Phase III Environmental Site Assessment, West Memorial Building, 344 Wellington Street, Ottawa, ON (DFRP #08837)

Final Report

Prepared for:
Amy Elder
Public Services and Procurement Canada
427 Laurier Avenue West, 3rd Floor
Ottawa, ON K1A 0S5

Prepared by:
Stantec Consulting Ltd.
1331 Clyde Ave., Suite 400
Ottawa, ON K2C 3G4

Project No. 122511222

March 31, 2016

Table of Contents

EXECUTIVE SUMMARY III

1.0 INTRODUCTION 1.1
1.1 GENERAL 1.1
1.2 SITE DESCRIPTION 1.1
1.2.1 Subject Property 1.1
1.2.2 Previous Reports 1.1
1.3 PHYSICAL SETTING 1.3
1.3.1 Surficial Geology 1.3
1.3.2 Bedrock Geology 1.3
1.3.3 Site Services 1.3
1.3.4 Topography and Drainage 1.3
1.4 REGULATORY FRAMEWORK 1.3
1.5 SCOPE OF WORK 1.4

2.0 FIELD INVESTIGATION 2.1
2.1 METHODOLOGY 2.1
2.2 LABORATORY ANALYTICAL PROGRAM 2.1

3.0 RESULTS 3.1
3.1 SOIL 3.1
3.1.1 Stratigraphy 3.1
3.1.2 Combustible Soil Vapour Concentrations 3.1
3.1.3 Soil Analytical Results 3.1
3.1.4 Waste Classification Results 3.3
3.2 QUALITY ASSURANCE/QUALITY CONTROL 3.4
3.3 DISCUSSION OF RESULTS 3.4
3.3.1 PAHs 3.4
3.3.2 Metals and Inorganics 3.4
3.3.3 pH 3.4

4.0 SOIL MANAGEMENT PLAN 4.1

5.0 NCSCS AND FCSI 5.1

6.0 CONCLUSIONS AND RECOMMENDATIONS 6.1
6.1 CONSTRUCTION WORKER HEALTH AND SAFETY PLAN 6.2

7.0 LIMITATIONS 7.1

8.0 SIGNATURES 8.1

LIST OF TABLES

Table 1: Laboratory Analytical Program 2.2
Table 2: PAH Exceedences 3.2
Table 3: Metals Exceedances 3.3
Table E-1: Summary of Soil Analytical Results..... Appendix E
Table E-2: Summary of Historical Soil Analytical Results..... Appendix E
Table E-3: Landfill Waste Disposal Characterization..... Appendix E

LIST OF FIGURES

Figure No. 1 – Key Plan ..... Appendix A
Figure No. 2 – Site Plan ..... Appendix A
Figure No. 3 – Soil Exceedances ..... Appendix A
Figure No. 4 – Impacted Soil – CCME Exceedances ..... Appendix A
Figure No. 5 – Impacted Soil – Ontario Table 1 Exceedances ..... Appendix A

LIST OF APPENDICES

APPENDIX A FIGURES A.1

APPENDIX B REGULATORY REVIEW B.1

APPENDIX C FIELD METHODOLOGY C.1

APPENDIX D BOREHOLE LOGS D.1

APPENDIX E SUMMARY ANALYTICAL TABLES E.1

APPENDIX F LABORATORY CERTIFICATES OF ANALYSES F.1

APPENDIX G SIEVE ANALYSIS G.1

APPENDIX H NCSCS SCORE SHEET H.1

APPENDIX I FCSI INFORMATION I.1

EXECUTIVE SUMMARY

Stantec Consulting Ltd. (Stantec) was retained by Public Services and Procurement Canada (PSPC, formerly Public Works and Government Services Canada) to conduct a Phase III Environmental Site Assessment (ESA) of the West Memorial Building located at 344 Wellington Street, Ottawa, Ontario (the "Site"). The total area of the Site is 8.2 hectares. The Site is bound by Wellington Street to the north, Lyon Street to the east, Sparks Street to the south, and Bay Street to the west. The Site has been assigned Directory of Federal Real Property (DFRP) # 08837001.

Based on the findings of a previous Phase II ESA conducted at the Site, as well as Stantec's knowledge of the area, fill material of unknown quality was expected to be present throughout the Site and poses environmental concern to the Site. At the request of PSPC, the Phase III ESA was limited to a soil investigation with a maximum of nine boreholes. In addition, no soil sampling was conducted in the loading dock area or beneath the building, as limited soil is assumed to be present between the building and bedrock.

The purpose of the Phase III ESA was to provide assessment and delineation of the potential for unknown fill quality and to develop a soil management plan, as well as occupational health and safety procedures, for use during possible construction upgrades to the facility.

The applicable soil guidelines/standards for the Site can be found in the following documents:

- Canadian Council of the Ministers of Environment (CCME), *Canada Wide Standards (CWS) for Petroleum Hydrocarbons (PHC)*, January, 2008.
- CCME, *Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health,* on-line summary accessed in February, 2016.
- Ministry of the Environment (MOE), *Soil, Ground Water and Sediment Standards for Use under Part XV.1 of the Environmental Protection Act,* April 15, 2011.
- MOE, *Ontario Environmental Protection Act, Regulation 347, General – Waste Management*, as amended.

The scope of work for the Phase III ESA consisted of drilling nine boreholes (BH16-1through BH16-9) distributed around the perimeter of the West Memorial building property to provide adequate coverage. Representative soil samples were collected from each borehole and submitted for laboratory analysis of petroleum hydrocarbon fractions F1 to F4 (PHCs F1 to F4), volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), pH, and metals. One composite soil sample collected from all boreholes was analyzed for landfill waste disposal characterization for soil management purposes during potential future construction.

Overburden at the Site generally consisted of topsoil underlain by a fine to medium sand fill with crushed stone and rock fragments. Brick debris was identified at most borehole locations. Bedrock was encountered at depths ranging from 1.22 metres below grade surface (mbgs) to 3.97 mbgs. Groundwater was not observed in the boreholes at the time of drilling.

Combustible soil vapour concentrations were measured in each of the soil samples (where possible) during the Phase III ESA field program. Combustible soil vapour concentrations ranged from non-detect (< 5 parts per million by volume (ppmv)) in the majority of locations to 5 ppmv in one sample at each of BH16-2 and BH16-4. Total organic vapour concentrations in soil ranged from non-detect (<0.02 ppmv) in the majority of locations to 8 ppmv in one sample at each of BH16-2 and BH16-4.

In total, fourteen soil samples were submitted for laboratory analysis of VOCs, PHCs F1 to F4, PAHs, metals/inorganics and pH, and ten soil samples were submitted for laboratory analysis of PCBs. One field duplicate sample, BH16-7, was collected from BH16-7 SS2. The duplicate sample was submitted for laboratory analysis of all parameters discussed. One composite soil sample was collected from all boreholes and submitted for analysis for waste classification purposes.

Measured concentrations of the contaminants of concern were below the applicable guidelines/standards in soil samples submitted for laboratory analysis, with the exception of pH, PAH, and metals exceedances in various soil samples**.** The relatively minor contaminant impacts are anticipated to be associated with the nature of the soil material used as fill around the building foundation.

The perimeter area of soil surrounding the site building was approximately 1,425 m^2. Using a halfway to clean hole approach, approximately 900 m^2 of soil exceeded the CCME guidelines. As bedrock was encountered at depths ranging from 1.22 mbgs to 3.97 mbgs, the average depth of 2.6 mbgs was used to calculate the total volume of impacted soil. This equates to a volume of approximately 2,340 m^3 of soil that exceeds the CCME guidelines at the Site.

A halfway to clean hole approach was also used to calculate an area of approximately 800 m^2 of soil that exceeded the Ontario Table 1 standards. Using the same average depth to bedrock of 2.6 mbgs, this equates to a volume of approximately 2,080 m^3 of soil that exceeds the Ontario Table 1 standards.

Overall, Stantec recommends that soil and soil-like material that is disturbed and excavated within the project bounds be managed according to the following procedures:

1. Retain/reuse within the site bounds as much as possible, including soil that does not meet the Ontario Table 1 standards or the CCME guidelines. Soil to be reused must meet the applicable required geotechnical specifications.
2. If suitable reuse options are not available and the material must be disposed of off-site, it must be placed at a MOECC-approved landfill as it does not satisfy the inert fill quality

criteria for provincially regulated land as we understand it to be applied by the MOECC. In addition, the soil cannot be re-used off-site on federally regulated land as clean fill. Based on the waste classification analyses undertaken as part of this Phase III ESA, the material may be disposed of at a non-hazardous waste landfill. However, more current laboratory results may be required by the receiving landfill at the time soil removal is ready to commence.

If soil exceeding the CCME guidelines will remain on the Site, complete a preliminary quantitative risk assessment (PQRA) to determine if the exceedances may result in an unacceptable risk to the site-specific receptors. In the event that the exceedances are considered to represent an unacceptable risk to site-specific receptors, the PQRA would recommend appropriate remedial and/or risk management measures.

The National Classification Systems for Contaminated Sites (NCSCS) score sheet was completed for the Site. It was characterized as a Class 2 site or medium priority for action.

The statements made in this Executive Summary text are subject to the limitations included in Section 7 and are to be read in conjunction with the remainder of this report.

1.0 INTRODUCTION

1.1 GENERAL

Stantec Consulting Ltd. (Stantec) was retained by Public Services and Procurement Canada (PSPC, formerly Public Works and Government Services Canada) to conduct a Phase III Environmental Site Assessment (ESA) of the West Memorial Building located at 344 Wellington Street, Ottawa, Ontario (the "Site"). The Site has been assigned Directory of Federal Real Property (DFRP) # 08837001. A key plan, illustrating the Site location, is provided on Figure 1, **Appendix A.**

The on-site building (West Memorial Building) is managed by PSPC and is not currently occupied. Stantec understands that proposed construction/rehabilitation of the building may result in excavation of soils from the perimeter of the building.

1.2 SITE DESCRIPTION

1.2.1 Subject Property

The West Memorial Building is located at 344 Wellington Street, Ottawa, Ontario. The total area of the Site is 8.2 hectares. The Site is bound by Wellington Street to the north, Lyon Street to the east, Sparks Street to the south, and Bay Street to the west. The Site consists of a multi-storey office building, with a footprint that covers approximately 98% of the Site area. The building is currently vacant but may be renovated for future federal government office and courtroom space. Reportedly, there are two basement levels under the entire footprint of the building.

A key plan, illustrating the site location is provided on Figure 1, **Appendix A**. A more detailed plan is provided on Figure 2, **Appendix A.**

1.2.2 Previous Reports

Stantec reviewed various reports provided by PSPC for the West Memorial Building. A complete list of the reports provided and a brief summary of each report is found below. Results from the Geofirma Supplemental Phase II ESA conducted in 2014/15 are included in **Table E-1.**

- Phase I Environmental Site Assessment, West Memorial Building, 344 Wellington Street, Ottawa, Ontario, Ecological Services for Planning Ltd., March 1997.

  A Phase I ESA was completed in 1997 and identified one area of potential environmental concern (APEC) consisting of a former fuel oil underground storage tank (UST) located in the northwest corner of the Site. The UST was reportedly removed in 1988 but there was no report documenting the condition of the UST or surrounding soil upon removal.

- Phase II Environmental Site Assessment West Memorial Building, Ottawa, Ontario, Beatty Franz and Associates Limited, February, 1999.

  This Phase II ESA, completed in 1999, consisted of drilling six shallow boreholes in the vicinity of the former UST. The soil consisted of fill on inferred bedrock to depths ranging from 1.7 to 2.7 metres below grade surface (mbgs). No groundwater monitoring wells were installed and the shallow water table was not observed during the drilling program. In addition, the former UST and associated distribution lines were not observed. Four soil samples were submitted for laboratory analysis of benzene, toluene, ethylbenzene, and xylenes (BTEX), and total petroleum hydrocarbons (gas, diesel, and heavy oil). No concentrations exceeded the federal soil guidelines in effect at the time. No further work was recommended.

- Draft Geotechnical Investigation, West Memorial Building 344 Wellington Street, Ottawa, Ontario, Golder Associates, July, 2014.

  The Geotechnical Investigation completed by Golder in 2014 was conducted in order to assess the general soil, bedrock, and groundwater conditions at the Site by drilling a total of six boreholes. One borehole was advanced to approximately 15.7 metres into the bedrock at the exterior loading dock area and five were advanced to approximately 3.3 to 4.9 metres into the bedrock within the basement of the structure. Groundwater was encountered at approximately 2.4 metres below the existing pavement surface of the second underground parking level.

- Supplemental Phase II Environmental Site Assessment, West Memorial Building, 344 Wellington Street, Ottawa, Ontario, Geofirma Engineering Ltd., January 7, 2015.

  The Supplemental Phase II ESA completed by Geofirma in 2014/15 consisted of drilling a total of 10 shallow boreholes. Six boreholes were drilled in the northwest corner of the Site near the former UST and four in the Cameron Lot, the east portion of the Site adjacent to Lyon Street, to assess a former diesel aboveground storage tank (AST) that had been installed inside the building at the bottom of an air duct. An electromagnetic survey was also completed in the northwest corner of the Site to confirm the absence of the UST. Hand digging completed in the area of two anomalies confirmed that the UST had been removed. The soil in both areas consisted of poor quality fill on inferred bedrock to depths ranging from 1.2 to 3.35 mbgs. No groundwater monitoring wells were installed and the shallow water table was not observed during the drilling program. Soil samples were submitted for laboratory analysis of one or more contaminants of concern (BTEX, petroleum hydrocarbons four fractions (PHCs F1 to F4), metals, and polycyclic aromatic hydrocarbons (PAHs)). Concentrations of one or more PAHs exceeded the federal soil guidelines in both assessed locations. Concentrations of copper exceeded the federal soil guideline in the northwest corner of the Site.

1.3 PHYSICAL SETTING

1.3.1 Surficial Geology

According to the Geological Survey of Canada's Map 1506A - Ottawa, scale 1:50,000, the native surficial soils in the area consist of clay and silt, underlying erosional terraces. Based on Stantec's subsurface investigation and those completed by others at the Site, the subsurface soil profile consisted of top soil, overlying medium brown sand fill.

1.3.2 Bedrock Geology

According to the Geological Survey of Canada's Map 1508A – Ottawa/Hull, scale 1:125,000, the bedrock geology of the Site and surrounding properties consists of limestone with some shaley partings: some sandstone in basal parts. During Stantec's investigation at the Site, bedrock was encountered at depths ranging from 1.22 to 3.97 mbgs.

1.3.3 Site Services

The building is currently vacant but may be renovated for future federal government office and courtroom space. Maintenance of infrastructure to keep the building functional occurs on a regular basis.

Based on the utility clearances obtained as part of this Phase III ESA, site services include: municipal water and sewer, private steam tunnel systems, hydro, telephone, and fibre optic cables.

1.3.4 Topography and Drainage

According to the Geological Survey of Canada's Map 31G/5 - Ottawa, scale 1:50,000 and site observations, the topography of the Site and surrounding properties is flat with moderate changes in elevation, and is at a similar grade to adjacent properties. Groundwater is anticipated to flow north towards the Ottawa River, approximately 250 metres from the Site.

Storm water runoff is expected to drain to catch basins on streets adjacent to the West Memorial property.

1.4 REGULATORY FRAMEWORK

The regulatory framework used to evaluate and compare the soil quality data was found in the following documents:

- Canadian Council of the Ministers of Environment (CCME), *Canada Wide Standards (CWS) for Petroleum Hydrocarbons (PHC)*, January, 2008.

- CCME, Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health, on-line summary accessed in February, 2016.

- Ministry of the Environment (MOE), Soil, Ground Water and Sediment Standards for Use under Part XV.1 of the Environmental Protection Act, April 15, 2011 (Table 3 and Table 1).

- MOE, Ontario Environmental Protection Act, Regulation 347, General – Waste Management, as amended.

As the Site is currently federal property, the federal guidelines were used to evaluate the extent of impacted soil. Ontario standards were used when a federal guideline was not available. The Ontario Table 1 soil standards and leachate criteria from Ontario Regulation 347 were used to determine suitable management options for excess fill material potentially generated during proposed future construction.

Details regarding the selection of the guidelines and standards are presented in **Appendix B**.

1.5 SCOPE OF WORK

The Phase III ESA was completed in accordance with Required Services (RS) 1.3 items (a), (b), (c), (d), (e), and (h), as specified in Standing Offer EN438-150984.

The following scope of work for the Phase III ESA was completed at the request of PSPC and was limited to a soil investigation with the drilling of nine boreholes. At the request of the PSPC, no soil sampling was conducted in the loading dock area or beneath the building, as no soil is assumed to be present between the building and bedrock. The scope is generally based on the requirements of the Canadian Standards Association (CSA) *Phase II Environmental Site Assessment* (a National Standard of Canada (reaffirmed 2008)), CAN/CSA-Z769-00, March 2000.

The Phase III ESA program included the following tasks:

- Complete private and public utility locates in the area of the proposed drilling.

- Prepare a checklist-style site specific health and safety plan for the field program.

- Advance nine exterior boreholes, placed around the perimeter of the building, to refusal on inferred bedrock at depths ranging from 1.2 to 3.3 mbgs.

- Submit one soil sample per borehole for laboratory analysis of all contaminants of concern, except polychlorinated biphenyls (PCBs) which were submitted from select boreholes. Where deeper soil is present, submit a second soil sample from depths greater than 1.5 mbgs. This was proposed for four of the nine sampling locations.

- Collect and submit one composite soil sample for landfill waste disposal characterization.

- Obtain geographical co-ordinates of the sampling locations in the Universal Transverse Mercator (UTM) system.

- Collect and submit 10% field duplicate samples for soil.
- Submit two soil samples to Stantec's geotechnical laboratory for sieve analysis to confirm classification of on-site soils as coarse textured.
- Estimate the volumes of contaminated soil at the Site.
- Identify and evaluate remedial measures and risk management options for on-site contaminated soil.
- Determine the most appropriate and cost-effective course of action for managing the on-site contaminated soil.
- Calculate the National Classification System for Contaminated Sites (NCSCS) score based on soil concentration data.
- Summarize the relevant information required for the Federal Contaminated Sites Inventory (FCSI) listing for the Site.
- Prepare a soil management plan to manage and dispose of excess soil that may be generated by future construction activities at the Site.
- Prepare occupational health and safety procedures for workers that may come in contact with contaminated soil during future constructions activities at the Site.
- Provide the results of the Phase III ESA in a written report.

2.0 FIELD INVESTIGATION

2.1 METHODOLOGY

Prior to commencing any field activities, borehole locations were cleared of underground services through consultation with a private utility locate company as well as public utility locate services.

The nine boreholes were drilled by Strata Drilling Group, of Almonte, Ontario, using a Geoprobe Model M420 equipped with sampling equipment to assess the soil conditions. Soil samples were collected from the boreholes at regular depth intervals using Macro Core samplers.

Stantec personnel visually classified and logged the subsurface conditions encountered within each of the boreholes at the time of the field work. Soil samples were analyzed in the field for combustible and total organic vapour concentrations using an RKI Eagle 2 Sample Draw Gas Monitor calibrated to hexane and isobutylene, respectively, and operating in methane elimination mode.

The soil samples were collected in accordance with the protocols established by the Canadian Standards Association's Guideline *Z769-00 Phase II Environmental Site Assessments* and standard industry practices to ensure that all data collected was of high quality and was representative of site conditions.

UTM co-ordinates were not recorded but the positions of the nine boreholes were measured from features of the on-site building infrastructure. These positions have been shown to scale on the figures provided in **Appendix A**.

Due to the presence of underground steam tunnels, BH16-2 could not be drilled in the proposed location and had to be moved several metres to the north.

Due to limited soil recovery during drilling activities, only one soil sample was submitted to Stantec's geotechnical laboratory for sieve analysis to confirm classification of on-site soils as coarse textured. Results are further detailed in a sieve analysis report attached as **Appendix G.**

The soil laboratory results were compared to the applicable federal guidelines and provincial standards.

The method for this scope of work is further detailed in **Appendix C.**

2.2 LABORATORY ANALYTICAL PROGRAM

The soil samples were submitted to Maxxam Analytics (Maxxam) in Ottawa, Ontario, for laboratory analysis of the contaminants of concern as outlined in Table 1 below. Maxxam is

accredited by CALA, the Canadian Associates for Laboratory Accreditation Inc., for the required analytical methods, and employs in-house quality assurance and quality control (QA/QC) programs to govern sample analysis, including the analyses of method blanks, spiked blanks, and the analyses of duplicates (10%) for each sample batch.

In total, fourteen soil samples were submitted for laboratory analysis of VOCs, PHCs F1 to F4, PAHs, metals/inorganics and pH. Due to miscommunication with the laboratory, ten soil samples, instead of five, were submitted for laboratory analysis of PCBs. One field duplicate sample, BH16-7, was collected from BH16-7 SS2. The duplicate sample was submitted for laboratory analysis of all parameters discussed. One composite soil sample was collected using fill material from all boreholes and submitted for analysis for waste classification purposes.

Table 1: Laboratory Analytical Program

Sample Location	Historical/Current Environmental Concerns	Soil Analyses
• BH16-1 SS2 • BH16-1 SS5 • BH16-2 SS2 • BH16-2 SS4 • BH16-3 SS2 • BH16-3 SS4 • BH16-4 SS2 • BH16-4 SS3 • BH16-4 SS6 • BH16-5 SS2 • BH16-6 SS2 • BH16-7 SS2 and duplicate BH16-7 • BH16-8 SS3 • BH16-9 SS3	Fill of unknown quality	PHC F1-F4, VOCs, PAHs, metals, and pH
• BH16-1 SS2 • BH16-2 SS2 • BH16-3 SS2 • BH16-4 SS3 • BH16-5 SS2 • BH16-6 SS2 • BH16-7 SS2 and duplicate BH16-7 • BH16-8 SS3 • BH16-9 SS3		PCBs
Composite from all boreholes	Soil disposal	Waste classification analyses

3.0 RESULTS

3.1 SOIL

3.1.1 Stratigraphy

Overburden at the Site generally consisted of topsoil underlain by a fine to medium sand fill with crushed stone and rock fragments. Brick debris was also identified at most borehole locations. Bedrock was encountered at depths of 1.22 metres below grade surface (mbgs) to 3.97 mbgs. Stratigraphy encountered by Stantec is similar to that described by Geofirma's Supplemental Phase II ESA in 2014 as well as Golder's Geotechnical Investigation in 2014. Detailed descriptions of stratigraphy observed are provided on the Borehole Logs in **Appendix D**.

3.1.2 Combustible Soil Vapour Concentrations

The combustible soil vapour concentrations measured during the Phase IIII ESA are documented on the borehole logs and presented in **Appendix D**. Petroleum odours were not detected at the borehole locations. Combustible soil vapour concentrations ranged from non-detect (< 5 parts per million by volume (ppmv)) in the majority of locations to 5 ppmv in one sample from each of BH16-2 and BH16-4. Total organic vapour concentrations in soil ranged from non-detect (<0.02 ppmv) in the majority of locations to 8 ppmv in one sample at each of BH16-2 and BH16-4. The soil samples were screened for both combustible and total organic vapours to address a wide range of contaminants that may be present in the fill material.

There are no regulatory criteria for soil vapours; however, elevated vapour concentrations are generally indicative of the presence of volatile parameters. Concentrations vary with parameter type, concentration, and age, and it should be noted that the readings are only intended to be used as a field screening tool to provide a qualitative measure of hydrocarbon levels within the subsurface. The readings do not provide a quantitative measure of analytical soil results.

3.1.3 Soil Analytical Results

The analytical results of the on-site soil samples submitted for laboratory analysis of the contaminants of concern were compared to the CCME, *Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health*, for commercial land use and fine-textured soil (on-line summary table viewed February, 2015, and the *Canada Wide Standards for PHC in Soil*. The analytical results were also compared to the Ontario Table 1 Full Depth Background Site Condition Standards residential/parkland/institutional/industrial/ commercial/community property use for soil management purposes during construction. Summary analytical results are presented in Table E-1 in **Appendix E.** Historical results obtained from assessment work completed by others at the Site in 2014 are tabulated in Table E-2 in **Appendix E**. Results of the waste classification analyses are presented in Table E-3 in **Appendix E.** Laboratory Certificates of

Analysis associated with the samples analysed as part of this Phase III ESA are provided in **Appendix F**.

3.1.3.1 pH

Measured concentrations of pH analyzed in the 14 soil samples submitted for laboratory analysis were within the applicable federal and provincial ranges, with the exception of BH16-4 SS6 where pH was measured outside of the federal pH range (9.14 vs. 6 to 8).

3.1.3.2 Petroleum Hydrocarbons (F1 to F4)

Measured concentrations of PHCs analysed in the 14 soil samples submitted for laboratory analysis were less than the applicable federal guidelines and provincial standards.

3.1.3.3 Volatile Organic Compounds (VOCs)

Measured concentrations of the VOCs analysed in the 14 soil samples submitted for laboratory analysis were less than the applicable federal guidelines and provincial standards.

3.1.3.4 Polycyclic Aromatic Hydrocarbons (PAHs)

Measured concentrations of the PAHs analysed in the 14 soil samples submitted for laboratory analysis were less than the applicable federal guidelines and provincial standards, with the exception of the samples identified in Table 2 below.

