage lower explosive limit (LEL). The RKI Eagle 2 instrument can determine combustible vapour

concentrations in the range equivalent to 0 to 11,000 ppmv of hexane. The instrument was configured to eliminate any response from methane for all sampling conducted at the site. Instrument calibration is checked on a daily basis in the LEL range using standard gases comprised of a known concentration of hexane in air. If the instrument readings are within ±10% of the standard gas value, then the instrument is deemed to be calibrated, however if the readings are greater than ±10% of the standard gas value then the instrument is re-calibrated prior to use. The vapour concentrations are accurate to within ±5% of reading or ±2% LEL (whichever is greater) in the 0-100% LEL range and to within ±50 ppm or ±10% of reading (whichever is greater) in the 0-50,000 ppm range.

Measured petroleum vapours were non-detectable (<25 ppm) in all samples where there was sufficient recovery to perform vapour measurements.

Sample selection for laboratory analysis was determined based on visual observation, odour, and petroleum vapour readings from the RKI Eagle 2.

## 4.5 Ground Water: Monitoring Well Installation

Monitoring wells TH1, TH3, and TH4 were installed by Pontil using a CME-55 track-mounted drill rig with hollow stem augers. Monitoring well TH2 was installed by Pontil using a CME-45 truck-mounted drill rig with hollow stem augers.

The monitoring wells were constructed from 50 millimetre diameter threaded Schedule 40 PVC pipe with a slot size of 0.01 inches and 2 threads per inch (TPI). The lower section of pipe is slotted above and below the water table. The upper section of the pipe is solid. The lower part of the annulus of the hole was backfilled with silica sand up to approximately 0.6 metres above the top of the slotted section. A bentonite seal a minimum of 0.6 metres thick was placed above the sand to just below grade. Bentonite and concrete was used to seal the monitoring wells at grade. Each monitoring well is equipped with a protective casing and locking lid. The screened interval from 12.8 to 15.8 mbgs at TH1 was selected to provide vertical delineation of ground water impacts encountered beneath 21 Yorkville Avenue. The screened intervals from 2.4 to 5.5 mbgs at TH2, from 2.7 to 5.8 mbgs at TH3, and from 2.9 to 5.9 mbgs at TH4 were selected to evaluate the horizontal extent of potential ground water impacts encountered beneath the floor slab at 21 Yorkville Avenue.

Proper field sampling procedures as documented in *Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario* (MOECC, 1996), including decontamination of sampling equipment, were followed to minimize the potential for cross-contamination.

At least 24 hours prior to collecting the ground water samples, the monitoring wells were developed by removing a minimum of three well volume equivalents of ground water or purging to dryness using a dedicated bailer. Purge water was examined for any petroleum product sheen or odours. Purge water did not demonstrate any indication of chemical impact and was therefore disposed onto a paved area at the site, away from any catch basins.

The location of the ground water monitoring wells is shown in Figure 3.

## 4.6 Ground Water: Field Measurements of Water Quality Parameters

Immediately prior to collecting the ground water samples, wells were purged until water quality parameters indicated that stable aquifer conditions had been reached.

Water quality parameters (pH, specific conductance (EC), total dissolved solids (TDS), and temperature) were measured using a Hanna Portable pH/EC/TDS/Temperature Meter. The pH (two-point calibration) and EC are calibrated daily, prior to use. The meter detects pH in the range of 0.00 to 14.00 ±0.01 pH, EC from 0 to 3,999 µS/cm ±2% full scale (F.S.), TDS from 0 to 2,000 ppm (mg/L) ±2% F.S., and temperature from 0.0 to 60.0˚C ±0.5˚C.

The water quality parameters were measured for the ground water samples collected from each monitor and are provided in Table 3.

## 4.7 Ground Water: Sampling

Prior to conducting the Phase Two ESA drilling investigation, EXP collected ground water samples from previously installed monitoring wells (SPL, 2015; MCR, 2015; Pinchin, 2016) on November 28, 2017. Samples were collected from MW01, MW02, MW03, BH1, BH15-3, and BH15-3S; monitoring wells MW03 and MW04 were dry at the time of sampling. The samples were collected using a low flow sampling technique and were submitted to the laboratory for analysis of PHC fractions F1 to F4 and VOCs.

Monitoring wells TH3 and TH4 were sampled on January 31, 2018. Monitoring well TH2 was sampled on February 5, 2018. Monitoring well TH1 was dry on both sampling dates. One field duplicate sample was collected from monitoring well TH3 for QA/QC purposes (discussed in Section 4.12).

As noted in Section 4.5, at least twenty-four hours prior to sampling, the monitoring wells were developed using a dedicated bailer by removing a minimum of three well volume equivalents of ground water or purging to dryness. Immediately prior to collecting the ground water samples, wells were purged until field stabilization parameters indicated that stable aquifer conditions had been reached; a dedicated bailer was used to collect the ground water samples from the newly installed monitoring wells.

The ground water samples selected for laboratory analysis were immediately placed into laboratory prepared glass bottles and vials, labeled, and transported to the laboratory stored in a cooler with ice at less than 10˚C.

## 4.8 Sediment: Sampling

Sediment was not present at the Phase Two property; therefore, no sediment samples were collected.

## 4.9 Analytical Testing

The ground water samples collected from previously installed monitoring wells on November 28, 2017 were analyzed by Maxxam Analytics (Maxxam). The soil and ground water samples collected by EXP in 2018 were submitted to AGAT Laboratories (AGAT).

Both laboratories performed the work following formal written methods and procedures. These methods include all the minimum requirements as specified in the document entitled *Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act* (March 9, 2004, amended as of July 1, 2011).

## 4.10 Residue Management Procedures

Soil cuttings from the drilling investigation were placed in drums in a designated area at the site pending off-site disposal. As no petroleum product sheen or odours were detected, purge water from development of the ground water monitors and fluids from the decontamination of sampling equipment were disposed on a paved portion of the site, away from any catch basins.

## 4.11 Elevation Surveying

A topographic survey was conducted by WSP on August 21, 2017. The benchmark used was a geodetic datum derived from City of Toronto Bench Mark No. CT828 (elevation= 116.982 metres). The benchmark is located on a public library building (north side of Yorkville Avenue, west of Yonge Street), 3.96 metres north of the southeast corner and 0.43 metres above grade.

The elevations of the ground water monitoring wells were interpolated from this topographic survey plan. A copy of the topographic survey plan is included in Appendix B.

## 4.12 Quality Assurance and Quality Control Measures

Soil and ground water samples were collected, preserved, and handled in accordance with the sampling and analysis plan (Appendix D). Soil and ground water samples selected for laboratory analysis were immediately placed into laboratory prepared glass jars, bottles and/or vials, labeled, and stored in a cooler with ice at less than 10˚C. Where F1/BTEX and/or VOC analysis of soil was required, the collection of discrete samples using methanol preservation and immediate placement into a cooler with free ice to maintain the temperature at less than

10°C for transport to the laboratory. All sample containers were labeled with the sample identification number, sample date and type and project number.

Dedicated equipment was used for ground water sampling at different monitors and soil sampling equipment was thoroughly cleaned between sample sites. Where sampling for trace organics, it was ensured that bare hand or latex glove did not come into contact with the soil or ground water as it was being placed into the laboratory sample container. Soil sampling equipment used for the collection of trace organics was cleaned using soap and water, followed by a water rinse and a methanol rinse between sampling locations.

One trip blank sample was submitted for laboratory analysis with each laboratory submission of ground water samples to be analyzed for PHC fraction F1 and VOCs.

Field duplicate samples were collected from each medium being sampled, so that at least one field duplicate sample was submitted for laboratory analysis for every ten samples submitted for laboratory analysis. A field duplicate sample was collected for soil at TH1 and submitted for analysis of PHC fractions F1 to F4 and VOCs. A field duplicate sample was collected for soil at TH2 and submitted for analysis of PAH, metals, hydride-forming metals, and ORPs. Two field duplicate samples were collected for ground water, at MW04 and TH3, and submitted for analysis of PHC fractions F1 to F4 and BTEX. Two field duplicate samples were collected for ground water, at MW02 and TH3, and submitted for analysis of VOCs.

All field instruments are calibrated on a daily basis, prior to use, as described in Sections 4.4 and 4.6.

There were no deviations from the QA/QC measures as set out in the sampling and analysis plan. The QA/QC measures are discussed further in the Quality Management, Control and Assurance procedures outlined in Appendix F.

# 5. Review and Evaluation

## 5.1 Geology

The geology observed within TH1 to TH4 was generally 5 centimetres of asphalt over a layer of sand and gravel fill over a fine sand layer to a depth of 4.6 mbgs, over a silty clay layer to a depth of 10.6 mbgs, over a silty sand/sandy silt layer to a depth greater than 15.9 mbgs.

According to the borehole log provided as part of the *Preliminary Geo-Environmental Investigation* report (MCR, 2016), the silty sand/sandy silt layer extended to a depth of 34 mbgs; a clayey silt till layer was encountered immediately overlying the shale bedrock, from approximately 34 to 38 mbgs.

## 5.2 Ground Water: Elevations and Flow Direction

The screened interval from 12.8 to 15.8 mbgs at TH1 was selected to provide an indication of ground water quality at the depth of the proposed excavation for the parking garage. Previously installed monitoring wells BH15-3 (SPL, 2015) and BH1 (MCR, 2015) are screened deeper from 18.3 to 21.3 mbgs and 21.65 to 27.45 mbgs, respectively.

The screened intervals from 2.4 to 5.5 mbgs at TH2, from 2.7 to 5.8 mbgs at TH3, and from 2.9 to 5.9 mbgs at TH4 were selected to evaluate the horizontal extent of ground water impacts encountered beneath the floor slab at 21 Yorkville Avenue.

All measurements of ground water and liquid petroleum (if any) depth were made with a Solinst Model 122 oil/water interface probe. Both the probe and the measuring tape that come into contact with liquids within the monitor are cleaned with Alconox detergent, and then rinsed with distilled water and methanol and allowed to air dry after each measurement.

For all monitors in which liquid petroleum is detected with the interface probe, the presence of liquid petroleum is verified with a bailer. For all monitoring wells in which liquid petroleum is not detected with the interface probe, a bailer is used to check the monitoring well for the presence of phase-separated liquid petroleum. A free flowing liquid petroleum layer was not detected in any of the ground water monitoring wells installed during the Phase Two investigation.

The elevations of the ground water monitoring wells at grade were interpolated from the topographic survey plan prepared by WSP (Section 4.11). The ground water elevations were calculated based on static water level measurements documented during the Phase Two investigation using a Solinst Model 122 oil/water interface probe. The measured depth to the ground water table in the newly installed wells TH2, TH3, and TH4 ranged from 3.22 (TH3) to 3.44 (TH2) mbgs. The calculated ground water elevations ranged from 113.46 (TH2) to 112.96 (TH4) masl. The ground water elevations are provided in Table 4.

The total site measures approximately 0.33 hectares (0.82 acres) in area. All of the monitoring wells are located within an area of 0.06 hectares (0.15 acres). To properly interpret the ground water flow direction, a minimum of three ground water table elevations are required. The measurements should be spread out across the extent of the site in a triangular pattern, and not in a straight line. Thus, ground water contours could not be determined at this time. Based on topography, the regional ground water flow direction is inferred to be southerly, towards Lake Ontario.

Given the depth of the ground water table at depths ranging from 3.22 to 3.44 mbgs in the native sand layer, it is possible that local ground water flow conditions would be influenced by the presence of basements within the on-site buildings and at adjacent properties, and by underground utilities present in the vicinity of the site.

## 5.3 Ground Water: Hydraulic Gradients

The total site measures approximately 0.33 hectares (0.82 acres) in area. All of the monitoring wells are located within an area of 0.06 hectares (0.15 acres). To properly calculate the horizontal hydraulic gradient, a minimum of three ground water table elevations are required. The monitoring wells, screened at the same elevation across the inferred water table, should be spread out across the extent of the site in a triangular pattern, and not in a straight line.

## 5.4 Fine-Medium Soil Texture

According to O. Reg.153/04, to be classified as medium to fine textured soil, at least two-thirds of the soil on Phase Two property, measured by volume, must contain 50% or more by mass of particles that are less than 75 micrometres in mean diameter.

Two soil samples collected by EXP were submitted for single-sieve grain size analysis. The sample collected within the silty clay at TH1 (3.8 to 4.4 mbgs) was classified as medium to fine textured. The sample collected within the fine sand at TH4 (3.1 to 3.6 mbgs) was classified as medium to fine textured.

Based on the stratigraphy observed by EXP and TH1 and on the borehole log provided as part of the *Preliminary Geo-Environmental Investigation* report (MCR, 2016), at least two-thirds of the material between grade and bedrock (38 mbgs) is anticipated to be medium to fine textured.

Therefore, the Table 3 Generic Site Condition Standards for a residential/parkland/institutional land use with medium to fine textured soil were applied to the site.

## 5.5 Soil: Field Screening

At each test hole, readings of the TCE concentration in the soil samples collected during the drilling investigation were measured using a Gastec GV-110-S manual pump, where soil recovery was sufficient to obtain a measurement. Readings for soil samples were obtained using Gastec TCE tubes (Model #132L, 1 to 70 ppm range). TCE vapour readings were non-detectable (<1 ppm) in all soil samples where there was sufficient recovery to perform vapour measurements.

If the concentration of TCE was found to be non-detectable, readings of the petroleum vapour concentrations in the soil samples were then measured using an RKI Instruments Eagle 2, where there was sufficient recovery. Measured petroleum vapours were non-detectable (<25 ppm) in all samples where there was sufficient recovery to perform vapour measurements.

Vapour readings for each soil sample are provided on the test hole logs (Appendix E).

## 5.6 Soil Quality

Five soil samples, including one field duplicate sample, were collected at depths ranging from 3.1 to 4.4 mbgs and submitted to the laboratory for analysis of PHC fractions F1 to F4 and VOCs. Seven soil samples, including one field duplicate sample, were collected at depths ranging from grade to 2.9 mbgs and submitted to the laboratory for analysis of PAHs and metals and inorganics.

The maximum concentration detected for each of the parameters analyzed in soil during the Phase Two investigation is provided in Table 5. The results of the soil chemical analyses along with the O. Reg. 153/04 Table 3 Standards are provided in Tables 6 through 9.

The following soil samples exceeded the Table 3 Standards:

- One soil sample, collected from TH1 at a depth of 0 to 0.6 mbgs, exceeded the Standards for various PAH parameters (acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, fluoranthene, indeno(1,2,3-cd)pyrene, and phenanthrene) and for lead. The deeper soil sample, collected from TH1 at a depth of 1.5 to 2.1 mbgs, was within the Standards for all PAH parameters and for lead;
- One soil sample, collected from TH2 at a depth of 0 to 0.6 mbgs, exceeded the Standards for two PAH parameters (benzo(a)pyrene and fluoranthene);
- One soil sample, collected from TH3 at a depth of 0 to 0.6 mbgs, exceeded the Standard for lead;
- One soil sample, collected from TH4 at a depth of 0 to 0.6 mbgs, exceeded the Standards for various PAHs (Benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenzo(a,h)anthracene, fluoranthene, and indeno(1,2,3-cd)pyrene) and for SAR. The deeper soil sample, collected from TH4 at a depth of 2.3 to 2.9 mbgs, was within the Standards for all PAH parameters and for SAR.

The deeper soil samples collected from TH1 (1.5 to 2.1 mbgs) and from TH4 (2.3 to 2.9 mbgs) were within the O. Reg. 153/04 Table 3 Standards for PAHs, lead, and SAR.

All soil samples analyzed for pH were within the range of 5.0 to 9.0, verifying the site is not classified as a sensitive area, and the Table 3 Standards are appropriate for this site.

The results of the current investigation do not indicate the presence of light or dense non-aqueous phase liquids, nor were contaminants related to chemical and biological transformations at the selected sampling locations. The soil results are not anticipated to serve as a source of contaminant mass contributing to the local ground water beneath the Phase Two property.

Copies of the Laboratory Certificates of Analysis are provided in Appendix G.

## 5.7 Ground Water Quality

On November 28, 2017, EXP collected ground water samples from previously installed monitoring wells at the site. Eight ground water samples, including one field duplicate sample, were collected and submitted to the laboratory for analysis of PHC fractions F1 to F4 and/or VOCs. On January 31 and February 5, 2018, four ground water samples, including one field duplicate sample, were collected from the newly installed TH2, TH3 and TH4 and submitted to the laboratory for analysis of PHC fractions F1 to F4 and VOCs. Trip blank samples were submitted for laboratory analysis with each laboratory submission of ground water samples to be analyzed for PHC fraction F1 and VOCs.

The maximum concentration detected for each of the parameters analyzed in ground water during the Phase Two investigation is provided in Table 5. The results of the ground water chemical analyses along with the Table 3 Standards are provided in Tables 10 and 11.

The ground water samples were within the Table 3 Standards for all the parameters analyzed with the following exceptions:

- One ground water sample (MW01) exceeded the Table 3 Standard for PCE;
- One ground water sample (MW02) and its field duplicate (MT020) exceeded the Table 3 Standard for PCE;
- One ground water sample (MW04) exceeded the Table 3 Standard for vinyl chloride;
- One ground water sample (TH2) exceeded the Table 3 Standard for PCE;
- One ground water sample (TH3) and its field duplicate (TH300) exceeded the Table 3 Standard for PCE; and,
- One ground water sample (TH4) exceeded the Table 3 Standard for TCE.

The results of the current investigation indicate the presence of dense non-aqueous phase liquids (VOCs) in ground water at the site. Certain contaminants detected in ground water at the site (TCE, vinyl chloride) may be related to the chemical degradation of PCE at the selected sampling locations. The analytical results do not suggest that there are contaminants in soil serving as a source of contaminant mass contributing to the local ground water beneath the Phase Two property.

Copies of the Laboratory Certificates of Analysis are provided in Appendix G.

## 5.8 Quality Assurance and Quality Control Results

The ground water samples collected from previously installed monitoring wells on November 28, 2017 were analyzed by Maxxam. The soil and ground water samples collected by EXP in 2018 were submitted to AGAT. Both laboratories performed the work following formal written methods and procedures. These methods include all the minimum requirements as specified in the document entitled *Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act* (March 9, 2004, amended as of July 1, 2011). All samples were handled in accordance with the Protocol.

Data quality objectives for the parameters of concern were set to meet acceptable Reporting Detection Limits (RDLs) to achieve the goal of defining areas where such parameters are present at levels in excess of applicable generic Standards, as defined in O. Reg. 153/04, under the Environmental Protection Act. This included providing written instruction to the participating analytical laboratory describing the required analyses on the Chain of Custody prepared and delivered with the samples. All analytical RDLs were below the Table 3 Standards.

A field duplicate sample was collected for soil at TH1 and submitted for analysis of PHC fractions F1 to F4 and VOCs. A field duplicate sample was collected for soil at TH2 and submitted for analysis of PAH, metals, hydride-forming metals, and ORPs. Two field duplicate samples were collected for ground water, at MW04 and TH3, and submitted for analysis of PHC fractions F1 to F4 and BTEX. Two field duplicate samples were collected for ground water, at MW02 and TH3, and submitted for analysis of VOCs. One trip blank sample was submitted for laboratory analysis with each laboratory submission of ground water samples to be analyzed for PHC fraction F1 and VOCs.

The precision of the analytical results can be expressed by the relative percent difference (RPD) between the original sample and the duplicate sample. The equation used to determine the RPD is provided below.

$$RPD = 2 \times (|(S-D)|/(S+D)) \times 100$$

Where, S = concentration of the original sample
D = concentration of the duplicate sample

RPDs can only be calculated if the concentration of both the duplicate sample and the original sample are above the analytical reporting detection limit (RDL).

For soil samples, the alert limit criteria for the field duplicate RPD is >100%. The calculated RPD between the duplicate samples and the original samples for soil was below 100% for all of the parameters analyzed.

For ground water samples, the alert limit criteria for the field duplicate RPD is >80% for PHC fractions F1 to F4, PAHs, and VOCs. The alert limit criteria for the field duplicate RPD for metals is >50%. The calculated RPD between the duplicate sample and the original sample for ground water was below the applicable alert limit criteria for all of the parameters analyzed.

All three trip blanks submitted to the laboratory were below the laboratory RDL for PHC fraction F1 and VOCs.

AGAT did not provide any comments or remarks on the Certificates of Analysis regarding the validity of the results for any of the samples analyzed.

The quality assurance and quality control measures are discussed further in the Quality Management, Control and Assurance procedures outlined in Appendix F.

Laboratory Certificates of Analysis were provided for all samples analyzed and are provided in Appendix G.

## 5.9 Phase Two Conceptual Site Model

A CSM was developed based on the APECs and areas where a PCA has occurred, identified in the Phase One Study Area during the Phase One investigation (EXP, 2018), as well as using information collected during the current Phase Two ESA. The CSM is a simplification of reality, which aims to identify the areas of concern, contaminant transport and exposure pathways and receptors.

PCAs identified within the Phase One Study Area, identified from Schedule D of O. Reg. 153/04, that were considered to result in an APEC are listed below:

- (8) Chemical manufacturing, processing and bulk storage;
- (10) Commercial Autobody Shops;
- (28) Gasoline and Associated Products Storage in Fixed Tanks;
- (30) Importation of Fill Material of Unknown Quality; and,
- (37) Operation of Dry Cleaning Equipment (where chemicals are used).

The above-noted PCAs were considered to result in twelve APECs at the site. The locations of the PCAs are shown on Figure 2A. The locations of the APECs are shown on Figure 2B.

Given that the site buildings and the underground parking garage at 11 Yorkville Avenue occupy the majority of the footprint of the site, access for drilling equipment was limited. Test holes were advanced within the parking areas at the rear of 19 Yorkville Avenue (TH1, TH2, and TH3) and at the rear of 16 Cumberland Street (TH4). Additional characterization of soil and ground water impacts within each of the twelve APECs will be required, following building demolition, before an RSC can be filed for the site.

Soil samples from TH1, TH2, and TH4 (all collected from 0 to 0.6 mbgs) exceeded the Table 3 Standards for various PAHs. Soil samples from TH1 and TH3 (both collected from 0 to 0.6 mbgs) exceeded the Table 3 Standards for lead. The soil samples from TH4 (collected from 0 to 0.6 mbgs) exceeded the Table 3 Standards for SAR. The deeper soil samples collected from TH1 (1.5 to 2.1 mbgs) and from TH4 (2.3 to 2.9 mbgs) were within the O. Reg. 153/04 Table 3 Standards for PAHs, lead, and SAR. Soil samples collected from all four test holes were within the Table 3 Standards for PHC fractions F1 to F4 and VOCs.

Ground water samples collected from two locations (TH2 and TH3) exceeded the Table 3 Standard for PCE; one ground water sample (TH4) exceeded the Table 3 Standard for TCE. The ground water samples were within the Table 3 Standards for PHC fractions F1 to F4.

The elevations of the ground water monitoring wells at grade were interpolated from the topographic survey plan prepared by WSP (Section 4.11). The ground water elevations were calculated based on static water level measurements documented during the Phase Two

investigation using a Solinst Model 122 oil/water interface probe. The measured depth to the ground water table in the newly installed wells TH2, TH3, and TH4 ranged from 3.22 (TH3) to 3.44 (TH2) mbgs. The calculated ground water elevations ranged from 113.46 (TH2) to 112.96 (TH4) masl. The ground water elevations are provided in Table 4.

The total site measures approximately 0.33 hectares (0.82 acres) in area. All of the monitoring wells are located within an area of 0.06 hectares (0.15 acres). To properly interpret the ground water flow direction, a minimum of three ground water table elevations are required. The measurements should be spread out across the extent of the site in a triangular pattern, and not in a straight line. Thus, ground water contours could not be determined at this time. Based on topography, the regional ground water flow direction is inferred to be southerly, towards Lake Ontario.

The extent of all impacts identified in soil and ground water must be fully delineated, both vertically and horizontally. Soil and ground water in exceedance of the Table 3 Standards must be remediated and/or risk assessed to support the filing of an RSC.

The Human Health and Ecological Conceptual Site Models (HHCSM and ECSM, respectively) provide diagrams showing the contaminant sources, release and transport mechanisms, exposure routes, and possible receptors. The CSMs identify the complete exposure pathways where receptors might make direct contact with the pCOCs identified in soil, or where they may indirectly be exposed to pCOCs in soil or ground water via vapour transport or other pathways. Additionally, the CSM identifies pathways considered insignificant or negligible because the pathways may be incomplete or blocked.

The Phase Two property is to be redeveloped for mixed commercial and residential use. Therefore, the receptors chosen for analysis include residents (toddlers and adults), visitors/trespassers (adult and toddler), indoor workers, maintenance workers and outdoor construction workers. The residents are considered the most sensitive receptors, therefore, they serve as surrogates for any other potential users of the Phase Two property (i.e., visitors and trespassers).

Exposure routes for humans include soil particulate inhalation, dermal contact to soil and ground water, incidental ingestion of soil and ground water, garden product ingestion, and inhalation or skin contact with soil and ground water vapours both inside and outside buildings.

The selection of ecological receptors takes into consideration the location of the Phase Two property in an urban area and the fact that the nearest surface water body to the site is located over two kilometres from the site. Relevant on-site ecological receptors consist of terrestrial valued ecological components (VECs) such as plants, soil invertebrates, mammals and birds. Off-site ecological receptors consist of the same terrestrial receptors found on-site. Given the distance to the nearest water body, aquatic species were not included.

Exposure routes for ecological receptors on-site include stem and foliar uptake, direct contact/root uptake, particle inhalation and vapour inhalation of soil and/or ground water pCOCs by plants, soil invertebrates, mammals and birds.

The HHCSM and ECSM, provided as Figures 5 and 6, present the potential exposure pathways to soil and ground water pCOCs.

# 6. Conclusions

Based on the findings of the Phase One ESA conducted by EXP (2018) twelve APECs were identified at the site. In addition, a Phase II ESA completed by Pinchin in 2016 for 21 Yorkville Avenue identified ground water impacted with PCE, a VOC. In accordance with O. Reg. 153/04, a Phase Two ESA must be completed to evaluate soil and ground water quality within each APEC before an RSC can be filed for the site.

Given that the site buildings and the underground parking garage at 11 Yorkville Avenue occupy the majority of the footprint of the site, access for drilling equipment was limited. Therefore, the objective of the current Phase Two ESA was to evaluate the quality of fill material and to install ground water monitoring wells within accessible areas to provide additional information regarding the horizontal and vertical extent of VOC-impacted ground water previously identified beneath 21 Yorkville Avenue.

Prior to conducting the Phase Two ESA drilling investigation, EXP collected ground water samples from previously installed monitoring wells (SPL, 2015; MCR, 2015; Pinchin, 2016) on November 28, 2017. The samples were submitted for analysis of PHC fractions F1 to F4 and VOCs. Ground water samples collected from two locations (MW01 and MW02) exceeded the Table 3 Standard for PCE; one ground water sample (MW04) exceeded the Table 3 Standard for vinyl chloride. The ground water samples were within the Table 3 Standards for PHC fractions F1 to F4.

The Phase Two ESA conducted by EXP included the advancement of four test holes (TH1 to TH4), all of which were completed as ground water monitoring wells. Soil samples were analyzed for PHC fractions F1 to F4, PAHs, VOCs, metals, hydride-forming metals, and ORPs. Ground water samples were analyzed for PHC fractions F1 to F4 and VOCs.

Surficial soil samples collected by EXP from three of the four sampling locations were found to exceed the Table 3 Standards for various PAHs, lead, and/or SAR. Deeper soil samples analyzed for vertical delineation purposes suggest that these impacts were confined to the fill material. All soil samples analyzed for PHCs and VOCs were within Table 3 Standards.

Ground water samples collected from two locations (TH2 and TH3) exceeded the Table 3 Standard for PCE and one ground water sample (TH4) exceeded the Table 3 Standard for TCE. The ground water samples were within the Table 3 Standards for PHC fractions F1 to F4. Additional characterization of soil and ground water impacts within each APEC will be required following building demolition before an RSC can be filed for the site. The extent of all impacts identified in soil and ground water must be fully delineated, both vertically and horizontally. Soil and ground water in exceedance of the Table 3 Standards must be remediated and/or risk assessed to support the filing of an RSC.

## 6.1 Signatures

Respectfully submitted,
EXP Services Inc.

Leah Whittaker, B.Sc.
Project Manager

I, the QP, certify that I have conducted and/or supervised the Phase Two ESA and that all findings and conclusions of the Phase Two ESA are included in the report.

Carla Reynolds, P.Biol., P.Geo. (Limited), $QP_{ESA}$
Manager, Environmental Services

# 7. References

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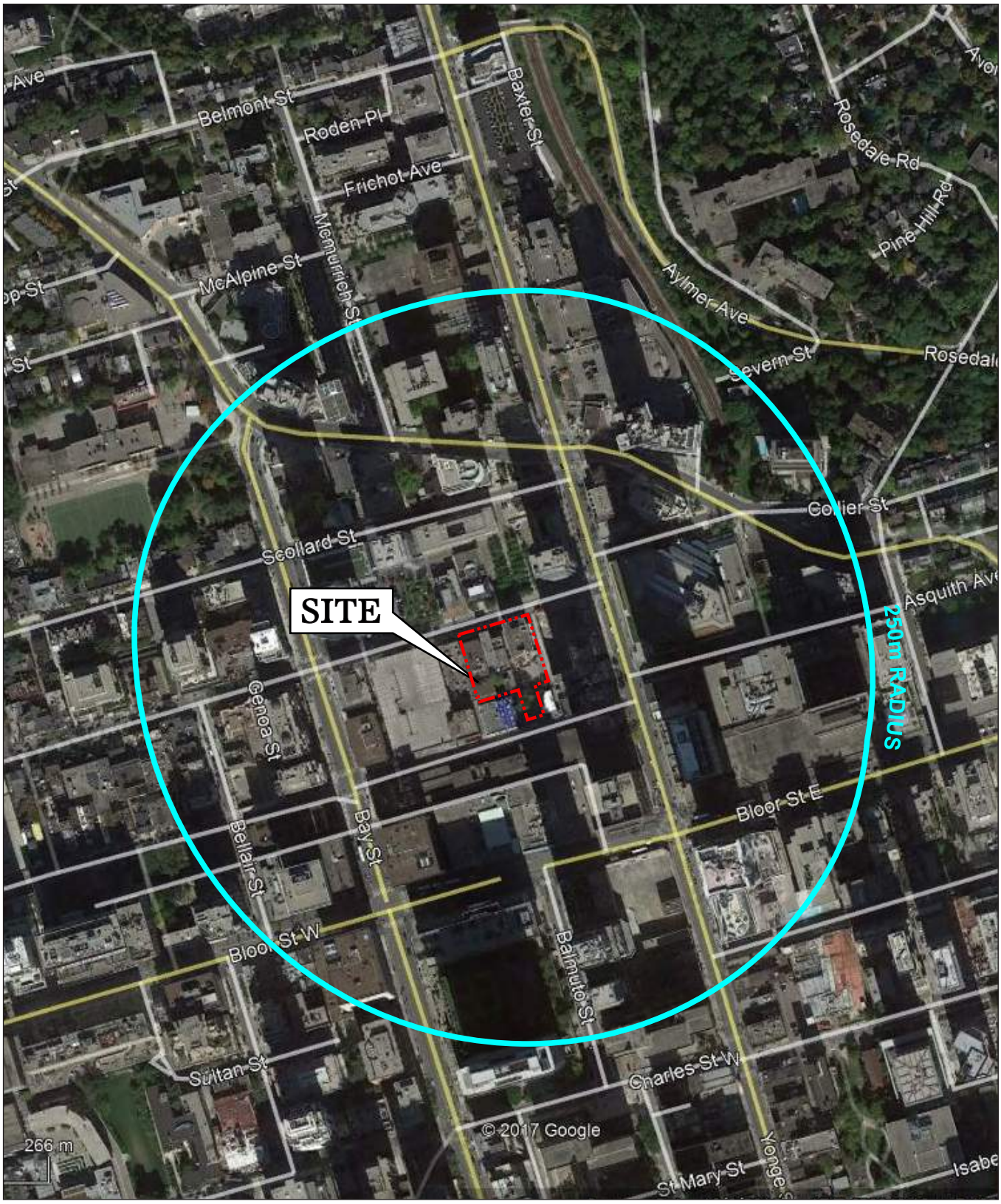
# Appendices

# Figures




**SCALE:** 0 50 100m

**SOURCE:** GOOGLE EARTH IMAGE DATED NOV. 9, 2016

| DRAWN BY | CHECKED BY |
|---|---|
| K.G. | L.W. |

**LEGEND:**

- PHASE ONE PROPERTY BOUNDARY
- 250m RADIUS PHASE ONE STUDY AREA

N

# LOCALITY PLAN

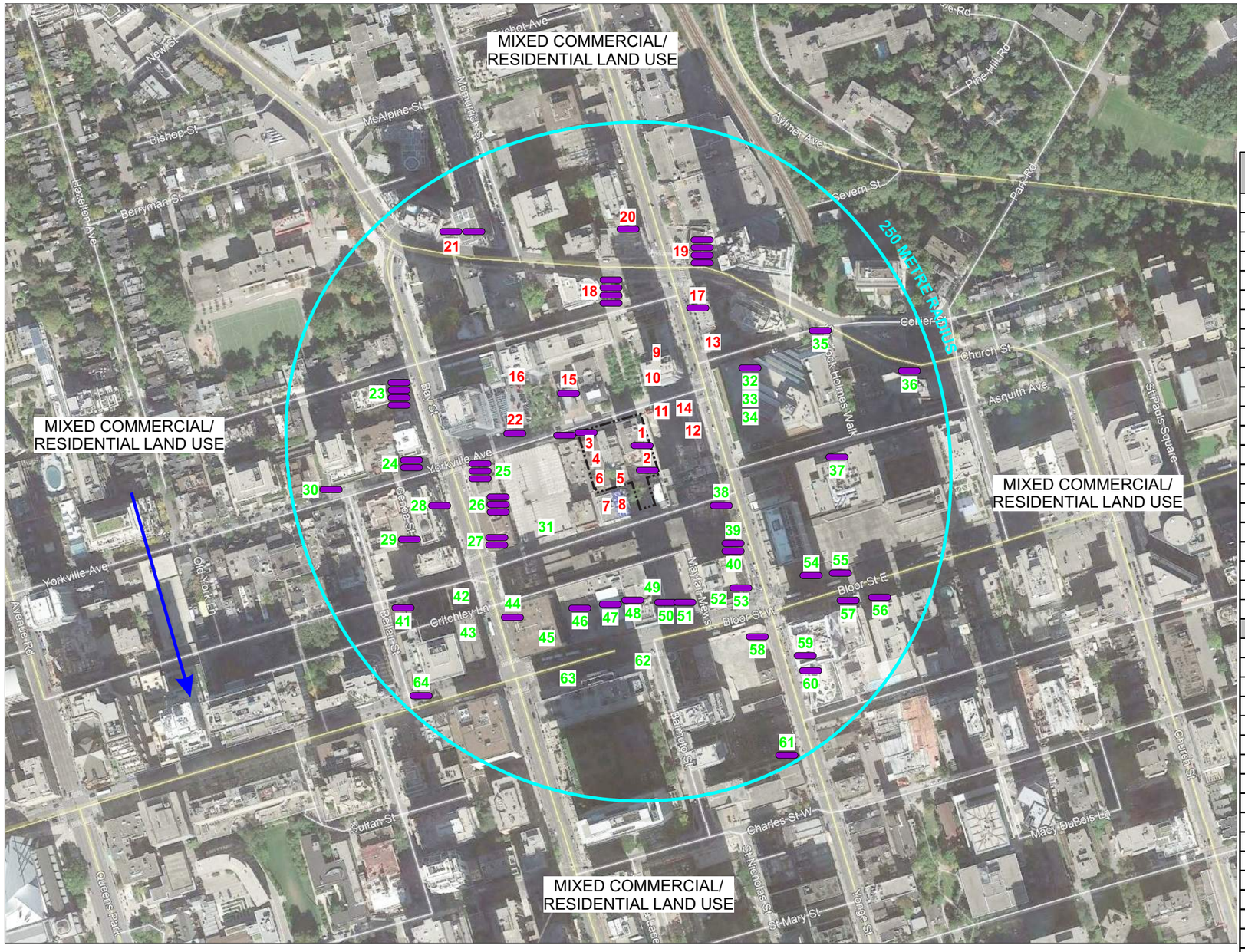
FIGURE 1

11 YORKVILLE AVENUE
TORONTO, ONTARIO

PROJECT NUMBER: 242474

DATE: FEBRUARY 2018

242474-LOCALITY




| PCA Source Number | PCA |
|---|---|
| 1 | (28) Gasoline and Associated Products Storage in Fixed Tanks |
| 2 | (28) Gasoline and Associated Products Storage in Fixed Tanks |
| 3 | (28) Gasoline and Associated Products Storage in Fixed Tanks |
| 4 | (10) Commercial Autobody Shops |
| 5 | (30) Importation of Fill Material of Unknown Quality |
| 6 | (37) Operation of Dry Cleaning Equipment (where chemicals are used) |
| 7 | (8) Chemical manufacturing, processing and bulk storage |
| 8 | (10) Commercial Autobody Shops |
| 9 | (37) Operation of Dry Cleaning Equipment (where chemicals are used) |
| 10 | (37) Operation of Dry Cleaning Equipment (where chemicals are used) |
| 11 | (37) Operation of Dry Cleaning Equipment (where chemicals are used) |
| 12 | (37) Operation of Dry Cleaning Equipment (where chemicals are used) |
| 13 | (37) Operation of Dry Cleaning Equipment (where chemicals are used) |
| 14 | (10) Commercial Autobody Shops |
| 15 | (28) Gasoline and Associated Products Storage in Fixed Tanks |
| 16 | (28) Gasoline and Associated Products Storage in Fixed Tanks |
| 17 | (28) Gasoline and Associated Products Storage in Fixed Tanks |
| 18 | (28) Gasoline and Associated Products Storage in Fixed Tanks |
| 19 | (28) Gasoline and Associated Products Storage in Fixed Tanks |
| 20 | (28) Gasoline and Associated Products Storage in Fixed Tanks |
| 21 | (28) Gasoline and Associated Products Storage in Fixed Tanks |
| 22 | (37) Operation of Dry Cleaning Equipment (where chemicals are used) |
| **De Minimis PCAs** | |
| 23 to 29 | (28) Gasoline and Associated Products Storage in Fixed Tanks |
| 30 | (10) Commercial Autobody Shops |
| 31 | (37) Operation of Dry Cleaning Equipment (where chemicals are used) |
| 32 | (28) Gasoline and Associated Products Storage in Fixed Tanks |
| 33 | (37) Operation of Dry Cleaning Equipment (where chemicals are used) |
| 34 | (17) Dye Manufacturing, Processing and Bulk Storage |
| 35 to 41 | (28) Gasoline and Associated Products Storage in Fixed Tanks |
| 42 to 43 | (37) Operation of Dry Cleaning Equipment (where chemicals are used) |
| 44 | (28) Gasoline and Associated Products Storage in Fixed Tanks |
| 45 | (37) Operation of Dry Cleaning Equipment (where chemicals are used) |
| 46 to 48 | (28) Gasoline and Associated Products Storage in Fixed Tanks |
| 49 | (37) Operation of Dry Cleaning Equipment (where chemicals are used) |
| 50 to 51 | (28) Gasoline and Associated Products Storage in Fixed Tanks |
| 52 | (37) Operation of Dry Cleaning Equipment (where chemicals are used) |
| 53 to 61 | (28) Gasoline and Associated Products Storage in Fixed Tanks |
| 62 to 63 | (37) Operation of Dry Cleaning Equipment (where chemicals are used) |
| 64 | (28) Gasoline and Associated Products Storage in Fixed Tanks |

**SCALE:**

0 75 150m

**SOURCE:**

BASED ON GOOGLE EARTH IMAGE DATED OCT. 10, 2016

**LEGEND:**

- RSC PROPERTY BOUNDARY
- PHASE ONE STUDY AREA
- TANK LOCATION
- INFERRED GROUND WATER FLOW DIRECTION
- RED — INDICATES PCA CONTRIBUTING TO AN APEC
- GREEN — INDICATES PCA IS CONSIDERED TO BE DE MINIMIS

exp.

| DRAWN BY | CHECKED BY |
|---|---|
| K.G. | L.W. |

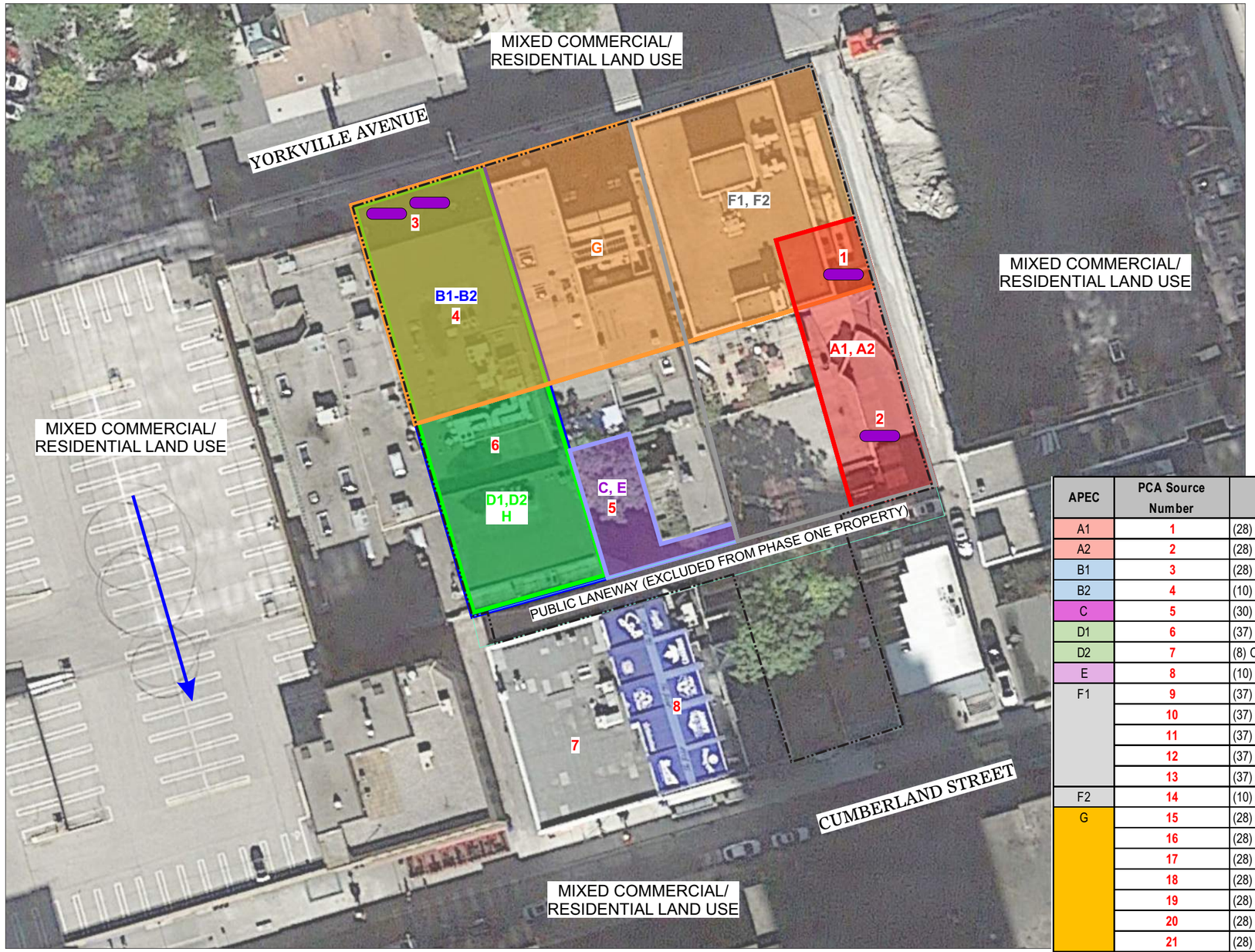
# PHASE ONE CONCEPTUAL SITE MODEL – PCAs

FIGURE 2A

11 YORKVILLE AVENUE
TORONTO, ONTARIO

PROJECT NUMBER: 242474 | DATE: FEBRUARY 2018

242474 CSM PLAN PCAs-FEB18




| APEC | PCA Source Number | PCA |
|---|---|---|
| A1 | 1 | (28) Gasoline and Associated Products Storage in Fixed Tanks |
| A2 | 2 | (28) Gasoline and Associated Products Storage in Fixed Tanks |
| B1 | 3 | (28) Gasoline and Associated Products Storage in Fixed Tanks |
| B2 | 4 | (10) Commercial Autobody Shops |
| C | 5 | (30) Importation of Fill Material of Unknown Quality |
| D1 | 6 | (37) Operation of Dry Cleaning Equipment (where chemicals are used) |
| D2 | 7 | (8) Chemical manufacturing, processing and bulk storage |
| E | 8 | (10) Commercial Autobody Shops |
| F1 | 9 | (37) Operation of Dry Cleaning Equipment (where chemicals are used) |
| | 10 | (37) Operation of Dry Cleaning Equipment (where chemicals are used) |
| | 11 | (37) Operation of Dry Cleaning Equipment (where chemicals are used) |
| | 12 | (37) Operation of Dry Cleaning Equipment (where chemicals are used) |
| | 13 | (37) Operation of Dry Cleaning Equipment (where chemicals are used) |
| F2 | 14 | (10) Commercial Autobody Shops |
| G | 15 | (28) Gasoline and Associated Products Storage in Fixed Tanks |
| | 16 | (28) Gasoline and Associated Products Storage in Fixed Tanks |
| | 17 | (28) Gasoline and Associated Products Storage in Fixed Tanks |
| | 18 | (28) Gasoline and Associated Products Storage in Fixed Tanks |
| | 19 | (28) Gasoline and Associated Products Storage in Fixed Tanks |
| | 20 | (28) Gasoline and Associated Products Storage in Fixed Tanks |
| | 21 | (28) Gasoline and Associated Products Storage in Fixed Tanks |
| H | 22 | (37) Operation of Dry Cleaning Equipment (where chemicals are used) |

**SCALE:**

0 10 20m

**SOURCE:**

BASED ON GOOGLE EARTH IMAGE
DATED OCT. 10, 2016

**LEGEND:**

- RSC PROPERTY BOUNDARY
- TANK LOCATION
- INFERRED GROUND WATER FLOW DIRECTION
- A — AREA OF POTENTIAL ENVIRONMENTAL CONCERN
- S1 — POTENTIALLY CONTAMINATING ACTIVITY
- RED — INDICATES PCA CONTRIBUTING TO AN APEC
- GREEN — INDICATES PCA IS CONSIDERED TO BE DE MINIMIS

exp.

| DRAWN BY | CHECKED BY |
|---|---|
| J.D.H. | L.W. |

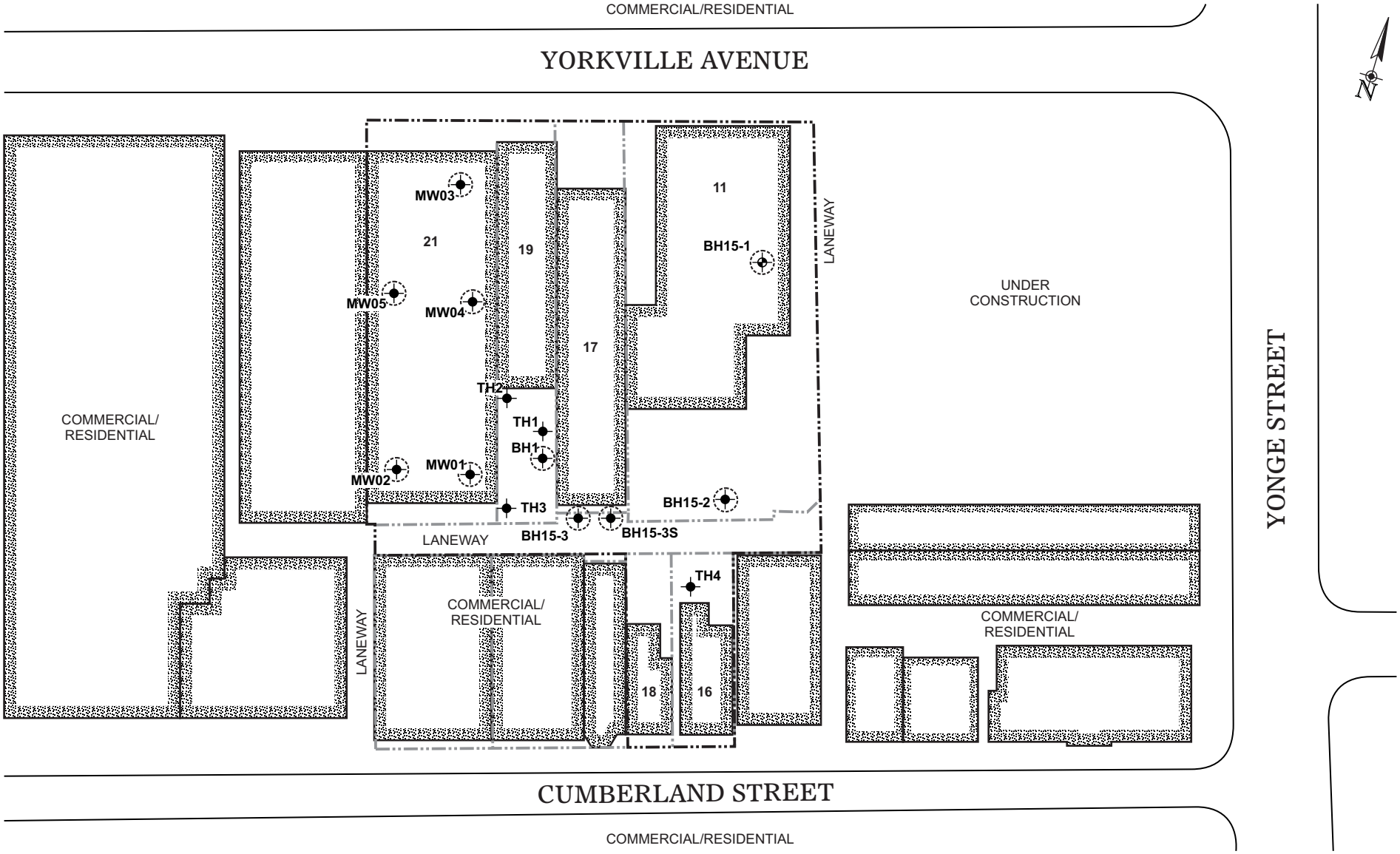
# PHASE ONE CONCEPTUAL SITE MODEL – APECs

FIGURE 2B

11 YORKVILLE AVENUE
TORONTO, ONTARIO

PROJECT NUMBER: 242474 | DATE: FEBRUARY 2018

242475 CSM PLAN APECs-FEB18




**SCALE:**

0 10 20m

(APPROXIMATE)

**SOURCE:**

BASED ON CITY OF TORONTO INTERACTIVE MAP AND FIELD OBSERVATIONS BY EXP STAFF

**NOTE:**

BH15-1 AND BH15-2 WERE ADVANCED IN AN UNDERGROUND PARKING GARAGE.

**LEGEND:**

- PROPERTY BOUNDARY
- PHASE II PROPERTY BOUNDARY
- TEST HOLE WITH MONITOR
  DEEP MONITOR TH1 (EXP, 2018)
  SHALLOW MONITOR TH2, TH3, TH4 (EXP, 2018)
- TEST HOLE WITH MONITORS
  BH15-2, BH15-3, BH15-3S (SPL, 2015)
  BH1 (MCCLYMONT & RAK, 2016)
  MW SERIES (PINCHIN, 2016)
- TEST HOLE
  BH15-1 (SPL, 2015)

| DRAWN BY | CHECKED BY |
|---|---|
| J.D.H. | L.W. |

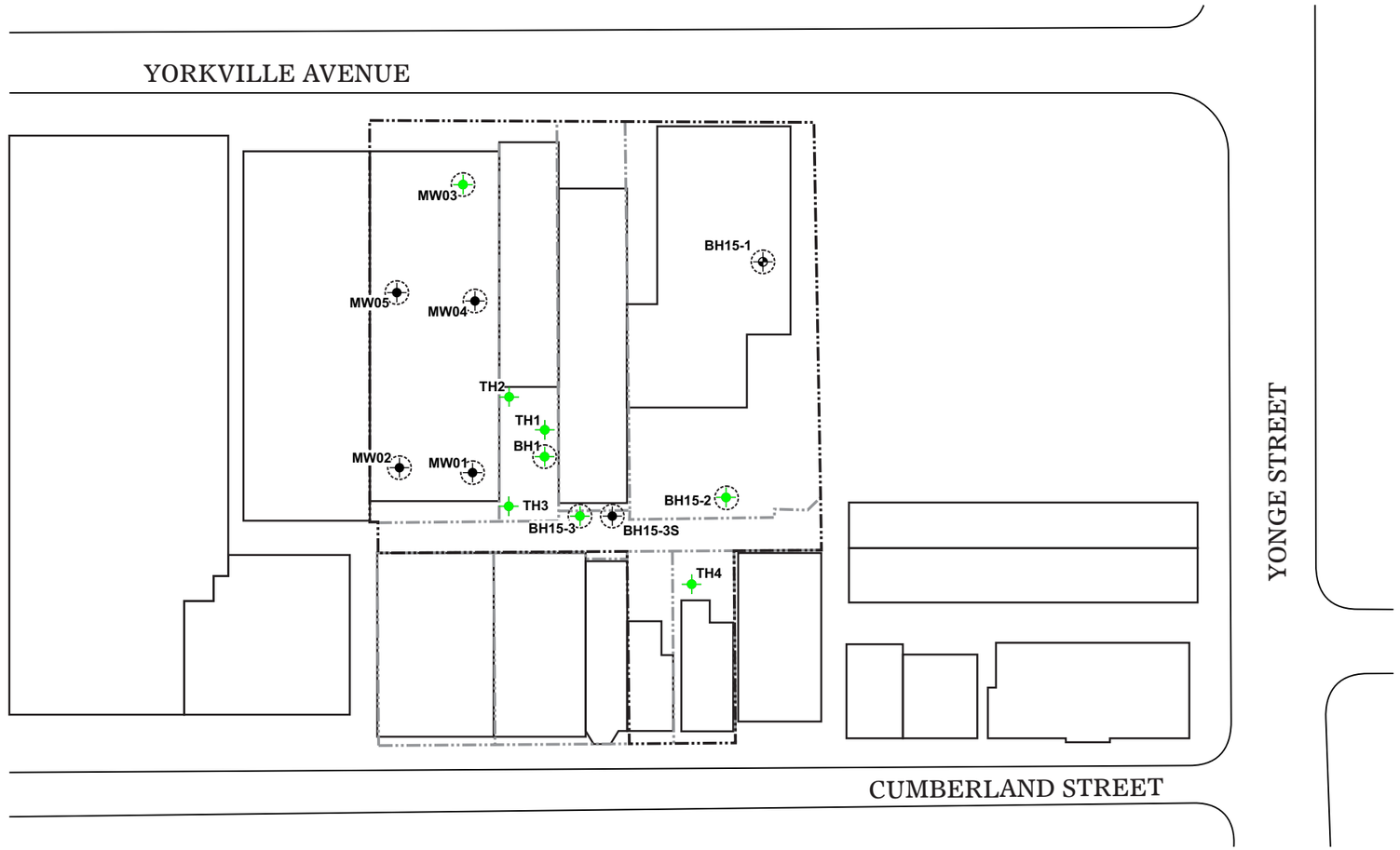
# SITE PLAN

FIGURE 3

11 YORKVILLE AVENUE
TORONTO, ONTARIO

PROJECT NUMBER: 242474 | DATE: FEBRUARY 2018

242474-SITE PLAN-FEB18




**SCALE:**

0 10 20m

(APPROXIMATE)

**SOURCE:**

BASED ON CITY OF TORONTO INTERACTIVE MAP AND FIELD OBSERVATIONS BY EXP STAFF

| exp. | DRAWN BY | CHECKED BY |
|---|---|---|
| | K.G. | L.W. |

**LEGEND:**

- PROPERTY BOUNDARY
- PHASE II PROPERTY BOUNDARY
- TEST HOLE WITH MONITOR
  DEEP MONITOR TH1 (EXP, 2018)
  SHALLOW MONITOR TH2, TH3, TH4 (EXP, 2018)
- TEST HOLE WITH MONITORS
  BH15-2, BH15-3, BH15-3S (SPL, 2015)
  BH1 (MCCLYMONT & RAK, 2016)
  MW SERIES (PINCHIN, 2016)
- TEST HOLE BH15-1 (SPL, 2015)

LOCATION WHERE SAMPLE IS WITHIN O. REG. 153/04 TABLE 3 STANDARDS FOR A RESIDENTIAL/PARKLAND/INSTITUTIONAL PROPERTY USE AND MEDIUM TO FINE TEXTURED SOIL FOR ALL PARAMETERS ANALYSED IS SHOWN IN GREEN

.

