**APPENDIX E**

# Soil and Groundwater Contamination Inventory

CITY OF TORONTO
REPORT NUMBER: 19M-01888-00

# SOIL AND GROUNDWATER CONTAMINANT INVESTIGATION

## SOUTHWEST AGINCOURT TRANSPORTATION CONNECTIONS STUDY ENVIRONMENTAL ASSESSMENT

wsp

# SOIL AND GROUNDWATER CONTAMINANT INVESTIGATION

## SOUTHWEST AGINCOURT TRANSPORTATION CONNECTIONS STUDY ENVIRONMENTAL ASSESSMENT

CITY OF TORONTO

PROJECT NO.: 19M-01888-00
CLIENT REF:19M-01888-00
DATE: AUGUST 28, 2020

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**Subject: Draft Soil and Groundwater Contaminant Investigation - Agincourt Municipal Class Environmental Assessment Study**
**Client ref.:** 19M-01888-00

We are pleased to submit this Draft Soil and Groundwater Contaminant Investigation for the Agincourt North-South Street and Grade Separation Environmental Assessment Study.

The report was completed to determine soil and groundwater quality within the proposed alignment of the north-south road and associated grade separation extending from Sheppard Avenue East to Village Green Square. The report describes the interpreted environmental conditions and provides recommendations for further environmental investigations.

If you have any questions or comments on the report, please contact the undersigned below.

Yours sincerely,

(signed Amanda Park) on behalf of)

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# EXECUTIVE SUMMARY

WSP Canada Group Limited (WSP), was retained by the City of Toronto (the City) to conduct a Soil and Groundwater Contaminant Investigation as a component of the Southwest Agincourt Transportation Connections Municipal Class Environmental Assessment (EA) Study. The Study will evaluate options for: a potential new north-south road extending from the current terminus of Village Green Square, associated grade separation under the Canadian Pacific (CP) Rail corridor, a multi-use trail, and improvements to the existing roads in the project-focus area. The Focus Area is bounded, generally, by Dowry Street to the north, the Metrolinx Stouffville Rail Corridor to the east, Highway 401 to the south, and Kennedy Road to the west, and also includes Sheppard Avenue East from Birchmount Road to Brimley Road.

The Soil and Groundwater Contaminant Investigation was carried out in response to recommendations included in the Phase One ESA report completed by WSP (June 2020) and for the purposes of assessing the quality of soil and groundwater to provide a framework for management during construction of the north-south road and associated grade separation. The focus of this Soil and Groundwater Contaminant Investigation are properties inferred to be impacted by construction of the proposed alignment of the north-south road extending from Sheppard Avenue East, east of Kennedy Road, towards the current terminus of Village Green Square.

A total of eight (8) boreholes were drilled as part of the program, all completed as monitoring wells. A summary of the findings from soil and groundwater investigation are as follows:

- Stratigraphy encountered at the boreholes consisted of a thin layer of asphalt or topsoil followed by granular base underlayer the asphalt varying to depths between 0.37 and 0.61 metres below ground surface (mbgs). Fill consisting of sand and gravel, gravelly sand, silty sand, sand and silt, silty clay was encountered between depths of 0.10 mbgs and 1.52 mbgs at six of the eight boreholes (BH1, BH2, BH3, BH4, BH5 and BH7). Native sandy silt, silty sand, sand and silt was encountered between depths of 1.52 and 12.19 mbgs.
- A total of 21 soil samples, including duplicates, were submitted to the laboratory for analysis of one or more of the following parameter packages: metals and inorganics (M&I), polycyclic aromatic hydrocarbons (PAH), petroleum hydrocarbons (PHC) fractions 1-4 (F1-F4), benzene, toluene, ethylbenzene and xylenes (BTEX) and volatile organic compounds (VOC).
- Results of laboratory analysis indicate the fill material at BH6 contains levels of SAR exceeding the MECP Table 3 SCS and the fill material at BH8 contains levels of EC and pH and concentrations of benzo(a)pyrene exceeding the Table 3 SCS. Impacted fill material from BH6 and BH8 was identified in the upper 0.6 m of soil stratigraphy. Soil samples analyzed from the native material at BH6 (1.5-2.1 mbgs) and BH8 (2.3-2.9 mbgs) met the Table 3 SCS for parameters which exceeded the Table 3 SCS within the fill material. In addition, all soil samples from BH1, BH2, BH3, BH4, BH5, and BH7 met the applicable Table 3 or Table 9 SCS.
- Groundwater was intercepted between 1.27 and 3.78 mbgs across the Project Limits. Groundwater at BH2 contained concentrations of chloride exceeding the Table 3 SCS. All other groundwater samples met the Table 3 SCS or Table 9 SCS, as applicable.

<u>Recommendations</u>

Groundwater generated during construction may be managed through the municipal storm or sanitary system, pending results of groundwater analysis as compared to the City of Toronto Storm and Sanitary and Combined Sewer Use By-law criteria, and application to the City of Toronto for a discharge permit or agreement.

Based on the soil chemical results, shallow fill material within the vicinity of BH8 and BH6 is considered impacted exceeding the Table 3 SCS. WSP recommends planning for the management and disposal of excess impacted soil in the vicinity of BH8 and BH6 to include additional sampling to delineate the extent of impacted fill material. Details of such delineation should be reviewed during the detail design process to facilitate management of soil within the construction footprint.

Excess and On-Site Soil Management Regulation (Ontario Regulation 406/19)

In addition, it is anticipated that the project will generate a significant quantity of excess soil which will need to be appropriately managed both on-site and off-site. An excess soil regulation is currently being implemented by Ontario (Excess and On-Site Soil Management Regulation - Ontario Regulation 406/19). The regulation will come into effect in January 2021 with the planning requirements being implemented in January 2022. Planning requirements would include an assessment of past uses, excess soil characterization report, and a destination assessment report. These are generally required for sites that generate greater than 2,000 $m^3$ of soil or sites that have potentially contaminating activities (PCAs) associated with them. A tracking and record keeping system will be required. Soil sample frequency requirements are also mandated as part of the Regulation and are based on the volume of excess soil. New excess soil standards have also been developed.

WSP recommends that during detailed design, a strategy for excess soil management pursuant to O. Reg. 406/19 should be developed and implemented. This strategy should include a comprehensive in-situ excess sampling program in coordination with the geotechnical program to fully characterize soil quality and identify off-site management options including a tracking and record keeping system. This strategy would form part of the construction tender for implementation by the Contractor under the supervision of a Qualified Person, as defined by Ontario Regulation 153/04, as amended.

# 1 INTRODUCTION

## 1.1 BACKGROUND

WSP Canada Group Limited (WSP), was retained by the City of Toronto (the City) to conduct a Soil and Groundwater Contaminant Investigation as a component of the Southwest Agincourt Transportation Connections Municipal Class Environmental Assessment (EA) Study. The Study will evaluate options for: a potential new north-south road extending from the current terminus of Village Green Square, associated grade separation under the Canadian Pacific (CP) Rail corridor, a multi-use trail, and improvements to the existing roads in the project-focus area. The Focus Area is bounded, generally, by Dowry Street to the north, the Metrolinx Stouffville Rail Corridor to the east, Highway 401 to the south, and Kennedy Road to the west, and also includes Sheppard Avenue East from Birchmount Road to Brimley Road.

The Contaminant Investigation was carried out in response to recommendations included in the Phase One ESA report completed by WSP (June 2020) and for the purposes of assessing the quality of soil and groundwater to provide a framework for management during construction of the north-south road and associated grade separation. The focus of this Contaminant Investigation are properties inferred to be impacted by construction of the proposed alignment of the north-south road extending from Sheppard Avenue East, east of Kennedy Road, towards the current terminus of Village Green Square.

The current land use of the properties within the limits of the proposed north-south road alignment include a mix of residential, parkland, commercial, institutional and community land use. The associated Project Limits are made up of multiple private and public properties extending from Sheppard Avenue East to Village Green Square. The investigated properties associated with the proposed road alignment are shown on **Figure 1**.

## 1.2 APPLICABLE SITE CONDITION STANDARDS

The applicable site condition standards used for the Focus Area are as follows:

For all lands within 30 m of the West Highland Creek, the Ministry of the Environment, Conservation and Parks (MECP) Table 9: Generic Site Condition Standards (SCS) for Use within 30 m of a Water Body in a Non-Potable Groundwater Condition for “coarse textured soils” under Part XV.1 of the Environmental Protection Act, 2011 are applied. The lands for which the Table 9 SCS apply included in the 30 m buffer from West Highland Creek are outlined on **Figure 2**.

For lands beyond the 30 m buffer of West Highland Creek, the MECP Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition for Industrial, Commercial, Community Property Use for “coarse textured soils” under Part XV.1 of the Environmental Protection Act, 2011 are applicable.

The SCS were chosen based on the following set of criteria:

- The lands within the Focus Area are not classified as a “Shallow Soil Property” under Section 43.1 of O. Reg. 153/04 (as amended);
- The West Highland Creek flows approximately northwest to southeast within the Focus Area;
- There are no drinking water wells or wellhead protection areas within the Focus Area. Municipal water is sourced from Lake Ontario;
- The pH values of the soil were measured at values between 5 and 9 in the surface soils and 5 and 11 in the subsurface soils; therefore, classification as “environmentally sensitive” as per O. Reg. 153/04 does not apply;
- Field observations and results of the grain size analysis indicate that at least two-thirds of the soil at the Subject Property is consistent with the definition of “coarse textured soil” in O. Reg. 153/04; and
- Stratified site conditions were not used for evaluating laboratory results.

# 2 BACKGROUND INFORMATION

## 2.1 PHYSICAL SETTING

The topography of the Focus Area ranges from elevation of approximately 162 metres above sea level (masl) to 170 masl (National Resources Canada, 2020). In general, topography slopes from west to east with local topographic lows following West Highland Creek. The Focus Area falls within the Highland Creek Watershed, which drains to Lake Ontario. An engineered floodplain flanks West Highland Creek within the Focus Area. Within the Focus Area the West Highland Creek flows to the southeast and crosses beneath Kennedy Road, Sheppard Ave E, and Highway 401.

The Focus Area falls within the South Slope physiographic region, consisting of successive sequences of glacial sands, silts and clays (glacial till deposits) (Singer, 2003). The South Slope refers to the southern slope of the Oak Ridges Moraine. Within this physiographic region, the Quaternary deposits ranging from oldest to youngest are: the Scarborough and Don Formation, the Sunnybrook Formation, the Thorncliffe Formation, and the Halton Formation. North of Lake Ontario, the Halton Till is primarily a sandy silt to silt till (Singer, 2003).

## 2.2 PAST INVESTIGATIONS

WSP completed a Phase One ESA in June 2020 (WSP 2020a) for the Southwest Agincourt Transportation Connections Study as part of the Municipal Class Environmental Assessment process for Schedule 'C'. The Phase One ESA included a review of land use, aerial photography, fire insurance plans, previous environmental investigations, and environmental records within the study Focus Area bounded by Kennedy Road to the west, Dowry Street to the north, the Stouffville GO Train Line to the east, and Village Green Square to the south. Significant findings of the Phase One ESA relevant to this Contaminant Investigation include:

- WSP reviewed a Phase One and Two ESA completed by Terraprobe Inc. in November 2018 for the properties located at 20 – 100 Cowdray Court. The identified APECs included:
    - The historical placement of imported fill of unknown quality during the development of the Focus Area between 1968 and 2002, and a large stockpile observed during the site reconnaissance at 50 Cowdray Court;
    - The on-going presence of an auto dealership with service garage at 20 Cowdray Court since the mid-1990s;
    - The on-going presence and use of a waste oil AST and oil/grit separator at 20 Cowdray Court since the mid 1990s;
    - The presence of a paint booth within the autobody shop at 20 Cowdray Court;
    - The historical use of fuel storage tanks northwest of the property at 2223 Kennedy Road in the early 1960s (off-site PCA); and
    - The ongoing presence of the CP railway tracks 20 m south of the property since the mid-1940s (offsite PCA).

    The Phase Two ESA conducted for 20-100 Cowdray Court included drilling of thirty-six (36) boreholes, and installation of thirty (30) monitoring wells. In addition, nine (9) existing wells from a previous investigation by Terraprobe in 2017 were also sampled. The results of the investigation identified concentrations of sodium adsorption ratio (SAR), electrical conductivity (EC), and cyanide in the soil, and concentrations of chloride and sodium in the groundwater exceeding the Table 3 Site Condition Standards for residential / parkland / institutional land use.

- Several Areas of Potential Environmental Concern (APECs) with moderate to high potential for contamination were identified within the Focus Area and surrounding Study Area based on current or historical Potentially Contaminating Activities (PCAs). The APECs within the Project Limits of this Contaminant Investigation include:
    - 4051 Sheppard Avenue East – Dry Cleaner;
    - 4061 Sheppard Avenue East – Transportation depot / Historical Gas Station / Historical Manufacturing;
    - 2223 Kennedy Road – Historical Manufacturing;
    - 40 Cowdray Court – Historical Manufacturing;
    - 2065/2075 Kennedy Road – Transportation Depot / Historical Manufacturing;
    - 4097 Sheppard Avenue East – Historical Automotive Service Centre; and
    - CP Railway.
- A Contaminant Investigation was recommended for the proposed north-south alignment to facilitate the detail design process. In addition, WSP recommended that property specific Phase One ESA(s) (and Phase Two ESAs as applicable) be completed for property acquisitions within areas highlighted as high or moderate APECs.

## 2.3 POTENTIAL CONTAMINANTS OF CONCERN

As summarized in **Section 2.2**, the Phase One ESA identified several APECs relating to PCAs in association with the current and historical land use within the Focus Area. A list of contaminants of potential concern (COPCs) associated with the APECs are included in **Table 1**, denoted by an "X"**.**

**Table 2-1 Potential Contaminants of Concern**

| PROPERTY | M&I | PAH | PHC | VOC | BTEX |
|---|---|---|---|---|---|
| 4051 Sheppard Avenue East | NA | NA | NA | X | NA |
| 4061 Sheppard Avenue East | X | X | X | NA | X |
| 4097 Sheppard Avenue East | X | X | X | NA | X |
| 2223 Kennedy Road | X | X | X | NA | X |
| 2075 Kennedy Road | X | X | X | NA | X |
| 40 Cowdray Court | X | X | X | NA | NA |
| CP Railway | X | X | X | X | X |

Notes:
1. M&I – metals and inorganics
2. PAH – polycyclic aromatic hydrocarbons

3. PHC – petroleum hydrocarbons Fractions F1-F4
4. VOC – volatile organic compounds
5. BTEX – benzene, toluene, ethylbenzene, and xylenes

# 3 SCOPE OF THE INVESTIGATION

## 3.1 OVERVIEW OF SITE INVESTIGATION

The scope of work for the Soil and Groundwater Contaminant Investigation was carried out in accordance to current best practices. Field methods and protocols were completed in general accordance with the requirements of O. Reg. 153/04, as amended, and the Ministry of the Environment, Conservation and Parks (MECP) Guidance on Sampling and Analytical Methods for Use at Contaminated Site in Ontario. The tasks completed for the Contaminant Investigation included:

- Preparation of a sampling and analysis plan (SAP) to document the purpose, rationale and location of samples to be recovered as part of the Contaminant Investigation;
- In conjunction with the Geotechnical Investigation, drilling of eight (8) boreholes to a maximum depth of 20.4 metres below ground surface (mbgs) by a MECP licensed environmental driller, under the supervision of WSP staff;
- Installation of monitoring wells in all eight (8) of the boreholes;
- Submission of soil and groundwater samples for laboratory analysis of COPCs, including quality control duplicates (blind field duplicates);
- Submission of one soil sample (representing worst-case conditions) for the O. Reg. 347 toxicity characteristic leaching procedure (TCLP) analysis of metals and inorganics, PAHs, PCBs and VOCs to determine suitability of soil for off- site disposal (i.e. hazardous versus non-hazardous);
- Surveying of the boreholes / monitoring wells ground surface and top of riser pipe elevations to determine water table elevations.
- Comparative analysis of the results of soil and groundwater results to the analysis to the applicable MECP Table 3 and Table 9 Site Condition Standards (SCS); and
- Documentation of the field and analytical programs into a Soil and Groundwater Contaminant Investigation Report.

## 3.2 MEDIA INVESTIGATED

Soil and groundwater quality were investigated as part of this Soil and Groundwater Contaminant Investigation. Soil and groundwater samples were collected in laboratory prepared bottles and were submitted to ALS Canada Ltd. (ALS), in Waterloo, Ontario, a laboratory accredited with the Canadian Association for Laboratory Accreditation (CALA). The collected soil and groundwater samples were analyzed in accordance with the COPCs, as identified in **Section 2.3.**

## 3.3 DEVIATIONS FROM SAMPLING AND ANALYSIS PLAN

The SAP is included in **Appendix A**. The plan was followed during the investigation to ensure that soil and groundwater quality was adequately characterized at the Subject Property. The following deviations to the SAP were undertaken in the field in response to field conditions and analytical results:

- Groundwater sampling was not completed at BH/MW8 as the monitoring well was found to be dry upon completion.

## 3.4 IMPEDIMENTS

No impediments were encountered in executing the soil and groundwater investigations.

# 4 INVESTIGATION METHOD

## 4.1 GENERAL

The soil and groundwater quality within the Focus Area were investigated at the locations shown on **Figure 2**, through the advancement of eight (8) boreholes which were all installed with monitoring wells using 51 mm PVC riser pipes. Four (4) monitoring wells were installed with flush mount casing protective covers, and the other four (4) monitoring wells were installed with aboveground steel monument casings. Investigation methods followed Standard Operating Procedures (SOPs) prepared by WSP for the completion of environmental borehole investigations. The investigation methods are described in the following sections.

## 4.2 DRILLING PROGRAM

The drilling was completed in conjunction with the Geotechnical Investigation from June 3rd to June 9th, 2020 by Pontil Drilling, a licenced drilling contractor based in Mount Albert, Ontario, and was completed under the direction and supervision of a member of WSP staff.

The investigation program focused on overburden geology within 20.4 m of the ground surface. The boreholes were advanced using a CME 75 track mounted drill rig equipped with hollow and solid stem augers while completing Standard Penetration Tests (SPT). Soil samples were collected from the ground surface to the borehole terminus with stainless steel split spoon samplers. Split spoons were washed with a potable water and detergent rinse between samples to prevent cross-contamination of the recovered soil samples.

## 4.3 SOIL SAMPLING

Soil samples were collected from 0.6 m long split spoon cores that were retrieved during drilling procedures. Geological conditions were observed in the soil samples and recorded into borehole logs (**Appendix B**) by WSP personnel indicating the colour, odour, texture, soil type and moisture. Soil samples were collected and handled in accordance with best practices used in the environmental consulting industry and WSP's SOPs.

Soil samples were recovered with dedicated nitrile gloves to prevent cross contamination between sampling locations as per the SAP (**Appendix A**) and were directly placed in labeled polyethylene bags for screening. A portion of each sample was maintained in an undisturbed condition and the balance of the sample was broken up to release soil vapours. The vapour readings were measured, and selected samples were jarred in laboratory prepared bottles for submission for chemical analysis. For samples considered for VOC and PHC fraction F1 analysis, a core was recovered in the field from the undisturbed portion of the bag and placed in a laboratory prepared vial containing a measured amount of methanol.

In addition to the above, two composite samples were submitted to the laboratory for leachate analyses under Reg 347 Schedule 4 for metals and inorganics, VOC, PCBs, and PAHs. The borehole logs are presented in **Appendix B** and test pit locations are presented in **Figure 2.**

## 4.4 FIELD SCREENING MEASUREMENTS

Soil samples collected in the polyethylene bags were used for screening using a RKI Eagle II, which operates as both a photoionization detector (PID) and a combustible gas indicator (CGI). The PID detects VOCs that emit below an ionization potential of 10.6 eV, which includes a wide range of chemicals such as solvents and fuels. The PID provides an indication of organic impacts in soil but does not measure concentrations of individual chemical parameters/compounds. The CGI detects combustible vapours such as those associated with fuels. As with the PID,

it provides an indication of potential environmental impacts but not chemical specific concentrations. The accuracy and precision of the PID and CGI will depend on soil characteristics, Subject Property conditions and weather, which can be difficult to quantify. The instruments are considered to be an accurate and precise indicator of gross contamination in soil vapour.

## 4.5 GROUNDWATER MONITORING WELL INSTALLATION

Groundwater monitoring wells were installed in all eight boreholes. The monitoring wells were installed by Pontil Drilling in accordance with Regulation 903: Wells, as amended, under the *Ontario Water Resources Act*, with the following construction details:

- Each monitoring well was constructed using 51 mm diameter well screens and polyvinyl chloride (PVC) riser pipe;
- The screened interval was 3.05 m long with a No. 10 slot size screen;
- Sand pack, consisting of No. 3 silica sand, was placed around the well screen and the sand pack was extended approximately 0.3 m above the top of the screen;
- A bentonite seal was then placed around the PVC riser pipe up to within 0.3 m of the ground surface; and
- Four monitoring wells were completed with flush mount protective covers and four monitoring wells were completed with steel monument casings which were cemented into place.
- Monitoring wells were developed a minimum of three well volumes, or until the monitoring well was dry, with low density polyethylene (LDPE) Waterra tubing and foot valves. Groundwater within the monitoring wells was allowed to recover at least 24 hours prior to sampling.

The locations of the monitoring wells are shown on **Figure 2**. The monitoring well locations were chosen to target the APECs identified in the Phase 1 ESA (summarized in **Section 2.2**) that may have contributed to groundwater impacts within the construction footprint of the proposed north-south road.

## 4.6 GROUNDWATER FIELD MEASUREMENTS OF WATER QUALITY PARAMETERS

Groundwater levels and any measurable free phase light non-aqueous phase liquid product ("free product") were measured in each of the eight monitoring wells on June 17th and 18th, 2020 using a Solinst interface probe. No measureable levels of free product were recorded at any of the monitoring wells. An RKI Eagle II portable gas detector was used to measure vapour concentrations within the monitoring well riser pipes at each monitoring well prior to obtaining groundwater measurements

Groundwater samples were collected from the monitoring wells on June 18th and 19th, 2020. Water quality parameters were monitored during the purging of monitoring wells using a YSI 556 water quality meter, until the consecutive readings of water quality parameters varied by less than 10%. A YSI unit is able to detect water quality parameters such as temperature, pH, conductivity, dissolved oxygen and oxidation reduction potential (ORP). The water quality parameters and subsurface vapour concentrations are recorded in **Table 4-1**.

**Table 4-1 Water Quality Parameter Results**

| Monitoring Well ID | Temperature (°C) | Conductivity (mS/cm)[1] | Dissolved Oxygen (mg/L)[2] | pH[3] | ORP (mV)[4] | Vapour Concentration CGI/PID (ppm)[5] |
|---|---|---|---|---|---|---|
| BH1 | 14.22 | 4.425 | 4.71 | 7.28 | -81.5 | 30/3 |

| Monitoring Well ID | Temperature (°C) | Conductivity (mS/cm)[1] | Dissolved Oxygen (mg/L)[2] | pH[3] | ORP (mV)[4] | Vapour Concentration CGI/PID (ppm)[5] |
|---|---|---|---|---|---|---|
| BH2 | 15.01 | 5.873 | 2.19 | 7.16 | -72.1 | 0/1 |
| BH3 | 11.76 | 0.729 | 0.90 | 7.80 | -77.6 | 0/0 |
| BH4 | 11.0 | 1.090 | 5.99 | 7.31 | -73.8 | 45/2 |
| BH5 | 12.93 | 0.789 | 6.47 | 7.29 | -58.3 | 5/1 |
| BH6 | 14.85 | 2.88 | 8.31 | 6.61 | -53.0 | 45/1 |
| BH7 | 9.59 | 1.543 | 6.12 | 6.96 | -67.6 | 0/4 |
| BH8 | NA | NA | NA | NA | NA | 5/1 |

*Notes:*
1. *mS/cm – millisiemens/centimeter*
2. *mg/L – milligram/litre*
3. *pH is the negative logarithm of the hydrogen ion activity, and is measured based on a pH scale which ranges from 0-14.*
4. *mV - millivolts*

The groundwater depths were measured in monitoring wells BH1, BH2, BH3, BH4, BH5 and BH6 on June 17th, 2020, and in BH7 on June 18th, 2020. As discussed in **Section 3.1**, monitoring well BH8 was found to be dry on June 17th and June 18th, 2020. The depth to groundwater measurements are displayed in **Table 2** in **Section 5.2**.

## 4.7 GROUNDWATER SAMPLING

Prior to groundwater sampling, a minimum of three well volumes were purged using low density polyethylene (LDPE) Waterra tubing to remove static groundwater within the filter pack (development of the well). Monitoring wells BH1, BH2, BH3, BH4, BH5, and BH6 were developed June 17th and BH7 was developed June 18th. Monitoring wells BH3, BH4, and BH6 were purged and sampled on January 18th, 2020, and BH1, BH2, BH5 and BH7 were purged and sampled on June 19th, 2020. Groundwater samples were conveyed directly into laboratory supplied containers. The groundwater samples were collected using low-flow sampling techniques with a Geotech peristaltic pump and LDPE Waterra tubing to minimize the inclusion of sediment and disturbing any potential volatilizing contaminants within the water column. Samples submitted for metals analysis were filtered in the field. All groundwater samples were placed in a cooler with ice prior to submission to ALS.

Groundwater samples from each monitoring well were submitted for analysis of the parameters included in **Table 4-2** below.

**Table 4-2 Groundwater Laboratory Analyses**

| MONITORING WELL ID | METALS AND INORGANICS | PAHS | PHCS F1-F4 | VOCS (INCLUDING BTEX) | SANITARY AND STORM SEWER USE[1] |
|---|---|---|---|---|---|
| BH1 | X | X | X | X | X |

| MONITORING WELL ID | METALS AND INORGANICS | PAHS | PHCS F1-F4 | VOCS (INCLUDING BTEX) | SANITARY AND STORM SEWER USE[1] |
|---|---|---|---|---|---|
| BH2 | X | X | X | X | X |
| BH3 | X | X | X | X | X |
| BH4 | X | X* | -- | X* | X |
| BH5 | X | X* | -- | X* | X |
| BH6 | X | X | X | X | X |
| BH7 | X | X | X | X | X |
| Trip Blank | -- | -- | -- | X | -- |

*Notes:*
*1. City of Toronto Storm and Sanitary and Combined Sewers Discharge Sewer Use By-law criteria.*
** Selected parameters only as included in Sewer Use By-law criteria*
*-- Not Analyzed.*

## 4.8 ANALYTICAL TESTING

Soil and groundwater samples were analyzed by ALS Environmental laboratory in Waterloo, Ontario, a Canadian Association of Laboratory Accreditation (CALA) laboratory and meets the requirements of Section 47 of O.Reg. 153/04, as amended, certifying that the analytical laboratory be accredited in accordance with the International Standard ISO/IEC 17025 and with standards developed by the Standards Council of Canada. Laboratory Certificates of Analyses are included in **Appendix C**.

## 4.9 RESIDUE MANAGEMENT PROCEDURES

Excess soil cuttings from drilling operations were collected and contained in sealed drums along with the purge water collected from the groundwater sampling event. Drums with soil cuttings were disposed by the drilling contractor, Pontil Drilling. Drums containing purged groundwater remain onsite until such time as they are no longer sampling. As discussed in **Section 5.7**, the TCLP soil sample analytical results have identified the impacted soil at the Subject Property is classified as non-hazardous. The TCLP analytical results are provided in the Laboratory Certificates of Analysis in **Appendix C**.

## 4.10 ELEVATION SURVEYING

Elevation surveying of ground surface and riser pipes of all eight monitoring wells was completed on July 9, 2020. Surveying was completed with a Sokkia GCX GNSS Receiver, using NAD 83 reference system by a member of WSP staff. The geodetic elevations of the top of riser and ground surface were recorded as meters above sea level (masl). The measured groundwater elevations are shown on **Figure 2.**

## 4.11 QUALITY ASSURANCE AND QUALITY CONTROL MEASURES

Quality assurance (QA) and quality control (QC) of the soil samples was monitored and maintained in a number of ways:

- The field investigation was completed using WSP's standard operating procedures for soil and groundwater sampling;
- Samples were given unique identifications as they were collected, typically identifying the project number, date, sample location and depth. The sample numbers were recorded in field notes for each location;
- All non-dedicated sampling and monitoring equipment (e.g. interface probe) was cleaned using Alconox™ and distilled water following each use;
- A chain-of-custody form was filled out for the samples prior to submitting the samples to the laboratory. The chain-of-custody documented sample movement from collection to receipt at the laboratory and provided sample identification, requested analysis and conditions of samples upon arrival at the laboratory (e.g., temperature, container status, etc.);
- Soil samples were randomly selected by the WSP field staff for duplicate testing. The number of QC samples submitted is equivalent to a minimum of 10% of the total number of samples submitted; and,
- Samples were randomly selected by the laboratory for QA checks. Generally, one sample for every ten samples submitted is checked. For each parameter, there is an acceptable upper and lower limit for the measured concentration of the parameter. Measured concentrations of analysed samples must fall within the upper and lower acceptable limits in order for the sample to be valid. If a result exceeds the upper or lower acceptable limits, the sample must be re-analysed.

# 5 REVIEW AND EVALUATION

## 5.1 GEOLOGY

The general subsurface stratigraphy within the Focus Area is generally characterized as follows:

- Thin layer of topsoil up to 0.19 m thick in six of the eight boreholes (BH1, BH2, BH3, BH4, BH5 and BH7).
- Thin layer of asphalt up to 0.10 m thick in two of the eight boreholes (BH6 and BH8).
- Granular base underlayer the asphalt varying to depths between 0.37 and 0.61 mbgs.
- Fill consisting of sand and gravel, gravelly sand, silty sand, sand and silt, silty clay between depths of 0.10 and 1.52 mbgs at six of the eight boreholes (BH1, BH2, BH3, BH4, BH5 and BH7).
- Sandy silt, silty sand, sand and silt between depths of 1.52 and 12.19 mbgs.
- Bedrock or buried structures were not encountered during drilling.

## 5.2 GROUNDWATER ELEVATIONS AND FLOW DIRECTION

Groundwater measurements collected on June 17th and June 18th, 2020 are included in **Table 5-1.** In general groundwater elevations appear to range between 165.96 and 162.82 masl, with the lowest groundwater elevations measured in the vicinity of West Highland Creek. The monitoring wells were installed as a linear feature to obtain soil and groundwater quality information for the proposed north-south alignment. As a result, groundwater flow direction could not be established based on the principle of triangulation and hydraulic heads. Regional groundwater flow is anticipated to drain south towards Lake Ontario.

**Table 5-1 Monitoring well and groundwater elevations**

| Monitoring Well ID | Ground Surface Elevation (MASL) | Top of Riser Elevation (MASL) | Groundwater Measurement June 17th, 2020 (MBGS) | Groundwater Measurement June 17th, 2020 (MASL) | Groundwater Measurement June 18th, 2020 (MBGS) | Groundwater Measurement June 18th, 2020 (MASL) |
|---|---|---|---|---|---|---|
| BH1 | 166.71 | 166.57 | 2.60 | 164.115 | -- | -- |
| BH2 | 166.59 | 166.44 | 3.78 | 162.815 | -- | -- |
| BH3 | 165.07 | 165.83 | 1.27 | 163.797 | -- | -- |
| BH4 | 166.90 | 167.84 | 2.64 | 164.262 | -- | -- |
| BH5 | 166.82 | 167.77 | 1.82 | 164.995 | -- | -- |
| BH6 | 167.60 | 167.48 | 1.65 | 165.955 | -- | -- |
| BH7 | 168.18 | 168.07 | -- | -- | 3.39 | 164.795 |

| Monitoring Well ID | Ground Surface Elevation (MASL) | Top of Riser Elevation (MASL) | Groundwater Measurement June 17th, 2020 (MBGS) | Groundwater Measurement June 17th, 2020 (MASL) | Groundwater Measurement June 18th, 2020 (MBGS) | Groundwater Measurement June 18th, 2020 (MASL) |
|---|---|---|---|---|---|---|
| BH8 | 168.80 | 168.59 | NA | NA | NA | NA |

*Notes:*
*--* *Not measured.*
*NA* *Monitoring well was dry.*

## 5.3 SOIL FIELD SCREENING

The purpose of field screening soil samples is to evaluate whether combustible (e.g., petroleum) or volatile (e.g., solvents) compounds may be present in the collected samples; field screening of soil samples is a tool which assists in determining which samples should be submitted to the laboratory for chemical analysis. The total organic vapour (TOV) measurements of the soil samples submitted for laboratory analysis are included in **Table 5-2** and shown on borehole logs in **Appendix B**.

**Table 5-2 Summary of Vapour Measurements and Soil Analyses**

| SAMPLE ID | SAMPLE DEPTH (mbgs)[1] | TOV (ppm) | METALS AND INORGANICS | PAHS | PHCS F1-F4 | VOCS[2] | BTEX | TCLP | GRAIN SIZE |
|---|---|---|---|---|---|---|---|---|---|
| BH1-SS1 | 0.10-0.61 | 10/0 | X | X | -- | - | --- | -- | -- |
| BH1-SS3 | 1.52-2.13 | 5/0 | -- | -- | X | X | -- | -- | -- |
| BH2-SS2 | 0.75-1.36 | 0/1 | X | X | -- | -- | -- | -- | -- |
| BH2-SS3 | 1.52-2.13 | 0/0 | -- | | X | X | -- | -- | -- |
| BH3-SS2 | 0.75-1.36 | 0/0 | X | X | -- | -- | -- | -- | -- |
| BH3-SS14 | 4.57-5.18 | 0/0 | -- | -- | X | X | -- | -- | -- |
| BH4-SS1 | 0.13-0.61 | 0/5 | X | X | -- | -- | -- | -- | -- |
| BH4-SS3 | 1.52-2.13 | 105/0 | -- | -- | -- | X | -- | -- | -- |
| BH4-SS6 | 3.81-4.42 | 25/0 | -- | -- | X | -- | X | -- | -- |
| BH5-SS1 | 0.19-0.61 | 0/0 | X | -- | -- | -- | --- | -- | -- |
| BH5-SS2 | 0.75-1.36 | 70/0 | X | X | -- | -- | -- | -- | -- |

| SAMPLE ID | SAMPLE DEPTH (mbgs)[1] | TOV (ppm) | METALS AND INORGANICS | PAHS | PHCS F1-F4 | VOCS[2] | BTEX | TCLP | GRAIN SIZE |
|---|---|---|---|---|---|---|---|---|---|
| BH5-SS6 | 3.81-4.42 | 40/0 | -- | -- | X | -- | X | -- | -- |
| BH6-SS1-2 | 0.37-0.61 | 20/0 | X | X | --- | -- | -- | -- | -- |
| BH6-SS3 | 1.52-2.13 | 20/1 | X | X | -- | -- | -- | X | X |
| BH6-SS4 | 2.27-2.89 | 95/0 | -- | -- | X | X | -- | -- | -- |
| BH6-SS5-1 | 3.05-3.66 | 35/0 | -- | -- | X | X | -- | X | -- |
| BH7-SS1 | 0.39-0.57 | 10/0 | X | X | -- | -- | -- | -- | -- |
| BH7-SS3 | 1.52-2.13 | 100/0 | -- | -- | X[3] | -- | X | -- | -- |
| BH7-SS5 | 3.05-3.66 | 60/0 | -- | -- | X | -- | X | -- | -- |
| BH8-SS1 | 0.09-0.61 | 0/6 | X | X | -- | -- | -- | -- | -- |
| BH8-SS5 | 3.05-3.66 | 0/1 | -- | -- | X | -- | X | X | -- |
| DUP4 Duplicate pair of BH6-SS4 | 2.27-2.89 | 95/0 | -- | -- | X | -- | X | -- | -- |

*Notes:*

1. *mbgs – metres below ground surface.*
2. *Including BTEX parameters.*
3. *Analyzed for PHC F1 only.*
4. *Field vapour readings are reported in parts per million (ppm) for total organic vapours showing CGI followed by PID readings.*

-- *Not analyzed.*

## 5.4 SOIL QUALITY

Based on field screening and observations, up to four (4) soil samples from each of the eight borehole locations (plus a field duplicate) were submitted to ALS to identify the presence of chemical impacts in the subsurface fill and native material.

Analytical results were compared to the MECP Table 3 and Table 9 SCS, as applicable based on the distance of the West Highland Creek from the sampling location. Parameters exceeding the Table 3 SCS (i.e. impacts) were identified for electrical conductivity (EC) at BH6; and Sodium Adsorption Ratio (SAR), pH and benzo(a)pyrene at BH8. All identified impacts were restricted to the fill material. All other collected soil samples met the applicable SCS. A summary of the soil samples exceeding the applicable MECP SCS is included in **Table 5-3**.

**Table 5-3 Summary of Soil Analytical Results Exceeding the MECP Table 3 SCS**

| SAMPLE ID | SAMPLE DEPTH (MBGS) | PARAMETER | MECP TABLE 3 SCS | RESULTS |
|---|---|---|---|---|
| BH6-SS1-2 | 0.37-0.61 | Sodium Adsorption Ratio | 12 (unitless) | 12.8 (unitless) |
| BH8-SS1 | 0.09-0.61 | pH | 5 to 9 pH Units | 11.81 (pH Units) |
| | | Electrical Conductivity | 1.4 (mS/cm) | 1.82 (mS/cm) |
| | | Benzo(a)pyrene | 0.3 µg/g | 0.346 µg/g |

Elevated EC and SAR in the fill material at BH6 and BH8 are inferred to be a result of road salt used in winter maintenance of public and private property, as these boreholes are located in areas with regular vehicular traffic. The elevated pH and benzo(a)pyrene in BH8 is attributed to impacts associated with poor quality fill material.

All samples met the Table 3 or Table 9 SCS for metals, PHC and VOC (including BTEX) parameters. The locations of chemical parameters exceeding the applicable MECP SCS are shown on **Figure 2.**

Two soil samples were submitted for toxicity characteristic leachate procedure (TCLP) analysis of metals and inorganics, VOC, PCBs, and PAHs. All TCLP samples met the Schedule 4, Leachate Quality Criteria under Regulation 347: General – Waste Management, as amended, of the *Environmental Protection Act*, and as such, is considered non-hazardous.

Laboratory COAs of soil results are included in **Appendix C.**

## 5.5 GROUNDWATER QUALITY

Analytical results from the Jun 18 and 19, 2020 groundwater sampling event indicated the chloride concentration at BH2 exceeded the Table 9 SCS. All other M&I, PAH, PHC, and VOC (including BTEX) parameters met the applicable Table 3 or Table 9 SCS. **Table 5-4** summarizes the groundwater results exceeding the applicable SCS.

**Table 5-4 Summary of Analytical Groundwater Samples Exceeding Applicable SCS**

| SAMPLE ID | MONITORING WELL SCREEN INTERVAL | PARAMETER | MECP TABLE 9 SCS | RESULTS |
|---|---|---|---|---|
| BH2 | 1.5 – 4.5 mbgs | Chloride | 1,800,000 µg/L | 3,560,000 µg/L |

The location of the groundwater sample exceeding the Table 9 SCS is shown on **Figure 2**. Laboratory COAs of groundwater results are included in **Appendix C**.

## 5.6 QUALITY ASSURANCE AND QUALITY CONTROL RESULTS

ALS completed a variety of quality assurance/quality control (QA/QC) measures on the soil and groundwater samples submitted as part of the sampling program. These QA/QC measures include: sample replicates, matrix spiked laboratory blanks, and process blanks. The reported QA/QC results from ALS indicate the results are considered reliable. The laboratory QC reports are included in the laboratory COAs in **Appendix C**.

In addition, WSP submitted one duplicate soil sample for analysis of PHCs F1 and BTEX, and one duplicate groundwater sample for the analysis of M&I, PHCs, PAHs and VOCs. The duplicate sample analytical results for soil and groundwater are included in the tables following the text. The submission of these samples demonstrated the accuracy and reliability of the laboratory procedures and instruments. Relative percent difference (RPD) for analyses in duplicate samples were evaluated for this investigation. The RPD calculation is only applicable when both original and duplicate concentrations are greater than five times the laboratory reporting detection limit (RDL).

Acceptable RPD limits in accordance with the MECP Alert Criteria are as follows:

- Metals and inorganics - 20% water; 30-40% soil (exception of conductivity at 10%)
- PAHs - 30% water; 40% soil
- VOCs – 30% water; 50% soil
- PHCs – 30% water; 30% soil

Results of soil analysis RPD between parent and duplicate pair BH6-SS4 and DUP 4 were not calculable as all parent and duplicate sample results were below the RDL.

The results of the groundwater duplicate analysis indicated that the RPDs between the parent and the duplicate samples BH7 and DUP01 were within the acceptable limits. The results of the RPD calculations for soil and groundwater are included in the tables following the text.

# 6 CONCLUSIONS

## 6.1 SUMMARY OF SOIL AND GROUNDWATER CONTAMINANT INVESTIGATION FINDINGS

A total of 21 soil samples, including duplicates, were submitted to the laboratory for analysis of one or more of the following parameter packages: M&I, PAH, PHC (F1-F4), BTEX and VOC. Results of laboratory analysis indicate the fill material at BH6 contains levels of SAR exceeding the MECP Table 3 SCS and the fill material at BH8 contains levels of EC and pH and concentrations of benzo(a)pyrene exceeding the Table 3 SCS. Impacted fill material from BH6 and BH8 was identified in the upper 0.6 m of soil stratigraphy. Soil samples analyzed from the native material at BH6 (1.5-2.1 mbgs) and BH8 (2.3-2.9 mbgs) met the Table 3 SCS for parameters which exceeded the Table 3 SCS within the fill material. In addition, all soil samples from BH1, BH2, BH3, BH4, BH5, and BH7 met the applicable Table 3 or Table 9 SCS. The locations of the soil samples exceeding the applicable SCS are shown on **Figure 2**.

Groundwater was intercepted between 1.27 to 3.78 mbgs across the Project Limits. Groundwater at BH2 contained concentrations of chloride exceeding the Table 3 SCS. All other groundwater samples met the Table 3 SCS or Table 9 SCS, as applicable. The locations of the groundwater sample exceeding the applicable SCS is shown on **Figure 2**.

## 6.2 RECOMMENDATIONS

Groundwater at BH2 was found to contain chloride exceeding the MECP Table 3 SCS, however all other groundwater samples met the applicable MECP SCS. Salt-related impacts, including elevated concentrations of chloride, do not pose environmental concern where groundwater is not used for drinking water or agricultural / planting purposes. The results indicate groundwater generated during construction may be managed through the municipal storm or sanitary system, pending results of groundwater analysis as compared to the City of Toronto Storm and Sanitary and Combined Sewer Use By-law criteria, and application to the City of Toronto for a discharge permit or agreement.

Based on the soil chemical results from the borehole investigation undertaken in June 2020, shallow fill material within the vicinity of BH8 and BH6 is considered impacted exceeding the Table 3 SCS. WSP recommends planning for the management and disposal of excess impacted soil in the vicinity of BH8 and BH6 to include additional sampling to delineate the extent of impacted fill material. Details of such delineation should be reviewed during the detail design process to facilitate management of soil within the construction footprint.

Excess and On-Site Soil Management Regulation (Ontario Regulation 406/19)

In addition, it is anticipated that the project will generate a significant quantity of excess soil which will need to be appropriately managed both on-site and off-site. An excess soil regulation is currently being implemented by Ontario (Excess and On-Site Soil Management Regulation - Ontario Regulation 406/19). The regulation will come into effect in January 2021 with the planning requirements being implemented in January 2022. Planning requirements would include an assessment of past uses, excess soil characterization report, and a destination assessment report. These is generally required for sites that generate greater than 2,000 $m^3$ of soil or sites that have potentially contaminating activities (PCAs) associated with them. A tracking and record keeping system will be required. Soil sample frequency requirements are also mandated as part of the Regulation and are based on the volume of excess soil. New excess soil standards have also been developed.

WSP recommends that during detailed design, a strategy for excess soil management pursuant to O. Reg. 406/19 should be developed and implemented. This strategy should include a comprehensive in-situ excess sampling program in coordination with the geotechnical program to fully characterize soil quality and identify off-site

management options including a tracking and record keeping system. This strategy would form part of the construction tender for implementation by the Contractor under the supervision of a Qualified Person.

# 7 QUALIFICATIONS OF ASSESSORS

## 7.1 WSP CANADA GROUP LIMITED

As one of the world's leading professional services firms, WSP provides technical expertise and strategic advice to clients in the Transportation & Infrastructure, Property & Buildings, Environment, Industry, Resources (including Mining and Oil & Gas) and Energy sectors, as well as offering project and program delivery and advisory services. Our experts include engineers, advisors, technicians, scientists, architects, planners, surveyors and environmental specialists, as well as other design, program and construction management professionals. With approximately 48,000 talented people in 550 offices across 40 countries—more than 8,000 in Canada and 9,500 in the U.S.—we are uniquely positioned to deliver successful and sustainable projects, wherever our clients need us. www.wsp.com

## 7.2 QUALIFIED PERSON

**Mr. Derek Stewart, M.Sc., P.Geo., QP$_{ESA}$** is a Contaminant Specialist/Senior Project Manager with WSP and has more than 29 years' experience managing contaminant and groundwater investigations in support of transportation infrastructure and land redevelopment projects. Mr. Stewart's work includes project technical support for both regional planning and local scale impact assessment studies supporting transportation route planning for municipal, provincial and federal Environmental Assessments (EAs); transportation infrastructure preliminary and detail designs; land redevelopment; and property acquisitions/dispositions. In addition, Mr. Stewart provides groundwater and contaminant support for road, rail and transit infrastructure construction projects. Derek is a Qualified Person (QP$_{ESA}$) as defined under Ontario Regulation 153/04, as amended. Derek provided quality control this Soil and Groundwater Contaminant Investigation.

## 7.3 TECHNICAL SUPPORT

**Ms. Valyn Bernard, B.A.Sc., P.Eng**. is a Project Engineer with the Environmental Management Department and has been working with WSP Canada Group Limited for over five years. She conducts Phase One and Two Environmental Site Assessments including document research, site visits, interviews, as well as implementing field investigations, including soil sampling through drilling and test pitting and groundwater monitoring and sampling. Additional tasks include carrying out Designated Substance Surveys and contaminant support for construction projects, through general overseeing of contractor companies during the management of contaminated soil and groundwater during construction activities. Valyn managed and reviewed the Soil and Groundwater Contaminant Investigation report.

**Ms. Anne Pattison, B.Sc., G.I.T.** is an Environmental Scientist with WSP, with over four years of experience in environmental and geotechnical science. She conducts Environmental Site Assessments and contaminant investigations including document research, site visits, interviews, report writing as well as implementing field investigations, including soil sampling through drilling and test pitting and groundwater monitoring and sampling. Additional responsibilities include carrying out hydrogeological assessments, and providing contaminant support for construction projects through planning of soil and groundwater investigations, and ongoing construction advising on excess materials management. Ms. Pattison oversaw the completion of the field program and completed the reporting for the Soil and Groundwater Contaminant Investigation report.

# 8 LIMITATIONS

("WSP") prepared this report solely for the use of the intended recipient, CITY OF TORONTO, in accordance with the professional services agreement between the parties. In the event a contract has not been executed, the parties agree that the WSP General Terms for Consultant shall govern their business relationship which was provided to you prior to the preparation of this report.

The report is intended to be used in its entirety. No excerpts may be taken to be representative of the findings in the assessment.

The conclusions presented in this report are based on work performed by trained, professional and technical staff, in accordance with their reasonable interpretation of current and accepted engineering and scientific practices at the time the work was performed.

The content and opinions contained in the present report are based on the observations and/or information available to WSP at the time of preparation, using investigation techniques and engineering analysis methods consistent with those ordinarily exercised by WSP and other engineering/scientific practitioners working under similar conditions, and subject to the same time, financial and physical constraints applicable to this project.

WSP disclaims any obligation to update this report if, after the date of this report, any conditions appear to differ significantly from those presented in this report; however, WSP reserves the right to amend or supplement this report based on additional information, documentation or evidence.

WSP makes no other representations whatsoever concerning the legal significance of its findings.

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In preparing this report, WSP has relied in good faith on information provided by others, as noted in the report. WSP has reasonably assumed that the information provided is correct and WSP is not responsible for the accuracy or completeness of such information.

Benchmark and elevations used in this report are primarily to establish relative elevation differences between the specific testing and/or sampling locations and should not be used for other purposes, such as grading, excavating, construction, planning, development, etc.

Design recommendations given in this report are applicable only to the project and areas as described in the text and then only if constructed in accordance with the details stated in this report. The comments made in this report on potential construction issues and possible methods are intended only for the guidance of the designer. The number of testing and/or sampling locations may not be sufficient to determine all the factors that may affect construction methods and costs. We accept no responsibility for any decisions made or actions taken as a result of this report unless we are specifically advised of and participate in such action, in which case our responsibility will be as agreed to at that time.

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This limitations statement is considered an integral part of this report.

# 9 REFERENCES

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# FIGURES

Prepared By: SerrouU

N

REIDMOUNT AVE

SHEPPARD AVE E

BH1

HGS6 / TD1
/ HIM13

DC4

HAS3

West Highland Creek

BH2

BH3

GORDON AVE

LAMONT AVE

BH4

BH5

COLLINGWOOD ST

KENNEDY RD

JADE ST

COWDRAY CRT

HIM1

BH6

RL2

BH7

BH8

VILLAGE GREEN SQ

HIM5
/ TD4

EARLTON RD

PENTLY CRES

LEJUNE RD

0 50 100 150 Metres

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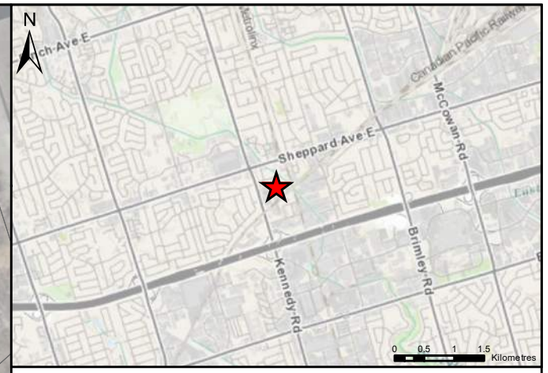
I:\EngSoftware\2019\33\19M-01888-00 Agincourt EA\MXD\Contaminant Investigation\Figure 1 Site Plan.mxd




LEGEND:

- SITE LOCATION
- MONITORING WELL (WSP, 2020)
- CONTAMINATE INVESTIGATION STUDY LIMITS
- INFERRED GROUNDWATER FLOW DIRECTION
- PARCEL FABRIC
- WATERCOURSES
- RAILWAY
- HIGH AREAS OF POTENTIAL ENVIRONMENTAL CONCERN

TITLE:

**SITE PLAN**

PROJECT:

SOIL AND GROUNDWATER INVESTIGATION
AGINCOURT ENVIRONMENTAL ASSESSMENT
SCARBOROUGH, ONTARIO

CLIENT:

CITY OF TORONTO

| PROJECT NO.: | REVIEWED BY: |
|---|---|
| 19M-01888-00 | DS |
| DATE: AUGUST 2020 | FIGURE: 1 |

Prepared By: SerrouU

N

REIDMOUNT AVE

SHEPPARD AVE E

West Highland Creek

GORDON AVE

LAMONT AVE

COLLINGWOOD ST

KENNEDY RD

JADE ST

COWDRAY CRT

EARLTON RD

PENTLY CRES

LEJUNE RD

BH1

BH2

BH3

BH4

BH5

BH6

BH7

BH8

| BH2 (1.52-4.57 mbgs) | | |
|---|---|---|
| **Parameter** | **MECP Standard** | **Result** |
| Chloride (µg/L) | 1,800,000 | 3,560,000 |

| BH6 (0-0.61 mbgs) | | |
|---|---|---|
| **Parameter** | **MECP Standard** | **Result** |
| Sodium Adsorption Ratio (unitless) | 12 | 12.8 |

| BH8 (0-0.61 mbgs) | | |
|---|---|---|
| **Parameter** | **MECP Standard** | **Result** |
| pH (unitless) | 5 to 9 | 11.8 |
| Electrical Conductivity (mS/cm) | 1.4 | 1.82 |
| Benzo(a)pyrene (µg/g) | 0.3 | 0.346 |

0 50 100 150 Metres

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LEGEND:

- MONITORING WELL (WSP, 2020)
- CONTAMINATE INVESTIGATION STUDY LIMITS
- PARCEL FABRIC
- WATERCOURSES
- RAILWAY

**NOTES**

1. Monitoring wells BH 2 and BH 3 were compared to MECP Table 9 site condition standards. All other monitoring wells were compared to MECP Table 3 site condition standards.
2. Soil exceedances are shown in orange call out boxes.
3. Groundwater exceedances are shown in blue call out boxes.

MECP Table 3: Full Depth Generic Site Condition Standards for Soil in a Non-Potable Ground Water Condition for Industrial/Commercial/Community Property Use with Medium to Fine Textured Soils.

MECP Table 9: Generic Site Condition Standards for Soil (other than Sediment) for Use within 30 m of a Water Body in a Non-Potable Groundwater Condition for Residential/ Parkland/Institutional/Industrial/Commercial/ Community Property Use.

TITLE:

**SOIL AND GROUNDWATER EXCEEDANCES**

PROJECT:

SOIL AND GROUNDWATER INVESTIGATION
AGINCOURT ENVIRONMENTAL ASSESSMENT
SCARBOROUGH, ONTARIO

CLIENT:

CITY OF TORONTO

| PROJECT NO.: | REVIEWED BY: |
|---|---|
| 19M-01888-00 | DS |
| DATE: AUGUST 2020 | FIGURE: 2 |

I:\EngSoftware\2019\33\19M-01888-00 Agincourt EA\MXD\Contaminant Investigation\Figure 2 Exceedances.mxd

# TABLES

**Table 9-1: Summary of Analytical Results in Soil**
**Metals, Inorganics and PAHs**
**Agincourt Environmental Assessment, Toronto, Ontario**

| Sample ID<br>Depth (m)<br>Lab Job #<br>Sampling Date | MECP TABLE 3 ICC STANDARD | MECP TABLE 9 RPI / ICC STANDARD | REPORTING LIMIT | UNITS | BH1-SS1<br>0-0.61<br>L2456363<br>3-Jun-2020 | BH2-SS2<br>0.76-1.37<br>L2457452<br>5-Jun-2020 | BH3-SS2<br>0.76-1.37<br>L2458709<br>9-Jun-2020 | BH4-SS1<br>0-0.61<br>L2458047<br>8-Jun-2020 | BH5-SS1<br>0-0.61<br>L2458699<br>9-Jun-2020 | BH6-SS1-2<br>0-0.61<br>L2457971<br>8-Jun-2020 | BH6-SS3<br>1.52-2.13<br>L2457971<br>8-Jun-2020 | BH7-SS1-2<br>0-0.61<br>L2457053<br>4-Jun-2020 | BH8-SS1<br>0-0.61<br>L2457100<br>4-Jun-2020 | BH8-SS4<br>2.28-2.89<br>L2457100<br>4-Jun-2020 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Metals and Inorganics*** | | | | | | | | | | | | | | |
| Antimony | 50 | 1.3 | 1 | µg/g | <1.0 | <1.0 | <1.0 | <1.0 | 2.3 | <1.0 | <1.0 | <1.0 | <1.0 | NA |
| Arsenic | 18 | 18 | 1 | µg/g | 1.8 | 2 | 2.2 | 3.7 | 3.3 | 3.8 | 2.9 | 2 | 2.6 | NA |
| Barium | 670 | 220 | 1 | µg/g | 29 | 54.1 | 49 | 113 | 71.4 | 143 | 50.4 | 39.8 | 73 | NA |
| Beryllium | 10 | 2.5 | 0.5 | µg/g | <0.50 | <0.50 | <0.50 | 0.65 | <0.50 | 0.68 | <0.50 | <0.50 | <0.50 | NA |
| Boron (Hot Water Soluble) | 2 | 1.5 | 0.1 | µg/g | 0.39 | 0.36 | 0.17 | 0.24 | 0.3 | 0.32 | <0.10 | 0.2 | 0.35 | NA |
| Cadmium | 1.9 | 1.2 | 0.5 | µg/g | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | 0.75 | NA |
| Chromium | 160 | 70 | 1 | µg/g | 9.8 | 13.6 | 14.6 | 24.9 | 16 | 26.3 | 11.7 | 10.9 | 17.6 | NA |
| Chromium VI | 10 | 0.66 | 0.2 | µg/g | 0.22 | <0.20 | 0.29 | 0.27 | 0.31 | 0.39 | <0.20 | <0.2 | 0.78 | NA |
| Cobalt | 100 | 22 | 1 | µg/g | 3 | 4.2 | 4.9 | 8.9 | 5.1 | 9 | 4.2 | 4 | 3.7 | NA |
| Copper | 300 | 92 | 1 | µg/g | 6.5 | 8.9 | 9.1 | 15.2 | 10.8 | 11.7 | 8.4 | 9.5 | 15.8 | NA |
| Lead | 120 | 120 | 1 | µg/g | 19.6 | 9.2 | 12.4 | 10.1 | 61.1 | 9.7 | 4.3 | 8.2 | 21.6 | NA |
| Mercury | 20 | 0.27 | 0.005 | µg/g | 0.0179 | 0.02 | 0.017 | 0.032 | 0.0216 | 0.0298 | <0.0050 | 0.0095 | 0.031 | NA |
| Molybdenum | 40 | 2 | 1 | µg/g | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | NA |
| Nickel | 340 | 82 | 1 | µg/g | 7.7 | 9 | 9.5 | 21.3 | 11.6 | 20.8 | 8.6 | 8.4 | 10.1 | NA |
| Selenium | 5.5 | 1.5 | 1 | µg/g | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | NA |
| Silver | 50 | 0.5 | 0.2 | µg/g | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | NA |
| Thallium | 3.3 | 1 | 0.5 | µg/g | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | NA |
| Vanadium | 86 | 86 | 1 | µg/g | 12.3 | 23.4 | 27.9 | 37.6 | 28.6 | 42.4 | 21 | 21.3 | 21 | NA |
| Zinc | 340 | 290 | 5 | µg/g | 29.7 | 30.6 | 33.3 | 42.8 | 41.7 | 46.3 | 23.2 | 29.1 | 82.7 | NA |
| pH | 5 to 9 | 5 to 9 | 0.1 | pH Units | 7.77 | 7.59 | 7.6 | 7.51 | 7.52 | 7.5 | 7.94 | 7.83 | **11.81** | 7.95 |
| Electrical Conductivity | 1.4 | 0.7 | 0.004 | mS/cm | 0.173 | 0.32 | 0.142 | 0.143 | 0.163 | 0.646 | 0.307 | 0.223 | **1.82** | 0.182 |
| Sodium Adsorption Ratio | 12 | 5 | 0.1 | Unitless | 1.74 | 4.28 | 0.13 | 0.17 | 0.11 | **12.8** | 2.95 | 0.68 | 2.6 | NA |
| Cyanide, Free | 0.051 | 0.051 | 0.05 | µg/g | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | NA |
| Boron (Total) | 120 | 36 | 5 | µg/g | 9.1 | 5.6 | 6.7 | 6 | 6.2 | 8.7 | 5.4 | <5.0 | 13.8 | NA |
| Uranium | 33 | 2.5 | 1 | µg/g | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | NA |
| ***Polycyclic Aromatic Hydrocarbons (PAHs)*** | | | | | | | | | | | | | | |
| Acenaphthene | 96 | 0.072 | 0.05 | µg/g | <0.050 | <0.050 | <0.050 | <0.050 | NA | <0.050 | <0.050 | <0.050 | 0.156 | NA |
| Acenaphthylene | 0.17 | 0.093 | 0.05 | µg/g | <0.050 | <0.050 | <0.050 | <0.050 | NA | <0.050 | <0.050 | <0.050 | <0.050 | NA |
| Anthracene | 0.74 | 0.22 | 0.05 | µg/g | <0.050 | <0.050 | <0.050 | <0.050 | NA | <0.050 | <0.050 | <0.050 | 0.221 | NA |
| Benzo(a)anthracene | 0.96 | 0.36 | 0.05 | µg/g | <0.050 | <0.050 | <0.050 | <0.050 | NA | <0.050 | <0.050 | <0.050 | 0.463 | NA |
| Benzo(a)pyrene | 0.3 | 0.3 | 0.05 | µg/g | <0.050 | <0.050 | <0.050 | <0.050 | NA | <0.050 | <0.050 | <0.050 | **0.346** | <0.020 |
| Benzo(b/j)fluoranthene | 0.96 | 0.47 | 0.05 | µg/g | 0.059 | <0.050 | <0.050 | <0.050 | NA | <0.050 | <0.050 | <0.050 | 0.543 | NA |
| Benzo(ghi)perylene | 9.6 | 0.68 | 0.05 | µg/g | <0.050 | <0.050 | <0.050 | <0.050 | NA | <0.050 | <0.050 | <0.050 | 0.228 | NA |
| Benzo(k)fluoranthene | 0.96 | 0.48 | 0.05 | µg/g | <0.050 | <0.050 | <0.050 | <0.050 | NA | <0.050 | <0.050 | <0.050 | 0.137 | NA |
| Chrysene | 9.6 | 2.8 | 0.05 | µg/g | 0.059 | <0.050 | <0.050 | <0.050 | NA | <0.050 | <0.050 | <0.050 | 0.518 | NA |
| Dibenzo(a,h)anthracene | 0.1 | 0.1 | 0.05 | µg/g | <0.050 | <0.050 | <0.050 | <0.050 | NA | <0.050 | <0.050 | <0.050 | 0.064 | NA |
| Fluoranthene | 9.6 | 0.69 | 0.05 | µg/g | 0.099 | 0.056 | 0.063 | <0.050 | NA | <0.050 | <0.050 | <0.050 | 1.15 | NA |
| Fluorene | 69 | 0.19 | 0.05 | µg/g | <0.050 | <0.050 | <0.050 | <0.050 | NA | <0.050 | <0.050 | <0.050 | 0.066 | NA |
| Indeno(1,2,3-cd)pyrene | 0.95 | 0.23 | 0.05 | µg/g | <0.050 | <0.050 | <0.050 | <0.050 | NA | <0.050 | <0.050 | <0.050 | 0.216 | NA |
| 1-Methylnaphthalene | NV | NV | 0.03 | µg/g | <0.030 | <0.030 | <0.030 | <0.030 | NA | <0.030 | <0.030 | <0.030 | 0.066 | NA |
| 2-Methylnaphthalene | NV | NV | 0.03 | µg/g | <0.030 | <0.030 | <0.030 | <0.030 | NA | <0.030 | <0.030 | <0.030 | 0.1 | NA |
| 1,2-Methylnaphthalene | 85 | 0.59 | 0.042 | µg/g | <0.042 | <0.042 | <0.042 | <0.042 | NA | <0.042 | <0.042 | <0.042 | 0.166 | NA |
| Naphthalene | 28 | 0.09 | 0.013 | µg/g | <0.013 | <0.013 | <0.013 | <0.013 | NA | <0.013 | <0.013 | <0.013 | 0.163 | NA |
| Phenanthrene | 16 | 0.69 | 0.046 | µg/g | 0.05 | <0.046 | <0.046 | <0.046 | NA | <0.046 | <0.046 | <0.046 | 1.36 | NA |
| Pyrene | 96 | 1 | 0.05 | µg/g | 0.085 | <0.050 | 0.053 | <0.050 | NA | <0.050 | <0.050 | <0.050 | 0.963 | NA |

***Notes:***

'NV ' : No Standard established NA: Parameter not analyzed

MECP Table 3: Ontario Ministry of the Environment, "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, " March 2004, amended July 1, 2011. Full Depth Generic Site Condition Standards for Soil in a Non-Potable Ground Water Condition for Industrial/Commercial/Community Property Use with Medium to Fine Textured Soils.

MECP Table 9: Ontario Ministry of the Environment, "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, " March 2004, amended July 1, 2011. Generic Site Condition Standards for Soil (other than Sediment) for Use within 30 m of a Water Body in a Non-Potable Groundwater Condition for Residential/Parkland/Institutional/Industrial/Commercial/Community Property Use.

| | |
|---|---|
| **100** | Exceeds MECP Table 3 Standards |
| ***100*** | Exceeds MECP Table 9 Standards |
| **100** | Detection Limit Exceeds Applicable Standard |

**Table 9-2: Summary of Analytical Results in Soil**
**PHCs and VOCs**
**Agincourt Environmental Assessment, Toronto, Ontario**

| Sample ID<br>Depth (m)<br>Lab Job #<br>Sampling Date | MECP TABLE 3 ICC STANDARD | MECP TABLE 9 RPI / ICC STANDARD | REPORTING LIMIT | UNITS | BH1-SS3<br>1.52-2.13<br>L2456363<br>3-Jun-2020 | BH2-SS3<br>1.52-2.13<br>L2457452<br>5-Jun-2020 | BH3-SS14<br>10.67-11.28<br>L2458709<br>9-Jun-2020 | BH4-SS3<br>1.52-2.13<br>L2458047<br>8-Jun-2020 | BH4-SS6<br>3.81-4.42<br>L2458047<br>8-Jun-2020 | BH6-SS4<br>2.28-2.89<br>L2457971<br>8-Jun-2020 | DUP 4<br>Duplicate of BH6-SS4<br>2.28-2.89<br>L2457971<br>8-Jun-2020 | BH6-SS5-1<br>3.05-3.66<br>L2457971<br>8-Jun-2020 | BH7-SS3<br>1.52-2.13<br>L2457053<br>4-Jun-2020 | BH7-SS5<br>3.05-3.66<br>L2457053<br>4-Jun-2020 | BH8-SS5<br>3.05-3.66<br>L2457100<br>4-Jun-2020 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Petroleum Hydrocarbon Compounds (PHCs)*** | | | | | | | | | | | | | | | |
| F1 (C6-C10) | 65 | 25 | 5 | µg/g | <5.0 | <5.0 | <5.0 | NA | <5.0 | <5.0 | <5.0 | <50 | <5.0 | <5.0 | <5.0 |
| F1 (C6-C10) - BTEX | 65 | 25 | 5 | µg/g | <5.0 | <5.0 | <5.0 | NA | <5.0 | <5.0 | <5.0 | <50 | <5.0 | <5.0 | <5.0 |
| F2 (C10-C16) | 250 | 10 | 10 | µg/g | <10 | <10 | <10 | NA | <10 | <10 | <10 | <100 | <10 | <10 | <10 |
| F3 (C16-C34) | 2500 | 240 | 50 | µg/g | <50 | <50 | <50 | NA | <50 | <50 | <50 | <500 | <50 | <50 | <50 |
| F4 (C34-C50) | 6600 | 120 | 50 | µg/g | <50 | <50 | <50 | NA | <50 | <50 | <50 | <500 | <50 | <50 | <50 |
| Reached Baseline at C50 | NV | NV | NV | NV | YES | YES | YES | NA | YES | YES | YES | YES | YES | YES | YES |
| ***Polychlorinated Biphenols (PCBs)*** | | | | | | | | | | | | | | | |
| Polychlorinated Biphenols | 1.1 | 0.3 | | µg/g | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| ***Volatile Organic Compounds (VOCs)*** | | | | | | | | | | | | | | | |
| Acetone | 28 | 0.5 | 0.5 | µg/g | <0.50 | <0.50 | <0.50 | <0.50 | NA | <0.50 | NA | <5.0 | NA | NA | NA |
| Benzene | 0.4 | 0.02 | 0.0068 | µg/g | <0.0068 | <0.0068 | <0.0068 | <0.0068 | <0.0068 | <0.0068 | <0.0068 | <0.068 | <0.0068 | <0.0068 | <0.0068 |
| Bromodichloromethane | 18 | 0.05 | 0.05 | µg/g | <0.050 | <0.050 | <0.050 | <0.050 | NA | <0.050 | NA | <0.50 | NA | NA | NA |
| Bromoform | 1.7 | 0.05 | 0.05 | µg/g | <0.050 | <0.050 | <0.050 | <0.050 | NA | <0.050 | NA | <0.50 | NA | NA | NA |
| Bromomethane | 0.05 | 0.05 | 0.05 | µg/g | <0.050 | <0.050 | <0.050 | <0.050 | NA | <0.050 | NA | **<0.50** | NA | NA | NA |
| Carbon Tetrachloride | 1.5 | 0.05 | 0.05 | µg/g | <0.050 | <0.050 | <0.050 | <0.050 | NA | <0.050 | NA | <0.50 | NA | NA | NA |
| Chlorobenzene | 2.7 | 0.05 | 0.05 | µg/g | <0.050 | <0.050 | <0.050 | <0.050 | NA | <0.050 | NA | <0.50 | NA | NA | NA |
| Chloroform | 0.18 | 0.05 | 0.05 | µg/g | <0.050 | <0.050 | <0.050 | <0.050 | NA | <0.050 | NA | **<0.50** | NA | NA | NA |
| Dibromochloromethane | 13 | 0.05 | 0.05 | µg/g | <0.050 | <0.050 | <0.050 | <0.050 | NA | <0.050 | NA | <0.50 | NA | NA | NA |
| 1,2-Dichlorobenzene | 8.5 | 0.05 | 0.05 | µg/g | <0.050 | <0.050 | <0.050 | <0.050 | NA | <0.050 | NA | <0.50 | NA | NA | NA |
| 1,3-Dichlorobenzene | 12 | 0.05 | 0.05 | µg/g | <0.050 | <0.050 | <0.050 | <0.050 | NA | <0.050 | NA | <0.50 | NA | NA | NA |
| 1,4-Dichlorobenzene | 0.84 | 0.05 | 0.05 | µg/g | <0.050 | <0.050 | <0.050 | <0.050 | NA | <0.050 | NA | <0.50 | NA | NA | NA |
| 1,1-Dichloroethane | 21 | 0.05 | 0.05 | µg/g | <0.050 | <0.050 | <0.050 | <0.050 | NA | <0.050 | NA | <0.50 | NA | NA | NA |
| 1,2-Dichloroethane | 0.05 | 0.05 | 0.05 | µg/g | <0.050 | <0.050 | <0.050 | <0.050 | NA | <0.050 | NA | **<0.50** | NA | NA | NA |
| 1,1-Dichloroethylene | 0.48 | 0.05 | 0.05 | µg/g | <0.050 | <0.050 | <0.050 | <0.050 | NA | <0.050 | NA | **<0.50** | NA | NA | NA |
| Cis-1,2-Dichloroethylene | 37 | 0.05 | 0.05 | µg/g | <0.050 | <0.050 | <0.050 | <0.050 | NA | <0.050 | NA | <0.50 | NA | NA | NA |
| Trans-1,2-Dichloroethylene | 9.3 | 0.05 | 0.05 | µg/g | <0.050 | <0.050 | <0.050 | <0.050 | NA | <0.050 | NA | <0.50 | NA | NA | NA |
| 1,2-Dichloropropane | 0.68 | 0.05 | 0.05 | µg/g | <0.050 | <0.050 | <0.050 | <0.050 | NA | <0.050 | NA | <0.50 | NA | NA | NA |
| Cis-1,3-Dichloropropylene | NV | NV | 0.03 | µg/g | <0.030 | <0.030 | <0.030 | <0.030 | NA | <0.030 | NA | <0.30 | NA | NA | NA |
| Trans-1,3-Dichloropropylene | NV | NV | 0.03 | µg/g | <0.030 | <0.030 | <0.030 | <0.030 | NA | <0.030 | NA | <0.30 | NA | NA | NA |
| 1,3-Dichloropropylene | 0.21 | 0.05 | 0.042 | µg/g | <0.042 | <0.042 | <0.042 | <0.042 | NA | <0.042 | NA | **<0.42** | NA | NA | NA |
| Ethylbenzene | 19 | 0.05 | 0.018 | µg/g | <0.018 | <0.018 | <0.018 | <0.018 | <0.018 | <0.018 | <0.018 | <0.18 | <0.018 | <0.018 | <0.018 |
| Ethylene Dibromide (1,2-Dibromoethane) | 0.05 | 0.05 | 0.05 | µg/g | <0.050 | <0.050 | <0.050 | <0.050 | NA | <0.050 | NA | **<0.50** | NA | NA | NA |
| Methyl Ethyl Ketone | 88 | 0.5 | 0.5 | µg/g | <0.50 | <0.50 | <0.50 | <0.50 | NA | <0.50 | NA | <5.0 | NA | NA | NA |
| Methylene Chloride | 2 | 0.05 | 0.05 | µg/g | <0.050 | <0.050 | <0.050 | <0.050 | NA | <0.050 | NA | <0.50 | NA | NA | NA |
| Methyl Isobutyl Ketone | 210 | 0.5 | 0.5 | µg/g | <0.50 | <0.50 | <0.50 | <0.50 | NA | <0.50 | NA | <5.0 | NA | NA | NA |
| Methyl-t-Butyl Ether | 3.2 | 0.05 | 0.05 | µg/g | <0.050 | <0.050 | <0.050 | <0.050 | NA | <0.050 | NA | <0.50 | NA | NA | NA |
| Styrene | 43 | 0.05 | 0.05 | µg/g | <0.050 | <0.050 | <0.050 | <0.050 | NA | <0.050 | NA | <0.50 | NA | NA | NA |
| 1,1,1,2-Tetrachloroethane | 0.11 | 0.05 | 0.05 | µg/g | <0.050 | <0.050 | <0.050 | <0.050 | NA | <0.050 | NA | **<0.50** | NA | NA | NA |
| 1,1,2,2-Tetrachloroethane | 0.094 | 0.05 | 0.05 | µg/g | <0.050 | <0.050 | <0.050 | <0.050 | NA | <0.050 | NA | **<0.50** | NA | NA | NA |
| Toluene | 78 | 0.2 | 0.08 | µg/g | <0.080 | <0.080 | <0.080 | <0.080 | <0.080 | <0.080 | <0.080 | <0.80 | <0.080 | <0.080 | <0.080 |
| Tetrachloroethylene | 21 | 0.05 | 0.05 | µg/g | <0.05 | <0.050 | <0.050 | <0.050 | NA | <0.050 | NA | <0.50 | NA | NA | NA |
| 1,1,1-Trichloroethane | 12 | 0.05 | 0.05 | µg/g | <0.050 | <0.050 | <0.050 | <0.050 | NA | <0.050 | NA | <0.50 | NA | NA | NA |
| 1,1,2-Trichloroethane | 0.11 | 0.05 | 0.05 | µg/g | <0.050 | <0.050 | <0.050 | <0.050 | NA | <0.050 | NA | **<0.50** | NA | NA | NA |
| Trichloroethylene | 0.61 | 0.05 | 0.01 | µg/g | <0.010 | <0.010 | <0.010 | <0.010 | NA | <0.010 | NA | <0.10 | NA | NA | NA |
| Vinyl Chloride | 0.25 | 0.02 | 0.02 | µg/g | <0.020 | <0.020 | <0.020 | <0.020 | NA | <0.020 | NA | <0.20 | NA | NA | NA |
| m-Xylene & p-Xylene | NV | NV | 0.03 | µg/g | <0.030 | <0.030 | <0.030 | <0.030 | <0.030 | <0.030 | <0.030 | <0.30 | <0.030 | <0.030 | <0.030 |
| o-Xylene | NV | NV | 0.02 | µg/g | <0.020 | <0.020 | <0.020 | <0.020 | <0.020 | <0.020 | <0.020 | <0.20 | <0.020 | <0.020 | <0.020 |
| Total Xylenes | 30 | 0.05 | 0.05 | µg/g | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.36 | <0.050 | <0.050 | <0.050 |
| Dichlorodifluoromethane | 25 | 0.05 | 0.05 | µg/g | <0.050 | <0.050 | <0.050 | <0.050 | NA | <0.050 | NA | <0.50 | NA | NA | NA |
| Hexane(n) | 88 | 0.05 | 0.05 | µg/g | <0.050 | <0.050 | <0.050 | <0.050 | NA | <0.050 | NA | <0.50 | NA | NA | NA |
| Trichlorofluoromethane | 5.8 | 0.25 | 0.05 | µg/g | <0.050 | <0.050 | <0.050 | <0.050 | NA | <0.050 | NA | <0.50 | NA | NA | NA |

***Notes:***

'NV ' : No Standard established NA: Parameter not analyzed

MECP Table 3: Ontario Ministry of the Environment, "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, " March 2004, amended July 1, 2011. Full Depth Generic Site Condition Standards for Soil in a Non-Potable Ground Water Condition for Industrial/Commercial/Community Property Use with Medium to Fine Textured Soils.

MECP Table 9: Ontario Ministry of the Environment, "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, " March 2004, amended July 1, 2011. Generic Site Condition Standards for Soil (other than Sediment) for Use within 30 m of a Water Body in a Non-Potable Groundwater Condition for Residential/Parkland/Institutional/Industrial/Commercial/Community Property Use.

| | |
|---|---|
| **100** | Exceeds MECP Table 3 Standards |
| ***100*** | Exceeds MECP Table 9 Standards |
| **100** | Detection Limit Exceeds Applicable Standard |

**Table 9-3: Summary of TCLP Analytical Results in Soil**
**Agincourt Environmental Assessment, Toronto, Ontario**

| Sample ID<br>Lab Job #<br>Date Sampled | MECP O.Reg. 558 SCH. 4 | REPORTING LIMIT | Units | BH6-SS5-1<br>L2458035<br>8-Jun-2020 |
|---|---|---|---|---|
| ***TCLP Metals and Inorganics*** | | | | |
| Leachable Fluoride (F-) | 150 | 10 | mg/L | <10 |
| Leachable Free Cyanide | 20 | 0.1 | mg/L | <0.10 |
| Leachable Nitrite (N) | NV | 2 | mg/L | <2.0 |
| Leachable Nitrate (N) | NV | 2 | mg/L | <2.0 |
| Leachable Nitrate + Nitrite | 1000 | 4 | mg/L | <4.0 |
| Leachable Mercury (Hg) | 0.1 | 0.0001 | mg/L | <0.00010 |
| Leachable Arsenic (As) | 2.5 | 0.05 | mg/L | <0.050 |
| Leachable Barium (Ba) | 100 | 0.5 | mg/L | 0.53 |
| Leachable Boron (B) | 500 | 2.5 | mg/L | <2.5 |
| Leachable Cadmium (Cd) | 0.5 | 0.005 | mg/L | <0.0050 |
| Leachable Chromium (Cr) | 5 | 0.05 | mg/L | <0.050 |
| Leachable Lead (Pb) | 5 | 0.025 | mg/L | <0.025 |
| Leachable Selenium (Se) | 1 | 0.025 | mg/L | <0.025 |
| Leachable Silver (Ag) | 5 | 0.005 | mg/L | <0.0050 |
| Leachable Uranium (U) | 10 | 0.25 | mg/L | <0.25 |
| Final pH | NV | 0.1 | pH | 5.89 |
| Initial pH | NV | 0.1 | pH | 9.6 |
| ***TCLP PAHs*** | | | | |
| Acenaphthene | NV | 0.005 | mg/L | <0.0050 |
| Acenaphthylene | NV | 0.005 | mg/L | <0.0050 |
| Anthracene | NV | 0.005 | mg/L | <0.0050 |
| Benzo(a)anthracene | NV | 0.005 | mg/L | <0.0050 |
| Benzo(a)pyrene | 0.001 | 0.001 | mg/L | <0.0010 |
| Benzo(b)fluoranthene | NV | 0.005 | mg/L | <0.0050 |
| Benzo(g,h,i)perylene | NV | 0.005 | mg/L | <0.0050 |
| Benzo(k)fluoranthene | NV | 0.005 | mg/L | <0.0050 |
| Chrysene | NV | 0.005 | mg/L | <0.0050 |
| Dibenzo(ah)anthracene | NV | 0.005 | mg/L | <0.0050 |
| Fluoranthene | NV | 0.005 | mg/L | <0.0050 |
| Fluorene | NV | 0.005 | mg/L | <0.0050 |
| Indeno(1,2,3-cd)pyrene | NV | 0.005 | mg/L | <0.0050 |
| Naphthalene | NV | 0.005 | mg/L | <0.0050 |
| Phenanthrene | NV | 0.005 | mg/L | <0.0050 |
| Pyrene | NV | 0.005 | mg/L | <0.0050 |
| Quinoline | NV | 0.005 | mg/L | <0.0050 |
| ***TCLP VOCs*** | | | | |
| 1,1-Dichloroethylene | 1.4 | 0.025 | mg/L | <0.025 |
| 1,2-Dichlorobenzene | 20 | 0.025 | mg/L | <0.025 |
| 1,2-Dichloroethane | 0.5 | 0.025 | mg/L | <0.025 |
| 1,4-Dichlorobenzene | 0.5 | 0.025 | mg/L | <0.025 |
| Benzene | 0.5 | 0.025 | mg/L | <0.025 |
| Carbon tetrachloride | 0.5 | 0.025 | mg/L | <0.025 |
| Chlorobenzene | 8 | 0.025 | mg/L | <0.025 |
| Chloroform | 10 | 0.1 | mg/L | <0.10 |
| Dichloromethane | 5 | 0.5 | mg/L | <0.50 |
| Methyl Ethyl Ketone | 200 | 1 | mg/L | <1.0 |
| Tetrachloroethylene | 3 | 0.025 | mg/L | <0.025 |
| Trichloroethylene | 5 | 0.025 | mg/L | <0.025 |
| Vinyl chloride | 0.2 | 0.05 | mg/L | <0.050 |
| ***TCLP PCBs*** | | | | |
| Total polychlorinated biphenyls | 0.3 | 0.0004 | mg/L | <0.00040 |

***Notes:***
'NV ' : No Standard established NA: Parameter not analyzed
MECP O.Reg. 558 Sch. 4: Ontario Ministry of Environment - Leachate Quality Criteria
**100** Exceeds MECP Leachate Quality Criteria

## Table 9-4: Summary of Relative Percent Differences (RPDs) in Soil
## Agincourt Environmental Assessment, Toronto, Ontario

| Parameter | MECP Alert Criteria | RDL | Sample[1] | Duplicate | % Difference |
|---|---|---|---|---|---|
| | | | BH6-SS4 | DUP 4 | |
| ***Petroleum Hydrocarbon Compounds (PHCs)*** | | | | | |
| F1 (C6-C10) | 30% | 5 | <5.0 | <50 | - |
| F1 (C6-C10) - BTEX | 30% | 5 | <5.0 | <50 | - |
| F2 (C10-C16) | 30% | 10 | <10 | <100 | - |
| F3 (C16-C34) | 30% | 50 | <50 | <500 | - |
| F4 (C34-C50) | 30% | 50 | <50 | <500 | - |
| **Parameter** | **MECP Alert Criteria** | **RDL** | **Sample[1]** | **Duplicate** | **% Difference** |
| | | | **BH6-SS4** | **DUP 4** | |
| ***Volatile Organic Compounds (VOCs)*** | | | | | |
| Benzene | 50% | 0.0068 | <0.0068 | <0.0068 | - |
| Ethylbenzene | 50% | 0.018 | <0.018 | <0.018 | - |
| Toluene | 50% | 0.08 | <0.080 | <0.080 | - |
| m-Xylene & p-Xylene | 50% | 0.03 | <0.030 | <0.030 | - |
| o-Xylene | 50% | 0.02 | <0.020 | <0.020 | - |
| Total Xylenes | 50% | 0.05 | <0.050 | <0.050 | - |
| | | | | | |

***Notes:***

| | |
|---|---|
| (1) | All results reported in micrograms per gram (µg/g) unless otherwise noted. |
| < | Parameter not detected above value specified |
| % Difference | Relative Percent Difference = \|(X-Y)/Average(X,Y)\| x 100% where X is the sample and Y is the duplicate |
| - | RPD could not be calculated as either one or both of the results are less than the detection limit or the results are less than 5 times the detection limit. |
| **50.2%** | RPD exceeds MECP Alert Criteria |

**Table 9-5: Summary of Analytical Results in Groundwater**
**Metals, Inorganics and PAHs**
**Agincourt**

| Sample ID<br>Screen Interval (mbgs)<br>Lab Job #<br>Sampling Date | MECP TABLE 3 STANDARD | MECP TABLE 9 STANDARD | REPORTING LIMIT | UNITS | BH1<br>1.52-4.57<br>L2463602<br>19-Jun-2020 | BH2<br>1.52-4.57<br>L2463602<br>19-Jun-2020 | DUP02<br>Duplicate of BH2<br>1.52-4.57<br>L2463602<br>19-Jun-2020 | BH3<br>8.53-11.58<br>L2463001<br>18-Jun-2020 | BH4<br>3.66-6.71<br>L2463001<br>18-Jun-2020 | BH5<br>2.13-5.18<br>L2463602<br>19-Jun-2020 | BH6<br>2.13-5.18<br>L2463001<br>18-Jun-2020 | BH7<br>2.13-5.18<br>L2463602<br>19-Jun-2020 | DUP01<br>Duplicate of BH7<br>2.13-5.18<br>L2463602<br>19-Jun-2020 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Metals and Inorganics*** | | | | | | | | | | | | | |
| Antimony | 20000 | 16000 | 0.1 | µg/L | <1.0 | <1.0 | NA | 0.6 | 0.21 | 0.28 | <1.0 | 0.13 | 0.13 |
| Arsenic | 1900 | 1500 | 0.1 | µg/L | <1.0 | 1.2 | NA | 1.12 | 1.08 | 0.94 | <1.0 | 0.52 | 0.53 |
| Barium | 29000 | 23000 | 0.1 | µg/L | 76.7 | 1270 | NA | 151 | 170 | 131 | 315 | 84.1 | 81.3 |
| Beryllium | 67 | 53 | 0.1 | µg/L | <1.0 | <1.0 | NA | <0.10 | <0.10 | <0.10 | <1.0 | <0.10 | <0.10 |
| Boron (Total) | 45000 | 36000 | 10 | µg/L | 150 | 100 | NA | 42 | 141 | 53 | <100 | 61 | 60 |
| Cadmium | 2.7 | 2.1 | 0.01 | µg/L | <0.050 | <0.050 | NA | <0.02 | <0.010 | <0.010 | <0.050 | 0.02 | 0.016 |
| Chromium | 810 | 640 | 0.5 | µg/L | <5.0 | <5.0 | NA | 1.43 | <0.50 | <0.50 | <5.0 | <0.50 | <0.50 |
| Chromium VI | 140 | 110 | 0.5 | µg/L | <0.50 | <0.50 | NA | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 |
| Cobalt | 66 | 52 | 0.1 | µg/L | <1.0 | <1.0 | NA | 0.97 | 0.43 | 0.26 | 1.3 | 0.98 | 0.98 |
| Copper | 87 | 69 | 0.2 | µg/L | <2.0 | <2.0 | NA | 0.85 | 2.28 | 0.89 | <2.0 | 1.32 | 1.56 |
| Lead | 25 | 20 | 0.05 | µg/L | <0.50 | <0.50 | NA | 0.761 | 0.112 | <0.050 | <0.50 | <0.050 | <0.050 |
| Mercury | 2.8 | 0.29 | 0.005 | µg/L | <0.0050 | <0.0050 | NA | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 |
| Molybdenum | 9200 | 7300 | 0.05 | µg/L | 15.3 | 0.77 | NA | 28.9 | 4.74 | 4.47 | 2.3 | 2.58 | 2.5 |
| Nickel | 490 | 390 | 0.5 | µg/L | <5.0 | <5.0 | NA | 1.56 | 1.2 | 1.01 | <5.0 | 2.22 | 2.26 |
| Selenium | 63 | 50 | 0.05 | µg/L | <0.50 | <0.50 | NA | 1.01 | 0.167 | 1.03 | <0.50 | 0.097 | 0.113 |
| Silver | 1.5 | 1.2 | 0.05 | µg/L | <0.50 | <0.50 | NA | <0.050 | <0.050 | <0.050 | <0.50 | <0.050 | <0.050 |
| Thallium | 510 | 400 | 0.1 | µg/L | 0.13 | <0.10 | NA | <0.010 | 0.022 | 0.023 | <0.10 | 0.026 | 0.027 |
| Vanadium | 250 | 200 | 0.5 | µg/L | <5.0 | <5.0 | NA | 1.81 | 1.26 | 1.21 | <5.0 | 0.7 | 0.7 |
| Zinc | 1100 | 890 | 1 | µg/L | <10 | <10 | NA | 3.5 | 1.7 | <1.0 | <10 | 3.1 | 3.4 |
| pH | 5 to 9 | 5 to 9 | 0.1 | pH Units | 7.59 | 7.17 | NA | 7.92 | 7.58 | 7.69 | 7.08 | 7.35 | 7.18 |
| Electrical Conductivity | NV | NV | 0.003 | mS/cm | 5.52 | 7.87 | NA | 1.01 | 1.1 | 1.1 | 6.04 | 2.08 | 2.11 |
| Cyanide, Free | 66 | 52 | 2 | µg/L | <2.0 | <2.0 | NA | <2.0 | <2.0 | <2.0 | <2.0 | <2.0 | <2.0 |
| Sodium | 2300000 | 1800000 | 500 | µg/L | 1090000 | 1470000 | NA | 168000 | 64800 | 50300 | 747000 | 170000 | 140000 |
| Chloride | 2300000 | 1800000 | 500 | µg/L | 1390000 | ***3560000*** | NA | 85200 | 90200 | 32500 | 2160000 | 271000 | 286000 |
| Uranium | 420 | 330 | 0.01 | µg/L | 3.11 | 0.32 | NA | 1.06 | 1.35 | 2.27 | 0.79 | 1.31 | 1.31 |
| ***Polycyclic Aromatic Hydrocarbons (PAHs)*** | | | | | | | | | | | | | |
| Acenaphthene | 1700 | 600 | 0.01 | µg/L | <0.010 | <0.020 | <0.020 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | NA |
| Acenaphthylene | 1.8 | 1.4 | 0.02 | µg/L | | <0.020 | <0.020 | <0.020 | | | <0.020 | | NA |
| Anthracene | 2.4 | 1 | 0.01 | µg/L | <0.010 | <0.020 | <0.020 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | NA |
| Benzo(a)anthracene | 4.7 | 1.8 | 0.01 | µg/L | <0.010 | <0.020 | <0.020 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | NA |
| Benzo(a)pyrene | 0.81 | 0.81 | 0.01 | µg/L | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | NA |
| Benzo(b/j)fluoranthene | 0.75 | 0.75 | 0.01 | µg/L | <0.010 | <0.020 | <0.020 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | NA |
| Benzo(ghi)perylene | 0.2 | 0.2 | 0.01 | µg/L | <0.010 | <0.020 | <0.020 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | NA |
| Benzo(k)fluoranthene | 0.4 | 0.4 | 0.01 | µg/L | <0.010 | <0.020 | <0.020 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | NA |
| Chrysene | 1 | 0.7 | 0.01 | µg/L | <0.010 | <0.020 | <0.020 | 0.014 | 0.011 | <0.010 | <0.010 | <0.010 | NA |
| Dibenzo(a,h)anthracene | 0.52 | 0.4 | 0.01 | µg/L | 0.012 | <0.020 | <0.020 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | NA |
| Fluoranthene | 130 | 73 | 0.01 | µg/L | 0.025 | 0.023 | <0.020 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | NA |
| Fluorene | 400 | 290 | 0.01 | µg/L | 0.017 | <0.020 | <0.020 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | NA |
| Indeno(1,2,3-cd)pyrene | 0.2 | 0.2 | 0.01 | µg/L | <0.010 | <0.020 | <0.020 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | NA |
| 1-Methylnaphthalene | NV | NV | 0.02 | µg/L | | 0.025 | <0.020 | <0.020 | | | <0.020 | | NA |
| 2-Methylnaphthalene | NV | NV | 0.02 | µg/L | | 0.023 | <0.020 | 0.021 | | | <0.020 | | NA |
| 1,2-Methylnaphthalene | 1800 | 1500 | 0.028 | µg/L | <0.028 | 0.048 | <0.028 | <0.028 | | | <0.028 | <0.028 | NA |
| Naphthalene | 6400 | 1400 | 0.01 | µg/L | 0.018 | <0.050 | <0.050 | 0.015 | 0.011 | <0.010 | 0.016 | 0.038 | NA |
| Phenanthrene | 580 | 380 | 0.01 | µg/L | 0.035 | 0.026 | <0.020 | 0.011 | <0.010 | <0.010 | 0.018 | <0.010 | NA |
| Pyrene | 68 | 5.7 | 0.01 | µg/L | 0.017 | 0.021 | <0.020 | <0.010 | <0.010 | <0.010 | <0.010 | 0.013 | NA |

***Notes:***

'NV ' : No Standard established NA: Parameter not analyzed

MECP Table 3: Ontario Ministry of the Environment, "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, " March 2004, amended July 1, 2011. Full Depth Generic Site Condition Standards in a Non-Potable Ground Water for All Types of Property Use with fine textured soils.

MECP Table 9: Ontario Ministry of the Environment, "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, " March 2004, amended July 1, 2011. Generic Site Condition Standards for Use within 30 m of a Water Body in a Non-Potable Ground Water Condition for All Types of Property Use.

| | |
|---|---|
| **100** | Exceeds MECP Table 3 Standards |
| ***100*** | Exceeds MECP Table 9 Standards |
| **100** | Detection Limit Exceeds Applicable Standard |

**Table 9-6: Summary of Analytical Results in Groundwater**
**PHCs and VOCs**
**Agincourt**

| Sample ID<br>Screen Interval (mbgs)<br>Lab Job #<br>Sampling Date | MECP TABLE 3 STANDARD | MECP TABLE 9 STANDARD | REPORTING LIMIT | UNITS | BH1<br>1.52-4.57<br>L2463602<br>19-Jun-2020 | BH2<br>1.52-4.57<br>L2463602<br>19-Jun-2020 | DUP02<br>Duplicate of BH2<br>1.52-4.57<br>L2463602<br>19-Jun-2020 | BH3<br>8.53-11.58<br>L2463001<br>18-Jun-2020 | BH4<br>3.66-6.71<br>L2463001<br>18-Jun-2020 | BH5<br>2.13-5.18<br>L2463602<br>19-Jun-2020 | BH6<br>2.13-5.18<br>L2463001<br>18-Jun-2020 | BH7<br>2.13-5.18<br>L2463602<br>19-Jun-2020 | DUP01<br>Duplicate of BH7<br>2.13-5.18<br>L2463602<br>19-Jun-2020 | TRIP BLANK<br>NA<br>L2463001<br>18-Jun-2020 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Petroleum Hydrocarbon Compounds (PHCs)*** | | | | | | | | | | | | | | |
| F1 (C6-C10) | 750 | 420 | 25 | µg/L | <25 | <25 | NA | <25 | NA | NA | <25 | <25 | NA | NA |
| F1 (C6-C10) - BTEX | 750 | 420 | 25 | µg/L | <25 | <25 | NA | <25 | NA | NA | <25 | <25 | NA | NA |
| F2 (C10-C16) | 150 | 150 | 100 | µg/L | <100 | <100 | <100 | <100 | NA | NA | <100 | <100 | NA | NA |
| F3 (C16-C34) | 500 | 500 | 250 | µg/L | <250 | <250 | <250 | <250 | NA | NA | <250 | <250 | NA | NA |
| F4 (C34-C50) | 500 | 500 | 250 | µg/L | <250 | <250 | <250 | <250 | NA | NA | <250 | <250 | NA | NA |
| Reached Baseline at C50 | NV | NV | NV | NV | YES | YES | YES | YES | NA | NA | YES | YES | NA | NA |
| ***Polychlorinated Biphenyls (PCBs)*** | | | | | | | | | | | | | | |
| Total PCBs | 15 | 0.2 | 0.04 | µg/L | <0.040 | <0.040 | NA | <0.040 | <0.040 | <0.040 | <0.040 | <0.040 | NA | NA |
| ***Volatile Organic Compounds (VOCs)*** | | | | | | | | | | | | | | |
| Acetone | 130000 | 100000 | 30 | µg/L | <30 | <30 | NA | <30 | NA | NA | <30 | <30 | <30 | <30 |
| Benzene | 430 | 44 | 0.5 | µg/L | <0.50 | <0.50 | NA | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 |
| Bromodichloromethane | 85000 | 67000 | 2 | µg/L | <2.0 | <2.0 | NA | <2.0 | NA | NA | <2.0 | <2.0 | <2.0 | <2.0 |
| Bromoform | 770 | 380 | 5 | µg/L | <5.0 | <5.0 | NA | <5.0 | NA | NA | <5.0 | <5.0 | <5.0 | <5.0 |
| Bromomethane | 56 | 5.6 | 0.5 | µg/L | <0.50 | <0.50 | NA | <0.50 | NA | NA | <0.50 | <0.50 | <0.50 | <0.50 |
| Carbon Tetrachloride | 8.4 | 0.79 | 0.2 | µg/L | <0.20 | <0.20 | NA | <0.20 | NA | NA | <0.20 | <0.20 | <0.20 | <0.20 |
| Chlorobenzene | 630 | 500 | 0.5 | µg/L | <0.50 | <0.50 | NA | <0.50 | NA | NA | <0.50 | <0.50 | <0.50 | <0.50 |
| Chloroform | 22 | 2.4 | 1 | µg/L | <1.0 | <1.0 | NA | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| Dibromochloromethane | 82000 | 65000 | 2 | µg/L | <2.0 | <2.0 | NA | <2.0 | NA | NA | <2.0 | <2.0 | <2.0 | <2.0 |
| 1,2-Dichlorobenzene | 9600 | 4600 | 0.5 | µg/L | <0.50 | <0.50 | NA | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 |
| 1,3-Dichlorobenzene | 9600 | 7600 | 0.5 | µg/L | <0.50 | <0.50 | NA | <0.50 | NA | NA | <0.50 | <0.50 | <0.50 | <0.50 |
| 1,4-Dichlorobenzene | 67 | 8 | 0.5 | µg/L | <0.50 | <0.50 | NA | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 |
| 1,1-Dichloroethane | 3100 | 320 | 0.5 | µg/L | <0.50 | <0.50 | NA | <0.50 | NA | NA | <0.50 | <0.50 | <0.50 | <0.50 |
| 1,2-Dichloroethane | 12 | 1.6 | 0.5 | µg/L | <0.50 | <0.50 | NA | <0.50 | NA | NA | <0.50 | <0.50 | <0.50 | <0.50 |
| 1,1-Dichloroethylene | 17 | 1.6 | 0.5 | µg/L | <0.50 | <0.50 | NA | <0.50 | NA | NA | <0.50 | <0.50 | <0.50 | <0.50 |
| Cis-1,2-Dichloroethylene | 17 | 1.6 | 0.5 | µg/L | <0.50 | <0.50 | NA | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 |
| Trans-1,2-Dichloroethylene | 17 | 1.6 | 0.5 | µg/L | <0.50 | <0.50 | NA | <0.50 | NA | NA | <0.50 | <0.50 | <0.50 | <0.50 |
| 1,2-Dichloropropane | 140 | 16 | 0.5 | µg/L | <0.50 | <0.50 | NA | <0.50 | NA | NA | <0.50 | <0.50 | <0.50 | <0.50 |
| Cis-1,3-Dichloropropylene | NV | NV | 0.3 | µg/L | <0.30 | <0.30 | NA | <0.30 | NA | NA | <0.30 | <0.30 | <0.30 | <0.30 |
| Trans-1,3-Dichloropropylene | NV | NV | 0.3 | µg/L | <0.30 | <0.30 | NA | <0.30 | <0.50 | <0.50 | <0.30 | <0.30 | <0.30 | <0.30 |
| 1,3-Dichloropropylene | 45 | 5.2 | 0.5 | µg/L | <0.58 | <0.58 | NA | <0.50 | NA | NA | <0.58 | <0.50 | <0.50 | <0.50 |
| Ethylbenzene | 2300 | 1800 | 0.5 | µg/L | <0.50 | <0.50 | NA | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 |
| Ethylene Dibromide (1,2-Dibromoethane | 0.83 | 0.25 | 0.2 | µg/L | <0.20 | <0.20 | NA | <0.20 | NA | NA | <0.20 | <0.20 | <0.20 | <0.20 |
| Methyl Ethyl Ketone | 1500000 | 470000 | 20 | µg/L | <20 | <20 | NA | <20 | NA | NA | <20 | <20 | <20 | <20 |
| Methylene Chloride | 5500 | 610 | 5 | µg/L | <5.0 | <5.0 | NA | <5.0 | <2.0 | <2.0 | <5.0 | <5.0 | <5.0 | <5.0 |
| Methyl Isobutyl Ketone | 580000 | 140000 | 20 | µg/L | <20 | <20 | NA | <20 | NA | NA | <20 | <20 | <20 | <20 |
| Methyl-t-Butyl Ether | 1400 | 190 | 2 | µg/L | <2.0 | <2.0 | NA | <2.0 | NA | NA | <2.0 | <2.0 | <2.0 | <2.0 |
| Styrene | 9100 | 1300 | 0.5 | µg/L | <0.50 | <0.50 | NA | <0.50 | NA | NA | <0.50 | <0.50 | <0.50 | <0.50 |
| 1,1,1,2-Tetrachloroethane | 28 | 3.3 | 0.5 | µg/L | <0.50 | <0.50 | NA | <0.50 | NA | NA | <0.50 | <0.50 | <0.50 | <0.50 |
| 1,1,2,2-Tetrachloroethane | 15 | 3.2 | 0.5 | µg/L | <0.50 | <0.50 | NA | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 |
| Toluene | 18000 | 14000 | 0.5 | µg/L | <0.50 | <0.50 | NA | <0.50 | 0.58 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 |
| Tetrachloroethylene | 17 | 1.6 | 0.5 | µg/L | <0.50 | <0.50 | NA | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 |
| 1,1,1-Trichloroethane | 6700 | 640 | 0.5 | µg/L | <0.50 | <0.50 | NA | <0.50 | NA | NA | <0.50 | <0.50 | <0.50 | <0.50 |
| 1,1,2-Trichloroethane | 30 | 4.7 | 0.5 | µg/L | <0.50 | <0.50 | NA | <0.50 | NA | NA | <0.50 | <0.50 | <0.50 | <0.50 |
| Trichloroethylene | 17 | 1.6 | 0.5 | µg/L | <0.50 | <0.50 | NA | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 |
| Vinyl Chloride | 1.7 | 0.5 | 0.5 | µg/L | <0.50 | <0.50 | NA | <0.50 | NA | NA | <0.50 | <0.50 | <0.50 | <0.50 |
| m-Xylene & p-Xylene | NV | NV | 0.4 | µg/L | <0.40 | <0.40 | NA | <0.40 | <1.0 | <1.0 | <0.40 | <0.40 | <0.40 | <0.40 |
| o-Xylene | NV | NV | 0.3 | µg/L | <0.30 | <0.30 | NA | <0.30 | NA | <0.50 | <0.30 | <0.30 | <0.30 | <0.30 |
| Total Xylenes | 4200 | 3300 | 0.5 | µg/L | <1.1 | <1.1 | NA | <0.50 | <1.1 | <1.1 | <1.1 | <0.50 | <0.50 | <0.50 |
| Dichlorodifluoromethane | 4400 | 3500 | 2 | µg/L | <2.0 | <2.0 | NA | <2.0 | NA | NA | <2.0 | <2.0 | <2.0 | <2.0 |
| Hexane(n) | 520 | 51 | 0.5 | µg/L | <0.50 | <0.50 | NA | <0.50 | NA | NA | <0.50 | <0.50 | <0.50 | <0.50 |
| Trichlorofluoromethane | 2500 | 2000 | 5 | µg/L | <5.0 | <5.0 | NA | <5.0 | NA | NA | <5.0 | <5.0 | <5.0 | <5.0 |

***Notes:***

'NV ' : No Standard established NA: Parameter not analyzed

MECP Table 3: Ontario Ministry of the Environment, "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, " March 2004, amended July 1, 2011. Full Depth Generic Site Condition Standards in a Non-Potable Ground Water for All Types of Property Use with fine textured soils.

MECP Table 9: Ontario Ministry of the Environment, "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, " March 2004, amended July 1, 2011. Generic Site Condition Standards for Use within 30 m of a Water Body in a Non-Potable Ground Water Condition for All Types of Property Use.

| | |
|---|---|
| **100** | Exceeds MECP Table 3 Standards |
| ***100*** | Exceeds MECP Table 9 Standards |
| **100** | Detection Limit Exceeds Applicable Standard |

**Table 9/7/2020: Summary of Relative Percent Differences (RPDs) in Groundwater**
**Agincourt**

| Parameter | MECP Alert Criteria | RDL | Sample[(1)] | Duplicate | % Difference |
|---|---|---|---|---|---|
| | | | BH7 | DUP01 | |
| ***Metals and Inorganics*** | | | | | |
| Antimony | 20% | 0.1 | 0.13 | 0.13 | - |
| Arsenic | 20% | 0.1 | 0.52 | 0.53 | 1.9% |
| Barium | 20% | 0.1 | 84.1 | 81.3 | 3.4% |
| Beryllium | 20% | 0.1 | <0.10 | <0.10 | - |
| Boron (Total) | 20% | 10 | 61 | 60 | 1.7% |
| Cadmium | 20% | 0.01 | 0.02 | 0.016 | - |
| Chromium | 20% | 0.5 | <0.50 | <0.50 | - |
| Chromium VI | 20% | 0.5 | <0.50 | <0.50 | - |
| Cobalt | 20% | 0.1 | 0.98 | 0.98 | 0.0% |
| Copper | 20% | 0.2 | 1.32 | 1.56 | 16.7% |
| Lead | 20% | 0.05 | <0.050 | <0.050 | - |
| Mercury | 20% | 0.005 | <0.0050 | <0.0050 | - |
| Molybdenum | 20% | 0.05 | 2.58 | 2.5 | 3.1% |
| Nickel | 20% | 0.5 | 2.22 | 2.26 | - |
| Selenium | 20% | 0.05 | 0.097 | 0.113 | - |
| Silver | 20% | 0.05 | <0.050 | <0.050 | - |
| Thallium | 20% | 0.1 | 0.026 | 0.027 | - |
| Vanadium | 20% | 0.5 | 0.7 | 0.7 | - |
| Zinc | 20% | 1 | 3.1 | 3.4 | - |
| pH (pH Units) | 0.3 | 0.1 | 7.35 | 7.18 | 0.02 |
| Electrical Conductivity (mS/cm) | 10% | 0.003 | 2.08 | 2.11 | 1.4% |
| Cyanide, Free | 20% | 2 | <2.0 | <2.0 | - |
| Sodium | 20% | 500 | 170000 | 140000 | 19.4% |
| Chloride | 20% | 500 | 271000 | 286000 | 5.4% |
| Uranium | 20% | 0.01 | 1.31 | 1.31 | 0.0% |

| Parameter | MECP Alert Criteria | RDL | Sample[(1)] | Duplicate | % Difference |
|---|---|---|---|---|---|
| | | | BH2 | DUP02 | |
| ***Polycyclic Aromatic Hydrocarbons (PAHs)*** | | | | | |
| Acenaphthene | 30% | 0.01 | <0.020 | <0.020 | - |
| Acenaphthylene | 30% | 0.02 | <0.020 | <0.020 | - |
| Anthracene | 30% | 0.01 | <0.020 | <0.020 | - |
| Benzo(a)anthracene | 30% | 0.01 | <0.020 | <0.020 | - |
| Benzo(a)pyrene | 30% | 0.01 | <0.010 | <0.010 | - |
| Benzo(b/j)fluoranthene | 30% | 0.01 | <0.020 | <0.020 | - |
| Benzo(ghi)perylene | 30% | 0.01 | <0.020 | <0.020 | - |
| Benzo(k)fluoranthene | 30% | 0.01 | <0.020 | <0.020 | - |
| Chrysene | 30% | 0.01 | <0.020 | <0.020 | - |
| Dibenzo(a,h)anthracene | 30% | 0.01 | <0.020 | <0.020 | - |
| Fluoranthene | 30% | 0.01 | 0.023 | <0.020 | - |
| Fluorene | 30% | 0.01 | <0.020 | <0.020 | - |
| Indeno(1,2,3-cd)pyrene | 30% | 0.01 | <0.020 | <0.020 | - |
| 1-Methylnaphthalene | 30% | 0.02 | 0.025 | <0.020 | - |
| 2-Methylnaphthalene | 30% | 0.02 | 0.023 | <0.020 | - |
| 1,2-Methylnaphthalene | 30% | 0.028 | 0.048 | <0.028 | - |
| Naphthalene | 30% | 0.01 | <0.050 | <0.050 | - |
| Phenanthrene | 30% | 0.01 | 0.026 | <0.020 | - |
| Pyrene | 30% | 0.01 | 0.021 | <0.020 | - |

| Parameter | MECP Alert Criteria | RDL | Sample[(1)] | Duplicate | % Difference |
|---|---|---|---|---|---|
| | | | BH2 | DUP02 | |
| ***Petroleum Hydrocarbon Compounds (PHCs)*** | | | | | |
| F1 (C6-C10) | 30% | 25 | <25 | NA | - |
| F1 (C6-C10) - BTEX | 30% | 25 | <25 | NA | - |
| F2 (C10-C16) | 30% | 100 | <100 | <100 | - |
| F3 (C16-C34) | 30% | 250 | <250 | <250 | - |
| F4 (C34-C50) | 30% | 250 | <250 | <250 | - |
| F4 Gravimetric | 30% | | | | #VALUE! |

| Parameter | MECP Alert Criteria | RDL | Sample[(1)] | Duplicate | % Difference |
|---|---|---|---|---|---|
| | | | | | |
| ***Polychlorinated Biphenyls (PCBs)*** | | | | | |
| Total PCBs | 30% | 0.04 | | | - |

| Parameter | MECP Alert Criteria | RDL | Sample[(1)] | Duplicate | % Difference |
|---|---|---|---|---|---|
| | | | BH7 | DUP01 | |
| ***Volatile Organic Compounds (VOCs)*** | | | | | |
| Acetone | 30% | 30 | <30 | <30 | - |
| Benzene | 30% | 0.5 | <0.50 | <0.50 | - |
| Bromodichloromethane | 30% | 2 | <2.0 | <2.0 | - |
| Bromoform | 30% | 5 | <5.0 | <5.0 | - |
| Bromomethane | 30% | 0.5 | <0.50 | <0.50 | - |
| Carbon Tetrachloride | 30% | 0.2 | <0.20 | <0.20 | - |
| Chlorobenzene | 30% | 0.5 | <0.50 | <0.50 | - |
| Chloroform | 30% | 1 | <1.0 | <1.0 | - |
| Dibromochloromethane | 30% | 2 | <2.0 | <2.0 | - |
| 1,2-Dichlorobenzene | 30% | 0.5 | <0.50 | <0.50 | - |
| 1,3-Dichlorobenzene | 30% | 0.5 | <0.50 | <0.50 | - |
| 1,4-Dichlorobenzene | 30% | 0.5 | <0.50 | <0.50 | - |
| 1,1-Dichloroethane | 30% | 0.5 | <0.50 | <0.50 | - |
| 1,2-Dichloroethane | 30% | 0.5 | <0.50 | <0.50 | - |
| 1,1-Dichloroethylene | 30% | 0.5 | <0.50 | <0.50 | - |
| Cis-1,2-Dichloroethylene | 30% | 0.5 | <0.50 | <0.50 | - |
| Trans-1,2-Dichloroethylene | 30% | 0.5 | <0.50 | <0.50 | - |
| 1,2-Dichloropropane | 30% | 0.5 | <0.50 | <0.50 | - |
| Cis-1,3-Dichloropropylene | 30% | 0.3 | <0.30 | <0.30 | - |
| Trans-1,3-Dichloropropylene | 30% | 0.3 | <0.30 | <0.30 | - |
| 1,3-Dichloropropylene | 30% | 0.5 | <0.50 | <0.50 | - |
| Ethylbenzene | 30% | 0.5 | <0.50 | <0.50 | - |
| Ethylene Dibromide | 30% | 0.2 | <0.20 | <0.20 | - |
| Methyl Ethyl Ketone | 30% | 20 | <20 | <20 | - |
| Methylene Chloride | 30% | 5 | <5.0 | <5.0 | - |
| Methyl Isobutyl Ketone | 30% | 20 | <20 | <20 | - |
| Methyl-t-Butyl Ether | 30% | 2 | <2.0 | <2.0 | - |
| Styrene | 30% | 0.5 | <0.50 | <0.50 | - |
| 1,1,1,2-Tetrachloroethane | 30% | 0.5 | <0.50 | <0.50 | - |
| 1,1,2,2-Tetrachloroethane | 30% | 0.5 | <0.50 | <0.50 | - |
| Toluene | 30% | 0.5 | <0.50 | <0.50 | - |
| Tetrachloroethylene | 30% | 0.5 | <0.50 | <0.50 | - |
| 1,1,1-Trichloroethane | 30% | 0.5 | <0.50 | <0.50 | - |
| 1,1,2-Trichloroethane | 30% | 0.5 | <0.50 | <0.50 | - |
| Trichloroethylene | 30% | 0.5 | <0.50 | <0.50 | - |
| Vinyl Chloride | 30% | 0.5 | <0.50 | <0.50 | - |
| m-Xylene & p-Xylene | 30% | 0.4 | <0.40 | <0.40 | - |
| o-Xylene | 30% | 0.3 | <0.30 | <0.30 | - |
| Total Xylenes | 30% | 0.5 | <0.50 | <0.50 | - |
| Dichlorodifluoromethane | 30% | 2 | <2.0 | <2.0 | - |
| Hexane(n) | 30% | 0.5 | <0.50 | <0.50 | - |
| Trichlorofluoromethane | 30% | 5 | <5.0 | <5.0 | - |

***Notes:***

| | |
|---|---|
| (1) | All results reported in micrograms per gram (µg/L) unless otherwise noted. |
| < | Parameter not detected above value specified |
| % Difference | Relative Percent Difference = \|(X-Y)/Average(X,Y)\| x 100% where X is the sample and Y is the duplicate |
| - | RPD could not be calculated as either one or both of the results are less than the detection limit or the results are less than 5 times the detection limit. |
| **40.5%** | RPD exceeds MECP Alert Criteria |

# APPENDIX

# A SAMPLING AND ANALYSIS PLAN

Agincourt EA Drilling - Sampling and Analysis Plan

| | Borehole Depth | Monitoring Well Screen Estimated Depth | APECs | COPC | Soil sample depth | # of samples for soil | # of samples for groundwater |
|---|---|---|---|---|---|---|---|
| **BH1** | 7m | approx 4-7m | Dry Cleaner and Gas Station/Transport Depot/Industrial Manufacturing to west | VOC, PHC, PAH, metals and inorganics in soil | One in fill material (0.5 - 2 m of fill)<br><br>One in native (silty sand till to sand, gravelly sand, or silty sand) if encountered, submitted on hold | up to 2 for each parameter | 1 sample |
| **BH2** | 7m | approx 4-7m | Dry Cleaner and Gas Station/Transport Depot/Industrial Manufacturing to west | VOC, PHC, PAH, metals and inorganics in soil and gw | One in fill material (0.5 - 2 m of fill)<br><br>One in native (silty sand till to sand, gravelly sand, or silty sand) submitted on hold | up to 2 for each parameter | 1 sample |
| **BH3** | 5-7m (refusal) | approx 4-7m | Historical Automotive Service to northeast<br>Gas Station/Transport Depot/Industrial Manufacturing to north | VOC, PHC, PAH, metals and inorganics in soil and gw | One in fill material (0.5 - 2 m of fill)<br><br>One in native (silty sand till to sand, gravelly sand, or silty sand) submitted on hold | up to 2 for each parameter | 1 sample |
| **BH4** | 5-7m (refusal) | approx 4-7m | no nearby high/moderate APECs, potential for road related salt impacts or fill material potential for fill material | VOC, PHC, PAH, metals and inorganics in soil and gw | One in fill material (0.5 - 2 m of fill)<br><br>One in native (silty sand till to sand, gravelly sand, or silty sand) submitted on hold | up to 2 for each parameter | 1 sample |
| **BH5** | 7m | approx 4-7m | no nearby high/moderate APECs, potential for road related salt impacts or fill material potential for fill material | M&I in soil and gw | One in fill material (0.5 - 2 m of fill)<br><br>One in native (silty sand till to sand, gravelly sand, or silty sand) submitted on hold | up to 2 for each parameter | 1 sample |
| **BH6** | 7m | approx 4-7m | Historical Manufacturing on site, railway line off site | M&I in soil and gw | One in fill material (0.5 - 2 m of fill)<br><br>One in native (silty sand till to sand, gravelly sand, or silty sand) submitted on hold | up to 2 for each parameter | 1 sample |
| **BH7** | 5-7m (refusal) | approx 4-7m | railway line to north, historical manufacturing/transport depot to west | VOC, PHC, PAH, metals and inorganics in soil and gw | One in fill material (0.5 - 2 m of fill)<br><br>One in native (silty sand till to sand, gravelly sand, or silty sand) submitted on hold | up to 2 for each parameter | 1 sample |
| **BH8** | 5-7m (refusal) | approx 4-7m | railway line to north, historical manufacturing/transport depot to west | VOC, PHC, PAH, metals and inorganics in soil and gw | One in fill material (0.5 - 2 m of fill)<br><br>One in native (silty sand till to sand, gravelly sand, or silty sand) submitted on hold | up to 2 for each parameter | 1 sample |
| **Duplicates** | | | | | | Up tp 2 duplicate soil samples | 1 duplicate groundwater |
| **Grain Size** | | | | | | At least one sample for each MW - taken from soil representative location of groundwater table | |

APPENDIX

# B BOREHOLE LOGS

# LOG OF BOREHOLE BH1



PROJECT: Agincourt
REF. NO.: 19M-01888-00
CLIENT: York Region
Method: Solid Stem Auger
ENCL NO.: 1
PROJECT LOCATION: Scarborough, ON
Diameter: 152.4 mm
ORIGINATED BY MA
DATUM: Geodetic
Date: Jun-03-2020 to Jun-03-2020
BH LOCATION: Scarborough, ON N 638000.73 E 4849286.15

| (m) ELEV / DEPTH | DESCRIPTION | STRATA PLOT | NUMBER | TYPE | BLOWS "N" 0.3 m | MONITORING WELL CONSTRUCTION | CHEMICAL ANALYSIS | PID (ppm) | CGD (ppm) | PLASTIC LIMIT / NATURAL MOISTURE CONTENT / LIQUID LIMIT ($w_P$ $w$ $w_L$) | POCKET PEN. (kg/sq cm) | REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 166.71 | Ground Surface | | | | | | | | | | | |
| 166.60 | **TOP SOIL (110 mm)** | | | | | | | | | | | |
| 0.11 / 166.08 | **FILL:** sand and gravel, grey to brown, moist | | 1 | SS | 24 | | | | | | | |
| 0.63 / 165.19 | **FILL:** silty clay, brown to dark brown, moist | | 2 | SS | 4 | | Bentonite Holeplug | | | | | |
| 1.52 / 164.42 | **CLAY WITH SILT:** some sand, trace gravel, brown to grey | | 3 | SS | 15 | | Sand | | | | | |
| 2.29 / 163.66 | **SILTY SAND:** trace gravel, mosit, some oxidation, brown to light brown | | 4 | SS | 100/ 249mm | | W. L. 164.1 m Jun 17, 2020 | | | | | |
| 3.05 / 163.05 | **SAND AND SILT:** trace gravel, trace clay, some oxidation, grey to brown, moist | | 5 | SS | 100/ 254mm | | Screen | | | | | 2 40 49 9 |
| 3.66 / 162.14 | **SAND:** some sitl, some gravel, grey, moist | | 6 | SS | 100/ 289mm | | | | | | | |
| 4.57 | **SILTY SAND:** some gravel, moist, dark grey | | 7 | SS | 97 | | | | | | | |
| | **SANDY SILT:** Trace gravel, moist, grey to brown | | 8 | SS | 60 | | | | | | | |
| 160.61 | | | | | | | Caved | | | | | |
| 6.10 / 159.85 | | | 9 | SS | 59 | | | | | | | |
| 6.86 / 159.24 | **SILT WITH SAND:** trace gravel, grey, moist | | 10 | SS | 60 | | | | | | | |
| 7.47 | **END OF BOREHOLE** Notes: 1) Borehole was open and ground water level at 7.2m below ground surface upon completion END OF BOREHOLE AT 7.47 mbgs | | | | | | | | | | | |

Soil Head Space Vapors
PID (ppm): 20 40 60 80
CGD (ppm): 20 40 60 80
WATER CONTENT (%): 10 20 30

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

# LOG OF BOREHOLE BH2



PROJECT: Agincourt
REF. NO.: 19M-01888-00
CLIENT: York Region
Method: Solid Stem Auger/ Mud Rotary
ENCL NO.: 2
PROJECT LOCATION: Scarborough, ON
Diameter: 152.4 mm
ORIGINATED BY MA
DATUM: Geodetic
Date: Jun-05-2020 to Jun-05-2020
BH LOCATION: Scarborough, ON N 638040.08 E 4849209.99

| (m) ELEV / DEPTH | DESCRIPTION | STRATA PLOT | NUMBER | TYPE | BLOWS "N" 0.3 m | MONITORING WELL CONSTRUCTION | CHEMICAL ANALYSIS | Soil Head Space Vapors PID (ppm) 20 40 60 80 | Soil Head Space Vapors CGD (ppm) 20 40 60 80 | PLASTIC LIMIT $w_P$ / NATURAL MOISTURE CONTENT $w$ / LIQUID LIMIT $w_L$ WATER CONTENT (%) 10 20 30 | POCKET PEN. (kg/sq cm) | REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 166.59 | Ground Surface | | | | | | | | | | | |
| 166.41 | **TOP SOIL (180 mm)** | | | | | | | | | | | |
| 0.18 | **FILL:** sand and silt, trace gravel, trace roots, trace oxidation, brown, dry | | 1 | SS | 22 | | | | | | | |
| | | | | | | | Bentonite Holeplug | | | | | |
| 1 | | | 2 | SS | 17 | | | | | | | 3 45 40 12 |
| 165.07 | | | | | | | Sand | | | | | |
| 1.52 | **SANDY SILT:** trace gravel, trace clay, trace roots, grey, moist to wet | | 3 | SS | 9 | | | | | | | |
| 2 | | | | | | | | | | | | |
| 164.30 | | | | | | | | | | | | |
| 2.29 | **SANDY SILT:** with clay, trace gravel, grey, wet | | 4 | SS | 4 | | | | | | | |
| 163.54 | | | | | | | Screen | | | | | |
| 3.05 | **SILTY SAND:** trace gravel, trace clay, some oxidation, grey to brown, moist | | 5 | SS | 4 | | | | | | | 9 44 38 9 |
| 162.78 | | | | | | | W. L. 162.8 m Jun 17, 2020 | | | | | |
| 3.81 | **SILTY SAND:** trace to some clay, trace to some gravel, grey, wet | | 6 | SS | 3 | | | | | | | |
| 4 | | | | | | | | | | | | |
| | | | 7 | SS | 17 | | | | | | | |
| 5 | | | | | | | | | | | | |
| | | | 8 | SS | 16 | | | | | | | |
| 6 | | | | | | | | | | | | |
| | | | 9 | SS | 7 | | | | | | | |
| 7 | | | | | | | | | | | | |
| | | | 10 | SS | 10 | | | | | | | 10 43 38 9 |
| | | | | | | | | | | | | |
| 8 | | | 11 | SS | 9 | | | | | | | |
| | | | | | | | | | | | | |
| | | | 12 | SS | 11 | | Caved | | | | | |
| 9 | | | | | | | | | | | | |
| | | | 13 | SS | 11 | | | | | | | |
| 156.68 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |

Continued Next Page

GROUNDWATER ELEVATIONS

Measurement 1st 2nd 3rd 4th

# LOG OF BOREHOLE BH2

PROJECT: Agincourt
REF. NO.: 19M-01888-00
CLIENT: York Region
Method: Solid Stem Auger/ Mud Rotary
ENCL NO.: 2
PROJECT LOCATION: Scarborough, ON
Diameter: 152.4 mm
ORIGINATED BY MA
DATUM: Geodetic
Date: Jun-05-2020 to Jun-05-2020
BH LOCATION: Scarborough, ON N 638040.08 E 4849209.99

| (m) ELEV / DEPTH | DESCRIPTION | STRATA PLOT | SAMPLES NUMBER | SAMPLES TYPE | SAMPLES "N" BLOWS 0.3 m | MONITORING WELL CONSTRUCTION | CHEMICAL ANALYSIS | Soil Head Space Vapors PID (ppm) 20 40 60 80 | Soil Head Space Vapors CGD (ppm) 20 40 60 80 | PLASTIC LIMIT / NATURAL MOISTURE CONTENT / LIQUID LIMIT $w_P$ $w$ $w_L$ WATER CONTENT (%) 10 20 30 | POCKET PEN. (kg/sq cm) | REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Continued | | | | | | | | | | | |
| 9.91<br>155.92 | **SANDY SILT:**<br>trace gravel, grey, wet(Continued) | | 14 | SS | 4 | | | | | | | |
| 10.67<br>11<br>12<br>154.40 | **SAND WITH SILT:**<br>trace clay, trace gravel, brown, wet | | 15 | SS | 10 | | | | | | | 1 71 25 2 |
| 12.19<br>153.79 | **SAND:**<br>some gravel, some silt, trace clay, brown, wet | | 16 | SS | 15 | | | | | | | 19 59 17 5 |
| 12.80 | **END OF BOREHOLE**<br>Notes:<br>1) Borehole was caved to 10.3m and ground water level at 7m below ground surface upon completion<br>2) Swithed to Mud Rotary at depth of 11m below ground sufrace<br>END OF BOREHOLE AT 12.8 mbgs | | | | | | | | | | | |

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

# LOG OF BOREHOLE BH3



PROJECT: Agincourt
REF. NO.: 19M-01888-00
CLIENT: York Region
Method: Hollow Stem Auger/ Mud Rotary
ENCL NO.: 3
PROJECT LOCATION: Scarborough, ON
Diameter: 152.4 mm
ORIGINATED BY MA
DATUM: Geodetic
Date: Jun-09-2020 to Jun-10-2020
BH LOCATION: Scarborough, ON N 638031.88 E 4849183.03

| (m) ELEV / DEPTH | DESCRIPTION | STRATA PLOT | NUMBER | TYPE | "N" BLOWS 0.3 m | MONITORING WELL CONSTRUCTION | CHEMICAL ANALYSIS | Soil Head Space Vapors PID (ppm) 20 40 60 80 | Soil Head Space Vapors CGD (ppm) 20 40 60 80 | PLASTIC LIMIT $w_P$ / NATURAL MOISTURE CONTENT $w$ / LIQUID LIMIT $w_L$ — WATER CONTENT (%) 10 20 30 | POCKET PEN. (kg/sq cm) | REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 165.07 | Ground Surface | | | | | | | | | | | |
| 164.90 | **TOP SOIL (170 mm)** | | | | | | | | | | | |
| 0.17 / 164.46 | **FILL:** sand with silt, some gravel, trace roots, brown, somewhat dry | | 1 | SS | 7 | | | | | | | |
| 0.61 / 163.55 | **FILL:** silty sand, some clay, trace gravel, trace roots, some oxidation, brown to dark brown, moist | | 2 | SS | 10 | | | | | | | |
| 1.52 / 162.78 | **SANDY SILT:** trace gravel, some oxidation, brown to greyish brown, moist | | 3 | SS | 25 | | | | | | | |
| 2.29 / 162.02 | **SANDY SILT:** trace gravel, trace clay, some oxidation, brown to greyish brown, somewhat dry | | 4 | SS | 43 | | | | | | | |
| 3.05 / 160.50 | **SANDY SILT:** some gravel, trace clay, grey, moist to somewhat moist | | 5 | SS | 42 | | | | | | | |
| | | | 6 | SS | 80 | | Bentonite Holeplug | | | | | |
| 4.57 / 159.74 | **SAND AND SILT:** trace clay, trace gravel, moist to somewhat moist | | 7 | SS | 100/ 279mm | | | | | | | 7 40 44 9 |
| 5.33 | **SANDY SILT:** some clay, trace gravel, moist to somewhat wet | | 8 | SS | 52 | | | | | | | |
| | | | 9 | SS | 31 | | | | | | | |
| 157.45 | | | 10 | SS | 52 | | | | | | | |
| 7.62 / 156.69 | **CLAYEY SILT:** with sand, grey, moist to somewhat wet, | | 11 | SS | 18 | | | | | | | |
| 8.38 / 156.46 | **SANDY SILT:** grey, wet | | | | | | Sand | | | | | |
| 8.61 / 155.67 | **CLAYEY SILT:** with sand, grey, moist | | 12 | SS | 34 | | | | | | | |
| 9.40 | **SANDY SILT:** grey, wet | | 13 | SS | 21 | | | | | | | |

W. L. 163.8 m Jun 17, 2020

Continued Next Page

GROUNDWATER ELEVATIONS

Measurement 1st 2nd 3rd 4th

# LOG OF BOREHOLE BH3

PROJECT: Agincourt
REF. NO.: 19M-01888-00
CLIENT: York Region
Method: Hollow Stem Auger/ Mud Rotary
ENCL NO.: 3
PROJECT LOCATION: Scarborough, ON
Diameter: 152.4 mm
ORIGINATED BY MA
DATUM: Geodetic
Date: Jun-09-2020 to Jun-10-2020
BH LOCATION: Scarborough, ON N 638031.88 E 4849183.03

| (m) ELEV / DEPTH | DESCRIPTION | STRATA PLOT | NUMBER | TYPE | "N" BLOWS 0.3 m | MONITORING WELL CONSTRUCTION | CHEMICAL ANALYSIS | Soil Head Space Vapors PID (ppm) 20 40 60 80 | Soil Head Space Vapors CGD (ppm) 20 40 60 80 | PLASTIC LIMIT / NATURAL MOISTURE CONTENT / LIQUID LIMIT $w_P$ $w$ $w_L$ WATER CONTENT (%) 10 20 30 | POCKET PEN. (kg/sq cm) | REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Continued | | | | | | | | | | | |
| 154.40 | **SANDY SILT:** grey, wet(Continued) | | | | | | Screen | | | | | |
| 10.67 | **SAND AND SILT:** trace clay, grey, wet | | 14 | SS | 10 | | | | | | | 0 42 56 2 |
| 151.35 | | | 15 | SS | 17 | | | | | | | |
| 13.72 | **SILTY SAND:** trace gravel, trace clay, grey, wet | | 16 | SS | 17 | | | | | | | 1 59 38 2 |
| | | | 17 | SS | 17 | | Caved | | | | | |
| 148.31 | | | | | | | | | | | | |
| 16.76 | **SAND WITH GRAVEL:** trace silt, grey, wet | | 18 | SS | 55 | | | | | | | |
| 146.78 | | | | | | | | | | | | |
| 18.29 | **SAND:** some silt, grey, moist | | 19 | SS | 89 | | | | | | | |
| 145.26 | | | | | | | | | | | | |
| 19.81 | | | | | | | | | | | | |

Continued Next Page

GROUNDWATER ELEVATIONS

Measurement 1st 2nd 3rd 4th

# LOG OF BOREHOLE BH3

PROJECT: Agincourt
REF. NO.: 19M-01888-00
CLIENT: York Region
Method: Hollow Stem Auger/ Mud Rotary
ENCL NO.: 3
PROJECT LOCATION: Scarborough, ON
Diameter: 152.4 mm
ORIGINATED BY MA
DATUM: Geodetic
Date: Jun-09-2020 to Jun-10-2020
BH LOCATION: Scarborough, ON N 638031.88 E 4849183.03

| SOIL PROFILE | | | SAMPLES | | | MONITORING WELL CONSTRUCTION | CHEMICAL ANALYSIS | Soil Head Space Vapors | | PLASTIC LIMIT / NATURAL MOISTURE CONTENT / LIQUID LIMIT | POCKET PEN. (kg/sq cm) | REMARKS AND GRAIN SIZE DISTRIBUTION (%) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (m) ELEV / DEPTH | DESCRIPTION | STRATA PLOT | NUMBER | TYPE | BLOWS / 0.3 m "N" | | | PID (ppm) 20 40 60 80 | CGD (ppm) 20 40 60 80 | $w_P$ $w$ $w_L$ WATER CONTENT (%) 10 20 30 | | GR SA SI CL |
| | Continued | | | | | | | | | | | |
| | **SAND:** trace gravel, brown, moist to somewhat wet(Continued) | | 20 | SS | 100/ 279mm | | | | | o | | |
| 144.65 / 20.42 | **END OF BOREHOLE** Notes: 1) Borehole was open and ground water level at 9.1m below ground surface upon completion 2) Swithed to Mud Rotary at depth of 3.05m below ground sufrace END OF BOREHOLE AT 20.4 mbgs | | | | | | | | | | | |

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

# LOG OF BOREHOLE BH4



PROJECT: Agincourt
REF. NO.: 19M-01888-00
CLIENT: York Region
Method: Solid Stem Auger
ENCL NO.: 4
PROJECT LOCATION: Scarborough, ON
Diameter: 152.4 mm
ORIGINATED BY MA
DATUM: Geodetic
Date: Jun-08-2020 to Jun-08-2020
BH LOCATION: Scarborough, ON N 638050.84 E 4849118.75

| (m) ELEV / DEPTH | DESCRIPTION | STRATA PLOT | SAMPLES NUMBER | TYPE | BLOWS "N" 0.3 m | MONITORING WELL CONSTRUCTION | CHEMICAL ANALYSIS | Soil Head Space Vapors PID (ppm) | CGD (ppm) | PLASTIC LIMIT / NATURAL MOISTURE CONTENT / LIQUID LIMIT ($w_P$ $w$ $w_L$) WATER CONTENT (%) | POCKET PEN. (kg/sq cm) | REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 166.90 | Ground Surface | | | | | | | | | | | |
| 166.77 | **TOP SOIL (130mm)** | | | | | | | | | | | |
| 0.13 | **FILL:** sand with silt, trace gravel, some oxidation, trace roots, brown, somewhat dry | | 1 | SS | 11 | | | | | | | |
| 166.07 | | | | | | | | | | | | |
| 0.83 | **SILTY SAND:** some gravel, some oxidation, brown, moist | | 2 | SS | 15 | | | | | | | |
| 165.38 | | | | | | | | | | | | |
| 1.52 | **SAND AND SILT:** trace gravel, trace clay, brown, somewhat moist | | 3 | SS | 23 | | Bentonite Holeplug | | 105 | | | 4 43 45 8 |
| 165.07 | | | | | | | | | | | | |
| 1.83 | **SANDY SILT:** trace gravel, some clay, grey, moist | | | | | | | | | | | |
| 164.61 | | | | | | | | | | | | |
| 2.29 | **SAND AND SILT:** trace gravel, trace to some clay, grey, wet to moist | | 4 | SS | 22 | | W. L. 164.3 m Jun 17, 2020 | | | | | |
| | | | 5 | SS | 60 | | Sand | | | | | |
| | | | 6 | SS | 47 | | | | | | | |
| | | | 7 | SS | 61 | | Screen | | | | | 3 42 46 9 |
| 161.57 | | | | | | | | | | | | |
| 5.33 | **SANDY SILT:** with clay, trace gravel, grey, wet | | 8 | SS | 45 | | | | | | | |
| 160.80 | | | | | | | | | | | | |
| 6.10 | **SANDY SILT:** with clay, grey, wet | | 9 | SS | 50 | | | | | | | |
| | | | 10 | SS | 30 | | Caved | | | | | |
| 159.43 | | | | | | | | | | | | |
| 7.47 | **END OF BOREHOLE** Notes: 1) Borehole was open and ground water level at 7.32m below ground surface upon completion END OF BOREHOLE AT 7.47 mbgs | | | | | | | | | | | |

GROUNDWATER ELEVATIONS

Measurement 1st 2nd 3rd 4th

# LOG OF BOREHOLE BH5



PROJECT: Agincourt
REF. NO.: 19M-01888-00
CLIENT: York Region
Method: Solid Stem Auger
ENCL NO.: 5
PROJECT LOCATION: Scarborough, ON
Diameter: 152.4 mm
ORIGINATED BY MA
DATUM: Geodetic
Date: Jun-09-2020 to Jun-09-2020
BH LOCATION: Scarborough, ON N 638059.74 E 4849095.53

| (m) ELEV / DEPTH | DESCRIPTION | STRATA PLOT | NUMBER | TYPE | "N" BLOWS 0.3 m | MONITORING WELL CONSTRUCTION | CHEMICAL ANALYSIS | PID (ppm) | CGD (ppm) | PLASTIC LIMIT $w_P$ | NATURAL MOISTURE CONTENT $w$ | LIQUID LIMIT $w_L$ | POCKET PEN. (kg/sq cm) | REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 166.82 | Ground Surface | | | | | | | | | | | | | |
| 166.63 | **TOP SOIL (190 mm)** | | | | | | | | | | | | | |
| 0.19 / 166.21 | **FILL:** sand with silt, trace gravel, some oxidation, trace roots, brown, organic odor, somewhat dry | | 1 | SS | 7 | | | | | | | | | |
| 0.61 / 165.30 | **SAND AND SILT:** trace gravel, trace clay, some oxidation, brown, moist | | 2 | SS | 14 | | Bentonite Holeplug | | | | | | | 2 44 46 8 |
| 1.52 / 164.53 | **SILTY SAND:** trace gravel, brown, somewhat moist | | 3 | SS | 24 | | Sand | W. L. 165.0 m Jun 17, 2020 | | | | | | |
| 2.29 / 163.77 | **SANDY SILT:** trace gravel, grey, wet to moist | | 4 | SS | 34 | | | | | | | | | |
| 3.05 / 163.01 | **SANDY SILT:** trace gravel, trace clay, grey, somewhat dry | | 5 | SS | 92 | | Screen | | | | | | | |
| 3.81 / 162.25 | **SAND AND SILT:** trace gravel, trace to some clay, grey, wet to moist | | 6 | SS | 65 | | | | | | | | | 2 44 45 9 |
| 4.57 | **SILTY SAND:** trace gravel, some clay, grey, wet to moist | | 7 | SS | 74 | | | | | | | | | |
| | | | 8 | SS | 39 | | | | | | | | | |
| 159.96 | | | 9 | SS | 42 | | Caved | | | | | | | |
| 6.86 / 159.35 | **SILTY SAND:** with clay, trace gravel, grey, wet | | 10 | SS | 29 | | | | | | | | | |
| 7.47 | **END OF BOREHOLE** Notes: 1) Borehole was open and ground water level at 7.39m below ground surface upon completion END OF BOREHOLE AT 7.47 mbgs | | | | | | | | | | | | | |

GROUNDWATER ELEVATIONS

Measurement 1st 2nd 3rd 4th

# LOG OF BOREHOLE BH6



PROJECT: Agincourt
REF. NO.: 19M-01888-00
CLIENT: York Region
Method: Solid Stem Auger
ENCL NO.: 6
PROJECT LOCATION: Scarborough, ON
Diameter: 152.4 mm
ORIGINATED BY MA
DATUM: Geodetic
Date: Jun-08-2020 to Jun-08-2020
BH LOCATION: Scarborough, ON N 638088.56 E 4848874.41

| (m) ELEV / DEPTH | DESCRIPTION | STRATA PLOT | SAMPLES NUMBER | TYPE | BLOWS "N" / 0.3 m | MONITORING WELL CONSTRUCTION | CHEMICAL ANALYSIS | Soil Head Space Vapors PID (ppm) 20 40 60 80 | CGD (ppm) 20 40 60 80 | PLASTIC LIMIT $w_P$ / NATURAL MOISTURE CONTENT $w$ / LIQUID LIMIT $w_L$ — WATER CONTENT (%) 10 20 30 | POCKET PEN. (kg/sq cm) | REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 167.60 | Ground Surface | | | | | | | | | | | |
| 167.50 | **ASPHALT (100 mm)** | | | | | | | | | | | |
| 0.10 / 167.23 | **GRANULAR BASE (270mm):** gravelly sand with silt, light brown, mostly dry | | 1-1 | SS | 7 | | | | | | | |
| 0.37 | **GRANULAR SUBBASE:** sand with gravel, some oxidation, brown to dark grey, somewhat dry | | 1-2 | SS | 7 | | | | | | | |
| 1 | | | 2 | SS | 42 | | Bentonite Holeplug | | | | | |
| 166.08 | | | | | | | | | | | | |
| 1.52 | **SAND AND SILT:** trace gravel, some clay, trace to some oxidation, brown to brownish grey | | 3 | SS | 100/ 305mm | | W. L. 166.0 m Jun 17, 2020 Sand | | | | | 2 44 43 11 |
| 2 | | | | | | | | | | | | |
| 165.31 | | | | | | | | | | | | |
| 2.29 | **SANDY SILT:** some clay, trace gravel, wet to moist - wet sample from 2.29m to 2.67m | | 4 | SS | 62 | | | | | | | |
| 164.55 | | | | | | | | | | | | |
| 3.05 | **SANDY SILT:** trace gravel, trace clay, grey, somewhat dry - wet sample from 3.05m to 3.23m | | 5-1 | SS | 45 | | | | | | | |
| 164.00 | | | | | | | | | | | | |
| 3.60 | **SAND WITHSILT:** grey, moist to wet - wet sample from 3.76m to 3.81m | | 5-2 | SS | 45 | | Screen | | | | | |
| 163.79 | | | | | | | | | | | | |
| 3.81 | **SANDY SILT:** some gravel, trace clay, grey, wet | | 6 | SS | 50/ 127mm | | | | | | | |
| 4 | | | | | | | | | | | | |
| 163.03 | | | | | | | | | | | | |
| 4.57 | **SANDY SILT:** trace gravel, some clay, grey, wet to moist -wet sample from 4.57m to 4.62m | | 7 | SS | 90/ 50mm | | | | | | | 3 31 56 10 |
| 5 | | | | | | | | | | | | |
| 162.42 | | | | | | | Caved | | | | | |
| 5.18 | **END OF BOREHOLE** Notes: 1) Borehole was open and ground water level at 4.72m below ground surface upon completion END OF BOREHOLE AT 5.18 mbgs | | | | | | | | | | | |

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

# LOG OF BOREHOLE BH7



PROJECT: Agincourt
REF. NO.: 19M-01888-00
CLIENT: York Region
Method: Solid Stem Auger
ENCL NO.: 7
PROJECT LOCATION: Scarborough, ON
Diameter: 152.4 mm
ORIGINATED BY MA
DATUM: Geodetic
Date: Jun-04-2020 to Jun-04-2020
BH LOCATION: Scarborough, ON N 638102.55 E 4848830.09

| (m) ELEV / DEPTH | DESCRIPTION | STRATA PLOT | NUMBER | TYPE | BLOWS 0.3 m "N" | MONITORING WELL CONSTRUCTION | CHEMICAL ANALYSIS | PID (ppm) 20 40 60 80 | CGD (ppm) 20 40 60 80 | PLASTIC LIMIT $w_P$ / NATURAL MOISTURE CONTENT $w$ / LIQUID LIMIT $w_L$ — WATER CONTENT (%) 10 20 30 | POCKET PEN. (kg/sq cm) | REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 168.18 | Ground Surface | | | | | | | | | | | |
| 168.04 | **TOP SOIL (140 mm)** | | | | | | | | | | | |
| 0.14 / 167.79 | **FILL:** gravelly sand, some silt, grey, somewhat dry | | 1-1 | SS | 40 | | | | | | | |
| 0.39 / 167.42 | **FILL:** sand and silt, trace clay, trace gravel, brown to grey, moist | | 1-2 | SS | 40 | | Bentonite Holeplug | | | | | |
| 0.76 / 166.66 | **FILL:** silty sand, trace gravel, trace roots, trace oxidation, brown, dry | | 2 | SS | 15 | | | | | | | |
| 1.52 / 165.89 | **SANDY SILT:** trace gravel, trace clay, trace roots, grey, moist to wet | | 3 | SS | 37 | | Sand | | | | | |
| 2.29 / 165.13 | **SANDY SILT:** with clay, trace gravel, grey, wet - moist sample from 2.29 to 2.44 | | 4 | SS | 52 | | | | | | | |
| 3.05 / 164.37 | **SAND WITH SILT:** trace gravel, some oxidation, grey to brown, moist - wet sample from 3.23m to 3.38m | | 5 | SS | 51 | | W. L. 164.8 m Jun 17, 2020 | | | | | |
| 3.81 | **SILT:** trace sand, trace clay, trace gravel, grey, wet - wet sample from 3.81m to 4.88m | | 6 | SS | 77 | | | | | | | |
| | | | 7 | SS | 86 | | | | | | | 1 4 88 7 |
| | - wet sample from 5.33m to 6.1m | | 8 | SS | 100/ 127mm | | | | | | | |
| 6.10 / 162.08 | | | | | | | | | | | | |
| 6.10 / 161.84 | **SAND:** trace gravel, brown, wet | | 9-1 | SS | 90/ 127mm | | | | | | | |
| 6.34 / 161.32 | **CLAYEY SILT:** with sand, grey, wet | | 9-2 | SS | 90/ 127mm | | | | | | | |
| 6.86 | **SILT WITH SAND:** some clay, trace to no gravel, grey, wet | | 10 | SS | 100/ 102mm | | | | | | | 2 29 58 11 |
| | | | 11 | SS | 100/ 127mm | | | | | | | |
| | | | 12 | SS | 85/ 127mm | | Caved | | | | | |
| | | | 13 | SS | 50/ 50mm | | | | | | | |
| 158.27 | | | | | | | | | | | | |

Continued Next Page

GROUNDWATER ELEVATIONS

Measurement 1st 2nd 3rd 4th

# LOG OF BOREHOLE BH7

PROJECT: Agincourt
REF. NO.: 19M-01888-00
CLIENT: York Region
Method: Solid Stem Auger
ENCL NO.: 7
PROJECT LOCATION: Scarborough, ON
Diameter: 152.4 mm
ORIGINATED BY MA
DATUM: Geodetic
Date: Jun-04-2020 to Jun-04-2020
BH LOCATION: Scarborough, ON N 638102.55 E 4848830.09

| (m) ELEV / DEPTH | DESCRIPTION | STRATA PLOT | SAMPLES: NUMBER | SAMPLES: TYPE | SAMPLES: BLOWS/0.3 m "N" | MONITORING WELL CONSTRUCTION | CHEMICAL ANALYSIS | Soil Head Space Vapors: PID (ppm) | Soil Head Space Vapors: CGD (ppm) | PLASTIC LIMIT / NATURAL MOISTURE CONTENT / LIQUID LIMIT ($w_P$ w $w_L$) WATER CONTENT (%) | POCKET PEN. (kg/sq cm) | REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Continued | | | | | | | 20 40 60 80 | 20 40 60 80 | 10 20 30 | | |
| 9.91<br>157.51 | **SILT WITH SAND:** trace gravel, trace clay, grey, wet(Continued) | | 14 | SS | 50/ 102mm | | | | | | | |
| 10.67<br>11<br>156.75 | **SILTY SAND:** trace gravel, trace clay, brown, wet | | 15 | SS | 50/ 102mm | | | | | | | 3 55 36 6 |
| 11.43<br>12<br>155.99 | **SANDY SILT:** trace clay, wet | | 16 | SS | 50/ 76mm | | | | | | | |
| 12.19 | **END OF BOREHOLE**<br>Notes:<br>1) Borehole was caved to 10.3m and ground water level at 7m below ground surface upon completion<br>2) Swithed to Mud Rotary at depth of 11m below ground sufrace<br>END OF BOREHOLE AT 12.19 mbgs | | | | | | | | | | | |

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

# LOG OF BOREHOLE BH8



PROJECT: Agincourt
REF. NO.: 19M-01888-00
CLIENT: York Region
Method: Solid Stem Auger
ENCL NO.: 8
PROJECT LOCATION: Scarborough, ON
Diameter: 152.4 mm
ORIGINATED BY MA
DATUM: Geodetic
Date: Jun-04-2020 to Jun-04-2020
BH LOCATION: Scarborough, ON N 638118.44 E 4848791.48

| (m) ELEV / DEPTH | DESCRIPTION | STRATA PLOT | SAMPLES NUMBER | TYPE | BLOWS/0.3 m "N" | MONITORING WELL CONSTRUCTION | CHEMICAL ANALYSIS | Soil Head Space Vapors PID (ppm) 20 40 60 80 | CGD (ppm) 20 40 60 80 | PLASTIC LIMIT / NATURAL MOISTURE CONTENT / LIQUID LIMIT $w_P$ $w$ $w_L$ WATER CONTENT (%) 10 20 30 | POCKET PEN. (kg/sq cm) | REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 168.80 | Ground Surface | | | | | | | | | | | |
| 168.71 | **ASPHALT (90mm)** | | | | | | | | | | | |
| 0.09 | **GRANULAR BASE (520mm):** gravelly sand, trace silt, brown, dry | | 1 | SS | 82/102mm | | | | | | | |
| 168.19 | | | | | | | | | | | | |
| 0.61 | **SANDY SILT:** trace gravel, some clay, brown, dry | | | | | | | | | | | |
| 1 | | | 2 | SS | 19 | | Bentonite Holeplug | | | | | 6 38 46 10 |
| | | | 3 | SS | 21 | | | | | | | |
| 2 | | | | | | | | | | | | |
| 166.51 | | | | | | | Sand | | | | | |
| 2.29 | **SAND WITH SILT:** trace gravel, trace oxidation, light brown, dry to moist | | 4 | SS | 18 | | | | | | | |
| 165.75 | | | | | | | | | | | | |
| 3.05 | **SILT WITH SAND:** trace gravel, trace to some clay, grey, moist to wet - wet sample from 3.05m to 3.5m | | 5 | SS | 35 | | | | | | | |
| 4 | | | 6 | SS | 100/102mm | | Screen | | | | | 1 23 65 11 |
| | | | 7 | SS | 100/102mm | | | | | | | |
| 5 | | | 8 | SS | 100/76mm | | | | | | | |
| 6 | | | 9 | SS | 100/76mm | | Caved | | | | | |
| | - wet sample from 6.6m to 6.7m | | | | | | | | | | | |
| 161.94 | | | | | | | | | | | | |
| 7 6.86 | **SANDY SILT:** trace clay, grey, moist | | 10 | SS | 50/127mm | | | | | | | |
| 161.33 | | | | | | | | | | | | |
| 7.47 | **END OF BOREHOLE** Notes: 1) Borehole was caved to 7.13m below ground surfaceand dry upon completion END OF BOREHOLE AT 7.47 mbgs | | | | | | | | | | | |

GROUNDWATER ELEVATIONS

Measurement 1st 2nd 3rd 4th

APPENDIX

# C LABORATORY CERTIFICATES OF ANALYSIS

WSP Canada Group Limited
ATTN: Valyn Bernard
100 Commerce Valley Drive West
Thornhill ON L3T 0A1

Date Received: 10-JUN-20
Report Date: 18-JUN-20 08:58 (MT)
Version: FINAL

Client Phone: 905-882-1100

# Certificate of Analysis

## Lab Work Order #: L2458709

Project P.O. #: NOT SUBMITTED
Job Reference: 19M-01888-00-CONTAM
C of C Numbers:
Legal Site Desc:

Emily Hansen
Account Manager

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# ANALYTICAL REPORT

## Summary of Guideline Exceedances

| Guideline ALS ID | Client ID | Grouping | Analyte | Result | Guideline Limit | Unit |
|---|---|---|---|---|---|---|

**Ontario Regulation 153/04 - April 15, 2011 Standards - T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

(No parameter exceedances)

# ANALYTICAL REPORT

## Physical Tests - SOIL

| | | Guide Limits | | | |
|---|---|---|---|---|---|
| **Lab ID** | | | | L2458709-1 | L2458709-3 |
| **Sample Date** | | | | 09-JUN-20 | 09-JUN-20 |
| **Sample ID** | | | | BH3-SS2 | BH3-SS14 |
| **Analyte** | **Unit** | **#1** | **#2** | | |
| Conductivity | mS/cm | 0.57 | - | 0.142 | |
| % Moisture | % | - | - | 10.4 | 16.4 |
| pH | pH units | - | - | 7.60 | |

**Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

# ANALYTICAL REPORT

## Cyanides - SOIL

| | | Guide Limits | | |
|---|---|---|---|---|
| **Analyte** | **Unit** | **#1** | **#2** | |
| **Lab ID** | | | | L2458709-1 |
| **Sample Date** | | | | 09-JUN-20 |
| **Sample ID** | | | | BH3-SS2 |
| Cyanide, Weak Acid Diss | ug/g | 0.051 | - | <0.050 |

**Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

# ANALYTICAL REPORT

## Saturated Paste Extractables - SOIL

| | | | | |
|---|---|---|---|---|
| | | | **Lab ID** | L2458709-1 |
| | | | **Sample Date** | 09-JUN-20 |
| | | | **Sample ID** | BH3-SS2 |
| **Analyte** | **Unit** | **Guide Limits #1** | **#2** | |
| SAR | SAR | 2.4 | - | 0.13 |
| Calcium (Ca) | mg/L | - | - | 22.4 |
| Magnesium (Mg) | mg/L | - | - | 1.42 |
| Sodium (Na) | mg/L | - | - | 2.33 |

**Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

# ANALYTICAL REPORT

## Metals - SOIL

| | | | | |
|---|---|---|---|---|
| | | | **Lab ID** | L2458709-1 |
| | | | **Sample Date** | 09-JUN-20 |
| | | | **Sample ID** | BH3-SS2 |
| | | **Guide Limits** | | |
| **Analyte** | **Unit** | **#1** | **#2** | |
| Antimony (Sb) | ug/g | 1.3 | - | <1.0 |
| Arsenic (As) | ug/g | 18 | - | 2.2 |
| Barium (Ba) | ug/g | 220 | - | 49.0 |
| Beryllium (Be) | ug/g | 2.5 | - | <0.50 |
| Boron (B) | ug/g | 36 | - | 6.7 |
| Boron (B), Hot Water Ext. | ug/g | 36 | - | 0.17 |
| Cadmium (Cd) | ug/g | 1.2 | - | <0.50 |
| Chromium (Cr) | ug/g | 70 | - | 14.6 |
| Cobalt (Co) | ug/g | 21 | - | 4.9 |
| Copper (Cu) | ug/g | 92 | - | 9.1 |
| Lead (Pb) | ug/g | 120 | - | 12.4 |
| Mercury (Hg) | ug/g | 0.27 | - | 0.0170 |
| Molybdenum (Mo) | ug/g | 2 | - | <1.0 |
| Nickel (Ni) | ug/g | 82 | - | 9.5 |
| Selenium (Se) | ug/g | 1.5 | - | <1.0 |
| Silver (Ag) | ug/g | 0.5 | - | <0.20 |
| Thallium (Tl) | ug/g | 1 | - | <0.50 |
| Uranium (U) | ug/g | 2.5 | - | <1.0 |
| Vanadium (V) | ug/g | 86 | - | 27.9 |
| Zinc (Zn) | ug/g | 290 | - | 33.3 |

**Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

# ANALYTICAL REPORT

## Speciated Metals - SOIL

| | | | | |
|---|---|---|---|---|
| | | | **Lab ID** | L2458709-1 |
| | | | **Sample Date** | 09-JUN-20 |
| | | | **Sample ID** | BH3-SS2 |
| | | **Guide Limits** | | |
| **Analyte** | **Unit** | **#1** | **#2** | |
| Chromium, Hexavalent | ug/g | 0.66 | - | 0.29 |

**Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

# ANALYTICAL REPORT

## Volatile Organic Compounds - SOIL

| | | | | |
|---|---|---|---|---|
| | | | **Lab ID** | L2458709-3 |
| | | | **Sample Date** | 09-JUN-20 |
| | | | **Sample ID** | BH3-SS14 |
| | | **Guide Limits** | | |
| **Analyte** | **Unit** | **#1** | **#2** | |
| Acetone | ug/g | 0.5 | - | <0.50 |
| Benzene | ug/g | 0.02 | - | <0.0068 |
| Bromodichloromethane | ug/g | 0.05 | - | <0.050 |
| Bromoform | ug/g | 0.05 | - | <0.050 |
| Bromomethane | ug/g | 0.05 | - | <0.050 |
| Carbon tetrachloride | ug/g | 0.05 | - | <0.050 |
| Chlorobenzene | ug/g | 0.05 | - | <0.050 |
| Dibromochloromethane | ug/g | 0.05 | - | <0.050 |
| Chloroform | ug/g | 0.05 | - | <0.050 |
| 1,2-Dibromoethane | ug/g | 0.05 | - | <0.050 |
| 1,2-Dichlorobenzene | ug/g | 0.05 | - | <0.050 |
| 1,3-Dichlorobenzene | ug/g | 0.05 | - | <0.050 |
| 1,4-Dichlorobenzene | ug/g | 0.05 | - | <0.050 |
| Dichlorodifluoromethane | ug/g | 0.05 | - | <0.050 |
| 1,1-Dichloroethane | ug/g | 0.05 | - | <0.050 |
| 1,2-Dichloroethane | ug/g | 0.05 | - | <0.050 |
| 1,1-Dichloroethylene | ug/g | 0.05 | - | <0.050 |
| cis-1,2-Dichloroethylene | ug/g | 0.05 | - | <0.050 |
| trans-1,2-Dichloroethylene | ug/g | 0.05 | - | <0.050 |
| Methylene Chloride | ug/g | 0.05 | - | <0.050 |
| 1,2-Dichloropropane | ug/g | 0.05 | - | <0.050 |
| cis-1,3-Dichloropropene | ug/g | - | - | <0.030 |
| trans-1,3-Dichloropropene | ug/g | - | - | <0.030 |
| 1,3-Dichloropropene (cis & trans) | ug/g | 0.05 | - | <0.042 |
| Ethylbenzene | ug/g | 0.05 | - | <0.018 |
| n-Hexane | ug/g | 0.05 | - | <0.050 |
| Methyl Ethyl Ketone | ug/g | 0.5 | - | <0.50 |
| Methyl Isobutyl Ketone | ug/g | 0.5 | - | <0.50 |
| MTBE | ug/g | 0.05 | - | <0.050 |
| Styrene | ug/g | 0.05 | - | <0.050 |

**Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

# ANALYTICAL REPORT

## Volatile Organic Compounds - SOIL

| | | | | |
|---|---|---|---|---|
| | | **Lab ID** | | L2458709-3 |
| | | **Sample Date** | | 09-JUN-20 |
| | | **Sample ID** | | BH3-SS14 |
| | | **Guide Limits** | | |
| **Analyte** | **Unit** | **#1** | **#2** | |
| 1,1,1,2-Tetrachloroethane | ug/g | 0.05 | - | <0.050 |
| 1,1,2,2-Tetrachloroethane | ug/g | 0.05 | - | <0.050 |
| Tetrachloroethylene | ug/g | 0.05 | - | <0.050 |
| Toluene | ug/g | 0.2 | - | <0.080 |
| 1,1,1-Trichloroethane | ug/g | 0.05 | - | <0.050 |
| 1,1,2-Trichloroethane | ug/g | 0.05 | - | <0.050 |
| Trichloroethylene | ug/g | 0.05 | - | <0.010 |
| Trichlorofluoromethane | ug/g | 0.25 | - | <0.050 |
| Vinyl chloride | ug/g | 0.02 | - | <0.020 |
| o-Xylene | ug/g | - | - | <0.020 |
| m+p-Xylenes | ug/g | - | - | <0.030 |
| Xylenes (Total) | ug/g | 0.05 | - | <0.050 |
| Surrogate: 4-Bromofluorobenzene | % | - | - | 82.2 |
| Surrogate: 1,4-Difluorobenzene | % | - | - | 112.0 |

**Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

# ANALYTICAL REPORT

## Hydrocarbons - SOIL

| | | | | |
|---|---|---|---|---|
| | | | **Lab ID** | L2458709-3 |
| | | | **Sample Date** | 09-JUN-20 |
| | | | **Sample ID** | BH3-SS14 |
| | | **Guide Limits** | | |
| **Analyte** | **Unit** | **#1** | **#2** | |
| F1 (C6-C10) | ug/g | 25 | - | <5.0 |
| F1-BTEX | ug/g | 25 | - | <5.0 |
| F2 (C10-C16) | ug/g | 10 | - | <10 |
| F3 (C16-C34) | ug/g | 240 | - | <50 |
| F4 (C34-C50) | ug/g | 120 | - | <50 |
| Total Hydrocarbons (C6-C50) | ug/g | - | - | <72 |
| Chrom. to baseline at nC50 | | - | - | YES |
| Surrogate: 2-Bromobenzotrifluoride | % | - | - | 80.2 |
| Surrogate: 3,4-Dichlorotoluene | % | - | - | 70.9 |

**Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

# ANALYTICAL REPORT

## Polycyclic Aromatic Hydrocarbons - SOIL

| | | | | |
|---|---|---|---|---|
| | | **Lab ID** | | L2458709-1 |
| | | **Sample Date** | | 09-JUN-20 |
| | | **Sample ID** | | BH3-SS2 |
| | | **Guide Limits** | | |
| **Analyte** | **Unit** | **#1** | **#2** | |
| Acenaphthene | ug/g | 0.072 | - | <0.050 |
| Acenaphthylene | ug/g | 0.093 | - | <0.050 |
| Anthracene | ug/g | 0.16 | - | <0.050 |
| Benzo(a)anthracene | ug/g | 0.36 | - | <0.050 |
| Benzo(a)pyrene | ug/g | 0.3 | - | <0.050 |
| Benzo(b)fluoranthene | ug/g | 0.47 | - | <0.050 |
| Benzo(g,h,i)perylene | ug/g | 0.68 | - | <0.050 |
| Benzo(k)fluoranthene | ug/g | 0.48 | - | <0.050 |
| Chrysene | ug/g | 2.8 | - | <0.050 |
| Dibenzo(ah)anthracene | ug/g | 0.1 | - | <0.050 |
| Fluoranthene | ug/g | 0.56 | - | 0.063 |
| Fluorene | ug/g | 0.12 | - | <0.050 |
| Indeno(1,2,3-cd)pyrene | ug/g | 0.23 | - | <0.050 |
| 1+2-Methylnaphthalenes | ug/g | 0.59 | - | <0.042 |
| 1-Methylnaphthalene | ug/g | 0.59 | - | <0.030 |
| 2-Methylnaphthalene | ug/g | 0.59 | - | <0.030 |
| Naphthalene | ug/g | 0.09 | - | <0.013 |
| Phenanthrene | ug/g | 0.69 | - | <0.046 |
| Pyrene | ug/g | 1 | - | 0.053 |
| Surrogate: 2-Fluorobiphenyl | % | - | - | 89.6 |
| Surrogate: p-Terphenyl d14 | % | - | - | 91.7 |

**Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

# Reference Information

**Methods Listed (if applicable):**

| ALS Test Code | Matrix | Test Description | Method Reference** |
|---|---|---|---|
| **B-HWS-R511-WT** | Soil | Boron-HWE-O.Reg 153/04 (July 2011) | HW EXTR, EPA 6010B |

A dried solid sample is extracted with calcium chloride, the sample undergoes a heating process. After cooling the sample is filtered and analyzed by ICP/OES.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

| | | | |
|---|---|---|---|
| **CN-WAD-R511-WT** | Soil | Cyanide (WAD)-O.Reg 153/04 (July 2011) | MOE 3015/APHA 4500CN I-WAD |

The sample is extracted with a strong base for 16 hours, and then filtered. The filtrate is then distilled where the cyanide is converted to cyanogen chloride by reacting with chloramine-T, the cyanogen chloride then reacts with a combination of barbituric acid and isonicotinic acid to form a highly colored complex.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

| | | | |
|---|---|---|---|
| **CR-CR6-IC-WT** | Soil | Hexavalent Chromium in Soil | SW846 3060A/7199 |

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 7199, published by the United States Environmental Protection Agency (EPA). The procedure involves analysis for chromium (VI) by ion chromatography using diphenylcarbazide in a sulphuric acid solution.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

| | | | |
|---|---|---|---|
| **EC-WT** | Soil | Conductivity (EC) | MOEE E3138 |

A representative subsample is tumbled with de-ionized (DI) water. The ratio of water to soil is 2:1 v/w. After tumbling the sample is then analyzed by a conductivity meter.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

| | | | |
|---|---|---|---|
| **F1-F4-511-CALC-WT** | Soil | F1-F4 Hydrocarbon Calculated Parameters | CCME CWS-PHC, Pub #1310, Dec 2001-S |

Analytical methods used for analysis of CCME Petroleum Hydrocarbons have been validated and comply with the Reference Method for the CWS PHC.