Table 2: PAH Exceedences

Borehole	Sample	Exceeds CCME Guidelines	Exceeds Ontario Table 1 Standards
BH16-1	SS2, SS5	Phenanthrene	None
BH16-2	SS2	Phenanthrene	None
BH16-2	SS4	Naphthalene, phenanthrene	Acenaphthylene, anthracene, fluoranthene, phenanthrene, pyrene, benzo(a)anthracene, benzo(a)pyrene, benzo(b/j)fluoranthene, dibenzo(a,h)anthracene, indeno(1,2,3-cd)pyrene
BH16-3	SS2	Phenanthrene	None
BH16-4	SS3	Naphthalene, phenanthrene[1]	None

Table 2: PAH Exceedences

Borehole	Sample	Exceeds CCME Guidelines	Exceeds Ontario Table 1 Standards
BH16-6	SS2	Acenaphthene, fluorene, naphthalene, phenanthrene	Acenaphthene, anthracene, fluoranthene, fluorene, total methylnaphthalene, naphthalene, phenanthrene, pyrene, benzo(a)anthracene, benzo(a)pyrene, benzo(b/j)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, indeno(1,2,3-cd)pyrene
BH16-7	Duplicate of BH16-7 SS2	Napthalene, phenanthrene	Anthracene, fluoranthene
BH16-8	SS3	Phenanthrene	None

1 Concentration of phenanthrene measured in laboratory duplicate of BH16-4 SS3 also exceeds the CCME guideline.

3.1.3.5 Polychlorinated Biphenyls (PCBs)

Measured concentrations of the PCBs analysed in the ten soil samples submitted for laboratory analysis were less than the applicable federal guidelines and provincial standards.

3.1.3.6 Metals and General Inorganics

Measured concentrations of the metal and general inorganics parameters analysed in the 14 soil samples submitted for laboratory analysis were less than the applicable federal guidelines and provincial standards, with the exception of the samples identified in Table 3 below.

Table 3: Metals Exceedances

Borehole	Sample	Exceeds CCME Guidelines	Exceeds Ontario Table 1 Standards
BH16-4	SS3	None	Barium
BH16-6	SS2	Copper, lead, zinc	Antimony, cadmium, copper, lead, mercury, silver, zinc
BH16-7	Duplicate of BH16-7 SS2	Copper	Antimony, copper, lead, mercury
BH16-9	SS3	None	Hexavalent chromium

3.1.4 Waste Classification Results

One composite soil sample was prepared from aliquots of soil collected from each of the nine boreholes drilled at the Site. The composite sample was submitted for laboratory analysis of waste classification parameters. Waste classification analyses were completed in accordance with the *Ontario Environmental Protection Act, Regulation 347, General – Waste Management*, as amended, and compared to the leachate criteria provided in Schedule 4 of the regulation.

The analysis indicated that the soil is not leachate toxic (i.e., it is non-hazardous) and therefore can be disposed at a local MOE-approved non-hazardous solid waste landfill. The waste classification results are presented in Table E-2 in **Appendix E.** Laboratory Certificates of Analysis are provided in **Appendix F**.

3.2 QUALITY ASSURANCE/QUALITY CONTROL

Based on the Maxxam Analytics Inc. QA/QC Interpretation Guide, relative percent difference (RPD) values for soil samples and their duplicates should be less than or equal to 100% RPD to ensure consistencies in laboratory and field procedures, and sample homogeneity. However, the interpretation guide also states that a blind field duplicate has limited use for samples that cannot be homogenized (i.e., VOCs in soils) and the RPD calculation is only applicable when concentrations in the sample and its field duplicate are greater than five times the laboratory reportable detection limit (RDL).

A blind field duplicate soil sample was recovered from BH16-7 SS2 (called BH16-7) and submitted for laboratory analysis of PHCs F1 to F4, VOCs, PAHs, PCBs, and metals. The RPD values calculated ranged from 0% to 175.7%, with a total of six values (lead, fluoranthene, phenanthrene, pyrene, benzo(b,j)fluoranthene, and benzo(a)pyrene total equivalents) higher than 100%. The high RPD values are attributed to inconsistencies in sample make-up due to the limited soil recovery in the boreholesand the lack of homogeneity in the fill at the Site.

3.3 DISCUSSION OF RESULTS

3.3.1 PAHs

Soil samples collected from BH16-2, BH16-6, and BH16-7 exceeded both the CCME guidelines and the Ontario Table 1 standards for several PAH parameters. In addition, soil samples collected from BH16-1, BH16-2, BH16-3, BH16-4, BH16-6, BH16-7 (laboratory duplicate), and BH16-8 exceeded the CCME guidelines for phenanthrene and BH16-4 exceeded the CCME guideline for naphthalene. PAHs are present in soil in almost the entire perimeter of the Site.

3.3.2 Metals and Inorganics

Soil samples collected from BH16-6 and BH16-7 exceeded both the CCME guidelines and the Ontario Table 1 standards for several metals parameters. In addition, soil samples collected from BH16-4 and BH16-9 exceeded the Ontario Table 1 Standards for barium and hexavalent chromium, respectively. The majority of metals present in the soil were located in the northwestern portion of the Site.

3.3.3 pH

One soil sample collected from BH16-4 SS6, at a depth of 3.05to 3.96 metres below ground surface, exceeded the CCME guideline range for pH.

4.0 SOIL MANAGEMENT PLAN

The soil sampling undertaken as part of the Phase III ESA, as well as the soil sampling conducted by Geofirma in 2014/2015, identified locations where soil impacts may be encountered during construction, as shown on Figure 3 in **Appendix A**. Concentrations of contaminants of concern exceeded both the applicable CCME guidelines, as shown on Figure 4 in **Appendix A**, and the Ontario Table 1 standards, as shown on Figure 5 in **Appendix A**, on all sides of the site building. As the site building is understood to be constructed directly on top of bedrock, impacted soil is interpreted to be present along the site perimeter, between the building and site boundary. Impacts were measured at varying depths; therefore, the vertical extent of impact is interpreted to be the full depth of soil, from the ground surface to the bedrock surface.

The perimeter area of soil surrounding the site building was approximately 1,425 m^2. Using a halfway to clean hole approach, as shown on Figure 4 in **Appendix A**, approximately 900 m^2 of soil exceeded the CCME guidelines. As bedrock was encountered at depths ranging from 1.22 mbgs to 3.97 mbgs, the average depth of 2.6 mbgs was used to calculate the total volume of impacted soil. This equates to a volume of approximately 2,340 m^3 of soil that exceeds the CCME guidelines at the Site.

A halfway to clean hole approach was also used to calculate an area of approximately 800 m^2 of soil that exceeded the Ontario Table 1 standards, as shown on Figure 5 in **Appendix A**. Using the same average depth to bedrock of 2.6 mbgs, this equates to a volume of approximately 2,0800 m^3 of soil that exceeds the Ontario Table 1 standards.

There is no requirement, either federally or in the province of Ontario, to remediate soils contained on a property, provided the impacted soils are not adversely impacting the soil quality in off-site areas. The nature of the soil impacts identified in the soil surrounding the West Memorial Building are likely associated with the soil material used as fill around the building foundation. The impacts in this soil are not typically mobile and are unlikely to adversely impact off-site areas. In addition, the nearby off-site areas likely contain fill material of similar chemical quality. Therefore, Stantec recommends that soil and soil-like material that is disturbed and excavated within the project bounds be managed according to the following procedures:

1. Retain/reuse within the site bounds as much as possible, including soil that does not meet the soil quality standards provided in the Ontario Table 1 Standards or CCME guidelines. Soil to be reused must meet the applicable required geotechnical specifications.

2. If suitable reuse options are not available and the material must be disposed of off-site, it must be placed at a MOECC-approved landfill as it does not satisfy the inert fill quality criteria for provincially regulated land as we understand it to be applied by the MOECC. In addition, the soil cannot be reused off-site on federally regulated land as clean fill. The material may be disposed of at a non-hazardous waste landfill.

5.0 NCSCS AND FCSI

The CCME developed the National Classification System for Contaminated Sites (NCSCS) as a method for evaluating contaminated sites according to their current or potential adverse impact on human health and the environment. The Site yielded a NCSCS score of 50.2 and a site classification category of Class 2, medium priority for action. The NCSCS score sheet can be found in **Appendix H.**

Information required to update the Federal Contaminated Sites Inventory (FCSI) listing for this Site is provided in **Appendix I.**

6.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the results of the Phase III ESA, Stantec made the following conclusions and recommendations:

- Nine boreholes were advanced and terminated at bedrock refusal.
- Groundwater was not observed in the boreholes at the time of drilling.
- Overburden at the site generally consisted of topsoil underlain by a fine to medium sand fill with crushed stone and rock fragments. Brick debris was also identified at most borehole locations. Bedrock was encountered at depths of 1.22 mbgs to 3.97 mbgs.
- The applicable soil guidelines/standards for the Site can be found in the following documents:
    - Canadian Council of the Ministers of Environment (CCME), *Canada Wide Standards (CWS) for Petroleum Hydrocarbons (PHC)*, January, 2008.
    - CCME, *Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health,* on-line summary accessed in February, 2016.
    - Ministry of the Environment (MOE), *Soil, Ground Water and Sediment Standards for Use under Part XV.1 of the Environmental Protection Act,* April 15, 2011.
    - MOE, *Ontario Environmental Protection Act, Regulation 347, General – Waste Management*, as amended.
- Combustible soil vapour concentrations were measured in the soil samples (where possible) collected during the Phase III ESA. Combustible soil vapour concentrations ranged from non-detect (< 5 parts per million by volume (ppmv)) in the majority of locations to 5 ppmv in one sample at each of BH16-2 and BH16-4. Total organic vapour concentrations in soil ranged from non-detect (<0.02 ppmv) in the majority of locations to 8 ppmv in one sample at each of BH16-2 and BH16-4.
- Measured concentrations of the contaminants of concern were below the applicable guidelines/standards in soil samples submitted for laboratory analysis, with the exception of pH, PAH, and metals exceedances in various soil samples**.** The relatively minor contaminant impacts are anticipated to be associated with the nature of the soil material used as fill around the building foundation.
- Approximately 2,340 m^3 of soil surrounding the building exceeds either the CCME guidelines or the Ontario Table 1 standards. This soil is interpreted to be impacted and

will require management during possible future construction activities. More current laboratory results may be required by the receiving landfill at the time soil removal is ready to commence.

- If soil exceeding the CCME guidelines will remain on the Site, complete a preliminary quantitative risk assessment (PQRA) to determine if the exceedances may result in an unacceptable risk to the site-specific receptors. In the event that the exceedances are considered to represent an unacceptable risk to site-specific receptors, the PQRA would recommend appropriate remedial and/or risk management measures.

- If soil exceeding the CCME guidelines is to be removed from the Site during future construction activities, as it cannot be accommodated within the Site bounds or does not meet the required geotechnical specifications, it must be placed at a MOECC-approved landfill as it does not satisfy the inert fill quality criteria for provincially regulated land as we understand it to be applied by the MOECC. In addition, the soil cannot be reused off-site on federally regulated land as clean fill. The waste classification analyses completed for the Phase III ESA indicated that the material may be disposed of at a non-hazardous waste landfill.

6.1 CONSTRUCTION WORKER HEALTH AND SAFETY PLAN

Although risk to human health has not been characterized for this Site, soil concentrations of several contaminants of concern exceeded generic guidelines. Therefore, in the event of future excavation activities, in order to protect construction workers, a site-specific health and safety plan (HASP) should be prepared in accordance with applicable Ontario Ministry of Labour health and safety regulations. The HASP should be designed based on the planned work, and should aim to minimize potential human health exposure pathways to protect construction workers. The following potential exposure risks shall be addressed in the HASP:

- Protection of construction workers from dermal exposure to contaminated soil, as well as particulate inhalation, and accidental ingestion of soils at the Site. As a minimum, this will entail workers wearing long sleeve coveralls, disposable nitrile gloves, and a dust mask when working in excavations. Additionally, workers should be advised to wash both hands and face prior to eating.

These requirements are in addition to any other health and safety requirements under the Occupational Health and Safety Act and its Regulations, including, but not limited to, excavation safety.

Implementation of a dust mitigation plan is also recommended during construction activities. Elements of the plan should include:

- Development and implementation of procedures for stockpiling excavated soil on-site to prevent erosion, transport, and leaching of contaminants; and

- Development and implementation of dust suppressant techniques such as continuous misting with water, which may be amended with an appropriate surfactant, during soil disturbance. Other dust suppression techniques may include treatment of soil with a wetting agent prior to soil disturbing activity, use of dust suppressants or covers on soil stockpiles and regulating vehicle speed.

The property owner will be responsible for advising those conducting or overseeing the subsurface excavation of the site conditions and the elements to be included in the HASP for the work. Records of such notifications should be kept in a log.

7.0 LIMITATIONS

This report documents work that was performed in accordance with generally accepted professional standards at the time and location in which the services were provided. No other representations, warranties or guarantees are made concerning the accuracy or completeness of the data or conclusions contained within this report, including no assurance that this work has uncovered all potential liabilities associated with the identified property.

This report provides an evaluation of selected environmental conditions associated with the identified portion of the property that was assessed at the time the work was conducted and is based on information obtained by and/or provided to Stantec at that time. There are no assurances regarding the accuracy and completeness of this information. All information received from the client or third parties in the preparation of this report has been assumed by Stantec to be correct. Stantec assumes no responsibility for any deficiency or inaccuracy in information received from others.

The opinions in this report can only be relied upon as they relate to the condition of the portion of the identified property that was assessed at the time the work was conducted. Activities at the property subsequent to Stantec's assessment may have significantly altered the property's condition. Stantec cannot comment on other areas of the property that were not assessed.

Conclusions made within this report consist of Stantec's professional opinion as of the time of the writing of this report, and are based solely on the scope of work described in the report, the limited data available and the results of the work. They are not a certification of the property's environmental condition. This report should not be construed as legal advice.

This report has been prepared for the exclusive use of the client identified herein and any use by any third party is prohibited. Stantec assumes no responsibility for losses, damages, liabilities or claims, howsoever arising, from third party use of this report.

This report is limited by the following:

1. Conditions observed on-site at the time of the 2016 field work.
2. Regulatory criteria in effect at the time the assessment was completed.

The locations of any utilities, buildings and structures, and property boundaries illustrated in or described within this report, if any, including pole lines, conduits, water mains, sewers and other surface or sub-surface utilities and structures are not guaranteed. Before starting work, the exact location of all such utilities and structures should be confirmed and Stantec assumes no liability for damage to them.

The conclusions are based on the site conditions encountered by Stantec at the time the work was performed at the specific testing and/or sampling locations, and conditions may vary

among sampling locations. Factors such as areas of potential concern identified in previous studies, site conditions (e.g., utilities) and cost may have constrained the sampling locations used in this assessment. In addition, analysis has been carried out for only a limited number of chemical parameters, and it should not be inferred that other chemical species are not present. Due to the nature of the investigation and the limited data available, Stantec does not warrant against undiscovered environmental liabilities nor that the sampling results are indicative of the condition of the entire site. As the purpose of this report is to identify site conditions which may pose an environmental risk; the identification of non-environmental risks to structures or people on the site is beyond the scope of this assessment.

Should additional information become available which differs significantly from our understanding of conditions presented in this report, Stantec specifically disclaims any responsibility to update the conclusions in this report.

8.0 SIGNATURES

This document entitled Phase III Environmental Site Assessment, West Memorial Building, 344 Wellington Street, Ottawa, ON (DFRP #08837), was prepared by Stantec Consulting Ltd. ("Stantec") for the account of Public Services and Procurement Canada (the "Client"). This document was prepared by Alistair Hart, B.Sc., with contributions from Kimberly Krug and Alicja Wierzbicka, and reviewed by Jane Yaraskavitch, M.Eng., P.Eng.

Prepared by _____

Alistair Hart, B.Sc.

Reviewed by _____

Jane Yaraskavitch, M.Eng., P.Eng.

This ESA was conducted in general accordance with the requirements of the Canadian Standards Association (CSA) *Phase II Environmental Site Assessment* (A National Standard of Canada (reaffirmed 2013)), CAN/CSA-Z769-00, March 2000, reaffirmed 2013.

Distribution: (3) Addressee

Appendix A

Figures

V:\01225\active\122511222\03_data\gis_cad\GIS\MXD\122511222_Fig01_Key_Plan.mxd
Revised: 2016-02-25 By: ncruikshank

February 2016
Project No. 122511222

Stantec

Notes

1. Coordinate System: NAD 1983 UTM Zone 18N
2. Base features produced under license with the Ontario Ministry of Natural Resources © Queen's Printer for Ontario, 2013.

Legend

- Site Location
- Highway
- Major Road
- Local Road
- Watercourse
- Waterbody
- Residential Area
- Wooded Area

Client/Project

Public Services and Procurement Canada (PSPC)
Phase III ESA
West Memorial Building
344 Wellington Street, Ottawa, ON

Figure No.

1

Title

Key Plan

V:\01225\active\122511222\03_data\gis_cad\GIS\MXD\122511222_Fig02_Site_Plan.mxd
Revised: 2016-03-30 By: clee

March 2016
Project No. 122511222

Stantec

Legend

- ⊕ Geofirma Borehole
- Golder Borehole
- Stantec Borehole

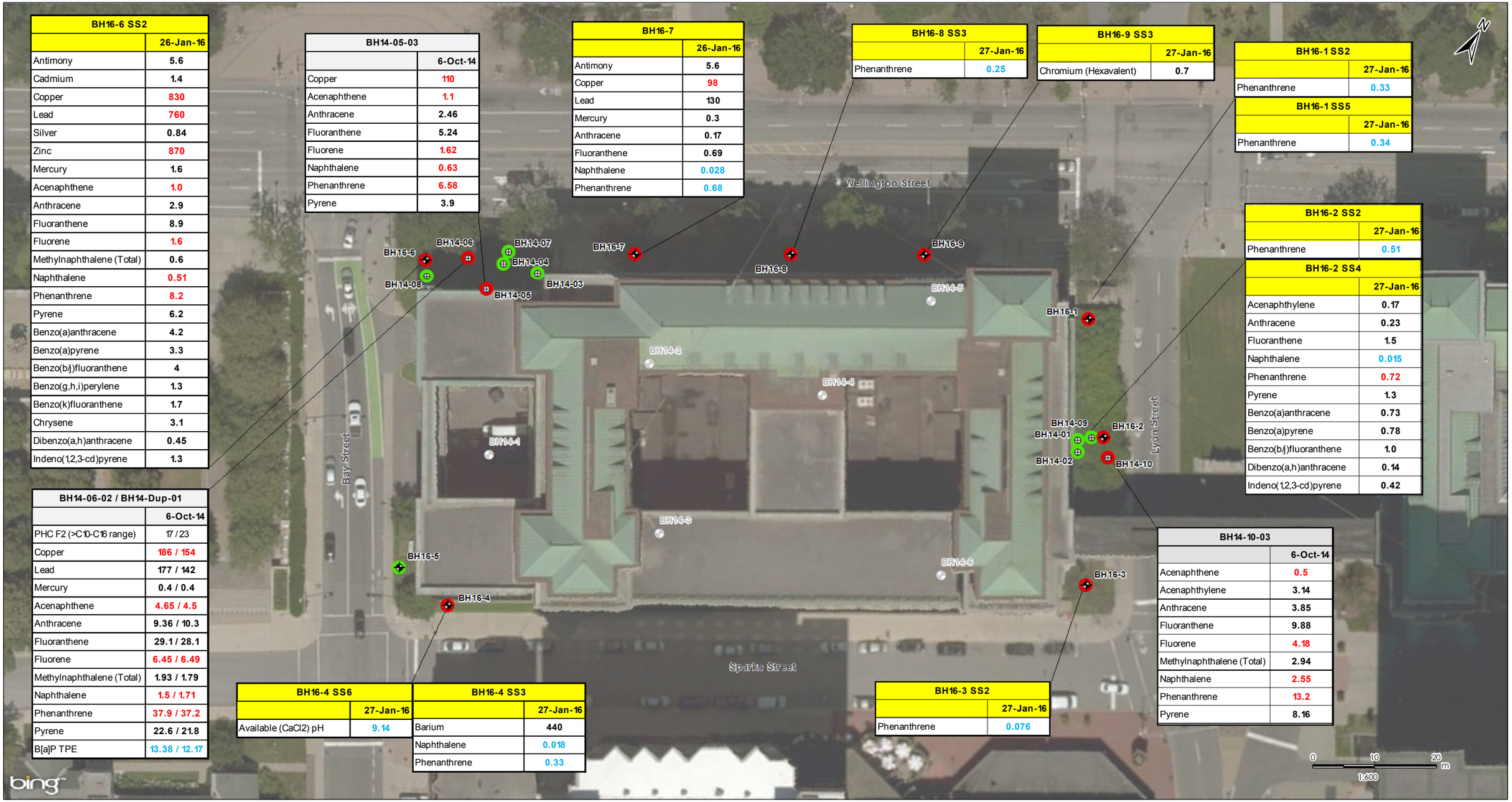
Notes

1. Coordinate System: NAD 1983 UTM Zone 18N
2. Building and Features: Geofirma Engineering Ltd, Figure A.3, 12/18/2014.
3. Orthoimagery: Microsoft (used with permission), 2015.

Client/Project
Public Services and Procurement Canada (PSPC)
Phase III ESA
West Memorial Building
344 Wellington Street, Ottawa, ON

Figure No.
2

Title
Site Plan



BH16-6 SS2	
	26-Jan-16
Antimony	5.6
Cadmium	1.4
Copper	830
Lead	760
Silver	0.84
Zinc	870
Mercury	1.6
Acenaphthene	1.0
Anthracene	2.9
Fluoranthene	8.9
Fluorene	1.6
Methylnaphthalene (Total)	0.6
Naphthalene	0.51
Phenanthrene	8.2
Pyrene	6.2
Benzo(a)anthracene	4.2
Benzo(a)pyrene	3.3
Benzo(b&j)fluoranthene	4
Benzo(g,h,i)perylene	1.3
Benzo(k)fluoranthene	1.7
Chrysene	3.1
Dibenzo(a,h)anthracene	0.45
Indeno(1,2,3-cd)pyrene	1.3

BH14-05-03	
	6-Oct-14
Copper	110
Acenaphthene	1.1
Anthracene	2.46
Fluoranthene	5.24
Fluorene	1.62
Naphthalene	0.63
Phenanthrene	6.58
Pyrene	3.9

BH16-7	
	26-Jan-16
Antimony	5.6
Copper	98
Lead	130
Mercury	0.3
Anthracene	0.17
Fluoranthene	0.69
Naphthalene	0.028
Phenanthrene	0.68

BH16-8 SS3	
	27-Jan-16
Phenanthrene	0.25

BH16-9 SS3	
	27-Jan-16
Chromium (Hexavalent)	0.7

BH16-1 SS2	
	27-Jan-16
Phenanthrene	0.33

BH16-1 SS5	
	27-Jan-16
Phenanthrene	0.34

BH16-2 SS2	
	27-Jan-16
Phenanthrene	0.51

BH16-2 SS4	
	27-Jan-16
Acenaphthylene	0.17
Anthracene	0.23
Fluoranthene	1.5
Naphthalene	0.015
Phenanthrene	0.72
Pyrene	1.3
Benzo(a)anthracene	0.73
Benzo(a)pyrene	0.78
Benzo(b&j)fluoranthene	1.0
Dibenzo(a,h)anthracene	0.14
Indeno(1,2,3-cd)pyrene	0.42

BH14-06-02 / BH14-Dup-01	
	6-Oct-14
PHC F2 (>C10-C16 range)	17 / 23
Copper	186 / 154
Lead	177 / 142
Mercury	0.4 / 0.4
Acenaphthene	4.65 / 4.5
Anthracene	9.36 / 10.3
Fluoranthene	29.1 / 28.1
Fluorene	6.45 / 6.49
Methylnaphthalene (Total)	1.93 / 1.79
Naphthalene	1.5 / 1.71
Phenanthrene	37.9 / 37.2
Pyrene	22.6 / 21.8
B[a]P TPE	13.38 / 12.17

BH16-4 SS6	
	27-Jan-16
Available (CaCl2) pH	9.14

BH16-4 SS3	
	27-Jan-16
Barium	440
Naphthalene	0.018
Phenanthrene	0.33

BH16-3 SS2	
	27-Jan-16
Phenanthrene	0.076

BH14-10-03	
	6-Oct-14
Acenaphthene	0.5
Acenaphthylene	3.14
Anthracene	3.85
Fluoranthene	9.88
Fluorene	4.18
Methylnaphthalene (Total)	2.94
Naphthalene	2.55
Phenanthrene	13.2
Pyrene	8.16

\\cd1218-f02\work_group2\01225\active\122511222\03_data\gis_cad\GIS\MXD\122511222_Fig03_EXCD.mxd
Revised: 2016-03-31 By: clee

March 2016
Project No. 122511222

Stantec

Notes
1. Coordinate System: NAD 1983 UTM Zone 18N
2. Building and Features: Geofirma Engineering Ltd, Figure A.3, 12/18/2014.
3. Orthoimagery: Microsoft (used with permission), 2015.