# SOIL ANALYTICAL RESULTS - PHCs

FIGURE 4A

11 YORKVILLE AVENUE
TORONTO, ONTARIO

PROJECT NUMBER: 242474

DATE: FEBRUARY 2018

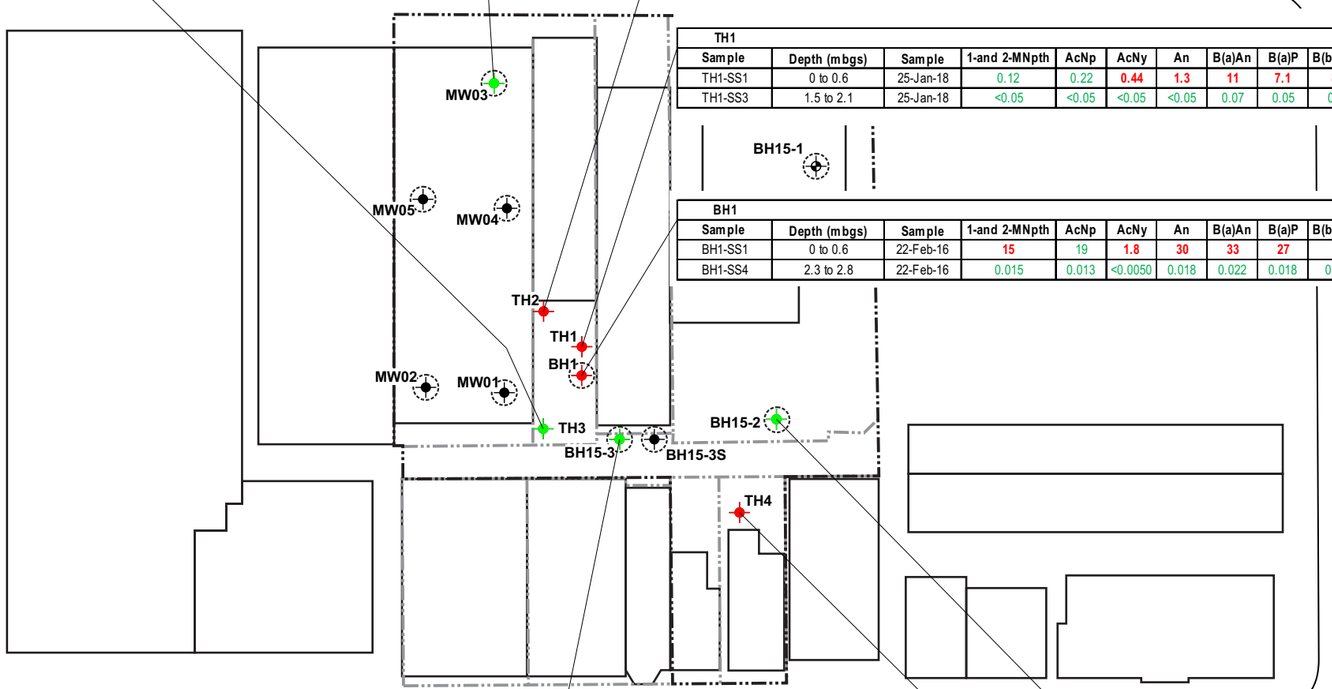
| TH3 | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample | Depth (mbgs) | Sample | 1-and 2-MNpth | AcNp | AcNy | An | B(a)An | B(a)P | B(b/j)Flth | B(g,h,i)Pyl | B(k)Flth | Chry | D(a,h)An | Flth | Fl | I(1,2,3-cd)P | Npth | Pth | Py |
| TH3-SS1 | 0 to 0.6 | 29-Jan-18 | <0.05 | <0.05 | <0.05 | <0.05 | 0.19 | 0.20 | 0.30 | 0.09 | 0.09 | 0.19 | <0.05 | 0.32 | <0.05 | 0.08 | <0.05 | 0.13 | 0.33 |

| MW03 | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample | Depth (mbgs) | Sample | 1-and 2-MNpth | AcNp | AcNy | An | B(a)An | B(a)P | B(b/j)Flth | B(g,h,i)Pyl | B(k)Flth | Chry | D(a,h)An | Flth | Fl | I(1,2,3-cd)P | Npth | Pth | Py |
| MW03-S4 | 1.83 to 2.44 | 17-Dec-15 | <0.0071 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.05 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 |

| TH2 | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample | Depth (mbgs) | Sample | 1-and 2-MNpth | AcNp | AcNy | An | B(a)An | B(a)P | B(b/j)Flth | B(g,h,i)Pyl | B(k)Flth | Chry | D(a,h)An | Flth | Fl | I(1,2,3-cd)P | Npth | Pth | Py |
| TH2-SS1 | 0 to 0.6 | 26-Jan-18 | <0.05 | <0.05 | <0.05 | 0.13 | 0.50 | **0.35** | 0.51 | 0.16 | 0.25 | 0.47 | <0.05 | **0.94** | <0.05 | 0.15 | <0.05 | 0.52 | 0.83 |
| ~TH2-SS101 | 0 to 0.6 | 26-Jan-18 | <0.05 | <0.05 | <0.05 | 0.13 | 0.42 | **0.31** | 0.40 | 0.13 | 0.25 | 0.46 | <0.05 | **0.88** | 0.06 | 0.13 | <0.05 | 0.60 | 0.73 |

| TH1 | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample | Depth (mbgs) | Sample | 1-and 2-MNpth | AcNp | AcNy | An | B(a)An | B(a)P | B(b/j)Flth | B(g,h,i)Pyl | B(k)Flth | Chry | D(a,h)An | Flth | Fl | I(1,2,3-cd)P | Npth | Pth | Py |
| TH1-SS1 | 0 to 0.6 | 25-Jan-18 | 0.12 | 0.22 | **0.44** | **1.3** | **11** | **7.1** | **8.6** | 1.6 | **4.1** | **10** | **0.45** | **17** | 0.43 | **1.7** | 0.10 | **8.3** | 15 |
| TH1-SS3 | 1.5 to 2.1 | 25-Jan-18 | <0.05 | <0.05 | <0.05 | <0.05 | 0.07 | 0.05 | 0.07 | <0.05 | <0.05 | 0.06 | <0.05 | 0.14 | <0.05 | <0.05 | <0.05 | 0.09 | 0.12 |

| BH1 | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample | Depth (mbgs) | Sample | 1-and 2-MNpth | AcNp | AcNy | An | B(a)An | B(a)P | B(b/j)Flth | B(g,h,i)Pyl | B(k)Flth | Chry | D(a,h)An | Flth | Fl | I(1,2,3-cd)P | Npth | Pth | Py |
| BH1-SS1 | 0 to 0.6 | 22-Feb-16 | **15** | 19 | **1.8** | **30** | **33** | **27** | **34** | **13** | **12** | **27** | **3.6** | **90** | 22 | **16** | **22** | **110** | 62 |
| BH1-SS4 | 2.3 to 2.8 | 22-Feb-16 | 0.015 | 0.013 | <0.0050 | 0.018 | 0.022 | 0.018 | 0.026 | 0.010 | 0.0092 | 0.019 | <0.0050 | 0.057 | 0.014 | 0.012 | 0.024 | 0.065 | 0.041 |




| BH15-3 | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample | Depth (mbgs) | Sample | 1-and 2-MNpth | AcNp | AcNy | An | B(a)An | B(a)P | B(b/j)Flth | B(g,h,i)Pyl | B(k)Flth | Chry | D(a,h)An | Flth | Fl | I(1,2,3-cd)P | Npth | Pth | Py |
| BH15-3 SS1 | 0.15 to 0.6 | 24-Jan-15 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |

| TH4 | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample | Depth (mbgs) | Sample | 1-and 2-MNpth | AcNp | AcNy | An | B(a)An | B(a)P | B(b/j)Flth | B(g,h,i)Pyl | B(k)Flth | Chry | D(a,h)An | Flth | Fl | I(1,2,3-cd)P | Npth | Pth | Py |
| TH4-SS1 | 0 to 0.6 | 29-Jan-18 | 0.07 | 0.11 | 0.11 | 0.48 | **2.1** | **1.8** | **2.1** | 0.74 | **1.1** | 1.9 | **0.18** | **4.8** | 0.16 | **0.72** | 0.06 | 2.8 | 4.5 |
| TH4-SS4 | 2.3 to 2.9 | 29-Jan-18 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |

| BH15-2 | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample | Depth (mbgs) | Sample | 1-and 2-MNpth | AcNp | AcNy | An | B(a)An | B(a)P | B(b/j)Flth | B(g,h,i)Pyl | B(k)Flth | Chry | D(a,h)An | Flth | Fl | I(1,2,3-cd)P | Npth | Pth | Py |
| BH15-2 S1 | 0 to 0.6 | 23-Jan-15 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |

| Parameter | Abbreviation | Table 3 Soil Standards |
|---|---|---|
| 1- and 2-Methylnaphthalene | 1-and 2-MNpth | 3.4 |
| Acenaphthene | AcNp | 58 |
| Acenaphthylene | AcNy | 0.17 |
| Benzo(a)anthracene | B(a)An | 0.63 |
| Benzo(a)pyrene | B(a)P | 0.3 |
| Benzo(b/j)fluoranthene | B(b/j)Flth | 0.78 |
| Benzo(g,h,i)perylene | B(g,h,i)Pyl | 7.8 |
| Benzo(k)Fluoranthene | B(k)Flth | 0.78 |
| Chrysene | Chry | 7.8 |
| Dibenzo(a,h)anthracene | D(a,h)An | 0.1 |
| Fluoranthene | Flth | 0.69 |
| Fluorene | Fl | 69 |
| Naphthalene | Npth | 0.48 |
| Indeno(1,2,3-cd)pyrene | I(1,2,3-cd)P | 0.75 |
| Phenanthrene | Pth | 7.8 |
| Pyrene | Py | 78 |

**SCALE:**
0 10 20m
(APPROXIMATE)

**SOURCE:**
BASED ON CITY OF TORONTO INTERACTIVE MAP AND FIELD OBSERVATIONS BY EXP STAFF

exp.

| DRAWN BY | CHECKED BY |
|---|---|
| K.G. | L.W. |

**LEGEND:**
- PROPERTY BOUNDARY
- PHASE II PROPERTY BOUNDARY
- TEST HOLE WITH MONITOR
  DEEP MONITOR TH1 (EXP, 2018)
  SHALLOW MONITOR TH2, TH3, TH4 (EXP, 2018)
- TEST HOLE WITH MONITORS
  BH15-2, BH15-3, BH15-3S (SPL, 2015)
  BH1 (MCCLYMONT & RAK, 2016)
  MW SERIES (PINCHIN, 2016)
- TEST HOLE BH15-1 (SPL, 2015)

*STANDARDS SHOWN ARE FOR A RESIDENTIAL/PARKLAND/INSTITUTIONAL PROPERTY USE AND MEDIUM TO FINE TEXTURED SOIL
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'~' INDICATES DUPLICATE FIELD SAMPLE
mbgs - METRES BELOW GROUND SURFACE
NA - NOT ANALYZED
ALL RESULTS IN UNITS OF µg/g UNLESS OTHERWISE NOTED.

# SOIL ANALYTICAL RESULTS - PAHs

FIGURE 4B

11 YORKVILLE AVENUE
TORONTO, ONTARIO

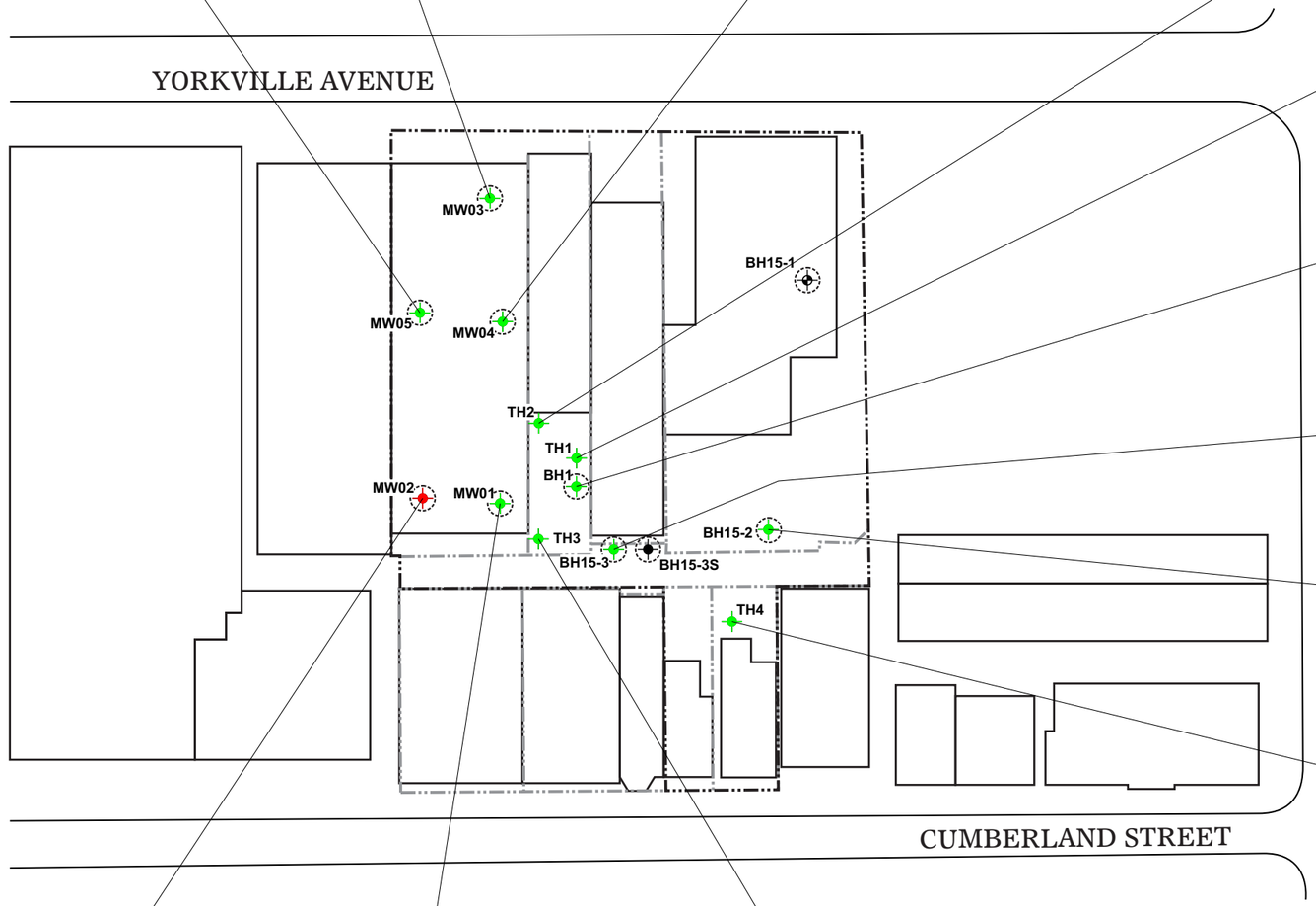
PROJECT NUMBER: 242474 | DATE: FEBRUARY 2018

| MW05 | | | |
|---|---|---|---|
| Sample | Depth (mbgs) | Sample | PCE |
| MW05-S2 | 0.61 to 1.22 | 18-Dec-15 | <0.050 |

| MW03 | | | |
|---|---|---|---|
| Sample | Depth (mbgs) | Sample | PCE |
| MW03-S3 | 1.22 to 1.83 | 17-Dec-15 | <0.050 |

| MW04 | | | |
|---|---|---|---|
| Sample | Depth (mbgs) | Sample | PCE |
| MW04-S4 | 1.83 to 2.44 | 18-Dec-15 | <0.050 |

| TH2 | | | |
|---|---|---|---|
| Sample | Depth (mbgs) | Sample | PCE |
| TH2-SS5 | 3.1 to 3.7 | 26-Jan-18 | 0.13 |




| TH1 | | | |
|---|---|---|---|
| Sample | Depth (mbgs) | Sample | PCE |
| TH1-SS5 | 3.1 to 3.7 | 25-Jan-18 | 0.71 |
| ~TH1-SS501 | 3.1 to 3.7 | 25-Jan-18 | 0.67 |

| BH1 | | | |
|---|---|---|---|
| Sample | Depth (mbgs) | Sample | PCE |
| BH1 SS18 | 22.95 to 23.25 | 23-Feb-16 | <0.050 |
| BH1 SS25 | 33.45 to 33.80 | 24-Feb-16 | <0.050 |

| BH15-3 | | | |
|---|---|---|---|
| Sample | Depth (mbgs) | Sample | PCE |
| BH15-3 SS17B | 21.3 to 21.9 | 25-Jan-15 | <0.05 |

| BH15-2 | | | |
|---|---|---|---|
| Sample | Depth (mbgs) | Sample | PCE |
| BH15-2 S6B | 6.1 to 6.7 | 23-Jan-15 | <0.05 |
| ~ QAQC 15-1 | 6.1 to 6.7 | 23-Jan-15 | <0.05 |

| TH4 | | | |
|---|---|---|---|
| Sample | Depth (mbgs) | Sample | PCE |
| TH4-SS5 | 3.1 to 3.7 | 26-Jan-18 | 0.08 |

| MW02 | | | |
|---|---|---|---|
| Sample | Depth (mbgs) | Sample | PCE |
| MW02-S6 | 3.05 to 3.66 | 17-Dec-15 | **2.9** |

| MW01 | | | |
|---|---|---|---|
| Sample | Depth (mbgs) | Sample | PCE |
| MW01-S5 | 3.05 to 3.66 | 17-Dec-15 | 1.6 |
| MW01-S9 | 5.49 to 6.10 | 17-Dec-15 | 0.1 |

| TH3 | | | |
|---|---|---|---|
| Sample | Depth (mbgs) | Sample | PCE |
| TH3-SS6 | 3.8 to 4.4 | 26-Jan-18 | 1.3 |

| Parameter | Abbreviation | Table 3 Ground Water Standards |
|---|---|---|
| Tetrachloroethylene | PCE | 2.3 |

**SCALE:**
0 10 20m
(APPROXIMATE)

**SOURCE:**
BASED ON CITY OF TORONTO INTERACTIVE MAP AND FIELD OBSERVATIONS BY EXP STAFF

| DRAWN BY | CHECKED BY |
|---|---|
| K.G. | L.W. |

**LEGEND:**
- PROPERTY BOUNDARY
- PHASE II PROPERTY BOUNDARY
- TEST HOLE WITH MONITOR
  DEEP MONITOR TH1 (EXP, 2018)
  SHALLOW MONITOR TH2, TH3, TH4 (EXP, 2018)
- TEST HOLE WITH MONITORS
  BH15-2, BH15-3, BH15-3S (SPL, 2015)
  BH1 (MCCLYMONT & RAK, 2016)
  MW SERIES (PINCHIN, 2016)
- TEST HOLE BH15-1 (SPL, 2015)

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mbgs - METRES BELOW GROUND SURFACE
NA - NOT ANALYZED
ALL RESULTS IN UNITS OF µg/g UNLESS OTHERWISE NOTED.

# SOIL ANALYTICAL RESULTS - VOCs

FIGURE 4C

11 YORKVILLE AVENUE
TORONTO, ONTARIO

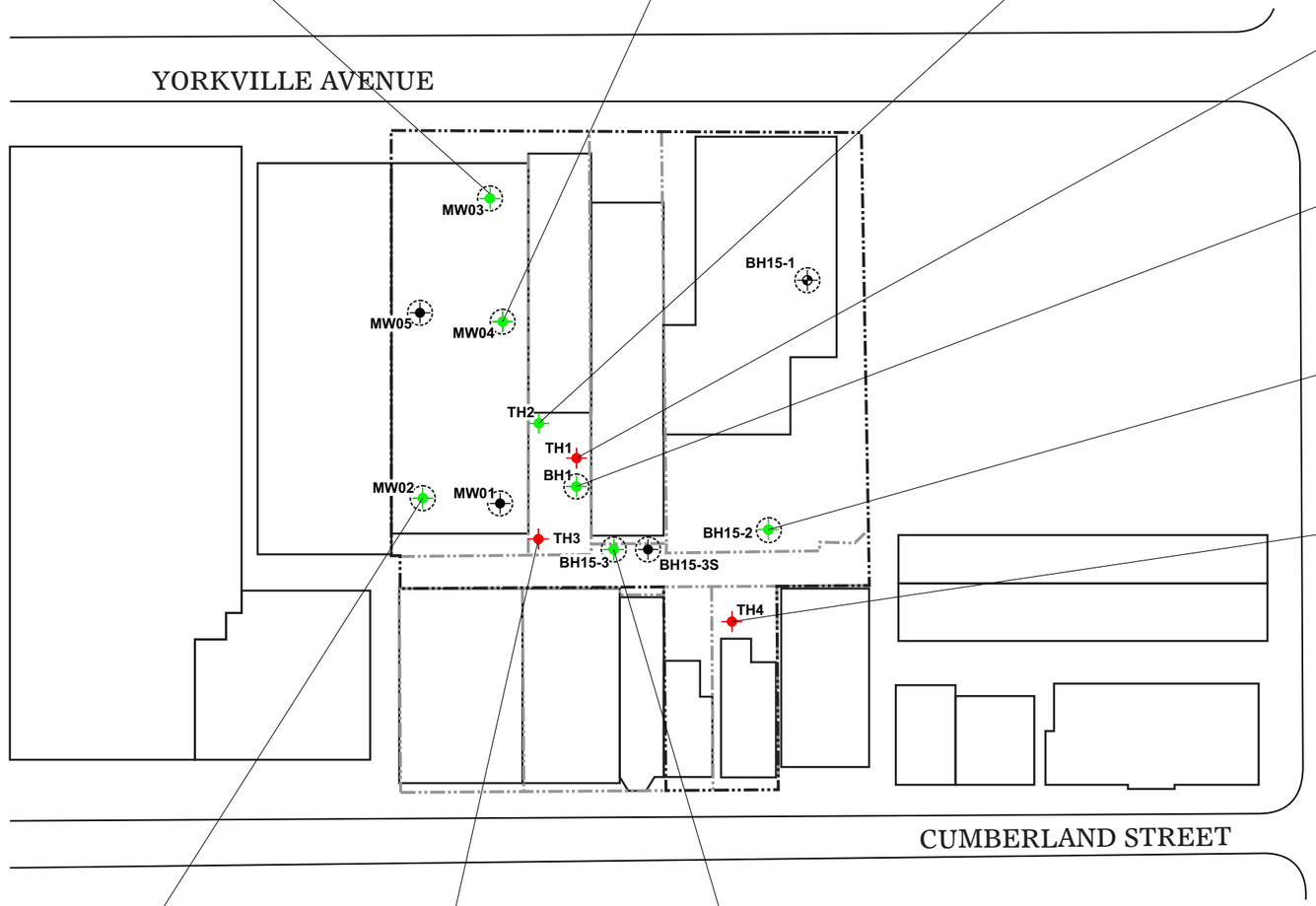
PROJECT NUMBER: 242474 | DATE: FEBRUARY 2018

242474-RESULTS-FEB18: SOIL VOC

| MW03 | | | | |
|---|---|---|---|---|
| Sample | Depth (mbgs) | Sample | Pb | SAR |
| MW03-S2 | 0.61 to 1.22 | 17-Dec-15 | 8.6 | NA |

| MW04 | | | | |
|---|---|---|---|---|
| Sample | Depth (mbgs) | Sample | Pb | SAR |
| MW04-S2 | 0.61 to 1.22 | 18-Dec-15 | 3.9 | NA |

| TH2 | | | | |
|---|---|---|---|---|
| Sample | Depth (mbgs) | Sample | Pb | SAR |
| TH2-SS1 | 0 to 0.6 | 26-Jan-18 | 27 | 0.358 |
| ~TH2-SS101 | 0 to 0.6 | 26-Jan-18 | 22 | 0.343 |




| TH1 | | | | |
|---|---|---|---|---|
| Sample | Depth (mbgs) | Sample | Pb | SAR |
| TH1-SS1 | 0 to 0.6 | 25-Jan-18 | 253 | 1.80 |
| TH1-SS3 | 1.5 to 2.1 | 25-Jan-18 | 4 | 2.08 |

| BH1 | | | | |
|---|---|---|---|---|
| Sample | Depth (mbgs) | Sample | Pb | SAR |
| BH1-SS1 | 0 to 0.6 | 22-Feb-16 | 34 | 0.59 |
| BH1-SS4 | 2.3 to 2.8 | 22-Feb-16 | 1.5 | 2.0 |

| BH15-2 | | | | |
|---|---|---|---|---|
| Sample | Depth (mbgs) | Sample | Pb | SAR |
| BH15-2 S2B | 1.2 to 1.8 | 23-Jan-15 | 7 | 1.04 |
| BH15-2 S4A | 3.1 to 3.7 | 23-Jan-15 | NA | 0.443 |

| TH4 | | | | |
|---|---|---|---|---|
| Sample | Depth (mbgs) | Sample | Pb | SAR |
| TH4-SS1 | 0 to 0.6 | 29-Jan-18 | 100 | 5.60 |
| TH4-SS4 | 2.3 to 2.9 | 29-Jan-18 | 2 | 2.86 |

| MW02 | | | | |
|---|---|---|---|---|
| Sample | Depth (mbgs) | Sample | Pb | SAR |
| MW02-S2 | 0.61 to 1.22 | 17-Dec-15 | 38 | NA |

| TH3 | | | | |
|---|---|---|---|---|
| Sample | Depth (mbgs) | Sample | Pb | SAR |
| TH3-SS1 | 0 to 0.6 | 29-Jan-18 | 155 | 1.72 |

| BH15-3 | | | | |
|---|---|---|---|---|
| Sample | Depth (mbgs) | Sample | Pb | SAR |
| BH15-3 SS2 | 0.8 to 1.4 | 24-Jan-15 | 9 | 4.58 |
| BH15-3 SS6 | 3.1 to 3.7 | 24-Jan-15 | NA | 0.462 |

| Parameter | Abbreviation | Table 3 Soil Standards |
|---|---|---|
| Lead | Pb | 120 |
| Sodium Adsorption Ratio | SAR | 5 |

**SCALE:**
0 10 20m
(APPROXIMATE)

**SOURCE:**
BASED ON CITY OF TORONTO INTERACTIVE MAP AND FIELD OBSERVATIONS BY EXP STAFF

| DRAWN BY | CHECKED BY |
|---|---|
| K.G. | L.W. |

**LEGEND:**
- PROPERTY BOUNDARY
- PHASE II PROPERTY BOUNDARY
- TEST HOLE WITH MONITOR
  DEEP MONITOR TH1 (EXP, 2018)
  SHALLOW MONITOR TH2, TH3, TH4 (EXP, 2018)
- TEST HOLE WITH MONITORS
  BH15-2, BH15-3, BH15-3S (SPL, 2015)
  BH1 (MCCLYMONT & RAK, 2016)
  MW SERIES (PINCHIN, 2016)
- TEST HOLE BH15-1 (SPL, 2015)

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mbgs - METRES BELOW GROUND SURFACE
NA - NOT ANALYZED
ALL RESULTS IN UNITS OF µg/g UNLESS OTHERWISE NOTED.

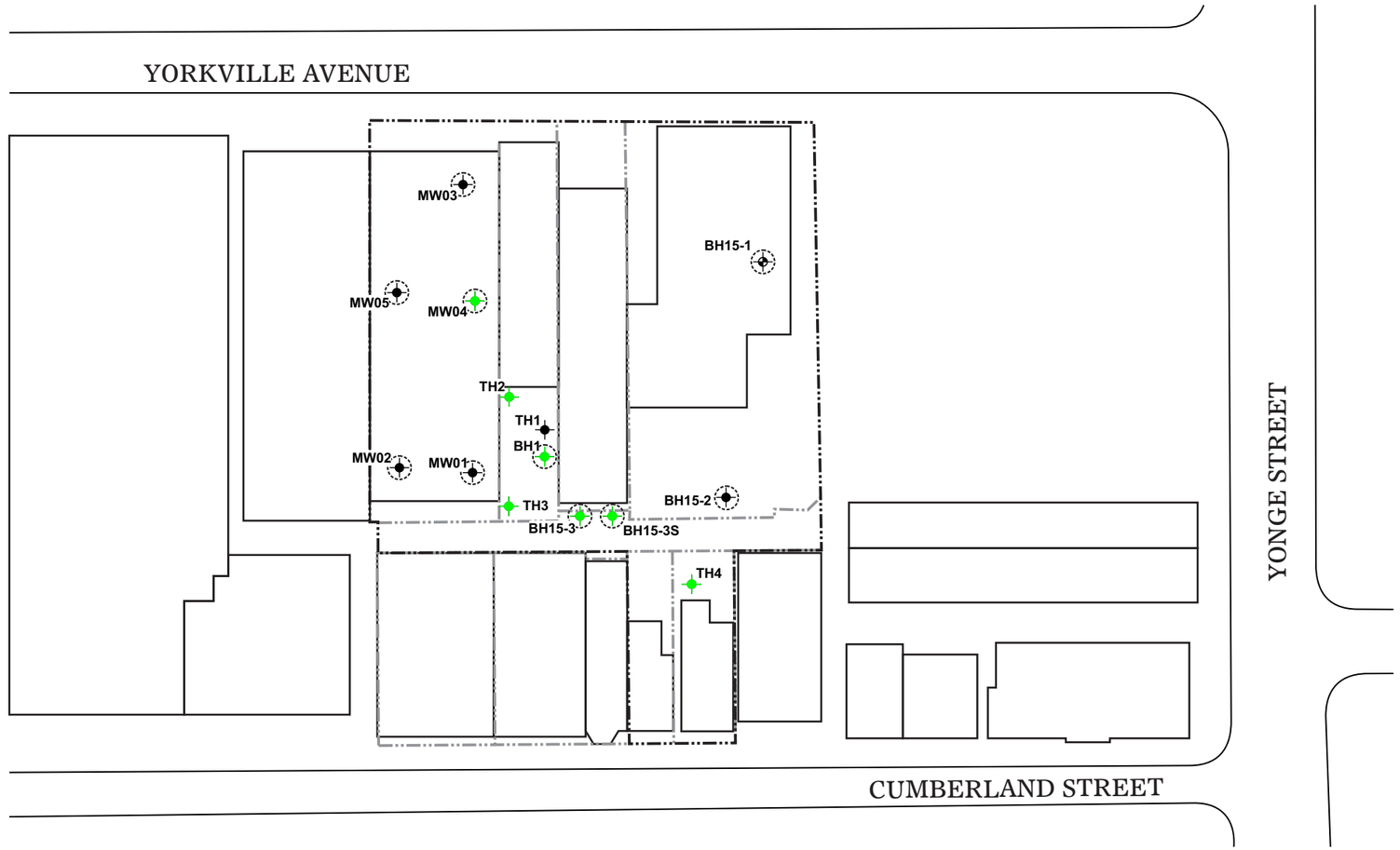
# SOIL ANALYTICAL RESULTS - – METALS, HYDRIDE-FORMING METALS AND ORPs

FIGURE 4D

11 YORKVILLE AVENUE
TORONTO, ONTARIO

PROJECT NUMBER: 242474

DATE: FEBRUARY 2018




**SCALE:**

0 10 20m

(APPROXIMATE)

**SOURCE:**

BASED ON CITY OF TORONTO INTERACTIVE MAP AND FIELD OBSERVATIONS BY EXP STAFF

| DRAWN BY | CHECKED BY |
|---|---|
| K.G. | L.W. |

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- PHASE II PROPERTY BOUNDARY
- TEST HOLE WITH MONITOR
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  SHALLOW MONITOR TH2, TH3, TH4 (EXP, 2018)
- TEST HOLE WITH MONITORS
  BH15-2, BH15-3, BH15-3S (SPL, 2015)
  BH1 (MCCLYMONT & RAK, 2016)
  MW SERIES (PINCHIN, 2016)
- TEST HOLE BH15-1 (SPL, 2015)

LOCATION WHERE SAMPLE IS WITHIN O. REG. 153/04 TABLE 3 STANDARDS FOR ALL TYPES OF PROPERTY USE AND MEDIUM TO FINE TEXTURED SOIL FOR ALL PARAMETERS ANALYSED IS SHOWN IN GREEN
.

# GROUND WATER ANALYTICAL RESULTS - PHCs

FIGURE 4E

11 YORKVILLE AVENUE
TORONTO, ONTARIO

PROJECT NUMBER: 242474

DATE: FEBRUARY 2018

| MW02 | | | | | |
|---|---|---|---|---|---|
| Sample | Depth (mbgs) | Sample | PCE | TCE | VC |
| MW02 | 2.13 to 5.18 | 22-Dec-15 | 220 | 1.9 | <2.0 |
| MW02 | 2.13 to 5.18 | 28-Nov-17 | 120 | 1.3 | <0.20 |
| ~MW020 | 2.13 to 5.18 | 28-Nov-17 | 100 | 1.4 | <0.20 |

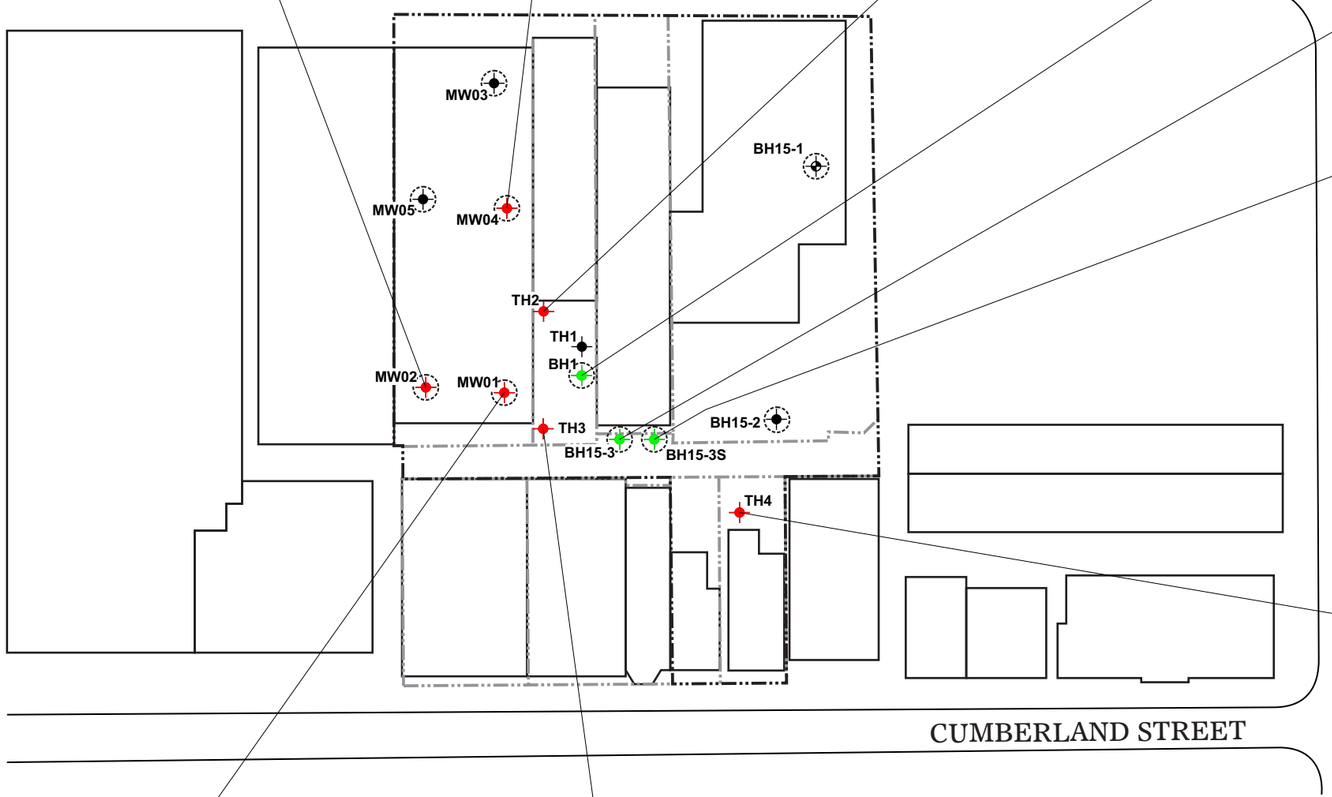
| MW04 | | | | | |
|---|---|---|---|---|---|
| Sample | Depth (mbgs) | Sample | PCE | TCE | VC |
| MW04 | 0.61 to 3.05 | 22-Dec-15 | <0.10 | <0.10 | 0.6 |
| MW04 | 0.61 to 3.05 | 28-Nov-17 | <0.20 | <0.20 | 2.1 |

| TH2 | | | | | |
|---|---|---|---|---|---|
| Sample | Depth (mbgs) | Sample | PCE | TCE | VC |
| TH2 | 2.4 to 5.5 | 5-Feb-18 | 24 | 14 | <0.17 |

| BH1 | | | | | |
|---|---|---|---|---|---|
| Sample | Depth (mbgs) | Sample | PCE | TCE | VC |
| BH1 | 24.2 to 26.6 | 26-Feb-16 | <0.20 | <0.20 | <0.20 |
| BH1 | 24.2 to 26.6 | 28-Nov-17 | <0.20 | <0.20 | <0.20 |

| BH15-3 | | | | | |
|---|---|---|---|---|---|
| Sample | Depth (mbgs) | Sample | PCE | TCE | VC |
| BH15-3 | 18.3 to 21.3 | 28-Jan-15 | 0.21 | <0.20 | <0.17 |
| BH15-3 | 18.3 to 21.3 | 28-Nov-17 | <0.20 | <0.20 | <0.20 |

| BH15-3S | | | | | |
|---|---|---|---|---|---|
| Sample | Depth (mbgs) | Sample | PCE | TCE | VC |
| BH15-3S | 2.4 to 5.5 | 28-Jan-15 | 0.67 | <0.20 | <0.17 |
| ~QA/QC GW | 2.4 to 5.5 | 28-Jan-15 | 0.88 | <0.20 | <0.17 |
| BH15-3S | 2.4 to 5.5 | 28-Nov-17 | 0.57 | <0.20 | <0.20 |




| TH4 | | | | | |
|---|---|---|---|---|---|
| Sample | Depth (mbgs) | Sample | PCE | TCE | VC |
| TH4 | 2.9 to 5.9 | 31-Jan-18 | 2.0 | 29 | <0.17 |

| MW01 | | | | | |
|---|---|---|---|---|---|
| Sample | Depth (mbgs) | Sample | PCE | TCE | VC |
| MW01 | 3.05 to 6.10 | 22-Dec-15 | 20 | 0.23 | <0.20 |
| MW01 | 3.05 to 6.10 | 28-Nov-17 | 55 | 0.32 | <0.20 |

| TH3 | | | | | |
|---|---|---|---|---|---|
| Sample | Depth (mbgs) | Sample | PCE | TCE | VC |
| TH3 | 2.7 to 5.8 | 31-Jan-18 | 26 | <0.20 | <0.17 |
| ~TH300 | 2.7 to 5.8 | 31-Jan-18 | 28 | <0.20 | <0.17 |

| Parameter | Abbreviation | Table 3 Ground Water Standards |
|---|---|---|
| Tetrachloroethylene | PCE | 17 |
| Trichloroethylene | TCE | 17 |
| Vinyl Chloride | VC | 1.7 |

**SCALE:**
0 10 20m
(APPROXIMATE)

**SOURCE:**
BASED ON CITY OF TORONTO INTERACTIVE MAP AND FIELD OBSERVATIONS BY EXP STAFF

| DRAWN BY | CHECKED BY |
|---|---|
| K.G. | L.W. |

**LEGEND:**
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- PHASE II PROPERTY BOUNDARY
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  SHALLOW MONITOR TH2, TH3, TH4 (EXP, 2018)
- TEST HOLE WITH MONITORS
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  BH1 (MCCLYMONT & RAK, 2016)
  MW SERIES (PINCHIN, 2016)
- TEST HOLE BH15-1 (SPL, 2015)

*STANDARDS SHOWN ARE FOR ALL TYPES OF PROPERTY USE AND MEDIUM TO FINE TEXTURED SOIL
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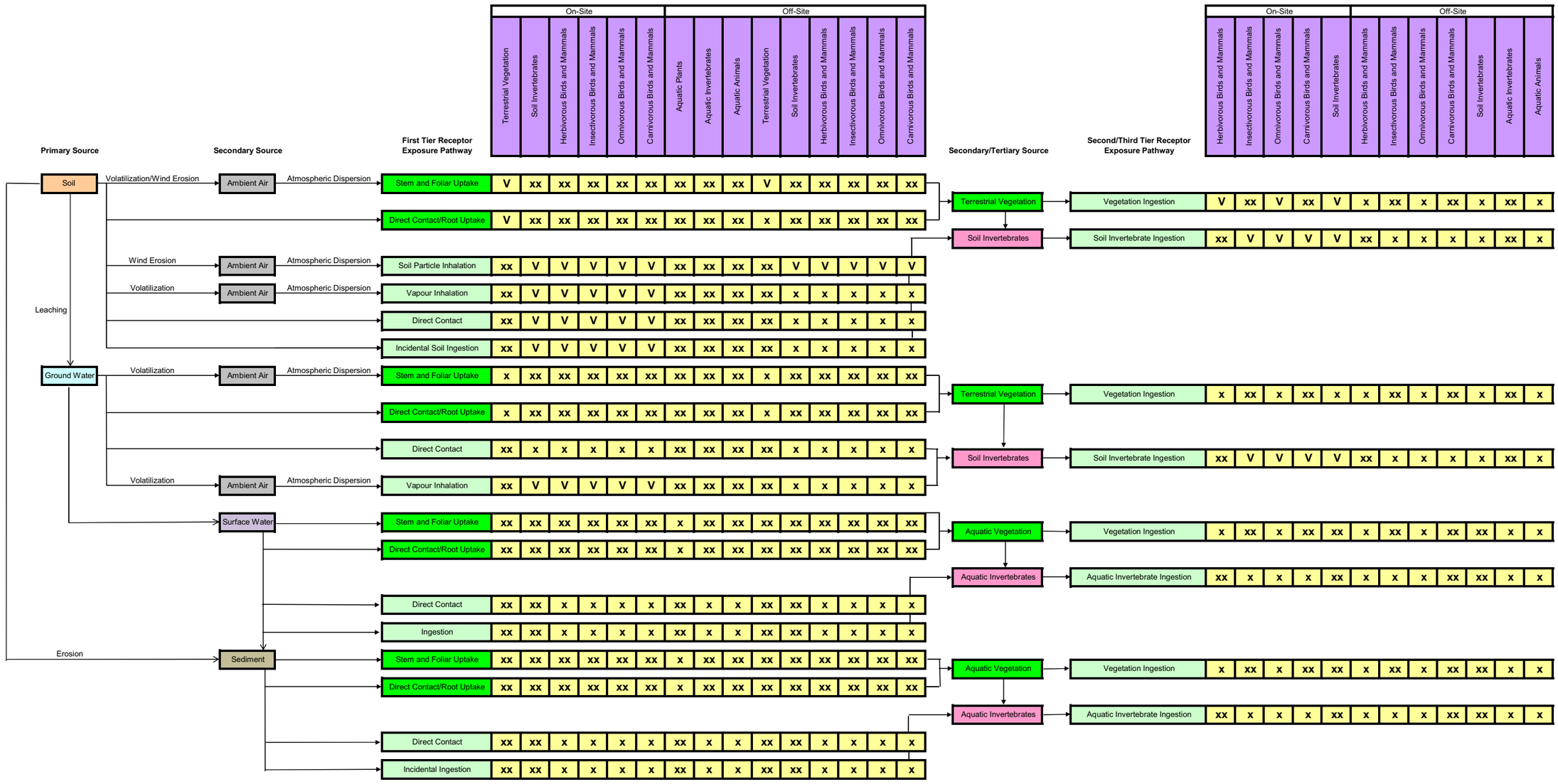
'~' INDICATES DUPLICATE FIELD SAMPLE
mbgs - METRES BELOW GROUND SURFACE
NA - NOT ANALYZED
ALL RESULTS IN UNITS OF ppb (µg/L), UNLESS OTHERWISE NOTED.

# GROUND WATER ANALYTICAL RESULTS - VOCs

FIGURE 4F

11 YORKVILLE AVENUE
TORONTO, ONTARIO

PROJECT NUMBER: 242474 | DATE: FEBRUARY 2018




**LEGEND:**

| | |
|---|---|
| x | INDICATES PATHWAY INCOMPLETE |
| V | INDICATES POTENTIAL EXPOSURE PATHWAY |
| xx | PATHWAY NOT APPLICABLE TO THIS RECEPTOR |

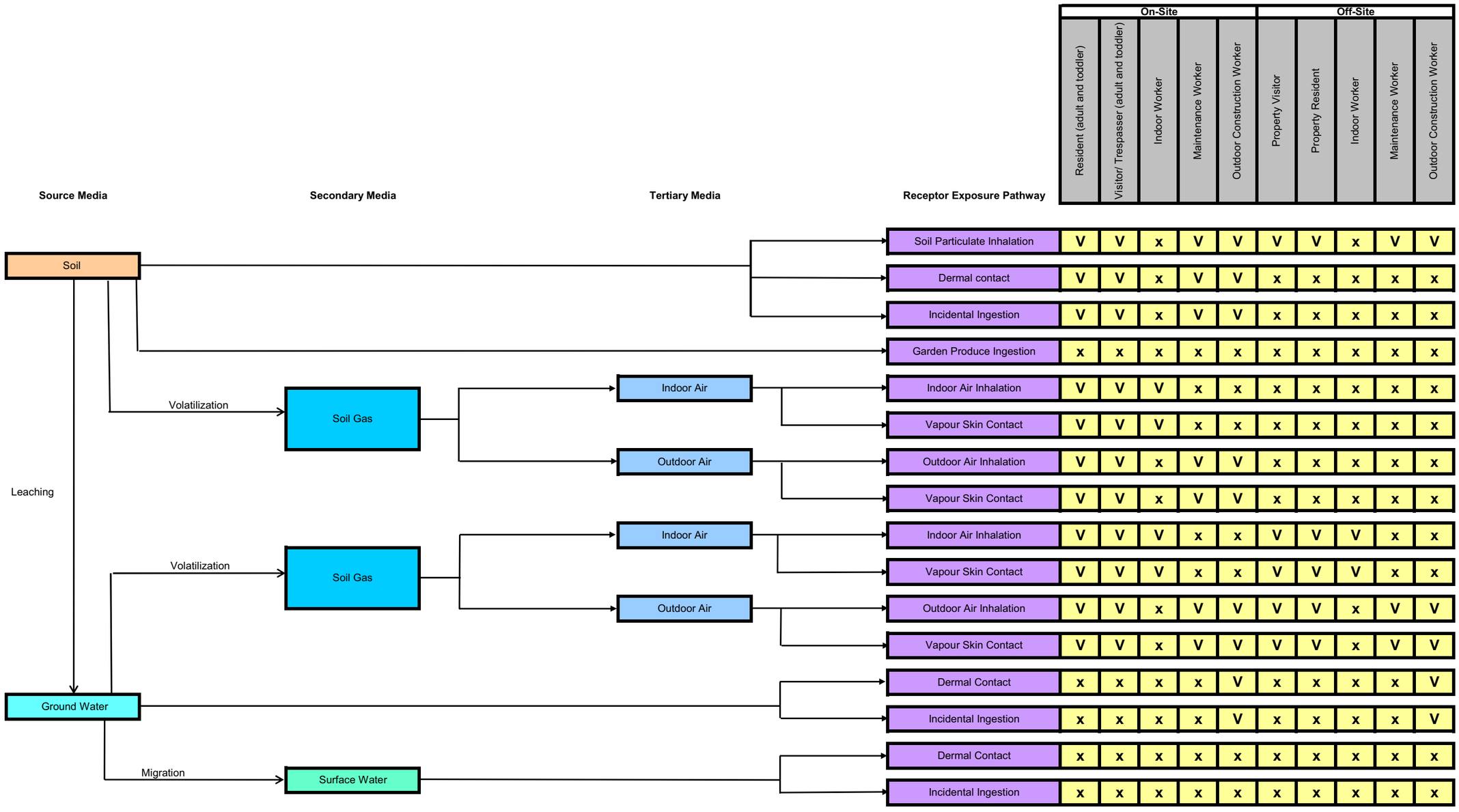
| DRAWN BY | CHECKED BY |
|---|---|
| K.G. | L.W. |

# ECOLOGICAL CONCEPTUAL SITE MODEL

FIGURE 5

11 YORKVILLE AVENUE
TORONTO, ONTARIO

PROJECT NUMBER: 242474 | DATE: FEBRUARY 2018




**LEGEND:**

| | |
|---|---|
| x | INDICATES PATHWAY INCOMPLETE |
| V | INDICATES POTENTIAL EXPOSURE PATHWAY |

| DRAWN BY | CHECKED BY |
|---|---|
| K.G. | L.W. |

HUMAN HEALTH CONCEPTUAL SITE MODEL

FIGURE 6

11 YORKVILLE AVENUE
TORONTO, ONTARIO

PROJECT NUMBER: 242474 | DATE: FEBRUARY 2018

242474-HHRA_ECSM CSM-FEB18: HHRA

# Tables

# Table 1: SITE ENVIRONMENTAL SETTING DATA



11 Yorkville Avenue, Toronto, Ontario
February 2018

## NATIVE SOIL

| | |
|---|---|
| Type: | Silty sand to sandy silt |
| Hydraulic Conductivity | (select range) |
| > $10^{-3}$ cm/s: | |
| <$10^{-3}$ to >$10^{-6}$ cm/s: | $10^{-5}$ cm/s |
| < $10^{-6}$ cm/s: | |
| Soil Texture: | Medium to fine |
| Estimated or Measured: | Estimated |

## GROUND WATER

| | |
|---|---|
| Depth to Water Table: | 3.22 to 3.44 mbgs |
| Estimated or Measured: | Measured (EXP, 2018) |
| Direction of Flow: | Southerly |
| Estimated or Measured: | Estimated |

## MUNICIPAL SERVICES

| | |
|---|---|
| Piped Water: | Yes |
| Ground Water Source: | No |
| Distance to Well: | N/A |
| Surface Water Source: | Yes - Lake Ontario |
| Sanitary Sewer: | Yes |
| Storm Sewer: | Yes |

## PRIVATE SERVICES

| | |
|---|---|
| Distance to Nearest Well: | N/A |
| Approximate Depth of Well: | N/A |
| Private Sanitary Sewage: | No |

## SURFACE WATER

| | |
|---|---|
| Name of water body: | Don River |
| Distance from site: | 2.0 kilometres east of the site |
| Elevation drop from site: | 40 metres |
| Direct Drainage from site: | No |

# Table 2: DARCY'S LAW CALCULATIONS



11 Yorkville Avenue, Toronto, Ontario
February 2018

Q=kia v=ki/n t=T/v

| | |
|---|---|
| Permeability k (m/sec) = | 1.00E-07 |
| (cm/sec) = | 1.00E-05 |
| Gradient i (m/m) = | 0.001 |
| Effective Porosity n = | 0.33 |
| Thickness T (m) = | NA |

| | |
|---|---|
| Velocity v (m/sec) = | 3.03E-10 |
| (feet/sec) = | 9.94E-10 |
| (feet/day) = | 8.59E-05 |
| (feet/year) = | 3.13E-02 |
| (metres/year) = | 9.56E-03 |

Permeability for silty sand to sandy silt based on published values (Freeze and Cherry, 1979).
Effective porosity based on published values (McWhorter and Sunada, 1977).
Gradient estimated based on slope of land.