Hydrocarbon results are expressed on a dry weight basis.

In cases where results for both F4 and F4G are reported, the greater of the two results must be used in any application of the CWS PHC guidelines and the gravimetric heavy hydrocarbons cannot be added to the C6 to C50 hydrocarbons.
In samples where BTEX and F1 were analyzed , F1-BTEX represents a value where the sum of Benzene, Toluene, Ethylbenzene and total Xylenes has been subtracted from F1.

In samples where PAHs, F2 and F3 were analyzed, F2-Naphth represents the result where Naphthalene has been subtracted from F2. F3-PAH represents a result where the sum of Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene, Fluoranthene, Indeno(1,2,3-cd)pyrene, Phenanthrene, and Pyrene has been subtracted from F3.

Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:
1. All extraction and analysis holding times were met.
2. Instrument performance showing response factors for C6 and C10 within 30% of the response factor for toluene.
3. Linearity of gasoline response within 15% throughout the calibration range.

Unless otherwise qualified, the following quality control criteria have been met for the F2-F4 hydrocarbon ranges:
1. All extraction and analysis holding times were met.
2. Instrument performance showing C10, C16 and C34 response factors within 10% of their average.
3. Instrument performance showing the C50 response factor within 30% of the average of the C10, C16 and C34 response factors.
4. Linearity of diesel or motor oil response within 15% throughout the calibration range.

# Reference Information

**Methods Listed (if applicable):**

| ALS Test Code | Matrix | Test Description | Method Reference** |
|---|---|---|---|
| **F1-HS-511-WT** | Soil | F1-O.Reg 153/04 (July 2011) | E3398/CCME TIER 1-HS |

Fraction F1 is determined by extracting a soil or sediment sample as received with methanol, then analyzing by headspace-GC/FID.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

| | | | |
|---|---|---|---|
| **F2-F4-511-WT** | Soil | F2-F4-O.Reg 153/04 (July 2011) | CCME Tier 1 |

Petroleum Hydrocarbons (F2-F4 fractions) are extracted from soil with 1:1 hexane:acetone using a rotary extractor. Extracts are treated with silica gel to remove polar organic interferences. F2, F3, & F4 are analyzed by GC-FID. F4G-sg is analyzed gravimetrically.

Notes:
1. F2 (C10-C16): Sum of all hydrocarbons that elute between nC10 and nC16.
2. F3 (C16-C34): Sum of all hydrocarbons that elute between nC16 and nC34.
3. F4 (C34-C50): Sum of all hydrocarbons that elute between nC34 and nC50.
4. F4G: Gravimetric Heavy Hydrocarbons
5. F4G-sg: Gravimetric Heavy Hydrocarbons (F4G) after silica gel treatment.
6. Where both F4 (C34-C50) and F4G-sg are reported for a sample, the larger of the two values is used for comparison against the relevant CCME guideline for F4.
7. F4G-sg cannot be added to the C6 to C50 hydrocarbon results to obtain an estimate of total extractable hydrocarbons.
8. This method is validated for use.
9. Data from analysis of validation and quality control samples is available upon request.
10. Reported results are expressed as milligrams per dry kilogram, unless otherwise indicated.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

| | | | |
|---|---|---|---|
| **HG-200.2-CVAA-WT** | Soil | Mercury in Soil by CVAAS | EPA 200.2/1631E (mod) |

Soil samples are digested with nitric and hydrochloric acids, followed by analysis by CVAAS.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

| | | | |
|---|---|---|---|
| **MET-200.2-CCMS-WT** | Soil | Metals in Soil by CRC ICPMS | EPA 200.2/6020B (mod) |

Soil/sediment is dried, disaggregated, and sieved (2 mm). For tests intended to support Ontario regulations, the <2mm fraction is ground to pass through a 0.355 mm sieve. Strong Acid Leachable Metals in the <2mm fraction are solubilized by heated digestion with nitric and hydrochloric acids. Instrumental analysis is by Collision / Reaction Cell ICPMS.

Limitations: This method is intended to liberate environmentally available metals. Silicate minerals are not solubilized. Some metals may be only partially recovered (matrix dependent), including Al, Ba, Be, Cr, S, Sr, Ti, Tl, V, W, and Zr. Elemental Sulfur may be poorly recovered by this method. Volatile forms of sulfur (e.g. sulfide, H2S) may be excluded if lost during sampling, storage, or digestion.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

| | | | |
|---|---|---|---|
| **METHYLNAPS-CALC-WT** | Soil | ABN-Calculated Parameters | SW846 8270 |
| **MOISTURE-WT** | Soil | % Moisture | CCME PHC in Soil - Tier 1 (mod) |
| **PAH-511-WT** | Soil | PAH-O.Reg 153/04 (July 2011) | SW846 3510/8270 |

A representative sub-sample of soil is fortified with deuterium-labelled surrogates and a mechanical shaking techniqueis used to extract the sample with a mixture of methanol and toluene. The extracts are concentrated and analyzed by GC/MS. Results for benzo(b) fluoranthene may include contributions from benzo(j)fluoranthene, if also present in the sample.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

# Reference Information

**Methods Listed (if applicable):**

| ALS Test Code | Matrix | Test Description | Method Reference** |
|---|---|---|---|
| **PH-WT** | Soil | pH | MOEE E3137A |

A minimum 10g portion of the sample is extracted with 20mL of 0.01M calcium chloride solution by shaking for at least 30 minutes. The aqueous layer is separated from the soil and then analyzed using a pH meter and electrode.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

| | | | |
|---|---|---|---|
| **SAR-R511-WT** | Soil | SAR-O.Reg 153/04 (July 2011) | SW846 6010C |

A dried, disaggregated solid sample is extracted with deionized water, the aqueous extract is separated from the solid, acidified and then analyzed using a ICP/OES. The concentrations of Na, Ca and Mg are reported as per CALA requirements for calculated parameters. These individual parameters are not for comparison to any guideline.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

| | | | |
|---|---|---|---|
| **VOC-1,3-DCP-CALC-WT** | Soil | Regulation 153 VOCs | SW8260B/SW8270C |
| **VOC-511-HS-WT** | Soil | VOC-O.Reg 153/04 (July 2011) | SW846 8260 (511) |

Soil and sediment samples are extracted in methanol and analyzed by headspace-GC/MS.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

| | | | |
|---|---|---|---|
| **XYLENES-SUM-CALC-WT** | Soil | Sum of Xylene Isomer Concentrations | CALCULATION |

Total xylenes represents the sum of o-xylene and m&p-xylene.

**ALS test methods may incorporate modifications from specified reference methods to improve performance.

Chain of Custody Numbers:

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

| Laboratory Definition Code | Laboratory Location |
|---|---|
| WT | ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA |

# Reference Information

**GLOSSARY OF REPORT TERMS**

*Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.*
*mg/kg - milligrams per kilogram based on dry weight of sample*
*mg/kg wwt - milligrams per kilogram based on wet weight of sample*
*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight*
*mg/L - unit of concentration based on volume, parts per million.*
*< - Less than.*
*D.L. - The reporting limit.*
*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*
*UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.*
*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*

*Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to, fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information. Guideline limits are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.*

# Quality Control Report

Workorder: L2458709 Report Date: 18-JUN-20 

Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **B-HWS-R511-WT** | **Soil** | | | | | | | |
| **Batch R5123023** | | | | | | | | |
| **WG3343634-4 DUP** | | **L2458701-5** | | | | | | |
| Boron (B), Hot Water Ext. | | 0.12 | 0.12 | | ug/g | 0.2 | 30 | 17-JUN-20 |
| **WG3343634-2 IRM** | | **WT SAR4** | | | | | | |
| Boron (B), Hot Water Ext. | | | 102.0 | | % | | 70-130 | 17-JUN-20 |
| **WG3343634-3 LCS** | | | | | | | | |
| Boron (B), Hot Water Ext. | | | 106.0 | | % | | 70-130 | 17-JUN-20 |
| **WG3343634-1 MB** | | | | | | | | |
| Boron (B), Hot Water Ext. | | | <0.10 | | ug/g | | 0.1 | 17-JUN-20 |
| **CN-WAD-R511-WT** | **Soil** | | | | | | | |
| **Batch R5117769** | | | | | | | | |
| **WG3341429-3 DUP** | | **L2458342-3** | | | | | | |
| Cyanide, Weak Acid Diss | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 35 | 15-JUN-20 |
| **WG3341429-2 LCS** | | | | | | | | |
| Cyanide, Weak Acid Diss | | | 99.4 | | % | | 80-120 | 15-JUN-20 |
| **WG3341429-1 MB** | | | | | | | | |
| Cyanide, Weak Acid Diss | | | <0.050 | | ug/g | | 0.05 | 15-JUN-20 |
| **WG3341429-4 MS** | | **L2458342-3** | | | | | | |
| Cyanide, Weak Acid Diss | | | 105.8 | | % | | 70-130 | 15-JUN-20 |
| **CR-CR6-IC-WT** | **Soil** | | | | | | | |
| **Batch R5121117** | | | | | | | | |
| **WG3341911-4 CRM** | | **WT-SQC012** | | | | | | |
| Chromium, Hexavalent | | | 94.5 | | % | | 70-130 | 16-JUN-20 |
| **WG3341911-3 DUP** | | **L2459070-4** | | | | | | |
| Chromium, Hexavalent | | <0.20 | <0.20 | RPD-NA | ug/g | N/A | 35 | 16-JUN-20 |
| **WG3341911-2 LCS** | | | | | | | | |
| Chromium, Hexavalent | | | 102.2 | | % | | 80-120 | 16-JUN-20 |
| **WG3341911-1 MB** | | | | | | | | |
| Chromium, Hexavalent | | | <0.20 | | ug/g | | 0.2 | 16-JUN-20 |
| **EC-WT** | **Soil** | | | | | | | |
| **Batch R5122598** | | | | | | | | |
| **WG3343641-4 DUP** | | **WG3343641-3** | | | | | | |
| Conductivity | | 0.250 | 0.256 | | mS/cm | 2.4 | 20 | 17-JUN-20 |
| **WG3343641-2 IRM** | | **WT SAR4** | | | | | | |
| Conductivity | | | 100.6 | | % | | 70-130 | 17-JUN-20 |
| **WG3343838-1 LCS** | | | | | | | | |
| Conductivity | | | 101.0 | | % | | 90-110 | 17-JUN-20 |
| **WG3343641-1 MB** | | | | | | | | |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **EC-WT** | **Soil** | | | | | | | |
| **Batch R5122598** | | | | | | | | |
| **WG3343641-1 MB** | | | | | | | | |
| Conductivity | | | <0.0040 | | mS/cm | | 0.004 | 17-JUN-20 |
| **F1-HS-511-WT** | **Soil** | | | | | | | |
| **Batch R5116589** | | | | | | | | |
| **WG3339632-4 DUP** | | **WG3339632-3** | | | | | | |
| F1 (C6-C10) | | <5.0 | <5.0 | RPD-NA | ug/g | N/A | 30 | 12-JUN-20 |
| **WG3339632-2 LCS** | | | | | | | | |
| F1 (C6-C10) | | | 105.2 | | % | | 80-120 | 12-JUN-20 |
| **WG3339632-1 MB** | | | | | | | | |
| F1 (C6-C10) | | | <5.0 | | ug/g | | 5 | 12-JUN-20 |
| Surrogate: 3,4-Dichlorotoluene | | | 88.9 | | % | | 60-140 | 12-JUN-20 |
| **WG3339632-6 MS** | | **L2458889-1** | | | | | | |
| F1 (C6-C10) | | | 106.5 | | % | | 60-140 | 12-JUN-20 |
| **F2-F4-511-WT** | **Soil** | | | | | | | |
| **Batch R5117986** | | | | | | | | |
| **WG3341130-3 DUP** | | **WG3341130-5** | | | | | | |
| F2 (C10-C16) | | <10 | <10 | RPD-NA | ug/g | N/A | 30 | 15-JUN-20 |
| F3 (C16-C34) | | <50 | <50 | RPD-NA | ug/g | N/A | 30 | 15-JUN-20 |
| F4 (C34-C50) | | <50 | <50 | RPD-NA | ug/g | N/A | 30 | 15-JUN-20 |
| **WG3341130-2 LCS** | | | | | | | | |
| F2 (C10-C16) | | | 95.8 | | % | | 80-120 | 15-JUN-20 |
| F3 (C16-C34) | | | 97.7 | | % | | 80-120 | 15-JUN-20 |
| F4 (C34-C50) | | | 101.1 | | % | | 80-120 | 15-JUN-20 |
| **WG3341130-1 MB** | | | | | | | | |
| F2 (C10-C16) | | | <10 | | ug/g | | 10 | 15-JUN-20 |
| F3 (C16-C34) | | | <50 | | ug/g | | 50 | 15-JUN-20 |
| F4 (C34-C50) | | | <50 | | ug/g | | 50 | 15-JUN-20 |
| Surrogate: 2-Bromobenzotrifluoride | | | 79.3 | | % | | 60-140 | 15-JUN-20 |
| **WG3341130-4 MS** | | **WG3341130-5** | | | | | | |
| F2 (C10-C16) | | | 98.1 | | % | | 60-140 | 15-JUN-20 |
| F3 (C16-C34) | | | 100.6 | | % | | 60-140 | 15-JUN-20 |
| F4 (C34-C50) | | | 105.3 | | % | | 60-140 | 15-JUN-20 |
| **HG-200.2-CVAA-WT** | **Soil** | | | | | | | |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **HG-200.2-CVAA-WT** | **Soil** | | | | | | | |
| **Batch R5122132** | | | | | | | | |
| **WG3343578-2 CRM** | | **WT-SS-1** | | | | | | |
| Mercury (Hg) | | | 107.7 | | % | | 70-130 | 17-JUN-20 |
| **WG3343578-6 DUP** | | **WG3343578-5** | | | | | | |
| Mercury (Hg) | | 0.0170 | 0.0186 | | ug/g | 9.3 | 40 | 17-JUN-20 |
| **WG3343578-3 LCS** | | | | | | | | |
| Mercury (Hg) | | | 107.0 | | % | | 80-120 | 17-JUN-20 |
| **WG3343578-1 MB** | | | | | | | | |
| Mercury (Hg) | | | <0.0050 | | mg/kg | | 0.005 | 17-JUN-20 |
| **MET-200.2-CCMS-WT** | **Soil** | | | | | | | |
| **Batch R5122359** | | | | | | | | |
| **WG3343578-2 CRM** | | **WT-SS-1** | | | | | | |
| Antimony (Sb) | | | 103.9 | | % | | 70-130 | 17-JUN-20 |
| Arsenic (As) | | | 121.6 | | % | | 70-130 | 17-JUN-20 |
| Beryllium (Be) | | | 106.4 | | % | | 70-130 | 17-JUN-20 |
| Boron (B) | | | 93.6 | | % | | 70-130 | 17-JUN-20 |
| Cadmium (Cd) | | | 102.5 | | % | | 70-130 | 17-JUN-20 |
| Chromium (Cr) | | | 95.6 | | % | | 70-130 | 17-JUN-20 |
| Cobalt (Co) | | | 107.5 | | % | | 70-130 | 17-JUN-20 |
| Copper (Cu) | | | 104.0 | | % | | 70-130 | 17-JUN-20 |
| Lead (Pb) | | | 105.2 | | % | | 70-130 | 17-JUN-20 |
| Molybdenum (Mo) | | | 102.0 | | % | | 70-130 | 17-JUN-20 |
| Nickel (Ni) | | | 109.8 | | % | | 70-130 | 17-JUN-20 |
| Selenium (Se) | | | 89.3 | | % | | 70-130 | 17-JUN-20 |
| Silver (Ag) | | | 103.0 | | % | | 70-130 | 17-JUN-20 |
| Thallium (Tl) | | | 83.1 | | % | | 70-130 | 17-JUN-20 |
| Vanadium (V) | | | 111.7 | | % | | 70-130 | 17-JUN-20 |
| Zinc (Zn) | | | 105.6 | | % | | 70-130 | 17-JUN-20 |
| **WG3343578-6 DUP** | | **WG3343578-5** | | | | | | |
| Antimony (Sb) | | 0.11 | <0.10 | RPD-NA | ug/g | N/A | 30 | 17-JUN-20 |
| Arsenic (As) | | 2.16 | 1.98 | | ug/g | 8.6 | 30 | 17-JUN-20 |
| Barium (Ba) | | 49.0 | 44.2 | | ug/g | 10 | 40 | 17-JUN-20 |
| Beryllium (Be) | | 0.35 | 0.29 | | ug/g | 18 | 30 | 17-JUN-20 |
| Boron (B) | | 6.7 | <5.0 | RPD-NA | ug/g | N/A | 30 | 17-JUN-20 |
| Cadmium (Cd) | | 0.098 | 0.090 | | ug/g | 8.8 | 30 | 17-JUN-20 |
| Chromium (Cr) | | 14.6 | 12.0 | | ug/g | 19 | 30 | 17-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **MET-200.2-CCMS-WT** | **Soil** | | | | | | | |
| **Batch R5122359** | | | | | | | | |
| **WG3343578-6 DUP** | | **WG3343578-5** | | | | | | |
| Cobalt (Co) | | 4.87 | 4.06 | | ug/g | 18 | 30 | 17-JUN-20 |
| Copper (Cu) | | 9.08 | 8.53 | | ug/g | 6.2 | 30 | 17-JUN-20 |
| Lead (Pb) | | 12.4 | 11.6 | | ug/g | 6.5 | 40 | 17-JUN-20 |
| Molybdenum (Mo) | | 0.30 | 0.29 | | ug/g | 3.7 | 40 | 17-JUN-20 |
| Nickel (Ni) | | 9.48 | 8.76 | | ug/g | 7.8 | 30 | 17-JUN-20 |
| Selenium (Se) | | <0.20 | <0.20 | RPD-NA | ug/g | N/A | 30 | 17-JUN-20 |
| Silver (Ag) | | <0.10 | <0.10 | RPD-NA | ug/g | N/A | 40 | 17-JUN-20 |
| Thallium (Tl) | | 0.091 | 0.077 | | ug/g | 16 | 30 | 17-JUN-20 |
| Uranium (U) | | 0.474 | 0.394 | | ug/g | 18 | 30 | 17-JUN-20 |
| Vanadium (V) | | 27.9 | 22.9 | | ug/g | 20 | 30 | 17-JUN-20 |
| Zinc (Zn) | | 33.3 | 30.0 | | ug/g | 10 | 30 | 17-JUN-20 |
| **WG3343578-4 LCS** | | | | | | | | |
| Antimony (Sb) | | | 106.0 | | % | | 80-120 | 17-JUN-20 |
| Arsenic (As) | | | 102.9 | | % | | 80-120 | 17-JUN-20 |
| Barium (Ba) | | | 103.1 | | % | | 80-120 | 17-JUN-20 |
| Beryllium (Be) | | | 98.7 | | % | | 80-120 | 17-JUN-20 |
| Boron (B) | | | 97.7 | | % | | 80-120 | 17-JUN-20 |
| Cadmium (Cd) | | | 95.2 | | % | | 80-120 | 17-JUN-20 |
| Chromium (Cr) | | | 100.0 | | % | | 80-120 | 17-JUN-20 |
| Cobalt (Co) | | | 98.5 | | % | | 80-120 | 17-JUN-20 |
| Copper (Cu) | | | 97.3 | | % | | 80-120 | 17-JUN-20 |
| Lead (Pb) | | | 97.3 | | % | | 80-120 | 17-JUN-20 |
| Molybdenum (Mo) | | | 100.9 | | % | | 80-120 | 17-JUN-20 |
| Nickel (Ni) | | | 98.4 | | % | | 80-120 | 17-JUN-20 |
| Selenium (Se) | | | 97.9 | | % | | 80-120 | 17-JUN-20 |
| Silver (Ag) | | | 102.3 | | % | | 80-120 | 17-JUN-20 |
| Thallium (Tl) | | | 99.5 | | % | | 80-120 | 17-JUN-20 |
| Uranium (U) | | | 92.1 | | % | | 80-120 | 17-JUN-20 |
| Vanadium (V) | | | 101.9 | | % | | 80-120 | 17-JUN-20 |
| Zinc (Zn) | | | 98.7 | | % | | 80-120 | 17-JUN-20 |
| **WG3343578-1 MB** | | | | | | | | |
| Antimony (Sb) | | | <0.10 | | mg/kg | | 0.1 | 17-JUN-20 |
| Arsenic (As) | | | <0.10 | | mg/kg | | 0.1 | 17-JUN-20 |
| Barium (Ba) | | | <0.50 | | mg/kg | | 0.5 | |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **MET-200.2-CCMS-WT** | **Soil** | | | | | | | |
| **Batch R5122359** | | | | | | | | |
| **WG3343578-1 MB** | | | | | | | | |
| Barium (Ba) | | | <0.50 | | mg/kg | | 0.5 | 17-JUN-20 |
| Beryllium (Be) | | | <0.10 | | mg/kg | | 0.1 | 17-JUN-20 |
| Boron (B) | | | <5.0 | | mg/kg | | 5 | 17-JUN-20 |
| Cadmium (Cd) | | | <0.020 | | mg/kg | | 0.02 | 17-JUN-20 |
| Chromium (Cr) | | | <0.50 | | mg/kg | | 0.5 | 17-JUN-20 |
| Cobalt (Co) | | | <0.10 | | mg/kg | | 0.1 | 17-JUN-20 |
| Copper (Cu) | | | <0.50 | | mg/kg | | 0.5 | 17-JUN-20 |
| Lead (Pb) | | | <0.50 | | mg/kg | | 0.5 | 17-JUN-20 |
| Molybdenum (Mo) | | | <0.10 | | mg/kg | | 0.1 | 17-JUN-20 |
| Nickel (Ni) | | | <0.50 | | mg/kg | | 0.5 | 17-JUN-20 |
| Selenium (Se) | | | <0.20 | | mg/kg | | 0.2 | 17-JUN-20 |
| Silver (Ag) | | | <0.10 | | mg/kg | | 0.1 | 17-JUN-20 |
| Thallium (Tl) | | | <0.050 | | mg/kg | | 0.05 | 17-JUN-20 |
| Uranium (U) | | | <0.050 | | mg/kg | | 0.05 | 17-JUN-20 |
| Vanadium (V) | | | <0.20 | | mg/kg | | 0.2 | 17-JUN-20 |
| Zinc (Zn) | | | <2.0 | | mg/kg | | 2 | 17-JUN-20 |
| **MOISTURE-WT** | **Soil** | | | | | | | |
| **Batch R5116355** | | | | | | | | |
| **WG3340669-3 DUP** | | **L2458756-1** | | | | | | |
| % Moisture | | 11.5 | 10.8 | | % | 6.7 | 20 | 13-JUN-20 |
| **WG3340669-2 LCS** | | | | | | | | |
| % Moisture | | | 97.8 | | % | | 90-110 | 13-JUN-20 |
| **WG3340669-1 MB** | | | | | | | | |
| % Moisture | | | <0.25 | | % | | 0.25 | 13-JUN-20 |
| **PAH-511-WT** | **Soil** | | | | | | | |
| **Batch R5119678** | | | | | | | | |
| **WG3341335-3 DUP** | | **WG3341335-5** | | | | | | |
| 1-Methylnaphthalene | | <0.030 | <0.030 | RPD-NA | ug/g | N/A | 40 | 16-JUN-20 |
| 2-Methylnaphthalene | | <0.030 | <0.030 | RPD-NA | ug/g | N/A | 40 | 16-JUN-20 |
| Acenaphthene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 16-JUN-20 |
| Acenaphthylene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 16-JUN-20 |
| Anthracene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 16-JUN-20 |
| Benzo(a)anthracene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 16-JUN-20 |
| Benzo(a)pyrene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 16-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAH-511-WT** | **Soil** | | | | | | | |
| **Batch R5119678** | | | | | | | | |
| **WG3341335-3 DUP** | | **WG3341335-5** | | | | | | |
| Benzo(b)fluoranthene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 16-JUN-20 |
| Benzo(g,h,i)perylene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 16-JUN-20 |
| Benzo(k)fluoranthene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 16-JUN-20 |
| Chrysene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 16-JUN-20 |
| Dibenzo(ah)anthracene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 16-JUN-20 |
| Fluoranthene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 16-JUN-20 |
| Fluorene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 16-JUN-20 |
| Indeno(1,2,3-cd)pyrene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 16-JUN-20 |
| Naphthalene | | <0.013 | <0.013 | RPD-NA | ug/g | N/A | 40 | 16-JUN-20 |
| Phenanthrene | | <0.046 | <0.046 | RPD-NA | ug/g | N/A | 40 | 16-JUN-20 |
| Pyrene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 16-JUN-20 |
| **WG3341335-2 LCS** | | | | | | | | |
| 1-Methylnaphthalene | | | 93.1 | | % | | 50-140 | 16-JUN-20 |
| 2-Methylnaphthalene | | | 89.1 | | % | | 50-140 | 16-JUN-20 |
| Acenaphthene | | | 94.7 | | % | | 50-140 | 16-JUN-20 |
| Acenaphthylene | | | 87.8 | | % | | 50-140 | 16-JUN-20 |
| Anthracene | | | 89.4 | | % | | 50-140 | 16-JUN-20 |
| Benzo(a)anthracene | | | 87.9 | | % | | 50-140 | 16-JUN-20 |
| Benzo(a)pyrene | | | 86.4 | | % | | 50-140 | 16-JUN-20 |
| Benzo(b)fluoranthene | | | 84.9 | | % | | 50-140 | 16-JUN-20 |
| Benzo(g,h,i)perylene | | | 85.7 | | % | | 50-140 | 16-JUN-20 |
| Benzo(k)fluoranthene | | | 93.1 | | % | | 50-140 | 16-JUN-20 |
| Chrysene | | | 101.3 | | % | | 50-140 | 16-JUN-20 |
| Dibenzo(ah)anthracene | | | 85.2 | | % | | 50-140 | 16-JUN-20 |
| Fluoranthene | | | 84.9 | | % | | 50-140 | 16-JUN-20 |
| Fluorene | | | 88.2 | | % | | 50-140 | 16-JUN-20 |
| Indeno(1,2,3-cd)pyrene | | | 85.0 | | % | | 50-140 | 16-JUN-20 |
| Naphthalene | | | 90.3 | | % | | 50-140 | 16-JUN-20 |
| Phenanthrene | | | 91.5 | | % | | 50-140 | 16-JUN-20 |
| Pyrene | | | 85.8 | | % | | 50-140 | 16-JUN-20 |
| **WG3341335-1 MB** | | | | | | | | |
| 1-Methylnaphthalene | | | <0.030 | | ug/g | | 0.03 | 16-JUN-20 |
| 2-Methylnaphthalene | | | <0.030 | | ug/g | | 0.03 | 16-JUN-20 |
| Acenaphthene | | | <0.050 | | ug/g | | 0.05 | |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAH-511-WT** | **Soil** | | | | | | | |
| **Batch R5119678** | | | | | | | | |
| **WG3341335-1 MB** | | | | | | | | |
| Acenaphthene | | | <0.050 | | ug/g | | 0.05 | 16-JUN-20 |
| Acenaphthylene | | | <0.050 | | ug/g | | 0.05 | 16-JUN-20 |
| Anthracene | | | <0.050 | | ug/g | | 0.05 | 16-JUN-20 |
| Benzo(a)anthracene | | | <0.050 | | ug/g | | 0.05 | 16-JUN-20 |
| Benzo(a)pyrene | | | <0.050 | | ug/g | | 0.05 | 16-JUN-20 |
| Benzo(b)fluoranthene | | | <0.050 | | ug/g | | 0.05 | 16-JUN-20 |
| Benzo(g,h,i)perylene | | | <0.050 | | ug/g | | 0.05 | 16-JUN-20 |
| Benzo(k)fluoranthene | | | <0.050 | | ug/g | | 0.05 | 16-JUN-20 |
| Chrysene | | | <0.050 | | ug/g | | 0.05 | 16-JUN-20 |
| Dibenzo(ah)anthracene | | | <0.050 | | ug/g | | 0.05 | 16-JUN-20 |
| Fluoranthene | | | <0.050 | | ug/g | | 0.05 | 16-JUN-20 |
| Fluorene | | | <0.050 | | ug/g | | 0.05 | 16-JUN-20 |
| Indeno(1,2,3-cd)pyrene | | | <0.050 | | ug/g | | 0.05 | 16-JUN-20 |
| Naphthalene | | | <0.013 | | ug/g | | 0.013 | 16-JUN-20 |
| Phenanthrene | | | <0.046 | | ug/g | | 0.046 | 16-JUN-20 |
| Pyrene | | | <0.050 | | ug/g | | 0.05 | 16-JUN-20 |
| Surrogate: 2-Fluorobiphenyl | | | 100.3 | | % | | 50-140 | 16-JUN-20 |
| Surrogate: p-Terphenyl d14 | | | 98.7 | | % | | 50-140 | 16-JUN-20 |
| **WG3341335-4 MS** | | **WG3341335-5** | | | | | | |
| 1-Methylnaphthalene | | | 113.9 | | % | | 50-140 | 16-JUN-20 |
| 2-Methylnaphthalene | | | 109.5 | | % | | 50-140 | 16-JUN-20 |
| Acenaphthene | | | 118.5 | | % | | 50-140 | 16-JUN-20 |
| Acenaphthylene | | | 110.5 | | % | | 50-140 | 16-JUN-20 |
| Anthracene | | | 109.9 | | % | | 50-140 | 16-JUN-20 |
| Benzo(a)anthracene | | | 115.9 | | % | | 50-140 | 16-JUN-20 |
| Benzo(a)pyrene | | | 111.2 | | % | | 50-140 | 16-JUN-20 |
| Benzo(b)fluoranthene | | | 107.9 | | % | | 50-140 | 16-JUN-20 |
| Benzo(g,h,i)perylene | | | 108.8 | | % | | 50-140 | 16-JUN-20 |
| Benzo(k)fluoranthene | | | 117.9 | | % | | 50-140 | 16-JUN-20 |
| Chrysene | | | 124.0 | | % | | 50-140 | 16-JUN-20 |
| Dibenzo(ah)anthracene | | | 110.4 | | % | | 50-140 | 16-JUN-20 |
| Fluoranthene | | | 111.2 | | % | | 50-140 | 16-JUN-20 |
| Fluorene | | | 114.2 | | % | | 50-140 | 16-JUN-20 |
| Indeno(1,2,3-cd)pyrene | | | 111.6 | | % | | 50-140 | 16-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAH-511-WT** | **Soil** | | | | | | | |
| **Batch R5119678** | | | | | | | | |
| **WG3341335-4 MS** | | **WG3341335-5** | | | | | | |
| Naphthalene | | | 108.2 | | % | | 50-140 | 16-JUN-20 |
| Phenanthrene | | | 110.7 | | % | | 50-140 | 16-JUN-20 |
| Pyrene | | | 112.6 | | % | | 50-140 | 16-JUN-20 |
| **PH-WT** | **Soil** | | | | | | | |
| **Batch R5117828** | | | | | | | | |
| **WG3341018-1 DUP** | | **L2458332-8** | | | | | | |
| pH | | 7.68 | 7.65 | J | pH units | 0.03 | 0.3 | 15-JUN-20 |
| **WG3342071-1 LCS** | | | | | | | | |
| pH | | | 6.99 | | pH units | | 6.9-7.1 | 15-JUN-20 |
| **SAR-R511-WT** | **Soil** | | | | | | | |
| **Batch R5123578** | | | | | | | | |
| **WG3343641-4 DUP** | | **WG3343641-3** | | | | | | |
| Calcium (Ca) | | 14.3 | 13.7 | | mg/L | 4.3 | 30 | 17-JUN-20 |
| Sodium (Na) | | 23.7 | 23.2 | | mg/L | 2.1 | 30 | 17-JUN-20 |
| Magnesium (Mg) | | 3.19 | 3.03 | | mg/L | 5.1 | 30 | 17-JUN-20 |
| **WG3343641-2 IRM** | | **WT SAR4** | | | | | | |
| Calcium (Ca) | | | 84.8 | | % | | 70-130 | 17-JUN-20 |
| Sodium (Na) | | | 98.7 | | % | | 70-130 | 17-JUN-20 |
| Magnesium (Mg) | | | 91.5 | | % | | 70-130 | 17-JUN-20 |
| **WG3343641-5 LCS** | | | | | | | | |
| Calcium (Ca) | | | 94.3 | | % | | 80-120 | 17-JUN-20 |
| Sodium (Na) | | | 94.0 | | % | | 80-120 | 17-JUN-20 |
| Magnesium (Mg) | | | 91.2 | | % | | 80-120 | 17-JUN-20 |
| **WG3343641-1 MB** | | | | | | | | |
| Calcium (Ca) | | | <0.50 | | mg/L | | 0.5 | 17-JUN-20 |
| Sodium (Na) | | | <0.50 | | mg/L | | 0.5 | 17-JUN-20 |
| Magnesium (Mg) | | | <0.50 | | mg/L | | 0.5 | 17-JUN-20 |
| **VOC-511-HS-WT** | **Soil** | | | | | | | |
| **Batch R5116589** | | | | | | | | |
| **WG3339632-4 DUP** | | **WG3339632-3** | | | | | | |
| 1,1,1,2-Tetrachloroethane | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 12-JUN-20 |
| 1,1,2,2-Tetrachloroethane | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 12-JUN-20 |
| 1,1,1-Trichloroethane | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 12-JUN-20 |
| 1,1,2-Trichloroethane | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 12-JUN-20 |
| 1,1-Dichloroethane | | <0.050 | <0.050 | | | | | |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **VOC-511-HS-WT** | **Soil** | | | | | | | |
| **Batch R5116589** | | | | | | | | |
| **WG3339632-4 DUP** | | **WG3339632-3** | | | | | | |
| 1,1-Dichloroethane | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 12-JUN-20 |
| 1,1-Dichloroethylene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 12-JUN-20 |
| 1,2-Dibromoethane | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 12-JUN-20 |
| 1,2-Dichlorobenzene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 12-JUN-20 |
| 1,2-Dichloroethane | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 12-JUN-20 |
| 1,2-Dichloropropane | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 12-JUN-20 |
| 1,3-Dichlorobenzene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 12-JUN-20 |
| 1,4-Dichlorobenzene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 12-JUN-20 |
| Acetone | | <0.50 | <0.50 | RPD-NA | ug/g | N/A | 40 | 12-JUN-20 |
| Benzene | | <0.0068 | <0.0068 | RPD-NA | ug/g | N/A | 40 | 12-JUN-20 |
| Bromodichloromethane | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 12-JUN-20 |
| Bromoform | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 12-JUN-20 |
| Bromomethane | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 12-JUN-20 |
| Carbon tetrachloride | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 12-JUN-20 |
| Chlorobenzene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 12-JUN-20 |
| Chloroform | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 12-JUN-20 |
| cis-1,2-Dichloroethylene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 12-JUN-20 |
| cis-1,3-Dichloropropene | | <0.030 | <0.030 | RPD-NA | ug/g | N/A | 40 | 12-JUN-20 |
| Dibromochloromethane | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 12-JUN-20 |
| Dichlorodifluoromethane | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 12-JUN-20 |
| Ethylbenzene | | <0.018 | <0.018 | RPD-NA | ug/g | N/A | 40 | 12-JUN-20 |
| n-Hexane | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 12-JUN-20 |
| Methylene Chloride | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 12-JUN-20 |
| MTBE | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 12-JUN-20 |
| m+p-Xylenes | | <0.030 | <0.030 | RPD-NA | ug/g | N/A | 40 | 12-JUN-20 |
| Methyl Ethyl Ketone | | <0.50 | <0.50 | RPD-NA | ug/g | N/A | 40 | 12-JUN-20 |
| Methyl Isobutyl Ketone | | <0.50 | <0.50 | RPD-NA | ug/g | N/A | 40 | 12-JUN-20 |
| o-Xylene | | <0.020 | <0.020 | RPD-NA | ug/g | N/A | 40 | 12-JUN-20 |
| Styrene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 12-JUN-20 |
| Tetrachloroethylene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 12-JUN-20 |
| Toluene | | <0.080 | <0.080 | RPD-NA | ug/g | N/A | 40 | 12-JUN-20 |
| trans-1,2-Dichloroethylene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 12-JUN-20 |
| trans-1,3-Dichloropropene | | <0.030 | <0.030 | | ug/g | | | 12-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **VOC-511-HS-WT** | **Soil** | | | | | | | |
| **Batch R5116589** | | | | | | | | |
| **WG3339632-4 DUP** | | **WG3339632-3** | | | | | | |
| trans-1,3-Dichloropropene | | <0.030 | <0.030 | RPD-NA | ug/g | N/A | 40 | 12-JUN-20 |
| Trichloroethylene | | <0.010 | <0.010 | RPD-NA | ug/g | N/A | 40 | 12-JUN-20 |
| Trichlorofluoromethane | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 12-JUN-20 |
| Vinyl chloride | | <0.020 | <0.020 | RPD-NA | ug/g | N/A | 40 | 12-JUN-20 |
| **WG3339632-2 LCS** | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | | | 105.9 | | % | | 60-130 | 12-JUN-20 |
| 1,1,2,2-Tetrachloroethane | | | 108.6 | | % | | 60-130 | 12-JUN-20 |
| 1,1,1-Trichloroethane | | | 112.2 | | % | | 60-130 | 12-JUN-20 |
| 1,1,2-Trichloroethane | | | 97.9 | | % | | 60-130 | 12-JUN-20 |
| 1,1-Dichloroethane | | | 114.6 | | % | | 60-130 | 12-JUN-20 |
| 1,1-Dichloroethylene | | | 109.6 | | % | | 60-130 | 12-JUN-20 |
| 1,2-Dibromoethane | | | 108.9 | | % | | 70-130 | 12-JUN-20 |
| 1,2-Dichlorobenzene | | | 107.2 | | % | | 70-130 | 12-JUN-20 |
| 1,2-Dichloroethane | | | 118.7 | | % | | 60-130 | 12-JUN-20 |
| 1,2-Dichloropropane | | | 114.6 | | % | | 70-130 | 12-JUN-20 |
| 1,3-Dichlorobenzene | | | 105.3 | | % | | 70-130 | 12-JUN-20 |
| 1,4-Dichlorobenzene | | | 109.3 | | % | | 70-130 | 12-JUN-20 |
| Acetone | | | 121.0 | | % | | 60-140 | 12-JUN-20 |
| Benzene | | | 113.5 | | % | | 70-130 | 12-JUN-20 |
| Bromodichloromethane | | | 131.9 | | % | | 50-140 | 12-JUN-20 |
| Bromoform | | | 115.7 | | % | | 70-130 | 12-JUN-20 |
| Bromomethane | | | 144.2 | MES | % | | 50-140 | 12-JUN-20 |
| Carbon tetrachloride | | | 117.1 | | % | | 70-130 | 12-JUN-20 |
| Chlorobenzene | | | 109.0 | | % | | 70-130 | 12-JUN-20 |
| Chloroform | | | 120.4 | | % | | 70-130 | 12-JUN-20 |
| cis-1,2-Dichloroethylene | | | 102.7 | | % | | 70-130 | 12-JUN-20 |
| cis-1,3-Dichloropropene | | | 129.1 | | % | | 70-130 | 12-JUN-20 |
| Dibromochloromethane | | | 108.7 | | % | | 60-130 | 12-JUN-20 |
| Dichlorodifluoromethane | | | 72.4 | | % | | 50-140 | 12-JUN-20 |
| Ethylbenzene | | | 94.9 | | % | | 70-130 | 12-JUN-20 |
| n-Hexane | | | 102.9 | | % | | 70-130 | 12-JUN-20 |
| Methylene Chloride | | | 124.9 | | % | | 70-130 | 12-JUN-20 |
| MTBE | | | 109.5 | | % | | 70-130 | 12-JUN-20 |
| m+p-Xylenes | | | 102.5 | | | | 70-130 | |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **VOC-511-HS-WT** | **Soil** | | | | | | | |
| **Batch R5116589** | | | | | | | | |
| **WG3339632-2 LCS** | | | | | | | | |
| m+p-Xylenes | | | 102.5 | | % | | 70-130 | 12-JUN-20 |
| Methyl Ethyl Ketone | | | 122.1 | | % | | 60-140 | 12-JUN-20 |
| Methyl Isobutyl Ketone | | | 101.5 | | % | | 60-140 | 12-JUN-20 |
| o-Xylene | | | 102.5 | | % | | 70-130 | 12-JUN-20 |
| Styrene | | | 93.2 | | % | | 70-130 | 12-JUN-20 |
| Tetrachloroethylene | | | 103.7 | | % | | 60-130 | 12-JUN-20 |
| Toluene | | | 99.0 | | % | | 70-130 | 12-JUN-20 |
| trans-1,2-Dichloroethylene | | | 112.7 | | % | | 60-130 | 12-JUN-20 |
| trans-1,3-Dichloropropene | | | 125.4 | | % | | 70-130 | 12-JUN-20 |
| Trichloroethylene | | | 113.5 | | % | | 60-130 | 12-JUN-20 |
| Trichlorofluoromethane | | | 103.2 | | % | | 50-140 | 12-JUN-20 |
| Vinyl chloride | | | 107.6 | | % | | 60-140 | 12-JUN-20 |
| **WG3339632-1 MB** | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | | | <0.050 | | ug/g | | 0.05 | 12-JUN-20 |
| 1,1,2,2-Tetrachloroethane | | | <0.050 | | ug/g | | 0.05 | 12-JUN-20 |
| 1,1,1-Trichloroethane | | | <0.050 | | ug/g | | 0.05 | 12-JUN-20 |
| 1,1,2-Trichloroethane | | | <0.050 | | ug/g | | 0.05 | 12-JUN-20 |
| 1,1-Dichloroethane | | | <0.050 | | ug/g | | 0.05 | 12-JUN-20 |
| 1,1-Dichloroethylene | | | <0.050 | | ug/g | | 0.05 | 12-JUN-20 |
| 1,2-Dibromoethane | | | <0.050 | | ug/g | | 0.05 | 12-JUN-20 |
| 1,2-Dichlorobenzene | | | <0.050 | | ug/g | | 0.05 | 12-JUN-20 |
| 1,2-Dichloroethane | | | <0.050 | | ug/g | | 0.05 | 12-JUN-20 |
| 1,2-Dichloropropane | | | <0.050 | | ug/g | | 0.05 | 12-JUN-20 |
| 1,3-Dichlorobenzene | | | <0.050 | | ug/g | | 0.05 | 12-JUN-20 |
| 1,4-Dichlorobenzene | | | <0.050 | | ug/g | | 0.05 | 12-JUN-20 |
| Acetone | | | <0.50 | | ug/g | | 0.5 | 12-JUN-20 |
| Benzene | | | <0.0068 | | ug/g | | 0.0068 | 12-JUN-20 |
| Bromodichloromethane | | | <0.050 | | ug/g | | 0.05 | 12-JUN-20 |
| Bromoform | | | <0.050 | | ug/g | | 0.05 | 12-JUN-20 |
| Bromomethane | | | <0.050 | | ug/g | | 0.05 | 12-JUN-20 |
| Carbon tetrachloride | | | <0.050 | | ug/g | | 0.05 | 12-JUN-20 |
| Chlorobenzene | | | <0.050 | | ug/g | | 0.05 | 12-JUN-20 |
| Chloroform | | | <0.050 | | ug/g | | 0.05 | 12-JUN-20 |
| cis-1,2-Dichloroethylene | | | <0.050 | | ug/g | | 0.05 | 12-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **VOC-511-HS-WT** | **Soil** | | | | | | | |
| **Batch R5116589** | | | | | | | | |
| **WG3339632-1 MB** | | | | | | | | |
| cis-1,3-Dichloropropene | | | <0.030 | | ug/g | | 0.03 | 12-JUN-20 |
| Dibromochloromethane | | | <0.050 | | ug/g | | 0.05 | 12-JUN-20 |
| Dichlorodifluoromethane | | | <0.050 | | ug/g | | 0.05 | 12-JUN-20 |
| Ethylbenzene | | | <0.018 | | ug/g | | 0.018 | 12-JUN-20 |
| n-Hexane | | | <0.050 | | ug/g | | 0.05 | 12-JUN-20 |
| Methylene Chloride | | | <0.050 | | ug/g | | 0.05 | 12-JUN-20 |
| MTBE | | | <0.050 | | ug/g | | 0.05 | 12-JUN-20 |
| m+p-Xylenes | | | <0.030 | | ug/g | | 0.03 | 12-JUN-20 |
| Methyl Ethyl Ketone | | | <0.50 | | ug/g | | 0.5 | 12-JUN-20 |
| Methyl Isobutyl Ketone | | | <0.50 | | ug/g | | 0.5 | 12-JUN-20 |
| o-Xylene | | | <0.020 | | ug/g | | 0.02 | 12-JUN-20 |
| Styrene | | | <0.050 | | ug/g | | 0.05 | 12-JUN-20 |
| Tetrachloroethylene | | | <0.050 | | ug/g | | 0.05 | 12-JUN-20 |
| Toluene | | | <0.080 | | ug/g | | 0.08 | 12-JUN-20 |
| trans-1,2-Dichloroethylene | | | <0.050 | | ug/g | | 0.05 | 12-JUN-20 |
| trans-1,3-Dichloropropene | | | <0.030 | | ug/g | | 0.03 | 12-JUN-20 |
| Trichloroethylene | | | <0.010 | | ug/g | | 0.01 | 12-JUN-20 |
| Trichlorofluoromethane | | | <0.050 | | ug/g | | 0.05 | 12-JUN-20 |
| Vinyl chloride | | | <0.020 | | ug/g | | 0.02 | 12-JUN-20 |
| Surrogate: 1,4-Difluorobenzene | | | 108.2 | | % | | 50-140 | 12-JUN-20 |
| Surrogate: 4-Bromofluorobenzene | | | 81.1 | | % | | 50-140 | 12-JUN-20 |
| **WG3339632-5 MS** | | **WG3339632-3** | | | | | | |
| 1,1,1,2-Tetrachloroethane | | | 104.3 | | % | | 50-140 | 12-JUN-20 |
| 1,1,2,2-Tetrachloroethane | | | 106.0 | | % | | 50-140 | 12-JUN-20 |
| 1,1,1-Trichloroethane | | | 113.7 | | % | | 50-140 | 12-JUN-20 |
| 1,1,2-Trichloroethane | | | 104.3 | | % | | 50-140 | 12-JUN-20 |
| 1,1-Dichloroethane | | | 133.6 | | % | | 50-140 | 12-JUN-20 |
| 1,1-Dichloroethylene | | | 100.1 | | % | | 50-140 | 12-JUN-20 |
| 1,2-Dibromoethane | | | 101.7 | | % | | 50-140 | 12-JUN-20 |
| 1,2-Dichlorobenzene | | | 100.1 | | % | | 50-140 | 12-JUN-20 |
| 1,2-Dichloroethane | | | 107.2 | | % | | 50-140 | 12-JUN-20 |
| 1,2-Dichloropropane | | | 105.5 | | % | | 50-140 | 12-JUN-20 |
| 1,3-Dichlorobenzene | | | 92.9 | | % | | 50-140 | 12-JUN-20 |
| 1,4-Dichlorobenzene | | | 90.9 | | % | | 50-140 | 12-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **VOC-511-HS-WT** | **Soil** | | | | | | | |
| **Batch R5116589** | | | | | | | | |
| **WG3339632-5 MS** | | **WG3339632-3** | | | | | | |
| Acetone | | | 132.3 | | % | | 50-140 | 12-JUN-20 |
| Benzene | | | 103.4 | | % | | 50-140 | 12-JUN-20 |
| Bromodichloromethane | | | 115.6 | | % | | 50-140 | 12-JUN-20 |
| Bromoform | | | 104.7 | | % | | 50-140 | 12-JUN-20 |
| Bromomethane | | | 107.2 | | % | | 50-140 | 12-JUN-20 |
| Carbon tetrachloride | | | 109.5 | | % | | 50-140 | 12-JUN-20 |
| Chlorobenzene | | | 98.5 | | % | | 50-140 | 12-JUN-20 |
| Chloroform | | | 112.6 | | % | | 50-140 | 12-JUN-20 |
| cis-1,2-Dichloroethylene | | | 102.6 | | % | | 50-140 | 12-JUN-20 |
| cis-1,3-Dichloropropene | | | 70.3 | | % | | 50-140 | 12-JUN-20 |
| Dibromochloromethane | | | 102.1 | | % | | 50-140 | 12-JUN-20 |
| Dichlorodifluoromethane | | | 70.9 | | % | | 50-140 | 12-JUN-20 |
| Ethylbenzene | | | 94.0 | | % | | 50-140 | 12-JUN-20 |
| n-Hexane | | | 100.6 | | % | | 50-140 | 12-JUN-20 |
| Methylene Chloride | | | 109.0 | | % | | 50-140 | 12-JUN-20 |
| MTBE | | | 102.5 | | % | | 50-140 | 12-JUN-20 |
| m+p-Xylenes | | | 94.9 | | % | | 50-140 | 12-JUN-20 |
| Methyl Ethyl Ketone | | | 87.4 | | % | | 50-140 | 12-JUN-20 |
| Methyl Isobutyl Ketone | | | 90.2 | | % | | 50-140 | 12-JUN-20 |
| o-Xylene | | | 99.4 | | % | | 50-140 | 12-JUN-20 |
| Styrene | | | 83.0 | | % | | 50-140 | 12-JUN-20 |
| Tetrachloroethylene | | | 90.8 | | % | | 50-140 | 12-JUN-20 |
| Toluene | | | 97.7 | | % | | 50-140 | 12-JUN-20 |
| trans-1,2-Dichloroethylene | | | 90.3 | | % | | 50-140 | 12-JUN-20 |
| trans-1,3-Dichloropropene | | | 69.2 | | % | | 50-140 | 12-JUN-20 |
| Trichloroethylene | | | 94.2 | | % | | 50-140 | 12-JUN-20 |
| Trichlorofluoromethane | | | 99.6 | | % | | 50-140 | 12-JUN-20 |
| Vinyl chloride | | | 97.5 | | % | | 50-140 | 12-JUN-20 |

# Quality Control Report

Workorder: L2458709 Report Date: 18-JUN-20

Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Valyn Bernard



**Legend:**

| | |
|---|---|
| Limit | ALS Control Limit (Data Quality Objectives) |
| DUP | Duplicate |
| RPD | Relative Percent Difference |
| N/A | Not Available |
| LCS | Laboratory Control Sample |
| SRM | Standard Reference Material |
| MS | Matrix Spike |
| MSD | Matrix Spike Duplicate |
| ADE | Average Desorption Efficiency |
| MB | Method Blank |
| IRM | Internal Reference Material |
| CRM | Certified Reference Material |
| CCV | Continuing Calibration Verification |
| CVS | Calibration Verification Standard |
| LCSD | Laboratory Control Sample Duplicate |

**Sample Parameter Qualifier Definitions:**

| Qualifier | Description |
|---|---|
| J | Duplicate results and limits are expressed in terms of absolute difference. |
| MES | Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME). |
| RPD-NA | Relative Percent Difference Not Available due to result(s) being less than detection limit. |

**Hold Time Exceedances:**

All test results reported with this submission were conducted within ALS recommended hold times.

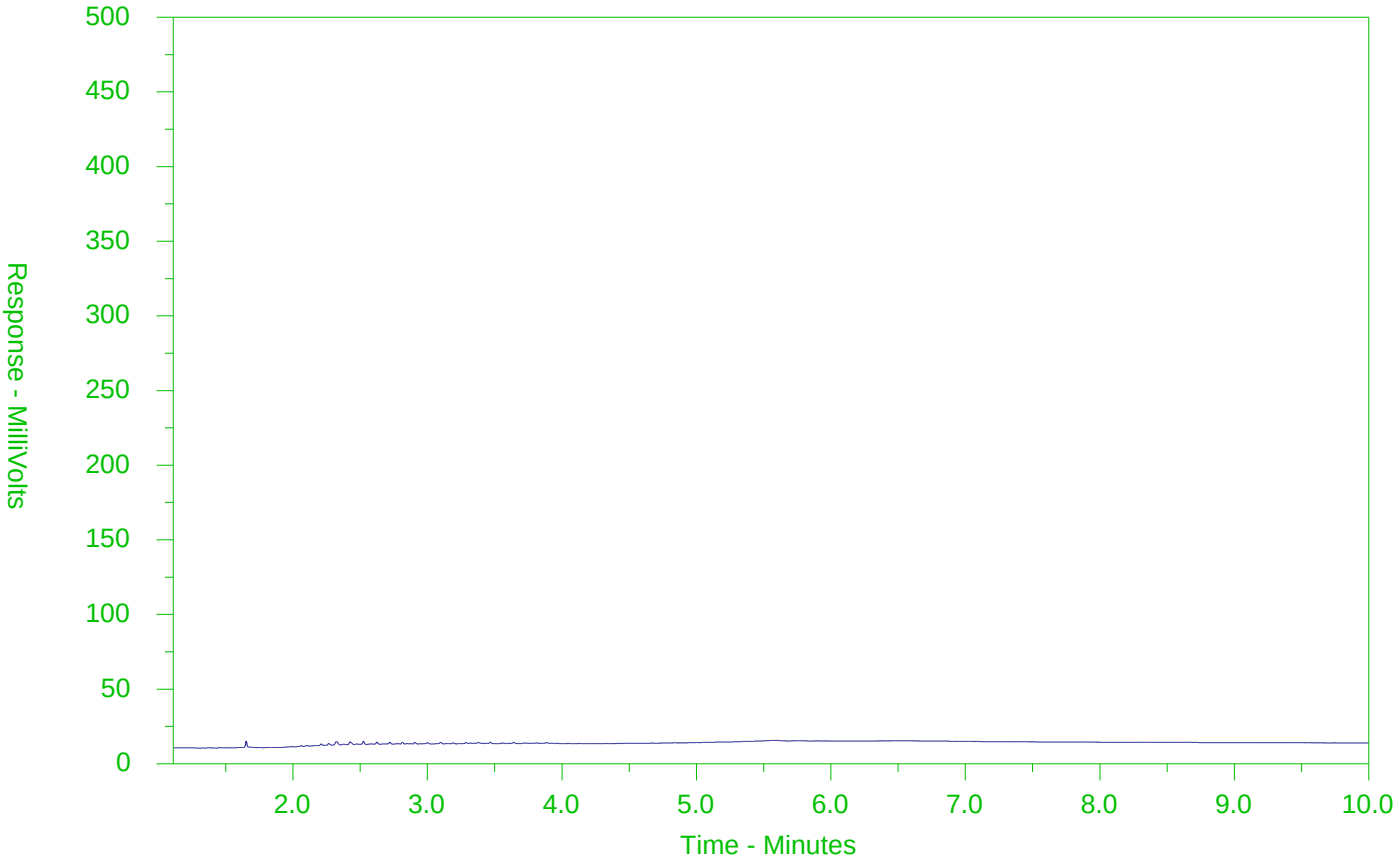
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

# CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2458709-3
Client Sample ID: BH3-SS14




| ←F2→ | ←F3→ | ←F4→ | |
|---|---|---|---|
| nC10 | nC16 | nC34 | nC50 |
| 174°C | 287°C | 481°C | 575°C |
| 346°F | 549°F | 898°F | 1067°F |
| Gasoline → | | ← Motor Oils/Lube Oils/Grease → | |
| ← Diesel/Jet Fuels → | | | |

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.

# Chain of Custody (COC) / Analyti Request Form

L2458709-COFC

COC Number: 17 -

Page of

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

| Report To | Contact and company name below will appear on the final report |
|---|---|
| Company: | WSP Canada Group Limited |
| Contact: | Valyn Bernard |
| Phone: | 1-289-835-2546 |
| | Company address below will appear on the final report |
| Street: | 610 Chartwell Rd |
| City/Province: | Oakville |
| Postal Code: | L6J 4A5 |
| **Invoice To** | Same as Report To ☐ YES ☐ NO |
| | Copy of Invoice with Report ☐ YES ☐ NO |
| Company: | WSP Canada Group Limited |
| Contact: | ca-accountspayable@wsp.com |

**Report Format / Distribution**

Select Report Format: ☑ PDF ☑ EXCEL ☐ EDD (DIGITAL)
Quality Control (QC) Report with Report ☑ YES ☐ NO
☑ Compare Results to Criteria on Report - provide details below if box checked
Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax: Derek.Stewart@wsp.com
Email 2: Valyn.Bernard@wsp.com
Email 3: Anne.Pattison@wsp.com

**Invoice Distribution**

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax: ca-accountspayable@wsp.com
Email 2: Valyn.Bernard@wsp.com

**Project Information**

ALS Account # / Quote #:
Job #: 19M-01888-00-CONTAM
PO / AFE:
LSD:

**Oil and Gas Required Fields (client use)**

AFE/Cost Center: PO#
Major/Minor Code: Routing Code:
Requisitioner:
Location:

**ALS Lab Work Order # (lab uae only):** L2458709

ALS Contact: Sampler:

**el Below - Contact your AM to confirm all E&P TATs (surcharges may apply)**

Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days): 4 day [P4-20%] ☐ | 3 day [P3-25%] ☐ | 2 day [P2-50%] ☐

EMERGENCY: 1 Busineas day [E - 100%] ☐ | Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply) ] ☐

Date and Tima Required for all E&P TATs: dd-mmm-yy hh:mm

For tasts that can not be performed according to the service lavel salacted, you will ba contacted.

**Analysis Request**

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

| ALS Sampla # (lab usa only) | Sample Identification and/or Coordinates (This description will appear on the report) | Date (dd-mmm-yy) | Time (hh:mm) | Sample Type | NUMBER OF CONTAINERS | Metals and Inorganics | PAHs | PHCs | VOCs | BTEX only | | TCLP PAHs | TCLP VOCs | TCLP Metals and Inorganics | TCLP PCBS | Grain Size | | | SAMPLES ON HOLD | SUSPECTED HAZARD (see Special Instructions) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | BH3-SS2 | June 09, 2020 | 12:00 PM | Soil | | R | R | | | | | | | | | | | | | |
| | BH3-SS3 | | | | | R | R | | R | | | | | | | | | | ✓ | |
| | BH3-SS14 | | | | | | | R | R | | | | | | | | | | | |
| | BH3-SS15 | | | | | | | R | R | | | [redacted] | | | | | | | ✓ | |
| | BH3-TCLP | | 6:00 PM | | | | | | | | | R | R | R | R | | | | ✓ | |

**Drinking Water (DW) Samples[1] (client use)**

Ara samples takan from a Regulatad DW System? ☐ YES ☐ NO
Ara samplaa for human consumption/ use? ☐ YES ☐ NO

**Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)**

[Combined] - Ontario R153-T1-SOIL+R347/90-TCLP

**SAMPLE CONDITION AS RECEIVED (lab use only)**

Frozen ☐ SIF Observations Yes ☐ No ☐
Ice Packs ☒ Ice Cubes ☐ Custody seal intact Yes ☐ No ☐
Cooling Initiated ☐

| INITIAL COOLER TEMPERATURES °C | | | | FINAL COOLER TEMPERATURES °C | | | |
|---|---|---|---|---|---|---|---|
| 6.8 | | | | 7.8 | | | |

**SHIPMENT RELEASE (client use)**

Released by: Madlool Alsabak Date: June 09, 2020 Time: 8:00 PM

**INITIAL SHIPMENT RECEPTION (lab use only)**

Received by: Date: 10/6/20 Time: 8:00

**FINAL SHIPMENT RECEPTION (lab use only)**

Received by: Date: June 10/20 Time: 15:15

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

JUNE 2018 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form.**

WSP Canada Group Limited
ATTN: Valyn Bernard
100 Commerce Valley Drive West
Thornhill ON L3T 0A1

Date Received: 10-JUN-20
Report Date: 18-JUN-20 08:57 (MT)
Version: FINAL

Client Phone: 905-882-1100

# Certificate of Analysis

## Lab Work Order #: L2458699

Project P.O. #: NOT SUBMITTED
Job Reference: 19M-01886-00-CONTAM
C of C Numbers:
Legal Site Desc:

Emily Hansen
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

## Summary of Guideline Exceedances

| ALS ID | Client ID | Grouping | Analyte | Result | Guideline Limit | Unit |
|---|---|---|---|---|---|---|
| **Guideline** | | | | | | |
| **Ontario Regulation 153/04 - April 15, 2011 Standards - T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use** | | | | | | |
| L2458699-1 | BH5-SS1 | Metals | Antimony (Sb) | 2.3 | 1.3 | ug/g |

# ANALYTICAL REPORT

## Physical Tests - SOIL

| | | Guide Limits | | | |
|---|---|---|---|---|---|
| **Lab ID** | | | | L2458699-1 | L2458699-3 |
| **Sample Date** | | | | 09-JUN-20 | 09-JUN-20 |
| **Sample ID** | | | | BH5-SS1 | BH5-SS6 |
| **Analyte** | **Unit** | **#1** | **#2** | | |
| Conductivity | mS/cm | 0.57 | - | 0.163 | |
| % Moisture | % | - | - | 10.9 | 8.22 |
| pH | pH units | - | - | 7.52 | |

**Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

# ANALYTICAL REPORT

## Cyanides - SOIL

| | | | | |
|---|---|---|---|---|
| | | | **Lab ID** | L2458699-1 |
| | | | **Sample Date** | 09-JUN-20 |
| | | | **Sample ID** | BH5-SS1 |
| | | **Guide Limits** | | |
| **Analyte** | **Unit** | **#1** | **#2** | |
| Cyanide, Weak Acid Diss | ug/g | 0.051 | - | <0.050 |

**Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

# ANALYTICAL REPORT

## Saturated Paste Extractables - SOIL

| | | | | |
|---|---|---|---|---|
| | | | **Lab ID** | L2458699-1 |
| | | | **Sample Date** | 09-JUN-20 |
| | | | **Sample ID** | BH5-SS1 |
| **Analyte** | **Unit** | **Guide Limits #1** | **#2** | |
| SAR | SAR | 2.4 | - | 0.11 |
| Calcium (Ca) | mg/L | - | - | 27.2 |
| Magnesium (Mg) | mg/L | - | - | 1.28 |
| Sodium (Na) | mg/L | - | - | 2.23 |

**Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

# ANALYTICAL REPORT

## Metals - SOIL

| | | | | Lab ID | L2458699-1 |
|---|---|---|---|---|---|
| | | | | Sample Date | 09-JUN-20 |
| | | | | Sample ID | BH5-SS1 |
| | | Guide Limits | | | |
| Analyte | Unit | #1 | #2 | | |
| Antimony (Sb) | ug/g | 1.3 | - | 2.3 | |
| Arsenic (As) | ug/g | 18 | - | 3.3 | |
| Barium (Ba) | ug/g | 220 | - | 71.4 | |
| Beryllium (Be) | ug/g | 2.5 | - | <0.50 | |
| Boron (B) | ug/g | 36 | - | 6.2 | |
| Boron (B), Hot Water Ext. | ug/g | 36 | - | 0.30 | |
| Cadmium (Cd) | ug/g | 1.2 | - | <0.50 | |
| Chromium (Cr) | ug/g | 70 | - | 16.0 | |
| Cobalt (Co) | ug/g | 21 | - | 5.1 | |
| Copper (Cu) | ug/g | 92 | - | 10.8 | |
| Lead (Pb) | ug/g | 120 | - | 61.1 | |
| Mercury (Hg) | ug/g | 0.27 | - | 0.0216 | |
| Molybdenum (Mo) | ug/g | 2 | - | <1.0 | |
| Nickel (Ni) | ug/g | 82 | - | 11.6 | |
| Selenium (Se) | ug/g | 1.5 | - | <1.0 | |
| Silver (Ag) | ug/g | 0.5 | - | <0.20 | |
| Thallium (Tl) | ug/g | 1 | - | <0.50 | |
| Uranium (U) | ug/g | 2.5 | - | <1.0 | |
| Vanadium (V) | ug/g | 86 | - | 28.6 | |
| Zinc (Zn) | ug/g | 290 | - | 41.7 | |

**Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

# ANALYTICAL REPORT

## Speciated Metals - SOIL

| | | | | |
|---|---|---|---|---|
| | | | **Lab ID** | L2458699-1 |
| | | | **Sample Date** | 09-JUN-20 |
| | | | **Sample ID** | BH5-SS1 |
| | | **Guide Limits** | | |
| **Analyte** | **Unit** | **#1** | **#2** | |
| Chromium, Hexavalent | ug/g | 0.66 | - | 0.31 |

**Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

# ANALYTICAL REPORT

## Volatile Organic Compounds - SOIL

| | | | | |
|---|---|---|---|---|
| | | | **Lab ID** | L2458699-3 |
| | | | **Sample Date** | 09-JUN-20 |
| | | | **Sample ID** | BH5-SS6 |
| | | **Guide Limits** | | |
| **Analyte** | **Unit** | **#1** | **#2** | |
| Benzene | ug/g | 0.02 | - | <0.0068 |
| Ethylbenzene | ug/g | 0.05 | - | <0.018 |
| Toluene | ug/g | 0.2 | - | <0.080 |
| o-Xylene | ug/g | - | - | <0.020 |
| m+p-Xylenes | ug/g | - | - | <0.030 |
| Xylenes (Total) | ug/g | 0.05 | - | <0.050 |
| Surrogate: 4-Bromofluorobenzene | % | - | - | 91.5 |
| Surrogate: 1,4-Difluorobenzene | % | - | - | 125.4 |

**Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

# ANALYTICAL REPORT

## Hydrocarbons - SOIL

| | | Guide Limits | | | |
|---|---|---|---|---|---|
| | | | | Lab ID | L2458699-3 |
| | | | | Sample Date | 09-JUN-20 |
| | | | | Sample ID | BH5-SS6 |
| **Analyte** | **Unit** | **#1** | **#2** | | |
| F1 (C6-C10) | ug/g | 25 | - | <5.0 | |
| F1-BTEX | ug/g | 25 | - | <5.0 | |
| F2 (C10-C16) | ug/g | 10 | - | <10 | |
| F3 (C16-C34) | ug/g | 240 | - | <50 | |
| F4 (C34-C50) | ug/g | 120 | - | <50 | |
| Total Hydrocarbons (C6-C50) | ug/g | - | - | <72 | |
| Chrom. to baseline at nC50 | | - | - | YES | |
| Surrogate: 2-Bromobenzotrifluoride | % | - | - | 77.1 | |
| Surrogate: 3,4-Dichlorotoluene | % | - | - | 83.0 | |

**Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

# Reference Information

**Methods Listed (if applicable):**

| ALS Test Code | Matrix | Test Description | Method Reference** |
|---|---|---|---|
| **B-HWS-R511-WT** | Soil | Boron-HWE-O.Reg 153/04 (July 2011) | HW EXTR, EPA 6010B |

A dried solid sample is extracted with calcium chloride, the sample undergoes a heating process. After cooling the sample is filtered and analyzed by ICP/OES.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

| | | | |
|---|---|---|---|
| **BTX-511-HS-WT** | Soil | BTEX-O.Reg 153/04 (July 2011) | SW846 8260 |

BTX is determined by extracting a soil or sediment sample as received with methanol, then analyzing by headspace-GC/MS.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

| | | | |
|---|---|---|---|
| **CN-WAD-R511-WT** | Soil | Cyanide (WAD)-O.Reg 153/04 (July 2011) | MOE 3015/APHA 4500CN I-WAD |

The sample is extracted with a strong base for 16 hours, and then filtered. The filtrate is then distilled where the cyanide is converted to cyanogen chloride by reacting with chloramine-T, the cyanogen chloride then reacts with a combination of barbituric acid and isonicotinic acid to form a highly colored complex.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

| | | | |
|---|---|---|---|
| **CR-CR6-IC-WT** | Soil | Hexavalent Chromium in Soil | SW846 3060A/7199 |

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 7199, published by the United States Environmental Protection Agency (EPA). The procedure involves analysis for chromium (VI) by ion chromatography using diphenylcarbazide in a sulphuric acid solution.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

| | | | |
|---|---|---|---|
| **EC-WT** | Soil | Conductivity (EC) | MOEE E3138 |

A representative subsample is tumbled with de-ionized (DI) water. The ratio of water to soil is 2:1 v/w. After tumbling the sample is then analyzed by a conductivity meter.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

| | | | |
|---|---|---|---|
| **F1-F4-511-CALC-WT** | Soil | F1-F4 Hydrocarbon Calculated Parameters | CCME CWS-PHC, Pub #1310, Dec 2001-S |

Analytical methods used for analysis of CCME Petroleum Hydrocarbons have been validated and comply with the Reference Method for the CWS PHC.

Hydrocarbon results are expressed on a dry weight basis.

In cases where results for both F4 and F4G are reported, the greater of the two results must be used in any application of the CWS PHC guidelines and the gravimetric heavy hydrocarbons cannot be added to the C6 to C50 hydrocarbons.
In samples where BTEX and F1 were analyzed , F1-BTEX represents a value where the sum of Benzene, Toluene, Ethylbenzene and total Xylenes has been subtracted from F1.

In samples where PAHs, F2 and F3 were analyzed, F2-Naphth represents the result where Naphthalene has been subtracted from F2. F3-PAH represents a result where the sum of Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene, Fluoranthene, Indeno(1,2,3-cd)pyrene, Phenanthrene, and Pyrene has been subtracted from F3.

Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:
1. All extraction and analysis holding times were met.
2. Instrument performance showing response factors for C6 and C10 within 30% of the response factor for toluene.
3. Linearity of gasoline response within 15% throughout the calibration range.

# Reference Information

**Methods Listed (if applicable):**

| ALS Test Code | Matrix | Test Description | Method Reference** |
|---|---|---|---|

Unless otherwise qualified, the following quality control criteria have been met for the F2-F4 hydrocarbon ranges:
1. All extraction and analysis holding times were met.
2. Instrument performance showing C10, C16 and C34 response factors within 10% of their average.
3. Instrument performance showing the C50 response factor within 30% of the average of the C10, C16 and C34 response factors.
4. Linearity of diesel or motor oil response within 15% throughout the calibration range.

**F1-HS-511-WT** Soil F1-O.Reg 153/04 (July 2011) E3398/CCME TIER 1-HS

Fraction F1 is determined by extracting a soil or sediment sample as received with methanol, then analyzing by headspace-GC/FID.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

**F2-F4-511-WT** Soil F2-F4-O.Reg 153/04 (July 2011) CCME Tier 1

Petroleum Hydrocarbons (F2-F4 fractions) are extracted from soil with 1:1 hexane:acetone using a rotary extractor. Extracts are treated with silica gel to remove polar organic interferences. F2, F3, & F4 are analyzed by GC-FID. F4G-sg is analyzed gravimetrically.

Notes:
1. F2 (C10-C16): Sum of all hydrocarbons that elute between nC10 and nC16.
2. F3 (C16-C34): Sum of all hydrocarbons that elute between nC16 and nC34.
3. F4 (C34-C50): Sum of all hydrocarbons that elute between nC34 and nC50.
4. F4G: Gravimetric Heavy Hydrocarbons
5. F4G-sg: Gravimetric Heavy Hydrocarbons (F4G) after silica gel treatment.
6. Where both F4 (C34-C50) and F4G-sg are reported for a sample, the larger of the two values is used for comparison against the relevant CCME guideline for F4.
7. F4G-sg cannot be added to the C6 to C50 hydrocarbon results to obtain an estimate of total extractable hydrocarbons.
8. This method is validated for use.
9. Data from analysis of validation and quality control samples is available upon request.
10. Reported results are expressed as milligrams per dry kilogram, unless otherwise indicated.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

**HG-200.2-CVAA-WT** Soil Mercury in Soil by CVAAS EPA 200.2/1631E (mod)

Soil samples are digested with nitric and hydrochloric acids, followed by analysis by CVAAS.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

**MET-200.2-CCMS-WT** Soil Metals in Soil by CRC ICPMS EPA 200.2/6020B (mod)

Soil/sediment is dried, disaggregated, and sieved (2 mm). For tests intended to support Ontario regulations, the <2mm fraction is ground to pass through a 0.355 mm sieve. Strong Acid Leachable Metals in the <2mm fraction are solubilized by heated digestion with nitric and hydrochloric acids. Instrumental analysis is by Collision / Reaction Cell ICPMS.

Limitations: This method is intended to liberate environmentally available metals. Silicate minerals are not solubilized. Some metals may be only partially recovered (matrix dependent), including Al, Ba, Be, Cr, S, Sr, Ti, Tl, V, W, and Zr. Elemental Sulfur may be poorly recovered by this method. Volatile forms of sulfur (e.g. sulfide, H2S) may be excluded if lost during sampling, storage, or digestion.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

**MOISTURE-WT** Soil % Moisture CCME PHC in Soil - Tier 1 (mod)

**PH-WT** Soil pH MOEE E3137A

# Reference Information

**Methods Listed (if applicable):**

| ALS Test Code | Matrix | Test Description | Method Reference** |
|---|---|---|---|

A minimum 10g portion of the sample is extracted with 20mL of 0.01M calcium chloride solution by shaking for at least 30 minutes. The aqueous layer is separated from the soil and then analyzed using a pH meter and electrode.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

| | | | |
|---|---|---|---|
| **SAR-R511-WT** | Soil | SAR-O.Reg 153/04 (July 2011) | SW846 6010C |

A dried, disaggregated solid sample is extracted with deionized water, the aqueous extract is separated from the solid, acidified and then analyzed using a ICP/OES. The concentrations of Na, Ca and Mg are reported as per CALA requirements for calculated parameters. These individual parameters are not for comparison to any guideline.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

| | | | |
|---|---|---|---|
| **XYLENES-SUM-CALC-WT** | Soil | Sum of Xylene Isomer Concentrations | CALCULATION |

Total xylenes represents the sum of o-xylene and m&p-xylene.

**ALS test methods may incorporate modifications from specified reference methods to improve performance.

Chain of Custody Numbers:

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

| Laboratory Definition Code | Laboratory Location |
|---|---|
| WT | ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA |

**GLOSSARY OF REPORT TERMS**

*Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.*
*mg/kg - milligrams per kilogram based on dry weight of sample*
*mg/kg wwt - milligrams per kilogram based on wet weight of sample*
*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight*
*mg/L - unit of concentration based on volume, parts per million.*
*< - Less than.*
*D.L. - The reporting limit.*
*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*
*UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.*
*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*

*Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to, fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information. Guideline limits are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.*

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **B-HWS-R511-WT** | **Soil** | | | | | | | |
| **Batch R5123023** | | | | | | | | |
| **WG3343634-4 DUP** | | **L2458701-5** | | | | | | |
| Boron (B), Hot Water Ext. | | 0.12 | 0.12 | | ug/g | 0.2 | 30 | 17-JUN-20 |
| **WG3343634-2 IRM** | | **WT SAR4** | | | | | | |
| Boron (B), Hot Water Ext. | | | 102.0 | | % | | 70-130 | 17-JUN-20 |
| **WG3343634-3 LCS** | | | | | | | | |
| Boron (B), Hot Water Ext. | | | 106.0 | | % | | 70-130 | 17-JUN-20 |
| **WG3343634-1 MB** | | | | | | | | |
| Boron (B), Hot Water Ext. | | | <0.10 | | ug/g | | 0.1 | 17-JUN-20 |
| **BTX-511-HS-WT** | **Soil** | | | | | | | |
| **Batch R5116589** | | | | | | | | |
| **WG3339632-4 DUP** | | **WG3339632-3** | | | | | | |
| Benzene | | <0.0068 | <0.0068 | RPD-NA | ug/g | N/A | 40 | 12-JUN-20 |
| Ethylbenzene | | <0.018 | <0.018 | RPD-NA | ug/g | N/A | 40 | 12-JUN-20 |
| m+p-Xylenes | | <0.030 | <0.030 | RPD-NA | ug/g | N/A | 40 | 12-JUN-20 |
| o-Xylene | | <0.020 | <0.020 | RPD-NA | ug/g | N/A | 40 | 12-JUN-20 |
| Toluene | | <0.080 | <0.080 | RPD-NA | ug/g | N/A | 40 | 12-JUN-20 |
| **WG3339632-2 LCS** | | | | | | | | |
| Benzene | | | 113.5 | | % | | 70-130 | 12-JUN-20 |
| Ethylbenzene | | | 94.9 | | % | | 70-130 | 12-JUN-20 |
| m+p-Xylenes | | | 102.5 | | % | | 70-130 | 12-JUN-20 |
| o-Xylene | | | 102.5 | | % | | 70-130 | 12-JUN-20 |
| Toluene | | | 99.0 | | % | | 70-130 | 12-JUN-20 |
| **WG3339632-1 MB** | | | | | | | | |
| Benzene | | | <0.0068 | | ug/g | | 0.0068 | 12-JUN-20 |
| Ethylbenzene | | | <0.018 | | ug/g | | 0.018 | 12-JUN-20 |
| m+p-Xylenes | | | <0.030 | | ug/g | | 0.03 | 12-JUN-20 |
| o-Xylene | | | <0.020 | | ug/g | | 0.02 | 12-JUN-20 |
| Toluene | | | <0.080 | | ug/g | | 0.08 | 12-JUN-20 |
| Surrogate: 1,4-Difluorobenzene | | | 108.2 | | % | | 50-140 | 12-JUN-20 |
| Surrogate: 4-Bromofluorobenzene | | | 81.1 | | % | | 50-140 | 12-JUN-20 |
| **CN-WAD-R511-WT** | **Soil** | | | | | | | |
| **Batch R5117769** | | | | | | | | |
| **WG3341429-3 DUP** | | **L2458342-3** | | | | | | |
| Cyanide, Weak Acid Diss | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 35 | 15-JUN-20 |
| **WG3341429-2 LCS** | | | | | | | | |
| Cyanide, Weak Acid Diss | | | 99.4 | | % | | 80-120 | 15-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **CN-WAD-R511-WT** | **Soil** | | | | | | | |
| **Batch R5117769** | | | | | | | | |
| **WG3341429-1 MB** | | | | | | | | |
| Cyanide, Weak Acid Diss | | | <0.050 | | ug/g | | 0.05 | 15-JUN-20 |
| **WG3341429-4 MS** | | **L2458342-3** | | | | | | |
| Cyanide, Weak Acid Diss | | | 105.8 | | % | | 70-130 | 15-JUN-20 |
| **CR-CR6-IC-WT** | **Soil** | | | | | | | |
| **Batch R5121117** | | | | | | | | |
| **WG3341911-4 CRM** | | **WT-SQC012** | | | | | | |
| Chromium, Hexavalent | | | 94.5 | | % | | 70-130 | 16-JUN-20 |
| **WG3341911-3 DUP** | | **L2459070-4** | | | | | | |
| Chromium, Hexavalent | | <0.20 | <0.20 | RPD-NA | ug/g | N/A | 35 | 16-JUN-20 |
| **WG3341911-2 LCS** | | | | | | | | |
| Chromium, Hexavalent | | | 102.2 | | % | | 80-120 | 16-JUN-20 |
| **WG3341911-1 MB** | | | | | | | | |
| Chromium, Hexavalent | | | <0.20 | | ug/g | | 0.2 | 16-JUN-20 |
| **EC-WT** | **Soil** | | | | | | | |
| **Batch R5122598** | | | | | | | | |
| **WG3343641-4 DUP** | | **WG3343641-3** | | | | | | |
| Conductivity | | 0.250 | 0.256 | | mS/cm | 2.4 | 20 | 17-JUN-20 |
| **WG3343641-2 IRM** | | **WT SAR4** | | | | | | |
| Conductivity | | | 100.6 | | % | | 70-130 | 17-JUN-20 |
| **WG3343838-1 LCS** | | | | | | | | |
| Conductivity | | | 101.0 | | % | | 90-110 | 17-JUN-20 |
| **WG3343641-1 MB** | | | | | | | | |
| Conductivity | | | <0.0040 | | mS/cm | | 0.004 | 17-JUN-20 |
| **F1-HS-511-WT** | **Soil** | | | | | | | |
| **Batch R5116589** | | | | | | | | |
| **WG3339632-4 DUP** | | **WG3339632-3** | | | | | | |
| F1 (C6-C10) | | <5.0 | <5.0 | RPD-NA | ug/g | N/A | 30 | 12-JUN-20 |
| **WG3339632-2 LCS** | | | | | | | | |
| F1 (C6-C10) | | | 105.2 | | % | | 80-120 | 12-JUN-20 |
| **WG3339632-1 MB** | | | | | | | | |
| F1 (C6-C10) | | | <5.0 | | ug/g | | 5 | 12-JUN-20 |
| Surrogate: 3,4-Dichlorotoluene | | | 88.9 | | % | | 60-140 | 12-JUN-20 |
| **WG3339632-6 MS** | | **L2458889-1** | | | | | | |
| F1 (C6-C10) | | | 106.5 | | % | | 60-140 | 12-JUN-20 |
| **F2-F4-511-WT** | **Soil** | | | | | | | |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **F2-F4-511-WT** | **Soil** | | | | | | | |
| **Batch R5117986** | | | | | | | | |
| **WG3341130-3 DUP** | | **WG3341130-5** | | | | | | |
| F2 (C10-C16) | | <10 | <10 | RPD-NA | ug/g | N/A | 30 | 15-JUN-20 |
| F3 (C16-C34) | | <50 | <50 | RPD-NA | ug/g | N/A | 30 | 15-JUN-20 |
| F4 (C34-C50) | | <50 | <50 | RPD-NA | ug/g | N/A | 30 | 15-JUN-20 |
| **WG3341130-2 LCS** | | | | | | | | |
| F2 (C10-C16) | | | 95.8 | | % | | 80-120 | 15-JUN-20 |
| F3 (C16-C34) | | | 97.7 | | % | | 80-120 | 15-JUN-20 |
| F4 (C34-C50) | | | 101.1 | | % | | 80-120 | 15-JUN-20 |
| **WG3341130-1 MB** | | | | | | | | |
| F2 (C10-C16) | | | <10 | | ug/g | | 10 | 15-JUN-20 |
| F3 (C16-C34) | | | <50 | | ug/g | | 50 | 15-JUN-20 |
| F4 (C34-C50) | | | <50 | | ug/g | | 50 | 15-JUN-20 |
| Surrogate: 2-Bromobenzotrifluoride | | | 79.3 | | % | | 60-140 | 15-JUN-20 |
| **WG3341130-4 MS** | | **WG3341130-5** | | | | | | |
| F2 (C10-C16) | | | 98.1 | | % | | 60-140 | 15-JUN-20 |
| F3 (C16-C34) | | | 100.6 | | % | | 60-140 | 15-JUN-20 |
| F4 (C34-C50) | | | 105.3 | | % | | 60-140 | 15-JUN-20 |
| **HG-200.2-CVAA-WT** | **Soil** | | | | | | | |
| **Batch R5122132** | | | | | | | | |
| **WG3343578-2 CRM** | | **WT-SS-1** | | | | | | |
| Mercury (Hg) | | | 107.7 | | % | | 70-130 | 17-JUN-20 |
| **WG3343578-6 DUP** | | **WG3343578-5** | | | | | | |
| Mercury (Hg) | | 0.0170 | 0.0186 | | ug/g | 9.3 | 40 | 17-JUN-20 |
| **WG3343578-3 LCS** | | | | | | | | |
| Mercury (Hg) | | | 107.0 | | % | | 80-120 | 17-JUN-20 |
| **WG3343578-1 MB** | | | | | | | | |
| Mercury (Hg) | | | <0.0050 | | mg/kg | | 0.005 | 17-JUN-20 |
| **MET-200.2-CCMS-WT** | **Soil** | | | | | | | |
| **Batch R5122359** | | | | | | | | |
| **WG3343578-2 CRM** | | **WT-SS-1** | | | | | | |
| Antimony (Sb) | | | 103.9 | | % | | 70-130 | 17-JUN-20 |
| Arsenic (As) | | | 121.6 | | % | | 70-130 | 17-JUN-20 |
| Beryllium (Be) | | | 106.4 | | % | | 70-130 | 17-JUN-20 |
| Boron (B) | | | 93.6 | | % | | 70-130 | 17-JUN-20 |
| Cadmium (Cd) | | | 102.5 | | % | | 70-130 | 17-JUN-20 |
| Chromium (Cr) | | | 95.6 | | % | | 70-130 | 17-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **MET-200.2-CCMS-WT** | **Soil** | | | | | | | |
| **Batch R5122359** | | | | | | | | |
| **WG3343578-2 CRM** | | **WT-SS-1** | | | | | | |
| Cobalt (Co) | | | 107.5 | | % | | 70-130 | 17-JUN-20 |
| Copper (Cu) | | | 104.0 | | % | | 70-130 | 17-JUN-20 |
| Lead (Pb) | | | 105.2 | | % | | 70-130 | 17-JUN-20 |
| Molybdenum (Mo) | | | 102.0 | | % | | 70-130 | 17-JUN-20 |
| Nickel (Ni) | | | 109.8 | | % | | 70-130 | 17-JUN-20 |
| Selenium (Se) | | | 89.3 | | % | | 70-130 | 17-JUN-20 |
| Silver (Ag) | | | 103.0 | | % | | 70-130 | 17-JUN-20 |
| Thallium (Tl) | | | 83.1 | | % | | 70-130 | 17-JUN-20 |
| Vanadium (V) | | | 111.7 | | % | | 70-130 | 17-JUN-20 |
| Zinc (Zn) | | | 105.6 | | % | | 70-130 | 17-JUN-20 |
| **WG3343578-6 DUP** | | **WG3343578-5** | | | | | | |
| Antimony (Sb) | | 0.11 | <0.10 | RPD-NA | ug/g | N/A | 30 | 17-JUN-20 |
| Arsenic (As) | | 2.16 | 1.98 | | ug/g | 8.6 | 30 | 17-JUN-20 |
| Barium (Ba) | | 49.0 | 44.2 | | ug/g | 10 | 40 | 17-JUN-20 |
| Beryllium (Be) | | 0.35 | 0.29 | | ug/g | 18 | 30 | 17-JUN-20 |
| Boron (B) | | 6.7 | <5.0 | RPD-NA | ug/g | N/A | 30 | 17-JUN-20 |
| Cadmium (Cd) | | 0.098 | 0.090 | | ug/g | 8.8 | 30 | 17-JUN-20 |
| Chromium (Cr) | | 14.6 | 12.0 | | ug/g | 19 | 30 | 17-JUN-20 |
| Cobalt (Co) | | 4.87 | 4.06 | | ug/g | 18 | 30 | 17-JUN-20 |
| Copper (Cu) | | 9.08 | 8.53 | | ug/g | 6.2 | 30 | 17-JUN-20 |
| Lead (Pb) | | 12.4 | 11.6 | | ug/g | 6.5 | 40 | 17-JUN-20 |
| Molybdenum (Mo) | | 0.30 | 0.29 | | ug/g | 3.7 | 40 | 17-JUN-20 |
| Nickel (Ni) | | 9.48 | 8.76 | | ug/g | 7.8 | 30 | 17-JUN-20 |
| Selenium (Se) | | <0.20 | <0.20 | RPD-NA | ug/g | N/A | 30 | 17-JUN-20 |
| Silver (Ag) | | <0.10 | <0.10 | RPD-NA | ug/g | N/A | 40 | 17-JUN-20 |
| Thallium (Tl) | | 0.091 | 0.077 | | ug/g | 16 | 30 | 17-JUN-20 |
| Uranium (U) | | 0.474 | 0.394 | | ug/g | 18 | 30 | 17-JUN-20 |
| Vanadium (V) | | 27.9 | 22.9 | | ug/g | 20 | 30 | 17-JUN-20 |
| Zinc (Zn) | | 33.3 | 30.0 | | ug/g | 10 | 30 | 17-JUN-20 |
| **WG3343578-4 LCS** | | | | | | | | |
| Antimony (Sb) | | | 106.0 | | % | | 80-120 | 17-JUN-20 |
| Arsenic (As) | | | 102.9 | | % | | 80-120 | 17-JUN-20 |
| Barium (Ba) | | | 103.1 | | % | | 80-120 | 17-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **MET-200.2-CCMS-WT** | **Soil** | | | | | | | |
| **Batch R5122359** | | | | | | | | |
| **WG3343578-4 LCS** | | | | | | | | |
| Beryllium (Be) | | | 98.7 | | % | | 80-120 | 17-JUN-20 |
| Boron (B) | | | 97.7 | | % | | 80-120 | 17-JUN-20 |
| Cadmium (Cd) | | | 95.2 | | % | | 80-120 | 17-JUN-20 |
| Chromium (Cr) | | | 100.0 | | % | | 80-120 | 17-JUN-20 |
| Cobalt (Co) | | | 98.5 | | % | | 80-120 | 17-JUN-20 |
| Copper (Cu) | | | 97.3 | | % | | 80-120 | 17-JUN-20 |
| Lead (Pb) | | | 97.3 | | % | | 80-120 | 17-JUN-20 |
| Molybdenum (Mo) | | | 100.9 | | % | | 80-120 | 17-JUN-20 |
| Nickel (Ni) | | | 98.4 | | % | | 80-120 | 17-JUN-20 |
| Selenium (Se) | | | 97.9 | | % | | 80-120 | 17-JUN-20 |
| Silver (Ag) | | | 102.3 | | % | | 80-120 | 17-JUN-20 |
| Thallium (Tl) | | | 99.5 | | % | | 80-120 | 17-JUN-20 |
| Uranium (U) | | | 92.1 | | % | | 80-120 | 17-JUN-20 |
| Vanadium (V) | | | 101.9 | | % | | 80-120 | 17-JUN-20 |
| Zinc (Zn) | | | 98.7 | | % | | 80-120 | 17-JUN-20 |
| **WG3343578-1 MB** | | | | | | | | |
| Antimony (Sb) | | | <0.10 | | mg/kg | | 0.1 | 17-JUN-20 |
| Arsenic (As) | | | <0.10 | | mg/kg | | 0.1 | 17-JUN-20 |
| Barium (Ba) | | | <0.50 | | mg/kg | | 0.5 | 17-JUN-20 |
| Beryllium (Be) | | | <0.10 | | mg/kg | | 0.1 | 17-JUN-20 |
| Boron (B) | | | <5.0 | | mg/kg | | 5 | 17-JUN-20 |
| Cadmium (Cd) | | | <0.020 | | mg/kg | | 0.02 | 17-JUN-20 |
| Chromium (Cr) | | | <0.50 | | mg/kg | | 0.5 | 17-JUN-20 |
| Cobalt (Co) | | | <0.10 | | mg/kg | | 0.1 | 17-JUN-20 |
| Copper (Cu) | | | <0.50 | | mg/kg | | 0.5 | 17-JUN-20 |
| Lead (Pb) | | | <0.50 | | mg/kg | | 0.5 | 17-JUN-20 |
| Molybdenum (Mo) | | | <0.10 | | mg/kg | | 0.1 | 17-JUN-20 |
| Nickel (Ni) | | | <0.50 | | mg/kg | | 0.5 | 17-JUN-20 |
| Selenium (Se) | | | <0.20 | | mg/kg | | 0.2 | 17-JUN-20 |
| Silver (Ag) | | | <0.10 | | mg/kg | | 0.1 | 17-JUN-20 |
| Thallium (Tl) | | | <0.050 | | mg/kg | | 0.05 | 17-JUN-20 |
| Uranium (U) | | | <0.050 | | mg/kg | | 0.05 | 17-JUN-20 |
| Vanadium (V) | | | <0.20 | | mg/kg | | 0.2 | 17-JUN-20 |
| Zinc (Zn) | | | <2.0 | | mg/kg | | 2 | 17-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **MOISTURE-WT** | **Soil** | | | | | | | |
| **Batch R5116355** | | | | | | | | |
| **WG3340669-3 DUP** | | **L2458756-1** | | | | | | |
| % Moisture | | 11.5 | 10.8 | | % | 6.7 | 20 | 13-JUN-20 |
| **WG3340669-2 LCS** | | | | | | | | |
| % Moisture | | | 97.8 | | % | | 90-110 | 13-JUN-20 |
| **WG3340669-1 MB** | | | | | | | | |
| % Moisture | | | <0.25 | | % | | 0.25 | 13-JUN-20 |
| **PH-WT** | **Soil** | | | | | | | |
| **Batch R5117828** | | | | | | | | |
| **WG3341018-1 DUP** | | **L2458332-8** | | | | | | |
| pH | | 7.68 | 7.65 | J | pH units | 0.03 | 0.3 | 15-JUN-20 |
| **WG3342071-1 LCS** | | | | | | | | |
| pH | | | 6.99 | | pH units | | 6.9-7.1 | 15-JUN-20 |
| **SAR-R511-WT** | **Soil** | | | | | | | |
| **Batch R5123578** | | | | | | | | |
| **WG3343641-4 DUP** | | **WG3343641-3** | | | | | | |
| Calcium (Ca) | | 14.3 | 13.7 | | mg/L | 4.3 | 30 | 17-JUN-20 |
| Sodium (Na) | | 23.7 | 23.2 | | mg/L | 2.1 | 30 | 17-JUN-20 |
| Magnesium (Mg) | | 3.19 | 3.03 | | mg/L | 5.1 | 30 | 17-JUN-20 |
| **WG3343641-2 IRM** | | **WT SAR4** | | | | | | |
| Calcium (Ca) | | | 84.8 | | % | | 70-130 | 17-JUN-20 |
| Sodium (Na) | | | 98.7 | | % | | 70-130 | 17-JUN-20 |
| Magnesium (Mg) | | | 91.5 | | % | | 70-130 | 17-JUN-20 |
| **WG3343641-5 LCS** | | | | | | | | |
| Calcium (Ca) | | | 94.3 | | % | | 80-120 | 17-JUN-20 |
| Sodium (Na) | | | 94.0 | | % | | 80-120 | 17-JUN-20 |
| Magnesium (Mg) | | | 91.2 | | % | | 80-120 | 17-JUN-20 |
| **WG3343641-1 MB** | | | | | | | | |
| Calcium (Ca) | | | <0.50 | | mg/L | | 0.5 | 17-JUN-20 |
| Sodium (Na) | | | <0.50 | | mg/L | | 0.5 | 17-JUN-20 |
| Magnesium (Mg) | | | <0.50 | | mg/L | | 0.5 | 17-JUN-20 |

# Quality Control Report

Workorder: L2458699 Report Date: 18-JUN-20

Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Valyn Bernard



**Legend:**

| | |
|---|---|
| Limit | ALS Control Limit (Data Quality Objectives) |
| DUP | Duplicate |
| RPD | Relative Percent Difference |
| N/A | Not Available |
| LCS | Laboratory Control Sample |
| SRM | Standard Reference Material |
| MS | Matrix Spike |
| MSD | Matrix Spike Duplicate |
| ADE | Average Desorption Efficiency |
| MB | Method Blank |
| IRM | Internal Reference Material |
| CRM | Certified Reference Material |
| CCV | Continuing Calibration Verification |
| CVS | Calibration Verification Standard |
| LCSD | Laboratory Control Sample Duplicate |

**Sample Parameter Qualifier Definitions:**

| Qualifier | Description |
|---|---|
| J | Duplicate results and limits are expressed in terms of absolute difference. |
| RPD-NA | Relative Percent Difference Not Available due to result(s) being less than detection limit. |

**Hold Time Exceedances:**

All test results reported with this submission were conducted within ALS recommended hold times.

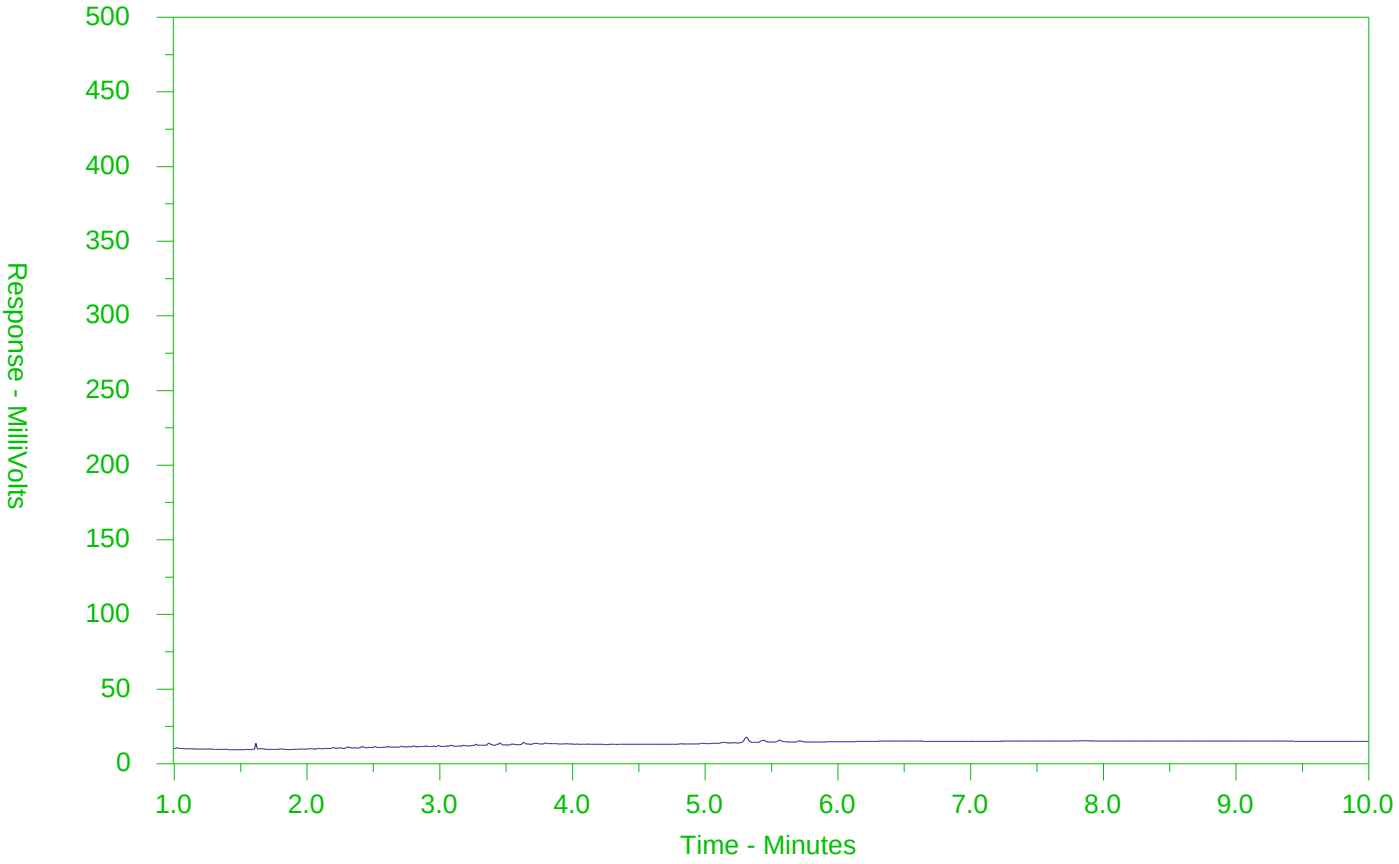
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

# CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2458699-3
Client Sample ID: BH5-SS6




| ←F2→ | ←F3→ | ←F4→ | |
|---|---|---|---|
| nC10 | nC16 | nC34 | nC50 |
| 174°C | 287°C | 481°C | 575°C |
| 346°F | 549°F | 898°F | 1067°F |
| Gasoline → | ← Motor Oils/Lube Oils/Grease → | | |
| ← Diesel/Jet Fuels → | | | |

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.

# Chain of Custody (COC) / Analytical Request Form

L2458699-COFC

COC Number: 17 -

Page of

**Canada Toll Free: 1 800 668 9878**

www.alsglobal.com

| Report To | Contact and company name below will appear on the final report |
|---|---|
| Company: | WSP Canada Group Limited |
| Contact: | Valyn Bernard |
| Phone: | 1-289-835-2546 |
| | Company address below will appear on the final report |
| Street: | 610 Chartwell Rd |
| City/Province: | Oakville |
| Postal Code: | L6J 4A5 |
| **Invoice To** | Same as Report To ☐ YES ☐ NO |
| | Copy of Invoice with Report ☐ YES ☐ NO |
| Company: | WSP Canada Group Limited |
| Contact: | ca-accountspayable@wsp.com |

**Report Format / Distribution**

Select Report Format: ☑ PDF ☑ EXCEL ☐ EDD (DIGITAL)
Quality Control (QC) Report with Report ☑ YES ☐ NO
☑ Compare Results to Criteria on Report - provide details below if box checked
Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax: Derek.Stewart@wsp.com
Email 2: Valyn.Bernard@wsp.com
Email 3: Anne.Pattison@wsp.com

**Invoice Distribution**

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax: ca-accountspayable@wsp.com
Email 2: Valyn.Bernard@wsp.com

**Project Information**

| | |
|---|---|
| ALS Account # / Quote #: | |
| Job #: | 19M-01888-00-CONTAM |
| PO / AFE: | |
| LSD: | |

**Oil and Gas Required Fields (client use)**

| | |
|---|---|
| AFE/Cost Center: | PO# |
| Major/Minor Code: | Routing Code: |
| Requisitioner: | |
| Location: | |

**ALS Lab Work Order # (lab use only):** L2458699 JUN 10 8

**ALS Contact:** **Sampler:**

**Contact your AM to confirm all E&P TATs (surcharges may apply)**

Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days): 4 day [P4-20%] ☐ | 3 day [P3-25%] ☐ | 2 day [P2-50%] ☐

EMERGENCY: 1 Business day [E - 100%] ☐ | Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] ☐

**Date and Time Required for all E&P TATs:** dd-mmm-yy hh:mm

For tests that can not be performed according to the service level selected, you will be contacted.

**Analysis Request**

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

| ALS Sample # (lab use only) | Sample Identification and/or Coordinates (This description will appear on the report) | Date (dd-mmm-yy) | Time (hh:mm) | Sample Type | NUMBER OF CONTAINERS | Metals and Inorganics | PAHs | PHCs | VOCs | BTEX only | TCLP PAHs | TCLP VOCs | TCLP Metals and Inorganics | TCLP PCBS | Grain Size | SAMPLES ON HOLD | SUSPECTED HAZARD (see Special Instructions) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | P | P | | | | | | | | | | |
| | BHS-SS1 | Jun 9, 2020 | 2PM | Soil | | R | R | | | | | | | | | ✓ | |
| | BHS-SS2 | " | " | " | | R | R | | | | | | | | | ✓ | |
| | BHS-SS6 | " | ✓ | ✓ | | | | R | | R | | | | | | | |
| | BHS-SS7 | | | | | | | R | | R | | | | | | ✓ | |
| | BHS-TCLP | | | | | | | | | | R | R | R | R | | ✓ | |

**Drinking Water (DW) Samples[1] (client use)**

Are samples taken from a Regulated DW System? ☐ YES ☐ NO

Are samples for human consumption/ use? ☐ YES ☐ NO

**Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)**

[Combined] - Ontario R153-T1-SOIL+R347/90-TCLP

**SAMPLE CONDITION AS RECEIVED (lab use only)**

Frozen ☐ SIF Observations Yes ☐ No ☐

Ice Packs ☒ Ice Cubes ☐ Custody seal intact Yes ☐ No ☐

Cooling Initiated ☐

| INITIAL COOLER TEMPERATURES °C | | | | FINAL COOLER TEMPERATURES °C | | | |
|---|---|---|---|---|---|---|---|
| 9.6 | | | | 5.9 | | | |

**SHIPMENT RELEASE (client use)**

Released by: Madlool Alsabak | Date: June 09, 2020 | Time: 8:30PM

**INITIAL SHIPMENT RECEPTION (lab use only)**

Received by: | Date: 10/6/20 | Time: 8:00

**FINAL SHIPMENT RECEPTION (lab use only)**

Received by: | Date: 6/10/20 | Time: 15:5

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

JUNE 2018 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

WSP Canada Group Limited
ATTN: Valyn Bernard
100 Commerce Valley Drive West
Thornhill ON L3T 0A1

Date Received: 09-JUN-20
Report Date: 16-JUN-20 16:12 (MT)
Version: FINAL

Client Phone: 905-882-1100

# Certificate of Analysis

## Lab Work Order #: L2458047

Project P.O. #: NOT SUBMITTED
Job Reference: 19M-01888-00-CONTAM
C of C Numbers:
Legal Site Desc:

Emily Hansen
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

# ANALYTICAL REPORT

## Summary of Guideline Exceedances

| Guideline ALS ID | Client ID | Grouping | Analyte | Result | Guideline Limit | Unit |
|---|---|---|---|---|---|---|

**Ontario Regulation 153/04 - April 15, 2011 Standards - T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

(No parameter exceedances)

# ANALYTICAL REPORT

## Physical Tests - SOIL

| Analyte | Unit | Guide Limits #1 | Guide Limits #2 | Lab ID / Sample Date / Sample ID: L2458047-1 BH4-SS1 | L2458047-2 BH4-SS3 | L2458047-3 BH4-SS6 |
|---|---|---|---|---|---|---|
| Conductivity | mS/cm | 0.57 | - | 0.143 | | |
| % Moisture | % | - | - | 9.16 | 8.16 | 6.57 |
| pH | pH units | - | - | 7.51 | | |

**Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

# ANALYTICAL REPORT

## Cyanides - SOIL

| | | Lab ID | L2458047-1 |
|---|---|---|---|
| | | Sample Date | |
| | | Sample ID | BH4-SS1 |
| | | Guide Limits | |
| Analyte | Unit | #1 | #2 | |
| Cyanide, Weak Acid Diss | ug/g | 0.051 | - | <0.050 |

**Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

# ANALYTICAL REPORT

## Saturated Paste Extractables - SOIL

| Analyte | Unit | Guide Limits #1 | Guide Limits #2 | Lab ID: L2458047-1<br>Sample Date:<br>Sample ID: BH4-SS1 |
|---|---|---|---|---|
| SAR | SAR | 2.4 | - | 0.17 |
| Calcium (Ca) | mg/L | - | - | 17.8 |
| Magnesium (Mg) | mg/L | - | - | 0.74 |
| Sodium (Na) | mg/L | - | - | 2.62 |

**Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

## Metals - SOIL

| | | | | Lab ID | L2458047-1 |
|---|---|---|---|---|---|
| | | | | Sample Date | |
| | | | | Sample ID | BH4-SS1 |
| | | Guide Limits | | | |
| Analyte | Unit | #1 | #2 | | |
| Antimony (Sb) | ug/g | 1.3 | - | <1.0 | |
| Arsenic (As) | ug/g | 18 | - | 3.7 | |
| Barium (Ba) | ug/g | 220 | - | 113 | |
| Beryllium (Be) | ug/g | 2.5 | - | 0.65 | |
| Boron (B) | ug/g | 36 | - | 6.0 | |
| Boron (B), Hot Water Ext. | ug/g | 36 | - | 0.24 | |
| Cadmium (Cd) | ug/g | 1.2 | - | <0.50 | |
| Chromium (Cr) | ug/g | 70 | - | 24.9 | |
| Cobalt (Co) | ug/g | 21 | - | 8.9 | |
| Copper (Cu) | ug/g | 92 | - | 15.2 | |
| Lead (Pb) | ug/g | 120 | - | 10.1 | |
| Mercury (Hg) | ug/g | 0.27 | - | 0.0320 | |
| Molybdenum (Mo) | ug/g | 2 | - | <1.0 | |
| Nickel (Ni) | ug/g | 82 | - | 21.3 | |
| Selenium (Se) | ug/g | 1.5 | - | <1.0 | |
| Silver (Ag) | ug/g | 0.5 | - | <0.20 | |
| Thallium (Tl) | ug/g | 1 | - | <0.50 | |
| Uranium (U) | ug/g | 2.5 | - | <1.0 | |
| Vanadium (V) | ug/g | 86 | - | 37.6 | |
| Zinc (Zn) | ug/g | 290 | - | 42.8 | |

**Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

# ANALYTICAL REPORT

## Speciated Metals - SOIL

| | | Guide Limits | | Lab ID | L2458047-1 |
|---|---|---|---|---|---|
| | | | | Sample Date | |
| | | | | Sample ID | BH4-SS1 |
| Analyte | Unit | #1 | #2 | | |
| Chromium, Hexavalent | ug/g | 0.66 | - | 0.27 | |

**Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

# ANALYTICAL REPORT

## Volatile Organic Compounds - SOIL

| | | | | Lab ID | L2458047-2 | L2458047-3 |
|---|---|---|---|---|---|---|
| | | | | Sample Date | | |
| | | | | Sample ID | BH4-SS3 | BH4-SS6 |
| | | Guide Limits | | | | |
| Analyte | Unit | #1 | #2 | | | |
| Acetone | ug/g | 0.5 | - | | <0.50 | |
| Benzene | ug/g | 0.02 | - | | <0.0068 | <0.0068 |
| Bromodichloromethane | ug/g | 0.05 | - | | <0.050 | |
| Bromoform | ug/g | 0.05 | - | | <0.050 | |
| Bromomethane | ug/g | 0.05 | - | | <0.050 | |
| Carbon tetrachloride | ug/g | 0.05 | - | | <0.050 | |
| Chlorobenzene | ug/g | 0.05 | - | | <0.050 | |
| Dibromochloromethane | ug/g | 0.05 | - | | <0.050 | |
| Chloroform | ug/g | 0.05 | - | | <0.050 | |
| 1,2-Dibromoethane | ug/g | 0.05 | - | | <0.050 | |
| 1,2-Dichlorobenzene | ug/g | 0.05 | - | | <0.050 | |
| 1,3-Dichlorobenzene | ug/g | 0.05 | - | | <0.050 | |
| 1,4-Dichlorobenzene | ug/g | 0.05 | - | | <0.050 | |
| Dichlorodifluoromethane | ug/g | 0.05 | - | | <0.050 | |
| 1,1-Dichloroethane | ug/g | 0.05 | - | | <0.050 | |
| 1,2-Dichloroethane | ug/g | 0.05 | - | | <0.050 | |
| 1,1-Dichloroethylene | ug/g | 0.05 | - | | <0.050 | |
| cis-1,2-Dichloroethylene | ug/g | 0.05 | - | | <0.050 | |
| trans-1,2-Dichloroethylene | ug/g | 0.05 | - | | <0.050 | |
| Methylene Chloride | ug/g | 0.05 | - | | <0.050 | |
| 1,2-Dichloropropane | ug/g | 0.05 | - | | <0.050 | |
| cis-1,3-Dichloropropene | ug/g | - | - | | <0.030 | |
| trans-1,3-Dichloropropene | ug/g | - | - | | <0.030 | |
| 1,3-Dichloropropene (cis & trans) | ug/g | 0.05 | - | | <0.042 | |
| Ethylbenzene | ug/g | 0.05 | - | | <0.018 | <0.018 |
| n-Hexane | ug/g | 0.05 | - | | <0.050 | |
| Methyl Ethyl Ketone | ug/g | 0.5 | - | | <0.50 | |
| Methyl Isobutyl Ketone | ug/g | 0.5 | - | | <0.50 | |
| MTBE | ug/g | 0.05 | - | | <0.050 | |
| Styrene | ug/g | 0.05 | - | | <0.050 | |

**Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

# ANALYTICAL REPORT

## Volatile Organic Compounds - SOIL

| | | | | Lab ID | L2458047-2 | L2458047-3 |
|---|---|---|---|---|---|---|
| | | | | Sample Date | | |
| | | | | Sample ID | BH4-SS3 | BH4-SS6 |
| | | Guide Limits | | | | |
| Analyte | Unit | #1 | #2 | | | |
| 1,1,1,2-Tetrachloroethane | ug/g | 0.05 | - | | <0.050 | |
| 1,1,2,2-Tetrachloroethane | ug/g | 0.05 | - | | <0.050 | |
| Tetrachloroethylene | ug/g | 0.05 | - | | <0.050 | |
| Toluene | ug/g | 0.2 | - | | <0.080 | <0.080 |
| 1,1,1-Trichloroethane | ug/g | 0.05 | - | | <0.050 | |
| 1,1,2-Trichloroethane | ug/g | 0.05 | - | | <0.050 | |
| Trichloroethylene | ug/g | 0.05 | - | | <0.010 | |
| Trichlorofluoromethane | ug/g | 0.25 | - | | <0.050 | |
| Vinyl chloride | ug/g | 0.02 | - | | <0.020 | |
| o-Xylene | ug/g | - | - | | <0.020 | <0.020 |
| m+p-Xylenes | ug/g | - | - | | <0.030 | <0.030 |
| Xylenes (Total) | ug/g | 0.05 | - | | <0.050 | <0.050 |
| Surrogate: 4-Bromofluorobenzene | % | - | - | | 111.8 | 120.5 |
| Surrogate: 1,4-Difluorobenzene | % | - | - | | 124.0 | 125.9 |

**Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

# ANALYTICAL REPORT

## Hydrocarbons - SOIL

| | | | | |
|---|---|---|---|---|
| | | | Lab ID | L2458047-3 |
| | | | Sample Date | |
| | | | Sample ID | BH4-SS6 |
| | | Guide Limits | | |
| Analyte | Unit | #1 | #2 | |
| F1 (C6-C10) | ug/g | 25 | - | <5.0 |
| F1-BTEX | ug/g | 25 | - | <5.0 |
| F2 (C10-C16) | ug/g | 10 | - | <10 |
| F3 (C16-C34) | ug/g | 240 | - | <50 |
| F4 (C34-C50) | ug/g | 120 | - | <50 |
| Total Hydrocarbons (C6-C50) | ug/g | - | - | <72 |
| Chrom. to baseline at nC50 | | - | - | YES |
| Surrogate: 2-Bromobenzotrifluoride | % | - | - | 89.3 |
| Surrogate: 3,4-Dichlorotoluene | % | - | - | 109.5 |

**Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

# ANALYTICAL REPORT

## Polycyclic Aromatic Hydrocarbons - SOIL

| | | Lab ID | L2458047-1 |
|---|---|---|---|
| | | Sample Date | |
| | | Sample ID | BH4-SS1 |
| | | Guide Limits | |
| Analyte | Unit | #1 | #2 | |
| Acenaphthene | ug/g | 0.072 | - | <0.050 |
| Acenaphthylene | ug/g | 0.093 | - | <0.050 |
| Anthracene | ug/g | 0.16 | - | <0.050 |
| Benzo(a)anthracene | ug/g | 0.36 | - | <0.050 |
| Benzo(a)pyrene | ug/g | 0.3 | - | <0.050 |
| Benzo(b)fluoranthene | ug/g | 0.47 | - | <0.050 |
| Benzo(g,h,i)perylene | ug/g | 0.68 | - | <0.050 |
| Benzo(k)fluoranthene | ug/g | 0.48 | - | <0.050 |
| Chrysene | ug/g | 2.8 | - | <0.050 |
| Dibenzo(ah)anthracene | ug/g | 0.1 | - | <0.050 |
| Fluoranthene | ug/g | 0.56 | - | <0.050 |
| Fluorene | ug/g | 0.12 | - | <0.050 |
| Indeno(1,2,3-cd)pyrene | ug/g | 0.23 | - | <0.050 |
| 1+2-Methylnaphthalenes | ug/g | 0.59 | - | <0.042 |
| 1-Methylnaphthalene | ug/g | 0.59 | - | <0.030 |
| 2-Methylnaphthalene | ug/g | 0.59 | - | <0.030 |
| Naphthalene | ug/g | 0.09 | - | <0.013 |
| Phenanthrene | ug/g | 0.69 | - | <0.046 |
| Pyrene | ug/g | 1 | - | <0.050 |
| Surrogate: 2-Fluorobiphenyl | % | - | - | 109.5 |
| Surrogate: p-Terphenyl d14 | % | - | - | 125.4 |

**Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

# Reference Information

**Methods Listed (if applicable):**

| ALS Test Code | Matrix | Test Description | Method Reference** |
|---|---|---|---|
| **B-HWS-R511-WT** | Soil | Boron-HWE-O.Reg 153/04 (July 2011) | HW EXTR, EPA 6010B |

A dried solid sample is extracted with calcium chloride, the sample undergoes a heating process. After cooling the sample is filtered and analyzed by ICP/OES.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

| | | | |
|---|---|---|---|
| **BTX-511-HS-WT** | Soil | BTEX-O.Reg 153/04 (July 2011) | SW846 8260 |

BTX is determined by extracting a soil or sediment sample as received with methanol, then analyzing by headspace-GC/MS.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

| | | | |
|---|---|---|---|
| **CN-WAD-R511-WT** | Soil | Cyanide (WAD)-O.Reg 153/04 (July 2011) | MOE 3015/APHA 4500CN I-WAD |

The sample is extracted with a strong base for 16 hours, and then filtered. The filtrate is then distilled where the cyanide is converted to cyanogen chloride by reacting with chloramine-T, the cyanogen chloride then reacts with a combination of barbituric acid and isonicotinic acid to form a highly colored complex.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

| | | | |
|---|---|---|---|
| **CR-CR6-IC-WT** | Soil | Hexavalent Chromium in Soil | SW846 3060A/7199 |

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 7199, published by the United States Environmental Protection Agency (EPA). The procedure involves analysis for chromium (VI) by ion chromatography using diphenylcarbazide in a sulphuric acid solution.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

| | | | |
|---|---|---|---|
| **EC-WT** | Soil | Conductivity (EC) | MOEE E3138 |

A representative subsample is tumbled with de-ionized (DI) water. The ratio of water to soil is 2:1 v/w. After tumbling the sample is then analyzed by a conductivity meter.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

| | | | |
|---|---|---|---|
| **F1-F4-511-CALC-WT** | Soil | F1-F4 Hydrocarbon Calculated Parameters | CCME CWS-PHC, Pub #1310, Dec 2001-S |

Analytical methods used for analysis of CCME Petroleum Hydrocarbons have been validated and comply with the Reference Method for the CWS PHC.

Hydrocarbon results are expressed on a dry weight basis.

In cases where results for both F4 and F4G are reported, the greater of the two results must be used in any application of the CWS PHC guidelines and the gravimetric heavy hydrocarbons cannot be added to the C6 to C50 hydrocarbons.
In samples where BTEX and F1 were analyzed , F1-BTEX represents a value where the sum of Benzene, Toluene, Ethylbenzene and total Xylenes has been subtracted from F1.

In samples where PAHs, F2 and F3 were analyzed, F2-Naphth represents the result where Naphthalene has been subtracted from F2. F3-PAH represents a result where the sum of Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene, Fluoranthene, Indeno(1,2,3-cd)pyrene, Phenanthrene, and Pyrene has been subtracted from F3.

Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:
1. All extraction and analysis holding times were met.
2. Instrument performance showing response factors for C6 and C10 within 30% of the response factor for toluene.
3. Linearity of gasoline response within 15% throughout the calibration range.

# Reference Information

**Methods Listed (if applicable):**

| ALS Test Code | Matrix | Test Description | Method Reference** |
|---|---|---|---|

Unless otherwise qualified, the following quality control criteria have been met for the F2-F4 hydrocarbon ranges:
1. All extraction and analysis holding times were met.
2. Instrument performance showing C10, C16 and C34 response factors within 10% of their average.
3. Instrument performance showing the C50 response factor within 30% of the average of the C10, C16 and C34 response factors.
4. Linearity of diesel or motor oil response within 15% throughout the calibration range.

**F1-HS-511-WT** Soil F1-O.Reg 153/04 (July 2011) E3398/CCME TIER 1-HS

Fraction F1 is determined by extracting a soil or sediment sample as received with methanol, then analyzing by headspace-GC/FID.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

**F2-F4-511-WT** Soil F2-F4-O.Reg 153/04 (July 2011) CCME Tier 1

Petroleum Hydrocarbons (F2-F4 fractions) are extracted from soil with 1:1 hexane:acetone using a rotary extractor. Extracts are treated with silica gel to remove polar organic interferences. F2, F3, & F4 are analyzed by GC-FID. F4G-sg is analyzed gravimetrically.

Notes:
1. F2 (C10-C16): Sum of all hydrocarbons that elute between nC10 and nC16.
2. F3 (C16-C34): Sum of all hydrocarbons that elute between nC16 and nC34.
3. F4 (C34-C50): Sum of all hydrocarbons that elute between nC34 and nC50.
4. F4G: Gravimetric Heavy Hydrocarbons
5. F4G-sg: Gravimetric Heavy Hydrocarbons (F4G) after silica gel treatment.
6. Where both F4 (C34-C50) and F4G-sg are reported for a sample, the larger of the two values is used for comparison against the relevant CCME guideline for F4.
7. F4G-sg cannot be added to the C6 to C50 hydrocarbon results to obtain an estimate of total extractable hydrocarbons.
8. This method is validated for use.
9. Data from analysis of validation and quality control samples is available upon request.
10. Reported results are expressed as milligrams per dry kilogram, unless otherwise indicated.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

**HG-200.2-CVAA-WT** Soil Mercury in Soil by CVAAS EPA 200.2/1631E (mod)

Soil samples are digested with nitric and hydrochloric acids, followed by analysis by CVAAS.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

**MET-200.2-CCMS-WT** Soil Metals in Soil by CRC ICPMS EPA 200.2/6020A (mod)

Soil/sediment is dried, disaggregated, and sieved (2 mm). For tests intended to support Ontario regulations, the <2mm fraction is ground to pass through a 0.355 mm sieve. Strong Acid Leachable Metals in the <2mm fraction are solubilized by heated digestion with nitric and hydrochloric acids. Instrumental analysis is by Collision / Reaction Cell ICPMS.

Limitations: This method is intended to liberate environmentally available metals. Silicate minerals are not solubilized. Some metals may be only partially recovered (matrix dependent), including Al, Ba, Be, Cr, S, Sr, Ti, Tl, V, W, and Zr. Elemental Sulfur may be poorly recovered by this method. Volatile forms of sulfur (e.g. sulfide, H2S) may be excluded if lost during sampling, storage, or digestion.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

**METHYLNAPS-CALC-WT** Soil ABN-Calculated Parameters SW846 8270

**MOISTURE-WT** Soil % Moisture CCME PHC in Soil - Tier 1 (mod)

# Reference Information

**Methods Listed (if applicable):**

| ALS Test Code | Matrix | Test Description | Method Reference** |
|---|---|---|---|
| **PAH-511-WT** | Soil | PAH-O.Reg 153/04 (July 2011) | SW846 3510/8270 |

A representative sub-sample of soil is fortified with deuterium-labelled surrogates and a mechanical shaking techniqueis used to extract the sample with a mixture of methanol and toluene. The extracts are concentrated and analyzed by GC/MS. Results for benzo(b) fluoranthene may include contributions from benzo(j)fluoranthene, if also present in the sample.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

| | | | |
|---|---|---|---|
| **PH-WT** | Soil | pH | MOEE E3137A |

A minimum 10g portion of the sample is extracted with 20mL of 0.01M calcium chloride solution by shaking for at least 30 minutes. The aqueous layer is separated from the soil and then analyzed using a pH meter and electrode.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

| | | | |
|---|---|---|---|
| **SAR-R511-WT** | Soil | SAR-O.Reg 153/04 (July 2011) | SW846 6010C |

A dried, disaggregated solid sample is extracted with deionized water, the aqueous extract is separated from the solid, acidified and then analyzed using a ICP/OES. The concentrations of Na, Ca and Mg are reported as per CALA requirements for calculated parameters. These individual parameters are not for comparison to any guideline.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

| | | | |
|---|---|---|---|
| **VOC-1,3-DCP-CALC-WT** | Soil | Regulation 153 VOCs | SW8260B/SW8270C |
| **VOC-511-HS-WT** | Soil | VOC-O.Reg 153/04 (July 2011) | SW846 8260 (511) |

Soil and sediment samples are extracted in methanol and analyzed by headspace-GC/MS.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

| | | | |
|---|---|---|---|
| **XYLENES-SUM-CALC-WT** | Soil | Sum of Xylene Isomer Concentrations | CALCULATION |

Total xylenes represents the sum of o-xylene and m&p-xylene.