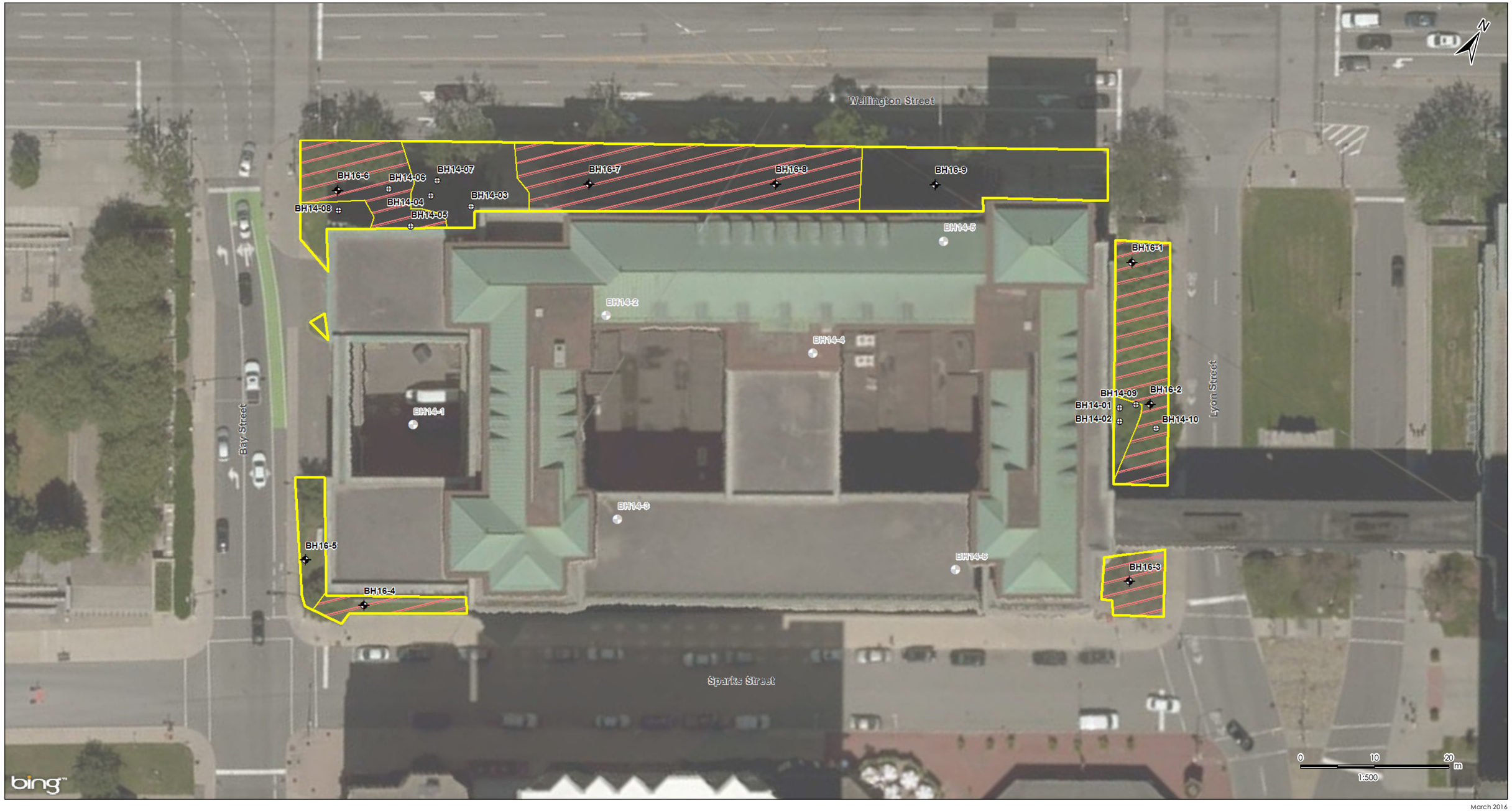
Legend
- Geofirma Borehole
- Golder Borehole
- Stantec Borehole
- Sampling Location Exceeds Criteria
- Sampling Location Does Not Exceed Criteria

1.05 Parameter Exceeds CCME Standards
1.05 Parameter Exceeds Ontario Table 1 Standards
1.05 Parameter Exceeds both CCME and Ontario Table 1 Standards

Client/Project
Public Services and Procurement Canada (PSPC)
Phase III ESA
West Memorial Building
344 Wellington Street, Ottawa, ON

Figure No.
3

Title
Soil Exceedences



V:\01225\active\122511222\03_data\gis_cad\GIS\MXD\122511222_Fig04_Soil_CCME.mxd
Revised: 2016-03-30 By: clee

March 2016
Project No. 122511222

Stantec

Legend

- Geofirma Borehole
- Golder Borehole
- Stantec Borehole
- Impacted Soil

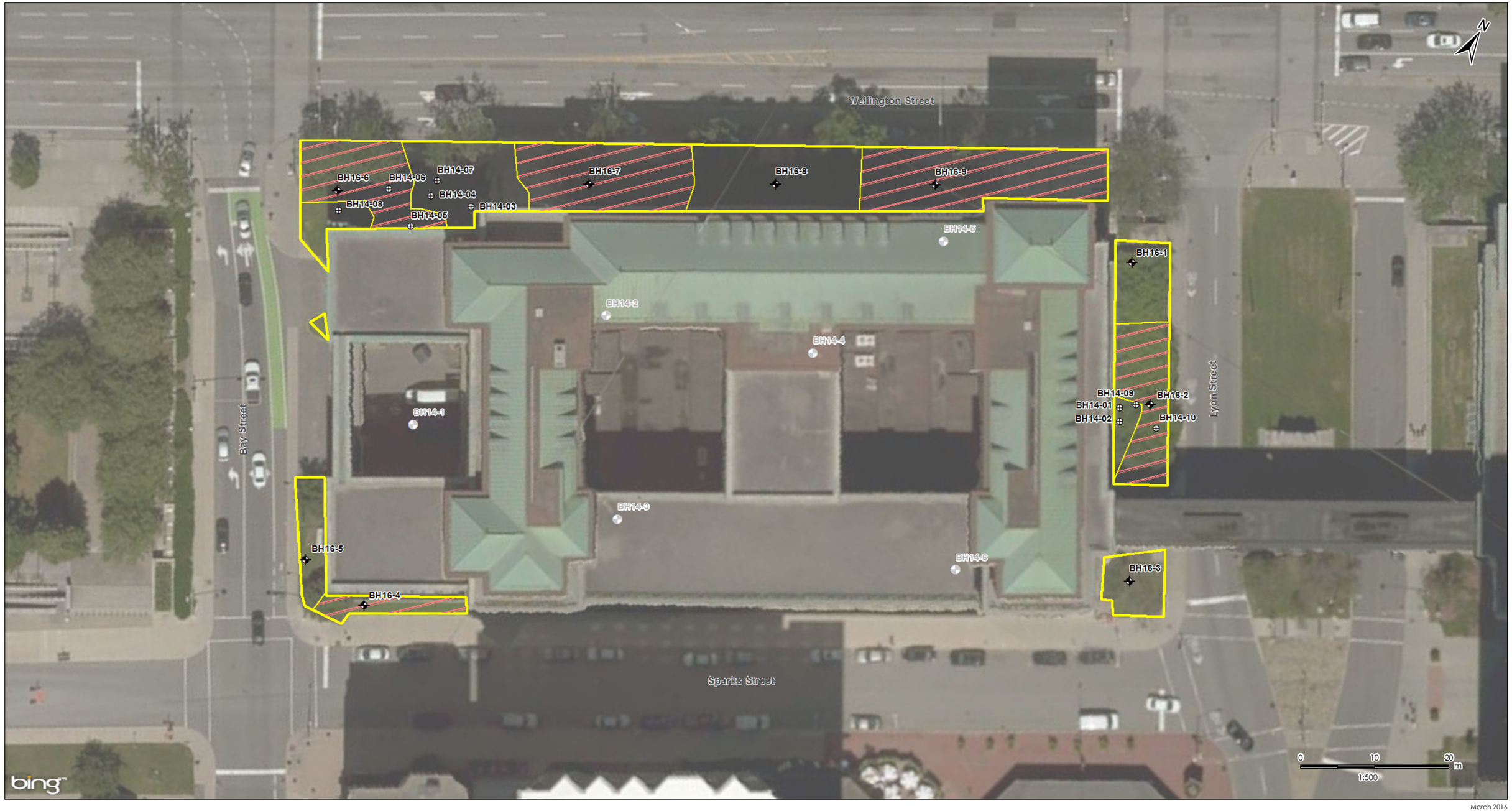
Notes

1. Coordinate System: NAD 1983 UTM Zone 18N
2. Building and Features: Geofirma Engineering Ltd, Figure A.3, 12/18/2014.
3. Orthoimagery: Microsoft (used with permission), 2015.

Client/Project
Public Services and Procurement Canada (PSPC)
Phase III ESA
West Memorial Building
344 Wellington, Ottawa, ON

Figure No.
4

Title
Impacted Soil - CCME Exceedences



V:\01225\active\122511222\03_data\gis_cad\GIS\MXD\122511222_Fig05_Soil_Table1.mxd
Revised: 2016-03-30 By: clee

March 2016
Project No. 122511222

Stantec

Legend

- Geofirma Borehole
- Golder Borehole
- Stantec Borehole
- Impacted Soil

Notes

1. Coordinate System: NAD 1983 UTM Zone 18N
2. Building and Features: Geofirma Engineering Ltd, Figure A.3, 12/18/2014.
3. Orthoimagery: Microsoft (used with permission), 2015.

Client/Project
Public Services and Procurement Canada (PSPC)
Phase III ESA
West Memorial Building
344 Wellington, Ottawa, ON

Figure No.
5

Title
Impacted Soil - Ontario Table 1 Exceedences

Appendix B

Regulatory Review

1.0 Introduction

Federal contaminated sites are generally evaluated using the *Canadian Environmental Quality Guidelines* (CEQG) developed by the Canadian Council of the Ministers of Environment (CCME). The CEQG provide science-based goals for the quality of atmospheric, aquatic, and terrestrial ecosystems. The CEQG are risk-based numerical concentrations set at levels at which it is believed that unacceptable adverse effects on environmental or human health will not occur. The applicable CEQG criteria, which can be used for the assessment and remediation of soil, sediment, and water, are selected based on generic site characterization data including land use (e.g., agricultural, residential, commercial, and industrial), soil texture (i.e., coarse or fine grained soils), presence and type (e.g., fresh or marine) of surface water, groundwater use (potable vs. non-potable) and water use (e.g., recreational or agricultural). Environmental soil, sediment, and water quality guidelines are derived using toxicological data to determine the threshold level to key receptors. The following numerical CEQGs for soil are available on-line at the CCME's website (http://ceqg-rcqe.ccme.ca/en/index.html#void):

- Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health

The CEQG do not include criteria/guidelines for petroleum hydrocarbons (PHC). Canada-Wide Standards (CWS) for petroleum hydrocarbons in soil were established pursuant to the 1998 Canada-Wide Accord on Environmental Harmonization of the CCME (user guidance documents revised January 2008). The Tier 1 CWS for PHC in soil are generic remedial standards for contaminated soil and subsoil occurring in four land use categories for coarse and fine textured soil. The CWS provide criteria for PHC in four fractions (F1 to F4) that exclude benzene, toluene, ethylbenzene, xylenes (BTEX), and benzo(a)pyrene.

In the province of Ontario, environmental conditions at a potentially contaminated site are typically assessed in the context of Ontario Regulation (O.Reg.) 153/04, which provides guidance for the assessment and remediation of soil, sediment, and groundwater. Soil, sediment, and groundwater quality standards referenced under O.Reg.153/04 are referred to as the Site Condition Standards (SCS), and are provided in Table 1 to Table 9 in the Ministry of the Environment (MOE) document *Soil, Ground Water and Sediment Standards for Use Under Part XV.I of the Environmental Protection Act* dated April 15, 2011. The soil and groundwater SCS are generic risk-based standards derived for various land uses, groundwater use, site-sensitivity, proximity to surface water, and soil-texture. The generic SCS are generally selected as the lowest of the pathway specific exposure criteria developed in the MOE document *Rationale for the Development of soil and Groundwater Standards for Use at Contaminated Sites in Ontario* dated April 15, 2011. The sediment SCS are the Lowest Effect Levels from the Ministry of Environment and Energy document *Guidelines for the Protection and Management of Aquatic Sediment Quality in Ontario*, dated August 1993.

1.1 SITE CHARACTERIZATION

As indicated earlier, the selection of applicable standards for comparison to soil analytical data is based on a review of various site characteristics. The relevant site characteristics are reviewed in the following sections, and where necessary, reference is made to requirements specific to selection of the SCS under O.Reg. 153/04.

1.1.1 Land Use

Land use at of the site was considered commercial. Commercial land use is defined by the CCME as land use where primary activity is commercial, not residential or manufacturing and does not include zones where food is grown.

1.1.2 Soil Texture

Coarse textured soil is defined by the CCME as "soils with a median grain size greater than 75 microns". Section 42(1) of O.Reg.153/04 defines coarse textured soil as "soil that contains 50 percent or more by mass of particles that are larger than 75 micrometres in mean diameter".

Based on grain size analyses completed by Stantec, the soil is considered to be coarse-grained.

1.1.3 Soil Thickness and Proximity to a Water Body

Section 43.1 of O.Reg.153/04 identifies specific SCS to be applied if any of the following circumstances exist:

(a) the property is a shallow soil property (i.e., depth to bedrock is less than 2 m); or

(b) the property includes all or part of a water body or is adjacent to a water body or includes land that is within 30 metres of a water body.

Based on the Phase III ESA findings, the average depth to bedrock was 2.6 m bgs, and more than two thirds of the Site appears to have more than 2 metres of soil, excluding the section of the Site with two underground parking levels. Therefore, the Site is not a shallow soil property.

It was noted and observed that the Ottawa River was approximately 250 metres from the sampling locations. Therefore, the protection of freshwater life was considered in the selection of CCME guidelines for PAHs.

1.1.4 Groundwater Use

Potable water in the area of the West Memorial Building is supplied by the municipal water system.

1.1.5 Environmental Sensitivity

Section 41 of O.Reg.153/04 states that a property is to be considered environmentally sensitive if any of the following circumstances exist:

(1)(a) the property is,
- *(i) within an area of natural significance,*
- *(ii) includes or is adjacent to an area of natural significance or part of such an area, or*
- *(iii) includes land that is within 30 metres of an area of natural significance or part of such an area;*

(b) the soil at the property has a pH value as follows:
- *(i) for surface soil, less than 5 or greater than 9,*
- *(ii) for sub-surface soil, less than 5 or greater than 11; or*

(c) a qualified person is of the opinion that, given the characteristics of the property and the certifications the qualified person would be required to make in a record of site condition in relation to the property as specified in Schedule A, it is appropriate to apply this section to the property.

One sample had a pH of 9.14, but was collected at a depth greater than 1.5 mbgs, where the pH range is 5 to 11 for the use of Ontario Tables 2 to 9. The pH range of 5 to 9 only applies to soil from 0 to 1.5 mbgs. Therefore, the property is not a "sensitive site" as defined by Ontario Regulation 153/04. In addition, Site is not located within 30 metres of an area of natural significance.

1.2 GENERIC CRITERIA SELECTION

1.2.1 Soil Criteria

Based on the site characterization data presented above, the soil sample analytical results were compared to the following criteria/standards:

- Canadian Council of the Ministers of Environment (CCME), *Canada Wide Standards (CWS) for Petroleum Hydrocarbons (PHC)*, January 2008, Table 1, Tier 1 Levels for Surface Soil – Commercial Land Use and Coarse Textured Soil.

- CCME, *Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health,* on-line summary accessed in February 2016, Commercial Land Use and Coarse Textured Soil.

- CCME, *Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health for Polycyclic Aromatic Hydrocarbons (PAHs)* fact sheet, 2010. The most conservative of the pathways for each PAH parameter, including protection of freshwater aquatic life, was considered applicable.

- Ministry of the Environment (MOE), *Soil, Ground Water and Sediment Standards for Use under Part XV.1 of the Environmental Protection Act,* April 15, 2011, Ontario Table 1 Full Depth Background Site Condition Standards for residential/parkland/institutional/industrial/commercial/community property use.

- MOE, *Soil, Ground Water and Sediment Standards for Use under Part XV.1 of the Environmental Protection Act,* April 15, 2011, Ontario Table 3 Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition, industrial/commercial/community property use, coarse textured soil.

- MOE, *Ontario Environmental Protection Act, Regulation 347, General – Waste Management*, as amended.

Appendix C

Field Methodology

FIELD METHODOLOGY

1.0 PRE-DRILLING SITE INVESTIGATIONS

1.1 Service and Utility Locates

The locations of services and utilities were established prior to the drilling and sampling phase of the investigation. The sampling locations were cleared of underground utilities by a private utility locator.

2.0 DRILLING INVESTIGATION

2.1 Drilling

Nine new boreholes were advanced to a maximum depth of 3.97m below ground surface using a Geoprobe Model M420 equipped with sampling equipment to assess the soil conditions. Soil samples were collected continuously from each location with the use of a Macro Core sampler. Stantec field personnel logged the characteristics of the materials and conducted field monitoring of petroleum hydrocarbon vapours.

2.2 Borehole Logging

Materials retrieved from the drilling operation were logged by Stantec personnel. The texture and composition of materials and the presence of combustible and volatile vapours or other indications of contamination were recorded.

2.3 Soil Sampling

Soil samples were collected continuously from the Macro Core samplers. One half of the sample was field tested for vapours and the other half was placed in laboratory supplied containers for potential laboratory analyses.

One composite soil sample was submitted for grain size analysis and the results are provided in **Appendix G.**

3.0 QUALITY ASSURANCE/QUALITY CONTROL

All samples were collected following strict Stantec sampling procedures. Samples were uniquely labeled and control was maintained through use of chain of custody forms. All samples were collected in laboratory supplied containers and preserved in insulated coolers. Appropriate sampling QA/QC procedures were adhered to at all times.

Appendix D

Borehole Logs

BOREHOLE RECORD

BH16-1

CLIENT Public Services and Procurement Canada PROJECT No. 122511222 ORIGINATED BY A.H.

LOCATION 344 Wellington Street, Ottawa, ON DATUM Local COMPILED BY A.H.

DATES: BORING January 27, 2016 WATER LEVEL TPC ELEV. CHECKED BY A.H.

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WATER LEVEL	DEPTH (ft)	VAPOUR CONCENTRATIONS ● PID ppm ▲ GASTECH ppm	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES N-VALUE
						● 5 10 15 20 ▲ 50 100 150 200			
0		Topsoil, frozen.							
		FILL, Brown fine sand, trace wood debris, damp.					SS	1	
1		FILL, Brown medium sand, trace crushed stone and brick debris, damp.			2		SS	2	
					4		SS	3	
2					6		SS	4	
					8		SS	5	
3		End of Borehole at 3.05 mbgs on bedrock refusal.			10				
4					12				
					14				
5					16				
					18				
6					20				
					22				
7					24				
					26				
8					28				
					30				
9					32				
10									

LABORATORY ANALYSES: SS2 submitted for VOCs, PHC F1-F4, PAHs, PCBs, and CCME Metals.
SS5 submitted for VOCs, PHC F1-F4, PAHs, and CCME Metals.

BOREHOLE RECORD

BH16-2

CLIENT Public Services and Procurement Canada PROJECT No. 122511222 ORIGINATED BY A.H.

LOCATION 344 Wellington Street, Ottawa, ON DATUM Local COMPILED BY A.H.

DATES: BORING January 27, 2016 WATER LEVEL TPC ELEV. CHECKED BY A.H.

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WATER LEVEL	DEPTH (ft)	VAPOUR CONCENTRATIONS ● PID ppm ▲ GASTECH ppm	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES N-VALUE
						● 5 10 15 20 ▲ 50 100 150 200			
0		Topsoil, frozen.					SS	1	
		FILL, Brown fine sand, trace wood debris, damp.			2				
1		FILL, Brown medium sand, trace crushed stone and brick debris, damp.			4		SS	2	
							SS	3	
2					6		SS	4	
		End of Borehole at 2.13 mbgs on bedrock refusal.			8				
3					10				
					12				
4					14				
					16				
5					18				
					20				
6					22				
					24				
7					26				
					28				
8					30				
					32				
9									
10									

LABORATORY ANALYSES: SS2 submitted for VOCs, PHC F1-F4, PAHs, PCBs, and CCME Metals.
SS4 submitted for VOCs, PHC F1-F4, PAHs, and CCME Metals.

BOREHOLE RECORD

BH16-3

CLIENT Public Services and Procurement Canada PROJECT No. 122511222 ORIGINATED BY A.H.

LOCATION 344 Wellington Street, Ottawa, ON DATUM Local COMPILED BY A.H.

DATES: BORING January 27, 2016 WATER LEVEL TPC ELEV. CHECKED BY A.H.

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WATER LEVEL	DEPTH (ft)	VAPOUR CONCENTRATIONS ● PID ppm ▲ GASTECH ppm	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES N-VALUE
						● 5 10 15 20 ▲ 50 100 150 200			
0		Topsoil, frozen.							
		FILL, Brown fine sand, trace wood debris, damp.			2		SS	1	
1		FILL, Brown medium sand, trace crushed stone and brick debris, damp.			4		SS	2	
					6		SS	3	
2							SS	4	
		End of Borehole at 2.13 mbgs on bedrock refusal.			8				
3					10				
					12				
4					14				
5					16				
					18				
6					20				
					22				
7					24				
					26				
8					28				
9					30				
					32				
10									

LABORATORY ANALYSES: SS2 submitted for VOCs, PHC F1-F4, PAHs, PCBs, and CCME Metals.
SS4 submitted for VOCs, PHC F1-F4, PAHs, and CCME Metals.

BOREHOLE RECORD

BH16-4

CLIENT Public Services and Procurement Canada PROJECT No. 122511222 ORIGINATED BY A.H.

LOCATION 344 Wellington Street, Ottawa, ON DATUM Local COMPILED BY A.H.

DATES: BORING January 26, 2016 WATER LEVEL TPC ELEV. CHECKED BY A.H.

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WATER LEVEL	DEPTH (ft)	VAPOUR CONCENTRATIONS ● PID ppm ▲ GASTECH ppm (● 5 10 15 20; ▲ 50 100 150 200)	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES N-VALUE
0		Topsoil, frozen.			2		SS	1	
1		FILL, Dark brown fine sand, trace brick debris, damp.			4		SS	2	
2		FILL, Light brown medium sand, trace crushed stone, damp.			6		SS	3	
3					8		SS	4	
4		End of Borehole at 3.97 mbgs on bedrock refusal.			10		SS	5	
5					12		SS	6	
6					14				
7					16				
8					18				
9					20				
10					22				
					24				
					26				
					28				
					30				
					32				

LABORATORY ANALYSES: SS2 submitted for VOCs, PHC F1-F4.
SS3 submitted for PAHs, PCBs, and CCME Metals.
SS6 submitted for VOCs, PHC F1-F4, PAHs, and CCME Metals.

BOREHOLE RECORD

BH16-5

CLIENT Public Services and Procurement Canada PROJECT No. 122511222 ORIGINATED BY A.H.

LOCATION 344 Wellington Street, Ottawa, ON DATUM Local COMPILED BY A.H.

DATES: BORING January 26, 2016 WATER LEVEL TPC ELEV. CHECKED BY A.H.

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WATER LEVEL	DEPTH (ft)	VAPOUR CONCENTRATIONS ● PID ppm ▲ GASTECH ppm	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES N-VALUE
						● 5 10 15 20 ▲ 50 100 150 200			
0		Topsoil, frozen.							
		FILL, Dark brown fine sand, damp.			2		SS	1	
1		FILL, Brown medium sand, trace crushed stone, damp.			4		SS	2	
					6		SS	3	
2					8		SS	4	
		End of Borehole at 2.74 mbgs on bedrock refusal.					SS	5	
3					10				
					12				
4					14				
5					16				
					18				
6					20				
					22				
7					24				
					26				
8					28				
9					30				
					32				
10									

LABORATORY ANALYSES: SS2 submitted for VOCs, PHC F1-F4, PAHs, PCBs, and CCME Metals.

BOREHOLE RECORD

BH16-6

CLIENT Public Services and Procurement Canada PROJECT No. 122511222 ORIGINATED BY A.H.

LOCATION 344 Wellington Street, Ottawa, ON DATUM Local COMPILED BY A.H.

DATES: BORING January 26, 2016 WATER LEVEL TPC ELEV. CHECKED BY A.H.

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WATER LEVEL	DEPTH (ft)	VAPOUR CONCENTRATIONS ● PID ppm ▲ GASTECH ppm	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES N-VALUE
						● 5 10 15 20 ▲ 50 100 150 200			
0		Topsoil, frozen.							
		FILL, Dark brown fine sand, damp.			2		SS	1	
1		FILL, Dark brown medium sand, trace crushed stone and brick debris, damp.					SS	2	
		End of Borehole at 1.22 mbgs on bedrock refusal.			4				
2					6				
					8				
3					10				
					12				
4					14				
5					16				
					18				
6					20				
					22				
7					24				
					26				
8					28				
9					30				
					32				
10									

LABORATORY ANALYSES: SS2 submitted for VOCs, PHC F1-F4, PAHs, PCBs, and CCME Metals.

Stantec

BOREHOLE RECORD

BH16-7

CLIENT Public Services and Procurement Canada PROJECT No. 122511222 ORIGINATED BY A.H.

LOCATION 344 Wellington Street, Ottawa, ON DATUM Local COMPILED BY A.H.

DATES: BORING January 26, 2016 WATER LEVEL TPC ELEV. CHECKED BY A.H.

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WATER LEVEL	DEPTH (ft)	VAPOUR CONCENTRATIONS ● PID ppm ▲ GASTECH ppm	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES N-VALUE
						● 5 10 15 20 ▲ 50 100 150 200			
0		Topsoil, frozen.							
		FILL, Brown fine sand and clay, trace crushed stone and brick debris, damp.			2		SS	1	
1					4		SS	2	
		End of Borehole at 1.37 mbgs on bedrock refusal.					SS	3	
2					6				
					8				
3					10				
					12				
4					14				
					16				
5					18				
					20				
6					22				
					24				
7					26				
					28				
8					30				
					32				
9									
10									

LABORATORY ANALYSES: SS2 submitted for VOCs, PHC F1-F4, PAHs, PCBs, and CCME Metals.
Duplicate taken from SS2 and submitted for VOCs, PHC F1-F4, PAHs, PCBs, and CCME Metals.

BOREHOLE RECORD

BH16-8

CLIENT Public Services and Procurement Canada PROJECT No. 122511222 ORIGINATED BY A.H.

LOCATION 344 Wellington Street, Ottawa, ON DATUM Local COMPILED BY A.H.

DATES: BORING January 26, 2016 WATER LEVEL TPC ELEV. CHECKED BY A.H.

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WATER LEVEL	DEPTH (ft)	VAPOUR CONCENTRATIONS ● PID ppm ▲ GASTECH ppm	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES N-VALUE
						● 5 10 15 20 ▲ 50 100 150 200			
0		Topsoil, frozen.							
		FILL, Brown medium sand, trace clay and wood debris, damp.			2		SS	1	
1		FILL, Brown medium sand, trace crushed stone, damp.			4		SS	2	
							SS	3	
2		End of Borehole at 1.75 mbgs on bedrock refusal.			6				
					8				
3					10				
					12				
4					14				
5					16				
					18				
6					20				
					22				
7					24				
					26				
8					28				
9					30				
10					32				

LABORATORY ANALYSES: SS3 submitted for VOCs, PHC F1-F4, PAHs, PCBs, and CCME Metals.

BOREHOLE RECORD

BH16-9

CLIENT Public Services and Procurement Canada PROJECT No. 122511222 ORIGINATED BY A.H.