**242474**

# Table 3: FIELD MEASUREMENTS OF WATER QUALITY PARAMETERS

11 Yorkville Avenue, Toronto, Ontario
February 2018



| Test Hole I.D. | Date Sampled | Temperature (˚C) | pH | Specific Conductance (µS) | Total Dissolved Solids (ppt) |
|---|---|---|---|---|---|
| BH1 | 28-Nov-17 | 14.5 | 7.23 | 0.57 | 0.291 |
| BH15-3 | 28-Nov-17 | 14.3 | 7.39 | 0.38 | 0.193 |
| BH15-3S | 28-Nov-17 | 15.8 | 7.17 | 2.69 | 1.369 |
| MW01 | 28-Nov-17 | 15.5 | 7.31 | 1.52 | 0.775 |
| MW02 | 28-Nov-17 | 15.7 | 7.35 | 2.88 | 1.438 |
| MW04 | 28-Nov-17 | 18.0 | 7.40 | 1.17 | 693 |
| TH2 | 5-Feb-18 | 12.9 | 7.60 | 0.78 | 0.43 |
| TH3 | 31-Jan-18 | 13.1 | 7.39 | 3.31 | 1.66 |
| TH4 | 31-Jan-18 | 12.2 | 7.40 | 2.83 | 1.42 |

# Table 4: ELEVATIONS OF GROUND WATER TABLE



11 Yorkville Avenue, Toronto, Ontario
February 2018

| Test Hole I.D. | Date Measured | Screen Interval (mbgs) | Screen Elevation (masl) | Elevation at Grade (masl) | Ground Water Depth Below Top of Pipe (m) | Ground Water Table Elevation (masl) |
|---|---|---|---|---|---|---|
| BH1 | 5-Feb-18 | 21.65 to 27.45 | 94.99 to 89.19 | 116.64 | 20.25 | 96.39 |
| BH15-3 | 5-Feb-18 | 18.3 to 21.3 | 98.00 to 95.00 | 116.30 | 17.41 | 98.89 |
| BH15-3S | 28-Nov-17 | 2.4 to 5.5 | 113.90 to 110.80 | 116.30 | 3.19 | 113.11 |
| MW01 | 28-Nov-17 | 3.1 to 6.1* | 113.21 to 110.21 | 116.31 | 4.19 | 112.12 |
| MW02 | 28-Nov-17 | 2.1 to 5.2* | 114.21 to 111.11 | 116.31 | 3.34 | 112.97 |
| MW04 | 28-Nov-17 | 0.6 to 3.05[I] | 113.66 to 111.21 | 114.26 | 0.58 | 113.68 |
| TH1 | 5-Feb-18 | 12.8 to 15.8 | 104.04 to 101.04 | 116.84 | dry | N/A |
| TH2 | 5-Feb-18 | 2.4 to 5.5 | 114.49 to 111.39 | 116.89 | 3.44 | 113.46 |
| TH3 | 31-Jan-18 | 2.7 to 5.8 | 113.53 to 110.43 | 116.23 | 3.22 | 113.02 |
| TH4 | 31-Jan-18 | 2.9 to 5.9 | 113.30 to 110.30 | 116.20 | 3.25 | 112.96 |

NOTES:

N/A means "not applicable". masl means "metres above sea level".

* measured from ground floor. [I] measured from basement concrete floor surface.

Elevation at grade interpolated from topographic survey prepared by WSP Geomatics Ontario Limited (2017).

Elevations derived from City of Toronto Benchmark No. CT828 (elevation = 116.982 masl).

# Table 5: MAXIMUM SOIL CONCENTRATION DATA - Petroleum Hydrocarbon Parameters

11 Yorkville Avenue, Toronto, Ontario

February 2018



| Contaminant Name | Number of Sample Locations | Number of Samples Analyzed | MDL* | Maximum Measured Concentration | Ontario Regulation 153/04 Table 3 Standards** | Date of Sampling | Test Hole | Sample I.D. | Sampling Depth (mbgs) |
|---|---|---|---|---|---|---|---|---|---|
| Benzene | 4 | 5 | 0.02 | <0.02 | 0.17 | 25-Jan-18 | TH1 | TH1-SS5 | 3.1 to 3.7 |
| Toluene | 4 | 5 | 0.02 | <0.02 | 6 | 25-Jan-18 | TH1 | TH1-SS5 | 3.1 to 3.7 |
| Ethylbenzene | 4 | 5 | 0.05 | <0.05 | 15 | 25-Jan-18 | TH1 | TH1-SS5 | 3.1 to 3.7 |
| Xylene Mixture (Total) | 4 | 5 | 0.05 | <0.05 | 25 | 25-Jan-18 | TH1 | TH1-SS5 | 3.1 to 3.7 |
| PHC F1 (C6 to C10) - BTEX | 4 | 5 | 5 | <5 | 65 | 25-Jan-18 | TH1 | TH1-SS5 | 3.1 to 3.7 |
| PHC F2 (C10 to C16) | 4 | 5 | 10 | <10 | 150 | 25-Jan-18 | TH1 | TH1-SS5 | 3.1 to 3.7 |
| PHC F3 (C16 to C34) | 4 | 5 | 50 | <50 | 1,300 | 25-Jan-18 | TH1 | TH1-SS5 | 3.1 to 3.7 |
| PHC F4 (C34 to C50) | 4 | 5 | 50 | <50 | 5,600 | 25-Jan-18 | TH1 | TH1-SS5 | 3.1 to 3.7 |

NOTES:

Analysis by AGAT Laboratories.

All results in ppm (µg/g) and based on dry weight basis.

* Minimum Analytical Reporting Detection Limit (MDL) is listed. Refer to individual Certificate of Analyses for sample-specific Reporting Detection Limit (RDL) value.

** Standards shown are for a residential property use and medium to fine textured soil.

Exceedances of the Table 3 Standards are shown in **bold**.

# Table 5: MAXIMUM SOIL CONCENTRATION DATA - Polycyclic Aromatic Hydrocarbons

11 Yorkville Avenue, Toronto, Ontario

February 2018



| Contaminant Name | Number of Sample Locations | Number of Samples Analyzed | MDL* | Maximum Measured Concentration | Ontario Regulation 153/04 Table 3 Standards** | Date of Sampling | Test Hole | Sample I.D. | Sampling Depth (mbgs) |
|---|---|---|---|---|---|---|---|---|---|
| 2-and 1-methyl Naphthalene | 4 | 7 | 0.05 | 0.12 | 3.4 | 25-Jan-18 | TH1 | TH1-SS1 | 0 to 0.6 |
| Acenaphthene | 4 | 7 | 0.05 | 0.22 | 58 | 25-Jan-18 | TH1 | TH1-SS1 | 0 to 0.6 |
| Acenaphthylene | 4 | 7 | 0.05 | **0.44** | 0.17 | 25-Jan-18 | TH1 | TH1-SS1 | 0 to 0.6 |
| Anthracene | 4 | 7 | 0.05 | **1.3** | 0.74 | 25-Jan-18 | TH1 | TH1-SS1 | 0 to 0.6 |
| Benzo(a)anthracene | 4 | 7 | 0.05 | **11** | 0.63 | 25-Jan-18 | TH1 | TH1-SS1 | 0 to 0.6 |
| Benzo(a)pyrene | 4 | 7 | 0.05 | **7.1** | 0.3 | 25-Jan-18 | TH1 | TH1-SS1 | 0 to 0.6 |
| Benzo(b)fluoranthene | 4 | 7 | 0.05 | **8.6** | 0.78 | 25-Jan-18 | TH1 | TH1-SS1 | 0 to 0.6 |
| Benzo(g,h,i)perylene | 4 | 7 | 0.05 | 1.6 | 7.8 | 25-Jan-18 | TH1 | TH1-SS1 | 0 to 0.6 |
| Benzo(k)fluoranthene | 4 | 7 | 0.05 | **4.1** | 0.78 | 25-Jan-18 | TH1 | TH1-SS1 | 0 to 0.6 |
| Chrysene | 4 | 7 | 0.05 | **10** | 7.8 | 25-Jan-18 | TH1 | TH1-SS1 | 0 to 0.6 |
| Dibenzo(a,h)anthracene | 4 | 7 | 0.05 | **0.45** | 0.1 | 25-Jan-18 | TH1 | TH1-SS1 | 0 to 0.6 |
| Fluoranthene | 4 | 7 | 0.05 | **17** | 0.69 | 25-Jan-18 | TH1 | TH1-SS1 | 0 to 0.6 |
| Fluorene | 4 | 7 | 0.05 | 0.43 | 69 | 25-Jan-18 | TH1 | TH1-SS1 | 0 to 0.6 |
| Indeno(1,2,3-cd)pyrene | 4 | 7 | 0.05 | **1.7** | 0.48 | 25-Jan-18 | TH1 | TH1-SS1 | 0 to 0.6 |
| Naphthalene | 4 | 7 | 0.05 | 0.10 | 0.75 | 25-Jan-18 | TH1 | TH1-SS1 | 0 to 0.6 |
| Phenanthrene | 4 | 7 | 0.05 | **8.3** | 7.8 | 25-Jan-18 | TH1 | TH1-SS1 | 0 to 0.6 |
| Pyrene | 4 | 7 | 0.05 | 15 | 78 | 25-Jan-18 | TH1 | TH1-SS1 | 0 to 0.6 |

NOTES:

Analysis by AGAT Laboratories.

All results in ppm (µg/g) and based on dry weight basis.

* Minimum Analytical Reporting Detection Limit (MDL) is listed. Refer to individual Certificate of Analyses for sample-specific Reporting Detection Limit (RDL) value.

** Standards shown are for a residential property use and medium to fine textured soil.

Exceedances of the Table 3 Standards are shown in **bold**.

# Table 5: MAXIMUM SOIL CONCENTRATION DATA - Volatile Organic Compounds

11 Yorkville Avenue, Toronto, Ontario

February 2018



| Contaminant Name | Number of Sample Locations | Number of Samples Analyzed | MDL* | Maximum Measured Concentration | Ontario Regulation 153/04 Table 3 Standards** | Date of Sampling | Test Hole | Sample I.D. | Sampling Depth (mbgs) |
|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 4 | 5 | 0.04 | <0.04 | 0.05 | 29-Jan-18 | TH3 | TH3-SS6 | 3.8 to 4.4 |
| 1,1,1-Trichloroethane | 4 | 5 | 0.05 | <0.05 | 3.4 | 29-Jan-18 | TH3 | TH3-SS6 | 3.8 to 4.4 |
| 1,1,2,2-Tetrachloroethane | 4 | 5 | 0.05 | <0.05 | 0.05 | 29-Jan-18 | TH3 | TH3-SS6 | 3.8 to 4.4 |
| 1,1,2-Trichloroethane | 4 | 5 | 0.04 | <0.04 | 0.05 | 29-Jan-18 | TH3 | TH3-SS6 | 3.8 to 4.4 |
| 1,1-Dichloroethane | 4 | 5 | 0.02 | <0.02 | 11 | 29-Jan-18 | TH3 | TH3-SS6 | 3.8 to 4.4 |
| 1,1-Dichloroethylene | 4 | 5 | 0.05 | <0.05 | 0.05 | 29-Jan-18 | TH3 | TH3-SS6 | 3.8 to 4.4 |
| 1,2-Dichlorobenzene | 4 | 5 | 0.05 | <0.05 | 4.3 | 29-Jan-18 | TH3 | TH3-SS6 | 3.8 to 4.4 |
| 1,2-Dichloroethane | 4 | 5 | 0.03 | <0.03 | 0.05 | 29-Jan-18 | TH3 | TH3-SS6 | 3.8 to 4.4 |
| 1,2-Dichloropropane | 4 | 5 | 0.03 | <0.03 | 0.085 | 29-Jan-18 | TH3 | TH3-SS6 | 3.8 to 4.4 |
| 1,3-Dichlorobenzene | 4 | 5 | 0.05 | <0.05 | 6 | 29-Jan-18 | TH3 | TH3-SS6 | 3.8 to 4.4 |
| 1,3-Dichloropropene | 4 | 5 | 0.04 | <0.04 | 0.083 | 29-Jan-18 | TH3 | TH3-SS6 | 3.8 to 4.4 |
| 1,4-Dichlorobenzene | 4 | 5 | 0.05 | <0.05 | 0.097 | 29-Jan-18 | TH3 | TH3-SS6 | 3.8 to 4.4 |
| Acetone | 4 | 5 | 0.50 | <0.50 | 28 | 29-Jan-18 | TH3 | TH3-SS6 | 3.8 to 4.4 |
| Benzene | 4 | 5 | 0.02 | <0.02 | 0.17 | 29-Jan-18 | TH3 | TH3-SS6 | 3.8 to 4.4 |
| Bromodichloromethane | 4 | 5 | 0.05 | <0.05 | 13 | 29-Jan-18 | TH3 | TH3-SS6 | 3.8 to 4.4 |
| Bromoform | 4 | 5 | 0.05 | <0.05 | 0.26 | 29-Jan-18 | TH3 | TH3-SS6 | 3.8 to 4.4 |
| Bromomethane | 4 | 5 | 0.05 | <0.05 | 0.05 | 29-Jan-18 | TH3 | TH3-SS6 | 3.8 to 4.4 |
| Carbon Tetrachloride | 4 | 5 | 0.05 | <0.05 | 0.12 | 29-Jan-18 | TH3 | TH3-SS6 | 3.8 to 4.4 |
| Chlorobenzene | 4 | 5 | 0.05 | <0.05 | 2.7 | 29-Jan-18 | TH3 | TH3-SS6 | 3.8 to 4.4 |
| Chloroform | 4 | 5 | 0.04 | <0.04 | 0.18 | 29-Jan-18 | TH3 | TH3-SS6 | 3.8 to 4.4 |
| cis- 1,2-Dichloroethylene | 4 | 5 | 0.02 | <0.02 | 30 | 29-Jan-18 | TH3 | TH3-SS6 | 3.8 to 4.4 |
| Dibromochloromethane | 4 | 5 | 0.05 | <0.05 | 9.4 | 29-Jan-18 | TH3 | TH3-SS6 | 3.8 to 4.4 |
| Dichlorodifluoromethane | 4 | 5 | 0.05 | <0.05 | 25 | 29-Jan-18 | TH3 | TH3-SS6 | 3.8 to 4.4 |
| Ethylbenzene | 4 | 5 | 0.05 | <0.05 | 15 | 29-Jan-18 | TH3 | TH3-SS6 | 3.8 to 4.4 |
| Ethylene Dibromide | 4 | 5 | 0.04 | <0.04 | 0.05 | 29-Jan-18 | TH3 | TH3-SS6 | 3.8 to 4.4 |
| Methyl Ethyl Ketone | 4 | 5 | 0.50 | <0.50 | 44 | 29-Jan-18 | TH3 | TH3-SS6 | 3.8 to 4.4 |
| Methyl Isobutyl Ketone | 4 | 5 | 0.50 | <0.50 | 4.3 | 29-Jan-18 | TH3 | TH3-SS6 | 3.8 to 4.4 |
| Methyl tert-butyl ether | 4 | 5 | 0.05 | <0.05 | 1.4 | 29-Jan-18 | TH3 | TH3-SS6 | 3.8 to 4.4 |
| Methylene Chloride | 4 | 5 | 0.05 | <0.05 | 0.96 | 29-Jan-18 | TH3 | TH3-SS6 | 3.8 to 4.4 |
| n-Hexane | 4 | 5 | 0.05 | <0.05 | 34 | 29-Jan-18 | TH3 | TH3-SS6 | 3.8 to 4.4 |
| Styrene | 4 | 5 | 0.05 | <0.05 | 2.2 | 29-Jan-18 | TH3 | TH3-SS6 | 3.8 to 4.4 |
| Tetrachloroethylene | 4 | 5 | 0.05 | 1.3 | 2.3 | 29-Jan-18 | TH3 | TH3-SS6 | 3.8 to 4.4 |
| Toluene | 4 | 5 | 0.02 | <0.02 | 6 | 29-Jan-18 | TH3 | TH3-SS6 | 3.8 to 4.4 |
| trans- 1,2-Dichloroethylene | 4 | 5 | 0.05 | <0.05 | 0.75 | 29-Jan-18 | TH3 | TH3-SS6 | 3.8 to 4.4 |
| Trichloroethylene | 4 | 5 | 0.03 | <0.03 | 0.52 | 29-Jan-18 | TH3 | TH3-SS6 | 3.8 to 4.4 |
| Trichlorofluoromethane | 4 | 5 | 0.05 | <0.05 | 5.8 | 29-Jan-18 | TH3 | TH3-SS6 | 3.8 to 4.4 |
| Vinyl Chloride | 4 | 5 | 0.02 | <0.02 | 0.022 | 29-Jan-18 | TH3 | TH3-SS6 | 3.8 to 4.4 |
| Xylene Mixture | 4 | 5 | 0.05 | <0.05 | 25 | 29-Jan-18 | TH3 | TH3-SS6 | 3.8 to 4.4 |

NOTES:

Analysis by AGAT Laboratories.

All results in ppm (µg/g) and based on dry weight basis.

* Minimum Analytical Reporting Detection Limit (MDL) is listed. Refer to individual Certificate of Analyses for sample-specific Reporting Detection Limit (RDL) value.

** Standards shown are for a residential property use and medium to fine textured soil.

Exceedances of the Table 3 Standards are shown in **bold**.

# Table 5: MAXIMUM SOIL CONCENTRATION DATA - Metals, Hydride-Forming Metals, and Other Regulated Parameters

11 Yorkville Avenue, Toronto, Ontario

February 2018



| Contaminant Name | Number of Sample Locations | Number of Samples Analyzed | MDL* | Maximum Measured Concentration | Ontario Regulation 153/04 Table 3 Standards** | Date of Sampling | Test Hole | Sample I.D. | Sampling Depth (mbgs) |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | 4 | 7 | 0.8 | 0.9 | 7.5 | 25-Jan-18 | TH1 | TH1-SS1 | 0 to 0.6 |
| Arsenic | 4 | 7 | 1 | 7 | 18 | 29-Jan-18 | TH3 | TH3-SS1 | 0 to 0.6 |
| Barium | 4 | 7 | 2 | 80 | 390 | 25-Jan-18 | TH1 | TH1-SS1 | 0 to 0.6 |
| Beryllium | 4 | 7 | 0.5 | <0.5 | 5 | 25-Jan-18 | TH1 | TH1-SS1 | 0 to 0.6 |
| Boron | 4 | 7 | 5 | 5 | 120 | 29-Jan-18 | TH3 | TH3-SS1 | 0 to 0.6 |
| Boron (Hot Water Soluble) | 4 | 7 | 0.10 | 0.76 | 1.5 | 29-Jan-18 | TH4 | TH4-SS1 | 0 to 0.6 |
| Cadmium | 4 | 7 | 0.5 | 0.7 | 1.2 | 29-Jan-18 | TH3 | TH3-SS1 | 0 to 0.6 |
| Chromium | 4 | 7 | 2 | 9 | 160 | 25-Jan-18 | TH1 | TH1-SS1 | 0 to 0.6 |
| Chromium VI | 4 | 7 | 0.2 | <0.2 | 10 | 25-Jan-18 | TH1 | TH1-SS1 | 0 to 0.6 |
| Cobalt | 4 | 7 | 0.5 | 2.5 | 22 | 25-Jan-18 | TH1 | TH1-SS1 | 0 to 0.6 |
| Copper | 4 | 7 | 1 | 48 | 180 | 25-Jan-18 | TH1 | TH1-SS1 | 0 to 0.6 |
| Cyanide | 4 | 7 | 0.040 | <0.040 | 0.051 | 25-Jan-18 | TH1 | TH1-SS1 | 0 to 0.6 |
| Lead | 4 | 7 | 1 | **253** | 120 | 25-Jan-18 | TH1 | TH1-SS1 | 0 to 0.6 |
| Mercury | 4 | 7 | 0.10 | 1.21 | 1.8 | 29-Jan-18 | TH3 | TH3-SS1 | 0 to 0.6 |
| Molybdenum | 4 | 7 | 0.5 | 0.5 | 6.9 | 29-Jan-18 | TH3 | TH3-SS1 | 0 to 0.6 |
| Nickel | 4 | 7 | 1 | 7 | 130 | 25-Jan-18 | TH1 | TH1-SS1 | 0 to 0.6 |
| Selenium | 4 | 7 | 0.4 | 0.8 | 2.4 | 29-Jan-18 | TH3 | TH3-SS1 | 0 to 0.6 |
| Silver | 4 | 7 | 0.2 | <0.2 | 25 | 25-Jan-18 | TH1 | TH1-SS1 | 0 to 0.6 |
| Thallium | 4 | 7 | 0.4 | <0.4 | 1 | 25-Jan-18 | TH1 | TH1-SS1 | 0 to 0.6 |
| Uranium | 4 | 7 | 0.5 | <0.5 | 23 | 25-Jan-18 | TH1 | TH1-SS1 | 0 to 0.6 |
| Vanadium | 4 | 7 | 1 | 13 | 86 | 29-Jan-18 | TH3 | TH3-SS1 | 0 to 0.6 |
| Zinc | 4 | 7 | 5 | 301 | 340 | 25-Jan-18 | TH1 | TH1-SS1 | 0 to 0.6 |
| Electrical Conductivity (2:1) | 4 | 7 | 0.005 | 0.408 | 0.7 | 29-Jan-18 | TH4 | TH4-SS1 | 0 to 0.6 |
| Sodium Adsorption Ratio | 4 | 7 | NV | **5.60** | 5 | 29-Jan-18 | TH4 | TH4-SS1 | 0 to 0.6 |

NOTES:

Analysis by AGAT Laboratories.

All results in ppm (µg/g) and based on dry weight basis.

* Minimum Analytical Reporting Detection Limit (MDL) is listed. Refer to individual Certificate of Analyses for sample-specific Reporting Detection Limit (RDL) value.

** Standards shown are for a residential property use and medium to fine textured soil.

Exceedances of the Table 3 Standards are shown in **bold**.

# Table 5: MAXIMUM GROUND WATER CONCENTRATION DATA - Petroleum Hydrocarbon Parameters

11 Yorkville Avenue, Toronto, Ontario

February 2018



| Contaminant Name | Number of Sample Locations | Number of Samples Analyzed | MDL* | Maximum Measured Concentration | Ontario Regulation 153/04 Table 3 Standards** | Date of Sampling | Monitor | Screen Interval (mbgs) |
|---|---|---|---|---|---|---|---|---|
| Benzene | 7 | 8 | 0.20 | <0.20 | 430 | 28-Nov-17 | BH15-3 | 18.3 to 21.3 |
| Toluene | 7 | 8 | 0.20 | 0.3 | 18,000 | 28-Nov-17 | BH15-3 | 18.3 to 21.3 |
| Ethylbenzene | 7 | 8 | 0.10 | <0.20 | 2,300 | 28-Nov-17 | BH15-3 | 18.3 to 21.3 |
| Xylene Mixture (Total) | 7 | 8 | 0.20 | 0.25 | 4,200 | 28-Nov-17 | BH15-3 | 18.3 to 21.3 |
| PHC F1 (C6 to C10) - BTEX | 7 | 8 | 25 | <25 | 750 | 28-Nov-17 | BH15-3 | 18.3 to 21.3 |
| PHC F2 (C10 to C16) | 7 | 9 | 100 | <100 | 150 | 28-Nov-17 | BH15-3 | 18.3 to 21.3 |
| PHC F3 (C16 to C34) | 7 | 9 | 100 | 180 | 500 | 31-Jan-18 | TH4 | 2.9 to 5.9 |
| PHC F4 (C34 to C50) | 7 | 9 | 100 | <200 | 500 | 28-Nov-17 | BH15-3 | 18.3 to 21.3 |

NOTES:

All results in ppb (µg/L).

* Minimum Analytical Reporting Detection Limit (MDL) is listed. Refer to individual Certificate of Analyses for sample-specific Reporting Detection Limit (RDL) value.

** Standards shown are for all types of property use and medium to fine textured soil.

Exceedances of the Table 3 Standards are shown in **bold**.

# Table 5: MAXIMUM GROUND WATER CONCENTRATION DATA - Volatile Organic Compounds

11 Yorkville Avenue, Toronto, Ontario

February 2018



| Contaminant Name | Number of Sample Locations | Number of Samples Analyzed | MDL* | Maximum Measured Concentration | Ontario Regulation 153/04 Table 3 Standards** | Date of Sampling | Monitor | Screen Interval (mbgs) |
|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 9 | 11 | <0.10 | <0.50 | 28 | 28-Nov-17 | MW02 | 2.1 to 5.2 |
| 1,1,1-Trichloroethane | 9 | 11 | <0.20 | <0.20 | 6,700 | 28-Nov-17 | MW02 | 2.1 to 5.2 |
| 1,1,2,2-Tetrachloroethane | 9 | 11 | <0.10 | <0.50 | 15 | 28-Nov-17 | MW02 | 2.1 to 5.2 |
| 1,1,2-Trichloroethane | 9 | 11 | <0.20 | <0.50 | 30 | 28-Nov-17 | MW02 | 2.1 to 5.2 |
| 1,1-Dichloroethane | 9 | 11 | <0.20 | 0.41 | 3,100 | 28-Nov-17 | MW04 | 0.61 to 3.05 |
| 1,1-Dichloroethylene | 9 | 11 | <0.20 | <0.20 | 17 | 28-Nov-17 | MW02 | 2.1 to 5.2 |
| 1,2-Dichlorobenzene | 9 | 11 | <0.10 | <0.50 | 9,600 | 28-Nov-17 | MW02 | 2.1 to 5.2 |
| 1,2-Dichloroethane | 9 | 11 | <0.20 | <0.50 | 12 | 28-Nov-17 | MW02 | 2.1 to 5.2 |
| 1,2-Dichloropropane | 9 | 11 | <0.20 | 0.85 | 140 | 28-Nov-17 | MW02 | 2.1 to 5.2 |
| 1,3-Dichlorobenzene | 9 | 11 | <0.10 | <0.50 | 9,600 | 28-Nov-17 | MW02 | 2.1 to 5.2 |
| 1,3-Dichloropropene | 9 | 11 | <0.30 | <0.50 | 45 | 28-Nov-17 | MW02 | 2.1 to 5.2 |
| 1,4-Dichlorobenzene | 9 | 11 | <0.10 | <0.50 | 67 | 28-Nov-17 | MW02 | 2.1 to 5.2 |
| Acetone | 9 | 11 | <1.0 | 69 | 130,000 | 28-Nov-17 | BH15-3 | 18.3 to 21.3 |
| Benzene | 9 | 11 | 0.20 | <0.20 | 430 | 28-Nov-17 | BH15-3 | 18.3 to 21.3 |
| Bromodichloromethane | 9 | 11 | <0.20 | <0.50 | 85,000 | 28-Nov-17 | MW02 | 2.1 to 5.2 |
| Bromoform | 9 | 11 | <0.10 | <1.0 | 770 | 28-Nov-17 | MW02 | 2.1 to 5.2 |
| Bromomethane | 9 | 11 | <0.20 | <0.50 | 56 | 28-Nov-17 | MW02 | 2.1 to 5.2 |
| Carbon Tetrachloride | 9 | 11 | <0.20 | <0.20 | 8.4 | 28-Nov-17 | MW02 | 2.1 to 5.2 |
| Chlorobenzene | 9 | 11 | <0.10 | <0.20 | 630 | 28-Nov-17 | MW02 | 2.1 to 5.2 |
| Chloroform | 9 | 11 | <0.20 | 0.37 | 22 | 31-Jan-18 | TH4 | 2.9 to 5.9 |
| cis- 1,2-Dichloroethylene | 9 | 11 | <0.20 | 5.9 | 17 | 5-Feb-18 | TH2 | 2.4 to 5.5 |
| Dibromochloromethane | 9 | 11 | <0.10 | <0.50 | 82,000 | 28-Nov-17 | MW02 | 2.1 to 5.2 |
| Dichlorodifluoromethane | 9 | 11 | <0.20 | <1.0 | 4,400 | 28-Nov-17 | MW02 | 2.1 to 5.2 |
| Ethylbenzene | 9 | 11 | 0.10 | <0.20 | 2,300 | 28-Nov-17 | BH15-3 | 18.3 to 21.3 |
| Ethylene Dibromide | 9 | 11 | <0.10 | <0.20 | 0.83 | 28-Nov-17 | MW02 | 2.1 to 5.2 |
| Methyl Ethyl Ketone | 9 | 11 | <1.0 | <10 | 1,500,000 | 28-Nov-17 | MW02 | 2.1 to 5.2 |
| Methyl Isobutyl Ketone | 9 | 11 | <1.0 | <5.0 | 580,000 | 28-Nov-17 | MW02 | 2.1 to 5.2 |
| Methyl tert-butyl ether | 9 | 11 | <0.20 | <0.50 | 1,400 | 28-Nov-17 | MW02 | 2.1 to 5.2 |
| Methylene Chloride | 9 | 11 | <0.30 | <2.0 | 5,500 | 28-Nov-17 | MW02 | 2.1 to 5.2 |
| n-Hexane | 9 | 11 | <0.20 | <1.0 | 520 | 28-Nov-17 | MW02 | 2.1 to 5.2 |
| Styrene | 9 | 11 | <0.10 | <0.50 | 9,100 | 28-Nov-17 | MW02 | 2.1 to 5.2 |
| Tetrachloroethylene | 9 | 11 | <0.20 | **120** | 17 | 28-Nov-17 | MW02 | 2.1 to 5.2 |
| Toluene | 9 | 11 | 0.20 | 0.3 | 18,000 | 28-Nov-17 | BH15-3 | 18.3 to 21.3 |
| trans- 1,2-Dichloroethylene | 9 | 11 | <0.20 | 15 | 17 | 5-Feb-18 | TH2 | 2.4 to 5.5 |
| Trichloroethylene | 9 | 11 | <0.20 | **29** | 17 | 31-Jan-18 | TH4 | 2.9 to 5.9 |
| Trichlorofluoromethane | 9 | 11 | <0.40 | <0.50 | 2,500 | 28-Nov-17 | MW02 | 2.1 to 5.2 |
| Vinyl Chloride | 9 | 11 | <0.17 | **2.1** | 1.7 | 28-Nov-17 | MW04 | 0.61 to 3.05 |
| Xylene Mixture | 9 | 11 | 0.20 | 0.25 | 4,200 | 28-Nov-17 | BH15-3 | 18.3 to 21.3 |

NOTES:

All results in ppb (µg/L).

* Minimum Analytical Reporting Detection Limit (MDL) is listed. Refer to individual Certificate of Analyses for sample-specific Reporting Detection Limit (RDL) value.

** Standards shown are for all types of property use and medium to fine textured soil.

Exceedances of the Table 3 Standards are shown in **bold**.

# Table 6: SOIL CHEMICAL ANALYSIS - Petroleum Hydrocarbon Parameters

11 Yorkville Avenue, Toronto, Ontario
February 2018



| Sample I.D. | Units | MDL* | Test Hole TH1-SS5 | Duplicate of TH1-SS5 TH1-SS501 | Test Hole TH2-SS5 | Test Hole TH3-SS6 | Test Hole TH4-SS5 | Ontario Regulation 153/04 Table 3 Soil Standards** |
|---|---|---|---|---|---|---|---|---|
| Depth (m) | | | 3.1 to 3.7 | 3.1 to 3.7 | 3.1 to 3.7 | 3.8 to 4.4 | 3.1 to 3.7 | |
| Soil Type | | | sand | sand | sand | silty clay | sand | |
| Date of Sample Collection | | | 25-Jan-18 | 25-Jan-18 | 26-Jan-18 | 29-Jan-18 | 29-Jan-18 | |
| Date of Sample Analysis | | | 1-Feb-18 | 1-Feb-18 | 1-Feb-18 | 1-Feb-18 | 1-Feb-18 | |
| Certificate of Analysis Number | | | 18T306685 | 18T306685 | 18T306685 | 18T306685 | 18T306685 | |
| Laboratory I.D. | | | 9037673 | 9037674 | 9037692 | 9037696 | 9037700 | |
| Field Vapour Reading | | | <25 ppm | <25 ppm | <25 ppm | <25 ppm | <25 ppm | |
| Benzene | µg/g | 0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.17 |
| Toluene | µg/g | 0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 6 |
| Ethylbenzene | µg/g | 0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | 15 |
| Xylene Mixture (Total) | µg/g | 0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | 25 |
| PHC F1 (C6 to C10) - BTEX | µg/g | 5 | <5 | <5 | <5 | <5 | <5 | 65 |
| PHC F2 (C10 to C16) | µg/g | 10 | <10 | <10 | <10 | <10 | <10 | 150 |
| PHC F3 (C16 to C34) | µg/g | 50 | <50 | <50 | <50 | <50 | <50 | 1,300 |
| PHC F4 (C34 to C50) | µg/g | 50 | <50 | <50 | <50 | <50 | <50 | 5,600 |

NOTES:

Analysis by AGAT Laboratories.

All results in ppm (µg/g) and based on dry weight basis. NA means "not analysed". NM means "not measured".

* Minimum Analytical Reporting Detection Limit (MDL) is listed. Refer to individual Certificate of Analyses for sample-specific Reporting Detection Limit (RDL) value.

** Standards shown are for a residential property use and medium to fine textured soil.

Exceedances of Table 3 Standards are shown in **bold**.

# Table 7: SOIL CHEMICAL ANALYSIS - Polycyclic Aromatic Hydrocarbons

11 Yorkville Avenue, Toronto, Ontario
February 2018



| Sample I.D. | Units | MDL* | Test Hole TH1-SS1 | Test Hole TH1-SS3 | Test Hole TH2-SS1 | Duplicate of TH2-SS1 TH2-SS101 | Test Hole TH3-SS1 | Test Hole TH4-SS1 | Test Hole TH4-SS4 | Ontario Regulation 153/04 Table 3 Soil Standards** |
|---|---|---|---|---|---|---|---|---|---|---|
| Depth (m) | | | 0 to 0.6 | 1.5 to 2.1 | 0 to 0.6 | 0 to 0.6 | 0 to 0.6 | 0 to 0.6 | 2.3 to 2.9 | |
| Soil Type | | | sand and gravel | sand | sand and gravel | sand and gravel | sand and gravel | sand and gravel | sand | |
| Date of Sample Collection | | | 25-Jan-18 | 25-Jan-18 | 26-Jan-18 | 26-Jan-18 | 29-Jan-18 | 29-Jan-18 | 29-Jan-18 | |
| Date of Sample Analysis | | | 5-Feb-18 | 14-Feb-18 | 5-Feb-18 | 5-Feb-18 | 5-Feb-18 | 5-Feb-18 | 14-Feb-18 | |
| Certificate of Analysis Number | | | 18T306685 | 18T306685 | 18T306685 | 18T306685 | 18T306685 | 18T306685 | 18T306685 | |
| Laboratory I.D. | | | 9037671 | 9037679 | 9037681 | 9037682 | 9037694 | 9037698 | 9037699 | |
| 2-and 1-methyl Naphthalene | µg/g | 0.05 | 0.12 | <0.05 | <0.05 | <0.05 | <0.05 | 0.07 | <0.05 | 3.4 |
| Acenaphthene | µg/g | 0.05 | 0.22 | <0.05 | <0.05 | <0.05 | <0.05 | 0.11 | <0.05 | 58 |
| Acenaphthylene | µg/g | 0.05 | **0.44** | <0.05 | <0.05 | <0.05 | <0.05 | 0.11 | <0.05 | 0.17 |
| Anthracene | µg/g | 0.05 | **1.3** | <0.05 | 0.13 | 0.13 | <0.05 | 0.48 | <0.05 | 0.74 |
| Benzo(a)anthracene | µg/g | 0.05 | **11** | 0.07 | 0.50 | 0.42 | 0.19 | **2.1** | <0.05 | 0.63 |
| Benzo(a)pyrene | µg/g | 0.05 | **7.1** | 0.05 | **0.35** | **0.31** | 0.20 | **1.8** | <0.05 | 0.3 |
| Benzo(b)fluoranthene | µg/g | 0.05 | **8.6** | 0.07 | 0.51 | 0.40 | 0.30 | **2.1** | <0.05 | 0.78 |
| Benzo(g,h,i)perylene | µg/g | 0.05 | 1.6 | <0.05 | 0.16 | 0.13 | 0.09 | 0.74 | <0.05 | 7.8 |
| Benzo(k)fluoranthene | µg/g | 0.05 | **4.1** | <0.05 | 0.25 | 0.25 | 0.09 | **1.1** | <0.05 | 0.78 |
| Chrysene | µg/g | 0.05 | **10** | 0.06 | 0.47 | 0.46 | 0.19 | 1.9 | <0.05 | 7.8 |
| Dibenzo(a,h)anthracene | µg/g | 0.05 | **0.45** | <0.05 | <0.05 | <0.05 | <0.05 | **0.18** | <0.05 | 0.1 |
| Fluoranthene | µg/g | 0.05 | **17** | 0.14 | **0.94** | **0.88** | 0.32 | **4.8** | <0.05 | 0.69 |
| Fluorene | µg/g | 0.05 | 0.43 | <0.05 | <0.05 | 0.06 | <0.05 | 0.16 | <0.05 | 69 |
| Indeno(1,2,3-cd)pyrene | µg/g | 0.05 | **1.7** | <0.05 | 0.15 | 0.13 | 0.08 | **0.72** | <0.05 | 0.48 |
| Naphthalene | µg/g | 0.05 | 0.10 | <0.05 | <0.05 | <0.05 | <0.05 | 0.06 | <0.05 | 0.75 |
| Phenanthrene | µg/g | 0.05 | **8.3** | 0.09 | 0.52 | 0.60 | 0.13 | 2.8 | <0.05 | 7.8 |
| Pyrene | µg/g | 0.05 | 15 | 0.12 | 0.83 | 0.73 | 0.33 | 4.5 | <0.05 | 78 |

NOTES:

Analysis by AGAT Laboratories.

All results in ppm (µg/g) and based on dry weight basis.

* Minimum Analytical Reporting Detection Limit (MDL) is listed. Refer to individual Certificate of Analyses for sample-specific Reporting Detection Limit (RDL) value.

** Standards shown are for a residential property use and medium to fine textured soil.

*** The sum of 1- and 2-Methylnaphthalene concentrations must not exceed the soil Standard if both are detected.

Exceedances of Table 3 Standards are shown in **bold**.

# Table 8: SOIL CHEMICAL ANALYSIS - Volatile Organic Compounds

11 Yorkville Avenue, Toronto, Ontario

February 2018



| Sample I.D. | Units | MDL* | Test Hole TH1-SS5 | Duplicate of TH1-SS5 TH1-SS501 | Test Hole TH2-SS5 | Test Hole TH3-SS6 | Test Hole TH4-SS5 | Ontario Regulation 153/04 Table 3 Soil Standards** |
|---|---|---|---|---|---|---|---|---|
| Depth (m) | | | 3.1 to 3.7 | 3.1 to 3.7 | 3.1 to 3.7 | 3.8 to 4.4 | 3.1 to 3.7 | |
| Soil Type | | | sand | sand | sand | silty clay | sand | |
| Date of Sample Collection | | | 25-Jan-18 | 25-Jan-18 | 26-Jan-18 | 29-Jan-18 | 29-Jan-18 | |
| Date of Sample Analysis | | | 1-Feb-18 | 1-Feb-18 | 1-Feb-18 | 1-Feb-18 | 1-Feb-18 | |
| Certificate of Analysis Number | | | 18T306685 | 18T306685 | 18T306685 | 18T306685 | 18T306685 | |
| Laboratory I.D. | | | 9037673 | 9037674 | 9037692 | 9037696 | 9037700 | |
| 1,1,1,2-Tetrachloroethane | µg/g | 0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | 0.05 |
| 1,1,1-Trichloroethane | µg/g | 0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | 3.4 |
| 1,1,2,2-Tetrachloroethane | µg/g | 0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | 0.05 |
| 1,1,2-Trichloroethane | µg/g | 0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | 0.05 |
| 1,1-Dichloroethane | µg/g | 0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 11 |
| 1,1-Dichloroethylene | µg/g | 0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | 0.05 |
| 1,2-Dichlorobenzene | µg/g | 0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | 4.3 |
| 1,2-Dichloroethane | µg/g | 0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | 0.05 |
| 1,2-Dichloropropane | µg/g | 0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | 0.085 |
| 1,3-Dichlorobenzene | µg/g | 0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | 6 |
| 1,3-Dichloropropene | µg/g | 0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | 0.083 |
| 1,4-Dichlorobenzene | µg/g | 0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | 0.097 |
| Acetone | µg/g | 0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | 28 |
| Benzene | µg/g | 0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.17 |
| Bromodichloromethane | µg/g | 0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | 13 |
| Bromoform | µg/g | 0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | 0.26 |
| Bromomethane | µg/g | 0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | 0.05 |
| Carbon Tetrachloride | µg/g | 0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | 0.12 |
| Chlorobenzene | µg/g | 0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | 2.7 |
| Chloroform | µg/g | 0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | 0.18 |
| Cis- 1,2-Dichloroethylene | µg/g | 0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 30 |
| Dibromochloromethane | µg/g | 0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | 9.4 |
| Dichlorodifluoromethane | µg/g | 0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | 25 |
| Ethylbenzene | µg/g | 0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | 15 |
| Ethylene Dibromide | µg/g | 0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | 0.05 |
| Methyl Ethyl Ketone | µg/g | 0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | 44 |
| Methyl Isobutyl Ketone | µg/g | 0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | 4.3 |
| Methyl tert-butyl Ether | µg/g | 0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | 1.4 |
| Methylene Chloride | µg/g | 0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | 0.96 |
| n-Hexane | µg/g | 0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | 34 |
| Styrene | µg/g | 0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | 2.2 |
| Tetrachloroethylene | µg/g | 0.05 | 0.71 | 0.67 | 0.13 | 1.3 | 0.08 | 2.3 |
| Toluene | µg/g | 0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 6 |
| Trans- 1,2-Dichloroethylene | µg/g | 0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | 0.75 |
| Trichloroethylene | µg/g | 0.03 | <0.03 | <0.03 | <0.03 | <0.03 | 0.33 | 0.52 |
| Trichlorofluoromethane | µg/g | 0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | 5.8 |
| Vinyl Chloride | µg/g | 0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.022 |
| Xylene Mixture | µg/g | 0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | 25 |

NOTES:

Analysis by AGAT Laboratories.

All results in ppm (µg/g) and based on dry weight basis.

* Minimum Analytical Reporting Detection Limit (MDL) is listed. Refer to individual Certificate of Analyses for sample-specific Reporting Detection Limit (RDL) value.

** Standards shown are for a residential property use and medium to fine textured soil.

Exceedances of Table 3 Standards are shown in **bold**.

# Table 9: SOIL CHEMICAL ANALYSIS - Metals, Hydride-Forming Metals, and Other Regulated Parameters

11 Yorkville Avenue, Toronto, Ontario

February 2018



| Sample I.D. | Units | MDL* | Test Hole TH1-SS1 | Test Hole TH1-SS2 | Test Hole TH1-SS3 | Test Hole TH1-SS10 | Test Hole TH2-SS2 | Duplicate of TH2-SS2 TH2-SS201 | Test Hole TH3-SS1 | Test Hole TH4-SS1 | Test Hole TH4-SS4 | Ontario Regulation 153/04 Table 3 Soil Standards** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Depth (m) | | | 0 to 0.6 | 0.8 to 1.4 | 1.5 to 2.1 | 6.9 to 7.5 | 0.8 to 1.4 | 0.8 to 1.4 | 0 to 0.6 | 0 to 0.6 | 2.3 to 2.9 | |
| Soil Type | | | sand and gravel | sand | sand | silty clay | sand | sand | sand and gravel | sand and gravel | sand | |
| Date of Sample Collection | | | 25-Jan-18 | 25-Jan-18 | 25-Jan-18 | 25-Jan-18 | 26-Jan-18 | 26-Jan-18 | 29-Jan-18 | 29-Jan-18 | 29-Jan-18 | |
| Date of Sample Analysis | | | 1-Feb-18 | 1-Feb-18 | 9-Feb-18 | 1-Feb-18 | 1-Feb-18 | 1-Feb-18 | 1-Feb-18 | 1-Feb-18 | 9-Feb-18 | |
| Certificate of Analysis Number | | | 18T306685 | 18T306685 | 18T306685 | 18T306685 | 18T306685 | 18T306685 | 18T306685 | 18T306685 | 18T306685 | |
| Laboratory I.D. | | | 9037671 | 9037672 | 9037679 | 9037708 | 9037683 | 9037684 | 9037694 | 9037698 | 9037699 | |
| Antimony | µg/g | 0.8 | 0.9 | NA | <0.8 | NA | <0.8 | <0.8 | 0.8 | <0.8 | <0.8 | 7.5 |
| Arsenic | µg/g | 1 | 6 | NA | 1 | NA | 3 | 3 | 7 | 5 | <1 | 18 |
| Barium | µg/g | 2 | 80 | NA | 14 | NA | 21 | 18 | 55 | 40 | 6 | 390 |
| Beryllium | µg/g | 0.5 | <0.5 | NA | <0.5 | NA | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | 5 |
| Boron | µg/g | 5 | <5 | NA | <5 | NA | <5 | <5 | 5 | <5 | <5 | 120 |
| Boron (Hot Water Soluble) | µg/g | 0.10 | 0.55 | NA | 0.39 | NA | 0.28 | 0.29 | 0.67 | 0.76 | <0.10 | 1.5 |
| Cadmium | µg/g | 0.5 | <0.5 | NA | <0.5 | NA | <0.5 | <0.5 | 0.7 | <0.5 | <0.5 | 1.2 |
| Chromium | µg/g | 2 | 9 | NA | 6 | NA | 5 | 5 | 7 | 7 | 2 | 160 |
| Chromium VI | µg/g | 0.2 | <0.2 | NA | <0.2 | NA | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | 10 |
| Cobalt | µg/g | 0.5 | 2.5 | NA | 2.0 | NA | 1.6 | 1.6 | 2.5 | 2.1 | 1.4 | 22 |
| Copper | µg/g | 1 | 48 | NA | 3 | NA | 6 | 5 | 18 | 11 | 3 | 180 |
| Cyanide | µg/g | 0.040 | <0.040 | NA | <0.040 | NA | <0.040 | <0.040 | <0.040 | <0.040 | <0.040 | 0.051 |
| Lead | µg/g | 1 | **253** | NA | 4 | NA | 27 | 22 | **155** | 100 | 2 | 120 |
| Mercury | µg/g | 0.10 | 0.40 | NA | <0.10 | NA | <0.10 | <0.10 | 1.21 | 0.87 | <0.10 | 1.8 |
| Molybdenum | µg/g | 0.5 | <0.5 | NA | <0.5 | NA | <0.5 | <0.5 | 0.5 | <0.5 | <0.5 | 6.9 |
| Nickel | µg/g | 1 | 7 | NA | 5 | NA | 4 | 3 | 6 | 5 | 3 | 130 |
| Selenium | µg/g | 0.4 | 0.4 | NA | <0.4 | NA | <0.4 | <0.4 | 0.8 | 0.8 | <0.4 | 2.4 |
| Silver | µg/g | 0.2 | <0.2 | NA | <0.2 | NA | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | 25 |
| Thallium | µg/g | 0.4 | <0.4 | NA | <0.4 | NA | <0.4 | <0.4 | <0.4 | <0.4 | <0.4 | 1 |
| Uranium | µg/g | 0.5 | <0.5 | NA | <0.5 | NA | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | 23 |
| Vanadium | µg/g | 1 | 12 | NA | 10 | NA | 10 | 9 | 13 | 11 | 4 | 86 |
| Zinc | µg/g | 5 | 301 | NA | 13 | NA | 37 | 28 | 189 | 76 | 7 | 340 |
| Electrical Conductivity (2:1) | mS/cm | 0.005 | 0.205 | NA | 0.218 | NA | 0.127 | 0.131 | 0.306 | 0.408 | 0.192 | 0.7 |
| Sodium Adsorption Ratio | N/A | NV | 1.80 | NA | 2.08 | NA | 0.358 | 0.343 | 1.72 | **5.60** | 2.86 | 5 |
| pH, 2:1 CaCl2 Extraction*** | pH Units | NV | 7.38 | 8.26 | 8.66 | 8.14 | 7.71 | 7.76 | 7.95 | 7.72 | 8.16 | NV |

NOTES:

Analysis by AGAT Laboratories.

NV mean "no value". N/A means "not applicable". NA means "not analyzed".

All results in ppm (µg/g) and based on dry weight basis.

* Minimum Analytical Reporting Detection Limit (MDL) is listed. Refer to individual Certificate of Analyses for sample-specific Reporting Detection Limit (RDL) value.

** Standards shown are for a residential property use and medium to fine textured soil.

*** pH range 5.0 to 9.0 for soil depths less than 1.5 m; pH range 5.0 to 11.0 for soil depths greater than 1.5 m.

Exceedances of Table 3 Standards are shown in **bold**.

## Table 10: GROUND WATER CHEMICAL ANALYSIS - Petroleum Hydrocarbon Parameters

11 Yorkville Avenue, Toronto, Ontario

February 2018



| Sample I.D. | Units | MDL* | Monitor MW04 | Duplicate of MW04 MW040 | Monitor BH1 | Monitor BH15-3 | Monitor BH15-3S | Trip Blank | Ontario Regulation 153/04 Table 3 Ground Water Standards** |
|---|---|---|---|---|---|---|---|---|---|
| Screen Interval (m) | | | 0.61 to 3.05 | 0.61 to 3.05 | 24.2 to 26.6 | 18.3 to 21.3 | 2.4 to 5.5 | N/A | |
| Date of Sample Collection | | | 28-Nov-17 | 28-Nov-17 | 28-Nov-17 | 28-Nov-17 | 28-Nov-17 | N/A | |
| Date of Sample Analysis | | | 5-Dec-17 | 5-Dec-17 | 5-Dec-17 | 5-Dec-17 | 5-Dec-17 | 5-Dec-17 | |
| Certificate of Analysis Number | | | B7R0003 | B7R0003 | B7R0003 | B7R0003 | B7R0003 | B7R0003 | |
| Laboratory I.D. | | | FQT607 | FQT612 | FQT608 | FQT609 | FQT610 | FQT613 | |
| Benzene | µg/L | 0.20 | <0.20 | NA | <0.20 | <0.20 | <0.20 | <0.20 | 430 |
| Toluene | µg/L | 0.20 | 0.26 | NA | <0.20 | 0.3 | <0.20 | <0.20 | 18,000 |
| Ethylbenzene | µg/L | 0.20 | <0.20 | NA | <0.20 | <0.20 | <0.20 | <0.20 | 2,300 |
| Xylene Mixture (Total) | µg/L | 0.20 | 0.23 | NA | <0.20 | 0.25 | <0.20 | <0.20 | 4,200 |
| PHC F1 (C6 to C10) - BTEX | µg/L | 25 | <25 | NA | <25 | <25 | <25 | <25 | 750 |
| PHC F2 (C10 to C16) | µg/L | 100 | <100 | <100 | <100 | <100 | <100 | NA | 150 |
| PHC F3 (C16 to C34) | µg/L | 200 | <200 | <200 | <200 | <200 | <200 | NA | 500 |
| PHC F4 (C34 to C50) | µg/L | 200 | <200 | <200 | <200 | <200 | <200 | NA | 500 |

NOTES:

Analysis by Maxxam Analytics.

All results in ppb (µg/L).

NA means 'not analyzed'.

* Minimum Analytical Reporting Detection Limit (MDL) is listed. Refer to individual Certificate of Analyses for sample-specific Reporting Detection Limit (RDL) value.

** Standards shown are for all types of property use and medium to fine textured soil.

Exceedances of Table 3 Standards are shown in **bold**.

## Table 10: GROUND WATER CHEMICAL ANALYSIS - Petroleum Hydrocarbon Parameters

11 Yorkville Avenue, Toronto, Ontario

February 2018



| Sample I.D. | Units | MDL* | Monitor TH2 | Monitor TH3 | Duplicate of TH3 TH300 | Monitor TH4 | Trip Blank | Trip Blank | Ontario Regulation 153/04 Table 3 Ground Water Standards** |
|---|---|---|---|---|---|---|---|---|---|
| Screen Interval (m) | | | 2.4 to 5.5 | 2.7 to 5.8 | 2.7 to 5.8 | 2.9 to 5.9 | N/A | N/A | |
| Date of Sample Collection | | | 5-Feb-18 | 31-Jan-18 | 31-Jan-18 | 31-Jan-18 | N/A | N/A | |
| Date of Sample Analysis | | | 9-Feb-18 | 6-Feb-18 | 6-Feb-18 | 6-Feb-18 | 6-Feb-18 | 9-Feb-18 | |
| Certificate of Analysis Number | | | 18T308880 | 18T307737 | 18T307737 | 18T307737 | 18T307737 | 18T308880 | |
| Laboratory I.D. | | | 9049221 | 9042565 | 9042711 | 9042710 | 9042744 | 9049265 | |
| Benzene | µg/L | 0.20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | 430 |
| Toluene | µg/L | 0.20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | 18,000 |
| Ethylbenzene | µg/L | 0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | 2,300 |
| Xylene Mixture (Total) | µg/L | 0.20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | 4,200 |
| PHC F1 (C6 to C10) - BTEX | µg/L | 25 | <25 | <25 | <25 | <25 | <25 | <25 | 750 |
| PHC F2 (C10 to C16) | µg/L | 100 | <100 | <100 | <100 | <100 | NA | NA | 150 |
| PHC F3 (C16 to C34) | µg/L | 100 | 110 | <100 | <100 | 180 | NA | NA | 500 |
| PHC F4 (C34 to C50) | µg/L | 100 | <100 | <100 | <100 | <100 | NA | NA | 500 |

NOTES:

Analysis by AGAT Laboratories.

All results in ppb (µg/L).

N/A means "not applicable". NA means "not analyzed".

* Minimum Analytical Reporting Detection Limit (MDL) is listed. Refer to individual Certificate of Analyses for sample-specific Reporting Detection Limit (RDL) value.

** Standards shown are for all types of property use and medium to fine textured soil.

Exceedances of Table 3 Standards are shown in **bold**.