**ALS test methods may incorporate modifications from specified reference methods to improve performance.

Chain of Custody Numbers:

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

| Laboratory Definition Code | Laboratory Location |
|---|---|
| WT | ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA |

# Reference Information

**GLOSSARY OF REPORT TERMS**

*Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.*
*mg/kg - milligrams per kilogram based on dry weight of sample*
*mg/kg wwt - milligrams per kilogram based on wet weight of sample*
*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight*
*mg/L - unit of concentration based on volume, parts per million.*
*< - Less than.*
*D.L. - The reporting limit.*
*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*
*UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.*
*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*

*Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to, fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information. Guideline limits are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.*

# Quality Control Report

Workorder: L2458047 Report Date: 16-JUN-20 

Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **B-HWS-R511-WT** | **Soil** | | | | | | | |
| **Batch R5119556** | | | | | | | | |
| **WG3342730-4 DUP** | | **L2458332-9** | | | | | | |
| Boron (B), Hot Water Ext. | | 0.75 | 0.72 | | ug/g | 4.5 | 30 | 16-JUN-20 |
| **WG3342730-2 IRM** | | **WT SAR4** | | | | | | |
| Boron (B), Hot Water Ext. | | | 97.0 | | % | | 70-130 | 16-JUN-20 |
| **WG3342730-3 LCS** | | | | | | | | |
| Boron (B), Hot Water Ext. | | | 107.0 | | % | | 70-130 | 16-JUN-20 |
| **WG3342730-1 MB** | | | | | | | | |
| Boron (B), Hot Water Ext. | | | <0.10 | | ug/g | | 0.1 | 16-JUN-20 |
| **BTX-511-HS-WT** | **Soil** | | | | | | | |
| **Batch R5115750** | | | | | | | | |
| **WG3338738-4 DUP** | | **WG3338738-3** | | | | | | |
| Benzene | | <0.0068 | <0.0068 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Ethylbenzene | | <0.018 | <0.018 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| m+p-Xylenes | | <0.030 | <0.030 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| o-Xylene | | <0.18 | <0.16 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Toluene | | <0.080 | <0.080 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| **WG3338738-2 LCS** | | | | | | | | |
| Benzene | | | 100.8 | | % | | 70-130 | 11-JUN-20 |
| Ethylbenzene | | | 100.5 | | % | | 70-130 | 11-JUN-20 |
| m+p-Xylenes | | | 98.4 | | % | | 70-130 | 11-JUN-20 |
| o-Xylene | | | 99.3 | | % | | 70-130 | 11-JUN-20 |
| Toluene | | | 98.3 | | % | | 70-130 | 11-JUN-20 |
| **WG3338738-1 MB** | | | | | | | | |
| Benzene | | | <0.0068 | | ug/g | | 0.0068 | 11-JUN-20 |
| Ethylbenzene | | | <0.018 | | ug/g | | 0.018 | 11-JUN-20 |
| m+p-Xylenes | | | <0.030 | | ug/g | | 0.03 | 11-JUN-20 |
| o-Xylene | | | <0.020 | | ug/g | | 0.02 | 11-JUN-20 |
| Toluene | | | <0.080 | | ug/g | | 0.08 | 11-JUN-20 |
| Surrogate: 1,4-Difluorobenzene | | | 119.8 | | % | | 50-140 | 11-JUN-20 |
| Surrogate: 4-Bromofluorobenzene | | | 116.3 | | % | | 50-140 | 11-JUN-20 |
| **WG3338738-5 MS** | | **WG3338738-3** | | | | | | |
| Benzene | | | 99.4 | | % | | 60-140 | 11-JUN-20 |
| Ethylbenzene | | | 97.0 | | % | | 60-140 | 11-JUN-20 |
| m+p-Xylenes | | | 94.4 | | % | | 60-140 | 11-JUN-20 |
| o-Xylene | | | 96.3 | | % | | 60-140 | 11-JUN-20 |
| Toluene | | | 96.9 | | % | | 60-140 | 11-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **CN-WAD-R511-WT** | **Soil** | | | | | | | |
| **Batch R5117769** | | | | | | | | |
| **WG3341029-3 DUP** | | **L2458332-1** | | | | | | |
| Cyanide, Weak Acid Diss | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 35 | 15-JUN-20 |
| **WG3341029-2 LCS** | | | | | | | | |
| Cyanide, Weak Acid Diss | | | 96.2 | | % | | 80-120 | 15-JUN-20 |
| **WG3341029-1 MB** | | | | | | | | |
| Cyanide, Weak Acid Diss | | | <0.050 | | ug/g | | 0.05 | 15-JUN-20 |
| **WG3341029-4 MS** | | **L2458332-1** | | | | | | |
| Cyanide, Weak Acid Diss | | | 105.1 | | % | | 70-130 | 15-JUN-20 |
| **CR-CR6-IC-WT** | **Soil** | | | | | | | |
| **Batch R5117469** | | | | | | | | |
| **WG3339713-4 CRM** | | **WT-SQC012** | | | | | | |
| Chromium, Hexavalent | | | 102.3 | | % | | 70-130 | 12-JUN-20 |
| **WG3339713-3 DUP** | | **L2458889-2** | | | | | | |
| Chromium, Hexavalent | | <0.20 | <0.20 | RPD-NA | ug/g | N/A | 35 | 12-JUN-20 |
| **WG3339713-2 LCS** | | | | | | | | |
| Chromium, Hexavalent | | | 104.8 | | % | | 80-120 | 12-JUN-20 |
| **WG3339713-1 MB** | | | | | | | | |
| Chromium, Hexavalent | | | <0.20 | | ug/g | | 0.2 | 12-JUN-20 |
| **EC-WT** | **Soil** | | | | | | | |
| **Batch R5119478** | | | | | | | | |
| **WG3342732-4 DUP** | | **WG3342732-3** | | | | | | |
| Conductivity | | 0.188 | 0.196 | | mS/cm | 4.4 | 20 | 16-JUN-20 |
| **WG3342732-2 IRM** | | **WT SAR4** | | | | | | |
| Conductivity | | | 105.0 | | % | | 70-130 | 16-JUN-20 |
| **WG3342969-1 LCS** | | | | | | | | |
| Conductivity | | | 101.6 | | % | | 90-110 | 16-JUN-20 |
| **WG3342732-1 MB** | | | | | | | | |
| Conductivity | | | <0.0040 | | mS/cm | | 0.004 | 16-JUN-20 |
| **F1-HS-511-WT** | **Soil** | | | | | | | |
| **Batch R5115750** | | | | | | | | |
| **WG3338738-4 DUP** | | **WG3338738-3** | | | | | | |
| F1 (C6-C10) | | <5.0 | <5.0 | RPD-NA | ug/g | N/A | 30 | 11-JUN-20 |
| **WG3338738-2 LCS** | | | | | | | | |
| F1 (C6-C10) | | | 109.7 | | % | | 80-120 | 11-JUN-20 |
| **WG3338738-1 MB** | | | | | | | | |
| F1 (C6-C10) | | | <5.0 | | ug/g | | 5 | 11-JUN-20 |
| Surrogate: 3,4-Dichlorotoluene | | | 116.8 | | % | | 60-140 | 11-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **F1-HS-511-WT** | **Soil** | | | | | | | |
| **Batch R5115750** | | | | | | | | |
| **WG3338738-6 MS** | | **L2458033-3** | | | | | | |
| F1 (C6-C10) | | | 108.4 | | % | | 60-140 | 11-JUN-20 |
| **F2-F4-511-WT** | **Soil** | | | | | | | |
| **Batch R5117502** | | | | | | | | |
| **WG3340086-3 DUP** | | **WG3340086-5** | | | | | | |
| F2 (C10-C16) | | <10 | 11 | RPD-NA | ug/g | N/A | 30 | 12-JUN-20 |
| F3 (C16-C34) | | <50 | <50 | RPD-NA | ug/g | N/A | 30 | 12-JUN-20 |
| F4 (C34-C50) | | <50 | <50 | RPD-NA | ug/g | N/A | 30 | 12-JUN-20 |
| **WG3340086-2 LCS** | | | | | | | | |
| F2 (C10-C16) | | | 102.0 | | % | | 80-120 | 12-JUN-20 |
| F3 (C16-C34) | | | 102.1 | | % | | 80-120 | 12-JUN-20 |
| F4 (C34-C50) | | | 98.0 | | % | | 80-120 | 12-JUN-20 |
| **WG3340086-1 MB** | | | | | | | | |
| F2 (C10-C16) | | | <10 | | ug/g | | 10 | 12-JUN-20 |
| F3 (C16-C34) | | | <50 | | ug/g | | 50 | 12-JUN-20 |
| F4 (C34-C50) | | | <50 | | ug/g | | 50 | 12-JUN-20 |
| Surrogate: 2-Bromobenzotrifluoride | | | 79.8 | | % | | 60-140 | 12-JUN-20 |
| **WG3340086-4 MS** | | **WG3340086-5** | | | | | | |
| F2 (C10-C16) | | | 105.1 | | % | | 60-140 | 12-JUN-20 |
| F3 (C16-C34) | | | 109.7 | | % | | 60-140 | 12-JUN-20 |
| F4 (C34-C50) | | | 110.5 | | % | | 60-140 | 12-JUN-20 |
| **HG-200.2-CVAA-WT** | **Soil** | | | | | | | |
| **Batch R5119027** | | | | | | | | |
| **WG3342720-2 CRM** | | **WT-SS-1** | | | | | | |
| Mercury (Hg) | | | 112.1 | | % | | 70-130 | 16-JUN-20 |
| **WG3342720-6 DUP** | | **WG3342720-5** | | | | | | |
| Mercury (Hg) | | <0.0050 | <0.0050 | RPD-NA | ug/g | N/A | 40 | 16-JUN-20 |
| **WG3342720-3 LCS** | | | | | | | | |
| Mercury (Hg) | | | 111.0 | | % | | 80-120 | 16-JUN-20 |
| **WG3342720-1 MB** | | | | | | | | |
| Mercury (Hg) | | | <0.0050 | | mg/kg | | 0.005 | 16-JUN-20 |
| **MET-200.2-CCMS-WT** | **Soil** | | | | | | | |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **MET-200.2-CCMS-WT** | **Soil** | | | | | | | |
| **Batch R5118697** | | | | | | | | |
| **WG3342720-2 CRM** | | **WT-SS-1** | | | | | | |
| Antimony (Sb) | | | 105.4 | | % | | 70-130 | 16-JUN-20 |
| Arsenic (As) | | | 126.6 | | % | | 70-130 | 16-JUN-20 |
| Beryllium (Be) | | | 106.0 | | % | | 70-130 | 16-JUN-20 |
| Boron (B) | | | 92.5 | | % | | 70-130 | 16-JUN-20 |
| Cadmium (Cd) | | | 109.3 | | % | | 70-130 | 16-JUN-20 |
| Chromium (Cr) | | | 102.1 | | % | | 70-130 | 16-JUN-20 |
| Cobalt (Co) | | | 111.2 | | % | | 70-130 | 16-JUN-20 |
| Copper (Cu) | | | 111.1 | | % | | 70-130 | 16-JUN-20 |
| Lead (Pb) | | | 111.4 | | % | | 70-130 | 16-JUN-20 |
| Molybdenum (Mo) | | | 110.3 | | % | | 70-130 | 16-JUN-20 |
| Nickel (Ni) | | | 114.8 | | % | | 70-130 | 16-JUN-20 |
| Selenium (Se) | | | 84.9 | | % | | 70-130 | 16-JUN-20 |
| Silver (Ag) | | | 107.2 | | % | | 70-130 | 16-JUN-20 |
| Thallium (Tl) | | | 82.6 | | % | | 70-130 | 16-JUN-20 |
| Vanadium (V) | | | 117.4 | | % | | 70-130 | 16-JUN-20 |
| Zinc (Zn) | | | 113.0 | | % | | 70-130 | 16-JUN-20 |
| **WG3342720-6 DUP** | | **WG3342720-5** | | | | | | |
| Antimony (Sb) | | <0.10 | <0.10 | RPD-NA | ug/g | N/A | 30 | 16-JUN-20 |
| Arsenic (As) | | 1.74 | 2.21 | | ug/g | 24 | 30 | 16-JUN-20 |
| Barium (Ba) | | 46.4 | 59.4 | | ug/g | 25 | 40 | 16-JUN-20 |
| Beryllium (Be) | | 0.24 | 0.31 | | ug/g | 25 | 30 | 16-JUN-20 |
| Boron (B) | | <5.0 | 6.5 | RPD-NA | ug/g | N/A | 30 | 16-JUN-20 |
| Cadmium (Cd) | | 0.034 | 0.045 | | ug/g | 28 | 30 | 16-JUN-20 |
| Chromium (Cr) | | 10.8 | 14.5 | | ug/g | 29 | 30 | 16-JUN-20 |
| Cobalt (Co) | | 3.24 | 4.15 | | ug/g | 25 | 30 | 16-JUN-20 |
| Copper (Cu) | | 6.13 | 7.55 | | ug/g | 21 | 30 | 16-JUN-20 |
| Lead (Pb) | | 3.72 | 4.50 | | ug/g | 19 | 40 | 16-JUN-20 |
| Molybdenum (Mo) | | 0.30 | 0.44 | | ug/g | 38 | 40 | 16-JUN-20 |
| Nickel (Ni) | | 6.56 | 8.25 | | ug/g | 23 | 30 | 16-JUN-20 |
| Selenium (Se) | | <0.20 | <0.20 | RPD-NA | ug/g | N/A | 30 | 16-JUN-20 |
| Silver (Ag) | | <0.10 | <0.10 | RPD-NA | ug/g | N/A | 40 | 16-JUN-20 |
| Thallium (Tl) | | 0.052 | 0.061 | | ug/g | 16 | 30 | 16-JUN-20 |
| Uranium (U) | | 0.710 | 0.903 | | ug/g | 24 | 30 | 16-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **MET-200.2-CCMS-WT** | **Soil** | | | | | | | |
| **Batch R5118697** | | | | | | | | |
| **WG3342720-6 DUP** | | **WG3342720-5** | | | | | | |
| Vanadium (V) | | 21.9 | 28.7 | | ug/g | 27 | 30 | 16-JUN-20 |
| Zinc (Zn) | | 17.6 | 21.5 | | ug/g | 20 | 30 | 16-JUN-20 |
| **WG3342720-4 LCS** | | | | | | | | |
| Antimony (Sb) | | | 102.4 | | % | | 80-120 | 16-JUN-20 |
| Arsenic (As) | | | 102.3 | | % | | 80-120 | 16-JUN-20 |
| Barium (Ba) | | | 102.1 | | % | | 80-120 | 16-JUN-20 |
| Beryllium (Be) | | | 94.6 | | % | | 80-120 | 16-JUN-20 |
| Boron (B) | | | 92.4 | | % | | 80-120 | 16-JUN-20 |
| Cadmium (Cd) | | | 95.4 | | % | | 80-120 | 16-JUN-20 |
| Chromium (Cr) | | | 103.7 | | % | | 80-120 | 16-JUN-20 |
| Cobalt (Co) | | | 101.0 | | % | | 80-120 | 16-JUN-20 |
| Copper (Cu) | | | 98.8 | | % | | 80-120 | 16-JUN-20 |
| Lead (Pb) | | | 99.0 | | % | | 80-120 | 16-JUN-20 |
| Molybdenum (Mo) | | | 101.6 | | % | | 80-120 | 16-JUN-20 |
| Nickel (Ni) | | | 100.1 | | % | | 80-120 | 16-JUN-20 |
| Selenium (Se) | | | 91.9 | | % | | 80-120 | 16-JUN-20 |
| Silver (Ag) | | | 99.8 | | % | | 80-120 | 16-JUN-20 |
| Thallium (Tl) | | | 98.9 | | % | | 80-120 | 16-JUN-20 |
| Uranium (U) | | | 92.8 | | % | | 80-120 | 16-JUN-20 |
| Vanadium (V) | | | 106.6 | | % | | 80-120 | 16-JUN-20 |
| Zinc (Zn) | | | 92.9 | | % | | 80-120 | 16-JUN-20 |
| **WG3342720-1 MB** | | | | | | | | |
| Antimony (Sb) | | | <0.10 | | mg/kg | | 0.1 | 16-JUN-20 |
| Arsenic (As) | | | <0.10 | | mg/kg | | 0.1 | 16-JUN-20 |
| Barium (Ba) | | | <0.50 | | mg/kg | | 0.5 | 16-JUN-20 |
| Beryllium (Be) | | | <0.10 | | mg/kg | | 0.1 | 16-JUN-20 |
| Boron (B) | | | <5.0 | | mg/kg | | 5 | 16-JUN-20 |
| Cadmium (Cd) | | | <0.020 | | mg/kg | | 0.02 | 16-JUN-20 |
| Chromium (Cr) | | | <0.50 | | mg/kg | | 0.5 | 16-JUN-20 |
| Cobalt (Co) | | | <0.10 | | mg/kg | | 0.1 | 16-JUN-20 |
| Copper (Cu) | | | <0.50 | | mg/kg | | 0.5 | 16-JUN-20 |
| Lead (Pb) | | | <0.50 | | mg/kg | | 0.5 | 16-JUN-20 |
| Molybdenum (Mo) | | | <0.10 | | mg/kg | | 0.1 | 16-JUN-20 |
| Nickel (Ni) | | | <0.50 | | mg/kg | | 0.5 | 16-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **MET-200.2-CCMS-WT** | **Soil** | | | | | | | |
| **Batch R5118697** | | | | | | | | |
| **WG3342720-1 MB** | | | | | | | | |
| Selenium (Se) | | | <0.20 | | mg/kg | | 0.2 | 16-JUN-20 |
| Silver (Ag) | | | <0.10 | | mg/kg | | 0.1 | 16-JUN-20 |
| Thallium (Tl) | | | <0.050 | | mg/kg | | 0.05 | 16-JUN-20 |
| Uranium (U) | | | <0.050 | | mg/kg | | 0.05 | 16-JUN-20 |
| Vanadium (V) | | | <0.20 | | mg/kg | | 0.2 | 16-JUN-20 |
| Zinc (Zn) | | | <2.0 | | mg/kg | | 2 | 16-JUN-20 |
| **MOISTURE-WT** | **Soil** | | | | | | | |
| **Batch R5116159** | | | | | | | | |
| **WG3339789-3 DUP** | | **L2458047-3** | | | | | | |
| % Moisture | | 6.57 | 6.56 | | % | 0.2 | 20 | 12-JUN-20 |
| **WG3339789-2 LCS** | | | | | | | | |
| % Moisture | | | 98.2 | | % | | 90-110 | 12-JUN-20 |
| **WG3339789-1 MB** | | | | | | | | |
| % Moisture | | | <0.25 | | % | | 0.25 | 12-JUN-20 |
| **PAH-511-WT** | **Soil** | | | | | | | |
| **Batch R5117482** | | | | | | | | |
| **WG3339896-3 DUP** | | **WG3339896-5** | | | | | | |
| 1-Methylnaphthalene | | <0.030 | <0.030 | RPD-NA | ug/g | N/A | 40 | 15-JUN-20 |
| 2-Methylnaphthalene | | <0.030 | <0.030 | RPD-NA | ug/g | N/A | 40 | 15-JUN-20 |
| Acenaphthene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 15-JUN-20 |
| Acenaphthylene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 15-JUN-20 |
| Anthracene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 15-JUN-20 |
| Benzo(a)anthracene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 15-JUN-20 |
| Benzo(a)pyrene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 15-JUN-20 |
| Benzo(b)fluoranthene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 15-JUN-20 |
| Benzo(g,h,i)perylene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 15-JUN-20 |
| Benzo(k)fluoranthene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 15-JUN-20 |
| Chrysene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 15-JUN-20 |
| Dibenzo(ah)anthracene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 15-JUN-20 |
| Fluoranthene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 15-JUN-20 |
| Fluorene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 15-JUN-20 |
| Indeno(1,2,3-cd)pyrene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 15-JUN-20 |
| Naphthalene | | <0.013 | <0.013 | RPD-NA | ug/g | N/A | 40 | 15-JUN-20 |
| Phenanthrene | | <0.046 | <0.046 | RPD-NA | ug/g | N/A | 40 | 15-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAH-511-WT** | **Soil** | | | | | | | |
| **Batch R5117482** | | | | | | | | |
| **WG3339896-3 DUP** | | **WG3339896-5** | | | | | | |
| Pyrene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 15-JUN-20 |
| **WG3339896-2 LCS** | | | | | | | | |
| 1-Methylnaphthalene | | | 85.4 | | % | | 50-140 | 15-JUN-20 |
| 2-Methylnaphthalene | | | 83.8 | | % | | 50-140 | 15-JUN-20 |
| Acenaphthene | | | 89.1 | | % | | 50-140 | 15-JUN-20 |
| Acenaphthylene | | | 85.1 | | % | | 50-140 | 15-JUN-20 |
| Anthracene | | | 85.4 | | % | | 50-140 | 15-JUN-20 |
| Benzo(a)anthracene | | | 91.6 | | % | | 50-140 | 15-JUN-20 |
| Benzo(a)pyrene | | | 87.4 | | % | | 50-140 | 15-JUN-20 |
| Benzo(b)fluoranthene | | | 89.7 | | % | | 50-140 | 15-JUN-20 |
| Benzo(g,h,i)perylene | | | 78.3 | | % | | 50-140 | 15-JUN-20 |
| Benzo(k)fluoranthene | | | 84.7 | | % | | 50-140 | 15-JUN-20 |
| Chrysene | | | 98.2 | | % | | 50-140 | 15-JUN-20 |
| Dibenzo(ah)anthracene | | | 85.8 | | % | | 50-140 | 15-JUN-20 |
| Fluoranthene | | | 76.0 | | % | | 50-140 | 15-JUN-20 |
| Fluorene | | | 84.0 | | % | | 50-140 | 15-JUN-20 |
| Indeno(1,2,3-cd)pyrene | | | 77.4 | | % | | 50-140 | 15-JUN-20 |
| Naphthalene | | | 86.0 | | % | | 50-140 | 15-JUN-20 |
| Phenanthrene | | | 87.3 | | % | | 50-140 | 15-JUN-20 |
| Pyrene | | | 86.9 | | % | | 50-140 | 15-JUN-20 |
| **WG3339896-1 MB** | | | | | | | | |
| 1-Methylnaphthalene | | | <0.030 | | ug/g | | 0.03 | 15-JUN-20 |
| 2-Methylnaphthalene | | | <0.030 | | ug/g | | 0.03 | 15-JUN-20 |
| Acenaphthene | | | <0.050 | | ug/g | | 0.05 | 15-JUN-20 |
| Acenaphthylene | | | <0.050 | | ug/g | | 0.05 | 15-JUN-20 |
| Anthracene | | | <0.050 | | ug/g | | 0.05 | 15-JUN-20 |
| Benzo(a)anthracene | | | <0.050 | | ug/g | | 0.05 | 15-JUN-20 |
| Benzo(a)pyrene | | | <0.050 | | ug/g | | 0.05 | 15-JUN-20 |
| Benzo(b)fluoranthene | | | <0.050 | | ug/g | | 0.05 | 15-JUN-20 |
| Benzo(g,h,i)perylene | | | <0.050 | | ug/g | | 0.05 | 15-JUN-20 |
| Benzo(k)fluoranthene | | | <0.050 | | ug/g | | 0.05 | 15-JUN-20 |
| Chrysene | | | <0.050 | | ug/g | | 0.05 | 15-JUN-20 |
| Dibenzo(ah)anthracene | | | <0.050 | | ug/g | | 0.05 | 15-JUN-20 |
| Fluoranthene | | | <0.050 | | ug/g | | 0.05 | 15-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAH-511-WT** | **Soil** | | | | | | | |
| **Batch R5117482** | | | | | | | | |
| **WG3339896-1 MB** | | | | | | | | |
| Fluorene | | | <0.050 | | ug/g | | 0.05 | 15-JUN-20 |
| Indeno(1,2,3-cd)pyrene | | | <0.050 | | ug/g | | 0.05 | 15-JUN-20 |
| Naphthalene | | | <0.013 | | ug/g | | 0.013 | 15-JUN-20 |
| Phenanthrene | | | <0.046 | | ug/g | | 0.046 | 15-JUN-20 |
| Pyrene | | | <0.050 | | ug/g | | 0.05 | 15-JUN-20 |
| Surrogate: 2-Fluorobiphenyl | | | 91.0 | | % | | 50-140 | 15-JUN-20 |
| Surrogate: p-Terphenyl d14 | | | 98.3 | | % | | 50-140 | 15-JUN-20 |
| **WG3339896-4 MS** | | **WG3339896-5** | | | | | | |
| 1-Methylnaphthalene | | | 91.7 | | % | | 50-140 | 15-JUN-20 |
| 2-Methylnaphthalene | | | 88.7 | | % | | 50-140 | 15-JUN-20 |
| Acenaphthene | | | 95.0 | | % | | 50-140 | 15-JUN-20 |
| Acenaphthylene | | | 91.5 | | % | | 50-140 | 15-JUN-20 |
| Anthracene | | | 90.9 | | % | | 50-140 | 15-JUN-20 |
| Benzo(a)anthracene | | | 98.5 | | % | | 50-140 | 15-JUN-20 |
| Benzo(a)pyrene | | | 92.4 | | % | | 50-140 | 15-JUN-20 |
| Benzo(b)fluoranthene | | | 94.5 | | % | | 50-140 | 15-JUN-20 |
| Benzo(g,h,i)perylene | | | 83.7 | | % | | 50-140 | 15-JUN-20 |
| Benzo(k)fluoranthene | | | 90.8 | | % | | 50-140 | 15-JUN-20 |
| Chrysene | | | 103.6 | | % | | 50-140 | 15-JUN-20 |
| Dibenzo(ah)anthracene | | | 92.7 | | % | | 50-140 | 15-JUN-20 |
| Fluoranthene | | | 81.7 | | % | | 50-140 | 15-JUN-20 |
| Fluorene | | | 89.7 | | % | | 50-140 | 15-JUN-20 |
| Indeno(1,2,3-cd)pyrene | | | 84.7 | | % | | 50-140 | 15-JUN-20 |
| Naphthalene | | | 91.4 | | % | | 50-140 | 15-JUN-20 |
| Phenanthrene | | | 92.6 | | % | | 50-140 | 15-JUN-20 |
| Pyrene | | | 93.4 | | % | | 50-140 | 15-JUN-20 |
| **PH-WT** | **Soil** | | | | | | | |
| **Batch R5116603** | | | | | | | | |
| **WG3340397-1 DUP** | | **L2457929-7** | | | | | | |
| pH | | 7.74 | 7.75 | J | pH units | 0.01 | 0.3 | 12-JUN-20 |
| **WG3340922-1 LCS** | | | | | | | | |
| pH | | | 6.94 | | pH units | | 6.9-7.1 | 12-JUN-20 |
| **SAR-R511-WT** | **Soil** | | | | | | | |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **SAR-R511-WT** | **Soil** | | | | | | | |
| **Batch R5119983** | | | | | | | | |
| **WG3342732-4 DUP** | | **WG3342732-3** | | | | | | |
| Calcium (Ca) | | 18.8 | 17.8 | | mg/L | 5.5 | 30 | 16-JUN-20 |
| Sodium (Na) | | 12.7 | 11.9 | | mg/L | 6.5 | 30 | 16-JUN-20 |
| Magnesium (Mg) | | 1.04 | 0.99 | | mg/L | 4.5 | 30 | 16-JUN-20 |
| **WG3342732-2 IRM** | | **WT SAR4** | | | | | | |
| Calcium (Ca) | | | 99.8 | | % | | 70-130 | 16-JUN-20 |
| Sodium (Na) | | | 94.7 | | % | | 70-130 | 16-JUN-20 |
| Magnesium (Mg) | | | 100.0 | | % | | 70-130 | 16-JUN-20 |
| **WG3342732-5 LCS** | | | | | | | | |
| Calcium (Ca) | | | 104.3 | | % | | 80-120 | 16-JUN-20 |
| Sodium (Na) | | | 105.0 | | % | | 80-120 | 16-JUN-20 |
| Magnesium (Mg) | | | 101.6 | | % | | 80-120 | 16-JUN-20 |
| **WG3342732-1 MB** | | | | | | | | |
| Calcium (Ca) | | | <0.50 | | mg/L | | 0.5 | 16-JUN-20 |
| Sodium (Na) | | | <0.50 | | mg/L | | 0.5 | 16-JUN-20 |
| Magnesium (Mg) | | | <0.50 | | mg/L | | 0.5 | 16-JUN-20 |
| **VOC-511-HS-WT** | **Soil** | | | | | | | |
| **Batch R5115645** | | | | | | | | |
| **WG3338841-4 DUP** | | **WG3338841-3** | | | | | | |
| 1,1,1,2-Tetrachloroethane | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| 1,1,2,2-Tetrachloroethane | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| 1,1,1-Trichloroethane | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| 1,1,2-Trichloroethane | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| 1,1-Dichloroethane | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| 1,1-Dichloroethylene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| 1,2-Dibromoethane | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| 1,2-Dichlorobenzene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| 1,2-Dichloroethane | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| 1,2-Dichloropropane | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| 1,3-Dichlorobenzene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| 1,4-Dichlorobenzene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Acetone | | <0.50 | <0.50 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Benzene | | <0.0068 | <0.0068 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Bromodichloromethane | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Bromoform | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **VOC-511-HS-WT** | **Soil** | | | | | | | |
| **Batch R5115645** | | | | | | | | |
| **WG3338841-4 DUP** | | **WG3338841-3** | | | | | | |
| Bromomethane | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Carbon tetrachloride | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Chlorobenzene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Chloroform | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| cis-1,2-Dichloroethylene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| cis-1,3-Dichloropropene | | <0.030 | <0.030 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Dibromochloromethane | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Dichlorodifluoromethane | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Ethylbenzene | | <0.018 | <0.018 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| n-Hexane | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Methylene Chloride | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| MTBE | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| m+p-Xylenes | | <0.030 | <0.030 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Methyl Ethyl Ketone | | <0.50 | <0.50 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Methyl Isobutyl Ketone | | <0.50 | <0.50 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| o-Xylene | | <0.020 | <0.020 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Styrene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Tetrachloroethylene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Toluene | | <0.080 | <0.080 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| trans-1,2-Dichloroethylene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| trans-1,3-Dichloropropene | | <0.030 | <0.030 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Trichloroethylene | | <0.010 | <0.010 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Trichlorofluoromethane | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Vinyl chloride | | <0.020 | <0.020 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| **WG3338841-2 LCS** | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | | | 105.1 | | % | | 60-130 | 11-JUN-20 |
| 1,1,2,2-Tetrachloroethane | | | 109.0 | | % | | 60-130 | 11-JUN-20 |
| 1,1,1-Trichloroethane | | | 109.9 | | % | | 60-130 | 11-JUN-20 |
| 1,1,2-Trichloroethane | | | 112.1 | | % | | 60-130 | 11-JUN-20 |
| 1,1-Dichloroethane | | | 110.4 | | % | | 60-130 | 11-JUN-20 |
| 1,1-Dichloroethylene | | | 100.3 | | % | | 60-130 | 11-JUN-20 |
| 1,2-Dibromoethane | | | 111.8 | | % | | 70-130 | 11-JUN-20 |
| 1,2-Dichlorobenzene | | | 109.7 | | % | | 70-130 | 11-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **VOC-511-HS-WT** | **Soil** | | | | | | | |
| **Batch R5115645** | | | | | | | | |
| **WG3338841-2 LCS** | | | | | | | | |
| 1,2-Dichloroethane | | | 115.1 | | % | | 60-130 | 11-JUN-20 |
| 1,2-Dichloropropane | | | 110.6 | | % | | 70-130 | 11-JUN-20 |
| 1,3-Dichlorobenzene | | | 109.2 | | % | | 70-130 | 11-JUN-20 |
| 1,4-Dichlorobenzene | | | 111.1 | | % | | 70-130 | 11-JUN-20 |
| Acetone | | | 121.4 | | % | | 60-140 | 11-JUN-20 |
| Benzene | | | 112.4 | | % | | 70-130 | 11-JUN-20 |
| Bromodichloromethane | | | 123.3 | | % | | 50-140 | 11-JUN-20 |
| Bromoform | | | 111.4 | | % | | 70-130 | 11-JUN-20 |
| Bromomethane | | | 132.2 | | % | | 50-140 | 11-JUN-20 |
| Carbon tetrachloride | | | 110.5 | | % | | 70-130 | 11-JUN-20 |
| Chlorobenzene | | | 110.6 | | % | | 70-130 | 11-JUN-20 |
| Chloroform | | | 116.8 | | % | | 70-130 | 11-JUN-20 |
| cis-1,2-Dichloroethylene | | | 111.5 | | % | | 70-130 | 11-JUN-20 |
| cis-1,3-Dichloropropene | | | 116.7 | | % | | 70-130 | 11-JUN-20 |
| Dibromochloromethane | | | 107.6 | | % | | 60-130 | 11-JUN-20 |
| Dichlorodifluoromethane | | | 73.0 | | % | | 50-140 | 11-JUN-20 |
| Ethylbenzene | | | 105.3 | | % | | 70-130 | 11-JUN-20 |
| n-Hexane | | | 100.2 | | % | | 70-130 | 11-JUN-20 |
| Methylene Chloride | | | 117.2 | | % | | 70-130 | 11-JUN-20 |
| MTBE | | | 114.0 | | % | | 70-130 | 11-JUN-20 |
| m+p-Xylenes | | | 105.3 | | % | | 70-130 | 11-JUN-20 |
| Methyl Ethyl Ketone | | | 121.4 | | % | | 60-140 | 11-JUN-20 |
| Methyl Isobutyl Ketone | | | 119.7 | | % | | 60-140 | 11-JUN-20 |
| o-Xylene | | | 113.5 | | % | | 70-130 | 11-JUN-20 |
| Styrene | | | 107.1 | | % | | 70-130 | 11-JUN-20 |
| Tetrachloroethylene | | | 108.7 | | % | | 60-130 | 11-JUN-20 |
| Toluene | | | 107.4 | | % | | 70-130 | 11-JUN-20 |
| trans-1,2-Dichloroethylene | | | 109.0 | | % | | 60-130 | 11-JUN-20 |
| trans-1,3-Dichloropropene | | | 118.8 | | % | | 70-130 | 11-JUN-20 |
| Trichloroethylene | | | 115.1 | | % | | 60-130 | 11-JUN-20 |
| Trichlorofluoromethane | | | 103.2 | | % | | 50-140 | 11-JUN-20 |
| Vinyl chloride | | | 110.1 | | % | | 60-140 | 11-JUN-20 |
| **WG3338841-1 MB** | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **VOC-511-HS-WT** | **Soil** | | | | | | | |
| **Batch R5115645** | | | | | | | | |
| **WG3338841-1 MB** | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| 1,1,1-Trichloroethane | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| 1,1,2-Trichloroethane | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| 1,1-Dichloroethane | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| 1,1-Dichloroethylene | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| 1,2-Dibromoethane | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| 1,2-Dichlorobenzene | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| 1,2-Dichloroethane | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| 1,2-Dichloropropane | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| 1,3-Dichlorobenzene | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| 1,4-Dichlorobenzene | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Acetone | | | <0.50 | | ug/g | | 0.5 | 11-JUN-20 |
| Benzene | | | <0.0068 | | ug/g | | 0.0068 | 11-JUN-20 |
| Bromodichloromethane | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Bromoform | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Bromomethane | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Carbon tetrachloride | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Chlorobenzene | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Chloroform | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| cis-1,2-Dichloroethylene | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| cis-1,3-Dichloropropene | | | <0.030 | | ug/g | | 0.03 | 11-JUN-20 |
| Dibromochloromethane | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Dichlorodifluoromethane | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Ethylbenzene | | | <0.018 | | ug/g | | 0.018 | 11-JUN-20 |
| n-Hexane | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Methylene Chloride | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| MTBE | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| m+p-Xylenes | | | <0.030 | | ug/g | | 0.03 | 11-JUN-20 |
| Methyl Ethyl Ketone | | | <0.50 | | ug/g | | 0.5 | 11-JUN-20 |
| Methyl Isobutyl Ketone | | | <0.50 | | ug/g | | 0.5 | 11-JUN-20 |
| o-Xylene | | | <0.020 | | ug/g | | 0.02 | 11-JUN-20 |
| Styrene | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Tetrachloroethylene | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **VOC-511-HS-WT** | **Soil** | | | | | | | |
| **Batch R5115645** | | | | | | | | |
| **WG3338841-1 MB** | | | | | | | | |
| Toluene | | | <0.080 | | ug/g | | 0.08 | 11-JUN-20 |
| trans-1,2-Dichloroethylene | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| trans-1,3-Dichloropropene | | | <0.030 | | ug/g | | 0.03 | 11-JUN-20 |
| Trichloroethylene | | | <0.010 | | ug/g | | 0.01 | 11-JUN-20 |
| Trichlorofluoromethane | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Vinyl chloride | | | <0.020 | | ug/g | | 0.02 | 11-JUN-20 |
| Surrogate: 1,4-Difluorobenzene | | | 120.0 | | % | | 50-140 | 11-JUN-20 |
| Surrogate: 4-Bromofluorobenzene | | | 109.3 | | % | | 50-140 | 11-JUN-20 |
| **WG3338841-5 MS** | | **WG3338841-3** | | | | | | |
| 1,1,1,2-Tetrachloroethane | | | 105.6 | | % | | 50-140 | 11-JUN-20 |
| 1,1,2,2-Tetrachloroethane | | | 109.7 | | % | | 50-140 | 11-JUN-20 |
| 1,1,1-Trichloroethane | | | 107.0 | | % | | 50-140 | 11-JUN-20 |
| 1,1,2-Trichloroethane | | | 116.8 | | % | | 50-140 | 11-JUN-20 |
| 1,1-Dichloroethane | | | 87.8 | | % | | 50-140 | 11-JUN-20 |
| 1,1-Dichloroethylene | | | 96.4 | | % | | 50-140 | 11-JUN-20 |
| 1,2-Dibromoethane | | | 117.5 | | % | | 50-140 | 11-JUN-20 |
| 1,2-Dichlorobenzene | | | 88.8 | | % | | 50-140 | 11-JUN-20 |
| 1,2-Dichloroethane | | | 119.1 | | % | | 50-140 | 11-JUN-20 |
| 1,2-Dichloropropane | | | 111.8 | | % | | 50-140 | 11-JUN-20 |
| 1,3-Dichlorobenzene | | | 85.2 | | % | | 50-140 | 11-JUN-20 |
| 1,4-Dichlorobenzene | | | 87.1 | | % | | 50-140 | 11-JUN-20 |
| Acetone | | | 134.1 | | % | | 50-140 | 11-JUN-20 |
| Benzene | | | 111.4 | | % | | 50-140 | 11-JUN-20 |
| Bromodichloromethane | | | 125.3 | | % | | 50-140 | 11-JUN-20 |
| Bromoform | | | 117.1 | | % | | 50-140 | 11-JUN-20 |
| Bromomethane | | | 127.1 | | % | | 50-140 | 11-JUN-20 |
| Carbon tetrachloride | | | 106.7 | | % | | 50-140 | 11-JUN-20 |
| Chlorobenzene | | | 109.5 | | % | | 50-140 | 11-JUN-20 |
| Chloroform | | | 116.8 | | % | | 50-140 | 11-JUN-20 |
| cis-1,2-Dichloroethylene | | | 111.1 | | % | | 50-140 | 11-JUN-20 |
| cis-1,3-Dichloropropene | | | 111.9 | | % | | 50-140 | 11-JUN-20 |
| Dibromochloromethane | | | 111.7 | | % | | 50-140 | 11-JUN-20 |
| Dichlorodifluoromethane | | | 66.1 | | % | | 50-140 | 11-JUN-20 |
| Ethylbenzene | | | 101.3 | | % | | 50-140 | 11-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **VOC-511-HS-WT** | **Soil** | | | | | | | |
| **Batch R5115645** | | | | | | | | |
| **WG3338841-5 MS** | | **WG3338841-3** | | | | | | |
| n-Hexane | | | 93.3 | | % | | 50-140 | 11-JUN-20 |
| Methylene Chloride | | | 118.1 | | % | | 50-140 | 11-JUN-20 |
| MTBE | | | 114.6 | | % | | 50-140 | 11-JUN-20 |
| m+p-Xylenes | | | 101.1 | | % | | 50-140 | 11-JUN-20 |
| Methyl Ethyl Ketone | | | 123.6 | | % | | 50-140 | 11-JUN-20 |
| Methyl Isobutyl Ketone | | | 129.2 | | % | | 50-140 | 11-JUN-20 |
| o-Xylene | | | 110.3 | | % | | 50-140 | 11-JUN-20 |
| Styrene | | | 104.7 | | % | | 50-140 | 11-JUN-20 |
| Tetrachloroethylene | | | 102.3 | | % | | 50-140 | 11-JUN-20 |
| Toluene | | | 104.8 | | % | | 50-140 | 11-JUN-20 |
| trans-1,2-Dichloroethylene | | | 103.8 | | % | | 50-140 | 11-JUN-20 |
| trans-1,3-Dichloropropene | | | 113.2 | | % | | 50-140 | 11-JUN-20 |
| Trichloroethylene | | | 118.3 | | % | | 50-140 | 11-JUN-20 |
| Trichlorofluoromethane | | | 98.0 | | % | | 50-140 | 11-JUN-20 |
| Vinyl chloride | | | 105.3 | | % | | 50-140 | 11-JUN-20 |

# Quality Control Report

Workorder: L2458047 Report Date: 16-JUN-20

Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Valyn Bernard



**Legend:**

| | |
|---|---|
| Limit | ALS Control Limit (Data Quality Objectives) |
| DUP | Duplicate |
| RPD | Relative Percent Difference |
| N/A | Not Available |
| LCS | Laboratory Control Sample |
| SRM | Standard Reference Material |
| MS | Matrix Spike |
| MSD | Matrix Spike Duplicate |
| ADE | Average Desorption Efficiency |
| MB | Method Blank |
| IRM | Internal Reference Material |
| CRM | Certified Reference Material |
| CCV | Continuing Calibration Verification |
| CVS | Calibration Verification Standard |
| LCSD | Laboratory Control Sample Duplicate |

**Sample Parameter Qualifier Definitions:**

| Qualifier | Description |
|---|---|
| J | Duplicate results and limits are expressed in terms of absolute difference. |
| RPD-NA | Relative Percent Difference Not Available due to result(s) being less than detection limit. |

**Hold Time Exceedances:**

All test results reported with this submission were conducted within ALS recommended hold times.

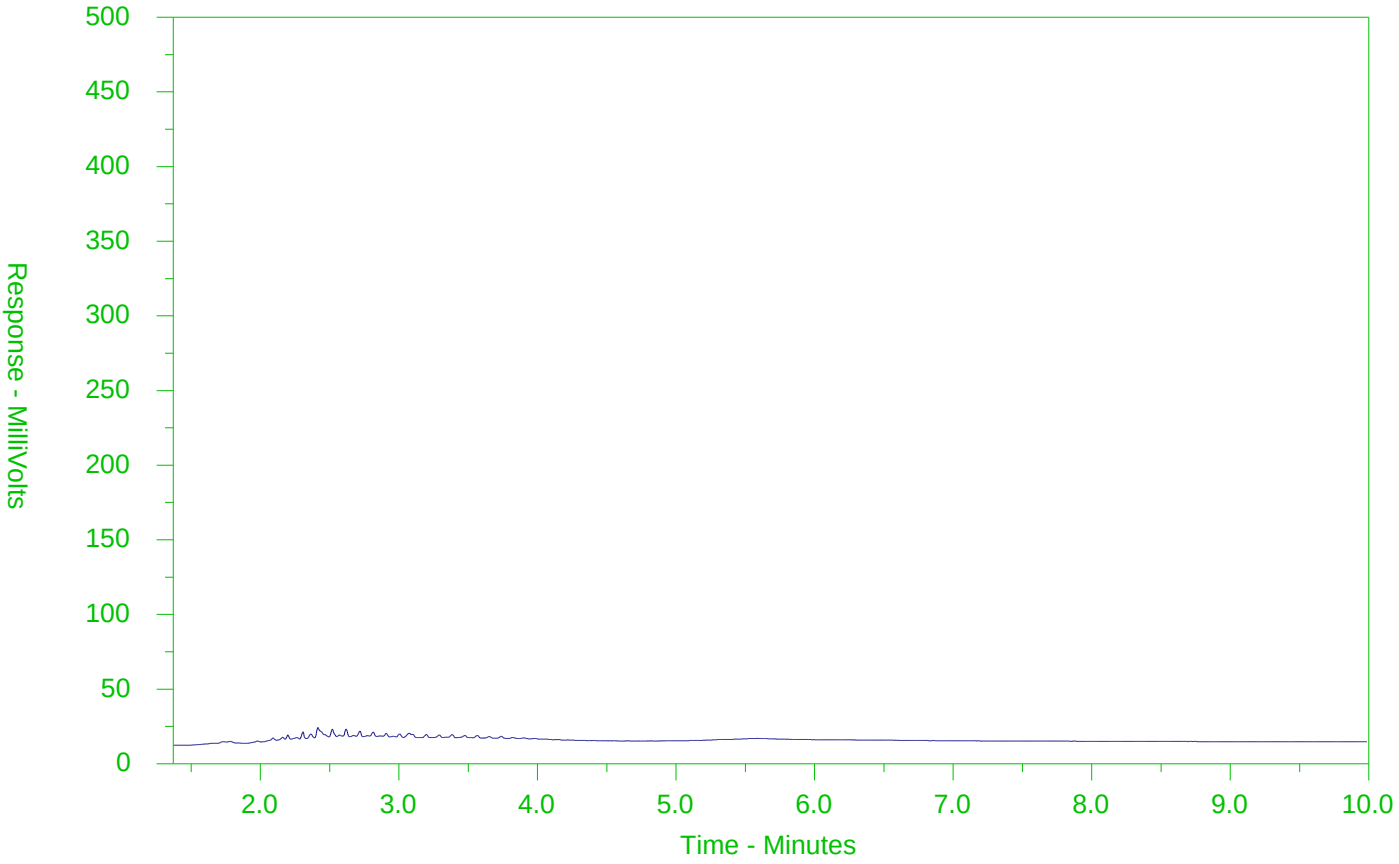
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

# CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2458047-3
Client Sample ID: BH4-SS6




| ←F2→ | ←F3→ | ←F4→ | |
|---|---|---|---|
| nC10 | nC16 | nC34 | nC50 |
| 174°C | 287°C | 481°C | 575°C |
| 346°F | 549°F | 898°F | 1067°F |
| Gasoline → | ← Motor Oils/Lube Oils/Grease → | | |
| ← Diesel/Jet Fuels → | | | |

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.

# Chain of Custody (COC) / Analytical Request Form

L2458047-COFC

COC Number: 17 -

Page of

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

| Report To | Contact and company name below will appear on the final report |
|---|---|
| Company: | WSP Canada Group Limited |
| Contact: | Valyn Bernard |
| Phone: | 1-289-835-2546 |
| | Company address below will appear on the final report |
| Street: | 610 Chartwell Rd |
| City/Province: | Oakville |
| Postal Code: | L6J 4A5 |
| **Invoice To** | Same as Report To ☐ YES ☐ NO |
| | Copy of Invoice with Report ☐ YES ☐ NO |
| Company: | WSP Canada Group Limited |
| Contact: | ca-accountspayable@wsp.com |

**Report Format / Distribution**

Select Report Format: ☑ PDF ☑ EXCEL ☐ EDD (DIGITAL)
Quality Control (QC) Report with Report ☑ YES ☐ NO
☑ Compare Results to Criteria on Report - provide details below if box checked
Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax Derek.Stewart@wsp.com
Email 2 Valyn.Bernard@wsp.com
Email 3 Anne.Pattison@wsp.com

**Invoice Distribution**

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax ca-accountspayable@wsp.com
Email 2 Valyn.Bernard@wsp.com

**Project Information**

ALS Account # / Quote #:
Job #: 19M-01888-00-CONTAM
PO / AFE:
LSD:

**Oil and Gas Required Fields (client use)**

AFE/Cost Center: PO#
Major/Minor Code: Routing Code:
Requisitioner:
Location:

**ALS Lab Work Order # (lab use only):** L2458047

**ALS Contact:** **Sampler:**

**Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)**

Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days): 4 day [P4-20%] ☐ 3 day [P3-25%] ☐ 2 day [P2-50%] ☐

EMERGENCY: 1 Business day [E - 100%] ☐ Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] ☐

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm

For tests that can not be performed according to the service level selected, you will be contacted.

**Analysis Request**

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

| ALS Sample # (lab use only) | Sample Identification and/or Coordinates (This description will appear on the report) | Date (dd-mmm-yy) | Time (hh:mm) | Sample Type | NUMBER OF CONTAINERS: Metals and Inorganics | PAHs | PHCs | VOCs | BTEX only | TCLP PAHs | TCLP VOCs | TCLP Metals and Inorganics | TCLP PCBS | Grain Size | SAMPLES ON HOLD | SUSPECTED HAZARD (see Special Instructions) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | P | P | | | | | | | | |
| | BH4-SS1 | | | | R | R | | | | | | | | | | |
| | BH4-SS3 | | | | R | R | | R | | | | | | | → | |
| | BH4-SS6 | | | | | | R | | R | | | | | | | |
| | BH4-SS7 | | | | | | R | | R | | | | | | | |
| | BH4-TCLP | | | | | | | | | R | R | R | R | | | |

**Drinking Water (DW) Samples[1] (client use)**

Are samples taken from a Regulated DW System? ☐ YES ☐ NO
Are samples for human consumption/ use? ☐ YES ☐ NO

**Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)**

[Combined] - Ontario R153-T1-SOIL+R347/90-TCLP

**SAMPLE CONDITION AS RECEIVED (lab use only)**

Frozen ☐ SIF Observations Yes ☐ No ☐
Ice Packs ☐ Ice Cubes ☒ Custody seal intact Yes ☐ No ☐
Cooling Initiated ☐

| INITIAL COOLER TEMPERATURES °C | | | | FINAL COOLER TEMPERATURES °C | | | |
|---|---|---|---|---|---|---|---|
| 0.1 | | | | 9.7 | | | |

**SHIPMENT RELEASE (client use)**

Released by: Madlool Alsabak Date: ~~7340~~ 3JUNE 08,2020 Time: 7:40pm

**INITIAL SHIPMENT RECEPTION (lab use only)**

Received by: Date: 9/6/20 Time: 8:30

**FINAL SHIPMENT RECEPTION (lab use only)**

Received by: Date: June 9/20 Time: 14:10

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

JUNE 2018 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

WSP Canada Group Limited
ATTN: Valyn Bernard
100 Commerce Valley Drive West
Thornhill ON L3T 0A1

Date Received: 09-JUN-20
Report Date: 16-JUN-20 14:44 (MT)
Version: FINAL

Client Phone: 905-882-1100

# Certificate of Analysis

## Lab Work Order #: L2458035

Project P.O. #: NOT SUBMITTED
Job Reference: 19M-01888-00-CONTAM
C of C Numbers:
Legal Site Desc:

Emily Hansen
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

# ANALYTICAL REPORT

## Summary of Guideline Exceedances

| ALS ID | Client ID | Grouping | Analyte | Result | Guideline Limit | Unit | Guideline |
|---|---|---|---|---|---|---|---|

**Federal & Provincial Waste Regulations (MAR, 2008) - Ontario Ministry of the Environment, General Waste Control Regulation No. 347/90**

(No parameter exceedances)

# ANALYTICAL REPORT

## Sample Preparation - WASTE

| | | | | |
|---|---|---|---|---|
| | | | Lab ID | L2458035-1 |
| | | | Sample Date | 08-JUN-20 |
| | | | Sample ID | BH6-SS5-1 |
| | | Guide Limits | | |
| Analyte | Unit | #1 | #2 | |
| Initial pH | pH units | - | - | 9.60 |
| Final pH | pH units | - | - | 5.89 |

**Guide Limit #1: Ontario Ministry of the Environment, General Waste Control Regulation No. 347/90**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

# ANALYTICAL REPORT

## TCLP Extractables - WASTE

| | | | | |
|---|---|---|---|---|
| | | | **Lab ID** | L2458035-1 |
| | | | **Sample Date** | 08-JUN-20 |
| | | | **Sample ID** | BH6-SS5-1 |
| | | **Guide Limits** | | |
| **Analyte** | **Unit** | **#1** | **#2** | |
| Acenaphthene | mg/L | - | - | <0.0050 |
| Acenaphthylene | mg/L | - | - | <0.0050 |
| Anthracene | mg/L | - | - | <0.0050 |
| Aroclor 1242 | mg/L | - | - | <0.00020 |
| Aroclor 1248 | mg/L | - | - | <0.00020 |
| Aroclor 1254 | mg/L | - | - | <0.00020 |
| Aroclor 1260 | mg/L | - | - | <0.00020 |
| Benzo(a)anthracene | mg/L | - | - | <0.0050 |
| Benzo(a)pyrene | mg/L | 0.001 | - | <0.0010 |
| Benzo(b)fluoranthene | mg/L | - | - | <0.0050 |
| Benzo(g,h,i)perylene | mg/L | - | - | <0.0050 |
| Cyanide, Weak Acid Diss | mg/L | 20 | - | <0.10 |
| Fluoride (F) | mg/L | 150.0 | - | <10 |
| Nitrate and Nitrite as N | mg/L | 1000 | - | <4.0 |
| Nitrate-N | mg/L | - | - | <2.0 |
| Nitrite-N | mg/L | - | - | <2.0 |
| Total PCBs | mg/L | 0.3 | - | <0.00040 |

**Guide Limit #1: Ontario Ministry of the Environment, General Waste Control Regulation No. 347/90**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

# ANALYTICAL REPORT

## TCLP Metals - WASTE

| | | | | |
|---|---|---|---|---|
| | | | **Lab ID** | L2458035-1 |
| | | | **Sample Date** | 08-JUN-20 |
| | | | **Sample ID** | BH6-SS5-1 |
| | | **Guide Limits** | | |
| **Analyte** | **Unit** | **#1** | **#2** | |
| Arsenic (As) | mg/L | 2.5 | - | <0.050 |
| Barium (Ba) | mg/L | 100 | - | 0.53 |
| Boron (B) | mg/L | 500 | - | <2.5 |
| Cadmium (Cd) | mg/L | 0.5 | - | <0.0050 |
| Chromium (Cr) | mg/L | 5.0 | - | <0.050 |
| Lead (Pb) | mg/L | 5.0 | - | <0.025 |
| Mercury (Hg) | mg/L | 0.1 | - | <0.00010 |
| Selenium (Se) | mg/L | 1.0 | - | <0.025 |
| Silver (Ag) | mg/L | 5.0 | - | <0.0050 |
| Uranium (U) | mg/L | 10 | - | <0.25 |

**Guide Limit #1: Ontario Ministry of the Environment, General Waste Control Regulation No. 347/90**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

# ANALYTICAL REPORT

## TCLP VOCs - WASTE

| | | | | |
|---|---|---|---|---|
| | | | **Lab ID** | L2458035-1 |
| | | | **Sample Date** | 08-JUN-20 |
| | | | **Sample ID** | BH6-SS5-1 |
| | | **Guide Limits** | | |
| **Analyte** | **Unit** | **#1** | **#2** | |
| 1,1-Dichloroethylene | mg/L | 1.4 | - | <0.025 |
| 1,2-Dichlorobenzene | mg/L | 20.0 | - | <0.025 |
| 1,2-Dichloroethane | mg/L | 0.5 | - | <0.025 |
| 1,4-Dichlorobenzene | mg/L | 0.5 | - | <0.025 |
| Benzene | mg/L | 0.5 | - | <0.025 |
| Carbon tetrachloride | mg/L | 0.5 | - | <0.025 |
| Chlorobenzene | mg/L | 8 | - | <0.025 |
| Chloroform | mg/L | 10 | - | <0.10 |
| Dichloromethane | mg/L | 5.0 | - | <0.50 |
| Methyl Ethyl Ketone | mg/L | 200.0 | - | <1.0 |
| Tetrachloroethylene | mg/L | 3 | - | <0.025 |
| Trichloroethylene | mg/L | 5 | - | <0.025 |
| Vinyl chloride | mg/L | 0.2 | - | <0.050 |
| Surrogate: 4-Bromofluorobenzene | % | - | - | 102.4 |

**Guide Limit #1: Ontario Ministry of the Environment, General Waste Control Regulation No. 347/90**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

# ANALYTICAL REPORT

## Volatile Organic Compounds - WASTE

| | | | | |
|---|---|---|---|---|
| | | | **Lab ID** | L2458035-1 |
| | | | **Sample Date** | 08-JUN-20 |
| | | | **Sample ID** | BH6-SS5-1 |
| | | **Guide Limits** | | |
| **Analyte** | **Unit** | **#1** | **#2** | |
| Surrogate: 1,4-Difluorobenzene | % | - | - | 100.9 |

**Guide Limit #1: Ontario Ministry of the Environment, General Waste Control Regulation No. 347/90**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

# ANALYTICAL REPORT

## Polycyclic Aromatic Hydrocarbons - WASTE

| | | | | |
|---|---|---|---|---|
| | | | Lab ID | L2458035-1 |
| | | | Sample Date | 08-JUN-20 |
| | | | Sample ID | BH6-SS5-1 |
| | | Guide Limits | | |
| Analyte | Unit | #1 | #2 | |
| Benzo(k)fluoranthene | mg/L | - | - | <0.0050 |
| Chrysene | mg/L | - | - | <0.0050 |
| Dibenzo(ah)anthracene | mg/L | - | - | <0.0050 |
| Fluoranthene | mg/L | - | - | <0.0050 |
| Fluorene | mg/L | - | - | <0.0050 |
| Indeno(1,2,3-cd)pyrene | mg/L | - | - | <0.0050 |
| Naphthalene | mg/L | - | - | <0.0050 |
| Phenanthrene | mg/L | - | - | <0.0050 |
| Pyrene | mg/L | - | - | <0.0050 |
| Quinoline | mg/L | - | - | <0.0050 |
| Surrogate: d10-Acenaphthene | % | - | - | 96.5 |
| Surrogate: d12-Chrysene | % | - | - | 88.3 |
| Surrogate: d8-Naphthalene | % | - | - | 96.5 |
| Surrogate: d10-Phenanthrene | % | - | - | 102.5 |

**Guide Limit #1: Ontario Ministry of the Environment, General Waste Control Regulation No. 347/90**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

# ANALYTICAL REPORT

## Polychlorinated Biphenyls - WASTE

| | | | | |
|---|---|---|---|---|
| | | | **Lab ID** | L2458035-1 |
| | | | **Sample Date** | 08-JUN-20 |
| | | | **Sample ID** | BH6-SS5-1 |
| **Analyte** | **Unit** | **Guide Limits #1** | **#2** | |
| Surrogate: Decachlorobiphenyl | % | - | - | 75.5 |
| Surrogate: Tetrachloro-m-xylene | % | - | - | 79.4 |

**Guide Limit #1: Ontario Ministry of the Environment, General Waste Control Regulation No. 347/90**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

# Reference Information

**Methods Listed (if applicable):**

| ALS Test Code | Matrix | Test Description | Method Reference** |
|---|---|---|---|
| **CN-TCLP-WT** | Waste | Cyanide for O. Reg 347 | APHA 4500CN I |

This analysis is carried out in accordance with the extraction procedure outlined in "Test Methods for Evaluating Solid Waste - Physical/Chemical Methods Volume 1C" SW-846 EPA Method 1311, published by the United States Environmental Protection Agency (EPA). In summary, the sample is extracted at a 20:1 liquid to solids ratio for 16 to 20 hours using either extraction fluid #1 (glacial acetic acid, water and sodium hydroxide) or extraction fluid #2 (glacial acetic acid), depending on the pH of the original sample. The extract is then filtered through a 0.6 to 0.8 micron glass fiber filter. The extract is then analyzed using procedures adapted from APHA Method 4500-CN I. "Weak Acid Dissociable Cyanide". Weak Acid Dissociable (WAD) cyanide is determined by in-line sample distillation with final determination by colourimetric analysis.

| | | | |
|---|---|---|---|
| **F-TCLP-WT** | Waste | Fluoride (F) for O. Reg 347 | EPA 300.1 |

This analysis is carried out in accordance with the extraction procedure outlined in "Test Methods for Evaluating Solid Waste - Physical/Chemical Methods Volume 1C" SW-846 EPA Method 1311, published by the United States Environmental Protection Agency (EPA). In summary, the sample is extracted at a 20:1 liquid to solids ratio for 16 to 20 hours using either extraction fluid #1 (glacial acetic acid, water and sodium hydroxide) or extraction fluid #2 (glacial acetic acid), depending on the pH of the original sample. The extract is then filtered through a 0.6 to 0.8 micron glass fiber filter. The extract is then analyzed using procedures adapted from EPA 300.1 and is analyzed by Ion Chromatography with conductivity and/or UV detection.

| | | | |
|---|---|---|---|
| **HG-TCLP-WT** | Waste | Mercury (CVAA) for O.Reg 347 | EPA 1631E |

This analysis is carried out in accordance with the extraction procedure outlined in "Test Methods for Evaluating Solid Waste - Physical/Chemical Methods Volume 1C" SW-846 EPA Method 1311, published by the United States Environmental Protection Agency (EPA). In summary, the sample is extracted at a 20:1 liquid to solids ratio for 16 to 20 hours using either extraction fluid #1 (glacial acetic acid, water and sodium hydroxide) or extraction fluid #2 (glacial acetic acid), depending on the pH of the original sample. The extract is then filtered through a 0.6 to 0.8 micron glass fibre filter and analysed using atomic absorption spectrophotometry (EPA 1631E).

| | | | |
|---|---|---|---|
| **LEACH-TCLP-WT** | Waste | Leachate Procedure for Reg 347 | EPA 1311 |

Inorganic and Semi-Volatile Organic contaminants are leached from waste samples in strict accordance with US EPA Method 1311, "Toxicity Characteristic Leaching Procedure" (TCLP). Test results are reported in leachate concentration units (normally mg/L).

| | | | |
|---|---|---|---|
| **MET-TCLP-WT** | Waste | O.Reg 347 TCLP Leachable Metals | EPA 6020B |

This analysis is carried out in accordance with the extraction procedure outlined in "Test Methods for Evaluating Solid Waste - Physical/Chemical Methods Volume 1C" SW-846 EPA Method 1311, published by the United States Environmental Protection Agency (EPA). In summary, the sample is extracted at a 20:1 liquid to solids ratio for 16 to 20 hours using either extraction fluid #1 (glacial acetic acid, water and sodium hydroxide) or extraction fluid #2 (glacial acetic acid), depending on the pH of the original sample. The extract is then filtered through a 0.6 to 0.8 micron glass fibre filter. Instrumental analysis of the digested extract is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020B).

| | | | |
|---|---|---|---|
| **N2N3-TCLP-WT** | Waste | Nitrate/Nitrite-N for O. Reg 347 | EPA 300.1 |

This analysis is carried out in accordance with the extraction procedure outlined in "Test Methods for Evaluating Solid Waste - Physical/Chemical Methods Volume 1C" SW-846 EPA Method 1311, published by the United States Environmental Protection Agency (EPA). In summary, the sample is extracted at a 20:1 liquid to solids ratio for 16 to 20 hours using either extraction fluid #1 (glacial acetic acid, water and sodium hydroxide) or extraction fluid #2 (glacial acetic acid), depending on the pH of the original sample. The extract is then filtered through a 0.6 to 0.8 micron glass fiber filter. The extract is then analyzed using procedures adapted from EPA 300.1 and is analyzed by Ion Chromatography with conductivity and/or UV detection.

| | | | |
|---|---|---|---|
| **PAH-TCLP-WT** | Waste | PAH for O. Reg 347 | SW846 8270 (PAH) |

Samples are leached according to TCLP protocol and then the aqueous leachate is extracted and the resulting extracts are analyzed on GC/MSD. Depending on the analytical GC/MS column used benzo(j)fluoranthene may chromatographically co-elute with benzo(b)fluoranthene or benzo(k)fluoranthene.

| | | | |
|---|---|---|---|
| **PCB-TCLP-WT** | Waste | PCBs for O. Reg 347 | SW846 8270 |
| **VOC-TCLP-WT** | Waste | VOC for O. Reg 347 | SW846 8260 |

A sample of waste is leached in a zero headspace extractor at 30–2 rpm for 18–2.0 hours with the appropriate leaching solution. After tumbling the leachate is analyzed directly by headspace technology, followed by GC/MS using internal standard quantitation.

**ALS test methods may incorporate modifications from specified reference methods to improve performance.

# Reference Information

Chain of Custody Numbers:

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

| Laboratory Definition Code | Laboratory Location |
|---|---|
| WT | ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA |

**GLOSSARY OF REPORT TERMS**

*Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.*
*mg/kg - milligrams per kilogram based on dry weight of sample*
*mg/kg wwt - milligrams per kilogram based on wet weight of sample*
*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight*
*mg/L - unit of concentration based on volume, parts per million.*
*< - Less than.*
*D.L. - The reporting limit.*
*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*
*UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.*
*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*

*Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to, fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information. Guideline limits are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.*

# Quality Control Report

Workorder: L2458035 Report Date: 16-JUN-20 

Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **CN-TCLP-WT** | **Waste** | | | | | | | |
| **Batch R5116867** | | | | | | | | |
| **WG3340811-3 DUP** | | **L2456591-2** | | | | | | |
| Cyanide, Weak Acid Diss | | <0.10 | <0.10 | RPD-NA | mg/L | N/A | 50 | 12-JUN-20 |
| **WG3340811-2 LCS** | | | | | | | | |
| Cyanide, Weak Acid Diss | | | 113.0 | | % | | 70-130 | 12-JUN-20 |
| **WG3340811-1 MB** | | | | | | | | |
| Cyanide, Weak Acid Diss | | | <0.10 | | mg/L | | 0.1 | 12-JUN-20 |
| **WG3340811-4 MS** | | **L2456591-2** | | | | | | |
| Cyanide, Weak Acid Diss | | | 112.1 | | % | | 50-140 | 12-JUN-20 |
| **F-TCLP-WT** | **Waste** | | | | | | | |
| **Batch R5117886** | | | | | | | | |
| **WG3341418-3 DUP** | | **L2459106-1** | | | | | | |
| Fluoride (F) | | <10 | <10 | RPD-NA | mg/L | N/A | 30 | 12-JUN-20 |
| **WG3341418-2 LCS** | | | | | | | | |
| Fluoride (F) | | | 100.3 | | % | | 70-130 | 12-JUN-20 |
| **WG3341418-1 MB** | | | | | | | | |
| Fluoride (F) | | | <10 | | mg/L | | 10 | 12-JUN-20 |
| **WG3341418-4 MS** | | **L2459106-1** | | | | | | |
| Fluoride (F) | | | 96.2 | | % | | 50-150 | 12-JUN-20 |
| **HG-TCLP-WT** | **Waste** | | | | | | | |
| **Batch R5116731** | | | | | | | | |
| **WG3340899-3 DUP** | | **L2457349-2** | | | | | | |
| Mercury (Hg) | | <0.0010 | <0.0010 | RPD-NA | mg/L | N/A | 50 | 12-JUN-20 |
| **WG3340899-2 LCS** | | | | | | | | |
| Mercury (Hg) | | | 105.0 | | % | | 70-130 | 12-JUN-20 |
| **WG3340899-1 MB** | | | | | | | | |
| Mercury (Hg) | | | <0.00010 | | mg/L | | 0.0001 | 12-JUN-20 |
| **WG3340899-4 MS** | | **L2457349-2** | | | | | | |
| Mercury (Hg) | | | 70.3 | | % | | 50-140 | 12-JUN-20 |
| **MET-TCLP-WT** | **Waste** | | | | | | | |
| **Batch R5116758** | | | | | | | | |
| **WG3340848-4 DUP** | | **WG3340848-3** | | | | | | |
| Silver (Ag) | | <0.0050 | <0.0050 | RPD-NA | mg/L | N/A | 50 | 12-JUN-20 |
| Arsenic (As) | | <0.050 | <0.050 | RPD-NA | mg/L | N/A | 50 | 12-JUN-20 |
| Boron (B) | | <2.5 | <2.5 | RPD-NA | mg/L | N/A | 50 | 12-JUN-20 |
| Barium (Ba) | | <0.50 | 0.52 | RPD-NA | mg/L | N/A | 50 | 12-JUN-20 |
| Cadmium (Cd) | | <0.0050 | <0.0050 | RPD-NA | mg/L | N/A | 50 | 12-JUN-20 |
| Chromium (Cr) | | <0.050 | <0.050 | RPD-NA | mg/L | N/A | 50 | 12-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **MET-TCLP-WT** | **Waste** | | | | | | | |
| **Batch R5116758** | | | | | | | | |
| **WG3340848-4 DUP** | | **WG3340848-3** | | | | | | |
| Lead (Pb) | | <0.025 | <0.025 | RPD-NA | mg/L | N/A | 50 | 12-JUN-20 |
| Selenium (Se) | | <0.025 | <0.025 | RPD-NA | mg/L | N/A | 50 | 12-JUN-20 |
| Uranium (U) | | <0.25 | <0.25 | RPD-NA | mg/L | N/A | 50 | 12-JUN-20 |
| **WG3340848-2 LCS** | | | | | | | | |
| Silver (Ag) | | | 91.2 | | % | | 70-130 | 12-JUN-20 |
| Arsenic (As) | | | 95.9 | | % | | 70-130 | 12-JUN-20 |
| Boron (B) | | | 91.0 | | % | | 70-130 | 12-JUN-20 |
| Barium (Ba) | | | 90.8 | | % | | 70-130 | 12-JUN-20 |
| Cadmium (Cd) | | | 96.1 | | % | | 70-130 | 12-JUN-20 |
| Chromium (Cr) | | | 96.8 | | % | | 70-130 | 12-JUN-20 |
| Lead (Pb) | | | 92.2 | | % | | 70-130 | 12-JUN-20 |
| Selenium (Se) | | | 94.0 | | % | | 70-130 | 12-JUN-20 |
| Uranium (U) | | | 92.7 | | % | | 70-130 | 12-JUN-20 |
| **WG3340848-1 MB** | | | | | | | | |
| Silver (Ag) | | | <0.0050 | | mg/L | | 0.005 | 12-JUN-20 |
| Arsenic (As) | | | <0.050 | | mg/L | | 0.05 | 12-JUN-20 |
| Boron (B) | | | <2.5 | | mg/L | | 2.5 | 12-JUN-20 |
| Barium (Ba) | | | <0.50 | | mg/L | | 0.5 | 12-JUN-20 |
| Cadmium (Cd) | | | <0.0050 | | mg/L | | 0.005 | 12-JUN-20 |
| Chromium (Cr) | | | <0.050 | | mg/L | | 0.05 | 12-JUN-20 |
| Lead (Pb) | | | <0.025 | | mg/L | | 0.025 | 12-JUN-20 |
| Selenium (Se) | | | <0.025 | | mg/L | | 0.025 | 12-JUN-20 |
| Uranium (U) | | | <0.25 | | mg/L | | 0.25 | 12-JUN-20 |
| **WG3340848-5 MS** | | **WG3340848-3** | | | | | | |
| Silver (Ag) | | | 113.6 | | % | | 50-140 | 12-JUN-20 |
| Arsenic (As) | | | 104.3 | | % | | 50-140 | 12-JUN-20 |
| Boron (B) | | | 99.4 | | % | | 50-140 | 12-JUN-20 |
| Barium (Ba) | | | 105.8 | | % | | 50-140 | 12-JUN-20 |
| Cadmium (Cd) | | | 102.6 | | % | | 50-140 | 12-JUN-20 |
| Chromium (Cr) | | | 104.7 | | % | | 50-140 | 12-JUN-20 |
| Lead (Pb) | | | 101.5 | | % | | 50-140 | 12-JUN-20 |
| Selenium (Se) | | | 103.3 | | % | | 50-140 | 12-JUN-20 |
| Uranium (U) | | | 98.2 | | % | | 50-140 | 12-JUN-20 |
| **N2N3-TCLP-WT** | **Waste** | | | | | | | |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **N2N3-TCLP-WT** | **Waste** | | | | | | | |
| **Batch R5117886** | | | | | | | | |
| **WG3341418-3 DUP** | | **L2459106-1** | | | | | | |
| Nitrate-N | | <2.0 | <2.0 | RPD-NA | mg/L | N/A | 25 | 12-JUN-20 |
| Nitrite-N | | <2.0 | <2.0 | RPD-NA | mg/L | N/A | 25 | 12-JUN-20 |
| **WG3341418-2 LCS** | | | | | | | | |
| Nitrate-N | | | 100.4 | | % | | 70-130 | 12-JUN-20 |
| Nitrite-N | | | 102.1 | | % | | 70-130 | 12-JUN-20 |
| **WG3341418-1 MB** | | | | | | | | |
| Nitrate-N | | | <2.0 | | mg/L | | 2 | 12-JUN-20 |
| Nitrite-N | | | <2.0 | | mg/L | | 2 | 12-JUN-20 |
| **WG3341418-4 MS** | | **L2459106-1** | | | | | | |
| Nitrate-N | | | 97.8 | | % | | 50-150 | 12-JUN-20 |
| Nitrite-N | | | 99.0 | | % | | 50-150 | 12-JUN-20 |
| **PAH-TCLP-WT** | **Waste** | | | | | | | |
| **Batch R5117344** | | | | | | | | |
| **WG3341142-3 DUP** | | **WG3341142-5** | | | | | | |
| Acenaphthene | | <0.0050 | <0.0050 | RPD-NA | mg/L | N/A | 50 | 14-JUN-20 |
| Acenaphthylene | | <0.0050 | <0.0050 | RPD-NA | mg/L | N/A | 50 | 14-JUN-20 |
| Anthracene | | <0.0050 | <0.0050 | RPD-NA | mg/L | N/A | 50 | 14-JUN-20 |
| Benzo(a)anthracene | | <0.0050 | <0.0050 | RPD-NA | mg/L | N/A | 50 | 14-JUN-20 |
| Benzo(a)pyrene | | <0.0010 | <0.0010 | RPD-NA | mg/L | N/A | 50 | 14-JUN-20 |
| Benzo(b)fluoranthene | | <0.0050 | <0.0050 | RPD-NA | mg/L | N/A | 50 | 14-JUN-20 |
| Benzo(g,h,i)perylene | | <0.0050 | <0.0050 | RPD-NA | mg/L | N/A | 50 | 14-JUN-20 |
| Benzo(k)fluoranthene | | <0.0050 | <0.0050 | RPD-NA | mg/L | N/A | 50 | 14-JUN-20 |
| Chrysene | | <0.0050 | <0.0050 | RPD-NA | mg/L | N/A | 50 | 14-JUN-20 |
| Dibenzo(ah)anthracene | | <0.0050 | <0.0050 | RPD-NA | mg/L | N/A | 50 | 14-JUN-20 |
| Fluoranthene | | <0.0050 | <0.0050 | RPD-NA | mg/L | N/A | 50 | 14-JUN-20 |
| Fluorene | | <0.0050 | <0.0050 | RPD-NA | mg/L | N/A | 50 | 14-JUN-20 |
| Indeno(1,2,3-cd)pyrene | | <0.0050 | <0.0050 | RPD-NA | mg/L | N/A | 50 | 14-JUN-20 |
| Naphthalene | | <0.0050 | <0.0050 | RPD-NA | mg/L | N/A | 50 | 14-JUN-20 |
| Phenanthrene | | <0.0050 | <0.0050 | RPD-NA | mg/L | N/A | 50 | 14-JUN-20 |
| Pyrene | | <0.0050 | <0.0050 | RPD-NA | mg/L | N/A | 50 | 14-JUN-20 |
| Quinoline | | <0.0050 | <0.0050 | RPD-NA | mg/L | N/A | 50 | 14-JUN-20 |
| **WG3341142-2 LCS** | | | | | | | | |
| Acenaphthene | | | 91.4 | | % | | 50-130 | 14-JUN-20 |
| Acenaphthylene | | | 96.2 | | % | | 50-130 | 14-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAH-TCLP-WT** | **Waste** | | | | | | | |
| **Batch R5117344** | | | | | | | | |
| **WG3341142-2 LCS** | | | | | | | | |
| Anthracene | | | 96.6 | | % | | 50-130 | 14-JUN-20 |
| Benzo(a)anthracene | | | 100.8 | | % | | 50-140 | 14-JUN-20 |
| Benzo(a)pyrene | | | 92.2 | | % | | 60-140 | 14-JUN-20 |
| Benzo(b)fluoranthene | | | 95.4 | | % | | 50-140 | 14-JUN-20 |
| Benzo(g,h,i)perylene | | | 96.2 | | % | | 50-140 | 14-JUN-20 |
| Benzo(k)fluoranthene | | | 93.3 | | % | | 50-150 | 14-JUN-20 |
| Chrysene | | | 91.7 | | % | | 50-140 | 14-JUN-20 |
| Dibenzo(ah)anthracene | | | 95.2 | | % | | 50-140 | 14-JUN-20 |
| Fluoranthene | | | 97.0 | | % | | 50-150 | 14-JUN-20 |
| Fluorene | | | 97.4 | | % | | 50-150 | 14-JUN-20 |
| Indeno(1,2,3-cd)pyrene | | | 111.5 | | % | | 50-140 | 14-JUN-20 |
| Naphthalene | | | 82.3 | | % | | 50-130 | 14-JUN-20 |
| Phenanthrene | | | 99.9 | | % | | 50-130 | 14-JUN-20 |
| Pyrene | | | 97.3 | | % | | 50-140 | 14-JUN-20 |
| Quinoline | | | 102.3 | | % | | 50-150 | 14-JUN-20 |
| **WG3341142-1 MB** | | | | | | | | |
| Acenaphthene | | | <0.0050 | | mg/L | | 0.005 | 14-JUN-20 |
| Acenaphthylene | | | <0.0050 | | mg/L | | 0.005 | 14-JUN-20 |
| Anthracene | | | <0.0050 | | mg/L | | 0.005 | 14-JUN-20 |
| Benzo(a)anthracene | | | <0.0050 | | mg/L | | 0.005 | 14-JUN-20 |
| Benzo(a)pyrene | | | <0.0010 | | mg/L | | 0.001 | 14-JUN-20 |
| Benzo(b)fluoranthene | | | <0.0050 | | mg/L | | 0.005 | 14-JUN-20 |
| Benzo(g,h,i)perylene | | | <0.0050 | | mg/L | | 0.005 | 14-JUN-20 |
| Benzo(k)fluoranthene | | | <0.0050 | | mg/L | | 0.005 | 14-JUN-20 |
| Chrysene | | | <0.0050 | | mg/L | | 0.005 | 14-JUN-20 |
| Dibenzo(ah)anthracene | | | <0.0050 | | mg/L | | 0.005 | 14-JUN-20 |
| Fluoranthene | | | <0.0050 | | mg/L | | 0.005 | 14-JUN-20 |
| Fluorene | | | <0.0050 | | mg/L | | 0.005 | 14-JUN-20 |
| Indeno(1,2,3-cd)pyrene | | | <0.0050 | | mg/L | | 0.005 | 14-JUN-20 |
| Naphthalene | | | <0.0050 | | mg/L | | 0.005 | 14-JUN-20 |
| Phenanthrene | | | <0.0050 | | mg/L | | 0.005 | 14-JUN-20 |
| Pyrene | | | <0.0050 | | mg/L | | 0.005 | 14-JUN-20 |
| Quinoline | | | <0.0050 | | mg/L | | 0.005 | 14-JUN-20 |
| Surrogate: d8-Naphthalene | | | 90.3 | | % | | 50-150 | 14-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAH-TCLP-WT** | **Waste** | | | | | | | |
| **Batch R5117344** | | | | | | | | |
| **WG3341142-1 MB** | | | | | | | | |
| Surrogate: d10-Phenanthrene | | | 105.8 | | % | | 50-150 | 14-JUN-20 |
| Surrogate: d12-Chrysene | | | 98.2 | | % | | 50-150 | 14-JUN-20 |
| Surrogate: d10-Acenaphthene | | | 100.1 | | % | | 50-150 | 14-JUN-20 |
| **WG3341142-4 MS** | | **WG3341142-5** | | | | | | |
| Acenaphthene | | | 93.5 | | % | | 50-150 | 14-JUN-20 |
| Acenaphthylene | | | 98.0 | | % | | 50-150 | 14-JUN-20 |
| Anthracene | | | 96.3 | | % | | 50-150 | 14-JUN-20 |
| Benzo(a)anthracene | | | 74.1 | | % | | 50-150 | 14-JUN-20 |
| Benzo(a)pyrene | | | 53.3 | | % | | 50-150 | 14-JUN-20 |
| Benzo(b)fluoranthene | | | 57.7 | | % | | 50-150 | 14-JUN-20 |
| Benzo(g,h,i)perylene | | | 43.8 | RRQC | % | | 50-150 | 14-JUN-20 |
| Benzo(k)fluoranthene | | | 54.1 | | % | | 50-150 | 14-JUN-20 |
| Chrysene | | | 62.5 | | % | | 50-150 | 14-JUN-20 |
| Dibenzo(ah)anthracene | | | 41.9 | RRQC | % | | 50-150 | 14-JUN-20 |
| Fluoranthene | | | 92.9 | | % | | 50-150 | 14-JUN-20 |
| Fluorene | | | 98.8 | | % | | 50-150 | 14-JUN-20 |
| Indeno(1,2,3-cd)pyrene | | | 51.6 | | % | | 50-150 | 14-JUN-20 |
| Naphthalene | | | 84.5 | | % | | 50-150 | 14-JUN-20 |
| Phenanthrene | | | 102.6 | | % | | 50-150 | 14-JUN-20 |
| Pyrene | | | 92.1 | | % | | 50-150 | 14-JUN-20 |
| Quinoline | | | 95.7 | | % | | 50-150 | 14-JUN-20 |
| COMMENTS: RRQC: Analyte recovery below ALS DQO. Associated sample data has not been affected and is considered reliable. | | | | | | | | |
| **PCB-TCLP-WT** | **Waste** | | | | | | | |
| **Batch R5117579** | | | | | | | | |
| **WG3341158-3 DUP** | | **WG3341158-5** | | | | | | |
| Aroclor 1242 | | <0.00020 | <0.00020 | RPD-NA | mg/L | N/A | 50 | 15-JUN-20 |
| Aroclor 1248 | | <0.00020 | <0.00020 | RPD-NA | mg/L | N/A | 50 | 15-JUN-20 |
| Aroclor 1254 | | <0.00020 | <0.00020 | RPD-NA | mg/L | N/A | 50 | 15-JUN-20 |
| Aroclor 1260 | | <0.00020 | <0.00020 | RPD-NA | mg/L | N/A | 50 | 15-JUN-20 |
| **WG3341158-2 LCS** | | | | | | | | |
| Aroclor 1242 | | | 102.5 | | % | | 65-130 | 15-JUN-20 |
| Aroclor 1248 | | | 113.3 | | % | | 65-130 | 15-JUN-20 |
| Aroclor 1254 | | | 100.9 | | % | | 65-130 | 15-JUN-20 |
| Aroclor 1260 | | | 97.6 | | % | | 65-130 | 15-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PCB-TCLP-WT** | **Waste** | | | | | | | |
| **Batch R5117579** | | | | | | | | |
| **WG3341158-1 MB** | | | | | | | | |
| Aroclor 1242 | | | <0.00020 | | mg/L | | 0.0002 | 15-JUN-20 |
| Aroclor 1248 | | | <0.00020 | | mg/L | | 0.0002 | 15-JUN-20 |
| Aroclor 1254 | | | <0.00020 | | mg/L | | 0.0002 | 15-JUN-20 |
| Aroclor 1260 | | | <0.00020 | | mg/L | | 0.0002 | 15-JUN-20 |
| Surrogate: Decachlorobiphenyl | | | 100.7 | | % | | 50-150 | 15-JUN-20 |
| Surrogate: Tetrachloro-m-xylene | | | 75.9 | | % | | 50-150 | 15-JUN-20 |
| **WG3341158-4 MS** | | **WG3341158-5** | | | | | | |
| Aroclor 1242 | | | 109.9 | | % | | 50-150 | 15-JUN-20 |
| Aroclor 1254 | | | 106.6 | | % | | 50-150 | 15-JUN-20 |
| Aroclor 1260 | | | 89.9 | | % | | 50-150 | 15-JUN-20 |
| **VOC-TCLP-WT** | **Waste** | | | | | | | |
| **Batch R5116120** | | | | | | | | |
| **WG3335023-1 LCS** | | | | | | | | |
| 1,1-Dichloroethylene | | | 92.0 | | % | | 70-130 | 11-JUN-20 |
| 1,2-Dichlorobenzene | | | 101.1 | | % | | 70-130 | 11-JUN-20 |
| 1,2-Dichloroethane | | | 107.1 | | % | | 70-130 | 11-JUN-20 |
| 1,4-Dichlorobenzene | | | 101.3 | | % | | 70-130 | 11-JUN-20 |
| Benzene | | | 101.9 | | % | | 70-130 | 11-JUN-20 |
| Carbon tetrachloride | | | 99.4 | | % | | 60-140 | 11-JUN-20 |
| Chlorobenzene | | | 102.0 | | % | | 70-130 | 11-JUN-20 |
| Chloroform | | | 106.3 | | % | | 70-130 | 11-JUN-20 |
| Dichloromethane | | | 106.2 | | % | | 70-130 | 11-JUN-20 |
| Methyl Ethyl Ketone | | | 110.5 | | % | | 50-150 | 11-JUN-20 |
| Tetrachloroethylene | | | 97.8 | | % | | 70-130 | 11-JUN-20 |
| Trichloroethylene | | | 102.6 | | % | | 70-130 | 11-JUN-20 |
| Vinyl chloride | | | 104.0 | | % | | 60-130 | 11-JUN-20 |
| **WG3335023-2 MB** | | | | | | | | |
| 1,1-Dichloroethylene | | | <0.025 | | mg/L | | 0.025 | 11-JUN-20 |
| 1,2-Dichlorobenzene | | | <0.025 | | mg/L | | 0.025 | 11-JUN-20 |
| 1,2-Dichloroethane | | | <0.025 | | mg/L | | 0.025 | 11-JUN-20 |
| 1,4-Dichlorobenzene | | | <0.025 | | mg/L | | 0.025 | 11-JUN-20 |
| Benzene | | | <0.025 | | mg/L | | 0.025 | 11-JUN-20 |
| Carbon tetrachloride | | | <0.025 | | mg/L | | 0.025 | 11-JUN-20 |
| Chlorobenzene | | | <0.025 | | mg/L | | 0.025 | 11-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **VOC-TCLP-WT** | **Waste** | | | | | | | |
| **Batch R5116120** | | | | | | | | |
| **WG3335023-2 MB** | | | | | | | | |
| Chloroform | | | <0.10 | | mg/L | | 0.1 | 11-JUN-20 |
| Dichloromethane | | | <0.50 | | mg/L | | 0.5 | 11-JUN-20 |
| Methyl Ethyl Ketone | | | <1.0 | | mg/L | | 1 | 11-JUN-20 |
| Tetrachloroethylene | | | <0.025 | | mg/L | | 0.025 | 11-JUN-20 |
| Trichloroethylene | | | <0.025 | | mg/L | | 0.025 | 11-JUN-20 |
| Vinyl chloride | | | <0.050 | | mg/L | | 0.05 | 11-JUN-20 |
| Surrogate: 1,4-Difluorobenzene | | | 101.3 | | % | | 70-130 | 11-JUN-20 |
| Surrogate: 4-Bromofluorobenzene | | | 103.7 | | % | | 70-130 | 11-JUN-20 |
| **WG3335023-4 MS** | | **WG3335023-3** | | | | | | |
| 1,1-Dichloroethylene | | | 94.5 | | % | | 50-140 | 12-JUN-20 |
| 1,2-Dichlorobenzene | | | 100.9 | | % | | 50-140 | 12-JUN-20 |
| 1,2-Dichloroethane | | | 102.1 | | % | | 50-140 | 12-JUN-20 |
| 1,4-Dichlorobenzene | | | 100.5 | | % | | 50-140 | 12-JUN-20 |
| Benzene | | | 102.6 | | % | | 50-140 | 12-JUN-20 |
| Carbon tetrachloride | | | 102.4 | | % | | 50-140 | 12-JUN-20 |
| Chlorobenzene | | | 102.3 | | % | | 50-140 | 12-JUN-20 |
| Chloroform | | | 106.4 | | % | | 50-140 | 12-JUN-20 |
| Dichloromethane | | | 103.1 | | % | | 50-140 | 12-JUN-20 |
| Methyl Ethyl Ketone | | | 94.3 | | % | | 50-140 | 12-JUN-20 |
| Tetrachloroethylene | | | 100.6 | | % | | 50-140 | 12-JUN-20 |
| Trichloroethylene | | | 102.9 | | % | | 50-140 | 12-JUN-20 |
| Vinyl chloride | | | 105.7 | | % | | 50-140 | 12-JUN-20 |

# Quality Control Report

Workorder: L2458035 Report Date: 16-JUN-20

Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Valyn Bernard



**Legend:**

| | |
|---|---|
| Limit | ALS Control Limit (Data Quality Objectives) |
| DUP | Duplicate |
| RPD | Relative Percent Difference |
| N/A | Not Available |
| LCS | Laboratory Control Sample |
| SRM | Standard Reference Material |
| MS | Matrix Spike |
| MSD | Matrix Spike Duplicate |
| ADE | Average Desorption Efficiency |
| MB | Method Blank |
| IRM | Internal Reference Material |
| CRM | Certified Reference Material |
| CCV | Continuing Calibration Verification |
| CVS | Calibration Verification Standard |
| LCSD | Laboratory Control Sample Duplicate |

**Sample Parameter Qualifier Definitions:**

| Qualifier | Description |
|---|---|
| RPD-NA | Relative Percent Difference Not Available due to result(s) being less than detection limit. |
| RRQC | Refer to report remarks for information regarding this QC result. |

**Hold Time Exceedances:**

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

# Chain of Custody (COC) / Analytical Request Form

ALS Environmental

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

L2458035-COFC

COC Number: 17 -

Page of

| Report To | Contact and company name below will appear on the final report |
|---|---|
| Company: | WSP Canada Group Limited |
| Contact: | Valyn Bernard |
| Phone: | 1-289-835-2546 |
| | Company address below will appear on the final report |
| Street: | 610 Chartwell Rd |
| City/Province: | Oakville |
| Postal Code: | L6J 4A5 |
| **Invoice To** | Same as Report To ☐ YES ☐ NO |
| | Copy of Invoice with Report ☐ YES ☐ NO |
| Company: | WSP Canada Group Limited |
| Contact: | ca-accountspayable@wsp.com |

**Project Information**

| | |
|---|---|
| ALS Account # / Quote #: | |
| Job #: | 19M-01888-00-CONTAM |
| PO / AFE: | |
| LSD: | |

**ALS Lab Work Order # (lab use only):** L2458035

| Report Format / Distribution | |
|---|---|
| Select Report Format: | ☑ PDF ☑ EXCEL ☐ EDD (DIGITAL) |
| Quality Control (QC) Report with Report | ☑ YES ☐ NO |
| ☑ Compare Results to Criteria on Report - provide details below if box checked | |
| Select Distribution: | ☑ EMAIL ☐ MAIL ☐ FAX |
| Email 1 or Fax | Derek.Stewart@wsp.com |
| Email 2 | Valyn.Bernard@wsp.com |
| Email 3 | Anne.Pattison@wsp.com |

**Invoice Distribution**

| | |
|---|---|
| Select Invoice Distribution: | ☑ EMAIL ☐ MAIL ☐ FAX |
| Email 1 or Fax | ca-accountspayable@wsp.com |
| Email 2 | Valyn.Bernard@wsp.com |

**Oil and Gas Required Fields (client use)**

| | |
|---|---|
| AFE/Cost Center: | PO# |
| Major/Minor Code: | Routing Code: |
| Requisitioner: | |
| Location: | |

**ALS Contact:** **Sampler:** MA

**Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)**

Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days): 4 day [P4-20%] ☐ | 3 day [P3-25%] ☐ | 2 day [P2-50%] ☐

EMERGENCY: 1 Business day [E - 100%] ☐ | Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] ☐

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm

For tests that can not be performed according to the service level selected, you will be contacted.

**Analysis Request**

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

| ALS Sample # (lab use only) | Sample Identification and/or Coordinates (This description will appear on the report) | Date (dd-mmm-yy) | Time (hh:mm) | Sample Type | NUMBER OF CONTAINERS | Metals and Inorganics | PAHs | PHCs | VOCs | BTEX only | BTEX and F1 | TCLP PAHs | TCLP VOCs | TCLP Metals and Inorganics | TCLP PCBS | Grain Size | SAMPLES ON HOLD | SUSPECTED HAZARD (see Special Instructions) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | P | P | | | | | | | | | | | |
| | BH6-SS1-2 | June 08, 2020 | Am | Soil | | R | R | | | | | | | | | | | |
| | BH6-SS3 | ↓ | ↓ | ↓ | | R | R | | | | | | | | | R | | ✓ |
| | BH6-SS4 | | | | | | | R | R | | R | | | | | | | |
| | Dup4 | | | | | | | R | | | R | | | | | | | ✓ |
| | BH6-SS5-1 | | | | | | | R | R | | | R | R | R | R | | | ✓ |

**Drinking Water (DW) Samples[1] (client use)**

Are samples taken from a Regulated DW System? ☐ YES ☐ NO

Are samples for human consumption/ use? ☐ YES ☐ NO

**Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)**

[Combined] - Ontario R153-T1-SOIL+R347/90-TCLP

**SAMPLE CONDITION AS RECEIVED (lab use only)**

Frozen ☐ | SIF Observations Yes ☐ No ☐

Ice Packs ☐ | Ice Cubes ☒ | Custody seal intact Yes ☐ No ☐

Cooling Initiated ☐

| INITIAL COOLER TEMPERATURES °C | FINAL COOLER TEMPERATURES °C |
|---|---|
| 0.1 | 6.6 |

**SHIPMENT RELEASE (client use)**

Released by: Madlool Alsabak | Date: June 08, 2020 | Time: 7:40 PM

**INITIAL SHIPMENT RECEPTION (lab use only)**

Received by: QC | Date: 9/6/20 | Time: 8:30

**FINAL SHIPMENT RECEPTION (lab use only)**

Received by: | Date: June 9/20 | Time: 14:10

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

[1] If samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form.**

JUNE 2018 FRONT

WSP Canada Group Limited
ATTN: Valyn Bernard
100 Commerce Valley Drive West
Thornhill ON L3T 0A1

Date Received: 09-JUN-20
Report Date: 16-JUN-20 14:43 (MT)
Version: FINAL

Client Phone: 905-882-1100

# Certificate of Analysis

## Lab Work Order #: L2457971

Project P.O. #: NOT SUBMITTED
Job Reference: 19M-01888-00-CONTAM
C of C Numbers:
Legal Site Desc:

Emily Hansen
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

# ANALYTICAL REPORT

## Summary of Guideline Exceedances

| Guideline ALS ID | Client ID | Grouping | Analyte | Result | Guideline Limit | Unit |
|---|---|---|---|---|---|---|
| **Ontario Regulation 153/04 - April 15, 2011 Standards - T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use** | | | | | | |
| L2457971-1 | BH6-SS1-2 | Physical Tests | Conductivity | 0.646 | 0.57 | mS/cm |
| | | Saturated Paste Extractables | SAR | 12.8 | 2.4 | SAR |
| L2457971-2 | BH6-SS3 | Saturated Paste Extractables | SAR | 2.95 | 2.4 | SAR |
| L2457971-5 | BH6-SS5-1 | Volatile Organic Compounds | Acetone | <5.0 | 0.5 | ug/g |
| | | | Benzene | <0.068 | 0.02 | ug/g |
| | | | Bromodichloromethane | <0.50 | 0.05 | ug/g |
| | | | Bromoform | <0.50 | 0.05 | ug/g |
| | | | Bromomethane | <0.50 | 0.05 | ug/g |
| | | | Carbon tetrachloride | <0.50 | 0.05 | ug/g |
| | | | Chlorobenzene | <0.50 | 0.05 | ug/g |
| | | | Dibromochloromethane | <0.50 | 0.05 | ug/g |
| | | | Chloroform | <0.50 | 0.05 | ug/g |
| | | | 1,2-Dibromoethane | <0.50 | 0.05 | ug/g |
| | | | 1,2-Dichlorobenzene | <0.50 | 0.05 | ug/g |
| | | | 1,3-Dichlorobenzene | <0.50 | 0.05 | ug/g |
| | | | 1,4-Dichlorobenzene | <0.50 | 0.05 | ug/g |
| | | | Dichlorodifluoromethane | <0.50 | 0.05 | ug/g |
| | | | 1,1-Dichloroethane | <0.50 | 0.05 | ug/g |
| | | | 1,2-Dichloroethane | <0.50 | 0.05 | ug/g |
| | | | 1,1-Dichloroethylene | <0.50 | 0.05 | ug/g |
| | | | cis-1,2-Dichloroethylene | <0.50 | 0.05 | ug/g |
| | | | trans-1,2-Dichloroethylene | <0.50 | 0.05 | ug/g |
| | | | Methylene Chloride | <0.50 | 0.05 | ug/g |
| | | | 1,2-Dichloropropane | <0.50 | 0.05 | ug/g |
| | | | 1,3-Dichloropropene (cis & trans) | <0.42 | 0.05 | ug/g |
| | | | Ethylbenzene | <0.18 | 0.05 | ug/g |
| | | | n-Hexane | <0.50 | 0.05 | ug/g |
| | | | Methyl Ethyl Ketone | <5.0 | 0.5 | ug/g |
| | | | Methyl Isobutyl Ketone | <5.0 | 0.5 | ug/g |
| | | | MTBE | <0.50 | 0.05 | ug/g |
| | | | Styrene | <0.50 | 0.05 | ug/g |
| | | | 1,1,1,2-Tetrachloroethane | <0.50 | 0.05 | ug/g |
| | | | 1,1,2,2-Tetrachloroethane | <0.50 | 0.05 | ug/g |
| | | | Tetrachloroethylene | <0.50 | 0.05 | ug/g |
| | | | Toluene | <0.80 | 0.2 | ug/g |
| | | | 1,1,1-Trichloroethane | <0.50 | 0.05 | ug/g |

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

## Summary of Guideline Exceedances

| Guideline ALS ID | Client ID | Grouping | Analyte | Result | Guideline Limit | Unit |
|---|---|---|---|---|---|---|
| **Ontario Regulation 153/04 - April 15, 2011 Standards - T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use** | | | | | | |
| L2457971-5 | BH6-SS5-1 | Volatile Organic Compounds | 1,1,2-Trichloroethane | <0.50 | 0.05 | ug/g |
| | | | Trichloroethylene | <0.10 | 0.05 | ug/g |
| | | | Trichlorofluoromethane | <0.50 | 0.25 | ug/g |
| | | | Vinyl chloride | <0.20 | 0.02 | ug/g |
| | | | Xylenes (Total) | <0.36 | 0.05 | ug/g |
| | | Hydrocarbons | F1 (C6-C10) | <50 | 25 | ug/g |
| | | | F1-BTEX | <50 | 25 | ug/g |
| | | | F2 (C10-C16) | <100 | 10 | ug/g |
| | | | F3 (C16-C34) | <500 | 240 | ug/g |
| | | | F4 (C34-C50) | <500 | 120 | ug/g |

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

# ANALYTICAL REPORT

## Physical Tests - SOIL

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Lab ID | L2457971-1 | L2457971-2 | L2457971-3 | L2457971-4 | L2457971-5 |
| | | | Sample Date | 08-JUN-20 | 08-JUN-20 | 08-JUN-20 | 08-JUN-20 | 08-JUN-20 |
| | | | Sample ID | BH6-SS1-2 | BH6-SS3 | BH6-SS4 | DUP 4 | BH6-SS5-1 |
| Analyte | Unit | Guide Limits #1 | #2 | | | | | |
| Conductivity | mS/cm | 0.57 | - | 0.646 | 0.307 | | | |
| % Moisture | % | - | - | 14.7 | 7.89 | 6.01 | 6.10 | 92.6 |
| pH | pH units | - | - | 7.50 | 7.94 | | | |

**Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

# ANALYTICAL REPORT

## Particle Size - SOIL

| Analyte | Unit | Guide Limits #1 | Guide Limits #2 | Lab ID: L2457971-2<br>Sample Date: 08-JUN-20<br>Sample ID: BH6-SS3 |
|---|---|---|---|---|
| % >75um | % | - | - | 37.3 |

**Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

# ANALYTICAL REPORT

## Cyanides - SOIL

| | | Guide Limits | | | |
|---|---|---|---|---|---|
| **Lab ID** | | | | L2457971-1 | L2457971-2 |
| **Sample Date** | | | | 08-JUN-20 | 08-JUN-20 |
| **Sample ID** | | | | BH6-SS1-2 | BH6-SS3 |
| **Analyte** | **Unit** | **#1** | **#2** | | |
| Cyanide, Weak Acid Diss | ug/g | 0.051 | - | <0.050 | <0.050 |

**Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

# ANALYTICAL REPORT

## Saturated Paste Extractables - SOIL

| | | | | | |
|---|---|---|---|---|---|
| | | | **Lab ID** | L2457971-1 | L2457971-2 |
| | | | **Sample Date** | 08-JUN-20 | 08-JUN-20 |
| | | | **Sample ID** | BH6-SS1-2 | BH6-SS3 |
| **Analyte** | **Unit** | **Guide Limits #1** | **#2** | | |
| SAR | SAR | 2.4 | - | 12.8 | 2.95 |
| Calcium (Ca) | mg/L | - | - | 6.02 | 10.6 |
| Magnesium (Mg) | mg/L | - | - | 0.70 | 1.66 |
| Sodium (Na) | mg/L | - | - | 125 | 39.1 |

**Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

## Metals - SOIL

| | | Guide Limits | | | |
|---|---|---|---|---|---|
| **Lab ID** | | | | L2457971-1 | L2457971-2 |
| **Sample Date** | | | | 08-JUN-20 | 08-JUN-20 |
| **Sample ID** | | | | BH6-SS1-2 | BH6-SS3 |
| **Analyte** | **Unit** | **#1** | **#2** | | |
| Antimony (Sb) | ug/g | 1.3 | - | <1.0 | <1.0 |
| Arsenic (As) | ug/g | 18 | - | 3.8 | 2.9 |
| Barium (Ba) | ug/g | 220 | - | 143 | 50.4 |
| Beryllium (Be) | ug/g | 2.5 | - | 0.68 | <0.50 |
| Boron (B) | ug/g | 36 | - | 8.7 | 5.4 |
| Boron (B), Hot Water Ext. | ug/g | 36 | - | 0.32 | <0.10 |
| Cadmium (Cd) | ug/g | 1.2 | - | <0.50 | <0.50 |
| Chromium (Cr) | ug/g | 70 | - | 26.3 | 11.7 |
| Cobalt (Co) | ug/g | 21 | - | 9.0 | 4.2 |
| Copper (Cu) | ug/g | 92 | - | 11.7 | 8.4 |
| Lead (Pb) | ug/g | 120 | - | 9.7 | 4.3 |
| Mercury (Hg) | ug/g | 0.27 | - | 0.0298 | <0.0050 |
| Molybdenum (Mo) | ug/g | 2 | - | <1.0 | <1.0 |
| Nickel (Ni) | ug/g | 82 | - | 20.8 | 8.6 |
| Selenium (Se) | ug/g | 1.5 | - | <1.0 | <1.0 |
| Silver (Ag) | ug/g | 0.5 | - | <0.20 | <0.20 |
| Thallium (Tl) | ug/g | 1 | - | <0.50 | <0.50 |
| Uranium (U) | ug/g | 2.5 | - | <1.0 | <1.0 |
| Vanadium (V) | ug/g | 86 | - | 42.4 | 21.0 |
| Zinc (Zn) | ug/g | 290 | - | 46.3 | 23.2 |

**Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

# ANALYTICAL REPORT

## Speciated Metals - SOIL

| | | Guide Limits | | | |
|---|---|---|---|---|---|
| **Lab ID** | | | | L2457971-1 | L2457971-2 |
| **Sample Date** | | | | 08-JUN-20 | 08-JUN-20 |
| **Sample ID** | | | | BH6-SS1-2 | BH6-SS3 |
| **Analyte** | **Unit** | **#1** | **#2** | | |
| Chromium, Hexavalent | ug/g | 0.66 | - | 0.39 | <0.20 |

**Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

# ANALYTICAL REPORT

## Volatile Organic Compounds - SOIL

| | | | | Lab ID | L2457971-3 | L2457971-4 | L2457971-5 |
|---|---|---|---|---|---|---|---|
| | | | | Sample Date | 08-JUN-20 | 08-JUN-20 | 08-JUN-20 |
| | | | | Sample ID | BH6-SS4 | DUP 4 | BH6-SS5-1 |
| Analyte | Unit | Guide Limits #1 | #2 | | | | |
| Acetone | ug/g | 0.5 | - | <0.50 | | <5.0 DLHM | |
| Benzene | ug/g | 0.02 | - | <0.0068 | <0.0068 | <0.068 DLHM | |
| Bromodichloromethane | ug/g | 0.05 | - | <0.050 | | <0.50 DLHM | |
| Bromoform | ug/g | 0.05 | - | <0.050 | | <0.50 DLHM | |
| Bromomethane | ug/g | 0.05 | - | <0.050 | | <0.50 DLHM | |
| Carbon tetrachloride | ug/g | 0.05 | - | <0.050 | | <0.50 DLHM | |
| Chlorobenzene | ug/g | 0.05 | - | <0.050 | | <0.50 DLHM | |
| Dibromochloromethane | ug/g | 0.05 | - | <0.050 | | <0.50 DLHM | |
| Chloroform | ug/g | 0.05 | - | <0.050 | | <0.50 DLHM | |
| 1,2-Dibromoethane | ug/g | 0.05 | - | <0.050 | | <0.50 DLHM | |
| 1,2-Dichlorobenzene | ug/g | 0.05 | - | <0.050 | | <0.50 DLHM | |
| 1,3-Dichlorobenzene | ug/g | 0.05 | - | <0.050 | | <0.50 DLHM | |
| 1,4-Dichlorobenzene | ug/g | 0.05 | - | <0.050 | | <0.50 DLHM | |
| Dichlorodifluoromethane | ug/g | 0.05 | - | <0.050 | | <0.50 DLHM | |
| 1,1-Dichloroethane | ug/g | 0.05 | - | <0.050 | | <0.50 DLHM | |
| 1,2-Dichloroethane | ug/g | 0.05 | - | <0.050 | | <0.50 DLHM | |
| 1,1-Dichloroethylene | ug/g | 0.05 | - | <0.050 | | <0.50 DLHM | |
| cis-1,2-Dichloroethylene | ug/g | 0.05 | - | <0.050 | | <0.50 DLHM | |
| trans-1,2-Dichloroethylene | ug/g | 0.05 | - | <0.050 | | <0.50 DLHM | |
| Methylene Chloride | ug/g | 0.05 | - | <0.050 | | <0.50 DLHM | |
| 1,2-Dichloropropane | ug/g | 0.05 | - | <0.050 | | <0.50 DLHM | |
| cis-1,3-Dichloropropene | ug/g | - | - | <0.030 | | <0.30 DLHM | |
| trans-1,3-Dichloropropene | ug/g | - | - | <0.030 | | <0.30 DLHM | |
| 1,3-Dichloropropene (cis & trans) | ug/g | 0.05 | - | <0.042 | | <0.42 | |
| Ethylbenzene | ug/g | 0.05 | - | <0.018 | <0.018 | <0.18 DLHM | |
| n-Hexane | ug/g | 0.05 | - | <0.050 | | <0.50 DLHM | |
| Methyl Ethyl Ketone | ug/g | 0.5 | - | <0.50 | | <5.0 DLHM | |
| Methyl Isobutyl Ketone | ug/g | 0.5 | - | <0.50 | | <5.0 DLHM | |
| MTBE | ug/g | 0.05 | - | <0.050 | | <0.50 DLHM | |
| Styrene | ug/g | 0.05 | - | <0.050 | | <0.50 DLHM | |

**Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

# ANALYTICAL REPORT

## Volatile Organic Compounds - SOIL

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | Lab ID | L2457971-3 | L2457971-4 | L2457971-5 |
| | | | Sample Date | 08-JUN-20 | 08-JUN-20 | 08-JUN-20 |
| | | | Sample ID | BH6-SS4 | DUP 4 | BH6-SS5-1 |
| Analyte | Unit | Guide Limits #1 | #2 | | | |
| 1,1,1,2-Tetrachloroethane | ug/g | 0.05 | - | <0.050 | | <0.50 DLHM |
| 1,1,2,2-Tetrachloroethane | ug/g | 0.05 | - | <0.050 | | <0.50 DLHM |
| Tetrachloroethylene | ug/g | 0.05 | - | <0.050 | | <0.50 DLHM |
| Toluene | ug/g | 0.2 | - | <0.080 | <0.080 | <0.80 DLHM |
| 1,1,1-Trichloroethane | ug/g | 0.05 | - | <0.050 | | <0.50 DLHM |
| 1,1,2-Trichloroethane | ug/g | 0.05 | - | <0.050 | | <0.50 DLHM |
| Trichloroethylene | ug/g | 0.05 | - | <0.010 | | <0.10 DLHM |
| Trichlorofluoromethane | ug/g | 0.25 | - | <0.050 | | <0.50 DLHM |
| Vinyl chloride | ug/g | 0.02 | - | <0.020 | | <0.20 DLHM |
| o-Xylene | ug/g | - | - | <0.020 | <0.020 | <0.20 DLHM |
| m+p-Xylenes | ug/g | - | - | <0.030 | <0.030 | <0.30 DLHM |
| Xylenes (Total) | ug/g | 0.05 | - | <0.050 | <0.050 | <0.36 |
| Surrogate: 4-Bromofluorobenzene | % | - | - | 111.2 | 112.4 | 105.3 |
| Surrogate: 1,4-Difluorobenzene | % | - | - | 121.6 | 117.3 | 115.5 |

**Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

# ANALYTICAL REPORT

## Hydrocarbons - SOIL

| Analyte | Unit | Guide Limits #1 | Guide Limits #2 | Lab ID | Sample Date | Sample ID |
|---|---|---|---|---|---|---|
| | | | | L2457971-3 | 08-JUN-20 | BH6-SS4 |
| | | | | L2457971-4 | 08-JUN-20 | DUP 4 |
| | | | | L2457971-5 | 08-JUN-20 | BH6-SS5-1 |
| F1 (C6-C10) | ug/g | 25 | - | <5.0 | <5.0 | <50 DLHM |
| F1-BTEX | ug/g | 25 | - | <5.0 | <5.0 | <50 |
| F2 (C10-C16) | ug/g | 10 | - | <10 | <10 | <100 DLHM |
| F3 (C16-C34) | ug/g | 240 | - | <50 | <50 | <500 DLHM |
| F4 (C34-C50) | ug/g | 120 | - | <50 | <50 | <500 DLHM |
| Total Hydrocarbons (C6-C50) | ug/g | - | - | <72 | <72 | <720 |
| Chrom. to baseline at nC50 | | - | - | YES | YES | YES |
| Surrogate: 2-Bromobenzotrifluoride | % | - | - | 88.2 | 89.0 | 85.6 |
| Surrogate: 3,4-Dichlorotoluene | % | - | - | 71.6 | 99.9 | 67.1 |

**Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

# ANALYTICAL REPORT

## Polycyclic Aromatic Hydrocarbons - SOIL

| | | Guide Limits | | | |
|---|---|---|---|---|---|
| **Lab ID** | | | | L2457971-1 | L2457971-2 |
| **Sample Date** | | | | 08-JUN-20 | 08-JUN-20 |
| **Sample ID** | | | | BH6-SS1-2 | BH6-SS3 |
| **Analyte** | **Unit** | **#1** | **#2** | | |
| Acenaphthene | ug/g | 0.072 | - | <0.050 | <0.050 |
| Acenaphthylene | ug/g | 0.093 | - | <0.050 | <0.050 |
| Anthracene | ug/g | 0.16 | - | <0.050 | <0.050 |
| Benzo(a)anthracene | ug/g | 0.36 | - | <0.050 | <0.050 |
| Benzo(a)pyrene | ug/g | 0.3 | - | <0.050 | <0.050 |
| Benzo(b)fluoranthene | ug/g | 0.47 | - | <0.050 | <0.050 |
| Benzo(g,h,i)perylene | ug/g | 0.68 | - | <0.050 | <0.050 |
| Benzo(k)fluoranthene | ug/g | 0.48 | - | <0.050 | <0.050 |
| Chrysene | ug/g | 2.8 | - | <0.050 | <0.050 |
| Dibenzo(ah)anthracene | ug/g | 0.1 | - | <0.050 | <0.050 |
| Fluoranthene | ug/g | 0.56 | - | <0.050 | <0.050 |
| Fluorene | ug/g | 0.12 | - | <0.050 | <0.050 |
| Indeno(1,2,3-cd)pyrene | ug/g | 0.23 | - | <0.050 | <0.050 |
| 1+2-Methylnaphthalenes | ug/g | 0.59 | - | <0.042 | <0.042 |
| 1-Methylnaphthalene | ug/g | 0.59 | - | <0.030 | <0.030 |
| 2-Methylnaphthalene | ug/g | 0.59 | - | <0.030 | <0.030 |
| Naphthalene | ug/g | 0.09 | - | <0.013 | <0.013 |
| Phenanthrene | ug/g | 0.69 | - | <0.046 | <0.046 |
| Pyrene | ug/g | 1 | - | <0.050 | <0.050 |
| Surrogate: 2-Fluorobiphenyl | % | - | - | 87.3 | 87.4 |
| Surrogate: p-Terphenyl d14 | % | - | - | 89.2 | 89.1 |

**Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

# Reference Information

**Qualifiers for Individual Parameters Listed:**

| Qualifier | Description |
|---|---|
| DLHM | Detection Limit Adjusted: Sample has High Moisture Content |

**Methods Listed (if applicable):**

| ALS Test Code | Matrix | Test Description | Method Reference** |
|---|---|---|---|
| **B-HWS-R511-WT** | Soil | Boron-HWE-O.Reg 153/04 (July 2011) | HW EXTR, EPA 6010B |

A dried solid sample is extracted with calcium chloride, the sample undergoes a heating process. After cooling the sample is filtered and analyzed by ICP/OES.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

| | | | |
|---|---|---|---|
| **BTX-511-HS-WT** | Soil | BTEX-O.Reg 153/04 (July 2011) | SW846 8260 |

BTX is determined by extracting a soil or sediment sample as received with methanol, then analyzing by headspace-GC/MS.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

| | | | |
|---|---|---|---|
| **CN-WAD-R511-WT** | Soil | Cyanide (WAD)-O.Reg 153/04 (July 2011) | MOE 3015/APHA 4500CN I-WAD |

The sample is extracted with a strong base for 16 hours, and then filtered. The filtrate is then distilled where the cyanide is converted to cyanogen chloride by reacting with chloramine-T, the cyanogen chloride then reacts with a combination of barbituric acid and isonicotinic acid to form a highly colored complex.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

| | | | |
|---|---|---|---|
| **CR-CR6-IC-WT** | Soil | Hexavalent Chromium in Soil | SW846 3060A/7199 |

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 7199, published by the United States Environmental Protection Agency (EPA). The procedure involves analysis for chromium (VI) by ion chromatography using diphenylcarbazide in a sulphuric acid solution.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

| | | | |
|---|---|---|---|
| **EC-WT** | Soil | Conductivity (EC) | MOEE E3138 |

A representative subsample is tumbled with de-ionized (DI) water. The ratio of water to soil is 2:1 v/w. After tumbling the sample is then analyzed by a conductivity meter.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

| | | | |
|---|---|---|---|
| **F1-F4-511-CALC-WT** | Soil | F1-F4 Hydrocarbon Calculated Parameters | CCME CWS-PHC, Pub #1310, Dec 2001-S |

Analytical methods used for analysis of CCME Petroleum Hydrocarbons have been validated and comply with the Reference Method for the CWS PHC.

Hydrocarbon results are expressed on a dry weight basis.

In cases where results for both F4 and F4G are reported, the greater of the two results must be used in any application of the CWS PHC guidelines and the gravimetric heavy hydrocarbons cannot be added to the C6 to C50 hydrocarbons.
In samples where BTEX and F1 were analyzed , F1-BTEX represents a value where the sum of Benzene, Toluene, Ethylbenzene and total Xylenes has been subtracted from F1.

In samples where PAHs, F2 and F3 were analyzed, F2-Naphth represents the result where Naphthalene has been subtracted from F2. F3-PAH represents a result where the sum of Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene, Fluoranthene, Indeno(1,2,3-cd)pyrene, Phenanthrene, and Pyrene has been subtracted from F3.

# Reference Information

**Methods Listed (if applicable):**

| ALS Test Code | Matrix | Test Description | Method Reference** |
|---|---|---|---|

Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:
1. All extraction and analysis holding times were met.
2. Instrument performance showing response factors for C6 and C10 within 30% of the response factor for toluene.
3. Linearity of gasoline response within 15% throughout the calibration range.

Unless otherwise qualified, the following quality control criteria have been met for the F2-F4 hydrocarbon ranges:
1. All extraction and analysis holding times were met.
2. Instrument performance showing C10, C16 and C34 response factors within 10% of their average.
3. Instrument performance showing the C50 response factor within 30% of the average of the C10, C16 and C34 response factors.
4. Linearity of diesel or motor oil response within 15% throughout the calibration range.

| | | | |
|---|---|---|---|
| **F1-HS-511-WT** | Soil | F1-O.Reg 153/04 (July 2011) | E3398/CCME TIER 1-HS |

Fraction F1 is determined by extracting a soil or sediment sample as received with methanol, then analyzing by headspace-GC/FID.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

| | | | |
|---|---|---|---|
| **F2-F4-511-WT** | Soil | F2-F4-O.Reg 153/04 (July 2011) | CCME Tier 1 |

Petroleum Hydrocarbons (F2-F4 fractions) are extracted from soil with 1:1 hexane:acetone using a rotary extractor. Extracts are treated with silica gel to remove polar organic interferences. F2, F3, & F4 are analyzed by GC-FID. F4G-sg is analyzed gravimetrically.

Notes:
1. F2 (C10-C16): Sum of all hydrocarbons that elute between nC10 and nC16.
2. F3 (C16-C34): Sum of all hydrocarbons that elute between nC16 and nC34.
3. F4 (C34-C50): Sum of all hydrocarbons that elute between nC34 and nC50.
4. F4G: Gravimetric Heavy Hydrocarbons
5. F4G-sg: Gravimetric Heavy Hydrocarbons (F4G) after silica gel treatment.
6. Where both F4 (C34-C50) and F4G-sg are reported for a sample, the larger of the two values is used for comparison against the relevant CCME guideline for F4.
7. F4G-sg cannot be added to the C6 to C50 hydrocarbon results to obtain an estimate of total extractable hydrocarbons.
8. This method is validated for use.
9. Data from analysis of validation and quality control samples is available upon request.
10. Reported results are expressed as milligrams per dry kilogram, unless otherwise indicated.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

| | | | |
|---|---|---|---|
| **HG-200.2-CVAA-WT** | Soil | Mercury in Soil by CVAAS | EPA 200.2/1631E (mod) |

Soil samples are digested with nitric and hydrochloric acids, followed by analysis by CVAAS.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

| | | | |
|---|---|---|---|
| **MET-200.2-CCMS-WT** | Soil | Metals in Soil by CRC ICPMS | EPA 200.2/6020A (mod) |

Soil/sediment is dried, disaggregated, and sieved (2 mm). For tests intended to support Ontario regulations, the <2mm fraction is ground to pass through a 0.355 mm sieve. Strong Acid Leachable Metals in the <2mm fraction are solubilized by heated digestion with nitric and hydrochloric acids. Instrumental analysis is by Collision / Reaction Cell ICPMS.

Limitations: This method is intended to liberate environmentally available metals. Silicate minerals are not solubilized. Some metals may be only partially recovered (matrix dependent), including Al, Ba, Be, Cr, S, Sr, Ti, Tl, V, W, and Zr. Elemental Sulfur may be poorly recovered by this method. Volatile forms of sulfur (e.g. sulfide, H2S) may be excluded if lost during sampling, storage, or digestion.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

# Reference Information

**Methods Listed (if applicable):**

| ALS Test Code | Matrix | Test Description | Method Reference** |
|---|---|---|---|
| **METHYLNAPS-CALC-WT** | Soil | ABN-Calculated Parameters | SW846 8270 |
| **MOISTURE-WT** | Soil | % Moisture | CCME PHC in Soil - Tier 1 (mod) |
| **PAH-511-WT** | Soil | PAH-O.Reg 153/04 (July 2011) | SW846 3510/8270 |

A representative sub-sample of soil is fortified with deuterium-labelled surrogates and a mechanical shaking techniqueis used to extract the sample with a mixture of methanol and toluene. The extracts are concentrated and analyzed by GC/MS. Results for benzo(b) fluoranthene may include contributions from benzo(j)fluoranthene, if also present in the sample.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

| | | | |
|---|---|---|---|
| **PH-WT** | Soil | pH | MOEE E3137A |

A minimum 10g portion of the sample is extracted with 20mL of 0.01M calcium chloride solution by shaking for at least 30 minutes. The aqueous layer is separated from the soil and then analyzed using a pH meter and electrode.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

| | | | |
|---|---|---|---|
| **PSA-75UM-SIEVE-WT** | Soil | % Particles>75um (Coarse/Fine) | CARTER CSSS 55.4 (modified) |

An air-dried sample is reduced to < 2 mm size and mixed with a dispersing agent (sodium metaphosphate). The sample is washed through a 200 mesh (75 µm) sieve. The retained mass of sample is used to determine % sand fraction. If the percentage of sand is >50%, the soil is considered to be coarse textured soil. If the percentage of sand is <50%, the soil is considered to be fine textured.

| | | | |
|---|---|---|---|
| **SAR-R511-WT** | Soil | SAR-O.Reg 153/04 (July 2011) | SW846 6010C |

A dried, disaggregated solid sample is extracted with deionized water, the aqueous extract is separated from the solid, acidified and then analyzed using a ICP/OES. The concentrations of Na, Ca and Mg are reported as per CALA requirements for calculated parameters. These individual parameters are not for comparison to any guideline.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

| | | | |
|---|---|---|---|
| **VOC-1,3-DCP-CALC-WT** | Soil | Regulation 153 VOCs | SW8260B/SW8270C |
| **VOC-511-HS-WT** | Soil | VOC-O.Reg 153/04 (July 2011) | SW846 8260 (511) |

Soil and sediment samples are extracted in methanol and analyzed by headspace-GC/MS.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

| | | | |
|---|---|---|---|
| **XYLENES-SUM-CALC-WT** | Soil | Sum of Xylene Isomer Concentrations | CALCULATION |

Total xylenes represents the sum of o-xylene and m&p-xylene.

**ALS test methods may incorporate modifications from specified reference methods to improve performance.

Chain of Custody Numbers:

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

| Laboratory Definition Code | Laboratory Location |
|---|---|
| WT | ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA |

# Reference Information

**GLOSSARY OF REPORT TERMS**

*Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.*
*mg/kg - milligrams per kilogram based on dry weight of sample*
*mg/kg wwt - milligrams per kilogram based on wet weight of sample*
*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight*
*mg/L - unit of concentration based on volume, parts per million.*
*< - Less than.*
*D.L. - The reporting limit.*
*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*
*UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.*
*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*

*Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to, fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information. Guideline limits are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.*