LOCATION 344 Wellington Street, Ottawa, ON DATUM Local COMPILED BY A.H.

DATES: BORING January 26, 2016 WATER LEVEL TPC ELEV. CHECKED BY A.H.

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WATER LEVEL	DEPTH (ft)	VAPOUR CONCENTRATIONS ● PID ppm ▲ GASTECH ppm	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES N-VALUE
						● 5 10 15 20 ▲ 50 100 150 200			
0		Topsoil, frozen.							
		FILL, Brown medium sand, trace clay and wood debris, damp.			2		SS	1	
1		FILL, Brown medium sand, trace crushed stone and brick debris, damp.			4		SS	2	
							SS	3	
2		End of Borehole at 1.83 mbgs on bedrock refusal.			6				
					8				
3					10				
					12				
4					14				
5					16				
					18				
6					20				
					22				
7					24				
					26				
8					28				
9					30				
					32				
10									

LABORATORY ANALYSES: SS3 submitted for VOCs, PHC F1-F4, PAHs, PCBs, and CCME Metals.

Appendix E

Summary Analytical Tables

Table E-1
Summary of Soil Analytical Results
Phase III ESA - West Memorial Building, 344 Wellington Street, Ottawa, ON
Public Services and Procurement Canada

Sample Location					BH16-1 SS2		BH16-1 SS5	BH16-2 SS2	BH16-2 SS4	BH16-3 SS2		BH16-3 SS4		BH16-4 SS2	BH16-4 SS3	
Sample Date					27-Jan-16	27-Jan-16	27-Jan-16	27-Jan-16	27-Jan-16	27-Jan-16	27-Jan-16	27-Jan-16	27-Jan-16	27-Jan-16	26-Jan-16	26-Jan-16
Sample ID					BH16-1 SS2	BH16-1 SS2 Lab-Dup	BH16-1 SS5	BH16-2 SS2	BH16-2 SS4	BH16-3 SS2	BH16-3 SS2 Lab-Dup	BH16-3 SS4	BH16-3 SS4 Lab-Dup	BH16-4 SS2	BH16-4 SS3	BH16-4 SS3 Lab-Dup
Sample Depth (m bgs)					0.61 - 1.22	0.61 - 1.22	2.44 - 3.05	0.61 - 1.22	1.83 - 2.13	0.61 - 1.22	0.61 - 1.22	1.83 - 2.13	1.83 - 2.13	0.61 - 1.22	1.22 - 1.83	1.22 - 1.83
Sampling Company					STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC
Laboratory					MAXXAM	MAXXAM	MAXXAM	MAXXAM	MAXXAM	MAXXAM	MAXXAM	MAXXAM	MAXXAM	MAXXAM	MAXXAM	MAXXAM
Laboratory Work Order					B616805	B616805	B616805	B616805	B616805	B616805	B616805	B616805	B616805	B616805	B616805	B616805
Laboratory Sample ID					BSQ140	BSQ140	BSQ141	BSQ138	BSQ139	BSQ136	BSQ136	BSQ137	BSQ137	BSQ133	BSQ124	BSQ124
Sample Type	Units	CCME	Ontario Table 3 SCS	Ontario Table 1 SCS		Lab Duplicate					Lab Duplicate		Lab Duplicate			Lab Duplicate
General Chemistry																
% Solids	%	n/v	n/a	n/v	-	-	-	-	-	-	-	-	-	-	-	-
Moisture	%	n/v	n/a	n/v	7.3	-	6.3	11	6.7	8.8	-	11	-	10	7.3	-
Available (CaCl2) pH	pH	6-8[A]	n/a	n/v	7.51	-	7.59	7.51	7.67	7.90	-	7.83	-	-	7.54	-
Petroleum Hydrocarbons																
PHC F1 (C6-C10 range)	µg/g	n/v	n/a	n/v	<10	-	<10	<10	<10	<10	-	<10	-	<10	<10	-
PHC F1 (C6-C10 range) - BTEX	µg/g	320[B]	n/a	25_{57}[M]	<10	-	<10	<10	<10	<10	-	<10	-	<10	<10	-
PHC F2 (>C10-C16 range)	µg/g	260[B]	n/a	10_{515}[M]	<10	-	<10	<10	<10	<10	-	<10	-	<10	<10	-
PHC F3 (>C16-C34 range)	µg/g	1700[B]	n/a	240_{68}[M]	<50	-	<50	<50	<50	<50	-	<50	-	<50	<50	-
PHC F4 (>C34-C50 range)	µg/g	3300[B]	n/a	120_{10}[M]	<50	-	<50	<50	<50	<50	-	<50	-	<50	<50	-
Metals																
Chromium (Hexavalent)	µg/g	1.4[A]	n/a	0.66[M]	<0.2	<0.2	<0.2	<0.2	<0.2	< 0.2	-	<0.2	-	-	< 0.2	-
Boron (Hot Water Ext.)	µg/g	n/v	2_{516}[L]	n/a[M]	0.058	-	0.35	0.38	0.16	0.20	-	0.14	-	-	0.15	-
Antimony	µg/g	40[A]	n/a	1.3[M]	<0.20	-	0.78	0.47	0.46	<0.20	-	<0.20	<0.20	-	1.1	-
Arsenic	µg/g	12[A]	n/a	18[M]	<1.0	-	2.4	3.1	1.7	<1.0	-	1.5	1.8	-	2.6	-
Barium	µg/g	2000[A]	n/a	220[M]	21	-	90	60	41	20	-	51	52	-	**440[M]**	-
Beryllium	µg/g	8[A]	n/a	2.5[M]	<0.20	-	0.29	0.32	0.23	0.23	-	0.29	0.32	-	0.29	-
Boron	µg/g	n/v	120[L]	36[M]	-	-	-	-	-	-	-	-	-	-	-	-
Boron, available	µg/g	n/v	n/v	n/v	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium	µg/g	22[A]	n/a	1.2[M]	<0.10	-	0.13	0.18	0.14	<0.10	-	<0.10	<0.10	-	0.26	-
Chromium (Total)	µg/g	87[A]	n/a	70[M]	6.7	-	16	19	12	24	-	15	15	-	15	-
Cobalt	µg/g	300[A]	n/a	21[M]	2.8	-	5.2	5.8	5.5	4.4	-	5.4	5.3	-	5.8	-
Copper	µg/g	91[A]	n/a	92[M]	6.9	-	14	14	13	6.2	-	12	12	-	19	-
Lead	µg/g	260[A]	n/a	120[M]	7.7	-	35	38	27	4.1	-	7.7	7.8	-	76	-
Sulphur	µg/g	n/v	n/v	n/v	58	-	530	240	170	81	-	150	na	-	330	-
Molybdenum	µg/g	40[A]	n/a	2[M]	<0.50	-	0.80	1.0	0.99	<0.50	-	0.70	0.76	-	1.2	-
Nickel	µg/g	89[A]	n/a	82[M]	5.3	-	12	13	11	11	-	11	11	-	13	-
Selenium	µg/g	2.9[A]	n/a	1.5[M]	<0.50	-	<0.50	<0.50	<0.50	<0.50	-	<0.50	<0.50	-	<0.50	-
Silver	µg/g	40[A]	n/a	0.5[M]	<0.20	-	<0.20	<0.20	<0.20	<0.20	-	<0.20	<0.20	-	<0.20	-
Thallium	µg/g	1[A]	n/a	1[M]	<0.050	-	0.11	0.12	0.11	0.063	-	0.13	0.12	-	0.13	-
Tin	µg/g	300[A]	n/a	n/v	<5.0	-	11	<5.0	<5.0	<5.0	-	<5.0	<5.0	-	<5.0	-
Uranium	µg/g	33[A]	n/a	2.5[M]	0.36	-	0.71	0.75	0.50	0.92	-	0.50	0.49	-	0.51	-
Vanadium	µg/g	130[A]	n/a	86[M]	16	-	24	28	22	57	-	26	25	-	25	-
Zinc	µg/g	360[A]	n/a	290[M]	12	-	41	48	31	22	-	21	21	-	48	-
Mercury	µg/g	24[A]	n/a	0.27[M]	<0.050	-	0.087	0.11	<0.050	<0.050	-	<0.050	<0.050	-	< 0.050	-

Table E-1
Summary of Soil Analytical Results
Phase III ESA - West Memorial Building, 344 Wellington Street, Ottawa, ON
Public Services and Procurement Canada

Sample Location					BH16-1 SS2		BH16-1 SS5	BH16-2 SS2	BH16-2 SS4	BH16-3 SS2		BH16-3 SS4		BH16-4 SS2	BH16-4 SS3	
Sample Date					27-Jan-16	27-Jan-16	27-Jan-16	27-Jan-16	27-Jan-16	27-Jan-16	27-Jan-16	27-Jan-16	27-Jan-16	27-Jan-16	26-Jan-16	26-Jan-16
Sample ID					BH16-1 SS2	BH16-1 SS2 Lab-Dup	BH16-1 SS5	BH16-2 SS2	BH16-2 SS4	BH16-3 SS2	BH16-3 SS2 Lab-Dup	BH16-3 SS4	BH16-3 SS4 Lab-Dup	BH16-4 SS2	BH16-4 SS3	BH16-4 SS3 Lab-Dup
Sample Depth (m bgs)					0.61 - 1.22	0.61 - 1.22	2.44 - 3.05	0.61 - 1.22	1.83 - 2.13	0.61 - 1.22	0.61 - 1.22	1.83 - 2.13	1.83 - 2.13	0.61 - 1.22	1.22 - 1.83	1.22 - 1.83
Sampling Company					STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC
Laboratory					MAXXAM	MAXXAM	MAXXAM	MAXXAM	MAXXAM	MAXXAM	MAXXAM	MAXXAM	MAXXAM	MAXXAM	MAXXAM	MAXXAM
Laboratory Work Order					B616805	B616805	B616805	B616805	B616805	B616805	B616805	B616805	B616805	B616805	B616805	B616805
Laboratory Sample ID					BSQ140	BSQ140	BSQ141	BSQ138	BSQ139	BSQ136	BSQ136	BSQ137	BSQ137	BSQ133	BSQ124	BSQ124
Sample Type	Units	CCME	Ontario Table 3 SCS	Ontario Table 1 SCS		Lab Duplicate					Lab Duplicate		Lab Duplicate			Lab Duplicate
Polychlorinated Biphenyls																
Aroclor 1242	µg/g	n/v	n/a	$_{s14}^{M}$	<0.010	-	na	<0.010	na	<0.010	-	-	-	-	<0.010	-
Aroclor 1248	µg/g	n/v	n/a	$_{s14}^{M}$	<0.010	-	na	<0.010	na	<0.010	-	-	-	-	<0.010	-
Aroclor 1254	µg/g	n/v	n/a	$_{s14}^{M}$	<0.010	-	na	<0.010	na	<0.010	-	-	-	-	<0.010	-
Aroclor1260	µg/g	n/v	n/a	$_{s14}^{M}$	<0.010	-	na	<0.010	na	<0.010	-	-	-	-	<0.010	-
Total Polychlorinated Biphenyls (PCBs)	µg/g	33[A]	n/a	0.3$_{s14}^{M}$	<0.010	-	na	<0.010	na	<0.010	-	-	-	-	<0.010	-
Non-Carcinogenic Polycyclic Aromatic Hydrocarbons																
Acenaphthene	µg/g	0.28[I]	n/a	0.072[M]	0.010	-	0.014	0.063	0.034	0.0071	-	<0.0050	-	-	0.029	0.032
Acenaphthylene	µg/g	320[I]	n/a	0.093[M]	0.058	-	0.054	0.0058	**0.17[M]**	0.0071	-	0.0071	-	-	0.0055	<0.0050
Anthracene	µg/g	32[EHK]	n/a	0.16[M]	0.087	-	0.092	0.11	**0.23[M]**	0.024	-	0.014	-	-	0.076	0.090
Fluoranthene	µg/g	180[EHK]	n/a	0.56[M]	0.33	-	0.40	0.47	**1.5[M]**	0.10	-	0.029	-	-	0.40	0.38
Fluorene	µg/g	0.25[I]	n/a	0.12[M]	0.062	-	0.056	0.078	0.087	0.011	-	0.032	-	-	0.033	0.043
Methylnaphthalene, 1-	µg/g	n/v	$_{s3}^{L}$	$_{s3}^{M}$	0.020	-	0.016	0.0074	0.028	<0.0050	-	<0.0050	-	-	0.0074	0.0064
Methylnaphthalene, 2-	µg/g	n/v	$_{s3}^{L}$	$_{s3}^{M}$	0.014	-	0.011	0.0069	0.018	<0.0050	-	<0.0050	-	-	0.0092	<0.0050
Methylnaphthalene (Total)	µg/g	n/v	76[L]	0.59$_{s3}^{M}$	0.034	-	0.027	0.014	0.046	<0.014	-	<0.014	-	-	0.017	na
Naphthalene	µg/g	0.013$_{6}^{EI}$ 22[G]	n/a	0.09[M]	0.0085	-	0.0086	<0.0050	**0.015[EI]**	<0.0050	-	<0.0050	-	-	**0.018[EI]**	<0.0050
Phenanthrene	µg/g	0.046$_{6}^{EI}$ 50[G]	n/a	0.69[M]	**0.33[EI]**	-	**0.34[EI]**	**0.51[EI]**	**0.72[EIM]**	**0.076[EI]**	-	0.043	-	-	**0.33[EI]**	**0.36[EI]**
Pyrene	µg/g	100[EG]	n/a	1[M]	0.25	-	0.30	0.32	**1.3[M]**	0.079	-	0.054	-	-	0.30	0.27
Biphenyl	µg/g	n/v	52[L]	52[M]	-	-	-	-	-	-	-	-	-	-	-	-
Quinoline	µg/g	n/v	n/v	n/v	-	-	-	-	-	-	-	-	-	-	-	-
Carcinogenic Polycyclic Aromatic Hydrocarbons																
Benzo(a)anthracene	µg/g	10[EG]	n/a	0.36[M]	0.13	-	0.16	0.17	**0.73[M]**	0.045	-	0.029	-	-	0.16	0.15
Benzo(a)pyrene	µg/g	72[EHK] 8800[I]	n/a	0.3[M]	0.14	-	0.18	0.15	**0.78[M]**	0.044	-	0.032	-	-	0.14	0.12
Benzo(b/j)fluoranthene	µg/g	10[EG]	n/a	0.47$_{z2}^{M}$	0.17	-	0.24	0.20	**1.0[M]**	0.066	-	0.048	-	-	0.19	0.16
Benzo(g,h,i)perylene	µg/g	n/v	9.6[L]	0.68[M]	0.072	-	0.10	0.068	0.43	0.032	-	0.024	-	-	0.067	0.055
Benzo(k)fluoranthene	µg/g	10[EG]	n/a	0.48[M]	0.063	-	0.090	0.080	0.40	0.024	-	0.017	-	-	0.071	0.064
Chrysene	µg/g	n/v	9.6[L]	2.8[M]	0.10	-	0.13	0.14	0.58	0.038	-	0.026	-	-	0.13	0.12
Dibenzo(a,h)anthracene	µg/g	10[EG]	n/a	0.1[M]	0.021	-	0.028	0.022	**0.14[M]**	0.0088	-	<0.0050	-	-	0.021	0.023
Indeno(1,2,3-cd)pyrene	µg/g	10[EG]	n/a	0.23[M]	0.069	-	0.095	0.070	**0.42[M]**	0.029	-	0.021	-	-	0.067	0.057
Benzo(a)pyrene Total Potency Equivalent (B[a]P TPE)	-	5.3[E]	n/a	n/v	0.21	-	0.27	0.23	1.19	0.07	-	0.05	-	-	0.21	0.19
Volatile Organic Compounds																
Acetone (2-Propanone)	µg/g	n/v	16[L]	0.5[M]	<0.50	-	<0.50	<0.50	<0.50	<0.50	-	<0.50	-	<0.50	-	-
Benzene	µg/g	0.03[A]	n/a	0.02[M]	<0.0060	-	<0.0060	<0.0060	<0.0060	<0.0060	-	<0.0060	-	<0.0060	-	-
Bromodichloromethane	µg/g	n/v	18[L]	0.05[M]	<0.050	-	<0.050	<0.050	<0.050	<0.050	-	<0.050	-	<0.050	-	-
Bromoform (Tribromomethane)	µg/g	n/v	0.61[L]	0.05[M]	<0.050	-	<0.050	<0.050	<0.050	<0.050	-	<0.050	-	<0.050	-	-
Bromomethane (Methyl bromide)	µg/g	n/v	0.05[L]	0.05[M]	<0.050	-	<0.050	<0.050	<0.050	<0.050	-	<0.050	-	<0.050	-	-
Carbon Tetrachloride (Tetrachloromethane)	µg/g	50[A]	n/a	0.05[M]	<0.050	-	<0.050	<0.050	<0.050	<0.050	-	<0.050	-	<0.050	-	-

Table E-1
Summary of Soil Analytical Results
Phase III ESA - West Memorial Building, 344 Wellington Street, Ottawa, ON
Public Services and Procurement Canada

Sample Location					BH16-1 SS2		BH16-1 SS5	BH16-2 SS2	BH16-2 SS4	BH16-3 SS2		BH16-3 SS4		BH16-4 SS2	BH16-4 SS3	
Sample Date					27-Jan-16	27-Jan-16	27-Jan-16	27-Jan-16	27-Jan-16	27-Jan-16	27-Jan-16	27-Jan-16	27-Jan-16	27-Jan-16	26-Jan-16	26-Jan-16
Sample ID					BH16-1 SS2	BH16-1 SS2 Lab-Dup	BH16-1 SS5	BH16-2 SS2	BH16-2 SS4	BH16-3 SS2	BH16-3 SS2 Lab-Dup	BH16-3 SS4	BH16-3 SS4 Lab-Dup	BH16-4 SS2	BH16-4 SS3	BH16-4 SS3 Lab-Dup
Sample Depth (m bgs)					0.61 - 1.22	0.61 - 1.22	2.44 - 3.05	0.61 - 1.22	1.83 - 2.13	0.61 - 1.22	0.61 - 1.22	1.83 - 2.13	1.83 - 2.13	0.61 - 1.22	1.22 - 1.83	1.22 - 1.83
Sampling Company					STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC
Laboratory					MAXXAM	MAXXAM	MAXXAM	MAXXAM	MAXXAM	MAXXAM	MAXXAM	MAXXAM	MAXXAM	MAXXAM	MAXXAM	MAXXAM
Laboratory Work Order					B616805	B616805	B616805	B616805	B616805	B616805	B616805	B616805	B616805	B616805	B616805	B616805
Laboratory Sample ID					BSQ140	BSQ140	BSQ141	BSQ138	BSQ139	BSQ136	BSQ136	BSQ137	BSQ137	BSQ133	BSQ124	BSQ124
Sample Type	Units	CCME	Ontario Table 3 SCS	Ontario Table 1 SCS		Lab Duplicate					Lab Duplicate		Lab Duplicate			Lab Duplicate
Chlorobenzene (Monochlorobenzene)	µg/g	10[A]	n/a	0.05[M]	<0.050	-	<0.050	<0.050	<0.050	<0.050	-	<0.050	-	<0.050	-	-
Chloroform (Trichloromethane)	µg/g	50[A]	n/a	0.05[M]	<0.050	-	<0.050	<0.050	<0.050	<0.050	-	<0.050	-	<0.050	-	-
Dibromochloromethane	µg/g	n/v	13[L]	0.05[M]	<0.050	-	<0.050	<0.050	<0.050	<0.050	-	<0.050	-	<0.050	-	-
Dichlorobenzene, 1,2-	µg/g	10[A]	n/a	0.05[M]	<0.050	-	<0.050	<0.050	<0.050	<0.050	-	<0.050	-	<0.050	-	-
Dichlorobenzene, 1,3-	µg/g	10[A]	n/a	0.05[M]	<0.050	-	<0.050	<0.050	<0.050	<0.050	-	<0.050	-	<0.050	-	-
Dichlorobenzene, 1,4-	µg/g	10[A]	n/a	0.05[M]	<0.050	-	<0.050	<0.050	<0.050	<0.050	-	<0.050	-	<0.050	-	-
Dichloroethane, 1,1-	µg/g	50[A]	n/a	0.05[M]	<0.050	-	<0.050	<0.050	<0.050	<0.050	-	<0.050	-	<0.050	-	-
Dichloroethane, 1,2-	µg/g	50[A]	n/a	0.05[M]	<0.050	-	<0.050	<0.050	<0.050	<0.050	-	<0.050	-	<0.050	-	-
Dichloroethylene, 1,1-	µg/g	50[A]	n/a	0.05[M]	<0.050	-	<0.050	<0.050	<0.050	<0.050	-	<0.050	-	<0.050	-	-
Dichloroethylene, cis-1,2-	µg/g	50[A]	n/a	0.05[M]	<0.050	-	<0.050	<0.050	<0.050	<0.050	-	<0.050	-	<0.050	-	-
Dichloroethylene, trans-1,2-	µg/g	50[A]	n/a	0.05[M]	<0.050	-	<0.050	<0.050	<0.050	<0.050	-	<0.050	-	<0.050	-	-
Dichloropropane, 1,2-	µg/g	50[A]	n/a	0.05[M]	<0.050	-	<0.050	<0.050	<0.050	<0.050	-	<0.050	-	<0.050	-	-
Dichloropropene, cis-1,3-	µg/g	n/v	[L]	[M]	<0.030	-	<0.030	<0.030	<0.030	<0.030	-	<0.030	-	<0.030	-	-
Dichloropropene, trans-1,3-	µg/g	n/v	[L]	[M]	<0.040	-	<0.040	<0.040	<0.040	<0.040	-	<0.040	-	<0.040	-	-
Ethylbenzene	µg/g	0.082[A]	n/a	0.05[M]	<0.010	-	<0.010	<0.010	<0.010	<0.010	-	<0.010	-	<0.010	-	-
Ethylene Dibromide (Dibromoethane, 1,2-)	µg/g	n/v	0.05[L]	0.05[M]	<0.050	-	<0.050	<0.050	<0.050	<0.050	-	<0.050	-	<0.050	-	-
Methyl Ethyl Ketone (2-Butanone)	µg/g	n/v	70[L]	0.5[M]	<0.50	-	<0.50	<0.50	<0.50	<0.50	-	<0.50	-	<0.50	-	-
Methylene Chloride (Dichloromethane)	µg/g	50[A]	n/a	0.05[M]	<0.050	-	<0.050	<0.050	<0.050	<0.050	-	<0.050	-	<0.050	-	-
Methyl Isobutyl Ketone	µg/g	n/v	31[L]	0.5[M]	<0.50	-	<0.50	<0.50	<0.50	<0.50	-	<0.50	-	<0.50	-	-
Methyl t-butyl ether (MTBE)	µg/g	n/v	11[L]	0.05[M]	<0.050	-	<0.050	<0.050	<0.050	<0.050	-	<0.050	-	<0.050	-	-
Styrene	µg/g	50[A]	n/a	0.05[M]	<0.050	-	<0.050	<0.050	<0.050	<0.050	-	<0.050	-	<0.050	-	-
Tetrachloroethane, 1,1,1,2-	µg/g	n/v	0.087[L]	0.05[M]	<0.050	-	<0.050	<0.050	<0.050	<0.050	-	<0.050	-	<0.050	-	-
Tetrachloroethane, 1,1,2,2-	µg/g	50[A]	n/a	0.05[M]	<0.050	-	<0.050	<0.050	<0.050	<0.050	-	<0.050	-	<0.050	-	-
Toluene	µg/g	0.37[A]	n/a	0.2[M]	<0.020	-	<0.020	<0.020	<0.020	<0.020	-	<0.020	-	<0.020	-	-
Tetrachloroethylene	µg/g	0.5[A]	n/a	0.05[M]	<0.050	-	<0.050	<0.050	<0.050	<0.050	-	<0.050	-	<0.050	-	-
Trichloroethane, 1,1,1-	µg/g	50[A]	n/a	0.05[M]	<0.050	-	<0.050	<0.050	<0.050	<0.050	-	<0.050	-	<0.050	-	-
Trichloroethane, 1,1,2-	µg/g	50[A]	n/a	0.05[M]	<0.050	-	<0.050	<0.050	<0.050	<0.050	-	<0.050	-	<0.050	-	-
Trichloroethylene (TCE)	µg/g	0.01[A]	n/a	0.05[M]	<0.010	-	<0.010	<0.010	<0.010	<0.010	-	<0.010	-	<0.010	-	-
Vinyl chloride	µg/g	n/v	0.032[L]	0.02[M]	<0.020	-	<0.020	<0.020	<0.020	<0.020	-	<0.020	-	<0.020	-	-
Xylene, m & p-	µg/g	n/v	[L]	[M]	<0.020	-	<0.020	<0.020	<0.020	<0.020	-	<0.020	-	<0.020	-	-
Xylene, o-	µg/g	n/v	[L]	[M]	<0.020	-	<0.020	<0.020	<0.020	<0.020	-	<0.020	-	<0.020	-	-
Xylenes, Total	µg/g	11[A]	n/a	[M]	<0.020	-	<0.020	<0.020	<0.020	<0.020	-	<0.020	-	<0.020	-	-
Dichlorodifluoromethane (FREON 12)	µg/g	n/v	16[L]	0.05[M]	<0.050	-	<0.050	<0.050	<0.050	<0.050	-	<0.050	-	<0.050	-	-
Hexane	µg/g	6.5[A]	n/a	0.05[M]	<0.050	-	<0.050	<0.050	<0.050	<0.050	-	<0.050	-	<0.050	-	-
Trichlorofluoromethane (Freon 11)	µg/g	n/v	4[L]	0.25[M]	<0.050	-	<0.050	<0.050	<0.050	<0.050	-	<0.050	-	<0.050	-	-
Dichloropropene, 1,3- (sum of isomers cis + trans)	µg/g	n/v	[L]	[M]	<0.050	-	<0.050	<0.050	<0.050	<0.050	-	<0.050	-	<0.050	-	-