# Table 11: GROUND WATER CHEMICAL ANALYSIS - Volatile Organic Compounds

11 Yorkville Avenue, Toronto, Ontario

February 2018



| Sample I.D. | Units | MDL* | Monitor MW01 | Monitor MW02 | Duplicate of MW02 MW020 | Monitor MW04 | Monitor BH1 | Monitor BH15-3 | Monitor BH15-3S | Trip Blank | Ontario Regulation 153/04 Table 3 Ground Water Standards** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Screen Interval (m) | | | 3.05 to 6.10 | 2.13 to 5.18 | 2.13 to 5.18 | 0.61 to 3.05 | 24.2 to 26.6 | 18.3 to 21.3 | 2.4 to 5.5 | N/A | |
| Date of Sample Collection | | | 28-Nov-17 | 28-Nov-17 | 28-Nov-17 | 28-Nov-17 | 28-Nov-17 | 28-Nov-17 | 28-Nov-17 | N/A | |
| Date of Sample Analysis | | | 5-Dec-17 | 5-Dec-17 | 5-Dec-17 | 5-Dec-17 | 5-Dec-17 | 5-Dec-17 | 5-Dec-17 | 5-Dec-17 | |
| Certificate of Analysis Number | | | B7R0003 | B7R0003 | B7R0003 | B7R0003 | B7R0003 | B7R0003 | B7R0003 | B7R0003 | |
| Laboratory I.D. | | | FQT605 | FQT606 | FQT611 | FQT607 | FQT608 | FQT609 | FQT610 | FQT613 | |
| 1,1,1,2-Tetrachloroethane | µg/L | 0.5 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | 28 |
| 1,1,1-Trichloroethane | µg/L | 0.2 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | 6,700 |
| 1,1,2,2-Tetrachloroethane | µg/L | 0.5 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | 15 |
| 1,1,2-Trichloroethane | µg/L | 0.5 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | 30 |
| 1,1-Dichloroethane | µg/L | 0.2 | <0.20 | <0.20 | <0.20 | 0.41 | <0.20 | <0.20 | <0.20 | <0.20 | 3,100 |
| 1,1-Dichloroethylene | µg/L | 0.2 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | 17 |
| 1,2-Dichlorobenzene | µg/L | 0.5 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | 9,600 |
| 1,2-Dichloroethane | µg/L | 0.5 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | 12 |
| 1,2-Dichloropropane | µg/L | 0.2 | <0.20 | 0.75 | 0.85 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | 140 |
| 1,3-Dichlorobenzene | µg/L | 0.5 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | 9,600 |
| 1,3-Dichloropropene | µg/L | 0.5 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | 45 |
| 1,4-Dichlorobenzene | µg/L | 0.5 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | 67 |
| Acetone | µg/L | 10 | <10 | <10 | <10 | <10 | <10 | 69 | <10 | <10 | 130,000 |
| Benzene | µg/L | 0.2 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | 430 |
| Bromodichloromethane | µg/L | 0.5 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | 85,000 |
| Bromoform | µg/L | 1 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | 770 |
| Bromomethane | µg/L | 0.5 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | 56 |
| Carbon Tetrachloride | µg/L | 0.2 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | 8.4 |
| Chlorobenzene | µg/L | 0.2 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | 630 |
| Chloroform | µg/L | 0.2 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | 22 |
| cis- 1,2-Dichloroethylene | µg/L | 0.5 | <0.50 | <0.50 | <0.50 | 2.1 | <0.50 | <0.50 | <0.50 | <0.50 | 17 |
| Dibromochloromethane | µg/L | 0.5 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | 82,000 |
| Dichlorodifluoromethane | µg/L | 1 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | 4,400 |
| Ethylbenzene | µg/L | 0.2 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | 2,300 |
| Ethylene Dibromide | µg/L | 0.2 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | 0.83 |
| Methyl Ethyl Ketone | µg/L | 10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | 1,500,000 |
| Methyl Isobutyl Ketone | µg/L | 5 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | 580,000 |
| Methyl tert-butyl ether | µg/L | 0.5 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | 1,400 |
| Methylene Chloride | µg/L | 2 | <2.0 | <2.0 | <2.0 | <2.0 | <2.0 | <2.0 | <2.0 | <2.0 | 5,500 |
| n-Hexane | µg/L | 1 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | 520 |
| Styrene | µg/L | 0.5 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | 9,100 |
| Tetrachloroethylene | µg/L | 0.2 | **55** | **120** | **100** | <0.20 | <0.20 | <0.20 | 0.57 | <0.20 | 17 |
| Toluene | µg/L | 0.2 | 0.23 | <0.20 | <0.20 | 0.26 | <0.20 | 0.3 | <0.20 | <0.20 | 18,000 |
| trans- 1,2-Dichloroethylene | µg/L | 0.5 | <0.50 | <0.50 | <0.50 | 1.1 | <0.50 | <0.50 | <0.50 | <0.50 | 17 |
| Trichloroethylene | µg/L | 0.2 | 0.32 | 1.3 | 1.4 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | 17 |
| Trichlorofluoromethane | µg/L | 0.5 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | 2,500 |
| Vinyl Chloride | µg/L | 0.2 | <0.20 | <0.20 | <0.20 | **2.1** | <0.20 | <0.20 | <0.20 | <0.20 | 1.7 |
| Xylene Mixture | µg/L | 0.2 | <0.20 | <0.20 | <0.20 | 0.23 | <0.20 | 0.25 | <0.20 | <0.20 | 4,200 |

NOTES:

Analysis by Maxxam Analytics.

All results in ppb (µg/L).

* Minimum Analytical Reporting Detection Limit (MDL) is listed. Refer to individual Certificate of Analyses for sample-specific Reporting Detection Limit (RDL) value.

** Standards shown are for all types of property use and medium to fine textured soil.

Exceedances of Table 3 Standards are shown in **bold**.

## Table 11: GROUND WATER CHEMICAL ANALYSIS - Volatile Organic Compounds

11 Yorkville Avenue, Toronto, Ontario
February 2018



| Sample I.D. | Units | MDL* | Monitor TH2 | Monitor TH3 | Duplicate of TH3 TH300 | Monitor TH4 | Trip Blank | Trip Blank | Ontario Regulation 153/04 Table 3 Ground Water Standards** |
|---|---|---|---|---|---|---|---|---|---|
| Screen Interval (m) | | | 2.4 to 5.5 | 2.7 to 5.8 | 2.7 to 5.8 | 2.9 to 5.9 | N/A | N/A | |
| Date of Sample Collection | | | 5-Feb-18 | 31-Jan-18 | 31-Jan-18 | 31-Jan-18 | N/A | N/A | |
| Date of Sample Analysis | | | 12-Feb-18 | 6-Feb-18 | 6-Feb-18 | 6-Feb-18 | 6-Feb-18 | 12-Feb-18 | |
| Certificate of Analysis Number | | | 18T308880 | 18T307737 | 18T307737 | 18T307737 | 18T307737 | 18T308880 | |
| Laboratory I.D. | | | 9049221 | 9042565 | 9042711 | 9042710 | 9042744 | 9049265 | |
| 1,1,1,2-Tetrachloroethane | µg/L | 0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | 28 |
| 1,1,1-Trichloroethane | µg/L | 0.30 | <0.30 | <0.30 | <0.30 | <0.30 | <0.30 | <0.30 | 6,700 |
| 1,1,2,2-Tetrachloroethane | µg/L | 0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | 15 |
| 1,1,2-Trichloroethane | µg/L | 0.20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | 30 |
| 1,1-Dichloroethane | µg/L | 0.30 | <0.30 | <0.30 | <0.30 | <0.30 | <0.30 | <0.30 | 3,100 |
| 1,1-Dichloroethylene | µg/L | 0.30 | <0.30 | <0.30 | <0.30 | <0.30 | <0.30 | <0.30 | 17 |
| 1,2-Dichlorobenzene | µg/L | 0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | 9,600 |
| 1,2-Dichloroethane | µg/L | 0.20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | 12 |
| 1,2-Dichloropropane | µg/L | 0.20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | 140 |
| 1,3-Dichlorobenzene | µg/L | 0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | 9,600 |
| 1,3-Dichloropropene | µg/L | 0.30 | <0.30 | <0.30 | <0.30 | <0.30 | <0.30 | <0.30 | 45 |
| 1,4-Dichlorobenzene | µg/L | 0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | 67 |
| Acetone | µg/L | 1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | 130,000 |
| Benzene | µg/L | 0.20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | 430 |
| Bromodichloromethane | µg/L | 0.20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | 85,000 |
| Bromoform | µg/L | 0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | 770 |
| Bromomethane | µg/L | 0.20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | 56 |
| Carbon Tetrachloride | µg/L | 0.20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | 8.4 |
| Chlorobenzene | µg/L | 0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | 630 |
| Chloroform | µg/L | 0.20 | <0.20 | <0.20 | <0.20 | 0.37 | <0.20 | <0.20 | 22 |
| cis- 1,2-Dichloroethylene | µg/L | 0.20 | 5.9 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | 17 |
| Dibromochloromethane | µg/L | 0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | 82,000 |
| Dichlorodifluoromethane | µg/L | 0.20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | 4,400 |
| Ethylbenzene | µg/L | 0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | 2,300 |
| Ethylene Dibromide | µg/L | 0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | 0.83 |
| Methyl Ethyl Ketone | µg/L | 1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | 1,500,000 |
| Methyl Isobutyl Ketone | µg/L | 1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | 580,000 |
| Methyl tert-butyl ether | µg/L | 0.20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | 1,400 |
| Methylene Chloride | µg/L | 0.30 | <0.30 | <0.30 | <0.30 | <0.30 | <0.30 | <0.30 | 5,500 |
| n-Hexane | µg/L | 0.20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | 520 |
| Styrene | µg/L | 0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | 9,100 |
| Tetrachloroethylene | µg/L | 0.20 | **24** | **26** | **28** | 2.0 | <0.20 | <0.20 | 17 |
| Toluene | µg/L | 0.20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | 18,000 |
| trans- 1,2-Dichloroethylene | µg/L | 0.20 | 15 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | 17 |
| Trichloroethylene | µg/L | 0.20 | 14 | <0.20 | <0.20 | **29** | <0.20 | <0.20 | 17 |
| Trichlorofluoromethane | µg/L | 0.40 | <0.40 | <0.40 | <0.40 | <0.40 | <0.40 | <0.40 | 2,500 |
| Vinyl Chloride | µg/L | 0.17 | <0.17 | <0.17 | <0.17 | <0.17 | <0.17 | <0.17 | 1.7 |
| Xylene Mixture | µg/L | 0.20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | 4,200 |

NOTES:

Analysis by AGAT Laboratories.

All results in ppb (µg/L).

* Minimum Analytical Reporting Detection Limit (MDL) is listed. Refer to individual Certificate of Analyses for sample-specific Reporting Detection Limit (RDL) value.

** Standards shown are for all types of property use and medium to fine textured soil.

Exceedances of Table 3 Standards are shown in **bold**.

# Appendix A:
# Limitations and Use of Report

# LIMITATIONS AND USE OF REPORT

## BASIS OF REPORT

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

Where applicable, recommended field services are the minimum necessary to ascertain that construction is being carried out in general conformity with building code guidelines, generally accepted practices and EXP's recommendations. Any reduction in the level of services recommended will result in EXP providing qualified opinions regarding the adequacy of the work. EXP can assist design professionals or contractors retained by the Client to review applicable plans, drawings, and specifications as they relate to the Report or to conduct field reviews during construction.

## RELIANCE ON INFORMATION PROVIDED

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

## STANDARD OF CARE

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

## COMPLETE REPORT

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

## USE OF REPORT

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

## REPORT FORMAT

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

# Appendix B:
# Survey Plan

# TOPOGRAPHIC PLAN OF
# ALL OF LOTS 8, 9, AND 12, PART OF LOTS 7, 11, AND 13 REGISTERED PLAN 355-Y
AND
# ALL OF TORONTO STANDARD CONDOMINIUM PLAN 1744
AND
# PART OF LOT 21 CONCESSION 2, FROM THE BAY CITY OF TORONTO
MUNICIPALITY OF METROPOLITAN TORONTO
SCALE 1: 250

2.5 0 2.5 5 7.5 10 15 25 metres

WSP GEOMATICS ONTARIO LIMITED
ONTARIO LAND SURVEYORS
2017

## STANDARD LEGEND

| | | |
|---|---|---|
| | ..... Denotes | SURVEY CONTROL POINT |
| | ..... Denotes | BENCH MARK |
| | ..... Denotes | ANCHOR |
| | ..... Denotes | GUY POLE |
| | ..... Denotes | LAMP STANDARD |
| | ..... Denotes | UTILITY POLE |
| W | ..... Denotes | HANDWELL |
| | ..... Denotes | FLOOD LIGHT |
| CB | ..... Denotes | CATCH BASIN |
| MH | ..... Denotes | MANHOLE |
| H MH | ..... Denotes | MANHOLE-HYDRO |
| ST MH | ..... Denotes | MANHOLE-STORM |
| S MH | ..... Denotes | MANHOLE-SANI |
| H | ..... Denotes | TERMINAL BOX : HYDRO |
| C | ..... Denotes | TERMINAL BOX : COMM |
| | ..... Denotes | BIKE RACK |
| | ..... Denotes | SINGLE POST SIGN |
| | ..... Denotes | DOUBLE POST SIGN |
| TP | ..... Denotes | TRAFFIC LIGHT |
| | ..... Denotes | FIRE HYDRANT |
| | ..... Denotes | VALVE CHAMBER |
| WV | ..... Denotes | WATER VALVE |
| GV | ..... Denotes | GAS VALVE |
| T T T | ..... Denotes | BURIED COMM PLANT |
| H-T | ..... Denotes | HYDRO AND COMMUNICATIONS ON SAME POLE |
| H H H | ..... Denotes | BURIED HYDRO PLANT |
| Gas Gas Gas | ..... Denotes | BURIED GAS PLANT |
| | ..... Denotes | CONIFER TREE |
| | ..... Denotes | DECIDUOUS TREE |
| | ..... Denotes | BUSH OR HEDGE |
| x | ..... Denotes | WIRE FENCE |
| San | ..... Denotes | SANITARY LINE |
| Stm | ..... Denotes | STORM LINE |
| W | ..... Denotes | WATER LINE |
| D | ..... Denotes | DITCH |
| | ..... Denotes | TOP OF SLOPE |
| BSP | ..... Denotes | BOTTOM OF SLOPE |
| | ..... Denotes | GUARD RAIL |
| | ..... Denotes | CHAIN LINK FENCE |
| | ..... Denotes | BOLLARD |
| GUTTER | ..... Denotes | STANDARD BARRIER CURB AND GUTTER ie. ... |
| CURB | ..... Denotes | BARRIER TYPE CURB ie. ..... |

GUTTER CURB CURB GUTTER

## DATE OF SURVEY : AUGUST 21, 2017

## BENCHMARK

**ELEVATIONS ARE IN METRES AND ARE DERIVED FROM CITY OF TORONTO BENCHMARK NO. CT828 NORTH SIDE OF YORKVILLE AVENUE WEST OF YONGE STREET, BENCHMARK ON A 1 STOREY PUBLIC LIBRARY BUILDING 3.96M NORTH FROM SOUTHEAST CORNER 0.43M ABOVE GRADE.**

**ELEVATION = 116.982M**

WSP Geomatics Ontario Limited Ontario Land Surveyors
610 Chartwell Road, Suite 300, Oakville, Ontario Canada, L6J 4A5
t: 905-823-8500 f: 905-823-8503 Website : www.wspgroup.ca

Drawing Number : **17M-01494-000**

| | | |
|---|---|---|
| P.Chief : A.K. | Dwg. By : C.E.W. | Chk'd by : G.M. |
| Job Number : 17M-01494-00-AV1 | | Tab Name: A2 |
| Dwg File Name: | | 17M-01494-00_T01_C3D2015.DWG |

K:\Jobs\17\17M-01494 Yorkville\dwg\17m-01494-00_T01_C3D2015.dwg

# Appendix C:
# Qualifications of Assessors

**Carla Reynolds, P.Biol., P.Geo. (Limited), $QP_{ESA}$ (Manager, Environmental Services)**

Carla Reynolds obtained an Honours degree in Biology from Queen's University in 1991 and a diploma in Terrain and Water Resources from Fleming College in 1994. Ms. Reynolds became a Professional Biologist with the Alberta Society of Professional Biologists in 2009. She is also registered as a Professional Geoscientist with the Association of Professional Geoscientists of Ontario and is a Qualified Person (QP) for both environmental assessments and risk assessments under Ontario Regulation 153/04.

Ms. Reynolds has over 23 years experience in environmental assessment and remediation. To date, she has completed over 2,000 environmental assessment or remediation projects for various clients across Canada. This work has included consultation during purchase, sale, leasing and development of land, consultation for brownfield site re-development and peer review of remedial design and reports.

**Leah C. Whittaker, B.Sc.** (**Project Manager)**

Leah Whittaker graduated from the University of Guelph in 2010 with a Bachelor of Science degree with a specialization in Environmental Toxicology (Honours, co-op).

Since joining EXP in 2011, Ms. Whittaker has conducted the field work, reporting and/or project management associated with over a hundred environmental assessment projects. Ms. Whittaker has also managed a number of due diligence portfolios. She has conducted and managed work at sites throughout Canada and in the United States.

**Ajay Jayalath, M.Env.Sc. (Hydrogeologist)**

Mr. Jayalath graduated from the University of Toronto in 2012 with a Bachelor of Science degree in Environmental Geoscience, specializing in Urban Geoscience and Hydrogeology. He completed his Master of Environmental Science Degree at the University of Toronto in 2014.

Mr. Jayalath has over four years of experience in geotechnical and environmental investigations. Since joining EXP in 2013, Mr. Jayalath has worked on numerous Phase One and Two ESAs, from conducting field work to the reporting phases. He has also been involved in the design and application of several remediation projects.

**Harry Nandakumar, B.Sc. (Environmental Scientist)**

Mr. Nandakumar graduated from University of Toronto in 2014 with an Honours in Bachelor of Science in Environmental Science specializing in Environmental Biology. He has over three years of field work experience. Mr. Nandakumar has been involved in number of Phase I and II environmental assessments for commercial, industrial and residential projects.

# Appendix D:
# Sampling and Analysis Plan

# Memorandum

Date: November 28, 2017
To: Harry Nandakumar
From: Leah Whittaker
CC: Carla Reynolds

**RE: Ground Water Sampling – 11 to 21 Yorkville Avenue, Toronto, Ontario**

| | |
|---|---|
| **Project Number:** | **MRK-00242474-A0-003** |
| **Date(s) of Field Work:** | **Tuesday, November 28, 2017 at 8:30 am** |
| **Site Address:** | **11-21 Yorkville Avenue, Toronto, Ontario** |
| **PM Contact:** | **Leah Whittaker, 905-695-3217 x 3649** |
| **Site Access Contact:** | **Paul Johnson, Building Operator, 416-454-7011** |
| **Laboratory:** | **Maxxam, Ashton Gibson – 905-817-5765 (office)** |

**NOTE: Please call Paul Johnson upon arrival. He will meet you out front of 21 Yorkville Avenue and provide access to the building.**

**PROJECT OBJECTIVES:**

A Phase II Environmental Site Assessment (ESA) was conducted at 21 Yorkville Avenue by Pinchin Ltd. in 2015. Five monitoring wells were installed beneath the floor slab. Ground water samples were collected from three of the monitoring wells; two wells were dry at the time of sampling. The ground water samples collected from two of the three locations sampled (MW01 and MW02) were found to exceed the Ministry of the Environment and Climate Change (MOECC) Table 3 Standards for a residential use for one or more volatile organic compound (VOC) parameters.

To obtain an update on the ground water quality, EXP will visit the site to collect a ground water sample from all accessible monitoring wells including: two outdoor monitoring wells at 17 Yorkville Avenue (BH15-3 and BH15-3S); one outdoor monitoring well at 19 Yorkville Avenue (BH1); and the five indoor monitoring wells at 21 Yorkville Avenue. The ground water samples will be submitted to an accredited laboratory for analysis of petroleum hydrocarbon (PHC) fractions F4 to F4 and VOCs.

…/2

220 Commerce Valley Drive West, Suite 110, Markham, Ontario L3T 0A8
T: +1.905.695.3217 • F: +1.905.695.0169 • www.exp.com

## SCOPE OF WORK:

The scope of work for the ground water sampling is as follows:

- Record the stick-down, depth to ground water and the depth to bottom at each of the eight monitoring wells.

***GROUND WATER SAMPLING PLAN***

| Address | Monitoring Well | Ground Water Analysis | QA/QC |
|---|---|---|---|
| 17 Yorkville Avenue (rear) | BH15-3S<br>BH15-3 | PHC and VOCs | 1 field duplicate (PHCs and VOCs) and 1 trip blank (VOCs) |
| 19 Yorkville Avenue (rear) | BH1 | PHC and VOCs | |
| 21 Yorkville Avenue (indoors) | MW01<br>MW02<br>MW03<br>MW04<br>MW05 | PHC and VOCs | |

- Prior to sampling, purge approximately three well volumes from each monitoring well (if recharge permits).

- A sample will be collected from each monitoring well and submitted for analysis of PHC fractions F1 to F4 and VOCs. In the event that the ground water recharge is slow, the sample to be analyzed for VOCs is a priority.

- One field duplicate ground water sample will be collected and submitted for QA/QC purposes; the field duplicate sample will be analyzed for PHC fractions F1 to F4 and VOCs. A trip blank, to be analyzed for VOCs, will be included with the submission of samples to the laboratory.

- A regular turn-around time will be requested for all samples (4 days).

- A sample pickup has been arranged at the office for the afternoon of Monday, August 14, 2017.

## Chain of Custody Information

- Project number MRK-00242474-A0-003, RSC – yes; Table 3 Standards, RPI land use, (soil texture = medium fine)
- All samples on regular (4-day) TAT
- Ground Water Analyses: PHC fractions F1 to F4, VOCs, including field duplicate and trip blank
    - If insufficient water – VOCs are the priority
- Samples will be picked up by Maxxam at the Markham office on Wednesday, November 29th.

Submit a copy to leah.whittaker@exp.com and carla.reynolds@exp.com.

## Health and Safety

- Review and complete attached Health and Safety Plan (HASP) and Field-Level Risk Assessment forms.
- Report any incidents, including near misses, to PM.
- Call or text upon reaching Site and prior to leaving for the day.

## References

**Exp** Standard Operating Procedure, *Field QA/QC Programs, Version 2.0*, revision date August 16, 2012.
**Exp** Standard Operating Procedure, *Monitoring and Ground Water Sampling, Version 2.0*, revision date July 6, 2017.

# Memorandum

Date: January 24, 2018
To: Ajay Jayalath
From: Leah Whittaker
CC: Carla Reynolds

**RE: Phase Two Environmental Site Assessment**
**19 Yorkville Avenue and 16 Cumberland Street, Toronto, Ontario**

| | |
|---|---|
| **Project Number:** | **MRK-00242474-A0-005** |
| **Date(s) of Field Work:** | **Private Locates – Wednesday, January 24, 2018**<br>**Drilling – Thursday, January 25 to Friday, January 26, 2018**<br>**Ground Water Sampling – Monday, January 29, 2018** |
| **Site Address:** | **19 Yorkville Avenue and 16 Cumberland Street, Toronto** |
| **PM Contact:** | **Leah Whittaker, 647-834-4686** |
| **Site Contact:** | **German Aguilo, 437-992-6995** |
| **Client Contact:** | **Lorelei Fernandes (RioCan), 416-489-2300**<br>**Zac Watson (Metropia), 647-391-3068** |
| **Laboratory:** | **AGAT, Andrew Martin, 905-712-5106** |
| **Drilling Subcontractor:** | **Pontil, Greg Smith - 289-338-1838** |
| **Private Locator:** | **All Clear Locates, Drew – 416-890-4357** |

**PROJECT OBJECTIVES:**

The site is being redeveloped as a high-rise condominium with some retail use at grade and on the concourse level. A Record of Site Condition (RSC) filing will be required to support the redevelopment to a more sensitive land use, in accordance with Ontario Regulation (O. Reg.) 153/04.

The Phase One ESA has identified potentially contaminating activities (PCAs) within the Phase One Study Area that were considered to result in eight areas of potential environmental concern (APECs). In accordance with the requirements of O. Reg. 153/04, a Phase Two ESA must be completed to investigate soil and ground water quality within the APECs.

Due to site access constraints, the majority of the site is inaccessible for the type of drilling equipment that would be required to install ground water monitoring wells. It should be noted that supplemental Phase Two ESA soil and ground water sampling work will be required to satisfy the requirements of O. Reg. 153/04 as portions of the site become accessible.

…/2

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## SCOPE OF WORK:

EXP will carry out a soil and ground water sampling program at the site. Pontil Drilling has been retained for the drilling work; Pontil will use a geoprobe for the shallow test holes and a conventional drill rig for the deeper test hole. The drilling is scheduled to be performed on Thursday, January 25th and Friday, January 26th, 2018.

Since the drilling work is to be performed on private property, private underground services, wires, or structures in the proposed drilling area must be identified by the owner prior to initiation of the work. Public utility locates were requested by EXP on December 22, 2017 (See attached locates for OneCall Ticket #2017518306 and 2017518340). All Clear Locates was retained to clear the test hole locations on Wednesday, January 23rd at 11 am.

A test hole rationale table is provided below:

| Test Hole ID | Objective | Monitoring Well Status |
|---|---|---|
| 1 | Vertical delineation of VOC-impacted ground water | Deep well to be screened from approximately 13-16 mbgs, the depth of the proposed excavation for 5 levels of underground parking. |
| 2 | Horizontal delineation of VOC-impacted ground water | Shallow well to be screened around 3 to 6 mbgs to intercept perched water. |
| 3 | Horizontal delineation of VOC-impacted ground water | Shallow well to be screened around 3 to 6 mbgs to intercept perched water. |
| 4 | Horizontal delineation of VOC-impacted ground water | Shallow well to be screened around 3 to 6 mbgs to intercept perched water. |

## Soil Sampling

- One test hole (**TH1**) will be completed as a deep monitoring well, advanced to a depth of approximately 16 mbgs.

- Three test holes (**TH2, TH3 and TH4**) will be completed as shallow monitoring wells, advanced to a depth of approximately 6 mbgs.

- Soil samples will be inspected for visual and olfactory evidence of chemical impact and for geological composition. The findings will be recorded in a log. Vapour readings in the soil will be measured using an RKI Eagle 2 portable hydrocarbon surveyor and/or Gastec GV-100 manual pump and colourimetric detection tubes, as appropriate.

- One “worst-case” soil sample will be collected from each test hole for laboratory analysis of polycyclic aromatic hydrocarbons (PAHs), metals and inorganics, petroleum (PHC) fractions F1 to F4, and volatile organic compounds (VOCs). The samples for PHC fractions F1 to F4 and VOCs should be collected at the same depth. Please collect a deeper delineation sample for each parameter and submit on hold. For soil samples placed in methanol vials, please ensure that they are accompanied by a jar of soil for **moisture content** analysis.

| Test Hole ID | Parameters | Vertical Delineation on HOLD |
|---|---|---|
| 1, 2, 3, 4 | PAHs, M&I – WC from fill<br>PHC F1-F4/VOCs – WC, or WT depth<br>Grain Size – representative of native stratigraphy (1-2 total samples) | PAHs, M&I – Fill/native interface<br>PHC F1-F4/VOCs |

WC = worst-case, WT = water table

Guidance on sampling depths:
**PAHs, M&I** – worst case from fill material or based on visual and olfactory evidence.
**VOCs** – worst case based on visual and olfactory evidence and vapour readings. If no evidence of contamination is observed, take above water table depth.
**PHCs** – worst case based on visual and olfactory evidence and vapour readings. If no evidence of contamination is observed, take sample at water table depth.

**NOTE**: Please do not straddle 1.5 mbgs interval when submitting soil samples.

- Please collect 1 surficial (above 1.5 metres) and 1 sub-surface (below 1.5 metres) sample for **pH analysis**.

- Please collect one representative soil sample from each strata for **grain size analysis**, excluding surficial fill and/or topsoil.

- Collect one field duplicate soil sample for each parameter, to be submitted to the laboratory for QA/QC purposes.

- Monitors will be constructed as 2'' monitors with a PVC screen interval no longer than 3.1 metres (10 feet) as specified by O. Reg. 153/04, and capped at the base of the monitor. The monitor will be backfilled with sand to an elevation of 0.3 to 0.6 metres (1 to 2 feet) above the top of the screened interval. The monitor will be sealed with bentonite to surface, capped with a locked j-plug and finished with a flush mount casing set in concrete. Please record monitor installation details including riser pipe length, screen interval slot size (e.g. 0.01 inch slot size, 2 TPI), diameter of annulus and depth to top of sand pack.

- If possible, develop the newly installed ground water monitoring wells prior to leaving the site for the day.

- Drumming of soil cuttings is anticipated. Please place drums off to the side in an area accessible for pick-up; try to place all in one area. For soil disposal purposes, please submit a representative sample for analysis for the following parameters: TCLP metals, TCLP B(a)P, TCLP PCBs, ignitability (all composite samples) and TCLP VOCs (discrete grab sample, no headspace). Submit on their own Chain of Custody.

- A sample pickup will be arranged at the site for the afternoon of Friday, January 26th. Soil samples should be submitted on a **regular (4-5 day)** turn-around time. Please ensure soil samples are properly preserved with ice in a storage cooler maintained below 10ºC.

## Ground Water Sampling

- The ground water monitoring wells will be properly purged prior to sampling; record stabilized field parameters for each monitor on sample form. One ground water sample will be retrieved from each of the newly installed monitors. Use proper sampling techniques to avoid introducing contaminants into the ground water sample. Use proper decontamination techniques between monitors.

- If no obvious impacts are noted, purged water can be disposed onto a paved area of the site away from any catch basins.

- Ground water samples will be collected from the ground water monitoring wells using new clean bailers. Collected ground water samples will be submitted to an accredited laboratory for analysis of PHC fractions F1 to F4 and VOCs.

- Collect one field duplicate sample for each parameter, to be submitted to the laboratory for QA/QC purposes. A trip blank should be submitted with the ground water samples, to be analyzed for VOCs.

- Please communicate with the PM to arrange the sample pickup details for the ground water samples. Soil samples should be submitted on a **regular (4-5 day)** turn-around time. Please ensure soil samples are properly preserved with ice in a storage cooler maintained below 10ºC.

## Reminders

- Please ensure that the HASP paperwork is completed prior to any drilling activities. All subcontractors should sign-off on this paperwork.
- Always wear hard hat, visi-vest and use pylons as needed. Discuss scope of work with any other contractors on-site, prior to the commencement of field work.
- Call PM after the completion of the first test hole, and before leaving the site for the day.
- Mark TH locations with measurements/GPS coordinates on a site plan.
- Take photographs of the site during the investigation.
- Document any near miss incidents.

## Chain of Custody Information

- Project number MRK-00242474-A0-005, Table 3 RPI Standards (soil texture = 2/3 of on-site soils, likely medium-fine).
- Use TH1, TH2, nomenclature.
- Soil Analyses: PAHs, M&I, PHC fractions F1 to F4, VOCs (include moisture content sample, if required), pH, grain size.
- Soil QA/QC: field duplicate sample.
- Ground Water Analyses: PHC fractions F1 to F4 and VOCs.
- Ground Water QA/QC: field duplicate sample, VOC trip blank.

- O. Reg. 558 samples from soil cuttings for TCLP: TCLP VOCs (discrete sample); TCLP metals, TCLP B(a)P, TCLP PCBs, Ignitability (composite sample). Submit on their own Chain of Custody.

Soil and ground water samples will be submitted on a regular (4-5 day) turn-around time.

Submit results to leah.whittaker@exp.com.

## References

EXP SOP, *Decontamination, Version 2.0*, rev. 2017
EXP SOP, *Field Screening, Version 2.0*, rev. 2017
EXP SOP, *Field QA/QC Programs, Version 2.0*, rev. 2012
EXP SOP, *Monitor Installation, Version 2.0*, rev. 2017
EXP SOP, *Monitor Development, Version 2.0*, rev. 2017
EXP SOP, *Monitor and Ground Water Sampling, Version 2.0*, rev. 2017
EXP SOP, *Soil Descriptions, Version 2.0*, rev. 2017
EXP SOP, *Subsurface Soil Sampling, Version 2.0*, rev. 2017
EXP SOP, *Test Hole Assessment, Version 2.0*, rev. 2017
EXP SOP, *Test Hole Procedure, Version 2.0*, rev. 2017


Shallow MW (~6 metres)

Deep MW (~16 metres)

# Appendix E:
# Test Hole Logs

# Log of Borehole TH1

Project No. MRK-00242474-A0 Drawing No. 1

Project: Phase Two Environmental Site Assessment Sheet No. 1 of 2

Location: Yorkville Avenue and Cumberland Street, Toronto, Ontario

Date Drilled: January 25 & 26, 2018

Drill Type: CME-55 Track, HSA

Datum: Benchmark CT828

**Chemical Analysis**

| | | | |
|---|---|---|---|
| BTEX | Benzene, Toluene, Ethylbenzene and Xylenes | * | Duplicate Sample |
| ING | Metals and Inorganics | PCB | Polychlorinated Biphenyls |
| MET | Metals | PHC | Petroleum Hydrocarbons (F1-F4) |
| PAH | Polycyclic Aromatic Hydrocarbons | VOC | Volatile Organic Compounds |
| PEST | Organochlorine Pesticides | | |

| GWL | SYMBOL | Soil Description | ELEV. m | DEPTH | N Value (20, 40, 60) | Combustible Vapour Reading (ppm) (25, 50, 75) | SAMPLES | % RECOV | SAMPLE ID | ANALYSIS |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | 116.84 | | | | | | | |
| | | 5cm of **ASPHALT** pavement. Brown sand and gravel **FILL**, trace brick, moist, no odour, no staining. | ~116.8 | 0 | | ND | | 80 | SS1 | ING PAH |
| | | Brown **SAND**, turning grey at 3.05 mbgs, wet at 3.05 mbgs, no odour, no staining. | ~115.8 | 1 | | ND | | 40 | SS2 | pH |
| | | | | 2 | | ND | | 60 | SS3 | ING PAH |
| | | | | | | ND | | 60 | SS4 | |
| | | | | 3 | | ND | | 70 | SS5 | PHC VOC |
| | | Grey silty **CLAY**, moist to wet, no odour, no staining. | ~113.2 | 4 | | ND | | 60 | SS6 | Grain size |
| | | | | 5 | | ND | | 80 | SS7 | |
| | | | | | | ND | | 80 | SS8 | |
| | | | | 6 | | ND | | 70 | SS9 | |
| | | | | 7 | | ND | | 60 | SS10 | pH |
| | | | | 8 | | ND | | 80 | SS11 | |
| | | | | | | ND | | 60 | SS12 | |
| | | | | 9 | | ND | | 80 | SS13 | |
| | | Grey silty **SAND**, moist , no odour, no staining. | ~107.1 | 10 | | | | | | |
| | | | | 11 | | ND | | 80 | SS14 | |
| | | | | 12 | | | | | | |

ENVIRONMENTAL-EXP MRK-242474- YORKVILLE.GPJ 2/28/18

Continued Next Page

| Time | Water Level (m) | Depth to Cave (m) |
|---|---|---|
| January 29, 2018 | Dry | |
| January 31, 2018 | Dry | |
| February 5, 2018 | Dry | |

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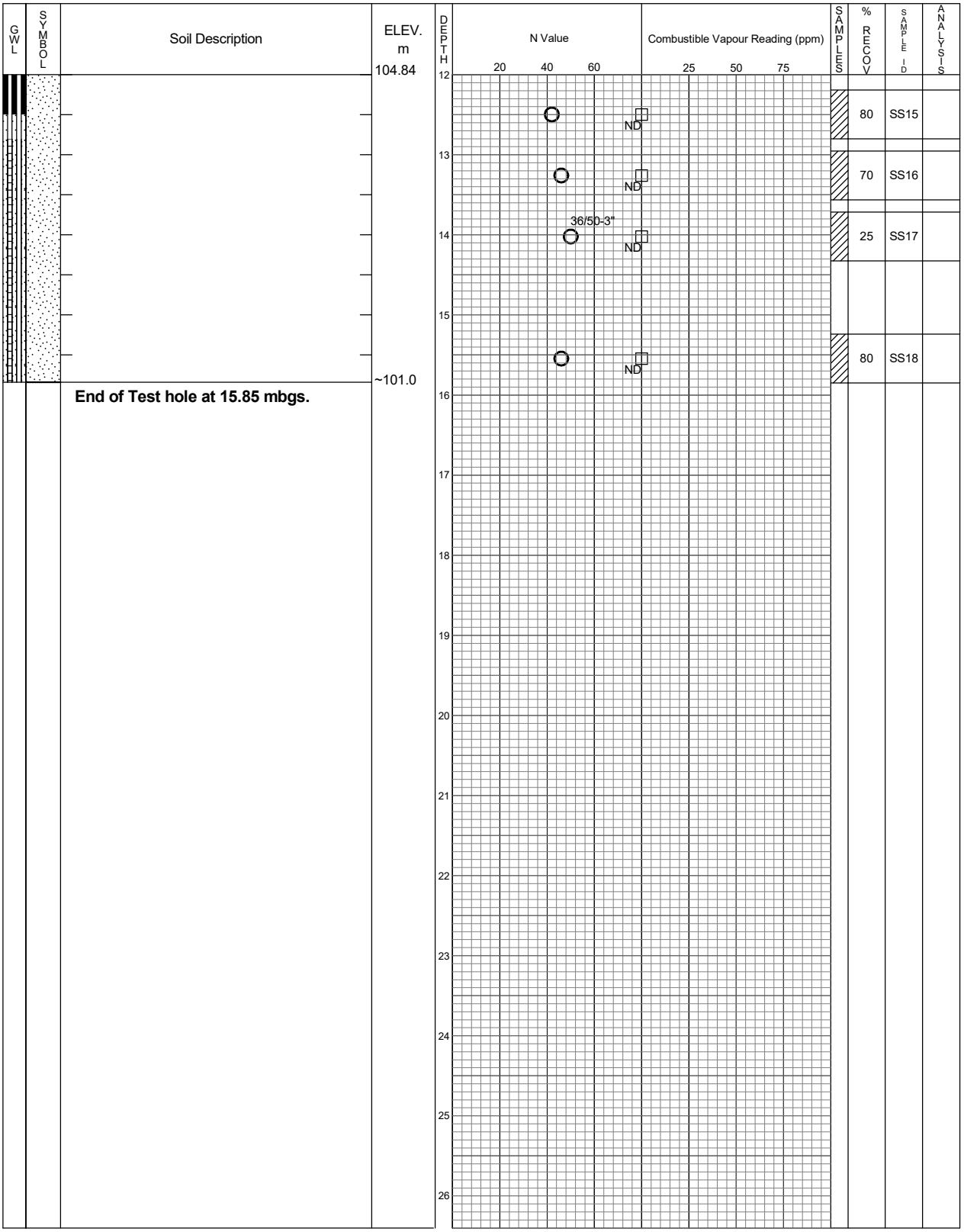
# Log of Borehole TH1

Project No. MRK-00242474-A0 Drawing No. 1

Project: Phase Two Environmental Site Assessment Sheet No. 2 of 2




ENVIRONMENTAL-EXP MRK-242474- YORKVILLE.GPJ 2/28/18

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| Time | Water Level (m) | Depth to Cave (m) |
|---|---|---|
| January 29, 2018 | Dry | |
| January 31, 2018 | Dry | |
| February 5, 2018 | Dry | |

# Log of Borehole TH2

Project No. MRK-00242474-A0 Drawing No. 2

Project: Phase Two Environmental Site Assessment Sheet No. 1 of 1

Location: Yorkville Avenue and Cumberland Street, Toronto, Ontario

Date Drilled: January 26, 2018

Drill Type: CME-45 Truck, HSA

Datum: Benchmark CT828

**Chemical Analysis**

| | | | |
|---|---|---|---|
| BTEX | Benzene, Toluene, Ethylbenzene and Xylenes | * | Duplicate Sample |
| ING | Metals and Inorganics | PCB | Polychlorinated Biphenyls |
| MET | Metals | PHC | Petroleum Hydrocarbons (F1-F4) |
| PAH | Polycyclic Aromatic Hydrocarbons | VOC | Volatile Organic Compounds |
| PEST | Organochlorine Pesticides | | |

| GWL | SYMBOL | Soil Description | ELEV. m | DEPTH | N Value 20 40 60 | Combustible Vapour Reading (ppm) 25 50 75 | SAMPLES | % RECOV | SAMPLE ID | ANALYSIS |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | 116.89 | | | | | | | |
| | | 5cm of **ASPHALT** pavement. | ~116.8 | 0 | | ND | | 80 | SS1 | PAH* |
| | | Brown sand and gravel **FILL**, trace brick, moist, no odour, no staining. | | 1 | | ND | | 70 | SS2 | ING* |
| | | | ~115.2 | 2 | | ND | | 80 | SS3 | |
| | | Light brown **SAND**, turning grey at 2.43 mbgs, wet at 2.43 mbgs, no odour, no staining. | | 3 | | ND | | 70 | SS4 | |
| | | | | 4 | | ND | | 60 | SS5 | PHC VOC |
| | | | | 5 | | ND | | 80 | SS6 | |
| | | | ~112.3 | 6 | | ND | | 80 | SS7 | |
| | | Grey silty **CLAY**, moist to wet, no odour, no staining. | | 7 | | ND | | 70 | SS8 | |
| | | | ~110.9 | 8 | | | | | | |
| | | **End of Test hole at 5.94 mbgs.** | | 9 | | | | | | |
| | | | | 10 | | | | | | |
| | | | | 11 | | | | | | |
| | | | | 12 | | | | | | |

ENVIRONMENTAL-EXP MRK-242474- YORKVILLE.GPJ 2/28/18

| Time | Water Level (m) | Depth to Cave (m) |
|---|---|---|
| January 29, 2018 | 3.41 | |
| February 5, 2018 | 3.44 | |

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# Log of Borehole TH3

Project No. MRK-00242474-A0 Drawing No. 3

Project: Phase Two Environmental Site Assessment Sheet No. 1 of 1

Location: Yorkville Avenue and Cumberland Street, Toronto, Ontario

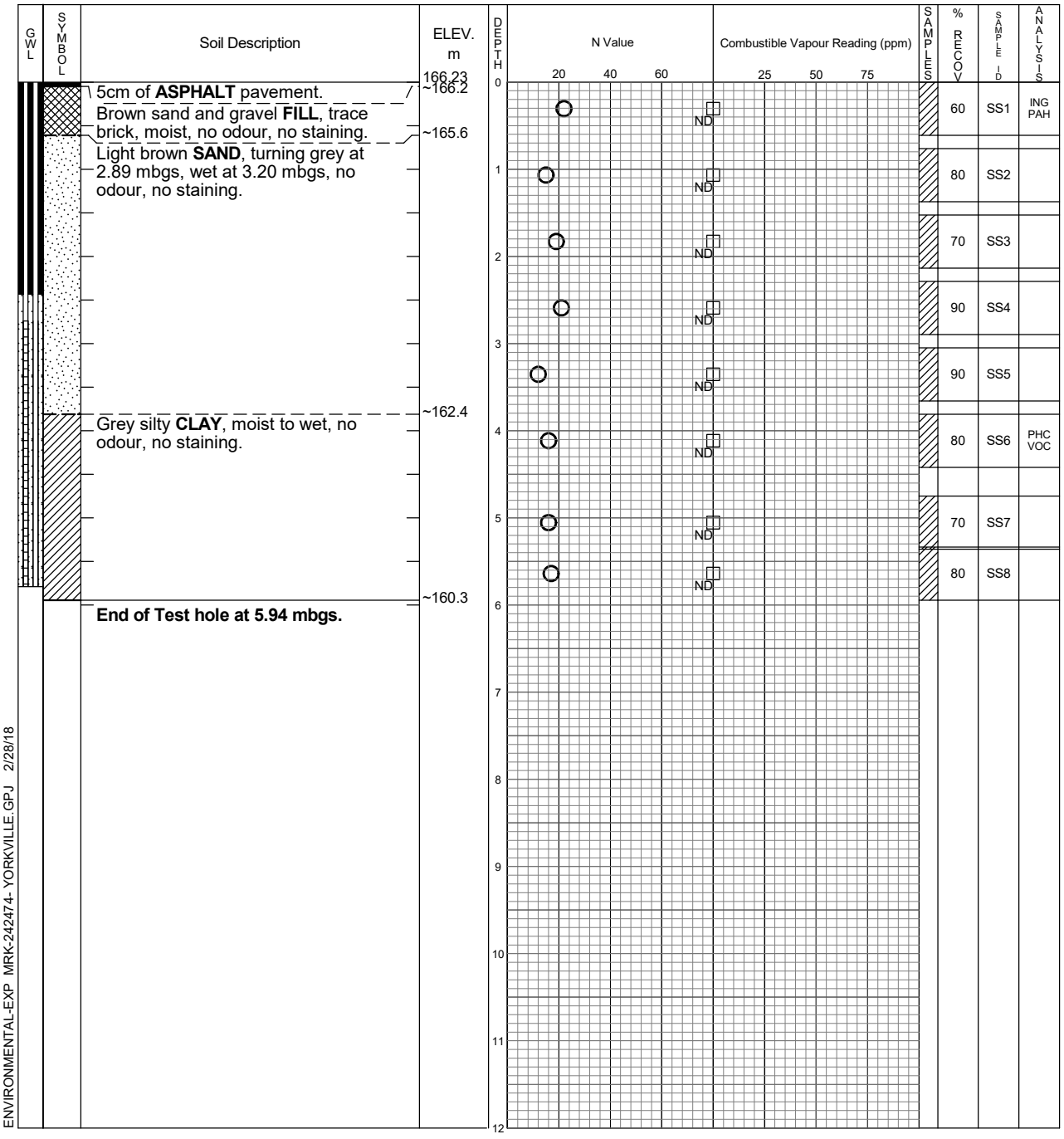
Date Drilled: January 29, 2018

Drill Type: CME-55 Track, HSA

Datum: Benchmark CT828

**Chemical Analysis**

| | | | |
|---|---|---|---|
| BTEX | Benzene, Toluene, Ethylbenzene and Xylenes | * | Duplicate Sample |
| ING | Metals and Inorganics | PCB | Polychlorinated Biphenyls |
| MET | Metals | PHC | Petroleum Hydrocarbons (F1-F4) |
| PAH | Polycyclic Aromatic Hydrocarbons | VOC | Volatile Organic Compounds |
| PEST | Organochlorine Pesticides | | |




ENVIRONMENTAL-EXP MRK-242474- YORKVILLE.GPJ 2/28/18

| Time | Water Level (m) | Depth to Cave (m) |
|---|---|---|
| January 29, 2018 | 3.19 | |
| January 31, 2018 | 3.22 | |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# Log of Borehole TH4

Project No. MRK-00242474-A0 Drawing No. 4

Project: Phase Two Environmental Site Assessment Sheet No. 1 of 1

Location: Yorkville Avenue and Cumberland Street, Toronto, Ontario

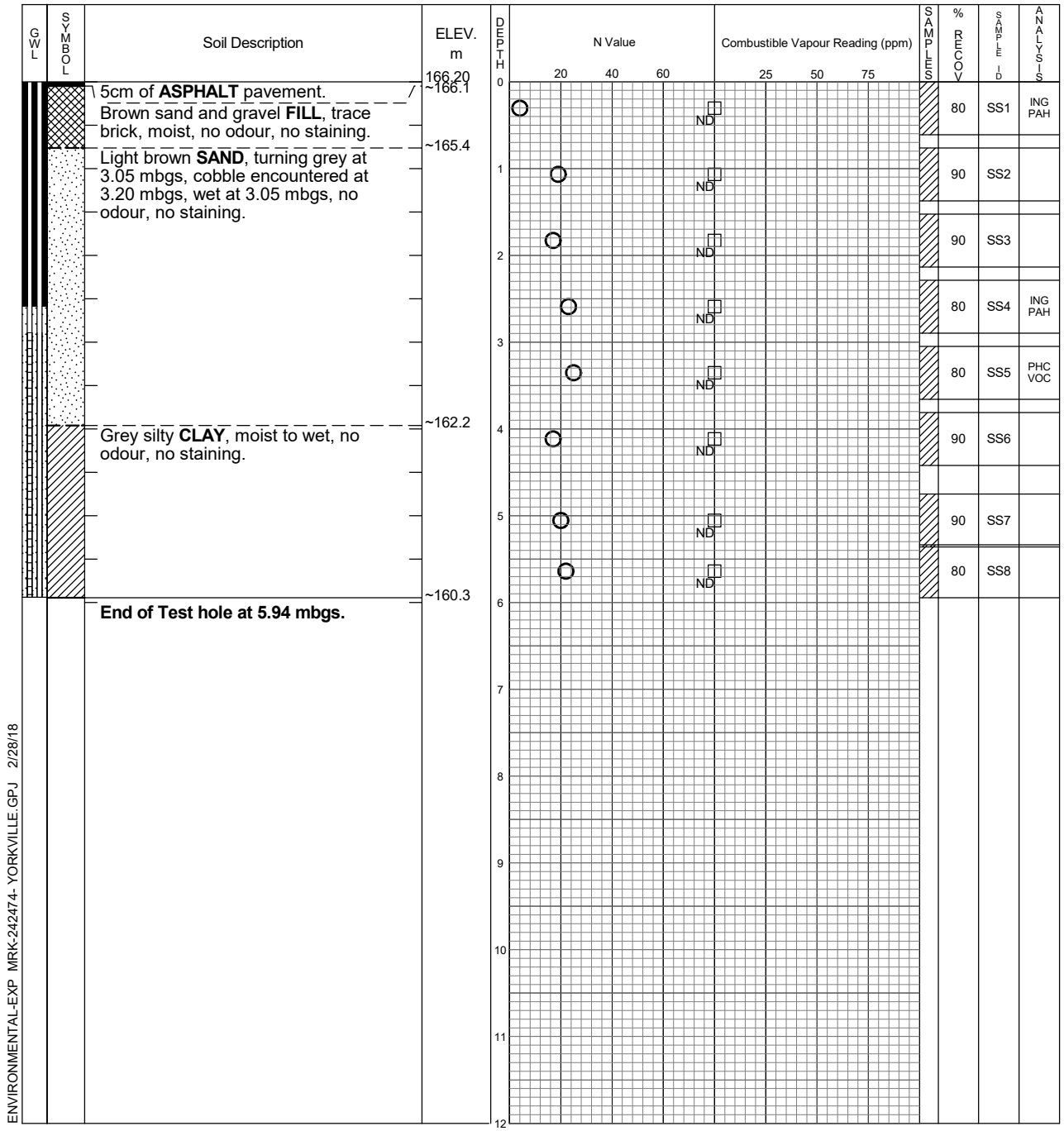
Date Drilled: January 29, 2018

Drill Type: CME-55 Track, HSA

Datum: Benchmark CT828

**Chemical Analysis**

| | | | |
|---|---|---|---|
| BTEX | Benzene, Toluene, Ethylbenzene and Xylenes | * | Duplicate Sample |
| ING | Metals and Inorganics | PCB | Polychlorinated Biphenyls |
| MET | Metals | PHC | Petroleum Hydrocarbons (F1-F4) |
| PAH | Polycyclic Aromatic Hydrocarbons | VOC | Volatile Organic Compounds |
| PEST | Organochlorine Pesticides | | |




ENVIRONMENTAL-EXP MRK-242474- YORKVILLE.GPJ 2/28/18

| Time | Water Level (m) | Depth to Cave (m) |
|---|---|---|
| January 29, 2018 | 3.23 | |
| January 31, 2018 | 3.25 | |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# Appendix F:
# Quality Assurance and Quality Control Measures

## QUALITY MANAGEMENT, CONTROL AND ASSURANCE

### Project Quality Management

Sample collection was performed using generally accepted principles and with appropriate sampling equipment. Written field sampling procedures for soil and ground water developed by EXP were used to ensure consistency in sample collection and preparation of samples for submission to the laboratory. The Ministry of Environment and Climate Change (MOECC) document entitled *Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario*, December 1996, was used as a reference.

The staff involved in the field sampling have participated in regular, ongoing EXP training programs and were qualified and experienced in collecting, describing, and preparing environmental samples for laboratory analysis.

Laboratory analysis was performed using generally accepted principles in accordance with the *Protocol for Analytical Methods Used in the Assessment of Properties* under Part XV.1 of the Environmental Protection Act (Protocol).

Data quality objectives for the parameters of concern were set to meet acceptable Reporting Detection Limits (RDLs) to achieve the goal of defining areas where such parameters are present at levels in excess of applicable generic Standards, as defined in Ontario Regulation (O. Reg.) 153/04, as amended to date, under the Environmental Protection Act. This included providing written instruction to the participating analytical laboratory describing the required analyses on the Chain of Custody prepared and delivered with the samples.

### Field Quality Assurance/ Quality Control

Field observations were made and documented in a field book in accordance with generally accepted practices and with the procedures developed and utilized by EXP.

EXP field sampling Quality Assurance/ Quality Control (QA/QC) protocols are tailored to the investigation and include, where appropriate:

- the collection of at least one duplicate sample per site for both soil and ground water (where three or more such samples are collected);
- where volatile organic chemical analysis of ground water is required, one trip blank shall be submitted for laboratory analysis with each submission;
- where volatile organic chemical analysis is required, the collection of discrete samples directly into sample bottles with teflon-lined lids and immediate placement into a cooler with free ice to maintain the temperature at less than $10^{o}$ C for transport to the laboratory;
- the use of dedicated equipment for ground water sampling at different monitors and the thorough cleaning of soil sampling equipment between sample sites; and,
- where sampling for trace organics (organic chemicals with a criterion value of less than 1 µg/g and/or samples collected for determination of background trace organic concentrations), ensuring that neither the bare hand or latex glove comes into contact with the soil or water as it is being placed into the laboratory sample container; soil sampling equipment used for the collection of trace organics is cleaned using soap & water, followed by a water rinse and a methanol rinse between sampling sites.

The results of the duplicate sample(s) are presented along with the tabulated data in the report. Tabulated data are presented to a maximum of three significant digits where reported by the laboratory.

**Laboratory Quality Assurance/Quality Control**

Laboratory analyses were completed by Maxxam Analytics (Maxxam) and by AGAT Laboratories (AGAT), both accredited laboratory for these tests. Both laboratories performed the work following formal written methods and procedures. These methods include all the minimum requirements as specified in the Protocol.

EXP has accepted the data provided by Maxxam and by AGAT based on the assurance that, as a minimum, the following requirements have been met and documentation to demonstrate compliance can be produced on request:

- the method performance criteria identified in the Protocol were met;
- sample storage requirements, pre-analysis processing techniques, and holding times for all sample types as identified in the Protocol were met;
- the results of all laboratory QC samples were within statistically determined control limits and if not, reasons were provided;
- surrogate recoveries (for organic analyses) were monitored and recorded;
- details on the precision and accuracy of the data have been recorded and retained and are available from the laboratory should they be required as a result of an MOECC audit;
- the analytical data were reported without blank correction (unless the correction was clearly identified on the Certificate of Analysis);
- all soil sampling results were reported on a dry weight basis; and,
- a Certificate of Analysis with all QA/QC sample data, including surrogate recoveries, has been received from the laboratory and is appended.

A field duplicate sample was collected for soil at TH1 and submitted for analysis of PHC fractions F1 to F4 and VOCs. A field duplicate sample was collected for soil at TH2 and submitted for analysis of PAH, metals, hydride-forming metals, and ORPs. Two field duplicate samples were collected for ground water, at MW04 and TH3, and submitted for analysis of PHC fractions F1 to F4 and BTEX. Two field duplicate samples were collected for ground water, at MW02 and TH3, and submitted for analysis of VOCs. One trip blank sample was submitted for laboratory analysis with each laboratory submission of ground water samples to be analyzed for PHC fraction F1 and VOCs.