# Quality Control Report

Workorder: L2457971 Report Date: 16-JUN-20 

Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **B-HWS-R511-WT** | **Soil** | | | | | | | |
| **Batch R5117953** | | | | | | | | |
| **WG3341915-4 DUP** | | **L2457971-1** | | | | | | |
| Boron (B), Hot Water Ext. | | 0.32 | 0.27 | | ug/g | 15 | 30 | 15-JUN-20 |
| **WG3341915-2 IRM** | | **WT SAR4** | | | | | | |
| Boron (B), Hot Water Ext. | | | 109.1 | | % | | 70-130 | 15-JUN-20 |
| **WG3341915-3 LCS** | | | | | | | | |
| Boron (B), Hot Water Ext. | | | 110.0 | | % | | 70-130 | 15-JUN-20 |
| **WG3341915-1 MB** | | | | | | | | |
| Boron (B), Hot Water Ext. | | | <0.10 | | ug/g | | 0.1 | 15-JUN-20 |
| **BTX-511-HS-WT** | **Soil** | | | | | | | |
| **Batch R5115995** | | | | | | | | |
| **WG3338771-4 DUP** | | **WG3338771-3** | | | | | | |
| Benzene | | 0.0782 | 0.0773 | | ug/g | 1.1 | 40 | 11-JUN-20 |
| Ethylbenzene | | 1.19 | 1.18 | | ug/g | 0.9 | 40 | 11-JUN-20 |
| m+p-Xylenes | | 5.60 | 5.52 | | ug/g | 1.3 | 40 | 11-JUN-20 |
| o-Xylene | | 0.354 | 0.351 | | ug/g | 0.6 | 40 | 11-JUN-20 |
| Toluene | | 0.349 | 0.344 | | ug/g | 1.3 | 40 | 11-JUN-20 |
| **WG3338771-2 LCS** | | | | | | | | |
| Benzene | | | 101.1 | | % | | 70-130 | 11-JUN-20 |
| Ethylbenzene | | | 101.8 | | % | | 70-130 | 11-JUN-20 |
| m+p-Xylenes | | | 99.4 | | % | | 70-130 | 11-JUN-20 |
| o-Xylene | | | 100.5 | | % | | 70-130 | 11-JUN-20 |
| Toluene | | | 99.7 | | % | | 70-130 | 11-JUN-20 |
| **WG3338771-1 MB** | | | | | | | | |
| Benzene | | | <0.0068 | | ug/g | | 0.0068 | 11-JUN-20 |
| Ethylbenzene | | | <0.018 | | ug/g | | 0.018 | 11-JUN-20 |
| m+p-Xylenes | | | <0.030 | | ug/g | | 0.03 | 11-JUN-20 |
| o-Xylene | | | <0.020 | | ug/g | | 0.02 | 11-JUN-20 |
| Toluene | | | <0.080 | | ug/g | | 0.08 | 11-JUN-20 |
| Surrogate: 1,4-Difluorobenzene | | | 119.2 | | % | | 50-140 | 11-JUN-20 |
| Surrogate: 4-Bromofluorobenzene | | | 113.6 | | % | | 50-140 | 11-JUN-20 |
| **WG3338771-5 MS** | | **WG3338771-3** | | | | | | |
| Benzene | | | 97.0 | | % | | 60-140 | 11-JUN-20 |
| Ethylbenzene | | | 70.0 | | % | | 60-140 | 11-JUN-20 |
| m+p-Xylenes | | | 28.8 | E | % | | 60-140 | 12-JUN-20 |
| o-Xylene | | | 89.1 | | % | | 60-140 | 11-JUN-20 |
| Toluene | | | 91.4 | | % | | 60-140 | 11-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **CN-WAD-R511-WT** | **Soil** | | | | | | | |
| **Batch R5116680** | | | | | | | | |
| **WG3340266-3 DUP** | | **L2458033-1** | | | | | | |
| Cyanide, Weak Acid Diss | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 35 | 12-JUN-20 |
| **WG3340266-2 LCS** | | | | | | | | |
| Cyanide, Weak Acid Diss | | | 103.3 | | % | | 80-120 | 12-JUN-20 |
| **WG3340266-1 MB** | | | | | | | | |
| Cyanide, Weak Acid Diss | | | <0.050 | | ug/g | | 0.05 | 12-JUN-20 |
| **WG3340266-4 MS** | | **L2458033-1** | | | | | | |
| Cyanide, Weak Acid Diss | | | 110.8 | | % | | 70-130 | 12-JUN-20 |
| **CR-CR6-IC-WT** | **Soil** | | | | | | | |
| **Batch R5117469** | | | | | | | | |
| **WG3339713-4 CRM** | | **WT-SQC012** | | | | | | |
| Chromium, Hexavalent | | | 102.3 | | % | | 70-130 | 12-JUN-20 |
| **WG3339713-3 DUP** | | **L2458889-2** | | | | | | |
| Chromium, Hexavalent | | <0.20 | <0.20 | RPD-NA | ug/g | N/A | 35 | 12-JUN-20 |
| **WG3339713-2 LCS** | | | | | | | | |
| Chromium, Hexavalent | | | 104.8 | | % | | 80-120 | 12-JUN-20 |
| **WG3339713-1 MB** | | | | | | | | |
| Chromium, Hexavalent | | | <0.20 | | ug/g | | 0.2 | 12-JUN-20 |
| **EC-WT** | **Soil** | | | | | | | |
| **Batch R5117816** | | | | | | | | |
| **WG3341928-4 DUP** | | **WG3341928-3** | | | | | | |
| Conductivity | | 0.220 | 0.218 | | mS/cm | 0.9 | 20 | 15-JUN-20 |
| **WG3341928-2 IRM** | | **WT SAR4** | | | | | | |
| Conductivity | | | 103.0 | | % | | 70-130 | 15-JUN-20 |
| **WG3342091-1 LCS** | | | | | | | | |
| Conductivity | | | 99.9 | | % | | 90-110 | 15-JUN-20 |
| **WG3341928-1 MB** | | | | | | | | |
| Conductivity | | | <0.0040 | | mS/cm | | 0.004 | 15-JUN-20 |
| **F1-HS-511-WT** | **Soil** | | | | | | | |
| **Batch R5115995** | | | | | | | | |
| **WG3338771-4 DUP** | | **WG3338771-3** | | | | | | |
| F1 (C6-C10) | | 79.2 | 81.8 | | ug/g | 3.3 | 30 | 11-JUN-20 |
| **WG3338771-2 LCS** | | | | | | | | |
| F1 (C6-C10) | | | 107.9 | | % | | 80-120 | 11-JUN-20 |
| **WG3338771-1 MB** | | | | | | | | |
| F1 (C6-C10) | | | <5.0 | | ug/g | | 5 | 11-JUN-20 |
| Surrogate: 3,4-Dichlorotoluene | | | 102.0 | | % | | 60-140 | 11-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **F1-HS-511-WT** | **Soil** | | | | | | | |
| **Batch R5115995** | | | | | | | | |
| **WG3338771-6 MS** | | **L2457038-2** | | | | | | |
| F1 (C6-C10) | | | 87.6 | | % | | 60-140 | 11-JUN-20 |
| **Batch R5117509** | | | | | | | | |
| **WG3338800-4 DUP** | | **WG3338800-3** | | | | | | |
| F1 (C6-C10) | | <5.0 | <5.0 | RPD-NA | ug/g | N/A | 30 | 15-JUN-20 |
| **WG3338800-2 LCS** | | | | | | | | |
| F1 (C6-C10) | | | 104.1 | | % | | 80-120 | 15-JUN-20 |
| **WG3338800-1 MB** | | | | | | | | |
| F1 (C6-C10) | | | <5.0 | | ug/g | | 5 | 15-JUN-20 |
| Surrogate: 3,4-Dichlorotoluene | | | 79.9 | | % | | 60-140 | 15-JUN-20 |
| **WG3338800-6 MS** | | **L2457905-2** | | | | | | |
| F1 (C6-C10) | | | 117.3 | | % | | 60-140 | 15-JUN-20 |
| **F2-F4-511-WT** | **Soil** | | | | | | | |
| **Batch R5117502** | | | | | | | | |
| **WG3340086-3 DUP** | | **WG3340086-5** | | | | | | |
| F2 (C10-C16) | | <10 | 11 | RPD-NA | ug/g | N/A | 30 | 12-JUN-20 |
| F3 (C16-C34) | | <50 | <50 | RPD-NA | ug/g | N/A | 30 | 12-JUN-20 |
| F4 (C34-C50) | | <50 | <50 | RPD-NA | ug/g | N/A | 30 | 12-JUN-20 |
| **WG3340086-2 LCS** | | | | | | | | |
| F2 (C10-C16) | | | 102.0 | | % | | 80-120 | 12-JUN-20 |
| F3 (C16-C34) | | | 102.1 | | % | | 80-120 | 12-JUN-20 |
| F4 (C34-C50) | | | 98.0 | | % | | 80-120 | 12-JUN-20 |
| **WG3340086-1 MB** | | | | | | | | |
| F2 (C10-C16) | | | <10 | | ug/g | | 10 | 12-JUN-20 |
| F3 (C16-C34) | | | <50 | | ug/g | | 50 | 12-JUN-20 |
| F4 (C34-C50) | | | <50 | | ug/g | | 50 | 12-JUN-20 |
| Surrogate: 2-Bromobenzotrifluoride | | | 79.8 | | % | | 60-140 | 12-JUN-20 |
| **WG3340086-4 MS** | | **WG3340086-5** | | | | | | |
| F2 (C10-C16) | | | 105.1 | | % | | 60-140 | 12-JUN-20 |
| F3 (C16-C34) | | | 109.7 | | % | | 60-140 | 12-JUN-20 |
| F4 (C34-C50) | | | 110.5 | | % | | 60-140 | 12-JUN-20 |
| **HG-200.2-CVAA-WT** | **Soil** | | | | | | | |
| **Batch R5117533** | | | | | | | | |
| **WG3341903-2 CRM** | | **WT-SS-1** | | | | | | |
| Mercury (Hg) | | | 118.3 | | % | | 70-130 | 15-JUN-20 |
| **WG3341903-6 DUP** | | **WG3341903-5** | | | | | | |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **HG-200.2-CVAA-WT** | **Soil** | | | | | | | |
| **Batch R5117533** | | | | | | | | |
| **WG3341903-6 DUP** | | **WG3341903-5** | | | | | | |
| Mercury (Hg) | | 0.0264 | 0.0281 | | ug/g | 6.1 | 40 | 15-JUN-20 |
| **WG3341903-3 LCS** | | | | | | | | |
| Mercury (Hg) | | | 108.0 | | % | | 80-120 | 15-JUN-20 |
| **WG3341903-1 MB** | | | | | | | | |
| Mercury (Hg) | | | <0.0050 | | mg/kg | | 0.005 | 15-JUN-20 |
| **Batch R5117539** | | | | | | | | |
| **WG3341912-2 CRM** | | **WT-SS-1** | | | | | | |
| Mercury (Hg) | | | 102.3 | | % | | 70-130 | 15-JUN-20 |
| **WG3341912-6 DUP** | | **WG3341912-5** | | | | | | |
| Mercury (Hg) | | <0.0050 | <0.0050 | RPD-NA | ug/g | N/A | 40 | 15-JUN-20 |
| **WG3341912-3 LCS** | | | | | | | | |
| Mercury (Hg) | | | 112.5 | | % | | 80-120 | 15-JUN-20 |
| **WG3341912-1 MB** | | | | | | | | |
| Mercury (Hg) | | | <0.0050 | | mg/kg | | 0.005 | 15-JUN-20 |
| **MET-200.2-CCMS-WT** | **Soil** | | | | | | | |
| **Batch R5117699** | | | | | | | | |
| **WG3341912-2 CRM** | | **WT-SS-1** | | | | | | |
| Antimony (Sb) | | | 97.3 | | % | | 70-130 | 15-JUN-20 |
| Arsenic (As) | | | 123.0 | | % | | 70-130 | 15-JUN-20 |
| Beryllium (Be) | | | 102.3 | | % | | 70-130 | 15-JUN-20 |
| Boron (B) | | | 96.1 | | % | | 70-130 | 15-JUN-20 |
| Cadmium (Cd) | | | 105.6 | | % | | 70-130 | 15-JUN-20 |
| Chromium (Cr) | | | 100.4 | | % | | 70-130 | 15-JUN-20 |
| Cobalt (Co) | | | 107.5 | | % | | 70-130 | 15-JUN-20 |
| Copper (Cu) | | | 112.0 | | % | | 70-130 | 15-JUN-20 |
| Lead (Pb) | | | 106.9 | | % | | 70-130 | 15-JUN-20 |
| Molybdenum (Mo) | | | 110.1 | | % | | 70-130 | 15-JUN-20 |
| Nickel (Ni) | | | 110.6 | | % | | 70-130 | 15-JUN-20 |
| Selenium (Se) | | | 91.8 | | % | | 70-130 | 15-JUN-20 |
| Silver (Ag) | | | 101.1 | | % | | 70-130 | 15-JUN-20 |
| Thallium (Tl) | | | 82.3 | | % | | 70-130 | 15-JUN-20 |
| Vanadium (V) | | | 116.3 | | % | | 70-130 | 15-JUN-20 |
| Zinc (Zn) | | | 113.0 | | % | | 70-130 | 15-JUN-20 |
| **WG3341912-6 DUP** | | **WG3341912-5** | | | | | | |
| Antimony (Sb) | | <0.10 | <0.10 | RPD-NA | ug/g | N/A | 30 | 15-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **MET-200.2-CCMS-WT** | **Soil** | | | | | | | |
| **Batch R5117699** | | | | | | | | |
| **WG3341912-6 DUP** | | **WG3341912-5** | | | | | | |
| Arsenic (As) | | 2.86 | 2.91 | | ug/g | 1.8 | 30 | 15-JUN-20 |
| Barium (Ba) | | 50.4 | 52.8 | | ug/g | 4.6 | 40 | 15-JUN-20 |
| Beryllium (Be) | | 0.28 | 0.28 | | ug/g | 0.3 | 30 | 15-JUN-20 |
| Boron (B) | | 5.4 | 5.8 | | ug/g | 7.8 | 30 | 15-JUN-20 |
| Cadmium (Cd) | | 0.051 | 0.053 | | ug/g | 2.9 | 30 | 15-JUN-20 |
| Chromium (Cr) | | 11.7 | 12.4 | | ug/g | 5.4 | 30 | 15-JUN-20 |
| Cobalt (Co) | | 4.21 | 4.26 | | ug/g | 1.3 | 30 | 15-JUN-20 |
| Copper (Cu) | | 8.38 | 8.49 | | ug/g | 1.3 | 30 | 15-JUN-20 |
| Lead (Pb) | | 4.33 | 4.43 | | ug/g | 2.3 | 40 | 15-JUN-20 |
| Molybdenum (Mo) | | 0.21 | 0.20 | | ug/g | 5.3 | 40 | 15-JUN-20 |
| Nickel (Ni) | | 8.65 | 8.73 | | ug/g | 1.0 | 30 | 15-JUN-20 |
| Selenium (Se) | | <0.20 | <0.20 | RPD-NA | ug/g | N/A | 30 | 15-JUN-20 |
| Silver (Ag) | | <0.10 | <0.10 | RPD-NA | ug/g | N/A | 40 | 15-JUN-20 |
| Thallium (Tl) | | 0.072 | 0.069 | | ug/g | 5.2 | 30 | 15-JUN-20 |
| Uranium (U) | | 0.352 | 0.372 | | ug/g | 5.6 | 30 | 15-JUN-20 |
| Vanadium (V) | | 21.0 | 21.9 | | ug/g | 4.6 | 30 | 15-JUN-20 |
| Zinc (Zn) | | 23.2 | 23.5 | | ug/g | 1.5 | 30 | 15-JUN-20 |
| **WG3341912-4 LCS** | | | | | | | | |
| Antimony (Sb) | | | 104.0 | | % | | 80-120 | 15-JUN-20 |
| Arsenic (As) | | | 106.2 | | % | | 80-120 | 15-JUN-20 |
| Barium (Ba) | | | 104.1 | | % | | 80-120 | 15-JUN-20 |
| Beryllium (Be) | | | 99.3 | | % | | 80-120 | 15-JUN-20 |
| Boron (B) | | | 98.3 | | % | | 80-120 | 15-JUN-20 |
| Cadmium (Cd) | | | 100.1 | | % | | 80-120 | 15-JUN-20 |
| Chromium (Cr) | | | 103.2 | | % | | 80-120 | 15-JUN-20 |
| Cobalt (Co) | | | 103.4 | | % | | 80-120 | 15-JUN-20 |
| Copper (Cu) | | | 102.4 | | % | | 80-120 | 15-JUN-20 |
| Lead (Pb) | | | 97.5 | | % | | 80-120 | 15-JUN-20 |
| Molybdenum (Mo) | | | 102.8 | | % | | 80-120 | 15-JUN-20 |
| Nickel (Ni) | | | 103.1 | | % | | 80-120 | 15-JUN-20 |
| Selenium (Se) | | | 102.9 | | % | | 80-120 | 15-JUN-20 |
| Silver (Ag) | | | 100.3 | | % | | 80-120 | 15-JUN-20 |
| Thallium (Tl) | | | 98.0 | | % | | 80-120 | 15-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **MET-200.2-CCMS-WT** | **Soil** | | | | | | | |
| **Batch R5117699** | | | | | | | | |
| **WG3341912-4 LCS** | | | | | | | | |
| Uranium (U) | | | 87.0 | | % | | 80-120 | 15-JUN-20 |
| Vanadium (V) | | | 106.4 | | % | | 80-120 | 15-JUN-20 |
| Zinc (Zn) | | | 101.3 | | % | | 80-120 | 15-JUN-20 |
| **WG3341912-1 MB** | | | | | | | | |
| Antimony (Sb) | | | <0.10 | | mg/kg | | 0.1 | 15-JUN-20 |
| Arsenic (As) | | | <0.10 | | mg/kg | | 0.1 | 15-JUN-20 |
| Barium (Ba) | | | <0.50 | | mg/kg | | 0.5 | 15-JUN-20 |
| Beryllium (Be) | | | <0.10 | | mg/kg | | 0.1 | 15-JUN-20 |
| Boron (B) | | | <5.0 | | mg/kg | | 5 | 15-JUN-20 |
| Cadmium (Cd) | | | <0.020 | | mg/kg | | 0.02 | 15-JUN-20 |
| Chromium (Cr) | | | <0.50 | | mg/kg | | 0.5 | 15-JUN-20 |
| Cobalt (Co) | | | <0.10 | | mg/kg | | 0.1 | 15-JUN-20 |
| Copper (Cu) | | | <0.50 | | mg/kg | | 0.5 | 15-JUN-20 |
| Lead (Pb) | | | <0.50 | | mg/kg | | 0.5 | 15-JUN-20 |
| Molybdenum (Mo) | | | <0.10 | | mg/kg | | 0.1 | 15-JUN-20 |
| Nickel (Ni) | | | <0.50 | | mg/kg | | 0.5 | 15-JUN-20 |
| Selenium (Se) | | | <0.20 | | mg/kg | | 0.2 | 15-JUN-20 |
| Silver (Ag) | | | <0.10 | | mg/kg | | 0.1 | 15-JUN-20 |
| Thallium (Tl) | | | <0.050 | | mg/kg | | 0.05 | 15-JUN-20 |
| Uranium (U) | | | <0.050 | | mg/kg | | 0.05 | 15-JUN-20 |
| Vanadium (V) | | | <0.20 | | mg/kg | | 0.2 | 15-JUN-20 |
| Zinc (Zn) | | | <2.0 | | mg/kg | | 2 | 15-JUN-20 |
| **Batch R5117787** | | | | | | | | |
| **WG3341903-2 CRM** | | **WT-SS-1** | | | | | | |
| Antimony (Sb) | | | 101.0 | | % | | 70-130 | 15-JUN-20 |
| Arsenic (As) | | | 122.8 | | % | | 70-130 | 15-JUN-20 |
| Beryllium (Be) | | | 106.0 | | % | | 70-130 | 15-JUN-20 |
| Boron (B) | | | 93.5 | | % | | 70-130 | 15-JUN-20 |
| Cadmium (Cd) | | | 105.8 | | % | | 70-130 | 15-JUN-20 |
| Chromium (Cr) | | | 100.7 | | % | | 70-130 | 15-JUN-20 |
| Cobalt (Co) | | | 108.1 | | % | | 70-130 | 15-JUN-20 |
| Copper (Cu) | | | 107.2 | | % | | 70-130 | 15-JUN-20 |
| Lead (Pb) | | | 115.1 | | % | | 70-130 | 15-JUN-20 |
| Molybdenum (Mo) | | | 109.7 | | % | | 70-130 | 15-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **MET-200.2-CCMS-WT** | **Soil** | | | | | | | |
| **Batch R5117787** | | | | | | | | |
| **WG3341903-2 CRM** | | **WT-SS-1** | | | | | | |
| Nickel (Ni) | | | 110.8 | | % | | 70-130 | 15-JUN-20 |
| Selenium (Se) | | | 93.0 | | % | | 70-130 | 15-JUN-20 |
| Silver (Ag) | | | 104.7 | | % | | 70-130 | 15-JUN-20 |
| Thallium (Tl) | | | 82.4 | | % | | 70-130 | 15-JUN-20 |
| Vanadium (V) | | | 113.7 | | % | | 70-130 | 15-JUN-20 |
| Zinc (Zn) | | | 112.2 | | % | | 70-130 | 15-JUN-20 |
| **WG3341903-6 DUP** | | **WG3341903-5** | | | | | | |
| Antimony (Sb) | | 0.17 | 0.18 | | ug/g | 1.9 | 30 | 15-JUN-20 |
| Arsenic (As) | | 3.82 | 3.83 | | ug/g | 0.1 | 30 | 15-JUN-20 |
| Barium (Ba) | | 76.1 | 76.7 | | ug/g | 0.9 | 40 | 15-JUN-20 |
| Beryllium (Be) | | 0.55 | 0.56 | | ug/g | 2.1 | 30 | 15-JUN-20 |
| Boron (B) | | 7.0 | 7.0 | | ug/g | 0.4 | 30 | 15-JUN-20 |
| Cadmium (Cd) | | 0.139 | 0.142 | | ug/g | 2.0 | 30 | 15-JUN-20 |
| Chromium (Cr) | | 22.0 | 22.5 | | ug/g | 2.4 | 30 | 15-JUN-20 |
| Cobalt (Co) | | 8.55 | 8.65 | | ug/g | 1.2 | 30 | 15-JUN-20 |
| Copper (Cu) | | 19.9 | 19.7 | | ug/g | 0.7 | 30 | 15-JUN-20 |
| Lead (Pb) | | 15.5 | 15.9 | | ug/g | 2.6 | 40 | 15-JUN-20 |
| Molybdenum (Mo) | | 0.45 | 0.56 | | ug/g | 22 | 40 | 15-JUN-20 |
| Nickel (Ni) | | 19.5 | 20.0 | | ug/g | 2.8 | 30 | 15-JUN-20 |
| Selenium (Se) | | <0.20 | <0.20 | RPD-NA | ug/g | N/A | 30 | 15-JUN-20 |
| Silver (Ag) | | 0.46 | 0.48 | | ug/g | 2.9 | 40 | 15-JUN-20 |
| Thallium (Tl) | | 0.126 | 0.133 | | ug/g | 5.7 | 30 | 15-JUN-20 |
| Uranium (U) | | 0.549 | 0.567 | | ug/g | 3.1 | 30 | 15-JUN-20 |
| Vanadium (V) | | 30.8 | 31.0 | | ug/g | 0.5 | 30 | 15-JUN-20 |
| Zinc (Zn) | | 55.5 | 55.4 | | ug/g | 0.2 | 30 | 15-JUN-20 |
| **WG3341903-4 LCS** | | | | | | | | |
| Antimony (Sb) | | | 111.2 | | % | | 80-120 | 15-JUN-20 |
| Arsenic (As) | | | 106.2 | | % | | 80-120 | 15-JUN-20 |
| Barium (Ba) | | | 106.1 | | % | | 80-120 | 15-JUN-20 |
| Beryllium (Be) | | | 103.9 | | % | | 80-120 | 15-JUN-20 |
| Boron (B) | | | 100.7 | | % | | 80-120 | 15-JUN-20 |
| Cadmium (Cd) | | | 104.2 | | % | | 80-120 | 15-JUN-20 |
| Chromium (Cr) | | | 105.7 | | % | | 80-120 | 15-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **MET-200.2-CCMS-WT** | **Soil** | | | | | | | |
| **Batch R5117787** | | | | | | | | |
| **WG3341903-4 LCS** | | | | | | | | |
| Cobalt (Co) | | | 102.2 | | % | | 80-120 | 15-JUN-20 |
| Copper (Cu) | | | 101.1 | | % | | 80-120 | 15-JUN-20 |
| Lead (Pb) | | | 105.9 | | % | | 80-120 | 15-JUN-20 |
| Molybdenum (Mo) | | | 107.5 | | % | | 80-120 | 15-JUN-20 |
| Nickel (Ni) | | | 102.0 | | % | | 80-120 | 15-JUN-20 |
| Selenium (Se) | | | 103.5 | | % | | 80-120 | 15-JUN-20 |
| Silver (Ag) | | | 104.7 | | % | | 80-120 | 15-JUN-20 |
| Thallium (Tl) | | | 106.6 | | % | | 80-120 | 15-JUN-20 |
| Uranium (U) | | | 100.6 | | % | | 80-120 | 15-JUN-20 |
| Vanadium (V) | | | 106.8 | | % | | 80-120 | 15-JUN-20 |
| Zinc (Zn) | | | 102.2 | | % | | 80-120 | 15-JUN-20 |
| **WG3341903-1 MB** | | | | | | | | |
| Antimony (Sb) | | | <0.10 | | mg/kg | | 0.1 | 15-JUN-20 |
| Arsenic (As) | | | <0.10 | | mg/kg | | 0.1 | 15-JUN-20 |
| Barium (Ba) | | | <0.50 | | mg/kg | | 0.5 | 15-JUN-20 |
| Beryllium (Be) | | | <0.10 | | mg/kg | | 0.1 | 15-JUN-20 |
| Boron (B) | | | <5.0 | | mg/kg | | 5 | 15-JUN-20 |
| Cadmium (Cd) | | | <0.020 | | mg/kg | | 0.02 | 15-JUN-20 |
| Chromium (Cr) | | | <0.50 | | mg/kg | | 0.5 | 15-JUN-20 |
| Cobalt (Co) | | | <0.10 | | mg/kg | | 0.1 | 15-JUN-20 |
| Copper (Cu) | | | <0.50 | | mg/kg | | 0.5 | 15-JUN-20 |
| Lead (Pb) | | | <0.50 | | mg/kg | | 0.5 | 15-JUN-20 |
| Molybdenum (Mo) | | | <0.10 | | mg/kg | | 0.1 | 15-JUN-20 |
| Nickel (Ni) | | | <0.50 | | mg/kg | | 0.5 | 15-JUN-20 |
| Selenium (Se) | | | <0.20 | | mg/kg | | 0.2 | 15-JUN-20 |
| Silver (Ag) | | | <0.10 | | mg/kg | | 0.1 | 15-JUN-20 |
| Thallium (Tl) | | | <0.050 | | mg/kg | | 0.05 | 15-JUN-20 |
| Uranium (U) | | | <0.050 | | mg/kg | | 0.05 | 15-JUN-20 |
| Vanadium (V) | | | <0.20 | | mg/kg | | 0.2 | 15-JUN-20 |
| Zinc (Zn) | | | <2.0 | | mg/kg | | 2 | 15-JUN-20 |
| **MOISTURE-WT** | **Soil** | | | | | | | |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **MOISTURE-WT** | **Soil** | | | | | | | |
| **Batch R5115574** | | | | | | | | |
| **WG3339687-3 DUP** | | **L2457609-1** | | | | | | |
| % Moisture | | 2.95 | 3.14 | | % | 6.2 | 20 | 12-JUN-20 |
| **WG3339687-2 LCS** | | | | | | | | |
| % Moisture | | | 99.4 | | % | | 90-110 | 12-JUN-20 |
| **WG3339687-1 MB** | | | | | | | | |
| % Moisture | | | <0.25 | | % | | 0.25 | 12-JUN-20 |
| **PAH-511-WT** | **Soil** | | | | | | | |
| **Batch R5116436** | | | | | | | | |
| **WG3339650-3 DUP** | | **WG3339650-5** | | | | | | |
| 1-Methylnaphthalene | | <0.030 | <0.030 | RPD-NA | ug/g | N/A | 40 | 12-JUN-20 |
| 2-Methylnaphthalene | | <0.030 | <0.030 | RPD-NA | ug/g | N/A | 40 | 12-JUN-20 |
| Acenaphthene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 12-JUN-20 |
| Acenaphthylene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 12-JUN-20 |
| Anthracene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 12-JUN-20 |
| Benzo(a)anthracene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 12-JUN-20 |
| Benzo(a)pyrene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 12-JUN-20 |
| Benzo(b)fluoranthene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 12-JUN-20 |
| Benzo(g,h,i)perylene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 12-JUN-20 |
| Benzo(k)fluoranthene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 12-JUN-20 |
| Chrysene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 12-JUN-20 |
| Dibenzo(ah)anthracene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 12-JUN-20 |
| Fluoranthene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 12-JUN-20 |
| Fluorene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 12-JUN-20 |
| Indeno(1,2,3-cd)pyrene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 12-JUN-20 |
| Naphthalene | | <0.013 | <0.013 | RPD-NA | ug/g | N/A | 40 | 12-JUN-20 |
| Phenanthrene | | <0.046 | <0.046 | RPD-NA | ug/g | N/A | 40 | 12-JUN-20 |
| Pyrene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 12-JUN-20 |
| **WG3339650-2 LCS** | | | | | | | | |
| 1-Methylnaphthalene | | | 89.8 | | % | | 50-140 | 12-JUN-20 |
| 2-Methylnaphthalene | | | 86.1 | | % | | 50-140 | 12-JUN-20 |
| Acenaphthene | | | 88.5 | | % | | 50-140 | 12-JUN-20 |
| Acenaphthylene | | | 82.2 | | % | | 50-140 | 12-JUN-20 |
| Anthracene | | | 87.6 | | % | | 50-140 | 12-JUN-20 |
| Benzo(a)anthracene | | | 86.7 | | % | | 50-140 | 12-JUN-20 |
| Benzo(a)pyrene | | | 85.6 | | % | | 50-140 | 12-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAH-511-WT** | **Soil** | | | | | | | |
| **Batch R5116436** | | | | | | | | |
| **WG3339650-2 LCS** | | | | | | | | |
| Benzo(b)fluoranthene | | | 80.9 | | % | | 50-140 | 12-JUN-20 |
| Benzo(g,h,i)perylene | | | 87.1 | | % | | 50-140 | 12-JUN-20 |
| Benzo(k)fluoranthene | | | 90.1 | | % | | 50-140 | 12-JUN-20 |
| Chrysene | | | 100.6 | | % | | 50-140 | 12-JUN-20 |
| Dibenzo(ah)anthracene | | | 86.5 | | % | | 50-140 | 12-JUN-20 |
| Fluoranthene | | | 82.1 | | % | | 50-140 | 12-JUN-20 |
| Fluorene | | | 79.5 | | % | | 50-140 | 12-JUN-20 |
| Indeno(1,2,3-cd)pyrene | | | 79.8 | | % | | 50-140 | 12-JUN-20 |
| Naphthalene | | | 88.4 | | % | | 50-140 | 12-JUN-20 |
| Phenanthrene | | | 90.8 | | % | | 50-140 | 12-JUN-20 |
| Pyrene | | | 83.4 | | % | | 50-140 | 12-JUN-20 |
| **WG3339650-1 MB** | | | | | | | | |
| 1-Methylnaphthalene | | | <0.030 | | ug/g | | 0.03 | 12-JUN-20 |
| 2-Methylnaphthalene | | | <0.030 | | ug/g | | 0.03 | 12-JUN-20 |
| Acenaphthene | | | <0.050 | | ug/g | | 0.05 | 12-JUN-20 |
| Acenaphthylene | | | <0.050 | | ug/g | | 0.05 | 12-JUN-20 |
| Anthracene | | | <0.050 | | ug/g | | 0.05 | 12-JUN-20 |
| Benzo(a)anthracene | | | <0.050 | | ug/g | | 0.05 | 12-JUN-20 |
| Benzo(a)pyrene | | | <0.050 | | ug/g | | 0.05 | 12-JUN-20 |
| Benzo(b)fluoranthene | | | <0.050 | | ug/g | | 0.05 | 12-JUN-20 |
| Benzo(g,h,i)perylene | | | <0.050 | | ug/g | | 0.05 | 12-JUN-20 |
| Benzo(k)fluoranthene | | | <0.050 | | ug/g | | 0.05 | 12-JUN-20 |
| Chrysene | | | <0.050 | | ug/g | | 0.05 | 12-JUN-20 |
| Dibenzo(ah)anthracene | | | <0.050 | | ug/g | | 0.05 | 12-JUN-20 |
| Fluoranthene | | | <0.050 | | ug/g | | 0.05 | 12-JUN-20 |
| Fluorene | | | <0.050 | | ug/g | | 0.05 | 12-JUN-20 |
| Indeno(1,2,3-cd)pyrene | | | <0.050 | | ug/g | | 0.05 | 12-JUN-20 |
| Naphthalene | | | <0.013 | | ug/g | | 0.013 | 12-JUN-20 |
| Phenanthrene | | | <0.046 | | ug/g | | 0.046 | 12-JUN-20 |
| Pyrene | | | <0.050 | | ug/g | | 0.05 | 12-JUN-20 |
| Surrogate: 2-Fluorobiphenyl | | | 81.5 | | % | | 50-140 | 12-JUN-20 |
| Surrogate: p-Terphenyl d14 | | | 81.1 | | % | | 50-140 | 12-JUN-20 |
| **WG3339650-4 MS** | | **WG3339650-5** | | | | | | |
| 1-Methylnaphthalene | | | 90.6 | | % | | 50-140 | 12-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAH-511-WT** | **Soil** | | | | | | | |
| **Batch R5116436** | | | | | | | | |
| **WG3339650-4 MS** | | **WG3339650-5** | | | | | | |
| 2-Methylnaphthalene | | | 87.3 | | % | | 50-140 | 12-JUN-20 |
| Acenaphthene | | | 89.6 | | % | | 50-140 | 12-JUN-20 |
| Acenaphthylene | | | 83.3 | | % | | 50-140 | 12-JUN-20 |
| Anthracene | | | 90.6 | | % | | 50-140 | 12-JUN-20 |
| Benzo(a)anthracene | | | 90.3 | | % | | 50-140 | 12-JUN-20 |
| Benzo(a)pyrene | | | 88.2 | | % | | 50-140 | 12-JUN-20 |
| Benzo(b)fluoranthene | | | 82.8 | | % | | 50-140 | 12-JUN-20 |
| Benzo(g,h,i)perylene | | | 87.5 | | % | | 50-140 | 12-JUN-20 |
| Benzo(k)fluoranthene | | | 93.5 | | % | | 50-140 | 12-JUN-20 |
| Chrysene | | | 102.3 | | % | | 50-140 | 12-JUN-20 |
| Dibenzo(ah)anthracene | | | 88.6 | | % | | 50-140 | 12-JUN-20 |
| Fluoranthene | | | 83.7 | | % | | 50-140 | 12-JUN-20 |
| Fluorene | | | 80.5 | | % | | 50-140 | 12-JUN-20 |
| Indeno(1,2,3-cd)pyrene | | | 82.1 | | % | | 50-140 | 12-JUN-20 |
| Naphthalene | | | 89.7 | | % | | 50-140 | 12-JUN-20 |
| Phenanthrene | | | 91.9 | | % | | 50-140 | 12-JUN-20 |
| Pyrene | | | 84.8 | | % | | 50-140 | 12-JUN-20 |
| **PH-WT** | **Soil** | | | | | | | |
| **Batch R5116057** | | | | | | | | |
| **WG3339722-1 DUP** | | **L2457094-1** | | | | | | |
| pH | | 7.64 | 7.56 | J | pH units | 0.08 | 0.3 | 11-JUN-20 |
| **WG3339971-1 LCS** | | | | | | | | |
| pH | | | 6.97 | | pH units | | 6.9-7.1 | 11-JUN-20 |
| **PSA-75UM-SIEVE-WT** | **Soil** | | | | | | | |
| **Batch R5115960** | | | | | | | | |
| **WG3340113-2 DUP** | | **L2456537-1** | | | | | | |
| % >75um | | 54.0 | 53.0 | J | % | 1.0 | 5 | 11-JUN-20 |
| **WG3340113-1 IRM** | | **PSA_IRM** | | | | | | |
| % >75um | | | 95.5 | | % | | 70-130 | 11-JUN-20 |
| **SAR-R511-WT** | **Soil** | | | | | | | |
| **Batch R5117989** | | | | | | | | |
| **WG3341928-4 DUP** | | **WG3341928-3** | | | | | | |
| Calcium (Ca) | | 8.76 | 8.34 | | mg/L | 4.9 | 30 | 15-JUN-20 |
| Sodium (Na) | | 21.0 | 20.7 | | mg/L | 1.4 | 30 | 15-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **SAR-R511-WT** | **Soil** | | | | | | | |
| **Batch R5117989** | | | | | | | | |
| **WG3341928-4 DUP** | | **WG3341928-3** | | | | | | |
| Magnesium (Mg) | | 2.83 | 2.73 | | mg/L | 3.6 | 30 | 15-JUN-20 |
| **WG3341928-2 IRM** | | **WT SAR4** | | | | | | |
| Calcium (Ca) | | | 99.1 | | % | | 70-130 | 15-JUN-20 |
| Sodium (Na) | | | 93.7 | | % | | 70-130 | 15-JUN-20 |
| Magnesium (Mg) | | | 99.1 | | % | | 70-130 | 15-JUN-20 |
| **WG3341928-5 LCS** | | | | | | | | |
| Calcium (Ca) | | | 103.3 | | % | | 80-120 | 15-JUN-20 |
| Sodium (Na) | | | 101.8 | | % | | 80-120 | 15-JUN-20 |
| Magnesium (Mg) | | | 100.8 | | % | | 80-120 | 15-JUN-20 |
| **WG3341928-1 MB** | | | | | | | | |
| Calcium (Ca) | | | <0.50 | | mg/L | | 0.5 | 15-JUN-20 |
| Sodium (Na) | | | <0.50 | | mg/L | | 0.5 | 15-JUN-20 |
| Magnesium (Mg) | | | <0.50 | | mg/L | | 0.5 | 15-JUN-20 |
| **VOC-511-HS-WT** | **Soil** | | | | | | | |
| **Batch R5117509** | | | | | | | | |
| **WG3338800-4 DUP** | | **WG3338800-3** | | | | | | |
| 1,1,1,2-Tetrachloroethane | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 15-JUN-20 |
| 1,1,2,2-Tetrachloroethane | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 15-JUN-20 |
| 1,1,1-Trichloroethane | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 15-JUN-20 |
| 1,1,2-Trichloroethane | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 15-JUN-20 |
| 1,1-Dichloroethane | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 15-JUN-20 |
| 1,1-Dichloroethylene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 15-JUN-20 |
| 1,2-Dibromoethane | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 15-JUN-20 |
| 1,2-Dichlorobenzene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 15-JUN-20 |
| 1,2-Dichloroethane | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 15-JUN-20 |
| 1,2-Dichloropropane | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 15-JUN-20 |
| 1,3-Dichlorobenzene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 15-JUN-20 |
| 1,4-Dichlorobenzene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 15-JUN-20 |
| Acetone | | <0.50 | <0.50 | RPD-NA | ug/g | N/A | 40 | 15-JUN-20 |
| Benzene | | <0.0068 | <0.0068 | RPD-NA | ug/g | N/A | 40 | 15-JUN-20 |
| Bromodichloromethane | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 15-JUN-20 |
| Bromoform | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 15-JUN-20 |
| Bromomethane | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 15-JUN-20 |
| Carbon tetrachloride | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 15-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **VOC-511-HS-WT** | **Soil** | | | | | | | |
| **Batch R5117509** | | | | | | | | |
| **WG3338800-4 DUP** | | **WG3338800-3** | | | | | | |
| Chlorobenzene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 15-JUN-20 |
| Chloroform | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 15-JUN-20 |
| cis-1,2-Dichloroethylene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 15-JUN-20 |
| cis-1,3-Dichloropropene | | <0.030 | <0.030 | RPD-NA | ug/g | N/A | 40 | 15-JUN-20 |
| Dibromochloromethane | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 15-JUN-20 |
| Dichlorodifluoromethane | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 15-JUN-20 |
| Ethylbenzene | | <0.018 | <0.018 | RPD-NA | ug/g | N/A | 40 | 15-JUN-20 |
| n-Hexane | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 15-JUN-20 |
| Methylene Chloride | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 15-JUN-20 |
| MTBE | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 15-JUN-20 |
| m+p-Xylenes | | <0.030 | <0.030 | RPD-NA | ug/g | N/A | 40 | 15-JUN-20 |
| Methyl Ethyl Ketone | | <0.50 | <0.50 | RPD-NA | ug/g | N/A | 40 | 15-JUN-20 |
| Methyl Isobutyl Ketone | | <0.50 | <0.50 | RPD-NA | ug/g | N/A | 40 | 15-JUN-20 |
| o-Xylene | | <0.020 | <0.020 | RPD-NA | ug/g | N/A | 40 | 15-JUN-20 |
| Styrene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 15-JUN-20 |
| Tetrachloroethylene | | 13.8 | 14.1 | | ug/g | 2.0 | 40 | 15-JUN-20 |
| Toluene | | <0.080 | <0.080 | RPD-NA | ug/g | N/A | 40 | 15-JUN-20 |
| trans-1,2-Dichloroethylene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 15-JUN-20 |
| trans-1,3-Dichloropropene | | <0.030 | <0.030 | RPD-NA | ug/g | N/A | 40 | 15-JUN-20 |
| Trichloroethylene | | <0.010 | <0.010 | RPD-NA | ug/g | N/A | 40 | 15-JUN-20 |
| Trichlorofluoromethane | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 15-JUN-20 |
| Vinyl chloride | | <0.020 | <0.020 | RPD-NA | ug/g | N/A | 40 | 15-JUN-20 |
| **WG3338800-2 LCS** | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | | | 114.0 | | % | | 60-130 | 15-JUN-20 |
| 1,1,2,2-Tetrachloroethane | | | 118.1 | | % | | 60-130 | 15-JUN-20 |
| 1,1,1-Trichloroethane | | | 109.3 | | % | | 60-130 | 15-JUN-20 |
| 1,1,2-Trichloroethane | | | 117.5 | | % | | 60-130 | 15-JUN-20 |
| 1,1-Dichloroethane | | | 82.0 | | % | | 60-130 | 15-JUN-20 |
| 1,1-Dichloroethylene | | | 98.2 | | % | | 60-130 | 15-JUN-20 |
| 1,2-Dibromoethane | | | 115.0 | | % | | 70-130 | 15-JUN-20 |
| 1,2-Dichlorobenzene | | | 108.9 | | % | | 70-130 | 15-JUN-20 |
| 1,2-Dichloroethane | | | 114.1 | | % | | 60-130 | 15-JUN-20 |
| 1,2-Dichloropropane | | | 123.4 | | % | | 70-130 | 15-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **VOC-511-HS-WT** | **Soil** | | | | | | | |
| **Batch R5117509** | | | | | | | | |
| **WG3338800-2 LCS** | | | | | | | | |
| 1,3-Dichlorobenzene | | | 105.2 | | % | | 70-130 | 15-JUN-20 |
| 1,4-Dichlorobenzene | | | 111.5 | | % | | 70-130 | 15-JUN-20 |
| Acetone | | | 134.4 | | % | | 60-140 | 15-JUN-20 |
| Benzene | | | 117.6 | | % | | 70-130 | 15-JUN-20 |
| Bromodichloromethane | | | 123.6 | | % | | 50-140 | 15-JUN-20 |
| Bromoform | | | 121.1 | | % | | 70-130 | 15-JUN-20 |
| Bromomethane | | | 141.0 | MES | % | | 50-140 | 15-JUN-20 |
| Carbon tetrachloride | | | 108.7 | | % | | 70-130 | 15-JUN-20 |
| Chlorobenzene | | | 108.5 | | % | | 70-130 | 15-JUN-20 |
| Chloroform | | | 116.7 | | % | | 70-130 | 15-JUN-20 |
| cis-1,2-Dichloroethylene | | | 105.7 | | % | | 70-130 | 15-JUN-20 |
| cis-1,3-Dichloropropene | | | 118.3 | | % | | 70-130 | 15-JUN-20 |
| Dibromochloromethane | | | 111.3 | | % | | 60-130 | 15-JUN-20 |
| Dichlorodifluoromethane | | | 83.5 | | % | | 50-140 | 15-JUN-20 |
| Ethylbenzene | | | 110.4 | | % | | 70-130 | 15-JUN-20 |
| n-Hexane | | | 112.5 | | % | | 70-130 | 15-JUN-20 |
| Methylene Chloride | | | 109.2 | | % | | 70-130 | 15-JUN-20 |
| MTBE | | | 106.1 | | % | | 70-130 | 15-JUN-20 |
| m+p-Xylenes | | | 114.5 | | % | | 70-130 | 15-JUN-20 |
| Methyl Ethyl Ketone | | | 125.3 | | % | | 60-140 | 15-JUN-20 |
| Methyl Isobutyl Ketone | | | 127.1 | | % | | 60-140 | 15-JUN-20 |
| o-Xylene | | | 120.5 | | % | | 70-130 | 15-JUN-20 |
| Styrene | | | 114.8 | | % | | 70-130 | 15-JUN-20 |
| Tetrachloroethylene | | | 110.5 | | % | | 60-130 | 15-JUN-20 |
| Toluene | | | 111.9 | | % | | 70-130 | 15-JUN-20 |
| trans-1,2-Dichloroethylene | | | 113.1 | | % | | 60-130 | 15-JUN-20 |
| trans-1,3-Dichloropropene | | | 126.4 | | % | | 70-130 | 15-JUN-20 |
| Trichloroethylene | | | 105.2 | | % | | 60-130 | 15-JUN-20 |
| Trichlorofluoromethane | | | 96.3 | | % | | 50-140 | 15-JUN-20 |
| Vinyl chloride | | | 136.2 | | % | | 60-140 | 15-JUN-20 |
| **WG3338800-1 MB** | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | | | <0.050 | | ug/g | | 0.05 | 15-JUN-20 |
| 1,1,2,2-Tetrachloroethane | | | <0.050 | | ug/g | | 0.05 | 15-JUN-20 |
| 1,1,1-Trichloroethane | | | <0.050 | | ug/g | | 0.05 | 15-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **VOC-511-HS-WT** | **Soil** | | | | | | | |
| **Batch R5117509** | | | | | | | | |
| **WG3338800-1 MB** | | | | | | | | |
| 1,1,2-Trichloroethane | | | <0.050 | | ug/g | | 0.05 | 15-JUN-20 |
| 1,1-Dichloroethane | | | <0.050 | | ug/g | | 0.05 | 15-JUN-20 |
| 1,1-Dichloroethylene | | | <0.050 | | ug/g | | 0.05 | 15-JUN-20 |
| 1,2-Dibromoethane | | | <0.050 | | ug/g | | 0.05 | 15-JUN-20 |
| 1,2-Dichlorobenzene | | | <0.050 | | ug/g | | 0.05 | 15-JUN-20 |
| 1,2-Dichloroethane | | | <0.050 | | ug/g | | 0.05 | 15-JUN-20 |
| 1,2-Dichloropropane | | | <0.050 | | ug/g | | 0.05 | 15-JUN-20 |
| 1,3-Dichlorobenzene | | | <0.050 | | ug/g | | 0.05 | 15-JUN-20 |
| 1,4-Dichlorobenzene | | | <0.050 | | ug/g | | 0.05 | 15-JUN-20 |
| Acetone | | | <0.50 | | ug/g | | 0.5 | 15-JUN-20 |
| Benzene | | | <0.0068 | | ug/g | | 0.0068 | 15-JUN-20 |
| Bromodichloromethane | | | <0.050 | | ug/g | | 0.05 | 15-JUN-20 |
| Bromoform | | | <0.050 | | ug/g | | 0.05 | 15-JUN-20 |
| Bromomethane | | | <0.050 | | ug/g | | 0.05 | 15-JUN-20 |
| Carbon tetrachloride | | | <0.050 | | ug/g | | 0.05 | 15-JUN-20 |
| Chlorobenzene | | | <0.050 | | ug/g | | 0.05 | 15-JUN-20 |
| Chloroform | | | <0.050 | | ug/g | | 0.05 | 15-JUN-20 |
| cis-1,2-Dichloroethylene | | | <0.050 | | ug/g | | 0.05 | 15-JUN-20 |
| cis-1,3-Dichloropropene | | | <0.030 | | ug/g | | 0.03 | 15-JUN-20 |
| Dibromochloromethane | | | <0.050 | | ug/g | | 0.05 | 15-JUN-20 |
| Dichlorodifluoromethane | | | <0.050 | | ug/g | | 0.05 | 15-JUN-20 |
| Ethylbenzene | | | <0.018 | | ug/g | | 0.018 | 15-JUN-20 |
| n-Hexane | | | <0.050 | | ug/g | | 0.05 | 15-JUN-20 |
| Methylene Chloride | | | <0.050 | | ug/g | | 0.05 | 15-JUN-20 |
| MTBE | | | <0.050 | | ug/g | | 0.05 | 15-JUN-20 |
| m+p-Xylenes | | | <0.030 | | ug/g | | 0.03 | 15-JUN-20 |
| Methyl Ethyl Ketone | | | <0.50 | | ug/g | | 0.5 | 15-JUN-20 |
| Methyl Isobutyl Ketone | | | <0.50 | | ug/g | | 0.5 | 15-JUN-20 |
| o-Xylene | | | <0.020 | | ug/g | | 0.02 | 15-JUN-20 |
| Styrene | | | <0.050 | | ug/g | | 0.05 | 15-JUN-20 |
| Tetrachloroethylene | | | <0.050 | | ug/g | | 0.05 | 15-JUN-20 |
| Toluene | | | <0.080 | | ug/g | | 0.08 | 15-JUN-20 |
| trans-1,2-Dichloroethylene | | | <0.050 | | ug/g | | 0.05 | 15-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **VOC-511-HS-WT** | **Soil** | | | | | | | |
| **Batch R5117509** | | | | | | | | |
| **WG3338800-1 MB** | | | | | | | | |
| trans-1,3-Dichloropropene | | | <0.030 | | ug/g | | 0.03 | 15-JUN-20 |
| Trichloroethylene | | | <0.010 | | ug/g | | 0.01 | 15-JUN-20 |
| Trichlorofluoromethane | | | <0.050 | | ug/g | | 0.05 | 15-JUN-20 |
| Vinyl chloride | | | <0.020 | | ug/g | | 0.02 | 15-JUN-20 |
| Surrogate: 1,4-Difluorobenzene | | | 112.6 | | % | | 50-140 | 15-JUN-20 |
| Surrogate: 4-Bromofluorobenzene | | | 104.8 | | % | | 50-140 | 15-JUN-20 |
| **WG3338800-5 MS** | | **WG3338800-3** | | | | | | |
| 1,1,1,2-Tetrachloroethane | | | 109.8 | | % | | 50-140 | 16-JUN-20 |
| 1,1,2,2-Tetrachloroethane | | | 109.9 | | % | | 50-140 | 16-JUN-20 |
| 1,1,1-Trichloroethane | | | 117.3 | | % | | 50-140 | 16-JUN-20 |
| 1,1,2-Trichloroethane | | | 112.3 | | % | | 50-140 | 16-JUN-20 |
| 1,1-Dichloroethane | | | 121.0 | | % | | 50-140 | 16-JUN-20 |
| 1,1-Dichloroethylene | | | 106.7 | | % | | 50-140 | 16-JUN-20 |
| 1,2-Dibromoethane | | | 110.8 | | % | | 50-140 | 16-JUN-20 |
| 1,2-Dichlorobenzene | | | 116.1 | | % | | 50-140 | 16-JUN-20 |
| 1,2-Dichloroethane | | | 112.8 | | % | | 50-140 | 16-JUN-20 |
| 1,2-Dichloropropane | | | 113.7 | | % | | 50-140 | 16-JUN-20 |
| 1,3-Dichlorobenzene | | | 113.0 | | % | | 50-140 | 16-JUN-20 |
| 1,4-Dichlorobenzene | | | 113.4 | | % | | 50-140 | 16-JUN-20 |
| Acetone | | | 128.5 | | % | | 50-140 | 16-JUN-20 |
| Benzene | | | 118.4 | | % | | 50-140 | 16-JUN-20 |
| Bromodichloromethane | | | 120.4 | | % | | 50-140 | 16-JUN-20 |
| Bromoform | | | 111.8 | | % | | 50-140 | 16-JUN-20 |
| Bromomethane | | | 127.3 | | % | | 50-140 | 16-JUN-20 |
| Carbon tetrachloride | | | 116.2 | | % | | 50-140 | 16-JUN-20 |
| Chlorobenzene | | | 117.1 | | % | | 50-140 | 16-JUN-20 |
| Chloroform | | | 122.4 | | % | | 50-140 | 16-JUN-20 |
| cis-1,2-Dichloroethylene | | | 104.4 | | % | | 50-140 | 16-JUN-20 |
| cis-1,3-Dichloropropene | | | 100.1 | | % | | 50-140 | 16-JUN-20 |
| Dibromochloromethane | | | 98.8 | | % | | 50-140 | 16-JUN-20 |
| Dichlorodifluoromethane | | | 86.8 | | % | | 50-140 | 16-JUN-20 |
| Ethylbenzene | | | 110.9 | | % | | 50-140 | 16-JUN-20 |
| n-Hexane | | | 109.0 | | % | | 50-140 | 16-JUN-20 |
| Methylene Chloride | | | 114.9 | | % | | 50-140 | 16-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **VOC-511-HS-WT** | **Soil** | | | | | | | |
| **Batch R5117509** | | | | | | | | |
| **WG3338800-5 MS** | | **WG3338800-3** | | | | | | |
| MTBE | | | 120.8 | | % | | 50-140 | 16-JUN-20 |
| m+p-Xylenes | | | 110.5 | | % | | 50-140 | 16-JUN-20 |
| Methyl Ethyl Ketone | | | 98.8 | | % | | 50-140 | 16-JUN-20 |
| Methyl Isobutyl Ketone | | | 117.1 | | % | | 50-140 | 16-JUN-20 |
| o-Xylene | | | 121.6 | | % | | 50-140 | 16-JUN-20 |
| Styrene | | | 108.7 | | % | | 50-140 | 16-JUN-20 |
| Tetrachloroethylene | | | N/A | MS-B | % | | - | 16-JUN-20 |
| Toluene | | | 118.5 | | % | | 50-140 | 16-JUN-20 |
| trans-1,2-Dichloroethylene | | | 107.7 | | % | | 50-140 | 16-JUN-20 |
| trans-1,3-Dichloropropene | | | 108.0 | | % | | 50-140 | 16-JUN-20 |
| Trichloroethylene | | | 116.9 | | % | | 50-140 | 16-JUN-20 |
| Trichlorofluoromethane | | | 103.5 | | % | | 50-140 | 16-JUN-20 |
| Vinyl chloride | | | 117.2 | | % | | 50-140 | 16-JUN-20 |

# Quality Control Report

Workorder: L2457971 Report Date: 16-JUN-20

Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Valyn Bernard



**Legend:**

| | |
|---|---|
| Limit | ALS Control Limit (Data Quality Objectives) |
| DUP | Duplicate |
| RPD | Relative Percent Difference |
| N/A | Not Available |
| LCS | Laboratory Control Sample |
| SRM | Standard Reference Material |
| MS | Matrix Spike |
| MSD | Matrix Spike Duplicate |
| ADE | Average Desorption Efficiency |
| MB | Method Blank |
| IRM | Internal Reference Material |
| CRM | Certified Reference Material |
| CCV | Continuing Calibration Verification |
| CVS | Calibration Verification Standard |
| LCSD | Laboratory Control Sample Duplicate |

**Sample Parameter Qualifier Definitions:**

| Qualifier | Description |
|---|---|
| E | Matrix Spike recovery outside ALS DQO due to heterogeneous analyte background in sample. |
| J | Duplicate results and limits are expressed in terms of absolute difference. |
| MES | Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME). |
| MS-B | Matrix Spike recovery could not be accurately calculated due to high analyte background in sample. |
| RPD-NA | Relative Percent Difference Not Available due to result(s) being less than detection limit. |

**Hold Time Exceedances:**

All test results reported with this submission were conducted within ALS recommended hold times.

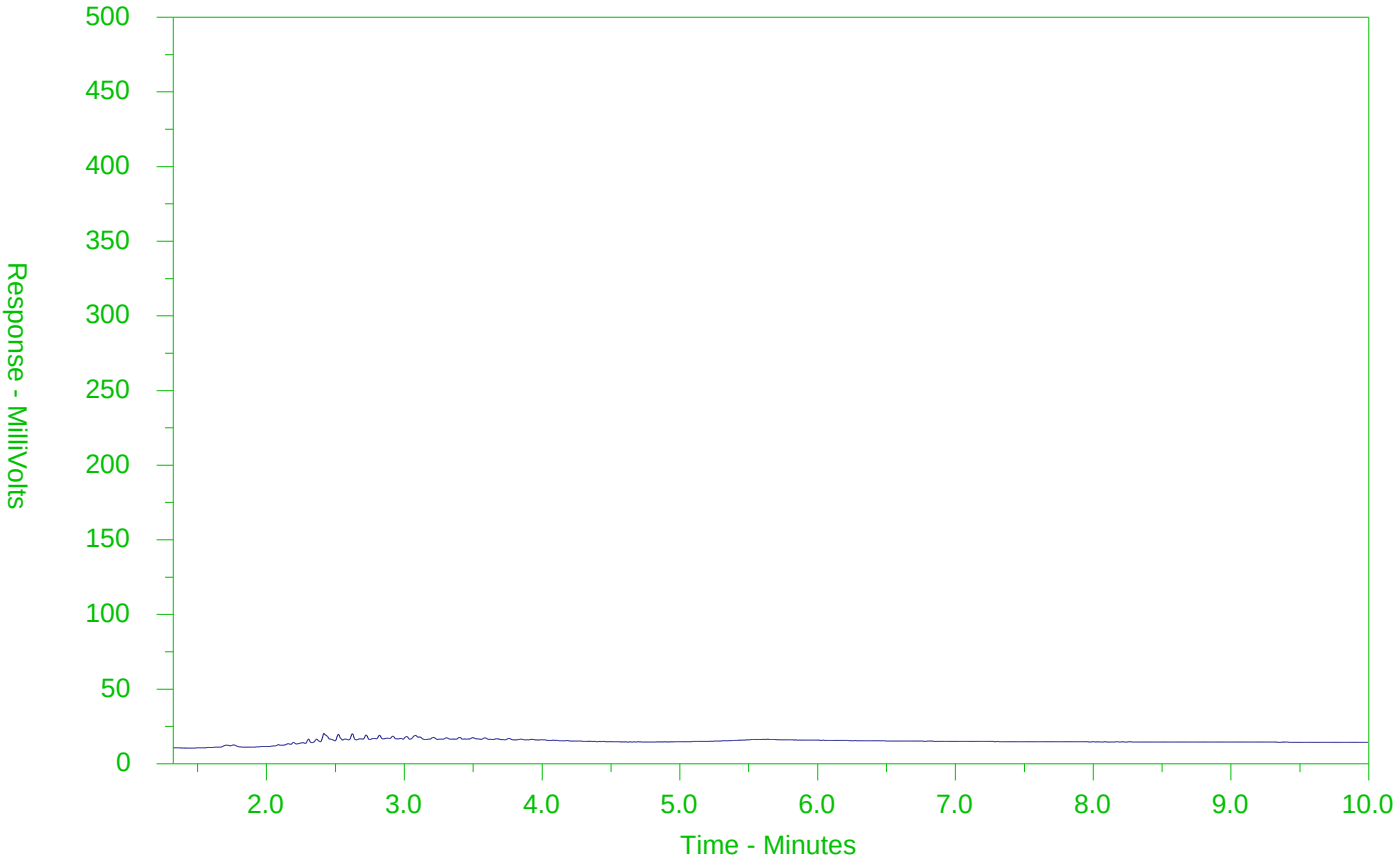
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

# CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2457971-3
Client Sample ID: BH6-SS4




| ←F2→ | ←F3→ | ←F4→ | |
|---|---|---|---|
| nC10 | nC16 | nC34 | nC50 |
| 174°C | 287°C | 481°C | 575°C |
| 346°F | 549°F | 898°F | 1067°F |
| Gasoline → | ← Motor Oils/Lube Oils/Grease → | | |
| ← Diesel/Jet Fuels → | | | |

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

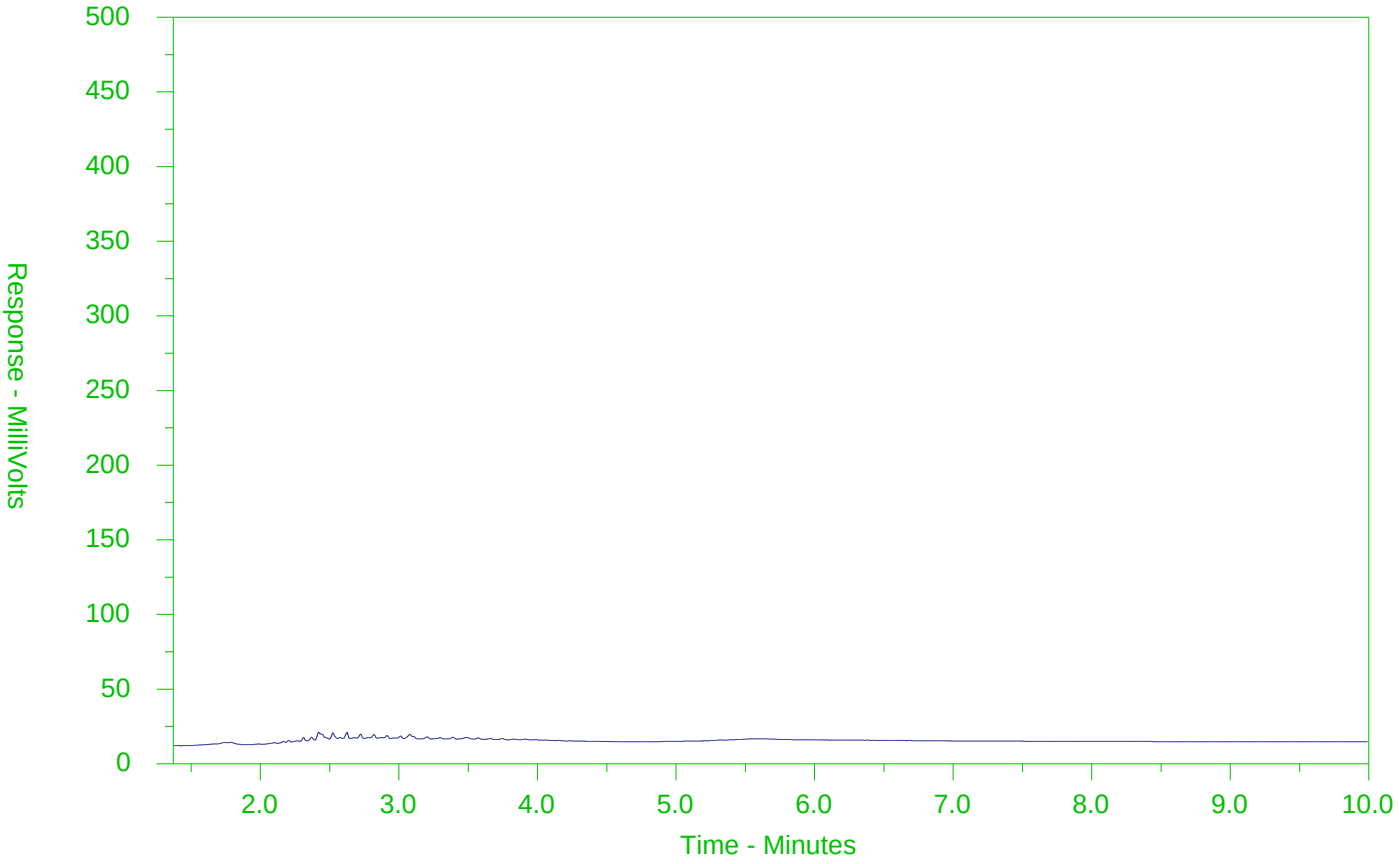
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.

# CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2457971-4
Client Sample ID: DUP 4




| ←F2→ | ←F3→ | ←F4→ | |
|---|---|---|---|
| nC10 | nC16 | nC34 | nC50 |
| 174°C | 287°C | 481°C | 575°C |
| 346°F | 549°F | 898°F | 1067°F |
| Gasoline → | ← Motor Oils/Lube Oils/Grease → | | |
| ← Diesel/Jet Fuels → | | | |

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

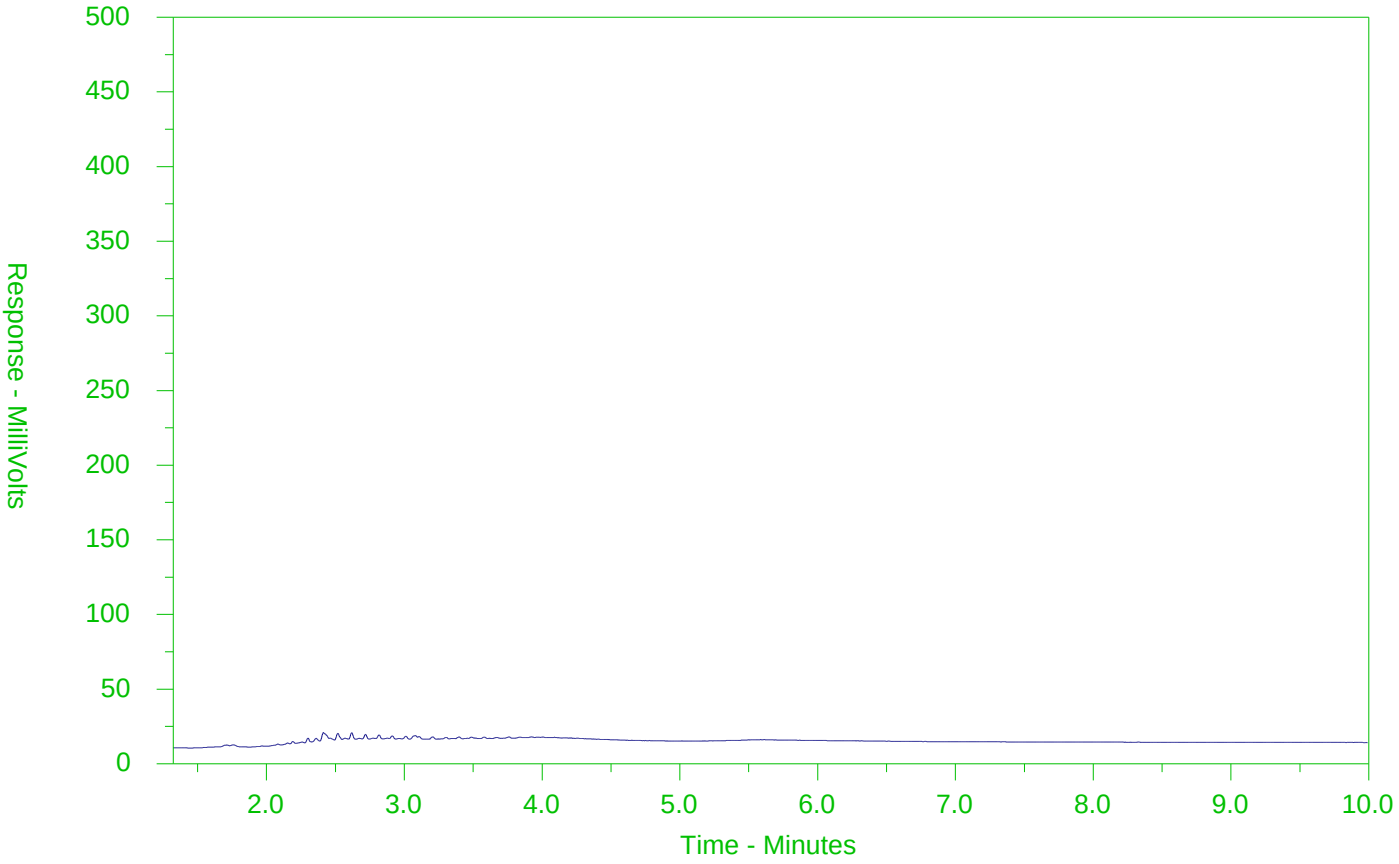
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.

# CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2457971-5
Client Sample ID: BH6-SS5-1




| ←F2→ | ←F3→ | ←F4→ | |
|---|---|---|---|
| nC10 | nC16 | nC34 | nC50 |
| 174°C | 287°C | 481°C | 575°C |
| 346°F | 549°F | 898°F | 1067°F |
| Gasoline → | ← Motor Oils/Lube Oils/Grease → | | |
| ← Diesel/Jet Fuels → | | | |

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.

# Chain of Custody (COC) / Analyt Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

L2457971-COFC

COC Number: 17 -

Page of

| Report To | Contact and company name below will appear on the final report |
|---|---|
| Company: | WSP Canada Group Limited |
| Contact: | Valyn Bernard |
| Phone: | 1-289-835-2546 |
| | Company address below will appear on the final report |
| Street: | 610 Chartwell Rd |
| City/Province: | Oakville |
| Postal Code: | L6J 4A5 |
| **Invoice To** | Same as Report To ☐ YES ☐ NO |
| | Copy of Invoice with Report ☐ YES ☐ NO |
| Company: | WSP Canada Group Limited |
| Contact: | ca-accountspayable@wsp.com |

**Report**

Select Report Format: ☑ PDF ☑ EXCEL ☐ EDD (DIGITAL)

Quality Control (QC) Report with Report ☑ YES ☐ NO

☑ Compare Results to Criteria on Report - provide details below if box checked

Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax Derek.Stewart@wsp.com

Email 2 Valyn.Bernard@wsp.com

Email 3 Anne.Pattison@wsp.com

**Invoice Distribution**

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax ca-accountspayable@wsp.com

Email 2 Valyn.Bernard@wsp.com

**Project Information**

| | |
|---|---|
| **ALS Account # / Quote #:** | |
| Job #: | 19M-01888-00-CONTAM |
| PO / AFE: | |
| LSD: | |

**Oil and Gas Required Fields (client use)**

| | |
|---|---|
| AFE/Cost Center: | PO# |
| Major/Minor Code: | Routing Code: |
| Requisitioner: | |
| Location: | |

**ALS Lab Work Order # (lab use only):** L2457971 **ALS Contact:** **Sampler:** MA -

**el Below - Contact your AM to confirm all E&P TATs (surcharges may apply)**

Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days): 4 day [P4-20%] ☐ | 3 day [P3-25%] ☐ | 2 day [P2-50%] ☐

EMERGENCY: 1 Business day [E - 100%] ☐ | Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] ☐

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm

For tests that can not be performed according to the service level selected, you will be contacted.

**Analysis Request**

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

| ALS Sample # (lab use only) | Sample Identification and/or Coordinates (This description will appear on the report) | Date (dd-mmm-yy) | Time (hh:mm) | Sample Type | NUMBER OF CONTAINERS | Metals and Inorganics | PAHs | PHCs | VOCs | BTEX only | BTEX and F1 | TCLP PAHs | TCLP VOCs | TCLP Metals and Inorganics | TCLP PCBS | Grain Size | SAMPLES ON HOLD | SUSPECTED HAZARD (see Special Instructions) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | P | P | | | | | | | | | |
| 1 | BH6-SS1-2 | June 08, 2020 | Am | Soil | | R | R | | | | | | | | | | | |
| 2 | BH6-SS3 | ↓ | ↓ | ↓ | | R | R | | | | | | | | | R | | ✓ |
| 3 | BH6-SS4 | | | | | | | R | R | | R | | | | | | | |
| 4 | Dup4 | | | | | | | R | | | R | | | | | | | ✓ |
| 5 | BH6-SS5-1 | | | | | | ✓ | R | R | | | R | R | R | R | | | ✓ |

**Drinking Water (DW) Samples[1] (client use)**

Are samples taken from a Regulated DW System? ☐ YES ☐ NO

Are samples for human consumption/ use? ☐ YES ☐ NO

**Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)**

[Combined] - Ontario R153-T1-SOIL+R347/90-TCLP

**SAMPLE CONDITION AS RECEIVED (lab use only)**

Frozen ☐ SIF Observations Yes ☐ No ☐

Ice Packs ☐ Ice Cubes ☑ Custody seal intact Yes ☐ No ☐

Cooling Initiated ☐

| INITIAL COOLER TEMPERATURES °C | | | | FINAL COOLER TEMPERATURES °C | | | |
|---|---|---|---|---|---|---|---|
| 0.1 | | | | 6.6 | | | |

**SHIPMENT RELEASE (client use)**

Released by: Madlool Alsabak Date: June 08, 2020 Time: 7:40 PM

**INITIAL SHIPMENT RECEPTION (lab use only)**

Received by: Date: 9/6/20 Time: 8:30

**FINAL SHIPMENT RECEPTION (lab use only)**

Received by: Date: June 9/20 Time: 14:10

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

JUNE 2018 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form.**

WSP Canada Group Limited
ATTN: Valyn Bernard
100 Commerce Valley Drive West
Thornhill ON L3T 0A1

Date Received: 08-JUN-20
Report Date: 15-JUN-20 16:55 (MT)
Version: FINAL

Client Phone: 905-882-1100

# Certificate of Analysis

## Lab Work Order #: L2457452

Project P.O. #: NOT SUBMITTED
Job Reference: 19M-01888-00-CONTAM
C of C Numbers:
Legal Site Desc:

Emily Hansen
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

## Summary of Guideline Exceedances

| ALS ID | Client ID | Grouping | Analyte | Result | Guideline Limit | Unit |
|---|---|---|---|---|---|---|
| **Guideline** | | | | | | |
| **Ontario Regulation 153/04 - April 15, 2011 Standards - T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use** | | | | | | |
| L2457452-1 | BH2-SS2 | Saturated Paste Extractables | SAR | 4.28 | 2.4 | SAR |

# ANALYTICAL REPORT

## Physical Tests - SOIL

| | | Guide Limits | | | |
|---|---|---|---|---|---|
| **Lab ID** | | | | L2457452-1 | L2457452-2 |
| **Sample Date** | | | | 05-JUN-20 | 05-JUN-20 |
| **Sample ID** | | | | BH2-SS2 | BH2-SS3 |
| **Analyte** | **Unit** | **#1** | **#2** | | |
| Conductivity | mS/cm | 0.57 | - | 0.320 | |
| % Moisture | % | - | - | 8.29 | 13.3 |
| pH | pH units | - | - | 7.59 | |

**Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

# ANALYTICAL REPORT

## Cyanides - SOIL

| | | Guide Limits | | |
|---|---|---|---|---|
| **Analyte** | **Unit** | **#1** | **#2** | |
| **Lab ID** | | | | L2457452-1 |
| **Sample Date** | | | | 05-JUN-20 |
| **Sample ID** | | | | BH2-SS2 |
| Cyanide, Weak Acid Diss | ug/g | 0.051 | - | <0.050 |

**Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

# ANALYTICAL REPORT

## Saturated Paste Extractables - SOIL

| | | | | |
|---|---|---|---|---|
| | | | **Lab ID** | L2457452-1 |
| | | | **Sample Date** | 05-JUN-20 |
| | | | **Sample ID** | BH2-SS2 |
| **Analyte** | **Unit** | **Guide Limits #1** | **#2** | |
| SAR | SAR | 2.4 | - | 4.28 |
| Calcium (Ca) | mg/L | - | - | 9.85 |
| Magnesium (Mg) | mg/L | - | - | 1.16 |
| Sodium (Na) | mg/L | - | - | 53.3 |

**Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

# ANALYTICAL REPORT

## Metals - SOIL

| | | | | |
|---|---|---|---|---|
| | | | **Lab ID** | L2457452-1 |
| | | | **Sample Date** | 05-JUN-20 |
| | | | **Sample ID** | BH2-SS2 |
| **Analyte** | **Unit** | **Guide Limits #1** | **#2** | |
| Antimony (Sb) | ug/g | 1.3 | - | <1.0 |
| Arsenic (As) | ug/g | 18 | - | 2.0 |
| Barium (Ba) | ug/g | 220 | - | 54.1 |
| Beryllium (Be) | ug/g | 2.5 | - | <0.50 |
| Boron (B) | ug/g | 36 | - | 5.6 |
| Boron (B), Hot Water Ext. | ug/g | 36 | - | 0.36 |
| Cadmium (Cd) | ug/g | 1.2 | - | <0.50 |
| Chromium (Cr) | ug/g | 70 | - | 13.6 |
| Cobalt (Co) | ug/g | 21 | - | 4.2 |
| Copper (Cu) | ug/g | 92 | - | 8.9 |
| Lead (Pb) | ug/g | 120 | - | 9.2 |
| Mercury (Hg) | ug/g | 0.27 | - | 0.0200 |
| Molybdenum (Mo) | ug/g | 2 | - | <1.0 |
| Nickel (Ni) | ug/g | 82 | - | 9.0 |
| Selenium (Se) | ug/g | 1.5 | - | <1.0 |
| Silver (Ag) | ug/g | 0.5 | - | <0.20 |
| Thallium (Tl) | ug/g | 1 | - | <0.50 |
| Uranium (U) | ug/g | 2.5 | - | <1.0 |
| Vanadium (V) | ug/g | 86 | - | 23.4 |
| Zinc (Zn) | ug/g | 290 | - | 30.6 |

**Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

# ANALYTICAL REPORT

## Speciated Metals - SOIL

| | | | | |
|---|---|---|---|---|
| | | | **Lab ID** | L2457452-1 |
| | | | **Sample Date** | 05-JUN-20 |
| | | | **Sample ID** | BH2-SS2 |
| | | **Guide Limits** | | |
| **Analyte** | **Unit** | **#1** | **#2** | |
| Chromium, Hexavalent | ug/g | 0.66 | - | <0.20 |

**Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

## Volatile Organic Compounds - SOIL

| | | | | Lab ID | L2457452-2 |
|---|---|---|---|---|---|
| | | | | Sample Date | 05-JUN-20 |
| | | | | Sample ID | BH2-SS3 |
| | | Guide Limits | | | |
| Analyte | Unit | #1 | #2 | | |
| Acetone | ug/g | 0.5 | - | <0.50 | |
| Benzene | ug/g | 0.02 | - | <0.0068 | |
| Bromodichloromethane | ug/g | 0.05 | - | <0.050 | |
| Bromoform | ug/g | 0.05 | - | <0.050 | |
| Bromomethane | ug/g | 0.05 | - | <0.050 | |
| Carbon tetrachloride | ug/g | 0.05 | - | <0.050 | |
| Chlorobenzene | ug/g | 0.05 | - | <0.050 | |
| Dibromochloromethane | ug/g | 0.05 | - | <0.050 | |
| Chloroform | ug/g | 0.05 | - | <0.050 | |
| 1,2-Dibromoethane | ug/g | 0.05 | - | <0.050 | |
| 1,2-Dichlorobenzene | ug/g | 0.05 | - | <0.050 | |
| 1,3-Dichlorobenzene | ug/g | 0.05 | - | <0.050 | |
| 1,4-Dichlorobenzene | ug/g | 0.05 | - | <0.050 | |
| Dichlorodifluoromethane | ug/g | 0.05 | - | <0.050 | |
| 1,1-Dichloroethane | ug/g | 0.05 | - | <0.050 | |
| 1,2-Dichloroethane | ug/g | 0.05 | - | <0.050 | |
| 1,1-Dichloroethylene | ug/g | 0.05 | - | <0.050 | |
| cis-1,2-Dichloroethylene | ug/g | 0.05 | - | <0.050 | |
| trans-1,2-Dichloroethylene | ug/g | 0.05 | - | <0.050 | |
| Methylene Chloride | ug/g | 0.05 | - | <0.050 | |
| 1,2-Dichloropropane | ug/g | 0.05 | - | <0.050 | |
| cis-1,3-Dichloropropene | ug/g | - | - | <0.030 | |
| trans-1,3-Dichloropropene | ug/g | - | - | <0.030 | |
| 1,3-Dichloropropene (cis & trans) | ug/g | 0.05 | - | <0.042 | |
| Ethylbenzene | ug/g | 0.05 | - | <0.018 | |
| n-Hexane | ug/g | 0.05 | - | <0.050 | |
| Methyl Ethyl Ketone | ug/g | 0.5 | - | <0.50 | |
| Methyl Isobutyl Ketone | ug/g | 0.5 | - | <0.50 | |
| MTBE | ug/g | 0.05 | - | <0.050 | |
| Styrene | ug/g | 0.05 | - | <0.050 | |

**Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

# ANALYTICAL REPORT

## Volatile Organic Compounds - SOIL

| | | | | |
|---|---|---|---|---|
| | | **Lab ID** | | L2457452-2 |
| | | **Sample Date** | | 05-JUN-20 |
| | | **Sample ID** | | BH2-SS3 |
| | | **Guide Limits** | | |
| **Analyte** | **Unit** | **#1** | **#2** | |
| 1,1,1,2-Tetrachloroethane | ug/g | 0.05 | - | <0.050 |
| 1,1,2,2-Tetrachloroethane | ug/g | 0.05 | - | <0.050 |
| Tetrachloroethylene | ug/g | 0.05 | - | <0.050 |
| Toluene | ug/g | 0.2 | - | <0.080 |
| 1,1,1-Trichloroethane | ug/g | 0.05 | - | <0.050 |
| 1,1,2-Trichloroethane | ug/g | 0.05 | - | <0.050 |
| Trichloroethylene | ug/g | 0.05 | - | <0.010 |
| Trichlorofluoromethane | ug/g | 0.25 | - | <0.050 |
| Vinyl chloride | ug/g | 0.02 | - | <0.020 |
| o-Xylene | ug/g | - | - | <0.020 |
| m+p-Xylenes | ug/g | - | - | <0.030 |
| Xylenes (Total) | ug/g | 0.05 | - | <0.050 |
| Surrogate: 4-Bromofluorobenzene | % | - | - | 99.3 |
| Surrogate: 1,4-Difluorobenzene | % | - | - | 113.7 |

**Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

# ANALYTICAL REPORT

## Hydrocarbons - SOIL

| | | Guide Limits | | | |
|---|---|---|---|---|---|
| | | | | Lab ID | L2457452-2 |
| | | | | Sample Date | 05-JUN-20 |
| | | | | Sample ID | BH2-SS3 |
| Analyte | Unit | #1 | #2 | | |
| F1 (C6-C10) | ug/g | 25 | - | <5.0 | |
| F1-BTEX | ug/g | 25 | - | <5.0 | |
| F2 (C10-C16) | ug/g | 10 | - | <10 | |
| F3 (C16-C34) | ug/g | 240 | - | <50 | |
| F4 (C34-C50) | ug/g | 120 | - | <50 | |
| Total Hydrocarbons (C6-C50) | ug/g | - | - | <72 | |
| Chrom. to baseline at nC50 | | - | - | YES | |
| Surrogate: 2-Bromobenzotrifluoride | % | - | - | 75.0 | |
| Surrogate: 3,4-Dichlorotoluene | % | - | - | 92.0 | |

**Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

# ANALYTICAL REPORT

## Polycyclic Aromatic Hydrocarbons - SOIL

| | | | | |
|---|---|---|---|---|
| | | **Lab ID** | | L2457452-1 |
| | | **Sample Date** | | 05-JUN-20 |
| | | **Sample ID** | | BH2-SS2 |
| **Analyte** | **Unit** | **Guide Limits #1** | **#2** | |
| Acenaphthene | ug/g | 0.072 | - | <0.050 |
| Acenaphthylene | ug/g | 0.093 | - | <0.050 |
| Anthracene | ug/g | 0.16 | - | <0.050 |
| Benzo(a)anthracene | ug/g | 0.36 | - | <0.050 |
| Benzo(a)pyrene | ug/g | 0.3 | - | <0.050 |
| Benzo(b)fluoranthene | ug/g | 0.47 | - | <0.050 |
| Benzo(g,h,i)perylene | ug/g | 0.68 | - | <0.050 |
| Benzo(k)fluoranthene | ug/g | 0.48 | - | <0.050 |
| Chrysene | ug/g | 2.8 | - | <0.050 |
| Dibenzo(ah)anthracene | ug/g | 0.1 | - | <0.050 |
| Fluoranthene | ug/g | 0.56 | - | 0.056 |
| Fluorene | ug/g | 0.12 | - | <0.050 |
| Indeno(1,2,3-cd)pyrene | ug/g | 0.23 | - | <0.050 |
| 1+2-Methylnaphthalenes | ug/g | 0.59 | - | <0.042 |
| 1-Methylnaphthalene | ug/g | 0.59 | - | <0.030 |
| 2-Methylnaphthalene | ug/g | 0.59 | - | <0.030 |
| Naphthalene | ug/g | 0.09 | - | <0.013 |
| Phenanthrene | ug/g | 0.69 | - | <0.046 |
| Pyrene | ug/g | 1 | - | <0.050 |
| Surrogate: 2-Fluorobiphenyl | % | - | - | 93.6 |
| Surrogate: p-Terphenyl d14 | % | - | - | 98.0 |

**Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

# Reference Information

**Methods Listed (if applicable):**

| ALS Test Code | Matrix | Test Description | Method Reference** |
|---|---|---|---|
| **B-HWS-R511-WT** | Soil | Boron-HWE-O.Reg 153/04 (July 2011) | HW EXTR, EPA 6010B |

A dried solid sample is extracted with calcium chloride, the sample undergoes a heating process. After cooling the sample is filtered and analyzed by ICP/OES.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

| | | | |
|---|---|---|---|
| **CN-WAD-R511-WT** | Soil | Cyanide (WAD)-O.Reg 153/04 (July 2011) | MOE 3015/APHA 4500CN I-WAD |

The sample is extracted with a strong base for 16 hours, and then filtered. The filtrate is then distilled where the cyanide is converted to cyanogen chloride by reacting with chloramine-T, the cyanogen chloride then reacts with a combination of barbituric acid and isonicotinic acid to form a highly colored complex.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

| | | | |
|---|---|---|---|
| **CR-CR6-IC-WT** | Soil | Hexavalent Chromium in Soil | SW846 3060A/7199 |

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 7199, published by the United States Environmental Protection Agency (EPA). The procedure involves analysis for chromium (VI) by ion chromatography using diphenylcarbazide in a sulphuric acid solution.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

| | | | |
|---|---|---|---|
| **EC-WT** | Soil | Conductivity (EC) | MOEE E3138 |

A representative subsample is tumbled with de-ionized (DI) water. The ratio of water to soil is 2:1 v/w. After tumbling the sample is then analyzed by a conductivity meter.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

| | | | |
|---|---|---|---|
| **F1-F4-511-CALC-WT** | Soil | F1-F4 Hydrocarbon Calculated Parameters | CCME CWS-PHC, Pub #1310, Dec 2001-S |

Analytical methods used for analysis of CCME Petroleum Hydrocarbons have been validated and comply with the Reference Method for the CWS PHC.

Hydrocarbon results are expressed on a dry weight basis.

In cases where results for both F4 and F4G are reported, the greater of the two results must be used in any application of the CWS PHC guidelines and the gravimetric heavy hydrocarbons cannot be added to the C6 to C50 hydrocarbons.
In samples where BTEX and F1 were analyzed , F1-BTEX represents a value where the sum of Benzene, Toluene, Ethylbenzene and total Xylenes has been subtracted from F1.

In samples where PAHs, F2 and F3 were analyzed, F2-Naphth represents the result where Naphthalene has been subtracted from F2. F3-PAH represents a result where the sum of Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene, Fluoranthene, Indeno(1,2,3-cd)pyrene, Phenanthrene, and Pyrene has been subtracted from F3.

Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:
1. All extraction and analysis holding times were met.
2. Instrument performance showing response factors for C6 and C10 within 30% of the response factor for toluene.
3. Linearity of gasoline response within 15% throughout the calibration range.

Unless otherwise qualified, the following quality control criteria have been met for the F2-F4 hydrocarbon ranges:
1. All extraction and analysis holding times were met.
2. Instrument performance showing C10, C16 and C34 response factors within 10% of their average.
3. Instrument performance showing the C50 response factor within 30% of the average of the C10, C16 and C34 response factors.
4. Linearity of diesel or motor oil response within 15% throughout the calibration range.

# Reference Information

**Methods Listed (if applicable):**

| ALS Test Code | Matrix | Test Description | Method Reference** |
|---|---|---|---|
| **F1-HS-511-WT** | Soil | F1-O.Reg 153/04 (July 2011) | E3398/CCME TIER 1-HS |

Fraction F1 is determined by extracting a soil or sediment sample as received with methanol, then analyzing by headspace-GC/FID.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

| | | | |
|---|---|---|---|
| **F2-F4-511-WT** | Soil | F2-F4-O.Reg 153/04 (July 2011) | CCME Tier 1 |

Petroleum Hydrocarbons (F2-F4 fractions) are extracted from soil with 1:1 hexane:acetone using a rotary extractor. Extracts are treated with silica gel to remove polar organic interferences. F2, F3, & F4 are analyzed by GC-FID. F4G-sg is analyzed gravimetrically.

Notes:
1. F2 (C10-C16): Sum of all hydrocarbons that elute between nC10 and nC16.
2. F3 (C16-C34): Sum of all hydrocarbons that elute between nC16 and nC34.
3. F4 (C34-C50): Sum of all hydrocarbons that elute between nC34 and nC50.
4. F4G: Gravimetric Heavy Hydrocarbons
5. F4G-sg: Gravimetric Heavy Hydrocarbons (F4G) after silica gel treatment.
6. Where both F4 (C34-C50) and F4G-sg are reported for a sample, the larger of the two values is used for comparison against the relevant CCME guideline for F4.
7. F4G-sg cannot be added to the C6 to C50 hydrocarbon results to obtain an estimate of total extractable hydrocarbons.
8. This method is validated for use.
9. Data from analysis of validation and quality control samples is available upon request.
10. Reported results are expressed as milligrams per dry kilogram, unless otherwise indicated.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

| | | | |
|---|---|---|---|
| **HG-200.2-CVAA-WT** | Soil | Mercury in Soil by CVAAS | EPA 200.2/1631E (mod) |

Soil samples are digested with nitric and hydrochloric acids, followed by analysis by CVAAS.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

| | | | |
|---|---|---|---|
| **MET-200.2-CCMS-WT** | Soil | Metals in Soil by CRC ICPMS | EPA 200.2/6020A (mod) |

Soil/sediment is dried, disaggregated, and sieved (2 mm). For tests intended to support Ontario regulations, the <2mm fraction is ground to pass through a 0.355 mm sieve. Strong Acid Leachable Metals in the <2mm fraction are solubilized by heated digestion with nitric and hydrochloric acids. Instrumental analysis is by Collision / Reaction Cell ICPMS.

Limitations: This method is intended to liberate environmentally available metals. Silicate minerals are not solubilized. Some metals may be only partially recovered (matrix dependent), including Al, Ba, Be, Cr, S, Sr, Ti, Tl, V, W, and Zr. Elemental Sulfur may be poorly recovered by this method. Volatile forms of sulfur (e.g. sulfide, H2S) may be excluded if lost during sampling, storage, or digestion.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

| | | | |
|---|---|---|---|
| **METHYLNAPS-CALC-WT** | Soil | ABN-Calculated Parameters | SW846 8270 |
| **MOISTURE-WT** | Soil | % Moisture | CCME PHC in Soil - Tier 1 (mod) |
| **PAH-511-WT** | Soil | PAH-O.Reg 153/04 (July 2011) | SW846 3510/8270 |

A representative sub-sample of soil is fortified with deuterium-labelled surrogates and a mechanical shaking techniqueis used to extract the sample with a mixture of methanol and toluene. The extracts are concentrated and analyzed by GC/MS. Results for benzo(b) fluoranthene may include contributions from benzo(j)fluoranthene, if also present in the sample.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

# Reference Information

**Methods Listed (if applicable):**

| ALS Test Code | Matrix | Test Description | Method Reference** |
|---|---|---|---|
| **PH-WT** | Soil | pH | MOEE E3137A |

A minimum 10g portion of the sample is extracted with 20mL of 0.01M calcium chloride solution by shaking for at least 30 minutes. The aqueous layer is separated from the soil and then analyzed using a pH meter and electrode.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

| | | | |
|---|---|---|---|
| **SAR-R511-WT** | Soil | SAR-O.Reg 153/04 (July 2011) | SW846 6010C |

A dried, disaggregated solid sample is extracted with deionized water, the aqueous extract is separated from the solid, acidified and then analyzed using a ICP/OES. The concentrations of Na, Ca and Mg are reported as per CALA requirements for calculated parameters. These individual parameters are not for comparison to any guideline.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

| | | | |
|---|---|---|---|
| **VOC-1,3-DCP-CALC-WT** | Soil | Regulation 153 VOCs | SW8260B/SW8270C |
| **VOC-511-HS-WT** | Soil | VOC-O.Reg 153/04 (July 2011) | SW846 8260 (511) |

Soil and sediment samples are extracted in methanol and analyzed by headspace-GC/MS.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

| | | | |
|---|---|---|---|
| **XYLENES-SUM-CALC-WT** | Soil | Sum of Xylene Isomer Concentrations | CALCULATION |

Total xylenes represents the sum of o-xylene and m&p-xylene.

**ALS test methods may incorporate modifications from specified reference methods to improve performance.

Chain of Custody Numbers:

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

| Laboratory Definition Code | Laboratory Location |
|---|---|
| WT | ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA |

# Reference Information

**GLOSSARY OF REPORT TERMS**

*Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.*
*mg/kg - milligrams per kilogram based on dry weight of sample*
*mg/kg wwt - milligrams per kilogram based on wet weight of sample*
*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight*
*mg/L - unit of concentration based on volume, parts per million.*
*< - Less than.*
*D.L. - The reporting limit.*
*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*
*UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.*
*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*

*Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to, fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information. Guideline limits are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.*

# Quality Control Report

Workorder: L2457452 Report Date: 15-JUN-20 

Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **B-HWS-R511-WT** | **Soil** | | | | | | | |
| **Batch R5117885** | | | | | | | | |
| **WG3341914-4 DUP** | | **L2457468-5** | | | | | | |
| Boron (B), Hot Water Ext. | | 0.38 | 0.38 | | ug/g | 1.5 | 30 | 15-JUN-20 |
| **WG3341914-2 IRM** | | **WT SAR4** | | | | | | |
| Boron (B), Hot Water Ext. | | | 101.8 | | % | | 70-130 | 15-JUN-20 |
| **WG3341914-3 LCS** | | | | | | | | |
| Boron (B), Hot Water Ext. | | | 107.0 | | % | | 70-130 | 15-JUN-20 |
| **WG3341914-1 MB** | | | | | | | | |
| Boron (B), Hot Water Ext. | | | <0.10 | | ug/g | | 0.1 | 15-JUN-20 |
| **CN-WAD-R511-WT** | **Soil** | | | | | | | |
| **Batch R5116069** | | | | | | | | |
| **WG3338792-3 DUP** | | **L2457003-1** | | | | | | |
| Cyanide, Weak Acid Diss | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 35 | 11-JUN-20 |
| **WG3338792-2 LCS** | | | | | | | | |
| Cyanide, Weak Acid Diss | | | 94.2 | | % | | 80-120 | 11-JUN-20 |
| **WG3338792-1 MB** | | | | | | | | |
| Cyanide, Weak Acid Diss | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| **WG3338792-4 MS** | | **L2457003-1** | | | | | | |
| Cyanide, Weak Acid Diss | | | 103.2 | | % | | 70-130 | 11-JUN-20 |
| **CR-CR6-IC-WT** | **Soil** | | | | | | | |
| **Batch R5115890** | | | | | | | | |
| **WG3338781-4 CRM** | | **WT-SQC012** | | | | | | |
| Chromium, Hexavalent | | | 95.3 | | % | | 70-130 | 11-JUN-20 |
| **WG3338781-3 DUP** | | **L2457003-1** | | | | | | |
| Chromium, Hexavalent | | 0.21 | 0.24 | | ug/g | 9.9 | 35 | 11-JUN-20 |
| **WG3338781-2 LCS** | | | | | | | | |
| Chromium, Hexavalent | | | 97.2 | | % | | 80-120 | 11-JUN-20 |
| **WG3338781-1 MB** | | | | | | | | |
| Chromium, Hexavalent | | | <0.20 | | ug/g | | 0.2 | 11-JUN-20 |
| **EC-WT** | **Soil** | | | | | | | |
| **Batch R5117814** | | | | | | | | |
| **WG3341929-4 DUP** | | **WG3341929-3** | | | | | | |
| Conductivity | | 1.08 | 1.11 | | mS/cm | 2.2 | 20 | 15-JUN-20 |
| **WG3341929-2 IRM** | | **WT SAR4** | | | | | | |
| Conductivity | | | 99.2 | | % | | 70-130 | 15-JUN-20 |
| **WG3342085-1 LCS** | | | | | | | | |
| Conductivity | | | 100.5 | | % | | 90-110 | 15-JUN-20 |
| **WG3341929-1 MB** | | | | | | | | |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **EC-WT** | **Soil** | | | | | | | |
| **Batch R5117814** | | | | | | | | |
| **WG3341929-1 MB** | | | | | | | | |
| Conductivity | | | <0.0040 | | mS/cm | | 0.004 | 15-JUN-20 |
| **F1-HS-511-WT** | **Soil** | | | | | | | |
| **Batch R5115857** | | | | | | | | |
| **WG3337828-4 DUP** | | **WG3337828-3** | | | | | | |
| F1 (C6-C10) | | <5.0 | <5.0 | RPD-NA | ug/g | N/A | 30 | 11-JUN-20 |
| **WG3337828-2 LCS** | | | | | | | | |
| F1 (C6-C10) | | | 115.2 | | % | | 80-120 | 11-JUN-20 |
| **WG3337828-1 MB** | | | | | | | | |
| F1 (C6-C10) | | | <5.0 | | ug/g | | 5 | 11-JUN-20 |
| Surrogate: 3,4-Dichlorotoluene | | | 97.4 | | % | | 60-140 | 11-JUN-20 |
| **WG3337828-6 MS** | | **L2457606-2** | | | | | | |
| F1 (C6-C10) | | | 114.9 | | % | | 60-140 | 11-JUN-20 |
| **F2-F4-511-WT** | **Soil** | | | | | | | |
| **Batch R5116971** | | | | | | | | |
| **WG3339093-3 DUP** | | **WG3339093-5** | | | | | | |
| F2 (C10-C16) | | <10 | <10 | RPD-NA | ug/g | N/A | 30 | 12-JUN-20 |
| F3 (C16-C34) | | <50 | <50 | RPD-NA | ug/g | N/A | 30 | 12-JUN-20 |
| F4 (C34-C50) | | <50 | <50 | RPD-NA | ug/g | N/A | 30 | 12-JUN-20 |
| **WG3339093-2 LCS** | | | | | | | | |
| F2 (C10-C16) | | | 94.3 | | % | | 80-120 | 12-JUN-20 |
| F3 (C16-C34) | | | 102.6 | | % | | 80-120 | 12-JUN-20 |
| F4 (C34-C50) | | | 92.5 | | % | | 80-120 | 12-JUN-20 |
| **WG3339093-1 MB** | | | | | | | | |
| F2 (C10-C16) | | | <10 | | ug/g | | 10 | 12-JUN-20 |
| F3 (C16-C34) | | | <50 | | ug/g | | 50 | 12-JUN-20 |
| F4 (C34-C50) | | | <50 | | ug/g | | 50 | 12-JUN-20 |
| Surrogate: 2-Bromobenzotrifluoride | | | 78.6 | | % | | 60-140 | 12-JUN-20 |
| **WG3339093-4 MS** | | **WG3339093-5** | | | | | | |
| F2 (C10-C16) | | | 96.5 | | % | | 60-140 | 12-JUN-20 |
| F3 (C16-C34) | | | 101.0 | | % | | 60-140 | 12-JUN-20 |
| F4 (C34-C50) | | | 97.0 | | % | | 60-140 | 12-JUN-20 |
| **HG-200.2-CVAA-WT** | **Soil** | | | | | | | |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **HG-200.2-CVAA-WT** | **Soil** | | | | | | | |
| **Batch R5117733** | | | | | | | | |
| **WG3341343-2 CRM** | | **WT-SS-1** | | | | | | |
| Mercury (Hg) | | | 97.7 | | % | | 70-130 | 15-JUN-20 |
| **WG3341343-6 DUP** | | **WG3341343-5** | | | | | | |
| Mercury (Hg) | | 0.0117 | 0.0115 | | ug/g | 1.5 | 40 | 15-JUN-20 |
| **WG3341343-3 LCS** | | | | | | | | |
| Mercury (Hg) | | | 83.0 | | % | | 80-120 | 15-JUN-20 |
| **WG3341343-1 MB** | | | | | | | | |
| Mercury (Hg) | | | <0.0050 | | mg/kg | | 0.005 | 15-JUN-20 |
| **MET-200.2-CCMS-WT** | **Soil** | | | | | | | |
| **Batch R5117616** | | | | | | | | |
| **WG3341343-2 CRM** | | **WT-SS-1** | | | | | | |
| Antimony (Sb) | | | 101.7 | | % | | 70-130 | 15-JUN-20 |
| Arsenic (As) | | | 124.0 | | % | | 70-130 | 15-JUN-20 |
| Beryllium (Be) | | | 109.7 | | % | | 70-130 | 15-JUN-20 |
| Boron (B) | | | 90.6 | | % | | 70-130 | 15-JUN-20 |
| Cadmium (Cd) | | | 109.1 | | % | | 70-130 | 15-JUN-20 |
| Chromium (Cr) | | | 96.8 | | % | | 70-130 | 15-JUN-20 |
| Cobalt (Co) | | | 110.9 | | % | | 70-130 | 15-JUN-20 |
| Copper (Cu) | | | 112.1 | | % | | 70-130 | 15-JUN-20 |
| Lead (Pb) | | | 110.1 | | % | | 70-130 | 15-JUN-20 |
| Molybdenum (Mo) | | | 111.5 | | % | | 70-130 | 15-JUN-20 |
| Nickel (Ni) | | | 116.8 | | % | | 70-130 | 15-JUN-20 |
| Selenium (Se) | | | 86.7 | | % | | 70-130 | 15-JUN-20 |
| Silver (Ag) | | | 109.6 | | % | | 70-130 | 15-JUN-20 |
| Thallium (Tl) | | | 79.0 | | % | | 70-130 | 15-JUN-20 |
| Vanadium (V) | | | 112.0 | | % | | 70-130 | 15-JUN-20 |
| Zinc (Zn) | | | 118.4 | | % | | 70-130 | 15-JUN-20 |
| **WG3341343-6 DUP** | | **WG3341343-5** | | | | | | |
| Antimony (Sb) | | <0.10 | <0.10 | RPD-NA | ug/g | N/A | 30 | 15-JUN-20 |
| Arsenic (As) | | 2.65 | 2.47 | | ug/g | 7.0 | 30 | 15-JUN-20 |
| Barium (Ba) | | 34.2 | 32.8 | | ug/g | 4.3 | 40 | 15-JUN-20 |
| Beryllium (Be) | | 0.30 | 0.28 | | ug/g | 5.1 | 30 | 15-JUN-20 |
| Boron (B) | | 5.3 | <5.0 | RPD-NA | ug/g | N/A | 30 | 15-JUN-20 |
| Cadmium (Cd) | | 0.059 | 0.058 | | ug/g | 2.6 | 30 | 15-JUN-20 |
| Chromium (Cr) | | 12.3 | 11.8 | | ug/g | 3.4 | 30 | 15-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **MET-200.2-CCMS-WT** | **Soil** | | | | | | | |
| **Batch R5117616** | | | | | | | | |
| **WG3341343-6 DUP** | | **WG3341343-5** | | | | | | |
| Cobalt (Co) | | 5.83 | 5.55 | | ug/g | 4.9 | 30 | 15-JUN-20 |
| Copper (Cu) | | 11.6 | 11.0 | | ug/g | 5.4 | 30 | 15-JUN-20 |
| Lead (Pb) | | 6.46 | 6.39 | | ug/g | 1.2 | 40 | 15-JUN-20 |
| Molybdenum (Mo) | | 0.56 | 0.55 | | ug/g | 1.8 | 40 | 15-JUN-20 |
| Nickel (Ni) | | 12.7 | 11.9 | | ug/g | 6.2 | 30 | 15-JUN-20 |
| Selenium (Se) | | <0.20 | <0.20 | RPD-NA | ug/g | N/A | 30 | 15-JUN-20 |
| Silver (Ag) | | <0.10 | <0.10 | RPD-NA | ug/g | N/A | 40 | 15-JUN-20 |
| Thallium (Tl) | | 0.130 | 0.133 | | ug/g | 2.8 | 30 | 15-JUN-20 |
| Uranium (U) | | 0.370 | 0.374 | | ug/g | 1.0 | 30 | 15-JUN-20 |
| Vanadium (V) | | 21.8 | 20.7 | | ug/g | 5.2 | 30 | 15-JUN-20 |
| Zinc (Zn) | | 30.3 | 28.3 | | ug/g | 7.0 | 30 | 15-JUN-20 |
| **WG3341343-4 LCS** | | | | | | | | |
| Antimony (Sb) | | | 104.0 | | % | | 80-120 | 15-JUN-20 |
| Arsenic (As) | | | 104.9 | | % | | 80-120 | 15-JUN-20 |
| Barium (Ba) | | | 104.7 | | % | | 80-120 | 15-JUN-20 |
| Beryllium (Be) | | | 102.7 | | % | | 80-120 | 15-JUN-20 |
| Boron (B) | | | 101.3 | | % | | 80-120 | 15-JUN-20 |
| Cadmium (Cd) | | | 99.95 | | % | | 80-120 | 15-JUN-20 |
| Chromium (Cr) | | | 104.6 | | % | | 80-120 | 15-JUN-20 |
| Cobalt (Co) | | | 102.9 | | % | | 80-120 | 15-JUN-20 |
| Copper (Cu) | | | 102.9 | | % | | 80-120 | 15-JUN-20 |
| Lead (Pb) | | | 99.3 | | % | | 80-120 | 15-JUN-20 |
| Molybdenum (Mo) | | | 103.7 | | % | | 80-120 | 15-JUN-20 |
| Nickel (Ni) | | | 102.8 | | % | | 80-120 | 15-JUN-20 |
| Selenium (Se) | | | 101.1 | | % | | 80-120 | 15-JUN-20 |
| Silver (Ag) | | | 101.6 | | % | | 80-120 | 15-JUN-20 |
| Thallium (Tl) | | | 99.1 | | % | | 80-120 | 15-JUN-20 |
| Uranium (U) | | | 99.8 | | % | | 80-120 | 15-JUN-20 |
| Vanadium (V) | | | 106.0 | | % | | 80-120 | 15-JUN-20 |
| Zinc (Zn) | | | 101.8 | | % | | 80-120 | 15-JUN-20 |
| **WG3341343-1 MB** | | | | | | | | |
| Antimony (Sb) | | | <0.10 | | mg/kg | | 0.1 | 15-JUN-20 |
| Arsenic (As) | | | <0.10 | | mg/kg | | 0.1 | 15-JUN-20 |
| Barium (Ba) | | | <0.50 | | mg/kg | | 0.5 | |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **MET-200.2-CCMS-WT** | **Soil** | | | | | | | |
| **Batch R5117616** | | | | | | | | |
| **WG3341343-1 MB** | | | | | | | | |
| Barium (Ba) | | | <0.50 | | mg/kg | | 0.5 | 15-JUN-20 |
| Beryllium (Be) | | | <0.10 | | mg/kg | | 0.1 | 15-JUN-20 |
| Boron (B) | | | <5.0 | | mg/kg | | 5 | 15-JUN-20 |
| Cadmium (Cd) | | | <0.020 | | mg/kg | | 0.02 | 15-JUN-20 |
| Chromium (Cr) | | | <0.50 | | mg/kg | | 0.5 | 15-JUN-20 |
| Cobalt (Co) | | | <0.10 | | mg/kg | | 0.1 | 15-JUN-20 |
| Copper (Cu) | | | <0.50 | | mg/kg | | 0.5 | 15-JUN-20 |
| Lead (Pb) | | | <0.50 | | mg/kg | | 0.5 | 15-JUN-20 |
| Molybdenum (Mo) | | | <0.10 | | mg/kg | | 0.1 | 15-JUN-20 |
| Nickel (Ni) | | | <0.50 | | mg/kg | | 0.5 | 15-JUN-20 |
| Selenium (Se) | | | <0.20 | | mg/kg | | 0.2 | 15-JUN-20 |
| Silver (Ag) | | | <0.10 | | mg/kg | | 0.1 | 15-JUN-20 |
| Thallium (Tl) | | | <0.050 | | mg/kg | | 0.05 | 15-JUN-20 |
| Uranium (U) | | | <0.050 | | mg/kg | | 0.05 | 15-JUN-20 |
| Vanadium (V) | | | <0.20 | | mg/kg | | 0.2 | 15-JUN-20 |
| Zinc (Zn) | | | <2.0 | | mg/kg | | 2 | 15-JUN-20 |
| **MOISTURE-WT** | **Soil** | | | | | | | |
| **Batch R5115573** | | | | | | | | |
| **WG3339703-3 DUP** | | **L2457609-2** | | | | | | |
| % Moisture | | 3.23 | 3.19 | | % | 1.3 | 20 | 12-JUN-20 |
| **WG3339703-2 LCS** | | | | | | | | |
| % Moisture | | | 95.7 | | % | | 90-110 | 12-JUN-20 |
| **WG3339703-1 MB** | | | | | | | | |
| % Moisture | | | <0.25 | | % | | 0.25 | 12-JUN-20 |
| **PAH-511-WT** | **Soil** | | | | | | | |
| **Batch R5115893** | | | | | | | | |
| **WG3338954-3 DUP** | | **WG3338954-5** | | | | | | |
| 1-Methylnaphthalene | | <0.030 | <0.030 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| 2-Methylnaphthalene | | <0.030 | <0.030 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Acenaphthene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Acenaphthylene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Anthracene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Benzo(a)anthracene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Benzo(a)pyrene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAH-511-WT** | **Soil** | | | | | | | |
| **Batch R5115893** | | | | | | | | |
| **WG3338954-3 DUP** | | **WG3338954-5** | | | | | | |
| Benzo(b)fluoranthene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Benzo(g,h,i)perylene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Benzo(k)fluoranthene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Chrysene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Dibenzo(ah)anthracene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Fluoranthene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Fluorene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Indeno(1,2,3-cd)pyrene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Naphthalene | | <0.013 | <0.013 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Phenanthrene | | <0.046 | <0.046 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Pyrene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| **WG3338954-2 LCS** | | | | | | | | |
| 1-Methylnaphthalene | | | 92.6 | | % | | 50-140 | 11-JUN-20 |
| 2-Methylnaphthalene | | | 89.2 | | % | | 50-140 | 11-JUN-20 |
| Acenaphthene | | | 92.7 | | % | | 50-140 | 11-JUN-20 |
| Acenaphthylene | | | 86.4 | | % | | 50-140 | 11-JUN-20 |
| Anthracene | | | 89.8 | | % | | 50-140 | 11-JUN-20 |
| Benzo(a)anthracene | | | 93.0 | | % | | 50-140 | 11-JUN-20 |
| Benzo(a)pyrene | | | 92.1 | | % | | 50-140 | 11-JUN-20 |
| Benzo(b)fluoranthene | | | 94.5 | | % | | 50-140 | 11-JUN-20 |
| Benzo(g,h,i)perylene | | | 79.5 | | % | | 50-140 | 11-JUN-20 |
| Benzo(k)fluoranthene | | | 93.4 | | % | | 50-140 | 11-JUN-20 |
| Chrysene | | | 104.2 | | % | | 50-140 | 11-JUN-20 |
| Dibenzo(ah)anthracene | | | 85.6 | | % | | 50-140 | 11-JUN-20 |
| Fluoranthene | | | 82.8 | | % | | 50-140 | 11-JUN-20 |
| Fluorene | | | 84.1 | | % | | 50-140 | 11-JUN-20 |
| Indeno(1,2,3-cd)pyrene | | | 74.3 | | % | | 50-140 | 11-JUN-20 |
| Naphthalene | | | 90.7 | | % | | 50-140 | 11-JUN-20 |
| Phenanthrene | | | 93.1 | | % | | 50-140 | 11-JUN-20 |
| Pyrene | | | 82.3 | | % | | 50-140 | 11-JUN-20 |
| **WG3338954-1 MB** | | | | | | | | |
| 1-Methylnaphthalene | | | <0.030 | | ug/g | | 0.03 | 11-JUN-20 |
| 2-Methylnaphthalene | | | <0.030 | | ug/g | | 0.03 | 11-JUN-20 |
| Acenaphthene | | | <0.050 | | ug/g | | 0.05 | |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAH-511-WT** | **Soil** | | | | | | | |
| **Batch R5115893** | | | | | | | | |
| **WG3338954-1 MB** | | | | | | | | |
| Acenaphthene | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Acenaphthylene | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Anthracene | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Benzo(a)anthracene | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Benzo(a)pyrene | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Benzo(b)fluoranthene | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Benzo(g,h,i)perylene | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Benzo(k)fluoranthene | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Chrysene | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Dibenzo(ah)anthracene | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Fluoranthene | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Fluorene | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Indeno(1,2,3-cd)pyrene | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Naphthalene | | | <0.013 | | ug/g | | 0.013 | 11-JUN-20 |
| Phenanthrene | | | <0.046 | | ug/g | | 0.046 | 11-JUN-20 |
| Pyrene | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Surrogate: 2-Fluorobiphenyl | | | 94.0 | | % | | 50-140 | 11-JUN-20 |
| Surrogate: p-Terphenyl d14 | | | 89.6 | | % | | 50-140 | 11-JUN-20 |
| **WG3338954-4 MS** | | **WG3338954-5** | | | | | | |
| 1-Methylnaphthalene | | | 89.9 | | % | | 50-140 | 11-JUN-20 |
| 2-Methylnaphthalene | | | 86.5 | | % | | 50-140 | 11-JUN-20 |
| Acenaphthene | | | 89.8 | | % | | 50-140 | 11-JUN-20 |
| Acenaphthylene | | | 83.4 | | % | | 50-140 | 11-JUN-20 |
| Anthracene | | | 87.4 | | % | | 50-140 | 11-JUN-20 |
| Benzo(a)anthracene | | | 90.9 | | % | | 50-140 | 11-JUN-20 |
| Benzo(a)pyrene | | | 89.7 | | % | | 50-140 | 11-JUN-20 |
| Benzo(b)fluoranthene | | | 92.8 | | % | | 50-140 | 11-JUN-20 |
| Benzo(g,h,i)perylene | | | 75.6 | | % | | 50-140 | 11-JUN-20 |
| Benzo(k)fluoranthene | | | 90.5 | | % | | 50-140 | 11-JUN-20 |
| Chrysene | | | 102.8 | | % | | 50-140 | 11-JUN-20 |
| Dibenzo(ah)anthracene | | | 82.8 | | % | | 50-140 | 11-JUN-20 |
| Fluoranthene | | | 80.0 | | % | | 50-140 | 11-JUN-20 |
| Fluorene | | | 80.8 | | % | | 50-140 | 11-JUN-20 |
| Indeno(1,2,3-cd)pyrene | | | 71.7 | | % | | 50-140 | 11-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAH-511-WT** | **Soil** | | | | | | | |
| **Batch R5115893** | | | | | | | | |
| **WG3338954-4 MS** | | **WG3338954-5** | | | | | | |
| Naphthalene | | | 87.5 | | % | | 50-140 | 11-JUN-20 |
| Phenanthrene | | | 91.1 | | % | | 50-140 | 11-JUN-20 |
| Pyrene | | | 79.1 | | % | | 50-140 | 11-JUN-20 |
| **PH-WT** | **Soil** | | | | | | | |
| **Batch R5116057** | | | | | | | | |
| **WG3339722-1 DUP** | | **L2457094-1** | | | | | | |
| pH | | 7.64 | 7.56 | J | pH units | 0.08 | 0.3 | 11-JUN-20 |
| **WG3339971-1 LCS** | | | | | | | | |
| pH | | | 6.97 | | pH units | | 6.9-7.1 | 11-JUN-20 |
| **SAR-R511-WT** | **Soil** | | | | | | | |
| **Batch R5117925** | | | | | | | | |
| **WG3341929-4 DUP** | | **WG3341929-3** | | | | | | |
| Calcium (Ca) | | 47.3 | 44.9 | | mg/L | 5.2 | 30 | 15-JUN-20 |
| Sodium (Na) | | 146 | 142 | | mg/L | 2.8 | 30 | 15-JUN-20 |
| Magnesium (Mg) | | 9.01 | 8.57 | | mg/L | 5.0 | 30 | 15-JUN-20 |
| **WG3341929-2 IRM** | | **WT SAR4** | | | | | | |
| Calcium (Ca) | | | 89.7 | | % | | 70-130 | 15-JUN-20 |
| Sodium (Na) | | | 96.7 | | % | | 70-130 | 15-JUN-20 |
| Magnesium (Mg) | | | 94.9 | | % | | 70-130 | 15-JUN-20 |
| **WG3341929-5 LCS** | | | | | | | | |
| Calcium (Ca) | | | 97.0 | | % | | 80-120 | 15-JUN-20 |
| Sodium (Na) | | | 95.6 | | % | | 80-120 | 15-JUN-20 |
| Magnesium (Mg) | | | 94.6 | | % | | 80-120 | 15-JUN-20 |
| **WG3341929-1 MB** | | | | | | | | |
| Calcium (Ca) | | | <0.50 | | mg/L | | 0.5 | 15-JUN-20 |
| Sodium (Na) | | | <0.50 | | mg/L | | 0.5 | 15-JUN-20 |
| Magnesium (Mg) | | | <0.50 | | mg/L | | 0.5 | 15-JUN-20 |
| **VOC-511-HS-WT** | **Soil** | | | | | | | |
| **Batch R5115857** | | | | | | | | |
| **WG3337828-4 DUP** | | **WG3337828-3** | | | | | | |
| 1,1,1,2-Tetrachloroethane | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| 1,1,2,2-Tetrachloroethane | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| 1,1,1-Trichloroethane | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| 1,1,2-Trichloroethane | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| 1,1-Dichloroethane | | <0.050 | <0.050 | | | | | |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **VOC-511-HS-WT** | **Soil** | | | | | | | |
| **Batch R5115857** | | | | | | | | |
| **WG3337828-4 DUP** | | **WG3337828-3** | | | | | | |
| 1,1-Dichloroethane | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| 1,1-Dichloroethylene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| 1,2-Dibromoethane | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| 1,2-Dichlorobenzene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| 1,2-Dichloroethane | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| 1,2-Dichloropropane | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| 1,3-Dichlorobenzene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| 1,4-Dichlorobenzene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Acetone | | <0.50 | <0.50 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Benzene | | <0.0068 | <0.0068 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Bromodichloromethane | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Bromoform | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Bromomethane | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Carbon tetrachloride | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Chlorobenzene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Chloroform | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| cis-1,2-Dichloroethylene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| cis-1,3-Dichloropropene | | <0.030 | <0.030 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Dibromochloromethane | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Dichlorodifluoromethane | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Ethylbenzene | | <0.018 | <0.018 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| n-Hexane | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Methylene Chloride | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| MTBE | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| m+p-Xylenes | | <0.030 | <0.030 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Methyl Ethyl Ketone | | <0.50 | <0.50 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Methyl Isobutyl Ketone | | <0.50 | <0.50 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| o-Xylene | | <0.020 | <0.020 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Styrene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Tetrachloroethylene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Toluene | | <0.080 | <0.080 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| trans-1,2-Dichloroethylene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| trans-1,3-Dichloropropene | | <0.030 | <0.030 | | ug/g | | | 11-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
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Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **VOC-511-HS-WT** | **Soil** | | | | | | | |
| **Batch R5115857** | | | | | | | | |
| **WG3337828-4 DUP** | | **WG3337828-3** | | | | | | |
| trans-1,3-Dichloropropene | | <0.030 | <0.030 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Trichloroethylene | | <0.010 | <0.010 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Trichlorofluoromethane | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Vinyl chloride | | <0.020 | <0.020 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| **WG3337828-2 LCS** | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | | | 107.7 | | % | | 60-130 | 11-JUN-20 |
| 1,1,2,2-Tetrachloroethane | | | 97.4 | | % | | 60-130 | 11-JUN-20 |
| 1,1,1-Trichloroethane | | | 113.2 | | % | | 60-130 | 11-JUN-20 |
| 1,1,2-Trichloroethane | | | 103.4 | | % | | 60-130 | 11-JUN-20 |
| 1,1-Dichloroethane | | | 106.5 | | % | | 60-130 | 11-JUN-20 |
| 1,1-Dichloroethylene | | | 100.5 | | % | | 60-130 | 11-JUN-20 |
| 1,2-Dibromoethane | | | 101.1 | | % | | 70-130 | 11-JUN-20 |
| 1,2-Dichlorobenzene | | | 102.9 | | % | | 70-130 | 11-JUN-20 |
| 1,2-Dichloroethane | | | 105.1 | | % | | 60-130 | 11-JUN-20 |
| 1,2-Dichloropropane | | | 108.9 | | % | | 70-130 | 11-JUN-20 |
| 1,3-Dichlorobenzene | | | 105.0 | | % | | 70-130 | 11-JUN-20 |
| 1,4-Dichlorobenzene | | | 110.6 | | % | | 70-130 | 11-JUN-20 |
| Acetone | | | 111.7 | | % | | 60-140 | 11-JUN-20 |
| Benzene | | | 110.0 | | % | | 70-130 | 11-JUN-20 |
| Bromodichloromethane | | | 117.9 | | % | | 50-140 | 11-JUN-20 |
| Bromoform | | | 106.3 | | % | | 70-130 | 11-JUN-20 |
| Bromomethane | | | 121.9 | | % | | 50-140 | 11-JUN-20 |
| Carbon tetrachloride | | | 114.7 | | % | | 70-130 | 11-JUN-20 |
| Chlorobenzene | | | 105.1 | | % | | 70-130 | 11-JUN-20 |
| Chloroform | | | 113.9 | | % | | 70-130 | 11-JUN-20 |
| cis-1,2-Dichloroethylene | | | 104.0 | | % | | 70-130 | 11-JUN-20 |
| cis-1,3-Dichloropropene | | | 112.0 | | % | | 70-130 | 11-JUN-20 |
| Dibromochloromethane | | | 102.6 | | % | | 60-130 | 11-JUN-20 |
| Dichlorodifluoromethane | | | 69.4 | | % | | 50-140 | 11-JUN-20 |
| Ethylbenzene | | | 108.6 | | % | | 70-130 | 11-JUN-20 |
| n-Hexane | | | 105.6 | | % | | 70-130 | 11-JUN-20 |
| Methylene Chloride | | | 108.4 | | % | | 70-130 | 11-JUN-20 |
| MTBE | | | 106.1 | | % | | 70-130 | 11-JUN-20 |
| m+p-Xylenes | | | 112.1 | | | | 70-130 | |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **VOC-511-HS-WT** | **Soil** | | | | | | | |
| **Batch R5115857** | | | | | | | | |
| **WG3337828-2 LCS** | | | | | | | | |
| m+p-Xylenes | | | 112.1 | | % | | 70-130 | 11-JUN-20 |
| Methyl Ethyl Ketone | | | 95.1 | | % | | 60-140 | 11-JUN-20 |
| Methyl Isobutyl Ketone | | | 95.4 | | % | | 60-140 | 11-JUN-20 |
| o-Xylene | | | 115.8 | | % | | 70-130 | 11-JUN-20 |
| Styrene | | | 109.5 | | % | | 70-130 | 11-JUN-20 |
| Tetrachloroethylene | | | 115.3 | | % | | 60-130 | 11-JUN-20 |
| Toluene | | | 108.2 | | % | | 70-130 | 11-JUN-20 |
| trans-1,2-Dichloroethylene | | | 109.3 | | % | | 60-130 | 11-JUN-20 |
| trans-1,3-Dichloropropene | | | 115.1 | | % | | 70-130 | 11-JUN-20 |
| Trichloroethylene | | | 109.7 | | % | | 60-130 | 11-JUN-20 |
| Trichlorofluoromethane | | | 90.8 | | % | | 50-140 | 11-JUN-20 |
| Vinyl chloride | | | 100.5 | | % | | 60-140 | 11-JUN-20 |
| **WG3337828-1 MB** | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| 1,1,2,2-Tetrachloroethane | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| 1,1,1-Trichloroethane | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| 1,1,2-Trichloroethane | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| 1,1-Dichloroethane | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| 1,1-Dichloroethylene | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| 1,2-Dibromoethane | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| 1,2-Dichlorobenzene | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| 1,2-Dichloroethane | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| 1,2-Dichloropropane | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| 1,3-Dichlorobenzene | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| 1,4-Dichlorobenzene | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Acetone | | | <0.50 | | ug/g | | 0.5 | 11-JUN-20 |
| Benzene | | | <0.0068 | | ug/g | | 0.0068 | 11-JUN-20 |
| Bromodichloromethane | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Bromoform | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Bromomethane | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Carbon tetrachloride | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Chlorobenzene | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Chloroform | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| cis-1,2-Dichloroethylene | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **VOC-511-HS-WT** | **Soil** | | | | | | | |
| **Batch R5115857** | | | | | | | | |
| **WG3337828-1 MB** | | | | | | | | |
| cis-1,3-Dichloropropene | | | <0.030 | | ug/g | | 0.03 | 11-JUN-20 |
| Dibromochloromethane | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Dichlorodifluoromethane | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Ethylbenzene | | | <0.018 | | ug/g | | 0.018 | 11-JUN-20 |
| n-Hexane | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Methylene Chloride | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| MTBE | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| m+p-Xylenes | | | <0.030 | | ug/g | | 0.03 | 11-JUN-20 |
| Methyl Ethyl Ketone | | | <0.50 | | ug/g | | 0.5 | 11-JUN-20 |
| Methyl Isobutyl Ketone | | | <0.50 | | ug/g | | 0.5 | 11-JUN-20 |
| o-Xylene | | | <0.020 | | ug/g | | 0.02 | 11-JUN-20 |
| Styrene | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Tetrachloroethylene | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Toluene | | | <0.080 | | ug/g | | 0.08 | 11-JUN-20 |
| trans-1,2-Dichloroethylene | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| trans-1,3-Dichloropropene | | | <0.030 | | ug/g | | 0.03 | 11-JUN-20 |
| Trichloroethylene | | | <0.010 | | ug/g | | 0.01 | 11-JUN-20 |
| Trichlorofluoromethane | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Vinyl chloride | | | <0.020 | | ug/g | | 0.02 | 11-JUN-20 |
| Surrogate: 1,4-Difluorobenzene | | | 120.7 | | % | | 50-140 | 11-JUN-20 |
| Surrogate: 4-Bromofluorobenzene | | | 108.4 | | % | | 50-140 | 11-JUN-20 |

# Quality Control Report

Workorder: L2457452 Report Date: 15-JUN-20

Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Valyn Bernard



**Legend:**

| | |
|---|---|
| Limit | ALS Control Limit (Data Quality Objectives) |
| DUP | Duplicate |
| RPD | Relative Percent Difference |
| N/A | Not Available |
| LCS | Laboratory Control Sample |
| SRM | Standard Reference Material |
| MS | Matrix Spike |
| MSD | Matrix Spike Duplicate |
| ADE | Average Desorption Efficiency |
| MB | Method Blank |
| IRM | Internal Reference Material |
| CRM | Certified Reference Material |
| CCV | Continuing Calibration Verification |
| CVS | Calibration Verification Standard |
| LCSD | Laboratory Control Sample Duplicate |

**Sample Parameter Qualifier Definitions:**

| Qualifier | Description |
|---|---|
| J | Duplicate results and limits are expressed in terms of absolute difference. |
| RPD-NA | Relative Percent Difference Not Available due to result(s) being less than detection limit. |

**Hold Time Exceedances:**

All test results reported with this submission were conducted within ALS recommended hold times.

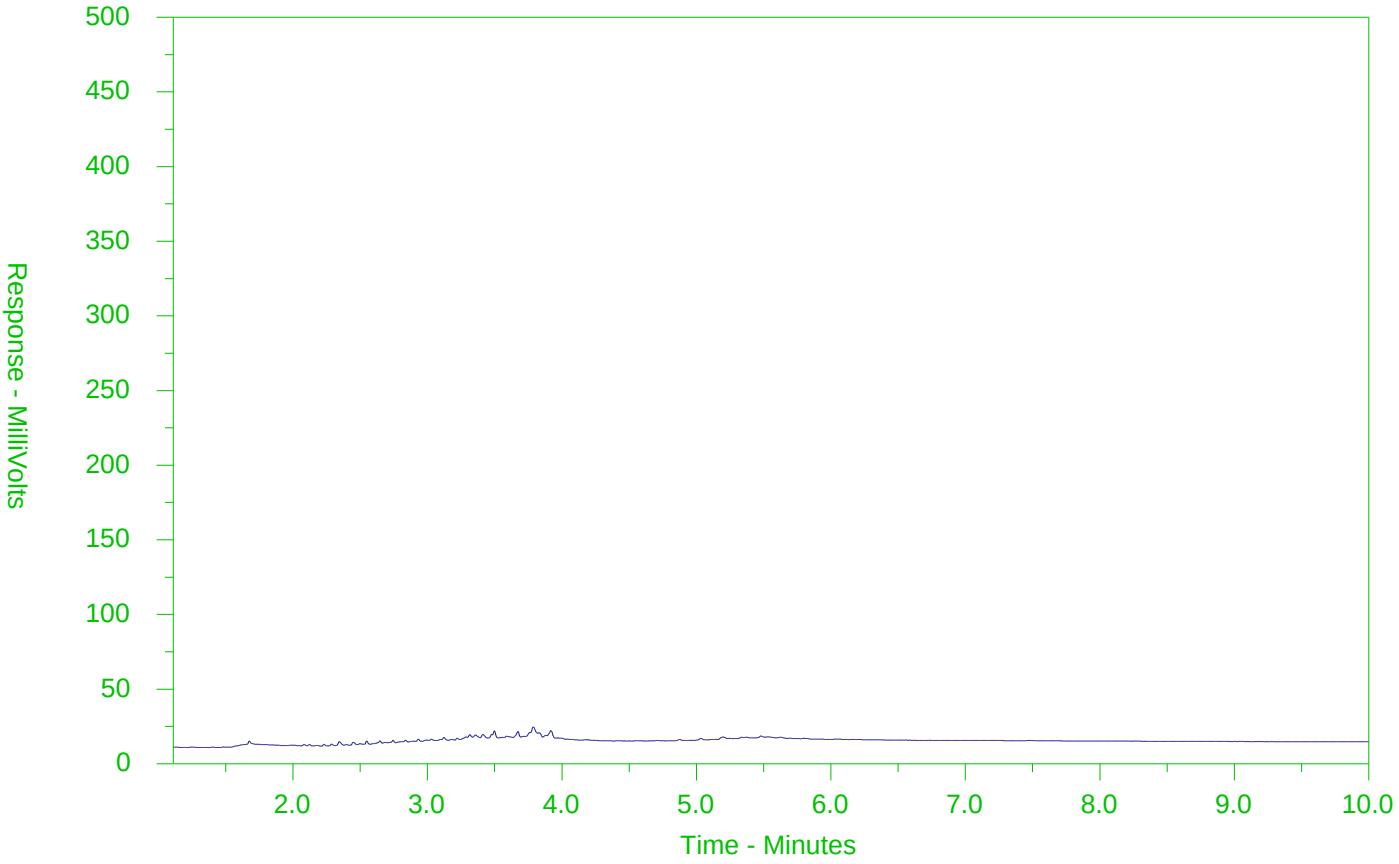
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

# CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2457452-2
Client Sample ID: BH2-SS3




| ←F2→ | ←F3→ | ←F4→ | |
|---|---|---|---|
| nC10 | nC16 | nC34 | nC50 |
| 174°C | 287°C | 481°C | 575°C |
| 346°F | 549°F | 898°F | 1067°F |
| Gasoline → | | ← Motor Oils/Lube Oils/Grease → | |
| ← Diesel/Jet Fuels → | | | |

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.

WSP Canada Group Limited
ATTN: Valyn Bernard
610 Chartwell Road
Suite 300
Oakville ON L6J 4A5

Date Received: 05-JUN-20
Report Date: 22-JUN-20 09:05 (MT)
Version: FINAL REV. 2

Client Phone: 905-829-6266

# Certificate of Analysis

## Lab Work Order #: L2457100

Project P.O. #: NOT SUBMITTED
Job Reference: 19M-01888-00-CONTAM
C of C Numbers:
Legal Site Desc:

Comments: ADDITIONAL 15-JUN-20 09:29

Emily Hansen
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

## Summary of Guideline Exceedances

| Guideline ALS ID | Client ID | Grouping | Analyte | Result | Guideline Limit | Unit |
|---|---|---|---|---|---|---|
| **Ontario Regulation 153/04 - April 15, 2011 Standards - T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use** | | | | | | |
| L2457100-1 | BH8-SS1 | Physical Tests | Conductivity | 1.82 | 0.57 | mS/cm |
| | | Saturated Paste Extractables | SAR | 2.60 | 2.4 | SAR |
| | | Speciated Metals | Chromium, Hexavalent | 0.78 | 0.66 | ug/g |
| | | Polycyclic Aromatic Hydrocarbons | Acenaphthene | 0.156 | 0.072 | ug/g |
| | | | Anthracene | 0.221 | 0.16 | ug/g |
| | | | Benzo(a)anthracene | 0.463 | 0.36 | ug/g |
| | | | Benzo(a)pyrene | 0.346 | 0.3 | ug/g |
| | | | Benzo(b)fluoranthene | 0.543 | 0.47 | ug/g |
| | | | Fluoranthene | 1.15 | 0.56 | ug/g |
| | | | Naphthalene | 0.163 | 0.09 | ug/g |
| | | | Phenanthrene | 1.36 | 0.69 | ug/g |

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

# ANALYTICAL REPORT

## Physical Tests - SOIL

| | | Guide Limits | | | | |
|---|---|---|---|---|---|---|
| **Lab ID** | | | | L2457100-1 | L2457100-3 | L2457100-4 |
| **Sample Date** | | | | 04-JUN-20 | 04-JUN-20 | 04-JUN-20 |
| **Sample ID** | | | | BH8-SS1 | BH8-SS4 | BH8-SS5 |
| **Analyte** | **Unit** | **#1** | **#2** | | | |
| Conductivity | mS/cm | 0.57 | - | 1.82 | 0.182 | |
| % Moisture | % | - | - | 10.5 | 10.5 | 14.5 |
| pH | pH units | - | - | 11.81 | 7.95 | |

**Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

# ANALYTICAL REPORT

## Cyanides - SOIL

| | | Lab ID | L2457100-1 |
|---|---|---|---|
| | | Sample Date | 04-JUN-20 |
| | | Sample ID | BH8-SS1 |
| Analyte | Unit | Guide Limits #1 | #2 | |
| Cyanide, Weak Acid Diss | ug/g | 0.051 | - | <0.050 |

**Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

# ANALYTICAL REPORT

## Saturated Paste Extractables - SOIL

| | | | | |
|---|---|---|---|---|
| | | | **Lab ID** | L2457100-1 |
| | | | **Sample Date** | 04-JUN-20 |
| | | | **Sample ID** | BH8-SS1 |
| **Analyte** | **Unit** | **Guide Limits #1** | **#2** | |
| SAR | SAR | 2.4 | - | 2.60 SAR:M |
| Calcium (Ca) | mg/L | - | - | 88.3 |
| Magnesium (Mg) | mg/L | - | - | <0.50 |
| Sodium (Na) | mg/L | - | - | 88.6 |

**Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

# ANALYTICAL REPORT

## Metals - SOIL

| | | | | |
|---|---|---|---|---|
| | | | **Lab ID** | L2457100-1 |
| | | | **Sample Date** | 04-JUN-20 |
| | | | **Sample ID** | BH8-SS1 |
| | | **Guide Limits** | | |
| **Analyte** | **Unit** | **#1** | **#2** | |
| Antimony (Sb) | ug/g | 1.3 | - | <1.0 |
| Arsenic (As) | ug/g | 18 | - | 2.6 |
| Barium (Ba) | ug/g | 220 | - | 73.0 |
| Beryllium (Be) | ug/g | 2.5 | - | <0.50 |
| Boron (B) | ug/g | 36 | - | 13.8 |
| Boron (B), Hot Water Ext. | ug/g | 36 | - | 0.35 |
| Cadmium (Cd) | ug/g | 1.2 | - | 0.75 |
| Chromium (Cr) | ug/g | 70 | - | 17.6 |
| Cobalt (Co) | ug/g | 21 | - | 3.7 |
| Copper (Cu) | ug/g | 92 | - | 15.8 |
| Lead (Pb) | ug/g | 120 | - | 21.6 |
| Mercury (Hg) | ug/g | 0.27 | - | 0.0310 |
| Molybdenum (Mo) | ug/g | 2 | - | <1.0 |
| Nickel (Ni) | ug/g | 82 | - | 10.1 |
| Selenium (Se) | ug/g | 1.5 | - | <1.0 |
| Silver (Ag) | ug/g | 0.5 | - | <0.20 |
| Thallium (Tl) | ug/g | 1 | - | <0.50 |
| Uranium (U) | ug/g | 2.5 | - | <1.0 |
| Vanadium (V) | ug/g | 86 | - | 21.0 |
| Zinc (Zn) | ug/g | 290 | - | 82.7 |

**Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

# ANALYTICAL REPORT

## Speciated Metals - SOIL

| | | | | |
|---|---|---|---|---|
| | | | **Lab ID** | L2457100-1 |
| | | | **Sample Date** | 04-JUN-20 |
| | | | **Sample ID** | BH8-SS1 |
| | | **Guide Limits** | | |
| **Analyte** | **Unit** | **#1** | **#2** | |
| Chromium, Hexavalent | ug/g | 0.66 | - | 0.78 |

**Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

# ANALYTICAL REPORT

## Volatile Organic Compounds - SOIL

| | | | | |
|---|---|---|---|---|
| | | | **Lab ID** | L2457100-4 |
| | | | **Sample Date** | 04-JUN-20 |
| | | | **Sample ID** | BH8-SS5 |
| | | **Guide Limits** | | |
| **Analyte** | **Unit** | **#1** | **#2** | |
| Benzene | ug/g | 0.02 | - | <0.0068 |
| Ethylbenzene | ug/g | 0.05 | - | <0.018 |
| Toluene | ug/g | 0.2 | - | <0.080 |
| o-Xylene | ug/g | - | - | <0.020 |
| m+p-Xylenes | ug/g | - | - | <0.030 |
| Xylenes (Total) | ug/g | 0.05 | - | <0.050 |
| Surrogate: 4-Bromofluorobenzene | % | - | - | 115.8 |
| Surrogate: 1,4-Difluorobenzene | % | - | - | 120.4 |

**Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

# ANALYTICAL REPORT

## Hydrocarbons - SOIL

| | | | | |
|---|---|---|---|---|
| | | | **Lab ID** | L2457100-4 |
| | | | **Sample Date** | 04-JUN-20 |
| | | | **Sample ID** | BH8-SS5 |
| | | **Guide Limits** | | |
| **Analyte** | **Unit** | **#1** | **#2** | |
| F1 (C6-C10) | ug/g | 25 | - | <5.0 |
| F1-BTEX | ug/g | 25 | - | <5.0 |
| F2 (C10-C16) | ug/g | 10 | - | <10 |
| F3 (C16-C34) | ug/g | 240 | - | <50 |
| F4 (C34-C50) | ug/g | 120 | - | <50 |
| Total Hydrocarbons (C6-C50) | ug/g | - | - | <72 |
| Chrom. to baseline at nC50 | | - | - | YES |
| Surrogate: 2-Bromobenzotrifluoride | % | - | - | 80.7 |
| Surrogate: 3,4-Dichlorotoluene | % | - | - | 109.3 |

**Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

# ANALYTICAL REPORT

## Polycyclic Aromatic Hydrocarbons - SOIL

| | | Guide Limits | | | |
|---|---|---|---|---|---|
| **Lab ID** | | | | L2457100-1 | L2457100-3 |
| **Sample Date** | | | | 04-JUN-20 | 04-JUN-20 |
| **Sample ID** | | | | BH8-SS1 | BH8-SS4 |
| **Analyte** | **Unit** | **#1** | **#2** | | |
| Acenaphthene | ug/g | 0.072 | - | 0.156 | |
| Acenaphthylene | ug/g | 0.093 | - | <0.050 | |
| Anthracene | ug/g | 0.16 | - | 0.221 | |
| Benzo(a)anthracene | ug/g | 0.36 | - | 0.463 | |
| Benzo(a)pyrene | mg/kg | 0.3 | - | | <0.020 |
| Benzo(a)pyrene | ug/g | 0.3 | - | 0.346 | |
| Benzo(b)fluoranthene | ug/g | 0.47 | - | 0.543 | |
| Benzo(g,h,i)perylene | ug/g | 0.68 | - | 0.228 | |
| Benzo(k)fluoranthene | ug/g | 0.48 | - | 0.137 | |
| Chrysene | ug/g | 2.8 | - | 0.518 | |
| Dibenzo(ah)anthracene | ug/g | 0.1 | - | 0.064 | |
| Fluoranthene | ug/g | 0.56 | - | 1.15 | |
| Fluorene | ug/g | 0.12 | - | 0.066 | |
| Indeno(1,2,3-cd)pyrene | ug/g | 0.23 | - | 0.216 | |
| 1+2-Methylnaphthalenes | ug/g | 0.59 | - | 0.166 | |
| 1-Methylnaphthalene | ug/g | 0.59 | - | 0.066 | |
| 2-Methylnaphthalene | ug/g | 0.59 | - | 0.100 | |
| Naphthalene | ug/g | 0.09 | - | 0.163 | |
| Phenanthrene | ug/g | 0.69 | - | 1.36 | |
| Pyrene | ug/g | 1 | - | 0.963 | |
| Surrogate: 2-Fluorobiphenyl | % | - | - | 89.4 | 92.5 |
| Surrogate: p-Terphenyl d14 | % | - | - | 105.0 | 93.1 |

**Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

# Reference Information

**Qualifiers for Individual Parameters Listed:**

| Qualifier | Description |
|---|---|
| SAR:M | Reported SAR represents a maximum value. Actual SAR may be lower if both Ca and Mg were detectable. |

**Methods Listed (if applicable):**

| ALS Test Code | Matrix | Test Description | Method Reference** |
|---|---|---|---|
| **B-HWS-R511-WT** | Soil | Boron-HWE-O.Reg 153/04 (July 2011) | HW EXTR, EPA 6010B |

A dried solid sample is extracted with calcium chloride, the sample undergoes a heating process. After cooling the sample is filtered and analyzed by ICP/OES.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

| | | | |
|---|---|---|---|
| **BAP-WT** | Soil | Benzo(a)pyrene | SW486 8270 |

The procedure uses a mechanical shaking technique to extract a representative sub-sample with a mixture of methanol and toluene. The extract is analyzed by GC/MSD.

| | | | |
|---|---|---|---|
| **BTX-511-HS-WT** | Soil | BTEX-O.Reg 153/04 (July 2011) | SW846 8260 |

BTX is determined by extracting a soil or sediment sample as received with methanol, then analyzing by headspace-GC/MS.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

| | | | |
|---|---|---|---|
| **CN-WAD-R511-WT** | Soil | Cyanide (WAD)-O.Reg 153/04 (July 2011) | MOE 3015/APHA 4500CN I-WAD |

The sample is extracted with a strong base for 16 hours, and then filtered. The filtrate is then distilled where the cyanide is converted to cyanogen chloride by reacting with chloramine-T, the cyanogen chloride then reacts with a combination of barbituric acid and isonicotinic acid to form a highly colored complex.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

| | | | |
|---|---|---|---|
| **CR-CR6-IC-WT** | Soil | Hexavalent Chromium in Soil | SW846 3060A/7199 |

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 7199, published by the United States Environmental Protection Agency (EPA). The procedure involves analysis for chromium (VI) by ion chromatography using diphenylcarbazide in a sulphuric acid solution.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

| | | | |
|---|---|---|---|
| **EC-WT** | Soil | Conductivity (EC) | MOEE E3138 |

A representative subsample is tumbled with de-ionized (DI) water. The ratio of water to soil is 2:1 v/w. After tumbling the sample is then analyzed by a conductivity meter.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

| | | | |
|---|---|---|---|
| **F1-F4-511-CALC-WT** | Soil | F1-F4 Hydrocarbon Calculated Parameters | CCME CWS-PHC, Pub #1310, Dec 2001-S |

Analytical methods used for analysis of CCME Petroleum Hydrocarbons have been validated and comply with the Reference Method for the CWS PHC.

Hydrocarbon results are expressed on a dry weight basis.

In cases where results for both F4 and F4G are reported, the greater of the two results must be used in any application of the CWS PHC guidelines and the gravimetric heavy hydrocarbons cannot be added to the C6 to C50 hydrocarbons.
In samples where BTEX and F1 were analyzed , F1-BTEX represents a value where the sum of Benzene, Toluene, Ethylbenzene and total Xylenes has been subtracted from F1.

# Reference Information

**Methods Listed (if applicable):**

| ALS Test Code | Matrix | Test Description | Method Reference** |
|---|---|---|---|

In samples where PAHs, F2 and F3 were analyzed, F2-Naphth represents the result where Naphthalene has been subtracted from F2. F3-PAH represents a result where the sum of Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene, Fluoranthene, Indeno(1,2,3-cd)pyrene, Phenanthrene, and Pyrene has been subtracted from F3.

Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:
1. All extraction and analysis holding times were met.
2. Instrument performance showing response factors for C6 and C10 within 30% of the response factor for toluene.
3. Linearity of gasoline response within 15% throughout the calibration range.

Unless otherwise qualified, the following quality control criteria have been met for the F2-F4 hydrocarbon ranges:
1. All extraction and analysis holding times were met.
2. Instrument performance showing C10, C16 and C34 response factors within 10% of their average.
3. Instrument performance showing the C50 response factor within 30% of the average of the C10, C16 and C34 response factors.
4. Linearity of diesel or motor oil response within 15% throughout the calibration range.

**F1-HS-511-WT** Soil F1-O.Reg 153/04 (July 2011) E3398/CCME TIER 1-HS

Fraction F1 is determined by extracting a soil or sediment sample as received with methanol, then analyzing by headspace-GC/FID.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

**F2-F4-511-WT** Soil F2-F4-O.Reg 153/04 (July 2011) CCME Tier 1

Petroleum Hydrocarbons (F2-F4 fractions) are extracted from soil with 1:1 hexane:acetone using a rotary extractor. Extracts are treated with silica gel to remove polar organic interferences. F2, F3, & F4 are analyzed by GC-FID. F4G-sg is analyzed gravimetrically.

Notes:
1. F2 (C10-C16): Sum of all hydrocarbons that elute between nC10 and nC16.
2. F3 (C16-C34): Sum of all hydrocarbons that elute between nC16 and nC34.
3. F4 (C34-C50): Sum of all hydrocarbons that elute between nC34 and nC50.
4. F4G: Gravimetric Heavy Hydrocarbons
5. F4G-sg: Gravimetric Heavy Hydrocarbons (F4G) after silica gel treatment.
6. Where both F4 (C34-C50) and F4G-sg are reported for a sample, the larger of the two values is used for comparison against the relevant CCME guideline for F4.
7. F4G-sg cannot be added to the C6 to C50 hydrocarbon results to obtain an estimate of total extractable hydrocarbons.
8. This method is validated for use.
9. Data from analysis of validation and quality control samples is available upon request.
10. Reported results are expressed as milligrams per dry kilogram, unless otherwise indicated.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

**HG-200.2-CVAA-WT** Soil Mercury in Soil by CVAAS EPA 200.2/1631E (mod)

Soil samples are digested with nitric and hydrochloric acids, followed by analysis by CVAAS.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

**MET-200.2-CCMS-WT** Soil Metals in Soil by CRC ICPMS EPA 200.2/6020B (mod)

Soil/sediment is dried, disaggregated, and sieved (2 mm). For tests intended to support Ontario regulations, the <2mm fraction is ground to pass through a 0.355 mm sieve. Strong Acid Leachable Metals in the <2mm fraction are solubilized by heated digestion with nitric and hydrochloric acids. Instrumental analysis is by Collision / Reaction Cell ICPMS.

Limitations: This method is intended to liberate environmentally available metals. Silicate minerals are not solubilized. Some metals may be only partially recovered (matrix dependent), including Al, Ba, Be, Cr, S, Sr, Ti, Tl, V, W, and Zr. Elemental Sulfur may be poorly recovered by this method. Volatile forms of sulfur (e.g. sulfide, H2S) may be excluded if lost during sampling, storage, or

# Reference Information

**Methods Listed (if applicable):**

| ALS Test Code | Matrix | Test Description | Method Reference** |
|---|---|---|---|

digestion.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

| | | | |
|---|---|---|---|
| **METHYLNAPS-CALC-WT** | Soil | ABN-Calculated Parameters | SW846 8270 |
| **MOISTURE-WT** | Soil | % Moisture | CCME PHC in Soil - Tier 1 (mod) |
| **PAH-511-WT** | Soil | PAH-O.Reg 153/04 (July 2011) | SW846 3510/8270 |

A representative sub-sample of soil is fortified with deuterium-labelled surrogates and a mechanical shaking techniqueis used to extract the sample with a mixture of methanol and toluene. The extracts are concentrated and analyzed by GC/MS. Results for benzo(b) fluoranthene may include contributions from benzo(j)fluoranthene, if also present in the sample.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

| | | | |
|---|---|---|---|
| **PH-WT** | Soil | pH | MOEE E3137A |

A minimum 10g portion of the sample is extracted with 20mL of 0.01M calcium chloride solution by shaking for at least 30 minutes. The aqueous layer is separated from the soil and then analyzed using a pH meter and electrode.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

| | | | |
|---|---|---|---|
| **SAR-R511-WT** | Soil | SAR-O.Reg 153/04 (July 2011) | SW846 6010C |

A dried, disaggregated solid sample is extracted with deionized water, the aqueous extract is separated from the solid, acidified and then analyzed using a ICP/OES. The concentrations of Na, Ca and Mg are reported as per CALA requirements for calculated parameters. These individual parameters are not for comparison to any guideline.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

| | | | |
|---|---|---|---|
| **XYLENES-SUM-CALC-WT** | Soil | Sum of Xylene Isomer Concentrations | CALCULATION |

Total xylenes represents the sum of o-xylene and m&p-xylene.

**ALS test methods may incorporate modifications from specified reference methods to improve performance.

Chain of Custody Numbers:

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

| Laboratory Definition Code | Laboratory Location |
|---|---|
| WT | ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA |

# Reference Information

**GLOSSARY OF REPORT TERMS**

*Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.*
*mg/kg - milligrams per kilogram based on dry weight of sample*
*mg/kg wwt - milligrams per kilogram based on wet weight of sample*
*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight*
*mg/L - unit of concentration based on volume, parts per million.*
*< - Less than.*
*D.L. - The reporting limit.*
*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*
*UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.*
*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*

*Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to, fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information. Guideline limits are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.*

# Quality Control Report

Workorder: L2457100 Report Date: 22-JUN-20 

Client: WSP Canada Group Limited
610 Chartwell Road Suite 300
Oakville ON L6J 4A5
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **B-HWS-R511-WT** | **Soil** | | | | | | | |
| **Batch R5116737** | | | | | | | | |
| **WG3340623-4 DUP** | | **L2457070-4** | | | | | | |
| Boron (B), Hot Water Ext. | | 0.14 | 0.15 | | ug/g | 3.5 | 30 | 12-JUN-20 |
| **WG3340623-2 IRM** | | **WT SAR4** | | | | | | |
| Boron (B), Hot Water Ext. | | | 98.8 | | % | | 70-130 | 12-JUN-20 |
| **WG3340623-3 LCS** | | | | | | | | |
| Boron (B), Hot Water Ext. | | | 109.0 | | % | | 70-130 | 12-JUN-20 |
| **WG3340623-1 MB** | | | | | | | | |
| Boron (B), Hot Water Ext. | | | <0.10 | | ug/g | | 0.1 | 12-JUN-20 |
| **BAP-WT** | **Soil** | | | | | | | |
| **Batch R5126366** | | | | | | | | |
| **WG3344769-3 DUP** | | **WG3344769-5** | | | | | | |
| Benzo(a)pyrene | | 0.049 | 0.057 | | mg/kg | 16 | 40 | 19-JUN-20 |
| **WG3344769-2 LCS** | | | | | | | | |
| Benzo(a)pyrene | | | 76.9 | | % | | 60-140 | 19-JUN-20 |
| **WG3344769-1 MB** | | | | | | | | |
| Benzo(a)pyrene | | | <0.020 | | mg/kg | | 0.02 | 19-JUN-20 |
| Surrogate: 2-Fluorobiphenyl | | | 88.8 | | % | | 50-140 | 19-JUN-20 |
| Surrogate: p-Terphenyl d14 | | | 87.5 | | % | | 50-140 | 19-JUN-20 |
| **WG3344769-4 MS** | | **WG3344769-5** | | | | | | |
| Benzo(a)pyrene | | | 98.0 | | % | | 50-140 | 19-JUN-20 |
| **BTX-511-HS-WT** | **Soil** | | | | | | | |
| **Batch R5113544** | | | | | | | | |
| **WG3336790-4 DUP** | | **WG3336790-3** | | | | | | |
| Benzene | | <0.0068 | <0.0068 | RPD-NA | ug/g | N/A | 40 | 10-JUN-20 |
| Ethylbenzene | | <0.018 | <0.018 | RPD-NA | ug/g | N/A | 40 | 10-JUN-20 |
| m+p-Xylenes | | <0.030 | <0.030 | RPD-NA | ug/g | N/A | 40 | 10-JUN-20 |
| o-Xylene | | N/A | <0.020 | RPD-NA | ug/g | N/A | 40 | 10-JUN-20 |
| Toluene | | <0.080 | <0.080 | RPD-NA | ug/g | N/A | 40 | 10-JUN-20 |
| **WG3336790-2 LCS** | | | | | | | | |
| Benzene | | | 98.0 | | % | | 70-130 | 10-JUN-20 |
| Ethylbenzene | | | 95.4 | | % | | 70-130 | 10-JUN-20 |
| m+p-Xylenes | | | 93.3 | | % | | 70-130 | 10-JUN-20 |
| o-Xylene | | | 95.6 | | % | | 70-130 | 10-JUN-20 |
| Toluene | | | 94.7 | | % | | 70-130 | 10-JUN-20 |
| **WG3336790-1 MB** | | | | | | | | |
| Benzene | | | <0.0068 | | ug/g | | 0.0068 | 10-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
610 Chartwell Road Suite 300
Oakville ON L6J 4A5
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **BTX-511-HS-WT** | **Soil** | | | | | | | |
| **Batch R5113544** | | | | | | | | |
| **WG3336790-1 MB** | | | | | | | | |
| Ethylbenzene | | | <0.018 | | ug/g | | 0.018 | 10-JUN-20 |
| m+p-Xylenes | | | <0.030 | | ug/g | | 0.03 | 10-JUN-20 |
| o-Xylene | | | <0.020 | | ug/g | | 0.02 | 10-JUN-20 |
| Toluene | | | <0.080 | | ug/g | | 0.08 | 10-JUN-20 |
| Surrogate: 1,4-Difluorobenzene | | | 118.6 | | % | | 50-140 | 10-JUN-20 |
| Surrogate: 4-Bromofluorobenzene | | | 113.6 | | % | | 50-140 | 10-JUN-20 |
| **WG3336790-5 MS** | | **WG3336790-3** | | | | | | |
| Benzene | | | 103.9 | | % | | 60-140 | 10-JUN-20 |
| Ethylbenzene | | | 101.8 | | % | | 60-140 | 10-JUN-20 |
| m+p-Xylenes | | | 99.2 | | % | | 60-140 | 10-JUN-20 |
| o-Xylene | | | 99.8 | | % | | 60-140 | 10-JUN-20 |
| Toluene | | | 100.9 | | % | | 60-140 | 10-JUN-20 |
| **CN-WAD-R511-WT** | **Soil** | | | | | | | |
| **Batch R5116069** | | | | | | | | |
| **WG3338792-3 DUP** | | **L2457003-1** | | | | | | |
| Cyanide, Weak Acid Diss | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 35 | 11-JUN-20 |
| **WG3338792-2 LCS** | | | | | | | | |
| Cyanide, Weak Acid Diss | | | 94.2 | | % | | 80-120 | 11-JUN-20 |
| **WG3338792-1 MB** | | | | | | | | |
| Cyanide, Weak Acid Diss | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| **WG3338792-4 MS** | | **L2457003-1** | | | | | | |
| Cyanide, Weak Acid Diss | | | 103.2 | | % | | 70-130 | 11-JUN-20 |
| **CR-CR6-IC-WT** | **Soil** | | | | | | | |
| **Batch R5115890** | | | | | | | | |
| **WG3338781-4 CRM** | | **WT-SQC012** | | | | | | |
| Chromium, Hexavalent | | | 95.3 | | % | | 70-130 | 11-JUN-20 |
| **WG3338781-3 DUP** | | **L2457003-1** | | | | | | |
| Chromium, Hexavalent | | 0.21 | 0.24 | | ug/g | 9.9 | 35 | 11-JUN-20 |
| **WG3338781-2 LCS** | | | | | | | | |
| Chromium, Hexavalent | | | 97.2 | | % | | 80-120 | 11-JUN-20 |
| **WG3338781-1 MB** | | | | | | | | |
| Chromium, Hexavalent | | | <0.20 | | ug/g | | 0.2 | 11-JUN-20 |
| **EC-WT** | **Soil** | | | | | | | |

# Quality Control Report



Client: WSP Canada Group Limited
610 Chartwell Road Suite 300
Oakville ON L6J 4A5
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **EC-WT** | **Soil** | | | | | | | |
| **Batch R5116550** | | | | | | | | |
| **WG3340624-4 DUP** | | **WG3340624-3** | | | | | | |
| Conductivity | | 0.235 | 0.229 | | mS/cm | 2.6 | 20 | 12-JUN-20 |
| **WG3340624-2 IRM** | | **WT SAR4** | | | | | | |
| Conductivity | | | 101.2 | | % | | 70-130 | 12-JUN-20 |
| **WG3340934-1 LCS** | | | | | | | | |
| Conductivity | | | 98.1 | | % | | 90-110 | 12-JUN-20 |
| **WG3340624-1 MB** | | | | | | | | |
| Conductivity | | | <0.0040 | | mS/cm | | 0.004 | 12-JUN-20 |
| **Batch R5126026** | | | | | | | | |
| **WG3345530-4 DUP** | | **WG3345530-3** | | | | | | |
| Conductivity | | 0.476 | 0.486 | | mS/cm | 2.1 | 20 | 19-JUN-20 |
| **WG3345530-2 IRM** | | **WT SAR4** | | | | | | |
| Conductivity | | | 104.6 | | % | | 70-130 | 19-JUN-20 |
| **WG3345779-1 LCS** | | | | | | | | |
| Conductivity | | | 99.4 | | % | | 90-110 | 19-JUN-20 |
| **WG3345530-1 MB** | | | | | | | | |
| Conductivity | | | <0.0040 | | mS/cm | | 0.004 | 19-JUN-20 |
| **F1-HS-511-WT** | **Soil** | | | | | | | |
| **Batch R5113544** | | | | | | | | |
| **WG3336790-4 DUP** | | **WG3336790-3** | | | | | | |
| F1 (C6-C10) | | <5.0 | <5.0 | RPD-NA | ug/g | N/A | 30 | 10-JUN-20 |
| **WG3336790-2 LCS** | | | | | | | | |
| F1 (C6-C10) | | | 118.1 | | % | | 80-120 | 10-JUN-20 |
| **WG3336790-1 MB** | | | | | | | | |
| F1 (C6-C10) | | | <5.0 | | ug/g | | 5 | 10-JUN-20 |
| Surrogate: 3,4-Dichlorotoluene | | | 115.5 | | % | | 60-140 | 10-JUN-20 |
| **WG3336790-6 MS** | | **L2456792-1** | | | | | | |
| F1 (C6-C10) | | | 105.2 | | % | | 60-140 | 10-JUN-20 |
| **F2-F4-511-WT** | **Soil** | | | | | | | |
| **Batch R5114398** | | | | | | | | |
| **WG3338664-3 DUP** | | **WG3338664-5** | | | | | | |
| F2 (C10-C16) | | <10 | <10 | RPD-NA | ug/g | N/A | 30 | 10-JUN-20 |
| F3 (C16-C34) | | <50 | <50 | RPD-NA | ug/g | N/A | 30 | 10-JUN-20 |
| F4 (C34-C50) | | <50 | <50 | RPD-NA | ug/g | N/A | 30 | 10-JUN-20 |
| **WG3338664-2 LCS** | | | | | | | | |
| F2 (C10-C16) | | | 95.9 | | % | | 80-120 | 10-JUN-20 |
| F3 (C16-C34) | | | 98.7 | | % | | 80-120 | 10-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
610 Chartwell Road Suite 300
Oakville ON L6J 4A5
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **F2-F4-511-WT** | **Soil** | | | | | | | |
| **Batch R5114398** | | | | | | | | |
| **WG3338664-2 LCS** | | | | | | | | |
| F4 (C34-C50) | | | 89.9 | | % | | 80-120 | 10-JUN-20 |
| **WG3338664-1 MB** | | | | | | | | |
| F2 (C10-C16) | | | <10 | | ug/g | | 10 | 10-JUN-20 |
| F3 (C16-C34) | | | <50 | | ug/g | | 50 | 10-JUN-20 |
| F4 (C34-C50) | | | <50 | | ug/g | | 50 | 10-JUN-20 |
| Surrogate: 2-Bromobenzotrifluoride | | | 79.2 | | % | | 60-140 | 10-JUN-20 |
| **WG3338664-4 MS** | | **WG3338664-5** | | | | | | |
| F2 (C10-C16) | | | 101.4 | | % | | 60-140 | 10-JUN-20 |
| F3 (C16-C34) | | | 104.2 | | % | | 60-140 | 10-JUN-20 |
| F4 (C34-C50) | | | 95.6 | | % | | 60-140 | 10-JUN-20 |
| **HG-200.2-CVAA-WT** | **Soil** | | | | | | | |
| **Batch R5116616** | | | | | | | | |
| **WG3340572-2 CRM** | | **WT-SS-1** | | | | | | |
| Mercury (Hg) | | | 90.3 | | % | | 70-130 | 12-JUN-20 |
| **WG3340572-6 DUP** | | **WG3340572-5** | | | | | | |
| Mercury (Hg) | | 0.0310 | 0.0279 | | ug/g | 11 | 40 | 12-JUN-20 |
| **WG3340572-3 LCS** | | | | | | | | |
| Mercury (Hg) | | | 93.0 | | % | | 80-120 | 12-JUN-20 |
| **WG3340572-1 MB** | | | | | | | | |
| Mercury (Hg) | | | <0.0050 | | mg/kg | | 0.005 | 12-JUN-20 |
| **MET-200.2-CCMS-WT** | **Soil** | | | | | | | |
| **Batch R5116485** | | | | | | | | |
| **WG3340572-2 CRM** | | **WT-SS-1** | | | | | | |
| Antimony (Sb) | | | 92.6 | | % | | 70-130 | 12-JUN-20 |
| Arsenic (As) | | | 110.9 | | % | | 70-130 | 12-JUN-20 |
| Beryllium (Be) | | | 101.6 | | % | | 70-130 | 12-JUN-20 |
| Boron (B) | | | 83.6 | | % | | 70-130 | 12-JUN-20 |
| Cadmium (Cd) | | | 100.4 | | % | | 70-130 | 12-JUN-20 |
| Chromium (Cr) | | | 89.7 | | % | | 70-130 | 12-JUN-20 |
| Cobalt (Co) | | | 100.6 | | % | | 70-130 | 12-JUN-20 |
| Copper (Cu) | | | 98.1 | | % | | 70-130 | 12-JUN-20 |
| Lead (Pb) | | | 101.9 | | % | | 70-130 | 12-JUN-20 |
| Molybdenum (Mo) | | | 97.6 | | % | | 70-130 | 12-JUN-20 |
| Nickel (Ni) | | | 103.6 | | % | | 70-130 | 12-JUN-20 |
| Selenium (Se) | | | 83.3 | | % | | 70-130 | 12-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
610 Chartwell Road Suite 300
Oakville ON L6J 4A5
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **MET-200.2-CCMS-WT** | **Soil** | | | | | | | |
| **Batch R5116485** | | | | | | | | |
| **WG3340572-2 CRM** | | **WT-SS-1** | | | | | | |
| Silver (Ag) | | | 97.7 | | % | | 70-130 | 12-JUN-20 |
| Thallium (Tl) | | | 77.5 | | % | | 70-130 | 12-JUN-20 |
| Vanadium (V) | | | 104.4 | | % | | 70-130 | 12-JUN-20 |
| Zinc (Zn) | | | 102.0 | | % | | 70-130 | 12-JUN-20 |
| **WG3340572-6 DUP** | | **WG3340572-5** | | | | | | |
| Antimony (Sb) | | 0.42 | 0.33 | | ug/g | 23 | 30 | 12-JUN-20 |
| Arsenic (As) | | 2.65 | 2.48 | | ug/g | 6.4 | 30 | 12-JUN-20 |
| Barium (Ba) | | 73.0 | 69.3 | | ug/g | 5.2 | 40 | 12-JUN-20 |
| Beryllium (Be) | | 0.49 | 0.47 | | ug/g | 3.9 | 30 | 12-JUN-20 |
| Boron (B) | | 13.8 | 12.8 | | ug/g | 7.0 | 30 | 12-JUN-20 |
| Cadmium (Cd) | | 0.745 | 0.844 | | ug/g | 12 | 30 | 12-JUN-20 |
| Chromium (Cr) | | 17.6 | 16.5 | | ug/g | 6.4 | 30 | 12-JUN-20 |
| Cobalt (Co) | | 3.72 | 3.71 | | ug/g | 0.3 | 30 | 12-JUN-20 |
| Copper (Cu) | | 15.8 | 15.2 | | ug/g | 3.8 | 30 | 12-JUN-20 |
| Lead (Pb) | | 21.6 | 19.7 | | ug/g | 9.6 | 40 | 12-JUN-20 |
| Molybdenum (Mo) | | 0.94 | 0.81 | | ug/g | 15 | 40 | 12-JUN-20 |
| Nickel (Ni) | | 10.1 | 9.82 | | ug/g | 2.8 | 30 | 12-JUN-20 |
| Selenium (Se) | | <0.20 | <0.20 | RPD-NA | ug/g | N/A | 30 | 12-JUN-20 |
| Silver (Ag) | | 0.17 | 0.17 | | ug/g | 3.6 | 40 | 12-JUN-20 |
| Thallium (Tl) | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 30 | 12-JUN-20 |
| Uranium (U) | | 0.698 | 0.661 | | ug/g | 5.5 | 30 | 12-JUN-20 |
| Vanadium (V) | | 21.0 | 20.6 | | ug/g | 1.9 | 30 | 12-JUN-20 |
| Zinc (Zn) | | 82.7 | 94.3 | | ug/g | 13 | 30 | 12-JUN-20 |
| **WG3340572-4 LCS** | | | | | | | | |
| Antimony (Sb) | | | 101.2 | | % | | 80-120 | 12-JUN-20 |
| Arsenic (As) | | | 97.6 | | % | | 80-120 | 12-JUN-20 |
| Barium (Ba) | | | 99.96 | | % | | 80-120 | 12-JUN-20 |
| Beryllium (Be) | | | 93.4 | | % | | 80-120 | 12-JUN-20 |
| Boron (B) | | | 92.8 | | % | | 80-120 | 12-JUN-20 |
| Cadmium (Cd) | | | 93.8 | | % | | 80-120 | 12-JUN-20 |
| Chromium (Cr) | | | 97.1 | | % | | 80-120 | 12-JUN-20 |
| Cobalt (Co) | | | 95.8 | | % | | 80-120 | 12-JUN-20 |
| Copper (Cu) | | | 93.8 | | % | | 80-120 | 12-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
610 Chartwell Road Suite 300
Oakville ON L6J 4A5
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **MET-200.2-CCMS-WT** | **Soil** | | | | | | | |
| **Batch R5116485** | | | | | | | | |
| **WG3340572-4 LCS** | | | | | | | | |
| Lead (Pb) | | | 96.3 | | % | | 80-120 | 12-JUN-20 |
| Molybdenum (Mo) | | | 99.4 | | % | | 80-120 | 12-JUN-20 |
| Nickel (Ni) | | | 94.7 | | % | | 80-120 | 12-JUN-20 |
| Selenium (Se) | | | 92.2 | | % | | 80-120 | 12-JUN-20 |
| Silver (Ag) | | | 97.6 | | % | | 80-120 | 12-JUN-20 |
| Thallium (Tl) | | | 95.7 | | % | | 80-120 | 12-JUN-20 |
| Uranium (U) | | | 94.3 | | % | | 80-120 | 12-JUN-20 |
| Vanadium (V) | | | 99.1 | | % | | 80-120 | 12-JUN-20 |
| Zinc (Zn) | | | 93.4 | | % | | 80-120 | 12-JUN-20 |
| **WG3340572-1 MB** | | | | | | | | |
| Antimony (Sb) | | | <0.10 | | mg/kg | | 0.1 | 12-JUN-20 |
| Arsenic (As) | | | <0.10 | | mg/kg | | 0.1 | 12-JUN-20 |
| Barium (Ba) | | | <0.50 | | mg/kg | | 0.5 | 12-JUN-20 |
| Beryllium (Be) | | | <0.10 | | mg/kg | | 0.1 | 12-JUN-20 |
| Boron (B) | | | <5.0 | | mg/kg | | 5 | 12-JUN-20 |
| Cadmium (Cd) | | | <0.020 | | mg/kg | | 0.02 | 12-JUN-20 |
| Chromium (Cr) | | | <0.50 | | mg/kg | | 0.5 | 12-JUN-20 |
| Cobalt (Co) | | | <0.10 | | mg/kg | | 0.1 | 12-JUN-20 |
| Copper (Cu) | | | <0.50 | | mg/kg | | 0.5 | 12-JUN-20 |
| Lead (Pb) | | | <0.50 | | mg/kg | | 0.5 | 12-JUN-20 |
| Molybdenum (Mo) | | | <0.10 | | mg/kg | | 0.1 | 12-JUN-20 |
| Nickel (Ni) | | | <0.50 | | mg/kg | | 0.5 | 12-JUN-20 |
| Selenium (Se) | | | <0.20 | | mg/kg | | 0.2 | 12-JUN-20 |
| Silver (Ag) | | | <0.10 | | mg/kg | | 0.1 | 12-JUN-20 |
| Thallium (Tl) | | | <0.050 | | mg/kg | | 0.05 | 12-JUN-20 |
| Uranium (U) | | | <0.050 | | mg/kg | | 0.05 | 12-JUN-20 |
| Vanadium (V) | | | <0.20 | | mg/kg | | 0.2 | 12-JUN-20 |
| Zinc (Zn) | | | <2.0 | | mg/kg | | 2 | 12-JUN-20 |
| **MOISTURE-WT** | **Soil** | | | | | | | |
| **Batch R5113462** | | | | | | | | |
| **WG3338768-3 DUP** | | **L2457305-2** | | | | | | |
| % Moisture | | 15.5 | 16.4 | | % | 5.8 | 20 | 11-JUN-20 |
| **WG3338768-2 LCS** | | | | | | | | |
| % Moisture | | | 96.3 | | % | | 90-110 | 11-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
610 Chartwell Road Suite 300
Oakville ON L6J 4A5
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **MOISTURE-WT** | **Soil** | | | | | | | |
| **Batch R5113462** | | | | | | | | |
| **WG3338768-1 MB** | | | | | | | | |
| % Moisture | | | <0.25 | | % | | 0.25 | 11-JUN-20 |
| **Batch R5117952** | | | | | | | | |
| **WG3342338-3 DUP** | | **L2457611-8** | | | | | | |
| % Moisture | | 17.3 | 17.5 | | % | 1.2 | 20 | 15-JUN-20 |
| **WG3342338-2 LCS** | | | | | | | | |
| % Moisture | | | 99.4 | | % | | 90-110 | 15-JUN-20 |
| **WG3342338-1 MB** | | | | | | | | |
| % Moisture | | | <0.25 | | % | | 0.25 | 15-JUN-20 |
| **PAH-511-WT** | **Soil** | | | | | | | |
| **Batch R5115815** | | | | | | | | |
| **WG3338176-3 DUP** | | **WG3338176-5** | | | | | | |
| 1-Methylnaphthalene | | <0.030 | <0.030 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| 2-Methylnaphthalene | | <0.030 | <0.030 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Acenaphthene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Acenaphthylene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Anthracene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Benzo(a)anthracene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Benzo(a)pyrene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Benzo(b)fluoranthene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Benzo(g,h,i)perylene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Benzo(k)fluoranthene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Chrysene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Dibenzo(ah)anthracene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Fluoranthene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Fluorene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Indeno(1,2,3-cd)pyrene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Naphthalene | | <0.013 | <0.013 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Phenanthrene | | <0.046 | <0.046 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Pyrene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| **WG3338176-2 LCS** | | | | | | | | |
| 1-Methylnaphthalene | | | 88.9 | | % | | 50-140 | 11-JUN-20 |
| 2-Methylnaphthalene | | | 86.5 | | % | | 50-140 | 11-JUN-20 |
| Acenaphthene | | | 92.9 | | % | | 50-140 | 11-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
610 Chartwell Road Suite 300
Oakville ON L6J 4A5
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAH-511-WT** | **Soil** | | | | | | | |
| **Batch R5115815** | | | | | | | | |
| **WG3338176-2 LCS** | | | | | | | | |
| Acenaphthylene | | | 89.4 | | % | | 50-140 | 11-JUN-20 |
| Anthracene | | | 87.5 | | % | | 50-140 | 11-JUN-20 |
| Benzo(a)anthracene | | | 93.5 | | % | | 50-140 | 11-JUN-20 |
| Benzo(a)pyrene | | | 89.2 | | % | | 50-140 | 11-JUN-20 |
| Benzo(b)fluoranthene | | | 86.6 | | % | | 50-140 | 11-JUN-20 |
| Benzo(g,h,i)perylene | | | 86.6 | | % | | 50-140 | 11-JUN-20 |
| Benzo(k)fluoranthene | | | 88.8 | | % | | 50-140 | 11-JUN-20 |
| Chrysene | | | 99.0 | | % | | 50-140 | 11-JUN-20 |
| Dibenzo(ah)anthracene | | | 95.9 | | % | | 50-140 | 11-JUN-20 |
| Fluoranthene | | | 76.5 | | % | | 50-140 | 11-JUN-20 |
| Fluorene | | | 87.9 | | % | | 50-140 | 11-JUN-20 |
| Indeno(1,2,3-cd)pyrene | | | 86.9 | | % | | 50-140 | 11-JUN-20 |
| Naphthalene | | | 88.6 | | % | | 50-140 | 11-JUN-20 |
| Phenanthrene | | | 89.0 | | % | | 50-140 | 11-JUN-20 |
| Pyrene | | | 87.3 | | % | | 50-140 | 11-JUN-20 |
| **WG3338176-1 MB** | | | | | | | | |
| 1-Methylnaphthalene | | | <0.030 | | ug/g | | 0.03 | 11-JUN-20 |
| 2-Methylnaphthalene | | | <0.030 | | ug/g | | 0.03 | 11-JUN-20 |
| Acenaphthene | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Acenaphthylene | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Anthracene | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Benzo(a)anthracene | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Benzo(a)pyrene | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Benzo(b)fluoranthene | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Benzo(g,h,i)perylene | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Benzo(k)fluoranthene | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Chrysene | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Dibenzo(ah)anthracene | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Fluoranthene | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Fluorene | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Indeno(1,2,3-cd)pyrene | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Naphthalene | | | <0.013 | | ug/g | | 0.013 | 11-JUN-20 |
| Phenanthrene | | | <0.046 | | ug/g | | 0.046 | 11-JUN-20 |
| Pyrene | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
610 Chartwell Road Suite 300
Oakville ON L6J 4A5
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAH-511-WT** | **Soil** | | | | | | | |
| **Batch R5115815** | | | | | | | | |
| **WG3338176-1 MB** | | | | | | | | |
| Surrogate: 2-Fluorobiphenyl | | | 84.4 | | % | | 50-140 | 11-JUN-20 |
| Surrogate: p-Terphenyl d14 | | | 93.7 | | % | | 50-140 | 11-JUN-20 |
| **WG3338176-4 MS** | | **WG3338176-5** | | | | | | |
| 1-Methylnaphthalene | | | 90.6 | | % | | 50-140 | 11-JUN-20 |
| 2-Methylnaphthalene | | | 88.0 | | % | | 50-140 | 11-JUN-20 |
| Acenaphthene | | | 95.3 | | % | | 50-140 | 11-JUN-20 |
| Acenaphthylene | | | 91.0 | | % | | 50-140 | 11-JUN-20 |
| Anthracene | | | 90.3 | | % | | 50-140 | 11-JUN-20 |
| Benzo(a)anthracene | | | 97.5 | | % | | 50-140 | 11-JUN-20 |
| Benzo(a)pyrene | | | 92.3 | | % | | 50-140 | 11-JUN-20 |
| Benzo(b)fluoranthene | | | 90.6 | | % | | 50-140 | 11-JUN-20 |
| Benzo(g,h,i)perylene | | | 87.5 | | % | | 50-140 | 11-JUN-20 |
| Benzo(k)fluoranthene | | | 92.3 | | % | | 50-140 | 11-JUN-20 |
| Chrysene | | | 102.0 | | % | | 50-140 | 11-JUN-20 |
| Dibenzo(ah)anthracene | | | 98.8 | | % | | 50-140 | 11-JUN-20 |
| Fluoranthene | | | 79.6 | | % | | 50-140 | 11-JUN-20 |
| Fluorene | | | 90.1 | | % | | 50-140 | 11-JUN-20 |
| Indeno(1,2,3-cd)pyrene | | | 89.3 | | % | | 50-140 | 11-JUN-20 |
| Naphthalene | | | 89.2 | | % | | 50-140 | 11-JUN-20 |
| Phenanthrene | | | 91.2 | | % | | 50-140 | 11-JUN-20 |
| Pyrene | | | 90.5 | | % | | 50-140 | 11-JUN-20 |
| **PH-WT** | **Soil** | | | | | | | |
| **Batch R5116054** | | | | | | | | |
| **WG3338802-1 DUP** | | **L2457003-1** | | | | | | |
| pH | | 7.88 | 7.88 | J | pH units | 0.00 | 0.3 | 11-JUN-20 |
| **WG3339967-1 LCS** | | | | | | | | |
| pH | | | 6.98 | | pH units | | 6.9-7.1 | 11-JUN-20 |
| **Batch R5124756** | | | | | | | | |
| **WG3344131-1 DUP** | | **L2460937-2** | | | | | | |
| pH | | 7.51 | 7.52 | J | pH units | 0.01 | 0.3 | 18-JUN-20 |
| **WG3344879-1 LCS** | | | | | | | | |
| pH | | | 6.99 | | pH units | | 6.9-7.1 | 18-JUN-20 |
| **SAR-R511-WT** | **Soil** | | | | | | | |

# Quality Control Report



Client: WSP Canada Group Limited
610 Chartwell Road Suite 300
Oakville ON L6J 4A5
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **SAR-R511-WT** | **Soil** | | | | | | | |
| **Batch R5116725** | | | | | | | | |
| **WG3340624-4 DUP** | | **WG3340624-3** | | | | | | |
| Calcium (Ca) | | 3.60 | 3.38 | | mg/L | 6.3 | 30 | 12-JUN-20 |
| Sodium (Na) | | 49.9 | 47.9 | | mg/L | 4.1 | 30 | 12-JUN-20 |
| Magnesium (Mg) | | 0.99 | 0.89 | | mg/L | 11 | 30 | 12-JUN-20 |
| **WG3340624-2 IRM** | | **WT SAR4** | | | | | | |
| Calcium (Ca) | | | 96.0 | | % | | 70-130 | 12-JUN-20 |
| Sodium (Na) | | | 93.3 | | % | | 70-130 | 12-JUN-20 |
| Magnesium (Mg) | | | 95.7 | | % | | 70-130 | 12-JUN-20 |
| **WG3340624-5 LCS** | | | | | | | | |
| Calcium (Ca) | | | 103.3 | | % | | 80-120 | 12-JUN-20 |
| Sodium (Na) | | | 104.2 | | % | | 80-120 | 12-JUN-20 |
| Magnesium (Mg) | | | 99.8 | | % | | 80-120 | 12-JUN-20 |
| **WG3340624-1 MB** | | | | | | | | |
| Calcium (Ca) | | | <0.50 | | mg/L | | 0.5 | 12-JUN-20 |
| Sodium (Na) | | | <0.50 | | mg/L | | 0.5 | 12-JUN-20 |
| Magnesium (Mg) | | | <0.50 | | mg/L | | 0.5 | 12-JUN-20 |

# Quality Control Report

Workorder: L2457100 Report Date: 22-JUN-20

Client: WSP Canada Group Limited
610 Chartwell Road Suite 300
Oakville ON L6J 4A5
Contact: Valyn Bernard



**Legend:**

| | |
|---|---|
| Limit | ALS Control Limit (Data Quality Objectives) |
| DUP | Duplicate |
| RPD | Relative Percent Difference |
| N/A | Not Available |
| LCS | Laboratory Control Sample |
| SRM | Standard Reference Material |
| MS | Matrix Spike |
| MSD | Matrix Spike Duplicate |
| ADE | Average Desorption Efficiency |
| MB | Method Blank |
| IRM | Internal Reference Material |
| CRM | Certified Reference Material |
| CCV | Continuing Calibration Verification |
| CVS | Calibration Verification Standard |
| LCSD | Laboratory Control Sample Duplicate |

**Sample Parameter Qualifier Definitions:**

| Qualifier | Description |
|---|---|
| J | Duplicate results and limits are expressed in terms of absolute difference. |
| RPD-NA | Relative Percent Difference Not Available due to result(s) being less than detection limit. |

**Hold Time Exceedances:**

All test results reported with this submission were conducted within ALS recommended hold times.