See notes at end of Table E-2

Table E-1
Summary of Soil Analytical Results
Phase III ESA - West Memorial Building, 344 Wellington Street, Ottawa, ON
Public Services and Procurement Canada

Sample Location					BH16-4 SS6			BH16-5 SS2	BH16-6 SS2	BH16-7 SS2		BH16-7		BH16-8 SS3	BH16-9 SS3
Sample Date					26-Jan-16	26-Jan-16	27-Jan-16	26-Jan-16	26-Jan-16	26-Jan-16	26-Jan-16	26-Jan-16		26-Jan-16	26-Jan-16
Sample ID					BH16-4 SS6	BH16-4 SS6 Lab-Dup	BH16-4 SS6	BH16-5 SS2	BH16-6 SS2	BH16-7 SS2	BH16-7 SS2 Lab-Dup	BH16-7		BH16-8 SS3	BH16-9 SS3
Sample Depth (m bgs)					3.05 - 3.96	3.05 - 3.96	3.05 - 3.96	0.61 - 1.22	0.61 - 1.22	0.61 - 1.22	0.61 - 1.22	0.61 - 1.22		1.22 - 1.75	1.22 - 1.83
Sampling Company					STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC		STANTEC	STANTEC
Laboratory					MAXXAM	MAXXAM	MAXXAM	MAXXAM	MAXXAM	MAXXAM	MAXXAM	MAXXAM		MAXXAM	MAXXAM
Laboratory Work Order					B616805	B616805	B616805	B616805	B616805	B616805	B616805	B616805		B616805	B616805
Laboratory Sample ID					BSQ125	BSQ125	BSQ132	BSQ126	BSQ127	BSQ128	BSQ128	BSQ129		BSQ130	BSQ131
Sample Type	Units	CCME	Ontario Table 3 SCS	Ontario Table 1 SCS		Lab Duplicate					Lab Duplicate	Field Duplicate of BH16-7 SS2	RPD %		
General Chemistry															
% Solids	%	n/v	n/a	n/v	-	-	-	-	-	-	-	-	-	-	-
Moisture	%	n/v	n/a	n/v	5.7	6.3	8.6	16	17	20	-	21	-	15	7.4
Available (CaCl2) pH	pH	6-8[A]	n/a	n/v	-	-	**9.14[A]**	7.42	7.43	7.59	-	7.57	-	7.82	7.03
Petroleum Hydrocarbons															
PHC F1 (C6-C10 range)	µg/g	n/v	n/a	n/v	<10	-	-	<10	<10	<10	-	<10	nc	<10	<10
PHC F1 (C6-C10 range) - BTEX	µg/g	320[B]	n/a	25_{57}[M]	<10	-	-	<10	<10	<10	-	<10	nc	<10	<10
PHC F2 (>C10-C16 range)	µg/g	260[B]	n/a	10_{515}[M]	<10	<10	-	<10	<10	<10	-	<10	nc	<10	<10
PHC F3 (>C16-C34 range)	µg/g	1700[B]	n/a	240_{68}[M]	<50	<50	-	<50	<50	<50	-	<50	nc	<50	<50
PHC F4 (>C34-C50 range)	µg/g	3300[B]	n/a	120_{510}[M]	<50	<50	-	<50	<50	<50	-	<50	nc	<50	<50
Metals															
Chromium (Hexavalent)	µg/g	1.4[A]	n/a	0.66[M]	-	-	< 0.2	< 0.2	<0.2	<0.2	-	<0.2	nc	<0.2	**0.7[M]**
Boron (Hot Water Ext.)	µg/g	n/v	2_{516}[L]	n/a[M]	-	-	0.10	0.51	0.34	0.063	<0.050	0.13	nc	0.068	0.071
Antimony	µg/g	40[A]	n/a	1.3[M]	-	-	<0.20	1.0	**16[M]**	0.99	-	**5.6[M]**	nc	0.65	0.70
Arsenic	µg/g	12[A]	n/a	18[M]	-	-	<1.0	4.7	12	1.6	-	3.3	nc	2.1	2.1
Barium	µg/g	2000[A]	n/a	220[M]	-	-	58	71	200	52	-	63	19.1	59	190
Beryllium	µg/g	8[A]	n/a	2.5[M]	-	-	0.22	0.35	0.35	0.23	-	0.26	nc	0.26	0.29
Boron	µg/g	n/v	120[L]	36[M]	-	-	-	-	-	-	-	-	nc	-	-
Boron, available	µg/g	n/v	n/a	n/v	-	-	-	-	-	-	-	-	nc	-	-
Cadmium	µg/g	22[A]	n/a	1.2[M]	-	-	<0.10	0.23	**1.4[M]**	0.15	-	0.15	nc	0.19	0.16
Chromium (Total)	µg/g	87[A]	n/a	70[M]	-	-	11	17	33	12	-	12	0	12	15
Cobalt	µg/g	300[A]	n/a	21[M]	-	-	5.6	4.7	8.8	5.2	-	5.4	3.8	6.4	5.2
Copper	µg/g	91[A]	n/a	92[M]	-	-	11	17	**830[AM]**	43	-	**98[AM]**	78	20	25
Lead	µg/g	260[A]	n/a	120[M]	-	-	5.2	95	**760[AM]**	21	-	**130[M]**	**144.4**	47	44
Sulphur	µg/g	n/v	n/v	n/v	-	-	120	320	600	150	-	300	nc	160	250
Molybdenum	µg/g	40[A]	n/a	2[M]	-	-	0.74	1.1	1.7	0.72	-	1.3	nc	1.1	0.75
Nickel	µg/g	89[A]	n/a	82[M]	-	-	9.6	12	21	10	-	12	18.2	12	11
Selenium	µg/g	2.9[A]	n/a	1.5[M]	-	-	<0.50	<0.50	0.93	<0.50	-	<0.50	nc	<0.50	<0.50
Silver	µg/g	40[A]	n/a	0.5[M]	-	-	<0.20	<0.20	**0.84[M]**	<0.20	-	<0.20	nc	<0.20	<0.20
Thallium	µg/g	1[A]	n/a	1[M]	-	-	0.092	0.12	0.21	0.11	-	0.17	nc	0.16	0.11
Tin	µg/g	300[A]	n/a	n/v	-	-	<5.0	5.2	94	<5.0	-	11	nc	<5.0	<5.0
Uranium	µg/g	33[A]	n/a	2.5[M]	-	-	0.50	0.72	0.47	0.50	-	0.47	6.2	0.55	0.94
Vanadium	µg/g	130[A]	n/a	86[M]	-	-	22	23	36	25	-	22	nc	23	21
Zinc	µg/g	360[A]	n/a	290[M]	-	-	18	64	**870[AM]**	36	-	85	81.0	42	80
Mercury	µg/g	24[A]	n/a	0.27[M]	-	-	<0.050	0.14	**1.6[M]**	0.082	-	**0.30[M]**	nc	0.075	0.12

Table E-1
Summary of Soil Analytical Results
Phase III ESA - West Memorial Building, 344 Wellington Street, Ottawa, ON
Public Services and Procurement Canada

Sample Location					BH16-4 SS6			BH16-5 SS2	BH16-6 SS2	BH16-7 SS2		BH16-7		BH16-8 SS3	BH16-9 SS3
Sample Date					26-Jan-16	26-Jan-16	27-Jan-16	26-Jan-16	26-Jan-16	26-Jan-16	26-Jan-16	26-Jan-16		26-Jan-16	26-Jan-16
Sample ID					BH16-4 SS6	BH16-4 SS6 Lab-Dup	BH16-4 SS6	BH16-5 SS2	BH16-6 SS2	BH16-7 SS2	BH16-7 SS2 Lab-Dup	BH16-7		BH16-8 SS3	BH16-9 SS3
Sample Depth (m bgs)					3.05 - 3.96	3.05 - 3.96	3.05 - 3.96	0.61 - 1.22	0.61 - 1.22	0.61 - 1.22	0.61 - 1.22	0.61 - 1.22		1.22 - 1.75	1.22 - 1.83
Sampling Company					STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC		STANTEC	STANTEC
Laboratory					MAXXAM	MAXXAM	MAXXAM	MAXXAM	MAXXAM	MAXXAM	MAXXAM	MAXXAM		MAXXAM	MAXXAM
Laboratory Work Order					B616805	B616805	B616805	B616805	B616805	B616805	B616805	B616805		B616805	B616805
Laboratory Sample ID					BSQ125	BSQ125	BSQ132	BSQ126	BSQ127	BSQ128	BSQ128	BSQ129		BSQ130	BSQ131
Sample Type	Units	CCME	Ontario Table 3 SCS	Ontario Table 1 SCS		Lab Duplicate					Lab Duplicate	Field Duplicate of BH16-7 SS2	RPD %		
Polychlorinated Biphenyls															
Aroclor 1242	µg/g	n/v	n/a	$_{s14}^{M}$	-	-	-	<0.010	<0.010	<0.010	-	<0.010	nc	<0.010	<0.010
Aroclor 1248	µg/g	n/v	n/a	$_{s14}^{M}$	-	-	-	<0.010	<0.010	<0.010	-	<0.010	nc	<0.010	<0.010
Aroclor 1254	µg/g	n/v	n/a	$_{s14}^{M}$	-	-	-	<0.010	<0.010	<0.010	-	<0.010	nc	<0.010	<0.010
Aroclor1260	µg/g	n/v	n/a	$_{s14}^{M}$	-	-	-	<0.010	<0.010	0.028	-	0.017	nc	<0.010	<0.010
Total Polychlorinated Biphenyls (PCBs)	µg/g	33[A]	n/a	0.3_{s14}^{M}	-	-	-	<0.010	<0.010	0.028	-	0.017	nc	<0.010	<0.010
Non-Carcinogenic Polycyclic Aromatic Hydrocarbons															
Acenaphthene	µg/g	0.28[I]	n/a	0.072[M]	-	-	<0.0050	<0.0050	**1.0[IM]**	<0.0050	-	0.071	nc	0.028	<0.0050
Acenaphthylene	µg/g	320[I]	n/a	0.093[M]	-	-	<0.0050	0.0066	0.026	<0.0050	-	0.0086	nc	<0.0050	<0.0050
Anthracene	µg/g	32[EHK]	n/a	0.16[M]	-	-	<0.0050	0.011	**2.9[M]**	0.0096	-	**0.17[M]**	nc	0.055	0.012
Fluoranthene	µg/g	180[EHK]	n/a	0.56[M]	-	-	0.016	0.098	**8.9[M]**	0.046	-	**0.69[M]**	**175**	0.26	0.040
Fluorene	µg/g	0.25[I]	n/a	0.12[M]	-	-	<0.0050	<0.0050	**1.6[IM]**	0.0062	-	0.10	nc	0.034	0.0058
Methylnaphthalene, 1-	µg/g	n/v	$_{s3}^{L}$	$_{s3}^{M}$	-	-	<0.0050	0.0054	0.26	<0.0050	-	0.026	nc	0.0059	<0.0050
Methylnaphthalene, 2-	µg/g	n/v	$_{s3}^{L}$	$_{s3}^{M}$	-	-	<0.0050	<0.0050	0.34	<0.0050	-	0.024	nc	0.0059	<0.0050
Methylnaphthalene (Total)	µg/g	n/v	76[L]	0.59_{s3}^{M}	-	-	<0.014	<0.014	**0.60[M]**	<0.014	-	0.050	nc	<0.014	<0.014
Naphthalene	µg/g	0.013_{6}^{EI} 22[G]	n/a	0.09[M]	-	-	<0.0050	0.0060	**0.51[EIM]**	<0.0050	-	**0.028[EI]**	nc	0.0075	<0.0050
Phenanthrene	µg/g	0.046_{6}^{EI} 50[G]	n/a	0.69[M]	-	-	0.014	0.036	**8.2[EIM]**	0.044	-	**0.68[EI]**	**175.7**	**0.25[EI]**	0.040
Pyrene	µg/g	100[EG]	n/a	1[M]	-	-	0.014	0.085	**6.2[M]**	0.035	-	0.50	**173.8**	0.19	0.032
Biphenyl	µg/g	n/v	52[L]	52[M]	-	-	-	-	-	-	-	-	nc	-	-
Quinoline	µg/g	n/v	n/v	n/v	-	-	-	-	-	-	-	-	nc	-	-
Carcinogenic Polycyclic Aromatic Hydrocarbons															
Benzo(a)anthracene	µg/g	10[EG]	n/a	0.36[M]	-	-	0.0070	0.054	**4.2[M]**	0.019	-	0.29	nc	0.11	0.018
Benzo(a)pyrene	µg/g	72[EHK] 8800[I]	n/a	0.3[M]	-	-	0.0065	0.063	**3.3[M]**	0.017	-	0.23	nc	0.094	0.017
Benzo(b/j)fluoranthene	µg/g	10[EG]	n/a	0.47_{z2}^{M}	-	-	0.0060	0.096	**4.0[M]**	0.028	-	0.30	**165.9**	0.13	0.024
Benzo(g,h,i)perylene	µg/g	n/v	9.6[L]	0.68[M]	-	-	<0.0050	0.039	**1.3[M]**	0.010	-	0.10	nc	0.046	0.010
Benzo(k)fluoranthene	µg/g	10[EG]	n/a	0.48[M]	-	-	<0.0050	0.035	**1.7[M]**	0.0096	-	0.12	nc	0.049	0.0089
Chrysene	µg/g	n/v	9.6[L]	2.8[M]	-	-	0.0070	0.050	**3.1[M]**	0.018	-	0.23	nc	0.095	0.016
Dibenzo(a,h)anthracene	µg/g	10[EG]	n/a	0.1[M]	-	-	<0.0050	0.0090	**0.45[M]**	<0.0050	-	0.036	nc	0.016	<0.0050
Indeno(1,2,3-cd)pyrene	µg/g	10[EG]	n/a	0.23[M]	-	-	<0.0050	0.038	**1.3[M]**	0.010	-	0.10	nc	0.047	0.0084
Benzo(a)pyrene Total Potency Equivalent (B[a]P TPE)	-	5.3[E]	n/a	n/v	-	-	0.011	0.095	4.91	0.026	-	0.35	**171.9**	0.145	0.026
Volatile Organic Compounds															
Acetone (2-Propanone)	µg/g	n/v	16[L]	0.5[M]	<0.50	<0.50	-	<0.50	<0.50	<0.50	-	<0.50	nc	<0.50	<0.50
Benzene	µg/g	0.03[A]	n/a	0.02[M]	<0.0060	<0.0060	-	<0.0060	<0.0060	<0.0060	-	<0.0060	nc	<0.0060	<0.0060
Bromodichloromethane	µg/g	n/v	18[L]	0.05[M]	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	<0.050	nc	<0.050	<0.050
Bromoform (Tribromomethane)	µg/g	n/v	0.61[L]	0.05[M]	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	<0.050	nc	<0.050	<0.050
Bromomethane (Methyl bromide)	µg/g	n/v	0.05[L]	0.05[M]	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	<0.050	nc	<0.050	<0.050
Carbon Tetrachloride (Tetrachloromethane)	µg/g	50[A]	n/a	0.05[M]	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	<0.050	nc	<0.050	<0.050

Table E-1
Summary of Soil Analytical Results
Phase III ESA - West Memorial Building, 344 Wellington Street, Ottawa, ON
Public Services and Procurement Canada

Sample Location					BH16-4 SS6			BH16-5 SS2	BH16-6 SS2	BH16-7 SS2		BH16-7		BH16-8 SS3	BH16-9 SS3
Sample Date					26-Jan-16	26-Jan-16	27-Jan-16	26-Jan-16	26-Jan-16	26-Jan-16	26-Jan-16	26-Jan-16		26-Jan-16	26-Jan-16
Sample ID					BH16-4 SS6	BH16-4 SS6 Lab-Dup	BH16-4 SS6	BH16-5 SS2	BH16-6 SS2	BH16-7 SS2	BH16-7 SS2 Lab-Dup	BH16-7		BH16-8 SS3	BH16-9 SS3
Sample Depth (m bgs)					3.05 - 3.96	3.05 - 3.96	3.05 - 3.96	0.61 - 1.22	0.61 - 1.22	0.61 - 1.22	0.61 - 1.22	0.61 - 1.22		1.22 - 1.75	1.22 - 1.83
Sampling Company					STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC		STANTEC	STANTEC
Laboratory					MAXXAM	MAXXAM	MAXXAM	MAXXAM	MAXXAM	MAXXAM	MAXXAM	MAXXAM		MAXXAM	MAXXAM
Laboratory Work Order					B616805	B616805	B616805	B616805	B616805	B616805	B616805	B616805		B616805	B616805
Laboratory Sample ID					BSQ125	BSQ125	BSQ132	BSQ126	BSQ127	BSQ128	BSQ128	BSQ129		BSQ130	BSQ131
Sample Type	Units	CCME	Ontario Table 3 SCS	Ontario Table 1 SCS		Lab Duplicate					Lab Duplicate	Field Duplicate of BH16-7 SS2	RPD		
													%		
Chlorobenzene (Monochlorobenzene)	µg/g	10[A]	n/a	0.05[M]	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	<0.050	nc	<0.050	<0.050
Chloroform (Trichloromethane)	µg/g	50[A]	n/a	0.05[M]	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	<0.050	nc	<0.050	<0.050
Dibromochloromethane	µg/g	n/v	13[L]	0.05[M]	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	<0.050	nc	<0.050	<0.050
Dichlorobenzene, 1,2-	µg/g	10[A]	n/a	0.05[M]	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	<0.050	nc	<0.050	<0.050
Dichlorobenzene, 1,3-	µg/g	10[A]	n/a	0.05[M]	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	<0.050	nc	<0.050	<0.050
Dichlorobenzene, 1,4-	µg/g	10[A]	n/a	0.05[M]	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	<0.050	nc	<0.050	<0.050
Dichloroethane, 1,1-	µg/g	50[A]	n/a	0.05[M]	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	<0.050	nc	<0.050	<0.050
Dichloroethane, 1,2-	µg/g	50[A]	n/a	0.05[M]	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	<0.050	nc	<0.050	<0.050
Dichloroethylene, 1,1-	µg/g	50[A]	n/a	0.05[M]	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	<0.050	nc	<0.050	<0.050
Dichloroethylene, cis-1,2-	µg/g	50[A]	n/a	0.05[M]	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	<0.050	nc	<0.050	<0.050
Dichloroethylene, trans-1,2-	µg/g	50[A]	n/a	0.05[M]	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	<0.050	nc	<0.050	<0.050
Dichloropropane, 1,2-	µg/g	50[A]	n/a	0.05[M]	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	<0.050	nc	<0.050	<0.050
Dichloropropene, cis-1,3-	µg/g	n/v	[s11][L]	[s11][M]	<0.030	<0.030	-	<0.030	<0.030	<0.030	-	<0.030	nc	<0.030	<0.030
Dichloropropene, trans-1,3-	µg/g	n/v	[s11][L]	[s11][M]	<0.040	<0.040	-	<0.040	<0.040	<0.040	-	<0.040	nc	<0.040	<0.040
Ethylbenzene	µg/g	0.082[A]	n/a	0.05[M]	<0.010	<0.010	-	<0.010	<0.010	<0.010	-	<0.010	nc	<0.010	<0.010
Ethylene Dibromide (Dibromoethane, 1,2-)	µg/g	n/v	0.05[L]	0.05[M]	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	<0.050	nc	<0.050	<0.050
Methyl Ethyl Ketone (2-Butanone)	µg/g	n/v	70[L]	0.5[M]	<0.50	<0.50	-	<0.50	<0.50	<0.50	-	<0.50	nc	<0.50	<0.50
Methylene Chloride (Dichloromethane)	µg/g	50[A]	n/a	0.05[M]	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	<0.050	nc	<0.050	<0.050
Methyl Isobutyl Ketone	µg/g	n/v	31[L]	0.5[M]	<0.50	<0.50	-	<0.50	<0.50	<0.50	-	<0.50	nc	<0.50	<0.50
Methyl t-butyl ether (MTBE)	µg/g	n/v	11[L]	0.05[M]	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	<0.050	nc	<0.050	<0.050
Styrene	µg/g	50[A]	n/a	0.05[M]	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	<0.050	nc	<0.050	<0.050
Tetrachloroethane, 1,1,1,2-	µg/g	n/v	0.087[L]	0.05[M]	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	<0.050	nc	<0.050	<0.050
Tetrachloroethane, 1,1,2,2-	µg/g	50[A]	n/a	0.05[M]	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	<0.050	nc	<0.050	<0.050
Toluene	µg/g	0.37[A]	n/a	0.2[M]	<0.020	<0.020	-	<0.020	<0.020	<0.020	-	<0.020	nc	<0.020	<0.020
Tetrachloroethylene	µg/g	0.5[A]	n/a	0.05[M]	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	<0.050	nc	<0.050	<0.050
Trichloroethane, 1,1,1-	µg/g	50[A]	n/a	0.05[M]	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	<0.050	nc	<0.050	<0.050
Trichloroethane, 1,1,2-	µg/g	50[A]	n/a	0.05[M]	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	<0.050	nc	<0.050	<0.050
Trichloroethylene (TCE)	µg/g	0.01[A]	n/a	0.05[M]	<0.010	<0.010	-	<0.010	<0.010	<0.010	-	<0.010	nc	<0.010	<0.010
Vinyl chloride	µg/g	n/v	0.032[L]	0.02[M]	<0.020	<0.020	-	<0.020	<0.020	<0.020	-	<0.020	nc	<0.020	<0.020
Xylene, m & p-	µg/g	n/v	[s1][L]	[s1][M]	<0.020	<0.020	-	<0.020	<0.020	<0.020	-	<0.020	nc	<0.020	<0.020
Xylene, o-	µg/g	n/v	[s1][L]	[s1][M]	<0.020	<0.020	-	<0.020	<0.020	<0.020	-	<0.020	nc	<0.020	<0.020
Xylenes, Total	µg/g	11[A]	n/a	[0.05$_{s1}$][M]	<0.020	<0.020	-	<0.020	<0.020	<0.020	-	<0.020	nc	<0.020	<0.020
Dichlorodifluoromethane (FREON 12)	µg/g	n/v	16[L]	0.05[M]	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	<0.050	nc	<0.050	<0.050
Hexane	µg/g	6.5[A]	n/a	0.05[M]	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	<0.050	nc	<0.050	<0.050
Trichlorofluoromethane (Freon 11)	µg/g	n/v	4[L]	0.25[M]	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	<0.050	nc	<0.050	<0.050
Dichloropropene, 1,3- (sum of isomers cis + trans)	µg/g	n/v	[0.18$_{s11}$][L]	[0.05$_{s11}$][M]	<0.050	na	-	<0.050	<0.050	<0.050	-	<0.050	nc	<0.050	<0.050

See notes at end of Table E-2

Table E-2
Summary of Historical Soil Analytical Results
Phase III ESA - West Memorial Building, 344 Wellington Street, Ottawa, ON
Public Services and Procurement Canada