The relative percent differences (RPDs) of the field duplicate samples are provided in this appendix. It should be noted that meaningful RPDs cannot be calculated if one or both of the analytical results are less than the reporting detection limits (RDLs).

For soil samples, the alert limit criteria for the field duplicate RPD is >100%. The calculated RPD between the duplicate samples and the original samples for soil was below 100% for all of the parameters analyzed.

For ground water samples, the alert limit criteria for the field duplicate RPD is >80% for PHC fractions F1 to F4, PAHs, and VOCs. The alert limit criteria for the field duplicate RPD for metals is >50%. The calculated RPD between the duplicate sample and the original sample for ground water was below the applicable alert limit criteria for all of the parameters analyzed.

The trip blank was below the laboratory RDL for all VOCs analyzed.

No laboratory data quality issues were identified that would have a material effect on the interpretation of results presented in this report.

# SOIL FIELD DUPLICATES - RELATIVE PERCENT DIFFERENCES

## Petroleum Hydrocarbon Parameters

11 Yorkville Avenue, Toronto, Ontario

February 2018



| Sample I.D. | MDL* | Test Hole TH1-SS5 | Duplicate of TH1-SS5 TH1-SS501 | RPD | Alert Limit |
|---|---|---|---|---|---|
| Depth (m) | | 3.1 to 3.7 | 3.1 to 3.7 | | |
| Soil Type | | sand | sand | | |
| Date of Sample Collection | | 25-Jan-18 | 25-Jan-18 | | |
| Date of Sample Analysis | | 1-Feb-18 | 1-Feb-18 | | |
| Certificate of Analysis Number | | 18T306685 | 18T306685 | | |
| Laboratory I.D. | | 9037673 | 9037674 | | |
| Field Vapour Reading | | <25 ppm | <25 ppm | | |
| Benzene | 0.02 | <0.02 | <0.02 | nc | >100% |
| Toluene | 0.02 | <0.02 | <0.02 | nc | >100% |
| Ethylbenzene | 0.05 | <0.05 | <0.05 | nc | >100% |
| Xylene Mixture (Total) | 0.05 | <0.05 | <0.05 | nc | >100% |
| PHC F1 (C6 to C10) - BTEX | 5 | <5 | <5 | nc | >100% |
| PHC F2 (C10 to C16) | 10 | <10 | <10 | nc | >100% |
| PHC F3 (C16 to C34) | 50 | <50 | <50 | nc | >100% |
| PHC F4 (C34 to C50) | 50 | <50 | <50 | nc | >100% |

NOTES:

Analysis by AGAT Laboratories.

All results in ppm (µg/g) and based on dry weight basis.

* Minimum Analytical Reporting Detection Limit (MDL) is listed. Refer to individual Certificate of Analyses for sample-specific Reporting Detection Limit (RDL) value.

'nc' means "not calculable", since one (or both) of the results are less than the RDL.

Exceedences of alert limits are shown in **bold**.

# SOIL FIELD DUPLICATES - RELATIVE PERCENT DIFFERENCES

## Polycyclic Aromatic Hydrocarbons

11 Yorkville Avenue, Toronto, Ontario

February 2018



| Sample I.D. | MDL* | Test Hole TH2-SS1 | Duplicate of TH2-SS1 TH2-SS101 | RPD | Alert Limit |
|---|---|---|---|---|---|
| Depth (m) | | 0 to 0.6 | 0 to 0.6 | | |
| Soil Type | | sand and gravel | sand and gravel | | |
| Date of Sample Collection | | 26-Jan-18 | 26-Jan-18 | | |
| Date of Sample Analysis | | 5-Feb-18 | 5-Feb-18 | | |
| Certificate of Analysis Number | | 18T306685 | 18T306685 | | |
| Laboratory I.D. | | 9037681 | 9037682 | | |
| 2-and 1-methyl Naphthalene | 0.05 | <0.05 | <0.05 | nc | >100% |
| Acenaphthene | 0.05 | <0.05 | <0.05 | nc | >100% |
| Acenaphthylene | 0.05 | <0.05 | <0.05 | nc | >100% |
| Anthracene | 0.05 | 0.13 | 0.13 | 0 | >100% |
| Benzo(a)anthracene | 0.05 | 0.5 | 0.42 | 17 | >100% |
| Benzo(a)pyrene | 0.05 | 0.35 | 0.31 | 12 | >100% |
| Benzo(b)fluoranthene | 0.05 | 0.51 | 0.4 | 24 | >100% |
| Benzo(g,h,i)perylene | 0.05 | 0.16 | 0.13 | 21 | >100% |
| Benzo(k)fluoranthene | 0.05 | 0.25 | 0.25 | 0 | >100% |
| Chrysene | 0.05 | 0.47 | 0.46 | 2 | >100% |
| Dibenzo(a,h)anthracene | 0.05 | <0.05 | <0.05 | nc | >100% |
| Fluoranthene | 0.05 | 0.94 | 0.88 | 7 | >100% |
| Fluorene | 0.05 | <0.05 | 0.06 | nc | >100% |
| Indeno(1,2,3-cd)pyrene | 0.05 | 0.15 | 0.13 | 14 | >100% |
| Naphthalene | 0.05 | <0.05 | <0.05 | nc | >100% |
| Phenanthrene | 0.05 | 0.52 | 0.6 | 14 | >100% |
| Pyrene | 0.05 | 0.83 | 0.73 | 13 | >100% |

NOTES:

Analysis by AGAT Laboratories.

All results in ppm (µg/g) and based on dry weight basis.

* Minimum Analytical Reporting Detection Limit (MDL) is listed. Refer to individual Certificate of Analyses for sample-specific Reporting Detection Limit (RDL) value.

'nc' means "not calculable", since one (or both) of the results are less than the RDL.

Exceedences of alert limits are shown in **bold**.

# SOIL FIELD DUPLICATES - RELATIVE PERCENT DIFFERENCES

## Volatile Organic Compounds

11 Yorkville Avenue, Toronto, Ontario

February 2018



| Sample I.D. | MDL* | Test Hole TH1-SS5 | Duplicate of TH1-SS5 TH1-SS501 | RPD | Alert Limit |
|---|---|---|---|---|---|
| Depth (m) | | 3.1 to 3.7 | 3.1 to 3.7 | | |
| Soil Type | | sand | sand | | |
| Date of Sample Collection | | 25-Jan-18 | 25-Jan-18 | | |
| Date of Sample Analysis | | 1-Feb-18 | 1-Feb-18 | | |
| Certificate of Analysis Number | | 18T306685 | 18T306685 | | |
| Laboratory I.D. | | 9037673 | 9037674 | | |
| 1,1,1,2-Tetrachloroethane | 0.04 | <0.04 | <0.04 | nc | >100% |
| 1,1,1-Trichloroethane | 0.05 | <0.05 | <0.05 | nc | >100% |
| 1,1,2,2-Tetrachloroethane | 0.05 | <0.05 | <0.05 | nc | >100% |
| 1,1,2-Trichloroethane | 0.04 | <0.04 | <0.04 | nc | >100% |
| 1,1-Dichloroethane | 0.02 | <0.02 | <0.02 | nc | >100% |
| 1,1-Dichloroethylene | 0.05 | <0.05 | <0.05 | nc | >100% |
| 1,2-Dichlorobenzene | 0.05 | <0.05 | <0.05 | nc | >100% |
| 1,2-Dichloroethane | 0.03 | <0.03 | <0.03 | nc | >100% |
| 1,2-Dichloropropane | 0.03 | <0.03 | <0.03 | nc | >100% |
| 1,3-Dichlorobenzene | 0.05 | <0.05 | <0.05 | nc | >100% |
| 1,3-Dichloropropene | 0.04 | <0.04 | <0.04 | nc | >100% |
| 1,4-Dichlorobenzene | 0.05 | <0.05 | <0.05 | nc | >100% |
| Acetone | 0.50 | <0.50 | <0.50 | nc | >100% |
| Benzene | 0.02 | <0.02 | <0.02 | nc | >100% |
| Bromodichloromethane | 0.05 | <0.05 | <0.05 | nc | >100% |
| Bromoform | 0.05 | <0.05 | <0.05 | nc | >100% |
| Bromomethane | 0.05 | <0.05 | <0.05 | nc | >100% |
| Carbon Tetrachloride | 0.05 | <0.05 | <0.05 | nc | >100% |
| Chlorobenzene | 0.05 | <0.05 | <0.05 | nc | >100% |
| Chloroform | 0.04 | <0.04 | <0.04 | nc | >100% |
| cis- 1,2-Dichloroethylene | 0.02 | <0.02 | <0.02 | nc | >100% |
| Dibromochloromethane | 0.05 | <0.05 | <0.05 | nc | >100% |
| Dichlorodifluoromethane | 0.05 | <0.05 | <0.05 | nc | >100% |
| Ethylbenzene | 0.05 | <0.05 | <0.05 | nc | >100% |
| Ethylene Dibromide | 0.04 | <0.04 | <0.04 | nc | >100% |
| Methyl Ethyl Ketone | 0.50 | <0.50 | <0.50 | nc | >100% |
| Methyl Isobutyl Ketone | 0.50 | <0.50 | <0.50 | nc | >100% |
| Methyl tert-butyl ether | 0.05 | <0.05 | <0.05 | nc | >100% |
| Methylene Chloride | 0.05 | <0.05 | <0.05 | nc | >100% |
| n-Hexane | 0.05 | <0.05 | <0.05 | nc | >100% |
| Styrene | 0.05 | <0.05 | <0.05 | nc | >100% |
| Tetrachloroethylene | 0.05 | 0.71 | 0.67 | 6 | >100% |
| Toluene | 0.02 | <0.02 | <0.02 | nc | >100% |
| trans- 1,2-Dichloroethylene | 0.05 | <0.05 | <0.05 | nc | >100% |
| Trichloroethylene | 0.03 | <0.03 | <0.03 | nc | >100% |
| Trichlorofluoromethane | 0.05 | <0.05 | <0.05 | nc | >100% |
| Vinyl Chloride | 0.02 | <0.02 | <0.02 | nc | >100% |
| Xylene Mixture | 0.05 | <0.05 | <0.05 | nc | >100% |

NOTES:

Analysis by AGAT Laboratories.

All results in ppm (µg/g) and based on dry weight basis.

* Minimum Analytical Reporting Detection Limit (MDL) is listed. Refer to individual Certificate of Analyses for sample-specific Reporting Detection Limit (RDL) value.

'nc' means "not calculable", since one (or both) of the results are less than the Reporting Detection Limit (RDL).

Exceedences of alert limits are shown in **bold**.

# SOIL FIELD DUPLICATES - RELATIVE PERCENT DIFFERENCES

## Metals, Hydride-Forming Metals and Other Regulated Parameters

11 Yorkville Avenue, Toronto, Ontario

February 2018



| Sample I.D. | MDL* | Test Hole TH2-SS2 | Duplicate of TH2-SS2 TH2-SS201 | RPD | Alert Limit |
|---|---|---|---|---|---|
| Depth (m) | | 0.8 to 1.4 | 0.8 to 1.4 | | |
| Soil Type | | sand | sand | | |
| Date of Sample Collection | | 26-Jan-18 | 26-Jan-18 | | |
| Date of Sample Analysis | | 1-Feb-18 | 1-Feb-18 | | |
| Certificate of Analysis Number | | 18T306685 | 18T306685 | | |
| Laboratory I.D. | | 9037683 | 9037684 | | |
| Antimony | 0.8 | <0.8 | <0.8 | nc | >100% |
| Arsenic | 1 | 3 | 3 | 0 | >100% |
| Barium | 2 | 21 | 18 | 15 | >100% |
| Beryllium | 0.5 | <0.5 | <0.5 | nc | >100% |
| Boron | 5 | <5 | <5 | nc | >100% |
| Boron (Hot Water Soluble) | 0.10 | 0.28 | 0.29 | 4 | >100% |
| Cadmium | 0.5 | <0.5 | <0.5 | nc | >100% |
| Chromium | 2 | 5 | 5 | 0 | >100% |
| Chromium VI | 0.2 | <0.2 | <0.2 | nc | >100% |
| Cobalt | 0.5 | 1.6 | 1.6 | 0 | >100% |
| Copper | 1 | 6 | 5 | 18 | >100% |
| Cyanide | 0.040 | <0.040 | <0.040 | nc | >100% |
| Lead | 1 | 27 | 22 | 20 | >100% |
| Mercury | 0.10 | <0.10 | <0.10 | nc | >100% |
| Molybdenum | 0.5 | <0.5 | <0.5 | nc | >100% |
| Nickel | 1 | 4 | 3 | 29 | >100% |
| Selenium | 0.4 | <0.4 | <0.4 | nc | >100% |
| Silver | 0.2 | <0.2 | <0.2 | nc | >100% |
| Thallium | 0.4 | <0.4 | <0.4 | nc | >100% |
| Uranium | 0.5 | <0.5 | <0.5 | nc | >100% |
| Vanadium | 1 | 10 | 9 | 11 | >100% |
| Zinc | 5 | 37 | 28 | 28 | >100% |
| Electrical Conductivity (2:1) | 0.005 | 0.127 | 0.131 | 3 | >100% |
| Sodium Adsorption Ratio | NV | 0.358 | 0.343 | 4 | >100% |

NOTES:

Analysis by AGAT Laboratories.

All results in ppm (µg/g) and based on dry weight basis.

* Minimum Analytical Reporting Detection Limit (MDL) is listed. Refer to individual Certificate of Analyses for sample-specific Reporting Detection Limit (RDL) value.

'nc' means "not calculable", since one (or both) of the results are less than the Reporting Detection Limit (RDL).

Exceedences of alert limits are shown in **bold**.

# GROUND WATER FIELD DUPLICATES - RELATIVE PERCENT DIFFERENCES

## Petroleum Hydrocarbon Parameters

11 Yorkville Avenue, Toronto, Ontario

February 2018



| Sample I.D. | MDL* | Monitor MW04 | Duplicate of MW04 MW040 | RPD | Alert Limit |
|---|---|---|---|---|---|
| Depth (m) | | 0.61 to 3.05 | 0.61 to 3.05 | | |
| Date of Sample Collection | | 28-Nov-17 | 28-Nov-17 | | |
| Date of Sample Analysis | | 5-Dec-17 | 5-Dec-17 | | |
| Certificate of Analysis Number | | B7R0003 | B7R0003 | | |
| Laboratory I.D. | | FQT607 | FQT612 | | |
| Benzene | 0.20 | <0.20 | NA | nc | >80% |
| Toluene | 0.20 | 0.26 | NA | nc | >80% |
| Ethylbenzene | 0.10 | <0.20 | NA | nc | >80% |
| Xylene Mixture (Total) | 0.20 | 0.23 | NA | nc | >80% |
| PHC F1 (C6 to C10) - BTEX | 25 | <25 | NA | nc | >80% |
| PHC F2 (C10 to C16) | 100 | <100 | <100 | nc | >80% |
| PHC F3 (C16 to C34) | 100 | <200 | <200 | nc | >80% |
| PHC F4 (C34 to C50) | 100 | <200 | <200 | nc | >80% |

NOTES:

Analysis by Maxxam Analytics.

NA means 'not analyzed'.

All results in ppb (µg/L).

* Minimum Analytical Reporting Detection Limit (MDL) is listed. Refer to individual Certificate of Analyses for sample-specific Reporting Detection Limit (RDL) value.

'nc' means "not calculable", since one (or both) of the results are less than the RDL.

Exceedences of alert limits are shown in **bold**.

# GROUND WATER FIELD DUPLICATES - RELATIVE PERCENT DIFFERENCES

## Petroleum Hydrocarbon Parameters

11 Yorkville Avenue, Toronto, Ontario

February 2018



| Sample I.D. | MDL* | Monitor TH3 | Duplicate of TH3 TH300 | RPD | Alert Limit |
|---|---|---|---|---|---|
| Depth (m) | | 2.7 to 5.8 | 2.7 to 5.8 | | |
| Date of Sample Collection | | 31-Jan-18 | 31-Jan-18 | | |
| Date of Sample Analysis | | 6-Feb-18 | 6-Feb-18 | | |
| Certificate of Analysis Number | | 18T307737 | 18T307737 | | |
| Laboratory I.D. | | 9042565 | 9042711 | | |
| Benzene | 0.20 | <0.20 | <0.20 | nc | >80% |
| Toluene | 0.20 | <0.20 | <0.20 | nc | >80% |
| Ethylbenzene | 0.10 | <0.10 | <0.10 | nc | >80% |
| Xylene Mixture (Total) | 0.20 | <0.20 | <0.20 | nc | >80% |
| PHC F1 (C6 to C10) - BTEX | 25 | <25 | <25 | nc | >80% |
| PHC F2 (C10 to C16) | 100 | <100 | <100 | nc | >80% |
| PHC F3 (C16 to C34) | 100 | <100 | <100 | nc | >80% |
| PHC F4 (C34 to C50) | 100 | <100 | <100 | nc | >80% |

NOTES:

Analysis by AGAT Laboratories.

All results in ppb (µg/L).

* Minimum Analytical Reporting Detection Limit (MDL) is listed. Refer to individual Certificate of Analyses for sample-specific Reporting Detection Limit (RDL) value.

'nc' means "not calculable", since one (or both) of the results are less than the RDL.

Exceedences of alert limits are shown in **bold**.

# GROUND WATER FIELD DUPLICATES - RELATIVE PERCENT DIFFERENCES

## Volatile Organic Compounds

11 Yorkville Avenue, Toronto, Ontario

February 2018



| Sample I.D. | MDL* | Monitor MW02 | Duplicate of MW02 MW020 | RPD | Alert Limit |
|---|---|---|---|---|---|
| Depth (m) | | 2.13 to 5.18 | 2.13 to 5.18 | | |
| Date of Sample Collection | | 28-Nov-17 | 28-Nov-17 | | |
| Date of Sample Analysis | | 5-Dec-17 | 5-Dec-17 | | |
| Certificate of Analysis Number | | B7R0003 | B7R0003 | | |
| Laboratory I.D. | | FQT606 | FQT611 | | |
| 1,1,1,2-Tetrachloroethane | 0.10 | <0.50 | <0.50 | nc | >80% |
| 1,1,1-Trichloroethane | 0.30 | <0.20 | <0.20 | nc | >80% |
| 1,1,2,2-Tetrachloroethane | 0.10 | <0.50 | <0.50 | nc | >80% |
| 1,1,2-Trichloroethane | 0.20 | <0.50 | <0.50 | nc | >80% |
| 1,1-Dichloroethane | 0.30 | <0.20 | <0.20 | nc | >80% |
| 1,1-Dichloroethylene | 0.30 | <0.20 | <0.20 | nc | >80% |
| 1,2-Dichlorobenzene | 0.10 | <0.50 | <0.50 | nc | >80% |
| 1,2-Dichloroethane | 0.20 | <0.50 | <0.50 | nc | >80% |
| 1,2-Dichloropropane | 0.20 | 0.75 | 0.85 | 13 | >80% |
| 1,3-Dichlorobenzene | 0.10 | <0.50 | <0.50 | nc | >80% |
| 1,3-Dichloropropene | 0.30 | <0.50 | <0.50 | nc | >80% |
| 1,4-Dichlorobenzene | 0.10 | <0.50 | <0.50 | nc | >80% |
| Acetone | 1.0 | <10 | <10 | nc | >80% |
| Benzene | 0.20 | <0.20 | <0.20 | nc | >80% |
| Bromodichloromethane | 0.20 | <0.50 | <0.50 | nc | >80% |
| Bromoform | 0.10 | <1.0 | <1.0 | nc | >80% |
| Bromomethane | 0.20 | <0.50 | <0.50 | nc | >80% |
| Carbon Tetrachloride | 0.20 | <0.20 | <0.20 | nc | >80% |
| Chlorobenzene | 0.10 | <0.20 | <0.20 | nc | >80% |
| Chloroform | 0.20 | <0.20 | <0.20 | nc | >80% |
| cis- 1,2-Dichloroethylene | 0.20 | <0.50 | <0.50 | nc | >80% |
| Dibromochloromethane | 0.10 | <0.50 | <0.50 | nc | >80% |
| Dichlorodifluoromethane | 0.20 | <1.0 | <1.0 | nc | >80% |
| Ethylbenzene | 0.10 | <0.20 | <0.20 | nc | >80% |
| Ethylene Dibromide | 0.10 | <0.20 | <0.20 | nc | >80% |
| Methyl Ethyl Ketone | 1.0 | <10 | <10 | nc | >80% |
| Methyl Isobutyl Ketone | 1.0 | <5.0 | <5.0 | nc | >80% |
| Methyl tert-butyl ether | 0.20 | <0.50 | <0.50 | nc | >80% |
| Methylene Chloride | 0.30 | <2.0 | <2.0 | nc | >80% |
| n-Hexane | 0.20 | <1.0 | <1.0 | nc | >80% |
| Styrene | 0.10 | <0.50 | <0.50 | nc | >80% |
| Tetrachloroethylene | 0.20 | 120 | 100 | 18 | >80% |
| Toluene | 0.20 | <0.20 | <0.20 | nc | >80% |
| trans- 1,2-Dichloroethylene | 0.20 | <0.50 | <0.50 | nc | >80% |
| Trichloroethylene | 0.20 | 1.3 | 1.4 | 7 | >80% |
| Trichlorofluoromethane | 0.40 | <0.50 | <0.50 | nc | >80% |
| Vinyl Chloride | 0.17 | <0.20 | <0.20 | nc | >80% |
| Xylene Mixture | 0.20 | <0.20 | <0.20 | nc | >80% |

NOTES:

Analysis by Maxxam Analytics.

All results in ppb (µg/L).

* Minimum Analytical Reporting Detection Limit (MDL) is listed. Refer to individual Certificate of Analyses for sample-specific Reporting Detection Limit (RDL) value.

'nc' means "not calculable", since one (or both) of the results are less than the RDL.

Exceedences of alert limits are shown in **bold**.

# GROUND WATER FIELD DUPLICATES - RELATIVE PERCENT DIFFERENCES

## Volatile Organic Compounds

11 to 25 Yorkville Avenue and 12 to 32 Cumberland Street, Toronto, Ontario

February 2018



| Sample I.D. | MDL* | Monitor TH3 | Duplicate of TH3 TH300 | RPD | Alert Limit |
|---|---|---|---|---|---|
| Depth (m) | | 2.7 to 5.8 | 2.7 to 5.8 | | |
| Date of Sample Collection | | 31-Jan-18 | 31-Jan-18 | | |
| Date of Sample Analysis | | 6-Feb-18 | 6-Feb-18 | | |
| Certificate of Analysis Number | | 18T307737 | 18T307737 | | |
| Laboratory I.D. | | 9042565 | 9042711 | | |
| 1,1,1,2-Tetrachloroethane | 0.10 | <0.10 | <0.10 | nc | >80% |
| 1,1,1-Trichloroethane | 0.30 | <0.30 | <0.30 | nc | >80% |
| 1,1,2,2-Tetrachloroethane | 0.10 | <0.10 | <0.10 | nc | >80% |
| 1,1,2-Trichloroethane | 0.20 | <0.20 | <0.20 | nc | >80% |
| 1,1-Dichloroethane | 0.30 | <0.30 | <0.30 | nc | >80% |
| 1,1-Dichloroethylene | 0.30 | <0.30 | <0.30 | nc | >80% |
| 1,2-Dichlorobenzene | 0.10 | <0.10 | <0.10 | nc | >80% |
| 1,2-Dichloroethane | 0.20 | <0.20 | <0.20 | nc | >80% |
| 1,2-Dichloropropane | 0.20 | <0.20 | <0.20 | nc | >80% |
| 1,3-Dichlorobenzene | 0.10 | <0.10 | <0.10 | nc | >80% |
| 1,3-Dichloropropene | 0.30 | <0.30 | <0.30 | nc | >80% |
| 1,4-Dichlorobenzene | 0.10 | <0.10 | <0.10 | nc | >80% |
| Acetone | 1.0 | <1.0 | <1.0 | nc | >80% |
| Benzene | 0.20 | <0.20 | <0.20 | nc | >80% |
| Bromodichloromethane | 0.20 | <0.20 | <0.20 | nc | >80% |
| Bromoform | 0.10 | <0.10 | <0.10 | nc | >80% |
| Bromomethane | 0.20 | <0.20 | <0.20 | nc | >80% |
| Carbon Tetrachloride | 0.20 | <0.20 | <0.20 | nc | >80% |
| Chlorobenzene | 0.10 | <0.10 | <0.10 | nc | >80% |
| Chloroform | 0.20 | <0.20 | <0.20 | nc | >80% |
| cis- 1,2-Dichloroethylene | 0.20 | <0.20 | <0.20 | nc | >80% |
| Dibromochloromethane | 0.10 | <0.10 | <0.10 | nc | >80% |
| Dichlorodifluoromethane | 0.20 | <0.20 | <0.20 | nc | >80% |
| Ethylbenzene | 0.10 | <0.10 | <0.10 | nc | >80% |
| Ethylene Dibromide | 0.10 | <0.10 | <0.10 | nc | >80% |
| Methyl Ethyl Ketone | 1.0 | <1.0 | <1.0 | nc | >80% |
| Methyl Isobutyl Ketone | 1.0 | <1.0 | <1.0 | nc | >80% |
| Methyl tert-butyl ether | 0.20 | <0.20 | <0.20 | nc | >80% |
| Methylene Chloride | 0.30 | <0.30 | <0.30 | nc | >80% |
| n-Hexane | 0.20 | <0.20 | <0.20 | nc | >80% |
| Styrene | 0.10 | <0.10 | <0.10 | nc | >80% |
| Tetrachloroethylene | 0.20 | 26 | 28 | 7 | >80% |
| Toluene | 0.20 | <0.20 | <0.20 | nc | >80% |
| trans- 1,2-Dichloroethylene | 0.20 | <0.20 | <0.20 | nc | >80% |
| Trichloroethylene | 0.20 | <0.20 | <0.20 | nc | >80% |
| Trichlorofluoromethane | 0.40 | <0.40 | <0.40 | nc | >80% |
| Vinyl Chloride | 0.17 | <0.17 | <0.17 | nc | >80% |
| Xylene Mixture | 0.20 | <0.20 | <0.20 | nc | >80% |

NOTES:

Analysis by AGAT Laboratories.

All results in ppb (µg/L).

* Minimum Analytical Reporting Detection Limit (MDL) is listed. Refer to individual Certificate of Analyses for sample-specific Reporting Detection Limit (RDL) value.

'nc' means "not calculable", since one (or both) of the results are less than the RDL.

Exceedences of alert limits are shown in **bold**.

# Appendix G:
# Laboratory Certificates of Analysis

Maxxam
A Bureau Veritas Group Company

Your Project #: MRK-00242474-A0
Your C.O.C. #: 641024-01-01

**Attention:Leah Whittaker**

exp Services Inc
220 Commerce Valley Dr W
Suite 500
Markham, ON
CANADA L3T 0A8

**Report Date: 2017/12/05**
Report #: R4894792
Version: 1 - Final

# CERTIFICATE OF ANALYSIS

**MAXXAM JOB #: B7R0003**
**Received: 2017/11/29, 15:00**

Sample Matrix: Water
# Samples Received: 9

| Analyses | Quantity | Date Extracted | Date Analyzed | Laboratory Method | Reference |
|---|---|---|---|---|---|
| 1,3-Dichloropropene Sum | 8 | N/A | 2017/12/05 | | EPA 8260C m |
| Petroleum Hydrocarbons F2-F4 in Water (1) | 5 | 2017/12/03 | 2017/12/04 | CAM SOP-00316 | CCME PHC-CWS m |
| Volatile Organic Compounds and F1 PHCs | 5 | N/A | 2017/12/05 | CAM SOP-00230 | EPA 8260C m |
| Volatile Organic Compounds in Water | 3 | N/A | 2017/12/05 | 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) All CCME PHC results met required criteria unless otherwise stated in the report. The CWS PHC methods employed by Maxxam conform to all prescribed elements of the reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following "Alberta Environment's Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil Validation of Performance-Based Alternative Methods September 2003". Documentation is available upon request. Modifications from Reference Method for the Canada-wide Standard for Petroleum Hydrocarbons in Soil-Tier 1 Method: F2/F3/F4 data reported using validated cold solvent extraction instead of Soxhlet extraction.

Your Project #: MRK-00242474-A0
Your C.O.C. #: 641024-01-01

**Attention:Leah Whittaker**

exp Services Inc
220 Commerce Valley Dr W
Suite 500
Markham, ON
CANADA L3T 0A8

**Report Date: 2017/12/05**
Report #: R4894792
Version: 1 - Final

# CERTIFICATE OF ANALYSIS

**MAXXAM JOB #: B7R0003**
**Received: 2017/11/29, 15:00**

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Ashton Gibson, Project Manager
Email: AGibson@maxxam.ca
Phone# (905) 817-5700
==========
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 #: B7R0003
Report Date: 2017/12/05

exp Services Inc
Client Project #: MRK-00242474-A0
Sampler Initials: HN

## VOLATILE ORGANICS BY GC/MS (WATER)

| Maxxam ID | | | FQT605 | FQT606 | | | FQT607 | FQT608 | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Sampling Date | | | 2017/11/28 | 2017/11/28 | | | 2017/11/28 | 2017/11/28 | | |
| COC Number | | | 641024-01-01 | 641024-01-01 | | | 641024-01-01 | 641024-01-01 | | |
| | **UNITS** | **Criteria** | **MW01** | **MW02** | **RDL** | **QC Batch** | **MW04** | **BH1** | **RDL** | **QC Batch** |
| **Calculated Parameters** | | | | | | | | | | |
| 1,3-Dichloropropene (cis+trans) | ug/L | **45** | ND | ND | 0.50 | 5292089 | ND | ND | 0.50 | 5292089 |
| **Volatile Organics** | | | | | | | | | | |
| Acetone (2-Propanone) | ug/L | **130000** | ND | ND | 10 | 5294552 | ND | ND | 10 | 5295153 |
| Benzene | ug/L | **430** | ND | ND | 0.20 | 5294552 | ND | ND | 0.20 | 5295153 |
| Bromodichloromethane | ug/L | **85000** | ND | ND | 0.50 | 5294552 | ND | ND | 0.50 | 5295153 |
| Bromoform | ug/L | **770** | ND | ND | 1.0 | 5294552 | ND | ND | 1.0 | 5295153 |
| Bromomethane | ug/L | **56** | ND | ND | 0.50 | 5294552 | ND | ND | 0.50 | 5295153 |
| Carbon Tetrachloride | ug/L | **8.4** | ND | ND | 0.20 | 5294552 | ND | ND | 0.20 | 5295153 |
| Chlorobenzene | ug/L | **630** | ND | ND | 0.20 | 5294552 | ND | ND | 0.20 | 5295153 |
| Chloroform | ug/L | **22** | ND | ND | 0.20 | 5294552 | ND | ND | 0.20 | 5295153 |
| Dibromochloromethane | ug/L | **82000** | ND | ND | 0.50 | 5294552 | ND | ND | 0.50 | 5295153 |
| 1,2-Dichlorobenzene | ug/L | **9600** | ND | ND | 0.50 | 5294552 | ND | ND | 0.50 | 5295153 |
| 1,3-Dichlorobenzene | ug/L | **9600** | ND | ND | 0.50 | 5294552 | ND | ND | 0.50 | 5295153 |
| 1,4-Dichlorobenzene | ug/L | **67** | ND | ND | 0.50 | 5294552 | ND | ND | 0.50 | 5295153 |
| Dichlorodifluoromethane (FREON 12) | ug/L | **4400** | ND | ND | 1.0 | 5294552 | ND | ND | 1.0 | 5295153 |
| 1,1-Dichloroethane | ug/L | **3100** | ND | ND | 0.20 | 5294552 | 0.41 | ND | 0.20 | 5295153 |
| 1,2-Dichloroethane | ug/L | **12** | ND | ND | 0.50 | 5294552 | ND | ND | 0.50 | 5295153 |
| 1,1-Dichloroethylene | ug/L | **17** | ND | ND | 0.20 | 5294552 | ND | ND | 0.20 | 5295153 |
| cis-1,2-Dichloroethylene | ug/L | **17** | ND | ND | 0.50 | 5294552 | 2.1 | ND | 0.50 | 5295153 |
| trans-1,2-Dichloroethylene | ug/L | **17** | ND | ND | 0.50 | 5294552 | 1.1 | ND | 0.50 | 5295153 |
| 1,2-Dichloropropane | ug/L | **140** | ND | 0.75 | 0.20 | 5294552 | ND | ND | 0.20 | 5295153 |
| cis-1,3-Dichloropropene | ug/L | **45** | ND | ND | 0.30 | 5294552 | ND | ND | 0.30 | 5295153 |
| trans-1,3-Dichloropropene | ug/L | **45** | ND | ND | 0.40 | 5294552 | ND | ND | 0.40 | 5295153 |
| Ethylbenzene | ug/L | **2300** | ND | ND | 0.20 | 5294552 | ND | ND | 0.20 | 5295153 |
| Ethylene Dibromide | ug/L | **0.83** | ND | ND | 0.20 | 5294552 | ND | ND | 0.20 | 5295153 |
| Hexane | ug/L | **520** | ND | ND | 1.0 | 5294552 | ND | ND | 1.0 | 5295153 |
| Methylene Chloride(Dichloromethane) | ug/L | **5500** | ND | ND | 2.0 | 5294552 | ND | ND | 2.0 | 5295153 |
| Methyl Ethyl Ketone (2-Butanone) | ug/L | **1500000** | ND | ND | 10 | 5294552 | ND | ND | 10 | 5295153 |
| Methyl Isobutyl Ketone | ug/L | **580000** | ND | ND | 5.0 | 5294552 | ND | ND | 5.0 | 5295153 |
| Methyl t-butyl ether (MTBE) | ug/L | **1400** | ND | ND | 0.50 | 5294552 | ND | ND | 0.50 | 5295153 |
| Styrene | ug/L | **9100** | ND | ND | 0.50 | 5294552 | ND | ND | 0.50 | 5295153 |

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
Non- Potable Ground Water - All Types of Property Uses - Medium and Fine Texture Soil
ND = Not detected



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

Maxxam Job #: B7R0003
Report Date: 2017/12/05

exp Services Inc
Client Project #: MRK-00242474-A0
Sampler Initials: HN

## VOLATILE ORGANICS BY GC/MS (WATER)

| Maxxam ID | | | FQT605 | FQT606 | | | FQT607 | FQT608 | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Sampling Date | | | 2017/11/28 | 2017/11/28 | | | 2017/11/28 | 2017/11/28 | | |
| COC Number | | | 641024-01-01 | 641024-01-01 | | | 641024-01-01 | 641024-01-01 | | |
| | **UNITS** | **Criteria** | **MW01** | **MW02** | **RDL** | **QC Batch** | **MW04** | **BH1** | **RDL** | **QC Batch** |
| 1,1,1,2-Tetrachloroethane | ug/L | **28** | ND | ND | 0.50 | 5294552 | ND | ND | 0.50 | 5295153 |
| 1,1,2,2-Tetrachloroethane | ug/L | **15** | ND | ND | 0.50 | 5294552 | ND | ND | 0.50 | 5295153 |
| Tetrachloroethylene | ug/L | **17** | **55** | **120** | 0.20 | 5294552 | ND | ND | 0.20 | 5295153 |
| Toluene | ug/L | **18000** | 0.23 | ND | 0.20 | 5294552 | 0.26 | ND | 0.20 | 5295153 |
| 1,1,1-Trichloroethane | ug/L | **6700** | ND | ND | 0.20 | 5294552 | ND | ND | 0.20 | 5295153 |
| 1,1,2-Trichloroethane | ug/L | **30** | ND | ND | 0.50 | 5294552 | ND | ND | 0.50 | 5295153 |
| Trichloroethylene | ug/L | **17** | 0.32 | 1.3 | 0.20 | 5294552 | ND | ND | 0.20 | 5295153 |
| Trichlorofluoromethane (FREON 11) | ug/L | **2500** | ND | ND | 0.50 | 5294552 | ND | ND | 0.50 | 5295153 |
| Vinyl Chloride | ug/L | **1.7** | ND | ND | 0.20 | 5294552 | **2.1** | ND | 0.20 | 5295153 |
| p+m-Xylene | ug/L | - | ND | ND | 0.20 | 5294552 | 0.23 | ND | 0.20 | 5295153 |
| o-Xylene | ug/L | - | ND | ND | 0.20 | 5294552 | ND | ND | 0.20 | 5295153 |
| Total Xylenes | ug/L | **4200** | ND | ND | 0.20 | 5294552 | 0.23 | ND | 0.20 | 5295153 |
| F1 (C6-C10) | ug/L | **750** | | | | | ND | ND | 25 | 5295153 |
| F1 (C6-C10) - BTEX | ug/L | **750** | | | | | ND | ND | 25 | 5295153 |
| **Surrogate Recovery (%)** | | | | | | | | | | |
| 4-Bromofluorobenzene | % | - | | | | | 92 | 94 | | 5295153 |
| D4-1,2-Dichloroethane | % | - | | | | | 105 | 107 | | 5295153 |
| D8-Toluene | % | - | | | | | 97 | 97 | | 5295153 |
| 4-Bromofluorobenzene | % | - | 100 | 125 | | 5294552 | | | | |
| D4-1,2-Dichloroethane | % | - | 96 | 100 | | 5294552 | | | | |
| D8-Toluene | % | - | 94 | 100 | | 5294552 | | | | |

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
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ND = Not detected



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Maxxam Job #: B7R0003
Report Date: 2017/12/05

exp Services Inc
Client Project #: MRK-00242474-A0
Sampler Initials: HN

## VOLATILE ORGANICS BY GC/MS (WATER)

| Maxxam ID | | | FQT609 | FQT610 | | | FQT611 | | |
|---|---|---|---|---|---|---|---|---|---|
| Sampling Date | | | 2017/11/28 | 2017/11/28 | | | 2017/11/28 | | |
| COC Number | | | 641024-01-01 | 641024-01-01 | | | 641024-01-01 | | |
| | **UNITS** | **Criteria** | **BH15-3** | **BH15-3S** | **RDL** | **QC Batch** | **MW020** | **RDL** | **QC Batch** |
| **Calculated Parameters** | | | | | | | | | |
| 1,3-Dichloropropene (cis+trans) | ug/L | **45** | ND | ND | 0.50 | 5292089 | ND | 0.50 | 5292089 |
| **Volatile Organics** | | | | | | | | | |
| Acetone (2-Propanone) | ug/L | **130000** | 69 | ND | 10 | 5295153 | ND | 10 | 5294552 |
| Benzene | ug/L | **430** | ND | ND | 0.20 | 5295153 | ND | 0.20 | 5294552 |
| Bromodichloromethane | ug/L | **85000** | ND | ND | 0.50 | 5295153 | ND | 0.50 | 5294552 |
| Bromoform | ug/L | **770** | ND | ND | 1.0 | 5295153 | ND | 1.0 | 5294552 |
| Bromomethane | ug/L | **56** | ND | ND | 0.50 | 5295153 | ND | 0.50 | 5294552 |
| Carbon Tetrachloride | ug/L | **8.4** | ND | ND | 0.20 | 5295153 | ND | 0.20 | 5294552 |
| Chlorobenzene | ug/L | **630** | ND | ND | 0.20 | 5295153 | ND | 0.20 | 5294552 |
| Chloroform | ug/L | **22** | ND | ND | 0.20 | 5295153 | ND | 0.20 | 5294552 |
| Dibromochloromethane | ug/L | **82000** | ND | ND | 0.50 | 5295153 | ND | 0.50 | 5294552 |
| 1,2-Dichlorobenzene | ug/L | **9600** | ND | ND | 0.50 | 5295153 | ND | 0.50 | 5294552 |
| 1,3-Dichlorobenzene | ug/L | **9600** | ND | ND | 0.50 | 5295153 | ND | 0.50 | 5294552 |
| 1,4-Dichlorobenzene | ug/L | **67** | ND | ND | 0.50 | 5295153 | ND | 0.50 | 5294552 |
| Dichlorodifluoromethane (FREON 12) | ug/L | **4400** | ND | ND | 1.0 | 5295153 | ND | 1.0 | 5294552 |
| 1,1-Dichloroethane | ug/L | **3100** | ND | ND | 0.20 | 5295153 | ND | 0.20 | 5294552 |
| 1,2-Dichloroethane | ug/L | **12** | ND | ND | 0.50 | 5295153 | ND | 0.50 | 5294552 |
| 1,1-Dichloroethylene | ug/L | **17** | ND | ND | 0.20 | 5295153 | ND | 0.20 | 5294552 |
| cis-1,2-Dichloroethylene | ug/L | **17** | ND | ND | 0.50 | 5295153 | ND | 0.50 | 5294552 |
| trans-1,2-Dichloroethylene | ug/L | **17** | ND | ND | 0.50 | 5295153 | ND | 0.50 | 5294552 |
| 1,2-Dichloropropane | ug/L | **140** | ND | ND | 0.20 | 5295153 | 0.85 | 0.20 | 5294552 |
| cis-1,3-Dichloropropene | ug/L | **45** | ND | ND | 0.30 | 5295153 | ND | 0.30 | 5294552 |
| trans-1,3-Dichloropropene | ug/L | **45** | ND | ND | 0.40 | 5295153 | ND | 0.40 | 5294552 |
| Ethylbenzene | ug/L | **2300** | ND | ND | 0.20 | 5295153 | ND | 0.20 | 5294552 |
| Ethylene Dibromide | ug/L | **0.83** | ND | ND | 0.20 | 5295153 | ND | 0.20 | 5294552 |
| Hexane | ug/L | **520** | ND | ND | 1.0 | 5295153 | ND | 1.0 | 5294552 |
| Methylene Chloride(Dichloromethane) | ug/L | **5500** | ND | ND | 2.0 | 5295153 | ND | 2.0 | 5294552 |
| Methyl Ethyl Ketone (2-Butanone) | ug/L | **1500000** | ND | ND | 10 | 5295153 | ND | 10 | 5294552 |
| Methyl Isobutyl Ketone | ug/L | **580000** | ND | ND | 5.0 | 5295153 | ND | 5.0 | 5294552 |
| Methyl t-butyl ether (MTBE) | ug/L | **1400** | ND | ND | 0.50 | 5295153 | ND | 0.50 | 5294552 |
| Styrene | ug/L | **9100** | ND | ND | 0.50 | 5295153 | ND | 0.50 | 5294552 |

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
Non- Potable Ground Water - All Types of Property Uses - Medium and Fine Texture Soil
ND = Not detected



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Maxxam Job #: B7R0003
Report Date: 2017/12/05

exp Services Inc
Client Project #: MRK-00242474-A0
Sampler Initials: HN

## VOLATILE ORGANICS BY GC/MS (WATER)

| Maxxam ID | | | FQT609 | FQT610 | | | FQT611 | | |
|---|---|---|---|---|---|---|---|---|---|
| Sampling Date | | | 2017/11/28 | 2017/11/28 | | | 2017/11/28 | | |
| COC Number | | | 641024-01-01 | 641024-01-01 | | | 641024-01-01 | | |
| | **UNITS** | **Criteria** | **BH15-3** | **BH15-3S** | **RDL** | **QC Batch** | **MW020** | **RDL** | **QC Batch** |
| 1,1,1,2-Tetrachloroethane | ug/L | **28** | ND | ND | 0.50 | 5295153 | ND | 0.50 | 5294552 |
| 1,1,2,2-Tetrachloroethane | ug/L | **15** | ND | ND | 0.50 | 5295153 | ND | 0.50 | 5294552 |
| Tetrachloroethylene | ug/L | **17** | ND | 0.57 | 0.20 | 5295153 | **100** | 0.20 | 5294552 |
| Toluene | ug/L | **18000** | 0.30 | ND | 0.20 | 5295153 | ND | 0.20 | 5294552 |
| 1,1,1-Trichloroethane | ug/L | **6700** | ND | ND | 0.20 | 5295153 | ND | 0.20 | 5294552 |
| 1,1,2-Trichloroethane | ug/L | **30** | ND | ND | 0.50 | 5295153 | ND | 0.50 | 5294552 |
| Trichloroethylene | ug/L | **17** | ND | ND | 0.20 | 5295153 | 1.4 | 0.20 | 5294552 |
| Trichlorofluoromethane (FREON 11) | ug/L | **2500** | ND | ND | 0.50 | 5295153 | ND | 0.50 | 5294552 |
| Vinyl Chloride | ug/L | **1.7** | ND | ND | 0.20 | 5295153 | ND | 0.20 | 5294552 |
| p+m-Xylene | ug/L | - | 0.25 | ND | 0.20 | 5295153 | ND | 0.20 | 5294552 |
| o-Xylene | ug/L | - | ND | ND | 0.20 | 5295153 | ND | 0.20 | 5294552 |
| Total Xylenes | ug/L | **4200** | 0.25 | ND | 0.20 | 5295153 | ND | 0.20 | 5294552 |
| F1 (C6-C10) | ug/L | **750** | ND | ND | 25 | 5295153 | | | |
| F1 (C6-C10) - BTEX | ug/L | **750** | ND | ND | 25 | 5295153 | | | |
| **Surrogate Recovery (%)** | | | | | | | | | |
| 4-Bromofluorobenzene | % | - | 91 | 92 | | 5295153 | | | |
| D4-1,2-Dichloroethane | % | - | 104 | 106 | | 5295153 | | | |
| D8-Toluene | % | - | 98 | 97 | | 5295153 | | | |
| 4-Bromofluorobenzene | % | - | | | | | 102 | | 5294552 |
| D4-1,2-Dichloroethane | % | - | | | | | 100 | | 5294552 |
| D8-Toluene | % | - | | | | | 93 | | 5294552 |

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
Non- Potable Ground Water - All Types of Property Uses - Medium and Fine Texture Soil
ND = Not detected



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## VOLATILE ORGANICS BY GC/MS (WATER)

| Maxxam ID | | | FQT613 | | |
|---|---|---|---|---|---|
| Sampling Date | | | 2017/11/28 | | |
| COC Number | | | 641024-01-01 | | |
| | **UNITS** | **Criteria** | **TRIP BLANK** | **RDL** | **QC Batch** |
| **Calculated Parameters** | | | | | |
| 1,3-Dichloropropene (cis+trans) | ug/L | **45** | ND | 0.50 | 5292089 |
| **Volatile Organics** | | | | | |
| Acetone (2-Propanone) | ug/L | **130000** | ND | 10 | 5295153 |
| Benzene | ug/L | **430** | ND | 0.20 | 5295153 |
| Bromodichloromethane | ug/L | **85000** | ND | 0.50 | 5295153 |
| Bromoform | ug/L | **770** | ND | 1.0 | 5295153 |
| Bromomethane | ug/L | **56** | ND | 0.50 | 5295153 |
| Carbon Tetrachloride | ug/L | **8.4** | ND | 0.20 | 5295153 |
| Chlorobenzene | ug/L | **630** | ND | 0.20 | 5295153 |
| Chloroform | ug/L | **22** | ND | 0.20 | 5295153 |
| Dibromochloromethane | ug/L | **82000** | ND | 0.50 | 5295153 |
| 1,2-Dichlorobenzene | ug/L | **9600** | ND | 0.50 | 5295153 |
| 1,3-Dichlorobenzene | ug/L | **9600** | ND | 0.50 | 5295153 |
| 1,4-Dichlorobenzene | ug/L | **67** | ND | 0.50 | 5295153 |
| Dichlorodifluoromethane (FREON 12) | ug/L | **4400** | ND | 1.0 | 5295153 |
| 1,1-Dichloroethane | ug/L | **3100** | ND | 0.20 | 5295153 |
| 1,2-Dichloroethane | ug/L | **12** | ND | 0.50 | 5295153 |
| 1,1-Dichloroethylene | ug/L | **17** | ND | 0.20 | 5295153 |
| cis-1,2-Dichloroethylene | ug/L | **17** | ND | 0.50 | 5295153 |
| trans-1,2-Dichloroethylene | ug/L | **17** | ND | 0.50 | 5295153 |
| 1,2-Dichloropropane | ug/L | **140** | ND | 0.20 | 5295153 |
| cis-1,3-Dichloropropene | ug/L | **45** | ND | 0.30 | 5295153 |
| trans-1,3-Dichloropropene | ug/L | **45** | ND | 0.40 | 5295153 |
| Ethylbenzene | ug/L | **2300** | ND | 0.20 | 5295153 |
| Ethylene Dibromide | ug/L | **0.83** | ND | 0.20 | 5295153 |
| Hexane | ug/L | **520** | ND | 1.0 | 5295153 |
| Methylene Chloride(Dichloromethane) | ug/L | **5500** | ND | 2.0 | 5295153 |
| Methyl Ethyl Ketone (2-Butanone) | ug/L | **1500000** | ND | 10 | 5295153 |
| Methyl Isobutyl Ketone | ug/L | **580000** | ND | 5.0 | 5295153 |

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
Non- Potable Ground Water - All Types of Property Uses - Medium and Fine Texture Soil

ND = Not detected



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Maxxam Job #: B7R0003
Report Date: 2017/12/05

exp Services Inc
Client Project #: MRK-00242474-A0
Sampler Initials: HN

## VOLATILE ORGANICS BY GC/MS (WATER)

| Maxxam ID | | | FQT613 | | |
|---|---|---|---|---|---|
| Sampling Date | | | 2017/11/28 | | |
| COC Number | | | 641024-01-01 | | |
| | **UNITS** | **Criteria** | **TRIP BLANK** | **RDL** | **QC Batch** |
| Methyl t-butyl ether (MTBE) | ug/L | **1400** | ND | 0.50 | 5295153 |
| Styrene | ug/L | **9100** | ND | 0.50 | 5295153 |
| 1,1,1,2-Tetrachloroethane | ug/L | **28** | ND | 0.50 | 5295153 |
| 1,1,2,2-Tetrachloroethane | ug/L | **15** | ND | 0.50 | 5295153 |
| Tetrachloroethylene | ug/L | **17** | ND | 0.20 | 5295153 |
| Toluene | ug/L | **18000** | ND | 0.20 | 5295153 |
| 1,1,1-Trichloroethane | ug/L | **6700** | ND | 0.20 | 5295153 |
| 1,1,2-Trichloroethane | ug/L | **30** | ND | 0.50 | 5295153 |
| Trichloroethylene | ug/L | **17** | ND | 0.20 | 5295153 |
| Trichlorofluoromethane (FREON 11) | ug/L | **2500** | ND | 0.50 | 5295153 |
| Vinyl Chloride | ug/L | **1.7** | ND | 0.20 | 5295153 |
| p+m-Xylene | ug/L | - | ND | 0.20 | 5295153 |
| o-Xylene | ug/L | - | ND | 0.20 | 5295153 |
| Total Xylenes | ug/L | **4200** | ND | 0.20 | 5295153 |
| F1 (C6-C10) | ug/L | **750** | ND | 25 | 5295153 |
| F1 (C6-C10) - BTEX | ug/L | **750** | ND | 25 | 5295153 |
| **Surrogate Recovery (%)** | | | | | |
| 4-Bromofluorobenzene | % | - | 94 | | 5295153 |
| D4-1,2-Dichloroethane | % | - | 105 | | 5295153 |
| D8-Toluene | % | - | 97 | | 5295153 |

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
Non- Potable Ground Water - All Types of Property Uses - Medium and Fine Texture Soil

ND = Not detected



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Maxxam Job #: B7R0003
Report Date: 2017/12/05

exp Services Inc
Client Project #: MRK-00242474-A0
Sampler Initials: HN

## PETROLEUM HYDROCARBONS (CCME)

| Maxxam ID | | | FQT607 | FQT608 | FQT609 | FQT610 | FQT612 | | |
|---|---|---|---|---|---|---|---|---|---|
| Sampling Date | | | 2017/11/28 | 2017/11/28 | 2017/11/28 | 2017/11/28 | 2017/11/28 | | |
| COC Number | | | 641024-01-01 | 641024-01-01 | 641024-01-01 | 641024-01-01 | 641024-01-01 | | |
| | **UNITS** | **Criteria** | **MW04** | **BH1** | **BH15-3** | **BH15-3S** | **MW040** | **RDL** | **QC Batch** |
| **F2-F4 Hydrocarbons** | | | | | | | | | |
| F2 (C10-C16 Hydrocarbons) | ug/L | **150** | ND | ND | ND | ND | ND | 100 | 5296762 |
| F3 (C16-C34 Hydrocarbons) | ug/L | **500** | ND | ND | ND | ND | ND | 200 | 5296762 |
| F4 (C34-C50 Hydrocarbons) | ug/L | **500** | ND | ND | ND | ND | ND | 200 | 5296762 |
| Reached Baseline at C50 | ug/L | **-** | Yes | Yes | Yes | Yes | Yes | | 5296762 |
| **Surrogate Recovery (%)** | | | | | | | | | |
| o-Terphenyl | % | **-** | 98 | 98 | 98 | 98 | 97 | | 5296762 |

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
Non- Potable Ground Water - All Types of Property Uses - Medium and Fine Texture Soil
ND = Not detected



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Maxxam Job #: B7R0003
Report Date: 2017/12/05

exp Services Inc
Client Project #: MRK-00242474-A0
Sampler Initials: HN

## GENERAL COMMENTS

Cooler custody seal was present and intact.

For all samples, all bottles contained visible sediment.