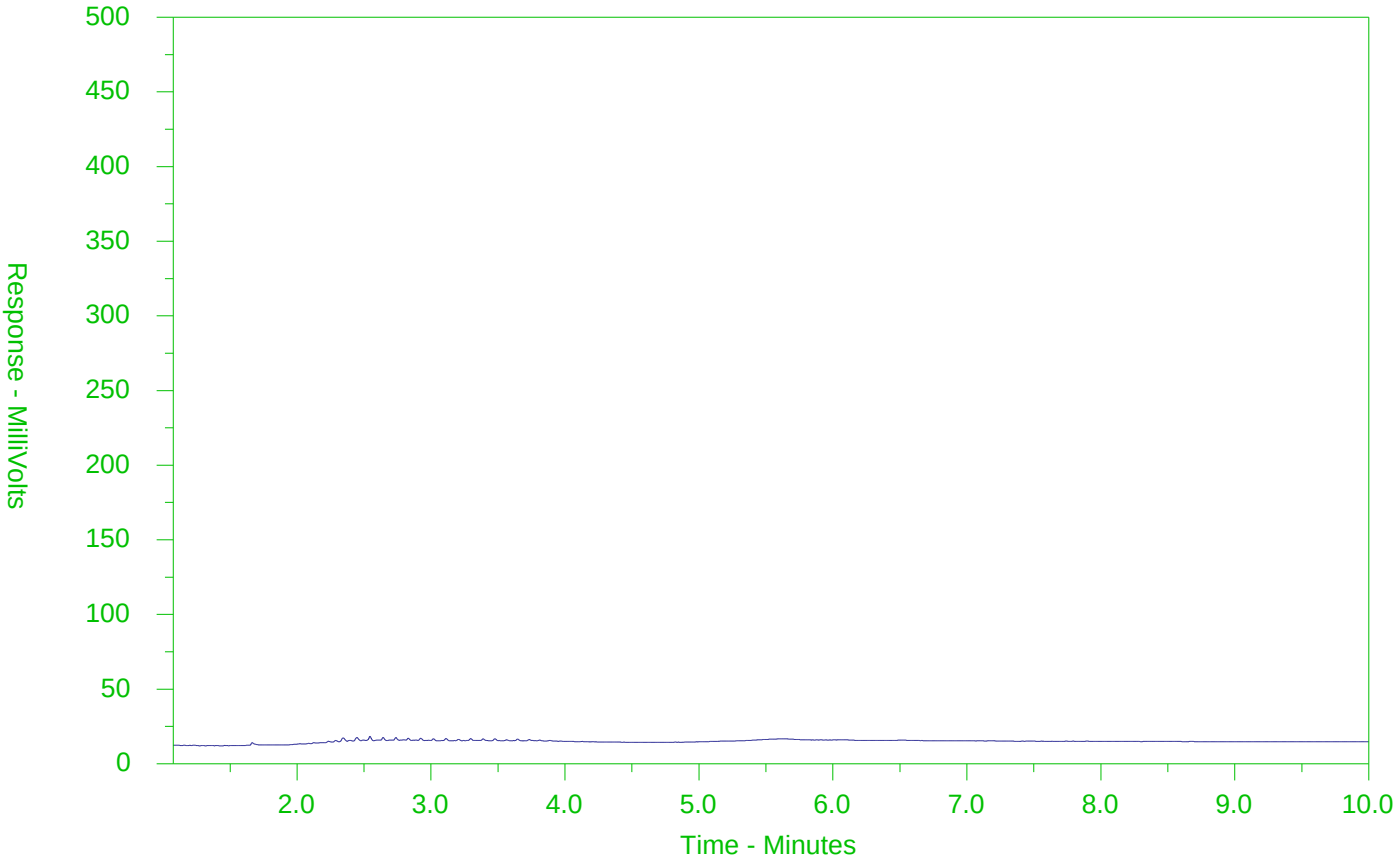
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

# CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2457100-4
Client Sample ID: BH8-SS5




| ←F2→ | ←F3→ | ←F4→ | |
|---|---|---|---|
| nC10 | nC16 | nC34 | nC50 |
| 174°C | 287°C | 481°C | 575°C |
| 346°F | 549°F | 898°F | 1067°F |
| Gasoline → | ← Motor Oils/Lube Oils/Grease → | | |
| ← Diesel/Jet Fuels → | | | |

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.

# Chain of Custody (COC) / Analytical Request Form

ALS Environmental
www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here (lab use only)

COC Number: 17 -

Page of

| Report To | Contact and company name below will appear on the final report |
|---|---|
| Company: | WSP Canada Group Limited |
| Contact: | Valyn Bernard |
| Phone: | 1-289-835-2546 |
| | Company address below will appear on the final report |
| Street: | 610 Chartwell Rd |
| City/Province: | Oakville |
| Postal Code: | L6J 4A5 |
| **Invoice To** | Same as Report To ☐ YES ☐ NO |
| | Copy of Invoice with Report ☐ YES ☐ NO |
| Company: | WSP Canada Group Limited |
| Contact: | ca-accountspayable@wsp.com |

| Report Format / Distribution | |
|---|---|
| Select Report Format: | ☑ PDF ☑ EXCEL ☐ EDD (DIGITAL) |
| Quality Control (QC) Report with Report | ☑ YES ☐ NO |
| ☑ Compare Results to Criteria on Report - provide details below if box checked | |
| Select Distribution: | ☑ EMAIL ☐ MAIL ☐ FAX |
| Email 1 or Fax | Derek.Stewart@wsp.com |
| Email 2 | Valyn.Bernard@wsp.com |
| Email 3 | Anne.Pattison@wsp.com |
| **Invoice Distribution** | |
| Select Invoice Distribution: | ☑ EMAIL ☐ MAIL ☐ FAX |
| Email 1 or Fax | ca-accountspayable@wsp.com |
| Email 2 | Valyn.Bernard@wsp.com |

| Project Information | | Oil and Gas Required Fields (client use) | |
|---|---|---|---|
| ALS Account # / Quote #: | | AFE/Cost Canter: | PO# |
| Job #: | 19M-01888-00-CONTAM | Major/Minor Code: | Routing Code: |
| PO / AFE: | | Requisitioner: | |
| LSD: | | Location: | |
| ALS Lab Work Order # (lab use only): | L2457100 RD | ALS Contact: | Sampler: |

**Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)**

Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days): 4 day [P4-20%] ☐ | 3 day [P3-25%] ☐ | 2 day [P2-50%] ☐

EMERGENCY: 1 Business day [E - 100%] ☐ | Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] ☐

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm

For tests that can not be performed according to the service level selected, you will be contacted.

**Analysis Request**

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

NUMBER OF CONTAINERS

| ALS Sample # (lab use only) | Sample Identification and/or Coordinates (This description will appear on the report) | Date (dd-mmm-yy) | Time (hh:mm) | Sample Type | Metals and Inorganics | PAHs | PHCs | VOCs | BTEX only | PHC F1 | PHC F2-4 | TCLP VOCs | TCLP Metals and Inorganics | TCLP PAHs | TCLP PCB | | Grain Size | | SAMPLES ON HOLD | SUSPECTED HAZARD (see Special Instructions) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | BH8-SS1 | 4-Jun-20 | 2Pm | Soil | R | R | | | | | | | | | | | | | | |
| | Dup3 | 4-Jun-20 | ↓ | Soil | R | R | | | | | | | | | | | | | all on hold | |
| | BH8-SS4 | 4-Jun-20 | | Soil | R | R | | | | | | | | | | | | | all on hold | |
| | BH8-SS5 | 4-Jun-20 | | Soil | | | R | | R | | | R | R | R | R | | | | only TCLP on ho | |
| | BH8-SS6 | 4-Jun-20 | 4Pm | Soil | | | R | | R | | | | | | | | R | | all on hold | |

**Drinking Water (DW) Samples[1] (client use)**

Are samples taken from a Regulated DW System? ☐ YES ☐ NO

Are samples for human consumption/ use? ☐ YES ☐ NO

**Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)**

[Combined] - Ontario R153-T1-SOIL+R347/90-TCLP

**SAMPLE CONDITION AS RECEIVED (lab use only)**

Frozen ☐ | SIF Observations Yes ☐ No ☐

Ice Packs ☐ Ice Cubes ☒ | Custody seal intact Yes ☐ No ☐

Cooling Initiated ☐

| INITIAL COOLER TEMPERATURES °C | | | | FINAL COOLER TEMPERATURES °C | | | |
|---|---|---|---|---|---|---|---|
| 2.0 | | | | | 2.1 | | |

| SHIPMENT RELEASE (client use) | | |
|---|---|---|
| Released by: Madlool Alsabak | Date: June 4, 2020 | Time: 6:30pm |

| INITIAL SHIPMENT RECEPTION (lab use only) | | |
|---|---|---|
| Received by: | Date: 5/6/20 | Time: 8:45 |

| FINAL SHIPMENT RECEPTION (lab use only) | | |
|---|---|---|
| Received by: | Date: 6-5-2020 | Time: 1545 |

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

JUNE 2018 FRONT

Failure to complate all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agreas with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples ara taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

WSP Canada Group Limited
ATTN: Valyn Bernard
610 Chartwell Road
Suite 300
Oakville ON L6J 4A5

Date Received: 05-JUN-20
Report Date: 15-JUN-20 09:49 (MT)
Version: FINAL

Client Phone: 905-829-6266

# Certificate of Analysis

## Lab Work Order #: L2457053

Project P.O. #: NOT SUBMITTED
Job Reference: 19M-01888-00-CONTAM
C of C Numbers:
Legal Site Desc:

Emily Hansen
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

# ANALYTICAL REPORT

## Summary of Guideline Exceedances

| Guideline ALS ID | Client ID | Grouping | Analyte | Result | Guideline Limit | Unit |
|---|---|---|---|---|---|---|

**Ontario Regulation 153/04 - April 15, 2011 Standards - T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

(No parameter exceedances)

# ANALYTICAL REPORT

## Physical Tests - SOIL

| | | Guide Limits | | | | |
|---|---|---|---|---|---|---|
| **Analyte** | **Unit** | **#1** | **#2** | | | |
| **Lab ID** | | | | L2457053-1 | L2457053-3 | L2457053-5 |
| **Sample Date** | | | | 04-JUN-20 | 04-JUN-20 | 04-JUN-20 |
| **Sample ID** | | | | BH7-SS1-2 | BH7-SS3 | BH7-SS5 |
| Conductivity | mS/cm | 0.57 | - | 0.223 | | |
| % Moisture | % | - | - | 6.36 | 8.55 | 11.2 |
| pH | pH units | - | - | 7.83 | | |

**Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

# ANALYTICAL REPORT

## Cyanides - SOIL

| | | | | |
|---|---|---|---|---|
| | | | **Lab ID** | L2457053-1 |
| | | | **Sample Date** | 04-JUN-20 |
| | | | **Sample ID** | BH7-SS1-2 |
| | | **Guide Limits** | | |
| **Analyte** | **Unit** | **#1** | **#2** | |
| Cyanide, Weak Acid Diss | ug/g | 0.051 | - | <0.050 |

**Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

# ANALYTICAL REPORT

## Saturated Paste Extractables - SOIL

| | | | | |
|---|---|---|---|---|
| | | | **Lab ID** | L2457053-1 |
| | | | **Sample Date** | 04-JUN-20 |
| | | | **Sample ID** | BH7-SS1-2 |
| **Analyte** | **Unit** | **Guide Limits #1** | **#2** | |
| SAR | SAR | 2.4 | - | 0.68 |
| Calcium (Ca) | mg/L | - | - | 20.3 |
| Magnesium (Mg) | mg/L | - | - | 1.96 |
| Sodium (Na) | mg/L | - | - | 12.0 |

**Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

# ANALYTICAL REPORT

## Metals - SOIL

| | | | | |
|---|---|---|---|---|
| | | | **Lab ID** | L2457053-1 |
| | | | **Sample Date** | 04-JUN-20 |
| | | | **Sample ID** | BH7-SS1-2 |
| | | **Guide Limits** | | |
| **Analyte** | **Unit** | **#1** | **#2** | |
| Antimony (Sb) | ug/g | 1.3 | - | <1.0 |
| Arsenic (As) | ug/g | 18 | - | 2.0 |
| Barium (Ba) | ug/g | 220 | - | 39.8 |
| Beryllium (Be) | ug/g | 2.5 | - | <0.50 |
| Boron (B) | ug/g | 36 | - | <5.0 |
| Boron (B), Hot Water Ext. | ug/g | 36 | - | 0.20 |
| Cadmium (Cd) | ug/g | 1.2 | - | <0.50 |
| Chromium (Cr) | ug/g | 70 | - | 10.9 |
| Cobalt (Co) | ug/g | 21 | - | 4.0 |
| Copper (Cu) | ug/g | 92 | - | 9.5 |
| Lead (Pb) | ug/g | 120 | - | 8.2 |
| Mercury (Hg) | ug/g | 0.27 | - | 0.0095 |
| Molybdenum (Mo) | ug/g | 2 | - | <1.0 |
| Nickel (Ni) | ug/g | 82 | - | 8.4 |
| Selenium (Se) | ug/g | 1.5 | - | <1.0 |
| Silver (Ag) | ug/g | 0.5 | - | <0.20 |
| Thallium (Tl) | ug/g | 1 | - | <0.50 |
| Uranium (U) | ug/g | 2.5 | - | <1.0 |
| Vanadium (V) | ug/g | 86 | - | 21.3 |
| Zinc (Zn) | ug/g | 290 | - | 29.1 |

**Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

# ANALYTICAL REPORT

## Speciated Metals - SOIL

| | | | | |
|---|---|---|---|---|
| | | | **Lab ID** | L2457053-1 |
| | | | **Sample Date** | 04-JUN-20 |
| | | | **Sample ID** | BH7-SS1-2 |
| | | **Guide Limits** | | |
| **Analyte** | **Unit** | **#1** | **#2** | |
| Chromium, Hexavalent | ug/g | 0.66 | - | <0.20 |

**Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

# ANALYTICAL REPORT

## Volatile Organic Compounds - SOIL

| | | | | | |
|---|---|---|---|---|---|
| | | | **Lab ID** | L2457053-3 | L2457053-5 |
| | | | **Sample Date** | 04-JUN-20 | 04-JUN-20 |
| | | | **Sample ID** | BH7-SS3 | BH7-SS5 |
| **Analyte** | **Unit** | **Guide Limits #1** | **#2** | | |
| Benzene | ug/g | 0.02 | - | <0.0068 | <0.0068 |
| Ethylbenzene | ug/g | 0.05 | - | <0.018 | <0.018 |
| Toluene | ug/g | 0.2 | - | <0.080 | <0.080 |
| o-Xylene | ug/g | - | - | <0.020 | <0.020 |
| m+p-Xylenes | ug/g | - | - | <0.030 | <0.030 |
| Xylenes (Total) | ug/g | 0.05 | - | <0.050 | <0.050 |
| Surrogate: 4-Bromofluorobenzene | % | - | - | 108.9 | 109.4 |
| Surrogate: 1,4-Difluorobenzene | % | - | - | 113.3 | 114.7 |

**Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

# ANALYTICAL REPORT

## Hydrocarbons - SOIL

| | | | | | |
|---|---|---|---|---|---|
| | | | **Lab ID** | L2457053-3 | L2457053-5 |
| | | | **Sample Date** | 04-JUN-20 | 04-JUN-20 |
| | | | **Sample ID** | BH7-SS3 | BH7-SS5 |
| **Analyte** | **Unit** | **Guide Limits #1** | **#2** | | |
| F1 (C6-C10) | ug/g | 25 | - | <5.0 | <5.0 |
| F1-BTEX | ug/g | 25 | - | <5.0 | <5.0 |
| F2 (C10-C16) | ug/g | 10 | - | <10 | <10 |
| F3 (C16-C34) | ug/g | 240 | - | <50 | <50 |
| F4 (C34-C50) | ug/g | 120 | - | <50 | <50 |
| Total Hydrocarbons (C6-C50) | ug/g | - | - | <72 | <72 |
| Chrom. to baseline at nC50 | | - | - | YES | YES |
| Surrogate: 2-Bromobenzotrifluoride | % | - | - | 72.1 | 84.8 |
| Surrogate: 3,4-Dichlorotoluene | % | - | - | 102.8 | 98.2 |

**Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

# ANALYTICAL REPORT

## Polycyclic Aromatic Hydrocarbons - SOIL

| | | | | |
|---|---|---|---|---|
| | | **Lab ID** | | L2457053-1 |
| | | **Sample Date** | | 04-JUN-20 |
| | | **Sample ID** | | BH7-SS1-2 |
| | | **Guide Limits** | | |
| **Analyte** | **Unit** | **#1** | **#2** | |
| Acenaphthene | ug/g | 0.072 | - | <0.050 |
| Acenaphthylene | ug/g | 0.093 | - | <0.050 |
| Anthracene | ug/g | 0.16 | - | <0.050 |
| Benzo(a)anthracene | ug/g | 0.36 | - | <0.050 |
| Benzo(a)pyrene | ug/g | 0.3 | - | <0.050 |
| Benzo(b)fluoranthene | ug/g | 0.47 | - | <0.050 |
| Benzo(g,h,i)perylene | ug/g | 0.68 | - | <0.050 |
| Benzo(k)fluoranthene | ug/g | 0.48 | - | <0.050 |
| Chrysene | ug/g | 2.8 | - | <0.050 |
| Dibenzo(ah)anthracene | ug/g | 0.1 | - | <0.050 |
| Fluoranthene | ug/g | 0.56 | - | <0.050 |
| Fluorene | ug/g | 0.12 | - | <0.050 |
| Indeno(1,2,3-cd)pyrene | ug/g | 0.23 | - | <0.050 |
| 1+2-Methylnaphthalenes | ug/g | 0.59 | - | <0.042 |
| 1-Methylnaphthalene | ug/g | 0.59 | - | <0.030 |
| 2-Methylnaphthalene | ug/g | 0.59 | - | <0.030 |
| Naphthalene | ug/g | 0.09 | - | <0.013 |
| Phenanthrene | ug/g | 0.69 | - | <0.046 |
| Pyrene | ug/g | 1 | - | <0.050 |
| Surrogate: 2-Fluorobiphenyl | % | - | - | 87.0 |
| Surrogate: p-Terphenyl d14 | % | - | - | 99.0 |

**Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

# Reference Information

**Methods Listed (if applicable):**

| ALS Test Code | Matrix | Test Description | Method Reference** |
|---|---|---|---|
| **B-HWS-R511-WT** | Soil | Boron-HWE-O.Reg 153/04 (July 2011) | HW EXTR, EPA 6010B |

A dried solid sample is extracted with calcium chloride, the sample undergoes a heating process. After cooling the sample is filtered and analyzed by ICP/OES.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

| | | | |
|---|---|---|---|
| **BTX-511-HS-WT** | Soil | BTEX-O.Reg 153/04 (July 2011) | SW846 8260 |

BTX is determined by extracting a soil or sediment sample as received with methanol, then analyzing by headspace-GC/MS.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

| | | | |
|---|---|---|---|
| **CN-WAD-R511-WT** | Soil | Cyanide (WAD)-O.Reg 153/04 (July 2011) | MOE 3015/APHA 4500CN I-WAD |

The sample is extracted with a strong base for 16 hours, and then filtered. The filtrate is then distilled where the cyanide is converted to cyanogen chloride by reacting with chloramine-T, the cyanogen chloride then reacts with a combination of barbituric acid and isonicotinic acid to form a highly colored complex.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

| | | | |
|---|---|---|---|
| **CR-CR6-IC-WT** | Soil | Hexavalent Chromium in Soil | SW846 3060A/7199 |

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 7199, published by the United States Environmental Protection Agency (EPA). The procedure involves analysis for chromium (VI) by ion chromatography using diphenylcarbazide in a sulphuric acid solution.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

| | | | |
|---|---|---|---|
| **EC-WT** | Soil | Conductivity (EC) | MOEE E3138 |

A representative subsample is tumbled with de-ionized (DI) water. The ratio of water to soil is 2:1 v/w. After tumbling the sample is then analyzed by a conductivity meter.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

| | | | |
|---|---|---|---|
| **F1-F4-511-CALC-WT** | Soil | F1-F4 Hydrocarbon Calculated Parameters | CCME CWS-PHC, Pub #1310, Dec 2001-S |

Analytical methods used for analysis of CCME Petroleum Hydrocarbons have been validated and comply with the Reference Method for the CWS PHC.

Hydrocarbon results are expressed on a dry weight basis.

In cases where results for both F4 and F4G are reported, the greater of the two results must be used in any application of the CWS PHC guidelines and the gravimetric heavy hydrocarbons cannot be added to the C6 to C50 hydrocarbons.
In samples where BTEX and F1 were analyzed , F1-BTEX represents a value where the sum of Benzene, Toluene, Ethylbenzene and total Xylenes has been subtracted from F1.

In samples where PAHs, F2 and F3 were analyzed, F2-Naphth represents the result where Naphthalene has been subtracted from F2. F3-PAH represents a result where the sum of Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene, Fluoranthene, Indeno(1,2,3-cd)pyrene, Phenanthrene, and Pyrene has been subtracted from F3.

Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:
1. All extraction and analysis holding times were met.
2. Instrument performance showing response factors for C6 and C10 within 30% of the response factor for toluene.
3. Linearity of gasoline response within 15% throughout the calibration range.

# Reference Information

**Methods Listed (if applicable):**

| ALS Test Code | Matrix | Test Description | Method Reference** |
|---|---|---|---|

Unless otherwise qualified, the following quality control criteria have been met for the F2-F4 hydrocarbon ranges:
1. All extraction and analysis holding times were met.
2. Instrument performance showing C10, C16 and C34 response factors within 10% of their average.
3. Instrument performance showing the C50 response factor within 30% of the average of the C10, C16 and C34 response factors.
4. Linearity of diesel or motor oil response within 15% throughout the calibration range.

**F1-HS-511-WT** Soil F1-O.Reg 153/04 (July 2011) E3398/CCME TIER 1-HS

Fraction F1 is determined by extracting a soil or sediment sample as received with methanol, then analyzing by headspace-GC/FID.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

**F2-F4-511-WT** Soil F2-F4-O.Reg 153/04 (July 2011) CCME Tier 1

Petroleum Hydrocarbons (F2-F4 fractions) are extracted from soil with 1:1 hexane:acetone using a rotary extractor. Extracts are treated with silica gel to remove polar organic interferences. F2, F3, & F4 are analyzed by GC-FID. F4G-sg is analyzed gravimetrically.

Notes:
1. F2 (C10-C16): Sum of all hydrocarbons that elute between nC10 and nC16.
2. F3 (C16-C34): Sum of all hydrocarbons that elute between nC16 and nC34.
3. F4 (C34-C50): Sum of all hydrocarbons that elute between nC34 and nC50.
4. F4G: Gravimetric Heavy Hydrocarbons
5. F4G-sg: Gravimetric Heavy Hydrocarbons (F4G) after silica gel treatment.
6. Where both F4 (C34-C50) and F4G-sg are reported for a sample, the larger of the two values is used for comparison against the relevant CCME guideline for F4.
7. F4G-sg cannot be added to the C6 to C50 hydrocarbon results to obtain an estimate of total extractable hydrocarbons.
8. This method is validated for use.
9. Data from analysis of validation and quality control samples is available upon request.
10. Reported results are expressed as milligrams per dry kilogram, unless otherwise indicated.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

**HG-200.2-CVAA-WT** Soil Mercury in Soil by CVAAS EPA 200.2/1631E (mod)

Soil samples are digested with nitric and hydrochloric acids, followed by analysis by CVAAS.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

**MET-200.2-CCMS-WT** Soil Metals in Soil by CRC ICPMS EPA 200.2/6020A (mod)

Soil/sediment is dried, disaggregated, and sieved (2 mm). For tests intended to support Ontario regulations, the <2mm fraction is ground to pass through a 0.355 mm sieve. Strong Acid Leachable Metals in the <2mm fraction are solubilized by heated digestion with nitric and hydrochloric acids. Instrumental analysis is by Collision / Reaction Cell ICPMS.

Limitations: This method is intended to liberate environmentally available metals. Silicate minerals are not solubilized. Some metals may be only partially recovered (matrix dependent), including Al, Ba, Be, Cr, S, Sr, Ti, Tl, V, W, and Zr. Elemental Sulfur may be poorly recovered by this method. Volatile forms of sulfur (e.g. sulfide, H2S) may be excluded if lost during sampling, storage, or digestion.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

**METHYLNAPS-CALC-WT** Soil ABN-Calculated Parameters SW846 8270

**MOISTURE-WT** Soil % Moisture CCME PHC in Soil - Tier 1 (mod)

# Reference Information

**Methods Listed (if applicable):**

| ALS Test Code | Matrix | Test Description | Method Reference** |
|---|---|---|---|
| **PAH-511-WT** | Soil | PAH-O.Reg 153/04 (July 2011) | SW846 3510/8270 |

A representative sub-sample of soil is fortified with deuterium-labelled surrogates and a mechanical shaking techniqueis used to extract the sample with a mixture of methanol and toluene. The extracts are concentrated and analyzed by GC/MS. Results for benzo(b) fluoranthene may include contributions from benzo(j)fluoranthene, if also present in the sample.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

| | | | |
|---|---|---|---|
| **PH-WT** | Soil | pH | MOEE E3137A |

A minimum 10g portion of the sample is extracted with 20mL of 0.01M calcium chloride solution by shaking for at least 30 minutes. The aqueous layer is separated from the soil and then analyzed using a pH meter and electrode.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

| | | | |
|---|---|---|---|
| **SAR-R511-WT** | Soil | SAR-O.Reg 153/04 (July 2011) | SW846 6010C |

A dried, disaggregated solid sample is extracted with deionized water, the aqueous extract is separated from the solid, acidified and then analyzed using a ICP/OES. The concentrations of Na, Ca and Mg are reported as per CALA requirements for calculated parameters. These individual parameters are not for comparison to any guideline.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

| | | | |
|---|---|---|---|
| **XYLENES-SUM-CALC-WT** | Soil | Sum of Xylene Isomer Concentrations | CALCULATION |

Total xylenes represents the sum of o-xylene and m&p-xylene.

**ALS test methods may incorporate modifications from specified reference methods to improve performance.

Chain of Custody Numbers:

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

| Laboratory Definition Code | Laboratory Location |
|---|---|
| WT | ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA |

# Reference Information

**GLOSSARY OF REPORT TERMS**

*Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.*
*mg/kg - milligrams per kilogram based on dry weight of sample*
*mg/kg wwt - milligrams per kilogram based on wet weight of sample*
*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight*
*mg/L - unit of concentration based on volume, parts per million.*
*< - Less than.*
*D.L. - The reporting limit.*
*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*
*UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.*
*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*

*Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to, fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information. Guideline limits are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.*

# Quality Control Report

Workorder: L2457053 Report Date: 15-JUN-20 

Client: WSP Canada Group Limited
610 Chartwell Road Suite 300
Oakville ON L6J 4A5
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **B-HWS-R511-WT** | **Soil** | | | | | | | |
| **Batch R5116823** | | | | | | | | |
| **WG3340651-4 DUP** | | **L2456907-1** | | | | | | |
| Boron (B), Hot Water Ext. | | <0.10 | <0.10 | RPD-NA | ug/g | N/A | 30 | 12-JUN-20 |
| **WG3340651-2 IRM** | | **WT SAR4** | | | | | | |
| Boron (B), Hot Water Ext. | | | 108.2 | | % | | 70-130 | 12-JUN-20 |
| **WG3340651-3 LCS** | | | | | | | | |
| Boron (B), Hot Water Ext. | | | 108.0 | | % | | 70-130 | 12-JUN-20 |
| **WG3340651-1 MB** | | | | | | | | |
| Boron (B), Hot Water Ext. | | | <0.10 | | ug/g | | 0.1 | 12-JUN-20 |
| **BTX-511-HS-WT** | **Soil** | | | | | | | |
| **Batch R5113544** | | | | | | | | |
| **WG3336790-4 DUP** | | **WG3336790-3** | | | | | | |
| Benzene | | <0.0068 | <0.0068 | RPD-NA | ug/g | N/A | 40 | 10-JUN-20 |
| Ethylbenzene | | <0.018 | <0.018 | RPD-NA | ug/g | N/A | 40 | 10-JUN-20 |
| m+p-Xylenes | | <0.030 | <0.030 | RPD-NA | ug/g | N/A | 40 | 10-JUN-20 |
| o-Xylene | | N/A | <0.020 | RPD-NA | ug/g | N/A | 40 | 10-JUN-20 |
| Toluene | | <0.080 | <0.080 | RPD-NA | ug/g | N/A | 40 | 10-JUN-20 |
| **WG3336790-2 LCS** | | | | | | | | |
| Benzene | | | 98.0 | | % | | 70-130 | 10-JUN-20 |
| Ethylbenzene | | | 95.4 | | % | | 70-130 | 10-JUN-20 |
| m+p-Xylenes | | | 93.3 | | % | | 70-130 | 10-JUN-20 |
| o-Xylene | | | 95.6 | | % | | 70-130 | 10-JUN-20 |
| Toluene | | | 94.7 | | % | | 70-130 | 10-JUN-20 |
| **WG3336790-1 MB** | | | | | | | | |
| Benzene | | | <0.0068 | | ug/g | | 0.0068 | 10-JUN-20 |
| Ethylbenzene | | | <0.018 | | ug/g | | 0.018 | 10-JUN-20 |
| m+p-Xylenes | | | <0.030 | | ug/g | | 0.03 | 10-JUN-20 |
| o-Xylene | | | <0.020 | | ug/g | | 0.02 | 10-JUN-20 |
| Toluene | | | <0.080 | | ug/g | | 0.08 | 10-JUN-20 |
| Surrogate: 1,4-Difluorobenzene | | | 118.6 | | % | | 50-140 | 10-JUN-20 |
| Surrogate: 4-Bromofluorobenzene | | | 113.6 | | % | | 50-140 | 10-JUN-20 |
| **WG3336790-5 MS** | | **WG3336790-3** | | | | | | |
| Benzene | | | 103.9 | | % | | 60-140 | 10-JUN-20 |
| Ethylbenzene | | | 101.8 | | % | | 60-140 | 10-JUN-20 |
| m+p-Xylenes | | | 99.2 | | % | | 60-140 | 10-JUN-20 |
| o-Xylene | | | 99.8 | | % | | 60-140 | 10-JUN-20 |
| Toluene | | | 100.9 | | % | | 60-140 | 10-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
610 Chartwell Road Suite 300
Oakville ON L6J 4A5
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **CN-WAD-R511-WT** | **Soil** | | | | | | | |
| **Batch R5116069** | | | | | | | | |
| **WG3338792-3 DUP** | | **L2457003-1** | | | | | | |
| Cyanide, Weak Acid Diss | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 35 | 11-JUN-20 |
| **WG3338792-2 LCS** | | | | | | | | |
| Cyanide, Weak Acid Diss | | | 94.2 | | % | | 80-120 | 11-JUN-20 |
| **WG3338792-1 MB** | | | | | | | | |
| Cyanide, Weak Acid Diss | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| **WG3338792-4 MS** | | **L2457003-1** | | | | | | |
| Cyanide, Weak Acid Diss | | | 103.2 | | % | | 70-130 | 11-JUN-20 |
| **CR-CR6-IC-WT** | **Soil** | | | | | | | |
| **Batch R5115890** | | | | | | | | |
| **WG3338781-4 CRM** | | **WT-SQC012** | | | | | | |
| Chromium, Hexavalent | | | 95.3 | | % | | 70-130 | 11-JUN-20 |
| **WG3338781-3 DUP** | | **L2457003-1** | | | | | | |
| Chromium, Hexavalent | | 0.21 | 0.24 | | ug/g | 9.9 | 35 | 11-JUN-20 |
| **WG3338781-2 LCS** | | | | | | | | |
| Chromium, Hexavalent | | | 97.2 | | % | | 80-120 | 11-JUN-20 |
| **WG3338781-1 MB** | | | | | | | | |
| Chromium, Hexavalent | | | <0.20 | | ug/g | | 0.2 | 11-JUN-20 |
| **EC-WT** | **Soil** | | | | | | | |
| **Batch R5116810** | | | | | | | | |
| **WG3340668-4 DUP** | | **WG3340668-3** | | | | | | |
| Conductivity | | 0.271 | 0.274 | | mS/cm | 1.1 | 20 | 12-JUN-20 |
| **WG3340668-2 IRM** | | **WT SAR4** | | | | | | |
| Conductivity | | | 101.8 | | % | | 70-130 | 12-JUN-20 |
| **WG3340927-1 LCS** | | | | | | | | |
| Conductivity | | | 97.2 | | % | | 90-110 | 12-JUN-20 |
| **WG3340668-1 MB** | | | | | | | | |
| Conductivity | | | <0.0040 | | mS/cm | | 0.004 | 12-JUN-20 |
| **F1-HS-511-WT** | **Soil** | | | | | | | |
| **Batch R5113544** | | | | | | | | |
| **WG3336790-4 DUP** | | **WG3336790-3** | | | | | | |
| F1 (C6-C10) | | <5.0 | <5.0 | RPD-NA | ug/g | N/A | 30 | 10-JUN-20 |
| **WG3336790-2 LCS** | | | | | | | | |
| F1 (C6-C10) | | | 118.1 | | % | | 80-120 | 10-JUN-20 |
| **WG3336790-1 MB** | | | | | | | | |
| F1 (C6-C10) | | | <5.0 | | ug/g | | 5 | 10-JUN-20 |
| Surrogate: 3,4-Dichlorotoluene | | | 115.5 | | % | | 60-140 | 10-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
610 Chartwell Road Suite 300
Oakville ON L6J 4A5
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **F1-HS-511-WT** | **Soil** | | | | | | | |
| **Batch R5113544** | | | | | | | | |
| **WG3336790-6 MS** | | **L2456792-1** | | | | | | |
| F1 (C6-C10) | | | 105.2 | | % | | 60-140 | 10-JUN-20 |
| **F2-F4-511-WT** | **Soil** | | | | | | | |
| **Batch R5114398** | | | | | | | | |
| **WG3338664-3 DUP** | | **WG3338664-5** | | | | | | |
| F2 (C10-C16) | | <10 | <10 | RPD-NA | ug/g | N/A | 30 | 10-JUN-20 |
| F3 (C16-C34) | | <50 | <50 | RPD-NA | ug/g | N/A | 30 | 10-JUN-20 |
| F4 (C34-C50) | | <50 | <50 | RPD-NA | ug/g | N/A | 30 | 10-JUN-20 |
| **WG3338664-2 LCS** | | | | | | | | |
| F2 (C10-C16) | | | 95.9 | | % | | 80-120 | 10-JUN-20 |
| F3 (C16-C34) | | | 98.7 | | % | | 80-120 | 10-JUN-20 |
| F4 (C34-C50) | | | 89.9 | | % | | 80-120 | 10-JUN-20 |
| **WG3338664-1 MB** | | | | | | | | |
| F2 (C10-C16) | | | <10 | | ug/g | | 10 | 10-JUN-20 |
| F3 (C16-C34) | | | <50 | | ug/g | | 50 | 10-JUN-20 |
| F4 (C34-C50) | | | <50 | | ug/g | | 50 | 10-JUN-20 |
| Surrogate: 2-Bromobenzotrifluoride | | | 79.2 | | % | | 60-140 | 10-JUN-20 |
| **WG3338664-4 MS** | | **WG3338664-5** | | | | | | |
| F2 (C10-C16) | | | 101.4 | | % | | 60-140 | 10-JUN-20 |
| F3 (C16-C34) | | | 104.2 | | % | | 60-140 | 10-JUN-20 |
| F4 (C34-C50) | | | 95.6 | | % | | 60-140 | 10-JUN-20 |
| **HG-200.2-CVAA-WT** | **Soil** | | | | | | | |
| **Batch R5117069** | | | | | | | | |
| **WG3340631-2 CRM** | | **WT-SS-1** | | | | | | |
| Mercury (Hg) | | | 117.6 | | % | | 70-130 | 13-JUN-20 |
| **WG3340631-6 DUP** | | **WG3340631-5** | | | | | | |
| Mercury (Hg) | | 0.0095 | 0.0100 | | ug/g | 5.7 | 40 | 13-JUN-20 |
| **WG3340631-3 LCS** | | | | | | | | |
| Mercury (Hg) | | | 100.0 | | % | | 80-120 | 13-JUN-20 |
| **WG3340631-1 MB** | | | | | | | | |
| Mercury (Hg) | | | <0.0050 | | mg/kg | | 0.005 | 13-JUN-20 |
| **MET-200.2-CCMS-WT** | **Soil** | | | | | | | |

# Quality Control Report



Client: WSP Canada Group Limited
610 Chartwell Road Suite 300
Oakville ON L6J 4A5
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **MET-200.2-CCMS-WT** | **Soil** | | | | | | | |
| **Batch R5116693** | | | | | | | | |
| **WG3340631-2 CRM** | | **WT-SS-1** | | | | | | |
| Antimony (Sb) | | | 88.8 | | % | | 70-130 | 12-JUN-20 |
| Arsenic (As) | | | 104.2 | | % | | 70-130 | 12-JUN-20 |
| Beryllium (Be) | | | 88.3 | | % | | 70-130 | 12-JUN-20 |
| Boron (B) | | | 75.5 | | % | | 70-130 | 12-JUN-20 |
| Cadmium (Cd) | | | 93.3 | | % | | 70-130 | 12-JUN-20 |
| Chromium (Cr) | | | 83.9 | | % | | 70-130 | 12-JUN-20 |
| Cobalt (Co) | | | 93.8 | | % | | 70-130 | 12-JUN-20 |
| Copper (Cu) | | | 91.7 | | % | | 70-130 | 12-JUN-20 |
| Lead (Pb) | | | 96.7 | | % | | 70-130 | 12-JUN-20 |
| Molybdenum (Mo) | | | 95.0 | | % | | 70-130 | 12-JUN-20 |
| Nickel (Ni) | | | 96.1 | | % | | 70-130 | 12-JUN-20 |
| Selenium (Se) | | | 80.9 | | % | | 70-130 | 12-JUN-20 |
| Silver (Ag) | | | 97.6 | | % | | 70-130 | 12-JUN-20 |
| Thallium (Tl) | | | 72.2 | | % | | 70-130 | 12-JUN-20 |
| Vanadium (V) | | | 97.3 | | % | | 70-130 | 12-JUN-20 |
| Zinc (Zn) | | | 93.9 | | % | | 70-130 | 12-JUN-20 |
| **WG3340631-6 DUP** | | **WG3340631-5** | | | | | | |
| Antimony (Sb) | | 0.14 | 0.12 | | ug/g | 18 | 30 | 12-JUN-20 |
| Arsenic (As) | | 1.99 | 1.95 | | ug/g | 2.0 | 30 | 12-JUN-20 |
| Barium (Ba) | | 39.8 | 38.2 | | ug/g | 4.0 | 40 | 12-JUN-20 |
| Beryllium (Be) | | 0.25 | 0.24 | | ug/g | 3.4 | 30 | 12-JUN-20 |
| Boron (B) | | <5.0 | <5.0 | RPD-NA | ug/g | N/A | 30 | 12-JUN-20 |
| Cadmium (Cd) | | 0.094 | 0.085 | | ug/g | 9.5 | 30 | 12-JUN-20 |
| Chromium (Cr) | | 10.9 | 10.6 | | ug/g | 2.2 | 30 | 12-JUN-20 |
| Cobalt (Co) | | 4.00 | 3.83 | | ug/g | 4.3 | 30 | 12-JUN-20 |
| Copper (Cu) | | 9.54 | 9.04 | | ug/g | 5.4 | 30 | 12-JUN-20 |
| Lead (Pb) | | 8.20 | 7.93 | | ug/g | 3.3 | 40 | 12-JUN-20 |
| Molybdenum (Mo) | | 0.36 | 0.35 | | ug/g | 2.4 | 40 | 12-JUN-20 |
| Nickel (Ni) | | 8.39 | 8.16 | | ug/g | 2.7 | 30 | 12-JUN-20 |
| Selenium (Se) | | <0.20 | <0.20 | RPD-NA | ug/g | N/A | 30 | 12-JUN-20 |
| Silver (Ag) | | <0.10 | <0.10 | RPD-NA | ug/g | N/A | 40 | 12-JUN-20 |
| Thallium (Tl) | | 0.073 | 0.071 | | ug/g | 1.9 | 30 | 12-JUN-20 |
| Uranium (U) | | 0.425 | 0.416 | | ug/g | 2.1 | 30 | 12-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
610 Chartwell Road Suite 300
Oakville ON L6J 4A5
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **MET-200.2-CCMS-WT** | **Soil** | | | | | | | |
| **Batch R5116693** | | | | | | | | |
| **WG3340631-6 DUP** | | **WG3340631-5** | | | | | | |
| Vanadium (V) | | 21.3 | 20.7 | | ug/g | 2.9 | 30 | 12-JUN-20 |
| Zinc (Zn) | | 29.1 | 28.5 | | ug/g | 2.2 | 30 | 12-JUN-20 |
| **WG3340631-4 LCS** | | | | | | | | |
| Antimony (Sb) | | | 107.2 | | % | | 80-120 | 12-JUN-20 |
| Arsenic (As) | | | 102.3 | | % | | 80-120 | 12-JUN-20 |
| Barium (Ba) | | | 106.9 | | % | | 80-120 | 12-JUN-20 |
| Beryllium (Be) | | | 98.1 | | % | | 80-120 | 12-JUN-20 |
| Boron (B) | | | 94.7 | | % | | 80-120 | 12-JUN-20 |
| Cadmium (Cd) | | | 100.7 | | % | | 80-120 | 12-JUN-20 |
| Chromium (Cr) | | | 99.9 | | % | | 80-120 | 12-JUN-20 |
| Cobalt (Co) | | | 100.1 | | % | | 80-120 | 12-JUN-20 |
| Copper (Cu) | | | 97.1 | | % | | 80-120 | 12-JUN-20 |
| Lead (Pb) | | | 104.6 | | % | | 80-120 | 12-JUN-20 |
| Molybdenum (Mo) | | | 103.5 | | % | | 80-120 | 12-JUN-20 |
| Nickel (Ni) | | | 98.7 | | % | | 80-120 | 12-JUN-20 |
| Selenium (Se) | | | 101.2 | | % | | 80-120 | 12-JUN-20 |
| Silver (Ag) | | | 102.8 | | % | | 80-120 | 12-JUN-20 |
| Thallium (Tl) | | | 104.2 | | % | | 80-120 | 12-JUN-20 |
| Uranium (U) | | | 103.7 | | % | | 80-120 | 12-JUN-20 |
| Vanadium (V) | | | 102.5 | | % | | 80-120 | 12-JUN-20 |
| Zinc (Zn) | | | 100.5 | | % | | 80-120 | 12-JUN-20 |
| **WG3340631-1 MB** | | | | | | | | |
| Antimony (Sb) | | | <0.10 | | mg/kg | | 0.1 | 12-JUN-20 |
| Arsenic (As) | | | <0.10 | | mg/kg | | 0.1 | 12-JUN-20 |
| Barium (Ba) | | | <0.50 | | mg/kg | | 0.5 | 12-JUN-20 |
| Beryllium (Be) | | | <0.10 | | mg/kg | | 0.1 | 12-JUN-20 |
| Boron (B) | | | <5.0 | | mg/kg | | 5 | 12-JUN-20 |
| Cadmium (Cd) | | | <0.020 | | mg/kg | | 0.02 | 12-JUN-20 |
| Chromium (Cr) | | | <0.50 | | mg/kg | | 0.5 | 12-JUN-20 |
| Cobalt (Co) | | | <0.10 | | mg/kg | | 0.1 | 12-JUN-20 |
| Copper (Cu) | | | <0.50 | | mg/kg | | 0.5 | 12-JUN-20 |
| Lead (Pb) | | | <0.50 | | mg/kg | | 0.5 | 12-JUN-20 |
| Molybdenum (Mo) | | | <0.10 | | mg/kg | | 0.1 | 12-JUN-20 |
| Nickel (Ni) | | | <0.50 | | mg/kg | | 0.5 | 12-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
610 Chartwell Road Suite 300
Oakville ON L6J 4A5
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **MET-200.2-CCMS-WT** | **Soil** | | | | | | | |
| **Batch R5116693** | | | | | | | | |
| **WG3340631-1 MB** | | | | | | | | |
| Selenium (Se) | | | <0.20 | | mg/kg | | 0.2 | 12-JUN-20 |
| Silver (Ag) | | | <0.10 | | mg/kg | | 0.1 | 12-JUN-20 |
| Thallium (Tl) | | | <0.050 | | mg/kg | | 0.05 | 12-JUN-20 |
| Uranium (U) | | | <0.050 | | mg/kg | | 0.05 | 12-JUN-20 |
| Vanadium (V) | | | <0.20 | | mg/kg | | 0.2 | 12-JUN-20 |
| Zinc (Zn) | | | <2.0 | | mg/kg | | 2 | 12-JUN-20 |
| **MOISTURE-WT** | **Soil** | | | | | | | |
| **Batch R5113478** | | | | | | | | |
| **WG3338244-3 DUP** | | **L2453516-10** | | | | | | |
| % Moisture | | 10.5 | 10.5 | | % | 0.0 | 20 | 10-JUN-20 |
| **WG3338244-2 LCS** | | | | | | | | |
| % Moisture | | | 99.4 | | % | | 90-110 | 10-JUN-20 |
| **WG3338244-1 MB** | | | | | | | | |
| % Moisture | | | <0.25 | | % | | 0.25 | 10-JUN-20 |
| **PAH-511-WT** | **Soil** | | | | | | | |
| **Batch R5115815** | | | | | | | | |
| **WG3338176-3 DUP** | | **WG3338176-5** | | | | | | |
| 1-Methylnaphthalene | | <0.030 | <0.030 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| 2-Methylnaphthalene | | <0.030 | <0.030 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Acenaphthene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Acenaphthylene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Anthracene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Benzo(a)anthracene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Benzo(a)pyrene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Benzo(b)fluoranthene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Benzo(g,h,i)perylene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Benzo(k)fluoranthene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Chrysene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Dibenzo(ah)anthracene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Fluoranthene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Fluorene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Indeno(1,2,3-cd)pyrene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Naphthalene | | <0.013 | <0.013 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Phenanthrene | | <0.046 | <0.046 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
610 Chartwell Road Suite 300
Oakville ON L6J 4A5
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAH-511-WT** | **Soil** | | | | | | | |
| **Batch R5115815** | | | | | | | | |
| **WG3338176-3 DUP** | | **WG3338176-5** | | | | | | |
| Pyrene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| **WG3338176-2 LCS** | | | | | | | | |
| 1-Methylnaphthalene | | | 88.9 | | % | | 50-140 | 11-JUN-20 |
| 2-Methylnaphthalene | | | 86.5 | | % | | 50-140 | 11-JUN-20 |
| Acenaphthene | | | 92.9 | | % | | 50-140 | 11-JUN-20 |
| Acenaphthylene | | | 89.4 | | % | | 50-140 | 11-JUN-20 |
| Anthracene | | | 87.5 | | % | | 50-140 | 11-JUN-20 |
| Benzo(a)anthracene | | | 93.5 | | % | | 50-140 | 11-JUN-20 |
| Benzo(a)pyrene | | | 89.2 | | % | | 50-140 | 11-JUN-20 |
| Benzo(b)fluoranthene | | | 86.6 | | % | | 50-140 | 11-JUN-20 |
| Benzo(g,h,i)perylene | | | 86.6 | | % | | 50-140 | 11-JUN-20 |
| Benzo(k)fluoranthene | | | 88.8 | | % | | 50-140 | 11-JUN-20 |
| Chrysene | | | 99.0 | | % | | 50-140 | 11-JUN-20 |
| Dibenzo(ah)anthracene | | | 95.9 | | % | | 50-140 | 11-JUN-20 |
| Fluoranthene | | | 76.5 | | % | | 50-140 | 11-JUN-20 |
| Fluorene | | | 87.9 | | % | | 50-140 | 11-JUN-20 |
| Indeno(1,2,3-cd)pyrene | | | 86.9 | | % | | 50-140 | 11-JUN-20 |
| Naphthalene | | | 88.6 | | % | | 50-140 | 11-JUN-20 |
| Phenanthrene | | | 89.0 | | % | | 50-140 | 11-JUN-20 |
| Pyrene | | | 87.3 | | % | | 50-140 | 11-JUN-20 |
| **WG3338176-1 MB** | | | | | | | | |
| 1-Methylnaphthalene | | | <0.030 | | ug/g | | 0.03 | 11-JUN-20 |
| 2-Methylnaphthalene | | | <0.030 | | ug/g | | 0.03 | 11-JUN-20 |
| Acenaphthene | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Acenaphthylene | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Anthracene | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Benzo(a)anthracene | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Benzo(a)pyrene | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Benzo(b)fluoranthene | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Benzo(g,h,i)perylene | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Benzo(k)fluoranthene | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Chrysene | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Dibenzo(ah)anthracene | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Fluoranthene | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
610 Chartwell Road Suite 300
Oakville ON L6J 4A5
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAH-511-WT** | **Soil** | | | | | | | |
| **Batch R5115815** | | | | | | | | |
| **WG3338176-1 MB** | | | | | | | | |
| Fluorene | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Indeno(1,2,3-cd)pyrene | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Naphthalene | | | <0.013 | | ug/g | | 0.013 | 11-JUN-20 |
| Phenanthrene | | | <0.046 | | ug/g | | 0.046 | 11-JUN-20 |
| Pyrene | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Surrogate: 2-Fluorobiphenyl | | | 84.4 | | % | | 50-140 | 11-JUN-20 |
| Surrogate: p-Terphenyl d14 | | | 93.7 | | % | | 50-140 | 11-JUN-20 |
| **WG3338176-4 MS** | | **WG3338176-5** | | | | | | |
| 1-Methylnaphthalene | | | 90.6 | | % | | 50-140 | 11-JUN-20 |
| 2-Methylnaphthalene | | | 88.0 | | % | | 50-140 | 11-JUN-20 |
| Acenaphthene | | | 95.3 | | % | | 50-140 | 11-JUN-20 |
| Acenaphthylene | | | 91.0 | | % | | 50-140 | 11-JUN-20 |
| Anthracene | | | 90.3 | | % | | 50-140 | 11-JUN-20 |
| Benzo(a)anthracene | | | 97.5 | | % | | 50-140 | 11-JUN-20 |
| Benzo(a)pyrene | | | 92.3 | | % | | 50-140 | 11-JUN-20 |
| Benzo(b)fluoranthene | | | 90.6 | | % | | 50-140 | 11-JUN-20 |
| Benzo(g,h,i)perylene | | | 87.5 | | % | | 50-140 | 11-JUN-20 |
| Benzo(k)fluoranthene | | | 92.3 | | % | | 50-140 | 11-JUN-20 |
| Chrysene | | | 102.0 | | % | | 50-140 | 11-JUN-20 |
| Dibenzo(ah)anthracene | | | 98.8 | | % | | 50-140 | 11-JUN-20 |
| Fluoranthene | | | 79.6 | | % | | 50-140 | 11-JUN-20 |
| Fluorene | | | 90.1 | | % | | 50-140 | 11-JUN-20 |
| Indeno(1,2,3-cd)pyrene | | | 89.3 | | % | | 50-140 | 11-JUN-20 |
| Naphthalene | | | 89.2 | | % | | 50-140 | 11-JUN-20 |
| Phenanthrene | | | 91.2 | | % | | 50-140 | 11-JUN-20 |
| Pyrene | | | 90.5 | | % | | 50-140 | 11-JUN-20 |
| **PH-WT** | **Soil** | | | | | | | |
| **Batch R5116054** | | | | | | | | |
| **WG3338802-1 DUP** | | **L2457003-1** | | | | | | |
| pH | | 7.88 | 7.88 | J | pH units | 0.00 | 0.3 | 11-JUN-20 |
| **WG3339967-1 LCS** | | | | | | | | |
| pH | | | 6.98 | | pH units | | 6.9-7.1 | 11-JUN-20 |
| **SAR-R511-WT** | **Soil** | | | | | | | |

# Quality Control Report



Client: WSP Canada Group Limited
610 Chartwell Road Suite 300
Oakville ON L6J 4A5
Contact: Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **SAR-R511-WT** | **Soil** | | | | | | | |
| **Batch R5116879** | | | | | | | | |
| **WG3340668-4 DUP** | | **WG3340668-3** | | | | | | |
| Calcium (Ca) | | 4.50 | 4.17 | | mg/L | 7.6 | 30 | 12-JUN-20 |
| Sodium (Na) | | 44.7 | 44.0 | | mg/L | 1.6 | 30 | 12-JUN-20 |
| Magnesium (Mg) | | 1.16 | 1.11 | | mg/L | 4.4 | 30 | 12-JUN-20 |
| **WG3340668-2 IRM** | | **WT SAR4** | | | | | | |
| Calcium (Ca) | | | 91.1 | | % | | 70-130 | 12-JUN-20 |
| Sodium (Na) | | | 95.0 | | % | | 70-130 | 12-JUN-20 |
| Magnesium (Mg) | | | 94.0 | | % | | 70-130 | 12-JUN-20 |
| **WG3340668-5 LCS** | | | | | | | | |
| Calcium (Ca) | | | 103.7 | | % | | 80-120 | 12-JUN-20 |
| Sodium (Na) | | | 104.0 | | % | | 80-120 | 12-JUN-20 |
| Magnesium (Mg) | | | 100.4 | | % | | 80-120 | 12-JUN-20 |
| **WG3340668-1 MB** | | | | | | | | |
| Calcium (Ca) | | | <0.50 | | mg/L | | 0.5 | 12-JUN-20 |
| Sodium (Na) | | | <0.50 | | mg/L | | 0.5 | 12-JUN-20 |
| Magnesium (Mg) | | | <0.50 | | mg/L | | 0.5 | 12-JUN-20 |

# Quality Control Report

Workorder: L2457053 Report Date: 15-JUN-20

Client: WSP Canada Group Limited
610 Chartwell Road Suite 300
Oakville ON L6J 4A5
Contact: Valyn Bernard



**Legend:**

| | |
|---|---|
| Limit | ALS Control Limit (Data Quality Objectives) |
| DUP | Duplicate |
| RPD | Relative Percent Difference |
| N/A | Not Available |
| LCS | Laboratory Control Sample |
| SRM | Standard Reference Material |
| MS | Matrix Spike |
| MSD | Matrix Spike Duplicate |
| ADE | Average Desorption Efficiency |
| MB | Method Blank |
| IRM | Internal Reference Material |
| CRM | Certified Reference Material |
| CCV | Continuing Calibration Verification |
| CVS | Calibration Verification Standard |
| LCSD | Laboratory Control Sample Duplicate |

**Sample Parameter Qualifier Definitions:**

| Qualifier | Description |
|---|---|
| J | Duplicate results and limits are expressed in terms of absolute difference. |
| RPD-NA | Relative Percent Difference Not Available due to result(s) being less than detection limit. |

**Hold Time Exceedances:**

All test results reported with this submission were conducted within ALS recommended hold times.

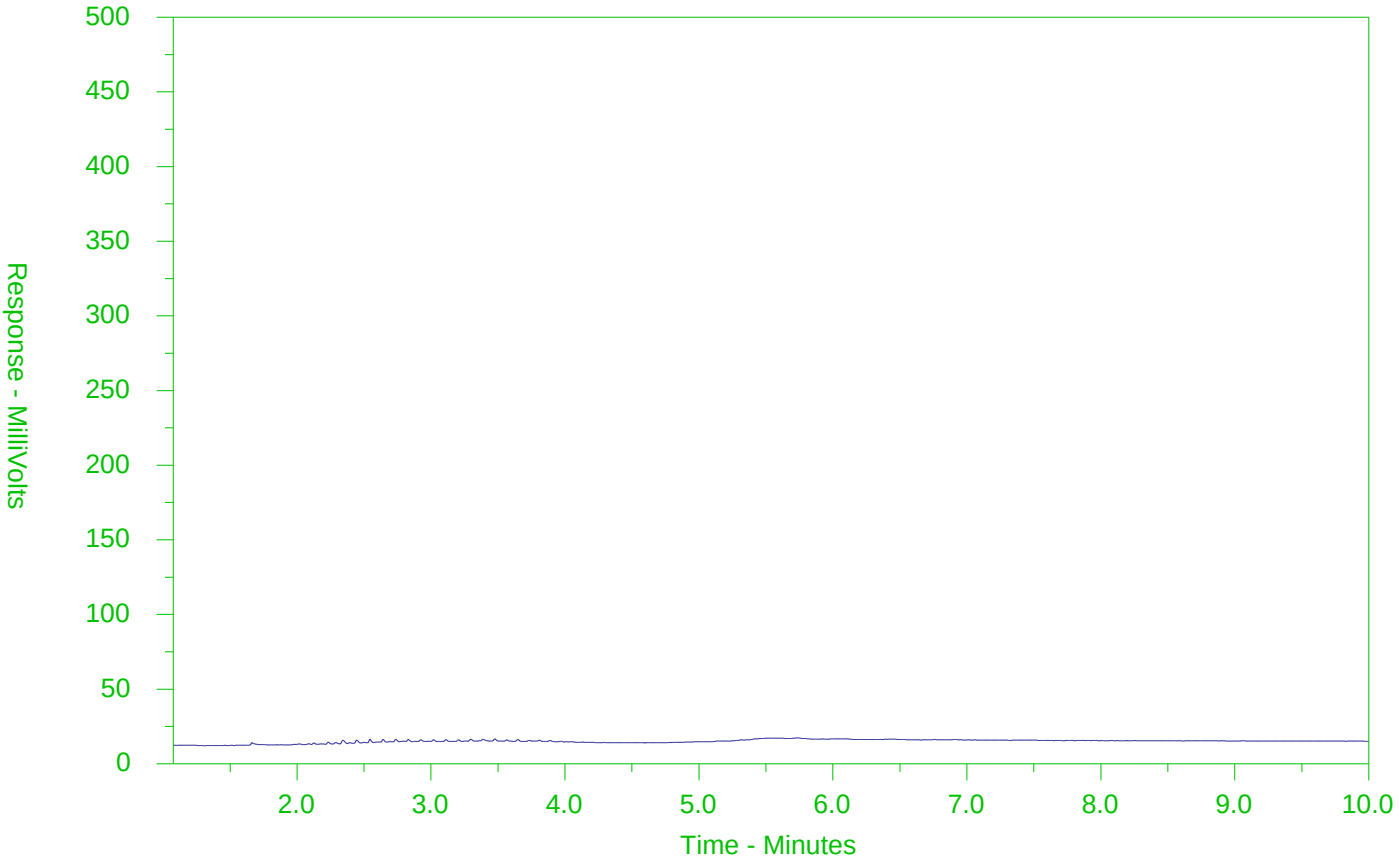
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

# CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2457053-3
Client Sample ID: BH7-SS3




| ←F2→ | ←F3→ | ←F4→ | |
|---|---|---|---|
| nC10 | nC16 | nC34 | nC50 |
| 174°C | 287°C | 481°C | 575°C |
| 346°F | 549°F | 898°F | 1067°F |
| Gasoline → | ← Motor Oils/Lube Oils/Grease → | | |
| ← Diesel/Jet Fuels → | | | |

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

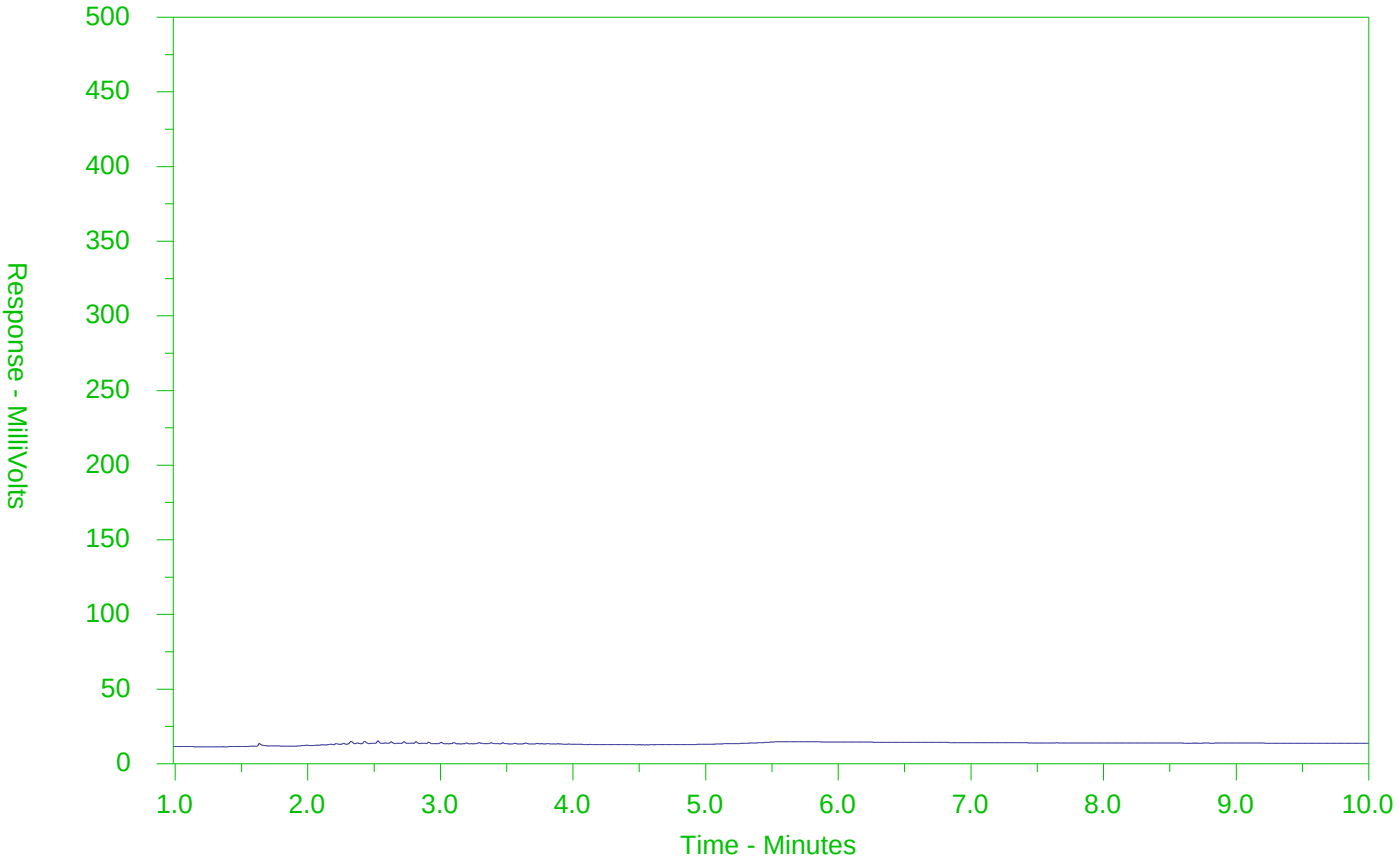
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.

# CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2457053-5
Client Sample ID: BH7-SS5




| ←F2→ | ←F3→ | ←F4→ | |
|---|---|---|---|
| nC10 | nC16 | nC34 | nC50 |
| 174°C | 287°C | 481°C | 575°C |
| 346°F | 549°F | 898°F | 1067°F |
| Gasoline → | | ← Motor Oils/Lube Oils/Grease → | |
| ← Diesel/Jet Fuels → | | | |

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.

# Chain of Custody (COC) / Analytical Request Form

ALS Environmental

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

L2457053-COFC

COC Number: 17 -

Page of

| Report To | Contact and company name below will appear on the final report |
|---|---|
| Company: | WSP Canada Group Limited |
| Contact: | Valyn Bernard |
| Phone: | 1-289-835-2546 |
| | Company address below will appear on the final report |
| Street: | 610 Chartwell Rd |
| City/Province: | Oakville |
| Postal Code: | L6J 4A5 |
| **Invoice To** | Same as Report To ☐ YES ☐ NO |
| | Copy of Invoice with Report ☐ YES ☐ NO |
| Company: | WSP Canada Group Limited |
| Contact: | ca-accountspayable@wsp.com |

**Report Format / D**

Select Report Format: ☑ PDF ☑ E

Quality Control (QC) Report with Repon ☐ NO

☑ Compare Results to Criteria on Report - provide details below if box checked

Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax Derek.Stewart@wsp.com

Email 2 Valyn.Bernard@wsp.com

Email 3 Anne.Pattison@wsp.com

**Invoice Distribution**

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax ca-accountspayable@wsp.com

Email 2 Valyn.Bernard@wsp.com

**Project Information**

ALS Account # / Quote #:

Job #: 19M-01888-00-CONTAM

PO / AFE:

LSD:

**Oil and Gas Required Fields (client use)**

AFE/Cost Center: PO#

Major/Minor Code: Routing Code:

Requisitioner:

Location:

**ALS Lab Work Order # (lab use only):** L2457053

**ALS Contact:** EH

**Sampler:**

**.. Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)**

**Regular [R]** ☑ Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days): 4 day [P4-20%] ☐ | 3 day [P3-25%] ☐ | 2 day [P2-50%] ☐

EMERGENCY: 1 Business day [E - 100%] ☐ | Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] ☐

**Date and Time Required for all E&P TATs:** dd-mmm-yy hh:mm

For tests that can not be performed according to the service level selected, you will be contacted.

**Analysis Request**

NUMBER OF CONTAINERS

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

| ALS Sample # (lab use only) | Sample Identification and/or Coordinates (This description will appear on the report) | Date (dd-mmm-yy) | Time (hh:mm) | Sample Type | Metals and Inorganics | PAHs | PHCs | VOCs | BTEX only | PHC F1 | PHC F2-4 | TCLP VOCs | TCLP Metals and Inorganics | TCLP PAHs | TCLP PCB | Grain Size | SAMPLES ON HOLD | SUSPECTED HAZARD (see Special Instructions) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | BH7-SS1-2 | 4-Jun-20 | 8 Am | Soil | R | R | | | | | | | | | | | | |
| | BH7-SS2 | | ↓ | | R | R | | | | | | | | | | | all on hold | |
| | BH7-SS3 | | | | | | | | R | R | | R | R | R | R | | TCLP on hold | |
| | BH7-SS4 | | | | | | | | R | R | | | | | | | all on hold | |
| | BH7-SS5 | | | | | | R | | R | | | | | | | | | |
| | BH7-SS6 | | 2 Pm | | | | R | | R | | | | | | | R | all on hold | |

**Drinking Water (DW) Samples[1] (client use)**

Are samples taken from a Regulated DW System? ☐ YES ☐ NO

Are samples for human consumption/ use? ☐ YES ☐ NO

**Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)**

[Combined] - Ontario R153-T1-SOIL+R347/90-TCLP

**SAMPLE CONDITION AS RECEIVED (lab use only)**

Frozen ☐ SIF Observations Yes ☐ No ☐

Ice Packs ☒ Ice Cubes ☒ Custody seal intact Yes ☐ No ☐

Cooling Initiated ☐

| INITIAL COOLER TEMPERATURES °C | | | | FINAL COOLER TEMPERATURES °C | | | |
|---|---|---|---|---|---|---|---|
| 0.1 | | | | 6.5 | | | |

**SHIPMENT RELEASE (client use)**

Released by: Madlool Alsabak | Date: June 4, 2020 | Time: 3:30 Pm

**INITIAL SHIPMENT RECEPTION (lab use only)**

Received by: | Date: 5/6/20 | Time: 8:45

**FINAL SHIPMENT RECEPTION (lab use only)**

Received by: | Date: 6-5-2020 | Time: 1545

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

JUNE 2018 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

SIF

WSP Canada Group Limited
ATTN: MADLOOL ALSABAK
610 Chartwell Road
Suite 300
Oakville ON L6J 4A5

Date Received: 04-JUN-20
Report Date: 12-JUN-20 07:36 (MT)
Version: FINAL

Client Phone: 905-823-4988

# Certificate of Analysis

## Lab Work Order #: L2456363

Project P.O. #: NOT SUBMITTED
Job Reference: 19M-01888-00-CONTAM
C of C Numbers: 17-801495
Legal Site Desc:

Emily Hansen
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

# ANALYTICAL REPORT

## Summary of Guideline Exceedances

| Guideline ALS ID | Client ID | Grouping | Analyte | Result | Guideline Limit | Unit |
|---|---|---|---|---|---|---|

**Ontario Regulation 153/04 - April 15, 2011 Standards - T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

(No parameter exceedances)

# ANALYTICAL REPORT

## Physical Tests - SOIL

| | | Guide Limits | | | |
|---|---|---|---|---|---|
| **Lab ID** | | | | L2456363-1 | L2456363-3 |
| **Sample Date** | | | | 03-JUN-20 | 03-JUN-20 |
| **Sample ID** | | | | BH1-SS1 | BH1-SS3 |
| **Analyte** | **Unit** | **#1** | **#2** | | |
| Conductivity | mS/cm | 0.57 | - | 0.173 | |
| % Moisture | % | - | - | 8.50 | 9.49 |
| pH | pH units | - | - | 7.77 | |

**Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

# ANALYTICAL REPORT

## Cyanides - SOIL

| | | | | |
|---|---|---|---|---|
| | | | **Lab ID** | L2456363-1 |
| | | | **Sample Date** | 03-JUN-20 |
| | | | **Sample ID** | BH1-SS1 |
| | | **Guide Limits** | | |
| **Analyte** | **Unit** | **#1** | **#2** | |
| Cyanide, Weak Acid Diss | ug/g | 0.051 | - | <0.050 |

**Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

# ANALYTICAL REPORT

## Saturated Paste Extractables - SOIL

| | | | | |
|---|---|---|---|---|
| | | | **Lab ID** | L2456363-1 |
| | | | **Sample Date** | 03-JUN-20 |
| | | | **Sample ID** | BH1-SS1 |
| **Analyte** | **Unit** | **Guide Limits #1** | **#2** | |
| SAR | SAR | 2.4 | - | 1.74 |
| Calcium (Ca) | mg/L | - | - | 6.91 |
| Magnesium (Mg) | mg/L | - | - | 0.75 |
| Sodium (Na) | mg/L | - | - | 18.0 |

**Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

# ANALYTICAL REPORT

## Metals - SOIL

| | | | | |
|---|---|---|---|---|
| | | | **Lab ID** | L2456363-1 |
| | | | **Sample Date** | 03-JUN-20 |
| | | | **Sample ID** | BH1-SS1 |
| | | **Guide Limits** | | |
| **Analyte** | **Unit** | **#1** | **#2** | |
| Antimony (Sb) | ug/g | 1.3 | - | <1.0 |
| Arsenic (As) | ug/g | 18 | - | 1.8 |
| Barium (Ba) | ug/g | 220 | - | 29.0 |
| Beryllium (Be) | ug/g | 2.5 | - | <0.50 |
| Boron (B) | ug/g | 36 | - | 9.1 |
| Boron (B), Hot Water Ext. | ug/g | 36 | - | 0.39 |
| Cadmium (Cd) | ug/g | 1.2 | - | <0.50 |
| Chromium (Cr) | ug/g | 70 | - | 9.8 |
| Cobalt (Co) | ug/g | 21 | - | 3.0 |
| Copper (Cu) | ug/g | 92 | - | 6.5 |
| Lead (Pb) | ug/g | 120 | - | 19.6 |
| Mercury (Hg) | ug/g | 0.27 | - | 0.0179 |
| Molybdenum (Mo) | ug/g | 2 | - | <1.0 |
| Nickel (Ni) | ug/g | 82 | - | 7.7 |
| Selenium (Se) | ug/g | 1.5 | - | <1.0 |
| Silver (Ag) | ug/g | 0.5 | - | <0.20 |
| Thallium (Tl) | ug/g | 1 | - | <0.50 |
| Uranium (U) | ug/g | 2.5 | - | <1.0 |
| Vanadium (V) | ug/g | 86 | - | 12.3 |
| Zinc (Zn) | ug/g | 290 | - | 29.7 |

**Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

# ANALYTICAL REPORT

## Speciated Metals - SOIL

| | | Guide Limits | | |
|---|---|---|---|---|
| **Analyte** | **Unit** | **#1** | **#2** | |
| **Lab ID** | | | | L2456363-1 |
| **Sample Date** | | | | 03-JUN-20 |
| **Sample ID** | | | | BH1-SS1 |
| Chromium, Hexavalent | ug/g | 0.66 | - | 0.22 |

**Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

# ANALYTICAL REPORT

## Volatile Organic Compounds - SOIL

| | | | | |
|---|---|---|---|---|
| | | | **Lab ID** | L2456363-3 |
| | | | **Sample Date** | 03-JUN-20 |
| | | | **Sample ID** | BH1-SS3 |
| | | **Guide Limits** | | |
| **Analyte** | **Unit** | **#1** | **#2** | |
| Acetone | ug/g | 0.5 | - | <0.50 |
| Benzene | ug/g | 0.02 | - | <0.0068 |
| Bromodichloromethane | ug/g | 0.05 | - | <0.050 |
| Bromoform | ug/g | 0.05 | - | <0.050 |
| Bromomethane | ug/g | 0.05 | - | <0.050 |
| Carbon tetrachloride | ug/g | 0.05 | - | <0.050 |
| Chlorobenzene | ug/g | 0.05 | - | <0.050 |
| Dibromochloromethane | ug/g | 0.05 | - | <0.050 |
| Chloroform | ug/g | 0.05 | - | <0.050 |
| 1,2-Dibromoethane | ug/g | 0.05 | - | <0.050 |
| 1,2-Dichlorobenzene | ug/g | 0.05 | - | <0.050 |
| 1,3-Dichlorobenzene | ug/g | 0.05 | - | <0.050 |
| 1,4-Dichlorobenzene | ug/g | 0.05 | - | <0.050 |
| Dichlorodifluoromethane | ug/g | 0.05 | - | <0.050 |
| 1,1-Dichloroethane | ug/g | 0.05 | - | <0.050 |
| 1,2-Dichloroethane | ug/g | 0.05 | - | <0.050 |
| 1,1-Dichloroethylene | ug/g | 0.05 | - | <0.050 |
| cis-1,2-Dichloroethylene | ug/g | 0.05 | - | <0.050 |
| trans-1,2-Dichloroethylene | ug/g | 0.05 | - | <0.050 |
| Methylene Chloride | ug/g | 0.05 | - | <0.050 |
| 1,2-Dichloropropane | ug/g | 0.05 | - | <0.050 |
| cis-1,3-Dichloropropene | ug/g | - | - | <0.030 |
| trans-1,3-Dichloropropene | ug/g | - | - | <0.030 |
| 1,3-Dichloropropene (cis & trans) | ug/g | 0.05 | - | <0.042 |
| Ethylbenzene | ug/g | 0.05 | - | <0.018 |
| n-Hexane | ug/g | 0.05 | - | <0.050 |
| Methyl Ethyl Ketone | ug/g | 0.5 | - | <0.50 |
| Methyl Isobutyl Ketone | ug/g | 0.5 | - | <0.50 |
| MTBE | ug/g | 0.05 | - | <0.050 |
| Styrene | ug/g | 0.05 | - | <0.050 |

**Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

## Volatile Organic Compounds - SOIL

| | | | | Lab ID | L2456363-3 |
|---|---|---|---|---|---|
| | | | | Sample Date | 03-JUN-20 |
| | | | | Sample ID | BH1-SS3 |
| | | Guide Limits | | | |
| Analyte | Unit | #1 | #2 | | |
| 1,1,1,2-Tetrachloroethane | ug/g | 0.05 | - | <0.050 | |
| 1,1,2,2-Tetrachloroethane | ug/g | 0.05 | - | <0.050 | |
| Tetrachloroethylene | ug/g | 0.05 | - | <0.050 | |
| Toluene | ug/g | 0.2 | - | <0.080 | |
| 1,1,1-Trichloroethane | ug/g | 0.05 | - | <0.050 | |
| 1,1,2-Trichloroethane | ug/g | 0.05 | - | <0.050 | |
| Trichloroethylene | ug/g | 0.05 | - | <0.010 | |
| Trichlorofluoromethane | ug/g | 0.25 | - | <0.050 | |
| Vinyl chloride | ug/g | 0.02 | - | <0.020 | |
| o-Xylene | ug/g | - | - | <0.020 | |
| m+p-Xylenes | ug/g | - | - | <0.030 | |
| Xylenes (Total) | ug/g | 0.05 | - | <0.050 | |
| Surrogate: 4-Bromofluorobenzene | % | - | - | 100.3 | |
| Surrogate: 1,4-Difluorobenzene | % | - | - | 117.9 | |

**Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

# ANALYTICAL REPORT

## Hydrocarbons - SOIL

| | | | | |
|---|---|---|---|---|
| | | | **Lab ID** | L2456363-3 |
| | | | **Sample Date** | 03-JUN-20 |
| | | | **Sample ID** | BH1-SS3 |
| | | **Guide Limits** | | |
| **Analyte** | **Unit** | **#1** | **#2** | |
| F1 (C6-C10) | ug/g | 25 | - | <5.0 |
| F1-BTEX | ug/g | 25 | - | <5.0 |
| F2 (C10-C16) | ug/g | 10 | - | <10 |
| F3 (C16-C34) | ug/g | 240 | - | <50 |
| F4 (C34-C50) | ug/g | 120 | - | <50 |
| Total Hydrocarbons (C6-C50) | ug/g | - | - | <72 |
| Chrom. to baseline at nC50 | | - | - | YES |
| Surrogate: 2-Bromobenzotrifluoride | % | - | - | 80.2 |
| Surrogate: 3,4-Dichlorotoluene | % | - | - | 74.7 |

**Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

# ANALYTICAL REPORT

## Polycyclic Aromatic Hydrocarbons - SOIL

| | | | | |
|---|---|---|---|---|
| | | **Lab ID** | | L2456363-1 |
| | | **Sample Date** | | 03-JUN-20 |
| | | **Sample ID** | | BH1-SS1 |
| | | **Guide Limits** | | |
| **Analyte** | **Unit** | **#1** | **#2** | |
| Acenaphthene | ug/g | 0.072 | - | <0.050 |
| Acenaphthylene | ug/g | 0.093 | - | <0.050 |
| Anthracene | ug/g | 0.16 | - | <0.050 |
| Benzo(a)anthracene | ug/g | 0.36 | - | <0.050 |
| Benzo(a)pyrene | ug/g | 0.3 | - | <0.050 |
| Benzo(b)fluoranthene | ug/g | 0.47 | - | 0.059 |
| Benzo(g,h,i)perylene | ug/g | 0.68 | - | <0.050 |
| Benzo(k)fluoranthene | ug/g | 0.48 | - | <0.050 |
| Chrysene | ug/g | 2.8 | - | 0.059 |
| Dibenzo(ah)anthracene | ug/g | 0.1 | - | <0.050 |
| Fluoranthene | ug/g | 0.56 | - | 0.099 |
| Fluorene | ug/g | 0.12 | - | <0.050 |
| Indeno(1,2,3-cd)pyrene | ug/g | 0.23 | - | <0.050 |
| 1+2-Methylnaphthalenes | ug/g | 0.59 | - | <0.042 |
| 1-Methylnaphthalene | ug/g | 0.59 | - | <0.030 |
| 2-Methylnaphthalene | ug/g | 0.59 | - | <0.030 |
| Naphthalene | ug/g | 0.09 | - | <0.013 |
| Phenanthrene | ug/g | 0.69 | - | 0.050 |
| Pyrene | ug/g | 1 | - | 0.085 |
| Surrogate: 2-Fluorobiphenyl | % | - | - | 92.6 |
| Surrogate: p-Terphenyl d14 | % | - | - | 104.5 |

**Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

# Reference Information

**Methods Listed (if applicable):**

| ALS Test Code | Matrix | Test Description | Method Reference** |
|---|---|---|---|
| **B-HWS-R511-WT** | Soil | Boron-HWE-O.Reg 153/04 (July 2011) | HW EXTR, EPA 6010B |

A dried solid sample is extracted with calcium chloride, the sample undergoes a heating process. After cooling the sample is filtered and analyzed by ICP/OES.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

| | | | |
|---|---|---|---|
| **CN-WAD-R511-WT** | Soil | Cyanide (WAD)-O.Reg 153/04 (July 2011) | MOE 3015/APHA 4500CN I-WAD |

The sample is extracted with a strong base for 16 hours, and then filtered. The filtrate is then distilled where the cyanide is converted to cyanogen chloride by reacting with chloramine-T, the cyanogen chloride then reacts with a combination of barbituric acid and isonicotinic acid to form a highly colored complex.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

| | | | |
|---|---|---|---|
| **CR-CR6-IC-WT** | Soil | Hexavalent Chromium in Soil | SW846 3060A/7199 |

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 7199, published by the United States Environmental Protection Agency (EPA). The procedure involves analysis for chromium (VI) by ion chromatography using diphenylcarbazide in a sulphuric acid solution.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

| | | | |
|---|---|---|---|
| **EC-WT** | Soil | Conductivity (EC) | MOEE E3138 |

A representative subsample is tumbled with de-ionized (DI) water. The ratio of water to soil is 2:1 v/w. After tumbling the sample is then analyzed by a conductivity meter.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

| | | | |
|---|---|---|---|
| **F1-F4-511-CALC-WT** | Soil | F1-F4 Hydrocarbon Calculated Parameters | CCME CWS-PHC, Pub #1310, Dec 2001-S |

Analytical methods used for analysis of CCME Petroleum Hydrocarbons have been validated and comply with the Reference Method for the CWS PHC.

Hydrocarbon results are expressed on a dry weight basis.

In cases where results for both F4 and F4G are reported, the greater of the two results must be used in any application of the CWS PHC guidelines and the gravimetric heavy hydrocarbons cannot be added to the C6 to C50 hydrocarbons.
In samples where BTEX and F1 were analyzed , F1-BTEX represents a value where the sum of Benzene, Toluene, Ethylbenzene and total Xylenes has been subtracted from F1.

In samples where PAHs, F2 and F3 were analyzed, F2-Naphth represents the result where Naphthalene has been subtracted from F2. F3-PAH represents a result where the sum of Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene, Fluoranthene, Indeno(1,2,3-cd)pyrene, Phenanthrene, and Pyrene has been subtracted from F3.

Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:
1. All extraction and analysis holding times were met.
2. Instrument performance showing response factors for C6 and C10 within 30% of the response factor for toluene.
3. Linearity of gasoline response within 15% throughout the calibration range.

Unless otherwise qualified, the following quality control criteria have been met for the F2-F4 hydrocarbon ranges:
1. All extraction and analysis holding times were met.
2. Instrument performance showing C10, C16 and C34 response factors within 10% of their average.
3. Instrument performance showing the C50 response factor within 30% of the average of the C10, C16 and C34 response factors.
4. Linearity of diesel or motor oil response within 15% throughout the calibration range.

# Reference Information

**Methods Listed (if applicable):**

| ALS Test Code | Matrix | Test Description | Method Reference** |
|---|---|---|---|
| **F1-HS-511-WT** | Soil | F1-O.Reg 153/04 (July 2011) | E3398/CCME TIER 1-HS |

Fraction F1 is determined by extracting a soil or sediment sample as received with methanol, then analyzing by headspace-GC/FID.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

| | | | |
|---|---|---|---|
| **F2-F4-511-WT** | Soil | F2-F4-O.Reg 153/04 (July 2011) | CCME Tier 1 |

Petroleum Hydrocarbons (F2-F4 fractions) are extracted from soil with 1:1 hexane:acetone using a rotary extractor. Extracts are treated with silica gel to remove polar organic interferences. F2, F3, & F4 are analyzed by GC-FID. F4G-sg is analyzed gravimetrically.

Notes:
1. F2 (C10-C16): Sum of all hydrocarbons that elute between nC10 and nC16.
2. F3 (C16-C34): Sum of all hydrocarbons that elute between nC16 and nC34.
3. F4 (C34-C50): Sum of all hydrocarbons that elute between nC34 and nC50.
4. F4G: Gravimetric Heavy Hydrocarbons
5. F4G-sg: Gravimetric Heavy Hydrocarbons (F4G) after silica gel treatment.
6. Where both F4 (C34-C50) and F4G-sg are reported for a sample, the larger of the two values is used for comparison against the relevant CCME guideline for F4.
7. F4G-sg cannot be added to the C6 to C50 hydrocarbon results to obtain an estimate of total extractable hydrocarbons.
8. This method is validated for use.
9. Data from analysis of validation and quality control samples is available upon request.
10. Reported results are expressed as milligrams per dry kilogram, unless otherwise indicated.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

| | | | |
|---|---|---|---|
| **HG-200.2-CVAA-WT** | Soil | Mercury in Soil by CVAAS | EPA 200.2/1631E (mod) |

Soil samples are digested with nitric and hydrochloric acids, followed by analysis by CVAAS.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

| | | | |
|---|---|---|---|
| **MET-200.2-CCMS-WT** | Soil | Metals in Soil by CRC ICPMS | EPA 200.2/6020A (mod) |

Soil/sediment is dried, disaggregated, and sieved (2 mm). For tests intended to support Ontario regulations, the <2mm fraction is ground to pass through a 0.355 mm sieve. Strong Acid Leachable Metals in the <2mm fraction are solubilized by heated digestion with nitric and hydrochloric acids. Instrumental analysis is by Collision / Reaction Cell ICPMS.

Limitations: This method is intended to liberate environmentally available metals. Silicate minerals are not solubilized. Some metals may be only partially recovered (matrix dependent), including Al, Ba, Be, Cr, S, Sr, Ti, Tl, V, W, and Zr. Elemental Sulfur may be poorly recovered by this method. Volatile forms of sulfur (e.g. sulfide, H2S) may be excluded if lost during sampling, storage, or digestion.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

| | | | |
|---|---|---|---|
| **METHYLNAPS-CALC-WT** | Soil | ABN-Calculated Parameters | SW846 8270 |
| **MOISTURE-WT** | Soil | % Moisture | CCME PHC in Soil - Tier 1 (mod) |
| **PAH-511-WT** | Soil | PAH-O.Reg 153/04 (July 2011) | SW846 3510/8270 |

A representative sub-sample of soil is fortified with deuterium-labelled surrogates and a mechanical shaking techniqueis used to extract the sample with a mixture of methanol and toluene. The extracts are concentrated and analyzed by GC/MS. Results for benzo(b) fluoranthene may include contributions from benzo(j)fluoranthene, if also present in the sample.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

# Reference Information

**Methods Listed (if applicable):**

| ALS Test Code | Matrix | Test Description | Method Reference** |
|---|---|---|---|
| **PH-WT** | Soil | pH | MOEE E3137A |

A minimum 10g portion of the sample is extracted with 20mL of 0.01M calcium chloride solution by shaking for at least 30 minutes. The aqueous layer is separated from the soil and then analyzed using a pH meter and electrode.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

| | | | |
|---|---|---|---|
| **SAR-R511-WT** | Soil | SAR-O.Reg 153/04 (July 2011) | SW846 6010C |

A dried, disaggregated solid sample is extracted with deionized water, the aqueous extract is separated from the solid, acidified and then analyzed using a ICP/OES. The concentrations of Na, Ca and Mg are reported as per CALA requirements for calculated parameters. These individual parameters are not for comparison to any guideline.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

| | | | |
|---|---|---|---|
| **VOC-1,3-DCP-CALC-WT** | Soil | Regulation 153 VOCs | SW8260B/SW8270C |
| **VOC-511-HS-WT** | Soil | VOC-O.Reg 153/04 (July 2011) | SW846 8260 (511) |

Soil and sediment samples are extracted in methanol and analyzed by headspace-GC/MS.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

| | | | |
|---|---|---|---|
| **XYLENES-SUM-CALC-WT** | Soil | Sum of Xylene Isomer Concentrations | CALCULATION |

Total xylenes represents the sum of o-xylene and m&p-xylene.

**ALS test methods may incorporate modifications from specified reference methods to improve performance.

Chain of Custody Numbers:

17-801495

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

| Laboratory Definition Code | Laboratory Location |
|---|---|
| WT | ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA |

# Reference Information

**GLOSSARY OF REPORT TERMS**

*Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.*
*mg/kg - milligrams per kilogram based on dry weight of sample*
*mg/kg wwt - milligrams per kilogram based on wet weight of sample*
*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight*
*mg/L - unit of concentration based on volume, parts per million.*
*< - Less than.*
*D.L. - The reporting limit.*
*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*
*UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.*
*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*

*Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to, fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information. Guideline limits are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.*

# Quality Control Report

Workorder: L2456363 Report Date: 12-JUN-20 

Client: WSP Canada Group Limited
610 Chartwell Road Suite 300
Oakville ON L6J 4A5
Contact: MADLOOL ALSABAK

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **B-HWS-R511-WT** | **Soil** | | | | | | | |
| **Batch R5116038** | | | | | | | | |
| **WG3339686-4 DUP** | | **L2456282-14** | | | | | | |
| Boron (B), Hot Water Ext. | | 0.18 | 0.19 | | ug/g | 5.9 | 30 | 11-JUN-20 |
| **WG3339686-2 IRM** | | **WT SAR4** | | | | | | |
| Boron (B), Hot Water Ext. | | | 96.9 | | % | | 70-130 | 11-JUN-20 |
| **WG3339686-3 LCS** | | | | | | | | |
| Boron (B), Hot Water Ext. | | | 101.0 | | % | | 70-130 | 11-JUN-20 |
| **WG3339686-1 MB** | | | | | | | | |
| Boron (B), Hot Water Ext. | | | <0.10 | | ug/g | | 0.1 | 11-JUN-20 |
| **CN-WAD-R511-WT** | **Soil** | | | | | | | |
| **Batch R5115362** | | | | | | | | |
| **WG3337885-3 DUP** | | **L2456477-1** | | | | | | |
| Cyanide, Weak Acid Diss | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 35 | 10-JUN-20 |
| **WG3337885-2 LCS** | | | | | | | | |
| Cyanide, Weak Acid Diss | | | 97.5 | | % | | 80-120 | 10-JUN-20 |
| **WG3337885-1 MB** | | | | | | | | |
| Cyanide, Weak Acid Diss | | | <0.050 | | ug/g | | 0.05 | 10-JUN-20 |
| **WG3337885-4 MS** | | **L2456477-1** | | | | | | |
| Cyanide, Weak Acid Diss | | | 104.5 | | % | | 70-130 | 10-JUN-20 |
| **CR-CR6-IC-WT** | **Soil** | | | | | | | |
| **Batch R5115624** | | | | | | | | |
| **WG3337867-4 CRM** | | **WT-SQC012** | | | | | | |
| Chromium, Hexavalent | | | 92.2 | | % | | 70-130 | 10-JUN-20 |
| **WG3337867-3 DUP** | | **L2456282-21** | | | | | | |
| Chromium, Hexavalent | | <0.20 | <0.20 | RPD-NA | ug/g | N/A | 35 | 10-JUN-20 |
| **WG3337867-2 LCS** | | | | | | | | |
| Chromium, Hexavalent | | | 94.4 | | % | | 80-120 | 10-JUN-20 |
| **WG3337867-1 MB** | | | | | | | | |
| Chromium, Hexavalent | | | <0.20 | | ug/g | | 0.2 | 10-JUN-20 |
| **EC-WT** | **Soil** | | | | | | | |
| **Batch R5116048** | | | | | | | | |
| **WG3339693-4 DUP** | | **WG3339693-3** | | | | | | |
| Conductivity | | 1.16 | 1.16 | | mS/cm | 0.4 | 20 | 11-JUN-20 |
| **WG3339693-2 IRM** | | **WT SAR4** | | | | | | |
| Conductivity | | | 106.0 | | % | | 70-130 | 11-JUN-20 |
| **WG3339953-1 LCS** | | | | | | | | |
| Conductivity | | | 100.2 | | % | | 90-110 | 11-JUN-20 |
| **WG3339693-1 MB** | | | | | | | | |

# Quality Control Report



Client: WSP Canada Group Limited
610 Chartwell Road Suite 300
Oakville ON L6J 4A5
Contact: MADLOOL ALSABAK

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **EC-WT** | **Soil** | | | | | | | |
| **Batch R5116048** | | | | | | | | |
| **WG3339693-1 MB** | | | | | | | | |
| Conductivity | | | <0.0040 | | mS/cm | | 0.004 | 11-JUN-20 |
| **F1-HS-511-WT** | **Soil** | | | | | | | |
| **Batch R5113936** | | | | | | | | |
| **WG3335898-4 DUP** | | **WG3335898-3** | | | | | | |
| F1 (C6-C10) | | <5.0 | <5.0 | RPD-NA | ug/g | N/A | 30 | 10-JUN-20 |
| **WG3335898-2 LCS** | | | | | | | | |
| F1 (C6-C10) | | | 108.7 | | % | | 80-120 | 10-JUN-20 |
| **WG3335898-1 MB** | | | | | | | | |
| F1 (C6-C10) | | | <5.0 | | ug/g | | 5 | 10-JUN-20 |
| Surrogate: 3,4-Dichlorotoluene | | | 83.7 | | % | | 60-140 | 10-JUN-20 |
| **WG3335898-6 MS** | | **L2456282-12** | | | | | | |
| F1 (C6-C10) | | | 96.2 | | % | | 60-140 | 10-JUN-20 |
| **F2-F4-511-WT** | **Soil** | | | | | | | |
| **Batch R5116227** | | | | | | | | |
| **WG3337944-3 DUP** | | **WG3337944-5** | | | | | | |
| F2 (C10-C16) | | <10 | <10 | RPD-NA | ug/g | N/A | 30 | 11-JUN-20 |
| F3 (C16-C34) | | <50 | <50 | RPD-NA | ug/g | N/A | 30 | 11-JUN-20 |
| F4 (C34-C50) | | <50 | <50 | RPD-NA | ug/g | N/A | 30 | 11-JUN-20 |
| **WG3337944-2 LCS** | | | | | | | | |
| F2 (C10-C16) | | | 91.1 | | % | | 80-120 | 11-JUN-20 |
| F3 (C16-C34) | | | 97.3 | | % | | 80-120 | 11-JUN-20 |
| F4 (C34-C50) | | | 89.6 | | % | | 80-120 | 11-JUN-20 |
| **WG3337944-1 MB** | | | | | | | | |
| F2 (C10-C16) | | | <10 | | ug/g | | 10 | 11-JUN-20 |
| F3 (C16-C34) | | | <50 | | ug/g | | 50 | 11-JUN-20 |
| F4 (C34-C50) | | | <50 | | ug/g | | 50 | 11-JUN-20 |
| Surrogate: 2-Bromobenzotrifluoride | | | 84.8 | | % | | 60-140 | 11-JUN-20 |
| **WG3337944-4 MS** | | **WG3337944-5** | | | | | | |
| F2 (C10-C16) | | | 89.7 | | % | | 60-140 | 11-JUN-20 |
| F3 (C16-C34) | | | 93.1 | | % | | 60-140 | 11-JUN-20 |
| F4 (C34-C50) | | | 86.1 | | % | | 60-140 | 11-JUN-20 |
| **HG-200.2-CVAA-WT** | **Soil** | | | | | | | |

# Quality Control Report



Client: WSP Canada Group Limited
610 Chartwell Road Suite 300
Oakville ON L6J 4A5
Contact: MADLOOL ALSABAK

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **HG-200.2-CVAA-WT** | **Soil** | | | | | | | |
| **Batch R5115873** | | | | | | | | |
| **WG3339682-2 CRM** | | **WT-SS-1** | | | | | | |
| Mercury (Hg) | | | 118.1 | | % | | 70-130 | 11-JUN-20 |
| **WG3339682-6 DUP** | | **WG3339682-5** | | | | | | |
| Mercury (Hg) | | 0.0158 | 0.0165 | | ug/g | 4.8 | 40 | 11-JUN-20 |
| **WG3339682-3 LCS** | | | | | | | | |
| Mercury (Hg) | | | 111.0 | | % | | 80-120 | 11-JUN-20 |
| **WG3339682-1 MB** | | | | | | | | |
| Mercury (Hg) | | | <0.0050 | | mg/kg | | 0.005 | 11-JUN-20 |
| **MET-200.2-CCMS-WT** | **Soil** | | | | | | | |
| **Batch R5115996** | | | | | | | | |
| **WG3339682-2 CRM** | | **WT-SS-1** | | | | | | |
| Antimony (Sb) | | | 100.9 | | % | | 70-130 | 11-JUN-20 |
| Arsenic (As) | | | 121.6 | | % | | 70-130 | 11-JUN-20 |
| Beryllium (Be) | | | 106.6 | | % | | 70-130 | 11-JUN-20 |
| Boron (B) | | | 92.0 | | % | | 70-130 | 11-JUN-20 |
| Cadmium (Cd) | | | 109.2 | | % | | 70-130 | 11-JUN-20 |
| Chromium (Cr) | | | 100.9 | | % | | 70-130 | 11-JUN-20 |
| Cobalt (Co) | | | 107.0 | | % | | 70-130 | 11-JUN-20 |
| Copper (Cu) | | | 106.9 | | % | | 70-130 | 11-JUN-20 |
| Lead (Pb) | | | 112.9 | | % | | 70-130 | 11-JUN-20 |
| Molybdenum (Mo) | | | 112.5 | | % | | 70-130 | 11-JUN-20 |
| Nickel (Ni) | | | 111.0 | | % | | 70-130 | 11-JUN-20 |
| Selenium (Se) | | | 96.1 | | % | | 70-130 | 11-JUN-20 |
| Silver (Ag) | | | 123.3 | | % | | 70-130 | 11-JUN-20 |
| Thallium (Tl) | | | 85.5 | | % | | 70-130 | 11-JUN-20 |
| Vanadium (V) | | | 115.1 | | % | | 70-130 | 11-JUN-20 |
| Zinc (Zn) | | | 109.4 | | % | | 70-130 | 11-JUN-20 |
| **WG3339682-6 DUP** | | **WG3339682-5** | | | | | | |
| Antimony (Sb) | | <0.10 | <0.10 | RPD-NA | ug/g | N/A | 30 | 11-JUN-20 |
| Arsenic (As) | | 2.77 | 2.88 | | ug/g | 3.9 | 30 | 11-JUN-20 |
| Barium (Ba) | | 53.1 | 56.2 | | ug/g | 5.7 | 40 | 11-JUN-20 |
| Beryllium (Be) | | 0.30 | 0.29 | | ug/g | 4.1 | 30 | 11-JUN-20 |
| Boron (B) | | <5.0 | <5.0 | RPD-NA | ug/g | N/A | 30 | 11-JUN-20 |
| Cadmium (Cd) | | 0.093 | 0.082 | | ug/g | 13 | 30 | 11-JUN-20 |
| Chromium (Cr) | | 14.3 | 15.0 | | ug/g | 4.4 | 30 | 11-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
610 Chartwell Road Suite 300
Oakville ON L6J 4A5
Contact: MADLOOL ALSABAK

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **MET-200.2-CCMS-WT** | **Soil** | | | | | | | |
| **Batch R5115996** | | | | | | | | |
| **WG3339682-6 DUP** | | **WG3339682-5** | | | | | | |
| Cobalt (Co) | | 5.36 | 5.71 | | ug/g | 6.3 | 30 | 11-JUN-20 |
| Copper (Cu) | | 13.4 | 14.0 | | ug/g | 4.0 | 30 | 11-JUN-20 |
| Lead (Pb) | | 10.5 | 10.3 | | ug/g | 1.2 | 40 | 11-JUN-20 |
| Molybdenum (Mo) | | 0.22 | 0.22 | | ug/g | 0.9 | 40 | 11-JUN-20 |
| Nickel (Ni) | | 10.9 | 11.5 | | ug/g | 5.0 | 30 | 11-JUN-20 |
| Selenium (Se) | | <0.20 | <0.20 | RPD-NA | ug/g | N/A | 30 | 11-JUN-20 |
| Silver (Ag) | | <0.10 | <0.10 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Thallium (Tl) | | 0.082 | 0.082 | | ug/g | 0.1 | 30 | 11-JUN-20 |
| Uranium (U) | | 0.352 | 0.354 | | ug/g | 0.8 | 30 | 11-JUN-20 |
| Vanadium (V) | | 22.4 | 23.1 | | ug/g | 2.9 | 30 | 11-JUN-20 |
| Zinc (Zn) | | 33.9 | 34.7 | | ug/g | 2.4 | 30 | 11-JUN-20 |
| **WG3339682-4 LCS** | | | | | | | | |
| Antimony (Sb) | | | 105.0 | | % | | 80-120 | 11-JUN-20 |
| Arsenic (As) | | | 99.9 | | % | | 80-120 | 11-JUN-20 |
| Barium (Ba) | | | 104.9 | | % | | 80-120 | 11-JUN-20 |
| Beryllium (Be) | | | 92.3 | | % | | 80-120 | 11-JUN-20 |
| Boron (B) | | | 88.1 | | % | | 80-120 | 11-JUN-20 |
| Cadmium (Cd) | | | 98.2 | | % | | 80-120 | 11-JUN-20 |
| Chromium (Cr) | | | 97.7 | | % | | 80-120 | 11-JUN-20 |
| Cobalt (Co) | | | 96.7 | | % | | 80-120 | 11-JUN-20 |
| Copper (Cu) | | | 95.6 | | % | | 80-120 | 11-JUN-20 |
| Lead (Pb) | | | 99.2 | | % | | 80-120 | 11-JUN-20 |
| Molybdenum (Mo) | | | 104.2 | | % | | 80-120 | 11-JUN-20 |
| Nickel (Ni) | | | 96.5 | | % | | 80-120 | 11-JUN-20 |
| Selenium (Se) | | | 96.5 | | % | | 80-120 | 11-JUN-20 |
| Silver (Ag) | | | 100.9 | | % | | 80-120 | 11-JUN-20 |
| Thallium (Tl) | | | 97.8 | | % | | 80-120 | 11-JUN-20 |
| Uranium (U) | | | 93.5 | | % | | 80-120 | 11-JUN-20 |
| Vanadium (V) | | | 100.8 | | % | | 80-120 | 11-JUN-20 |
| Zinc (Zn) | | | 94.9 | | % | | 80-120 | 11-JUN-20 |
| **WG3339682-1 MB** | | | | | | | | |
| Antimony (Sb) | | | <0.10 | | mg/kg | | 0.1 | 11-JUN-20 |
| Arsenic (As) | | | <0.10 | | mg/kg | | 0.1 | 11-JUN-20 |
| Barium (Ba) | | | <0.50 | | mg/kg | | 0.5 | |

# Quality Control Report



Client: WSP Canada Group Limited
610 Chartwell Road Suite 300
Oakville ON L6J 4A5
Contact: MADLOOL ALSABAK

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **MET-200.2-CCMS-WT** | **Soil** | | | | | | | |
| **Batch R5115996** | | | | | | | | |
| **WG3339682-1 MB** | | | | | | | | |
| Barium (Ba) | | | <0.50 | | mg/kg | | 0.5 | 11-JUN-20 |
| Beryllium (Be) | | | <0.10 | | mg/kg | | 0.1 | 11-JUN-20 |
| Boron (B) | | | <5.0 | | mg/kg | | 5 | 11-JUN-20 |
| Cadmium (Cd) | | | <0.020 | | mg/kg | | 0.02 | 11-JUN-20 |
| Chromium (Cr) | | | <0.50 | | mg/kg | | 0.5 | 11-JUN-20 |
| Cobalt (Co) | | | <0.10 | | mg/kg | | 0.1 | 11-JUN-20 |
| Copper (Cu) | | | <0.50 | | mg/kg | | 0.5 | 11-JUN-20 |
| Lead (Pb) | | | <0.50 | | mg/kg | | 0.5 | 11-JUN-20 |
| Molybdenum (Mo) | | | <0.10 | | mg/kg | | 0.1 | 11-JUN-20 |
| Nickel (Ni) | | | <0.50 | | mg/kg | | 0.5 | 11-JUN-20 |
| Selenium (Se) | | | <0.20 | | mg/kg | | 0.2 | 11-JUN-20 |
| Silver (Ag) | | | <0.10 | | mg/kg | | 0.1 | 11-JUN-20 |
| Thallium (Tl) | | | <0.050 | | mg/kg | | 0.05 | 11-JUN-20 |
| Uranium (U) | | | <0.050 | | mg/kg | | 0.05 | 11-JUN-20 |
| Vanadium (V) | | | <0.20 | | mg/kg | | 0.2 | 11-JUN-20 |
| Zinc (Zn) | | | <2.0 | | mg/kg | | 2 | 11-JUN-20 |
| **MOISTURE-WT** | **Soil** | | | | | | | |
| **Batch R5111163** | | | | | | | | |
| **WG3337807-3 DUP** | | **L2456282-18** | | | | | | |
| % Moisture | | 7.71 | 7.95 | | % | 3.0 | 20 | 09-JUN-20 |
| **WG3337807-2 LCS** | | | | | | | | |
| % Moisture | | | 99.96 | | % | | 90-110 | 09-JUN-20 |
| **WG3337807-1 MB** | | | | | | | | |
| % Moisture | | | <0.25 | | % | | 0.25 | 09-JUN-20 |
| **PAH-511-WT** | **Soil** | | | | | | | |
| **Batch R5116123** | | | | | | | | |
| **WG3337792-3 DUP** | | **WG3337792-5** | | | | | | |
| 1-Methylnaphthalene | | <0.030 | <0.030 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| 2-Methylnaphthalene | | <0.030 | <0.030 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Acenaphthene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Acenaphthylene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Anthracene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Benzo(a)anthracene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Benzo(a)pyrene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
610 Chartwell Road Suite 300
Oakville ON L6J 4A5
Contact: MADLOOL ALSABAK

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAH-511-WT** | **Soil** | | | | | | | |
| **Batch R5116123** | | | | | | | | |
| **WG3337792-3 DUP** | | **WG3337792-5** | | | | | | |
| Benzo(b)fluoranthene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Benzo(g,h,i)perylene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Benzo(k)fluoranthene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Chrysene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Dibenzo(ah)anthracene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Fluoranthene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Fluorene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Indeno(1,2,3-cd)pyrene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Naphthalene | | <0.013 | <0.013 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Phenanthrene | | <0.046 | <0.046 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| Pyrene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 11-JUN-20 |
| **WG3337792-2 LCS** | | | | | | | | |
| 1-Methylnaphthalene | | | 85.9 | | % | | 50-140 | 11-JUN-20 |
| 2-Methylnaphthalene | | | 83.9 | | % | | 50-140 | 11-JUN-20 |
| Acenaphthene | | | 86.1 | | % | | 50-140 | 11-JUN-20 |
| Acenaphthylene | | | 84.2 | | % | | 50-140 | 11-JUN-20 |
| Anthracene | | | 91.4 | | % | | 50-140 | 11-JUN-20 |
| Benzo(a)anthracene | | | 92.2 | | % | | 50-140 | 11-JUN-20 |
| Benzo(a)pyrene | | | 84.9 | | % | | 50-140 | 11-JUN-20 |
| Benzo(b)fluoranthene | | | 98.3 | | % | | 50-140 | 11-JUN-20 |
| Benzo(g,h,i)perylene | | | 80.0 | | % | | 50-140 | 11-JUN-20 |
| Benzo(k)fluoranthene | | | 90.1 | | % | | 50-140 | 11-JUN-20 |
| Chrysene | | | 97.2 | | % | | 50-140 | 11-JUN-20 |
| Dibenzo(ah)anthracene | | | 88.2 | | % | | 50-140 | 11-JUN-20 |
| Fluoranthene | | | 95.8 | | % | | 50-140 | 11-JUN-20 |
| Fluorene | | | 71.6 | | % | | 50-140 | 11-JUN-20 |
| Indeno(1,2,3-cd)pyrene | | | 91.9 | | % | | 50-140 | 11-JUN-20 |
| Naphthalene | | | 86.3 | | % | | 50-140 | 11-JUN-20 |
| Phenanthrene | | | 88.5 | | % | | 50-140 | 11-JUN-20 |
| Pyrene | | | 105.9 | | % | | 50-140 | 11-JUN-20 |
| **WG3337792-1 MB** | | | | | | | | |
| 1-Methylnaphthalene | | | <0.030 | | ug/g | | 0.03 | 11-JUN-20 |
| 2-Methylnaphthalene | | | <0.030 | | ug/g | | 0.03 | 11-JUN-20 |
| Acenaphthene | | | <0.050 | | ug/g | | 0.05 | |

# Quality Control Report



Client: WSP Canada Group Limited
610 Chartwell Road Suite 300
Oakville ON L6J 4A5
Contact: MADLOOL ALSABAK

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAH-511-WT** | **Soil** | | | | | | | |
| **Batch R5116123** | | | | | | | | |
| **WG3337792-1 MB** | | | | | | | | |
| Acenaphthene | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Acenaphthylene | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Anthracene | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Benzo(a)anthracene | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Benzo(a)pyrene | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Benzo(b)fluoranthene | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Benzo(g,h,i)perylene | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Benzo(k)fluoranthene | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Chrysene | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Dibenzo(ah)anthracene | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Fluoranthene | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Fluorene | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Indeno(1,2,3-cd)pyrene | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Naphthalene | | | <0.013 | | ug/g | | 0.013 | 11-JUN-20 |
| Phenanthrene | | | <0.046 | | ug/g | | 0.046 | 11-JUN-20 |
| Pyrene | | | <0.050 | | ug/g | | 0.05 | 11-JUN-20 |
| Surrogate: 2-Fluorobiphenyl | | | 88.2 | | % | | 50-140 | 11-JUN-20 |
| Surrogate: p-Terphenyl d14 | | | 104.1 | | % | | 50-140 | 11-JUN-20 |
| **WG3337792-4 MS** | | **WG3337792-5** | | | | | | |
| 1-Methylnaphthalene | | | 97.7 | | % | | 50-140 | 11-JUN-20 |
| 2-Methylnaphthalene | | | 97.7 | | % | | 50-140 | 11-JUN-20 |
| Acenaphthene | | | 97.2 | | % | | 50-140 | 11-JUN-20 |
| Acenaphthylene | | | 98.9 | | % | | 50-140 | 11-JUN-20 |
| Anthracene | | | 93.8 | | % | | 50-140 | 11-JUN-20 |
| Benzo(a)anthracene | | | 98.2 | | % | | 50-140 | 11-JUN-20 |
| Benzo(a)pyrene | | | 102.9 | | % | | 50-140 | 11-JUN-20 |
| Benzo(b)fluoranthene | | | 102.3 | | % | | 50-140 | 11-JUN-20 |
| Benzo(g,h,i)perylene | | | 93.9 | | % | | 50-140 | 11-JUN-20 |
| Benzo(k)fluoranthene | | | 101.4 | | % | | 50-140 | 11-JUN-20 |
| Chrysene | | | 101.0 | | % | | 50-140 | 11-JUN-20 |
| Dibenzo(ah)anthracene | | | 106.6 | | % | | 50-140 | 11-JUN-20 |
| Fluoranthene | | | 101.7 | | % | | 50-140 | 11-JUN-20 |
| Fluorene | | | 91.3 | | % | | 50-140 | 11-JUN-20 |
| Indeno(1,2,3-cd)pyrene | | | 108.4 | | % | | 50-140 | 11-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
610 Chartwell Road Suite 300
Oakville ON L6J 4A5
Contact: MADLOOL ALSABAK

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAH-511-WT** | **Soil** | | | | | | | |
| **Batch R5116123** | | | | | | | | |
| **WG3337792-4 MS** | | **WG3337792-5** | | | | | | |
| Naphthalene | | | 90.7 | | % | | 50-140 | 11-JUN-20 |
| Phenanthrene | | | 91.7 | | % | | 50-140 | 11-JUN-20 |
| Pyrene | | | 104.1 | | % | | 50-140 | 11-JUN-20 |
| **PH-WT** | **Soil** | | | | | | | |
| **Batch R5115400** | | | | | | | | |
| **WG3337876-1 DUP** | | **L2455903-9** | | | | | | |
| pH | | 8.34 | 8.37 | J | pH units | 0.03 | 0.3 | 10-JUN-20 |
| **WG3339084-1 LCS** | | | | | | | | |
| pH | | | 6.95 | | pH units | | 6.9-7.1 | 10-JUN-20 |
| **SAR-R511-WT** | **Soil** | | | | | | | |
| **Batch R5116198** | | | | | | | | |
| **WG3339693-4 DUP** | | **WG3339693-3** | | | | | | |
| Calcium (Ca) | | <0.50 | <0.50 | RPD-NA | mg/L | N/A | 30 | 11-JUN-20 |
| Sodium (Na) | | 219 | 220 | | mg/L | 0.5 | 30 | 11-JUN-20 |
| Magnesium (Mg) | | <0.50 | <0.50 | RPD-NA | mg/L | N/A | 30 | 11-JUN-20 |
| **WG3339693-2 IRM** | | **WT SAR4** | | | | | | |
| Calcium (Ca) | | | 103.5 | | % | | 70-130 | 11-JUN-20 |
| Sodium (Na) | | | 90.6 | | % | | 70-130 | 11-JUN-20 |
| Magnesium (Mg) | | | 99.1 | | % | | 70-130 | 11-JUN-20 |
| **WG3339693-5 LCS** | | | | | | | | |
| Calcium (Ca) | | | 106.3 | | % | | 80-120 | 11-JUN-20 |
| Sodium (Na) | | | 107.8 | | % | | 80-120 | 11-JUN-20 |
| Magnesium (Mg) | | | 103.8 | | % | | 80-120 | 11-JUN-20 |
| **WG3339693-1 MB** | | | | | | | | |
| Calcium (Ca) | | | <0.50 | | mg/L | | 0.5 | 11-JUN-20 |
| Sodium (Na) | | | <0.50 | | mg/L | | 0.5 | 11-JUN-20 |
| Magnesium (Mg) | | | <0.50 | | mg/L | | 0.5 | 11-JUN-20 |
| **VOC-511-HS-WT** | **Soil** | | | | | | | |
| **Batch R5113936** | | | | | | | | |
| **WG3335898-4 DUP** | | **WG3335898-3** | | | | | | |
| 1,1,1,2-Tetrachloroethane | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 10-JUN-20 |
| 1,1,2,2-Tetrachloroethane | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 10-JUN-20 |
| 1,1,1-Trichloroethane | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 10-JUN-20 |
| 1,1,2-Trichloroethane | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 10-JUN-20 |
| 1,1-Dichloroethane | | <0.050 | <0.050 | | | | | |

# Quality Control Report



Client: WSP Canada Group Limited
610 Chartwell Road Suite 300
Oakville ON L6J 4A5
Contact: MADLOOL ALSABAK

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **VOC-511-HS-WT** | **Soil** | | | | | | | |
| **Batch R5113936** | | | | | | | | |
| **WG3335898-4 DUP** | | **WG3335898-3** | | | | | | |
| 1,1-Dichloroethane | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 10-JUN-20 |
| 1,1-Dichloroethylene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 10-JUN-20 |
| 1,2-Dibromoethane | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 10-JUN-20 |
| 1,2-Dichlorobenzene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 10-JUN-20 |
| 1,2-Dichloroethane | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 10-JUN-20 |
| 1,2-Dichloropropane | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 10-JUN-20 |
| 1,3-Dichlorobenzene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 10-JUN-20 |
| 1,4-Dichlorobenzene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 10-JUN-20 |
| Acetone | | <0.50 | <0.50 | RPD-NA | ug/g | N/A | 40 | 10-JUN-20 |
| Benzene | | <0.0068 | <0.0068 | RPD-NA | ug/g | N/A | 40 | 10-JUN-20 |
| Bromodichloromethane | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 10-JUN-20 |
| Bromoform | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 10-JUN-20 |
| Bromomethane | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 10-JUN-20 |
| Carbon tetrachloride | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 10-JUN-20 |
| Chlorobenzene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 10-JUN-20 |
| Chloroform | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 10-JUN-20 |
| cis-1,2-Dichloroethylene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 10-JUN-20 |
| cis-1,3-Dichloropropene | | <0.030 | <0.030 | RPD-NA | ug/g | N/A | 40 | 10-JUN-20 |
| Dibromochloromethane | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 10-JUN-20 |
| Dichlorodifluoromethane | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 10-JUN-20 |
| Ethylbenzene | | <0.018 | <0.018 | RPD-NA | ug/g | N/A | 40 | 10-JUN-20 |
| n-Hexane | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 10-JUN-20 |
| Methylene Chloride | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 10-JUN-20 |
| MTBE | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 10-JUN-20 |
| m+p-Xylenes | | <0.030 | <0.030 | RPD-NA | ug/g | N/A | 40 | 10-JUN-20 |
| Methyl Ethyl Ketone | | <0.50 | <0.50 | RPD-NA | ug/g | N/A | 40 | 10-JUN-20 |
| Methyl Isobutyl Ketone | | <0.50 | <0.50 | RPD-NA | ug/g | N/A | 40 | 10-JUN-20 |
| o-Xylene | | <0.020 | <0.020 | RPD-NA | ug/g | N/A | 40 | 10-JUN-20 |
| Styrene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 10-JUN-20 |
| Tetrachloroethylene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 10-JUN-20 |
| Toluene | | <0.080 | <0.080 | RPD-NA | ug/g | N/A | 40 | 10-JUN-20 |
| trans-1,2-Dichloroethylene | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 10-JUN-20 |
| trans-1,3-Dichloropropene | | <0.030 | <0.030 | | ug/g | | | 10-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
610 Chartwell Road Suite 300
Oakville ON L6J 4A5
Contact: MADLOOL ALSABAK

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **VOC-511-HS-WT** | **Soil** | | | | | | | |
| **Batch R5113936** | | | | | | | | |
| **WG3335898-4 DUP** | | **WG3335898-3** | | | | | | |
| trans-1,3-Dichloropropene | | <0.030 | <0.030 | RPD-NA | ug/g | N/A | 40 | 10-JUN-20 |
| Trichloroethylene | | <0.010 | <0.010 | RPD-NA | ug/g | N/A | 40 | 10-JUN-20 |
| Trichlorofluoromethane | | <0.050 | <0.050 | RPD-NA | ug/g | N/A | 40 | 10-JUN-20 |
| Vinyl chloride | | <0.020 | <0.020 | RPD-NA | ug/g | N/A | 40 | 10-JUN-20 |
| **WG3335898-2 LCS** | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | | | 106.0 | | % | | 60-130 | 10-JUN-20 |
| 1,1,2,2-Tetrachloroethane | | | 117.2 | | % | | 60-130 | 10-JUN-20 |
| 1,1,1-Trichloroethane | | | 111.8 | | % | | 60-130 | 10-JUN-20 |
| 1,1,2-Trichloroethane | | | 114.3 | | % | | 60-130 | 10-JUN-20 |
| 1,1-Dichloroethane | | | 123.3 | | % | | 60-130 | 10-JUN-20 |
| 1,1-Dichloroethylene | | | 102.9 | | % | | 60-130 | 10-JUN-20 |
| 1,2-Dibromoethane | | | 110.8 | | % | | 70-130 | 10-JUN-20 |
| 1,2-Dichlorobenzene | | | 104.1 | | % | | 70-130 | 10-JUN-20 |
| 1,2-Dichloroethane | | | 117.7 | | % | | 60-130 | 10-JUN-20 |
| 1,2-Dichloropropane | | | 115.6 | | % | | 70-130 | 10-JUN-20 |
| 1,3-Dichlorobenzene | | | 102.2 | | % | | 70-130 | 10-JUN-20 |
| 1,4-Dichlorobenzene | | | 103.2 | | % | | 70-130 | 10-JUN-20 |
| Acetone | | | 132.1 | | % | | 60-140 | 10-JUN-20 |
| Benzene | | | 119.8 | | % | | 70-130 | 10-JUN-20 |
| Bromodichloromethane | | | 122.0 | | % | | 50-140 | 10-JUN-20 |
| Bromoform | | | 107.4 | | % | | 70-130 | 10-JUN-20 |
| Bromomethane | | | 121.2 | | % | | 50-140 | 10-JUN-20 |
| Carbon tetrachloride | | | 109.7 | | % | | 70-130 | 10-JUN-20 |
| Chlorobenzene | | | 115.3 | | % | | 70-130 | 10-JUN-20 |
| Chloroform | | | 120.9 | | % | | 70-130 | 10-JUN-20 |
| cis-1,2-Dichloroethylene | | | 112.4 | | % | | 70-130 | 10-JUN-20 |
| cis-1,3-Dichloropropene | | | 105.7 | | % | | 70-130 | 10-JUN-20 |
| Dibromochloromethane | | | 98.5 | | % | | 60-130 | 10-JUN-20 |
| Dichlorodifluoromethane | | | 73.2 | | % | | 50-140 | 10-JUN-20 |
| Ethylbenzene | | | 106.4 | | % | | 70-130 | 10-JUN-20 |
| n-Hexane | | | 99.97 | | % | | 70-130 | 10-JUN-20 |
| Methylene Chloride | | | 118.8 | | % | | 70-130 | 10-JUN-20 |
| MTBE | | | 111.4 | | % | | 70-130 | 10-JUN-20 |
| m+p-Xylenes | | | 107.2 | | | | 70-130 | |

# Quality Control Report



Client: WSP Canada Group Limited
610 Chartwell Road Suite 300
Oakville ON L6J 4A5
Contact: MADLOOL ALSABAK

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **VOC-511-HS-WT** | **Soil** | | | | | | | |
| **Batch R5113936** | | | | | | | | |
| **WG3335898-2 LCS** | | | | | | | | |
| m+p-Xylenes | | | 107.2 | | % | | 70-130 | 10-JUN-20 |
| Methyl Ethyl Ketone | | | 122.2 | | % | | 60-140 | 10-JUN-20 |
| Methyl Isobutyl Ketone | | | 117.5 | | % | | 60-140 | 10-JUN-20 |
| o-Xylene | | | 116.5 | | % | | 70-130 | 10-JUN-20 |
| Styrene | | | 106.8 | | % | | 70-130 | 10-JUN-20 |
| Tetrachloroethylene | | | 107.1 | | % | | 60-130 | 10-JUN-20 |
| Toluene | | | 114.4 | | % | | 70-130 | 10-JUN-20 |
| trans-1,2-Dichloroethylene | | | 101.3 | | % | | 60-130 | 10-JUN-20 |
| trans-1,3-Dichloropropene | | | 107.1 | | % | | 70-130 | 10-JUN-20 |
| Trichloroethylene | | | 111.6 | | % | | 60-130 | 10-JUN-20 |
| Trichlorofluoromethane | | | 92.5 | | % | | 50-140 | 10-JUN-20 |
| Vinyl chloride | | | 105.3 | | % | | 60-140 | 10-JUN-20 |
| **WG3335898-1 MB** | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | | | <0.050 | | ug/g | | 0.05 | 10-JUN-20 |
| 1,1,2,2-Tetrachloroethane | | | <0.050 | | ug/g | | 0.05 | 10-JUN-20 |
| 1,1,1-Trichloroethane | | | <0.050 | | ug/g | | 0.05 | 10-JUN-20 |
| 1,1,2-Trichloroethane | | | <0.050 | | ug/g | | 0.05 | 10-JUN-20 |
| 1,1-Dichloroethane | | | <0.050 | | ug/g | | 0.05 | 10-JUN-20 |
| 1,1-Dichloroethylene | | | <0.050 | | ug/g | | 0.05 | 10-JUN-20 |
| 1,2-Dibromoethane | | | <0.050 | | ug/g | | 0.05 | 10-JUN-20 |
| 1,2-Dichlorobenzene | | | <0.050 | | ug/g | | 0.05 | 10-JUN-20 |
| 1,2-Dichloroethane | | | <0.050 | | ug/g | | 0.05 | 10-JUN-20 |
| 1,2-Dichloropropane | | | <0.050 | | ug/g | | 0.05 | 10-JUN-20 |
| 1,3-Dichlorobenzene | | | <0.050 | | ug/g | | 0.05 | 10-JUN-20 |
| 1,4-Dichlorobenzene | | | <0.050 | | ug/g | | 0.05 | 10-JUN-20 |
| Acetone | | | <0.50 | | ug/g | | 0.5 | 10-JUN-20 |
| Benzene | | | <0.0068 | | ug/g | | 0.0068 | 10-JUN-20 |
| Bromodichloromethane | | | <0.050 | | ug/g | | 0.05 | 10-JUN-20 |
| Bromoform | | | <0.050 | | ug/g | | 0.05 | 10-JUN-20 |
| Bromomethane | | | <0.050 | | ug/g | | 0.05 | 10-JUN-20 |
| Carbon tetrachloride | | | <0.050 | | ug/g | | 0.05 | 10-JUN-20 |
| Chlorobenzene | | | <0.050 | | ug/g | | 0.05 | 10-JUN-20 |
| Chloroform | | | <0.050 | | ug/g | | 0.05 | 10-JUN-20 |
| cis-1,2-Dichloroethylene | | | <0.050 | | ug/g | | 0.05 | 10-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
610 Chartwell Road Suite 300
Oakville ON L6J 4A5
Contact: MADLOOL ALSABAK

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **VOC-511-HS-WT** | **Soil** | | | | | | | |
| **Batch R5113936** | | | | | | | | |
| **WG3335898-1 MB** | | | | | | | | |
| cis-1,3-Dichloropropene | | | <0.030 | | ug/g | | 0.03 | 10-JUN-20 |
| Dibromochloromethane | | | <0.050 | | ug/g | | 0.05 | 10-JUN-20 |
| Dichlorodifluoromethane | | | <0.050 | | ug/g | | 0.05 | 10-JUN-20 |
| Ethylbenzene | | | <0.018 | | ug/g | | 0.018 | 10-JUN-20 |
| n-Hexane | | | <0.050 | | ug/g | | 0.05 | 10-JUN-20 |
| Methylene Chloride | | | <0.050 | | ug/g | | 0.05 | 10-JUN-20 |
| MTBE | | | <0.050 | | ug/g | | 0.05 | 10-JUN-20 |
| m+p-Xylenes | | | <0.030 | | ug/g | | 0.03 | 10-JUN-20 |
| Methyl Ethyl Ketone | | | <0.50 | | ug/g | | 0.5 | 10-JUN-20 |
| Methyl Isobutyl Ketone | | | <0.50 | | ug/g | | 0.5 | 10-JUN-20 |
| o-Xylene | | | <0.020 | | ug/g | | 0.02 | 10-JUN-20 |
| Styrene | | | <0.050 | | ug/g | | 0.05 | 10-JUN-20 |
| Tetrachloroethylene | | | <0.050 | | ug/g | | 0.05 | 10-JUN-20 |
| Toluene | | | <0.080 | | ug/g | | 0.08 | 10-JUN-20 |
| trans-1,2-Dichloroethylene | | | <0.050 | | ug/g | | 0.05 | 10-JUN-20 |
| trans-1,3-Dichloropropene | | | <0.030 | | ug/g | | 0.03 | 10-JUN-20 |
| Trichloroethylene | | | <0.010 | | ug/g | | 0.01 | 10-JUN-20 |
| Trichlorofluoromethane | | | <0.050 | | ug/g | | 0.05 | 10-JUN-20 |
| Vinyl chloride | | | <0.020 | | ug/g | | 0.02 | 10-JUN-20 |
| Surrogate: 1,4-Difluorobenzene | | | 110.4 | | % | | 50-140 | 10-JUN-20 |
| Surrogate: 4-Bromofluorobenzene | | | 91.8 | | % | | 50-140 | 10-JUN-20 |
| **WG3335898-5 MS** | | **WG3335898-3** | | | | | | |
| 1,1,1,2-Tetrachloroethane | | | 110.2 | | % | | 50-140 | 10-JUN-20 |
| 1,1,2,2-Tetrachloroethane | | | 119.7 | | % | | 50-140 | 10-JUN-20 |
| 1,1,1-Trichloroethane | | | 114.3 | | % | | 50-140 | 10-JUN-20 |
| 1,1,2-Trichloroethane | | | 120.3 | | % | | 50-140 | 10-JUN-20 |
| 1,1-Dichloroethane | | | 127.6 | | % | | 50-140 | 10-JUN-20 |
| 1,1-Dichloroethylene | | | 105.2 | | % | | 50-140 | 10-JUN-20 |
| 1,2-Dibromoethane | | | 117.1 | | % | | 50-140 | 10-JUN-20 |
| 1,2-Dichlorobenzene | | | 106.0 | | % | | 50-140 | 10-JUN-20 |
| 1,2-Dichloroethane | | | 122.2 | | % | | 50-140 | 10-JUN-20 |
| 1,2-Dichloropropane | | | 119.7 | | % | | 50-140 | 10-JUN-20 |
| 1,3-Dichlorobenzene | | | 103.9 | | % | | 50-140 | 10-JUN-20 |
| 1,4-Dichlorobenzene | | | 104.6 | | % | | 50-140 | 10-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
610 Chartwell Road Suite 300
Oakville ON L6J 4A5
Contact: MADLOOL ALSABAK

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **VOC-511-HS-WT** | **Soil** | | | | | | | |
| **Batch R5113936** | | | | | | | | |
| **WG3335898-5 MS** | | **WG3335898-3** | | | | | | |
| Acetone | | | 144.2 | MES | % | | 50-140 | 10-JUN-20 |
| Benzene | | | 123.5 | | % | | 50-140 | 10-JUN-20 |
| Bromodichloromethane | | | 126.7 | | % | | 50-140 | 10-JUN-20 |
| Bromoform | | | 113.1 | | % | | 50-140 | 10-JUN-20 |
| Bromomethane | | | 121.5 | | % | | 50-140 | 10-JUN-20 |
| Carbon tetrachloride | | | 112.1 | | % | | 50-140 | 10-JUN-20 |
| Chlorobenzene | | | 118.6 | | % | | 50-140 | 10-JUN-20 |
| Chloroform | | | 125.2 | | % | | 50-140 | 10-JUN-20 |
| cis-1,2-Dichloroethylene | | | 116.9 | | % | | 50-140 | 10-JUN-20 |
| cis-1,3-Dichloropropene | | | 103.5 | | % | | 50-140 | 10-JUN-20 |
| Dibromochloromethane | | | 102.8 | | % | | 50-140 | 10-JUN-20 |
| Dichlorodifluoromethane | | | 74.5 | | % | | 50-140 | 10-JUN-20 |
| Ethylbenzene | | | 108.8 | | % | | 50-140 | 10-JUN-20 |
| n-Hexane | | | 102.6 | | % | | 50-140 | 10-JUN-20 |
| Methylene Chloride | | | 123.3 | | % | | 50-140 | 10-JUN-20 |
| MTBE | | | 115.9 | | % | | 50-140 | 10-JUN-20 |
| m+p-Xylenes | | | 109.4 | | % | | 50-140 | 10-JUN-20 |
| Methyl Ethyl Ketone | | | 113.0 | | % | | 50-140 | 10-JUN-20 |
| Methyl Isobutyl Ketone | | | 124.1 | | % | | 50-140 | 10-JUN-20 |
| o-Xylene | | | 119.5 | | % | | 50-140 | 10-JUN-20 |
| Styrene | | | 109.6 | | % | | 50-140 | 10-JUN-20 |
| Tetrachloroethylene | | | 108.8 | | % | | 50-140 | 10-JUN-20 |
| Toluene | | | 117.7 | | % | | 50-140 | 10-JUN-20 |
| trans-1,2-Dichloroethylene | | | 102.3 | | % | | 50-140 | 10-JUN-20 |
| trans-1,3-Dichloropropene | | | 104.8 | | % | | 50-140 | 10-JUN-20 |
| Trichloroethylene | | | 116.4 | | % | | 50-140 | 10-JUN-20 |
| Trichlorofluoromethane | | | 94.5 | | % | | 50-140 | 10-JUN-20 |
| Vinyl chloride | | | 107.1 | | % | | 50-140 | 10-JUN-20 |

# Quality Control Report

Workorder: L2456363 Report Date: 12-JUN-20

Client: WSP Canada Group Limited
610 Chartwell Road Suite 300
Oakville ON L6J 4A5
Contact: MADLOOL ALSABAK



**Legend:**

| | |
|---|---|
| Limit | ALS Control Limit (Data Quality Objectives) |
| DUP | Duplicate |
| RPD | Relative Percent Difference |
| N/A | Not Available |
| LCS | Laboratory Control Sample |
| SRM | Standard Reference Material |
| MS | Matrix Spike |
| MSD | Matrix Spike Duplicate |
| ADE | Average Desorption Efficiency |
| MB | Method Blank |
| IRM | Internal Reference Material |
| CRM | Certified Reference Material |
| CCV | Continuing Calibration Verification |
| CVS | Calibration Verification Standard |
| LCSD | Laboratory Control Sample Duplicate |

**Sample Parameter Qualifier Definitions:**

| Qualifier | Description |
|---|---|
| J | Duplicate results and limits are expressed in terms of absolute difference. |
| MES | Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME). |
| RPD-NA | Relative Percent Difference Not Available due to result(s) being less than detection limit. |

**Hold Time Exceedances:**

All test results reported with this submission were conducted within ALS recommended hold times.