Sample Location					BH14-01-01	BH14-02-01	BH14-03-03	BH14-04-03	BH14-05-02	BH14-05-03	BH14-06-02		BH14-07-03	BH14-08-02	BH14-09-01	BH14-10-03
Sample Date					6-Oct-14	6-Oct-14	6-Oct-14	6-Oct-14	6-Oct-14	6-Oct-14	6-Oct-14	6-Oct-14	6-Oct-14	6-Oct-14	6-Oct-14	6-Oct-14
Sample ID					BH14-01-01	BH14-02-01	BH14-03-03	BH14-04-03	BH14-05-02	BH14-05-03	BH14-06-02	BH14-Dup-01	BH14-07-03	BH14-08-02	BH14-09-01	BH14-10-03
Sample Depth (m bgs)					0.2 - 0.6	0.3 - 0.5	1.8 - 2.7	1.8 - 2.07	0.6 - 1.8	1.8 - 2.7	0.6 - 1.5	0.6 - 1.5	1.8 - 2.4	0.6 - 1.2	0 - 0.6	1.8 - 2.7
Sampling Company					GEOFIRMA	GEOFIRMA	GEOFIRMA	GEOFIRMA	GEOFIRMA	GEOFIRMA	GEOFIRMA	GEOFIRMA	GEOFIRMA	GEOFIRMA	GEOFIRMA	GEOFIRMA
Laboratory					PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL
Laboratory Work Order					1441099	1441099	1441099	1441099	1441099	1441099	1441099	1441099	1441099	1441099	1441099	1441099
Laboratory Sample ID					1441099-01	1441099-02	1441099-03	1441099-04	1441099-05	1441099-06	1441099-07	1441099-12	1441099-08	1441099-09	1441099-10	1441099-11
Sample Type	Units	CCME	Ontario Table 3 SCS	Ontario Table 1 SCS								Field Duplicate of BH14-06-02				
General Chemistry																
% Solids	%	n/v	n/a	n/v	92.1	94.2	95.6	96.8	96.4	97.3	94.8	95.7	95.2	92.6	93.4	93.3
Moisture	%	n/v	n/a	n/v	-	-	-	-	-	-	-	-	-	-	-	-
Available (CaCl2) pH	pH	6-8[A]	n/a	n/v	-	-	-	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons																
PHC F1 (C6-C10 range)	µg/g	n/v	n/a	n/v	<7	<7	<7	<7	-	<7	<7	<7	<7	<7	<7	<7
PHC F1 (C6-C10 range) - BTEX	µg/g	320[B]	n/a	25_{57}[M]	-	-	-	-	-	-	-	-	-	-	-	-
PHC F2 (>C10-C16 range)	µg/g	260[B]	n/a	10_{s15}[M]	<4	<4	<4	<4	-	<4	**17[M]**	**23[M]**	<4	7	<4	<4
PHC F3 (>C16-C34 range)	µg/g	1700[B]	n/a	240_{s8}[M]	17	26	<8	<8	-	14	108	171	<8	69	15	39
PHC F4 (>C34-C50 range)	µg/g	3300[B]	n/a	120_{s10}[M]	<6	13	<6	<6	-	<6	46	100	<6	<6	<6	<6
Metals																
Chromium (Hexavalent)	µg/g	1.4[A]	n/a	0.66[M]	-	-	-	-	<0.2	<0.2	<0.2	<0.2	-	-	<0.2	<0.2
Boron (Hot Water Ext.)	µg/g	n/v	2_{s16}[L]	n/a[M]	-	-	-	-	-	-	-	-	-	-	-	-
Antimony	µg/g	40[A]	n/a	1.3[M]	-	-	-	-	<1	<1	<1	<1	-	-	<1	<1
Arsenic	µg/g	12[A]	n/a	18[M]	-	-	-	-	<1	<1	6	<1	-	-	<1	<1
Barium	µg/g	2000[A]	n/a	220[M]	-	-	-	-	71.7	76.7	115	128	-	-	79.8	78.3
Beryllium	µg/g	8[A]	n/a	2.5[M]	-	-	-	-	<1	<1	<1	<1	-	-	<1	<1
Boron	µg/g	n/v	120[L]	36[M]	-	-	-	-	4.3	6.2	6	5.6	-	-	4.1	5.8
Boron, available	µg/g	n/v	n/v	n/v	-	-	-	-	<0.5	<0.5	<0.5	<0.5	-	-	<0.5	<0.5
Cadmium	µg/g	22[A]	n/a	1.2[M]	-	-	-	-	<0.5	<0.5	<0.5	<0.5	-	-	<0.5	<0.5
Chromium (Total)	µg/g	87[A]	n/a	70[M]	-	-	-	-	16.3	15.8	21.2	21.6	-	-	21	15.9
Cobalt	µg/g	300[A]	n/a	21[M]	-	-	-	-	6.8	5.9	6.8	6.6	-	-	5.8	5.7
Copper	µg/g	91[A]	n/a	92[M]	-	-	-	-	20.2	**110[AM]**	**186[AM]**	**154[AM]**	-	-	19.8	19.9
Lead	µg/g	260[A]	n/a	120[M]	-	-	-	-	50.3	66.4	**177[M]**	**142[M]**	-	-	33.9	40.8
Sulphur	µg/g	n/v	n/v	n/v	-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum	µg/g	40[A]	n/a	2[M]	-	-	-	-	<1	<1	1.3	1.2	-	-	<1	1.3
Nickel	µg/g	89[A]	n/a	82[M]	-	-	-	-	13.9	11.8	14.9	14.9	-	-	14.3	12.8
Selenium	µg/g	2.9[A]	n/a	1.5[M]	-	-	-	-	<1	<1	<1	<1	-	-	<1	<1
Silver	µg/g	40[A]	n/a	0.5[M]	-	-	-	-	<0.5	<0.5	<0.5	<0.5	-	-	<0.5	<0.5
Thallium	µg/g	1[A]	n/a	1[M]	-	-	-	-	<1	<1	<1	<1	-	-	<1	<1
Tin	µg/g	300[A]	n/a	n/v	-	-	-	-	<5	8.8	12.4	14.6	-	-	<5	<5
Uranium	µg/g	33[A]	n/a	2.5[M]	-	-	-	-	<1	<1	<1	<1	-	-	<1	<1
Vanadium	µg/g	130[A]	n/a	86[M]	-	-	-	-	27.2	24.5	26.2	26.3	-	-	29.7	24.9
Zinc	µg/g	360[A]	n/a	290[M]	-	-	-	-	29.4	81.2	170	141	-	-	61.6	41.1
Mercury	µg/g	24[A]	n/a	0.27[M]	-	-	-	-	<0.1	<0.1	**0.4[M]**	**0.4[M]**	-	-	0.2	<0.1

Table E-2
Summary of Historical Soil Analytical Results
Phase III ESA - West Memorial Building, 344 Wellington Street, Ottawa, ON
Public Services and Procurement Canada

Sample Location					BH14-01-01	BH14-02-01	BH14-03-03	BH14-04-03	BH14-05-02	BH14-05-03	BH14-06-02		BH14-07-03	BH14-08-02	BH14-09-01	BH14-10-03
Sample Date					6-Oct-14	6-Oct-14	6-Oct-14	6-Oct-14	6-Oct-14	6-Oct-14	6-Oct-14	6-Oct-14	6-Oct-14	6-Oct-14	6-Oct-14	6-Oct-14
Sample ID					BH14-01-01	BH14-02-01	BH14-03-03	BH14-04-03	BH14-05-02	BH14-05-03	BH14-06-02	BH14-Dup-01	BH14-07-03	BH14-08-02	BH14-09-01	BH14-10-03
Sample Depth (m bgs)					0.2 - 0.6	0.3 - 0.5	1.8 - 2.7	1.8 - 2.07	0.6 - 1.8	1.8 - 2.7	0.6 - 1.5	0.6 - 1.5	1.8 - 2.4	0.6 - 1.2	0 - 0.6	1.8 - 2.7
Sampling Company					GEOFIRMA	GEOFIRMA	GEOFIRMA	GEOFIRMA	GEOFIRMA	GEOFIRMA	GEOFIRMA	GEOFIRMA	GEOFIRMA	GEOFIRMA	GEOFIRMA	GEOFIRMA
Laboratory					PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL
Laboratory Work Order					1441099	1441099	1441099	1441099	1441099	1441099	1441099	1441099	1441099	1441099	1441099	1441099
Laboratory Sample ID					1441099-01	1441099-02	1441099-03	1441099-04	1441099-05	1441099-06	1441099-07	1441099-12	1441099-08	1441099-09	1441099-10	1441099-11
Sample Type	Units	CCME	Ontario Table 3 SCS	Ontario Table 1 SCS								Field Duplicate of BH14-06-02				
Polychlorinated Biphenyls																
Aroclor 1242	µg/g	n/v	n/a	$_{s14}^{M}$	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor 1248	µg/g	n/v	n/a	$_{s14}^{M}$	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor 1254	µg/g	n/v	n/a	$_{s14}^{M}$	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor1260	µg/g	n/v	n/a	$_{s14}^{M}$	-	-	-	-	-	-	-	-	-	-	-	-
Total Polychlorinated Biphenyls (PCBs)	µg/g	33[A]	n/a	0.3_{s14}^{M}	-	-	-	-	-	-	-	-	-	-	-	-
Non-Carcinogenic Polycyclic Aromatic Hydrocarbons																
Acenaphthene	µg/g	0.28[I]	n/a	0.072[M]	-	-	-	-	-	**1.1[IM]**	**4.65[IM]**	**4.5[IM]**	-	-	-	**0.5[IM]**
Acenaphthylene	µg/g	320[I]	n/a	0.093[M]	-	-	-	-	-	0.04	***<0.4***	***<0.4***	-	-	-	**3.14[M]**
Anthracene	µg/g	32[EHK]	n/a	0.16[M]	-	-	-	-	-	**2.46[M]**	**9.36[M]**	**10.3[M]**	-	-	-	**3.85[M]**
Fluoranthene	µg/g	180[EHK]	n/a	0.56[M]	-	-	-	-	-	**5.24[M]**	**29.1[M]**	**28.1[M]**	-	-	-	**9.88[M]**
Fluorene	µg/g	0.25[I]	n/a	0.12[M]	-	-	-	-	-	**1.62[IM]**	**6.45[IM]**	**6.49[IM]**	-	-	-	**4.18[IM]**
Methylnaphthalene, 1-	µg/g	n/v	$_{s3}^{L}$	$_{s3}^{M}$	-	-	-	-	-	0.23	0.89	0.77	-	-	-	1.25
Methylnaphthalene, 2-	µg/g	n/v	$_{s3}^{L}$	$_{s3}^{M}$	-	-	-	-	-	0.36	1.04	1.01	-	-	-	1.69
Methylnaphthalene (Total)	µg/g	n/v	76[L]	0.59_{s3}^{M}	-	-	-	-	-	0.59	**1.93[M]**	**1.79[M]**	-	-	-	**2.94[M]**
Naphthalene	µg/g	0.013_{e}[EI] 22[G]	n/a	0.09[M]	-	-	-	-	-	**0.63[IM]**	**1.5[IM]**	**1.71[IM]**	-	-	-	**2.55[IM]**
Phenanthrene	µg/g	0.046_{e}[EI] 50[G]	n/a	0.69[M]	-	-	-	-	-	**6.58[EIM]**	**37.9[EIM]**	**37.2[EIM]**	-	-	-	**13.2[EIM]**
Pyrene	µg/g	100[EG]	n/a	1[M]	-	-	-	-	-	**3.9[M]**	**22.6[M]**	**21.8[M]**	-	-	-	**8.16[M]**
Biphenyl	µg/g	n/v	52[L]	52[M]	-	-	-	-	-	0.16	0.48	0.49	-	-	-	0.51
Quinoline	µg/g	n/v	n/v	n/v	-	-	-	-	-	<0.1	<2	<2	-	-	-	<0.1
Carcinogenic Polycyclic Aromatic Hydrocarbons																
Benzo(a)anthracene	µg/g	10[EG]	n/a	0.36[M]	-	-	-	-	-	2.3	12.5	11.2	-	-	-	4.08
Benzo(a)pyrene	µg/g	72[EHK] 8800[J]	n/a	0.3[M]	-	-	-	-	-	1.62	8.3	7.66	-	-	-	2.66
Benzo(b/j)fluoranthene	µg/g	10[EG]	n/a	0.47_{s2}^{M}	-	-	-	-	-	2.54	13.8	11.9	-	-	-	4.26
Benzo(g,h,i)perylene	µg/g	n/v	9.6[L]	0.68[M]	-	-	-	-	-	0.85	4.34	4.05	-	-	-	1.32
Benzo(k)fluoranthene	µg/g	10[EG]	n/a	0.48[M]	-	-	-	-	-	1.01	5.34	4.53	-	-	-	2.36
Chrysene	µg/g	n/v	9.6[L]	2.8[M]	-	-	-	-	-	2.22	11.7	11.1	-	-	-	3.63
Dibenzo(a,h)anthracene	µg/g	10[EG]	n/a	0.1[M]	-	-	-	-	-	0.27	1.35	1.21	-	-	-	0.44
Indeno(1,2,3-cd)pyrene	µg/g	10[EG]	n/a	0.23[M]	-	-	-	-	-	0.84	4.06	3.88	-	-	-	1.37
Benzo(a)pyrene Total Potency Equivalent (B[a]P TPE)	-	5.3[E]	n/a	n/v	-	-	-	-	-	2.59	**13.38[E]**	**12.17[E]**	-	-	-	4.36
Volatile Organic Compounds																
Acetone (2-Propanone)	µg/g	n/v	16[L]	0.5[M]	-	-	-	-	-	-	-	-	-	-	-	-
Benzene	µg/g	0.03[A]	n/a	0.02[M]	-	<0.002	<0.002	-	-	-	<0.002	<0.002	-	-	-	-
Bromodichloromethane	µg/g	n/v	18[L]	0.05[M]	-	-	-	-	-	-	-	-	-	-	-	-
Bromoform (Tribromomethane)	µg/g	n/v	0.61[L]	0.05[M]	-	-	-	-	-	-	-	-	-	-	-	-
Bromomethane (Methyl bromide)	µg/g	n/v	0.05[L]	0.05[M]	-	-	-	-	-	-	-	-	-	-	-	-

Table E-2
Summary of Historical Soil Analytical Results
Phase III ESA - West Memorial Building, 344 Wellington Street, Ottawa, ON
Public Services and Procurement Canada

Sample Location					BH14-01-01	BH14-02-01	BH14-03-03	BH14-04-03	BH14-05-02	BH14-05-03	BH14-06-02		BH14-07-03	BH14-08-02	BH14-09-01	BH14-10-03
Sample Date					6-Oct-14	6-Oct-14	6-Oct-14	6-Oct-14	6-Oct-14	6-Oct-14	6-Oct-14	6-Oct-14	6-Oct-14	6-Oct-14	6-Oct-14	6-Oct-14
Sample ID					BH14-01-01	BH14-02-01	BH14-03-03	BH14-04-03	BH14-05-02	BH14-05-03	BH14-06-02	BH14-Dup-01	BH14-07-03	BH14-08-02	BH14-09-01	BH14-10-03
Sample Depth (m bgs)					0.2 - 0.6	0.3 - 0.5	1.8 - 2.7	1.8 - 2.07	0.6 - 1.8	1.8 - 2.7	0.6 - 1.5	0.6 - 1.5	1.8 - 2.4	0.6 - 1.2	0 - 0.6	1.8 - 2.7
Sampling Company					GEOFIRMA	GEOFIRMA	GEOFIRMA	GEOFIRMA	GEOFIRMA	GEOFIRMA	GEOFIRMA	GEOFIRMA	GEOFIRMA	GEOFIRMA	GEOFIRMA	GEOFIRMA
Laboratory					PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL
Laboratory Work Order					1441099	1441099	1441099	1441099	1441099	1441099	1441099	1441099	1441099	1441099	1441099	1441099
Laboratory Sample ID					1441099-01	1441099-02	1441099-03	1441099-04	1441099-05	1441099-06	1441099-07	1441099-12	1441099-08	1441099-09	1441099-10	1441099-11
Sample Type	Units	CCME	Ontario Table 3 SCS	Ontario Table 1 SCS								Field Duplicate of BH14-06-02				
Carbon Tetrachloride (Tetrachloromethane)	µg/g	50[A]	n/a	0.05[M]	-	-	-	-	-	-	-	-	-	-	-	-
Chlorobenzene (Monochlorobenzene)	µg/g	10[A]	n/a	0.05[M]	-	-	-	-	-	-	-	-	-	-	-	-
Chloroform (Trichloromethane)	µg/g	50[A]	n/a	0.05[M]	-	-	-	-	-	-	-	-	-	-	-	-
Dibromochloromethane	µg/g	n/v	13[L]	0.05[M]	-	-	-	-	-	-	-	-	-	-	-	-
Dichlorobenzene, 1,2-	µg/g	10[A]	n/a	0.05[M]	-	-	-	-	-	-	-	-	-	-	-	-
Dichlorobenzene, 1,3-	µg/g	10[A]	n/a	0.05[M]	-	-	-	-	-	-	-	-	-	-	-	-
Dichlorobenzene, 1,4-	µg/g	10[A]	n/a	0.05[M]	-	-	-	-	-	-	-	-	-	-	-	-
Dichloroethane, 1,1-	µg/g	50[A]	n/a	0.05[M]	-	-	-	-	-	-	-	-	-	-	-	-
Dichloroethane, 1,2-	µg/g	50[A]	n/a	0.05[M]	-	-	-	-	-	-	-	-	-	-	-	-
Dichloroethylene, 1,1-	µg/g	50[A]	n/a	0.05[M]	-	-	-	-	-	-	-	-	-	-	-	-
Dichloroethylene, cis-1,2-	µg/g	50[A]	n/a	0.05[M]	-	-	-	-	-	-	-	-	-	-	-	-
Dichloroethylene, trans-1,2-	µg/g	50[A]	n/a	0.05[M]	-	-	-	-	-	-	-	-	-	-	-	-
Dichloropropane, 1,2-	µg/g	50[A]	n/a	0.05[M]	-	-	-	-	-	-	-	-	-	-	-	-
Dichloropropene, cis-1,3-	µg/g	n/v	[s11][L]	[s11][M]	-	-	-	-	-	-	-	-	-	-	-	-
Dichloropropene, trans-1,3-	µg/g	n/v	[s11][L]	[s11][M]	-	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	µg/g	0.082[A]	n/a	0.05[M]	-	<0.002	<0.002	-	-	-	<0.002	<0.002	-	-	-	-
Ethylene Dibromide (Dibromoethane, 1,2-)	µg/g	n/v	0.05[L]	0.05[M]	-	-	-	-	-	-	-	-	-	-	-	-
Methyl Ethyl Ketone (2-Butanone)	µg/g	n/v	70[L]	0.5[M]	-	-	-	-	-	-	-	-	-	-	-	-
Methylene Chloride (Dichloromethane)	µg/g	50[A]	n/a	0.05[M]	-	-	-	-	-	-	-	-	-	-	-	-
Methyl Isobutyl Ketone	µg/g	n/v	31[L]	0.5[M]	-	-	-	-	-	-	-	-	-	-	-	-
Methyl t-butyl ether (MTBE)	µg/g	n/v	11[L]	0.05[M]	-	-	-	-	-	-	-	-	-	-	-	-
Styrene	µg/g	50[A]	n/a	0.05[M]	-	-	-	-	-	-	-	-	-	-	-	-
Tetrachloroethane, 1,1,1,2-	µg/g	n/v	0.087[L]	0.05[M]	-	-	-	-	-	-	-	-	-	-	-	-
Tetrachloroethane, 1,1,2,2-	µg/g	50[A]	n/a	0.05[M]	-	-	-	-	-	-	-	-	-	-	-	-
Toluene	µg/g	0.37[A]	n/a	0.2[M]	-	<0.002	<0.002	-	-	-	<0.002	<0.002	-	-	-	-
Tetrachloroethylene	µg/g	0.5[A]	n/a	0.05[M]	-	-	-	-	-	-	-	-	-	-	-	-
Trichloroethane, 1,1,1-	µg/g	50[A]	n/a	0.05[M]	-	-	-	-	-	-	-	-	-	-	-	-
Trichloroethane, 1,1,2-	µg/g	50[A]	n/a	0.05[M]	-	-	-	-	-	-	-	-	-	-	-	-
Trichloroethylene (TCE)	µg/g	0.01[A]	n/a	0.05[M]	-	-	-	-	-	-	-	-	-	-	-	-
Vinyl chloride	µg/g	n/v	0.032[L]	0.02[M]	-	-	-	-	-	-	-	-	-	-	-	-
Xylene, m & p-	µg/g	n/v	[s1][L]	[s1][M]	-	<0.002	<0.002	-	-	-	<0.002	<0.002	-	-	-	-
Xylene, o-	µg/g	n/v	[s1][L]	[s1][M]	-	<0.002	<0.002	-	-	-	<0.002	<0.002	-	-	-	-
Xylenes, Total	µg/g	11[A]	n/a	[0.05s1][M]	-	<0.002	<0.002	-	-	-	<0.002	<0.002	-	-	-	-
Dichlorodifluoromethane (FREON 12)	µg/g	n/v	16[L]	0.05[M]	-	-	-	-	-	-	-	-	-	-	-	-
Hexane	µg/g	6.5[A]	n/a	0.05[M]	-	-	-	-	-	-	-	-	-	-	-	-
Trichlorofluoromethane (Freon 11)	µg/g	n/v	4[L]	0.25[M]	-	-	-	-	-	-	-	-	-	-	-	-
Dichloropropene, 1,3- (sum of isomers cis + trans)	µg/g	n/v	[0.18s11][L]	[0.05s11][M]	-	-	-	-	-	-	-	-	-	-	-	-

See notes on last page

Table E-1 and E-2 Notes
Summary of Soil Analytical Results
Phase III ESA - West Memorial Building, 344 Wellington Street, Ottawa, ON
Public Services and Procurement Canada

Notes:

CCME	Canadian Council of Ministers of the Environment
A	Canadian Environmental Quality Guidelines, Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health, on-line summary table, for commercial land use and coarse grained soil
B	Canada Wide Standards for PHC in Soil - Commercial land use - Coarse-grained Soil, non-potable groundwater, Tier 1 (Revised Jan 2008, Table 3), lowest guideline of all pathways
D	Canadian Soil Quality Guideline for the Protection of Environmental and Human Health, PAH, 2008. revised 2010, for an Commercial land use (Table 1 - Direct contact)
E	Canadian Soil Quality Guideline for the Protection of Environmental and Human Health, PAH, 2008. revised 2010, for an Commercial land use (Table 1 - Environmental health guidelines based on non-carcinogenic effects of PAHs)
F	Canadian Soil Quality Guideline for the Protection of Environmental and Human Health, PAH, 2008. revised 2010, for an Commercial land use (Table 1 - Protection of potable water)
G	Canadian Soil Quality Guideline for the Protection of Environmental and Human Health, PAH, 2008. revised 2010, for an Commercial land use (Table 2 - Interim/Provisional Soil Quality Critera, CCME 1991)
H	Canadian Soil Quality Guideline for the Protection of Environmental and Human Health, PAH, 2008. revised 2010, for an Commercial land use (Table 2 - Soil Quality Guideline for Environmental Health)
I	Canadian Soil Quality Guideline for the Protection of Environmental and Human Health, PAH, 2008. revised 2010, for an Commercial land use (Table 2 - Soil Quality Guideline for Protection of freshwater life)
J	Canadian Soil Quality Guideline for the Protection of Environmental and Human Health, PAH, 2008. revised 2010, for an Commercial land use (Table 2 - Soil Quality Guideline for Soil and food ingestion)
K	Canadian Soil Quality Guideline for the Protection of Environmental and Human Health, PAH, 2008. revised 2010, for an Commercial land use (Table 2 - Soil Quality Guideline for Soil Contact)
Ontario SCS	Soil, Ground Water and Sediment Standards for Use under Part XV.I of the Environmental Protection Act (MOE, 2011)
L	Table 3 - Industrial / Commercial / Community Property Use - Coarse Textured Soils
M	Table 1 - Residential / Parkland / Institutional / Industrial / Commercial / Community Property Use
6.5[A]	Concentration exceeds the indicated standard.
15.2	Measured concentration was less than the applicable standard.
<0.50	Laboratory reportable detection limit was greater than the applicable standard.
<0.03	Analyte was not detected at a concentration greater than the laboratory reportable detection limit.
n/v	No standard/guideline value.
n/a	Ontario Standard not applicable as a federal guideline is available.
-	Parameter not analyzed / not available.
a,b,c	SQG based on an incremental lifetime cancer risk (ILCR) of 1 in 100,000 (10e-5). B[a]P TPE = Benzo[a]pyrene Total Potency Equivalents, which is the sum of estimated cancer potency relative to B[a]P for all potentially carcinogenic unsubstituted PAHs. The B[a]P TPE for a soil sample is calculated by multiplying the concentration of each PAH in the sample by its B[a]P Potency Equivalence Factor (PEF), given below, and summing the products: Benz[a]anthracene = 0.1, Benzo[a]pyrene = 1, Benzo[b+j+k]fluoranthene = 0.1, Benzo[g,h,i]perylene = 0.01, Chrysene = 0.01, Dibenz[a,h]anthracene =1, Indeno[1,2,3-cd]pyrene = 0.1.
e	This value is the Soil Quality Guideline for the Protection of Freshwater Life. Users may wish to consider the application, on a site-specific basis, of this value where potential impacts to nearby surface waters are a concern (the value may be less than the common limit of detection in some jurisdictions; and the 1991 Interim Soil Quality Criteria for phenanthrene).
s1	Standard is applicable to total xylenes, and m & p-xylenes and o-xylenes should be summed for comparison.
s2	Standard is for benzo(b)fluoranthene; however, the analytical laboratory can not distinguish between benzo(b)fluoranthene and benzo(j)fluoranthene, and therefore, the result is a combination of the two isomers, against which the standard has been compared.
s3	Standard is applicable to both 1-methylnaphthalene and 2-methylnaphthalene, with the provision that if both are detected the sum of the two must not exceed the standard.
s7	Standard is applicable to PHC in the F1 range minus BTEX.
s8	Standard is applicable to PHC in the F3 range, minus PAHs (other than naphthalene). If PAHs were not analyzed, the standard is applied to F3.
s10	If baseline is not reached during F4 analysis, then gravimetric analysis is to be performed, and the standard is applied to the higher of the two results.
s11	Standard is applicable to 1,3-Dichloropropene, and the individual isomers (cis + trans) should be added for comparison.
s14	Standard is applicable to total PCBs, and the individual Aroclors should be added for comparison.
s15	Standard is applicable to PHC in the F2 range minus naphthalene. If naphthalene was not analyzed, the standard is applied to F2.
s16	For surface soil, the boron standard is for hot water soluble extract. For subsurface soil, the standard is for total boron (mixed strong acid digest), as ecological criteria are not considered.
LD	Elevated detection limits due to the nature of the sample matrix.
RPD	Relative Percent Difference
nc	RPD is not calculated unless both concentrations are greater than five times the reportable detection limit.
na	Not Analyzed
m bgs	Metres below grade surface

Table E-3
Landfill Waste Disposal Characterization
Phase III ESA - West Memorial Building, 344 Wellington Street, Ottawa, ON
Public Services and Procurement Canada

Sample Location			**558**
Sample Date			**27-Jan-16**
Sample ID			**558**
Sampling Company			**STANTEC**
Laboratory			**MAXXAM**
Laboratory Work Order			**B617237**
Laboratory Sample ID	**Units**	**MOECC**	**BSS343**
Leachate Preparation			
Amount Extracted (Wet Weight)	g	n/v	25
Cyanide (Free)	mg/L	20[A]	<0.010
Fluoride	mg/L	150[A]	0.16
Nitrate (as N)	mg/L	n/v	<1.0
Nitrite (as N)	mg/L	n/v	<0.10
Nitrate + Nitrite (N)	mg/L	1000	<1.0
TCLP - Percent Solids	%wt	n/v	100
TCLP Extraction Fluid	n/a	n/v	FLUID 1
Ignitability	n/a	n/v	NF/NI
pH (Final Leach)	pH	n/v	4.90
pH Value (Initial Leach)	pH	n/v	9.22
Moisture	%	n/v	19
Metals			
Arsenic	mg/L	2.5[A]	<0.20
Barium	mg/L	100[A]	0.38
Boron	mg/L	500.0[A]	0.38
Cadmium	mg/L	0.5[A]	<0.050
Chromium (Total)	mg/L	5[A]	<0.10
Lead	mg/L	5[A]	<0.10
Mercury	mg/L	0.1[A]	<0.0010
Selenium	mg/L	1[A]	<0.10
Silver	mg/L	5[A]	<0.010
Uranium	mg/L	10[A]	<0.010
Polychlorinated Biphenyls			
Aroclor 1016	ug/g	n/v	<0.010
Aroclor 1221	ug/g	n/v	<0.010
Aroclor 1232	ug/g	n/v	<0.010
Aroclor 1242	ug/g	n/v	<0.010
Aroclor 1248	ug/g	n/v	<0.010
Aroclor 1254	ug/g	n/v	<0.010
Aroclor 1260	ug/g	n/v	<0.010
Aroclor 1262	ug/g	n/v	<0.010
Aroclor 1268	ug/g	n/v	<0.010
Total Polychlorinated Biphenyls (PCBs)	ug/g	n/v	<0.010
Semi - Volatile Organic Compounds			
Benzo(a)pyrene	ug/L	1[A]	<0.10
m/p-Cresol	ug/L	200000[A]	<2.5
o-Cresol	ug/L	200000[A]	<2.5
Cresol Total	ug/L	n/v	<2.5
2,4-Dichlorophenol	ug/L	90000[A]	<2.5
2,4-Dinitrotoluene	ug/L	130[A]	<10
Hexachlorobenzene	ug/L	130[A]	<10
Hexachlorobutadiene	ug/L	500[A]	<10
Hexachloroethane	ug/L	3000[A]	<10
Nitrobenzene	ug/L	2000[A]	<10
Pentachlorophenol	ug/L	6000[A]	<2.5
Pyridine	ug/L	5000[A]	<10
2,3,4,6-Tetrachlorophenol	ug/L	10000[A]	<2.5
2,4,5-Trichlorophenol	ug/L	400000[A]	<0.50
2,4,6-Trichlorophenol	ug/L	500[A]	<2.5
Volatile Organic Compounds			
Benzene	mg/L	0.5[A]	<0.020
Carbon Tetrachloride (Tetrachloromethane)	mg/L	0.5[A]	<0.020
Chlorobenzene (Monochlorobenzene)	mg/L	8[A]	<0.020
Chloroform (Trichloromethane)	mg/L	10[A]	<0.020
Dichlorobenzene, 1,2-	mg/L	20[A]	<0.050
Dichlorobenzene, 1,4-	mg/L	0.5[A]	<0.050
Dichloroethane, 1,2-	mg/L	0.5[A]	<0.050
Dichloroethylene, 1,1-	mg/L	1.4[A]	<0.020
Methyl Ethyl Ketone (MEK)	mg/L	200[A]	<1.0
Methylene Chloride (Dichloromethane)	mg/L	5[A]	<0.20
Tetrachloroethylene	mg/L	3[A]	<0.020
Trichloroethylene	mg/L	5[A]	<0.020
Vinyl chloride	mg/L	0.2[A]	<0.020

Notes:

MOECC	Ontario Ministry of the Environment and Climate Change
[A]	MOECC O.Reg. 347 of R.R.O. 1990 - Schedule 4 – Leachate Quality Criteria
6.5[A]	Concentration exceeds the indicated standard.
15.2	Measured concentration was less than the applicable standard.
<0.50	Laboratory reportable detection limit was greater than the applicable standard.
<0.03	Analyte was not detected at a concentration greater than the laboratory reportable detection limit.
n/v	No standard/guideline value.
NF/NI	Not flammable, not ignitable.