**Results relate only to the items tested.**



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Maxxam Job #: B7R0003
Report Date: 2017/12/05

## QUALITY ASSURANCE REPORT

exp Services Inc
Client Project #: MRK-00242474-A0
Sampler Initials: HN

| | | | Matrix Spike | | SPIKED BLANK | | Method Blank | | RPD | |
|---|---|---|---|---|---|---|---|---|---|---|
| QC Batch | Parameter | Date | % Recovery | QC Limits | % Recovery | QC Limits | Value | UNITS | Value (%) | QC Limits |
| 5294552 | 4-Bromofluorobenzene | 2017/12/04 | 101 | 70 - 130 | 100 | 70 - 130 | 101 | % | | |
| 5294552 | D4-1,2-Dichloroethane | 2017/12/04 | 99 | 70 - 130 | 95 | 70 - 130 | 92 | % | | |
| 5294552 | D8-Toluene | 2017/12/04 | 98 | 70 - 130 | 100 | 70 - 130 | 99 | % | | |
| 5295153 | 4-Bromofluorobenzene | 2017/12/04 | 99 | 70 - 130 | 99 | 70 - 130 | 92 | % | | |
| 5295153 | D4-1,2-Dichloroethane | 2017/12/04 | 106 | 70 - 130 | 103 | 70 - 130 | 102 | % | | |
| 5295153 | D8-Toluene | 2017/12/04 | 98 | 70 - 130 | 99 | 70 - 130 | 98 | % | | |
| 5296762 | o-Terphenyl | 2017/12/04 | 98 | 60 - 130 | 98 | 60 - 130 | 97 | % | | |
| 5294552 | 1,1,1,2-Tetrachloroethane | 2017/12/04 | 104 | 70 - 130 | 106 | 70 - 130 | ND, RDL=0.50 | ug/L | NC | 30 |
| 5294552 | 1,1,1-Trichloroethane | 2017/12/04 | 88 | 70 - 130 | 90 | 70 - 130 | ND, RDL=0.20 | ug/L | NC | 30 |
| 5294552 | 1,1,2,2-Tetrachloroethane | 2017/12/04 | 108 | 70 - 130 | 107 | 70 - 130 | ND, RDL=0.50 | ug/L | NC | 30 |
| 5294552 | 1,1,2-Trichloroethane | 2017/12/04 | 104 | 70 - 130 | 103 | 70 - 130 | ND, RDL=0.50 | ug/L | NC | 30 |
| 5294552 | 1,1-Dichloroethane | 2017/12/04 | 96 | 70 - 130 | 97 | 70 - 130 | ND, RDL=0.20 | ug/L | 3.6 | 30 |
| 5294552 | 1,1-Dichloroethylene | 2017/12/04 | 99 | 70 - 130 | 101 | 70 - 130 | ND, RDL=0.20 | ug/L | NC | 30 |
| 5294552 | 1,2-Dichlorobenzene | 2017/12/04 | 96 | 70 - 130 | 98 | 70 - 130 | ND, RDL=0.50 | ug/L | NC | 30 |
| 5294552 | 1,2-Dichloroethane | 2017/12/04 | 93 | 70 - 130 | 90 | 70 - 130 | ND, RDL=0.50 | ug/L | NC | 30 |
| 5294552 | 1,2-Dichloropropane | 2017/12/04 | 90 | 70 - 130 | 90 | 70 - 130 | ND, RDL=0.20 | ug/L | NC | 30 |
| 5294552 | 1,3-Dichlorobenzene | 2017/12/04 | 98 | 70 - 130 | 102 | 70 - 130 | ND, RDL=0.50 | ug/L | NC | 30 |
| 5294552 | 1,4-Dichlorobenzene | 2017/12/04 | 98 | 70 - 130 | 100 | 70 - 130 | ND, RDL=0.50 | ug/L | NC | 30 |
| 5294552 | Acetone (2-Propanone) | 2017/12/04 | 92 | 60 - 140 | 94 | 60 - 140 | ND, RDL=10 | ug/L | NC | 30 |
| 5294552 | Benzene | 2017/12/04 | 93 | 70 - 130 | 94 | 70 - 130 | ND, RDL=0.20 | ug/L | NC | 30 |
| 5294552 | Bromodichloromethane | 2017/12/04 | 92 | 70 - 130 | 92 | 70 - 130 | ND, RDL=0.50 | ug/L | NC | 30 |
| 5294552 | Bromoform | 2017/12/04 | 111 | 70 - 130 | 110 | 70 - 130 | ND, RDL=1.0 | ug/L | NC | 30 |
| 5294552 | Bromomethane | 2017/12/04 | 94 | 60 - 140 | 91 | 60 - 140 | ND, RDL=0.50 | ug/L | NC | 30 |
| 5294552 | Carbon Tetrachloride | 2017/12/04 | 88 | 70 - 130 | 90 | 70 - 130 | ND, RDL=0.20 | ug/L | NC | 30 |
| 5294552 | Chlorobenzene | 2017/12/04 | 97 | 70 - 130 | 99 | 70 - 130 | ND, RDL=0.20 | ug/L | NC | 30 |
| 5294552 | Chloroform | 2017/12/04 | 90 | 70 - 130 | 91 | 70 - 130 | ND, RDL=0.20 | ug/L | 1.6 | 30 |
| 5294552 | cis-1,2-Dichloroethylene | 2017/12/04 | 90 | 70 - 130 | 90 | 70 - 130 | ND, RDL=0.50 | ug/L | NC | 30 |
| 5294552 | cis-1,3-Dichloropropene | 2017/12/04 | 93 | 70 - 130 | 86 | 70 - 130 | ND, RDL=0.30 | ug/L | NC | 30 |
| 5294552 | Dibromochloromethane | 2017/12/04 | 104 | 70 - 130 | 104 | 70 - 130 | ND, RDL=0.50 | ug/L | NC | 30 |
| 5294552 | Dichlorodifluoromethane (FREON 12) | 2017/12/04 | 85 | 60 - 140 | 86 | 60 - 140 | ND, RDL=1.0 | ug/L | NC | 30 |
| 5294552 | Ethylbenzene | 2017/12/04 | 92 | 70 - 130 | 95 | 70 - 130 | ND, RDL=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 |
| 5294552 | Ethylene Dibromide | 2017/12/04 | 106 | 70 - 130 | 104 | 70 - 130 | ND, RDL=0.20 | ug/L | NC | 30 |
| 5294552 | Hexane | 2017/12/04 | 97 | 70 - 130 | 100 | 70 - 130 | ND, RDL=1.0 | ug/L | NC | 30 |
| 5294552 | Methyl Ethyl Ketone (2-Butanone) | 2017/12/04 | 97 | 60 - 140 | 96 | 60 - 140 | ND, RDL=10 | ug/L | NC | 30 |
| 5294552 | Methyl Isobutyl Ketone | 2017/12/04 | 99 | 70 - 130 | 97 | 70 - 130 | ND, RDL=5.0 | ug/L | NC | 30 |
| 5294552 | Methyl t-butyl ether (MTBE) | 2017/12/04 | 90 | 70 - 130 | 91 | 70 - 130 | ND, RDL=0.50 | ug/L | NC | 30 |
| 5294552 | Methylene Chloride(Dichloromethane) | 2017/12/04 | 92 | 70 - 130 | 91 | 70 - 130 | ND, RDL=2.0 | ug/L | NC | 30 |
| 5294552 | o-Xylene | 2017/12/04 | 93 | 70 - 130 | 98 | 70 - 130 | ND, RDL=0.20 | ug/L | NC | 30 |
| 5294552 | p+m-Xylene | 2017/12/04 | 96 | 70 - 130 | 100 | 70 - 130 | ND, RDL=0.20 | ug/L | NC | 30 |
| 5294552 | Styrene | 2017/12/04 | 95 | 70 - 130 | 99 | 70 - 130 | ND, RDL=0.50 | ug/L | NC | 30 |
| 5294552 | Tetrachloroethylene | 2017/12/04 | 92 | 70 - 130 | 95 | 70 - 130 | ND, RDL=0.20 | ug/L | NC | 30 |
| 5294552 | Toluene | 2017/12/04 | 90 | 70 - 130 | 93 | 70 - 130 | ND, RDL=0.20 | ug/L | NC | 30 |
| 5294552 | Total Xylenes | 2017/12/04 | | | | | ND, RDL=0.20 | ug/L | NC | 30 |
| 5294552 | trans-1,2-Dichloroethylene | 2017/12/04 | 93 | 70 - 130 | 94 | 70 - 130 | ND, RDL=0.50 | ug/L | NC | 30 |
| 5294552 | trans-1,3-Dichloropropene | 2017/12/04 | 104 | 70 - 130 | 95 | 70 - 130 | ND, RDL=0.40 | ug/L | NC | 30 |
| 5294552 | Trichloroethylene | 2017/12/04 | 88 | 70 - 130 | 90 | 70 - 130 | ND, RDL=0.20 | ug/L | NC | 30 |
| 5294552 | Trichlorofluoromethane (FREON 11) | 2017/12/04 | 89 | 70 - 130 | 90 | 70 - 130 | ND, RDL=0.50 | ug/L | NC | 30 |
| 5294552 | Vinyl Chloride | 2017/12/04 | 91 | 70 - 130 | 92 | 70 - 130 | ND, RDL=0.20 | ug/L | NC | 30 |
| 5295153 | 1,1,1,2-Tetrachloroethane | 2017/12/05 | 105 | 70 - 130 | 102 | 70 - 130 | ND, RDL=0.50 | ug/L | NC | 30 |
| 5295153 | 1,1,1-Trichloroethane | 2017/12/05 | 95 | 70 - 130 | 94 | 70 - 130 | ND, RDL=0.20 | ug/L | NC | 30 |
| 5295153 | 1,1,2,2-Tetrachloroethane | 2017/12/05 | 120 | 70 - 130 | 110 | 70 - 130 | ND, RDL=0.50 | ug/L | NC | 30 |
| 5295153 | 1,1,2-Trichloroethane | 2017/12/05 | 109 | 70 - 130 | 103 | 70 - 130 | ND, RDL=0.50 | ug/L | NC | 30 |
| 5295153 | 1,1-Dichloroethane | 2017/12/05 | 109 | 70 - 130 | 106 | 70 - 130 | ND, RDL=0.20 | ug/L | NC | 30 |
| 5295153 | 1,1-Dichloroethylene | 2017/12/05 | 111 | 70 - 130 | 111 | 70 - 130 | ND, RDL=0.20 | ug/L | NC | 30 |
| 5295153 | 1,2-Dichlorobenzene | 2017/12/05 | 107 | 70 - 130 | 102 | 70 - 130 | ND, RDL=0.50 | ug/L | NC | 30 |
| 5295153 | 1,2-Dichloroethane | 2017/12/05 | 106 | 70 - 130 | 100 | 70 - 130 | ND, RDL=0.50 | ug/L | NC | 30 |
| 5295153 | 1,2-Dichloropropane | 2017/12/05 | 99 | 70 - 130 | 95 | 70 - 130 | ND, RDL=0.20 | ug/L | NC | 30 |
| 5295153 | 1,3-Dichlorobenzene | 2017/12/05 | 109 | 70 - 130 | 107 | 70 - 130 | ND, RDL=0.50 | ug/L | NC | 30 |
| 5295153 | 1,4-Dichlorobenzene | 2017/12/05 | 112 | 70 - 130 | 110 | 70 - 130 | ND, RDL=0.50 | ug/L | NC | 30 |
| 5295153 | Acetone (2-Propanone) | 2017/12/05 | 112 | 60 - 140 | 103 | 60 - 140 | ND, RDL=10 | ug/L | NC | 30 |
| 5295153 | Benzene | 2017/12/05 | 108 | 70 - 130 | 106 | 70 - 130 | ND, RDL=0.20 | ug/L | NC | 30 |
| 5295153 | Bromodichloromethane | 2017/12/05 | 99 | 70 - 130 | 95 | 70 - 130 | ND, RDL=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 |
| 5295153 | Bromoform | 2017/12/05 | 108 | 70 - 130 | 100 | 70 - 130 | ND, RDL=1.0 | ug/L | NC | 30 |
| 5295153 | Bromomethane | 2017/12/05 | 104 | 60 - 140 | 103 | 60 - 140 | ND, RDL=0.50 | ug/L | NC | 30 |
| 5295153 | Carbon Tetrachloride | 2017/12/05 | 92 | 70 - 130 | 92 | 70 - 130 | ND, RDL=0.20 | ug/L | NC | 30 |
| 5295153 | Chlorobenzene | 2017/12/05 | 100 | 70 - 130 | 98 | 70 - 130 | ND, RDL=0.20 | ug/L | NC | 30 |
| 5295153 | Chloroform | 2017/12/05 | 103 | 70 - 130 | 100 | 70 - 130 | ND, RDL=0.20 | ug/L | 5.0 | 30 |
| 5295153 | cis-1,2-Dichloroethylene | 2017/12/05 | 104 | 70 - 130 | 100 | 70 - 130 | ND, RDL=0.50 | ug/L | NC | 30 |
| 5295153 | cis-1,3-Dichloropropene | 2017/12/05 | 97 | 70 - 130 | 92 | 70 - 130 | ND, RDL=0.30 | ug/L | NC | 30 |
| 5295153 | Dibromochloromethane | 2017/12/05 | 106 | 70 - 130 | 101 | 70 - 130 | ND, RDL=0.50 | ug/L | NC | 30 |
| 5295153 | Dichlorodifluoromethane (FREON 12) | 2017/12/05 | 100 | 60 - 140 | 101 | 60 - 140 | ND, RDL=1.0 | ug/L | NC | 30 |
| 5295153 | Ethylbenzene | 2017/12/05 | 97 | 70 - 130 | 96 | 70 - 130 | ND, RDL=0.20 | ug/L | NC | 30 |
| 5295153 | Ethylene Dibromide | 2017/12/05 | 112 | 70 - 130 | 105 | 70 - 130 | ND, RDL=0.20 | ug/L | NC | 30 |
| 5295153 | F1 (C6-C10) - BTEX | 2017/12/05 | | | | | ND, RDL=25 | ug/L | NC | 30 |
| 5295153 | F1 (C6-C10) | 2017/12/05 | 95 | 60 - 140 | 99 | 60 - 140 | ND, RDL=25 | ug/L | NC | 30 |
| 5295153 | Hexane | 2017/12/05 | 106 | 70 - 130 | 106 | 70 - 130 | ND, RDL=1.0 | ug/L | NC | 30 |
| 5295153 | Methyl Ethyl Ketone (2-Butanone) | 2017/12/05 | 121 | 60 - 140 | 110 | 60 - 140 | ND, RDL=10 | ug/L | NC | 30 |
| 5295153 | Methyl Isobutyl Ketone | 2017/12/05 | 114 | 70 - 130 | 104 | 70 - 130 | ND, RDL=5.0 | ug/L | NC | 30 |
| 5295153 | Methyl t-butyl ether (MTBE) | 2017/12/05 | 100 | 70 - 130 | 96 | 70 - 130 | ND, RDL=0.50 | ug/L | NC | 30 |
| 5295153 | Methylene Chloride(Dichloromethane) | 2017/12/05 | 108 | 70 - 130 | 103 | 70 - 130 | ND, RDL=2.0 | ug/L | NC | 30 |
| 5295153 | o-Xylene | 2017/12/05 | 99 | 70 - 130 | 97 | 70 - 130 | ND, RDL=0.20 | ug/L | NC | 30 |
| 5295153 | p+m-Xylene | 2017/12/05 | 98 | 70 - 130 | 97 | 70 - 130 | ND, RDL=0.20 | ug/L | NC | 30 |
| 5295153 | Styrene | 2017/12/05 | 97 | 70 - 130 | 96 | 70 - 130 | ND, RDL=0.50 | ug/L | NC | 30 |
| 5295153 | Tetrachloroethylene | 2017/12/05 | 93 | 70 - 130 | 94 | 70 - 130 | ND, RDL=0.20 | ug/L | 1.5 | 30 |
| 5295153 | Toluene | 2017/12/05 | 96 | 70 - 130 | 94 | 70 - 130 | ND, RDL=0.20 | ug/L | NC | 30 |
| 5295153 | Total Xylenes | 2017/12/05 | | | | | ND, RDL=0.20 | ug/L | NC | 30 |
| 5295153 | trans-1,2-Dichloroethylene | 2017/12/05 | 103 | 70 - 130 | 102 | 70 - 130 | ND, RDL=0.50 | ug/L | NC | 30 |
| 5295153 | trans-1,3-Dichloropropene | 2017/12/05 | 98 | 70 - 130 | 91 | 70 - 130 | ND, RDL=0.40 | ug/L | NC | 30 |
| 5295153 | Trichloroethylene | 2017/12/05 | 98 | 70 - 130 | 97 | 70 - 130 | ND, RDL=0.20 | ug/L | 4.0 | 30 |
| 5295153 | Trichlorofluoromethane (FREON 11) | 2017/12/05 | 98 | 70 - 130 | 98 | 70 - 130 | ND, RDL=0.50 | ug/L | NC | 30 |
| 5295153 | Vinyl Chloride | 2017/12/05 | 106 | 70 - 130 | 106 | 70 - 130 | ND, RDL=0.20 | ug/L | NC | 30 |
| 5296762 | F2 (C10-C16 Hydrocarbons) | 2017/12/04 | 94 | 50 - 130 | 94 | 60 - 130 | ND, RDL=100 | ug/L | NC | 30 |
| 5296762 | F3 (C16-C34 Hydrocarbons) | 2017/12/04 | 99 | 50 - 130 | 99 | 60 - 130 | ND, RDL=200 | 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 |
| 5296762 | F4 (C34-C50 Hydrocarbons) | 2017/12/04 | 99 | 50 - 130 | 99 | 60 - 130 | ND, RDL=200 | ug/L | NC | 30 |

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

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

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

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

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

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



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Maxxam Job #: B7R0003
Report Date: 2017/12/05

exp Services Inc
Client Project #: MRK-00242474-A0
Sampler Initials: HN

## 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

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 #: B7R0003
Report Date: 2017/12/05

exp Services Inc
Client Project #: MRK-00242474-A0
Sampler Initials: HN

## Exceedence Summary Table – Reg153/04 T3-GW-F/M

### Result Exceedences

| Sample ID | Maxxam ID | Parameter | Criteria | Result | DL | Units |
|---|---|---|---|---|---|---|
| MW01 | FQT605-01 | Tetrachloroethylene | 17 | 55 | 0.20 | ug/L |
| MW02 | FQT606-01 | Tetrachloroethylene | 17 | 120 | 0.20 | ug/L |
| MW04 | FQT607-02 | Vinyl Chloride | 1.7 | 2.1 | 0.20 | ug/L |
| MW020 | FQT611-01 | Tetrachloroethylene | 17 | 100 | 0.20 | ug/L |

The exceedence summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.


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AGAT Laboratories

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

**CLIENT NAME:** **EXP Services Inc**
**220 Commerce Valley Drive West,Suite 500**
**Markham, ON, ON L3T0A8**
**(905) 695-3217**

**ATTENTION TO:** **Leah Whittaker**

**PROJECT:** **MRK-000242474-A0-005**

**AGAT WORK ORDER:** **18T306685**

**SOIL ANALYSIS REVIEWED BY:** **Amanjot Bhela, Inorganic Coordinator**

**TRACE ORGANICS REVIEWED BY:** **Oksana Gushyla, Trace Organics Lab Supervisor**

**DATE REPORTED:** **Feb 14, 2018**

**PAGES (INCLUDING COVER):** **21**

**VERSION*:** **2**

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

***NOTES***

VERSION 2:Version 2 supersedes version 1. Version 2 updated to include PAHs and M&I to 9037679 (TH1-SS3); 9037699 (TH4-SS4), issued on February 14, 2018.

**All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.**

AGAT Laboratories

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

# Certificate of Analysis

**AGAT WORK ORDER: 18T306685**

**PROJECT: MRK-000242474-A0-005**

**CLIENT NAME: EXP Services Inc**

**ATTENTION TO: Leah Whittaker**

**SAMPLING SITE:**

**SAMPLED BY:AJ**

## O. Reg. 153(511) - Metals & Inorganics (Soil)

**DATE RECEIVED: 2018-01-30**

**DATE REPORTED: 2018-02-14**

| | | | | | SAMPLE DESCRIPTION: | TH1-SS1 | TH1-SS3 | TH2-SS2 | TH2-SS201 | TH3-SS1 | TH4-SS1 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | SAMPLE TYPE: | Soil | Soil | Soil | Soil | Soil | Soil |
| | | | | | DATE SAMPLED: | 2018-01-25 | 2018-01-25 | 2018-01-26 | 2018-01-26 | 2018-01-29 | 2018-01-29 |
| Parameter | Unit | G / S | RDL | Date Prepared | Date Analyzed | 9037671 | 9037679 | 9037683 | 9037684 | 9037694 | 9037698 |
| Antimony | µg/g | 7.5 | 0.8 | 2018-02-01 | 2018-02-01 | 0.9 | <0.8 | <0.8 | <0.8 | 0.8 | <0.8 |
| Arsenic | µg/g | 18 | 1 | 2018-02-01 | 2018-02-01 | 6 | 1 | 3 | 3 | 7 | 5 |
| Barium | µg/g | 390 | 2 | 2018-02-01 | 2018-02-01 | 80 | 14 | 21 | 18 | 55 | 40 |
| Beryllium | µg/g | 5 | 0.5 | 2018-02-01 | 2018-02-01 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| Boron | µg/g | 120 | 5 | 2018-02-01 | 2018-02-01 | <5 | <5 | <5 | <5 | 5 | <5 |
| Boron (Hot Water Soluble) | µg/g | 1.5 | 0.10 | 2018-02-01 | 2018-02-01 | 0.55 | 0.39 | 0.28 | 0.29 | 0.67 | 0.76 |
| Cadmium | µg/g | 1.2 | 0.5 | 2018-02-01 | 2018-02-01 | <0.5 | <0.5 | <0.5 | <0.5 | 0.7 | <0.5 |
| Chromium | µg/g | 160 | 2 | 2018-02-01 | 2018-02-01 | 9 | 6 | 5 | 5 | 7 | 7 |
| Cobalt | µg/g | 22 | 0.5 | 2018-02-01 | 2018-02-01 | 2.5 | 2.0 | 1.6 | 1.6 | 2.5 | 2.1 |
| Copper | µg/g | 180 | 1 | 2018-02-01 | 2018-02-01 | 48 | 3 | 6 | 5 | 18 | 11 |
| Lead | µg/g | 120 | 1 | 2018-02-01 | 2018-02-01 | **253** | 4 | 27 | 22 | **155** | 100 |
| Molybdenum | µg/g | 6.9 | 0.5 | 2018-02-01 | 2018-02-01 | <0.5 | <0.5 | <0.5 | <0.5 | 0.5 | <0.5 |
| Nickel | µg/g | 130 | 1 | 2018-02-01 | 2018-02-01 | 7 | 5 | 4 | 3 | 6 | 5 |
| Selenium | µg/g | 2.4 | 0.4 | 2018-02-01 | 2018-02-01 | 0.4 | <0.4 | <0.4 | <0.4 | 0.8 | 0.8 |
| Silver | µg/g | 25 | 0.2 | 2018-02-01 | 2018-02-01 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 |
| Thallium | µg/g | 1 | 0.4 | 2018-02-01 | 2018-02-01 | <0.4 | <0.4 | <0.4 | <0.4 | <0.4 | <0.4 |
| Uranium | µg/g | 23 | 0.5 | 2018-02-01 | 2018-02-01 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| Vanadium | µg/g | 86 | 1 | 2018-02-01 | 2018-02-01 | 12 | 10 | 10 | 9 | 13 | 11 |
| Zinc | µg/g | 340 | 5 | 2018-02-01 | 2018-02-01 | 301 | 13 | 37 | 28 | 189 | 76 |
| Chromium VI | µg/g | 10 | 0.2 | 2018-02-01 | 2018-02-01 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 |
| Cyanide | µg/g | 0.051 | 0.040 | 2018-02-02 | 2018-02-02 | <0.040 | <0.040 | <0.040 | <0.040 | <0.040 | <0.040 |
| Mercury | µg/g | 1.8 | 0.10 | 2018-02-01 | 2018-02-01 | 0.40 | <0.10 | <0.10 | <0.10 | 1.21 | 0.87 |
| Electrical Conductivity | mS/cm | 0.7 | 0.005 | 2018-02-01 | 2018-02-01 | 0.205 | 0.218 | 0.127 | 0.131 | 0.306 | 0.408 |
| Sodium Adsorption Ratio | NA | 5 | NA | 2018-02-01 | 2018-02-01 | 1.80 | 2.08 | 0.358 | 0.343 | 1.72 | **5.60** |
| pH, 2:1 CaCl2 Extraction | pH Units | | NA | 2018-02-01 | 2018-02-01 | 7.38 | 8.66 | 7.71 | 7.76 | 7.95 | 7.72 |

***Certified By:*** Amanjot Bhela

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# Certificate of Analysis

**AGAT WORK ORDER: 18T306685**

**PROJECT: MRK-000242474-A0-005**

**CLIENT NAME: EXP Services Inc**

**ATTENTION TO: Leah Whittaker**

**SAMPLING SITE:**

**SAMPLED BY:AJ**

## O. Reg. 153(511) - Metals & Inorganics (Soil)

**DATE RECEIVED: 2018-01-30**

**DATE REPORTED: 2018-02-14**

| | | | | SAMPLE DESCRIPTION: | TH4-SS4 |
|---|---|---|---|---|---|
| | | | | SAMPLE TYPE: | Soil |
| | | | | DATE SAMPLED: | 2018-01-29 |
| Parameter | Unit | G / S | RDL | Date Prepared | Date Analyzed | 9037699 |
| Antimony | µg/g | 7.5 | 0.8 | 2018-02-09 | 2018-02-09 | <0.8 |
| Arsenic | µg/g | 18 | 1 | 2018-02-09 | 2018-02-09 | <1 |
| Barium | µg/g | 390 | 2 | 2018-02-09 | 2018-02-09 | 6 |
| Beryllium | µg/g | 5 | 0.5 | 2018-02-09 | 2018-02-09 | <0.5 |
| Boron | µg/g | 120 | 5 | 2018-02-09 | 2018-02-09 | <5 |
| Boron (Hot Water Soluble) | µg/g | 1.5 | 0.10 | 2018-02-09 | 2018-02-09 | <0.10 |
| Cadmium | µg/g | 1.2 | 0.5 | 2018-02-09 | 2018-02-09 | <0.5 |
| Chromium | µg/g | 160 | 2 | 2018-02-09 | 2018-02-09 | 2 |
| Cobalt | µg/g | 22 | 0.5 | 2018-02-09 | 2018-02-09 | 1.4 |
| Copper | µg/g | 180 | 1 | 2018-02-09 | 2018-02-09 | 3 |
| Lead | µg/g | 120 | 1 | 2018-02-09 | 2018-02-09 | 2 |
| Molybdenum | µg/g | 6.9 | 0.5 | 2018-02-09 | 2018-02-09 | <0.5 |
| Nickel | µg/g | 130 | 1 | 2018-02-09 | 2018-02-09 | 3 |
| Selenium | µg/g | 2.4 | 0.4 | 2018-02-09 | 2018-02-09 | <0.4 |
| Silver | µg/g | 25 | 0.2 | 2018-02-09 | 2018-02-09 | <0.2 |
| Thallium | µg/g | 1 | 0.4 | 2018-02-09 | 2018-02-09 | <0.4 |
| Uranium | µg/g | 23 | 0.5 | 2018-02-09 | 2018-02-09 | <0.5 |
| Vanadium | µg/g | 86 | 1 | 2018-02-09 | 2018-02-09 | 4 |
| Zinc | µg/g | 340 | 5 | 2018-02-09 | 2018-02-09 | 7 |
| Chromium VI | µg/g | 10 | 0.2 | 2018-02-09 | 2018-02-09 | <0.2 |
| Cyanide | µg/g | 0.051 | 0.040 | 2018-02-09 | 2018-02-09 | <0.040 |
| Mercury | µg/g | 1.8 | 0.10 | 2018-02-09 | 2018-02-09 | <0.10 |
| Electrical Conductivity | mS/cm | 0.7 | 0.005 | 2018-02-09 | 2018-02-09 | 0.192 |
| Sodium Adsorption Ratio | NA | 5 | NA | 2018-02-09 | 2018-02-09 | 2.86 |
| pH, 2:1 CaCl2 Extraction | pH Units | | NA | 2018-02-09 | 2018-02-09 | 8.16 |

**Comments:** RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Residential/Parkland/Institutional Property Use - Medium and Fine Textured Soils
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

**9037671-9037699** EC & SAR were determined on the DI water extract obtained from the 2:1 leaching procedure (2 parts DI water:1 part soil). pH was determined on the 0.01M CaCl2 extract prepared at 2:1 ratio.

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# Certificate of Analysis

**AGAT WORK ORDER: 18T306685**

**PROJECT: MRK-000242474-A0-005**

**CLIENT NAME: EXP Services Inc**

**ATTENTION TO: Leah Whittaker**

**SAMPLING SITE:**

**SAMPLED BY:AJ**

## O. Reg. 153(511) - ORPs (Soil)

**DATE RECEIVED: 2018-01-30**

**DATE REPORTED: 2018-02-14**

| | | | | | SAMPLE DESCRIPTION: | TH1-SS2 | TH1-SS10 |
|---|---|---|---|---|---|---|---|
| | | | | | SAMPLE TYPE: | Soil | Soil |
| | | | | | DATE SAMPLED: | 2018-01-25 | 2018-01-25 |
| Parameter | Unit | G / S | RDL | Date Prepared | Date Analyzed | 9037672 | 9037708 |
| pH, 2:1 CaCl2 Extraction | pH Units | | NA | 2018-02-01 | 2018-02-01 | 8.26 | 8.14 |

**Comments:** RDL - Reported Detection Limit; G / S - Guideline / Standard

**9037672-9037708** pH was determined on the 0.01M CaCl2 extract obtained from 2:1 leaching procedure (2 parts extraction fluid:1 part wet soil).

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**AGAT WORK ORDER: 18T306685**

**PROJECT: MRK-000242474-A0-005**

**CLIENT NAME: EXP Services Inc**

**ATTENTION TO: Leah Whittaker**

**SAMPLING SITE:**

**SAMPLED BY:AJ**

## Particle Size by Sieve (Wet)

**DATE RECEIVED: 2018-01-30**

**DATE REPORTED: 2018-02-14**

| | | | | | SAMPLE DESCRIPTION: | TH1-SS6 | TH4-SS5 |
|---|---|---|---|---|---|---|---|
| | | | | | SAMPLE TYPE: | Soil | Soil |
| | | | | | DATE SAMPLED: | 2018-01-25 | 2018-01-29 |
| Parameter | Unit | G / S | RDL | Date Prepared | Date Analyzed | 9037675 | 9037700 |
| Sieve Analysis - 75 µm (retained) | % | | NA | 2018-02-02 | 2018-02-02 | 5.40 | 93.1 |
| Sieve Analysis - 75 µm (passing) | % | | NA | 2018-02-02 | 2018-02-02 | 94.60 | 6.9 |
| Soil Texture (Toronto) | | | | | | Fine | Coarse |

**Comments:** RDL - Reported Detection Limit; G / S - Guideline / Standard

**9037675-9037700** Value reported is the amount of sample passing through or retained on sieve after wash with water and represents proportion by weight particles smaller or larger than indicated sieve size.

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# Certificate of Analysis

**AGAT WORK ORDER: 18T306685**

**PROJECT: MRK-000242474-A0-005**

**CLIENT NAME: EXP Services Inc**

**ATTENTION TO: Leah Whittaker**

**SAMPLING SITE:**

**SAMPLED BY:AJ**

## O. Reg. 153(511) - PAHs (Soil)

**DATE RECEIVED: 2018-01-30**

**DATE REPORTED: 2018-02-14**

| | | | | | SAMPLE DESCRIPTION: | TH1-SS1 | TH1-SS3 | TH2-SS1 | TH2-SS101 | TH3-SS1 | TH4-SS1 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | SAMPLE TYPE: | Soil | Soil | Soil | Soil | Soil | Soil |
| | | | | | DATE SAMPLED: | 2018-01-25 | 2018-01-25 | 2018-01-26 | 2018-01-26 | 2018-01-29 | 2018-01-29 |
| **Parameter** | **Unit** | **G / S** | **RDL** | **Date Prepared** | **Date Analyzed** | **9037671** | **9037679** | **9037681** | **9037682** | **9037694** | **9037698** |
| Naphthalene | µg/g | 0.75 | 0.05 | 2018-02-05 | 2018-02-05 | 0.10 | <0.05 | <0.05 | <0.05 | <0.05 | 0.06 |
| Acenaphthylene | µg/g | 0.17 | 0.05 | 2018-02-05 | 2018-02-05 | **0.44** | <0.05 | <0.05 | <0.05 | <0.05 | 0.11 |
| Acenaphthene | µg/g | 58 | 0.05 | 2018-02-05 | 2018-02-05 | 0.22 | <0.05 | <0.05 | <0.05 | <0.05 | 0.11 |
| Fluorene | µg/g | 69 | 0.05 | 2018-02-05 | 2018-02-05 | 0.43 | <0.05 | <0.05 | 0.06 | <0.05 | 0.16 |
| Phenanthrene | µg/g | 7.8 | 0.05 | 2018-02-05 | 2018-02-05 | **8.3** | 0.09 | 0.52 | 0.60 | 0.13 | 2.8 |
| Anthracene | µg/g | 0.74 | 0.05 | 2018-02-05 | 2018-02-05 | **1.3** | <0.05 | 0.13 | 0.13 | <0.05 | 0.48 |
| Fluoranthene | µg/g | 0.69 | 0.05 | 2018-02-05 | 2018-02-05 | **17** | 0.14 | **0.94** | **0.88** | 0.32 | **4.8** |
| Pyrene | µg/g | 78 | 0.05 | 2018-02-05 | 2018-02-05 | 15 | 0.12 | 0.83 | 0.73 | 0.33 | 4.5 |
| Benz(a)anthracene | µg/g | 0.63 | 0.05 | 2018-02-05 | 2018-02-05 | **11** | 0.07 | 0.50 | 0.42 | 0.19 | **2.1** |
| Chrysene | µg/g | 7.8 | 0.05 | 2018-02-05 | 2018-02-05 | **10** | 0.06 | 0.47 | 0.46 | 0.19 | 1.9 |
| Benzo(b)fluoranthene | µg/g | 0.78 | 0.05 | 2018-02-05 | 2018-02-05 | **8.6** | 0.07 | 0.51 | 0.40 | 0.30 | **2.1** |
| Benzo(k)fluoranthene | µg/g | 0.78 | 0.05 | 2018-02-05 | 2018-02-05 | **4.1** | <0.05 | 0.25 | 0.25 | 0.09 | **1.1** |
| Benzo(a)pyrene | µg/g | 0.3 | 0.05 | 2018-02-05 | 2018-02-05 | **7.1** | 0.05 | **0.35** | **0.31** | 0.20 | **1.8** |
| Indeno(1,2,3-cd)pyrene | µg/g | 0.48 | 0.05 | 2018-02-05 | 2018-02-05 | **1.7** | <0.05 | 0.15 | 0.13 | 0.08 | **0.72** |
| Dibenz(a,h)anthracene | µg/g | 0.1 | 0.05 | 2018-02-05 | 2018-02-05 | **0.45** | <0.05 | <0.05 | <0.05 | <0.05 | **0.18** |
| Benzo(g,h,i)perylene | µg/g | 7.8 | 0.05 | 2018-02-05 | 2018-02-05 | 1.6 | <0.05 | 0.16 | 0.13 | 0.09 | 0.74 |
| 2-and 1-methyl Naphthalene | µg/g | 3.4 | 0.05 | 2018-02-05 | 2018-02-05 | 0.12 | <0.05 | <0.05 | <0.05 | <0.05 | 0.07 |
| Moisture Content | % | | 0.1 | 2018-02-05 | 2018-02-05 | 10.5 | 6.8 | 7.9 | 11.4 | 11.7 | 14.0 |
| **Surrogate** | **Unit** | **Acceptable Limits** | | | | | | | | | |
| Chrysene-d12 | % | 50-140 | | 2018-02-05 | 2018-02-05 | 86 | 88 | 105 | 100 | 84 | 90 |

***Certified By:***

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# Certificate of Analysis

**AGAT WORK ORDER: 18T306685**

**PROJECT: MRK-000242474-A0-005**

**CLIENT NAME: EXP Services Inc**

**ATTENTION TO: Leah Whittaker**

**SAMPLING SITE:**

**SAMPLED BY:AJ**

## O. Reg. 153(511) - PAHs (Soil)

**DATE RECEIVED: 2018-01-30**

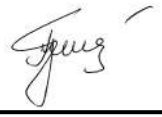
**DATE REPORTED: 2018-02-14**

| | | | | SAMPLE DESCRIPTION: | | TH4-SS4 |
|---|---|---|---|---|---|---|
| | | | | SAMPLE TYPE: | | Soil |
| | | | | DATE SAMPLED: | | 2018-01-29 |
| Parameter | Unit | G / S | RDL | Date Prepared | Date Analyzed | 9037699 |
| Naphthalene | µg/g | 0.75 | 0.05 | 2018-02-14 | 2018-02-14 | <0.05 |
| Acenaphthylene | µg/g | 0.17 | 0.05 | 2018-02-14 | 2018-02-14 | <0.05 |
| Acenaphthene | µg/g | 58 | 0.05 | 2018-02-14 | 2018-02-14 | <0.05 |
| Fluorene | µg/g | 69 | 0.05 | 2018-02-14 | 2018-02-14 | <0.05 |
| Phenanthrene | µg/g | 7.8 | 0.05 | 2018-02-14 | 2018-02-14 | <0.05 |
| Anthracene | µg/g | 0.74 | 0.05 | 2018-02-14 | 2018-02-14 | <0.05 |
| Fluoranthene | µg/g | 0.69 | 0.05 | 2018-02-14 | 2018-02-14 | <0.05 |
| Pyrene | µg/g | 78 | 0.05 | 2018-02-14 | 2018-02-14 | <0.05 |
| Benz(a)anthracene | µg/g | 0.63 | 0.05 | 2018-02-14 | 2018-02-14 | <0.05 |
| Chrysene | µg/g | 7.8 | 0.05 | 2018-02-14 | 2018-02-14 | <0.05 |
| Benzo(b)fluoranthene | µg/g | 0.78 | 0.05 | 2018-02-14 | 2018-02-14 | <0.05 |
| Benzo(k)fluoranthene | µg/g | 0.78 | 0.05 | 2018-02-14 | 2018-02-14 | <0.05 |
| Benzo(a)pyrene | µg/g | 0.3 | 0.05 | 2018-02-14 | 2018-02-14 | <0.05 |
| Indeno(1,2,3-cd)pyrene | µg/g | 0.48 | 0.05 | 2018-02-14 | 2018-02-14 | <0.05 |
| Dibenz(a,h)anthracene | µg/g | 0.1 | 0.05 | 2018-02-14 | 2018-02-14 | <0.05 |
| Benzo(g,h,i)perylene | µg/g | 7.8 | 0.05 | 2018-02-14 | 2018-02-14 | <0.05 |
| 2-and 1-methyl Naphthalene | µg/g | 3.4 | 0.05 | 2018-02-14 | 2018-02-14 | <0.05 |
| Moisture Content | % | | 0.1 | 2018-02-14 | 2018-02-14 | 4.3 |
| **Surrogate** | **Unit** | **Acceptable Limits** | | | | |
| Chrysene-d12 | % | 50-140 | | 2018-02-14 | 2018-02-14 | 82 |

**Comments:** RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Residential/Parkland/Institutional Property Use - Medium and Fine Textured Soils
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

**9037671-9037699** Results are based on the dry weight of the soil.
Note: The result for Benzo(b)Fluoranthene is the total of the Benzo(b)&(j)Fluoranthene isomers because the isomers co-elute on the GC column.

***Certified By:***



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# Certificate of Analysis

**AGAT WORK ORDER: 18T306685**

**PROJECT: MRK-000242474-A0-005**

**CLIENT NAME: EXP Services Inc**

**ATTENTION TO: Leah Whittaker**

**SAMPLING SITE:**

**SAMPLED BY:AJ**

## O. Reg. 153(511) - PHCs F1 - F4 (-BTEX) (Soil)

**DATE RECEIVED: 2018-01-30**

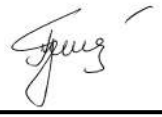
**DATE REPORTED: 2018-02-14**

| | | | | | | SAMPLE DESCRIPTION: | TH1-SS5 | TH1-SS501 | TH2-SS5 | TH3-SS6 | TH4-SS5 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | SAMPLE TYPE: | Soil | Soil | Soil | Soil | Soil |
| | | | | | | DATE SAMPLED: | 2018-01-25 | 2018-01-25 | 2018-01-26 | 2018-01-29 | 2018-01-29 |
| **Parameter** | **Unit** | **G / S** | **RDL** | **Date Prepared** | **Date Analyzed** | | **9037673** | **9037674** | **9037692** | **9037696** | **9037700** |
| F1 (C6 to C10) | µg/g | 65 | 5 | 2018-02-01 | 2018-02-01 | | <5 | <5 | <5 | <5 | <5 |
| F1 (C6 to C10) minus BTEX | µg/g | 65 | 5 | 2018-02-01 | 2018-02-01 | | <5 | <5 | <5 | <5 | <5 |
| F2 (C10 to C16) | µg/g | 150 | 10 | 2018-02-01 | 2018-02-01 | | <10 | <10 | <10 | <10 | <10 |
| F3 (C16 to C34) | µg/g | 1300 | 50 | 2018-02-01 | 2018-02-01 | | <50 | <50 | <50 | <50 | <50 |
| F4 (C34 to C50) | µg/g | 5600 | 50 | 2018-02-01 | 2018-02-01 | | <50 | <50 | <50 | <50 | <50 |
| Gravimetric Heavy Hydrocarbons | µg/g | 5600 | 50 | | | | NA | NA | NA | NA | NA |
| Moisture Content | % | | 0.1 | 2018-02-01 | 2018-02-01 | | 18.7 | 19.0 | 18.2 | 18.6 | 17.0 |
| **Surrogate** | **Unit** | **Acceptable Limits** | | | | | | | | | |
| Terphenyl | % | 60-140 | | 2018-02-01 | 2018-02-01 | | 87 | 103 | 110 | 92 | 91 |

**Comments:** RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Residential/Parkland/Institutional Property Use - Medium and Fine Textured Soils
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

**9037673-9037700** Results are based on sample dry weight.
The C6-C10 fraction is calculated using toluene response factor.
The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and n-C34.
Gravimetric Heavy Hydrocarbons are not included in the Total C16-C50 and are only determined if the chromatogram of the C34 - C50 hydrocarbons indicates that hydrocarbons >C50 are present.
The chromatogram has returned to baseline by the retention time of nC50.
Total C6 - C50 results are corrected for BTEX contributions.
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
nC6 and nC10 response factors are within 30% of Toluene response factor.
nC10, nC16 and nC34 response factors are within 10% of their average.
C50 response factor is within 70% of nC10 + nC16 + nC34 average.
Linearity is within 15%.
Extraction and holding times were met for this sample.
Fractions 1-4 are quantified without the contribution of PAHs. Under Ontario Regulation 153, results are considered valid without determining the PAH contribution if not requested by the client.

***Certified By:***



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# Certificate of Analysis

**AGAT WORK ORDER: 18T306685**

**PROJECT: MRK-000242474-A0-005**

**CLIENT NAME: EXP Services Inc**

**ATTENTION TO: Leah Whittaker**

**SAMPLING SITE:**

**SAMPLED BY:AJ**

## O. Reg. 153(511) - VOCs (Soil)

**DATE RECEIVED: 2018-01-30**

**DATE REPORTED: 2018-02-14**

| | | | | | SAMPLE DESCRIPTION: | TH1-SS5 | TH1-SS501 | TH2-SS5 | TH3-SS6 | TH4-SS5 |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | SAMPLE TYPE: | Soil | Soil | Soil | Soil | Soil |
| | | | | | DATE SAMPLED: | 2018-01-25 | 2018-01-25 | 2018-01-26 | 2018-01-29 | 2018-01-29 |
| Parameter | Unit | G / S | RDL | Date Prepared | Date Analyzed | 9037673 | 9037674 | 9037692 | 9037696 | 9037700 |
| Dichlorodifluoromethane | µg/g | 25 | 0.05 | 2018-02-01 | 2018-02-01 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Vinyl Chloride | ug/g | 0.022 | 0.02 | 2018-02-01 | 2018-02-01 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Bromomethane | ug/g | 0.05 | 0.05 | 2018-02-01 | 2018-02-01 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Trichlorofluoromethane | ug/g | 5.8 | 0.05 | 2018-02-01 | 2018-02-01 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Acetone | ug/g | 28 | 0.50 | 2018-02-01 | 2018-02-01 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 |
| 1,1-Dichloroethylene | ug/g | 0.05 | 0.05 | 2018-02-01 | 2018-02-01 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Methylene Chloride | ug/g | 0.96 | 0.05 | 2018-02-01 | 2018-02-01 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Trans- 1,2-Dichloroethylene | ug/g | 0.75 | 0.05 | 2018-02-01 | 2018-02-01 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Methyl tert-butyl Ether | ug/g | 1.4 | 0.05 | 2018-02-01 | 2018-02-01 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 1,1-Dichloroethane | ug/g | 11 | 0.02 | 2018-02-01 | 2018-02-01 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Methyl Ethyl Ketone | ug/g | 44 | 0.50 | 2018-02-01 | 2018-02-01 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 |
| Cis- 1,2-Dichloroethylene | ug/g | 30 | 0.02 | 2018-02-01 | 2018-02-01 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Chloroform | ug/g | 0.18 | 0.04 | 2018-02-01 | 2018-02-01 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 |
| 1,2-Dichloroethane | ug/g | 0.05 | 0.03 | 2018-02-01 | 2018-02-01 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 |
| 1,1,1-Trichloroethane | ug/g | 3.4 | 0.05 | 2018-02-01 | 2018-02-01 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Carbon Tetrachloride | ug/g | 0.12 | 0.05 | 2018-02-01 | 2018-02-01 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Benzene | ug/g | 0.17 | 0.02 | 2018-02-01 | 2018-02-01 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| 1,2-Dichloropropane | ug/g | 0.085 | 0.03 | 2018-02-01 | 2018-02-01 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 |
| Trichloroethylene | ug/g | 0.52 | 0.03 | 2018-02-01 | 2018-02-01 | <0.03 | <0.03 | <0.03 | <0.03 | 0.33 |
| Bromodichloromethane | ug/g | 13 | 0.05 | 2018-02-01 | 2018-02-01 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Methyl Isobutyl Ketone | ug/g | 4.3 | 0.50 | 2018-02-01 | 2018-02-01 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 |
| 1,1,2-Trichloroethane | ug/g | 0.05 | 0.04 | 2018-02-01 | 2018-02-01 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 |
| Toluene | ug/g | 6 | 0.02 | 2018-02-01 | 2018-02-01 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Dibromochloromethane | ug/g | 9.4 | 0.05 | 2018-02-01 | 2018-02-01 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Ethylene Dibromide | ug/g | 0.05 | 0.04 | 2018-02-01 | 2018-02-01 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 |
| Tetrachloroethylene | ug/g | 2.3 | 0.05 | 2018-02-01 | 2018-02-01 | 0.71 | 0.67 | 0.13 | 1.3 | 0.08 |
| 1,1,1,2-Tetrachloroethane | ug/g | 0.05 | 0.04 | 2018-02-01 | 2018-02-01 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 |
| Chlorobenzene | ug/g | 2.7 | 0.05 | 2018-02-01 | 2018-02-01 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Ethylbenzene | ug/g | 15 | 0.05 | 2018-02-01 | 2018-02-01 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| m & p-Xylene | ug/g | | 0.05 | 2018-02-01 | 2018-02-01 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |

***Certified By:***

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# Certificate of Analysis

**AGAT WORK ORDER: 18T306685**

**PROJECT: MRK-000242474-A0-005**

**CLIENT NAME: EXP Services Inc**

**ATTENTION TO: Leah Whittaker**

**SAMPLING SITE:**

**SAMPLED BY:AJ**

## O. Reg. 153(511) - VOCs (Soil)

**DATE RECEIVED: 2018-01-30**

**DATE REPORTED: 2018-02-14**

| | | | | | SAMPLE DESCRIPTION: | TH1-SS5 | TH1-SS501 | TH2-SS5 | TH3-SS6 | TH4-SS5 |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | SAMPLE TYPE: | Soil | Soil | Soil | Soil | Soil |
| | | | | | DATE SAMPLED: | 2018-01-25 | 2018-01-25 | 2018-01-26 | 2018-01-29 | 2018-01-29 |
| **Parameter** | **Unit** | **G / S** | **RDL** | **Date Prepared** | **Date Analyzed** | **9037673** | **9037674** | **9037692** | **9037696** | **9037700** |
| Bromoform | ug/g | 0.26 | 0.05 | 2018-02-01 | 2018-02-01 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Styrene | ug/g | 2.2 | 0.05 | 2018-02-01 | 2018-02-01 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 1,1,2,2-Tetrachloroethane | ug/g | 0.05 | 0.05 | 2018-02-01 | 2018-02-01 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| o-Xylene | ug/g | | 0.05 | 2018-02-01 | 2018-02-01 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 1,3-Dichlorobenzene | ug/g | 6 | 0.05 | 2018-02-01 | 2018-02-01 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 1,4-Dichlorobenzene | ug/g | 0.097 | 0.05 | 2018-02-01 | 2018-02-01 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 1,2-Dichlorobenzene | ug/g | 4.3 | 0.05 | 2018-02-01 | 2018-02-01 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Xylene Mixture | ug/g | 25 | 0.05 | 2018-02-01 | 2018-02-01 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 1,3-Dichloropropene | µg/g | 0.083 | 0.04 | 2018-02-01 | 2018-02-01 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 |
| n-Hexane | µg/g | 34 | 0.05 | 2018-02-01 | 2018-02-01 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **Surrogate** | **Unit** | **Acceptable Limits** | | | | | | | | |
| Toluene-d8 | % Recovery | 50-140 | | 2018-02-01 | 2018-02-01 | 75 | 76 | 75 | 74 | 74 |
| 4-Bromofluorobenzene | % Recovery | 50-140 | | 2018-02-01 | 2018-02-01 | 97 | 93 | 94 | 93 | 92 |

**Comments:** RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Residential/Parkland/Institutional Property Use - Medium and Fine Textured Soils
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

**9037673-9037700** The sample was analysed using the high level technique. The sample was extracted using methanol, a small amount of the methanol extract was diluted in water and the purge & trap GC/MS analysis was performed. Results are based on the dry weight of the soil.