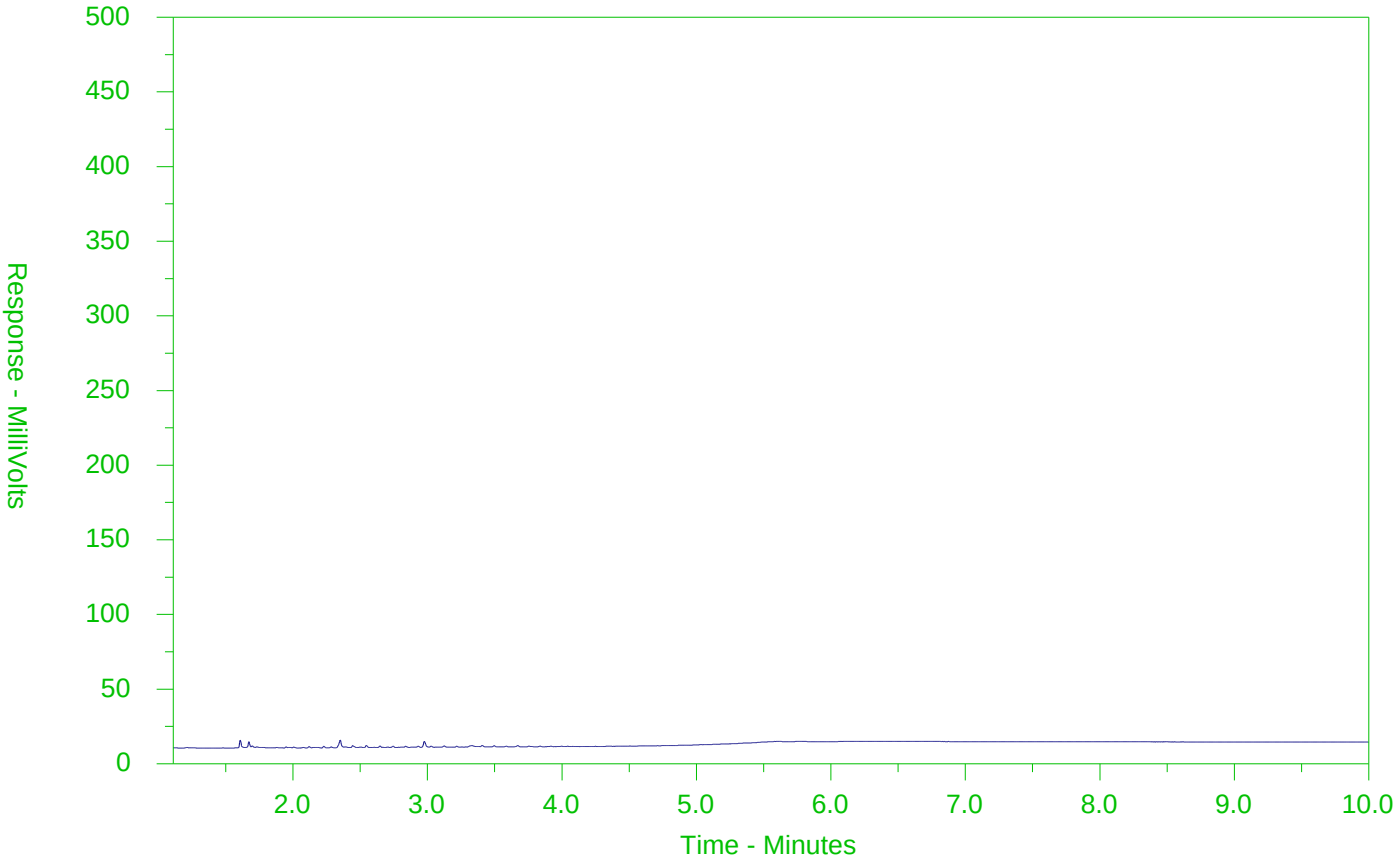
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

# CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2456363-3
Client Sample ID: BH1-SS3




| ←F2→ | ←F3→ | ←F4→ | |
|---|---|---|---|
| nC10 | nC16 | nC34 | nC50 |
| 174°C | 287°C | 481°C | 575°C |
| 346°F | 549°F | 898°F | 1067°F |
| Gasoline → | ← Motor Oils/Lube Oils/Grease → | | |
| ← Diesel/Jet Fuels → | | | |

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.

# ALS Environmental

www.alsglobal.com

## Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L2456363-COFC

COC Number: 17 - 801495

Page 1 of 1

| Report To | Contact and company name below will appear on the final report |
|---|---|
| Company: | WSP |
| Contact: | Madlool Kabahar / Anne Pattison |
| Phone: | 226-229-7551 / 905-599-9034 |
| Company address below will appear on the final report | |
| Street: | 1010 Chartwell Rd |
| City/Province: | Oakville ON |
| Postal Code: | |
| **Invoice To** | Same as Report To [X] YES [ ] NO |
| | Copy of Invoice with Report [ ] YES [X] NO |
| Company: | |
| Contact: | |

**Report Format / Distribution**

Select Report Format: [X] PDF [X] EXCEL [ ] EDD (DIGITAL)

Quality Control (QC) Report with Report [X] YES [ ] NO

[X] Compare Results to Criteria on Report - provide details below if box checked

Select Distribution: [X] EMAIL [ ] MAIL [ ] FAX

Email 1 or Fax: valyn.bernard@wsp.com

Email 2: anne.pattison@wsp.com

Email 3: justin.serroul@wsp.com

**Invoice Distribution**

Select Invoice Distribution: [X] EMAIL [ ] MAIL [ ] FAX

Email 1 or Fax: valyn.bernard@wsp.com

Email 2: Payables.ontario@wsp.com

**Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)**

Regular [R] [X] Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days): 4 day [P4-20%] [ ] | 3 day [P3-25%] [ ] | 2 day [P2-50%] [ ]

EMERGENCY: 1 Business day [E - 100%] [ ] | Same Day, Weekend or Statutory holiday [E2 -200%] (Laboratory opening fees may apply) ] [ ]

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm

For tests that can not be performed according to the service level selected, you will be contacted.

**Project Information**

ALS Account # / Quote #:

Job #: 19M-01888-00-CONTAM

PO / AFE:

LSD:

**Oil and Gas Required Fields (client use)**

AFE/Cost Center: PO#

Major/Minor Code: Routing Code:

Requisitioner:

Location:

ALS Lab Work Order # (lab use only): L2456363

ALS Contact: Emily Hansen Sampler: M.A.

**Analysis Request**

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

| ALS Sample # (lab use only) | Sample Identification and/or Coordinates (This description will appear on the report) | Date (dd-mmm-yy) | Time (hh:mm) | Sample Type | NUMBER OF CONTAINERS | Metals & Inorganics | pHTs | PHCs F1-F4 | VOCs | F1 BTEX | F2-F4 | TCLP PAHs | TCLP Metals & Inorganics | TCLP PCBs | TCLP VOC | Grain Size (75 µm) | SAMPLES ON HOLD | SUSPECTED HAZARD (see Special Instructions) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | BH1-SS1 | 03-Jun-20 | 0??? | Soil | 2 | X | X | | | | | | | | | | | |
| | DUP2 | | | | 2 | X | X | | | | | | | | | | ✓ | |
| | BH1-SS3 | | | | 3 | | | X | X | | | | | | | X | ✓ | |
| | BH1-SS4 | | | | 2 | X | X | | | | | | | | | | ✓ | |
| | BH1-SS5 | | | | 3 | | | X | X | | | | | | | | ✓ | |
| | DUP1 | | | | 2 | | | | | X | X | | | | | | ✓ | |
| | TCLP-BH1-SS7 | | | | 3 | | | | | | | X | X | X | X | | ✓ | |

*Also report to derek.stewart@wsp.com

**Drinking Water (DW) Samples[1] (client use)**

Are samples taken from a Regulated DW System? [ ] YES [ ] NO

Are samples for human consumption/ use? [ ] YES [ ] NO

**Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)**

Note: only hold grain size from BH1-SS3 (run PHC F1-4 & VOC)

Reg 153 04 Table 1 & Reg 340 TCLP

**SAMPLE CONDITION AS RECEIVED (lab use only)**

Frozen [ ] | SIF Observations Yes [ ] No [ ]

Ice Packs [X] Ice Cubes [ ] | Custody seal intact Yes [ ] No [ ]

Cooling Initiated [ ]

INITIAL COOLER TEMPERATURES °C | FINAL COOLER TEMPERATURES °C

5.4

**SHIPMENT RELEASE (client use)**

Released by: Anne Pattison | Date: June 4 2020 | Time: 11:38

**INITIAL SHIPMENT RECEPTION (lab use only)**

Received by: | Date: | Time:

**FINAL SHIPMENT RECEPTION (lab use only)**

Received by: | Date: 6/4/20 | Time: 125

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

JUNE 2018 FRONT

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

WSP Canada Group Limited
ATTN: Anne Pattison
100 Commerce Valley Drive West
Thornhill ON L3T 0A1

Date Received: 19-JUN-20
Report Date: 30-JUN-20 15:07 (MT)
Version: FINAL

Client Phone: 905-882-1100

# Certificate of Analysis

## Lab Work Order #: L2463602

Project P.O. #: NOT SUBMITTED
Job Reference: 19M-01888-00-CONTAM
C of C Numbers: 17-802001
Legal Site Desc:

Emily Hansen
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

# ANALYTICAL REPORT

## Summary of Guideline Exceedances

| Guideline ALS ID | Client ID | Grouping | Analyte | Result | Guideline Limit | Unit |
|---|---|---|---|---|---|---|
| **Ontario Toronto Sanitary Discharge Sewer By-Law 100-2016 (FEB 4,2016) - Ontario Toronto Sanitary Discharge Sewer By-Law** | | | | | | |
| L2463602-4 | BH2 | Physical Tests | Total Suspended Solids | 533 | 350 | mg/L |
| **Ontario Toronto Sanitary Discharge Sewer By-Law 100-2016 (FEB 4,2016) - Ontario Toronto Storm Sewer By-Law** | | | | | | |
| L2463602-1 | BH7 | Total Metals | Manganese (Mn)-Total | 0.133 | 0.05 | mg/L |
| L2463602-3 | BH5 | Physical Tests | Total Suspended Solids | 39.5 | 15 | mg/L |
| L2463602-4 | BH2 | Physical Tests | Total Suspended Solids | 533 | 15 | mg/L |
| | | Anions and Nutrients | Phosphorus, Total | 0.907 | 0.4 | mg/L |
| | | Total Metals | Manganese (Mn)-Total | 1.48 | 0.05 | mg/L |
| | | | Zinc (Zn)-Total | 0.043 | 0.04 | mg/L |
| L2463602-6 | BH1 | Physical Tests | Total Suspended Solids | 149 | 15 | mg/L |
| | | Total Metals | Manganese (Mn)-Total | 0.136 | 0.05 | mg/L |
| | | Aggregate Organics | Phenols (4AAP) | 0.0115 | 0.008 | mg/L |

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

# ANALYTICAL REPORT

## Physical Tests - WATER

| Analyte | Unit | Guide Limits #1 | Guide Limits #2 | Lab ID | Sample Date | Sample ID | L2463602-1 | L2463602-2 | L2463602-3 | L2463602-4 | L2463602-6 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 19-JUN-20 | BH7 | 19-JUN-20 | DUP01 | 19-JUN-20 | BH5 | 19-JUN-20 | BH2 | 19-JUN-20 | BH1 |
| Conductivity | mS/cm | - | - | | 2.08 | | 2.11 | | 1.10 | | 7.87 | | 5.52 | |
| pH | pH units | 6.00-11.5 | 6.0-9.5 | | 7.35 | HTD | 7.18 | HTD | 7.69 | HTD | 7.17 | HTD | 7.59 | HTD |
| Total Suspended Solids | mg/L | 350 | 15 | | 13.0 | | | | 39.5 | | 533 | DLHC | 149 | |

**Guide Limit #1: Ontario Toronto Sanitary Discharge Sewer By-Law**
**Guide Limit #2: Ontario Toronto Storm Sewer By-Law**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

# ANALYTICAL REPORT

## Anions and Nutrients - WATER

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Lab ID | L2463602-1 | L2463602-2 | L2463602-3 | L2463602-4 | L2463602-6 |
| | | | Sample Date | 19-JUN-20 | 19-JUN-20 | 19-JUN-20 | 19-JUN-20 | 19-JUN-20 |
| | | | Sample ID | BH7 | DUP01 | BH5 | BH2 | BH1 |
| Analyte | Unit | Guide Limits #1 | #2 | | | | | |
| Chloride (Cl) | mg/L | - | - | 271 DLDS | 286 DLDS | 32.5 DLDS | 3560 DLDS | 1390 DLDS |
| Fluoride (F) | mg/L | 10 | - | <0.10 DLDS | | <0.10 DLDS | <0.40 DLDS | <0.40 DLDS |
| Total Kjeldahl Nitrogen | mg/L | 100 | - | 0.21 | | 0.34 | 18.6 DLM | 0.66 |
| Phosphorus, Total | mg/L | 10 | 0.4 | 0.0071 | | 0.0366 | 0.907 | 0.173 |

**Guide Limit #1: Ontario Toronto Sanitary Discharge Sewer By-Law**
**Guide Limit #2: Ontario Toronto Storm Sewer By-Law**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

# ANALYTICAL REPORT

## Cyanides - WATER

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Lab ID | L2463602-1 | L2463602-2 | L2463602-3 | L2463602-4 | L2463602-6 |
| | | | Sample Date | 19-JUN-20 | 19-JUN-20 | 19-JUN-20 | 19-JUN-20 | 19-JUN-20 |
| | | | Sample ID | BH7 | DUP01 | BH5 | BH2 | BH1 |
| | | Guide Limits | | | | | | |
| Analyte | Unit | #1 | #2 | | | | | |
| Cyanide, Weak Acid Diss | ug/L | - | - | <2.0 | <2.0 | <2.0 | <2.0 | <2.0 |
| Cyanide, Total | mg/L | 2 | 0.02 | <0.0020 | | <0.0020 | 0.0035 | <0.0020 |

**Guide Limit #1: Ontario Toronto Sanitary Discharge Sewer By-Law**
**Guide Limit #2: Ontario Toronto Storm Sewer By-Law**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

# ANALYTICAL REPORT

## Bacteriological Tests - WATER

| Analyte | Unit | Guide Limits #1 | Guide Limits #2 | Lab ID: L2463602-1 / Sample Date: 19-JUN-20 / Sample ID: BH7 | Lab ID: L2463602-3 / Sample Date: 19-JUN-20 / Sample ID: BH5 | Lab ID: L2463602-4 / Sample Date: 19-JUN-20 / Sample ID: BH2 | Lab ID: L2463602-6 / Sample Date: 19-JUN-20 / Sample ID: BH1 |
|---|---|---|---|---|---|---|---|
| E. Coli | CFU/100mL | - | 200 | 0 | 0 | 80 DLM | 0 |

**Guide Limit #1: Ontario Toronto Sanitary Discharge Sewer By-Law**
**Guide Limit #2: Ontario Toronto Storm Sewer By-Law**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

# ANALYTICAL REPORT

## Total Metals - WATER

| Analyte | Unit | Guide Limits #1 | Guide Limits #2 | Lab ID: L2463602-1 / Sample Date: 19-JUN-20 / Sample ID: BH7 | Lab ID: L2463602-3 / Sample Date: 19-JUN-20 / Sample ID: BH5 | Lab ID: L2463602-4 / Sample Date: 19-JUN-20 / Sample ID: BH2 | Lab ID: L2463602-6 / Sample Date: 19-JUN-20 / Sample ID: BH1 |
|---|---|---|---|---|---|---|---|
| Aluminum (Al)-Total | mg/L | 50 | - | 0.214 DLHC | 1.03 DLHC | 5.87 DLHC | 2.71 DLHC |
| Antimony (Sb)-Total | mg/L | 5 | - | <0.0010 DLHC | <0.0010 DLHC | <0.0010 DLHC | <0.0010 DLHC |
| Arsenic (As)-Total | mg/L | 1 | 0.02 | <0.0010 DLHC | 0.0013 DLHC | 0.0032 DLHC | 0.0027 DLHC |
| Cadmium (Cd)-Total | mg/L | 0.7 | 0.008 | <0.000050 DLHC | <0.000050 DLHC | 0.000109 DLHC | <0.000050 DLHC |
| Chromium (Cr)-Total | mg/L | 4 | 0.08 | <0.0050 DLHC | <0.0050 DLHC | 0.0102 DLHC | 0.0083 DLHC |
| Cobalt (Co)-Total | mg/L | 5 | - | 0.0011 DLHC | <0.0010 DLHC | 0.0050 DLHC | 0.0015 DLHC |
| Copper (Cu)-Total | mg/L | 2 | 0.04 | <0.0050 DLHC | <0.0050 DLHC | 0.0128 DLHC | <0.0050 DLHC |
| Lead (Pb)-Total | mg/L | 1 | 0.12 | <0.00050 DLHC | 0.00102 DLHC | 0.0141 DLHC | 0.00304 DLHC |
| Manganese (Mn)-Total | mg/L | 5 | 0.05 | 0.133 DLHC | 0.0458 DLHC | 1.48 DLHC | 0.136 DLHC |
| Mercury (Hg)-Total | mg/L | 0.01 | 0.0004 | <0.0000050 SRU | 0.0000164 SRU | 0.0000148 SRU | 0.0000126 SRU |
| Molybdenum (Mo)-Total | mg/L | 5 | - | 0.00251 DLHC | 0.00349 DLHC | 0.00113 DLHC | 0.0123 DLHC |
| Nickel (Ni)-Total | mg/L | 2 | 0.08 | <0.0050 DLHC | <0.0050 DLHC | 0.0098 DLHC | 0.0059 DLHC |
| Selenium (Se)-Total | mg/L | 1 | 0.02 | <0.00050 DLHC | 0.00051 DLHC | <0.00050 DLHC | <0.00050 DLHC |
| Silver (Ag)-Total | mg/L | 5 | 0.12 | <0.00050 DLHC | <0.00050 DLHC | <0.00050 DLHC | <0.00050 DLHC |
| Tin (Sn)-Total | mg/L | 5 | - | <0.0010 DLHC | <0.0010 DLHC | <0.0010 DLHC | <0.0010 DLHC |
| Titanium (Ti)-Total | mg/L | 5 | - | 0.0076 DLHC | <0.040 DLUI | 0.217 DLHC | 0.0649 DLHC |
| Zinc (Zn)-Total | mg/L | 2 | 0.04 | <0.030 DLHC | <0.030 DLHC | 0.043 DLHC | <0.030 DLHC |

**Guide Limit #1: Ontario Toronto Sanitary Discharge Sewer By-Law**
**Guide Limit #2: Ontario Toronto Storm Sewer By-Law**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

# ANALYTICAL REPORT

## Dissolved Metals - WATER

| Analyte | Unit | Guide Limits #1 | Guide Limits #2 | Lab ID | L2463602-1 | L2463602-2 | L2463602-3 | L2463602-4 | L2463602-6 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sample Date | 19-JUN-20 | 19-JUN-20 | 19-JUN-20 | 19-JUN-20 | 19-JUN-20 |
| | | | | Sample ID | BH7 | DUP01 | BH5 | BH2 | BH1 |
| Dissolved Mercury Filtration Location | | - | - | | FIELD | FIELD | FIELD | FIELD | FIELD |
| Dissolved Metals Filtration Location | | - | - | | FIELD | FIELD | FIELD | FIELD | FIELD |
| Antimony (Sb)-Dissolved | ug/L | 5000 | - | | 0.13 | 0.13 | 0.28 | <1.0 DLHC | <1.0 DLHC |
| Arsenic (As)-Dissolved | ug/L | 1000 | 20 | | 0.52 | 0.53 | 0.94 | 1.2 DLHC | <1.0 DLHC |
| Barium (Ba)-Dissolved | ug/L | - | - | | 84.1 | 81.3 | 131 | 1270 DLHC | 76.7 DLHC |
| Beryllium (Be)-Dissolved | ug/L | - | - | | <0.10 | <0.10 | <0.10 | <1.0 DLHC | <1.0 DLHC |
| Boron (B)-Dissolved | ug/L | - | - | | 61 | 60 | 53 | 100 DLHC | 150 DLHC |
| Cadmium (Cd)-Dissolved | ug/L | 700 | 8 | | 0.020 | 0.016 | <0.010 | <0.050 DLHC | <0.050 DLHC |
| Chromium (Cr)-Dissolved | ug/L | 4000 | 80 | | <0.50 | <0.50 | <0.50 | <5.0 DLHC | <5.0 DLHC |
| Cobalt (Co)-Dissolved | ug/L | 5000 | - | | 0.98 | 0.98 | 0.26 | <1.0 DLHC | <1.0 DLHC |
| Copper (Cu)-Dissolved | ug/L | 2000 | 40 | | 1.32 | 1.56 | 0.89 | <2.0 DLHC | <2.0 DLHC |
| Lead (Pb)-Dissolved | ug/L | 1000 | 120 | | <0.050 | <0.050 | <0.050 | <0.50 DLHC | <0.50 DLHC |
| Mercury (Hg)-Dissolved | ug/L | 10 | 0.4 | | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 |
| Molybdenum (Mo)-Dissolved | ug/L | 5000 | - | | 2.58 | 2.50 | 4.47 | 0.77 DLHC | 15.3 DLHC |
| Nickel (Ni)-Dissolved | ug/L | 2000 | 80 | | 2.22 | 2.26 | 1.01 | <5.0 DLHC | <5.0 DLHC |
| Selenium (Se)-Dissolved | ug/L | 1000 | 20 | | 0.097 | 0.113 | 1.03 | <0.50 DLHC | <0.50 DLHC |
| Silver (Ag)-Dissolved | ug/L | 5000 | 120 | | <0.050 | <0.050 | <0.050 | <0.50 DLHC | <0.50 DLHC |
| Sodium (Na)-Dissolved | ug/L | - | - | | 170000 DLHC | 140000 DLHC | 50300 | 1470000 DLHC | 1090000 DLHC |
| Thallium (Tl)-Dissolved | ug/L | - | - | | 0.026 | 0.027 | 0.023 | <0.10 DLHC | 0.13 DLHC |
| Uranium (U)-Dissolved | ug/L | - | - | | 1.31 | 1.31 | 2.27 | 0.32 DLHC | 3.11 DLHC |
| Vanadium (V)-Dissolved | ug/L | - | - | | 0.70 | 0.70 | 1.21 | <5.0 DLHC | <5.0 DLHC |
| Zinc (Zn)-Dissolved | ug/L | 2000 | 40 | | 3.1 | 3.4 | <1.0 | <10 DLHC | <10 DLHC |

**Guide Limit #1: Ontario Toronto Sanitary Discharge Sewer By-Law**
**Guide Limit #2: Ontario Toronto Storm Sewer By-Law**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

# ANALYTICAL REPORT

## Speciated Metals - WATER

| | | | | Lab ID | L2463602-1 | L2463602-2 | L2463602-3 | L2463602-4 | L2463602-6 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sample Date | 19-JUN-20 | 19-JUN-20 | 19-JUN-20 | 19-JUN-20 | 19-JUN-20 |
| | | | | Sample ID | BH7 | DUP01 | BH5 | BH2 | BH1 |
| | | Guide Limits | | | | | | | |
| Analyte | Unit | #1 | #2 | | | | | | |
| Chromium, Hexavalent | mg/L | 2 | 0.04 | <0.00050 | | <0.00050 RRR | <0.00050 RRR | <0.00050 RRR | |
| Chromium, Hexavalent | ug/L | 2000 | 40 | <0.50 RRR | <0.50 RRR | <0.50 | <0.50 | <0.50 | |

**Guide Limit #1: Ontario Toronto Sanitary Discharge Sewer By-Law**
**Guide Limit #2: Ontario Toronto Storm Sewer By-Law**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

# ANALYTICAL REPORT

## Aggregate Organics - WATER

| Analyte | Unit | Guide Limits #1 | Guide Limits #2 | Lab ID L2463602-1 / Sample Date 19-JUN-20 / Sample ID BH7 | Lab ID L2463602-3 / Sample Date 19-JUN-20 / Sample ID BH5 | Lab ID L2463602-4 / Sample Date 19-JUN-20 / Sample ID BH2 | Lab ID L2463602-6 / Sample Date 19-JUN-20 / Sample ID BH1 |
|---|---|---|---|---|---|---|---|
| BOD | mg/L | 300 | 15 | <3.0 BODL | <3.0 BODL | 6.4 | <3.0 BODL |
| Oil and Grease, Total | mg/L | - | - | <5.0 | <5.0 | <5.0 | <5.0 |
| Animal/Veg Oil & Grease | mg/L | 150 | - | <5.0 | <5.0 | <5.0 | <5.0 |
| Mineral Oil and Grease | mg/L | 15 | - | <2.5 | <2.5 | <2.5 | <2.5 |
| Phenols (4AAP) | mg/L | 1.0 | 0.008 | 0.0023 | 0.0014 | 0.0015 | 0.0115 |

**Guide Limit #1: Ontario Toronto Sanitary Discharge Sewer By-Law**
**Guide Limit #2: Ontario Toronto Storm Sewer By-Law**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

## Volatile Organic Compounds - WATER

| | | | | Lab ID | L2463602-1 | L2463602-2 | L2463602-3 | L2463602-4 | L2463602-6 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sample Date | 19-JUN-20 | 19-JUN-20 | 19-JUN-20 | 19-JUN-20 | 19-JUN-20 |
| | | | | Sample ID | BH7 | DUP01 | BH5 | BH2 | BH1 |
| | | Guide Limits | | | | | | | |
| Analyte | Unit | #1 | #2 | | | | | | |
| Acetone | ug/L | - | - | | <30 | <30 | | <30 | <30 |
| Benzene | ug/L | 10 | 2 | | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 |
| Bromodichloromethane | ug/L | - | - | | <2.0 | <2.0 | | <2.0 | <2.0 |
| Bromoform | ug/L | - | - | | <5.0 | <5.0 | | <5.0 | <5.0 |
| Bromomethane | ug/L | - | - | | <0.50 | <0.50 | | <0.50 | <0.50 |
| Carbon tetrachloride | ug/L | - | - | | <0.20 | <0.20 | | <0.20 | <0.20 |
| Chlorobenzene | ug/L | - | - | | <0.50 | <0.50 | | <0.50 | <0.50 |
| Dibromochloromethane | ug/L | - | - | | <2.0 | <2.0 | | <2.0 | <2.0 |
| Chloroform | ug/L | 40 | 2 | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| 1,2-Dibromoethane | ug/L | - | - | | <0.20 | <0.20 | | <0.20 | <0.20 |
| 1,2-Dichlorobenzene | ug/L | 50 | 5.6 | | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 |
| 1,3-Dichlorobenzene | ug/L | - | - | | <0.50 | <0.50 | | <0.50 | <0.50 |
| 1,4-Dichlorobenzene | ug/L | 80 | 6.8 | | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 |
| Dichlorodifluoromethane | ug/L | - | - | | <2.0 | <2.0 | | <2.0 | <2.0 |
| 1,1-Dichloroethane | ug/L | - | - | | <0.50 | <0.50 | | <0.50 | <0.50 |
| 1,2-Dichloroethane | ug/L | - | - | | <0.50 | <0.50 | | <0.50 | <0.50 |
| 1,1-Dichloroethylene | ug/L | - | - | | <0.50 | <0.50 | | <0.50 | <0.50 |
| cis-1,2-Dichloroethylene | ug/L | 4000 | 5.6 | | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 |
| trans-1,2-Dichloroethylene | ug/L | - | - | | <0.50 | <0.50 | | <0.50 | <0.50 |
| Dichloromethane | ug/L | 2000 | 5.2 | | <2.0 | | <2.0 | <2.0 | <2.0 |
| Methylene Chloride | ug/L | 2000 | 5.2 | | <5.0 | <5.0 | | <5.0 | <5.0 |
| 1,2-Dichloropropane | ug/L | - | - | | <0.50 | <0.50 | | <0.50 | <0.50 |
| cis-1,3-Dichloropropene | ug/L | - | - | | <0.30 | <0.30 | | <0.30 | <0.30 |
| trans-1,3-Dichloropropene | ug/L | 140 | - | | <0.50 | <0.30 | <0.50 | <0.30 | <0.50 |
| | | | | | <0.30 | | | <0.50 | <0.30 |
| 1,3-Dichloropropene (cis & trans) | ug/L | - | - | | <0.50 | <0.50 | | <0.58 | <0.58 |
| Ethylbenzene | ug/L | 160 | 2 | | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 |
| n-Hexane | ug/L | - | - | | <0.50 | <0.50 | | <0.50 | <0.50 |
| Methyl Ethyl Ketone | ug/L | - | - | | <20 | <20 | | <20 | <20 |
| Methyl Isobutyl Ketone | ug/L | - | - | | <20 | <20 | | <20 | <20 |
| MTBE | ug/L | - | - | | <2.0 | <2.0 | | <2.0 | <2.0 |

**Guide Limit #1: Ontario Toronto Sanitary Discharge Sewer By-Law**

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

# ANALYTICAL REPORT

## Volatile Organic Compounds - WATER

| Analyte | Unit | Guide Limits #1 | Guide Limits #2 | Lab ID | L2463602-1 | L2463602-2 | L2463602-3 | L2463602-4 | L2463602-6 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sample Date | 19-JUN-20 | 19-JUN-20 | 19-JUN-20 | 19-JUN-20 | 19-JUN-20 |
| | | | | Sample ID | BH7 | DUP01 | BH5 | BH2 | BH1 |
| Styrene | ug/L | - | - | | <0.50 | <0.50 | | <0.50 | <0.50 |
| 1,1,1,2-Tetrachloroethane | ug/L | - | - | | <0.50 | <0.50 | | <0.50 | <0.50 |
| 1,1,2,2-Tetrachloroethane | ug/L | 1400 | 17 | | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 |
| Tetrachloroethylene | ug/L | 1000 | 4.4 | | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 |
| Toluene | ug/L | 16 | 2 | | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 |
| 1,1,1-Trichloroethane | ug/L | - | - | | <0.50 | <0.50 | | <0.50 | <0.50 |
| 1,1,2-Trichloroethane | ug/L | - | - | | <0.50 | <0.50 | | <0.50 | <0.50 |
| Trichloroethylene | ug/L | 400 | 7.6 | | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 |
| Trichlorofluoromethane | ug/L | - | - | | <5.0 | <5.0 | | <5.0 | <5.0 |
| Vinyl chloride | ug/L | - | - | | <0.50 | <0.50 | | <0.50 | <0.50 |
| o-Xylene | ug/L | - | - | | <0.30 | <0.30 | <0.50 | <0.30 | <0.50 |
| | | | | | <0.50 | | | <0.50 | <0.30 |
| m+p-Xylenes | ug/L | - | - | | <1.0 | <0.40 | <1.0 | <0.40 | <1.0 |
| | | | | | <0.40 | | | <1.0 | <0.40 |
| Xylenes (Total) | ug/L | 1400 | 4.4 | | <0.50 | <0.50 | <1.1 | <1.1 | <1.1 |
| Surrogate: 4-Bromofluorobenzene | % | - | - | | 94.1 | 95.8 | 94.2 | 94.7 | 93.5 |
| Surrogate: 1,4-Difluorobenzene | % | - | - | | 98.4 | 97.8 | 98.8 | 98.2 | 98.8 |

**Guide Limit #1: Ontario Toronto Sanitary Discharge Sewer By-Law**
**Guide Limit #2: Ontario Toronto Storm Sewer By-Law**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

# ANALYTICAL REPORT

## Hydrocarbons - WATER

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | Lab ID | L2463602-1 | L2463602-4 | L2463602-5 | L2463602-6 |
| | | | Sample Date | 19-JUN-20 | 19-JUN-20 | 19-JUN-20 | 19-JUN-20 |
| | | | Sample ID | BH7 | BH2 | DUP02 | BH1 |
| | | Guide Limits | | | | | |
| Analyte | Unit | #1 | #2 | | | | |
| F1 (C6-C10) | ug/L | - | - | <25 | <25 | | <25 |
| F1-BTEX | ug/L | - | - | <25 | <25 | | <25 |
| F2 (C10-C16) | ug/L | - | - | <100 | <100 | <100 | <100 |
| F2-Naphth | ug/L | - | - | <100 | <100 | <100 | <100 |
| F3 (C16-C34) | ug/L | - | - | <250 | <250 | <250 | <250 |
| F3-PAH | ug/L | - | - | <250 | <250 | <250 | <250 |
| F4 (C34-C50) | ug/L | - | - | <250 | <250 | <250 | <250 |
| Total Hydrocarbons (C6-C50) | ug/L | - | - | <370 | <370 | | <370 |
| Chrom. to baseline at nC50 | | - | - | YES | YES | YES | YES |
| Surrogate: 2-Bromobenzotrifluoride | % | - | - | 86.8 | 90.8 | 89.2 | 90.2 |
| Surrogate: 3,4-Dichlorotoluene | % | - | - | 70.1 | 65.3 | | 67.5 |

**Guide Limit #1: Ontario Toronto Sanitary Discharge Sewer By-Law**
**Guide Limit #2: Ontario Toronto Storm Sewer By-Law**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

## Polycyclic Aromatic Hydrocarbons - WATER

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Lab ID | L2463602-1 | L2463602-3 | L2463602-4 | L2463602-5 | L2463602-6 |
| | | | Sample Date | 19-JUN-20 | 19-JUN-20 | 19-JUN-20 | 19-JUN-20 | 19-JUN-20 |
| | | | Sample ID | BH7 | BH5 | BH2 | DUP02 | BH1 |
| | | Guide Limits | | | | | | |
| Analyte | Unit | #1 | #2 | | | | | |
| Acenaphthene | ug/L | - | - | <0.010 | <0.010 | <0.020 | <0.020 | <0.010 |
| Acenaphthylene | ug/L | - | - | | | <0.020 | <0.020 | |
| Anthracene | ug/L | - | - | <0.010 | <0.010 | <0.020 | <0.020 | <0.010 |
| Benzo(a)anthracene | ug/L | - | - | <0.010 | <0.010 | <0.020 | <0.020 | <0.010 |
| Benzo(a)pyrene | ug/L | - | - | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 |
| Benzo(b)fluoranthene | ug/L | - | - | <0.010 | <0.010 | <0.020 | <0.020 | <0.010 |
| Benzo(e)pyrene | ug/L | - | - | <0.050 | <0.050 | 0.146 | | <0.075 DLIS |
| Benzo(g,h,i)perylene | ug/L | - | - | | | <0.020 | <0.020 | |
| Benzo(ghi)perylene | ug/L | - | - | <0.010 | <0.010 | | | <0.010 |
| Benzo(k)fluoranthene | ug/L | - | - | <0.010 | <0.010 | <0.020 | <0.020 | <0.010 |
| Chrysene | ug/L | - | - | <0.010 | <0.010 | <0.020 | <0.020 | 0.012 |
| Dibenz(a,h)acridine | ug/L | - | - | <0.050 | <0.050 | <0.050 | | <0.075 DLIS |
| Dibenz(a,j)acridine | ug/L | - | - | <0.050 | <0.050 | <0.050 | | <0.075 DLIS |
| Dibenzo(a,h)anthracene | ug/L | - | - | <0.010 | <0.010 | | | <0.010 |
| Dibenzo(ah)anthracene | ug/L | - | - | | | <0.020 | <0.020 | |
| Dibenzo(a,i)pyrene | ug/L | - | - | <0.050 | <0.075 RRR | <0.100 RRR | | <0.075 DLIS |
| 7H-Dibenzo(c,g)carbazole | ug/L | - | - | <0.050 | <0.050 | <0.050 | | <0.075 DLIS |
| 1,3-Dinitropyrene | ug/L | - | - | <1.0 | <1.0 | <1.0 | | <1.0 |
| 1,6-Dinitropyrene | ug/L | - | - | <1.0 | <1.0 | <1.0 | | <1.0 |
| 1,8-Dinitropyrene | ug/L | - | - | <1.0 | <1.0 | <1.0 | | <1.0 |
| Fluoranthene | ug/L | - | - | <0.010 | <0.010 | 0.023 | <0.020 | 0.025 |
| Fluorene | ug/L | - | - | <0.010 | <0.010 | <0.020 | <0.020 | 0.017 |
| Indeno(1,2,3-cd)pyrene | ug/L | - | - | <0.010 | <0.010 | <0.020 | <0.020 | <0.010 |
| 1+2-Methylnaphthalenes | ug/L | - | - | <0.028 | | 0.048 | <0.028 | <0.028 |
| 1-Methylnaphthalene | ug/L | - | - | | | 0.025 | <0.020 | |
| 2-Methylnaphthalene | ug/L | - | - | | | 0.023 | <0.020 | |
| Naphthalene | ug/L | - | - | 0.038 | <0.010 | <0.050 | <0.050 | 0.018 |
| Perylene | ug/L | - | - | <0.010 | <0.010 | | | <0.010 |
| Phenanthrene | ug/L | - | - | <0.010 | <0.010 | 0.026 | <0.020 | 0.035 |
| Pyrene | ug/L | - | - | 0.013 | <0.010 | 0.021 | <0.020 | 0.017 |

**Guide Limit #1: Ontario Toronto Sanitary Discharge Sewer By-Law**
**Guide Limit #2: Ontario Toronto Storm Sewer By-Law**

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

# ANALYTICAL REPORT

## Polycyclic Aromatic Hydrocarbons - WATER

| | | Guide Limits | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Lab ID** | | | | L2463602-1 | L2463602-3 | L2463602-4 | L2463602-5 | L2463602-6 |
| **Sample Date** | | | | 19-JUN-20 | 19-JUN-20 | 19-JUN-20 | 19-JUN-20 | 19-JUN-20 |
| **Sample ID** | | | | BH7 | BH5 | BH2 | DUP02 | BH1 |
| **Analyte** | **Unit** | **#1** | **#2** | | | | | |
| Surrogate: d10-Acenaphthene | % | - | - | | | 91.4 | 98.2 | |
| Surrogate: d12-Chrysene | % | - | - | | | 87.0 | 91.9 | |
| Surrogate: 2-Fluorobiphenyl | % | - | - | 89.2 | 96.2 | | | 92.9 |
| Surrogate: d8-Naphthalene | % | - | - | | | 87.6 | 102.4 | |
| Surrogate: d10-Phenanthrene | % | - | - | | | 100.0 | 107.5 | |
| Surrogate: d14-Terphenyl | % | - | - | 101.7 | 98.5 | 75.6 | | 92.8 |
| Surrogate: p-Terphenyl d14 | % | - | - | 85.7 | 99.1 | | | 93.1 |
| Total PAHs | ug/L | 5 | 2 | <1.7 | <1.7 | <1.7 | | <1.7 |

**Guide Limit #1: Ontario Toronto Sanitary Discharge Sewer By-Law**
**Guide Limit #2: Ontario Toronto Storm Sewer By-Law**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

# ANALYTICAL REPORT

## Semi-Volatile Organics - WATER

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | Lab ID | L2463602-1 | L2463602-3 | L2463602-4 | L2463602-6 |
| | | | Sample Date | 19-JUN-20 | 19-JUN-20 | 19-JUN-20 | 19-JUN-20 |
| | | | Sample ID | BH7 | BH5 | BH2 | BH1 |
| | | Guide Limits | | | | | |
| Analyte | Unit | #1 | #2 | | | | |
| 3,3'-Dichlorobenzidine | ug/L | 2 | 0.8 | <0.40 | <0.40 | <0.40 | <0.40 |
| Di-n-butylphthalate | ug/L | 80 | 15 | <1.0 | <1.0 | <1.0 | <1.0 |
| Bis(2-ethylhexyl)phthalate | ug/L | 12 | 8.8 | <2.0 | <2.0 | <2.0 | <2.0 |
| Pentachlorophenol | ug/L | 5 | 2 | <0.50 | <0.50 | <0.50 | <0.50 |
| Surrogate: 2-Fluorobiphenyl | % | - | - | 88.6 | 102.2 | 91.6 | 94.4 |
| Surrogate: p-Terphenyl d14 | % | - | - | 100.0 | 102.5 | 64.7 | 86.8 |
| Surrogate: 2,4,6-Tribromophenol | % | - | - | 118.1 | 88.7 | 72.8 | 93.2 |

**Guide Limit #1: Ontario Toronto Sanitary Discharge Sewer By-Law**
**Guide Limit #2: Ontario Toronto Storm Sewer By-Law**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

# ANALYTICAL REPORT

## Polychlorinated Biphenyls - WATER

| | | Guide Limits | | | | | |
|---|---|---|---|---|---|---|---|
| **Lab ID** | | | | L2463602-1 | L2463602-3 | L2463602-4 | L2463602-6 |
| **Sample Date** | | | | 19-JUN-20 | 19-JUN-20 | 19-JUN-20 | 19-JUN-20 |
| **Sample ID** | | | | BH7 | BH5 | BH2 | BH1 |
| **Analyte** | **Unit** | **#1** | **#2** | | | | |
| Aroclor 1242 | ug/L | - | - | <0.020 | <0.020 | <0.020 | <0.020 |
| Aroclor 1248 | ug/L | - | - | <0.020 | <0.020 | <0.020 | <0.020 |
| Aroclor 1254 | ug/L | - | - | <0.020 | <0.020 | <0.020 | <0.020 |
| Aroclor 1260 | ug/L | - | - | <0.020 | <0.020 | <0.020 | <0.020 |
| Surrogate: Decachlorobiphenyl | % | - | - | 88.1 | 71.4 | 78.5 | 71.1 |
| Total PCBs | ug/L | 1 | 0.4 | <0.040 | <0.040 | <0.040 | <0.040 |
| Surrogate: Tetrachloro-m-xylene | % | - | - | 72.9 | 71.8 | 71.6 | 68.3 |

**Guide Limit #1: Ontario Toronto Sanitary Discharge Sewer By-Law**
**Guide Limit #2: Ontario Toronto Storm Sewer By-Law**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

# ANALYTICAL REPORT

## Organic Parameters - WATER

| Analyte | Unit | Guide Limits #1 | Guide Limits #2 | Lab ID: L2463602-1 / Sample Date: 19-JUN-20 / Sample ID: BH7 | Lab ID: L2463602-3 / Sample Date: 19-JUN-20 / Sample ID: BH5 | Lab ID: L2463602-4 / Sample Date: 19-JUN-20 / Sample ID: BH2 | Lab ID: L2463602-6 / Sample Date: 19-JUN-20 / Sample ID: BH1 |
|---|---|---|---|---|---|---|---|
| Nonylphenol | ug/L | 20 | 1 | <1.0 | <1.0 | <1.0 | <1.0 |
| Nonylphenol Diethoxylates | ug/L | - | - | <0.10 | <0.10 | <0.10 | <0.10 |
| Total Nonylphenol Ethoxylates | ug/L | 200 | 10 | <2.0 | <2.0 | <2.0 | <2.0 |
| Nonylphenol Monoethoxylates | ug/L | - | - | <2.0 | <2.0 | <2.0 | <2.0 |

**Guide Limit #1: Ontario Toronto Sanitary Discharge Sewer By-Law**
**Guide Limit #2: Ontario Toronto Storm Sewer By-Law**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

# Reference Information

**Additional Comments for Sample Listed:**

| Samplenum | Matrix | Report Remarks | Sample Comments |
|---|---|---|---|
| L2463602-1 | Water | Note: RRR; Reporting limit has been adjusted according to recovery in Laboratory Control Sample. | |
| L2463602-1 | Water | Note: Cr6: Sample was lab-filtered. Parameter exceeded hold time prior to analysis. | |
| L2463602-2 | Water | Note: Cr6: Sample was lab-filtered. Parameter exceeded hold time prior to analysis. | |
| L2463602-3 | Water | Note: Cr6: Sample received unpreserved. Parameter exceeded hold time prior to analysis. | |
| L2463602-3 | Water | Note: RRR; Reporting limits have been adjusted according to instrument response. | |
| L2463602-4 | Water | Note: Cr6: Sample received unpreserved. Parameter exceeded hold time prior to analysis. | |
| L2463602-4 | Water | Note: RRR; Reporting limits have been adjusted according to instrument response | |
| L2463602-6 | Water | Note: Cr6: Sample received unpreserved. Parameter exceeded hold time prior to analysis. | |

**Qualifiers for Individual Parameters Listed:**

| Qualifier | Description |
|---|---|
| DLDS | Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity. |
| HTD | Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time. |
| DLUI | Detection Limit Raised: Unknown Interference generated an apparent false positive test result. |
| BODL | Limit of Reporting for BOD was increased to account for the largest volume of sample tested. |
| DLM | Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity). |
| SRU | Sample Received Unpreserved. Results may be biased low for indicated parameter(s) |
| DLHC | Detection Limit Raised: Dilution required due to high concentration of test analyte(s). |
| DLIS | Detection Limit Adjusted: Insufficient Sample |
| RRR | Refer to Report Remarks for issues regarding this analysis |

**Methods Listed (if applicable):**

| ALS Test Code | Matrix | Test Description | Method Reference** |
|---|---|---|---|
| **625-PAH-LOW-WT** | Water | EPA 8270 PAH (Low Level) | SW846 8270 |

Aqueous samples are extracted and extracts are analyzed on GC/MSD. Depending on the analytical GC/MS column used benzo(j)fluoranthene may chromatographically co-elute with benzo(b)fluoranthene or benzo(k)fluoranthene.

| | | | |
|---|---|---|---|
| **625-SAN-WT** | Water | Ontario Sanitary Sewer SVOC Target List | SW-846 8270 |

Samples are extracted with solvent and then analyzed by GC/MS.

| | | | |
|---|---|---|---|
| **BOD-WT** | Water | BOD | APHA 5210 B |

This analysis is carried out using procedures adapted from APHA Method 5210B - "Biochemical Oxygen Demand (BOD)". All forms of biochemical oxygen demand (BOD) are determined by diluting and incubating a sample for a specified time period, and measuring the oxygen depletion using a dissolved oxygen meter. Dissolved BOD (SOLUBLE) is determined by filtering the sample through a glass fibre filter prior to dilution. Carbonaceous BOD (CBOD) is determined by adding a nitrification inhibitor to the diluted sample prior to incubation.

| | | | |
|---|---|---|---|
| **CL-IC-N-WT** | Water | Chloride by IC | EPA 300.1 (mod) |

# Reference Information

**Methods Listed (if applicable):**

| ALS Test Code | Matrix | Test Description | Method Reference** |
|---|---|---|---|

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

| | | | |
|---|---|---|---|
| **CN-TOT-WT** | Water | Cyanide, Total | ISO 14403-2 |

Total cyanide is determined by the combination of UV digestion and distillation. Cyanide is converted to cyanogen chloride by reacting with chloramine-T, the cyanogen chloride then reacts with a combination of barbituric acid and isonicotinic acid to form a highly colored complex.

When using this method, high levels of thiocyanate in samples can cause false positives at ~1-2% of the thiocyanate concentration. For samples with detectable cyanide analyzed by this method, ALS recommends analysis for thiocyanate to check for this potential interference

| | | | |
|---|---|---|---|
| **CN-WAD-R511-WT** | Water | Cyanide (WAD)-O.Reg 153/04 | APHA 4500CN I-Weak acid Dist Colorimet |

Weak acid dissociable cyanide (WAD) is determined by undergoing a distillation procedure. Cyanide is converted to cyanogen chloride by reacting with chloramine-T, the cyanogen chloride then reacts with a combination of barbituric acid and isonicotinic acid to form a highly colored complex.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

| | | | |
|---|---|---|---|
| **CR-CR6-IC-R511-WT** | Water | Hex Chrom-O.Reg 153/04 (July 2011) | EPA 7199 |

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 7199, published by the United States Environmental Protection Agency (EPA). The procedure involves analysis for chromium (VI) by ion chromatography using diphenylcarbazide in a sulphuric acid solution. Chromium (III) is calculated as the difference between the total chromium and the chromium (VI) results.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

| | | | |
|---|---|---|---|
| **CR-CR6-IC-WT** | Water | Chromium +6 | EPA 7199 |

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 7199, published by the United States Environmental Protection Agency (EPA). The procedure involves analysis for chromium (VI) by ion chromatography using diphenylcarbazide in a sulphuric acid solution. Chromium (III) is calculated as the difference between the total chromium and the chromium (VI) results.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

| | | | |
|---|---|---|---|
| **EC-R511-WT** | Water | Conductivity-O.Reg 153/04 (July 2011) | APHA 2510 B |

Water samples can be measured directly by immersing the conductivity cell into the sample.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

| | | | |
|---|---|---|---|
| **EC-SCREEN-WT** | Water | Conductivity Screen (Internal Use Only) | APHA 2510 |

Qualitative analysis of conductivity where required during preparation of other tests - e.g. TDS, metals, etc.

| | | | |
|---|---|---|---|
| **EC-WW-MF-WT** | Water | E. Coli | SM 9222D |

A 100 mL volume of sample is filtered through a membrane, the membrane is placed on mFC-BCIG agar and incubated at 44.5 –0 .2 °C for 24 – 2 h. Method ID: WT-TM-1200

| | | | |
|---|---|---|---|
| **F-IC-N-WT** | Water | Fluoride in Water by IC | EPA 300.1 (mod) |

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

| | | | |
|---|---|---|---|
| **F1-F4-511-CALC-WT** | Water | F1-F4 Hydrocarbon Calculated Parameters | CCME CWS-PHC, Pub #1310, Dec 2001-L |

# Reference Information

**Methods Listed (if applicable):**

| ALS Test Code | Matrix | Test Description | Method Reference** |
|---|---|---|---|

Analytical methods used for analysis of CCME Petroleum Hydrocarbons have been validated and comply with the Reference Method for the CWS PHC.

In cases where results for both F4 and F4G are reported, the greater of the two results must be used in any application of the CWS PHC guidelines and the gravimetric heavy hydrocarbons cannot be added to the C6 to C50 hydrocarbons.
In samples where BTEX and F1 were analyzed , F1-BTEX represents a value where the sum of Benzene, Toluene, Ethylbenzene and total Xylenes has been subtracted from F1.

In samples where PAHs, F2 and F3 were analyzed, F2-Naphth represents the result where Naphthalene has been subtracted from F2. F3-PAH represents a result where the sum of Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene, Fluoranthene, Indeno(1,2,3-cd)pyrene, Phenanthrene, and Pyrene has been subtracted from F3.

Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:
1. All extraction and analysis holding times were met.
2. Instrument performance showing response factors for C6 and C10 within 30% of the response factor for toluene.
3. Linearity of gasoline response within 15% throughout the calibration range.

Unless otherwise qualified, the following quality control criteria have been met for the F2-F4 hydrocarbon ranges:
1. All extraction and analysis holding times were met.
2. Instrument performance showing C10, C16 and C34 response factors within 10% of their average.
3. Instrument performance showing the C50 response factor within 30% of the average of the C10, C16 and C34 response factors.
4. Linearity of diesel or motor oil response within 15% throughout the calibration range.

| | | | |
|---|---|---|---|
| **F1-HS-511-WT** | Water | F1-O.Reg 153/04 (July 2011) | E3398/CCME TIER 1-HS |

Fraction F1 is determined by analyzing by headspace-GC/FID.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

| | | | |
|---|---|---|---|
| **F2-F4-511-WT** | Water | F2-F4-O.Reg 153/04 (July 2011) | EPA 3511/CCME Tier 1 |

Petroleum Hydrocarbons (F2-F4 fractions) are extracted from water using a hexane micro-extraction technique. Instrumental analysis is by GC-FID, as per the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil Tier 1 Method, CCME, 2001.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

| | | | |
|---|---|---|---|
| **HG-D-UG/L-CVAA-WT** | Water | Diss. Mercury in Water by CVAAS (ug/L) | EPA 1631E (mod) |

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

| | | | |
|---|---|---|---|
| **HG-T-CVAA-WT** | Water | Total Mercury in Water by CVAAS | EPA 1631E (mod) |

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

| | | | |
|---|---|---|---|
| **MET-D-UG/L-MS-WT** | Water | Diss. Metals in Water by ICPMS (ug/L) | EPA 200.8 |

The metal constituents of a non-acidified sample that pass through a membrane filter prior to ICP/MS analysis.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

# Reference Information

**Methods Listed (if applicable):**

| ALS Test Code | Matrix | Test Description | Method Reference** |
|---|---|---|---|
| **MET-T-CCMS-WT** | Water | Total Metals in Water by CRC ICPMS | EPA 200.2/6020A (mod) |

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

| | | | |
|---|---|---|---|
| **METHYLNAPS-CALC-WT** | Water | PAH-Calculated Parameters | SW846 8270 |
| **NP,NPE-LCMS-WT** | Water | Nonylphenols and Ethoxylates by LC/MS-MS | J. Chrom A849 (1999) p.467-482 |

Water samples are filtered and analyzed on LCMS/MS by direct injection.

| | | | |
|---|---|---|---|
| **OGG-SPEC-CALC-WT** | Water | Speciated Oil and Grease A/V Calc | CALCULATION |

Sample is extracted with hexane, sample speciation into mineral and animal/vegetable fractions is achieved via silica gel separation and is then determined gravimetrically.

| | | | |
|---|---|---|---|
| **OGG-SPEC-WT** | Water | Speciated Oil and Grease-Gravimetric | APHA 5520 B |

The procedure involves an extraction of the entire water sample with hexane. Sample speciation into mineral and animal/vegetable fractions is achieved via silica gel separation and is then determined gravimetrically.

| | | | |
|---|---|---|---|
| **P-T-COL-WT** | Water | Total P in Water by Colour | APHA 4500-P PHOSPHORUS |

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is deteremined colourimetrically after persulphate digestion of the sample.

| | | | |
|---|---|---|---|
| **PAH-511-WT** | Water | PAH-O. Reg 153/04 (July 2011) | SW846 3510/8270 |

Aqueous samples, fortified with surrogates, are extracted using liquid/liquid extraction technique. The sample extracts are concentrated and then analyzed using GC/MS. Results for benzo(b) fluoranthene may include contributions from benzo(j)fluoranthene, if also present in the sample.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

| | | | |
|---|---|---|---|
| **PAH-EXTRA-WT** | Water | Sanitary Sewer Use By-Law Additional PAH | SW 846 8270 |
| **PAH-SUM-CALC-WT** | Water | TOTAL PAH's | CALCULATION |

Total PAH represents the sum of all PAH analytes reported for a given sample. Note that regulatory agencies and criteria differ in their definitions of Total PAH in terms of the individual PAH analytes to be included.

| | | | |
|---|---|---|---|
| **PCB-WT** | Water | Polychlorinated Biphenyls | EPA 8082 |

PCBs are extracted from an aqueous sample at neutral pH with aliquots of dichloromethane using a modified separatory funnel technique. The extracts are analyzed by GC/MSD.

| | | | |
|---|---|---|---|
| **PH-WT** | Water | pH | APHA 4500 H-Electrode |

Water samples are analyzed directly by a calibrated pH meter.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011). Holdtime for samples under this regulation is 28 days

# Reference Information

**Methods Listed (if applicable):**

| ALS Test Code | Matrix | Test Description | Method Reference** |
|---|---|---|---|
| **PHENOLS-4AAP-WT** | Water | Phenol (4AAP) | EPA 9066 |
| An automated method is used to distill the sample. The distillate is then buffered to pH 9.4 which reacts with 4AAP and potassium ferricyanide to form a red complex which is measured colorimetrically. | | | |
| **SOLIDS-TSS-WT** | Water | Suspended solids | APHA 2540 D-Gravimetric |
| A well-mixed sample is filtered through a weighed standard glass fibre filter and the residue retained is dried in an oven at 104–1°C for a minimum of four hours or until a constant weight is achieved. | | | |
| **TKN-WT** | Water | Total Kjeldahl Nitrogen | APHA 4500-Norg D |
| This analysis is carried out using procedures adapted from APHA Method 4500-Norg "Nitrogen (Organic)". Total Kjeldahl Nitrogen is determined by sample digestion at 380 Celsius with analysis using an automated colorimetric method. | | | |
| **VOC-1,3-DCP-CALC-WT** | Water | Regulation 153 VOCs | SW8260B/SW8270C |
| **VOC-511-HS-WT** | Water | VOC by GCMS HS O.Reg 153/04 (July 2011) | SW846 8260 |
| Liquid samples are analyzed by headspace GC/MSD. | | | |
| Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported). | | | |
| **VOC-ROU-HS-WT** | Water | Volatile Organic Compounds | SW846 8260 |
| Aqueous samples are analyzed by headspace-GC/MS. | | | |
| **XYLENES-SUM-CALC-WT** | Water | Sum of Xylene Isomer Concentrations | CALCULATION |
| Total xylenes represents the sum of o-xylene and m&p-xylene. | | | |

**ALS test methods may incorporate modifications from specified reference methods to improve performance.

Chain of Custody Numbers:

17-802001

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

| Laboratory Definition Code | Laboratory Location |
|---|---|
| WT | ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA |

# Reference Information

**GLOSSARY OF REPORT TERMS**

*Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.*
*mg/kg - milligrams per kilogram based on dry weight of sample*
*mg/kg wwt - milligrams per kilogram based on wet weight of sample*
*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight*
*mg/L - unit of concentration based on volume, parts per million.*
*< - Less than.*
*D.L. - The reporting limit.*
*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*
*UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.*
*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*

*Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to, fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information. Guideline limits are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.*

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Anne Pattison

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **625-PAH-LOW-WT** | **Water** | | | | | | | |
| **Batch R5131676** | | | | | | | | |
| **WG3348679-2 LCS** | | | | | | | | |
| Acenaphthene | | | 57.8 | | % | | 50-140 | 25-JUN-20 |
| Anthracene | | | 82.6 | | % | | 50-140 | 25-JUN-20 |
| Benzo(a)anthracene | | | 88.1 | | % | | 50-140 | 25-JUN-20 |
| Benzo(a)pyrene | | | 82.3 | | % | | 60-130 | 25-JUN-20 |
| Benzo(b)fluoranthene | | | 91.8 | | % | | 50-140 | 25-JUN-20 |
| Benzo(ghi)perylene | | | 90.2 | | % | | 50-140 | 25-JUN-20 |
| Benzo(k)fluoranthene | | | 74.2 | | % | | 50-140 | 25-JUN-20 |
| Chrysene | | | 93.3 | | % | | 50-140 | 25-JUN-20 |
| Dibenzo(a,h)anthracene | | | 83.3 | | % | | 50-140 | 25-JUN-20 |
| Fluoranthene | | | 91.7 | | % | | 50-140 | 25-JUN-20 |
| Fluorene | | | 66.7 | | % | | 50-140 | 25-JUN-20 |
| Indeno(1,2,3-cd)pyrene | | | 86.0 | | % | | 50-140 | 25-JUN-20 |
| Naphthalene | | | 53.9 | | % | | 50-130 | 25-JUN-20 |
| Perylene | | | 92.5 | | % | | 50-140 | 25-JUN-20 |
| Phenanthrene | | | 82.9 | | % | | 50-140 | 25-JUN-20 |
| Pyrene | | | 94.1 | | % | | 50-140 | 25-JUN-20 |
| COMMENTS: RRQC; Result is outside ALS control limits; reporting limits have been adjusted accordingly in associated samples. | | | | | | | | |
| **WG3348679-1 MB** | | | | | | | | |
| Acenaphthene | | | <0.010 | | ug/L | | 0.01 | 25-JUN-20 |
| Anthracene | | | <0.010 | | ug/L | | 0.01 | 25-JUN-20 |
| Benzo(a)anthracene | | | <0.010 | | ug/L | | 0.01 | 25-JUN-20 |
| Benzo(a)pyrene | | | <0.010 | | ug/L | | 0.01 | 25-JUN-20 |
| Benzo(b)fluoranthene | | | <0.010 | | ug/L | | 0.01 | 25-JUN-20 |
| Benzo(ghi)perylene | | | <0.010 | | ug/L | | 0.01 | 25-JUN-20 |
| Benzo(k)fluoranthene | | | <0.010 | | ug/L | | 0.01 | 25-JUN-20 |
| Chrysene | | | <0.010 | | ug/L | | 0.01 | 25-JUN-20 |
| Dibenzo(a,h)anthracene | | | <0.010 | | ug/L | | 0.01 | 25-JUN-20 |
| Fluoranthene | | | <0.010 | | ug/L | | 0.01 | 25-JUN-20 |
| Fluorene | | | <0.010 | | ug/L | | 0.01 | 25-JUN-20 |
| Indeno(1,2,3-cd)pyrene | | | <0.010 | | ug/L | | 0.01 | 25-JUN-20 |
| Naphthalene | | | <0.010 | | ug/L | | 0.01 | 25-JUN-20 |
| Perylene | | | <0.010 | | ug/L | | 0.01 | 25-JUN-20 |
| Phenanthrene | | | <0.010 | | ug/L | | 0.01 | 25-JUN-20 |
| Pyrene | | | <0.010 | | ug/L | | 0.01 | 25-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Anne Pattison

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **625-PAH-LOW-WT** | **Water** | | | | | | | |
| **Batch R5131676** | | | | | | | | |
| **WG3348679-1 MB** | | | | | | | | |
| Surrogate: 2-Fluorobiphenyl | | | 78.7 | | % | | 40-130 | 25-JUN-20 |
| Surrogate: p-Terphenyl d14 | | | 94.3 | | % | | 40-130 | 25-JUN-20 |
| **Batch R5135620** | | | | | | | | |
| **WG3350993-2 LCS** | | | | | | | | |
| Acenaphthene | | | 87.4 | | % | | 50-140 | 29-JUN-20 |
| Anthracene | | | 81.2 | | % | | 50-140 | 29-JUN-20 |
| Benzo(a)anthracene | | | 88.7 | | % | | 50-140 | 29-JUN-20 |
| Benzo(a)pyrene | | | 83.8 | | % | | 60-130 | 29-JUN-20 |
| Benzo(b)fluoranthene | | | 77.7 | | % | | 50-140 | 29-JUN-20 |
| Benzo(ghi)perylene | | | 83.9 | | % | | 50-140 | 29-JUN-20 |
| Benzo(k)fluoranthene | | | 94.3 | | % | | 50-140 | 29-JUN-20 |
| Chrysene | | | 97.9 | | % | | 50-140 | 29-JUN-20 |
| Dibenzo(a,h)anthracene | | | 85.7 | | % | | 50-140 | 29-JUN-20 |
| Fluoranthene | | | 80.6 | | % | | 50-140 | 29-JUN-20 |
| Fluorene | | | 89.2 | | % | | 50-140 | 29-JUN-20 |
| Indeno(1,2,3-cd)pyrene | | | 88.1 | | % | | 50-140 | 29-JUN-20 |
| Naphthalene | | | 89.0 | | % | | 50-130 | 29-JUN-20 |
| Perylene | | | 84.9 | | % | | 50-140 | 29-JUN-20 |
| Phenanthrene | | | 87.1 | | % | | 50-140 | 29-JUN-20 |
| Pyrene | | | 86.2 | | % | | 50-140 | 29-JUN-20 |
| **WG3350993-1 MB** | | | | | | | | |
| Acenaphthene | | | <0.010 | | ug/L | | 0.01 | 29-JUN-20 |
| Anthracene | | | <0.010 | | ug/L | | 0.01 | 29-JUN-20 |
| Benzo(a)anthracene | | | <0.010 | | ug/L | | 0.01 | 29-JUN-20 |
| Benzo(a)pyrene | | | <0.010 | | ug/L | | 0.01 | 29-JUN-20 |
| Benzo(b)fluoranthene | | | <0.010 | | ug/L | | 0.01 | 29-JUN-20 |
| Benzo(ghi)perylene | | | <0.010 | | ug/L | | 0.01 | 29-JUN-20 |
| Benzo(k)fluoranthene | | | <0.010 | | ug/L | | 0.01 | 29-JUN-20 |
| Chrysene | | | <0.010 | | ug/L | | 0.01 | 29-JUN-20 |
| Dibenzo(a,h)anthracene | | | <0.010 | | ug/L | | 0.01 | 29-JUN-20 |
| Fluoranthene | | | <0.010 | | ug/L | | 0.01 | 29-JUN-20 |
| Fluorene | | | <0.010 | | ug/L | | 0.01 | 29-JUN-20 |
| Indeno(1,2,3-cd)pyrene | | | <0.010 | | ug/L | | 0.01 | 29-JUN-20 |
| Naphthalene | | | <0.010 | | ug/L | | 0.01 | 29-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Anne Pattison

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **625-PAH-LOW-WT** | **Water** | | | | | | | |
| **Batch R5135620** | | | | | | | | |
| **WG3350993-1 MB** | | | | | | | | |
| Perylene | | | <0.010 | | ug/L | | 0.01 | 29-JUN-20 |
| Phenanthrene | | | <0.010 | | ug/L | | 0.01 | 29-JUN-20 |
| Pyrene | | | <0.010 | | ug/L | | 0.01 | 29-JUN-20 |
| Surrogate: 2-Fluorobiphenyl | | | 86.0 | | % | | 40-130 | 29-JUN-20 |
| Surrogate: p-Terphenyl d14 | | | 98.7 | | % | | 40-130 | 29-JUN-20 |
| **625-SAN-WT** | **Water** | | | | | | | |
| **Batch R5131903** | | | | | | | | |
| **WG3348679-2 LCS** | | | | | | | | |
| 3,3'-Dichlorobenzidine | | | 54.0 | | % | | 50-140 | 25-JUN-20 |
| Bis(2-ethylhexyl)phthalate | | | 92.4 | | % | | 50-140 | 25-JUN-20 |
| Di-n-butylphthalate | | | 100.4 | | % | | 50-140 | 25-JUN-20 |
| Pentachlorophenol | | | 118.1 | | % | | 50-140 | 25-JUN-20 |
| **WG3348679-1 MB** | | | | | | | | |
| 3,3'-Dichlorobenzidine | | | <0.40 | | ug/L | | 0.4 | 25-JUN-20 |
| Bis(2-ethylhexyl)phthalate | | | <2.0 | | ug/L | | 2 | 25-JUN-20 |
| Di-n-butylphthalate | | | <1.0 | | ug/L | | 1 | 25-JUN-20 |
| Pentachlorophenol | | | <0.50 | | ug/L | | 0.5 | 25-JUN-20 |
| Surrogate: 2-Fluorobiphenyl | | | 80.8 | | % | | 40-130 | 25-JUN-20 |
| Surrogate: 2,4,6-Tribromophenol | | | 75.7 | | % | | 40-130 | 25-JUN-20 |
| Surrogate: p-Terphenyl d14 | | | 113.8 | | % | | 40-130 | 25-JUN-20 |
| **Batch R5137598** | | | | | | | | |
| **WG3350993-2 LCS** | | | | | | | | |
| 3,3'-Dichlorobenzidine | | | 66.1 | | % | | 50-140 | 30-JUN-20 |
| Bis(2-ethylhexyl)phthalate | | | 99.5 | | % | | 50-140 | 30-JUN-20 |
| Di-n-butylphthalate | | | 106.2 | | % | | 50-140 | 30-JUN-20 |
| Pentachlorophenol | | | 105.8 | | % | | 50-140 | 30-JUN-20 |
| **WG3350993-1 MB** | | | | | | | | |
| 3,3'-Dichlorobenzidine | | | <0.40 | | ug/L | | 0.4 | 30-JUN-20 |
| Bis(2-ethylhexyl)phthalate | | | <2.0 | | ug/L | | 2 | 30-JUN-20 |
| Di-n-butylphthalate | | | <1.0 | | ug/L | | 1 | 30-JUN-20 |
| Pentachlorophenol | | | <0.50 | | ug/L | | 0.5 | 30-JUN-20 |
| Surrogate: 2-Fluorobiphenyl | | | 88.1 | | % | | 40-130 | 30-JUN-20 |
| Surrogate: 2,4,6-Tribromophenol | | | 76.7 | | % | | 40-130 | 30-JUN-20 |
| Surrogate: p-Terphenyl d14 | | | 98.4 | | % | | 40-130 | 30-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Anne Pattison

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **BOD-WT** | **Water** | | | | | | | |
| **Batch R5132076** | | | | | | | | |
| **WG3346613-10 DUP** | | **L2462850-37** | | | | | | |
| BOD | | 3.2 | 3.5 | | mg/L | 9.8 | 30 | 20-JUN-20 |
| **WG3346613-11 LCS** | | | | | | | | |
| BOD | | | 103.0 | | % | | 85-115 | 20-JUN-20 |
| **WG3346613-9 MB** | | | | | | | | |
| BOD | | | <2.0 | | mg/L | | 2 | 20-JUN-20 |
| **CL-IC-N-WT** | **Water** | | | | | | | |
| **Batch R5131318** | | | | | | | | |
| **WG3348471-19 DUP** | | **WG3348471-18** | | | | | | |
| Chloride (Cl) | | 27.4 | 27.4 | | mg/L | 0.1 | 20 | 23-JUN-20 |
| **WG3348471-17 LCS** | | | | | | | | |
| Chloride (Cl) | | | 102.5 | | % | | 90-110 | 23-JUN-20 |
| **WG3348471-16 MB** | | | | | | | | |
| Chloride (Cl) | | | <0.50 | | mg/L | | 0.5 | 23-JUN-20 |
| **WG3348471-20 MS** | | **WG3348471-18** | | | | | | |
| Chloride (Cl) | | | 98.2 | | % | | 75-125 | 23-JUN-20 |
| **CN-TOT-WT** | **Water** | | | | | | | |
| **Batch R5130020** | | | | | | | | |
| **WG3347569-11 DUP** | | **L2462597-13** | | | | | | |
| Cyanide, Total | | 0.0375 | 0.0382 | | mg/L | 1.8 | 20 | 22-JUN-20 |
| **WG3347569-10 LCS** | | | | | | | | |
| Cyanide, Total | | | 97.4 | | % | | 80-120 | 22-JUN-20 |
| **WG3347569-18 LCS** | | | | | | | | |
| Cyanide, Total | | | 99.6 | | % | | 80-120 | 22-JUN-20 |
| **WG3347569-17 MB** | | | | | | | | |
| Cyanide, Total | | | <0.0020 | | mg/L | | 0.002 | 22-JUN-20 |
| **WG3347569-9 MB** | | | | | | | | |
| Cyanide, Total | | | <0.0020 | | mg/L | | 0.002 | 22-JUN-20 |
| **WG3347569-12 MS** | | **L2462597-13** | | | | | | |
| Cyanide, Total | | | 90.2 | | % | | 70-130 | 22-JUN-20 |
| **CN-WAD-R511-WT** | **Water** | | | | | | | |
| **Batch R5130982** | | | | | | | | |
| **WG3347575-3 DUP** | | **L2463415-2** | | | | | | |
| Cyanide, Weak Acid Diss | | <2.0 | <2.0 | RPD-NA | ug/L | N/A | 20 | 22-JUN-20 |
| **WG3347575-2 LCS** | | | | | | | | |
| Cyanide, Weak Acid Diss | | | 101.4 | | % | | 80-120 | 22-JUN-20 |
| **WG3347575-1 MB** | | | | | | | | |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Anne Pattison

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **CN-WAD-R511-WT** | **Water** | | | | | | | |
| **Batch R5130982** | | | | | | | | |
| **WG3347575-1 MB** | | | | | | | | |
| Cyanide, Weak Acid Diss | | | <2.0 | | ug/L | | 2 | 22-JUN-20 |
| **WG3347575-4 MS** | | **L2463415-2** | | | | | | |
| Cyanide, Weak Acid Diss | | | 96.6 | | % | | 75-125 | 22-JUN-20 |
| **CR-CR6-IC-R511-WT** | **Water** | | | | | | | |
| **Batch R5128840** | | | | | | | | |
| **WG3347208-4 DUP** | | **WG3347208-3** | | | | | | |
| Chromium, Hexavalent | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 20 | 22-JUN-20 |
| **WG3347208-2 LCS** | | | | | | | | |
| Chromium, Hexavalent | | | 99.2 | | % | | 80-120 | 22-JUN-20 |
| **WG3347208-1 MB** | | | | | | | | |
| Chromium, Hexavalent | | | <0.50 | | ug/L | | 0.5 | 22-JUN-20 |
| **WG3347208-5 MS** | | **WG3347208-3** | | | | | | |
| Chromium, Hexavalent | | | 105.3 | | % | | 70-130 | 22-JUN-20 |
| **CR-CR6-IC-WT** | **Water** | | | | | | | |
| **Batch R5128858** | | | | | | | | |
| **WG3347209-4 DUP** | | **WG3347209-3** | | | | | | |
| Chromium, Hexavalent | | <0.00050 | <0.00050 | RPD-NA | mg/L | N/A | 20 | 22-JUN-20 |
| **WG3347209-2 LCS** | | | | | | | | |
| Chromium, Hexavalent | | | 104.5 | | % | | 80-120 | 22-JUN-20 |
| **WG3347209-1 MB** | | | | | | | | |
| Chromium, Hexavalent | | | <0.00050 | | mg/L | | 0.0005 | 22-JUN-20 |
| **WG3347209-5 MS** | | **WG3347209-3** | | | | | | |
| Chromium, Hexavalent | | | 103.4 | | % | | 70-130 | 22-JUN-20 |
| **EC-R511-WT** | **Water** | | | | | | | |
| **Batch R5131885** | | | | | | | | |
| **WG3348212-4 DUP** | | **WG3348212-3** | | | | | | |
| Conductivity | | 2.52 | 2.51 | | mS/cm | 0.4 | 10 | 23-JUN-20 |
| **WG3348212-2 LCS** | | | | | | | | |
| Conductivity | | | 97.7 | | % | | 90-110 | 23-JUN-20 |
| **WG3348212-1 MB** | | | | | | | | |
| Conductivity | | | <0.0030 | | mS/cm | | 0.003 | 23-JUN-20 |
| **EC-WW-MF-WT** | **Water** | | | | | | | |
| **Batch R5126678** | | | | | | | | |
| **WG3346426-3 DUP** | | **L2463513-4** | | | | | | |
| E. Coli | | 0 | 0 | | CFU/100mL | 0.0 | 65 | 20-JUN-20 |
| **WG3346426-1 MB** | | | | | | | | |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Anne Pattison

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **EC-WW-MF-WT** | **Water** | | | | | | | |
| **Batch R5126678** | | | | | | | | |
| **WG3346426-1 MB** | | | | | | | | |
| E. Coli | | | 0 | | CFU/100mL | | 1 | 20-JUN-20 |
| **F-IC-N-WT** | **Water** | | | | | | | |
| **Batch R5131318** | | | | | | | | |
| **WG3348471-19 DUP** | | **WG3348471-18** | | | | | | |
| Fluoride (F) | | 0.645 | 0.645 | | mg/L | 0.0 | 20 | 23-JUN-20 |
| **WG3348471-17 LCS** | | | | | | | | |
| Fluoride (F) | | | 103.0 | | % | | 90-110 | 23-JUN-20 |
| **WG3348471-16 MB** | | | | | | | | |
| Fluoride (F) | | | <0.020 | | mg/L | | 0.02 | 23-JUN-20 |
| **WG3348471-20 MS** | | **WG3348471-18** | | | | | | |
| Fluoride (F) | | | 101.0 | | % | | 75-125 | 23-JUN-20 |
| **F1-HS-511-WT** | **Water** | | | | | | | |
| **Batch R5132297** | | | | | | | | |
| **WG3349403-4 DUP** | | **WG3349403-3** | | | | | | |
| F1 (C6-C10) | | <25 | <25 | RPD-NA | ug/L | N/A | 30 | 25-JUN-20 |
| **WG3349403-1 LCS** | | | | | | | | |
| F1 (C6-C10) | | | 116.2 | | % | | 80-120 | 25-JUN-20 |
| **WG3349403-2 MB** | | | | | | | | |
| F1 (C6-C10) | | | <25 | | ug/L | | 25 | 25-JUN-20 |
| Surrogate: 3,4-Dichlorotoluene | | | 91.1 | | % | | 60-140 | 25-JUN-20 |
| **WG3349403-5 MS** | | **WG3349403-3** | | | | | | |
| F1 (C6-C10) | | | 97.8 | | % | | 60-140 | 25-JUN-20 |
| **F2-F4-511-WT** | **Water** | | | | | | | |
| **Batch R5131598** | | | | | | | | |
| **WG3347760-2 LCS** | | | | | | | | |
| F2 (C10-C16) | | | 115.8 | | % | | 70-130 | 24-JUN-20 |
| F3 (C16-C34) | | | 122.5 | | % | | 70-130 | 24-JUN-20 |
| F4 (C34-C50) | | | 114.9 | | % | | 70-130 | 24-JUN-20 |
| **WG3347760-1 MB** | | | | | | | | |
| F2 (C10-C16) | | | <100 | | ug/L | | 100 | 24-JUN-20 |
| F3 (C16-C34) | | | <250 | | ug/L | | 250 | 24-JUN-20 |
| F4 (C34-C50) | | | <250 | | ug/L | | 250 | 24-JUN-20 |
| Surrogate: 2-Bromobenzotrifluoride | | | 86.6 | | % | | 60-140 | 24-JUN-20 |
| **HG-D-UG/L-CVAA-WT** | **Water** | | | | | | | |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Anne Pattison

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **HG-D-UG/L-CVAA-WT** | **Water** | | | | | | | |
| **Batch R5127117** | | | | | | | | |
| **WG3346951-4 DUP** | | **WG3346951-3** | | | | | | |
| Mercury (Hg)-Dissolved | | <0.0050 | <0.0050 | RPD-NA | ug/L | N/A | 20 | 22-JUN-20 |
| **WG3346951-2 LCS** | | | | | | | | |
| Mercury (Hg)-Dissolved | | | 114.0 | | % | | 80-120 | 22-JUN-20 |
| **WG3346951-1 MB** | | | | | | | | |
| Mercury (Hg)-Dissolved | | | <0.0050 | | ug/L | | 0.005 | 22-JUN-20 |
| **WG3346951-6 MS** | | **WG3346951-5** | | | | | | |
| Mercury (Hg)-Dissolved | | | 86.8 | | % | | 70-130 | 22-JUN-20 |
| **HG-T-CVAA-WT** | **Water** | | | | | | | |
| **Batch R5131133** | | | | | | | | |
| **WG3348215-3 DUP** | | **L2463096-1** | | | | | | |
| Mercury (Hg)-Total | | <0.0000050 | <0.000005C | RPD-NA | mg/L | N/A | 20 | 24-JUN-20 |
| **WG3348215-2 LCS** | | | | | | | | |
| Mercury (Hg)-Total | | | 103.0 | | % | | 80-120 | 24-JUN-20 |
| **WG3348215-1 MB** | | | | | | | | |
| Mercury (Hg)-Total | | | <0.000005C | | mg/L | | 0.000005 | 24-JUN-20 |
| **WG3348215-4 MS** | | **L2463001-1** | | | | | | |
| Mercury (Hg)-Total | | | 103.0 | | % | | 70-130 | 24-JUN-20 |
| **MET-D-UG/L-MS-WT** | **Water** | | | | | | | |
| **Batch R5128237** | | | | | | | | |
| **WG3347490-4 DUP** | | **WG3347490-3** | | | | | | |
| Antimony (Sb)-Dissolved | | <0.10 | <0.10 | RPD-NA | ug/L | N/A | 20 | 23-JUN-20 |
| Arsenic (As)-Dissolved | | 0.94 | 0.99 | | ug/L | 5.2 | 20 | 23-JUN-20 |
| Barium (Ba)-Dissolved | | 174 | 180 | | ug/L | 3.4 | 20 | 23-JUN-20 |
| Beryllium (Be)-Dissolved | | <0.10 | <0.10 | RPD-NA | ug/L | N/A | 20 | 23-JUN-20 |
| Boron (B)-Dissolved | | 254 | 250 | | ug/L | 1.7 | 20 | 23-JUN-20 |
| Cadmium (Cd)-Dissolved | | <0.0050 | <0.0050 | RPD-NA | ug/L | N/A | 20 | 23-JUN-20 |
| Chromium (Cr)-Dissolved | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 20 | 23-JUN-20 |
| Cobalt (Co)-Dissolved | | 0.16 | 0.15 | | ug/L | 5.3 | 20 | 23-JUN-20 |
| Copper (Cu)-Dissolved | | 0.99 | 1.01 | | ug/L | 1.9 | 20 | 23-JUN-20 |
| Lead (Pb)-Dissolved | | 0.161 | 0.158 | | ug/L | 1.6 | 20 | 23-JUN-20 |
| Molybdenum (Mo)-Dissolved | | 0.691 | 0.705 | | ug/L | 2.0 | 20 | 23-JUN-20 |
| Nickel (Ni)-Dissolved | | 1.25 | 1.26 | | ug/L | 0.4 | 20 | 23-JUN-20 |
| Selenium (Se)-Dissolved | | <0.050 | <0.050 | RPD-NA | ug/L | N/A | 20 | 23-JUN-20 |
| Silver (Ag)-Dissolved | | <0.050 | <0.050 | RPD-NA | ug/L | N/A | 20 | 23-JUN-20 |
| Sodium (Na)-Dissolved | | 43200 | 43000 | | ug/L | 0.3 | 20 | 23-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Anne Pattison

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **MET-D-UG/L-MS-WT** | **Water** | | | | | | | |
| **Batch R5128237** | | | | | | | | |
| **WG3347490-4 DUP** | | **WG3347490-3** | | | | | | |
| Thallium (Tl)-Dissolved | | <0.010 | <0.010 | RPD-NA | ug/L | N/A | 20 | 23-JUN-20 |
| Uranium (U)-Dissolved | | 1.24 | 1.24 | | ug/L | 0.1 | 20 | 23-JUN-20 |
| Vanadium (V)-Dissolved | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 20 | 23-JUN-20 |
| Zinc (Zn)-Dissolved | | 2.3 | 2.3 | | ug/L | 1.2 | 20 | 23-JUN-20 |
| **WG3347490-2 LCS** | | | | | | | | |
| Antimony (Sb)-Dissolved | | | 95.6 | | % | | 80-120 | 23-JUN-20 |
| Arsenic (As)-Dissolved | | | 93.7 | | % | | 80-120 | 23-JUN-20 |
| Barium (Ba)-Dissolved | | | 93.8 | | % | | 80-120 | 23-JUN-20 |
| Beryllium (Be)-Dissolved | | | 101.2 | | % | | 80-120 | 23-JUN-20 |
| Boron (B)-Dissolved | | | 109.0 | | % | | 80-120 | 23-JUN-20 |
| Cadmium (Cd)-Dissolved | | | 98.1 | | % | | 80-120 | 23-JUN-20 |
| Chromium (Cr)-Dissolved | | | 98.6 | | % | | 80-120 | 23-JUN-20 |
| Cobalt (Co)-Dissolved | | | 94.9 | | % | | 80-120 | 23-JUN-20 |
| Copper (Cu)-Dissolved | | | 97.4 | | % | | 80-120 | 23-JUN-20 |
| Lead (Pb)-Dissolved | | | 103.3 | | % | | 80-120 | 23-JUN-20 |
| Molybdenum (Mo)-Dissolved | | | 96.7 | | % | | 80-120 | 23-JUN-20 |
| Nickel (Ni)-Dissolved | | | 98.3 | | % | | 80-120 | 23-JUN-20 |
| Selenium (Se)-Dissolved | | | 100.6 | | % | | 80-120 | 23-JUN-20 |
| Silver (Ag)-Dissolved | | | 99.97 | | % | | 80-120 | 23-JUN-20 |
| Sodium (Na)-Dissolved | | | 100.1 | | % | | 80-120 | 23-JUN-20 |
| Thallium (Tl)-Dissolved | | | 100.7 | | % | | 80-120 | 23-JUN-20 |
| Uranium (U)-Dissolved | | | 103.5 | | % | | 80-120 | 23-JUN-20 |
| Vanadium (V)-Dissolved | | | 98.4 | | % | | 80-120 | 23-JUN-20 |
| Zinc (Zn)-Dissolved | | | 95.3 | | % | | 80-120 | 23-JUN-20 |
| **WG3347490-1 MB** | | | | | | | | |
| Antimony (Sb)-Dissolved | | | <0.10 | | ug/L | | 0.1 | 23-JUN-20 |
| Arsenic (As)-Dissolved | | | <0.10 | | ug/L | | 0.1 | 23-JUN-20 |
| Barium (Ba)-Dissolved | | | <0.10 | | ug/L | | 0.1 | 23-JUN-20 |
| Beryllium (Be)-Dissolved | | | <0.10 | | ug/L | | 0.1 | 23-JUN-20 |
| Boron (B)-Dissolved | | | <10 | | ug/L | | 10 | 23-JUN-20 |
| Cadmium (Cd)-Dissolved | | | <0.0050 | | ug/L | | 0.005 | 23-JUN-20 |
| Chromium (Cr)-Dissolved | | | <0.50 | | ug/L | | 0.5 | 23-JUN-20 |
| Cobalt (Co)-Dissolved | | | <0.10 | | ug/L | | 0.1 | 23-JUN-20 |
| Copper (Cu)-Dissolved | | | <0.20 | | ug/L | | 0.2 | 23-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Anne Pattison

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **MET-D-UG/L-MS-WT** | **Water** | | | | | | | |
| **Batch R5128237** | | | | | | | | |
| **WG3347490-1 MB** | | | | | | | | |
| Lead (Pb)-Dissolved | | | <0.050 | | ug/L | | 0.05 | 23-JUN-20 |
| Molybdenum (Mo)-Dissolved | | | <0.050 | | ug/L | | 0.05 | 23-JUN-20 |
| Nickel (Ni)-Dissolved | | | <0.50 | | ug/L | | 0.5 | 23-JUN-20 |
| Selenium (Se)-Dissolved | | | <0.050 | | ug/L | | 0.05 | 23-JUN-20 |
| Silver (Ag)-Dissolved | | | <0.050 | | ug/L | | 0.05 | 23-JUN-20 |
| Sodium (Na)-Dissolved | | | <50 | | ug/L | | 50 | 23-JUN-20 |
| Thallium (Tl)-Dissolved | | | <0.010 | | ug/L | | 0.01 | 23-JUN-20 |
| Uranium (U)-Dissolved | | | <0.010 | | ug/L | | 0.01 | 23-JUN-20 |
| Vanadium (V)-Dissolved | | | <0.50 | | ug/L | | 0.5 | 23-JUN-20 |
| Zinc (Zn)-Dissolved | | | <1.0 | | ug/L | | 1 | 23-JUN-20 |
| **WG3347490-5 MS** | | **WG3347490-6** | | | | | | |
| Antimony (Sb)-Dissolved | | | 94.3 | | % | | 70-130 | 23-JUN-20 |
| Arsenic (As)-Dissolved | | | 101.7 | | % | | 70-130 | 23-JUN-20 |
| Barium (Ba)-Dissolved | | | N/A | MS-B | % | | - | 23-JUN-20 |
| Beryllium (Be)-Dissolved | | | 101.4 | | % | | 70-130 | 23-JUN-20 |
| Boron (B)-Dissolved | | | N/A | MS-B | % | | - | 23-JUN-20 |
| Cadmium (Cd)-Dissolved | | | 92.7 | | % | | 70-130 | 23-JUN-20 |
| Chromium (Cr)-Dissolved | | | 99.3 | | % | | 70-130 | 23-JUN-20 |
| Cobalt (Co)-Dissolved | | | 91.1 | | % | | 70-130 | 23-JUN-20 |
| Copper (Cu)-Dissolved | | | 91.7 | | % | | 70-130 | 23-JUN-20 |
| Lead (Pb)-Dissolved | | | 93.8 | | % | | 70-130 | 23-JUN-20 |
| Molybdenum (Mo)-Dissolved | | | 100.5 | | % | | 70-130 | 23-JUN-20 |
| Nickel (Ni)-Dissolved | | | 91.3 | | % | | 70-130 | 23-JUN-20 |
| Selenium (Se)-Dissolved | | | 108.8 | | % | | 70-130 | 23-JUN-20 |
| Silver (Ag)-Dissolved | | | 79.4 | | % | | 70-130 | 23-JUN-20 |
| Sodium (Na)-Dissolved | | | N/A | MS-B | % | | - | 23-JUN-20 |
| Thallium (Tl)-Dissolved | | | 90.8 | | % | | 70-130 | 23-JUN-20 |
| Uranium (U)-Dissolved | | | 98.2 | | % | | 70-130 | 23-JUN-20 |
| Vanadium (V)-Dissolved | | | 105.1 | | % | | 70-130 | 23-JUN-20 |
| Zinc (Zn)-Dissolved | | | 90.5 | | % | | 70-130 | 23-JUN-20 |
| **MET-T-CCMS-WT** | **Water** | | | | | | | |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Anne Pattison

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **MET-T-CCMS-WT** | **Water** | | | | | | | |
| **Batch R5130969** | | | | | | | | |
| **WG3347657-4 DUP** | | **WG3347657-3** | | | | | | |
| Aluminum (Al)-Total | | 0.0286 | 0.0286 | | mg/L | 0.1 | 20 | 24-JUN-20 |
| Antimony (Sb)-Total | | <0.00010 | <0.00010 | RPD-NA | mg/L | N/A | 20 | 24-JUN-20 |
| Arsenic (As)-Total | | 0.00060 | 0.00061 | | mg/L | 2.4 | 20 | 24-JUN-20 |
| Cadmium (Cd)-Total | | <0.0000050 | <0.000005( | RPD-NA | mg/L | N/A | 20 | 24-JUN-20 |
| Chromium (Cr)-Total | | <0.00050 | <0.00050 | RPD-NA | mg/L | N/A | 20 | 24-JUN-20 |
| Cobalt (Co)-Total | | <0.00010 | <0.00010 | RPD-NA | mg/L | N/A | 20 | 24-JUN-20 |
| Copper (Cu)-Total | | 0.00058 | 0.00056 | | mg/L | 2.9 | 20 | 24-JUN-20 |
| Lead (Pb)-Total | | 0.000063 | 0.000059 | | mg/L | 6.4 | 20 | 24-JUN-20 |
| Manganese (Mn)-Total | | 0.0216 | 0.0216 | | mg/L | 0.0 | 20 | 24-JUN-20 |
| Molybdenum (Mo)-Total | | <0.000050 | <0.000050 | RPD-NA | mg/L | N/A | 20 | 24-JUN-20 |
| Nickel (Ni)-Total | | <0.00050 | <0.00050 | RPD-NA | mg/L | N/A | 20 | 24-JUN-20 |
| Selenium (Se)-Total | | 0.000077 | 0.000064 | | mg/L | 17 | 20 | 24-JUN-20 |
| Silver (Ag)-Total | | <0.000050 | <0.000050 | RPD-NA | mg/L | N/A | 20 | 24-JUN-20 |
| Tin (Sn)-Total | | <0.00010 | <0.00010 | RPD-NA | mg/L | N/A | 20 | 24-JUN-20 |
| Titanium (Ti)-Total | | <0.00030 | <0.00030 | RPD-NA | mg/L | N/A | 20 | 24-JUN-20 |
| Zinc (Zn)-Total | | <0.0030 | <0.0030 | RPD-NA | mg/L | N/A | 20 | 24-JUN-20 |
| **WG3347657-2 LCS** | | | | | | | | |
| Aluminum (Al)-Total | | | 94.8 | | % | | 80-120 | 24-JUN-20 |
| Antimony (Sb)-Total | | | 104.5 | | % | | 80-120 | 24-JUN-20 |
| Arsenic (As)-Total | | | 100.6 | | % | | 80-120 | 24-JUN-20 |
| Cadmium (Cd)-Total | | | 101.0 | | % | | 80-120 | 24-JUN-20 |
| Chromium (Cr)-Total | | | 97.1 | | % | | 80-120 | 24-JUN-20 |
| Cobalt (Co)-Total | | | 96.9 | | % | | 80-120 | 24-JUN-20 |
| Copper (Cu)-Total | | | 97.1 | | % | | 80-120 | 24-JUN-20 |
| Lead (Pb)-Total | | | 104.4 | | % | | 80-120 | 24-JUN-20 |
| Manganese (Mn)-Total | | | 97.5 | | % | | 80-120 | 24-JUN-20 |
| Molybdenum (Mo)-Total | | | 99.8 | | % | | 80-120 | 24-JUN-20 |
| Nickel (Ni)-Total | | | 96.1 | | % | | 80-120 | 24-JUN-20 |
| Selenium (Se)-Total | | | 99.9 | | % | | 80-120 | 24-JUN-20 |
| Silver (Ag)-Total | | | 102.6 | | % | | 80-120 | 24-JUN-20 |
| Tin (Sn)-Total | | | 100.5 | | % | | 80-120 | 24-JUN-20 |
| Titanium (Ti)-Total | | | 92.9 | | % | | 80-120 | 24-JUN-20 |
| Zinc (Zn)-Total | | | 98.2 | | % | | 80-120 | 24-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Anne Pattison

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **MET-T-CCMS-WT** | **Water** | | | | | | | |
| **Batch R5130969** | | | | | | | | |
| **WG3347657-1 MB** | | | | | | | | |
| Aluminum (Al)-Total | | | <0.0050 | | mg/L | | 0.005 | 24-JUN-20 |
| Antimony (Sb)-Total | | | <0.00010 | | mg/L | | 0.0001 | 24-JUN-20 |
| Arsenic (As)-Total | | | <0.00010 | | mg/L | | 0.0001 | 24-JUN-20 |
| Cadmium (Cd)-Total | | | <0.000005( | | mg/L | | 0.000005 | 24-JUN-20 |
| Chromium (Cr)-Total | | | <0.00050 | | mg/L | | 0.0005 | 24-JUN-20 |
| Cobalt (Co)-Total | | | <0.00010 | | mg/L | | 0.0001 | 24-JUN-20 |
| Copper (Cu)-Total | | | <0.00050 | | mg/L | | 0.0005 | 24-JUN-20 |
| Lead (Pb)-Total | | | <0.000050 | | mg/L | | 0.00005 | 24-JUN-20 |
| Manganese (Mn)-Total | | | <0.00050 | | mg/L | | 0.0005 | 24-JUN-20 |
| Molybdenum (Mo)-Total | | | <0.000050 | | mg/L | | 0.00005 | 24-JUN-20 |
| Nickel (Ni)-Total | | | <0.00050 | | mg/L | | 0.0005 | 24-JUN-20 |
| Selenium (Se)-Total | | | <0.000050 | | mg/L | | 0.00005 | 24-JUN-20 |
| Silver (Ag)-Total | | | <0.000050 | | mg/L | | 0.00005 | 24-JUN-20 |
| Tin (Sn)-Total | | | <0.00010 | | mg/L | | 0.0001 | 24-JUN-20 |
| Titanium (Ti)-Total | | | <0.00030 | | mg/L | | 0.0003 | 24-JUN-20 |
| Zinc (Zn)-Total | | | <0.0030 | | mg/L | | 0.003 | 24-JUN-20 |
| **WG3347657-5 MS** | | **WG3347657-3** | | | | | | |
| Aluminum (Al)-Total | | | 86.1 | | % | | 70-130 | 24-JUN-20 |
| Antimony (Sb)-Total | | | 101.8 | | % | | 70-130 | 24-JUN-20 |
| Arsenic (As)-Total | | | 96.1 | | % | | 70-130 | 24-JUN-20 |
| Cadmium (Cd)-Total | | | 98.0 | | % | | 70-130 | 24-JUN-20 |
| Chromium (Cr)-Total | | | 93.7 | | % | | 70-130 | 24-JUN-20 |
| Cobalt (Co)-Total | | | 94.6 | | % | | 70-130 | 24-JUN-20 |
| Copper (Cu)-Total | | | 95.2 | | % | | 70-130 | 24-JUN-20 |
| Lead (Pb)-Total | | | 100.5 | | % | | 70-130 | 24-JUN-20 |
| Manganese (Mn)-Total | | | N/A | MS-B | % | | - | 24-JUN-20 |
| Molybdenum (Mo)-Total | | | 97.9 | | % | | 70-130 | 24-JUN-20 |
| Nickel (Ni)-Total | | | 93.7 | | % | | 70-130 | 24-JUN-20 |
| Selenium (Se)-Total | | | 99.4 | | % | | 70-130 | 24-JUN-20 |
| Silver (Ag)-Total | | | 99.5 | | % | | 70-130 | 24-JUN-20 |
| Tin (Sn)-Total | | | 97.1 | | % | | 70-130 | 24-JUN-20 |
| Titanium (Ti)-Total | | | 88.6 | | % | | 70-130 | 24-JUN-20 |
| Zinc (Zn)-Total | | | 94.0 | | % | | 70-130 | 24-JUN-20 |
| **NP,NPE-LCMS-WT** | **Water** | | | | | | | |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Anne Pattison

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **NP,NPE-LCMS-WT** | **Water** | | | | | | | |
| **Batch R5127106** | | | | | | | | |
| **WG3346917-3 DUP** | | **L2463322-2** | | | | | | |
| Nonylphenol | | <1.0 | <1.0 | RPD-NA | ug/L | N/A | 30 | 22-JUN-20 |
| Nonylphenol Monoethoxylates | | <2.0 | <2.0 | RPD-NA | ug/L | N/A | 30 | 22-JUN-20 |
| Nonylphenol Diethoxylates | | <0.10 | <0.10 | RPD-NA | ug/L | N/A | 30 | 22-JUN-20 |
| **WG3346917-2 LCS** | | | | | | | | |
| Nonylphenol | | | 89.7 | | % | | 75-125 | 22-JUN-20 |
| Nonylphenol Monoethoxylates | | | 97.5 | | % | | 75-125 | 22-JUN-20 |
| Nonylphenol Diethoxylates | | | 115.0 | | % | | 75-125 | 22-JUN-20 |
| **WG3346917-1 MB** | | | | | | | | |
| Nonylphenol | | | <1.0 | | ug/L | | 1 | 22-JUN-20 |
| Nonylphenol Monoethoxylates | | | <2.0 | | ug/L | | 2 | 22-JUN-20 |
| Nonylphenol Diethoxylates | | | <0.10 | | ug/L | | 0.1 | 22-JUN-20 |
| **WG3346917-4 MS** | | **L2463322-2** | | | | | | |
| Nonylphenol | | | 109.7 | | % | | 50-150 | 22-JUN-20 |
| Nonylphenol Monoethoxylates | | | 116.4 | | % | | 50-150 | 22-JUN-20 |
| Nonylphenol Diethoxylates | | | 101.7 | | % | | 50-150 | 22-JUN-20 |
| **OGG-SPEC-WT** | **Water** | | | | | | | |
| **Batch R5128196** | | | | | | | | |
| **WG3347263-2 LCS** | | | | | | | | |
| Oil and Grease, Total | | | 97.8 | | % | | 70-130 | 22-JUN-20 |
| Mineral Oil and Grease | | | 94.0 | | % | | 70-130 | 22-JUN-20 |
| **WG3347263-1 MB** | | | | | | | | |
| Oil and Grease, Total | | | <5.0 | | mg/L | | 5 | 22-JUN-20 |
| Mineral Oil and Grease | | | <2.5 | | mg/L | | 2.5 | 22-JUN-20 |
| **P-T-COL-WT** | **Water** | | | | | | | |
| **Batch R5131150** | | | | | | | | |
| **WG3346982-3 DUP** | | **WG3346982-5** | | | | | | |
| Phosphorus, Total | | 0.122 | 0.123 | | mg/L | 0.9 | 20 | 24-JUN-20 |
| **WG3346982-2 LCS** | | | | | | | | |
| Phosphorus, Total | | | 97.2 | | % | | 80-120 | 24-JUN-20 |
| **WG3346982-1 MB** | | | | | | | | |
| Phosphorus, Total | | | <0.0030 | | mg/L | | 0.003 | 24-JUN-20 |
| **WG3346982-4 MS** | | **WG3346982-5** | | | | | | |
| Phosphorus, Total | | | N/A | MS-B | % | | - | 24-JUN-20 |
| **PAH-511-WT** | **Water** | | | | | | | |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Anne Pattison

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAH-511-WT** | **Water** | | | | | | | |
| **Batch R5132230** | | | | | | | | |
| **WG3347760-2 LCS** | | | | | | | | |
| 1-Methylnaphthalene | | | 94.5 | | % | | 50-140 | 25-JUN-20 |
| 2-Methylnaphthalene | | | 85.2 | | % | | 50-140 | 25-JUN-20 |
| Acenaphthene | | | 94.7 | | % | | 50-140 | 25-JUN-20 |
| Acenaphthylene | | | 99.9 | | % | | 50-140 | 25-JUN-20 |
| Anthracene | | | 102.0 | | % | | 50-140 | 25-JUN-20 |
| Benzo(a)anthracene | | | 100.7 | | % | | 50-140 | 25-JUN-20 |
| Benzo(a)pyrene | | | 95.0 | | % | | 50-140 | 25-JUN-20 |
| Benzo(b)fluoranthene | | | 94.4 | | % | | 50-140 | 25-JUN-20 |
| Benzo(g,h,i)perylene | | | 95.7 | | % | | 50-140 | 25-JUN-20 |
| Benzo(k)fluoranthene | | | 92.8 | | % | | 50-140 | 25-JUN-20 |
| Chrysene | | | 89.4 | | % | | 50-140 | 25-JUN-20 |
| Dibenzo(ah)anthracene | | | 92.4 | | % | | 50-140 | 25-JUN-20 |
| Fluoranthene | | | 100.7 | | % | | 50-140 | 25-JUN-20 |
| Fluorene | | | 98.9 | | % | | 50-140 | 25-JUN-20 |
| Indeno(1,2,3-cd)pyrene | | | 107.6 | | % | | 50-140 | 25-JUN-20 |
| Naphthalene | | | 89.8 | | % | | 50-140 | 25-JUN-20 |
| Phenanthrene | | | 103.7 | | % | | 50-140 | 25-JUN-20 |
| Pyrene | | | 100.6 | | % | | 50-140 | 25-JUN-20 |
| **WG3347760-1 MB** | | | | | | | | |
| 1-Methylnaphthalene | | | <0.020 | | ug/L | | 0.02 | 25-JUN-20 |
| 2-Methylnaphthalene | | | <0.020 | | ug/L | | 0.02 | 25-JUN-20 |
| Acenaphthene | | | <0.020 | | ug/L | | 0.02 | 25-JUN-20 |
| Acenaphthylene | | | <0.020 | | ug/L | | 0.02 | 25-JUN-20 |
| Anthracene | | | <0.020 | | ug/L | | 0.02 | 25-JUN-20 |
| Benzo(a)anthracene | | | <0.020 | | ug/L | | 0.02 | 25-JUN-20 |
| Benzo(a)pyrene | | | <0.010 | | ug/L | | 0.01 | 25-JUN-20 |
| Benzo(b)fluoranthene | | | <0.020 | | ug/L | | 0.02 | 25-JUN-20 |
| Benzo(g,h,i)perylene | | | <0.020 | | ug/L | | 0.02 | 25-JUN-20 |
| Benzo(k)fluoranthene | | | <0.020 | | ug/L | | 0.02 | 25-JUN-20 |
| Chrysene | | | <0.020 | | ug/L | | 0.02 | 25-JUN-20 |
| Dibenzo(ah)anthracene | | | <0.020 | | ug/L | | 0.02 | 25-JUN-20 |
| Fluoranthene | | | <0.020 | | ug/L | | 0.02 | 25-JUN-20 |
| Fluorene | | | <0.020 | | ug/L | | 0.02 | 25-JUN-20 |
| Indeno(1,2,3-cd)pyrene | | | <0.020 | | ug/L | | 0.02 | 25-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Anne Pattison

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAH-511-WT** | **Water** | | | | | | | |
| **Batch R5132230** | | | | | | | | |
| **WG3347760-1 MB** | | | | | | | | |
| Naphthalene | | | <0.050 | | ug/L | | 0.05 | 25-JUN-20 |
| Phenanthrene | | | <0.020 | | ug/L | | 0.02 | 25-JUN-20 |
| Pyrene | | | <0.020 | | ug/L | | 0.02 | 25-JUN-20 |
| Surrogate: d8-Naphthalene | | | 90.8 | | % | | 60-140 | 25-JUN-20 |
| Surrogate: d10-Phenanthrene | | | 103.8 | | % | | 60-140 | 25-JUN-20 |
| Surrogate: d12-Chrysene | | | 88.6 | | % | | 60-140 | 25-JUN-20 |
| Surrogate: d10-Acenaphthene | | | 96.1 | | % | | 60-140 | 25-JUN-20 |
| **PAH-EXTRA-WT** | **Water** | | | | | | | |
| **Batch R5131963** | | | | | | | | |
| **WG3348679-2 LCS** | | | | | | | | |
| Benzo(e)pyrene | | | 92.2 | | % | | 60-130 | 25-JUN-20 |
| 1,3-Dinitropyrene | | | 50.9 | LCS-ND | % | | 60-130 | 25-JUN-20 |
| 1,6-Dinitropyrene | | | 32.0 | RRQC | % | | 60-130 | 25-JUN-20 |
| Dibenz(a,h)acridine | | | 143.2 | LCS-H | % | | 60-130 | 25-JUN-20 |
| 1,8-Dinitropyrene | | | 48.1 | RRQC | % | | 60-130 | 25-JUN-20 |
| Dibenz(a,j)acridine | | | 121.1 | | % | | 60-130 | 25-JUN-20 |
| 7H-Dibenzo(c,g)carbazole | | | 129.2 | | % | | 60-130 | 25-JUN-20 |
| Dibenzo(a,i)pyrene | | | 74.7 | | % | | 60-130 | 25-JUN-20 |
| COMMENTS: RRQC; Results are outside ALS control limtis; Reporting limits have been adjusted accordingly or results unaffected. | | | | | | | | |
| **WG3348679-1 MB** | | | | | | | | |
| Benzo(e)pyrene | | | <0.050 | | ug/L | | 0.05 | 25-JUN-20 |
| 1,3-Dinitropyrene | | | <1.0 | | ug/L | | 1 | 25-JUN-20 |
| 1,6-Dinitropyrene | | | <1.0 | | ug/L | | 1 | 25-JUN-20 |
| Dibenz(a,h)acridine | | | <0.050 | | ug/L | | 0.05 | 25-JUN-20 |
| 1,8-Dinitropyrene | | | <1.0 | | ug/L | | 1 | 25-JUN-20 |
| Dibenz(a,j)acridine | | | <0.050 | | ug/L | | 0.05 | 25-JUN-20 |
| 7H-Dibenzo(c,g)carbazole | | | <0.050 | | ug/L | | 0.05 | 25-JUN-20 |
| Dibenzo(a,i)pyrene | | | <0.050 | | ug/L | | 0.05 | 25-JUN-20 |
| Surrogate: d14-Terphenyl | | | 99.1 | | % | | 40-130 | 25-JUN-20 |
| **Batch R5135736** | | | | | | | | |
| **WG3350993-2 LCS** | | | | | | | | |
| Benzo(e)pyrene | | | 94.3 | | % | | 60-130 | 29-JUN-20 |
| 1,3-Dinitropyrene | | | 87.5 | | % | | 60-130 | 29-JUN-20 |
| 1,6-Dinitropyrene | | | 79.6 | | % | | 60-130 | 29-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Anne Pattison

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAH-EXTRA-WT** | **Water** | | | | | | | |
| **Batch R5135736** | | | | | | | | |
| **WG3350993-2 LCS** | | | | | | | | |
| Dibenz(a,h)acridine | | | 141.6 | LCS-H | % | | 60-130 | 29-JUN-20 |
| 1,8-Dinitropyrene | | | 95.4 | | % | | 60-130 | 29-JUN-20 |
| Dibenz(a,j)acridine | | | 119.3 | | % | | 60-130 | 29-JUN-20 |
| 7H-Dibenzo(c,g)carbazole | | | 131.7 | LCS-H | % | | 60-130 | 29-JUN-20 |
| Dibenzo(a,i)pyrene | | | 75.6 | | % | | 60-130 | 29-JUN-20 |
| **WG3350993-1 MB** | | | | | | | | |
| Benzo(e)pyrene | | | <0.050 | | ug/L | | 0.05 | 29-JUN-20 |
| 1,3-Dinitropyrene | | | <1.0 | | ug/L | | 1 | 29-JUN-20 |
| 1,6-Dinitropyrene | | | <1.0 | | ug/L | | 1 | 29-JUN-20 |
| Dibenz(a,h)acridine | | | <0.050 | | ug/L | | 0.05 | 29-JUN-20 |
| 1,8-Dinitropyrene | | | <1.0 | | ug/L | | 1 | 29-JUN-20 |
| Dibenz(a,j)acridine | | | <0.050 | | ug/L | | 0.05 | 29-JUN-20 |
| 7H-Dibenzo(c,g)carbazole | | | <0.050 | | ug/L | | 0.05 | 29-JUN-20 |
| Dibenzo(a,i)pyrene | | | <0.050 | | ug/L | | 0.05 | 29-JUN-20 |
| Surrogate: d14-Terphenyl | | | 97.2 | | % | | 40-130 | 29-JUN-20 |
| **PCB-WT** | **Water** | | | | | | | |
| **Batch R5131760** | | | | | | | | |
| **WG3348248-2 LCS** | | | | | | | | |
| Aroclor 1242 | | | 99.4 | | % | | 65-130 | 25-JUN-20 |
| Aroclor 1248 | | | 111.6 | | % | | 65-130 | 25-JUN-20 |
| Aroclor 1254 | | | 100.7 | | % | | 65-130 | 25-JUN-20 |
| Aroclor 1260 | | | 88.5 | | % | | 65-130 | 25-JUN-20 |
| **WG3348248-1 MB** | | | | | | | | |
| Aroclor 1242 | | | <0.020 | | ug/L | | 0.02 | 25-JUN-20 |
| Aroclor 1248 | | | <0.020 | | ug/L | | 0.02 | 25-JUN-20 |
| Aroclor 1254 | | | <0.020 | | ug/L | | 0.02 | 25-JUN-20 |
| Aroclor 1260 | | | <0.020 | | ug/L | | 0.02 | 25-JUN-20 |
| Surrogate: Decachlorobiphenyl | | | 81.6 | | % | | 50-150 | 25-JUN-20 |
| Surrogate: Tetrachloro-m-xylene | | | 76.2 | | % | | 50-150 | 25-JUN-20 |
| **PH-WT** | **Water** | | | | | | | |
| **Batch R5131812** | | | | | | | | |
| **WG3349175-4 DUP** | | **WG3349175-3** | | | | | | |
| pH | | 7.70 | 7.70 | J | pH units | 0.00 | 0.2 | 24-JUN-20 |
| **WG3349175-2 LCS** | | | | | | | | |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Anne Pattison

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PH-WT** | **Water** | | | | | | | |
| **Batch R5131812** | | | | | | | | |
| **WG3349175-2 LCS** | | | | | | | | |
| pH | | | 7.04 | | pH units | | 6.9-7.1 | 24-JUN-20 |
| **PHENOLS-4AAP-WT** | **Water** | | | | | | | |
| **Batch R5129857** | | | | | | | | |
| **WG3346939-3 DUP** | | **L2463322-2** | | | | | | |
| Phenols (4AAP) | | <0.0010 | <0.0010 | RPD-NA | mg/L | N/A | 20 | 22-JUN-20 |
| **WG3346939-2 LCS** | | | | | | | | |
| Phenols (4AAP) | | | 105.2 | | % | | 85-115 | 22-JUN-20 |
| **WG3346939-1 MB** | | | | | | | | |
| Phenols (4AAP) | | | <0.0010 | | mg/L | | 0.001 | 22-JUN-20 |
| **WG3346939-4 MS** | | **L2463322-2** | | | | | | |
| Phenols (4AAP) | | | 104.5 | | % | | 75-125 | 22-JUN-20 |
| **SOLIDS-TSS-WT** | **Water** | | | | | | | |
| **Batch R5131704** | | | | | | | | |
| **WG3348758-3 DUP** | | **L2463922-1** | | | | | | |
| Total Suspended Solids | | 5200 | 5070 | | mg/L | 2.6 | 20 | 25-JUN-20 |
| **WG3348758-2 LCS** | | | | | | | | |
| Total Suspended Solids | | | 98.2 | | % | | 85-115 | 25-JUN-20 |
| **WG3348758-1 MB** | | | | | | | | |
| Total Suspended Solids | | | <2.0 | | mg/L | | 2 | 25-JUN-20 |
| **TKN-WT** | **Water** | | | | | | | |
| **Batch R5127636** | | | | | | | | |
| **WG3346962-3 DUP** | | **L2463322-3** | | | | | | |
| Total Kjeldahl Nitrogen | | 1.77 | 1.66 | | mg/L | 6.3 | 20 | 22-JUN-20 |
| **WG3346962-2 LCS** | | | | | | | | |
| Total Kjeldahl Nitrogen | | | 109.0 | | % | | 75-125 | 22-JUN-20 |
| **WG3346962-1 MB** | | | | | | | | |
| Total Kjeldahl Nitrogen | | | <0.15 | | mg/L | | 0.15 | 22-JUN-20 |
| **WG3346962-4 MS** | | **L2463322-3** | | | | | | |
| Total Kjeldahl Nitrogen | | | 109.5 | | % | | 70-130 | 22-JUN-20 |
| **VOC-511-HS-WT** | **Water** | | | | | | | |
| **Batch R5132297** | | | | | | | | |
| **WG3349403-4 DUP** | | **WG3349403-3** | | | | | | |
| 1,1,1,2-Tetrachloroethane | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 25-JUN-20 |
| 1,1,2,2-Tetrachloroethane | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 25-JUN-20 |
| 1,1,1-Trichloroethane | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 25-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Anne Pattison

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **VOC-511-HS-WT** | **Water** | | | | | | | |
| **Batch R5132297** | | | | | | | | |
| **WG3349403-4 DUP** | | **WG3349403-3** | | | | | | |
| 1,1,2-Trichloroethane | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 25-JUN-20 |
| 1,1-Dichloroethane | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 25-JUN-20 |
| 1,1-Dichloroethylene | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 25-JUN-20 |
| 1,2-Dibromoethane | | <0.20 | <0.20 | RPD-NA | ug/L | N/A | 30 | 25-JUN-20 |
| 1,2-Dichlorobenzene | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 25-JUN-20 |
| 1,2-Dichloroethane | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 25-JUN-20 |
| 1,2-Dichloropropane | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 25-JUN-20 |
| 1,3-Dichlorobenzene | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 25-JUN-20 |
| 1,4-Dichlorobenzene | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 25-JUN-20 |
| Acetone | | <30 | <30 | RPD-NA | ug/L | N/A | 30 | 25-JUN-20 |
| Benzene | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 25-JUN-20 |
| Bromodichloromethane | | <2.0 | <2.0 | RPD-NA | ug/L | N/A | 30 | 25-JUN-20 |
| Bromoform | | <5.0 | <5.0 | RPD-NA | ug/L | N/A | 30 | 25-JUN-20 |
| Bromomethane | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 25-JUN-20 |
| Carbon tetrachloride | | <0.20 | <0.20 | RPD-NA | ug/L | N/A | 30 | 25-JUN-20 |
| Chlorobenzene | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 25-JUN-20 |
| Chloroform | | <1.0 | <1.0 | RPD-NA | ug/L | N/A | 30 | 25-JUN-20 |
| cis-1,2-Dichloroethylene | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 25-JUN-20 |
| cis-1,3-Dichloropropene | | <0.30 | <0.30 | RPD-NA | ug/L | N/A | 30 | 25-JUN-20 |
| Dibromochloromethane | | <2.0 | <2.0 | RPD-NA | ug/L | N/A | 30 | 25-JUN-20 |
| Dichlorodifluoromethane | | <2.0 | <2.0 | RPD-NA | ug/L | N/A | 30 | 25-JUN-20 |
| Ethylbenzene | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 25-JUN-20 |
| n-Hexane | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 25-JUN-20 |
| m+p-Xylenes | | <0.40 | <0.40 | RPD-NA | ug/L | N/A | 30 | 25-JUN-20 |
| Methyl Ethyl Ketone | | <20 | <20 | RPD-NA | ug/L | N/A | 30 | 25-JUN-20 |
| Methyl Isobutyl Ketone | | <20 | <20 | RPD-NA | ug/L | N/A | 30 | 25-JUN-20 |
| Methylene Chloride | | <5.0 | <5.0 | RPD-NA | ug/L | N/A | 30 | 25-JUN-20 |
| MTBE | | <2.0 | <2.0 | RPD-NA | ug/L | N/A | 30 | 25-JUN-20 |
| o-Xylene | | <0.30 | <0.30 | RPD-NA | ug/L | N/A | 30 | 25-JUN-20 |
| Styrene | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 25-JUN-20 |
| Tetrachloroethylene | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 25-JUN-20 |
| Toluene | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 25-JUN-20 |
| trans-1,2-Dichloroethylene | | <0.50 | <0.50 | | ug/L | | | 25-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Anne Pattison

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **VOC-511-HS-WT** | **Water** | | | | | | | |
| **Batch R5132297** | | | | | | | | |
| **WG3349403-4 DUP** | | **WG3349403-3** | | | | | | |
| trans-1,2-Dichloroethylene | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 25-JUN-20 |
| trans-1,3-Dichloropropene | | <0.30 | <0.30 | RPD-NA | ug/L | N/A | 30 | 25-JUN-20 |
| Trichloroethylene | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 25-JUN-20 |
| Trichlorofluoromethane | | <5.0 | <5.0 | RPD-NA | ug/L | N/A | 30 | 25-JUN-20 |
| Vinyl chloride | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 25-JUN-20 |
| **WG3349403-1 LCS** | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | | | 111.4 | | % | | 70-130 | 25-JUN-20 |
| 1,1,2,2-Tetrachloroethane | | | 84.6 | | % | | 70-130 | 25-JUN-20 |
| 1,1,1-Trichloroethane | | | 114.5 | | % | | 70-130 | 25-JUN-20 |
| 1,1,2-Trichloroethane | | | 117.5 | | % | | 70-130 | 25-JUN-20 |
| 1,1-Dichloroethane | | | 118.2 | | % | | 70-130 | 25-JUN-20 |
| 1,1-Dichloroethylene | | | 111.8 | | % | | 70-130 | 25-JUN-20 |
| 1,2-Dibromoethane | | | 112.4 | | % | | 70-130 | 25-JUN-20 |
| 1,2-Dichlorobenzene | | | 112.9 | | % | | 70-130 | 25-JUN-20 |
| 1,2-Dichloroethane | | | 114.1 | | % | | 70-130 | 25-JUN-20 |
| 1,2-Dichloropropane | | | 122.5 | | % | | 70-130 | 25-JUN-20 |
| 1,3-Dichlorobenzene | | | 110.2 | | % | | 70-130 | 25-JUN-20 |
| 1,4-Dichlorobenzene | | | 113.0 | | % | | 70-130 | 25-JUN-20 |
| Acetone | | | 129.7 | | % | | 60-140 | 25-JUN-20 |
| Benzene | | | 114.5 | | % | | 70-130 | 25-JUN-20 |
| Bromodichloromethane | | | 120.7 | | % | | 70-130 | 25-JUN-20 |
| Bromoform | | | 106.2 | | % | | 70-130 | 25-JUN-20 |
| Bromomethane | | | 139.5 | | % | | 60-140 | 25-JUN-20 |
| Carbon tetrachloride | | | 113.2 | | % | | 70-130 | 25-JUN-20 |
| Chlorobenzene | | | 109.7 | | % | | 70-130 | 25-JUN-20 |
| Chloroform | | | 121.5 | | % | | 70-130 | 25-JUN-20 |
| cis-1,2-Dichloroethylene | | | 114.3 | | % | | 70-130 | 25-JUN-20 |
| cis-1,3-Dichloropropene | | | 114.9 | | % | | 70-130 | 25-JUN-20 |
| Dibromochloromethane | | | 110.7 | | % | | 70-130 | 25-JUN-20 |
| Dichlorodifluoromethane | | | 97.1 | | % | | 50-140 | 25-JUN-20 |
| Ethylbenzene | | | 116.8 | | % | | 70-130 | 25-JUN-20 |
| n-Hexane | | | 115.6 | | % | | 70-130 | 25-JUN-20 |
| m+p-Xylenes | | | 108.0 | | % | | 70-130 | 25-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Anne Pattison

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **VOC-511-HS-WT** | **Water** | | | | | | | |
| **Batch R5132297** | | | | | | | | |
| **WG3349403-1 LCS** | | | | | | | | |
| Methyl Ethyl Ketone | | | 113.4 | | % | | 60-140 | 25-JUN-20 |
| Methyl Isobutyl Ketone | | | 116.6 | | % | | 60-140 | 25-JUN-20 |
| Methylene Chloride | | | 114.8 | | % | | 70-130 | 25-JUN-20 |
| MTBE | | | 111.1 | | % | | 70-130 | 25-JUN-20 |
| o-Xylene | | | 116.0 | | % | | 70-130 | 25-JUN-20 |
| Styrene | | | 103.4 | | % | | 70-130 | 25-JUN-20 |
| Tetrachloroethylene | | | 114.7 | | % | | 70-130 | 25-JUN-20 |
| Toluene | | | 116.4 | | % | | 70-130 | 25-JUN-20 |
| trans-1,2-Dichloroethylene | | | 113.0 | | % | | 70-130 | 25-JUN-20 |
| trans-1,3-Dichloropropene | | | 130.4 | MES | % | | 70-130 | 25-JUN-20 |
| Trichloroethylene | | | 113.1 | | % | | 70-130 | 25-JUN-20 |
| Trichlorofluoromethane | | | 108.0 | | % | | 60-140 | 25-JUN-20 |
| Vinyl chloride | | | 119.9 | | % | | 60-140 | 25-JUN-20 |
| **WG3349403-2 MB** | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | | | <0.50 | | ug/L | | 0.5 | 25-JUN-20 |
| 1,1,2,2-Tetrachloroethane | | | <0.50 | | ug/L | | 0.5 | 25-JUN-20 |
| 1,1,1-Trichloroethane | | | <0.50 | | ug/L | | 0.5 | 25-JUN-20 |
| 1,1,2-Trichloroethane | | | <0.50 | | ug/L | | 0.5 | 25-JUN-20 |
| 1,1-Dichloroethane | | | <0.50 | | ug/L | | 0.5 | 25-JUN-20 |
| 1,1-Dichloroethylene | | | <0.50 | | ug/L | | 0.5 | 25-JUN-20 |
| 1,2-Dibromoethane | | | <0.20 | | ug/L | | 0.2 | 25-JUN-20 |
| 1,2-Dichlorobenzene | | | <0.50 | | ug/L | | 0.5 | 25-JUN-20 |
| 1,2-Dichloroethane | | | <0.50 | | ug/L | | 0.5 | 25-JUN-20 |
| 1,2-Dichloropropane | | | <0.50 | | ug/L | | 0.5 | 25-JUN-20 |
| 1,3-Dichlorobenzene | | | <0.50 | | ug/L | | 0.5 | 25-JUN-20 |
| 1,4-Dichlorobenzene | | | <0.50 | | ug/L | | 0.5 | 25-JUN-20 |
| Acetone | | | <30 | | ug/L | | 30 | 25-JUN-20 |
| Benzene | | | <0.50 | | ug/L | | 0.5 | 25-JUN-20 |
| Bromodichloromethane | | | <2.0 | | ug/L | | 2 | 25-JUN-20 |
| Bromoform | | | <5.0 | | ug/L | | 5 | 25-JUN-20 |
| Bromomethane | | | <0.50 | | ug/L | | 0.5 | 25-JUN-20 |
| Carbon tetrachloride | | | <0.20 | | ug/L | | 0.2 | 25-JUN-20 |
| Chlorobenzene | | | <0.50 | | ug/L | | 0.5 | 25-JUN-20 |
| Chloroform | | | <1.0 | | ug/L | | 1 | 25-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Anne Pattison

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **VOC-511-HS-WT** | **Water** | | | | | | | |
| **Batch R5132297** | | | | | | | | |
| **WG3349403-2 MB** | | | | | | | | |
| cis-1,2-Dichloroethylene | | | <0.50 | | ug/L | | 0.5 | 25-JUN-20 |
| cis-1,3-Dichloropropene | | | <0.30 | | ug/L | | 0.3 | 25-JUN-20 |
| Dibromochloromethane | | | <2.0 | | ug/L | | 2 | 25-JUN-20 |
| Dichlorodifluoromethane | | | <2.0 | | ug/L | | 2 | 25-JUN-20 |
| Ethylbenzene | | | <0.50 | | ug/L | | 0.5 | 25-JUN-20 |
| n-Hexane | | | <0.50 | | ug/L | | 0.5 | 25-JUN-20 |
| m+p-Xylenes | | | <0.40 | | ug/L | | 0.4 | 25-JUN-20 |
| Methyl Ethyl Ketone | | | <20 | | ug/L | | 20 | 25-JUN-20 |
| Methyl Isobutyl Ketone | | | <20 | | ug/L | | 20 | 25-JUN-20 |
| Methylene Chloride | | | <5.0 | | ug/L | | 5 | 25-JUN-20 |
| MTBE | | | <2.0 | | ug/L | | 2 | 25-JUN-20 |
| o-Xylene | | | <0.30 | | ug/L | | 0.3 | 25-JUN-20 |
| Styrene | | | <0.50 | | ug/L | | 0.5 | 25-JUN-20 |
| Tetrachloroethylene | | | <0.50 | | ug/L | | 0.5 | 25-JUN-20 |
| Toluene | | | <0.50 | | ug/L | | 0.5 | 25-JUN-20 |
| trans-1,2-Dichloroethylene | | | <0.50 | | ug/L | | 0.5 | 25-JUN-20 |
| trans-1,3-Dichloropropene | | | <0.30 | | ug/L | | 0.3 | 25-JUN-20 |
| Trichloroethylene | | | <0.50 | | ug/L | | 0.5 | 25-JUN-20 |
| Trichlorofluoromethane | | | <5.0 | | ug/L | | 5 | 25-JUN-20 |
| Vinyl chloride | | | <0.50 | | ug/L | | 0.5 | 25-JUN-20 |
| Surrogate: 1,4-Difluorobenzene | | | 99.2 | | % | | 70-130 | 25-JUN-20 |
| Surrogate: 4-Bromofluorobenzene | | | 95.8 | | % | | 70-130 | 25-JUN-20 |
| **WG3349403-5 MS** | | **WG3349403-3** | | | | | | |
| 1,1,1,2-Tetrachloroethane | | | 112.1 | | % | | 50-140 | 25-JUN-20 |
| 1,1,2,2-Tetrachloroethane | | | 89.9 | | % | | 50-140 | 25-JUN-20 |
| 1,1,1-Trichloroethane | | | 115.4 | | % | | 50-140 | 25-JUN-20 |
| 1,1,2-Trichloroethane | | | 120.1 | | % | | 50-140 | 25-JUN-20 |
| 1,1-Dichloroethane | | | 119.8 | | % | | 50-140 | 25-JUN-20 |
| 1,1-Dichloroethylene | | | 111.4 | | % | | 50-140 | 25-JUN-20 |
| 1,2-Dibromoethane | | | 114.0 | | % | | 50-140 | 25-JUN-20 |
| 1,2-Dichlorobenzene | | | 111.3 | | % | | 50-140 | 25-JUN-20 |
| 1,2-Dichloroethane | | | 118.1 | | % | | 50-140 | 25-JUN-20 |
| 1,2-Dichloropropane | | | 125.1 | | % | | 50-140 | 25-JUN-20 |
| 1,3-Dichlorobenzene | | | 106.2 | | % | | 50-140 | 25-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Anne Pattison

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **VOC-511-HS-WT** | **Water** | | | | | | | |
| **Batch R5132297** | | | | | | | | |
| **WG3349403-5 MS** | | **WG3349403-3** | | | | | | |
| 1,4-Dichlorobenzene | | | 108.6 | | % | | 50-140 | 25-JUN-20 |
| Acetone | | | 130.7 | | % | | 50-140 | 25-JUN-20 |
| Benzene | | | 116.1 | | % | | 50-140 | 25-JUN-20 |
| Bromodichloromethane | | | 123.6 | | % | | 50-140 | 25-JUN-20 |
| Bromoform | | | 109.1 | | % | | 50-140 | 25-JUN-20 |
| Bromomethane | | | 137.0 | | % | | 50-140 | 25-JUN-20 |
| Carbon tetrachloride | | | 113.5 | | % | | 50-140 | 25-JUN-20 |
| Chlorobenzene | | | 109.2 | | % | | 50-140 | 25-JUN-20 |
| Chloroform | | | 123.9 | | % | | 50-140 | 25-JUN-20 |
| cis-1,2-Dichloroethylene | | | 116.6 | | % | | 50-140 | 25-JUN-20 |
| cis-1,3-Dichloropropene | | | 112.6 | | % | | 50-140 | 25-JUN-20 |
| Dibromochloromethane | | | 112.7 | | % | | 50-140 | 25-JUN-20 |
| Dichlorodifluoromethane | | | 93.2 | | % | | 50-140 | 25-JUN-20 |
| Ethylbenzene | | | 114.8 | | % | | 50-140 | 25-JUN-20 |
| n-Hexane | | | 114.4 | | % | | 50-140 | 25-JUN-20 |
| m+p-Xylenes | | | 106.1 | | % | | 50-140 | 25-JUN-20 |
| Methyl Ethyl Ketone | | | 118.6 | | % | | 50-140 | 25-JUN-20 |
| Methyl Isobutyl Ketone | | | 122.8 | | % | | 50-140 | 25-JUN-20 |
| Methylene Chloride | | | 117.4 | | % | | 50-140 | 25-JUN-20 |
| MTBE | | | 110.7 | | % | | 50-140 | 25-JUN-20 |
| o-Xylene | | | 114.8 | | % | | 50-140 | 25-JUN-20 |
| Styrene | | | 102.3 | | % | | 50-140 | 25-JUN-20 |
| Tetrachloroethylene | | | 111.8 | | % | | 50-140 | 25-JUN-20 |
| Toluene | | | 115.0 | | % | | 50-140 | 25-JUN-20 |
| trans-1,2-Dichloroethylene | | | 112.2 | | % | | 50-140 | 25-JUN-20 |
| trans-1,3-Dichloropropene | | | 123.6 | | % | | 50-140 | 25-JUN-20 |
| Trichloroethylene | | | 113.3 | | % | | 50-140 | 25-JUN-20 |
| Trichlorofluoromethane | | | 107.3 | | % | | 50-140 | 25-JUN-20 |
| Vinyl chloride | | | 118.0 | | % | | 50-140 | 25-JUN-20 |
| **VOC-ROU-HS-WT** | **Water** | | | | | | | |
| **Batch R5132297** | | | | | | | | |
| **WG3349403-4 DUP** | | **WG3349403-3** | | | | | | |
| 1,1,2,2-Tetrachloroethane | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 25-JUN-20 |
| 1,2-Dichlorobenzene | | <0.50 | <0.50 | | | | | |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Anne Pattison

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **VOC-ROU-HS-WT** | **Water** | | | | | | | |
| **Batch R5132297** | | | | | | | | |
| **WG3349403-4 DUP** | | **WG3349403-3** | | | | | | |
| 1,2-Dichlorobenzene | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 25-JUN-20 |
| 1,4-Dichlorobenzene | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 25-JUN-20 |
| Benzene | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 25-JUN-20 |
| Chloroform | | <1.0 | <1.0 | RPD-NA | ug/L | N/A | 30 | 25-JUN-20 |
| cis-1,2-Dichloroethylene | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 25-JUN-20 |
| Dichloromethane | | <2.0 | <2.0 | RPD-NA | ug/L | N/A | 30 | 25-JUN-20 |
| Ethylbenzene | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 25-JUN-20 |
| m+p-Xylenes | | <0.40 | <0.40 | RPD-NA | ug/L | N/A | 30 | 25-JUN-20 |
| o-Xylene | | <0.30 | <0.30 | RPD-NA | ug/L | N/A | 30 | 25-JUN-20 |
| Tetrachloroethylene | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 25-JUN-20 |
| Toluene | | <0.40 | <0.40 | RPD-NA | ug/L | N/A | 30 | 25-JUN-20 |
| trans-1,3-Dichloropropene | | <0.30 | <0.30 | RPD-NA | ug/L | N/A | 30 | 25-JUN-20 |
| Trichloroethylene | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 25-JUN-20 |
| **WG3349403-1 LCS** | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | | | 84.6 | | % | | 70-130 | 25-JUN-20 |
| 1,2-Dichlorobenzene | | | 112.9 | | % | | 70-130 | 25-JUN-20 |
| 1,4-Dichlorobenzene | | | 113.0 | | % | | 70-130 | 25-JUN-20 |
| Benzene | | | 114.5 | | % | | 70-130 | 25-JUN-20 |
| Chloroform | | | 121.5 | | % | | 70-130 | 25-JUN-20 |
| cis-1,2-Dichloroethylene | | | 114.3 | | % | | 70-130 | 25-JUN-20 |
| Dichloromethane | | | 114.8 | | % | | 70-130 | 25-JUN-20 |
| Ethylbenzene | | | 116.8 | | % | | 70-130 | 25-JUN-20 |
| m+p-Xylenes | | | 108.0 | | % | | 70-130 | 25-JUN-20 |
| o-Xylene | | | 116.0 | | % | | 70-130 | 25-JUN-20 |
| Tetrachloroethylene | | | 114.7 | | % | | 70-130 | 25-JUN-20 |
| Toluene | | | 116.4 | | % | | 70-130 | 25-JUN-20 |
| trans-1,3-Dichloropropene | | | 130.4 | MES | % | | 70-130 | 25-JUN-20 |
| Trichloroethylene | | | 113.1 | | % | | 70-130 | 25-JUN-20 |
| **WG3349403-2 MB** | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | | | <0.50 | | ug/L | | 0.5 | 25-JUN-20 |
| 1,2-Dichlorobenzene | | | <0.50 | | ug/L | | 0.5 | 25-JUN-20 |
| 1,4-Dichlorobenzene | | | <0.50 | | ug/L | | 0.5 | 25-JUN-20 |
| Benzene | | | <0.50 | | ug/L | | 0.5 | 25-JUN-20 |
| | | | | | | | 1 | |

# Quality Control Report



Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Anne Pattison

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **VOC-ROU-HS-WT** | **Water** | | | | | | | |
| **Batch R5132297** | | | | | | | | |
| **WG3349403-2 MB** | | | | | | | | |
| Chloroform | | | <1.0 | | ug/L | | 1 | 25-JUN-20 |
| cis-1,2-Dichloroethylene | | | <0.50 | | ug/L | | 0.5 | 25-JUN-20 |
| Dichloromethane | | | <2.0 | | ug/L | | 2 | 25-JUN-20 |
| Ethylbenzene | | | <0.50 | | ug/L | | 0.5 | 25-JUN-20 |
| m+p-Xylenes | | | <0.40 | | ug/L | | 0.4 | 25-JUN-20 |
| o-Xylene | | | <0.30 | | ug/L | | 0.3 | 25-JUN-20 |
| Tetrachloroethylene | | | <0.50 | | ug/L | | 0.5 | 25-JUN-20 |
| Toluene | | | <0.40 | | ug/L | | 0.4 | 25-JUN-20 |
| trans-1,3-Dichloropropene | | | <0.30 | | ug/L | | 0.3 | 25-JUN-20 |
| Trichloroethylene | | | <0.50 | | ug/L | | 0.5 | 25-JUN-20 |
| Surrogate: 1,4-Difluorobenzene | | | 99.2 | | % | | 70-130 | 25-JUN-20 |
| Surrogate: 4-Bromofluorobenzene | | | 95.8 | | % | | 70-130 | 25-JUN-20 |
| **WG3349403-5 MS** | | **WG3349403-3** | | | | | | |
| 1,1,2,2-Tetrachloroethane | | | 89.9 | | % | | 50-150 | 25-JUN-20 |
| 1,2-Dichlorobenzene | | | 111.3 | | % | | 50-150 | 25-JUN-20 |
| 1,4-Dichlorobenzene | | | 108.6 | | % | | 50-150 | 25-JUN-20 |
| Benzene | | | 116.1 | | % | | 50-150 | 25-JUN-20 |
| Chloroform | | | 123.9 | | % | | 50-150 | 25-JUN-20 |
| cis-1,2-Dichloroethylene | | | 116.6 | | % | | 50-150 | 25-JUN-20 |
| Dichloromethane | | | 117.4 | | % | | 50-150 | 25-JUN-20 |
| Ethylbenzene | | | 114.8 | | % | | 50-150 | 25-JUN-20 |
| m+p-Xylenes | | | 106.1 | | % | | 50-150 | 25-JUN-20 |
| o-Xylene | | | 114.8 | | % | | 50-150 | 25-JUN-20 |
| Tetrachloroethylene | | | 111.8 | | % | | 50-150 | 25-JUN-20 |
| Toluene | | | 115.0 | | % | | 50-150 | 25-JUN-20 |
| trans-1,3-Dichloropropene | | | 123.6 | | % | | 50-150 | 25-JUN-20 |
| Trichloroethylene | | | 113.3 | | % | | 50-150 | 25-JUN-20 |

# Quality Control Report

Workorder: L2463602 Report Date: 30-JUN-20

Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Anne Pattison



**Legend:**

| | |
|---|---|
| Limit | ALS Control Limit (Data Quality Objectives) |
| DUP | Duplicate |
| RPD | Relative Percent Difference |
| N/A | Not Available |
| LCS | Laboratory Control Sample |
| SRM | Standard Reference Material |
| MS | Matrix Spike |
| MSD | Matrix Spike Duplicate |
| ADE | Average Desorption Efficiency |
| MB | Method Blank |
| IRM | Internal Reference Material |
| CRM | Certified Reference Material |
| CCV | Continuing Calibration Verification |
| CVS | Calibration Verification Standard |
| LCSD | Laboratory Control Sample Duplicate |

**Sample Parameter Qualifier Definitions:**

| Qualifier | Description |
|---|---|
| J | Duplicate results and limits are expressed in terms of absolute difference. |
| LCS-H | Lab Control Sample recovery was above ALS DQO. Non-detected sample results are considered reliable. Other results, if reported, have been qualified. |
| LCS-ND | Lab Control Sample recovery was slightly outside ALS DQO. Reported non-detect results for associated samples were unaffected. |
| MES | Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME). |
| MS-B | Matrix Spike recovery could not be accurately calculated due to high analyte background in sample. |
| RPD-NA | Relative Percent Difference Not Available due to result(s) being less than detection limit. |
| RRQC | Refer to report remarks for information regarding this QC result. |

# Quality Control Report

Workorder: L2463602 Report Date: 30-JUN-20

Client: WSP Canada Group Limited
100 Commerce Valley Drive West
Thornhill ON L3T 0A1
Contact: Anne Pattison



**Hold Time Exceedances:**

| ALS Product Description | Sample ID | Sampling Date | Date Processed | Rec. HT | Actual HT | Units | Qualifier |
|---|---|---|---|---|---|---|---|
| **Physical Tests** | | | | | | | |
| pH | | | | | | | |
| | 1 | 19-JUN-20 | 24-JUN-20 00:00 | 4 | 5 | days | EHT |
| | 2 | 19-JUN-20 | 24-JUN-20 00:00 | 4 | 5 | days | EHT |
| | 3 | 19-JUN-20 | 24-JUN-20 00:00 | 4 | 5 | days | EHT |
| | 4 | 19-JUN-20 | 24-JUN-20 00:00 | 4 | 5 | days | EHT |
| | 6 | 19-JUN-20 | 24-JUN-20 00:00 | 4 | 5 | days | EHT |

**Legend & Qualifier Definitions:**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR: Exceeded ALS recommended hold time prior to sample receipt.
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT: Exceeded ALS recommended hold time prior to analysis.
Rec. HT: ALS recommended hold time (see units).