Appendix F

Laboratory Certificates of Analyses

Maxxam
A Bureau Veritas Group Company

Your Project #: 122511222
Site Location: 344 WELLINGTON
Your C.O.C. #: 546828-03-01, 546828-01-01

Attention:Jill Peters-Dechman

Stantec Consulting Ltd
1331 Clyde Avenue
Suite 400
Ottawa, ON
K2C 3G4

Report Date: 2016/02/04
Report #: R3879020
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B616805
Received: 2016/01/27, 12:34

Sample Matrix: Soil
Samples Received: 16

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	14	N/A	2016/02/04	CAM SOP-00301	EPA 8270D m
Hot Water Extractable Boron (1)	14	2016/02/02	2016/02/02	CAM SOP-00408	R153 Ana. Prot. 2011
1,3-Dichloropropene Sum (1)	14	N/A	2016/02/01		EPA 8260C m
Hexavalent Chromium in Soil by IC (1, 2)	14	2016/02/02	2016/02/03	CAM SOP-00436	EPA 3060/7199 m
Petroleum Hydro. CCME F1 & BTEX in Soil (3)	14	N/A	2016/02/02	OTT SOP-00002	CCME CWS
Petroleum Hydrocarbons F2-F4 in Soil (4)	5	2016/01/28	2016/01/28	OTT SOP-00001	CCME CWS
Petroleum Hydrocarbons F2-F4 in Soil (4)	9	2016/01/28	2016/01/29	OTT SOP-00001	CCME CWS
Strong Acid Leachable Metals by ICPMS (1)	14	2016/02/02	2016/02/02	CAM SOP-00447	EPA 6020A m
Acid Extractable Metals Analysis by ICP (1)	14	2016/02/02	2016/02/02	CAM SOP-00408	EPA 6010C m
MOISTURE	16	N/A	2016/01/29	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	14	2016/01/28	2016/01/28	OTT SOP-00011	EPA 8270D m
Polychlorinated Biphenyl in Soil (1)	10	2016/02/01	2016/02/01	CAM SOP-00309	EPA 8082A m
pH CaCl2 EXTRACT (1)	14	2016/02/01	2016/02/01	CAM SOP-00413	EPA 9045 D m
Volatile Organic Compounds in Soil (1)	14	N/A	2016/01/30	CAM SOP-00228	EPA 8260 m

Remarks:

Maxxam Analytics has performed all analytical testing herein in accordance with ISO 17025 and the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act. All methodologies comply with this document and are validated for use in the laboratory. The methods and techniques employed in this analysis conform to the performance criteria (detection limits, accuracy and precision) as outlined in the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act.

Maxxam Analytics is accredited for all specific parameters as required by Ontario Regulation 153/04. Maxxam Analytics is limited in liability to the actual cost of analysis unless otherwise agreed in writing. There is no other warranty expressed or implied. Samples will be retained at Maxxam Analytics for three weeks from receipt of data or as per contract.

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

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

Your Project #: 122511222
Site Location: 344 WELLINGTON
Your C.O.C. #: 546828-03-01, 546828-01-01

Attention:Jill Peters-Dechman

Stantec Consulting Ltd
1331 Clyde Avenue
Suite 400
Ottawa, ON
K2C 3G4

Report Date: 2016/02/04
Report #: R3879020
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B616805
Received: 2016/01/27, 12:34

(1) This test was performed by Maxxam Analytics Mississauga
(2) Soils are reported on a dry weight basis unless otherwise specified.
(3) No lab extraction date is given for F1BTEX & VOC samples that are field preserved with methanol. Extraction date is the date sampled unless otherwise stated.
(4) All CCME PHC results met required criteria unless otherwise stated in the report. The CWS PHC methods employed by Maxxam conform to all prescribed elements of the reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following "Alberta Environment's Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil Validation of Performance-Based Alternative Methods September 2003". Documentation is available upon request. Modifications from Reference Method for the Canada-wide Standard for Petroleum Hydrocarbons in Soil-Tier 1 Method: F2/F3/F4 data reported using validated cold solvent extraction instead of Soxhlet extraction.

Encryption Key

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

==========

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

Maxxam Job #: B616805
Report Date: 2016/02/04

Stantec Consulting Ltd
Client Project #: 122511222
Site Location: 344 WELLINGTON
Sampler Initials: AH

CCME METALS PACKAGE (SOIL)

Maxxam ID		BSQ124	BSQ126	BSQ127	BSQ128	BSQ128		
Sampling Date		2016/01/26 09:00	2016/01/26 10:00	2016/01/26 11:00	2016/01/26 12:00	2016/01/26 12:00		
COC Number		546828-03-01	546828-03-01	546828-03-01	546828-03-01	546828-03-01		
	UNITS	BH16-4 SS3	BH16-5 SS2	BH16-6 SS2	BH16-7 SS2	BH16-7 SS2 Lab-Dup	RDL	QC Batch
Inorganics								
Chromium (VI)	ug/g	<0.2	<0.2	<0.2	<0.2		0.2	4367008
Metals								
Hot Water Ext. Boron (B)	ug/g	0.15	0.51	0.34	0.063	<0.050	0.050	4366681
Acid Extractable Antimony (Sb)	ug/g	1.1	1.0	16	0.99		0.20	4366750
Acid Extractable Arsenic (As)	ug/g	2.6	4.7	12	1.6		1.0	4366750
Acid Extractable Barium (Ba)	ug/g	440	71	200	52		0.50	4366750
Acid Extractable Beryllium (Be)	ug/g	0.29	0.35	0.35	0.23		0.20	4366750
Acid Extractable Cadmium (Cd)	ug/g	0.26	0.23	1.4	0.15		0.10	4366750
Acid Extractable Chromium (Cr)	ug/g	15	17	33	12		1.0	4366750
Acid Extractable Cobalt (Co)	ug/g	5.8	4.7	8.8	5.2		0.10	4366750
Acid Extractable Copper (Cu)	ug/g	19	17	830	43		0.50	4366750
Acid Extractable Lead (Pb)	ug/g	76	95	760	21		1.0	4366750
Acid Extractable Sulphur (S)	ug/g	330	320	600	150		50	4366683
Acid Extractable Molybdenum (Mo)	ug/g	1.2	1.1	1.7	0.72		0.50	4366750
Acid Extractable Nickel (Ni)	ug/g	13	12	21	10		0.50	4366750
Acid Extractable Selenium (Se)	ug/g	<0.50	<0.50	0.93	<0.50		0.50	4366750
Acid Extractable Silver (Ag)	ug/g	<0.20	<0.20	0.84	<0.20		0.20	4366750
Acid Extractable Thallium (Tl)	ug/g	0.13	0.12	0.21	0.11		0.050	4366750
Acid Extractable Tin (Sn)	ug/g	<5.0	5.2	94	<5.0		5.0	4366750
Acid Extractable Uranium (U)	ug/g	0.51	0.72	0.47	0.50		0.050	4366750
Acid Extractable Vanadium (V)	ug/g	25	23	36	25		5.0	4366750
Acid Extractable Zinc (Zn)	ug/g	48	64	870	36		5.0	4366750
Acid Extractable Mercury (Hg)	ug/g	<0.050	0.14	1.6	0.082		0.050	4366750

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

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

Maxxam Job #: B616805
Report Date: 2016/02/04

Stantec Consulting Ltd
Client Project #: 122511222
Site Location: 344 WELLINGTON
Sampler Initials: AH

CCME METALS PACKAGE (SOIL)

Maxxam ID		BSQ129	BSQ130	BSQ131	BSQ132	BSQ136		
Sampling Date		2016/01/26 12:00	2016/01/26 13:00	2016/01/26 14:00	2016/01/27 09:00	2016/01/27 09:00		
COC Number		546828-03-01	546828-03-01	546828-03-01	546828-03-01	546828-01-01		
	UNITS	BH16-7	BH16-8 SS3	BH16-9 SS3	BH16-4 SS6	BH16-3 SS2	RDL	QC Batch
Inorganics								
Chromium (VI)	ug/g	<0.2	<0.2	0.7	<0.2	<0.2	0.2	4367008
Metals								
Hot Water Ext. Boron (B)	ug/g	0.13	0.068	0.071	0.10	0.20	0.050	4366681
Acid Extractable Antimony (Sb)	ug/g	5.6	0.65	0.70	<0.20	<0.20	0.20	4366750
Acid Extractable Arsenic (As)	ug/g	3.3	2.1	2.1	<1.0	<1.0	1.0	4366750
Acid Extractable Barium (Ba)	ug/g	63	59	190	58	20	0.50	4366750
Acid Extractable Beryllium (Be)	ug/g	0.26	0.26	0.29	0.22	0.23	0.20	4366750
Acid Extractable Cadmium (Cd)	ug/g	0.15	0.19	0.16	<0.10	<0.10	0.10	4366750
Acid Extractable Chromium (Cr)	ug/g	12	12	15	11	24	1.0	4366750
Acid Extractable Cobalt (Co)	ug/g	5.4	6.4	5.2	5.6	4.4	0.10	4366750
Acid Extractable Copper (Cu)	ug/g	98	20	25	11	6.2	0.50	4366750
Acid Extractable Lead (Pb)	ug/g	130	47	44	5.2	4.1	1.0	4366750
Acid Extractable Sulphur (S)	ug/g	300	160	250	120	81	50	4366683
Acid Extractable Molybdenum (Mo)	ug/g	1.3	1.1	0.75	0.74	<0.50	0.50	4366750
Acid Extractable Nickel (Ni)	ug/g	12	12	11	9.6	11	0.50	4366750
Acid Extractable Selenium (Se)	ug/g	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4366750
Acid Extractable Silver (Ag)	ug/g	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4366750
Acid Extractable Thallium (Tl)	ug/g	0.17	0.16	0.11	0.092	0.063	0.050	4366750
Acid Extractable Tin (Sn)	ug/g	11	<5.0	<5.0	<5.0	<5.0	5.0	4366750
Acid Extractable Uranium (U)	ug/g	0.47	0.55	0.94	0.50	0.92	0.050	4366750
Acid Extractable Vanadium (V)	ug/g	22	23	21	22	57	5.0	4366750
Acid Extractable Zinc (Zn)	ug/g	85	42	80	18	22	5.0	4366750
Acid Extractable Mercury (Hg)	ug/g	0.30	0.075	0.12	<0.050	<0.050	0.050	4366750

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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

Maxxam Job #: B616805
Report Date: 2016/02/04

Stantec Consulting Ltd
Client Project #: 122511222
Site Location: 344 WELLINGTON
Sampler Initials: AH

CCME METALS PACKAGE (SOIL)

Maxxam ID		BSQ136	BSQ137	BSQ137	BSQ138	BSQ139		
Sampling Date		2016/01/27 09:00	2016/01/27 09:00	2016/01/27 09:00	2016/01/27 10:00	2016/01/27 10:00		
COC Number		546828-01-01	546828-01-01	546828-01-01	546828-01-01	546828-01-01		
	UNITS	BH16-3 SS2 Lab-Dup	BH16-3 SS4	BH16-3 SS4 Lab-Dup	BH16-2 SS2	BH16-2 SS4	RDL	QC Batch
Inorganics								
Chromium (VI)	ug/g		<0.2		<0.2	<0.2	0.2	4367008
Metals								
Hot Water Ext. Boron (B)	ug/g		0.14		0.38	0.16	0.050	4366681
Acid Extractable Antimony (Sb)	ug/g		<0.20	<0.20	0.47	0.46	0.20	4366750
Acid Extractable Arsenic (As)	ug/g		1.5	1.8	3.1	1.7	1.0	4366750
Acid Extractable Barium (Ba)	ug/g		51	52	60	41	0.50	4366750
Acid Extractable Beryllium (Be)	ug/g		0.29	0.32	0.32	0.23	0.20	4366750
Acid Extractable Cadmium (Cd)	ug/g		<0.10	<0.10	0.18	0.14	0.10	4366750
Acid Extractable Chromium (Cr)	ug/g		15	15	19	12	1.0	4366750
Acid Extractable Cobalt (Co)	ug/g		5.4	5.3	5.8	5.5	0.10	4366750
Acid Extractable Copper (Cu)	ug/g		12	12	14	13	0.50	4366750
Acid Extractable Lead (Pb)	ug/g		7.7	7.8	38	27	1.0	4366750
Acid Extractable Sulphur (S)	ug/g	110	150		240	170	50	4366683
Acid Extractable Molybdenum (Mo)	ug/g		0.70	0.76	1.0	0.99	0.50	4366750
Acid Extractable Nickel (Ni)	ug/g		11	11	13	11	0.50	4366750
Acid Extractable Selenium (Se)	ug/g		<0.50	<0.50	<0.50	<0.50	0.50	4366750
Acid Extractable Silver (Ag)	ug/g		<0.20	<0.20	<0.20	<0.20	0.20	4366750
Acid Extractable Thallium (Tl)	ug/g		0.13	0.12	0.12	0.11	0.050	4366750
Acid Extractable Tin (Sn)	ug/g		<5.0	<5.0	<5.0	<5.0	5.0	4366750
Acid Extractable Uranium (U)	ug/g		0.50	0.49	0.75	0.50	0.050	4366750
Acid Extractable Vanadium (V)	ug/g		26	25	28	22	5.0	4366750
Acid Extractable Zinc (Zn)	ug/g		21	21	48	31	5.0	4366750
Acid Extractable Mercury (Hg)	ug/g		<0.050	<0.050	0.11	<0.050	0.050	4366750

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

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

Maxxam Job #: B616805
Report Date: 2016/02/04

Stantec Consulting Ltd
Client Project #: 122511222
Site Location: 344 WELLINGTON
Sampler Initials: AH

CCME METALS PACKAGE (SOIL)

Maxxam ID		BSQ140	BSQ140	BSQ141		
Sampling Date		2016/01/27 11:00	2016/01/27 11:00	2016/01/27 11:00		
COC Number		546828-01-01	546828-01-01	546828-01-01		
	UNITS	BH16-1 SS2	BH16-1 SS2 Lab-Dup	BH16-1 SS5	RDL	QC Batch
Inorganics						
Chromium (VI)	ug/g	<0.2	<0.2	<0.2	0.2	4367008
Metals						
Hot Water Ext. Boron (B)	ug/g	0.058		0.35	0.050	4366681
Acid Extractable Antimony (Sb)	ug/g	<0.20		0.78	0.20	4366750
Acid Extractable Arsenic (As)	ug/g	<1.0		2.4	1.0	4366750
Acid Extractable Barium (Ba)	ug/g	21		90	0.50	4366750
Acid Extractable Beryllium (Be)	ug/g	<0.20		0.29	0.20	4366750
Acid Extractable Cadmium (Cd)	ug/g	<0.10		0.13	0.10	4366750
Acid Extractable Chromium (Cr)	ug/g	6.7		16	1.0	4366750
Acid Extractable Cobalt (Co)	ug/g	2.8		5.2	0.10	4366750
Acid Extractable Copper (Cu)	ug/g	6.9		14	0.50	4366750
Acid Extractable Lead (Pb)	ug/g	7.7		35	1.0	4366750
Acid Extractable Sulphur (S)	ug/g	58		530	50	4366683
Acid Extractable Molybdenum (Mo)	ug/g	<0.50		0.80	0.50	4366750
Acid Extractable Nickel (Ni)	ug/g	5.3		12	0.50	4366750
Acid Extractable Selenium (Se)	ug/g	<0.50		<0.50	0.50	4366750
Acid Extractable Silver (Ag)	ug/g	<0.20		<0.20	0.20	4366750
Acid Extractable Thallium (Tl)	ug/g	<0.050		0.11	0.050	4366750
Acid Extractable Tin (Sn)	ug/g	<5.0		11	5.0	4366750
Acid Extractable Uranium (U)	ug/g	0.36		0.71	0.050	4366750
Acid Extractable Vanadium (V)	ug/g	16		24	5.0	4366750
Acid Extractable Zinc (Zn)	ug/g	12		41	5.0	4366750
Acid Extractable Mercury (Hg)	ug/g	<0.050		0.087	0.050	4366750

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

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

Maxxam Job #: B616805
Report Date: 2016/02/04

Stantec Consulting Ltd
Client Project #: 122511222
Site Location: 344 WELLINGTON
Sampler Initials: AH

O.REG 153 PAHS (SOIL)

Maxxam ID		BSQ124	BSQ124	BSQ126	BSQ127	BSQ128	BSQ129		
Sampling Date		2016/01/26 09:00	2016/01/26 09:00	2016/01/26 10:00	2016/01/26 11:00	2016/01/26 12:00	2016/01/26 12:00		
COC Number		546828-03-01	546828-03-01	546828-03-01	546828-03-01	546828-03-01	546828-03-01		
	UNITS	BH16-4 SS3	BH16-4 SS3 Lab-Dup	BH16-5 SS2	BH16-6 SS2	BH16-7 SS2	BH16-7	RDL	QC Batch
Inorganics									
Moisture	%	7.3		16	17	20	21	0.2	4361398
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	0.017		<0.014	0.60	<0.014	0.050	0.014	4360430
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	0.029	0.032	<0.0050	1.0	<0.0050	0.071	0.0050	4361404
Acenaphthylene	ug/g	0.0055	<0.0050	0.0066	0.026	<0.0050	0.0086	0.0050	4361404
Anthracene	ug/g	0.076	0.090	0.011	2.9	0.0096	0.17	0.0050	4361404
Benzo(a)anthracene	ug/g	0.16	0.15	0.054	4.2	0.019	0.29	0.0050	4361404
Benzo(a)pyrene	ug/g	0.14	0.12	0.063	3.3	0.017	0.23	0.0050	4361404
Benzo(b/j)fluoranthene	ug/g	0.19	0.16	0.096	4.0	0.028	0.30	0.0050	4361404
Benzo(g,h,i)perylene	ug/g	0.067	0.055	0.039	1.3	0.010	0.10	0.0050	4361404
Benzo(k)fluoranthene	ug/g	0.071	0.064	0.035	1.7	0.0096	0.12	0.0050	4361404
Chrysene	ug/g	0.13	0.12	0.050	3.1	0.018	0.23	0.0050	4361404
Dibenz(a,h)anthracene	ug/g	0.021	0.023	0.0090	0.45	<0.0050	0.036	0.0050	4361404
Fluoranthene	ug/g	0.40	0.38	0.098	8.9	0.046	0.69	0.0050	4361404
Fluorene	ug/g	0.033	0.043	<0.0050	1.6	0.0062	0.10	0.0050	4361404
Indeno(1,2,3-cd)pyrene	ug/g	0.067	0.057	0.038	1.3	0.010	0.10	0.0050	4361404
1-Methylnaphthalene	ug/g	0.0074	0.0064	0.0054	0.26	<0.0050	0.026	0.0050	4361404
2-Methylnaphthalene	ug/g	0.0092	<0.0050	<0.0050	0.34	<0.0050	0.024	0.0050	4361404
Naphthalene	ug/g	0.018	<0.0050	0.0060	0.51	<0.0050	0.028	0.0050	4361404
Phenanthrene	ug/g	0.33	0.36	0.036	8.2	0.044	0.68	0.0050	4361404
Pyrene	ug/g	0.30	0.27	0.085	6.2	0.035	0.50	0.0050	4361404
Surrogate Recovery (%)									
D10-Anthracene	%	80	78	79	79	79	78		4361404
D14-Terphenyl (FS)	%	83	81	82	84	82	80		4361404
D8-Acenaphthylene	%	77	76	78	76	76	74		4361404

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

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

Maxxam Job #: B616805
Report Date: 2016/02/04

Stantec Consulting Ltd
Client Project #: 122511222
Site Location: 344 WELLINGTON
Sampler Initials: AH

O.REG 153 PAHS (SOIL)

Maxxam ID		BSQ130	BSQ131	BSQ132	BSQ136	BSQ137	BSQ138		
Sampling Date		2016/01/26 13:00	2016/01/26 14:00	2016/01/27 09:00	2016/01/27 09:00	2016/01/27 09:00	2016/01/27 10:00		
COC Number		546828-03-01	546828-03-01	546828-03-01	546828-01-01	546828-01-01	546828-01-01		
	UNITS	BH16-8 SS3	BH16-9 SS3	BH16-4 SS6	BH16-3 SS2	BH16-3 SS4	BH16-2 SS2	RDL	QC Batch
Inorganics									
Moisture	%	15	7.4	8.6	8.8	11	11	0.2	4361398
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	<0.014	<0.014	<0.014	<0.014	<0.014	0.014	0.014	4360430
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	0.028	<0.0050	<0.0050	0.0071	<0.0050	0.063	0.0050	4361404
Acenaphthylene	ug/g	<0.0050	<0.0050	<0.0050	0.0071	0.0071	0.0058	0.0050	4361404
Anthracene	ug/g	0.055	0.012	<0.0050	0.024	0.014	0.11	0.0050	4361404
Benzo(a)anthracene	ug/g	0.11	0.018	0.0070	0.045	0.029	0.17	0.0050	4361404
Benzo(a)pyrene	ug/g	0.094	0.017	0.0065	0.044	0.032	0.15	0.0050	4361404
Benzo(b/j)fluoranthene	ug/g	0.13	0.024	0.0060	0.066	0.048	0.20	0.0050	4361404
Benzo(g,h,i)perylene	ug/g	0.046	0.010	<0.0050	0.032	0.024	0.068	0.0050	4361404
Benzo(k)fluoranthene	ug/g	0.049	0.0089	<0.0050	0.024	0.017	0.080	0.0050	4361404
Chrysene	ug/g	0.095	0.016	0.0070	0.038	0.026	0.14	0.0050	4361404
Dibenz(a,h)anthracene	ug/g	0.016	<0.0050	<0.0050	0.0088	<0.0050	0.022	0.0050	4361404
Fluoranthene	ug/g	0.26	0.040	0.016	0.10	0.067	0.47	0.0050	4361404
Fluorene	ug/g	0.034	0.0058	<0.0050	0.011	0.0061	0.078	0.0050	4361404
Indeno(1,2,3-cd)pyrene	ug/g	0.047	0.0084	<0.0050	0.029	0.021	0.070	0.0050	4361404
1-Methylnaphthalene	ug/g	0.0059	<0.0050	<0.0050	<0.0050	<0.0050	0.0074	0.0050	4361404
2-Methylnaphthalene	ug/g	0.0059	<0.0050	<0.0050	<0.0050	<0.0050	0.0069	0.0050	4361404
Naphthalene	ug/g	0.0075	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4361404
Phenanthrene	ug/g	0.25	0.040	0.014	0.076	0.043	0.51	0.0050	4361404
Pyrene	ug/g	0.19	0.032	0.014	0.079	0.054	0.32	0.0050	4361404
Surrogate Recovery (%)									
D10-Anthracene	%	81	82	81	78	79	79		4361404
D14-Terphenyl (FS)	%	85	85	85	82	81	82		4361404
D8-Acenaphthylene	%	80	80	81	77	78	79		4361404

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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

Maxxam Job #: B616805
Report Date: 2016/02/04

Stantec Consulting Ltd
Client Project #: 122511222
Site Location: 344 WELLINGTON
Sampler Initials: AH

O.REG 153 PAHS (SOIL)