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# Guideline Violation

**AGAT WORK ORDER: 18T306685**

**PROJECT: MRK-000242474-A0-005**

**CLIENT NAME: EXP Services Inc**

**ATTENTION TO: Leah Whittaker**

| SAMPLEID | SAMPLE TITLE | GUIDELINE | ANALYSIS PACKAGE | PARAMETER | UNIT | GUIDEVALUE | RESULT |
|---|---|---|---|---|---|---|---|
| 9037671 | TH1-SS1 | ON T3 S RPI MFT | O. Reg. 153(511) - Metals & Inorganics (Soil) | Lead | µg/g | 120 | 253 |
| 9037671 | TH1-SS1 | ON T3 S RPI MFT | O. Reg. 153(511) - PAHs (Soil) | Acenaphthylene | µg/g | 0.17 | 0.44 |
| 9037671 | TH1-SS1 | ON T3 S RPI MFT | O. Reg. 153(511) - PAHs (Soil) | Anthracene | µg/g | 0.74 | 1.3 |
| 9037671 | TH1-SS1 | ON T3 S RPI MFT | O. Reg. 153(511) - PAHs (Soil) | Benz(a)anthracene | µg/g | 0.63 | 11 |
| 9037671 | TH1-SS1 | ON T3 S RPI MFT | O. Reg. 153(511) - PAHs (Soil) | Benzo(a)pyrene | µg/g | 0.3 | 7.1 |
| 9037671 | TH1-SS1 | ON T3 S RPI MFT | O. Reg. 153(511) - PAHs (Soil) | Benzo(b)fluoranthene | µg/g | 0.78 | 8.6 |
| 9037671 | TH1-SS1 | ON T3 S RPI MFT | O. Reg. 153(511) - PAHs (Soil) | Benzo(k)fluoranthene | µg/g | 0.78 | 4.1 |
| 9037671 | TH1-SS1 | ON T3 S RPI MFT | O. Reg. 153(511) - PAHs (Soil) | Chrysene | µg/g | 7.8 | 10 |
| 9037671 | TH1-SS1 | ON T3 S RPI MFT | O. Reg. 153(511) - PAHs (Soil) | Dibenz(a,h)anthracene | µg/g | 0.1 | 0.45 |
| 9037671 | TH1-SS1 | ON T3 S RPI MFT | O. Reg. 153(511) - PAHs (Soil) | Fluoranthene | µg/g | 0.69 | 17 |
| 9037671 | TH1-SS1 | ON T3 S RPI MFT | O. Reg. 153(511) - PAHs (Soil) | Indeno(1,2,3-cd)pyrene | µg/g | 0.48 | 1.7 |
| 9037671 | TH1-SS1 | ON T3 S RPI MFT | O. Reg. 153(511) - PAHs (Soil) | Phenanthrene | µg/g | 7.8 | 8.3 |
| 9037681 | TH2-SS1 | ON T3 S RPI MFT | O. Reg. 153(511) - PAHs (Soil) | Benzo(a)pyrene | µg/g | 0.3 | 0.35 |
| 9037681 | TH2-SS1 | ON T3 S RPI MFT | O. Reg. 153(511) - PAHs (Soil) | Fluoranthene | µg/g | 0.69 | 0.94 |
| 9037682 | TH2-SS101 | ON T3 S RPI MFT | O. Reg. 153(511) - PAHs (Soil) | Benzo(a)pyrene | µg/g | 0.3 | 0.31 |
| 9037682 | TH2-SS101 | ON T3 S RPI MFT | O. Reg. 153(511) - PAHs (Soil) | Fluoranthene | µg/g | 0.69 | 0.88 |
| 9037694 | TH3-SS1 | ON T3 S RPI MFT | O. Reg. 153(511) - Metals & Inorganics (Soil) | Lead | µg/g | 120 | 155 |
| 9037698 | TH4-SS1 | ON T3 S RPI MFT | O. Reg. 153(511) - Metals & Inorganics (Soil) | Sodium Adsorption Ratio | NA | 5 | 5.60 |
| 9037698 | TH4-SS1 | ON T3 S RPI MFT | O. Reg. 153(511) - PAHs (Soil) | Benz(a)anthracene | µg/g | 0.63 | 2.1 |
| 9037698 | TH4-SS1 | ON T3 S RPI MFT | O. Reg. 153(511) - PAHs (Soil) | Benzo(a)pyrene | µg/g | 0.3 | 1.8 |
| 9037698 | TH4-SS1 | ON T3 S RPI MFT | O. Reg. 153(511) - PAHs (Soil) | Benzo(b)fluoranthene | µg/g | 0.78 | 2.1 |
| 9037698 | TH4-SS1 | ON T3 S RPI MFT | O. Reg. 153(511) - PAHs (Soil) | Benzo(k)fluoranthene | µg/g | 0.78 | 1.1 |
| 9037698 | TH4-SS1 | ON T3 S RPI MFT | O. Reg. 153(511) - PAHs (Soil) | Dibenz(a,h)anthracene | µg/g | 0.1 | 0.18 |
| 9037698 | TH4-SS1 | ON T3 S RPI MFT | O. Reg. 153(511) - PAHs (Soil) | Fluoranthene | µg/g | 0.69 | 4.8 |
| 9037698 | TH4-SS1 | ON T3 S RPI MFT | O. Reg. 153(511) - PAHs (Soil) | Indeno(1,2,3-cd)pyrene | µg/g | 0.48 | 0.72 |

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# Quality Assurance

**CLIENT NAME: EXP Services Inc**

**AGAT WORK ORDER: 18T306685**

**PROJECT: MRK-000242474-A0-005**

**ATTENTION TO: Leah Whittaker**

**SAMPLING SITE:**

**SAMPLED BY:AJ**

## Soil Analysis

| RPT Date: Feb 14, 2018 | | | DUPLICATE | | | | REFERENCE MATERIAL | | | METHOD BLANK SPIKE | | | MATRIX SPIKE | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PARAMETER | Batch | Sample Id | Dup #1 | Dup #2 | RPD | Method Blank | Measured Value | Acceptable Limits | | Recovery | Acceptable Limits | | Recovery | Acceptable Limits | |
| | | | | | | | | Lower | Upper | | Lower | Upper | | Lower | Upper |
| **O. Reg. 153(511) - Metals & Inorganics (Soil)** | | | | | | | | | | | | | | | |
| Antimony | 9036098 | | <0.8 | <0.8 | NA | < 0.8 | 93% | 70% | 130% | 108% | 80% | 120% | 75% | 70% | 130% |
| Arsenic | 9036098 | | 4 | 4 | NA | < 1 | 111% | 70% | 130% | 105% | 80% | 120% | 105% | 70% | 130% |
| Barium | 9036098 | | 45 | 43 | 4.5% | < 2 | 99% | 70% | 130% | 97% | 80% | 120% | 99% | 70% | 130% |
| Beryllium | 9036098 | | <0.5 | <0.5 | NA | < 0.5 | 93% | 70% | 130% | 102% | 80% | 120% | 97% | 70% | 130% |
| Boron | 9036098 | | <5 | <5 | NA | < 5 | 81% | 70% | 130% | 93% | 80% | 120% | 80% | 70% | 130% |
| Boron (Hot Water Soluble) | 9038612 | | 0.18 | 0.19 | NA | < 0.10 | 107% | 60% | 140% | 94% | 70% | 130% | 90% | 60% | 140% |
| Cadmium | 9036098 | | <0.5 | <0.5 | NA | < 0.5 | 100% | 70% | 130% | 99% | 80% | 120% | 106% | 70% | 130% |
| Chromium | 9036098 | | 13 | 13 | 0.0% | < 2 | 94% | 70% | 130% | 96% | 80% | 120% | 93% | 70% | 130% |
| Cobalt | 9036098 | | 7.1 | 7.0 | 1.4% | < 0.5 | 92% | 70% | 130% | 94% | 80% | 120% | 93% | 70% | 130% |
| Copper | 9036098 | | 16 | 16 | 0.0% | < 1 | 98% | 70% | 130% | 105% | 80% | 120% | 102% | 70% | 130% |
| Lead | 9036098 | | 31 | 31 | 0.0% | < 1 | 107% | 70% | 130% | 91% | 80% | 120% | 90% | 70% | 130% |
| Molybdenum | 9036098 | | <0.5 | <0.5 | NA | < 0.5 | 101% | 70% | 130% | 107% | 80% | 120% | 111% | 70% | 130% |
| Nickel | 9036098 | | 16 | 16 | 0.0% | < 1 | 95% | 70% | 130% | 100% | 80% | 120% | 102% | 70% | 130% |
| Selenium | 9036098 | | 0.4 | <0.4 | NA | < 0.4 | 109% | 70% | 130% | 98% | 80% | 120% | 105% | 70% | 130% |
| Silver | 9036098 | | <0.2 | <0.2 | NA | < 0.2 | 97% | 70% | 130% | 105% | 80% | 120% | 101% | 70% | 130% |
| Thallium | 9036098 | | <0.4 | <0.4 | NA | < 0.4 | 92% | 70% | 130% | 106% | 80% | 120% | 108% | 70% | 130% |
| Uranium | 9036098 | | <0.5 | <0.5 | NA | < 0.5 | 84% | 70% | 130% | 81% | 80% | 120% | 86% | 70% | 130% |
| Vanadium | 9036098 | | 19 | 18 | 5.4% | < 1 | 88% | 70% | 130% | 95% | 80% | 120% | 85% | 70% | 130% |
| Zinc | 9036098 | | 102 | 100 | 2.0% | < 5 | 101% | 70% | 130% | 106% | 80% | 120% | 123% | 70% | 130% |
| Chromium VI | 9050927 | | <0.2 | <0.2 | NA | < 0.2 | 77% | 70% | 130% | 106% | 80% | 120% | 94% | 70% | 130% |
| Cyanide | 9034966 | | <0.040 | <0.040 | NA | < 0.040 | 104% | 70% | 130% | 107% | 80% | 120% | 85% | 70% | 130% |
| Mercury | 9036098 | | <0.10 | <0.10 | NA | < 0.10 | 102% | 70% | 130% | 94% | 80% | 120% | 101% | 70% | 130% |
| Electrical Conductivity | 9050548 | | 0.787 | 0.813 | 3.2% | < 0.005 | 99% | 90% | 110% | NA | | | NA | | |
| Sodium Adsorption Ratio | 9036115 | | 0.113 | 0.120 | 6.0% | NA | NA | | | NA | | | NA | | |
| pH, 2:1 CaCl2 Extraction | 9038612 | | 7.58 | 7.62 | 0.5% | NA | 101% | 80% | 120% | NA | | | NA | | |
| **O. Reg. 153(511) - ORPs (Soil)** | | | | | | | | | | | | | | | |
| pH, 2:1 CaCl2 Extraction | 9038612 | | 7.58 | 7.62 | 0.5% | NA | 101% | 90% | 110% | NA | | | NA | | |
| **Particle Size by Sieve (Wet)** | | | | | | | | | | | | | | | |
| Sieve Analysis - 75 µm (retained) | 9037675 | 9037675 | 5.40 | 4.96 | 8.5% | NA | 99% | 70% | 130% | | | | | | |
| Sieve Analysis - 75 µm (passing) | 9037675 | 9037675 | 94.60 | 95.04 | 0.5% | NA | | 70% | 130% | | | | | | |

Comments: NA signifies Not Applicable.
Duplicate Qualifier: As the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **O. Reg. 153(511) - Metals & Inorganics (Soil)** | | | | | | | | | | | | | | | |
| Antimony | 9055256 | | <0.8 | <0.8 | NA | < 0.8 | 110% | 70% | 130% | 103% | 80% | 120% | 82% | 70% | 130% |
| Arsenic | 9055256 | | 3 | 3 | NA | < 1 | 106% | 70% | 130% | 103% | 80% | 120% | 108% | 70% | 130% |
| Barium | 9055256 | | 63 | 64 | 1.6% | < 2 | 101% | 70% | 130% | 98% | 80% | 120% | 92% | 70% | 130% |
| Beryllium | 9055256 | | <0.5 | <0.5 | NA | < 0.5 | 97% | 70% | 130% | 115% | 80% | 120% | 96% | 70% | 130% |

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# Quality Assurance

**CLIENT NAME: EXP Services Inc**

**AGAT WORK ORDER: 18T306685**

**PROJECT: MRK-000242474-A0-005**

**ATTENTION TO: Leah Whittaker**

**SAMPLING SITE:**

**SAMPLED BY:AJ**

## Soil Analysis (Continued)

| RPT Date: Feb 14, 2018 | | | DUPLICATE | | | | REFERENCE MATERIAL | | | METHOD BLANK SPIKE | | | MATRIX SPIKE | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PARAMETER | Batch | Sample Id | Dup #1 | Dup #2 | RPD | Method Blank | Measured Value | Acceptable Limits | | Recovery | Acceptable Limits | | Recovery | Acceptable Limits | |
| | | | | | | | | Lower | Upper | | Lower | Upper | | Lower | Upper |
| Boron | 9055256 | | 7 | 7 | NA | < 5 | 72% | 70% | 130% | 110% | 80% | 120% | 88% | 70% | 130% |
| Boron (Hot Water Soluble) | 9055256 | | 0.25 | 0.24 | NA | < 0.10 | 106% | 60% | 140% | 100% | 70% | 130% | 98% | 60% | 140% |
| Cadmium | 9055256 | | <0.5 | <0.5 | NA | < 0.5 | 99% | 70% | 130% | 105% | 80% | 120% | 108% | 70% | 130% |
| Chromium | 9055256 | | 14 | 14 | 0.0% | < 2 | 80% | 70% | 130% | 102% | 80% | 120% | 96% | 70% | 130% |
| Cobalt | 9055256 | | 5.8 | 6.0 | 3.4% | < 0.5 | 84% | 70% | 130% | 93% | 80% | 120% | 92% | 70% | 130% |
| Copper | 9055256 | | 13 | 13 | 0.0% | < 1 | 93% | 70% | 130% | 102% | 80% | 120% | 93% | 70% | 130% |
| Lead | 9055256 | | 9 | 11 | 20.0% | < 1 | 99% | 70% | 130% | 89% | 80% | 120% | 93% | 70% | 130% |
| Molybdenum | 9055256 | | <0.5 | <0.5 | NA | < 0.5 | 93% | 70% | 130% | 99% | 80% | 120% | 102% | 70% | 130% |
| Nickel | 9055256 | | 13 | 12 | 8.0% | < 1 | 92% | 70% | 130% | 101% | 80% | 120% | 100% | 70% | 130% |
| Selenium | 9055256 | | <0.4 | <0.4 | NA | < 0.4 | 112% | 70% | 130% | 104% | 80% | 120% | 110% | 70% | 130% |
| Silver | 9055256 | | <0.2 | <0.2 | NA | < 0.2 | 90% | 70% | 130% | 99% | 80% | 120% | 86% | 70% | 130% |
| Thallium | 9055256 | | <0.4 | <0.4 | NA | < 0.4 | 86% | 70% | 130% | 104% | 80% | 120% | 100% | 70% | 130% |
| Uranium | 9055256 | | <0.5 | <0.5 | NA | < 0.5 | 82% | 70% | 130% | 100% | 80% | 120% | 102% | 70% | 130% |
| Vanadium | 9055256 | | 20 | 19 | 5.1% | < 1 | 86% | 70% | 130% | 98% | 80% | 120% | 82% | 70% | 130% |
| Zinc | 9055256 | | 48 | 47 | 2.1% | < 5 | 100% | 70% | 130% | 99% | 80% | 120% | 96% | 70% | 130% |
| Chromium VI | 9055256 | | <0.2 | <0.2 | NA | < 0.2 | 77% | 70% | 130% | 99% | 80% | 120% | 105% | 70% | 130% |
| Cyanide | 9055256 | | <0.040 | <0.040 | NA | < 0.040 | 104% | 70% | 130% | 99% | 80% | 120% | 92% | 70% | 130% |
| Mercury | 9055256 | | <0.10 | <0.10 | NA | < 0.10 | 107% | 70% | 130% | 97% | 80% | 120% | 97% | 70% | 130% |
| Electrical Conductivity | 9055256 | | 0.643 | 0.634 | 1.4% | < 0.005 | 99% | 90% | 110% | NA | | | NA | | |
| Sodium Adsorption Ratio | 9055256 | | 5.32 | 5.16 | 3.1% | NA | NA | | | NA | | | NA | | |
| pH, 2:1 CaCl2 Extraction | 9055256 | | 10.9 | 11.0 | 0.9% | NA | 102% | 80% | 120% | NA | | | NA | | |

Comments: NA signifies Not Applicable.
Duplicate Qualifier: As the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.

**Certified By:** Amanjot Bhela

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# Quality Assurance

**CLIENT NAME: EXP Services Inc**

**AGAT WORK ORDER: 18T306685**

**PROJECT: MRK-000242474-A0-005**

**ATTENTION TO: Leah Whittaker**

**SAMPLING SITE:**

**SAMPLED BY:AJ**

## Trace Organics Analysis

**RPT Date: Feb 14, 2018**

| PARAMETER | Batch | Sample Id | DUPLICATE | | | Method Blank | REFERENCE MATERIAL | | | METHOD BLANK SPIKE | | | MATRIX SPIKE | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Dup #1 | Dup #2 | RPD | | Measured Value | Acceptable Limits | | Recovery | Acceptable Limits | | Recovery | Acceptable Limits | |
| | | | | | | | | Lower | Upper | | Lower | Upper | | Lower | Upper |
| **O. Reg. 153(511) - PAHs (Soil)** | | | | | | | | | | | | | | | |
| Naphthalene | 9018617 | | < 0.05 | < 0.05 | NA | < 0.05 | 109% | 50% | 140% | 104% | 50% | 140% | 106% | 50% | 140% |
| Acenaphthylene | 9018617 | | < 0.05 | < 0.05 | NA | < 0.05 | 116% | 50% | 140% | 104% | 50% | 140% | 94% | 50% | 140% |
| Acenaphthene | 9018617 | | < 0.05 | < 0.05 | NA | < 0.05 | 102% | 50% | 140% | 102% | 50% | 140% | 95% | 50% | 140% |
| Fluorene | 9018617 | | < 0.05 | < 0.05 | NA | < 0.05 | 110% | 50% | 140% | 105% | 50% | 140% | 110% | 50% | 140% |
| Phenanthrene | 9018617 | | < 0.05 | < 0.05 | NA | < 0.05 | 105% | 50% | 140% | 93% | 50% | 140% | 109% | 50% | 140% |
| Anthracene | 9018617 | | < 0.05 | < 0.05 | NA | < 0.05 | 95% | 50% | 140% | 98% | 50% | 140% | 105% | 50% | 140% |
| Fluoranthene | 9018617 | | < 0.05 | < 0.05 | NA | < 0.05 | 101% | 50% | 140% | 101% | 50% | 140% | 110% | 50% | 140% |
| Pyrene | 9018617 | | < 0.05 | < 0.05 | NA | < 0.05 | 98% | 50% | 140% | 93% | 50% | 140% | 115% | 50% | 140% |
| Benz(a)anthracene | 9018617 | | < 0.05 | < 0.05 | NA | < 0.05 | 109% | 50% | 140% | 81% | 50% | 140% | 98% | 50% | 140% |
| Chrysene | 9018617 | | < 0.05 | < 0.05 | NA | < 0.05 | 103% | 50% | 140% | 96% | 50% | 140% | 107% | 50% | 140% |
| Benzo(b)fluoranthene | 9018617 | | < 0.05 | < 0.05 | NA | < 0.05 | 116% | 50% | 140% | 99% | 50% | 140% | 104% | 50% | 140% |
| Benzo(k)fluoranthene | 9018617 | | < 0.05 | < 0.05 | NA | < 0.05 | 97% | 50% | 140% | 105% | 50% | 140% | 89% | 50% | 140% |
| Benzo(a)pyrene | 9018617 | | < 0.05 | < 0.05 | NA | < 0.05 | 104% | 50% | 140% | 95% | 50% | 140% | 88% | 50% | 140% |
| Indeno(1,2,3-cd)pyrene | 9018617 | | < 0.05 | < 0.05 | NA | < 0.05 | 114% | 50% | 140% | 105% | 50% | 140% | 102% | 50% | 140% |
| Dibenz(a,h)anthracene | 9018617 | | < 0.05 | < 0.05 | NA | < 0.05 | 105% | 50% | 140% | 97% | 50% | 140% | 103% | 50% | 140% |
| Benzo(g,h,i)perylene | 9018617 | | < 0.05 | < 0.05 | NA | < 0.05 | 105% | 50% | 140% | 87% | 50% | 140% | 96% | 50% | 140% |
| 2-and 1-methyl Naphthalene | 9018617 | | < 0.05 | < 0.05 | NA | < 0.05 | 114% | 50% | 140% | 104% | 50% | 140% | 102% | 50% | 140% |
| **O. Reg. 153(511) - VOCs (Soil)** | | | | | | | | | | | | | | | |
| Dichlorodifluoromethane | 9029648 | | < 0.05 | < 0.05 | NA | < 0.05 | 117% | 50% | 140% | 98% | 50% | 140% | 105% | 50% | 140% |
| Vinyl Chloride | 9029648 | | < 0.02 | < 0.02 | NA | < 0.02 | 101% | 50% | 140% | 119% | 50% | 140% | 80% | 50% | 140% |
| Bromomethane | 9029648 | | < 0.05 | < 0.05 | NA | < 0.05 | 102% | 50% | 140% | 101% | 50% | 140% | 98% | 50% | 140% |
| Trichlorofluoromethane | 9029648 | | < 0.05 | < 0.05 | NA | < 0.05 | 101% | 50% | 140% | 127% | 50% | 140% | 126% | 50% | 140% |
| Acetone | 9029648 | | < 0.50 | < 0.50 | NA | < 0.50 | 90% | 50% | 140% | 99% | 50% | 140% | 96% | 50% | 140% |
| 1,1-Dichloroethylene | 9029648 | | < 0.05 | < 0.05 | NA | < 0.05 | 77% | 50% | 140% | 102% | 60% | 130% | 100% | 50% | 140% |
| Methylene Chloride | 9029648 | | < 0.05 | < 0.05 | NA | < 0.05 | 84% | 50% | 140% | 115% | 60% | 130% | 116% | 50% | 140% |
| Trans- 1,2-Dichloroethylene | 9029648 | | < 0.05 | < 0.05 | NA | < 0.05 | 88% | 50% | 140% | 87% | 60% | 130% | 95% | 50% | 140% |
| Methyl tert-butyl Ether | 9029648 | | < 0.05 | < 0.05 | NA | < 0.05 | 111% | 50% | 140% | 92% | 60% | 130% | 104% | 50% | 140% |
| 1,1-Dichloroethane | 9029648 | | < 0.02 | < 0.02 | NA | < 0.02 | 86% | 50% | 140% | 88% | 60% | 130% | 98% | 50% | 140% |
| Methyl Ethyl Ketone | 9029648 | | < 0.50 | < 0.50 | NA | < 0.50 | 101% | 50% | 140% | 81% | 50% | 140% | 88% | 50% | 140% |
| Cis- 1,2-Dichloroethylene | 9029648 | | < 0.02 | < 0.02 | NA | < 0.02 | 73% | 50% | 140% | 85% | 60% | 130% | 93% | 50% | 140% |
| Chloroform | 9029648 | | < 0.04 | < 0.04 | NA | < 0.04 | 76% | 50% | 140% | 81% | 60% | 130% | 92% | 50% | 140% |
| 1,2-Dichloroethane | 9029648 | | < 0.03 | < 0.03 | NA | < 0.03 | 72% | 50% | 140% | 81% | 60% | 130% | 86% | 50% | 140% |
| 1,1,1-Trichloroethane | 9029648 | | < 0.05 | < 0.05 | NA | < 0.05 | 89% | 50% | 140% | 82% | 60% | 130% | 87% | 50% | 140% |
| Carbon Tetrachloride | 9029648 | | < 0.05 | < 0.05 | NA | < 0.05 | 86% | 50% | 140% | 75% | 60% | 130% | 79% | 50% | 140% |
| Benzene | 9029648 | | < 0.02 | < 0.02 | NA | < 0.02 | 71% | 50% | 140% | 88% | 60% | 130% | 92% | 50% | 140% |
| 1,2-Dichloropropane | 9029648 | | < 0.03 | < 0.03 | NA | < 0.03 | 78% | 50% | 140% | 89% | 60% | 130% | 92% | 50% | 140% |
| Trichloroethylene | 9029648 | | < 0.03 | < 0.03 | NA | < 0.03 | 70% | 50% | 140% | 87% | 60% | 130% | 91% | 50% | 140% |
| Bromodichloromethane | 9029648 | | < 0.05 | < 0.05 | NA | < 0.05 | 78% | 50% | 140% | 78% | 60% | 130% | 85% | 50% | 140% |

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# Quality Assurance

**CLIENT NAME: EXP Services Inc**

**AGAT WORK ORDER: 18T306685**

**PROJECT: MRK-000242474-A0-005**

**ATTENTION TO: Leah Whittaker**

**SAMPLING SITE:**

**SAMPLED BY:AJ**

## Trace Organics Analysis (Continued)

| RPT Date: Feb 14, 2018 | | | DUPLICATE | | | | REFERENCE MATERIAL | | | METHOD BLANK SPIKE | | | MATRIX SPIKE | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PARAMETER | Batch | Sample Id | Dup #1 | Dup #2 | RPD | Method Blank | Measured Value | Acceptable Limits | | Recovery | Acceptable Limits | | Recovery | Acceptable Limits | |
| | | | | | | | | Lower | Upper | | Lower | Upper | | Lower | Upper |
| Methyl Isobutyl Ketone | 9029648 | | < 0.50 | < 0.50 | NA | < 0.50 | 91% | 50% | 140% | 80% | 50% | 140% | 84% | 50% | 140% |
| 1,1,2-Trichloroethane | 9029648 | | < 0.04 | < 0.04 | NA | < 0.04 | 114% | 50% | 140% | 95% | 60% | 130% | 96% | 50% | 140% |
| Toluene | 9029648 | | < 0.02 | < 0.02 | NA | < 0.02 | 92% | 50% | 140% | 98% | 60% | 130% | 99% | 50% | 140% |
| Dibromochloromethane | 9029648 | | < 0.05 | < 0.05 | NA | < 0.05 | 88% | 50% | 140% | 80% | 60% | 130% | 83% | 50% | 140% |
| Ethylene Dibromide | 9029648 | | < 0.04 | < 0.04 | NA | < 0.04 | 98% | 50% | 140% | 89% | 60% | 130% | 92% | 50% | 140% |
| Tetrachloroethylene | 9029648 | | < 0.05 | < 0.05 | NA | < 0.05 | 90% | 50% | 140% | 97% | 60% | 130% | 99% | 50% | 140% |
| 1,1,1,2-Tetrachloroethane | 9029648 | | < 0.04 | < 0.04 | NA | < 0.04 | 103% | 50% | 140% | 88% | 60% | 130% | 91% | 50% | 140% |
| Chlorobenzene | 9029648 | | < 0.05 | < 0.05 | NA | < 0.05 | 108% | 50% | 140% | 96% | 60% | 130% | 98% | 50% | 140% |
| Ethylbenzene | 9029648 | | < 0.05 | < 0.05 | NA | < 0.05 | 104% | 50% | 140% | 93% | 60% | 130% | 95% | 50% | 140% |
| m & p-Xylene | 9029648 | | < 0.05 | < 0.05 | NA | < 0.05 | 106% | 50% | 140% | 92% | 60% | 130% | 96% | 50% | 140% |
| Bromoform | 9029648 | | < 0.05 | < 0.05 | NA | < 0.05 | 99% | 50% | 140% | 74% | 60% | 130% | 79% | 50% | 140% |
| Styrene | 9029648 | | < 0.05 | < 0.05 | NA | < 0.05 | 81% | 50% | 140% | 90% | 60% | 130% | 87% | 50% | 140% |
| 1,1,2,2-Tetrachloroethane | 9029648 | | < 0.05 | < 0.05 | NA | < 0.05 | 73% | 50% | 140% | 86% | 60% | 130% | 90% | 50% | 140% |
| o-Xylene | 9029648 | | < 0.05 | < 0.05 | NA | < 0.05 | 110% | 50% | 140% | 93% | 60% | 130% | 96% | 50% | 140% |
| 1,3-Dichlorobenzene | 9029648 | | < 0.05 | < 0.05 | NA | < 0.05 | 121% | 50% | 140% | 84% | 60% | 130% | 86% | 50% | 140% |
| 1,4-Dichlorobenzene | 9029648 | | < 0.05 | < 0.05 | NA | < 0.05 | 124% | 50% | 140% | 87% | 60% | 130% | 91% | 50% | 140% |
| 1,2-Dichlorobenzene | 9029648 | | < 0.05 | < 0.05 | NA | < 0.05 | 124% | 50% | 140% | 85% | 60% | 130% | 85% | 50% | 140% |
| 1,3-Dichloropropene | 9029648 | | < 0.04 | < 0.04 | NA | < 0.04 | 88% | 50% | 140% | 102% | 60% | 130% | 118% | 50% | 140% |
| n-Hexane | 9029648 | | < 0.05 | < 0.05 | NA | < 0.05 | 94% | 50% | 140% | 93% | 60% | 130% | 96% | 50% | 140% |
| **O. Reg. 153(511) - PHCs F1 - F4 (-BTEX) (Soil)** | | | | | | | | | | | | | | | |
| F1 (C6 to C10) | 9040254 | | < 5 | < 5 | NA | < 5 | 80% | 60% | 130% | 86% | 85% | 115% | 78% | 70% | 130% |
| F2 (C10 to C16) | 9038085 | | < 10 | < 10 | NA | < 10 | 102% | 60% | 130% | 100% | 80% | 120% | 97% | 70% | 130% |
| F3 (C16 to C34) | 9038085 | | < 50 | < 50 | NA | < 50 | 106% | 60% | 130% | 103% | 80% | 120% | 108% | 70% | 130% |
| F4 (C34 to C50) | 9038085 | | < 50 | < 50 | NA | < 50 | 101% | 60% | 130% | 93% | 80% | 120% | 98% | 70% | 130% |

Comments:
When the average of the sample and duplicate results is less than 5x the RDL, the Relative Percent Difference (RPD) will be indicated as Not Applicable (NA).

***Certified By:***

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# Method Summary

**CLIENT NAME: EXP Services Inc**

**AGAT WORK ORDER: 18T306685**

**PROJECT: MRK-000242474-A0-005**

**ATTENTION TO: Leah Whittaker**

**SAMPLING SITE:**

**SAMPLED BY:AJ**

| PARAMETER | AGAT S.O.P | LITERATURE REFERENCE | ANALYTICAL TECHNIQUE |
|---|---|---|---|
| **Soil Analysis** | | | |
| Antimony | MET-93-6103 | EPA SW-846 3050B & 6020A | ICP-MS |
| Arsenic | MET-93-6103 | EPA SW-846 3050B & 6020A | ICP-MS |
| Barium | MET-93-6103 | EPA SW-846 3050B & 6020A | ICP-MS |
| Beryllium | MET-93-6103 | EPA SW-846 3050B & 6020A | ICP-MS |
| Boron | MET-93-6103 | EPA SW-846 3050B & 6020A | ICP-MS |
| Boron (Hot Water Soluble) | MET-93-6104 | EPA SW 846 6010C; MSA, Part 3, Ch.21 | ICP/OES |
| Cadmium | MET-93-6103 | EPA SW-846 3050B & 6020A | ICP-MS |
| Chromium | MET-93-6103 | EPA SW-846 3050B & 6020A | ICP-MS |
| Cobalt | MET-93-6103 | EPA SW-846 3050B & 6020A | ICP-MS |
| Copper | MET-93-6103 | EPA SW-846 3050B & 6020A | ICP-MS |
| Lead | MET-93-6103 | EPA SW-846 3050B & 6020A | ICP-MS |
| Molybdenum | MET-93-6103 | EPA SW-846 3050B & 6020A | ICP-MS |
| Nickel | MET-93-6103 | EPA SW-846 3050B & 6020A | ICP-MS |
| Selenium | MET-93-6103 | EPA SW-846 3050B & 6020A | ICP-MS |
| Silver | MET-93-6103 | EPA SW-846 3050B & 6020A | ICP-MS |
| Thallium | MET-93-6103 | EPA SW-846 3050B & 6020A | ICP-MS |
| Uranium | MET-93-6103 | EPA SW-846 3050B & 6020A | ICP-MS |
| Vanadium | MET-93-6103 | EPA SW-846 3050B & 6020A | ICP-MS |
| Zinc | MET-93-6103 | EPA SW-846 3050B & 6020A | ICP-MS |
| Chromium VI | INOR-93-6029 | SM 3500 B; MSA Part 3, Ch. 25 | SPECTROPHOTOMETER |
| Cyanide | INOR-93-6052 | MOE CN-3015 & E 3009 A;SM 4500 CN | TECHNICON AUTO ANALYZER |
| Mercury | MET-93-6103 | EPA SW-846 3050B & 6020A | ICP-MS |
| Electrical Conductivity | INOR-93-6036 | McKeague 4.12, SM 2510 B | EC METER |
| Sodium Adsorption Ratio | INOR-93-6007 | McKeague 4.12 & 3.26 & EPA SW-846 6010B | ICP/OES |
| pH, 2:1 CaCl2 Extraction | INOR-93-6031 | MSA part 3 & SM 4500-H+ B | PH METER |
| pH, 2:1 CaCl2 Extraction | INOR-93-6031 | MSA part 3 & SM 4500-H+ B | pH METER |
| Sieve Analysis - 75 µm (retained) | | KROETSCH 2007; SHEPPARD 2007 | SIEVE |
| Sieve Analysis - 75 µm (passing) | | KROETSCH 2007; SHEPPARD 2007 | SIEVE |

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# Method Summary

**CLIENT NAME: EXP Services Inc**

**AGAT WORK ORDER: 18T306685**

**PROJECT: MRK-000242474-A0-005**

**ATTENTION TO: Leah Whittaker**

**SAMPLING SITE:**

**SAMPLED BY:AJ**

| PARAMETER | AGAT S.O.P | LITERATURE REFERENCE | ANALYTICAL TECHNIQUE |
|---|---|---|---|
| **Trace Organics Analysis** | | | |
| Naphthalene | ORG-91-5106 | EPA SW846 3541 & 8270 | GC/MS |
| Acenaphthylene | ORG-91-5106 | EPA SW846 3541 & 8270 | GC/MS |
| Acenaphthene | ORG-91-5106 | EPA SW846 3541 & 8270 | GC/MS |
| Fluorene | ORG-91-5106 | EPA SW846 3541 & 8270 | GC/MS |
| Phenanthrene | ORG-91-5106 | EPA SW846 3541 & 8270 | GC/MS |
| Anthracene | ORG-91-5106 | EPA SW846 3541 & 8270 | GC/MS |
| Fluoranthene | ORG-91-5106 | EPA SW846 3541 & 8270 | GC/MS |
| Pyrene | ORG-91-5106 | EPA SW846 3541 & 8270 | GC/MS |
| Benz(a)anthracene | ORG-91-5106 | EPA SW846 3541 & 8270 | GC/MS |
| Chrysene | ORG-91-5106 | EPA SW846 3541 & 8270 | GC/MS |
| Benzo(b)fluoranthene | ORG-91-5106 | EPA SW846 3541 & 8270 | GC/MS |
| Benzo(k)fluoranthene | ORG-91-5106 | EPA SW846 3541 & 8270 | GC/MS |
| Benzo(a)pyrene | ORG-91-5106 | EPA SW846 3541 & 8270 | GC/MS |
| Indeno(1,2,3-cd)pyrene | ORG-91-5106 | EPA SW846 3541 & 8270 | GC/MS |
| Dibenz(a,h)anthracene | ORG-91-5106 | EPA SW846 3541 & 8270 | GC/MS |
| Benzo(g,h,i)perylene | ORG-91-5106 | EPA SW846 3541 & 8270 | GC/MS |
| 2-and 1-methyl Naphthalene | ORG-91-5106 | EPA SW846 3541 & 8270 | GC/MS |
| Moisture Content | ORG-91-5106 | EPA SW-846 3541 & 8270 | BALANCE |
| Chrysene-d12 | ORG-91-5106 | EPA SW846 3541 & 8270 | GC/MS |
| F1 (C6 to C10) | VOL-91-5009 | CCME Tier 1 Method, SW846 5035 | P &T GC / FID |
| F1 (C6 to C10) minus BTEX | VOL-91-5009 | CCME Tier 1 Method, SW846 5035 | P & T GC / FID |
| F2 (C10 to C16) | VOL-91-5009 | CCME Tier 1 Method | GC / FID |
| F3 (C16 to C34) | VOL-91-5009 | CCME Tier 1 Method | GC / FID |
| F4 (C34 to C50) | VOL-91-5009 | CCME Tier 1 Method | GC / FID |
| Gravimetric Heavy Hydrocarbons | VOL-91-5009 | CCME Tier 1 Method | Balance |
| Moisture Content | VOL-91-5009 | CCME Tier 1 Method, SW846 5035,8015 | BALANCE |
| Terphenyl | VOL-91-5009 | CCME Tier 1 Method | GC/FID |
| Dichlorodifluoromethane | VOL-91-5002 | EPA SW-846 5035 & 8260 | (P&T)GC/MS |
| Vinyl Chloride | VOL-91-5002 | EPA SW-846 5035 & 8260 | (P&T)GC/MS |
| Bromomethane | VOL-91-5002 | EPA SW-846 5035 & 8260 | (P&T)GC/MS |
| Trichlorofluoromethane | VOL-91-5002 | EPA SW-846 5035 & 8260 | (P&T)GC/MS |
| Acetone | VOL-91-5002 | EPA SW-846 5035 & 8260 | (P&T)GC/MS |
| 1,1-Dichloroethylene | VOL-91-5002 | EPA SW-846 5035 & 8260 | (P&T)GC/MS |
| Methylene Chloride | VOL-91-5002 | EPA SW-846 5035 & 8260 | (P&T)GC/MS |
| Trans- 1,2-Dichloroethylene | VOL-91-5002 | EPA SW-846 5035 & 8260 | (P&T)GC/MS |
| Methyl tert-butyl Ether | VOL-91-5002 | EPA SW-846 5035 & 8260 | (P&T)GC/MS |
| 1,1-Dichloroethane | VOL-91-5002 | EPA SW-846 5035 & 8260 | (P&T)GC/MS |
| Methyl Ethyl Ketone | VOL-91-5002 | EPA SW-846 5035 & 8260 | (P&T)GC/MS |
| Cis- 1,2-Dichloroethylene | VOL-91-5002 | EPA SW-846 5035 & 8260 | (P&T)GC/MS |
| Chloroform | VOL-91-5002 | EPA SW-846 5035 & 8260 | (P&T)GC/MS |
| 1,2-Dichloroethane | VOL-91-5002 | EPA SW-846 5035 & 8260 | (P&T)GC/MS |
| 1,1,1-Trichloroethane | VOL-91-5002 | EPA SW-846 5035 & 8260 | (P&T)GC/MS |
| Carbon Tetrachloride | VOL-91-5002 | EPA SW-846 5035 & 8260 | (P&T)GC/MS |
| Benzene | VOL-91-5002 | EPA SW-846 5035 & 8260 | (P&T)GC/MS |
| 1,2-Dichloropropane | VOL-91-5002 | EPA SW-846 5035 & 8260 | (P&T)GC/MS |
| Trichloroethylene | VOL-91-5002 | EPA SW-846 5035 & 8260 | (P&T)GC/MS |
| Bromodichloromethane | VOL-91-5002 | EPA SW-846 5035 & 8260 | (P&T)GC/MS |
| Methyl Isobutyl Ketone | VOL-91-5002 | EPA SW-846 5035 & 8260 | (P&T)GC/MS |

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# Method Summary

**CLIENT NAME: EXP Services Inc**

**AGAT WORK ORDER: 18T306685**

**PROJECT: MRK-000242474-A0-005**

**ATTENTION TO: Leah Whittaker**

**SAMPLING SITE:**

**SAMPLED BY:AJ**

| PARAMETER | AGAT S.O.P | LITERATURE REFERENCE | ANALYTICAL TECHNIQUE |
|---|---|---|---|
| 1,1,2-Trichloroethane | VOL-91-5002 | EPA SW-846 5035 & 8260 | (P&T)GC/MS |
| Toluene | VOL-91-5002 | EPA SW-846 5035 & 8260 | (P&T)GC/MS |
| Dibromochloromethane | VOL-91-5002 | EPA SW-846 5035 & 8260 | (P&T)GC/MS |
| Ethylene Dibromide | VOL-91-5002 | EPA SW-846 5035 & 8260 | (P&T)GC/MS |
| Tetrachloroethylene | VOL-91-5002 | EPA SW-846 5035 & 8260 | (P&T)GC/MS |
| 1,1,1,2-Tetrachloroethane | VOL-91-5002 | EPA SW-846 5035 & 8260 | (P&T)GC/MS |
| Chlorobenzene | VOL-91-5002 | EPA SW-846 5035 & 8260 | (P&T)GC/MS |
| Ethylbenzene | VOL-91-5002 | EPA SW-846 5035 & 8260 | (P&T)GC/MS |
| m & p-Xylene | VOL-91-5002 | EPA SW-846 5035 & 8260 | (P&T)GC/MS |
| Bromoform | VOL-91-5002 | EPA SW-846 5035 & 8260 | (P&T)GC/MS |
| Styrene | VOL-91-5002 | EPA SW-846 5035 & 8260 | (P&T)GC/MS |
| 1,1,2,2-Tetrachloroethane | VOL-91-5002 | EPA SW-846 5035 & 8260 | (P&T)GC/MS |
| o-Xylene | VOL-91-5002 | EPA SW-846 5035 & 8260 | (P&T)GC/MS |
| 1,3-Dichlorobenzene | VOL-91-5002 | EPA SW-846 5035 & 8260 | (P&T)GC/MS |
| 1,4-Dichlorobenzene | VOL-91-5002 | EPA SW-846 5035 & 8260 | (P&T)GC/MS |
| 1,2-Dichlorobenzene | VOL-91-5002 | EPA SW-846 5035 & 8260 | (P&T)GC/MS |
| Xylene Mixture | VOL-91-5002 | EPA SW-846 5035 & 8260 | (P&T)GC/MS |
| 1,3-Dichloropropene | VOL-91-5002 | EPA SW-846 5035 & 8260 | (P&T)GC/MS |
| n-Hexane | VOL-91-5002 | EPA SW-846 5035 & 8260 | (P&T)GC/MS |
| Toluene-d8 | VOL-91-5002 | EPA SW-846 5035 & 8260 | (P&T)GC/MS |
| 4-Bromofluorobenzene | VOL-91-5002 | EPA SW-846 5035 & 8260 | (P&T)GC/MS |

# AGAT Laboratories

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## Chain of Custody Record

**If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form** (potable water intended for human consumption)

**Laboratory Use Only**
Work Order #: 18T3 06685
Cooler Quantity: 1 of 1
Arrival Temperatures: 3.9 | 5.5 | 3.7 / 3.3 | 3 | 2.8
Custody Seal Intact: ☐Yes ☐No ☐N/A
Notes:

### Report Information:
Company: Exp Services Inc
Contact: Leah Whitfaker
Address: 220 Commerce Valley D. 10
Markham, ON.
Phone: 9/6953212 Fax:
Reports to be sent to:
1. Email: leah.whitfaker@exp.com
2. Email: Gary.Jayaletl@exp.com

### Project Information:
Project: MRK-000242474-A0-005
Site Location:
Sampled By: AO
AGAT Quote #: PO:
Please note: If quotation number is not provided, client will be billed full price for analysis.

### Invoice Information:
Bill To Same: Yes ☐ No ☐
Company:
Contact:
Address:
Email:

### Regulatory Requirements:
☐ No Regulatory Requirement
(Please check all applicable boxes)

☑ Regulation 153/04
Table 3 (Indicate One)
☐ Ind/Com
☑ Res/Park
☐ Agriculture
Soil Texture (Check One)
☐ Coarse
☑ Fine

☐ Sewer Use
☐ Sanitary
☐ Storm
Region (Indicate One)

☐ Regulation 558
☐ CCME
☐ Prov. Water Quality Objectives (PWQO)
☐ Other
(Indicate One)

Is this submission for a **Record of Site Condition?** ☐ Yes ☐ No

**Report Guideline on Certificate of Analysis** ☑ Yes ☐ No

### Turnaround Time (TAT) Required:
**Regular TAT** ☑ 5 to 7 Business Days
**Rush TAT** (Rush Surcharges Apply) 4
☐ 3 Business Days ☐ 2 Business Days ☐ 1 Business Day
**OR** Date Required (Rush Surcharges May Apply):
Please provide prior notification for rush TAT
*TAT is exclusive of weekends and statutory holidays

### Sample Matrix Legend
B Biota
GW Ground Water
O Oil
P Paint
S Soil
SD Sediment
SW Surface Water

| Sample Identification | Date Sampled | Time Sampled | # of Containers | Sample Matrix | Comments/ Special Instructions | Field Filtered - Metals, Hg, CrVI (Please Circle) Y / N | Metals and Inorganics | Metal Scan | Hydride Forming Metals | Client Custom Metals | (Check Applicable) ORPs: ☐B-HWS ☐Cl⁻ ☐CN⁻ ☐EC ☐FOC ☐$NO_2$/$NO_3$ ☐Total N ☐Hg ☐pH ☐SAR | Nutrients: ☐TP ☐$NH_3$ ☐TKN ☐$NO_3$ ☐$NO_2$ ☐$NO_3$/$NO_2$ | Volatiles: ☐VOC ☐BTEX ☐THM | CCME Fractions 1 to 4 | ABNs | PAHs | Chlorophenols | PCBs | Organochlorine Pesticides | TCLP Metals/Inorganics | Sewer Use | pH | grain size |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TH1-SS1 | 1/25/18 | | 2 | S | | | ✓ | | | | | | | | | ✓ | | | | | | |
| TH1-SS2 | | | 1 | S | | | | | | | | | | | | | | | | | ✓ | |
| TH1-SS5 | | | 2 | S | | | | | | | | | ✓ | ✓ | | | | | | | | |
| TH1-SS501 | | | 2 | S | | | | | | | | | ✓ | ✓ | | | | | | | | |
| TH1-SS6 | | | 1 | S | | | | | | | | | | | | | | | | | | ✓ |
| TH1-SS7 | | | 2 | S | Hold | | | | | | | | ✓ | ✓ | | | | | | | | |
| TH1-SS3 | | | 2 | S | Hold | | ✓ | | | | | | | | | ✓ | | | | | | |
| TH2-SS1 | 1/26/18 | | 1 | S | | | ✓ | | | | | | | | | ✓ | | | | | | |
| TH2-SS101 | | | 1 | S | | | | | | | | | | | | ✓ | | | | | | |
| TH2-SS2 | | | 1 | S | | | ✓ | | | | | | | | | | | | | | | |
| TH2-SS201 | | | 1 | S | | | ✓ | | | | | | | | | | | | | | | |

| Samples Relinquished By (Print Name and Sign): | Date | Time | Samples Received By (Print Name and Sign): | Date | Time |
|---|---|---|---|---|---|
| Gary Jayaletl | Jan 29/18 | 12 pm | | 2018/1/30 | 12:43 |
| | 2018/1/30 | 2:00 | | | |
| | | | | | |

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Nº: T 037643

Document ID:DIV-78 1511.011

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Date Issued: Feb 18, 2016

# AGAT Laboratories

5835 Coopers Avenue
Mississauga, Ontario L4Z 1Y2
Ph: 905.712.5100 Fax: 905.712.5122
webearth.agatlabs.com

## Chain of Custody Record

**If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form** (potable water intended for human consumption)

### Laboratory Use Only

Work Order #:

Cooler Quantity: 1 cmp

Arrival Temperatures: 3.9 | 3.5 | 3.7
2.3 | 3 | 2.8

Custody Seal Intact: ☐Yes ☐No ☐N/A

Notes:

### Report Information:

Company: Exp Services Inc
Contact: Leah Whittaker
Address: 220 Commerce Valley Dr W
Markham, ON
Phone: 9/695 3217 Fax:
Reports to be sent to:
1. Email: Tracy-Jayalath@exp.com
2. Email: Leah.Whittaker@exp.com

### Regulatory Requirements:

☐ No Regulatory Requirement
(Please check all applicable boxes)

☑ Regulation 153/04
Table 3 (Indicate One)
☐ Ind/Comm
☑ Res/Park
☐ Agriculture
Soil Texture (Check One)
☐ Coarse
☑ Fine

☐ Sewer Use
☐ Sanitary
☐ Storm
Region ____ (Indicate One)

☐ Regulation 558
☐ CCME
☐ Prov. Water Quality Objectives (PWQO)
☐ Other
____ (Indicate One)

Is this submission for a **Record of Site Condition?** ☐ Yes ☐ No

**Report Guideline on *Certificate of Analysis*** ☑ Yes ☐ No

### Turnaround Time (TAT) Required:

**Regular TAT** ☐ 5 to 7 Business Days

**Rush TAT** (Rush Surcharges Apply) 4

☐ 3 Business Days ☐ 2 Business Days ☐ 1 Business Day

**OR** Date Required (Rush Surcharges May Apply):

*Please provide prior notification for rush TAT*
**TAT is exclusive of weekends and statutory holidays*

### Project Information:

Project: MRR-000294474-A0-005
Site Location:
Sampled By: AJ
AGAT Quote #: PO:
Please note: If quotation number is not provided, client will be billed full price for analysis.

### Invoice Information:

Bill To Same: Yes ☑ No ☐

Company:
Contact:
Address:
Email:

### Sample Matrix Legend

| | |
|---|---|
| B | Biota |
| GW | Ground Water |
| O | Oil |
| P | Paint |
| S | Soil |
| SD | Sediment |
| SW | Surface Water |

| Sample Identification | Date Sampled | Time Sampled | # of Containers | Sample Matrix | Comments/ Special Instructions | Field Filtered - Metals, Hg, CrVI (Please Circle) Y / N | Metals and Inorganics | Metal Scan | Hydride Forming Metals | Client Custom Metals | ORPs: ☐B-HWS ☐Cl ☐CN ☐EC ☐FOC ☐$NO_3/NO_2$ ☐$Cr^{6+}$ ☐Total N ☐Hg ☐pH ☐SAR | Nutrients: ☐TP ☐$NH_3$ ☐TKN ☐$NO_3$ ☐$NO_2$ ☐$NO_3/NO_2$ | Volatiles: ☑VOC ☐BTEX ☐THM | CCME Fractions 1 to 4 | ABNs | PAHs | Chlorophenols | PCBs | Organochlorine Pesticides | TCLP Metals/Inorganics | Sewer Use | grain size |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TH2-SS4 | 1/26/18 | | 2 | S | Hold | | ✓ | | | | | | | | | ✓ | | | | | | |
| TH2-SS5 | | | 2 | S | | | | | | | | | ✓ | ✓ | | | | | | | | |
| TH2-SS8 | | | 2 | S | Hold | | | | | | | | ✓ | ✓ | | | | | | | | |
| TH3-SS1 | 1/29/18 | | 2 | S | | | ✓ | | | | | | | | | ✓ | | | | | | |
| TH3-SS4 | | | 2 | S | Hold | | ✓ | | | | | | | | | ✓ | | | | | | |
| TH3-SS6 | | | 2 | S | | | | | | | | | ✓ | ✓ | | | | | | | | |
| TH3-SS8 | | | 2 | S | Hold | | | | | | | | ✓ | ✓ | | | | | | | | |
| TH4-SS1 | | | 2 | S | | | ✓ | | | | | | | | | ✓ | | | | | | |
| TH4-SS4 | | | 2 | S | Hold | | ✓ | | | | | | | | | ✓ | | | | | | |
| TH4-SS5 | | | 2 | S | | | | | | | | | ✓ | | | | | | | | ✓ | |
| TH4-SS8 | | | 2 | S | Hold | | | | | | | | ✓ | ✓ | | | | | | | | |

| Samples Relinquished By (Print Name and Sign): | Date | Time | Samples Received By (Print Name and Sign): | Date | Time |
|---|---|---|---|---|---|
| Tracy Jayalath | Jan 29/18 | 9am | | 2018/1/30 | 12:43 |
| Samples Relinquished By (Print Name and Sign): | Date 2018/1/30 | Time 2:00 | Samples Received By (Print Name and Sign): | Date | Time |
| Samples Relinquished By (Print Name and Sign): | Date | Time | Samples Received By (Print Name and Sign): | Date | Time |

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Nº: T 037644

Document ID: Div 78-1511.011

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Date Issued: FEB 18, 2016

AGAT Laboratories
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webearth.agatlabs.com

# Chain of Custody Record

**If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form** (potable water intended for human consumption)

## Laboratory Use Only

Work Order #: _____

Cooler Quantity: 1 on ice

Arrival Temperatures: 3.9 | 3.5 | 3.7
3.8 | 3 | 2.8

Custody Seal Intact: ☐ Yes ☐ No ☐ N/A

Notes: _____

## Report Information:

Company: Exp Services Inc

Contact: _____

Address: _____

Phone: _____ Fax: _____

*Reports to be sent to:*

1. Email: Mech.Whittaker@exp.com
2. Email: _____

## Regulatory Requirements:

☐ No Regulatory Requirement

*(Please check all applicable boxes)*

☐ Regulation 153/04
Table _____ *Indicate One*
☐ Ind/Com
☐ Res/Park
☐ Agriculture
Soil Texture *(Check One)*
☐ Coarse
☐ Fine

☐ Sewer Use
☐ Sanitary
☐ Storm
Region _____ *Indicate One*

☐ Regulation 558
☐ CCME
☐ Prov. Water Quality Objectives (PWQO)
☐ Other
_____ *Indicate One*

Is this submission for a **Record of Site Condition?** ☑ Yes ☐ No

**Report Guideline on *Certificate of Analysis*** ☑ Yes ☐ No

## Turnaround Time (TAT) Required:

**Regular TAT** ☑ 5 to 7 Business Days

**Rush TAT** (Rush Surcharges Apply)

☐ 3 Business Days ☐ 2 Business Days ☐ 1 Business Day

**OR** Date Required (Rush Surcharges May Apply): _____

*Please provide prior notification for rush TAT*
**TAT is exclusive of weekends and statutory holidays*

## Project Information:

Project: MRC-0002424-Fy-AO-005

Site Location: _____

Sampled By: _____

AGAT Quote #: _____ PO: _____

*Please note: If quotation number is not provided, client will be billed full price for analysis.*

## Invoice Information:

Bill To Same: Yes ☑ No ☐

Company: _____

Contact: _____

Address: _____

Email: _____

## Sample Matrix Legend

| | |
|---|---|
| **B** | Biota |
| **GW** | Ground Water |
| **O** | Oil |
| **P** | Paint |
| **S** | Soil |
| **SD** | Sediment |
| **SW** | Surface Water |

| Sample Identification | Date Sampled | Time Sampled | # of Containers | Sample Matrix | Comments/ Special Instructions | Field Filtered - Metals, Hg, CrVI (Please Circle) Y / N | Metals and Inorganics | Metal Scan | Hydride Forming Metals | Client Custom Metals | (Check Applicable) ORPs: ☐ B-HWS ☐ Cl ☐ CN ☐ $Cr^{6+}$ ☐ EC ☐ FOC ☐ $NO_3/NO_2$ ☐ Total N ☐ Hg ☐ pH ☐ SAR | (Check Applicable) Nutrients: ☐ TP ☐ $NH_3$ ☐ TKN ☐ $NO_3$ ☐ $NO_2$ ☐ $NO_3/NO_2$ | (Check Applicable) Volatiles: ☐ VOC ☐ BTEX ☐ THM | CCME Fractions 1 to 4 | ABNs | PAHs | Chlorophenols | PCBs | Organochlorine Pesticides | TCLP Metals/Inorganics | Sewer Use | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| THI-SS10 | 1/29/18 | | 1 | S | | | | | | | | | | | | | | | | | |

| Samples Relinquished By (Print Name and Sign): | Date | Time | Samples Received By (Print Name and Sign): | Date | Time |
|---|---|---|---|---|---|
| [illegible] | Jan 30/18 | 12 | [illegible] | 2018/1/30 | 12:44 |
| [illegible] | 2018/1/30 | 21:00 | | | |
| | | | | | |

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Nº: T 037661

AGAT Laboratories

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

**CLIENT NAME:** **EXP Services Inc**
**220 Commerce Valley Drive West,Suite 500**
**Markham, ON, ON L3T0A8**
**(905) 695-3217**

**ATTENTION TO:** **Leah Whittaker**

**PROJECT:** **MRK-00242474-A0-005**

**AGAT WORK ORDER:** **18T307737**

**TRACE ORGANICS REVIEWED BY:** **Neli Popnikolova, Senior Chemist**

**DATE REPORTED:** **Feb 07, 2018**

**PAGES (INCLUDING COVER):** **11**

**VERSION*:** **1**

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

***NOTES***

**All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.**

AGAT Laboratories

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CANADA L4Z 1Y2
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FAX (905)712-5122
http://www.agatlabs.com

# Certificate of Analysis

**AGAT WORK ORDER: 18T307737**

**PROJECT: MRK-00242474-A0-005**

**CLIENT NAME: EXP Services Inc**

**ATTENTION TO: Leah Whittaker**

**SAMPLING SITE:**

**SAMPLED BY:HN**

## O. Reg. 153(511) - PHCs F1 - F4 (-BTEX) (Water)

**DATE RECEIVED: 2018-02-01**

**DATE REPORTED: 2018-02-07**

| | | SAMPLE DESCRIPTION: | | TH 3 | TH 4 | TH 300 |
|---|---|---|---|---|---|---|
| | | SAMPLE TYPE: | | Water | Water | Water |
| | | DATE SAMPLED: | | 2018-01-31 | 2018-01-31 | 2018-01-31 |
| Parameter | Unit | G / S | RDL | 9042565 | 9042710 | 9042711 |
| F1 (C6 to C10) | µg/L | 750 | 25 | <25 | <25 | <25 |
| F1 (C6 to C10) minus BTEX | µg/L | 750 | 25 | <25 | <25 | <25 |
| F2 (C10 to C16) | µg/L | 150 | 100 | <100 | <100 | <100 |
| F3 (C16 to C34) | µg/L | 500 | 100 | <100 | 180 | <100 |
| F4 (C34 to C50) | µg/L | 500 | 100 | <100 | <100 | <100 |
| Gravimetric Heavy Hydrocarbons | µg/L | 500 | 500 | NA | NA | NA |
| **Surrogate** | **Unit** | **Acceptable Limits** | | | | |
| Terphenyl | % | 60-140 | | 89 | 89 | 94 |

**Comments:** RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Non-Potable Ground Water - All Types of Property Uses - Medium and Fine Textured Soils
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

**9042565-9042711** The C6-C10 fraction is calculated using Toluene response factor.
The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and nC34.
Gravimetric Heavy Hydrocarbons are not included in the Total C16 - C50 and are only determined if the chromatogram of the C34 - C50 Hydrocarbons indicated that hydrocarbons >C50 are present.
The chromatogram has returned to baseline by the retention time of nC50.
Total C6-C50 results are corrected for BTEX contributions.
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
nC6 and nC10 response factors are within 30% of Toluene response factor.
nC10, nC16 and nC34 response factors are within 10% of their average.
C50 response factor is within 70% of nC10 + nC16 nC34 average.
Linearity is within 15%.
Extraction and holding times were met for this sample.
Fractions 1-4 are quantified with the contribution of PAHs. Under Ontario Regulation 153, results are considered valid without determining the PAH contribution if not requested by the client.