Notes*:
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2463602 were received on 19-JUN-20 18:25.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

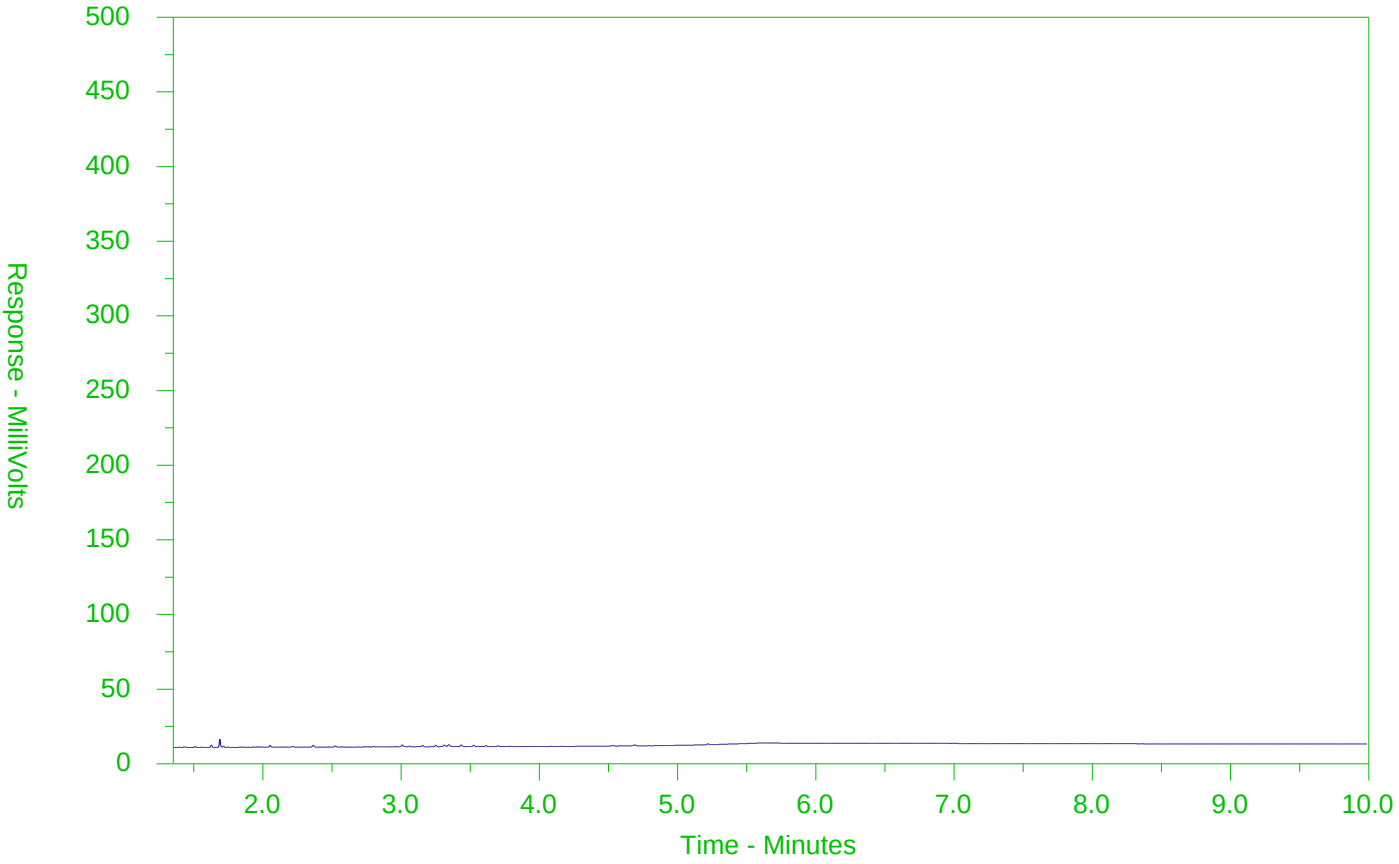
---

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

# CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2463602-1
Client Sample ID: BH7




| ←F2→ | ←F3→ | ←F4→ | |
|---|---|---|---|
| nC10 | nC16 | nC34 | nC50 |
| 174°C | 287°C | 481°C | 575°C |
| 346°F | 549°F | 898°F | 1067°F |
| Gasoline → | ← Motor Oils/Lube Oils/Grease → | | |
| ← Diesel/Jet Fuels → | | | |

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

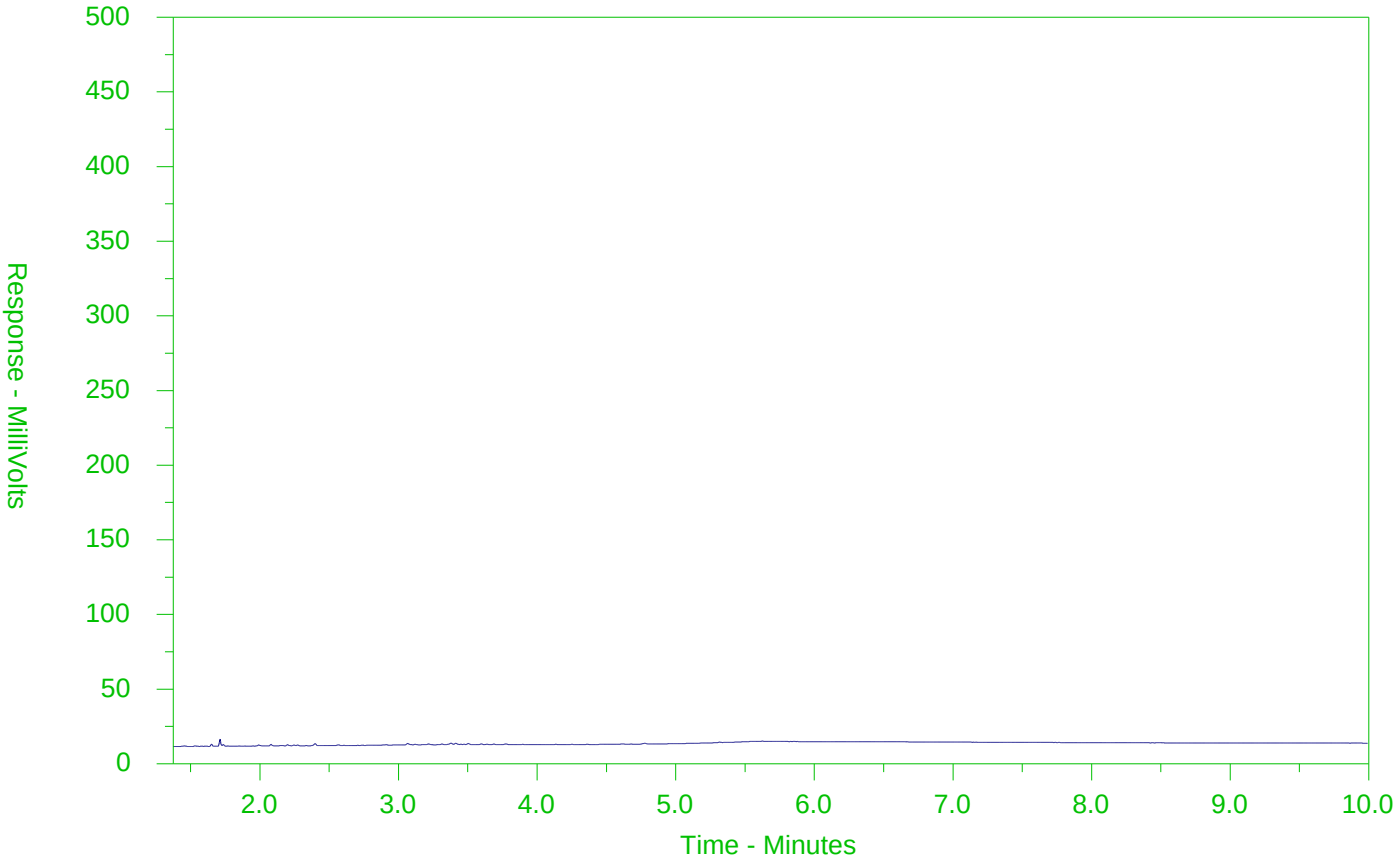
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.

# CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2463602-4
Client Sample ID: BH2




| ←F2→ | ←F3→ | ←F4→ | |
|---|---|---|---|
| nC10 | nC16 | nC34 | nC50 |
| 174°C | 287°C | 481°C | 575°C |
| 346°F | 549°F | 898°F | 1067°F |
| Gasoline → | ← Motor Oils/Lube Oils/Grease → | | |
| ← Diesel/Jet Fuels → | | | |

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

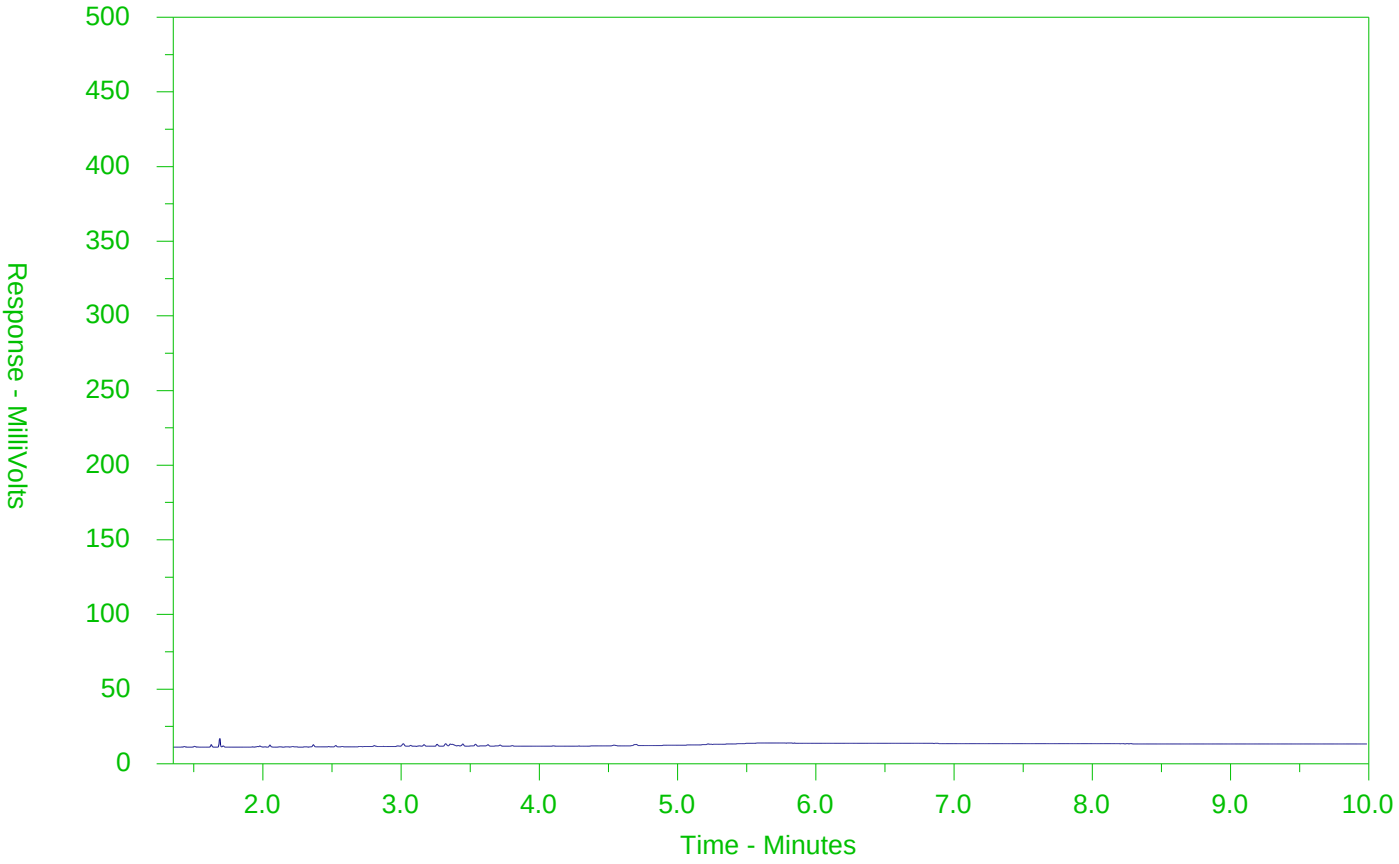
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.

# CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2463602-5
Client Sample ID: DUP02




| ←F2→ | ←F3→ | ←F4→ | |
|---|---|---|---|
| nC10 | nC16 | nC34 | nC50 |
| 174°C | 287°C | 481°C | 575°C |
| 346°F | 549°F | 898°F | 1067°F |
| Gasoline → | | ← Motor Oils/Lube Oils/Grease → | |
| ← Diesel/Jet Fuels → | | | |

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

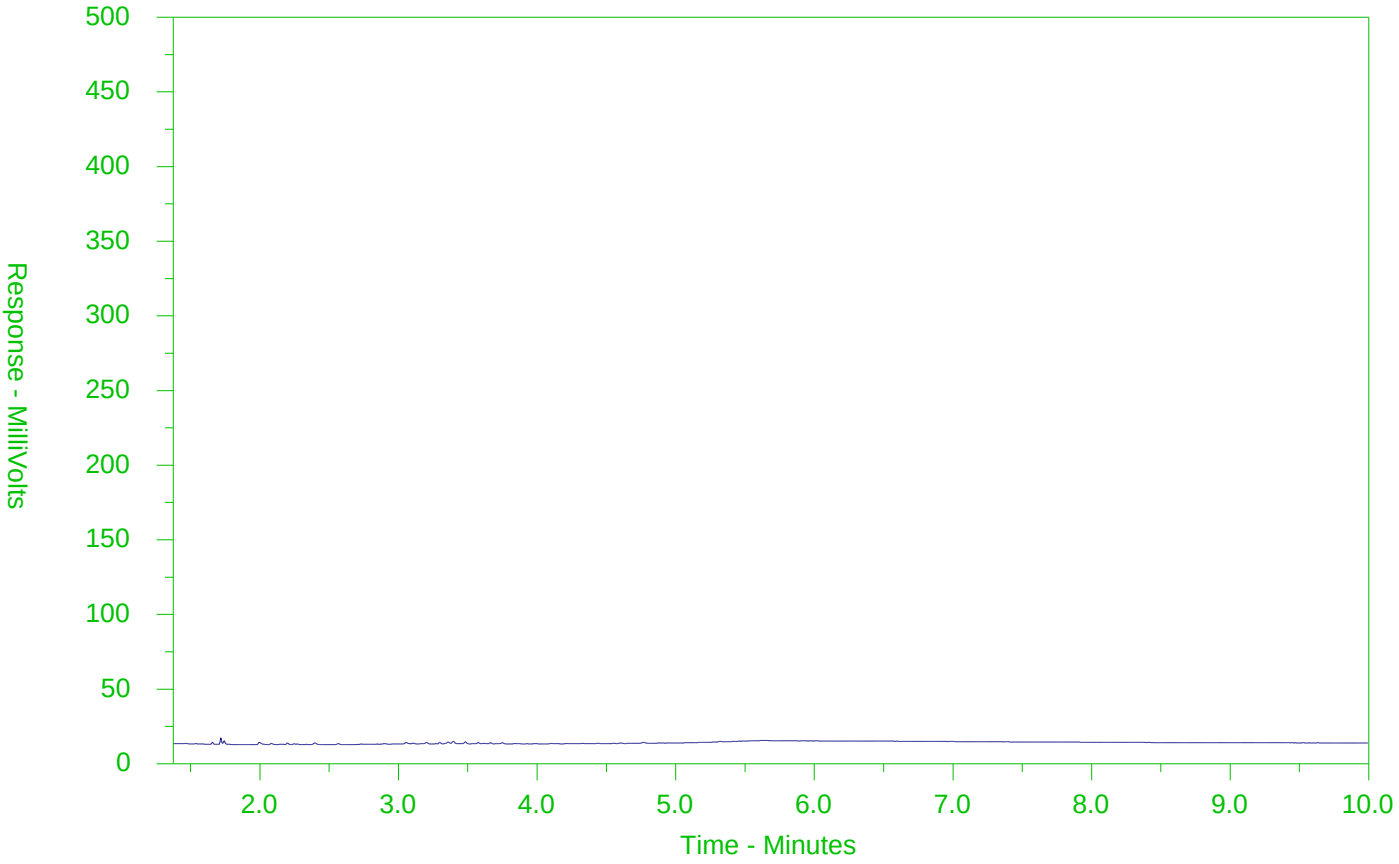
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.

# CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2463602-6
Client Sample ID: BH1




| ←F2→ | ←F3→ | ←F4→ | |
|---|---|---|---|
| nC10 | nC16 | nC34 | nC50 |
| 174°C | 287°C | 481°C | 575°C |
| 346°F | 549°F | 898°F | 1067°F |
| Gasoline → | | ← Motor Oils/Lube Oils/Grease → | |
| ← Diesel/Jet Fuels → | | | |

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.

ALS Environmental
www.alsglobal.com

# Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L2463602-COFC

COC Number: 17 - 802001

Page 1 of 1

| Report To | Contact and company name below will appear on the final report |
|---|---|
| Company: | WSP Canada Group Ltd |
| Contact: | Anne Pattison 905 5999094 |
| Phone: | |
| Company address below will appear on the final report | |
| Street: | 610 Chartwell Rd |
| City/Province: | Oakville, ON |
| Postal Code: | |
| **Invoice To** | Same as Report To [X] YES [ ] NO |
| | Copy of Invoice with Report [ ] YES [X] NO |
| Company: | |
| Contact: | |

**Project Information**

| | |
|---|---|
| ALS Account # / Quote #: | |
| Job #: | 19M-01888-CO-CONTAM |
| PO / AFE: | |
| LSD: | |
| ALS Lab Work Order # (lab use only): | L2463602 |

**Report Format / Distribution**

Select Report Format: [X] PDF [X] EXCEL [ ] EDD (DIGITAL)
Quality Control (QC) Report with Report [X] YES [ ] NO
[X] Compare Results to Criteria on Report - provide details below if box checked
Select Distribution: [X] EMAIL [ ] MAIL [ ] FAX
Email 1 or Fax: edd@mmm.ca
Email 2: valyn.bernard@wsp.com
Email 3: anne.pattison@wsp.com

**Invoice Distribution**

Select Invoice Distribution: [X] EMAIL [ ] MAIL [ ] FAX
Email 1 or Fax: derek.stewart@wsp.com
Email 2: valyn.bernard@wsp.com payables.ontario@wsp.com

**Oil and Gas Required Fields (client use)**

| | |
|---|---|
| AFE/Cost Center: | PO# |
| Major/Minor Code: | Routing Code: |
| Requisitioner: | |
| Location: | |
| ALS Contact: | Sampler: |

**Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)**

Regular [R]: [X] Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days): 4 day [P4-20%] [ ] | 3 day [P3-25%] [ ] | 2 day [P2-50%] [ ]

EMERGENCY: 1 Business day [E - 100%] [ ] | Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] [ ]

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm

For tests that can not be performed according to the service level selected, you will be contacted.

**Analysis Request**

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

| ALS Sample # (lab use only) | Sample Identification and/or Coordinates (This description will appear on the report) | Date (dd-mmm-yy) | Time (hh:mm) | Sample Type | NUMBER OF CONTAINERS | F | P | Reg 153 metals & Inorganics | Reg 153 VOCs | Reg 153 PHCs F1-4 | Reg 153 PAHs | Reg 153 PHC F2-4 | City of Toronto Sewer Use | SAMPLES ON HOLD | SUSPECTED HAZARD (see Special Instructions) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | BH7 | 19-JUN-20 | AM | GW | 22 | X | X | X | X | | | | X | | |
| | DUP01 | | AM | | 2 | X | X | | | | | | | | |
| | BH5 | | PM | | 23 | X | X | X | X | | | | X | | on hold |
| | BH2 | | | | 22 | X | X | X | X | X | | | X | | |
| | DUP02 | | | | 4 | | | | X | X | | | | | |
| | BH1 | | | | 22 | X | X | X | X | | | | X | | |

**Drinking Water (DW) Samples[1] (client use)**

Are samples taken from a Regulated DW System? [ ] YES [X] NO

Are samples for human consumption/ use? [ ] YES [X] NO

**Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)**

- Take total metals & total mercury from gen chem bottle
- very silty for BH2
- low recovery BH1
- Reg 153/04 Table 9 & Table 3 ICC / City of Toronto sanitary and storm sewer use

**SAMPLE CONDITION AS RECEIVED (lab use only)**

| | | | | | |
|---|---|---|---|---|---|
| Frozen | [ ] | SIF Observations | Yes [ ] | No | [ ] |
| Ice Packs | [X] | Ice Cubes [ ] | Custody seal intact | Yes [ ] | No [ ] |
| Cooling Initiated | [X] | | | | |

| INITIAL COOLER TEMPERATURES °C | | | | FINAL COOLER TEMPERATURES °C | | | |
|---|---|---|---|---|---|---|---|
| | | | | 21.8 | 23.4 | | |

**SHIPMENT RELEASE (client use)**

| Released by: | Date: | Time: |
|---|---|---|
| Anne Pattison | June 19, 2020 | 6:20 pm |

**INITIAL SHIPMENT RECEPTION (lab use only)**

| Received by: | Date: | Time: |
|---|---|---|
| | | |

**FINAL SHIPMENT RECEPTION (lab use only)**

| Received by: | Date: | Time: |
|---|---|---|
| BH | 10/19/20 | 1825 |

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

JUNE 2018 FRONT

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

WSP Canada Group Limited
ATTN: Anne Pattison/Valyn Bernard
610 Chartwell Road
Suite 300
Oakville ON L6J 4A5

Date Received: 18-JUN-20
Report Date: 25-JUN-20 15:13 (MT)
Version: FINAL REV. 2

Client Phone: 905-882-1100

# Certificate of Analysis

## Lab Work Order #: L2463001

Project P.O. #: NOT SUBMITTED
Job Reference: 19M-01888-00-CONTAM
C of C Numbers:
Legal Site Desc:

Emily Hansen
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

# ANALYTICAL REPORT

## Summary of Guideline Exceedances

| ALS ID | Client ID | Grouping | Analyte | Result | Guideline Limit | Unit |
|---|---|---|---|---|---|---|
| **Guideline** | | | | | | |
| **Ontario Regulation 153/04 - April 15, 2011 Standards - T3-Non-Potable Ground Water-All Types of Property Uses (Coarse)** | | | | | | |
| (No parameter exceedances) | | | | | | |
| **Ontario Regulation 153/04 - April 15, 2011 Standards - T9-Non-Potable Ground Water-All Types of Property Use** | | | | | | |
| L2463001-1 | BH6 | Anions and Nutrients | Chloride (Cl) | 2160 | 1800 | mg/L |

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

# ANALYTICAL REPORT

## Physical Tests - WATER

| | | Guide Limits | | | | |
|---|---|---|---|---|---|---|
| **Lab ID** | | | | L2463001-1 | L2463001-2 | L2463001-3 |
| **Sample Date** | | | | 18-JUN-20 | 18-JUN-20 | 18-JUN-20 |
| **Sample ID** | | | | BH6 | BH3 | BH4 |
| **Analyte** | **Unit** | **#1** | **#2** | | | |
| Conductivity | mS/cm | - | - | 6.04 | 1.01 | 1.10 |
| pH | pH units | - | - | 7.08 | 7.92 | 7.58 |
| Total Suspended Solids | mg/L | - | - | 61.4 | 1630 DLHC | 693 DLHC |

**Guide Limit #1: T3-Non-Potable Ground Water-All Types of Property Uses (Coarse)**
**Guide Limit #2: T9-Non-Potable Ground Water-All Types of Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

# ANALYTICAL REPORT

## Anions and Nutrients - WATER

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | Lab ID | L2463001-1 | L2463001-2 | L2463001-3 |
| | | | Sample Date | 18-JUN-20 | 18-JUN-20 | 18-JUN-20 |
| | | | Sample ID | BH6 | BH3 | BH4 |
| Analyte | Unit | Guide Limits #1 | #2 | | | |
| Chloride (Cl) | mg/L | 2300 | 1800 | 2160 DLDS | 85.2 | 90.2 |
| Fluoride (F) | mg/L | - | - | <0.40 DLDS | 0.233 | 0.113 |
| Total Kjeldahl Nitrogen | mg/L | - | - | 0.35 | 0.88 | 0.91 |
| Phosphorus, Total | mg/L | - | - | 0.0267 | 0.678 | 0.342 |

**Guide Limit #1: T3-Non-Potable Ground Water-All Types of Property Uses (Coarse)**
**Guide Limit #2: T9-Non-Potable Ground Water-All Types of Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

# ANALYTICAL REPORT

## Cyanides - WATER

| | | Guide Limits | | | | |
|---|---|---|---|---|---|---|
| **Lab ID** | | | | L2463001-1 | L2463001-2 | L2463001-3 |
| **Sample Date** | | | | 18-JUN-20 | 18-JUN-20 | 18-JUN-20 |
| **Sample ID** | | | | BH6 | BH3 | BH4 |
| **Analyte** | **Unit** | **#1** | **#2** | | | |
| Cyanide, Weak Acid Diss | ug/L | 66 | 52 | <2.0 | <2.0 | <2.0 |
| Cyanide, Total | mg/L | - | - | <0.0020 | <0.0020 | <0.0020 |

**Guide Limit #1: T3-Non-Potable Ground Water-All Types of Property Uses (Coarse)**
**Guide Limit #2: T9-Non-Potable Ground Water-All Types of Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

# ANALYTICAL REPORT

## Bacteriological Tests - WATER

| Analyte | Unit | Guide Limits #1 | Guide Limits #2 | Lab ID | Sample Date | Sample ID |
|---|---|---|---|---|---|---|
| | | | | L2463001-1 | L2463001-2 | L2463001-3 |
| | | | | 18-JUN-20 | 18-JUN-20 | 18-JUN-20 |
| | | | | BH6 | BH3 | BH4 |
| E. Coli | CFU/100mL | - | - | 0 | 12 DLM | <2 DLM |

**Guide Limit #1: T3-Non-Potable Ground Water-All Types of Property Uses (Coarse)**
**Guide Limit #2: T9-Non-Potable Ground Water-All Types of Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

# ANALYTICAL REPORT

## Total Metals - WATER

| Analyte | Unit | Guide Limits #1 | Guide Limits #2 | Lab ID / Sample Date / Sample ID: L2463001-1, 18-JUN-20, BH6 | L2463001-2, 18-JUN-20, BH3 | L2463001-3, 18-JUN-20, BH4 |
|---|---|---|---|---|---|---|
| Aluminum (Al)-Total | mg/L | - | - | 0.550 DLHC | 9.70 DLHC | 6.30 DLHC |
| Antimony (Sb)-Total | mg/L | 20 | 16 | <0.0010 DLHC | <0.0010 DLHC | <0.0010 DLHC |
| Arsenic (As)-Total | mg/L | 1.9 | 1.5 | <0.0010 DLHC | 0.0045 DLHC | 0.0036 DLHC |
| Cadmium (Cd)-Total | mg/L | 0.0027 | 0.0021 | <0.000050 DLHC | <0.000090 DLM | 0.000053 DLHC |
| Chromium (Cr)-Total | mg/L | 0.81 | 0.64 | <0.0050 DLHC | 0.0165 DLHC | 0.0124 DLHC |
| Cobalt (Co)-Total | mg/L | 0.066 | 0.052 | 0.0016 DLHC | 0.0078 DLHC | 0.0048 DLHC |
| Copper (Cu)-Total | mg/L | 0.087 | 0.069 | <0.0050 DLHC | 0.0193 DLHC | 0.0110 DLHC |
| Lead (Pb)-Total | mg/L | 0.025 | 0.02 | <0.00050 DLHC | 0.00864 DLHC | 0.00603 DLHC |
| Manganese (Mn)-Total | mg/L | - | - | 0.146 DLHC | 0.620 DLHC | 0.392 DLHC |
| Mercury (Hg)-Total | mg/L | 0.00029 | 0.00029 | <0.0000050 SRU | <0.0000050 SRU | 0.0000122 SRU |
| Molybdenum (Mo)-Total | mg/L | 9.2 | 7.3 | 0.00266 DLHC | 0.0359 DLHC | 0.00549 DLHC |
| Nickel (Ni)-Total | mg/L | 0.49 | 0.39 | <0.0050 DLHC | 0.0168 DLHC | 0.0106 DLHC |
| Selenium (Se)-Total | mg/L | 0.063 | 0.05 | <0.00050 DLHC | 0.00118 DLHC | <0.00050 DLHC |
| Silver (Ag)-Total | mg/L | 0.0015 | 0.0012 | <0.00050 DLHC | <0.00050 DLHC | <0.00050 DLHC |
| Tin (Sn)-Total | mg/L | - | - | <0.0010 DLHC | <0.0010 DLHC | <0.0010 DLHC |
| Titanium (Ti)-Total | mg/L | - | - | <0.030 DLUI | 0.255 DLHC | 0.253 DLHC |
| Zinc (Zn)-Total | mg/L | 1.1 | 0.89 | <0.030 DLHC | 0.049 DLHC | 0.032 DLHC |

**Guide Limit #1: T3-Non-Potable Ground Water-All Types of Property Uses (Coarse)**
**Guide Limit #2: T9-Non-Potable Ground Water-All Types of Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

# ANALYTICAL REPORT

## Dissolved Metals - WATER

| Analyte | Unit | Guide Limits #1 | Guide Limits #2 | Lab ID | Sample Date | Sample ID |
|---|---|---|---|---|---|---|
| | | | | L2463001-1 | L2463001-2 | L2463001-3 |
| | | | | 18-JUN-20 | 18-JUN-20 | 18-JUN-20 |
| | | | | BH6 | BH3 | BH4 |
| Dissolved Mercury Filtration Location | | - | - | FIELD | FIELD | FIELD |
| Dissolved Metals Filtration Location | | - | - | FIELD | FIELD | FIELD |
| Antimony (Sb)-Dissolved | ug/L | 20000 | 16000 | <1.0 DLHC | 0.60 | 0.21 |
| Arsenic (As)-Dissolved | ug/L | 1900 | 1500 | <1.0 DLHC | 1.12 | 1.08 |
| Barium (Ba)-Dissolved | ug/L | 29000 | 23000 | 315 DLHC | 151 | 170 |
| Beryllium (Be)-Dissolved | ug/L | 67 | 53 | <1.0 DLHC | <0.10 | <0.10 |
| Boron (B)-Dissolved | ug/L | 45000 | 36000 | <100 DLHC | 42 | 141 |
| Cadmium (Cd)-Dissolved | ug/L | 2.7 | 2.1 | <0.050 DLHC | <0.02 DLM | <0.010 |
| Chromium (Cr)-Dissolved | ug/L | 810 | 640 | <5.0 DLHC | 1.43 | <0.50 |
| Cobalt (Co)-Dissolved | ug/L | 66 | 52 | 1.3 DLHC | 0.97 | 0.43 |
| Copper (Cu)-Dissolved | ug/L | 87 | 69 | <2.0 DLHC | 0.85 | 2.28 |
| Lead (Pb)-Dissolved | ug/L | 25 | 20 | <0.50 DLHC | 0.761 | 0.112 |
| Mercury (Hg)-Dissolved | ug/L | 0.29 | 0.29 | <0.0050 | <0.0050 | <0.0050 |
| Molybdenum (Mo)-Dissolved | ug/L | 9200 | 7300 | 2.30 DLHC | 28.9 | 4.74 |
| Nickel (Ni)-Dissolved | ug/L | 490 | 390 | <5.0 DLHC | 1.56 | 1.20 |
| Selenium (Se)-Dissolved | ug/L | 63 | 50 | <0.50 DLHC | 1.01 | 0.167 |
| Silver (Ag)-Dissolved | ug/L | 1.5 | 1.2 | <0.50 DLHC | <0.050 | <0.050 |
| Sodium (Na)-Dissolved | ug/L | 23000001800000 | | 747000 DLHC | 168000 DLHC | 64800 |
| Thallium (Tl)-Dissolved | ug/L | 510 | 400 | <0.10 DLHC | <0.010 | 0.022 |
| Uranium (U)-Dissolved | ug/L | 420 | 330 | 0.79 DLHC | 1.06 | 1.35 |
| Vanadium (V)-Dissolved | ug/L | 250 | 200 | <5.0 DLHC | 1.81 | 1.26 |
| Zinc (Zn)-Dissolved | ug/L | 1100 | 890 | <10 DLHC | 3.5 | 1.7 |

**Guide Limit #1: T3-Non-Potable Ground Water-All Types of Property Uses (Coarse)**
**Guide Limit #2: T9-Non-Potable Ground Water-All Types of Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

# ANALYTICAL REPORT

## Speciated Metals - WATER

| | | Guide Limits | | | | |
|---|---|---|---|---|---|---|
| **Lab ID** | | | | L2463001-1 | L2463001-2 | L2463001-3 |
| **Sample Date** | | | | 18-JUN-20 | 18-JUN-20 | 18-JUN-20 |
| **Sample ID** | | | | BH6 | BH3 | BH4 |
| **Analyte** | **Unit** | **#1** | **#2** | | | |
| Chromium, Hexavalent | mg/L | 0.14 | 0.11 | <0.00050 SRU | <0.00050 SRU | <0.00050 SRU |
| Chromium, Hexavalent | ug/L | 140 | 110 | <0.50 | <0.50 | <0.50 |

**Guide Limit #1: T3-Non-Potable Ground Water-All Types of Property Uses (Coarse)**
**Guide Limit #2: T9-Non-Potable Ground Water-All Types of Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

# ANALYTICAL REPORT

## Aggregate Organics - WATER

| | | | | Lab ID | L2463001-1 | L2463001-2 | L2463001-3 |
|---|---|---|---|---|---|---|---|
| | | | | Sample Date | 18-JUN-20 | 18-JUN-20 | 18-JUN-20 |
| | | | | Sample ID | BH6 | BH3 | BH4 |
| | | Guide Limits | | | | | |
| Analyte | Unit | #1 | #2 | | | | |
| BOD | mg/L | - | - | <3.0 BODL | <3.0 BODL | <3.0 BODL |
| Oil and Grease, Total | mg/L | - | - | <5.0 | <5.0 | <5.0 |
| Animal/Veg Oil & Grease | mg/L | - | - | <5.0 | <5.0 | <5.0 |
| Mineral Oil and Grease | mg/L | - | - | <2.5 | <2.5 | <2.5 |
| Phenols (4AAP) | mg/L | - | - | 0.0016 | 0.0022 | <0.0010 |

**Guide Limit #1: T3-Non-Potable Ground Water-All Types of Property Uses (Coarse)**
**Guide Limit #2: T9-Non-Potable Ground Water-All Types of Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

## Volatile Organic Compounds - WATER

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | Lab ID | L2463001-1 | L2463001-2 | L2463001-3 | L2463001-4 |
| | | | Sample Date | 18-JUN-20 | 18-JUN-20 | 18-JUN-20 | 18-JUN-20 |
| | | | Sample ID | BH6 | BH3 | BH4 | TRIP BLANKS |
| | | Guide Limits | | | | | |
| Analyte | Unit | #1 | #2 | | | | |
| Acetone | ug/L | 130000 | 100000 | <30 | <30 | | <30 |
| Benzene | ug/L | 44 | 44 | <0.50 | <0.50 | <0.50 OWP | <0.50 |
| Bromodichloromethane | ug/L | 85000 | 67000 | <2.0 | <2.0 | | <2.0 |
| Bromoform | ug/L | 380 | 380 | <5.0 | <5.0 | | <5.0 |
| Bromomethane | ug/L | 5.6 | 5.6 | <0.50 | <0.50 | | <0.50 |
| Carbon tetrachloride | ug/L | 0.79 | 0.79 | <0.20 | <0.20 | | <0.20 |
| Chlorobenzene | ug/L | 630 | 500 | <0.50 | <0.50 | | <0.50 |
| Dibromochloromethane | ug/L | 82000 | 65000 | <2.0 | <2.0 | | <2.0 |
| Chloroform | ug/L | 2.4 | 2.4 | <1.0 | <1.0 | <1.0 OWP | <1.0 |
| 1,2-Dibromoethane | ug/L | 0.25 | 0.25 | <0.20 | <0.20 | | <0.20 |
| 1,2-Dichlorobenzene | ug/L | 4600 | 4600 | <0.50 | <0.50 | <0.50 OWP | <0.50 |
| 1,3-Dichlorobenzene | ug/L | 9600 | 7600 | <0.50 | <0.50 | | <0.50 |
| 1,4-Dichlorobenzene | ug/L | 8 | 8 | <0.50 | <0.50 | <0.50 OWP | <0.50 |
| Dichlorodifluoromethane | ug/L | 4400 | 3500 | <2.0 | <2.0 | | <2.0 |
| 1,1-Dichloroethane | ug/L | 320 | 320 | <0.50 | <0.50 | | <0.50 |
| 1,2-Dichloroethane | ug/L | 1.6 | 1.6 | <0.50 | <0.50 | | <0.50 |
| 1,1-Dichloroethylene | ug/L | 1.6 | 1.6 | <0.50 | <0.50 | | <0.50 |
| cis-1,2-Dichloroethylene | ug/L | 1.6 | 1.6 | <0.50 | <0.50 | <0.50 OWP | <0.50 |
| trans-1,2-Dichloroethylene | ug/L | 1.6 | 1.6 | <0.50 | <0.50 | | <0.50 |
| Dichloromethane | ug/L | 610 | 610 | <2.0 | <2.0 | <2.0 OWP | |
| Methylene Chloride | ug/L | 610 | 610 | <5.0 | <5.0 | | <5.0 |
| 1,2-Dichloropropane | ug/L | 16 | 16 | <0.50 | <0.50 | | <0.50 |
| cis-1,3-Dichloropropene | ug/L | - | - | <0.30 | <0.30 | | <0.30 |
| trans-1,3-Dichloropropene | ug/L | - | - | <0.30 | <0.50 | <0.50 OWP | <0.30 |
| | | | | <0.50 | <0.30 | | |
| 1,3-Dichloropropene (cis & trans) | ug/L | 5.2 | 5.2 | <0.58 | <0.50 | | <0.50 |
| Ethylbenzene | ug/L | 2300 | 1800 | <0.50 | <0.50 | <0.50 OWP | <0.50 |
| n-Hexane | ug/L | 51 | 51 | <0.50 | <0.50 | | <0.50 |
| Methyl Ethyl Ketone | ug/L | 470000 | 470000 | <20 | <20 | | <20 |
| Methyl Isobutyl Ketone | ug/L | 140000 | 140000 | <20 | <20 | | <20 |
| MTBE | ug/L | 190 | 190 | <2.0 | <2.0 | | <2.0 |

**Guide Limit #1: T3-Non-Potable Ground Water-All Types of Property Uses (Coarse)**

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

## Volatile Organic Compounds - WATER

| Analyte | Unit | Guide Limits #1 | Guide Limits #2 | Lab ID | L2463001-1 | L2463001-2 | L2463001-3 | L2463001-4 |
|---|---|---|---|---|---|---|---|---|
| | | | | Sample Date | 18-JUN-20 | 18-JUN-20 | 18-JUN-20 | 18-JUN-20 |
| | | | | Sample ID | BH6 | BH3 | BH4 | TRIP BLANKS |
| Styrene | ug/L | 1300 | 1300 | | <0.50 | <0.50 | | <0.50 |
| 1,1,1,2-Tetrachloroethane | ug/L | 3.3 | 3.4 | | <0.50 | <0.50 | | <0.50 |
| 1,1,2,2-Tetrachloroethane | ug/L | 3.2 | 3.2 | | <0.50 | <0.50 | <0.50 OWP | <0.50 |
| Tetrachloroethylene | ug/L | 1.6 | 1.6 | | <0.50 | <0.50 | <0.50 OWP | <0.50 |
| Toluene | ug/L | 18000 | 14000 | | <0.50 | <0.50 | 0.58 OWP | <0.50 |
| 1,1,1-Trichloroethane | ug/L | 640 | 640 | | <0.50 | <0.50 | | <0.50 |
| 1,1,2-Trichloroethane | ug/L | 4.7 | 4.7 | | <0.50 | <0.50 | | <0.50 |
| Trichloroethylene | ug/L | 1.6 | 1.6 | | <0.50 | <0.50 | <0.50 OWP | <0.50 |
| Trichlorofluoromethane | ug/L | 2500 | 2000 | | <5.0 | <5.0 | | <5.0 |
| Vinyl chloride | ug/L | 0.5 | 0.5 | | <0.50 | <0.50 | | <0.50 |
| o-Xylene | ug/L | - | - | | <0.50 | <0.50 | <0.50 OWP | <0.30 |
| | | | | | <0.30 | <0.30 | | |
| m+p-Xylenes | ug/L | - | - | | <0.40 | <1.0 | <1.0 OWP | <0.40 |
| | | | | | <1.0 | <0.40 | | |
| Xylenes (Total) | ug/L | 4200 | 3300 | | <1.1 | <0.50 | <1.1 | <0.50 |
| Surrogate: 4-Bromofluorobenzene | % | - | - | | 95.6 | 97.0 | 98.5 | 97.4 |
| Surrogate: 1,4-Difluorobenzene | % | - | - | | 99.4 | 99.2 | 99.6 | 99.4 |

**Guide Limit #1: T3-Non-Potable Ground Water-All Types of Property Uses (Coarse)**
**Guide Limit #2: T9-Non-Potable Ground Water-All Types of Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

# ANALYTICAL REPORT

## Hydrocarbons - WATER

| | | | | | |
|---|---|---|---|---|---|
| | | | **Lab ID** | L2463001-1 | L2463001-2 |
| | | | **Sample Date** | 18-JUN-20 | 18-JUN-20 |
| | | | **Sample ID** | BH6 | BH3 |
| | | **Guide Limits** | | | |
| **Analyte** | **Unit** | **#1** | **#2** | | |
| F1 (C6-C10) | ug/L | 750 | 420 | <25 | <25 |
| F1-BTEX | ug/L | 750 | 420 | <25 | <25 |
| F2 (C10-C16) | ug/L | 150 | 150 | <100 | <100 |
| F2-Naphth | ug/L | - | - | <100 | <100 |
| F3 (C16-C34) | ug/L | 500 | 500 | <250 | <250 |
| F3-PAH | ug/L | - | - | <250 | <250 |
| F4 (C34-C50) | ug/L | 500 | 500 | <250 | <250 |
| Total Hydrocarbons (C6-C50) | ug/L | - | - | <370 | <370 |
| Chrom. to baseline at nC50 | | - | - | YES | YES |
| Surrogate: 2-Bromobenzotrifluoride | % | - | - | 90.9 | 95.8 |
| Surrogate: 3,4-Dichlorotoluene | % | - | - | 73.4 | 77.0 |

**Guide Limit #1: T3-Non-Potable Ground Water-All Types of Property Uses (Coarse)**
**Guide Limit #2: T9-Non-Potable Ground Water-All Types of Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

# ANALYTICAL REPORT

## Polycyclic Aromatic Hydrocarbons - WATER

| | | | | Lab ID | L2463001-1 | L2463001-2 | L2463001-3 |
|---|---|---|---|---|---|---|---|
| | | | | Sample Date | 18-JUN-20 | 18-JUN-20 | 18-JUN-20 |
| | | | | Sample ID | BH6 | BH3 | BH4 |
| | | Guide Limits | | | | | |
| Analyte | Unit | #1 | #2 | | | | |
| Acenaphthene | ug/L | 600 | 600 | <0.020 | <0.020 | <0.010 |
| | | | | <0.010 | <0.010 | |
| Acenaphthylene | ug/L | 1.8 | 1.4 | <0.020 | <0.020 | |
| Anthracene | ug/L | 2.4 | 1 | <0.010 | <0.020 | <0.010 |
| | | | | <0.020 | <0.010 | |
| Benzo(a)anthracene | ug/L | 4.7 | 1.8 | <0.020 | <0.020 | <0.010 |
| | | | | <0.010 | <0.010 | |
| Benzo(a)pyrene | ug/L | 0.81 | 0.81 | <0.010 | <0.010 | <0.010 |
| | | | | <0.010 | <0.010 | |
| Benzo(b)fluoranthene | ug/L | 0.75 | 0.75 | <0.020 | <0.010 | <0.010 |
| | | | | <0.010 | <0.020 | |
| Benzo(e)pyrene | ug/L | - | - | <0.050 | <0.050 | <0.050 |
| Benzo(g,h,i)perylene | ug/L | 0.2 | 0.2 | <0.020 | <0.020 | |
| Benzo(ghi)perylene | ug/L | 0.2 | 0.2 | <0.010 | <0.010 | <0.010 |
| Benzo(k)fluoranthene | ug/L | 0.4 | 0.4 | <0.020 | <0.010 | <0.010 |
| | | | | <0.010 | <0.020 | |
| Chrysene | ug/L | 1 | 0.7 | <0.020 | <0.020 | 0.011 |
| | | | | <0.010 | 0.014 | |
| Dibenz(a,h)acridine | ug/L | - | - | <0.050 | <0.050 | <0.050 |
| Dibenz(a,j)acridine | ug/L | - | - | <0.050 | <0.050 | <0.050 |
| Dibenzo(a,h)anthracene | ug/L | 0.52 | 0.4 | <0.010 | <0.010 | <0.010 |
| Dibenzo(ah)anthracene | ug/L | 0.52 | 0.4 | <0.020 | <0.020 | |
| Dibenzo(a,i)pyrene | ug/L | - | - | <0.050 | <0.050 | <0.050 |
| 7H-Dibenzo(c,g)carbazole | ug/L | - | - | <0.050 | <0.050 | <0.050 |
| 1,3-Dinitropyrene | ug/L | - | - | <1.0 | <1.0 | <1.0 |
| 1,6-Dinitropyrene | ug/L | - | - | <2.0 RRR | <2.0 RRR | <2.0 RRR |
| 1,8-Dinitropyrene | ug/L | - | - | <2.0 RRR | <2.0 RRR | <2.0 RRR |
| Fluoranthene | ug/L | 130 | 73 | <0.020 | <0.020 | <0.010 |
| | | | | <0.010 | <0.010 | |
| Fluorene | ug/L | 400 | 290 | <0.020 | <0.010 | <0.010 |
| | | | | <0.010 | <0.020 | |
| Indeno(1,2,3-cd)pyrene | ug/L | 0.2 | 0.2 | <0.010 | <0.020 | <0.010 |
| | | | | <0.020 | <0.010 | |
| 1+2-Methylnaphthalenes | ug/L | 1800 | 1500 | <0.028 | <0.028 | |
| 1-Methylnaphthalene | ug/L | 1800 | 1500 | <0.020 | <0.020 | |

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

# ANALYTICAL REPORT

## Polycyclic Aromatic Hydrocarbons - WATER

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | Lab ID | L2463001-1 | L2463001-2 | L2463001-3 |
| | | | Sample Date | 18-JUN-20 | 18-JUN-20 | 18-JUN-20 |
| | | | Sample ID | BH6 | BH3 | BH4 |
| | | Guide Limits | | | | |
| Analyte | Unit | #1 | #2 | | | |
| 2-Methylnaphthalene | ug/L | 1800 | 1500 | <0.020 | 0.021 | |
| Naphthalene | ug/L | 1400 | 1400 | 0.016 | <0.050 | 0.011 |
| | | | | <0.050 | 0.015 R | |
| Perylene | ug/L | - | - | <0.010 | 0.020 | <0.010 |
| Phenanthrene | ug/L | 580 | 380 | 0.018 | 0.011 | <0.010 |
| | | | | <0.020 | <0.020 | |
| Pyrene | ug/L | 68 | 5.7 | <0.020 | <0.010 | <0.010 |
| | | | | <0.010 | <0.020 | |
| Surrogate: d10-Acenaphthene | % | - | - | 99.0 | 95.6 | |
| Surrogate: d12-Chrysene | % | - | - | 89.1 | 84.5 | |
| Surrogate: 2-Fluorobiphenyl | % | - | - | 78.1 | 69.7 | 85.0 |
| Surrogate: d8-Naphthalene | % | - | - | 96.4 | 91.9 | |
| Surrogate: d10-Phenanthrene | % | - | - | 103.4 | 101.6 | |
| Surrogate: d14-Terphenyl | % | - | - | 95.6 | 57.3 | 96.2 |
| Surrogate: p-Terphenyl d14 | % | - | - | 100.1 | 54.2 | 96.6 |
| Total PAHs | ug/L | - | - | <3.0 | <3.0 | <3.0 |

**Guide Limit #1: T3-Non-Potable Ground Water-All Types of Property Uses (Coarse)**
**Guide Limit #2: T9-Non-Potable Ground Water-All Types of Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

# ANALYTICAL REPORT

## Semi-Volatile Organics - WATER

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | Lab ID | L2463001-1 | L2463001-2 | L2463001-3 |
| | | | Sample Date | 18-JUN-20 | 18-JUN-20 | 18-JUN-20 |
| | | | Sample ID | BH6 | BH3 | BH4 |
| | | Guide Limits | | | | |
| Analyte | Unit | #1 | #2 | | | |
| 3,3'-Dichlorobenzidine | ug/L | 640 | 500 | <0.40 | <0.40 | <0.40 |
| Di-n-butylphthalate | ug/L | - | - | <1.0 | <1.0 | <1.0 |
| Bis(2-ethylhexyl)phthalate | ug/L | 140 | 30 | <2.0 | <2.0 | <2.0 |
| Pentachlorophenol | ug/L | 62 | 50 | <0.50 | <0.50 | <0.50 |
| Surrogate: 2-Fluorobiphenyl | % | - | - | 81.9 | 76.3 | 82.8 |
| Surrogate: p-Terphenyl d14 | % | - | - | 95.5 | 52.7 | 94.8 |
| Surrogate: 2,4,6-Tribromophenol | % | - | - | 89.4 | 94.3 | 98.2 |

**Guide Limit #1: T3-Non-Potable Ground Water-All Types of Property Uses (Coarse)**
**Guide Limit #2: T9-Non-Potable Ground Water-All Types of Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

# ANALYTICAL REPORT

## Polychlorinated Biphenyls - WATER

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | Lab ID | L2463001-1 | L2463001-2 | L2463001-3 |
| | | | Sample Date | 18-JUN-20 | 18-JUN-20 | 18-JUN-20 |
| | | | Sample ID | BH6 | BH3 | BH4 |
| | | Guide Limits | | | | |
| Analyte | Unit | #1 | #2 | | | |
| Aroclor 1242 | ug/L | - | - | <0.020 | <0.020 | <0.020 |
| Aroclor 1248 | ug/L | - | - | <0.020 | <0.020 | <0.020 |
| Aroclor 1254 | ug/L | - | - | <0.020 | <0.020 | <0.020 |
| Aroclor 1260 | ug/L | - | - | <0.020 | <0.020 | <0.020 |
| Surrogate: Decachlorobiphenyl | % | - | - | 87.3 | 52.3 | 66.4 |
| Total PCBs | ug/L | 7.8 | 0.2 | <0.040 | <0.040 | <0.040 |
| Surrogate: Tetrachloro-m-xylene | % | - | - | 86.3 | 82.8 | 85.0 |

**Guide Limit #1: T3-Non-Potable Ground Water-All Types of Property Uses (Coarse)**
**Guide Limit #2: T9-Non-Potable Ground Water-All Types of Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

# ANALYTICAL REPORT

## Organic Parameters - WATER

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | **Lab ID** | L2463001-1 | L2463001-2 | L2463001-3 |
| | | | **Sample Date** | 18-JUN-20 | 18-JUN-20 | 18-JUN-20 |
| | | | **Sample ID** | BH6 | BH3 | BH4 |
| | | **Guide Limits** | | | | |
| **Analyte** | **Unit** | **#1** | **#2** | | | |
| Nonylphenol | ug/L | - | - | <1.0 | <1.0 | <1.0 |
| Nonylphenol Diethoxylates | ug/L | - | - | <0.10 | <0.10 | <0.10 |
| Total Nonylphenol Ethoxylates | ug/L | - | - | <2.0 | <2.0 | <2.0 |
| Nonylphenol Monoethoxylates | ug/L | - | - | <2.0 | <2.0 | <2.0 |

**Guide Limit #1: T3-Non-Potable Ground Water-All Types of Property Uses (Coarse)**
**Guide Limit #2: T9-Non-Potable Ground Water-All Types of Property Use**

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

# Reference Information

**Additional Comments for Sample Listed:**

| Samplenum | Matrix | Report Remarks | Sample Comments |
|---|---|---|---|
| L2463001-1 | Water | Note: RRR; reporting limit has been adjusted according to recovery in Laboratory Control Sample. | |
| L2463001-1 | Water | Note: RRR; Reporting limit has been adjusted based on recovery of compound in Laboratory Control Sample. | |
| L2463001-2 | Water | Note: RRR; reporting limit has been adjusted according to recovery in Laboratory Control Sample | |
| L2463001-2 | Water | Note: Increased CD LOR due to potential interference NI | |
| L2463001-2 | Water | Note: raised Cd LOR to remove potential Mo interference | |
| L2463001-2 | Water | Note: RRR; Reporting limit has been adjusted based on recovery of compound in Laboratory Control Sample. | |
| L2463001-3 | Water | Note: RRR; reporting limit has been adjusted according to recovery in Laboratory Control Sample | |
| L2463001-3 | Water | Note: RRR; Reporting limit has been adjusted based on recovery of compound in Laboratory Control Sample. | |

**Qualifiers for Individual Parameters Listed:**

| Qualifier | Description |
|---|---|
| R | The ion abundance ratio(s) did not meet the acceptance criteria. Value is an estimated maximum. |
| DLDS | Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity. |
| DLUI | Detection Limit Raised: Unknown Interference generated an apparent false positive test result. |
| BODL | Limit of Reporting for BOD was increased to account for the largest volume of sample tested. |
| DLM | Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity). |
| OWP | Organic water sample contained visible sediment (must be included as part of analysis). Measured concentrations of organic substances in water can be biased high due to presence of |

# Reference Information

sediment.

| | |
|---|---|
| SRU | Sample Received Unpreserved. Results may be biased low for indicated parameter(s) |
| DLHC | Detection Limit Raised: Dilution required due to high concentration of test analyte(s). |
| RRR | Refer to Report Remarks for issues regarding this analysis |

**Methods Listed (if applicable):**

| ALS Test Code | Matrix | Test Description | Method Reference** |
|---|---|---|---|
| **625-PAH-LOW-WT** | Water | EPA 8270 PAH (Low Level) | SW846 8270 |

Aqueous samples are extracted and extracts are analyzed on GC/MSD. Depending on the analytical GC/MS column used benzo(j)fluoranthene may chromatographically co-elute with benzo(b)fluoranthene or benzo(k)fluoranthene.

| | | | |
|---|---|---|---|
| **625-SAN-WT** | Water | Ontario Sanitary Sewer SVOC Target List | SW-846 8270 |

Samples are extracted with solvent and then analyzed by GC/MS.

| | | | |
|---|---|---|---|
| **BOD-WT** | Water | BOD | APHA 5210 B |

This analysis is carried out using procedures adapted from APHA Method 5210B - "Biochemical Oxygen Demand (BOD)". All forms of biochemical oxygen demand (BOD) are determined by diluting and incubating a sample for a specified time period, and measuring the oxygen depletion using a dissolved oxygen meter. Dissolved BOD (SOLUBLE) is determined by filtering the sample through a glass fibre filter prior to dilution. Carbonaceous BOD (CBOD) is determined by adding a nitrification inhibitor to the diluted sample prior to incubation.

| | | | |
|---|---|---|---|
| **CL-IC-N-WT** | Water | Chloride by IC | EPA 300.1 (mod) |

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

| | | | |
|---|---|---|---|
| **CN-TOT-WT** | Water | Cyanide, Total | ISO 14403-2 |

Total cyanide is determined by the combination of UV digestion and distillation. Cyanide is converted to cyanogen chloride by reacting with chloramine-T, the cyanogen chloride then reacts with a combination of barbituric acid and isonicotinic acid to form a highly colored complex.

When using this method, high levels of thiocyanate in samples can cause false positives at ~1-2% of the thiocyanate concentration. For samples with detectable cyanide analyzed by this method, ALS recommends analysis for thiocyanate to check for this potential interference

| | | | |
|---|---|---|---|
| **CN-WAD-R511-WT** | Water | Cyanide (WAD)-O.Reg 153/04 | APHA 4500CN I-Weak acid Dist Colorimet |

Weak acid dissociable cyanide (WAD) is determined by undergoing a distillation procedure. Cyanide is converted to cyanogen chloride by reacting with chloramine-T, the cyanogen chloride then reacts with a combination of barbituric acid and isonicotinic acid to form a highly colored complex.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

| | | | |
|---|---|---|---|
| **CR-CR6-IC-R511-WT** | Water | Hex Chrom-O.Reg 153/04 (July 2011) | EPA 7199 |

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 7199, published by the United States Environmental Protection Agency (EPA). The procedure involves analysis for chromium (VI) by ion chromatography using diphenylcarbazide in a sulphuric acid solution. Chromium (III) is calculated as the difference between the total chromium and the chromium (VI) results.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

| | | | |
|---|---|---|---|
| **CR-CR6-IC-WT** | Water | Chromium +6 | EPA 7199 |

# Reference Information

**Methods Listed (if applicable):**

| ALS Test Code | Matrix | Test Description | Method Reference** |
|---|---|---|---|

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 7199, published by the United States Environmental Protection Agency (EPA). The procedure involves analysis for chromium (VI) by ion chromatography using diphenylcarbazide in a sulphuric acid solution. Chromium (III) is calculated as the difference between the total chromium and the chromium (VI) results.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

| | | | |
|---|---|---|---|
| **EC-R511-WT** | Water | Conductivity-O.Reg 153/04 (July 2011) | APHA 2510 B |

Water samples can be measured directly by immersing the conductivity cell into the sample.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

| | | | |
|---|---|---|---|
| **EC-SCREEN-WT** | Water | Conductivity Screen (Internal Use Only) | APHA 2510 |

Qualitative analysis of conductivity where required during preparation of other tests - e.g. TDS, metals, etc.

| | | | |
|---|---|---|---|
| **EC-WW-MF-WT** | Water | E. Coli | SM 9222D |

A 100 mL volume of sample is filtered through a membrane, the membrane is placed on mFC-BCIG agar and incubated at 44.5 –0 .2 °C for 24 – 2 h. Method ID: WT-TM-1200

| | | | |
|---|---|---|---|
| **F-IC-N-WT** | Water | Fluoride in Water by IC | EPA 300.1 (mod) |

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

| | | | |
|---|---|---|---|
| **F1-F4-511-CALC-WT** | Water | F1-F4 Hydrocarbon Calculated Parameters | CCME CWS-PHC, Pub #1310, Dec 2001-L |

Analytical methods used for analysis of CCME Petroleum Hydrocarbons have been validated and comply with the Reference Method for the CWS PHC.

In cases where results for both F4 and F4G are reported, the greater of the two results must be used in any application of the CWS PHC guidelines and the gravimetric heavy hydrocarbons cannot be added to the C6 to C50 hydrocarbons.
In samples where BTEX and F1 were analyzed , F1-BTEX represents a value where the sum of Benzene, Toluene, Ethylbenzene and total Xylenes has been subtracted from F1.

In samples where PAHs, F2 and F3 were analyzed, F2-Naphth represents the result where Naphthalene has been subtracted from F2. F3-PAH represents a result where the sum of Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene, Fluoranthene, Indeno(1,2,3-cd)pyrene, Phenanthrene, and Pyrene has been subtracted from F3.

Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:
1. All extraction and analysis holding times were met.
2. Instrument performance showing response factors for C6 and C10 within 30% of the response factor for toluene.
3. Linearity of gasoline response within 15% throughout the calibration range.

Unless otherwise qualified, the following quality control criteria have been met for the F2-F4 hydrocarbon ranges:
1. All extraction and analysis holding times were met.
2. Instrument performance showing C10, C16 and C34 response factors within 10% of their average.
3. Instrument performance showing the C50 response factor within 30% of the average of the C10, C16 and C34 response factors.
4. Linearity of diesel or motor oil response within 15% throughout the calibration range.

| | | | |
|---|---|---|---|
| **F1-HS-511-WT** | Water | F1-O.Reg 153/04 (July 2011) | E3398/CCME TIER 1-HS |

Fraction F1 is determined by analyzing by headspace-GC/FID.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

| | | | |
|---|---|---|---|
| **F2-F4-511-WT** | Water | F2-F4-O.Reg 153/04 (July 2011) | EPA 3511/CCME Tier 1 |

# Reference Information

**Methods Listed (if applicable):**

| ALS Test Code | Matrix | Test Description | Method Reference** |
|---|---|---|---|

Petroleum Hydrocarbons (F2-F4 fractions) are extracted from water using a hexane micro-extraction technique. Instrumental analysis is by GC-FID, as per the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil Tier 1 Method, CCME, 2001.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

| | | | |
|---|---|---|---|
| **HG-D-UG/L-CVAA-WT** | Water | Diss. Mercury in Water by CVAAS (ug/L) | EPA 1631E (mod) |

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

| | | | |
|---|---|---|---|
| **HG-T-CVAA-WT** | Water | Total Mercury in Water by CVAAS | EPA 1631E (mod) |

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

| | | | |
|---|---|---|---|
| **MET-D-UG/L-MS-WT** | Water | Diss. Metals in Water by ICPMS (ug/L) | EPA 200.8 |

The metal constituents of a non-acidified sample that pass through a membrane filter prior to ICP/MS analysis.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

| | | | |
|---|---|---|---|
| **MET-T-CCMS-WT** | Water | Total Metals in Water by CRC ICPMS | EPA 200.2/6020A (mod) |

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

| | | | |
|---|---|---|---|
| **METHYLNAPS-CALC-WT** | Water | PAH-Calculated Parameters | SW846 8270 |
| **NP,NPE-LCMS-WT** | Water | Nonylphenols and Ethoxylates by LC/MS-MS | J. Chrom A849 (1999) p.467-482 |

Water samples are filtered and analyzed on LCMS/MS by direct injection.

| | | | |
|---|---|---|---|
| **OGG-SPEC-CALC-WT** | Water | Speciated Oil and Grease A/V Calc | CALCULATION |

Sample is extracted with hexane, sample speciation into mineral and animal/vegetable fractions is achieved via silica gel separation and is then determined gravimetrically.

| | | | |
|---|---|---|---|
| **OGG-SPEC-WT** | Water | Speciated Oil and Grease-Gravimetric | APHA 5520 B |

The procedure involves an extraction of the entire water sample with hexane. Sample speciation into mineral and animal/vegetable fractions is achieved via silica gel separation and is then determined gravimetrically.

| | | | |
|---|---|---|---|
| **P-T-COL-WT** | Water | Total P in Water by Colour | APHA 4500-P PHOSPHORUS |

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is deteremined colourimetrically after persulphate digestion of the sample.

# Reference Information

**Methods Listed (if applicable):**

| ALS Test Code | Matrix | Test Description | Method Reference** |
|---|---|---|---|
| **PAH-511-WT** | Water | PAH-O. Reg 153/04 (July 2011) | SW846 3510/8270 |

Aqueous samples, fortified with surrogates, are extracted using liquid/liquid extraction technique. The sample extracts are concentrated and then analyzed using GC/MS. Results for benzo(b) fluoranthene may include contributions from benzo(j)fluoranthene, if also present in the sample.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

| | | | |
|---|---|---|---|
| **PAH-EXTRA-WT** | Water | Sanitary Sewer Use By-Law Additional PAH | SW 846 8270 |
| **PAH-SUM-CALC-WT** | Water | TOTAL PAH's | CALCULATION |

Total PAH represents the sum of all PAH analytes reported for a given sample. Note that regulatory agencies and criteria differ in their definitions of Total PAH in terms of the individual PAH analytes to be included.

| | | | |
|---|---|---|---|
| **PCB-WT** | Water | Polychlorinated Biphenyls | EPA 8082 |

PCBs are extracted from an aqueous sample at neutral pH with aliquots of dichloromethane using a modified separatory funnel technique. The extracts are analyzed by GC/MSD.

| | | | |
|---|---|---|---|
| **PH-WT** | Water | pH | APHA 4500 H-Electrode |

Water samples are analyzed directly by a calibrated pH meter.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011). Holdtime for samples under this regulation is 28 days

| | | | |
|---|---|---|---|
| **PHENOLS-4AAP-WT** | Water | Phenol (4AAP) | EPA 9066 |

An automated method is used to distill the sample. The distillate is then buffered to pH 9.4 which reacts with 4AAP and potassium ferricyanide to form a red complex which is measured colorimetrically.

| | | | |
|---|---|---|---|
| **SOLIDS-TSS-WT** | Water | Suspended solids | APHA 2540 D-Gravimetric |

A well-mixed sample is filtered through a weighed standard glass fibre filter and the residue retained is dried in an oven at 104–1°C for a minimum of four hours or until a constant weight is achieved.

| | | | |
|---|---|---|---|
| **TKN-WT** | Water | Total Kjeldahl Nitrogen | APHA 4500-Norg D |

This analysis is carried out using procedures adapted from APHA Method 4500-Norg "Nitrogen (Organic)". Total Kjeldahl Nitrogen is determined by sample digestion at 380 Celsius with analysis using an automated colorimetric method.

| | | | |
|---|---|---|---|
| **VOC-1,3-DCP-CALC-WT** | Water | Regulation 153 VOCs | SW8260B/SW8270C |
| **VOC-511-HS-WT** | Water | VOC by GCMS HS O.Reg 153/04 (July 2011) | SW846 8260 |

Liquid samples are analyzed by headspace GC/MSD.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

| | | | |
|---|---|---|---|
| **VOC-ROU-HS-WT** | Water | Volatile Organic Compounds | SW846 8260 |

Aqueous samples are analyzed by headspace-GC/MS.

| | | | |
|---|---|---|---|
| **XYLENES-SUM-CALC-WT** | Water | Sum of Xylene Isomer Concentrations | CALCULATION |

Total xylenes represents the sum of o-xylene and m&p-xylene.

# Reference Information

**Methods Listed (if applicable):**

| ALS Test Code | Matrix | Test Description | Method Reference** |
|---|---|---|---|

**ALS test methods may incorporate modifications from specified reference methods to improve performance.

Chain of Custody Numbers:

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

| Laboratory Definition Code | Laboratory Location |
|---|---|
| WT | ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA |

**GLOSSARY OF REPORT TERMS**

*Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.*
*mg/kg - milligrams per kilogram based on dry weight of sample*
*mg/kg wwt - milligrams per kilogram based on wet weight of sample*
*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight*
*mg/L - unit of concentration based on volume, parts per million.*
*< - Less than.*
*D.L. - The reporting limit.*
*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*
*UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.*
*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*

*Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to, fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information. Guideline limits are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.*

# Quality Control Report



Client: WSP Canada Group Limited
610 Chartwell Road Suite 300
Oakville ON L6J 4A5
Contact: Anne Pattison/Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **625-PAH-LOW-WT** | **Water** | | | | | | | |
| **Batch R5131676** | | | | | | | | |
| **WG3348679-2 LCS** | | | | | | | | |
| Acenaphthene | | | 57.8 | | % | | 50-140 | 25-JUN-20 |
| Anthracene | | | 82.6 | | % | | 50-140 | 25-JUN-20 |
| Benzo(a)anthracene | | | 88.1 | | % | | 50-140 | 25-JUN-20 |
| Benzo(a)pyrene | | | 82.3 | | % | | 60-130 | 25-JUN-20 |
| Benzo(b)fluoranthene | | | 91.8 | | % | | 50-140 | 25-JUN-20 |
| Benzo(ghi)perylene | | | 90.2 | | % | | 50-140 | 25-JUN-20 |
| Benzo(k)fluoranthene | | | 74.2 | | % | | 50-140 | 25-JUN-20 |
| Chrysene | | | 93.3 | | % | | 50-140 | 25-JUN-20 |
| Dibenzo(a,h)anthracene | | | 83.3 | | % | | 50-140 | 25-JUN-20 |
| Fluoranthene | | | 91.7 | | % | | 50-140 | 25-JUN-20 |
| Fluorene | | | 66.7 | | % | | 50-140 | 25-JUN-20 |
| Indeno(1,2,3-cd)pyrene | | | 86.0 | | % | | 50-140 | 25-JUN-20 |
| Naphthalene | | | 53.9 | | % | | 50-130 | 25-JUN-20 |
| Perylene | | | 92.5 | | % | | 50-140 | 25-JUN-20 |
| Phenanthrene | | | 82.9 | | % | | 50-140 | 25-JUN-20 |
| Pyrene | | | 94.1 | | % | | 50-140 | 25-JUN-20 |
| COMMENTS: RRQC; Result is outside ALS control limits; reporting limits have been adjusted accordingly in associated samples. | | | | | | | | |
| **WG3348679-1 MB** | | | | | | | | |
| Acenaphthene | | | <0.010 | | ug/L | | 0.01 | 25-JUN-20 |
| Anthracene | | | <0.010 | | ug/L | | 0.01 | 25-JUN-20 |
| Benzo(a)anthracene | | | <0.010 | | ug/L | | 0.01 | 25-JUN-20 |
| Benzo(a)pyrene | | | <0.010 | | ug/L | | 0.01 | 25-JUN-20 |
| Benzo(b)fluoranthene | | | <0.010 | | ug/L | | 0.01 | 25-JUN-20 |
| Benzo(ghi)perylene | | | <0.010 | | ug/L | | 0.01 | 25-JUN-20 |
| Benzo(k)fluoranthene | | | <0.010 | | ug/L | | 0.01 | 25-JUN-20 |
| Chrysene | | | <0.010 | | ug/L | | 0.01 | 25-JUN-20 |
| Dibenzo(a,h)anthracene | | | <0.010 | | ug/L | | 0.01 | 25-JUN-20 |
| Fluoranthene | | | <0.010 | | ug/L | | 0.01 | 25-JUN-20 |
| Fluorene | | | <0.010 | | ug/L | | 0.01 | 25-JUN-20 |
| Indeno(1,2,3-cd)pyrene | | | <0.010 | | ug/L | | 0.01 | 25-JUN-20 |
| Naphthalene | | | <0.010 | | ug/L | | 0.01 | 25-JUN-20 |
| Perylene | | | <0.010 | | ug/L | | 0.01 | 25-JUN-20 |
| Phenanthrene | | | <0.010 | | ug/L | | 0.01 | 25-JUN-20 |
| Pyrene | | | <0.010 | | ug/L | | 0.01 | 25-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
610 Chartwell Road Suite 300
Oakville ON L6J 4A5
Contact: Anne Pattison/Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **625-PAH-LOW-WT** | **Water** | | | | | | | |
| **Batch R5131676** | | | | | | | | |
| **WG3348679-1 MB** | | | | | | | | |
| Surrogate: 2-Fluorobiphenyl | | | 78.7 | | % | | 40-130 | 25-JUN-20 |
| Surrogate: p-Terphenyl d14 | | | 94.3 | | % | | 40-130 | 25-JUN-20 |
| **625-SAN-WT** | **Water** | | | | | | | |
| **Batch R5131903** | | | | | | | | |
| **WG3348679-2 LCS** | | | | | | | | |
| 3,3'-Dichlorobenzidine | | | 54.0 | | % | | 50-140 | 25-JUN-20 |
| Bis(2-ethylhexyl)phthalate | | | 92.4 | | % | | 50-140 | 25-JUN-20 |
| Di-n-butylphthalate | | | 100.4 | | % | | 50-140 | 25-JUN-20 |
| Pentachlorophenol | | | 118.1 | | % | | 50-140 | 25-JUN-20 |
| **WG3348679-1 MB** | | | | | | | | |
| 3,3'-Dichlorobenzidine | | | <0.40 | | ug/L | | 0.4 | 25-JUN-20 |
| Bis(2-ethylhexyl)phthalate | | | <2.0 | | ug/L | | 2 | 25-JUN-20 |
| Di-n-butylphthalate | | | <1.0 | | ug/L | | 1 | 25-JUN-20 |
| Pentachlorophenol | | | <0.50 | | ug/L | | 0.5 | 25-JUN-20 |
| Surrogate: 2-Fluorobiphenyl | | | 80.8 | | % | | 40-130 | 25-JUN-20 |
| Surrogate: 2,4,6-Tribromophenol | | | 75.7 | | % | | 40-130 | 25-JUN-20 |
| Surrogate: p-Terphenyl d14 | | | 113.8 | | % | | 40-130 | 25-JUN-20 |
| **BOD-WT** | **Water** | | | | | | | |
| **Batch R5131349** | | | | | | | | |
| **WG3345836-10 DUP** | | **L2462445-1** | | | | | | |
| BOD | | <3.0 | <3.0 | RPD-NA | mg/L | N/A | 30 | 19-JUN-20 |
| **WG3345836-11 LCS** | | | | | | | | |
| BOD | | | 104.5 | | % | | 85-115 | 19-JUN-20 |
| **WG3345836-9 MB** | | | | | | | | |
| BOD | | | <2.0 | | mg/L | | 2 | 19-JUN-20 |
| **CL-IC-N-WT** | **Water** | | | | | | | |
| **Batch R5127237** | | | | | | | | |
| **WG3346305-14 DUP** | | **WG3346305-13** | | | | | | |
| Chloride (Cl) | | 52.1 | 52.2 | | mg/L | 0.1 | 20 | 19-JUN-20 |
| **WG3346305-12 LCS** | | | | | | | | |
| Chloride (Cl) | | | 100.9 | | % | | 90-110 | 19-JUN-20 |
| **WG3346305-11 MB** | | | | | | | | |
| Chloride (Cl) | | | <0.50 | | mg/L | | 0.5 | 19-JUN-20 |
| **WG3346305-15 MS** | | **WG3346305-13** | | | | | | |
| Chloride (Cl) | | | 98.4 | | % | | 75-125 | 19-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
610 Chartwell Road Suite 300
Oakville ON L6J 4A5
Contact: Anne Pattison/Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **CL-IC-N-WT** | **Water** | | | | | | | |
| **Batch R5131318** | | | | | | | | |
| **WG3348471-14 DUP** | | **WG3348471-13** | | | | | | |
| Chloride (Cl) | | 5.17 | 5.17 | | mg/L | 0.0 | 20 | 23-JUN-20 |
| **WG3348471-12 LCS** | | | | | | | | |
| Chloride (Cl) | | | 102.4 | | % | | 90-110 | 23-JUN-20 |
| **WG3348471-11 MB** | | | | | | | | |
| Chloride (Cl) | | | <0.50 | | mg/L | | 0.5 | 23-JUN-20 |
| **WG3348471-15 MS** | | **WG3348471-13** | | | | | | |
| Chloride (Cl) | | | 101.7 | | % | | 75-125 | 23-JUN-20 |
| **CN-TOT-WT** | **Water** | | | | | | | |
| **Batch R5127137** | | | | | | | | |
| **WG3345719-3 DUP** | | **WG3345719-5** | | | | | | |
| Cyanide, Total | | <0.0020 | <0.0020 | RPD-NA | mg/L | N/A | 20 | 19-JUN-20 |
| **WG3345719-2 LCS** | | | | | | | | |
| Cyanide, Total | | | 92.4 | | % | | 80-120 | 19-JUN-20 |
| **WG3345719-1 MB** | | | | | | | | |
| Cyanide, Total | | | <0.0020 | | mg/L | | 0.002 | 19-JUN-20 |
| **WG3345719-4 MS** | | **WG3345719-5** | | | | | | |
| Cyanide, Total | | | 95.7 | | % | | 70-130 | 19-JUN-20 |
| **CN-WAD-R511-WT** | **Water** | | | | | | | |
| **Batch R5127137** | | | | | | | | |
| **WG3345719-3 DUP** | | **WG3345719-5** | | | | | | |
| Cyanide, Weak Acid Diss | | <2.0 | <2.0 | RPD-NA | ug/L | N/A | 20 | 19-JUN-20 |
| **WG3345719-2 LCS** | | | | | | | | |
| Cyanide, Weak Acid Diss | | | 100.4 | | % | | 80-120 | 19-JUN-20 |
| **WG3345719-1 MB** | | | | | | | | |
| Cyanide, Weak Acid Diss | | | <2.0 | | ug/L | | 2 | 19-JUN-20 |
| **WG3345719-4 MS** | | **WG3345719-5** | | | | | | |
| Cyanide, Weak Acid Diss | | | 106.9 | | % | | 75-125 | 19-JUN-20 |
| **CR-CR6-IC-R511-WT** | **Water** | | | | | | | |
| **Batch R5127005** | | | | | | | | |
| **WG3345883-4 DUP** | | **WG3345883-3** | | | | | | |
| Chromium, Hexavalent | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 20 | 19-JUN-20 |
| **WG3345883-2 LCS** | | | | | | | | |
| Chromium, Hexavalent | | | 98.5 | | % | | 80-120 | 19-JUN-20 |
| **WG3345883-1 MB** | | | | | | | | |
| Chromium, Hexavalent | | | <0.50 | | ug/L | | 0.5 | 19-JUN-20 |
| **WG3345883-5 MS** | | **WG3345883-3** | | | | | | |

# Quality Control Report



Client: WSP Canada Group Limited
610 Chartwell Road Suite 300
Oakville ON L6J 4A5
Contact: Anne Pattison/Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **CR-CR6-IC-R511-WT** | **Water** | | | | | | | |
| **Batch R5127005** | | | | | | | | |
| **WG3345883-5 MS** | | **WG3345883-3** | | | | | | |
| Chromium, Hexavalent | | | 95.9 | | % | | 70-130 | 19-JUN-20 |
| **CR-CR6-IC-WT** | **Water** | | | | | | | |
| **Batch R5127010** | | | | | | | | |
| **WG3345884-4 DUP** | | **WG3345884-3** | | | | | | |
| Chromium, Hexavalent | | <0.00050 | <0.00050 | RPD-NA | mg/L | N/A | 20 | 19-JUN-20 |
| **WG3345884-2 LCS** | | | | | | | | |
| Chromium, Hexavalent | | | 98.4 | | % | | 80-120 | 19-JUN-20 |
| **WG3345884-1 MB** | | | | | | | | |
| Chromium, Hexavalent | | | <0.00050 | | mg/L | | 0.0005 | 19-JUN-20 |
| **WG3345884-5 MS** | | **WG3345884-3** | | | | | | |
| Chromium, Hexavalent | | | 103.4 | | % | | 70-130 | 22-JUN-20 |
| **EC-R511-WT** | **Water** | | | | | | | |
| **Batch R5127121** | | | | | | | | |
| **WG3346418-4 DUP** | | **WG3346418-3** | | | | | | |
| Conductivity | | 0.283 | 0.288 | | mS/cm | 1.8 | 10 | 20-JUN-20 |
| **WG3346418-2 LCS** | | | | | | | | |
| Conductivity | | | 102.6 | | % | | 90-110 | 20-JUN-20 |
| **WG3346418-1 MB** | | | | | | | | |
| Conductivity | | | <0.0030 | | mS/cm | | 0.003 | 20-JUN-20 |
| **Batch R5129280** | | | | | | | | |
| **WG3345830-4 DUP** | | **WG3345830-3** | | | | | | |
| Conductivity | | 1.55 | 1.54 | | mS/cm | 0.3 | 10 | 19-JUN-20 |
| **WG3345830-2 LCS** | | | | | | | | |
| Conductivity | | | 100.0 | | % | | 90-110 | 19-JUN-20 |
| **WG3345830-1 MB** | | | | | | | | |
| Conductivity | | | <0.0030 | | mS/cm | | 0.003 | 19-JUN-20 |
| **EC-WW-MF-WT** | **Water** | | | | | | | |
| **Batch R5126694** | | | | | | | | |
| **WG3345750-1 MB** | | | | | | | | |
| E. Coli | | | 0 | | CFU/100mL | | 1 | 19-JUN-20 |
| **F-IC-N-WT** | **Water** | | | | | | | |

# Quality Control Report



Client: WSP Canada Group Limited
610 Chartwell Road Suite 300
Oakville ON L6J 4A5
Contact: Anne Pattison/Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **F-IC-N-WT** | **Water** | | | | | | | |
| **Batch R5127237** | | | | | | | | |
| **WG3346305-14 DUP** | | **WG3346305-13** | | | | | | |
| Fluoride (F) | | 0.085 | 0.085 | | mg/L | 0.0 | 20 | 19-JUN-20 |
| **WG3346305-12 LCS** | | | | | | | | |
| Fluoride (F) | | | 100.6 | | % | | 90-110 | 19-JUN-20 |
| **WG3346305-11 MB** | | | | | | | | |
| Fluoride (F) | | | <0.020 | | mg/L | | 0.02 | 19-JUN-20 |
| **WG3346305-15 MS** | | **WG3346305-13** | | | | | | |
| Fluoride (F) | | | 97.9 | | % | | 75-125 | 19-JUN-20 |
| **Batch R5131318** | | | | | | | | |
| **WG3348471-14 DUP** | | **WG3348471-13** | | | | | | |
| Fluoride (F) | | 0.651 | 0.646 | | mg/L | 0.7 | 20 | 23-JUN-20 |
| **WG3348471-12 LCS** | | | | | | | | |
| Fluoride (F) | | | 103.9 | | % | | 90-110 | 23-JUN-20 |
| **WG3348471-11 MB** | | | | | | | | |
| Fluoride (F) | | | <0.020 | | mg/L | | 0.02 | 23-JUN-20 |
| **WG3348471-15 MS** | | **WG3348471-13** | | | | | | |
| Fluoride (F) | | | 97.0 | | % | | 75-125 | 23-JUN-20 |
| **F1-HS-511-WT** | **Water** | | | | | | | |
| **Batch R5128716** | | | | | | | | |
| **WG3342147-4 DUP** | | **WG3342147-3** | | | | | | |
| F1 (C6-C10) | | 114 | 124 | | ug/L | 8.9 | 30 | 23-JUN-20 |
| **WG3342147-1 LCS** | | | | | | | | |
| F1 (C6-C10) | | | 105.2 | | % | | 80-120 | 23-JUN-20 |
| **WG3342147-2 MB** | | | | | | | | |
| F1 (C6-C10) | | | <25 | | ug/L | | 25 | 23-JUN-20 |
| Surrogate: 3,4-Dichlorotoluene | | | 89.8 | | % | | 60-140 | 23-JUN-20 |
| **WG3342147-5 MS** | | **WG3342147-3** | | | | | | |
| F1 (C6-C10) | | | 102.8 | | % | | 60-140 | 23-JUN-20 |
| **Batch R5128841** | | | | | | | | |
| **WG3347607-4 DUP** | | **WG3347607-3** | | | | | | |
| F1 (C6-C10) | | <25 | <25 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| **WG3347607-1 LCS** | | | | | | | | |
| F1 (C6-C10) | | | 115.8 | | % | | 80-120 | 23-JUN-20 |
| **WG3347607-2 MB** | | | | | | | | |
| F1 (C6-C10) | | | <25 | | ug/L | | 25 | 23-JUN-20 |
| Surrogate: 3,4-Dichlorotoluene | | | 91.2 | | % | | 60-140 | 23-JUN-20 |
| **WG3347607-5 MS** | | **WG3347607-3** | | | | | | |
| F1 (C6-C10) | | | 109.2 | | | | 60-140 | |

# Quality Control Report



Client: WSP Canada Group Limited
610 Chartwell Road Suite 300
Oakville ON L6J 4A5
Contact: Anne Pattison/Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **F1-HS-511-WT** | **Water** | | | | | | | |
| **Batch R5128841** | | | | | | | | |
| **WG3347607-5 MS** | | **WG3347607-3** | | | | | | |
| F1 (C6-C10) | | | 109.2 | | % | | 60-140 | 23-JUN-20 |
| **F2-F4-511-WT** | **Water** | | | | | | | |
| **Batch R5125893** | | | | | | | | |
| **WG3345492-2 LCS** | | | | | | | | |
| F2 (C10-C16) | | | 94.8 | | % | | 70-130 | 19-JUN-20 |
| F3 (C16-C34) | | | 94.7 | | % | | 70-130 | 19-JUN-20 |
| F4 (C34-C50) | | | 106.0 | | % | | 70-130 | 19-JUN-20 |
| **WG3345492-1 MB** | | | | | | | | |
| F2 (C10-C16) | | | <100 | | ug/L | | 100 | 19-JUN-20 |
| F3 (C16-C34) | | | <250 | | ug/L | | 250 | 19-JUN-20 |
| F4 (C34-C50) | | | <250 | | ug/L | | 250 | 19-JUN-20 |
| Surrogate: 2-Bromobenzotrifluoride | | | 94.0 | | % | | 60-140 | 19-JUN-20 |
| **HG-D-UG/L-CVAA-WT** | **Water** | | | | | | | |
| **Batch R5127113** | | | | | | | | |
| **WG3345994-4 DUP** | | **WG3345994-3** | | | | | | |
| Mercury (Hg)-Dissolved | | <0.0050 | <0.0050 | RPD-NA | ug/L | N/A | 20 | 22-JUN-20 |
| **WG3345994-2 LCS** | | | | | | | | |
| Mercury (Hg)-Dissolved | | | 97.4 | | % | | 80-120 | 22-JUN-20 |
| **WG3345994-1 MB** | | | | | | | | |
| Mercury (Hg)-Dissolved | | | <0.0050 | | ug/L | | 0.005 | 22-JUN-20 |
| **WG3345994-6 MS** | | **WG3345994-5** | | | | | | |
| Mercury (Hg)-Dissolved | | | 89.2 | | % | | 70-130 | 22-JUN-20 |
| **HG-T-CVAA-WT** | **Water** | | | | | | | |
| **Batch R5131133** | | | | | | | | |
| **WG3348215-3 DUP** | | **L2463096-1** | | | | | | |
| Mercury (Hg)-Total | | <0.0000050 | <0.000005( | RPD-NA | mg/L | N/A | 20 | 24-JUN-20 |
| **WG3348215-2 LCS** | | | | | | | | |
| Mercury (Hg)-Total | | | 103.0 | | % | | 80-120 | 24-JUN-20 |
| **WG3348215-1 MB** | | | | | | | | |
| Mercury (Hg)-Total | | | <0.000005( | | mg/L | | 0.000005 | 24-JUN-20 |
| **WG3348215-4 MS** | | **L2463001-1** | | | | | | |
| Mercury (Hg)-Total | | | 103.0 | | % | | 70-130 | 24-JUN-20 |
| **MET-D-UG/L-MS-WT** | **Water** | | | | | | | |

# Quality Control Report



Client: WSP Canada Group Limited
610 Chartwell Road Suite 300
Oakville ON L6J 4A5
Contact: Anne Pattison/Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **MET-D-UG/L-MS-WT** | **Water** | | | | | | | |
| **Batch R5126038** | | | | | | | | |
| **WG3345498-4 DUP** | | **WG3345498-3** | | | | | | |
| Antimony (Sb)-Dissolved | | <0.10 | <0.10 | RPD-NA | ug/L | N/A | 20 | 19-JUN-20 |
| Arsenic (As)-Dissolved | | 0.10 | 0.11 | | ug/L | 11 | 20 | 19-JUN-20 |
| Barium (Ba)-Dissolved | | 54.8 | 54.3 | | ug/L | 0.8 | 20 | 19-JUN-20 |
| Beryllium (Be)-Dissolved | | <0.10 | <0.10 | RPD-NA | ug/L | N/A | 20 | 19-JUN-20 |
| Boron (B)-Dissolved | | 36 | 35 | | ug/L | 3.8 | 20 | 19-JUN-20 |
| Cadmium (Cd)-Dissolved | | <0.0050 | <0.0050 | RPD-NA | ug/L | N/A | 20 | 19-JUN-20 |
| Chromium (Cr)-Dissolved | | 0.74 | 0.73 | | ug/L | 0.7 | 20 | 19-JUN-20 |
| Cobalt (Co)-Dissolved | | <0.10 | <0.10 | RPD-NA | ug/L | N/A | 20 | 19-JUN-20 |
| Copper (Cu)-Dissolved | | 0.77 | 0.78 | | ug/L | 1.9 | 20 | 19-JUN-20 |
| Lead (Pb)-Dissolved | | <0.050 | <0.050 | RPD-NA | ug/L | N/A | 20 | 19-JUN-20 |
| Molybdenum (Mo)-Dissolved | | 0.937 | 0.963 | | ug/L | 2.8 | 20 | 19-JUN-20 |
| Nickel (Ni)-Dissolved | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 20 | 19-JUN-20 |
| Selenium (Se)-Dissolved | | 0.064 | <0.050 | RPD-NA | ug/L | N/A | 20 | 19-JUN-20 |
| Silver (Ag)-Dissolved | | <0.050 | <0.050 | RPD-NA | ug/L | N/A | 20 | 19-JUN-20 |
| Sodium (Na)-Dissolved | | 60800 | 60600 | | ug/L | 0.3 | 20 | 19-JUN-20 |
| Thallium (Tl)-Dissolved | | <0.010 | <0.010 | RPD-NA | ug/L | N/A | 20 | 19-JUN-20 |
| Uranium (U)-Dissolved | | 0.366 | 0.366 | | ug/L | 0.1 | 20 | 19-JUN-20 |
| Vanadium (V)-Dissolved | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 20 | 19-JUN-20 |
| Zinc (Zn)-Dissolved | | 1.6 | 1.6 | | ug/L | 4.1 | 20 | 19-JUN-20 |
| **WG3345498-2 LCS** | | | | | | | | |
| Antimony (Sb)-Dissolved | | | 101.9 | | % | | 80-120 | 19-JUN-20 |
| Arsenic (As)-Dissolved | | | 99.2 | | % | | 80-120 | 19-JUN-20 |
| Barium (Ba)-Dissolved | | | 100.2 | | % | | 80-120 | 19-JUN-20 |
| Beryllium (Be)-Dissolved | | | 103.5 | | % | | 80-120 | 19-JUN-20 |
| Boron (B)-Dissolved | | | 104.0 | | % | | 80-120 | 19-JUN-20 |
| Cadmium (Cd)-Dissolved | | | 95.9 | | % | | 80-120 | 19-JUN-20 |
| Chromium (Cr)-Dissolved | | | 100.3 | | % | | 80-120 | 19-JUN-20 |
| Cobalt (Co)-Dissolved | | | 99.9 | | % | | 80-120 | 19-JUN-20 |
| Copper (Cu)-Dissolved | | | 98.5 | | % | | 80-120 | 19-JUN-20 |
| Lead (Pb)-Dissolved | | | 99.8 | | % | | 80-120 | 19-JUN-20 |
| Molybdenum (Mo)-Dissolved | | | 101.1 | | % | | 80-120 | 19-JUN-20 |
| Nickel (Ni)-Dissolved | | | 98.9 | | % | | 80-120 | 19-JUN-20 |
| Selenium (Se)-Dissolved | | | 100.9 | | % | | 80-120 | 19-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
610 Chartwell Road Suite 300
Oakville ON L6J 4A5
Contact: Anne Pattison/Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **MET-D-UG/L-MS-WT** | **Water** | | | | | | | |
| **Batch R5126038** | | | | | | | | |
| **WG3345498-2 LCS** | | | | | | | | |
| Silver (Ag)-Dissolved | | | 100.7 | | % | | 80-120 | 19-JUN-20 |
| Sodium (Na)-Dissolved | | | 102.1 | | % | | 80-120 | 19-JUN-20 |
| Thallium (Tl)-Dissolved | | | 100.5 | | % | | 80-120 | 19-JUN-20 |
| Uranium (U)-Dissolved | | | 102.3 | | % | | 80-120 | 19-JUN-20 |
| Vanadium (V)-Dissolved | | | 103.3 | | % | | 80-120 | 19-JUN-20 |
| Zinc (Zn)-Dissolved | | | 96.7 | | % | | 80-120 | 19-JUN-20 |
| **WG3345498-1 MB** | | | | | | | | |
| Antimony (Sb)-Dissolved | | | <0.10 | | ug/L | | 0.1 | 19-JUN-20 |
| Arsenic (As)-Dissolved | | | <0.10 | | ug/L | | 0.1 | 19-JUN-20 |
| Barium (Ba)-Dissolved | | | <0.10 | | ug/L | | 0.1 | 19-JUN-20 |
| Beryllium (Be)-Dissolved | | | <0.10 | | ug/L | | 0.1 | 19-JUN-20 |
| Boron (B)-Dissolved | | | <10 | | ug/L | | 10 | 19-JUN-20 |
| Cadmium (Cd)-Dissolved | | | <0.0050 | | ug/L | | 0.005 | 19-JUN-20 |
| Chromium (Cr)-Dissolved | | | <0.50 | | ug/L | | 0.5 | 19-JUN-20 |
| Cobalt (Co)-Dissolved | | | <0.10 | | ug/L | | 0.1 | 19-JUN-20 |
| Copper (Cu)-Dissolved | | | <0.20 | | ug/L | | 0.2 | 19-JUN-20 |
| Lead (Pb)-Dissolved | | | <0.050 | | ug/L | | 0.05 | 19-JUN-20 |
| Molybdenum (Mo)-Dissolved | | | <0.050 | | ug/L | | 0.05 | 19-JUN-20 |
| Nickel (Ni)-Dissolved | | | <0.50 | | ug/L | | 0.5 | 19-JUN-20 |
| Selenium (Se)-Dissolved | | | <0.050 | | ug/L | | 0.05 | 19-JUN-20 |
| Silver (Ag)-Dissolved | | | <0.050 | | ug/L | | 0.05 | 19-JUN-20 |
| Sodium (Na)-Dissolved | | | <50 | | ug/L | | 50 | 19-JUN-20 |
| Thallium (Tl)-Dissolved | | | <0.010 | | ug/L | | 0.01 | 19-JUN-20 |
| Uranium (U)-Dissolved | | | <0.010 | | ug/L | | 0.01 | 19-JUN-20 |
| Vanadium (V)-Dissolved | | | <0.50 | | ug/L | | 0.5 | 19-JUN-20 |
| Zinc (Zn)-Dissolved | | | <1.0 | | ug/L | | 1 | 19-JUN-20 |
| **WG3345498-5 MS** | | **WG3345498-3** | | | | | | |
| Antimony (Sb)-Dissolved | | | 92.8 | | % | | 70-130 | 19-JUN-20 |
| Arsenic (As)-Dissolved | | | 100.4 | | % | | 70-130 | 19-JUN-20 |
| Barium (Ba)-Dissolved | | | N/A | MS-B | % | | - | 19-JUN-20 |
| Beryllium (Be)-Dissolved | | | 105.3 | | % | | 70-130 | 19-JUN-20 |
| Boron (B)-Dissolved | | | 94.0 | | % | | 70-130 | 19-JUN-20 |
| Cadmium (Cd)-Dissolved | | | 94.9 | | % | | 70-130 | 19-JUN-20 |
| Chromium (Cr)-Dissolved | | | 96.8 | | % | | 70-130 | 19-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
610 Chartwell Road Suite 300
Oakville ON L6J 4A5
Contact: Anne Pattison/Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **MET-D-UG/L-MS-WT** | **Water** | | | | | | | |
| **Batch R5126038** | | | | | | | | |
| **WG3345498-5 MS** | | **WG3345498-3** | | | | | | |
| Cobalt (Co)-Dissolved | | | 94.2 | | % | | 70-130 | 19-JUN-20 |
| Copper (Cu)-Dissolved | | | 91.3 | | % | | 70-130 | 19-JUN-20 |
| Lead (Pb)-Dissolved | | | 93.4 | | % | | 70-130 | 19-JUN-20 |
| Molybdenum (Mo)-Dissolved | | | 99.0 | | % | | 70-130 | 19-JUN-20 |
| Nickel (Ni)-Dissolved | | | 91.7 | | % | | 70-130 | 19-JUN-20 |
| Selenium (Se)-Dissolved | | | 108.9 | | % | | 70-130 | 19-JUN-20 |
| Silver (Ag)-Dissolved | | | 93.6 | | % | | 70-130 | 19-JUN-20 |
| Sodium (Na)-Dissolved | | | N/A | MS-B | % | | - | 19-JUN-20 |
| Thallium (Tl)-Dissolved | | | 92.9 | | % | | 70-130 | 19-JUN-20 |
| Uranium (U)-Dissolved | | | N/A | MS-B | % | | - | 19-JUN-20 |
| Vanadium (V)-Dissolved | | | 102.4 | | % | | 70-130 | 19-JUN-20 |
| Zinc (Zn)-Dissolved | | | 91.5 | | % | | 70-130 | 19-JUN-20 |
| **MET-T-CCMS-WT** | **Water** | | | | | | | |
| **Batch R5128857** | | | | | | | | |
| **WG3347656-4 DUP** | | **WG3347656-3** | | | | | | |
| Aluminum (Al)-Total | | 0.0092 | 0.0092 | | mg/L | 0.8 | 20 | 23-JUN-20 |
| Antimony (Sb)-Total | | 0.00068 | 0.00068 | | mg/L | 0.3 | 20 | 23-JUN-20 |
| Arsenic (As)-Total | | 0.00064 | 0.00063 | | mg/L | 1.1 | 20 | 23-JUN-20 |
| Cadmium (Cd)-Total | | <0.0000050 | <0.000005( | RPD-NA | mg/L | N/A | 20 | 23-JUN-20 |
| Chromium (Cr)-Total | | <0.00050 | <0.00050 | RPD-NA | mg/L | N/A | 20 | 23-JUN-20 |
| Cobalt (Co)-Total | | 0.00048 | 0.00048 | | mg/L | 0.7 | 20 | 23-JUN-20 |
| Copper (Cu)-Total | | <0.00050 | <0.00050 | RPD-NA | mg/L | N/A | 20 | 23-JUN-20 |
| Lead (Pb)-Total | | 0.000059 | 0.000057 | | mg/L | 3.1 | 20 | 23-JUN-20 |
| Manganese (Mn)-Total | | 0.268 | 0.265 | | mg/L | 1.2 | 20 | 23-JUN-20 |
| Molybdenum (Mo)-Total | | 0.00585 | 0.00596 | | mg/L | 1.8 | 20 | 23-JUN-20 |
| Nickel (Ni)-Total | | 0.00266 | 0.00252 | | mg/L | 5.2 | 20 | 23-JUN-20 |
| Selenium (Se)-Total | | 0.000139 | 0.000156 | | mg/L | 12 | 20 | 23-JUN-20 |
| Silver (Ag)-Total | | <0.000050 | <0.000050 | RPD-NA | mg/L | N/A | 20 | 23-JUN-20 |
| Tin (Sn)-Total | | <0.00010 | <0.00010 | RPD-NA | mg/L | N/A | 20 | 23-JUN-20 |
| Titanium (Ti)-Total | | <0.00030 | <0.00030 | RPD-NA | mg/L | N/A | 20 | 23-JUN-20 |
| Zinc (Zn)-Total | | 0.0031 | <0.0030 | RPD-NA | mg/L | N/A | 20 | 23-JUN-20 |
| **WG3347656-2 LCS** | | | | | | | | |
| Aluminum (Al)-Total | | | 101.7 | | % | | 80-120 | 23-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
610 Chartwell Road Suite 300
Oakville ON L6J 4A5
Contact: Anne Pattison/Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **MET-T-CCMS-WT** | **Water** | | | | | | | |
| **Batch R5128857** | | | | | | | | |
| **WG3347656-2 LCS** | | | | | | | | |
| Antimony (Sb)-Total | | | 101.4 | | % | | 80-120 | 23-JUN-20 |
| Arsenic (As)-Total | | | 98.2 | | % | | 80-120 | 23-JUN-20 |
| Cadmium (Cd)-Total | | | 98.9 | | % | | 80-120 | 23-JUN-20 |
| Chromium (Cr)-Total | | | 98.3 | | % | | 80-120 | 23-JUN-20 |
| Cobalt (Co)-Total | | | 97.9 | | % | | 80-120 | 23-JUN-20 |
| Copper (Cu)-Total | | | 97.7 | | % | | 80-120 | 23-JUN-20 |
| Lead (Pb)-Total | | | 101.8 | | % | | 80-120 | 23-JUN-20 |
| Manganese (Mn)-Total | | | 99.1 | | % | | 80-120 | 23-JUN-20 |
| Molybdenum (Mo)-Total | | | 99.7 | | % | | 80-120 | 23-JUN-20 |
| Nickel (Ni)-Total | | | 97.2 | | % | | 80-120 | 23-JUN-20 |
| Selenium (Se)-Total | | | 98.6 | | % | | 80-120 | 23-JUN-20 |
| Silver (Ag)-Total | | | 98.0 | | % | | 80-120 | 23-JUN-20 |
| Tin (Sn)-Total | | | 98.6 | | % | | 80-120 | 23-JUN-20 |
| Titanium (Ti)-Total | | | 94.9 | | % | | 80-120 | 23-JUN-20 |
| Zinc (Zn)-Total | | | 98.4 | | % | | 80-120 | 23-JUN-20 |
| **WG3347656-1 MB** | | | | | | | | |
| Aluminum (Al)-Total | | | <0.0050 | | mg/L | | 0.005 | 23-JUN-20 |
| Antimony (Sb)-Total | | | <0.00010 | | mg/L | | 0.0001 | 23-JUN-20 |
| Arsenic (As)-Total | | | <0.00010 | | mg/L | | 0.0001 | 23-JUN-20 |
| Cadmium (Cd)-Total | | | <0.000005( | | mg/L | | 0.000005 | 23-JUN-20 |
| Chromium (Cr)-Total | | | <0.00050 | | mg/L | | 0.0005 | 23-JUN-20 |
| Cobalt (Co)-Total | | | <0.00010 | | mg/L | | 0.0001 | 23-JUN-20 |
| Copper (Cu)-Total | | | <0.00050 | | mg/L | | 0.0005 | 23-JUN-20 |
| Lead (Pb)-Total | | | <0.000050 | | mg/L | | 0.00005 | 23-JUN-20 |
| Manganese (Mn)-Total | | | <0.00050 | | mg/L | | 0.0005 | 23-JUN-20 |
| Molybdenum (Mo)-Total | | | <0.000050 | | mg/L | | 0.00005 | 23-JUN-20 |
| Nickel (Ni)-Total | | | <0.00050 | | mg/L | | 0.0005 | 23-JUN-20 |
| Selenium (Se)-Total | | | <0.000050 | | mg/L | | 0.00005 | 23-JUN-20 |
| Silver (Ag)-Total | | | <0.000050 | | mg/L | | 0.00005 | 23-JUN-20 |
| Tin (Sn)-Total | | | <0.00010 | | mg/L | | 0.0001 | 23-JUN-20 |
| Titanium (Ti)-Total | | | <0.00030 | | mg/L | | 0.0003 | 23-JUN-20 |
| Zinc (Zn)-Total | | | <0.0030 | | mg/L | | 0.003 | 23-JUN-20 |
| **WG3347656-5 MS** | | **WG3347656-3** | | | | | | |
| Aluminum (Al)-Total | | | 96.4 | | % | | 70-130 | 23-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
610 Chartwell Road Suite 300
Oakville ON L6J 4A5
Contact: Anne Pattison/Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **MET-T-CCMS-WT** | **Water** | | | | | | | |
| **Batch R5128857** | | | | | | | | |
| **WG3347656-5 MS** | | **WG3347656-3** | | | | | | |
| Antimony (Sb)-Total | | | 99.8 | | % | | 70-130 | 23-JUN-20 |
| Arsenic (As)-Total | | | 97.5 | | % | | 70-130 | 23-JUN-20 |
| Cadmium (Cd)-Total | | | 94.6 | | % | | 70-130 | 23-JUN-20 |
| Chromium (Cr)-Total | | | 95.3 | | % | | 70-130 | 23-JUN-20 |
| Cobalt (Co)-Total | | | 93.3 | | % | | 70-130 | 23-JUN-20 |
| Copper (Cu)-Total | | | 93.0 | | % | | 70-130 | 23-JUN-20 |
| Lead (Pb)-Total | | | 95.6 | | % | | 70-130 | 23-JUN-20 |
| Manganese (Mn)-Total | | | N/A | MS-B | % | | - | 23-JUN-20 |
| Molybdenum (Mo)-Total | | | 95.6 | | % | | 70-130 | 23-JUN-20 |
| Nickel (Ni)-Total | | | 91.6 | | % | | 70-130 | 23-JUN-20 |
| Selenium (Se)-Total | | | 100.1 | | % | | 70-130 | 23-JUN-20 |
| Silver (Ag)-Total | | | 91.1 | | % | | 70-130 | 23-JUN-20 |
| Tin (Sn)-Total | | | 95.7 | | % | | 70-130 | 23-JUN-20 |
| Titanium (Ti)-Total | | | 92.7 | | % | | 70-130 | 23-JUN-20 |
| Zinc (Zn)-Total | | | 94.7 | | % | | 70-130 | 23-JUN-20 |
| **Batch R5130914** | | | | | | | | |
| **WG3348417-4 DUP** | | **WG3348417-3** | | | | | | |
| Aluminum (Al)-Total | | <0.0050 | <0.0050 | RPD-NA | mg/L | N/A | 20 | 23-JUN-20 |
| Antimony (Sb)-Total | | <0.00010 | <0.00010 | RPD-NA | mg/L | N/A | 20 | 23-JUN-20 |
| Arsenic (As)-Total | | 0.00011 | 0.00013 | | mg/L | 13 | 20 | 23-JUN-20 |
| Cadmium (Cd)-Total | | 0.0000237 | 0.0000212 | | mg/L | 11 | 20 | 23-JUN-20 |
| Chromium (Cr)-Total | | 0.0168 | 0.0171 | | mg/L | 1.9 | 20 | 23-JUN-20 |
| Cobalt (Co)-Total | | <0.00010 | <0.00010 | RPD-NA | mg/L | N/A | 20 | 23-JUN-20 |
| Copper (Cu)-Total | | 0.00117 | 0.00123 | | mg/L | 5.2 | 20 | 23-JUN-20 |
| Lead (Pb)-Total | | 0.00122 | 0.00124 | | mg/L | 1.8 | 20 | 23-JUN-20 |
| Manganese (Mn)-Total | | <0.00050 | <0.00050 | RPD-NA | mg/L | N/A | 20 | 23-JUN-20 |
| Molybdenum (Mo)-Total | | 0.000080 | 0.000080 | | mg/L | 0.1 | 20 | 23-JUN-20 |
| Nickel (Ni)-Total | | 0.00082 | 0.00084 | | mg/L | 1.7 | 20 | 23-JUN-20 |
| Selenium (Se)-Total | | 0.000278 | 0.000256 | | mg/L | 8.4 | 20 | 23-JUN-20 |
| Silver (Ag)-Total | | <0.000050 | <0.000050 | RPD-NA | mg/L | N/A | 20 | 23-JUN-20 |
| Tin (Sn)-Total | | 0.00012 | 0.00012 | | mg/L | 3.3 | 20 | 23-JUN-20 |
| Titanium (Ti)-Total | | <0.00030 | <0.00030 | RPD-NA | mg/L | N/A | 20 | 23-JUN-20 |
| Zinc (Zn)-Total | | 0.0052 | 0.0049 | | mg/L | 6.3 | 20 | 23-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
610 Chartwell Road Suite 300
Oakville ON L6J 4A5
Contact: Anne Pattison/Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **MET-T-CCMS-WT** | **Water** | | | | | | | |
| **Batch R5130914** | | | | | | | | |
| **WG3348417-2 LCS** | | | | | | | | |
| Aluminum (Al)-Total | | | 105.5 | | % | | 80-120 | 23-JUN-20 |
| Antimony (Sb)-Total | | | 99.4 | | % | | 80-120 | 23-JUN-20 |
| Arsenic (As)-Total | | | 100.4 | | % | | 80-120 | 23-JUN-20 |
| Cadmium (Cd)-Total | | | 103.7 | | % | | 80-120 | 23-JUN-20 |
| Chromium (Cr)-Total | | | 102.3 | | % | | 80-120 | 23-JUN-20 |
| Cobalt (Co)-Total | | | 102.4 | | % | | 80-120 | 23-JUN-20 |
| Copper (Cu)-Total | | | 101.4 | | % | | 80-120 | 23-JUN-20 |
| Lead (Pb)-Total | | | 102.5 | | % | | 80-120 | 23-JUN-20 |
| Manganese (Mn)-Total | | | 101.2 | | % | | 80-120 | 23-JUN-20 |
| Molybdenum (Mo)-Total | | | 98.9 | | % | | 80-120 | 23-JUN-20 |
| Nickel (Ni)-Total | | | 101.9 | | % | | 80-120 | 23-JUN-20 |
| Selenium (Se)-Total | | | 98.7 | | % | | 80-120 | 23-JUN-20 |
| Silver (Ag)-Total | | | 99.6 | | % | | 80-120 | 23-JUN-20 |
| Tin (Sn)-Total | | | 97.2 | | % | | 80-120 | 23-JUN-20 |
| Titanium (Ti)-Total | | | 98.7 | | % | | 80-120 | 23-JUN-20 |
| Zinc (Zn)-Total | | | 101.3 | | % | | 80-120 | 23-JUN-20 |
| **WG3348417-1 MB** | | | | | | | | |
| Aluminum (Al)-Total | | | <0.0050 | | mg/L | | 0.005 | 23-JUN-20 |
| Antimony (Sb)-Total | | | <0.00010 | | mg/L | | 0.0001 | 23-JUN-20 |
| Arsenic (As)-Total | | | <0.00010 | | mg/L | | 0.0001 | 23-JUN-20 |
| Cadmium (Cd)-Total | | | <0.000005( | | mg/L | | 0.000005 | 23-JUN-20 |
| Chromium (Cr)-Total | | | <0.00050 | | mg/L | | 0.0005 | 23-JUN-20 |
| Cobalt (Co)-Total | | | <0.00010 | | mg/L | | 0.0001 | 23-JUN-20 |
| Copper (Cu)-Total | | | <0.00050 | | mg/L | | 0.0005 | 23-JUN-20 |
| Lead (Pb)-Total | | | <0.000050 | | mg/L | | 0.00005 | 23-JUN-20 |
| Manganese (Mn)-Total | | | <0.00050 | | mg/L | | 0.0005 | 23-JUN-20 |
| Molybdenum (Mo)-Total | | | <0.000050 | | mg/L | | 0.00005 | 23-JUN-20 |
| Nickel (Ni)-Total | | | <0.00050 | | mg/L | | 0.0005 | 23-JUN-20 |
| Selenium (Se)-Total | | | <0.000050 | | mg/L | | 0.00005 | 23-JUN-20 |
| Silver (Ag)-Total | | | <0.000050 | | mg/L | | 0.00005 | 23-JUN-20 |
| Tin (Sn)-Total | | | <0.00010 | | mg/L | | 0.0001 | 23-JUN-20 |
| Titanium (Ti)-Total | | | <0.00030 | | mg/L | | 0.0003 | 23-JUN-20 |
| Zinc (Zn)-Total | | | <0.0030 | | mg/L | | 0.003 | 23-JUN-20 |
| **WG3348417-5 MS** | | **WG3348417-3** | | | | | | |

# Quality Control Report



Client: WSP Canada Group Limited
610 Chartwell Road Suite 300
Oakville ON L6J 4A5
Contact: Anne Pattison/Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **MET-T-CCMS-WT** | **Water** | | | | | | | |
| **Batch R5130914** | | | | | | | | |
| **WG3348417-5 MS** | | **WG3348417-3** | | | | | | |
| Aluminum (Al)-Total | | | 106.9 | | % | | 70-130 | 23-JUN-20 |
| Antimony (Sb)-Total | | | 97.5 | | % | | 70-130 | 23-JUN-20 |
| Arsenic (As)-Total | | | 99.2 | | % | | 70-130 | 23-JUN-20 |
| Cadmium (Cd)-Total | | | 96.6 | | % | | 70-130 | 23-JUN-20 |
| Chromium (Cr)-Total | | | N/A | MS-B | % | | - | 23-JUN-20 |
| Cobalt (Co)-Total | | | 98.2 | | % | | 70-130 | 23-JUN-20 |
| Copper (Cu)-Total | | | 92.8 | | % | | 70-130 | 23-JUN-20 |
| Lead (Pb)-Total | | | 92.3 | | % | | 70-130 | 23-JUN-20 |
| Manganese (Mn)-Total | | | 98.1 | | % | | 70-130 | 23-JUN-20 |
| Molybdenum (Mo)-Total | | | 103.3 | | % | | 70-130 | 23-JUN-20 |
| Nickel (Ni)-Total | | | 95.7 | | % | | 70-130 | 23-JUN-20 |
| Selenium (Se)-Total | | | 95.1 | | % | | 70-130 | 23-JUN-20 |
| Silver (Ag)-Total | | | 92.5 | | % | | 70-130 | 23-JUN-20 |
| Tin (Sn)-Total | | | 94.7 | | % | | 70-130 | 23-JUN-20 |
| Titanium (Ti)-Total | | | 101.9 | | % | | 70-130 | 23-JUN-20 |
| Zinc (Zn)-Total | | | 90.5 | | % | | 70-130 | 23-JUN-20 |
| **NP,NPE-LCMS-WT** | **Water** | | | | | | | |
| **Batch R5127106** | | | | | | | | |
| **WG3346917-3 DUP** | | **L2463322-2** | | | | | | |
| Nonylphenol | | <1.0 | <1.0 | RPD-NA | ug/L | N/A | 30 | 22-JUN-20 |
| Nonylphenol Monoethoxylates | | <2.0 | <2.0 | RPD-NA | ug/L | N/A | 30 | 22-JUN-20 |
| Nonylphenol Diethoxylates | | <0.10 | <0.10 | RPD-NA | ug/L | N/A | 30 | 22-JUN-20 |
| **WG3346917-2 LCS** | | | | | | | | |
| Nonylphenol | | | 89.7 | | % | | 75-125 | 22-JUN-20 |
| Nonylphenol Monoethoxylates | | | 97.5 | | % | | 75-125 | 22-JUN-20 |
| Nonylphenol Diethoxylates | | | 115.0 | | % | | 75-125 | 22-JUN-20 |
| **WG3346917-1 MB** | | | | | | | | |
| Nonylphenol | | | <1.0 | | ug/L | | 1 | 22-JUN-20 |
| Nonylphenol Monoethoxylates | | | <2.0 | | ug/L | | 2 | 22-JUN-20 |
| Nonylphenol Diethoxylates | | | <0.10 | | ug/L | | 0.1 | 22-JUN-20 |
| **WG3346917-4 MS** | | **L2463322-2** | | | | | | |
| Nonylphenol | | | 109.7 | | % | | 50-150 | 22-JUN-20 |
| Nonylphenol Monoethoxylates | | | 116.4 | | % | | 50-150 | 22-JUN-20 |
| Nonylphenol Diethoxylates | | | 101.7 | | % | | 50-150 | 22-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
610 Chartwell Road Suite 300
Oakville ON L6J 4A5
Contact: Anne Pattison/Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **OGG-SPEC-WT** | **Water** | | | | | | | |
| **Batch R5126454** | | | | | | | | |
| **WG3345969-2 LCS** | | | | | | | | |
| Oil and Grease, Total | | | 98.0 | | % | | 70-130 | 19-JUN-20 |
| Mineral Oil and Grease | | | 93.0 | | % | | 70-130 | 19-JUN-20 |
| **WG3345969-1 MB** | | | | | | | | |
| Oil and Grease, Total | | | <5.0 | | mg/L | | 5 | 19-JUN-20 |
| Mineral Oil and Grease | | | <2.5 | | mg/L | | 2.5 | 19-JUN-20 |
| **P-T-COL-WT** | **Water** | | | | | | | |
| **Batch R5130117** | | | | | | | | |
| **WG3345829-7 DUP** | | **WG3345829-9** | | | | | | |
| Phosphorus, Total | | 0.0267 | 0.0262 | | mg/L | 1.9 | 20 | 23-JUN-20 |
| **WG3345829-6 LCS** | | | | | | | | |
| Phosphorus, Total | | | 109.1 | | % | | 80-120 | 23-JUN-20 |
| **WG3345829-5 MB** | | | | | | | | |
| Phosphorus, Total | | | <0.0030 | | mg/L | | 0.003 | 23-JUN-20 |
| **WG3345829-8 MS** | | **WG3345829-9** | | | | | | |
| Phosphorus, Total | | | 96.3 | | % | | 70-130 | 23-JUN-20 |
| **PAH-511-WT** | **Water** | | | | | | | |
| **Batch R5129242** | | | | | | | | |
| **WG3345492-2 LCS** | | | | | | | | |
| 1-Methylnaphthalene | | | 92.7 | | % | | 50-140 | 23-JUN-20 |
| 2-Methylnaphthalene | | | 83.0 | | % | | 50-140 | 23-JUN-20 |
| Acenaphthene | | | 92.8 | | % | | 50-140 | 23-JUN-20 |
| Acenaphthylene | | | 96.0 | | % | | 50-140 | 23-JUN-20 |
| Anthracene | | | 95.1 | | % | | 50-140 | 23-JUN-20 |
| Benzo(a)anthracene | | | 98.6 | | % | | 50-140 | 23-JUN-20 |
| Benzo(a)pyrene | | | 84.1 | | % | | 50-140 | 23-JUN-20 |
| Benzo(b)fluoranthene | | | 93.3 | | % | | 50-140 | 23-JUN-20 |
| Benzo(g,h,i)perylene | | | 96.7 | | % | | 50-140 | 23-JUN-20 |
| Benzo(k)fluoranthene | | | 88.8 | | % | | 50-140 | 23-JUN-20 |
| Chrysene | | | 87.0 | | % | | 50-140 | 23-JUN-20 |
| Dibenzo(ah)anthracene | | | 93.6 | | % | | 50-140 | 23-JUN-20 |
| Fluoranthene | | | 98.4 | | % | | 50-140 | 23-JUN-20 |
| Fluorene | | | 94.9 | | % | | 50-140 | 23-JUN-20 |
| Indeno(1,2,3-cd)pyrene | | | 105.9 | | % | | 50-140 | 23-JUN-20 |
| Naphthalene | | | 88.4 | | % | | 50-140 | 23-JUN-20 |
| Phenanthrene | | | 98.1 | | % | | 50-140 | 23-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
610 Chartwell Road Suite 300
Oakville ON L6J 4A5
Contact: Anne Pattison/Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAH-511-WT** | **Water** | | | | | | | |
| **Batch R5129242** | | | | | | | | |
| **WG3345492-2 LCS** | | | | | | | | |
| Pyrene | | | 98.4 | | % | | 50-140 | 23-JUN-20 |
| **WG3345492-1 MB** | | | | | | | | |
| 1-Methylnaphthalene | | | <0.020 | | ug/L | | 0.02 | 23-JUN-20 |
| 2-Methylnaphthalene | | | <0.020 | | ug/L | | 0.02 | 23-JUN-20 |
| Acenaphthene | | | <0.020 | | ug/L | | 0.02 | 23-JUN-20 |
| Acenaphthylene | | | <0.020 | | ug/L | | 0.02 | 23-JUN-20 |
| Anthracene | | | <0.020 | | ug/L | | 0.02 | 23-JUN-20 |
| Benzo(a)anthracene | | | <0.020 | | ug/L | | 0.02 | 23-JUN-20 |
| Benzo(a)pyrene | | | <0.010 | | ug/L | | 0.01 | 23-JUN-20 |
| Benzo(b)fluoranthene | | | <0.020 | | ug/L | | 0.02 | 23-JUN-20 |
| Benzo(g,h,i)perylene | | | <0.020 | | ug/L | | 0.02 | 23-JUN-20 |
| Benzo(k)fluoranthene | | | <0.020 | | ug/L | | 0.02 | 23-JUN-20 |
| Chrysene | | | <0.020 | | ug/L | | 0.02 | 23-JUN-20 |
| Dibenzo(ah)anthracene | | | <0.020 | | ug/L | | 0.02 | 23-JUN-20 |
| Fluoranthene | | | <0.020 | | ug/L | | 0.02 | 23-JUN-20 |
| Fluorene | | | <0.020 | | ug/L | | 0.02 | 23-JUN-20 |
| Indeno(1,2,3-cd)pyrene | | | <0.020 | | ug/L | | 0.02 | 23-JUN-20 |
| Naphthalene | | | <0.050 | | ug/L | | 0.05 | 23-JUN-20 |
| Phenanthrene | | | <0.020 | | ug/L | | 0.02 | 23-JUN-20 |
| Pyrene | | | <0.020 | | ug/L | | 0.02 | 23-JUN-20 |
| Surrogate: d8-Naphthalene | | | 95.3 | | % | | 60-140 | 23-JUN-20 |
| Surrogate: d10-Phenanthrene | | | 101.5 | | % | | 60-140 | 23-JUN-20 |
| Surrogate: d12-Chrysene | | | 89.0 | | % | | 60-140 | 23-JUN-20 |
| Surrogate: d10-Acenaphthene | | | 97.9 | | % | | 60-140 | 23-JUN-20 |
| **PAH-EXTRA-WT** | **Water** | | | | | | | |
| **Batch R5131963** | | | | | | | | |
| **WG3348679-2 LCS** | | | | | | | | |
| Benzo(e)pyrene | | | 92.2 | | % | | 60-130 | 25-JUN-20 |
| 1,3-Dinitropyrene | | | 50.9 | LCS-ND | % | | 60-130 | 25-JUN-20 |
| 1,6-Dinitropyrene | | | 32.0 | RRQC | % | | 60-130 | 25-JUN-20 |
| Dibenz(a,h)acridine | | | 143.2 | LCS-H | % | | 60-130 | 25-JUN-20 |
| 1,8-Dinitropyrene | | | 48.1 | RRQC | % | | 60-130 | 25-JUN-20 |
| Dibenz(a,j)acridine | | | 121.1 | | % | | 60-130 | 25-JUN-20 |
| 7H-Dibenzo(c,g)carbazole | | | 129.2 | | % | | 60-130 | 25-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
610 Chartwell Road Suite 300
Oakville ON L6J 4A5
Contact: Anne Pattison/Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAH-EXTRA-WT** | **Water** | | | | | | | |
| **Batch R5131963** | | | | | | | | |
| **WG3348679-2 LCS** | | | | | | | | |
| Dibenzo(a,i)pyrene | | | 74.7 | | % | | 60-130 | 25-JUN-20 |
| COMMENTS: RRQC; Results are outside ALS control limtis; Reporting limits have been adjusted accordingly or results unaffected. | | | | | | | | |
| **WG3348679-1 MB** | | | | | | | | |
| Benzo(e)pyrene | | | <0.050 | | ug/L | | 0.05 | 25-JUN-20 |
| 1,3-Dinitropyrene | | | <1.0 | | ug/L | | 1 | 25-JUN-20 |
| 1,6-Dinitropyrene | | | <1.0 | | ug/L | | 1 | 25-JUN-20 |
| Dibenz(a,h)acridine | | | <0.050 | | ug/L | | 0.05 | 25-JUN-20 |
| 1,8-Dinitropyrene | | | <1.0 | | ug/L | | 1 | 25-JUN-20 |
| Dibenz(a,j)acridine | | | <0.050 | | ug/L | | 0.05 | 25-JUN-20 |
| 7H-Dibenzo(c,g)carbazole | | | <0.050 | | ug/L | | 0.05 | 25-JUN-20 |
| Dibenzo(a,i)pyrene | | | <0.050 | | ug/L | | 0.05 | 25-JUN-20 |
| Surrogate: d14-Terphenyl | | | 99.1 | | % | | 40-130 | 25-JUN-20 |
| **PCB-WT** | **Water** | | | | | | | |
| **Batch R5126959** | | | | | | | | |
| **WG3345621-2 LCS** | | | | | | | | |
| Aroclor 1242 | | | 113.2 | | % | | 65-130 | 22-JUN-20 |
| Aroclor 1248 | | | 119.4 | | % | | 65-130 | 22-JUN-20 |
| Aroclor 1254 | | | 111.3 | | % | | 65-130 | 22-JUN-20 |
| Aroclor 1260 | | | 104.5 | | % | | 65-130 | 22-JUN-20 |
| **WG3345621-1 MB** | | | | | | | | |
| Aroclor 1242 | | | <0.020 | | ug/L | | 0.02 | 22-JUN-20 |
| Aroclor 1248 | | | <0.020 | | ug/L | | 0.02 | 22-JUN-20 |
| Aroclor 1254 | | | <0.020 | | ug/L | | 0.02 | 22-JUN-20 |
| Aroclor 1260 | | | <0.020 | | ug/L | | 0.02 | 22-JUN-20 |
| Surrogate: Decachlorobiphenyl | | | 103.9 | | % | | 50-150 | 22-JUN-20 |
| Surrogate: Tetrachloro-m-xylene | | | 80.5 | | % | | 50-150 | 22-JUN-20 |
| **PH-WT** | **Water** | | | | | | | |
| **Batch R5127064** | | | | | | | | |
| **WG3346566-4 DUP** | | **WG3346566-3** | | | | | | |
| pH | | 7.30 | 7.20 | J | pH units | 0.10 | 0.2 | 20-JUN-20 |
| **Batch R5129280** | | | | | | | | |
| **WG3345830-4 DUP** | | **WG3345830-3** | | | | | | |
| pH | | 7.60 | 7.58 | J | pH units | 0.02 | 0.2 | 19-JUN-20 |
| **WG3345830-2 LCS** | | | | | | | | |

# Quality Control Report



Client: WSP Canada Group Limited
610 Chartwell Road Suite 300
Oakville ON L6J 4A5
Contact: Anne Pattison/Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PH-WT** | **Water** | | | | | | | |
| **Batch R5129280** | | | | | | | | |
| **WG3345830-2 LCS** | | | | | | | | |
| pH | | | 6.99 | | pH units | | 6.9-7.1 | 19-JUN-20 |
| **PHENOLS-4AAP-WT** | **Water** | | | | | | | |
| **Batch R5126306** | | | | | | | | |
| **WG3345616-3 DUP** | | **L2461378-2** | | | | | | |
| Phenols (4AAP) | | <0.0010 | <0.0010 | RPD-NA | mg/L | N/A | 20 | 19-JUN-20 |
| **WG3345616-2 LCS** | | | | | | | | |
| Phenols (4AAP) | | | 108.6 | | % | | 85-115 | 19-JUN-20 |
| **WG3345616-1 MB** | | | | | | | | |
| Phenols (4AAP) | | | <0.0010 | | mg/L | | 0.001 | 19-JUN-20 |
| **WG3345616-4 MS** | | **L2461378-2** | | | | | | |
| Phenols (4AAP) | | | 108.6 | | % | | 75-125 | 19-JUN-20 |
| **SOLIDS-TSS-WT** | **Water** | | | | | | | |
| **Batch R5130926** | | | | | | | | |
| **WG3347912-3 DUP** | | **L2463899-3** | | | | | | |
| Total Suspended Solids | | 4910 | 4960 | | mg/L | 0.9 | 20 | 24-JUN-20 |
| **WG3347912-2 LCS** | | | | | | | | |
| Total Suspended Solids | | | 93.3 | | % | | 85-115 | 24-JUN-20 |
| **WG3347912-1 MB** | | | | | | | | |
| Total Suspended Solids | | | <2.0 | | mg/L | | 2 | 24-JUN-20 |
| **Batch R5131704** | | | | | | | | |
| **WG3348758-3 DUP** | | **L2463922-1** | | | | | | |
| Total Suspended Solids | | 5200 | 5070 | | mg/L | 2.6 | 20 | 25-JUN-20 |
| **WG3348758-2 LCS** | | | | | | | | |
| Total Suspended Solids | | | 98.2 | | % | | 85-115 | 25-JUN-20 |
| **WG3348758-1 MB** | | | | | | | | |
| Total Suspended Solids | | | <2.0 | | mg/L | | 2 | 25-JUN-20 |
| **TKN-WT** | **Water** | | | | | | | |
| **Batch R5127636** | | | | | | | | |
| **WG3345753-3 DUP** | | **L2462346-5** | | | | | | |
| Total Kjeldahl Nitrogen | | 1.07 | 1.35 | J | mg/L | 0.28 | 0.3 | 22-JUN-20 |
| **WG3345753-2 LCS** | | | | | | | | |
| Total Kjeldahl Nitrogen | | | 113.5 | | % | | 75-125 | 22-JUN-20 |
| **WG3345753-1 MB** | | | | | | | | |
| Total Kjeldahl Nitrogen | | | <0.15 | | mg/L | | 0.15 | 22-JUN-20 |
| **WG3345753-4 MS** | | **L2462346-5** | | | | | | |

# Quality Control Report



Client: WSP Canada Group Limited
610 Chartwell Road Suite 300
Oakville ON L6J 4A5
Contact: Anne Pattison/Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **TKN-WT** | **Water** | | | | | | | |
| **Batch R5127636** | | | | | | | | |
| **WG3345753-4 MS** | | **L2462346-5** | | | | | | |
| Total Kjeldahl Nitrogen | | | 119.5 | | % | | 70-130 | 22-JUN-20 |
| **VOC-511-HS-WT** | **Water** | | | | | | | |
| **Batch R5128716** | | | | | | | | |
| **WG3342147-4 DUP** | | **WG3342147-3** | | | | | | |
| 1,1,1,2-Tetrachloroethane | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| 1,1,2,2-Tetrachloroethane | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| 1,1,1-Trichloroethane | | 1.28 | 1.21 | | ug/L | 5.6 | 30 | 23-JUN-20 |
| 1,1,2-Trichloroethane | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| 1,1-Dichloroethane | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| 1,1-Dichloroethylene | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| 1,2-Dibromoethane | | <0.20 | <0.20 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| 1,2-Dichlorobenzene | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| 1,2-Dichloroethane | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| 1,2-Dichloropropane | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| 1,3-Dichlorobenzene | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| 1,4-Dichlorobenzene | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| Acetone | | <30 | <30 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| Benzene | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| Bromodichloromethane | | <2.0 | <2.0 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| Bromoform | | <5.0 | <5.0 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| Bromomethane | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| Carbon tetrachloride | | <0.20 | <0.20 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| Chlorobenzene | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| Chloroform | | <1.0 | <1.0 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| cis-1,2-Dichloroethylene | | 4.69 | 4.32 | | ug/L | 8.2 | 30 | 23-JUN-20 |
| cis-1,3-Dichloropropene | | <0.30 | <0.30 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| Dibromochloromethane | | <2.0 | <2.0 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| Dichlorodifluoromethane | | <2.0 | <2.0 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| Ethylbenzene | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| n-Hexane | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| m+p-Xylenes | | <0.40 | <0.40 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| Methyl Ethyl Ketone | | <20 | <20 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
610 Chartwell Road Suite 300
Oakville ON L6J 4A5
Contact: Anne Pattison/Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **VOC-511-HS-WT** | **Water** | | | | | | | |
| **Batch R5128716** | | | | | | | | |
| **WG3342147-4 DUP** | | **WG3342147-3** | | | | | | |
| Methyl Isobutyl Ketone | | <20 | <20 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| Methylene Chloride | | <5.0 | <5.0 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| MTBE | | <2.0 | <2.0 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| o-Xylene | | <0.30 | <0.30 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| Styrene | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| Tetrachloroethylene | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| Toluene | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| trans-1,2-Dichloroethylene | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| trans-1,3-Dichloropropene | | <0.30 | <0.30 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| Trichloroethylene | | 749 | 698 | | ug/L | 7.2 | 30 | 23-JUN-20 |
| Trichlorofluoromethane | | <5.0 | <5.0 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| Vinyl chloride | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| **WG3342147-1 LCS** | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | | | 96.3 | | % | | 70-130 | 23-JUN-20 |
| 1,1,2,2-Tetrachloroethane | | | 114.6 | | % | | 70-130 | 23-JUN-20 |
| 1,1,1-Trichloroethane | | | 99.3 | | % | | 70-130 | 23-JUN-20 |
| 1,1,2-Trichloroethane | | | 108.0 | | % | | 70-130 | 23-JUN-20 |
| 1,1-Dichloroethane | | | 84.4 | | % | | 70-130 | 23-JUN-20 |
| 1,1-Dichloroethylene | | | 94.9 | | % | | 70-130 | 23-JUN-20 |
| 1,2-Dibromoethane | | | 104.4 | | % | | 70-130 | 23-JUN-20 |
| 1,2-Dichlorobenzene | | | 101.4 | | % | | 70-130 | 23-JUN-20 |
| 1,2-Dichloroethane | | | 109.1 | | % | | 70-130 | 23-JUN-20 |
| 1,2-Dichloropropane | | | 106.7 | | % | | 70-130 | 23-JUN-20 |
| 1,3-Dichlorobenzene | | | 99.6 | | % | | 70-130 | 23-JUN-20 |
| 1,4-Dichlorobenzene | | | 100.4 | | % | | 70-130 | 23-JUN-20 |
| Acetone | | | 118.0 | | % | | 60-140 | 23-JUN-20 |
| Benzene | | | 108.4 | | % | | 70-130 | 23-JUN-20 |
| Bromodichloromethane | | | 113.0 | | % | | 70-130 | 23-JUN-20 |
| Bromoform | | | 102.5 | | % | | 70-130 | 23-JUN-20 |
| Bromomethane | | | 121.6 | | % | | 60-140 | 23-JUN-20 |
| Carbon tetrachloride | | | 97.7 | | % | | 70-130 | 23-JUN-20 |
| Chlorobenzene | | | 103.1 | | % | | 70-130 | 23-JUN-20 |
| Chloroform | | | 110.0 | | % | | 70-130 | 23-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
610 Chartwell Road Suite 300
Oakville ON L6J 4A5
Contact: Anne Pattison/Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **VOC-511-HS-WT** | **Water** | | | | | | | |
| **Batch R5128716** | | | | | | | | |
| **WG3342147-1 LCS** | | | | | | | | |
| cis-1,2-Dichloroethylene | | | 105.1 | | % | | 70-130 | 23-JUN-20 |
| cis-1,3-Dichloropropene | | | 102.0 | | % | | 70-130 | 23-JUN-20 |
| Dibromochloromethane | | | 98.5 | | % | | 70-130 | 23-JUN-20 |
| Dichlorodifluoromethane | | | 83.2 | | % | | 50-140 | 23-JUN-20 |
| Ethylbenzene | | | 93.1 | | % | | 70-130 | 23-JUN-20 |
| n-Hexane | | | 88.5 | | % | | 70-130 | 23-JUN-20 |
| m+p-Xylenes | | | 95.5 | | % | | 70-130 | 23-JUN-20 |
| Methyl Ethyl Ketone | | | 115.8 | | % | | 60-140 | 23-JUN-20 |
| Methyl Isobutyl Ketone | | | 99.6 | | % | | 60-140 | 23-JUN-20 |
| Methylene Chloride | | | 96.4 | | % | | 70-130 | 23-JUN-20 |
| MTBE | | | 103.6 | | % | | 70-130 | 23-JUN-20 |
| o-Xylene | | | 100.4 | | % | | 70-130 | 23-JUN-20 |
| Styrene | | | 92.8 | | % | | 70-130 | 23-JUN-20 |
| Tetrachloroethylene | | | 98.8 | | % | | 70-130 | 23-JUN-20 |
| Toluene | | | 98.2 | | % | | 70-130 | 23-JUN-20 |
| trans-1,2-Dichloroethylene | | | 87.9 | | % | | 70-130 | 23-JUN-20 |
| trans-1,3-Dichloropropene | | | 104.7 | | % | | 70-130 | 23-JUN-20 |
| Trichloroethylene | | | 103.2 | | % | | 70-130 | 23-JUN-20 |
| Trichlorofluoromethane | | | 89.2 | | % | | 60-140 | 23-JUN-20 |
| Vinyl chloride | | | 108.0 | | % | | 60-140 | 23-JUN-20 |
| **WG3342147-2 MB** | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | | | <0.50 | | ug/L | | 0.5 | 23-JUN-20 |
| 1,1,2,2-Tetrachloroethane | | | <0.50 | | ug/L | | 0.5 | 23-JUN-20 |
| 1,1,1-Trichloroethane | | | <0.50 | | ug/L | | 0.5 | 23-JUN-20 |
| 1,1,2-Trichloroethane | | | <0.50 | | ug/L | | 0.5 | 23-JUN-20 |
| 1,1-Dichloroethane | | | <0.50 | | ug/L | | 0.5 | 23-JUN-20 |
| 1,1-Dichloroethylene | | | <0.50 | | ug/L | | 0.5 | 23-JUN-20 |
| 1,2-Dibromoethane | | | <0.20 | | ug/L | | 0.2 | 23-JUN-20 |
| 1,2-Dichlorobenzene | | | <0.50 | | ug/L | | 0.5 | 23-JUN-20 |
| 1,2-Dichloroethane | | | <0.50 | | ug/L | | 0.5 | 23-JUN-20 |
| 1,2-Dichloropropane | | | <0.50 | | ug/L | | 0.5 | 23-JUN-20 |
| 1,3-Dichlorobenzene | | | <0.50 | | ug/L | | 0.5 | 23-JUN-20 |
| 1,4-Dichlorobenzene | | | <0.50 | | ug/L | | 0.5 | 23-JUN-20 |
| Acetone | | | <30 | | ug/L | | 30 | 23-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
610 Chartwell Road Suite 300
Oakville ON L6J 4A5
Contact: Anne Pattison/Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **VOC-511-HS-WT** | **Water** | | | | | | | |
| **Batch R5128716** | | | | | | | | |
| **WG3342147-2 MB** | | | | | | | | |
| Benzene | | | <0.50 | | ug/L | | 0.5 | 23-JUN-20 |
| Bromodichloromethane | | | <2.0 | | ug/L | | 2 | 23-JUN-20 |
| Bromoform | | | <5.0 | | ug/L | | 5 | 23-JUN-20 |
| Bromomethane | | | <0.50 | | ug/L | | 0.5 | 23-JUN-20 |
| Carbon tetrachloride | | | <0.20 | | ug/L | | 0.2 | 23-JUN-20 |
| Chlorobenzene | | | <0.50 | | ug/L | | 0.5 | 23-JUN-20 |
| Chloroform | | | <1.0 | | ug/L | | 1 | 23-JUN-20 |
| cis-1,2-Dichloroethylene | | | <0.50 | | ug/L | | 0.5 | 23-JUN-20 |
| cis-1,3-Dichloropropene | | | <0.30 | | ug/L | | 0.3 | 23-JUN-20 |
| Dibromochloromethane | | | <2.0 | | ug/L | | 2 | 23-JUN-20 |
| Dichlorodifluoromethane | | | <2.0 | | ug/L | | 2 | 23-JUN-20 |
| Ethylbenzene | | | <0.50 | | ug/L | | 0.5 | 23-JUN-20 |
| n-Hexane | | | <0.50 | | ug/L | | 0.5 | 23-JUN-20 |
| m+p-Xylenes | | | <0.40 | | ug/L | | 0.4 | 23-JUN-20 |
| Methyl Ethyl Ketone | | | <20 | | ug/L | | 20 | 23-JUN-20 |
| Methyl Isobutyl Ketone | | | <20 | | ug/L | | 20 | 23-JUN-20 |
| Methylene Chloride | | | <5.0 | | ug/L | | 5 | 23-JUN-20 |
| MTBE | | | <2.0 | | ug/L | | 2 | 23-JUN-20 |
| o-Xylene | | | <0.30 | | ug/L | | 0.3 | 23-JUN-20 |
| Styrene | | | <0.50 | | ug/L | | 0.5 | 23-JUN-20 |
| Tetrachloroethylene | | | <0.50 | | ug/L | | 0.5 | 23-JUN-20 |
| Toluene | | | <0.50 | | ug/L | | 0.5 | 23-JUN-20 |
| trans-1,2-Dichloroethylene | | | <0.50 | | ug/L | | 0.5 | 23-JUN-20 |
| trans-1,3-Dichloropropene | | | <0.30 | | ug/L | | 0.3 | 23-JUN-20 |
| Trichloroethylene | | | <0.50 | | ug/L | | 0.5 | 23-JUN-20 |
| Trichlorofluoromethane | | | <5.0 | | ug/L | | 5 | 23-JUN-20 |
| Vinyl chloride | | | <0.50 | | ug/L | | 0.5 | 23-JUN-20 |
| Surrogate: 1,4-Difluorobenzene | | | 99.2 | | % | | 70-130 | 23-JUN-20 |
| Surrogate: 4-Bromofluorobenzene | | | 97.1 | | % | | 70-130 | 23-JUN-20 |
| **WG3342147-5 MS** | | **WG3342147-3** | | | | | | |
| 1,1,1,2-Tetrachloroethane | | | 107.2 | | % | | 50-140 | 24-JUN-20 |
| 1,1,2,2-Tetrachloroethane | | | 100.5 | | % | | 50-140 | 24-JUN-20 |
| 1,1,1-Trichloroethane | | | 111.5 | | % | | 50-140 | 24-JUN-20 |
| 1,1,2-Trichloroethane | | | 102.1 | | % | | 50-140 | 24-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
610 Chartwell Road Suite 300
Oakville ON L6J 4A5
Contact: Anne Pattison/Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **VOC-511-HS-WT** | **Water** | | | | | | | |
| **Batch R5128716** | | | | | | | | |
| **WG3342147-5 MS** | | **WG3342147-3** | | | | | | |
| 1,1-Dichloroethane | | | 109.7 | | % | | 50-140 | 24-JUN-20 |
| 1,1-Dichloroethylene | | | 94.9 | | % | | 50-140 | 24-JUN-20 |
| 1,2-Dibromoethane | | | 107.9 | | % | | 50-140 | 24-JUN-20 |
| 1,2-Dichlorobenzene | | | 109.2 | | % | | 50-140 | 24-JUN-20 |
| 1,2-Dichloroethane | | | 107.8 | | % | | 50-140 | 24-JUN-20 |
| 1,2-Dichloropropane | | | 115.9 | | % | | 50-140 | 24-JUN-20 |
| 1,3-Dichlorobenzene | | | 112.3 | | % | | 50-140 | 24-JUN-20 |
| 1,4-Dichlorobenzene | | | 113.1 | | % | | 50-140 | 24-JUN-20 |
| Acetone | | | 114.4 | | % | | 50-140 | 24-JUN-20 |
| Benzene | | | 107.4 | | % | | 50-140 | 24-JUN-20 |
| Bromodichloromethane | | | 112.8 | | % | | 50-140 | 24-JUN-20 |
| Bromoform | | | 99.4 | | % | | 50-140 | 24-JUN-20 |
| Bromomethane | | | 128.5 | | % | | 50-140 | 24-JUN-20 |
| Carbon tetrachloride | | | 111.6 | | % | | 50-140 | 24-JUN-20 |
| Chlorobenzene | | | 106.9 | | % | | 50-140 | 24-JUN-20 |
| Chloroform | | | 112.5 | | % | | 50-140 | 24-JUN-20 |
| cis-1,2-Dichloroethylene | | | 107.8 | | % | | 50-140 | 24-JUN-20 |
| cis-1,3-Dichloropropene | | | 102.8 | | % | | 50-140 | 24-JUN-20 |
| Dibromochloromethane | | | 106.8 | | % | | 50-140 | 24-JUN-20 |
| Dichlorodifluoromethane | | | 100.4 | | % | | 50-140 | 24-JUN-20 |
| Ethylbenzene | | | 104.2 | | % | | 50-140 | 24-JUN-20 |
| n-Hexane | | | 107.7 | | % | | 50-140 | 24-JUN-20 |
| m+p-Xylenes | | | 110.8 | | % | | 50-140 | 24-JUN-20 |
| Methyl Ethyl Ketone | | | 111.1 | | % | | 50-140 | 24-JUN-20 |
| Methyl Isobutyl Ketone | | | 105.1 | | % | | 50-140 | 24-JUN-20 |
| Methylene Chloride | | | 109.7 | | % | | 50-140 | 24-JUN-20 |
| MTBE | | | 105.4 | | % | | 50-140 | 24-JUN-20 |
| o-Xylene | | | 118.6 | | % | | 50-140 | 24-JUN-20 |
| Styrene | | | 102.4 | | % | | 50-140 | 24-JUN-20 |
| Tetrachloroethylene | | | 111.3 | | % | | 50-140 | 24-JUN-20 |
| Toluene | | | 104.4 | | % | | 50-140 | 24-JUN-20 |
| trans-1,2-Dichloroethylene | | | 106.5 | | % | | 50-140 | 24-JUN-20 |
| trans-1,3-Dichloropropene | | | 108.8 | | % | | 50-140 | 24-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
610 Chartwell Road Suite 300
Oakville ON L6J 4A5
Contact: Anne Pattison/Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **VOC-511-HS-WT** | **Water** | | | | | | | |
| **Batch R5128716** | | | | | | | | |
| **WG3342147-5 MS** | | **WG3342147-3** | | | | | | |
| Trichloroethylene | | | N/A | MS-B | % | | - | 24-JUN-20 |
| Trichlorofluoromethane | | | 90.6 | | % | | 50-140 | 24-JUN-20 |
| Vinyl chloride | | | 105.7 | | % | | 50-140 | 24-JUN-20 |
| **Batch R5128841** | | | | | | | | |
| **WG3347607-4 DUP** | | **WG3347607-3** | | | | | | |
| 1,1,1,2-Tetrachloroethane | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| 1,1,2,2-Tetrachloroethane | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| 1,1,1-Trichloroethane | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| 1,1,2-Trichloroethane | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| 1,1-Dichloroethane | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| 1,1-Dichloroethylene | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| 1,2-Dibromoethane | | <0.20 | <0.20 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| 1,2-Dichlorobenzene | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| 1,2-Dichloroethane | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| 1,2-Dichloropropane | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| 1,3-Dichlorobenzene | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| 1,4-Dichlorobenzene | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| Acetone | | <30 | <30 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| Benzene | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| Bromodichloromethane | | <2.0 | <2.0 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| Bromoform | | <5.0 | <5.0 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| Bromomethane | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| Carbon tetrachloride | | <0.20 | <0.20 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| Chlorobenzene | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| Chloroform | | <1.0 | <1.0 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| cis-1,2-Dichloroethylene | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| cis-1,3-Dichloropropene | | <0.30 | <0.30 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| Dibromochloromethane | | <2.0 | <2.0 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| Dichlorodifluoromethane | | <2.0 | <2.0 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| Ethylbenzene | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| n-Hexane | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| m+p-Xylenes | | <0.40 | <0.40 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| Methyl Ethyl Ketone | | <20 | <20 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
610 Chartwell Road Suite 300
Oakville ON L6J 4A5
Contact: Anne Pattison/Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **VOC-511-HS-WT** | **Water** | | | | | | | |
| **Batch R5128841** | | | | | | | | |
| **WG3347607-4 DUP** | | **WG3347607-3** | | | | | | |
| Methyl Isobutyl Ketone | | <20 | <20 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| Methylene Chloride | | <5.0 | <5.0 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| MTBE | | <2.0 | <2.0 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| o-Xylene | | <0.30 | <0.30 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| Styrene | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| Tetrachloroethylene | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| Toluene | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| trans-1,2-Dichloroethylene | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| trans-1,3-Dichloropropene | | <0.30 | <0.30 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| Trichloroethylene | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| Trichlorofluoromethane | | <5.0 | <5.0 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| Vinyl chloride | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| **WG3347607-1 LCS** | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | | | 102.8 | | % | | 70-130 | 23-JUN-20 |
| 1,1,2,2-Tetrachloroethane | | | 113.6 | | % | | 70-130 | 23-JUN-20 |
| 1,1,1-Trichloroethane | | | 108.3 | | % | | 70-130 | 23-JUN-20 |
| 1,1,2-Trichloroethane | | | 107.1 | | % | | 70-130 | 23-JUN-20 |
| 1,1-Dichloroethane | | | 80.4 | | % | | 70-130 | 23-JUN-20 |
| 1,1-Dichloroethylene | | | 104.5 | | % | | 70-130 | 23-JUN-20 |
| 1,2-Dibromoethane | | | 103.0 | | % | | 70-130 | 23-JUN-20 |
| 1,2-Dichlorobenzene | | | 109.3 | | % | | 70-130 | 23-JUN-20 |
| 1,2-Dichloroethane | | | 105.7 | | % | | 70-130 | 23-JUN-20 |
| 1,2-Dichloropropane | | | 109.2 | | % | | 70-130 | 23-JUN-20 |
| 1,3-Dichlorobenzene | | | 111.0 | | % | | 70-130 | 23-JUN-20 |
| 1,4-Dichlorobenzene | | | 110.6 | | % | | 70-130 | 23-JUN-20 |
| Acetone | | | 108.5 | | % | | 60-140 | 23-JUN-20 |
| Benzene | | | 114.4 | | % | | 70-130 | 23-JUN-20 |
| Bromodichloromethane | | | 114.6 | | % | | 70-130 | 23-JUN-20 |
| Bromoform | | | 102.0 | | % | | 70-130 | 23-JUN-20 |
| Bromomethane | | | 133.1 | | % | | 60-140 | 23-JUN-20 |
| Carbon tetrachloride | | | 107.9 | | % | | 70-130 | 23-JUN-20 |
| Chlorobenzene | | | 111.0 | | % | | 70-130 | 23-JUN-20 |
| Chloroform | | | 114.2 | | % | | 70-130 | 23-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
610 Chartwell Road Suite 300
Oakville ON L6J 4A5
Contact: Anne Pattison/Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **VOC-511-HS-WT** | **Water** | | | | | | | |
| **Batch R5128841** | | | | | | | | |
| **WG3347607-1 LCS** | | | | | | | | |
| cis-1,2-Dichloroethylene | | | 109.7 | | % | | 70-130 | 23-JUN-20 |
| cis-1,3-Dichloropropene | | | 107.0 | | % | | 70-130 | 23-JUN-20 |
| Dibromochloromethane | | | 99.8 | | % | | 70-130 | 23-JUN-20 |
| Dichlorodifluoromethane | | | 96.2 | | % | | 50-140 | 23-JUN-20 |
| Ethylbenzene | | | 104.8 | | % | | 70-130 | 23-JUN-20 |
| n-Hexane | | | 98.7 | | % | | 70-130 | 23-JUN-20 |
| m+p-Xylenes | | | 107.3 | | % | | 70-130 | 23-JUN-20 |
| Methyl Ethyl Ketone | | | 105.4 | | % | | 60-140 | 23-JUN-20 |
| Methyl Isobutyl Ketone | | | 93.0 | | % | | 60-140 | 23-JUN-20 |
| Methylene Chloride | | | 96.9 | | % | | 70-130 | 23-JUN-20 |
| MTBE | | | 110.5 | | % | | 70-130 | 23-JUN-20 |
| o-Xylene | | | 111.0 | | % | | 70-130 | 23-JUN-20 |
| Styrene | | | 100.3 | | % | | 70-130 | 23-JUN-20 |
| Tetrachloroethylene | | | 114.1 | | % | | 70-130 | 23-JUN-20 |
| Toluene | | | 107.3 | | % | | 70-130 | 23-JUN-20 |
| trans-1,2-Dichloroethylene | | | 94.9 | | % | | 70-130 | 23-JUN-20 |
| trans-1,3-Dichloropropene | | | 112.6 | | % | | 70-130 | 23-JUN-20 |
| Trichloroethylene | | | 113.0 | | % | | 70-130 | 23-JUN-20 |
| Trichlorofluoromethane | | | 99.9 | | % | | 60-140 | 23-JUN-20 |
| Vinyl chloride | | | 121.9 | | % | | 60-140 | 23-JUN-20 |
| **WG3347607-2 MB** | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | | | <0.50 | | ug/L | | 0.5 | 23-JUN-20 |
| 1,1,2,2-Tetrachloroethane | | | <0.50 | | ug/L | | 0.5 | 23-JUN-20 |
| 1,1,1-Trichloroethane | | | <0.50 | | ug/L | | 0.5 | 23-JUN-20 |
| 1,1,2-Trichloroethane | | | <0.50 | | ug/L | | 0.5 | 23-JUN-20 |
| 1,1-Dichloroethane | | | <0.50 | | ug/L | | 0.5 | 23-JUN-20 |
| 1,1-Dichloroethylene | | | <0.50 | | ug/L | | 0.5 | 23-JUN-20 |
| 1,2-Dibromoethane | | | <0.20 | | ug/L | | 0.2 | 23-JUN-20 |
| 1,2-Dichlorobenzene | | | <0.50 | | ug/L | | 0.5 | 23-JUN-20 |
| 1,2-Dichloroethane | | | <0.50 | | ug/L | | 0.5 | 23-JUN-20 |
| 1,2-Dichloropropane | | | <0.50 | | ug/L | | 0.5 | 23-JUN-20 |
| 1,3-Dichlorobenzene | | | <0.50 | | ug/L | | 0.5 | 23-JUN-20 |
| 1,4-Dichlorobenzene | | | <0.50 | | ug/L | | 0.5 | 23-JUN-20 |
| Acetone | | | <30 | | ug/L | | 30 | 23-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
610 Chartwell Road Suite 300
Oakville ON L6J 4A5
Contact: Anne Pattison/Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **VOC-511-HS-WT** | **Water** | | | | | | | |
| **Batch R5128841** | | | | | | | | |
| **WG3347607-2 MB** | | | | | | | | |
| Benzene | | | <0.50 | | ug/L | | 0.5 | 23-JUN-20 |
| Bromodichloromethane | | | <2.0 | | ug/L | | 2 | 23-JUN-20 |
| Bromoform | | | <5.0 | | ug/L | | 5 | 23-JUN-20 |
| Bromomethane | | | <0.50 | | ug/L | | 0.5 | 23-JUN-20 |
| Carbon tetrachloride | | | <0.20 | | ug/L | | 0.2 | 23-JUN-20 |
| Chlorobenzene | | | <0.50 | | ug/L | | 0.5 | 23-JUN-20 |
| Chloroform | | | <1.0 | | ug/L | | 1 | 23-JUN-20 |
| cis-1,2-Dichloroethylene | | | <0.50 | | ug/L | | 0.5 | 23-JUN-20 |
| cis-1,3-Dichloropropene | | | <0.30 | | ug/L | | 0.3 | 23-JUN-20 |
| Dibromochloromethane | | | <2.0 | | ug/L | | 2 | 23-JUN-20 |
| Dichlorodifluoromethane | | | <2.0 | | ug/L | | 2 | 23-JUN-20 |
| Ethylbenzene | | | <0.50 | | ug/L | | 0.5 | 23-JUN-20 |
| n-Hexane | | | <0.50 | | ug/L | | 0.5 | 23-JUN-20 |
| m+p-Xylenes | | | <0.40 | | ug/L | | 0.4 | 23-JUN-20 |
| Methyl Ethyl Ketone | | | <20 | | ug/L | | 20 | 23-JUN-20 |
| Methyl Isobutyl Ketone | | | <20 | | ug/L | | 20 | 23-JUN-20 |
| Methylene Chloride | | | <5.0 | | ug/L | | 5 | 23-JUN-20 |
| MTBE | | | <2.0 | | ug/L | | 2 | 23-JUN-20 |
| o-Xylene | | | <0.30 | | ug/L | | 0.3 | 23-JUN-20 |
| Styrene | | | <0.50 | | ug/L | | 0.5 | 23-JUN-20 |
| Tetrachloroethylene | | | <0.50 | | ug/L | | 0.5 | 23-JUN-20 |
| Toluene | | | <0.50 | | ug/L | | 0.5 | 23-JUN-20 |
| trans-1,2-Dichloroethylene | | | <0.50 | | ug/L | | 0.5 | 23-JUN-20 |
| trans-1,3-Dichloropropene | | | <0.30 | | ug/L | | 0.3 | 23-JUN-20 |
| Trichloroethylene | | | <0.50 | | ug/L | | 0.5 | 23-JUN-20 |
| Trichlorofluoromethane | | | <5.0 | | ug/L | | 5 | 23-JUN-20 |
| Vinyl chloride | | | <0.50 | | ug/L | | 0.5 | 23-JUN-20 |
| Surrogate: 1,4-Difluorobenzene | | | 99.2 | | % | | 70-130 | 23-JUN-20 |
| Surrogate: 4-Bromofluorobenzene | | | 96.4 | | % | | 70-130 | 23-JUN-20 |
| **WG3347607-5 MS** | | **WG3347607-3** | | | | | | |
| 1,1,1,2-Tetrachloroethane | | | 107.1 | | % | | 50-140 | 24-JUN-20 |
| 1,1,2,2-Tetrachloroethane | | | 102.9 | | % | | 50-140 | 24-JUN-20 |
| 1,1,1-Trichloroethane | | | 110.2 | | % | | 50-140 | 24-JUN-20 |
| 1,1,2-Trichloroethane | | | 104.7 | | % | | 50-140 | 24-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
610 Chartwell Road Suite 300
Oakville ON L6J 4A5
Contact: Anne Pattison/Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **VOC-511-HS-WT** | **Water** | | | | | | | |
| **Batch R5128841** | | | | | | | | |
| **WG3347607-5 MS** | | **WG3347607-3** | | | | | | |
| 1,1-Dichloroethane | | | 109.7 | | % | | 50-140 | 24-JUN-20 |
| 1,1-Dichloroethylene | | | 93.6 | | % | | 50-140 | 24-JUN-20 |
| 1,2-Dibromoethane | | | 111.4 | | % | | 50-140 | 24-JUN-20 |
| 1,2-Dichlorobenzene | | | 109.2 | | % | | 50-140 | 24-JUN-20 |
| 1,2-Dichloroethane | | | 110.8 | | % | | 50-140 | 24-JUN-20 |
| 1,2-Dichloropropane | | | 116.8 | | % | | 50-140 | 24-JUN-20 |
| 1,3-Dichlorobenzene | | | 111.0 | | % | | 50-140 | 24-JUN-20 |
| 1,4-Dichlorobenzene | | | 112.2 | | % | | 50-140 | 24-JUN-20 |
| Acetone | | | 124.0 | | % | | 50-140 | 24-JUN-20 |
| Benzene | | | 107.3 | | % | | 50-140 | 24-JUN-20 |
| Bromodichloromethane | | | 114.5 | | % | | 50-140 | 24-JUN-20 |
| Bromoform | | | 101.6 | | % | | 50-140 | 24-JUN-20 |
| Bromomethane | | | 127.9 | | % | | 50-140 | 24-JUN-20 |
| Carbon tetrachloride | | | 109.8 | | % | | 50-140 | 24-JUN-20 |
| Chlorobenzene | | | 106.5 | | % | | 50-140 | 24-JUN-20 |
| Chloroform | | | 113.1 | | % | | 50-140 | 24-JUN-20 |
| cis-1,2-Dichloroethylene | | | 108.0 | | % | | 50-140 | 24-JUN-20 |
| cis-1,3-Dichloropropene | | | 102.5 | | % | | 50-140 | 24-JUN-20 |
| Dibromochloromethane | | | 108.4 | | % | | 50-140 | 24-JUN-20 |
| Dichlorodifluoromethane | | | 98.6 | | % | | 50-140 | 24-JUN-20 |
| Ethylbenzene | | | 102.4 | | % | | 50-140 | 24-JUN-20 |
| n-Hexane | | | 105.1 | | % | | 50-140 | 24-JUN-20 |
| m+p-Xylenes | | | 108.9 | | % | | 50-140 | 24-JUN-20 |
| Methyl Ethyl Ketone | | | 119.2 | | % | | 50-140 | 24-JUN-20 |
| Methyl Isobutyl Ketone | | | 109.5 | | % | | 50-140 | 24-JUN-20 |
| Methylene Chloride | | | 111.7 | | % | | 50-140 | 24-JUN-20 |
| MTBE | | | 105.4 | | % | | 50-140 | 24-JUN-20 |
| o-Xylene | | | 116.9 | | % | | 50-140 | 24-JUN-20 |
| Styrene | | | 101.3 | | % | | 50-140 | 24-JUN-20 |
| Tetrachloroethylene | | | 109.2 | | % | | 50-140 | 24-JUN-20 |
| Toluene | | | 103.3 | | % | | 50-140 | 24-JUN-20 |
| trans-1,2-Dichloroethylene | | | 105.5 | | % | | 50-140 | 24-JUN-20 |
| trans-1,3-Dichloropropene | | | 108.5 | | % | | 50-140 | 24-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
610 Chartwell Road Suite 300
Oakville ON L6J 4A5
Contact: Anne Pattison/Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **VOC-511-HS-WT** | **Water** | | | | | | | |
| **Batch R5128841** | | | | | | | | |
| **WG3347607-5 MS** | | **WG3347607-3** | | | | | | |
| Trichloroethylene | | | 106.5 | | % | | 50-140 | 24-JUN-20 |
| Trichlorofluoromethane | | | 88.8 | | % | | 50-140 | 24-JUN-20 |
| Vinyl chloride | | | 104.3 | | % | | 50-140 | 24-JUN-20 |
| **VOC-ROU-HS-WT** | **Water** | | | | | | | |
| **Batch R5128716** | | | | | | | | |
| **WG3342147-4 DUP** | | **WG3342147-3** | | | | | | |
| 1,1,2,2-Tetrachloroethane | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| 1,2-Dichlorobenzene | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| 1,4-Dichlorobenzene | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| Benzene | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| Chloroform | | <1.0 | <1.0 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| cis-1,2-Dichloroethylene | | 4.69 | 4.32 | | ug/L | 8.2 | 30 | 23-JUN-20 |
| Dichloromethane | | <2.0 | <2.0 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| Ethylbenzene | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| m+p-Xylenes | | <1.0 | <0.40 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| o-Xylene | | <0.50 | <0.30 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| Tetrachloroethylene | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| Toluene | | <0.50 | <0.40 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| trans-1,3-Dichloropropene | | <0.30 | <0.30 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| Trichloroethylene | | 749 | 698 | | ug/L | 7.2 | 30 | 23-JUN-20 |
| **WG3342147-1 LCS** | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | | | 114.6 | | % | | 70-130 | 23-JUN-20 |
| 1,2-Dichlorobenzene | | | 101.4 | | % | | 70-130 | 23-JUN-20 |
| 1,4-Dichlorobenzene | | | 100.4 | | % | | 70-130 | 23-JUN-20 |
| Benzene | | | 108.4 | | % | | 70-130 | 23-JUN-20 |
| Chloroform | | | 110.0 | | % | | 70-130 | 23-JUN-20 |
| cis-1,2-Dichloroethylene | | | 105.1 | | % | | 70-130 | 23-JUN-20 |
| Dichloromethane | | | 96.4 | | % | | 70-130 | 23-JUN-20 |
| Ethylbenzene | | | 93.1 | | % | | 70-130 | 23-JUN-20 |
| m+p-Xylenes | | | 95.5 | | % | | 70-130 | 23-JUN-20 |
| o-Xylene | | | 100.4 | | % | | 70-130 | 23-JUN-20 |
| Tetrachloroethylene | | | 98.8 | | % | | 70-130 | 23-JUN-20 |
| Toluene | | | 98.2 | | % | | 70-130 | 23-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
610 Chartwell Road Suite 300
Oakville ON L6J 4A5
Contact: Anne Pattison/Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **VOC-ROU-HS-WT** | **Water** | | | | | | | |
| **Batch R5128716** | | | | | | | | |
| **WG3342147-1 LCS** | | | | | | | | |
| trans-1,3-Dichloropropene | | | 104.7 | | % | | 70-130 | 23-JUN-20 |
| Trichloroethylene | | | 103.2 | | % | | 70-130 | 23-JUN-20 |
| **WG3342147-2 MB** | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | | | <0.50 | | ug/L | | 0.5 | 23-JUN-20 |
| 1,2-Dichlorobenzene | | | <0.50 | | ug/L | | 0.5 | 23-JUN-20 |
| 1,4-Dichlorobenzene | | | <0.50 | | ug/L | | 0.5 | 23-JUN-20 |
| Benzene | | | <0.50 | | ug/L | | 0.5 | 23-JUN-20 |
| Chloroform | | | <1.0 | | ug/L | | 1 | 23-JUN-20 |
| cis-1,2-Dichloroethylene | | | <0.50 | | ug/L | | 0.5 | 23-JUN-20 |
| Dichloromethane | | | <2.0 | | ug/L | | 2 | 23-JUN-20 |
| Ethylbenzene | | | <0.50 | | ug/L | | 0.5 | 23-JUN-20 |
| m+p-Xylenes | | | <0.40 | | ug/L | | 0.4 | 23-JUN-20 |
| o-Xylene | | | <0.30 | | ug/L | | 0.3 | 23-JUN-20 |
| Tetrachloroethylene | | | <0.50 | | ug/L | | 0.5 | 23-JUN-20 |
| Toluene | | | <0.40 | | ug/L | | 0.4 | 23-JUN-20 |
| trans-1,3-Dichloropropene | | | <0.30 | | ug/L | | 0.3 | 23-JUN-20 |
| Trichloroethylene | | | <0.50 | | ug/L | | 0.5 | 23-JUN-20 |
| Surrogate: 1,4-Difluorobenzene | | | 99.2 | | % | | 70-130 | 23-JUN-20 |
| Surrogate: 4-Bromofluorobenzene | | | 97.1 | | % | | 70-130 | 23-JUN-20 |
| **WG3342147-5 MS** | | **WG3342147-3** | | | | | | |
| 1,1,2,2-Tetrachloroethane | | | 100.5 | | % | | 50-150 | 24-JUN-20 |
| 1,2-Dichlorobenzene | | | 109.2 | | % | | 50-150 | 24-JUN-20 |
| 1,4-Dichlorobenzene | | | 113.1 | | % | | 50-150 | 24-JUN-20 |
| Benzene | | | 107.4 | | % | | 50-150 | 24-JUN-20 |
| Chloroform | | | 112.5 | | % | | 50-150 | 24-JUN-20 |
| cis-1,2-Dichloroethylene | | | 107.8 | | % | | 50-150 | 24-JUN-20 |
| Dichloromethane | | | 109.7 | | % | | 50-150 | 24-JUN-20 |
| Ethylbenzene | | | 104.2 | | % | | 50-150 | 24-JUN-20 |
| m+p-Xylenes | | | 110.8 | | % | | 50-150 | 24-JUN-20 |
| o-Xylene | | | 118.6 | | % | | 50-150 | 24-JUN-20 |
| Tetrachloroethylene | | | 111.3 | | % | | 50-150 | 24-JUN-20 |
| Toluene | | | 104.4 | | % | | 50-150 | 24-JUN-20 |
| trans-1,3-Dichloropropene | | | 108.8 | | % | | 50-150 | 24-JUN-20 |
| Trichloroethylene | | | N/A | MS-B | % | | - | 24-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
610 Chartwell Road Suite 300
Oakville ON L6J 4A5
Contact: Anne Pattison/Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **VOC-ROU-HS-WT** | **Water** | | | | | | | |
| **Batch R5128841** | | | | | | | | |
| **WG3347607-4 DUP** | | **WG3347607-3** | | | | | | |
| 1,1,2,2-Tetrachloroethane | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| 1,2-Dichlorobenzene | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| 1,4-Dichlorobenzene | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| Benzene | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| Chloroform | | <1.0 | <1.0 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| cis-1,2-Dichloroethylene | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| Dichloromethane | | <2.0 | <2.0 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| Ethylbenzene | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| m+p-Xylenes | | <0.40 | <0.40 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| o-Xylene | | <0.30 | <0.30 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| Tetrachloroethylene | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| Toluene | | <0.40 | <0.40 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| trans-1,3-Dichloropropene | | <0.30 | <0.30 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| Trichloroethylene | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 23-JUN-20 |
| **WG3347607-1 LCS** | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | | | 113.6 | | % | | 70-130 | 23-JUN-20 |
| 1,2-Dichlorobenzene | | | 109.3 | | % | | 70-130 | 23-JUN-20 |
| 1,4-Dichlorobenzene | | | 110.6 | | % | | 70-130 | 23-JUN-20 |
| Benzene | | | 114.4 | | % | | 70-130 | 23-JUN-20 |
| Chloroform | | | 114.2 | | % | | 70-130 | 23-JUN-20 |
| cis-1,2-Dichloroethylene | | | 109.7 | | % | | 70-130 | 23-JUN-20 |
| Dichloromethane | | | 96.9 | | % | | 70-130 | 23-JUN-20 |
| Ethylbenzene | | | 104.8 | | % | | 70-130 | 23-JUN-20 |
| m+p-Xylenes | | | 107.3 | | % | | 70-130 | 23-JUN-20 |
| o-Xylene | | | 111.0 | | % | | 70-130 | 23-JUN-20 |
| Tetrachloroethylene | | | 114.1 | | % | | 70-130 | 23-JUN-20 |
| Toluene | | | 107.3 | | % | | 70-130 | 23-JUN-20 |
| trans-1,3-Dichloropropene | | | 112.6 | | % | | 70-130 | 23-JUN-20 |
| Trichloroethylene | | | 113.0 | | % | | 70-130 | 23-JUN-20 |
| **WG3347607-2 MB** | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | | | <0.50 | | ug/L | | 0.5 | 23-JUN-20 |
| 1,2-Dichlorobenzene | | | <0.50 | | ug/L | | 0.5 | 23-JUN-20 |
| 1,4-Dichlorobenzene | | | <0.50 | | ug/L | | 0.5 | 23-JUN-20 |
| | | | | | | | 0.5 | |

# Quality Control Report



Client: WSP Canada Group Limited
610 Chartwell Road Suite 300
Oakville ON L6J 4A5
Contact: Anne Pattison/Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **VOC-ROU-HS-WT** | **Water** | | | | | | | |
| **Batch R5128841** | | | | | | | | |
| **WG3347607-2 MB** | | | | | | | | |
| Benzene | | | <0.50 | | ug/L | | 0.5 | 23-JUN-20 |
| Chloroform | | | <1.0 | | ug/L | | 1 | 23-JUN-20 |
| cis-1,2-Dichloroethylene | | | <0.50 | | ug/L | | 0.5 | 23-JUN-20 |
| Dichloromethane | | | <2.0 | | ug/L | | 2 | 23-JUN-20 |
| Ethylbenzene | | | <0.50 | | ug/L | | 0.5 | 23-JUN-20 |
| m+p-Xylenes | | | <0.40 | | ug/L | | 0.4 | 23-JUN-20 |
| o-Xylene | | | <0.30 | | ug/L | | 0.3 | 23-JUN-20 |
| Tetrachloroethylene | | | <0.50 | | ug/L | | 0.5 | 23-JUN-20 |
| Toluene | | | <0.40 | | ug/L | | 0.4 | 23-JUN-20 |
| trans-1,3-Dichloropropene | | | <0.30 | | ug/L | | 0.3 | 23-JUN-20 |
| Trichloroethylene | | | <0.50 | | ug/L | | 0.5 | 23-JUN-20 |
| Surrogate: 1,4-Difluorobenzene | | | 99.2 | | % | | 70-130 | 23-JUN-20 |
| Surrogate: 4-Bromofluorobenzene | | | 96.4 | | % | | 70-130 | 23-JUN-20 |
| **WG3347607-5 MS** | | **WG3347607-3** | | | | | | |
| 1,1,2,2-Tetrachloroethane | | | 102.9 | | % | | 50-150 | 24-JUN-20 |
| 1,2-Dichlorobenzene | | | 109.2 | | % | | 50-150 | 24-JUN-20 |
| 1,4-Dichlorobenzene | | | 112.2 | | % | | 50-150 | 24-JUN-20 |
| Benzene | | | 107.3 | | % | | 50-150 | 24-JUN-20 |
| Chloroform | | | 113.1 | | % | | 50-150 | 24-JUN-20 |
| cis-1,2-Dichloroethylene | | | 108.0 | | % | | 50-150 | 24-JUN-20 |
| Dichloromethane | | | 111.7 | | % | | 50-150 | 24-JUN-20 |
| Ethylbenzene | | | 102.4 | | % | | 50-150 | 24-JUN-20 |
| m+p-Xylenes | | | 108.9 | | % | | 50-150 | 24-JUN-20 |
| o-Xylene | | | 116.9 | | % | | 50-150 | 24-JUN-20 |
| Tetrachloroethylene | | | 109.2 | | % | | 50-150 | 24-JUN-20 |
| Toluene | | | 103.3 | | % | | 50-150 | 24-JUN-20 |
| trans-1,3-Dichloropropene | | | 108.5 | | % | | 50-150 | 24-JUN-20 |
| Trichloroethylene | | | 106.5 | | % | | 50-150 | 24-JUN-20 |
| **Batch R5131025** | | | | | | | | |
| **WG3348088-4 DUP** | | **WG3348088-3** | | | | | | |
| 1,1,2,2-Tetrachloroethane | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 24-JUN-20 |
| 1,2-Dichlorobenzene | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 24-JUN-20 |
| 1,4-Dichlorobenzene | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 24-JUN-20 |
| Benzene | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 24-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
610 Chartwell Road Suite 300
Oakville ON L6J 4A5
Contact: Anne Pattison/Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **VOC-ROU-HS-WT** | **Water** | | | | | | | |
| **Batch R5131025** | | | | | | | | |
| **WG3348088-4 DUP** | | **WG3348088-3** | | | | | | |
| Chloroform | | <1.0 | <1.0 | RPD-NA | ug/L | N/A | 30 | 24-JUN-20 |
| cis-1,2-Dichloroethylene | | 3.33 | 3.38 | | ug/L | 1.5 | 30 | 24-JUN-20 |
| Dichloromethane | | <2.0 | <2.0 | RPD-NA | ug/L | N/A | 30 | 24-JUN-20 |
| Ethylbenzene | | <0.50 | <0.50 | RPD-NA | ug/L | N/A | 30 | 24-JUN-20 |
| m+p-Xylenes | | <0.40 | <0.40 | RPD-NA | ug/L | N/A | 30 | 24-JUN-20 |
| o-Xylene | | <0.30 | <0.30 | RPD-NA | ug/L | N/A | 30 | 24-JUN-20 |
| Tetrachloroethylene | | 1.37 | 1.40 | | ug/L | 2.2 | 30 | 24-JUN-20 |
| Toluene | | <0.40 | <0.40 | RPD-NA | ug/L | N/A | 30 | 24-JUN-20 |
| trans-1,3-Dichloropropene | | <0.30 | <0.30 | RPD-NA | ug/L | N/A | 30 | 24-JUN-20 |
| Trichloroethylene | | 0.88 | 0.83 | | ug/L | 5.8 | 30 | 24-JUN-20 |
| **WG3348088-1 LCS** | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | | | 119.8 | | % | | 70-130 | 24-JUN-20 |
| 1,2-Dichlorobenzene | | | 107.7 | | % | | 70-130 | 24-JUN-20 |
| 1,4-Dichlorobenzene | | | 104.6 | | % | | 70-130 | 24-JUN-20 |
| Benzene | | | 107.9 | | % | | 70-130 | 24-JUN-20 |
| Chloroform | | | 117.2 | | % | | 70-130 | 24-JUN-20 |
| cis-1,2-Dichloroethylene | | | 111.3 | | % | | 70-130 | 24-JUN-20 |
| Dichloromethane | | | 118.5 | | % | | 70-130 | 24-JUN-20 |
| Ethylbenzene | | | 93.6 | | % | | 70-130 | 24-JUN-20 |
| m+p-Xylenes | | | 98.2 | | % | | 70-130 | 24-JUN-20 |
| o-Xylene | | | 109.0 | | % | | 70-130 | 24-JUN-20 |
| Tetrachloroethylene | | | 104.8 | | % | | 70-130 | 24-JUN-20 |
| Toluene | | | 105.9 | | % | | 70-130 | 24-JUN-20 |
| trans-1,3-Dichloropropene | | | 126.8 | | % | | 70-130 | 24-JUN-20 |
| Trichloroethylene | | | 102.3 | | % | | 70-130 | 24-JUN-20 |
| **WG3348088-2 MB** | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | | | <0.50 | | ug/L | | 0.5 | 24-JUN-20 |
| 1,2-Dichlorobenzene | | | <0.50 | | ug/L | | 0.5 | 24-JUN-20 |
| 1,4-Dichlorobenzene | | | <0.50 | | ug/L | | 0.5 | 24-JUN-20 |
| Benzene | | | <0.50 | | ug/L | | 0.5 | 24-JUN-20 |
| Chloroform | | | <1.0 | | ug/L | | 1 | 24-JUN-20 |
| cis-1,2-Dichloroethylene | | | <0.50 | | ug/L | | 0.5 | 24-JUN-20 |
| Dichloromethane | | | <2.0 | | ug/L | | 2 | 24-JUN-20 |
| Ethylbenzene | | | <0.50 | | ug/L | | 0.5 | 24-JUN-20 |

# Quality Control Report



Client: WSP Canada Group Limited
610 Chartwell Road Suite 300
Oakville ON L6J 4A5
Contact: Anne Pattison/Valyn Bernard

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **VOC-ROU-HS-WT** | **Water** | | | | | | | |
| **Batch R5131025** | | | | | | | | |
| **WG3348088-2 MB** | | | | | | | | |
| m+p-Xylenes | | | <0.40 | | ug/L | | 0.4 | 24-JUN-20 |
| o-Xylene | | | <0.30 | | ug/L | | 0.3 | 24-JUN-20 |
| Tetrachloroethylene | | | <0.50 | | ug/L | | 0.5 | 24-JUN-20 |
| Toluene | | | <0.40 | | ug/L | | 0.4 | 24-JUN-20 |
| trans-1,3-Dichloropropene | | | <0.30 | | ug/L | | 0.3 | 24-JUN-20 |
| Trichloroethylene | | | <0.50 | | ug/L | | 0.5 | 24-JUN-20 |
| Surrogate: 1,4-Difluorobenzene | | | 99.1 | | % | | 70-130 | 24-JUN-20 |
| Surrogate: 4-Bromofluorobenzene | | | 98.8 | | % | | 70-130 | 24-JUN-20 |
| **WG3348088-5 MS** | | **WG3348088-3** | | | | | | |
| 1,1,2,2-Tetrachloroethane | | | 97.1 | | % | | 50-150 | 24-JUN-20 |
| 1,2-Dichlorobenzene | | | 109.0 | | % | | 50-150 | 24-JUN-20 |
| 1,4-Dichlorobenzene | | | 113.6 | | % | | 50-150 | 24-JUN-20 |
| Benzene | | | 107.0 | | % | | 50-150 | 24-JUN-20 |
| Chloroform | | | 112.7 | | % | | 50-150 | 24-JUN-20 |
| cis-1,2-Dichloroethylene | | | 108.2 | | % | | 50-150 | 24-JUN-20 |
| Dichloromethane | | | 109.5 | | % | | 50-150 | 24-JUN-20 |
| Ethylbenzene | | | 103.0 | | % | | 50-150 | 24-JUN-20 |
| m+p-Xylenes | | | 110.1 | | % | | 50-150 | 24-JUN-20 |
| o-Xylene | | | 116.8 | | % | | 50-150 | 24-JUN-20 |
| Tetrachloroethylene | | | 111.9 | | % | | 50-150 | 24-JUN-20 |
| Toluene | | | 102.8 | | % | | 50-150 | 24-JUN-20 |
| trans-1,3-Dichloropropene | | | 111.5 | | % | | 50-150 | 24-JUN-20 |
| Trichloroethylene | | | 108.6 | | % | | 50-150 | 24-JUN-20 |

# Quality Control Report

Workorder: L2463001 Report Date: 25-JUN-20

Client: WSP Canada Group Limited
610 Chartwell Road Suite 300
Oakville ON L6J 4A5
Contact: Anne Pattison/Valyn Bernard



**Legend:**

| | |
|---|---|
| Limit | ALS Control Limit (Data Quality Objectives) |
| DUP | Duplicate |
| RPD | Relative Percent Difference |
| N/A | Not Available |
| LCS | Laboratory Control Sample |
| SRM | Standard Reference Material |
| MS | Matrix Spike |
| MSD | Matrix Spike Duplicate |
| ADE | Average Desorption Efficiency |
| MB | Method Blank |
| IRM | Internal Reference Material |
| CRM | Certified Reference Material |
| CCV | Continuing Calibration Verification |
| CVS | Calibration Verification Standard |
| LCSD | Laboratory Control Sample Duplicate |

**Sample Parameter Qualifier Definitions:**

| Qualifier | Description |
|---|---|
| J | Duplicate results and limits are expressed in terms of absolute difference. |
| LCS-H | Lab Control Sample recovery was above ALS DQO. Non-detected sample results are considered reliable. Other results, if reported, have been qualified. |
| LCS-ND | Lab Control Sample recovery was slightly outside ALS DQO. Reported non-detect results for associated samples were unaffected. |
| MS-B | Matrix Spike recovery could not be accurately calculated due to high analyte background in sample. |
| RPD-NA | Relative Percent Difference Not Available due to result(s) being less than detection limit. |
| RRQC | Refer to report remarks for information regarding this QC result. |

**Hold Time Exceedances:**

All test results reported with this submission were conducted within ALS recommended hold times.

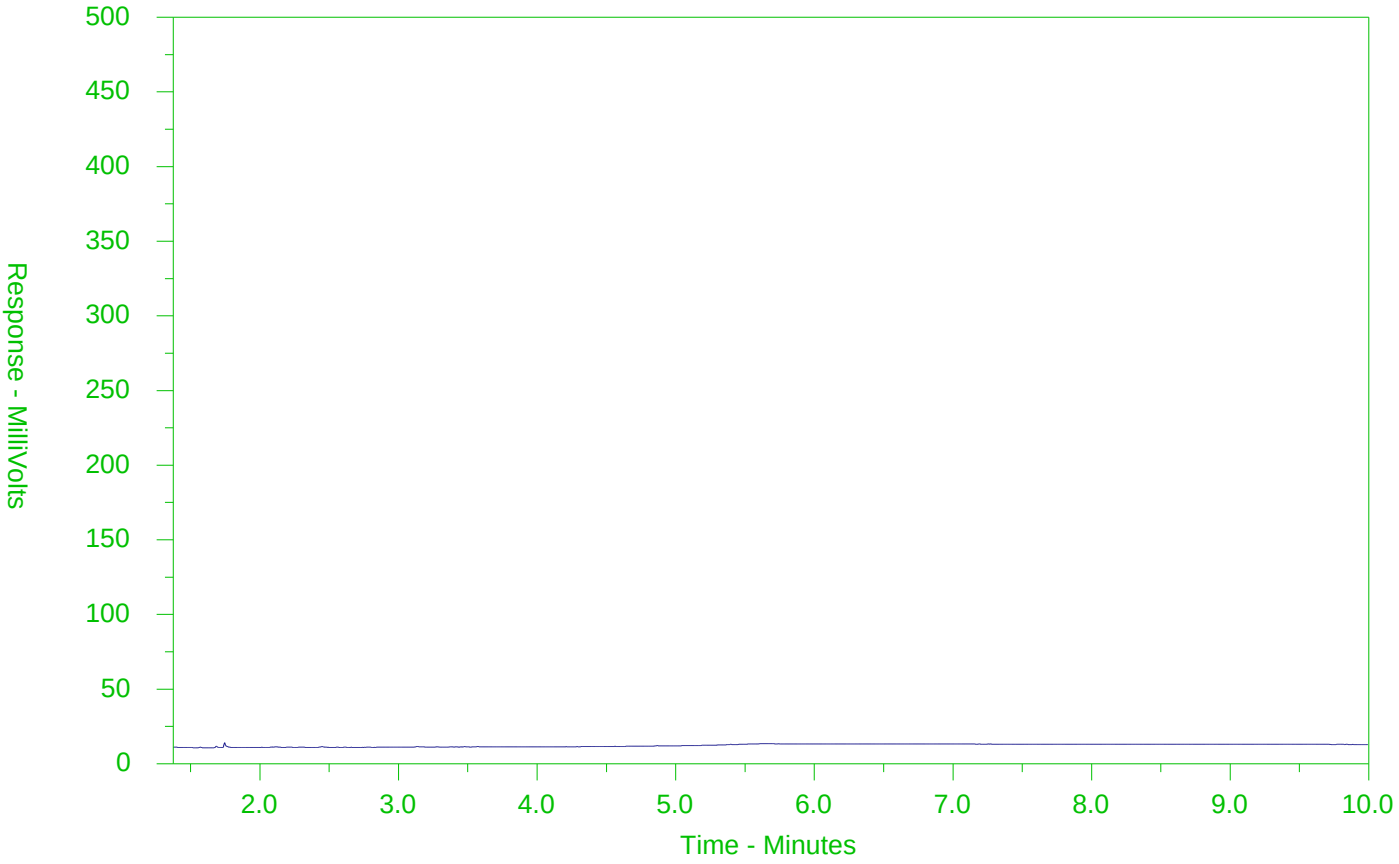
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

# CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2463001-1
Client Sample ID: BH6




| ←F2→ | ←F3→ | ←F4→ | |
|---|---|---|---|
| nC10 | nC16 | nC34 | nC50 |
| 174°C | 287°C | 481°C | 575°C |
| 346°F | 549°F | 898°F | 1067°F |
| Gasoline → | ← Motor Oils/Lube Oils/Grease → | | |
| ← Diesel/Jet Fuels → | | | |

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

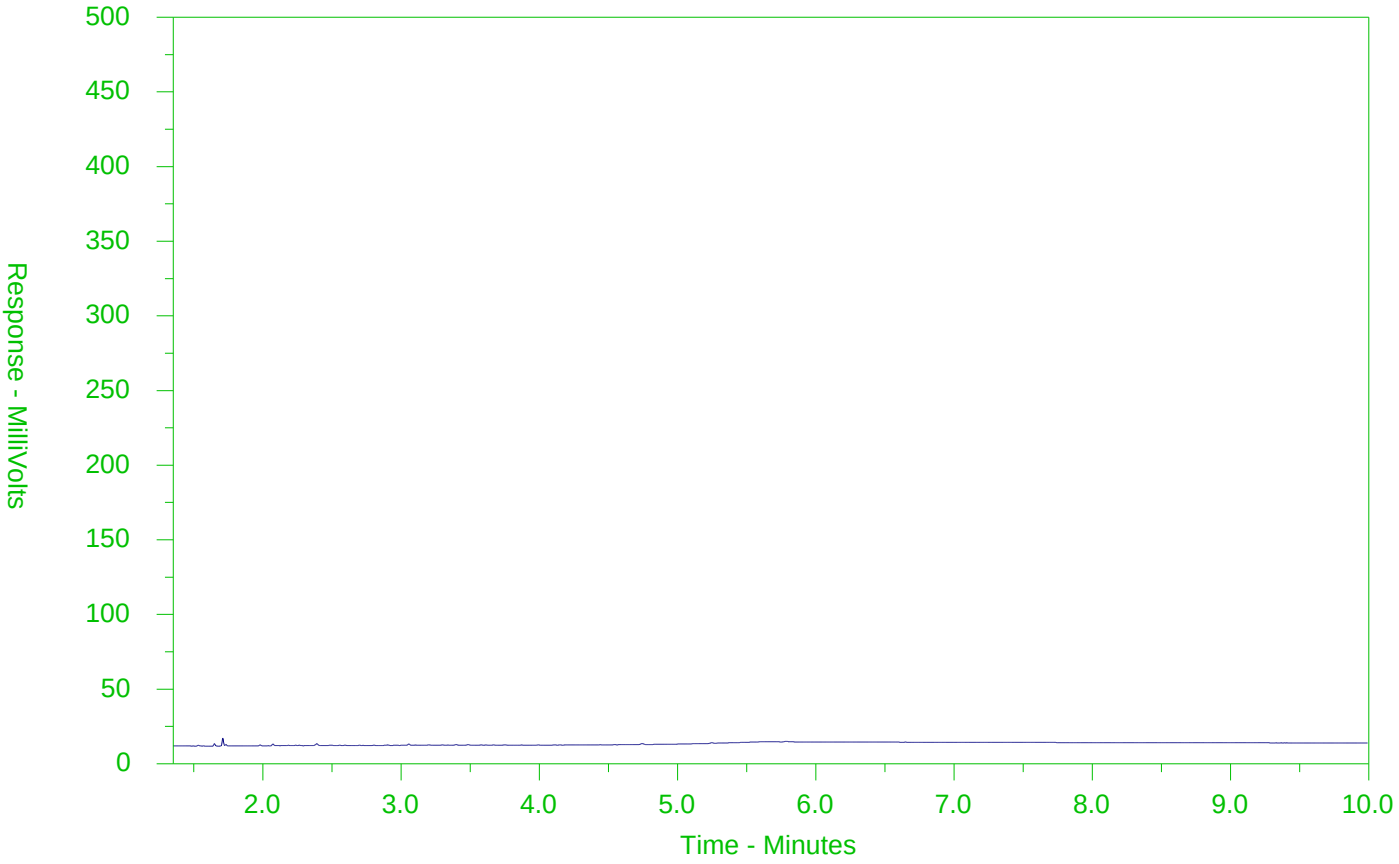
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.

# CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2463001-2
Client Sample ID: BH3




| ←F2→ | ←F3→ | ←F4→ | |
|---|---|---|---|
| nC10 | nC16 | nC34 | nC50 |
| 174°C | 287°C | 481°C | 575°C |
| 346°F | 549°F | 898°F | 1067°F |
| Gasoline → | ← Motor Oils/Lube Oils/Grease → | | |
| ← Diesel/Jet Fuels → | | | |

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.

# Chain of Custody (COC) / Analytical Request Form

ALS Environmental

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here (lab use only)

COC Number: 17 - AH

Page 1 of 1

| Report To | Contact and company name below will appear on the final report |
|---|---|
| Company: | WSP Canada Group Limited |
| Contact: | Valyn Bernard & Anne Pattison |
| Phone: | 1-289-835-2546 905-599-9094 |
| | Company address below will appear on the final report |
| Street: | 610 Chartwell Rd |
| City/Province: | Oakville |
| Postal Code: | L6J 4A5 |
| **Invoice To** | Same as Report To ☑ YES ☐ NO |
| | Copy of Invoice with Report ☐ YES ☒ NO |
| Company: | WSP Canada Group Limited |
| Contact: | ca-accountspayable@wsp.com |

**Report Format / Distribution**

Select Report Format: ☑ PDF ☑ EXCEL ☐ EDD (DIGITAL)

Quality Control (QC) Report with Report ☑ YES ☐ NO

☑ Compare Results to Criteria on Report - provide details below if box checked

Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: Derek.Stewart@wsp.com, eddarmm.ca

Email 2: Valyn.Bernard@wsp.com

Email 3: Anne.Pattison@wsp.com

**Invoice Distribution**

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: ca-accountspayable@wsp.com

Email 2: Valyn.Bernard@wsp.com

**Project Information**

| | |
|---|---|
| ALS Account # / Quote #: | |
| Job #: | 19M-01888-00-CONTAM |
| PO / AFE: | |
| LSD: | |

**Oil and Gas Required Fields (client use)**

| | |
|---|---|
| AFE/Cost Center: | PO#: |
| Major/Minor Code: | Routing Code: |
| Requisitioner: | |
| Location: | |

**Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)**

Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days): 4 day [P4-20%] ☐ | 3 day [P3-25%] ☐ | 2 day [P2-50%] ☐

EMERGENCY: 1 Business day [E - 100%] ☐ | Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] ☐

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm

For tests that can not be performed according to the service level selected, you will be contacted.

**Analysis Request**

ALS Lab Work Order # (lab use only): L2463001RD

ALS Contact: Emily Hansen

Sampler: AP

| ALS Sample # (lab use only) | Sample Identification and/or Coordinates (This description will appear on the report) | Date (dd-mmm-yy) | Time (hh:mm) | Sample Type | NUMBER OF CONTAINERS | Metals and Inorganics | PAHs | PHCs | VOCs | BTEX only | BTEX, F1 Reg 153 | TCLP PAHs | TCLP VOCs | TCLP Metals and Inorganics | City of Toronto Sewer Use | SAMPLES ON HOLD | SUSPECTED HAZARD (see Special Instructions) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | F | | P | P | | | | | | | | |
| | | | | | | Reg 153 | Reg 153 | Reg 153 | Reg 153 | | | | | | | | |
| | BH6 | 18-JUN-20 | AM | GW | 22 | X | X | X | X | | | | | | X | | |
| | BH3 | ↓ | PM | ↓ | 22 | X | X | X | X | | | | | | X | | |
| | BH4 | ↓ | PM | ↓ | 22 | X | X | X | X | | | | | | X | hold | |

**Drinking Water (DW) Samples[1] (client use)**

Are samples taken from a Regulated DW System? ☐ YES ☒ NO

Are samples for human consumption/ use? ☐ YES ☒ NO

**Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)**

*Note: 2 coolers (large & small)

~~Guideline - Ontario Reg 153 - T1 SOIL - PQ T/90 TCLP~~

Reg 153/04 T9 & T3 ICC

City of Toronto Storm & Sanitary Sewer Use

**SAMPLE CONDITION AS RECEIVED (lab use only)**

Frozen ☐ | SIF Observations Yes ☐ No ☐

Ice Packs ☒ | Ice Cubes ☐ | Custody seal intact Yes ☐ No ☐

Cooling Initiated ☐

| INITIAL COOLER TEMPERATURES °C | | | | FINAL COOLER TEMPERATURES °C | | | |
|---|---|---|---|---|---|---|---|
| | | | | 23.4 | 18.1 | | |

**SHIPMENT RELEASE (client use)**

| Released by: | Date: | Time: |
|---|---|---|
| ~~Madhavi Mokk~~ Anne Pattison | ~~June 2, 2020~~ June 18 2020 | 6:15 P.M. |

**INITIAL SHIPMENT RECEPTION (lab use only)**

| Received by: | Date: | Time: |
|---|---|---|
| | | |

**FINAL SHIPMENT RECEPTION (lab use only)**

| Received by: | Date: | Time: |
|---|---|---|
| SH | 6/18/20 | 1900 |

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

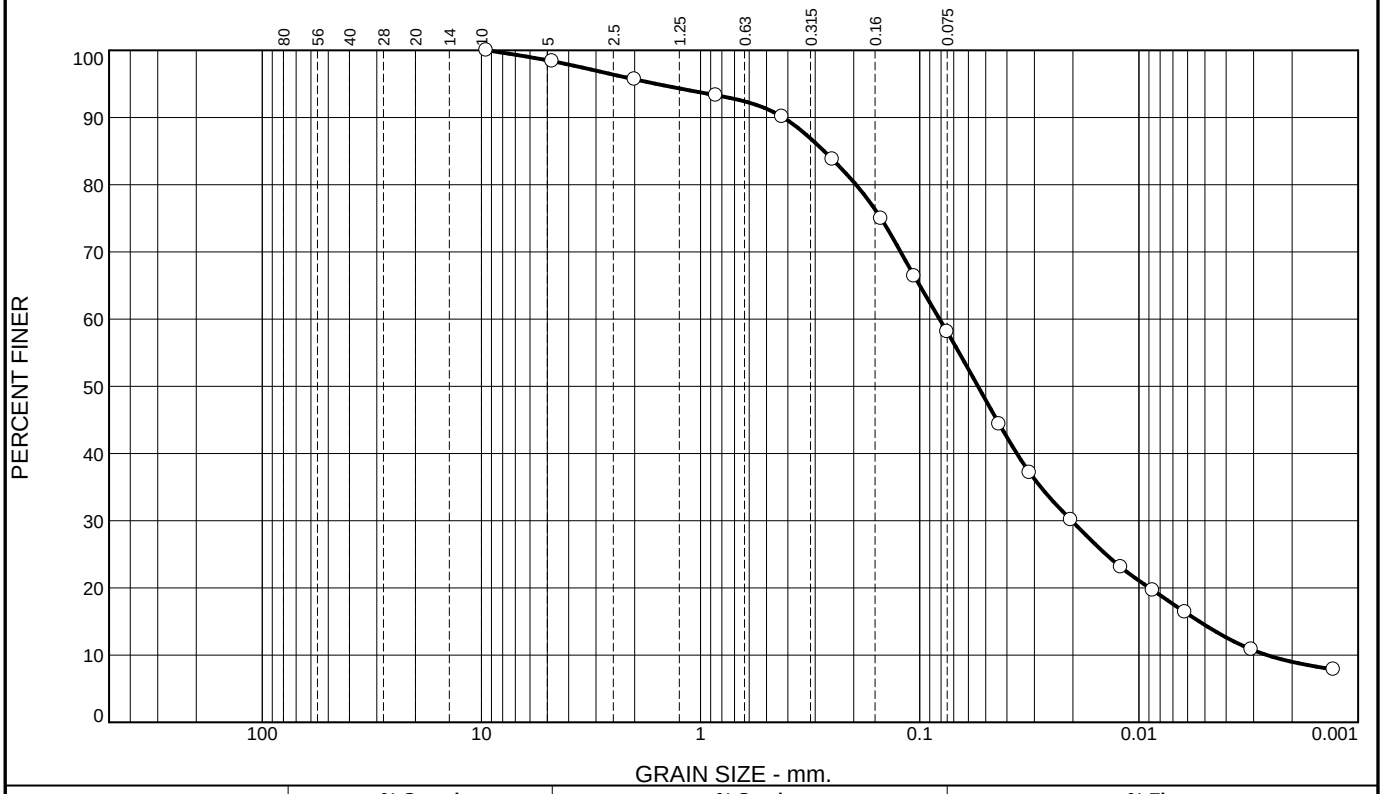
JUNE 2018 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form.**

SIF

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0 | 0 | 2 | 2 | 6 | 32 | 49 | 9 |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 9.50 | 100 | | |
| 4.75 | 98 | | |
| 2.00 | 96 | | |
| 0.85 | 93 | | |
| 0.425 | 90 | | |
| 0.250 | 84 | | |
| 0.150 | 75 | | |
| 0.106 | 66 | | |
| 0.075 | 58 | | |
| 0.0434 mm. | 44 | | |
| 0.0315 mm. | 37 | | |
| 0.0204 mm. | 30 | | |
| 0.0121 mm. | 23 | | |
| 0.0086 mm. | 20 | | |
| 0.0062 mm. | 16 | | |
| 0.0031 mm. | 11 | | |
| 0.0013 mm. | 7.9 | | |

* (no specification provided)

**Soil Description**

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4199 $D_{85}$= 0.2733 $D_{60}$= 0.0812
$D_{50}$= 0.0543 $D_{30}$= 0.0203 $D_{15}$= 0.0053
$D_{10}$= 0.0026 $C_u$= 31.12 $C_c$= 1.94

**Classification**

USCS= AASHTO=

**Remarks**

**Source of Sample:** Site Drilling
**Sample Number:** BH1_SS5

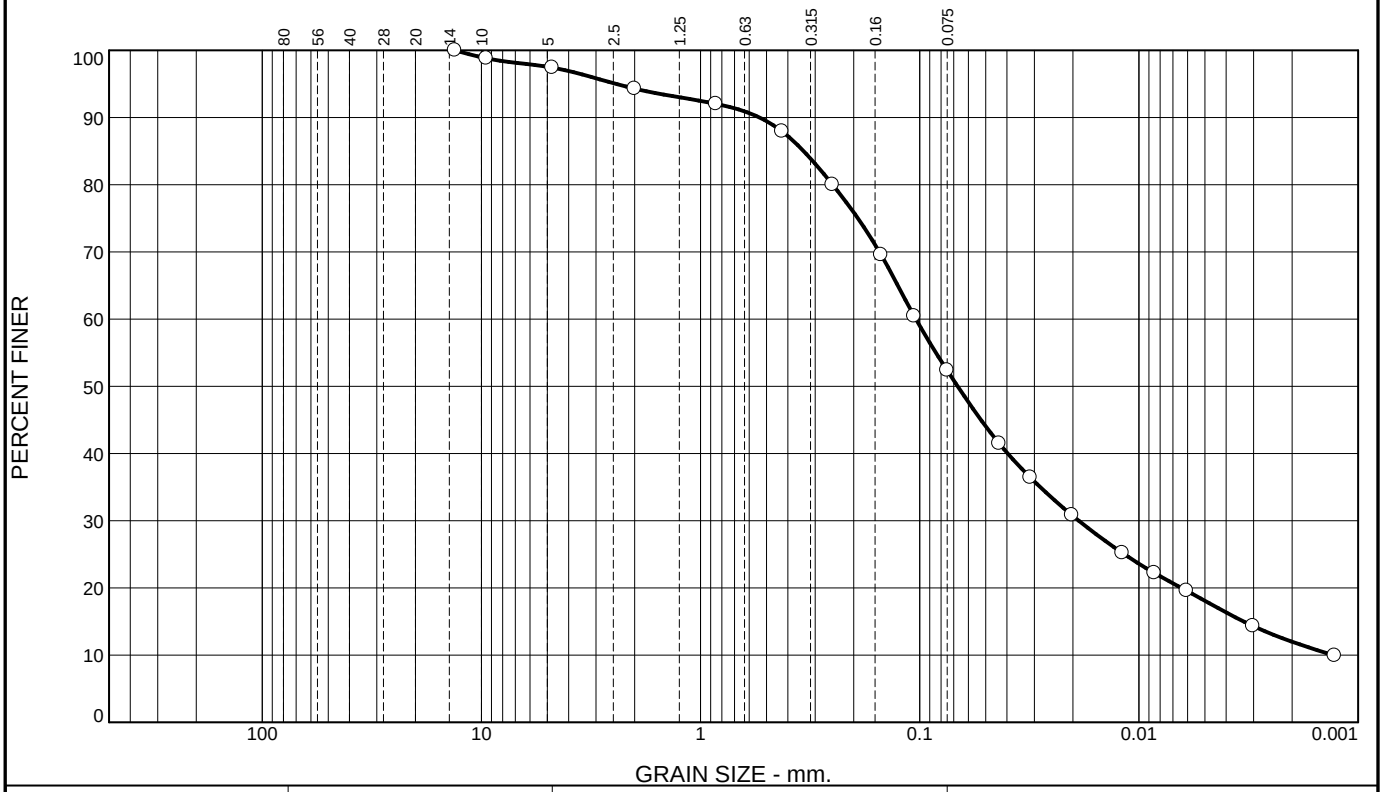
**Date:** July 16, 2020

**Client:** City of Toronto
**Project:** Agincourt Grade Separation

**Project No:** 19M-01888-00 **Figure** BH1_SS5

**Tested By:** Bruce Shan & LXQ & S.L

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0 | 0 | 3 | 3 | 6 | 36 | 40 | 12 |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 13.20 | 100 | | |
| 9.50 | 99 | | |
| 4.75 | 97 | | |
| 2.00 | 94 | | |
| 0.85 | 92 | | |
| 0.425 | 88 | | |
| 0.250 | 80 | | |
| 0.150 | 70 | | |
| 0.106 | 60 | | |
| 0.075 | 52 | | |
| 0.0434 mm. | 41 | | |
| 0.0313 mm. | 36 | | |
| 0.0202 mm. | 31 | | |
| 0.0119 mm. | 25 | | |
| 0.0085 mm. | 22 | | |
| 0.0061 mm. | 20 | | |
| 0.0030 mm. | 14 | | |
| 0.0013 mm. | 9.9 | | |

* (no specification provided)

**Soil Description**

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.5386 $D_{85}$= 0.3388 $D_{60}$= 0.1042
$D_{50}$= 0.0672 $D_{30}$= 0.0188 $D_{15}$= 0.0033
$D_{10}$= 0.0013 $C_u$= 79.95 $C_c$= 2.61

**Classification**

USCS= AASHTO=

**Remarks**

**Source of Sample:** Site Drilling
**Sample Number:** BH2_SS2

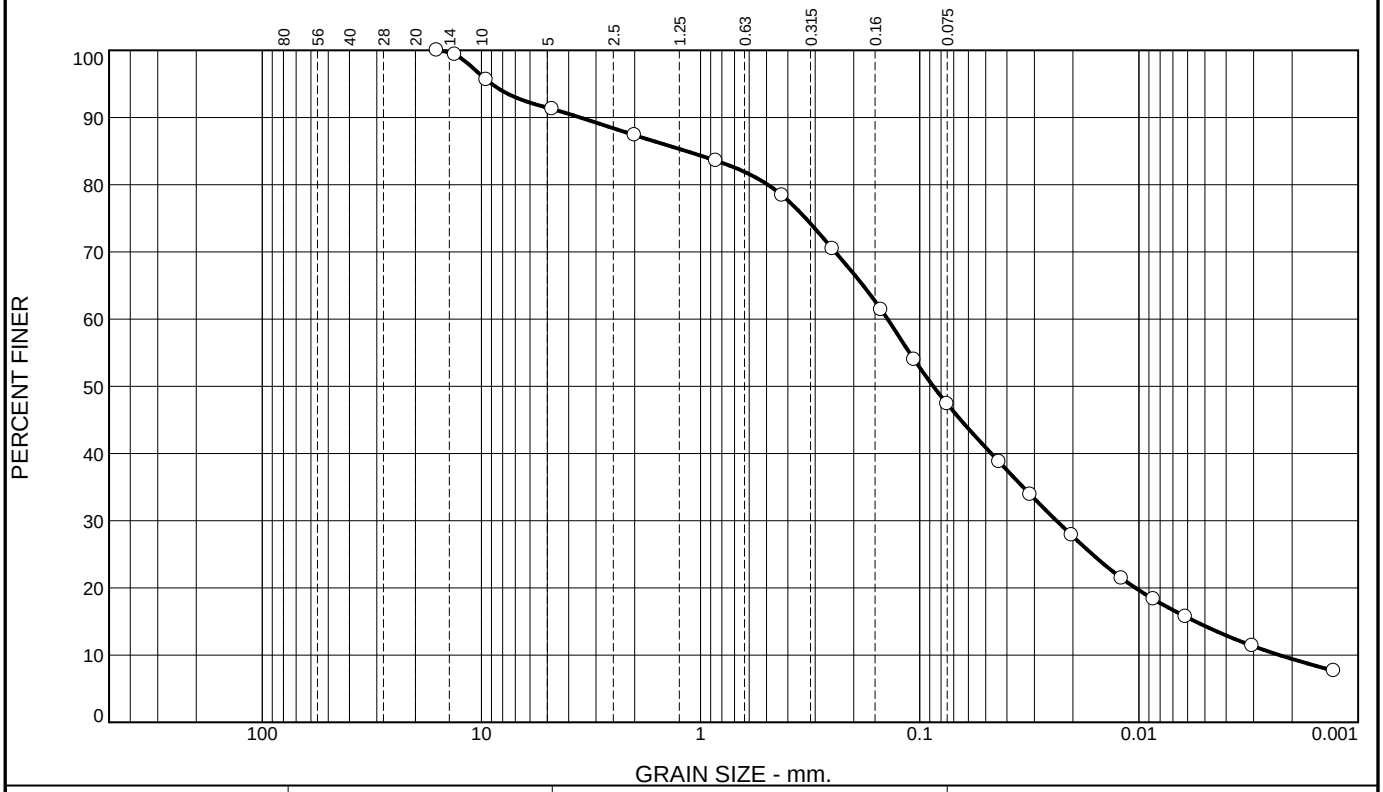
**Date:** July 16, 2020

**Client:** City of Toronto
**Project:** Agincourt Grade Separation

**Project No:** 19M-01888-00 **Figure** BH2_SS2

**Tested By:** Bruce Shan & LXQ & S.L

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0 | 0 | 9 | 4 | 9 | 31 | 38 | 9 |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 16.00 | 100 | | |
| 13.20 | 99 | | |
| 9.50 | 96 | | |
| 4.75 | 91 | | |
| 2.00 | 87 | | |
| 0.85 | 84 | | |
| 0.425 | 78 | | |
| 0.250 | 70 | | |
| 0.150 | 61 | | |
| 0.106 | 54 | | |
| 0.075 | 47 | | |
| 0.0434 mm. | 39 | | |
| 0.0313 mm. | 34 | | |
| 0.0203 mm. | 28 | | |
| 0.0120 mm. | 21 | | |
| 0.0086 mm. | 18 | | |
| 0.0061 mm. | 16 | | |
| 0.0030 mm. | 11 | | |
| 0.0013 mm. | 7.7 | | |

* (no specification provided)

**Soil Description**

Silty Sand

**Atterberg Limits**

PL= NP LL= NV PI= NP

**Coefficients**

$D_{90}$= 3.5427 $D_{85}$= 1.1634 $D_{60}$= 0.1402
$D_{50}$= 0.0867 $D_{30}$= 0.0238 $D_{15}$= 0.0055
$D_{10}$= 0.0023 $C_u$= 61.50 $C_c$= 1.77

**Classification**

USCS= SM AASHTO= A-4(0)

**Remarks**

**Source of Sample:** Site Drilling
**Sample Number:** BH2_SS5

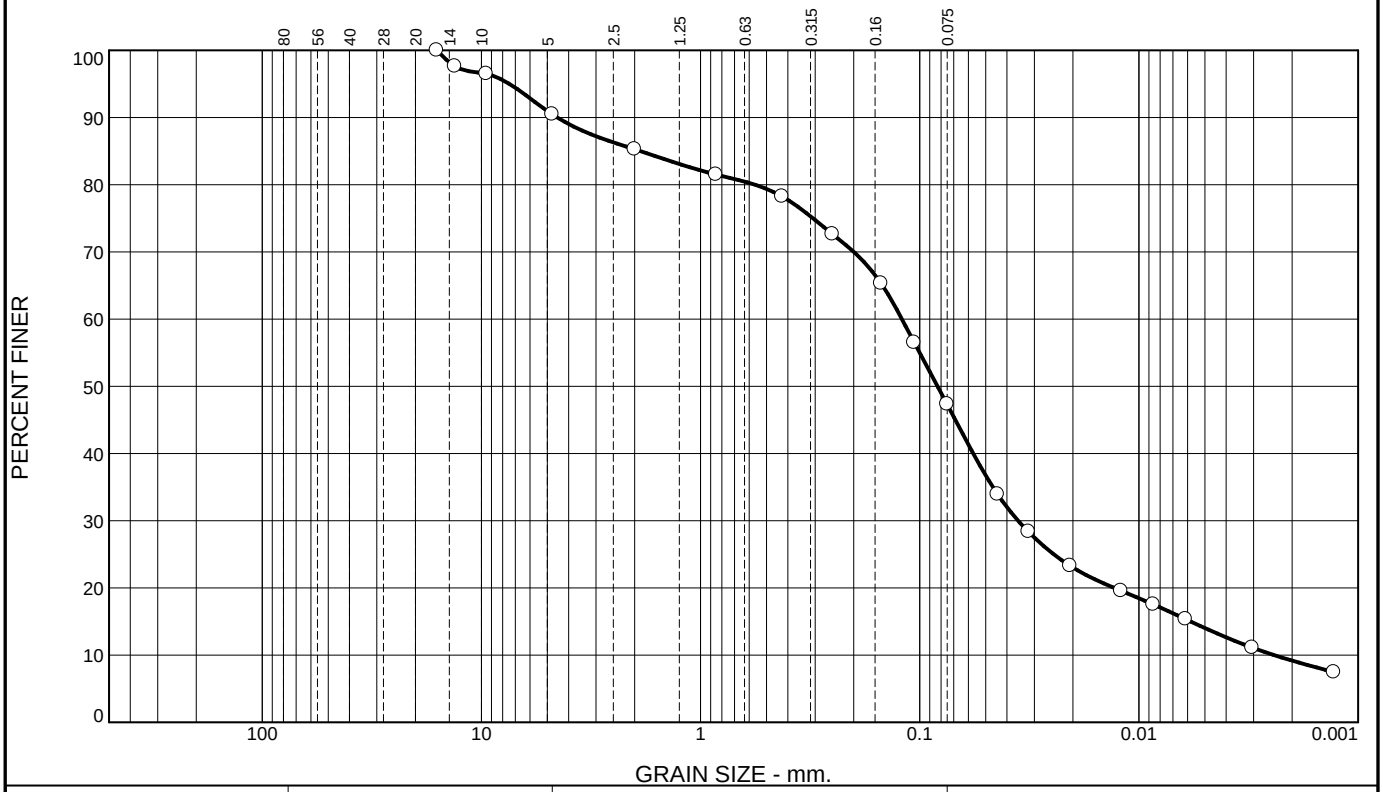
**Date:** July 16, 2020

**Client:** City of Toronto
**Project:** Agincourt Grade Separation

**Project No:** 19M-01888-00 **Figure** BH2_SS5

**Tested By:** Bruce Shan & LXQ & S.L

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0 | 0 | 10 | 5 | 7 | 31 | 38 | 9 |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 16.00 | 100 | | |
| 13.20 | 98 | | |
| 9.50 | 97 | | |
| 4.75 | 90 | | |
| 2.00 | 85 | | |
| 0.85 | 81 | | |
| 0.425 | 78 | | |
| 0.250 | 73 | | |
| 0.150 | 65 | | |
| 0.106 | 57 | | |
| 0.075 | 47 | | |
| 0.0441 mm. | 34 | | |
| 0.0319 mm. | 28 | | |
| 0.0206 mm. | 23 | | |
| 0.0121 mm. | 20 | | |
| 0.0086 mm. | 18 | | |
| 0.0061 mm. | 15 | | |
| 0.0030 mm. | 11 | | |
| 0.0013 mm. | 7.5 | | |

* (no specification provided)

**Soil Description**

Silty Sand

**Atterberg Limits**

PL= NP LL= NV PI= NP

**Coefficients**

$D_{90}$= 4.5090 $D_{85}$= 1.8867 $D_{60}$= 0.1206
$D_{50}$= 0.0829 $D_{30}$= 0.0356 $D_{15}$= 0.0058
$D_{10}$= 0.0024 $C_u$= 49.89 $C_c$= 4.35

**Classification**

USCS= SM AASHTO= A-4(0)

**Remarks**

**Source of Sample:** Site Drilling
**Sample Number:** BH2_SS10

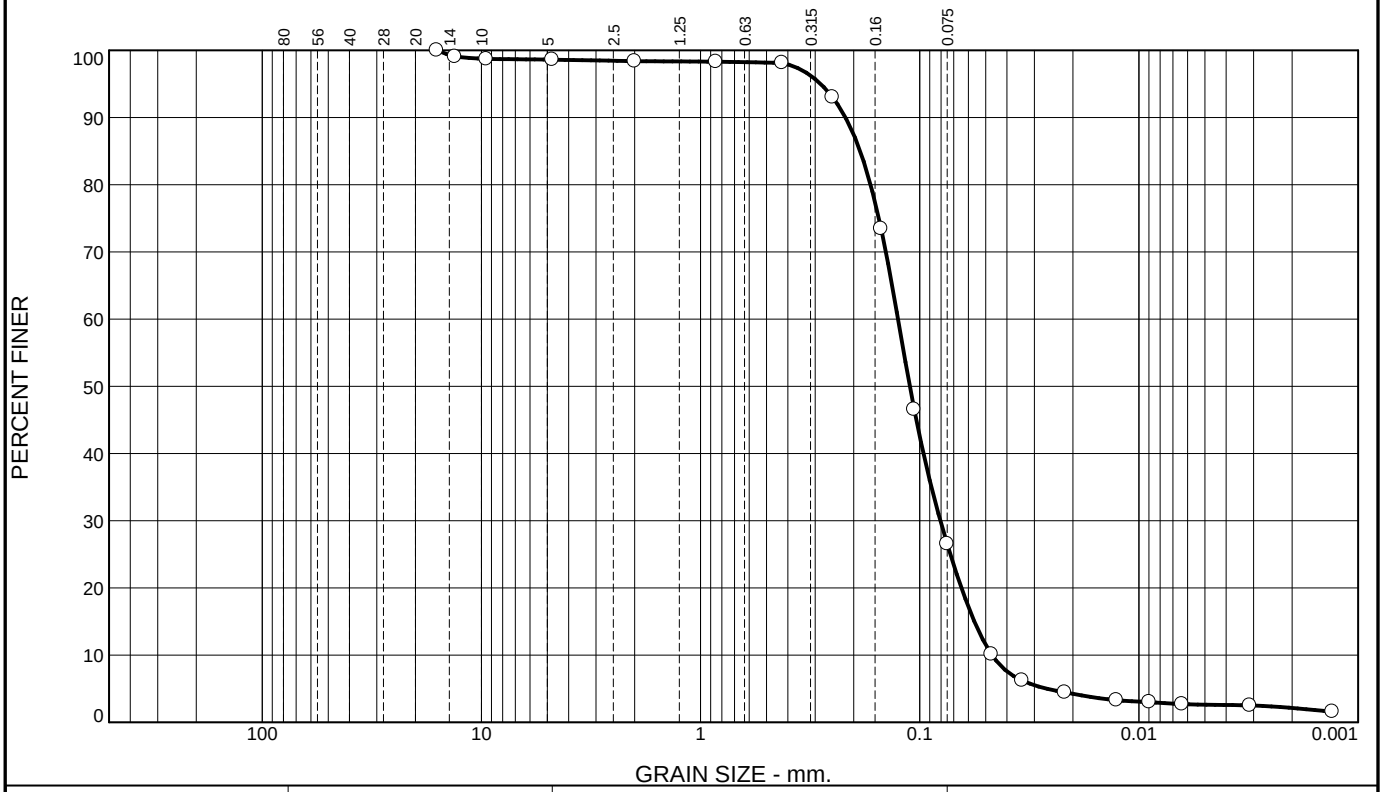
**Date:** July 16, 2020

**Client:** City of Toronto
**Project:** Agincourt Grade Separation

**Project No:** 19M-01888-00 **Figure** BH2_SS10

**Tested By:** Bruce Shan & LXQ & S.L

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0 | 0 | 1 | 1 | 0 | 71 | 25 | 2 |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 16.00 | 100 | | |
| 13.20 | 99 | | |
| 9.50 | 99 | | |
| 4.75 | 99 | | |
| 2.00 | 98 | | |
| 0.85 | 98 | | |
| 0.425 | 98 | | |
| 0.250 | 93 | | |
| 0.150 | 73 | | |
| 0.106 | 47 | | |
| 0.075 | 27 | | |
| 0.0470 mm. | 10 | | |
| 0.0341 mm. | 6.2 | | |
| 0.0218 mm. | 4.5 | | |
| 0.0127 mm. | 3.3 | | |
| 0.0090 mm. | 3.0 | | |
| 0.0064 mm. | 2.7 | | |
| 0.0031 mm. | 2.5 | | |
| 0.0013 mm. | 1.6 | | |

* (no specification provided)

**Soil Description**

Silty Sand

**Atterberg Limits**

PL= NP LL= NV PI= NP

**Coefficients**

$D_{90}$= 0.2181 $D_{85}$= 0.1870 $D_{60}$= 0.1257
$D_{50}$= 0.1110 $D_{30}$= 0.0805 $D_{15}$= 0.0564
$D_{10}$= 0.0468 $C_u$= 2.69 $C_c$= 1.10

**Classification**

USCS= SM AASHTO= A-2-4(0)

**Remarks**

**Source of Sample:** Site Drilling
**Sample Number:** BH2_SS15

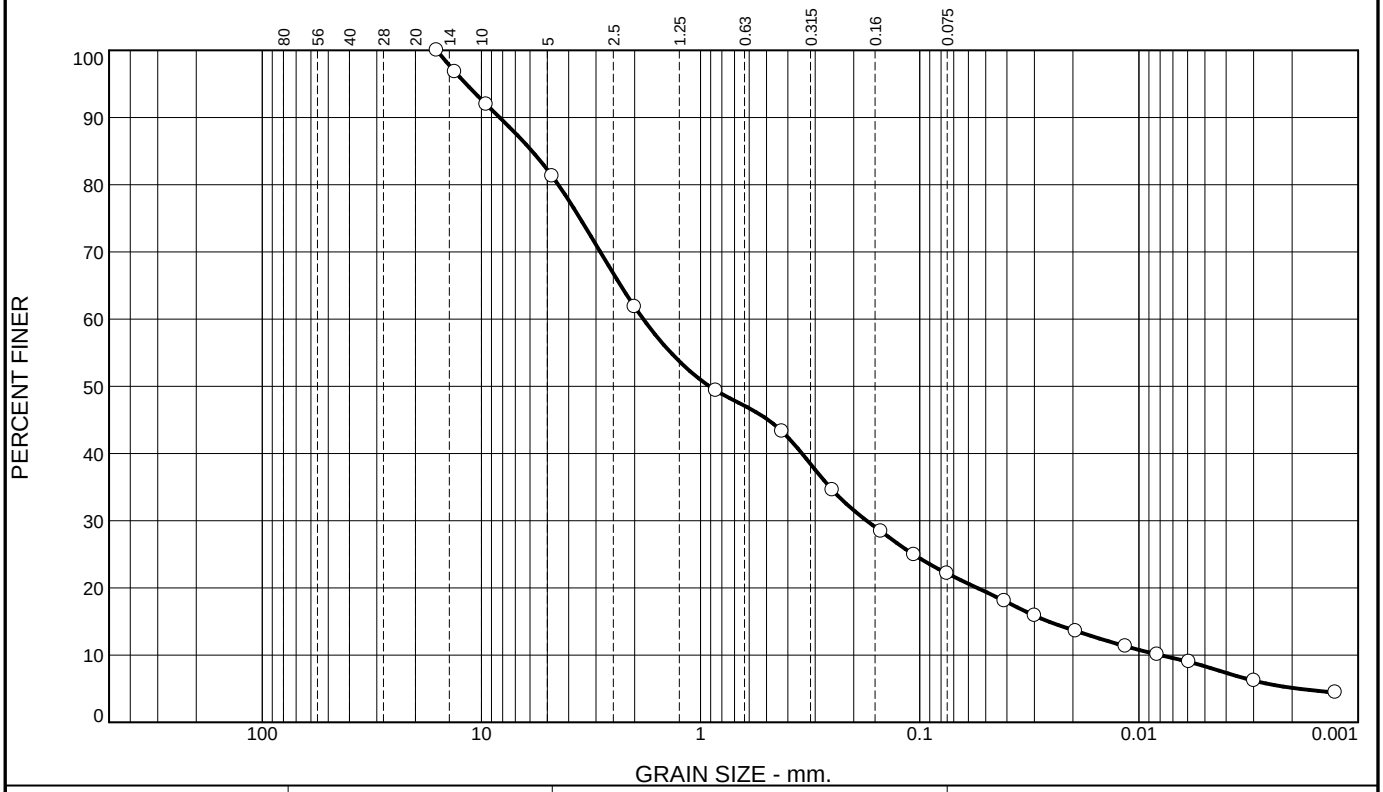
**Date:** July 16, 2020

**Client:** City of Toronto
**Project:** Agincourt Grade Separation

**Project No:** 19M-01888-00 **Figure** BH2_SS15

**Tested By:** Bruce Shan & LXQ & S.L

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0 | 0 | 19 | 19 | 19 | 21 | 17 | 5 |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 16.00 | 100 | | |
| 13.20 | 97 | | |
| 9.50 | 92 | | |
| 4.75 | 81 | | |
| 2.00 | 62 | | |
| 0.85 | 49 | | |
| 0.425 | 43 | | |
| 0.250 | 35 | | |
| 0.150 | 28 | | |
| 0.106 | 25 | | |
| 0.075 | 22 | | |
| 0.0411 mm. | 18 | | |
| 0.0299 mm. | 16 | | |
| 0.0194 mm. | 14 | | |
| 0.0115 mm. | 11 | | |
| 0.0082 mm. | 10 | | |
| 0.0059 mm. | 9.0 | | |
| 0.0030 mm. | 6.2 | | |
| 0.0013 mm. | 4.4 | | |

* (no specification provided)

**Soil Description**

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 8.2593 $D_{85}$= 5.8736 $D_{60}$= 1.8257
$D_{50}$= 0.9106 $D_{30}$= 0.1746 $D_{15}$= 0.0258
$D_{10}$= 0.0080 $C_u$= 227.68 $C_c$= 2.08

**Classification**

USCS= AASHTO=

**Remarks**

**Source of Sample:** Site Drilling
**Sample Number:** BH2_SS16

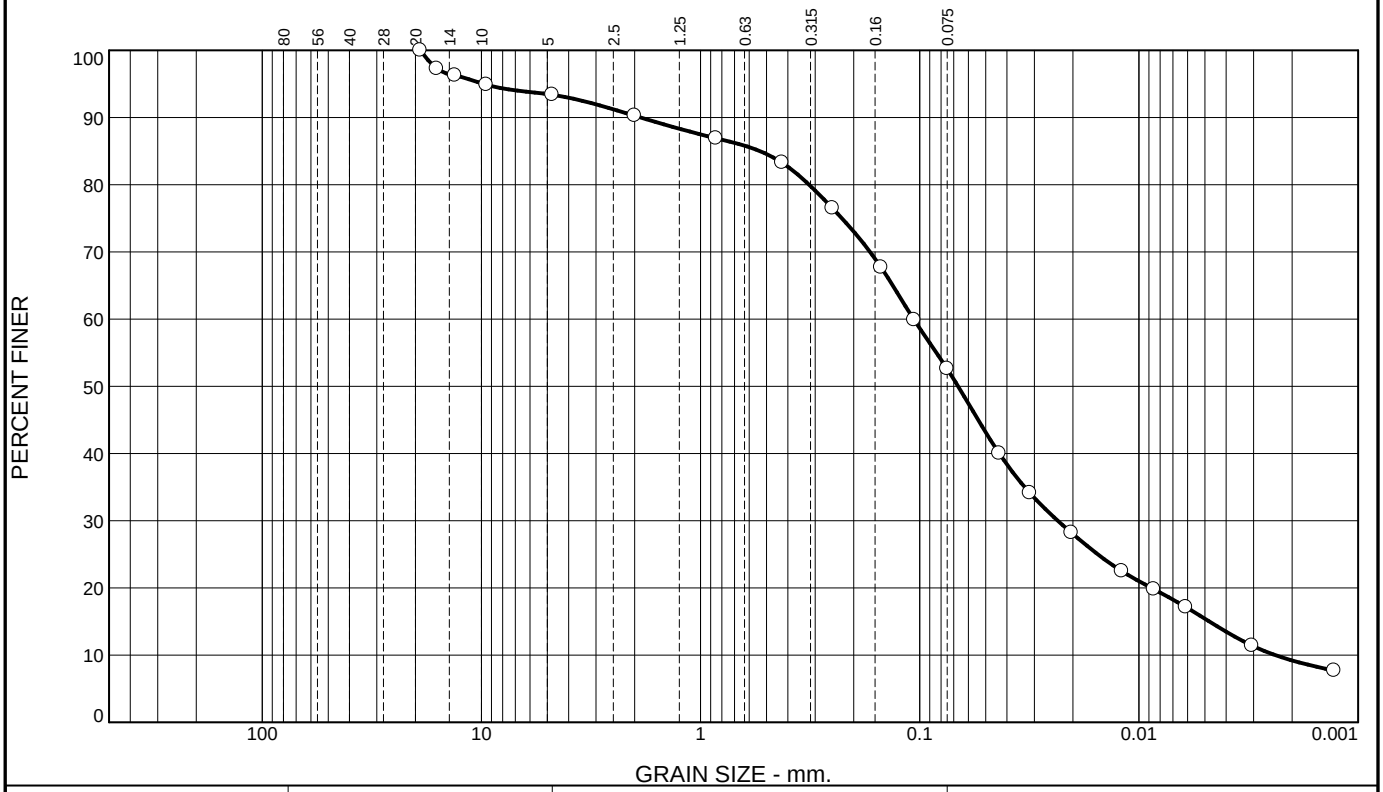
**Date:** July 16, 2020

**Client:** City of Toronto
**Project:** Agincourt Grade Separation

**Project No:** 19M-01888-00 **Figure** BH2_SS16

**Tested By:** Bruce Shan & LXQ & S.L

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0 | 0 | 7 | 3 | 7 | 30 | 44 | 9 |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 19.00 | 100 | | |
| 16.00 | 97 | | |
| 13.20 | 96 | | |
| 9.50 | 95 | | |
| 4.75 | 93 | | |
| 2.00 | 90 | | |
| 0.85 | 87 | | |
| 0.425 | 83 | | |
| 0.250 | 76 | | |
| 0.150 | 68 | | |
| 0.106 | 60 | | |
| 0.075 | 53 | | |
| 0.0434 mm. | 40 | | |
| 0.0314 mm. | 34 | | |
| 0.0203 mm. | 28 | | |
| 0.0120 mm. | 22 | | |
| 0.0086 mm. | 20 | | |
| 0.0061 mm. | 17 | | |
| 0.0030 mm. | 11 | | |
| 0.0013 mm. | 7.7 | | |

* (no specification provided)

**Soil Description**

Sandy Silt

**Atterberg Limits**

PL= NP LL= NV PI= NP

**Coefficients**

$D_{90}$= 1.8813 $D_{85}$= 0.5363 $D_{60}$= 0.1067
$D_{50}$= 0.0669 $D_{30}$= 0.0235 $D_{15}$= 0.0048
$D_{10}$= 0.0024 $C_u$= 44.63 $C_c$= 2.16

**Classification**

USCS= ML AASHTO= A-4(0)

**Remarks**

**Source of Sample:** Site Drilling
**Sample Number:** BH3_SS7

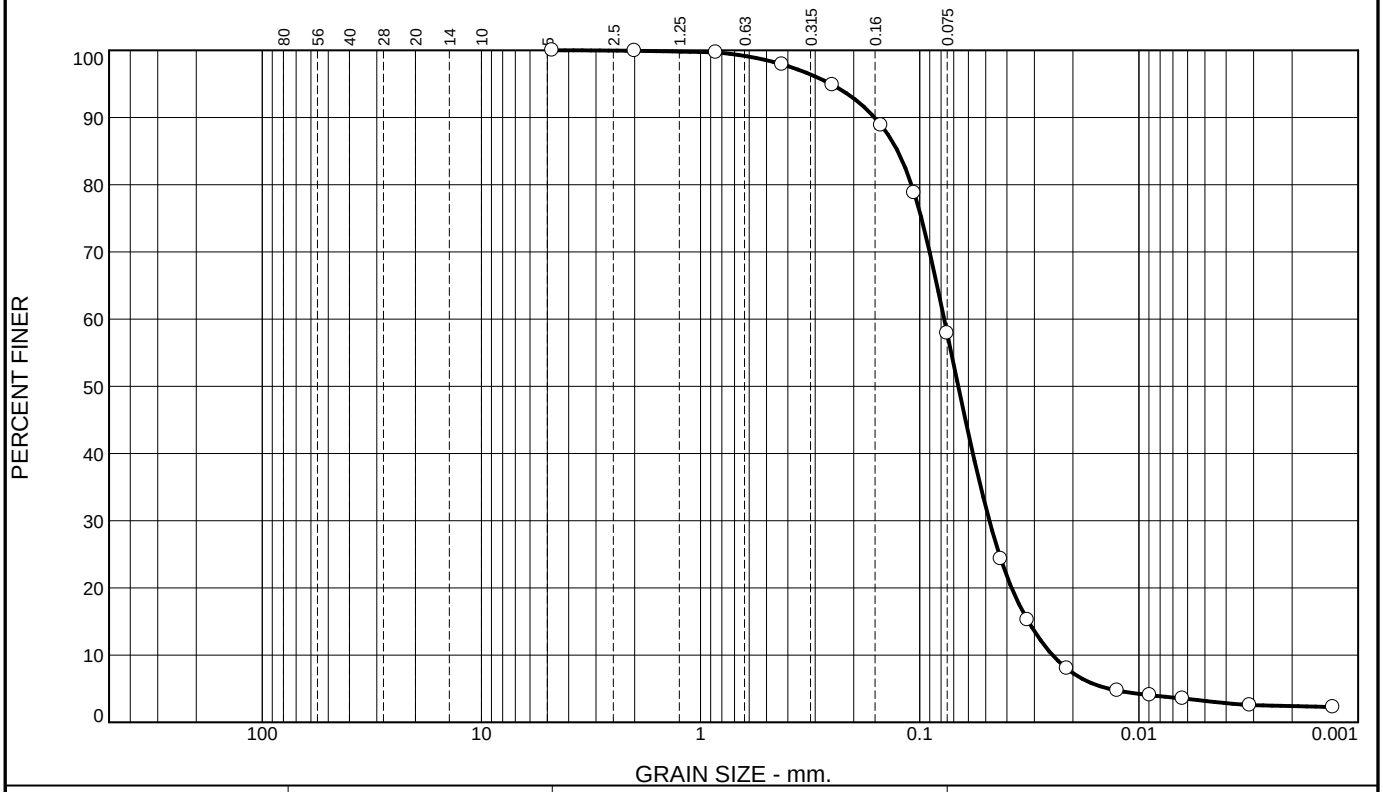
**Date:** July 16, 2020

**Client:** City of Toronto
**Project:** Agincourt Grade Separation

**Project No:** 19M-01888-00 **Figure** BH3_SS7

**Tested By:** Bruce Shan & LXQ & S.L

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0 | 0 | 0 | 0 | 2 | 40 | 56 | 2 |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 4.75 | 100 | | |
| 2.00 | 100 | | |
| 0.85 | 100 | | |
| 0.425 | 98 | | |
| 0.250 | 95 | | |
| 0.150 | 89 | | |
| 0.106 | 79 | | |
| 0.075 | 58 | | |
| 0.0427 mm. | 24 | | |
| 0.0322 mm. | 15 | | |
| 0.0213 mm. | 8.0 | | |
| 0.0126 mm. | 4.7 | | |
| 0.0089 mm. | 4.0 | | |
| 0.0063 mm. | 3.5 | | |
| 0.0031 mm. | 2.6 | | |
| 0.0013 mm. | 2.3 | | |

* (no specification provided)

**Soil Description**

Sandy Silt

**Atterberg Limits**

PL= NP LL= NV PI= NP

**Coefficients**

$D_{90}$= 0.1609 $D_{85}$= 0.1261 $D_{60}$= 0.0774
$D_{50}$= 0.0667 $D_{30}$= 0.0481 $D_{15}$= 0.0319
$D_{10}$= 0.0248 $C_u$= 3.12 $C_c$= 1.21

**Classification**

USCS= ML AASHTO= A-4(0)

**Remarks**

**Source of Sample:** Site Drilling
**Sample Number:** BH3_SS14

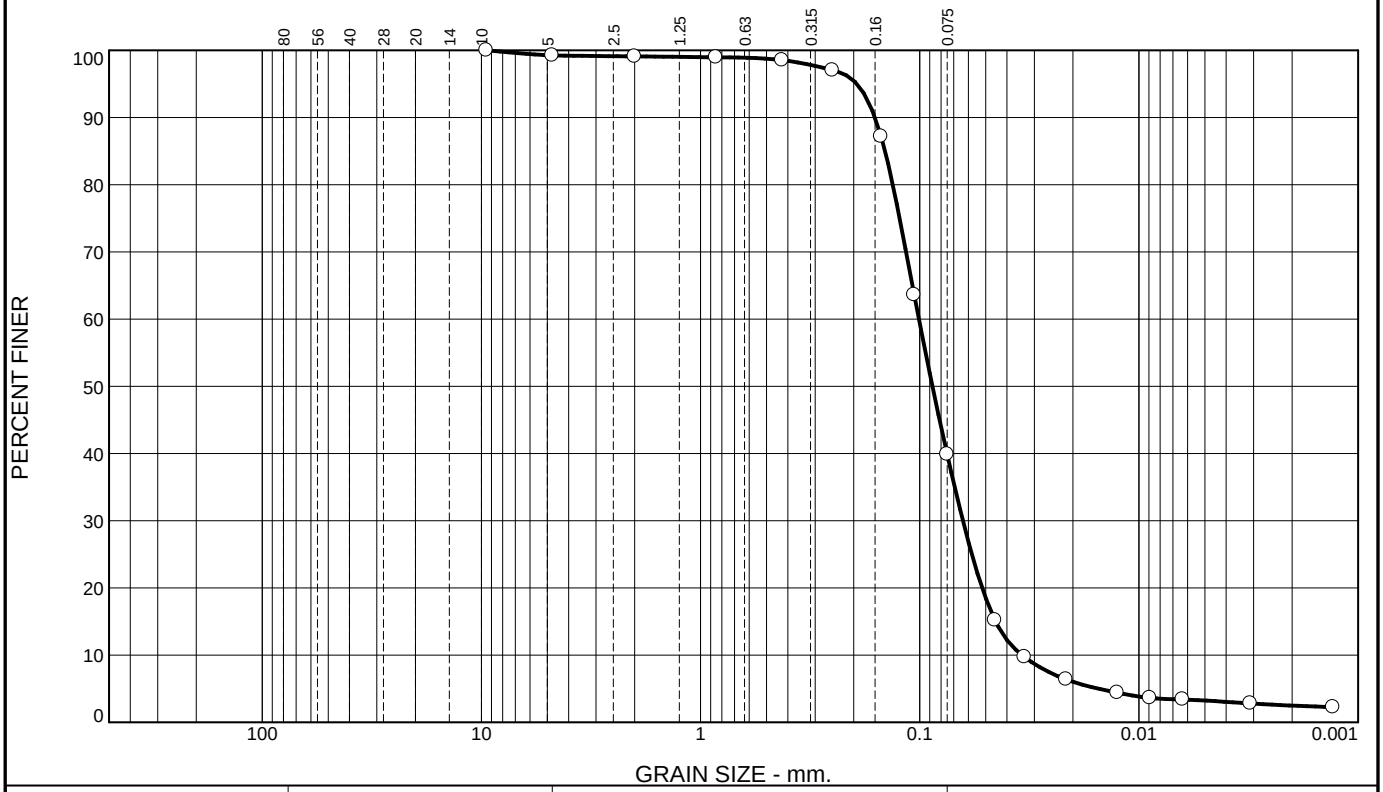
**Date:** July 16, 2020

**Client:** City of Toronto
**Project:** Agincourt Grade Separation

**Project No:** 19M-01888-00 **Figure** BH3_SS14

**Tested By:** Bruce Shan & LXQ & S.L

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0 | 0 | 1 | 0 | 0 | 59 | 38 | 2 |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 9.50 | 100 | | |
| 4.75 | 99 | | |
| 2.00 | 99 | | |
| 0.85 | 99 | | |
| 0.425 | 99 | | |
| 0.250 | 97 | | |
| 0.150 | 87 | | |
| 0.106 | 64 | | |
| 0.075 | 40 | | |
| 0.0454 mm. | 15 | | |
| 0.0333 mm. | 9.7 | | |
| 0.0215 mm. | 6.4 | | |
| 0.0125 mm. | 4.4 | | |
| 0.0089 mm. | 3.6 | | |
| 0.0063 mm. | 3.4 | | |
| 0.0031 mm. | 2.8 | | |
| 0.0013 mm. | 2.3 | | |

* (no specification provided)

**Soil Description**

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.1600 $D_{85}$= 0.1440 $D_{60}$= 0.1009
$D_{50}$= 0.0875 $D_{30}$= 0.0636 $D_{15}$= 0.0451
$D_{10}$= 0.0342 $C_u$= 2.95 $C_c$= 1.17

**Classification**

USCS= AASHTO=

**Remarks**

**Source of Sample:** Site Drilling
**Sample Number:** BH3_SS16

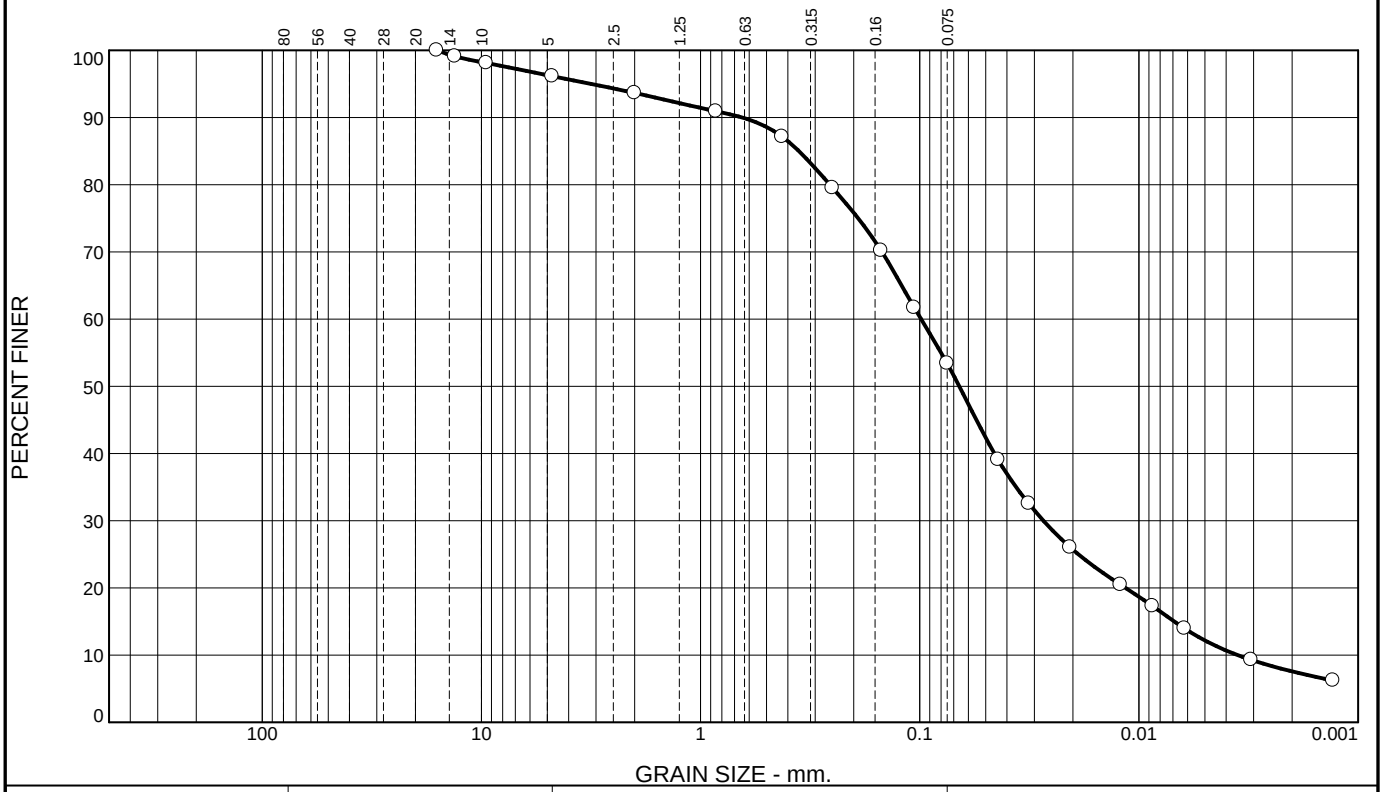
**Date:** July 16, 2020

**Client:** City of Toronto
**Project:** Agincourt Grade Separation

**Project No:** 19M-01888-00 **Figure** BH3_SS16

**Tested By:** Bruce Shan & LXQ & S.L

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0 | 0 | 4 | 2 | 7 | 34 | 45 | 8 |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 16.00 | 100 | | |
| 13.20 | 99 | | |
| 9.50 | 98 | | |
| 4.75 | 96 | | |
| 2.00 | 94 | | |
| 0.85 | 91 | | |
| 0.425 | 87 | | |
| 0.250 | 80 | | |
| 0.150 | 70 | | |
| 0.106 | 62 | | |
| 0.075 | 53 | | |
| 0.0439 mm. | 39 | | |
| 0.0318 mm. | 33 | | |
| 0.0206 mm. | 26 | | |
| 0.0121 mm. | 20 | | |
| 0.0087 mm. | 17 | | |
| 0.0062 mm. | 14 | | |
| 0.0031 mm. | 9.3 | | |
| 0.0013 mm. | 6.2 | | |

* (no specification provided)

**Soil Description**

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.6469 $D_{85}$= 0.3562 $D_{60}$= 0.0987
$D_{50}$= 0.0660 $D_{30}$= 0.0273 $D_{15}$= 0.0069
$D_{10}$= 0.0035 $C_u$= 27.86 $C_c$= 2.13

**Classification**

USCS= AASHTO=

**Remarks**

**Source of Sample:** Site Drilling
**Sample Number:** BH4_SS3

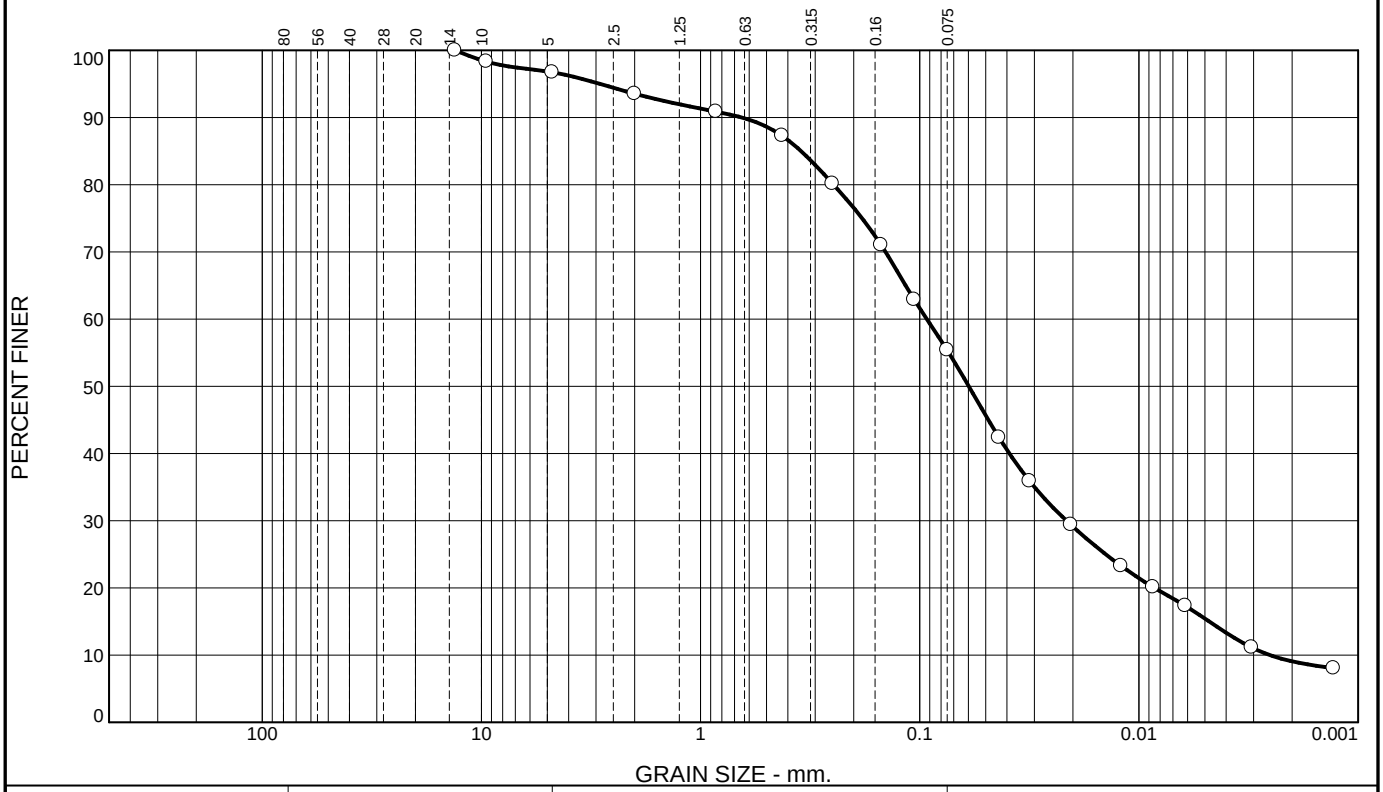
**Date:** July 16, 2020

**Client:** City of Toronto
**Project:** Agincourt Grade Separation

**Project No:** 19M-01888-00 **Figure** BH4_SS3

**Tested By:** Bruce Shan & LXQ & S.L

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0 | 0 | 3 | 3 | 7 | 32 | 46 | 9 |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 13.20 | 100 | | |
| 9.50 | 98 | | |
| 4.75 | 97 | | |
| 2.00 | 94 | | |
| 0.85 | 91 | | |
| 0.425 | 87 | | |
| 0.250 | 80 | | |
| 0.150 | 71 | | |
| 0.106 | 63 | | |
| 0.075 | 55 | | |
| 0.0435 mm. | 42 | | |
| 0.0315 mm. | 36 | | |
| 0.0204 mm. | 29 | | |
| 0.0121 mm. | 23 | | |
| 0.0086 mm. | 20 | | |
| 0.0061 mm. | 17 | | |
| 0.0031 mm. | 11 | | |
| 0.0013 mm. | 8.1 | | |

* (no specification provided)

**Soil Description**

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.6499 $D_{85}$= 0.3482 $D_{60}$= 0.0929
$D_{50}$= 0.0598 $D_{30}$= 0.0214 $D_{15}$= 0.0048
$D_{10}$= 0.0025 $C_u$= 36.79 $C_c$= 1.95

**Classification**

USCS= AASHTO=

**Remarks**

**Source of Sample:** Site Drilling
**Sample Number:** BH4_SS7

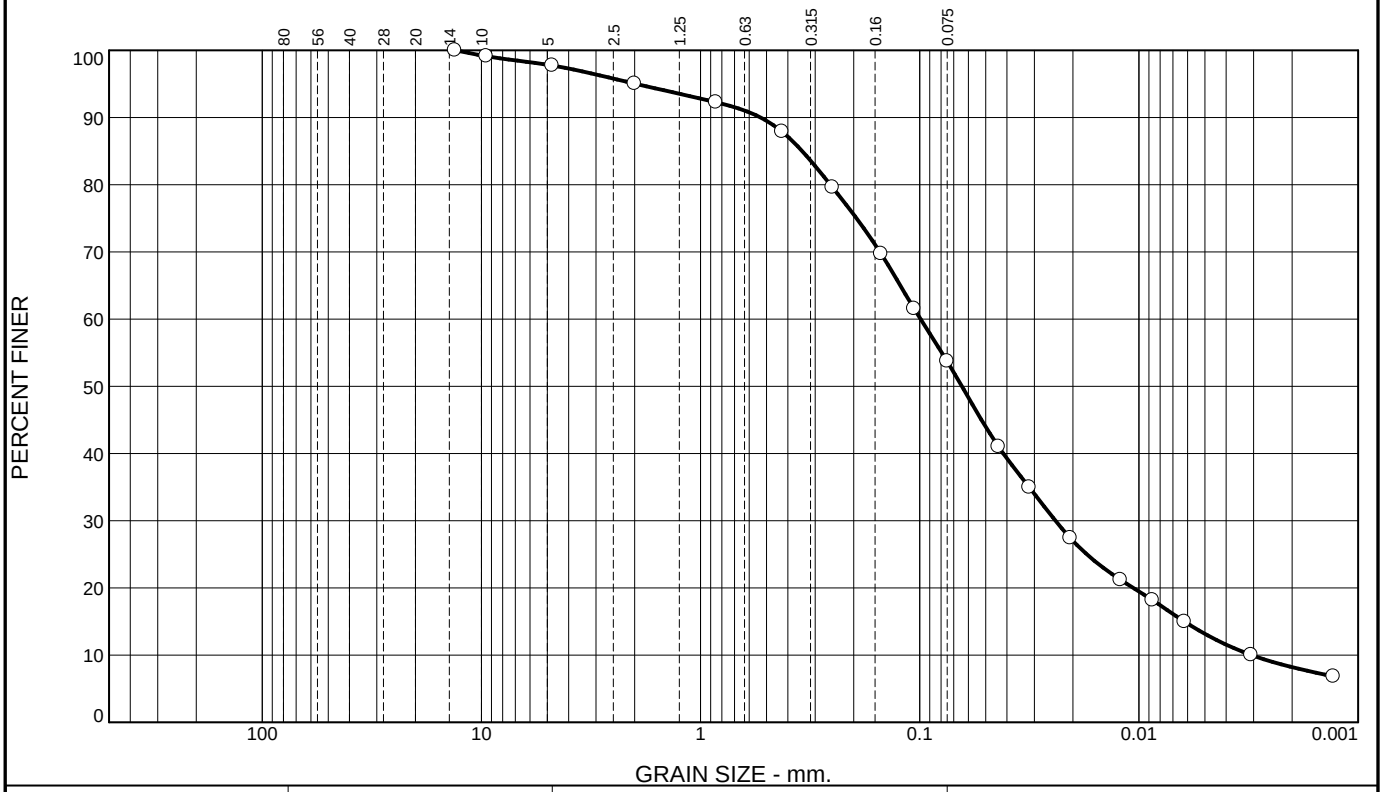
**Date:** July 16, 2020

**Client:** City of Toronto
**Project:** Agincourt Grade Separation

**Project No:** 19M-01888-00 **Figure** BH4_SS7

**Tested By:** Bruce Shan & LXQ & S.L

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0 | 0 | 2 | 3 | 7 | 34 | 46 | 8 |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 13.20 | 100 | | |
| 9.50 | 99 | | |
| 4.75 | 98 | | |
| 2.00 | 95 | | |
| 0.85 | 92 | | |
| 0.425 | 88 | | |
| 0.250 | 80 | | |
| 0.150 | 70 | | |
| 0.106 | 62 | | |
| 0.075 | 54 | | |
| 0.0437 mm. | 41 | | |
| 0.0316 mm. | 35 | | |
| 0.0205 mm. | 27 | | |
| 0.0121 mm. | 21 | | |
| 0.0087 mm. | 18 | | |
| 0.0062 mm. | 15 | | |
| 0.0031 mm. | 10 | | |
| 0.0013 mm. | 6.8 | | |

* (no specification provided)

**Soil Description**

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.5325 $D_{85}$= 0.3440 $D_{60}$= 0.0991
$D_{50}$= 0.0642 $D_{30}$= 0.0240 $D_{15}$= 0.0062
$D_{10}$= 0.0031 $C_u$= 32.36 $C_c$= 1.90

**Classification**

USCS= AASHTO=

**Remarks**

**Source of Sample:** Site Drilling
**Sample Number:** BH5_SS2

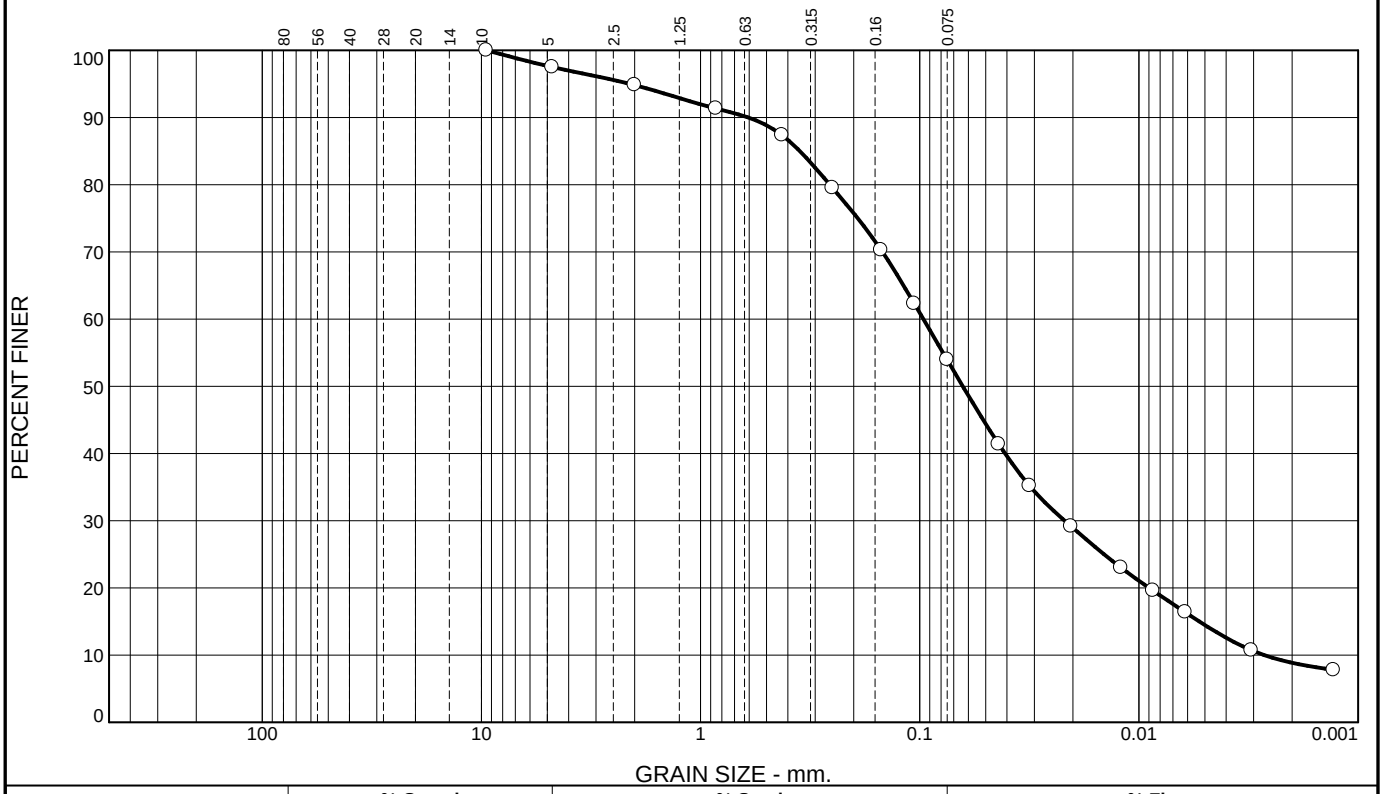
**Date:** July 16, 2020

**Client:** City of Toronto
**Project:** Agincourt Grade Separation

**Project No:** 19M-01888-00 **Figure** BH5_SS2

**Tested By:** Bruce Shan & LXQ & S.L

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0 | 0 | 2 | 3 | 8 | 33 | 45 | 9 |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 9.50 | 100 | | |
| 4.75 | 98 | | |
| 2.00 | 95 | | |
| 0.85 | 91 | | |
| 0.425 | 87 | | |
| 0.250 | 80 | | |
| 0.150 | 70 | | |
| 0.106 | 62 | | |
| 0.075 | 54 | | |
| 0.0436 mm. | 41 | | |
| 0.0316 mm. | 35 | | |
| 0.0204 mm. | 29 | | |
| 0.0121 mm. | 23 | | |
| 0.0086 mm. | 20 | | |
| 0.0061 mm. | 16 | | |
| 0.0031 mm. | 11 | | |
| 0.0013 mm. | 7.8 | | |

* (no specification provided)

**Soil Description**

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.6061 $D_{85}$= 0.3525 $D_{60}$= 0.0963
$D_{50}$= 0.0636 $D_{30}$= 0.0218 $D_{15}$= 0.0053
$D_{10}$= 0.0027 $C_u$= 35.96 $C_c$= 1.85

**Classification**

USCS= AASHTO=

**Remarks**

**Source of Sample:** Site Drilling
**Sample Number:** BH5_SS6

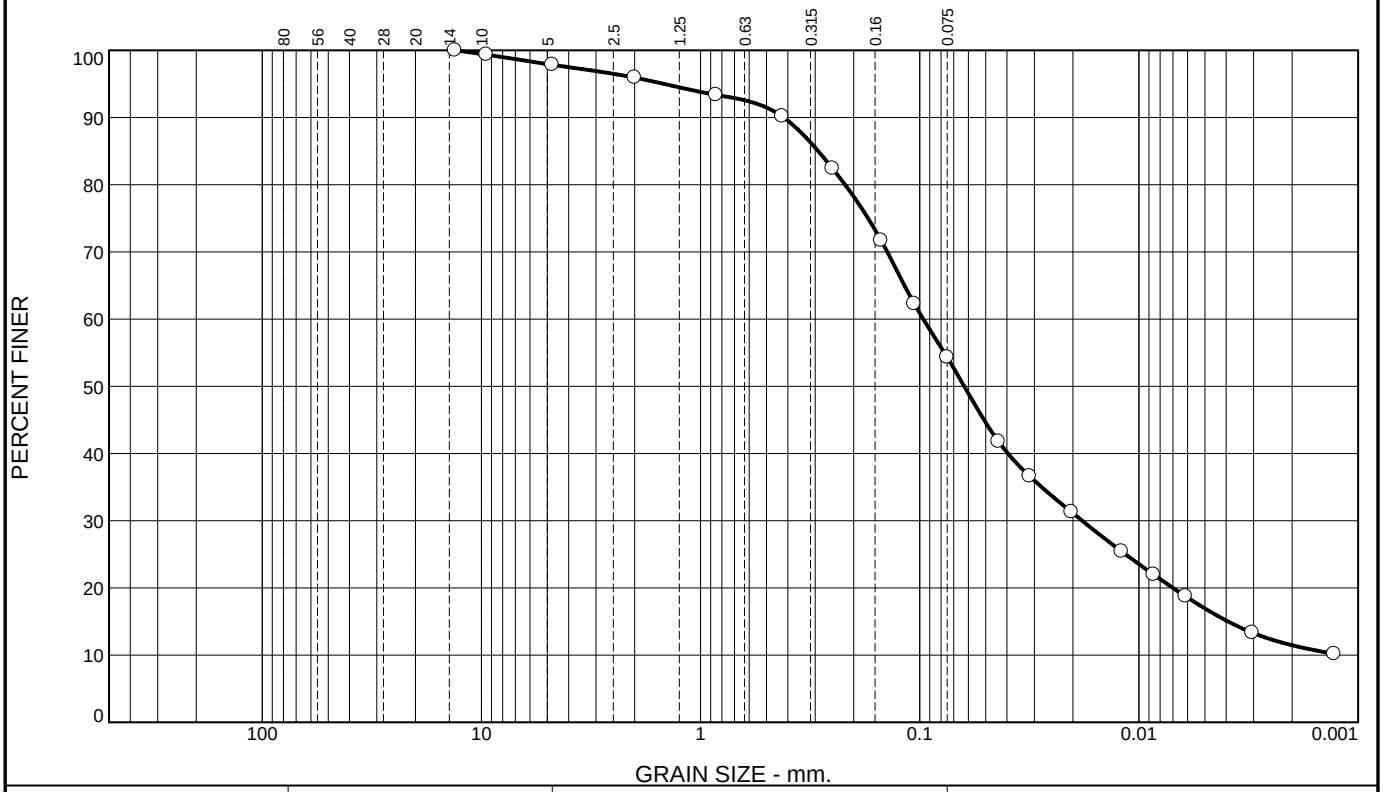
**Date:** July 16, 2020

**Client:** City of Toronto
**Project:** Agincourt Grade Separation

**Project No:** 19M-01888-00 **Figure** BH5_SS6

**Tested By:** Bruce Shan & LXQ & S.L

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0 | 0 | 2 | 2 | 6 | 36 | 43 | 11 |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 13.20 | 100 | | |
| 9.50 | 99 | | |
| 4.75 | 98 | | |
| 2.00 | 96 | | |
| 0.85 | 93 | | |
| 0.425 | 90 | | |
| 0.250 | 82 | | |
| 0.150 | 72 | | |
| 0.106 | 62 | | |
| 0.075 | 54 | | |
| 0.0437 mm. | 42 | | |
| 0.0315 mm. | 37 | | |
| 0.0203 mm. | 31 | | |
| 0.0120 mm. | 25 | | |
| 0.0086 mm. | 22 | | |
| 0.0061 mm. | 19 | | |
| 0.0030 mm. | 13 | | |
| 0.0013 mm. | 10 | | |

* (no specification provided)

**Soil Description**

Sandy Silt

**Atterberg Limits**

PL= 11 LL= 14 PI= 3

**Coefficients**

$D_{90}$= 0.4177 $D_{85}$= 0.2906 $D_{60}$= 0.0965
$D_{50}$= 0.0627 $D_{30}$= 0.0182 $D_{15}$= 0.0039
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= ML AASHTO= A-4(0)

**Remarks**

**Source of Sample:** Site Drilling
**Sample Number:** BH6_SS3

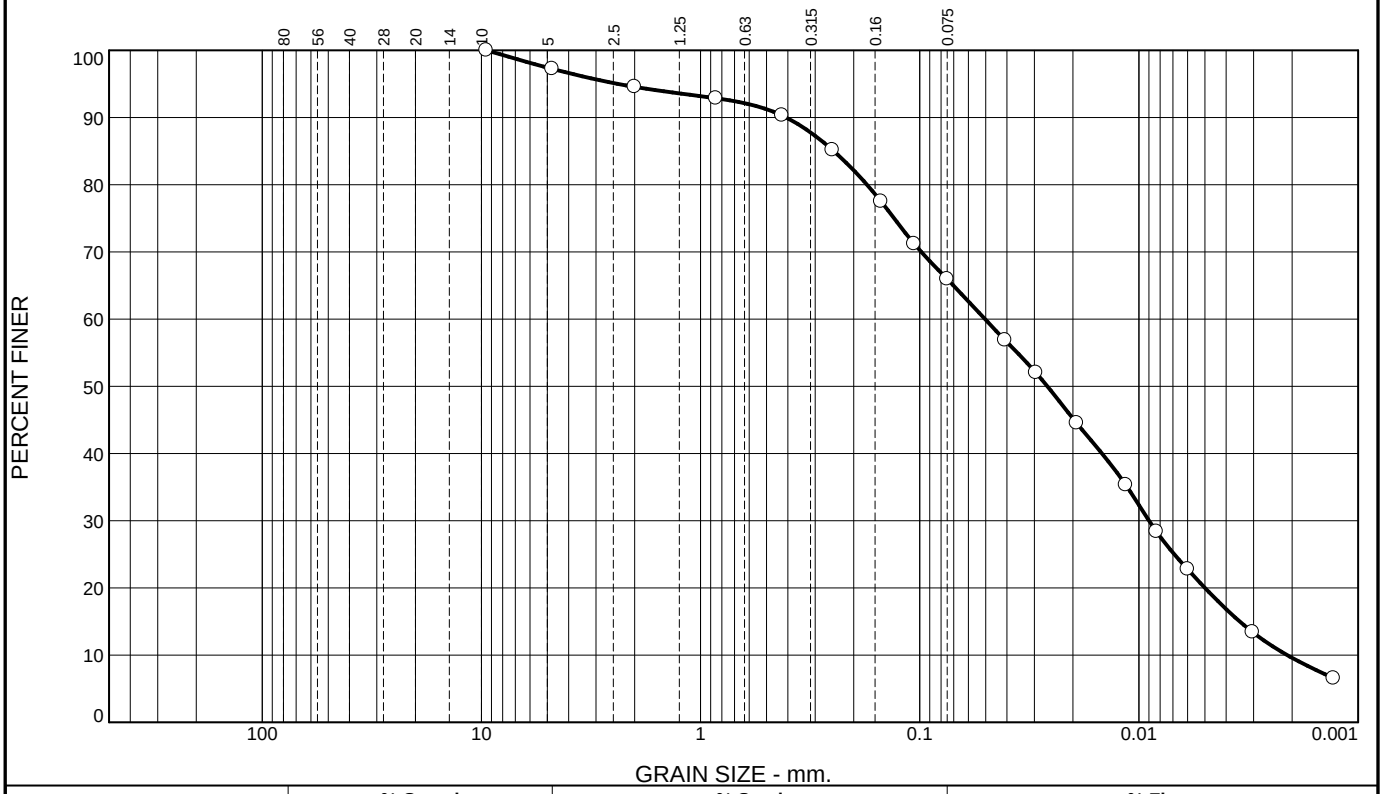
**Date:** July 16, 2020

**Client:** City of Toronto
**Project:** Agincourt Grade Separation

**Project No:** 19M-01888-00 **Figure** BH6_SS3

**Tested By:** Bruce Shan & LXQ & S.L

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0 | 0 | 3 | 2 | 5 | 24 | 56 | 10 |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 9.50 | 100 | | |
| 4.75 | 97 | | |
| 2.00 | 95 | | |
| 0.85 | 93 | | |
| 0.425 | 90 | | |
| 0.250 | 85 | | |
| 0.150 | 77 | | |
| 0.106 | 71 | | |
| 0.075 | 66 | | |
| 0.0408 mm. | 57 | | |
| 0.0295 mm. | 52 | | |
| 0.0192 mm. | 45 | | |
| 0.0115 mm. | 35 | | |
| 0.0083 mm. | 28 | | |
| 0.0060 mm. | 23 | | |
| 0.0030 mm. | 13 | | |
| 0.0013 mm. | 6.6 | | |

* (no specification provided)

**Soil Description**

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4071 $D_{85}$= 0.2469 $D_{60}$= 0.0504
$D_{50}$= 0.0262 $D_{30}$= 0.0090 $D_{15}$= 0.0035
$D_{10}$= 0.0021 $C_u$= 23.91 $C_c$= 0.76

**Classification**

USCS= AASHTO=

**Remarks**

**Source of Sample:** Site Drilling
**Sample Number:** BH6_SS7

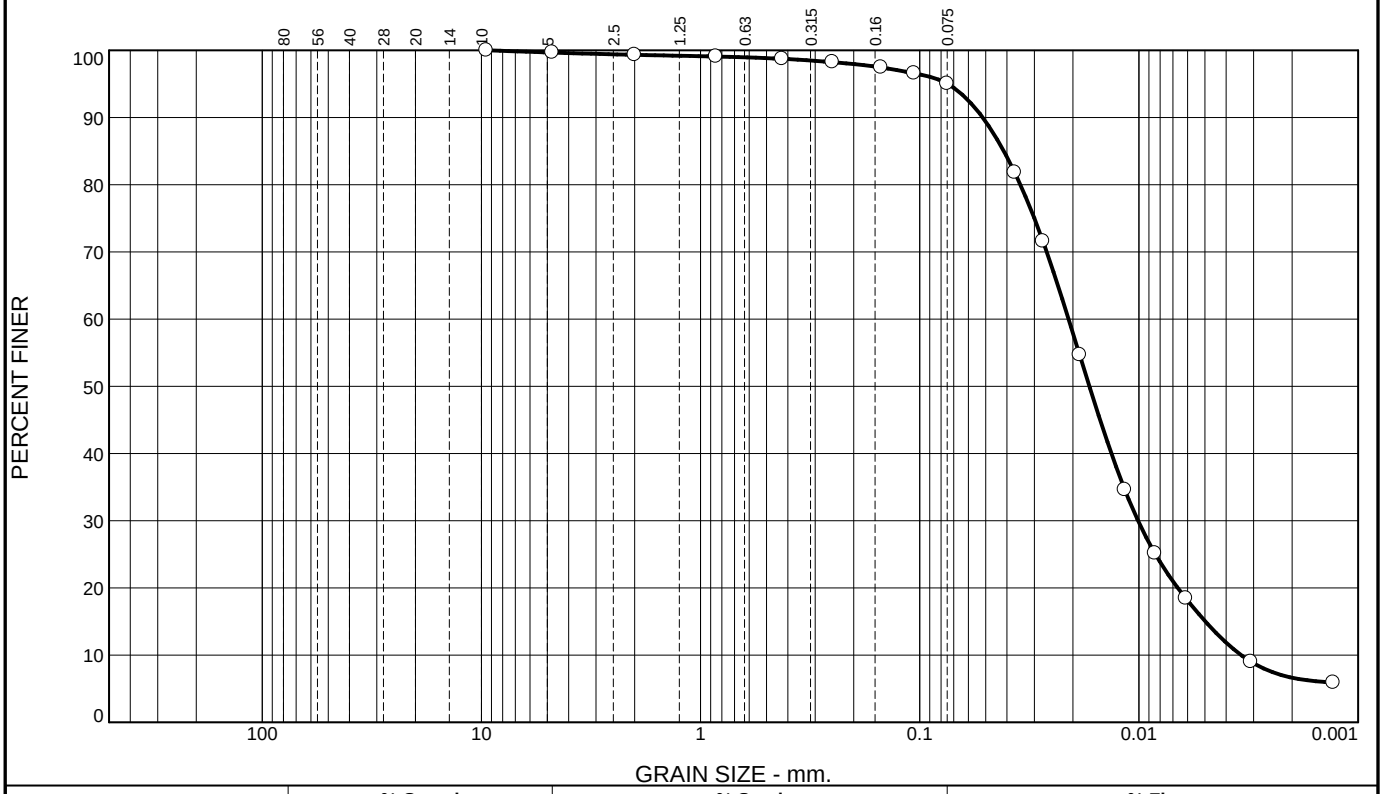
**Date:** July 16, 2020

**Client:** City of Toronto
**Project:** Agincourt Grade Separation

**Project No:** 19M-01888-00 **Figure** BH6_SS7

**Tested By:** Bruce Shan & LXQ & S.L

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0 | 0 | 0 | 1 | 0 | 4 | 88 | 7 |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 9.50 | 100 | | |
| 4.75 | 100 | | |
| 2.00 | 99 | | |
| 0.85 | 99 | | |
| 0.425 | 99 | | |
| 0.250 | 98 | | |
| 0.150 | 97 | | |
| 0.106 | 97 | | |
| 0.075 | 95 | | |
| 0.0369 mm. | 82 | | |
| 0.0274 mm. | 72 | | |
| 0.0186 mm. | 55 | | |
| 0.0116 mm. | 35 | | |
| 0.0085 mm. | 25 | | |
| 0.0061 mm. | 18 | | |
| 0.0031 mm. | 9.0 | | |
| 0.0013 mm. | 5.9 | | |

* (no specification provided)

**Soil Description**

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.0516 $D_{85}$= 0.0414 $D_{60}$= 0.0209
$D_{50}$= 0.0168 $D_{30}$= 0.0101 $D_{15}$= 0.0050
$D_{10}$= 0.0034 $C_u$= 6.14 $C_c$= 1.42

**Classification**

USCS= AASHTO=

**Remarks**

**Source of Sample:** Site Drilling
**Sample Number:** BH7_SS6

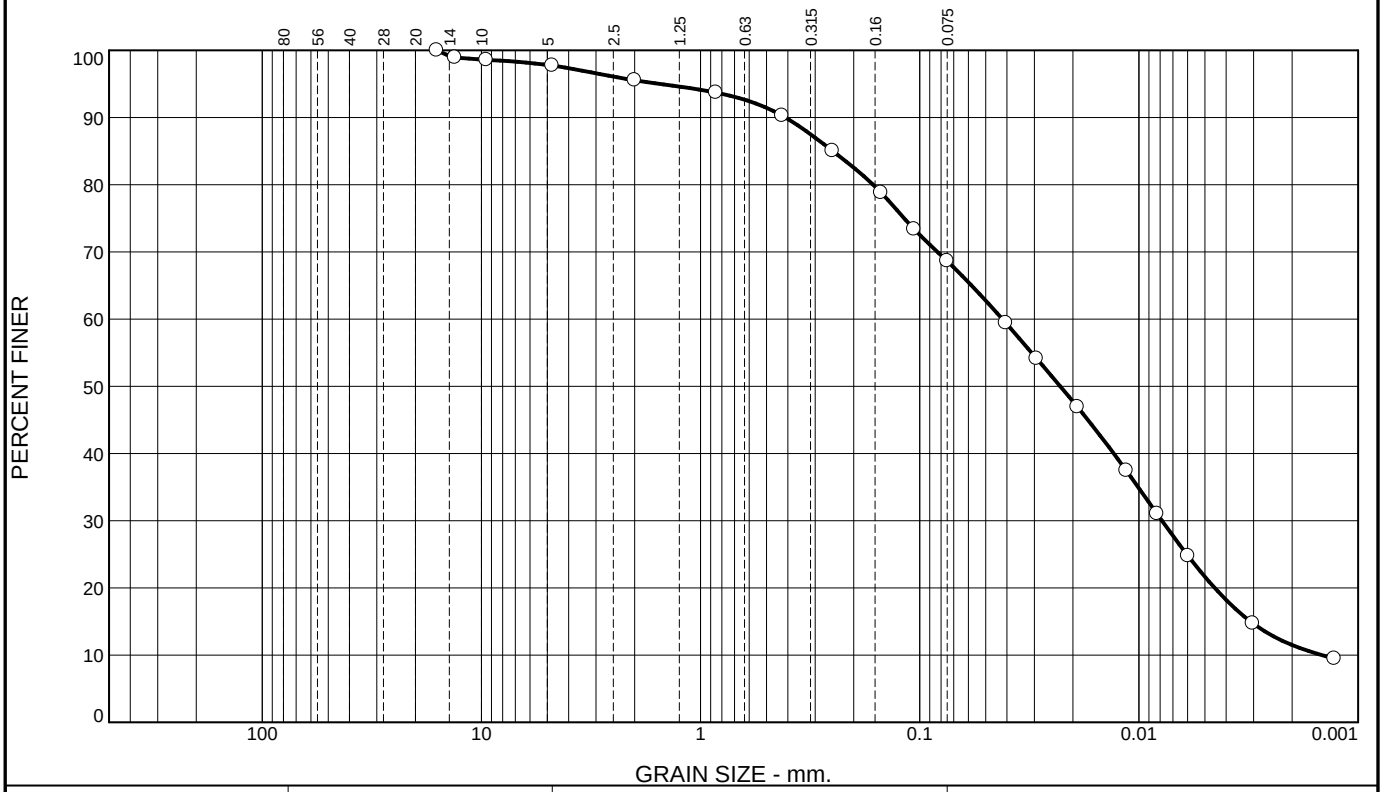
**Date:** July 16, 2020

**Client:** City of Toronto
**Project:** Agincourt Grade Separation

**Project No:** 19M-01888-00 **Figure** BH7_SS6

**Tested By:** Bruce Shan & LXQ & S.L

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0 | 0 | 2 | 2 | 6 | 21 | 58 | 11 |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 16.00 | 100 | | |
| 13.20 | 99 | | |
| 9.50 | 99 | | |
| 4.75 | 98 | | |
| 2.00 | 96 | | |
| 0.85 | 94 | | |
| 0.425 | 90 | | |
| 0.250 | 85 | | |
| 0.150 | 79 | | |
| 0.106 | 73 | | |
| 0.075 | 69 | | |
| 0.0405 mm. | 59 | | |
| 0.0293 mm. | 54 | | |
| 0.0191 mm. | 47 | | |
| 0.0114 mm. | 37 | | |
| 0.0083 mm. | 31 | | |
| 0.0060 mm. | 25 | | |
| 0.0030 mm. | 15 | | |
| 0.0013 mm. | 9.5 | | |

* (no specification provided)

**Soil Description**

Sandy Silt

**Atterberg Limits**

PL= 13 LL= 16 PI= 3

**Coefficients**

$D_{90}$= 0.4105 $D_{85}$= 0.2494 $D_{60}$= 0.0420
$D_{50}$= 0.0229 $D_{30}$= 0.0079 $D_{15}$= 0.0031
$D_{10}$= 0.0015 $C_u$= 28.70 $C_c$= 1.00

**Classification**

USCS= ML AASHTO= A-4(0)

**Remarks**

**Source of Sample:** Site Drilling
**Sample Number:** BH7_SS10

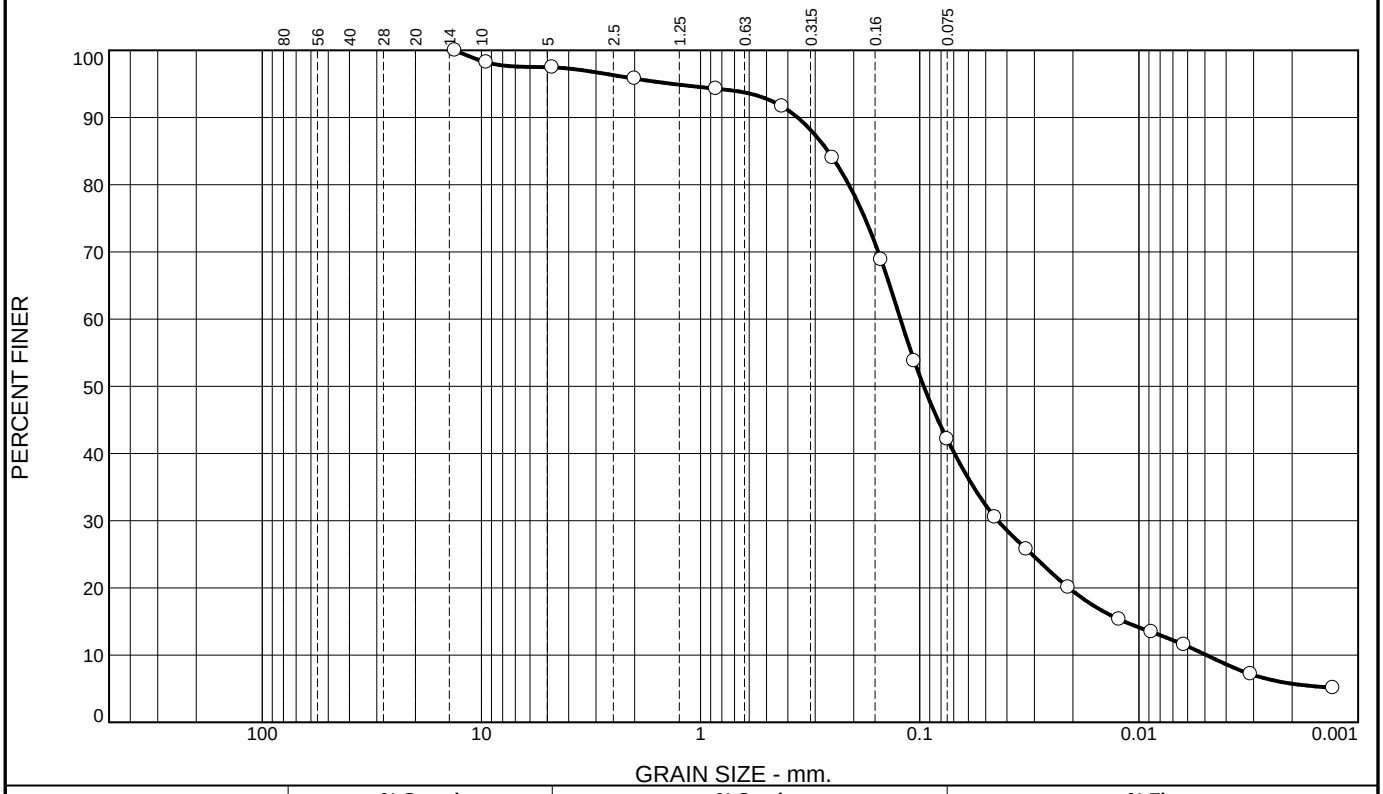
**Date:** July 16, 2020

**Client:** City of Toronto
**Project:** Agincourt Grade Separation

**Project No:** 19M-01888-00 **Figure** BH7_SS10

**Tested By:** Bruce Shan & LXQ & S.L

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0 | 0 | 3 | 1 | 4 | 50 | 36 | 6 |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 13.20 | 100 | | |
| 9.50 | 98 | | |
| 4.75 | 97 | | |
| 2.00 | 96 | | |
| 0.85 | 94 | | |
| 0.425 | 92 | | |
| 0.250 | 84 | | |
| 0.150 | 69 | | |
| 0.106 | 54 | | |
| 0.075 | 42 | | |
| 0.0454 mm. | 31 | | |
| 0.0326 mm. | 26 | | |
| 0.0210 mm. | 20 | | |
| 0.0123 mm. | 15 | | |
| 0.0088 mm. | 13 | | |
| 0.0062 mm. | 12 | | |
| 0.0031 mm. | 7.2 | | |
| 0.0013 mm. | 5.1 | | |

* (no specification provided)

**Soil Description**

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3609 $D_{85}$= 0.2624 $D_{60}$= 0.1225
$D_{50}$= 0.0960 $D_{30}$= 0.0440 $D_{15}$= 0.0117
$D_{10}$= 0.0049 $C_u$= 24.88 $C_c$= 3.21

**Classification**

USCS= AASHTO=

**Remarks**

**Source of Sample:** Site Drilling
**Sample Number:** BH7_SS15

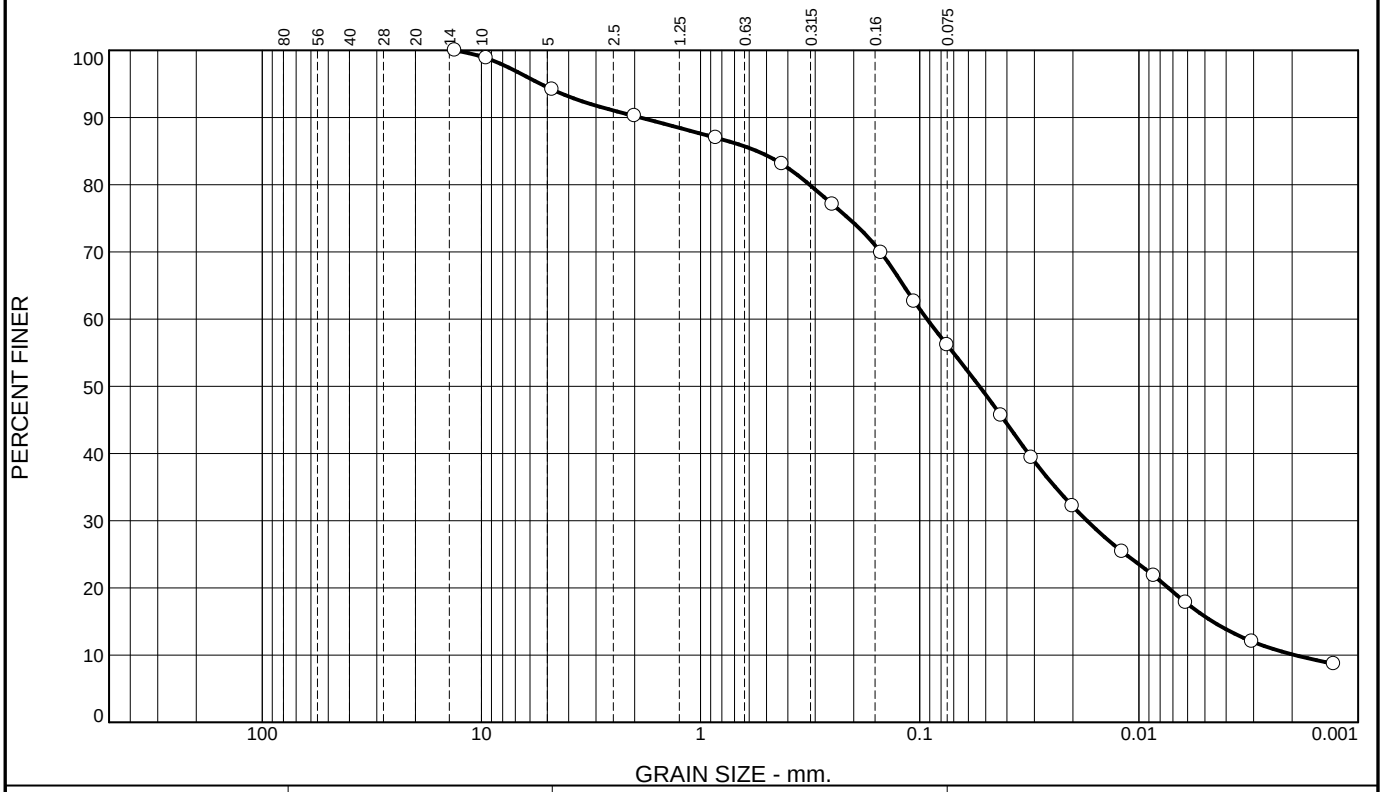
**Date:** July 16, 2020

**Client:** City of Toronto
**Project:** Agincourt Grade Separation

**Project No:** 19M-01888-00 **Figure** BH7_SS15

**Tested By:** Bruce Shan & LXQ & S.L

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0 | 0 | 6 | 4 | 7 | 27 | 46 | 10 |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 13.20 | 100 | | |
| 9.50 | 99 | | |
| 4.75 | 94 | | |
| 2.00 | 90 | | |
| 0.85 | 87 | | |
| 0.425 | 83 | | |
| 0.250 | 77 | | |
| 0.150 | 70 | | |
| 0.106 | 63 | | |
| 0.075 | 56 | | |
| 0.0426 mm. | 46 | | |
| 0.0309 mm. | 39 | | |
| 0.0201 mm. | 32 | | |
| 0.0119 mm. | 25 | | |
| 0.0085 mm. | 22 | | |
| 0.0061 mm. | 18 | | |
| 0.0030 mm. | 12 | | |
| 0.0013 mm. | 8.7 | | |

* (no specification provided)

**Soil Description**

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 1.8854 $D_{85}$= 0.5531 $D_{60}$= 0.0927
$D_{50}$= 0.0535 $D_{30}$= 0.0173 $D_{15}$= 0.0046
$D_{10}$= 0.0019 $C_u$= 47.73 $C_c$= 1.65

**Classification**

USCS= AASHTO=

**Remarks**

**Source of Sample:** Site Drilling
**Sample Number:** BH8_SS2

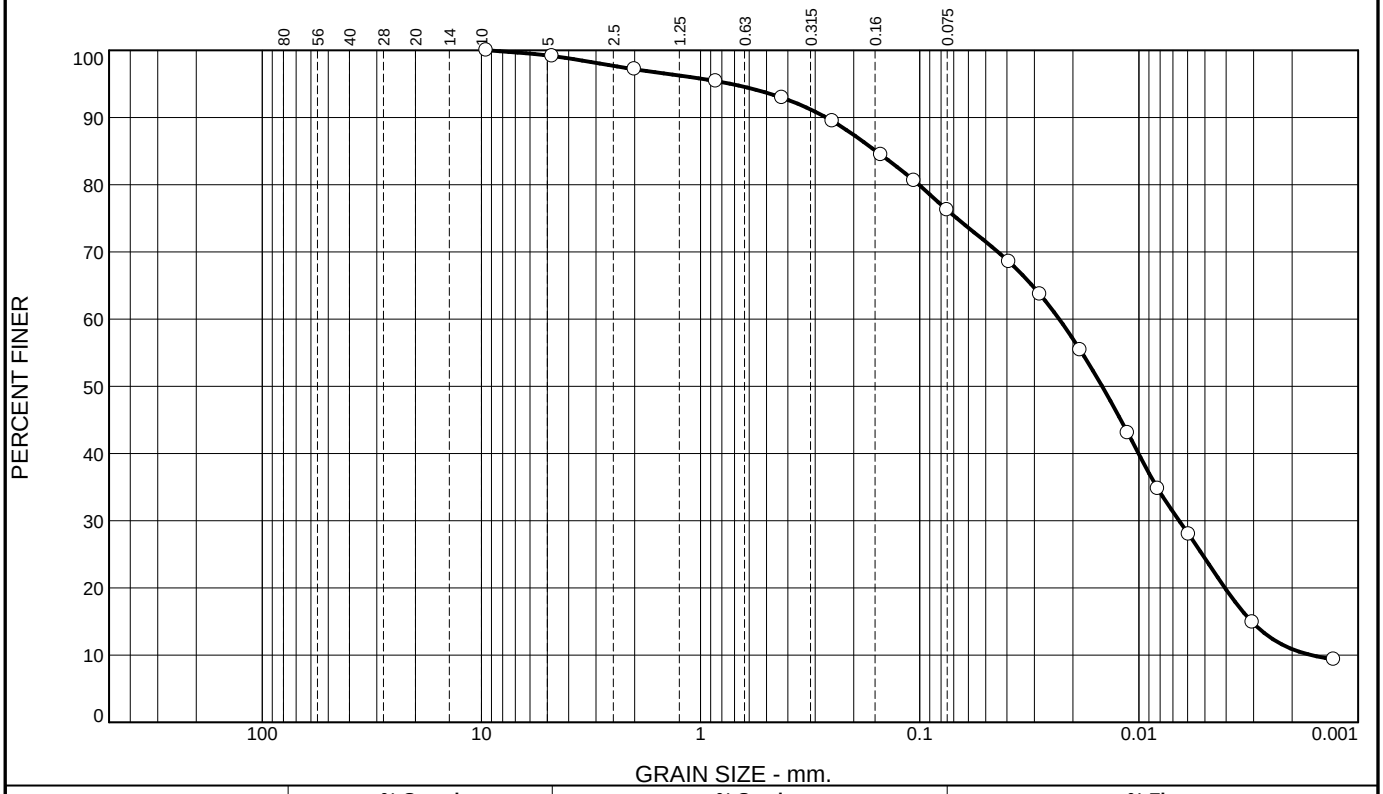
**Date:** July 16, 2020

**Client:** City of Toronto
**Project:** Agincourt Grade Separation

**Project No:** 19M-01888-00 **Figure** BH8_SS2

**Tested By:** Bruce Shan & LXQ & S.L

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0 | 0 | 1 | 2 | 4 | 17 | 65 | 11 |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 9.50 | 100 | | |
| 4.75 | 99 | | |
| 2.00 | 97 | | |
| 0.85 | 95 | | |
| 0.425 | 93 | | |
| 0.250 | 89 | | |
| 0.150 | 84 | | |
| 0.106 | 81 | | |
| 0.075 | 76 | | |
| 0.0391 mm. | 69 | | |
| 0.0283 mm. | 64 | | |
| 0.0185 mm. | 55 | | |
| 0.0112 mm. | 43 | | |
| 0.0082 mm. | 35 | | |
| 0.0059 mm. | 28 | | |
| 0.0030 mm. | 15 | | |
| 0.0013 mm. | 9.3 | | |

* (no specification provided)

**Soil Description**

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2671 $D_{85}$= 0.1584 $D_{60}$= 0.0231
$D_{50}$= 0.0147 $D_{30}$= 0.0066 $D_{15}$= 0.0031
$D_{10}$= 0.0016 $C_u$= 14.15 $C_c$= 1.14

**Classification**

USCS= AASHTO=

**Remarks**

**Source of Sample:** Site Drilling
**Sample Number:** BH8_SS6

**Date:** July 16, 2020

**Client:** City of Toronto
**Project:** Agincourt Grade Separation

**Project No:** 19M-01888-00 **Figure** BH8_SS6

**Tested By:** Bruce Shan & LXQ & S.L