***Certified By:*** N Popnikolof

AGAT Laboratories

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

# Certificate of Analysis

**AGAT WORK ORDER: 18T307737**

**PROJECT: MRK-00242474-A0-005**

**CLIENT NAME: EXP Services Inc**

**ATTENTION TO: Leah Whittaker**

**SAMPLING SITE:**

**SAMPLED BY:HN**

## O. Reg. 153(511) - PHCs F1/BTEX (Water)

**DATE RECEIVED: 2018-02-01**

**DATE REPORTED: 2018-02-07**

| | | SAMPLE DESCRIPTION: | | Trip Blank |
|---|---|---|---|---|
| | | SAMPLE TYPE: | | Water |
| | | DATE SAMPLED: | | 2018-01-31 |
| Parameter | Unit | G / S | RDL | 9042744 |
| F1 (C6 to C10) | µg/L | 750 | 25 | <25 |
| F1 (C6 to C10) minus BTEX | µg/L | 750 | 25 | <25 |

**Comments:** RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Non-Potable Ground Water - All Types of Property Uses - Medium and Fine Textured Soils
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

**9042744** The C6-C10 fraction is calculated using Toluene response factor.
Total C6-C10 results are corrected for BTEX contributions.
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
nC6 and nC10 response factors are within 30% of Toluene response factor.
Extraction and holding times were met for this sample.
NA = Not Applicable

***Certified By:*** N Popnikolof

AGAT Laboratories

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

# Certificate of Analysis

**AGAT WORK ORDER: 18T307737**

**PROJECT: MRK-00242474-A0-005**

**CLIENT NAME: EXP Services Inc**

**ATTENTION TO: Leah Whittaker**

**SAMPLING SITE:**

**SAMPLED BY:HN**

## O. Reg. 153(511) - VOCs (Water)

**DATE RECEIVED: 2018-02-01**

**DATE REPORTED: 2018-02-07**

| | | SAMPLE DESCRIPTION: | | TH 3 | TH 4 | TH 300 | Trip Blank |
|---|---|---|---|---|---|---|---|
| | | SAMPLE TYPE: | | Water | Water | Water | Water |
| | | DATE SAMPLED: | | 2018-01-31 | 2018-01-31 | 2018-01-31 | 2018-01-31 |
| Parameter | Unit | G / S | RDL | 9042565 | 9042710 | 9042711 | 9042744 |
| Dichlorodifluoromethane | µg/L | 4400 | 0.20 | <0.20 | <0.20 | <0.20 | <0.20 |
| Vinyl Chloride | µg/L | 1.7 | 0.17 | <0.17 | <0.17 | <0.17 | <0.17 |
| Bromomethane | µg/L | 56 | 0.20 | <0.20 | <0.20 | <0.20 | <0.20 |
| Trichlorofluoromethane | µg/L | 2500 | 0.40 | <0.40 | <0.40 | <0.40 | <0.40 |
| Acetone | µg/L | 130000 | 1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| 1,1-Dichloroethylene | µg/L | 17 | 0.30 | <0.30 | <0.30 | <0.30 | <0.30 |
| Methylene Chloride | µg/L | 5500 | 0.30 | <0.30 | <0.30 | <0.30 | <0.30 |
| trans- 1,2-Dichloroethylene | µg/L | 17 | 0.20 | <0.20 | <0.20 | <0.20 | <0.20 |
| Methyl tert-butyl ether | µg/L | 1400 | 0.20 | <0.20 | <0.20 | <0.20 | <0.20 |
| 1,1-Dichloroethane | µg/L | 3100 | 0.30 | <0.30 | <0.30 | <0.30 | <0.30 |
| Methyl Ethyl Ketone | µg/L | 1500000 | 1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| cis- 1,2-Dichloroethylene | µg/L | 17 | 0.20 | <0.20 | <0.20 | <0.20 | <0.20 |
| Chloroform | µg/L | 22 | 0.20 | <0.20 | 0.37 | <0.20 | <0.20 |
| 1,2-Dichloroethane | µg/L | 12 | 0.20 | <0.20 | <0.20 | <0.20 | <0.20 |
| 1,1,1-Trichloroethane | µg/L | 6700 | 0.30 | <0.30 | <0.30 | <0.30 | <0.30 |
| Carbon Tetrachloride | µg/L | 8.4 | 0.20 | <0.20 | <0.20 | <0.20 | <0.20 |
| Benzene | µg/L | 430 | 0.20 | <0.20 | <0.20 | <0.20 | <0.20 |
| 1,2-Dichloropropane | µg/L | 140 | 0.20 | <0.20 | <0.20 | <0.20 | <0.20 |
| Trichloroethylene | µg/L | 17 | 0.20 | <0.20 | **29** | <0.20 | <0.20 |
| Bromodichloromethane | µg/L | 85000 | 0.20 | <0.20 | <0.20 | <0.20 | <0.20 |
| Methyl Isobutyl Ketone | µg/L | 580000 | 1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| 1,1,2-Trichloroethane | µg/L | 30 | 0.20 | <0.20 | <0.20 | <0.20 | <0.20 |
| Toluene | µg/L | 18000 | 0.20 | <0.20 | <0.20 | <0.20 | <0.20 |
| Dibromochloromethane | µg/L | 82000 | 0.10 | <0.10 | <0.10 | <0.10 | <0.10 |
| Ethylene Dibromide | µg/L | 0.83 | 0.10 | <0.10 | <0.10 | <0.10 | <0.10 |
| Tetrachloroethylene | µg/L | 17 | 0.20 | **26** | 2.0 | **28** | <0.20 |
| 1,1,1,2-Tetrachloroethane | µg/L | 28 | 0.10 | <0.10 | <0.10 | <0.10 | <0.10 |
| Chlorobenzene | µg/L | 630 | 0.10 | <0.10 | <0.10 | <0.10 | <0.10 |
| Ethylbenzene | µg/L | 2300 | 0.10 | <0.10 | <0.10 | <0.10 | <0.10 |
| m & p-Xylene | µg/L | | 0.20 | <0.20 | <0.20 | <0.20 | <0.20 |

***Certified By:*** NPopnikolof

AGAT Laboratories

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

# Certificate of Analysis

**AGAT WORK ORDER: 18T307737**

**PROJECT: MRK-00242474-A0-005**

**CLIENT NAME: EXP Services Inc**

**ATTENTION TO: Leah Whittaker**

**SAMPLING SITE:**

**SAMPLED BY:HN**

## O. Reg. 153(511) - VOCs (Water)

**DATE RECEIVED: 2018-02-01**

**DATE REPORTED: 2018-02-07**

| | | SAMPLE DESCRIPTION: | | TH 3 | TH 4 | TH 300 | Trip Blank |
|---|---|---|---|---|---|---|---|
| | | SAMPLE TYPE: | | Water | Water | Water | Water |
| | | DATE SAMPLED: | | 2018-01-31 | 2018-01-31 | 2018-01-31 | 2018-01-31 |
| Parameter | Unit | G / S | RDL | 9042565 | 9042710 | 9042711 | 9042744 |
| Bromoform | µg/L | 770 | 0.10 | <0.10 | <0.10 | <0.10 | <0.10 |
| Styrene | µg/L | 9100 | 0.10 | <0.10 | <0.10 | <0.10 | <0.10 |
| 1,1,2,2-Tetrachloroethane | µg/L | 15 | 0.10 | <0.10 | <0.10 | <0.10 | <0.10 |
| o-Xylene | µg/L | | 0.10 | <0.10 | <0.10 | <0.10 | <0.10 |
| 1,3-Dichlorobenzene | µg/L | 9600 | 0.10 | <0.10 | <0.10 | <0.10 | <0.10 |
| 1,4-Dichlorobenzene | µg/L | 67 | 0.10 | <0.10 | <0.10 | <0.10 | <0.10 |
| 1,2-Dichlorobenzene | µg/L | 9600 | 0.10 | <0.10 | <0.10 | <0.10 | <0.10 |
| 1,3-Dichloropropene | µg/L | 45 | 0.30 | <0.30 | <0.30 | <0.30 | <0.30 |
| Xylene Mixture | µg/L | 4200 | 0.20 | <0.20 | <0.20 | <0.20 | <0.20 |
| n-Hexane | µg/L | 520 | 0.20 | <0.20 | <0.20 | <0.20 | <0.20 |
| **Surrogate** | **Unit** | **Acceptable Limits** | | | | | |
| Toluene-d8 | % Recovery | 50-140 | | 76 | 84 | 74 | 102 |
| 4-Bromofluorobenzene | % Recovery | 50-140 | | 103 | 90 | 102 | 101 |

**Comments:** RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Non-Potable Ground Water - All Types of Property Uses - Medium and Fine Textured Soils
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

***Certified By:*** N Popnikolof

AGAT Laboratories

# Guideline Violation

**AGAT WORK ORDER: 18T307737**

**PROJECT: MRK-00242474-A0-005**

5835 COOPERS AVENUE
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FAX (905)712-5122
http://www.agatlabs.com

**CLIENT NAME: EXP Services Inc**

**ATTENTION TO: Leah Whittaker**

| SAMPLEID | SAMPLE TITLE | GUIDELINE | ANALYSIS PACKAGE | PARAMETER | UNIT | GUIDEVALUE | RESULT |
|---|---|---|---|---|---|---|---|
| 9042565 | TH 3 | ON T3 NPGW MFT | O. Reg. 153(511) - VOCs (Water) | Tetrachloroethylene | µg/L | 17 | 26 |
| 9042710 | TH 4 | ON T3 NPGW MFT | O. Reg. 153(511) - VOCs (Water) | Trichloroethylene | µg/L | 17 | 29 |
| 9042711 | TH 300 | ON T3 NPGW MFT | O. Reg. 153(511) - VOCs (Water) | Tetrachloroethylene | µg/L | 17 | 28 |

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# Quality Assurance

**CLIENT NAME: EXP Services Inc**

**AGAT WORK ORDER: 18T307737**

**PROJECT: MRK-00242474-A0-005**

**ATTENTION TO: Leah Whittaker**

**SAMPLING SITE:**

**SAMPLED BY:HN**

## Trace Organics Analysis

**RPT Date: Feb 07, 2018**

| PARAMETER | Batch | Sample Id | DUPLICATE | | | Method Blank | REFERENCE MATERIAL | | | METHOD BLANK SPIKE | | | MATRIX SPIKE | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Dup #1 | Dup #2 | RPD | | Measured Value | Acceptable Limits | | Recovery | Acceptable Limits | | Recovery | Acceptable Limits | |
| | | | | | | | | Lower | Upper | | Lower | Upper | | Lower | Upper |
| **O. Reg. 153(511) - VOCs (Water)** | | | | | | | | | | | | | | | |
| Dichlorodifluoromethane | 9038147 | | < 0.20 | < 0.20 | NA | < 0.20 | 95% | 50% | 140% | 103% | 50% | 140% | 117% | 50% | 140% |
| Vinyl Chloride | 9038147 | | < 0.17 | < 0.17 | NA | < 0.17 | 101% | 50% | 140% | 112% | 50% | 140% | 85% | 50% | 140% |
| Bromomethane | 9038147 | | < 0.20 | < 0.20 | NA | < 0.20 | 106% | 50% | 140% | 104% | 50% | 140% | 114% | 50% | 140% |
| Trichlorofluoromethane | 9038147 | | < 0.40 | < 0.40 | NA | < 0.40 | 96% | 50% | 140% | 91% | 50% | 140% | 120% | 50% | 140% |
| Acetone | 9038147 | | < 1.0 | < 1.0 | NA | < 1.0 | 106% | 50% | 140% | 111% | 50% | 140% | 103% | 50% | 140% |
| 1,1-Dichloroethylene | 9038147 | | < 0.30 | < 0.30 | NA | < 0.30 | 79% | 50% | 140% | 104% | 60% | 130% | 106% | 50% | 140% |
| Methylene Chloride | 9038147 | | < 0.30 | < 0.30 | NA | < 0.30 | 85% | 50% | 140% | 96% | 60% | 130% | 98% | 50% | 140% |
| trans- 1,2-Dichloroethylene | 9038147 | | < 0.20 | < 0.20 | NA | < 0.20 | 104% | 50% | 140% | 90% | 60% | 130% | 105% | 50% | 140% |
| Methyl tert-butyl ether | 9038147 | | < 0.20 | < 0.20 | NA | < 0.20 | 92% | 50% | 140% | 100% | 60% | 130% | 108% | 50% | 140% |
| 1,1-Dichloroethane | 9038147 | | < 0.30 | < 0.30 | NA | < 0.30 | 88% | 50% | 140% | 91% | 60% | 130% | 101% | 50% | 140% |
| Methyl Ethyl Ketone | 9038147 | | < 1.0 | < 1.0 | NA | < 1.0 | 117% | 50% | 140% | 109% | 50% | 140% | 104% | 50% | 140% |
| cis- 1,2-Dichloroethylene | 9038147 | | < 0.20 | < 0.20 | NA | < 0.20 | 72% | 50% | 140% | 113% | 60% | 130% | 96% | 50% | 140% |
| Chloroform | 9038147 | | < 0.20 | < 0.20 | NA | < 0.20 | 95% | 50% | 140% | 95% | 60% | 130% | 112% | 50% | 140% |
| 1,2-Dichloroethane | 9038147 | | < 0.20 | < 0.20 | NA | < 0.20 | 87% | 50% | 140% | 110% | 60% | 130% | 94% | 50% | 140% |
| 1,1,1-Trichloroethane | 9038147 | | < 0.30 | < 0.30 | NA | < 0.30 | 76% | 50% | 140% | 105% | 60% | 130% | 91% | 50% | 140% |
| Carbon Tetrachloride | 9038147 | | < 0.20 | < 0.20 | NA | < 0.20 | 78% | 50% | 140% | 81% | 60% | 130% | 74% | 50% | 140% |
| Benzene | 9038147 | | < 0.20 | < 0.20 | NA | < 0.20 | 78% | 50% | 140% | 97% | 60% | 130% | 77% | 50% | 140% |
| 1,2-Dichloropropane | 9038147 | | < 0.20 | < 0.20 | NA | < 0.20 | 94% | 50% | 140% | 105% | 60% | 130% | 95% | 50% | 140% |
| Trichloroethylene | 9038147 | | < 0.20 | < 0.20 | NA | < 0.20 | 71% | 50% | 140% | 87% | 60% | 130% | 73% | 50% | 140% |
| Bromodichloromethane | 9038147 | | < 0.20 | < 0.20 | NA | < 0.20 | 113% | 50% | 140% | 111% | 60% | 130% | 89% | 50% | 140% |
| Methyl Isobutyl Ketone | 9038147 | | < 1.0 | < 1.0 | NA | < 1.0 | 108% | 50% | 140% | 104% | 50% | 140% | 100% | 50% | 140% |
| 1,1,2-Trichloroethane | 9038147 | | < 0.20 | < 0.20 | NA | < 0.20 | 109% | 50% | 140% | 115% | 60% | 130% | 110% | 50% | 140% |
| Toluene | 9038147 | | < 0.20 | < 0.20 | NA | < 0.20 | 114% | 50% | 140% | 96% | 60% | 130% | 102% | 50% | 140% |
| Dibromochloromethane | 9038147 | | < 0.10 | < 0.10 | NA | < 0.10 | 106% | 50% | 140% | 106% | 60% | 130% | 110% | 50% | 140% |
| Ethylene Dibromide | 9038147 | | < 0.10 | < 0.10 | NA | < 0.10 | 93% | 50% | 140% | 102% | 60% | 130% | 106% | 50% | 140% |
| Tetrachloroethylene | 9038147 | | < 0.20 | < 0.20 | NA | < 0.20 | 97% | 50% | 140% | 118% | 60% | 130% | 95% | 50% | 140% |
| 1,1,1,2-Tetrachloroethane | 9038147 | | < 0.10 | < 0.10 | NA | < 0.10 | 103% | 50% | 140% | 95% | 60% | 130% | 102% | 50% | 140% |
| Chlorobenzene | 9038147 | | < 0.10 | < 0.10 | NA | < 0.10 | 102% | 50% | 140% | 118% | 60% | 130% | 102% | 50% | 140% |
| Ethylbenzene | 9038147 | | < 0.10 | < 0.10 | NA | < 0.10 | 115% | 50% | 140% | 111% | 60% | 130% | 81% | 50% | 140% |
| m & p-Xylene | 9038147 | | < 0.20 | < 0.20 | NA | < 0.20 | 117% | 50% | 140% | 118% | 60% | 130% | 97% | 50% | 140% |
| Bromoform | 9038147 | | < 0.10 | < 0.10 | NA | < 0.10 | 111% | 50% | 140% | 102% | 60% | 130% | 107% | 50% | 140% |
| Styrene | 9038147 | | < 0.10 | < 0.10 | NA | < 0.10 | 83% | 50% | 140% | 98% | 60% | 130% | 71% | 50% | 140% |
| 1,1,2,2-Tetrachloroethane | 9038147 | | < 0.10 | < 0.10 | NA | < 0.10 | 108% | 50% | 140% | 71% | 60% | 130% | 79% | 50% | 140% |
| o-Xylene | 9038147 | | < 0.10 | < 0.10 | NA | < 0.10 | 113% | 50% | 140% | 111% | 60% | 130% | 100% | 50% | 140% |
| 1,3-Dichlorobenzene | 9038147 | | < 0.10 | < 0.10 | NA | < 0.10 | 103% | 50% | 140% | 110% | 60% | 130% | 89% | 50% | 140% |
| 1,4-Dichlorobenzene | 9038147 | | < 0.10 | < 0.10 | NA | < 0.10 | 106% | 50% | 140% | 94% | 60% | 130% | 107% | 50% | 140% |
| 1,2-Dichlorobenzene | 9038147 | | < 0.10 | < 0.10 | NA | < 0.10 | 115% | 50% | 140% | 111% | 60% | 130% | 92% | 50% | 140% |
| 1,3-Dichloropropene | 9038147 | | < 0.30 | < 0.30 | NA | < 0.30 | 106% | 50% | 140% | 86% | 60% | 130% | 90% | 50% | 140% |
| n-Hexane | 9038147 | | < 0.20 | < 0.20 | NA | < 0.20 | 99% | 50% | 140% | 111% | 60% | 130% | 109% | 50% | 140% |

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# Quality Assurance

**CLIENT NAME: EXP Services Inc** | **AGAT WORK ORDER: 18T307737**

**PROJECT: MRK-00242474-A0-005** | **ATTENTION TO: Leah Whittaker**

**SAMPLING SITE:** | **SAMPLED BY:HN**

## Trace Organics Analysis (Continued)

| RPT Date: Feb 07, 2018 | | | DUPLICATE | | | | REFERENCE MATERIAL | | | | METHOD BLANK SPIKE | | | MATRIX SPIKE | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PARAMETER | Batch | Sample Id | Dup #1 | Dup #2 | RPD | Method Blank | Measured Value | Acceptable Limits | | Recovery | Acceptable Limits | | Recovery | Acceptable Limits | |
| | | | | | | | | Lower | Upper | | Lower | Upper | | Lower | Upper |
| **O. Reg. 153(511) - PHCs F1 - F4 (-BTEX) (Water)** | | | | | | | | | | | | | | | |
| F1 (C6 to C10) | 9025020 | | < 25 | < 25 | NA | < 25 | 85% | 60% | 140% | 90% | 60% | 140% | 77% | 60% | 140% |
| F2 (C10 to C16) | | TW | < 100 | < 100 | NA | < 100 | 97% | 60% | 140% | 62% | 60% | 140% | 65% | 60% | 140% |
| F3 (C16 to C34) | | TW | < 100 | < 100 | NA | < 100 | 103% | 60% | 140% | 102% | 60% | 140% | 112% | 60% | 140% |
| F4 (C34 to C50) | | TW | < 100 | < 100 | NA | < 100 | 83% | 60% | 140% | 83% | 60% | 140% | 94% | 60% | 140% |

Comments: Tap water analysis has been performed as QC sample testing for duplicate and matrix spike due to insufficient sample volume.
When the average of the sample and duplicate results is less than 5x the RDL, the Relative Percent Difference (RPD) will be indicated as Not Applicable (NA).

***Certified By:*** N Popowkof

AGAT Laboratories

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# Method Summary

**CLIENT NAME: EXP Services Inc**

**AGAT WORK ORDER: 18T307737**

**PROJECT: MRK-00242474-A0-005**

**ATTENTION TO: Leah Whittaker**

**SAMPLING SITE:**

**SAMPLED BY:HN**

| PARAMETER | AGAT S.O.P | LITERATURE REFERENCE | ANALYTICAL TECHNIQUE |
|---|---|---|---|
| **Trace Organics Analysis** | | | |
| F1 (C6 to C10) | VOL-91-5010 | MOE PHC E3421 | (P&T)GC/FID |
| F1 (C6 to C10) minus BTEX | VOL-91-5010 | MOE PHC E3421 | (P&T)GC/FID |
| F2 (C10 to C16) | VOL-91-5010 | MOE PHC E3421 | GC / FID |
| F3 (C16 to C34) | VOL-91-5010 | MOE PHC E3421 | GC / FID |
| F4 (C34 to C50) | VOL-91-5010 | MOE PHC E3421 | GC / FID |
| Gravimetric Heavy Hydrocarbons | VOL-91-5010 | MOE PHC E3421 | BALANCE |
| Terphenyl | VOL-91-5010 | | GC/FID |
| F1 (C6 to C10) | VOL-91-5010 | MOE PHC-E3421 | (P&T)GC/FID |
| F1 (C6 to C10) minus BTEX | VOL-91-5010 | MOE PHC-E3421 | (P&T)GC/FID |
| Dichlorodifluoromethane | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| Vinyl Chloride | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| Bromomethane | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| Trichlorofluoromethane | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| Acetone | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| 1,1-Dichloroethylene | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| Methylene Chloride | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| trans- 1,2-Dichloroethylene | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| Methyl tert-butyl ether | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| 1,1-Dichloroethane | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| Methyl Ethyl Ketone | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| cis- 1,2-Dichloroethylene | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| Chloroform | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| 1,2-Dichloroethane | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| 1,1,1-Trichloroethane | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| Carbon Tetrachloride | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| Benzene | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| 1,2-Dichloropropane | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| Trichloroethylene | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| Bromodichloromethane | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| Methyl Isobutyl Ketone | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| 1,1,2-Trichloroethane | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| Toluene | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| Dibromochloromethane | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| Ethylene Dibromide | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| Tetrachloroethylene | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| 1,1,1,2-Tetrachloroethane | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| Chlorobenzene | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| Ethylbenzene | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| m & p-Xylene | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| Bromoform | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| Styrene | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| 1,1,2,2-Tetrachloroethane | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| o-Xylene | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| 1,3-Dichlorobenzene | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| 1,4-Dichlorobenzene | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| 1,2-Dichlorobenzene | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| 1,3-Dichloropropene | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| Xylene Mixture | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| n-Hexane | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |

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# Method Summary

**CLIENT NAME: EXP Services Inc**

**AGAT WORK ORDER: 18T307737**

**PROJECT: MRK-00242474-A0-005**

**ATTENTION TO: Leah Whittaker**

**SAMPLING SITE:**

**SAMPLED BY:HN**

| PARAMETER | AGAT S.O.P | LITERATURE REFERENCE | ANALYTICAL TECHNIQUE |
|---|---|---|---|
| Toluene-d8 | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| 4-Bromofluorobenzene | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |

# AGAT Laboratories

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webearth.agatlabs.com

## Chain of Custody Record

**If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form** (potable water intended for human consumption)

### Laboratory Use Only

Work Order #: 18T307737

Cooler Quantity: 1 cooler

Arrival Temperatures: 4.1 | 3.9 | 3.7
2.9 | 3.1 | 3.3

Custody Seal Intact: ☐Yes ☐No ☐N/A

Notes:

### Report Information:

Company: Exp Services Inc
Contact: Leah Whittaker
Address: 220 Commerce Valley Dr W
MARKHAM, ON
Phone: 905 695 3217 Fax:
*Reports to be sent to:*
1. Email: leah.whittaker@exp.com
2. Email:

### Regulatory Requirements:

☐ No Regulatory Requirement

*(Please check all applicable boxes)*

☒ Regulation 153/04
Table 3 *Indicate One*
☐ Ind/Com
☒ Res/Park
☐ Agriculture

Soil Texture *(Check One)*
☐ Coarse
☒ Fine

☐ Sewer Use
☐ Sanitary
☐ Storm

Region _____ *Indicate One*

☐ Regulation 558
☐ CCME
☐ Prov. Water Quality Objectives (PWQO)
☐ Other

*Indicate One*

Is this submission for a **Record of Site Condition?** ☐ Yes ☐ No

**Report Guideline on *Certificate of Analysis*** ☐ Yes ☐ No

### Turnaround Time (TAT) Required:

**Regular TAT** ☐ 5 to 7 Business Days

**Rush TAT** (Rush Surcharges Apply)

☐ 3 Business Days ☐ 2 Business Days ☐ 1 Business Day

**OR** Date Required (Rush Surcharges May Apply):

*Please provide prior notification for rush TAT*
**TAT is exclusive of weekends and statutory holidays*

### Project Information:

Project: MRK-00242474-A0 -005
Site Location:
Sampled By: HN
AGAT Quote #: PO:
*Please note: If quotation number is not provided, client will be billed full price for analysis.*

### Invoice Information:

Bill To Same: Yes ☒ No ☐

Company:
Contact:
Address:
Email:

### Sample Matrix Legend

| | |
|---|---|
| B | Biota |
| GW | Ground Water |
| O | Oil |
| P | Paint |
| S | Soil |
| SD | Sediment |
| SW | Surface Water |

| Sample Identification | Date Sampled | Time Sampled | # of Containers | Sample Matrix | Comments/ Special Instructions | Field Filtered - Metals, Hg, CrVI (Please Circle) Y / N | Metals and Inorganics | Metal Scan | Hydride Forming Metals | Client Custom Metals | (Chack Applicable) ORPs: ☐B-HWS ☐Cl ☐CN ☐$Cr^{6+}$ ☐EC ☐FOC ☐$NO_3/NO_2$ ☐Total N ☐Hg ☐pH ☐SAR | Nutrients: ☐TP ☐$NH_3$ ☐TKN ☐$NO_3$ ☐$NO_2$ ☐$NO_3/NO_2$ | Volatiles: ☐VOC ☐BTEX ☐THM | CCME Fractions 1 to 4 | ABNs | PAHs | Chlorophenols | PCBs | Organochlorine Pesticides | TCLP Metals/Inorganics | Sewer Use |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TH3 | Jan 31/18 | AM/PM | 7 | GW | | | | | | | | | X | X | | | | | | | |
| TH4 | ↓ | ↓ | 7 | ↓ | | | | | | | | | X | X | | | | | | | |
| ~~TH2000~~ TH300 | | | 7 | | | | | | | | | | X | X | | | | | | | |

Samples Relinquished By (Print Name and Sign): Hem Kumar
Samples Relinquished By (Print Name and Sign):
Samples Relinquished By (Print Name and Sign):
Date: Jan 31/18 Time: 4:23
Samples Received By (Print Name and Sign):
Samples Received By (Print Name and Sign):
Date: 2018/2/1 Time: 12:51
Samples Received By (Print Name and Sign):
Date: Time:

Page 1 of 1
Nº: T 037700

AGAT Laboratories

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**CLIENT NAME: EXP Services Inc**
**220 Commerce Valley Drive West,Suite 500**
**Markham, ON, ON L3T0A8**
**(905) 695-3217**

**ATTENTION TO: Leah Whittaker**

**PROJECT: 247474-A0-002**

**AGAT WORK ORDER: 18T308880**

**TRACE ORGANICS REVIEWED BY: Neli Popnikolova, Senior Chemist**

**DATE REPORTED: Feb 12, 2018**

**PAGES (INCLUDING COVER): 11**

**VERSION*: 1**

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

***NOTES***

**All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.**

AGAT Laboratories

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# Certificate of Analysis

**AGAT WORK ORDER: 18T308880**

**PROJECT: 247474-A0-002**

**CLIENT NAME: EXP Services Inc**

**ATTENTION TO: Leah Whittaker**

**SAMPLING SITE:**

**SAMPLED BY:HN**

## O. Reg. 153(511) - PHCs F1 - F4 (-BTEX) (Water)

**DATE RECEIVED: 2018-02-06**

**DATE REPORTED: 2018-02-12**

| | | SAMPLE DESCRIPTION: | | TH2 |
|---|---|---|---|---|
| | | SAMPLE TYPE: | | Water |
| | | DATE SAMPLED: | | 2018-02-05 |
| **Parameter** | **Unit** | **G / S** | **RDL** | **9049221** |
| F1 (C6 to C10) | µg/L | 750 | 25 | <25 |
| F1 (C6 to C10) minus BTEX | µg/L | 750 | 25 | <25 |
| F2 (C10 to C16) | µg/L | 150 | 100 | <100 |
| F3 (C16 to C34) | µg/L | 500 | 100 | 110 |
| F4 (C34 to C50) | µg/L | 500 | 100 | <100 |
| Gravimetric Heavy Hydrocarbons | µg/L | 500 | 500 | NA |
| **Surrogate** | **Unit** | **Acceptable Limits** | | |
| Terphenyl | % | 60-140 | | 68 |

**Comments:** RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Non-Potable Ground Water - All Types of Property Uses - Medium and Fine Textured Soils
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

**9049221** The C6-C10 fraction is calculated using Toluene response factor.
The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and nC34.
Gravimetric Heavy Hydrocarbons are not included in the Total C16 - C50 and are only determined if the chromatogram of the C34 - C50 Hydrocarbons indicated that hydrocarbons >C50 are present.
The chromatogram has returned to baseline by the retention time of nC50.
Total C6-C50 results are corrected for BTEX contributions.
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
nC6 and nC10 response factors are within 30% of Toluene response factor.
nC10, nC16 and nC34 response factors are within 10% of their average.
C50 response factor is within 70% of nC10 + nC16 nC34 average.
Linearity is within 15%.
Extraction and holding times were met for this sample.
Fractions 1-4 are quantified with the contribution of PAHs. Under Ontario Regulation 153, results are considered valid without determining the PAH contribution if not requested by the client.

***Certified By:*** N Popnikolof

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# Certificate of Analysis

**AGAT WORK ORDER: 18T308880**

**PROJECT: 247474-A0-002**

**CLIENT NAME: EXP Services Inc**

**ATTENTION TO: Leah Whittaker**

**SAMPLING SITE:**

**SAMPLED BY:HN**

## O. Reg. 153(511) - PHCs F1/BTEX (Water)

**DATE RECEIVED: 2018-02-06**

**DATE REPORTED: 2018-02-12**

| | | SAMPLE DESCRIPTION: | | Trip Blank |
|---|---|---|---|---|
| | | SAMPLE TYPE: | | Water |
| | | DATE SAMPLED: | | 2018-02-05 |
| Parameter | Unit | G / S | RDL | 9049265 |
| F1 (C6 to C10) | µg/L | 750 | 25 | <25 |
| F1 (C6 to C10) minus BTEX | µg/L | 750 | 25 | <25 |

**Comments:** RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Non-Potable Ground Water - All Types of Property Uses - Medium and Fine Textured Soils
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

**9049265** The C6-C10 fraction is calculated using Toluene response factor.
Total C6-C10 results are corrected for BTEX contributions.
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
nC6 and nC10 response factors are within 30% of Toluene response factor.
Extraction and holding times were met for this sample.
NA = Not Applicable

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# Certificate of Analysis

**AGAT WORK ORDER: 18T308880**

**PROJECT: 247474-A0-002**

**CLIENT NAME: EXP Services Inc**

**ATTENTION TO: Leah Whittaker**

**SAMPLING SITE:**

**SAMPLED BY:HN**

## O. Reg. 153(511) - VOCs (Water)

**DATE RECEIVED: 2018-02-06**

**DATE REPORTED: 2018-02-12**

| | | SAMPLE DESCRIPTION: | | TH2 | Trip Blank |
|---|---|---|---|---|---|
| | | SAMPLE TYPE: | | Water | Water |
| | | DATE SAMPLED: | | 2018-02-05 | 2018-02-05 |
| Parameter | Unit | G / S | RDL | 9049221 | 9049265 |
| Dichlorodifluoromethane | µg/L | 4400 | 0.20 | <0.20 | <0.20 |
| Vinyl Chloride | µg/L | 1.7 | 0.17 | <0.17 | <0.17 |
| Bromomethane | µg/L | 56 | 0.20 | <0.20 | <0.20 |
| Trichlorofluoromethane | µg/L | 2500 | 0.40 | <0.40 | <0.40 |
| Acetone | µg/L | 130000 | 1.0 | <1.0 | <1.0 |
| 1,1-Dichloroethylene | µg/L | 17 | 0.30 | <0.30 | <0.30 |
| Methylene Chloride | µg/L | 5500 | 0.30 | <0.30 | <0.30 |
| trans- 1,2-Dichloroethylene | µg/L | 17 | 0.20 | 15 | <0.20 |
| Methyl tert-butyl ether | µg/L | 1400 | 0.20 | <0.20 | <0.20 |
| 1,1-Dichloroethane | µg/L | 3100 | 0.30 | <0.30 | <0.30 |
| Methyl Ethyl Ketone | µg/L | 1500000 | 1.0 | <1.0 | <1.0 |
| cis- 1,2-Dichloroethylene | µg/L | 17 | 0.20 | 5.9 | <0.20 |
| Chloroform | µg/L | 22 | 0.20 | <0.20 | <0.20 |
| 1,2-Dichloroethane | µg/L | 12 | 0.20 | <0.20 | <0.20 |
| 1,1,1-Trichloroethane | µg/L | 6700 | 0.30 | <0.30 | <0.30 |
| Carbon Tetrachloride | µg/L | 8.4 | 0.20 | <0.20 | <0.20 |
| Benzene | µg/L | 430 | 0.20 | <0.20 | <0.20 |
| 1,2-Dichloropropane | µg/L | 140 | 0.20 | <0.20 | <0.20 |
| Trichloroethylene | µg/L | 17 | 0.20 | 14 | <0.20 |
| Bromodichloromethane | µg/L | 85000 | 0.20 | <0.20 | <0.20 |
| Methyl Isobutyl Ketone | µg/L | 580000 | 1.0 | <1.0 | <1.0 |
| 1,1,2-Trichloroethane | µg/L | 30 | 0.20 | <0.20 | <0.20 |
| Toluene | µg/L | 18000 | 0.20 | <0.20 | <0.20 |
| Dibromochloromethane | µg/L | 82000 | 0.10 | <0.10 | <0.10 |
| Ethylene Dibromide | µg/L | 0.83 | 0.10 | <0.10 | <0.10 |
| Tetrachloroethylene | µg/L | 17 | 0.20 | **24** | <0.20 |
| 1,1,1,2-Tetrachloroethane | µg/L | 28 | 0.10 | <0.10 | <0.10 |
| Chlorobenzene | µg/L | 630 | 0.10 | <0.10 | <0.10 |
| Ethylbenzene | µg/L | 2300 | 0.10 | <0.10 | <0.10 |
| m & p-Xylene | µg/L | | 0.20 | <0.20 | <0.20 |

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# Certificate of Analysis

**AGAT WORK ORDER: 18T308880**

**PROJECT: 247474-A0-002**

**CLIENT NAME: EXP Services Inc**

**ATTENTION TO: Leah Whittaker**

**SAMPLING SITE:**

**SAMPLED BY:HN**

## O. Reg. 153(511) - VOCs (Water)

**DATE RECEIVED: 2018-02-06**

**DATE REPORTED: 2018-02-12**

| | | SAMPLE DESCRIPTION: | | TH2 | Trip Blank |
|---|---|---|---|---|---|
| | | SAMPLE TYPE: | | Water | Water |
| | | DATE SAMPLED: | | 2018-02-05 | 2018-02-05 |
| **Parameter** | **Unit** | **G / S** | **RDL** | **9049221** | **9049265** |
| Bromoform | µg/L | 770 | 0.10 | <0.10 | <0.10 |
| Styrene | µg/L | 9100 | 0.10 | <0.10 | <0.10 |
| 1,1,2,2-Tetrachloroethane | µg/L | 15 | 0.10 | <0.10 | <0.10 |
| o-Xylene | µg/L | | 0.10 | <0.10 | <0.10 |
| 1,3-Dichlorobenzene | µg/L | 9600 | 0.10 | <0.10 | <0.10 |
| 1,4-Dichlorobenzene | µg/L | 67 | 0.10 | <0.10 | <0.10 |
| 1,2-Dichlorobenzene | µg/L | 9600 | 0.10 | <0.10 | <0.10 |
| 1,3-Dichloropropene | µg/L | 45 | 0.30 | <0.30 | <0.30 |
| Xylene Mixture | µg/L | 4200 | 0.20 | <0.20 | <0.20 |
| n-Hexane | µg/L | 520 | 0.20 | <0.20 | <0.20 |
| **Surrogate** | **Unit** | **Acceptable Limits** | | | |
| Toluene-d8 | % Recovery | 50-140 | | 86 | 90 |
| 4-Bromofluorobenzene | % Recovery | 50-140 | | 77 | 79 |

**Comments:** RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Non-Potable Ground Water - All Types of Property Uses - Medium and Fine Textured Soils
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

***Certified By:*** N Popnikolof

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# Guideline Violation

**AGAT WORK ORDER: 18T308880**

**PROJECT: 247474-A0-002**

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**CLIENT NAME: EXP Services Inc**

**ATTENTION TO: Leah Whittaker**

| SAMPLEID | SAMPLE TITLE | GUIDELINE | ANALYSIS PACKAGE | PARAMETER | UNIT | GUIDEVALUE | RESULT |
|---|---|---|---|---|---|---|---|
| 9049221 | TH2 | ON T3 NPGW MFT | O. Reg. 153(511) - VOCs (Water) | Tetrachloroethylene | µg/L | 17 | 24 |

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# Quality Assurance

**CLIENT NAME: EXP Services Inc**

**AGAT WORK ORDER: 18T308880**

**PROJECT: 247474-A0-002**

**ATTENTION TO: Leah Whittaker**

**SAMPLING SITE:**

**SAMPLED BY:HN**

## Trace Organics Analysis

**RPT Date: Feb 12, 2018**

| PARAMETER | Batch | Sample Id | DUPLICATE | | | Method Blank | REFERENCE MATERIAL | | | METHOD BLANK SPIKE | | | MATRIX SPIKE | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Dup #1 | Dup #2 | RPD | | Measured Value | Acceptable Limits | | Recovery | Acceptable Limits | | Recovery | Acceptable Limits | |
| | | | | | | | | Lower | Upper | | Lower | Upper | | Lower | Upper |
| **O. Reg. 153(511) - VOCs (Water)** | | | | | | | | | | | | | | | |
| Dichlorodifluoromethane | 9050096 | | < 0.20 | < 0.20 | NA | < 0.20 | 119% | 50% | 140% | 105% | 50% | 140% | 130% | 50% | 140% |
| Vinyl Chloride | 9050096 | | < 0.17 | < 0.17 | NA | < 0.17 | 124% | 50% | 140% | 94% | 50% | 140% | 129% | 50% | 140% |
| Bromomethane | 9050096 | | < 0.20 | < 0.20 | NA | < 0.20 | 88% | 50% | 140% | 129% | 50% | 140% | 108% | 50% | 140% |
| Trichlorofluoromethane | 9050096 | | < 0.40 | < 0.40 | NA | < 0.40 | 91% | 50% | 140% | 121% | 50% | 140% | 92% | 50% | 140% |
| Acetone | 9050096 | | < 1.0 | < 1.0 | NA | < 1.0 | 112% | 50% | 140% | 95% | 50% | 140% | 111% | 50% | 140% |
| 1,1-Dichloroethylene | 9050096 | | < 0.30 | < 0.30 | NA | < 0.30 | 96% | 50% | 140% | 95% | 60% | 130% | 101% | 50% | 140% |
| Methylene Chloride | 9050096 | | < 0.30 | < 0.30 | NA | < 0.30 | 117% | 50% | 140% | 90% | 60% | 130% | 77% | 50% | 140% |
| trans- 1,2-Dichloroethylene | 9050096 | | < 0.20 | < 0.20 | NA | < 0.20 | 112% | 50% | 140% | 113% | 60% | 130% | 98% | 50% | 140% |
| Methyl tert-butyl ether | 9050096 | | < 0.20 | < 0.20 | NA | < 0.20 | 112% | 50% | 140% | 110% | 60% | 130% | 103% | 50% | 140% |
| 1,1-Dichloroethane | 9050096 | | < 0.30 | < 0.30 | NA | < 0.30 | 118% | 50% | 140% | 111% | 60% | 130% | 105% | 50% | 140% |
| Methyl Ethyl Ketone | 9050096 | | < 1.0 | < 1.0 | NA | < 1.0 | 100% | 50% | 140% | 105% | 50% | 140% | 100% | 50% | 140% |
| cis- 1,2-Dichloroethylene | 9050096 | | < 0.20 | < 0.20 | NA | < 0.20 | 113% | 50% | 140% | 110% | 60% | 130% | 87% | 50% | 140% |
| Chloroform | 9050096 | | < 0.20 | < 0.20 | NA | < 0.20 | 105% | 50% | 140% | 117% | 60% | 130% | 101% | 50% | 140% |
| 1,2-Dichloroethane | 9050096 | | < 0.20 | < 0.20 | NA | < 0.20 | 97% | 50% | 140% | 98% | 60% | 130% | 102% | 50% | 140% |
| 1,1,1-Trichloroethane | 9050096 | | < 0.30 | < 0.30 | NA | < 0.30 | 114% | 50% | 140% | 119% | 60% | 130% | 93% | 50% | 140% |
| Carbon Tetrachloride | 9050096 | | < 0.20 | < 0.20 | NA | < 0.20 | 106% | 50% | 140% | 104% | 60% | 130% | 74% | 50% | 140% |
| Benzene | 9050096 | | < 0.20 | < 0.20 | NA | < 0.20 | 102% | 50% | 140% | 92% | 60% | 130% | 72% | 50% | 140% |
| 1,2-Dichloropropane | 9050096 | | < 0.20 | < 0.20 | NA | < 0.20 | 116% | 50% | 140% | 105% | 60% | 130% | 82% | 50% | 140% |
| Trichloroethylene | 9050096 | | < 0.20 | < 0.20 | NA | < 0.20 | 100% | 50% | 140% | 99% | 60% | 130% | 73% | 50% | 140% |
| Bromodichloromethane | 9050096 | | < 0.20 | < 0.20 | NA | < 0.20 | 118% | 50% | 140% | 111% | 60% | 130% | 90% | 50% | 140% |
| Methyl Isobutyl Ketone | 9050096 | | < 1.0 | < 1.0 | NA | < 1.0 | 106% | 50% | 140% | 95% | 50% | 140% | 77% | 50% | 140% |
| 1,1,2-Trichloroethane | 9050096 | | < 0.20 | < 0.20 | NA | < 0.20 | 92% | 50% | 140% | 91% | 60% | 130% | 108% | 50% | 140% |
| Toluene | 9050096 | | < 0.20 | < 0.20 | NA | < 0.20 | 94% | 50% | 140% | 119% | 60% | 130% | 97% | 50% | 140% |
| Dibromochloromethane | 9050096 | | < 0.10 | < 0.10 | NA | < 0.10 | 112% | 50% | 140% | 106% | 60% | 130% | 103% | 50% | 140% |
| Ethylene Dibromide | 9050096 | | < 0.10 | < 0.10 | NA | < 0.10 | 97% | 50% | 140% | 118% | 60% | 130% | 98% | 50% | 140% |
| Tetrachloroethylene | 9050096 | | < 0.20 | < 0.20 | NA | < 0.20 | 90% | 50% | 140% | 118% | 60% | 130% | 97% | 50% | 140% |
| 1,1,1,2-Tetrachloroethane | 9050096 | | < 0.10 | < 0.10 | NA | < 0.10 | 91% | 50% | 140% | 98% | 60% | 130% | 101% | 50% | 140% |
| Chlorobenzene | 9050096 | | < 0.10 | < 0.10 | NA | < 0.10 | 101% | 50% | 140% | 107% | 60% | 130% | 100% | 50% | 140% |
| Ethylbenzene | 9050096 | | < 0.10 | < 0.10 | NA | < 0.10 | 117% | 50% | 140% | 97% | 60% | 130% | 75% | 50% | 140% |
| m & p-Xylene | 9050096 | | < 0.20 | < 0.20 | NA | < 0.20 | 115% | 50% | 140% | 112% | 60% | 130% | 89% | 50% | 140% |
| Bromoform | 9050096 | | < 0.10 | < 0.10 | NA | < 0.10 | 106% | 50% | 140% | 119% | 60% | 130% | 104% | 50% | 140% |
| Styrene | 9050096 | | < 0.10 | < 0.10 | NA | < 0.10 | 80% | 50% | 140% | 93% | 60% | 130% | 71% | 50% | 140% |
| 1,1,2,2-Tetrachloroethane | 9050096 | | < 0.10 | < 0.10 | NA | < 0.10 | 120% | 50% | 140% | 110% | 60% | 130% | 111% | 50% | 140% |
| o-Xylene | 9050096 | | < 0.10 | < 0.10 | NA | < 0.10 | 120% | 50% | 140% | 117% | 60% | 130% | 93% | 50% | 140% |
| 1,3-Dichlorobenzene | 9050096 | | < 0.10 | < 0.10 | NA | < 0.10 | 116% | 50% | 140% | 102% | 60% | 130% | 84% | 50% | 140% |
| 1,4-Dichlorobenzene | 9050096 | | < 0.10 | < 0.10 | NA | < 0.10 | 109% | 50% | 140% | 120% | 60% | 130% | 102% | 50% | 140% |
| 1,2-Dichlorobenzene | 9050096 | | < 0.10 | < 0.10 | NA | < 0.10 | 110% | 50% | 140% | 107% | 60% | 130% | 88% | 50% | 140% |
| 1,3-Dichloropropene | 9050096 | | < 0.30 | < 0.30 | NA | < 0.30 | 112% | 50% | 140% | 94% | 60% | 130% | 80% | 50% | 140% |
| n-Hexane | 9050096 | | < 0.20 | < 0.20 | NA | < 0.20 | 117% | 50% | 140% | 83% | 60% | 130% | 87% | 50% | 140% |

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# Quality Assurance

**CLIENT NAME: EXP Services Inc**

**AGAT WORK ORDER: 18T308880**

**PROJECT: 247474-A0-002**

**ATTENTION TO: Leah Whittaker**

**SAMPLING SITE:**

**SAMPLED BY:HN**

## Trace Organics Analysis (Continued)

| RPT Date: Feb 12, 2018 | | | DUPLICATE | | | | REFERENCE MATERIAL | | | METHOD BLANK SPIKE | | | MATRIX SPIKE | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PARAMETER | Batch | Sample Id | Dup #1 | Dup #2 | RPD | Method Blank | Measured Value | Acceptable Limits | | Recovery | Acceptable Limits | | Recovery | Acceptable Limits | |
| | | | | | | | | Lower | Upper | | Lower | Upper | | Lower | Upper |
| **O. Reg. 153(511) - PHCs F1 - F4 (-BTEX) (Water)** | | | | | | | | | | | | | | | |
| F1 (C6 to C10) | 9025020 | | < 25 | < 25 | NA | < 25 | 85% | 60% | 140% | 90% | 60% | 140% | 77% | 60% | 140% |
| F2 (C10 to C16) | | TW | < 100 | < 100 | NA | < 100 | 97% | 60% | 140% | 63% | 60% | 140% | 75% | 60% | 140% |
| F3 (C16 to C34) | | TW | < 100 | < 100 | NA | < 100 | 102% | 60% | 140% | 91% | 60% | 140% | 106% | 60% | 140% |
| F4 (C34 to C50) | | TW | < 100 | < 100 | NA | < 100 | 82% | 60% | 140% | 85% | 60% | 140% | 85% | 60% | 140% |

Comments: Tap water analysis has been performed as QC sample testing for duplicate and matrix spike due to insufficient sample volume.
When the average of the sample and duplicate results is less than 5x the RDL, the Relative Percent Difference (RPD) will be indicated as Not Applicable (NA).

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# Method Summary

**CLIENT NAME: EXP Services Inc**

**AGAT WORK ORDER: 18T308880**

**PROJECT: 247474-A0-002**

**ATTENTION TO: Leah Whittaker**

**SAMPLING SITE:**

**SAMPLED BY:HN**

| PARAMETER | AGAT S.O.P | LITERATURE REFERENCE | ANALYTICAL TECHNIQUE |
|---|---|---|---|
| **Trace Organics Analysis** | | | |
| F1 (C6 to C10) | VOL-91-5010 | MOE PHC E3421 | (P&T)GC/FID |
| F1 (C6 to C10) minus BTEX | VOL-91-5010 | MOE PHC E3421 | (P&T)GC/FID |
| F2 (C10 to C16) | VOL-91-5010 | MOE PHC E3421 | GC / FID |
| F3 (C16 to C34) | VOL-91-5010 | MOE PHC E3421 | GC / FID |
| F4 (C34 to C50) | VOL-91-5010 | MOE PHC E3421 | GC / FID |
| Gravimetric Heavy Hydrocarbons | VOL-91-5010 | MOE PHC E3421 | BALANCE |
| Terphenyl | VOL-91-5010 | | GC/FID |
| F1 (C6 to C10) | VOL-91-5010 | MOE PHC-E3421 | (P&T)GC/FID |
| F1 (C6 to C10) minus BTEX | VOL-91-5010 | MOE PHC-E3421 | (P&T)GC/FID |
| Dichlorodifluoromethane | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| Vinyl Chloride | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| Bromomethane | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| Trichlorofluoromethane | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| Acetone | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| 1,1-Dichloroethylene | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| Methylene Chloride | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| trans- 1,2-Dichloroethylene | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| Methyl tert-butyl ether | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| 1,1-Dichloroethane | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| Methyl Ethyl Ketone | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| cis- 1,2-Dichloroethylene | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| Chloroform | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| 1,2-Dichloroethane | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| 1,1,1-Trichloroethane | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| Carbon Tetrachloride | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| Benzene | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| 1,2-Dichloropropane | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| Trichloroethylene | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| Bromodichloromethane | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| Methyl Isobutyl Ketone | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| 1,1,2-Trichloroethane | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| Toluene | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| Dibromochloromethane | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| Ethylene Dibromide | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| Tetrachloroethylene | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| 1,1,1,2-Tetrachloroethane | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| Chlorobenzene | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| Ethylbenzene | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| m & p-Xylene | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| Bromoform | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| Styrene | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| 1,1,2,2-Tetrachloroethane | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| o-Xylene | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| 1,3-Dichlorobenzene | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| 1,4-Dichlorobenzene | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| 1,2-Dichlorobenzene | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| 1,3-Dichloropropene | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| Xylene Mixture | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| n-Hexane | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |

5835 COOPERS AVENUE
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# Method Summary

**CLIENT NAME: EXP Services Inc** **AGAT WORK ORDER: 18T308880**

**PROJECT: 247474-A0-002** **ATTENTION TO: Leah Whittaker**

**SAMPLING SITE:** **SAMPLED BY:HN**

| PARAMETER | AGAT S.O.P | LITERATURE REFERENCE | ANALYTICAL TECHNIQUE |
|---|---|---|---|
| Toluene-d8 | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |
| 4-Bromofluorobenzene | VOL-91-5001 | EPA SW-846 5030 & 8260 | (P&T)GC/MS |

# AGAT Laboratories

5835 Coopers Avenue
Mississauga, Ontario L4Z 1Y2
Ph: 905.712.5100 Fax: 905.712.5122
webearth.agatlabs.com

## Chain of Custody Record

**If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form** (potable water intended for human consumption)

**Laboratory Use Only**
Work Order #: 18T308880
Cooler Quantity: small
Arrival Temperatures: 3.9 | 4 | 3.6 / 2.8 | 3 | 3.1
Custody Seal Intact: ☐Yes ☐No ☐N/A
Notes:

**Report Information:**
Company: Exp Services Inc
Contact: Leah Whittaker
Address: 220 Commerce Valley Dr W, Markham, ON
Phone: 905 695 3217 Fax:
Reports to be sent to:
1. Email: leah.whittaker@exp.com
2. Email:

**Regulatory Requirements:** ☐ No Regulatory Requirement
(Please check all applicable boxes)

☒ Regulation 153/04 — Table 3 (Indicate One) — ☐ Ind/Com ☒ Res/Park ☐ Agriculture
Soil Texture (Check One): ☐ Coarse ☒ Fine
☐ Sewer Use — ☐ Sanitary ☐ Storm — Region ____ (Indicate One)
☐ Regulation 558
☐ CCME
☐ Prov. Water Quality Objectives (PWQO)
☐ Other ____ (Indicate One)

Is this submission for a **Record of Site Condition?** ☐ Yes ☐ No

**Report Guideline on *Certificate of Analysis*** ☐ Yes ☐ No

**Turnaround Time (TAT) Required:**
**Regular TAT** ☒ 5 to 7 Business Days
**Rush TAT** (Rush Surcharges Apply)
☐ 3 Business Days ☐ 2 Business Days ☐ 1 Business Day
**OR** Date Required (Rush Surcharges May Apply): ____
*Please provide prior notification for rush TAT*
**TAT is exclusive of weekends and statutory holidays*

**Project Information:**
Project: 247474 - A0-002
Site Location:
Sampled By: HN
AGAT Quote #: PO:
*Please note: If quotation number is not provided, client will be billed full price for analysis.*

**Invoice Information:** Bill To Same: Yes ☒ No ☐
Company:
Contact:
Address:
Email:

**Sample Matrix Legend**

| | |
|---|---|
| B | Biota |
| GW | Ground Water |
| O | Oil |
| P | Paint |
| S | Soil |
| SD | Sediment |
| SW | Surface Water |

| Sample Identification | Date Sampled | Time Sampled | # of Containers | Sample Matrix | Comments/ Special Instructions | Field Filtered - Metals, Hg, CrVI (Please Circle) Y / N | Metals and Inorganics | Metal Scan | Hydride Forming Metals | Client Custom Metals | ORPs: ☐ B-HWS ☐ Cl ☐ CN ☐ $Cr^{6+}$ ☐ EC ☐ FOC ☐ $NO_3/NO_2$ ☐ Total N ☐ Hg ☐ pH ☐ SAR | Nutrients: ☐ TP ☐ $NH_3$ ☐ TKN ☐ $NO_3$ ☐ $NO_2$ ☐ $NO_3/NO_2$ | Volatiles: ☒ VOC ☐ BTEX ☐ THM | CCME Fractions 1 to 4 | ABNs | PAHs | Chlorophenols | PCBs | Organochlorine Pesticides | TCLP Metals/Inorganics | Sewer Use | VOC & PHC F1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TH2 | Feb 5/18 | PM | 7 | GW | | | | | | | | | X | X | | | | | | | |
| TRIP BLANK | Feb 5/18 | PM | 3 | ↓ | | | | | | | | | X | | | | | | | | X |

Samples Relinquished By (Print Name and Sign): Date: Feb 6/18 Time: Samples Received By (Print Name and Sign): Date: 2018/2/6 Time: 11:52
Samples Relinquished By (Print Name and Sign): Date: 2018/2/6 Time: 2:26 Samples Received By (Print Name and Sign): Date: Time:
Samples Relinquished By (Print Name and Sign): Date: Time: Samples Received By (Print Name and Sign): Date: Time:

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Pink Copy - Client | Yellow Copy - AGAT | White Copy- AGAT