Maxxam ID		BSQ139	BSQ140	BSQ141		
Sampling Date		2016/01/27 10:00	2016/01/27 11:00	2016/01/27 11:00		
COC Number		546828-01-01	546828-01-01	546828-01-01		
	UNITS	BH16-2 SS4	BH16-1 SS2	BH16-1 SS5	RDL	QC Batch
Inorganics						
Moisture	%	6.7	7.3	6.3	0.2	4361398
Calculated Parameters						
Methylnaphthalene, 2-(1-)	ug/g	0.046	0.034	0.027	0.014	4360430
Polyaromatic Hydrocarbons						
Acenaphthene	ug/g	0.034	0.010	0.014	0.0050	4361404
Acenaphthylene	ug/g	0.17	0.058	0.054	0.0050	4361404
Anthracene	ug/g	0.23	0.087	0.092	0.0050	4361404
Benzo(a)anthracene	ug/g	0.73	0.13	0.16	0.0050	4361404
Benzo(a)pyrene	ug/g	0.78	0.14	0.18	0.0050	4361404
Benzo(b/j)fluoranthene	ug/g	1.0	0.17	0.24	0.0050	4361404
Benzo(g,h,i)perylene	ug/g	0.43	0.072	0.10	0.0050	4361404
Benzo(k)fluoranthene	ug/g	0.40	0.063	0.090	0.0050	4361404
Chrysene	ug/g	0.58	0.10	0.13	0.0050	4361404
Dibenz(a,h)anthracene	ug/g	0.14	0.021	0.028	0.0050	4361404
Fluoranthene	ug/g	1.5	0.33	0.40	0.0050	4361404
Fluorene	ug/g	0.087	0.062	0.056	0.0050	4361404
Indeno(1,2,3-cd)pyrene	ug/g	0.42	0.069	0.095	0.0050	4361404
1-Methylnaphthalene	ug/g	0.028	0.020	0.016	0.0050	4361404
2-Methylnaphthalene	ug/g	0.018	0.014	0.011	0.0050	4361404
Naphthalene	ug/g	0.015	0.0085	0.0086	0.0050	4361404
Phenanthrene	ug/g	0.72	0.33	0.34	0.0050	4361404
Pyrene	ug/g	1.3	0.25	0.30	0.0050	4361404
Surrogate Recovery (%)						
D10-Anthracene	%	83	83	79		4361404
D14-Terphenyl (FS)	%	86	85	82		4361404
D8-Acenaphthylene	%	81	82	78		4361404

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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

Maxxam Job #: B616805
Report Date: 2016/02/04

Stantec Consulting Ltd
Client Project #: 122511222
Site Location: 344 WELLINGTON
Sampler Initials: AH

O.REG 153 PCBS (SOIL)

Maxxam ID		BSQ124	BSQ126	BSQ127	BSQ128	BSQ129	BSQ130		
Sampling Date		2016/01/26 09:00	2016/01/26 10:00	2016/01/26 11:00	2016/01/26 12:00	2016/01/26 12:00	2016/01/26 13:00		
COC Number		546828-03-01	546828-03-01	546828-03-01	546828-03-01	546828-03-01	546828-03-01		
	UNITS	BH16-4 SS3	BH16-5 SS2	BH16-6 SS2	BH16-7 SS2	BH16-7	BH16-8 SS3	RDL	QC Batch
PCBs									
Aroclor 1242	ug/g	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4365378
Aroclor 1248	ug/g	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4365378
Aroclor 1254	ug/g	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4365378
Aroclor 1260	ug/g	<0.010	<0.010	<0.010	0.028	0.017	<0.010	0.010	4365378
Total PCB	ug/g	<0.010	<0.010	<0.010	0.028	0.017	<0.010	0.010	4365378
Surrogate Recovery (%)									
Decachlorobiphenyl	%	78	87	74	80	84	79		4365378

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		BSQ131	BSQ136	BSQ138	BSQ140		
Sampling Date		2016/01/26 14:00	2016/01/27 09:00	2016/01/27 10:00	2016/01/27 11:00		
COC Number		546828-03-01	546828-01-01	546828-01-01	546828-01-01		
	UNITS	BH16-9 SS3	BH16-3 SS2	BH16-2 SS2	BH16-1 SS2	RDL	QC Batch
PCBs							
Aroclor 1242	ug/g	<0.010	<0.010	<0.010	<0.010	0.010	4365378
Aroclor 1248	ug/g	<0.010	<0.010	<0.010	<0.010	0.010	4365378
Aroclor 1254	ug/g	<0.010	<0.010	<0.010	<0.010	0.010	4365378
Aroclor 1260	ug/g	<0.010	<0.010	<0.010	<0.010	0.010	4365378
Total PCB	ug/g	<0.010	<0.010	<0.010	<0.010	0.010	4365378
Surrogate Recovery (%)							
Decachlorobiphenyl	%	91	92	92	87		4365378

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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

Maxxam Job #: B616805
Report Date: 2016/02/04

Stantec Consulting Ltd
Client Project #: 122511222
Site Location: 344 WELLINGTON
Sampler Initials: AH

O.REG 153 PETROLEUM HYDROCARBONS (SOIL)

Maxxam ID		BSQ125	BSQ125	BSQ126	BSQ127	BSQ128	BSQ129		
Sampling Date		2016/01/26 09:00	2016/01/26 09:00	2016/01/26 10:00	2016/01/26 11:00	2016/01/26 12:00	2016/01/26 12:00		
COC Number		546828-03-01	546828-03-01	546828-03-01	546828-03-01	546828-03-01	546828-03-01		
	UNITS	BH16-4 SS6	BH16-4 SS6 Lab-Dup	BH16-5 SS2	BH16-6 SS2	BH16-7 SS2	BH16-7	RDL	QC Batch
Inorganics									
Moisture	%	5.7	6.3					0.2	4361398
BTEX & F1 Hydrocarbons									
F1 (C6-C10)	ug/g	<10		<10	<10	<10	<10	10	4362018
F1 (C6-C10) - BTEX	ug/g	<10		<10	<10	<10	<10	10	4362018
F2-F4 Hydrocarbons									
F2 (C10-C16 Hydrocarbons)	ug/g	<10	<10	<10	<10	<10	<10	10	4361402
F3 (C16-C34 Hydrocarbons)	ug/g	<50	<50	<50	<50	<50	<50	50	4361402
F4 (C34-C50 Hydrocarbons)	ug/g	<50	<50	<50	<50	<50	<50	50	4361402
Reached Baseline at C50	ug/g	Yes	Yes	Yes	Yes	Yes	Yes		4361402
Surrogate Recovery (%)									
1,4-Difluorobenzene	%	110		107	108	107	106		4362018
4-Bromofluorobenzene	%	90		89	101	92	96		4362018
D10-Ethylbenzene	%	93		82	92	93	88		4362018
D4-1,2-Dichloroethane	%	113		109	113	111	109		4362018
o-Terphenyl	%	115	118	120	119	123	122		4361402

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

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

Maxxam Job #: B616805
Report Date: 2016/02/04

Stantec Consulting Ltd
Client Project #: 122511222
Site Location: 344 WELLINGTON
Sampler Initials: AH

O.REG 153 PETROLEUM HYDROCARBONS (SOIL)

Maxxam ID		BSQ130	BSQ131	BSQ133	BSQ136	BSQ137	BSQ138		
Sampling Date		2016/01/26 13:00	2016/01/26 14:00	2016/01/27 09:00	2016/01/27 09:00	2016/01/27 09:00	2016/01/27 10:00		
COC Number		546828-03-01	546828-03-01	546828-03-01	546828-01-01	546828-01-01	546828-01-01		
	UNITS	BH16-8 SS3	BH16-9 SS3	BH16-4 SS2	BH16-3 SS2	BH16-3 SS4	BH16-2 SS2	RDL	QC Batch
Inorganics									
Moisture	%			10				0.2	4361398
BTEX & F1 Hydrocarbons									
F1 (C6-C10)	ug/g	<10	<10	<10	<10	<10	<10	10	4362018
F1 (C6-C10) - BTEX	ug/g	<10	<10	<10	<10	<10	<10	10	4362018
F2-F4 Hydrocarbons									
F2 (C10-C16 Hydrocarbons)	ug/g	<10	<10	<10	<10	<10	<10	10	4361402
F3 (C16-C34 Hydrocarbons)	ug/g	<50	<50	<50	<50	<50	<50	50	4361402
F4 (C34-C50 Hydrocarbons)	ug/g	<50	<50	<50	<50	<50	<50	50	4361402
Reached Baseline at C50	ug/g	Yes	Yes	Yes	Yes	Yes	Yes		4361402
Surrogate Recovery (%)									
1,4-Difluorobenzene	%	109	106	109	110	108	108		4362018
4-Bromofluorobenzene	%	87	101	96	91	92	86		4362018
D10-Ethylbenzene	%	88	93	90	96	100	93		4362018
D4-1,2-Dichloroethane	%	115	117	114	114	112	109		4362018
o-Terphenyl	%	130	128	122	113	115	118		4361402

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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

Maxxam Job #: B616805
Report Date: 2016/02/04

Stantec Consulting Ltd
Client Project #: 122511222
Site Location: 344 WELLINGTON
Sampler Initials: AH

O.REG 153 PETROLEUM HYDROCARBONS (SOIL)

Maxxam ID		BSQ139	BSQ140	BSQ141		
Sampling Date		2016/01/27 10:00	2016/01/27 11:00	2016/01/27 11:00		
COC Number		546828-01-01	546828-01-01	546828-01-01		
	UNITS	BH16-2 SS4	BH16-1 SS2	BH16-1 SS5	RDL	QC Batch
BTEX & F1 Hydrocarbons						
F1 (C6-C10)	ug/g	<10	<10	<10	10	4362018
F1 (C6-C10) - BTEX	ug/g	<10	<10	<10	10	4362018
F2-F4 Hydrocarbons						
F2 (C10-C16 Hydrocarbons)	ug/g	<10	<10	<10	10	4361402
F3 (C16-C34 Hydrocarbons)	ug/g	<50	<50	<50	50	4361402
F4 (C34-C50 Hydrocarbons)	ug/g	<50	<50	<50	50	4361402
Reached Baseline at C50	ug/g	Yes	Yes	Yes		4361402
Surrogate Recovery (%)						
1,4-Difluorobenzene	%	111	110	108		4362018
4-Bromofluorobenzene	%	89	95	86		4362018
D10-Ethylbenzene	%	99	100	98		4362018
D4-1,2-Dichloroethane	%	116	119	100		4362018
o-Terphenyl	%	118	112	115		4361402

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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

Maxxam Job #: B616805
Report Date: 2016/02/04

Stantec Consulting Ltd
Client Project #: 122511222
Site Location: 344 WELLINGTON
Sampler Initials: AH

RESULTS OF ANALYSES OF SOIL

Maxxam ID		BSQ124	BSQ126	BSQ127	BSQ128	BSQ129		BSQ130	
Sampling Date		2016/01/26 09:00	2016/01/26 10:00	2016/01/26 11:00	2016/01/26 12:00	2016/01/26 12:00		2016/01/26 13:00	
COC Number		546828-03-01	546828-03-01	546828-03-01	546828-03-01	546828-03-01		546828-03-01	
	UNITS	BH16-4 SS3	BH16-5 SS2	BH16-6 SS2	BH16-7 SS2	BH16-7	QC Batch	BH16-8 SS3	QC Batch
Inorganics									
Available (CaCl2) pH	pH	7.54	7.42	7.43	7.59	7.57	4365310	7.82	4365685
QC Batch = Quality Control Batch									

Maxxam ID		BSQ131	BSQ132		BSQ136	BSQ137	BSQ138	
Sampling Date		2016/01/26 14:00	2016/01/27 09:00		2016/01/27 09:00	2016/01/27 09:00	2016/01/27 10:00	
COC Number		546828-03-01	546828-03-01		546828-01-01	546828-01-01	546828-01-01	
	UNITS	BH16-9 SS3	BH16-4 SS6	QC Batch	BH16-3 SS2	BH16-3 SS4	BH16-2 SS2	QC Batch
Inorganics								
Available (CaCl2) pH	pH	7.03	9.14	4365310	7.90	7.83	7.51	4365685
QC Batch = Quality Control Batch								

Maxxam ID		BSQ139	BSQ140		BSQ141	
Sampling Date		2016/01/27 10:00	2016/01/27 11:00		2016/01/27 11:00	
COC Number		546828-01-01	546828-01-01		546828-01-01	
	UNITS	BH16-2 SS4	BH16-1 SS2	QC Batch	BH16-1 SS5	QC Batch
Inorganics						
Available (CaCl2) pH	pH	7.67	7.51	4365310	7.59	4365685
QC Batch = Quality Control Batch						

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

Maxxam Job #: B616805
Report Date: 2016/02/04

Stantec Consulting Ltd
Client Project #: 122511222
Site Location: 344 WELLINGTON
Sampler Initials: AH

VOLATILE ORGANICS BY GC/MS (SOIL)

Maxxam ID		BSQ125	BSQ125	BSQ126	BSQ127	BSQ128		
Sampling Date		2016/01/26 09:00	2016/01/26 09:00	2016/01/26 10:00	2016/01/26 11:00	2016/01/26 12:00		
COC Number		546828-03-01	546828-03-01	546828-03-01	546828-03-01	546828-03-01		
	UNITS	BH16-4 SS6	BH16-4 SS6 Lab-Dup	BH16-5 SS2	BH16-6 SS2	BH16-7 SS2	RDL	QC Batch
Calculated Parameters								
1,3-Dichloropropene (cis+trans)	ug/g	<0.050		<0.050	<0.050	<0.050	0.050	4359885
Volatile Organics								
Acetone (2-Propanone)	ug/g	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4361712
Benzene	ug/g	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	0.0060	4361712
Bromodichloromethane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
Bromoform	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
Bromomethane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
Carbon Tetrachloride	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
Chlorobenzene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
Chloroform	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
Dibromochloromethane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
1,2-Dichlorobenzene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
1,3-Dichlorobenzene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
1,4-Dichlorobenzene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
Dichlorodifluoromethane (FREON 12)	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
1,1-Dichloroethane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
1,2-Dichloroethane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
1,1-Dichloroethylene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
cis-1,2-Dichloroethylene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
trans-1,2-Dichloroethylene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
1,2-Dichloropropane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
cis-1,3-Dichloropropene	ug/g	<0.030	<0.030	<0.030	<0.030	<0.030	0.030	4361712
trans-1,3-Dichloropropene	ug/g	<0.040	<0.040	<0.040	<0.040	<0.040	0.040	4361712
Ethylbenzene	ug/g	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4361712
Ethylene Dibromide	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
Hexane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
Methylene Chloride(Dichloromethane)	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
Methyl Isobutyl Ketone	ug/g	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4361712
Methyl Ethyl Ketone (2-Butanone)	ug/g	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4361712
Methyl t-butyl ether (MTBE)	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
Styrene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
1,1,1,2-Tetrachloroethane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712

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

Maxxam Job #: B616805
Report Date: 2016/02/04

Stantec Consulting Ltd
Client Project #: 122511222
Site Location: 344 WELLINGTON
Sampler Initials: AH

VOLATILE ORGANICS BY GC/MS (SOIL)

Maxxam ID		BSQ125	BSQ125	BSQ126	BSQ127	BSQ128		
Sampling Date		2016/01/26 09:00	2016/01/26 09:00	2016/01/26 10:00	2016/01/26 11:00	2016/01/26 12:00		
COC Number		546828-03-01	546828-03-01	546828-03-01	546828-03-01	546828-03-01		
	UNITS	BH16-4 SS6	BH16-4 SS6 Lab-Dup	BH16-5 SS2	BH16-6 SS2	BH16-7 SS2	RDL	QC Batch
1,1,2,2-Tetrachloroethane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
Tetrachloroethylene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
Toluene	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	4361712
1,1,1-Trichloroethane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
1,1,2-Trichloroethane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
Trichloroethylene	ug/g	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4361712
Vinyl Chloride	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	4361712
p+m-Xylene	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	4361712
o-Xylene	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	4361712
Total Xylenes	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	4361712
Trichlorofluoromethane (FREON 11)	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
Surrogate Recovery (%)								
4-Bromofluorobenzene	%	99	100	99	97	104		4361712
D10-o-Xylene	%	95	95	93	90	96		4361712
D4-1,2-Dichloroethane	%	94	83	97	96	84		4361712
D8-Toluene	%	101	101	99	105	90		4361712

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

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

Maxxam Job #: B616805
Report Date: 2016/02/04

Stantec Consulting Ltd
Client Project #: 122511222
Site Location: 344 WELLINGTON
Sampler Initials: AH

VOLATILE ORGANICS BY GC/MS (SOIL)

Maxxam ID		BSQ129	BSQ130	BSQ131	BSQ133	BSQ136		
Sampling Date		2016/01/26 12:00	2016/01/26 13:00	2016/01/26 14:00	2016/01/27 09:00	2016/01/27 09:00		
COC Number		546828-03-01	546828-03-01	546828-03-01	546828-03-01	546828-01-01		
	UNITS	BH16-7	BH16-8 SS3	BH16-9 SS3	BH16-4 SS2	BH16-3 SS2	RDL	QC Batch
Calculated Parameters								
1,3-Dichloropropene (cis+trans)	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4359885
Volatile Organics								
Acetone (2-Propanone)	ug/g	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4361712
Benzene	ug/g	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	0.0060	4361712
Bromodichloromethane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
Bromoform	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
Bromomethane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
Carbon Tetrachloride	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
Chlorobenzene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
Chloroform	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
Dibromochloromethane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
1,2-Dichlorobenzene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
1,3-Dichlorobenzene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
1,4-Dichlorobenzene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
Dichlorodifluoromethane (FREON 12)	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
1,1-Dichloroethane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
1,2-Dichloroethane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
1,1-Dichloroethylene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
cis-1,2-Dichloroethylene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
trans-1,2-Dichloroethylene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
1,2-Dichloropropane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
cis-1,3-Dichloropropene	ug/g	<0.030	<0.030	<0.030	<0.030	<0.030	0.030	4361712
trans-1,3-Dichloropropene	ug/g	<0.040	<0.040	<0.040	<0.040	<0.040	0.040	4361712
Ethylbenzene	ug/g	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4361712
Ethylene Dibromide	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
Hexane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
Methylene Chloride(Dichloromethane)	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
Methyl Isobutyl Ketone	ug/g	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4361712
Methyl Ethyl Ketone (2-Butanone)	ug/g	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4361712
Methyl t-butyl ether (MTBE)	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
Styrene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
1,1,1,2-Tetrachloroethane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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

Maxxam Job #: B616805
Report Date: 2016/02/04

Stantec Consulting Ltd
Client Project #: 122511222
Site Location: 344 WELLINGTON
Sampler Initials: AH

VOLATILE ORGANICS BY GC/MS (SOIL)

Maxxam ID		BSQ129	BSQ130	BSQ131	BSQ133	BSQ136		
Sampling Date		2016/01/26 12:00	2016/01/26 13:00	2016/01/26 14:00	2016/01/27 09:00	2016/01/27 09:00		
COC Number		546828-03-01	546828-03-01	546828-03-01	546828-03-01	546828-01-01		
	UNITS	BH16-7	BH16-8 SS3	BH16-9 SS3	BH16-4 SS2	BH16-3 SS2	RDL	QC Batch
1,1,2,2-Tetrachloroethane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
Tetrachloroethylene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
Toluene	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	4361712
1,1,1-Trichloroethane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
1,1,2-Trichloroethane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
Trichloroethylene	ug/g	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4361712
Vinyl Chloride	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	4361712
p+m-Xylene	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	4361712
o-Xylene	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	4361712
Total Xylenes	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	4361712
Trichlorofluoromethane (FREON 11)	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
Surrogate Recovery (%)								
4-Bromofluorobenzene	%	100	100	107	98	101		4361712
D10-o-Xylene	%	96	99	100	90	92		4361712
D4-1,2-Dichloroethane	%	100	83	82	95	101		4361712
D8-Toluene	%	92	100	90	102	100		4361712

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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

Maxxam Job #: B616805
Report Date: 2016/02/04

Stantec Consulting Ltd
Client Project #: 122511222
Site Location: 344 WELLINGTON
Sampler Initials: AH

VOLATILE ORGANICS BY GC/MS (SOIL)

Maxxam ID		BSQ137	BSQ138	BSQ139	BSQ140	BSQ141		
Sampling Date		2016/01/27 09:00	2016/01/27 10:00	2016/01/27 10:00	2016/01/27 11:00	2016/01/27 11:00		
COC Number		546828-01-01	546828-01-01	546828-01-01	546828-01-01	546828-01-01		
	UNITS	BH16-3 SS4	BH16-2 SS2	BH16-2 SS4	BH16-1 SS2	BH16-1 SS5	RDL	QC Batch
Calculated Parameters								
1,3-Dichloropropene (cis+trans)	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4359885
Volatile Organics								
Acetone (2-Propanone)	ug/g	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4361712
Benzene	ug/g	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	0.0060	4361712
Bromodichloromethane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
Bromoform	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
Bromomethane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
Carbon Tetrachloride	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
Chlorobenzene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
Chloroform	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
Dibromochloromethane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
1,2-Dichlorobenzene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
1,3-Dichlorobenzene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
1,4-Dichlorobenzene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
Dichlorodifluoromethane (FREON 12)	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
1,1-Dichloroethane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
1,2-Dichloroethane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
1,1-Dichloroethylene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
cis-1,2-Dichloroethylene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
trans-1,2-Dichloroethylene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
1,2-Dichloropropane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
cis-1,3-Dichloropropene	ug/g	<0.030	<0.030	<0.030	<0.030	<0.030	0.030	4361712
trans-1,3-Dichloropropene	ug/g	<0.040	<0.040	<0.040	<0.040	<0.040	0.040	4361712
Ethylbenzene	ug/g	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4361712
Ethylene Dibromide	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
Hexane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
Methylene Chloride(Dichloromethane)	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
Methyl Isobutyl Ketone	ug/g	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4361712
Methyl Ethyl Ketone (2-Butanone)	ug/g	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4361712
Methyl t-butyl ether (MTBE)	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
Styrene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
1,1,1,2-Tetrachloroethane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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

Maxxam Job #: B616805
Report Date: 2016/02/04

Stantec Consulting Ltd
Client Project #: 122511222
Site Location: 344 WELLINGTON
Sampler Initials: AH

VOLATILE ORGANICS BY GC/MS (SOIL)

Maxxam ID		BSQ137	BSQ138	BSQ139	BSQ140	BSQ141		
Sampling Date		2016/01/27 09:00	2016/01/27 10:00	2016/01/27 10:00	2016/01/27 11:00	2016/01/27 11:00		
COC Number		546828-01-01	546828-01-01	546828-01-01	546828-01-01	546828-01-01		
	UNITS	BH16-3 SS4	BH16-2 SS2	BH16-2 SS4	BH16-1 SS2	BH16-1 SS5	RDL	QC Batch
1,1,2,2-Tetrachloroethane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
Tetrachloroethylene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
Toluene	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	4361712
1,1,1-Trichloroethane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
1,1,2-Trichloroethane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
Trichloroethylene	ug/g	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4361712
Vinyl Chloride	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	4361712
p+m-Xylene	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	4361712
o-Xylene	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	4361712
Total Xylenes	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	4361712
Trichlorofluoromethane (FREON 11)	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4361712
Surrogate Recovery (%)								
4-Bromofluorobenzene	%	100	103	101	106	107		4361712
D10-o-Xylene	%	96	97	85	88	100		4361712
D4-1,2-Dichloroethane	%	94	89	96	95	94		4361712
D8-Toluene	%	100	99	100	102	104		4361712

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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

Maxxam Job #: B616805
Report Date: 2016/02/04

Stantec Consulting Ltd
Client Project #: 122511222
Site Location: 344 WELLINGTON
Sampler Initials: AH

TEST SUMMARY

Maxxam ID: BSQ124
Sample ID: BH16-4 SS3
Matrix: Soil

Collected: 2016/01/26
Shipped:
Received: 2016/01/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4360430	N/A	2016/02/04	Paul Rubinato
Hot Water Extractable Boron	ICP	4366681	2016/02/02	2016/02/02	Jolly John
Hexavalent Chromium in Soil by IC	IC/SPEC	4367008	2016/02/02	2016/02/03	Manoj Gera
Strong Acid Leachable Metals by ICPMS	ICP/MS	4366750	2016/02/02	2016/02/02	Grace Bu
Acid Extractable Metals Analysis by ICP	ICP	4366683	2016/02/02	2016/02/02	Azita Fazaeli
MOISTURE	BAL	4361398	N/A	2016/01/29	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4361404	2016/01/28	2016/01/28	Liliana Gaburici
Polychlorinated Biphenyl in Soil	GC/ECD	4365378	2016/02/01	2016/02/01	Li Peng
pH CaCl2 EXTRACT	AT	4365310	2016/02/01	2016/02/01	Neil Dassanayake

Maxxam ID: BSQ124 Dup
Sample ID: BH16-4 SS3
Matrix: Soil

Collected: 2016/01/26
Shipped:
Received: 2016/01/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4361404	2016/01/28	2016/01/28	Liliana Gaburici

Maxxam ID: BSQ125
Sample ID: BH16-4 SS6
Matrix: Soil

Collected: 2016/01/26
Shipped:
Received: 2016/01/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	4359885	N/A	2016/02/01	Automated Statchk
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4362018	N/A	2016/02/02	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4361402	2016/01/28	2016/01/28	Arezoo Habibagahi
MOISTURE	BAL	4361398	N/A	2016/01/29	Liliana Gaburici
Volatile Organic Compounds in Soil	GC/MS	4361712	N/A	2016/01/30	Anna Gabrielyan

Maxxam ID: BSQ125 Dup
Sample ID: BH16-4 SS6
Matrix: Soil

Collected: 2016/01/26
Shipped:
Received: 2016/01/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4361402	2016/01/28	2016/01/28	Arezoo Habibagahi
MOISTURE	BAL	4361398	N/A	2016/01/29	Liliana Gaburici
Volatile Organic Compounds in Soil	GC/MS	4361712	N/A	2016/01/30	Anna Gabrielyan

Maxxam ID: BSQ126
Sample ID: BH16-5 SS2
Matrix: Soil

Collected: 2016/01/26
Shipped:
Received: 2016/01/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4360430	N/A	2016/02/04	Paul Rubinato
Hot Water Extractable Boron	ICP	4366681	2016/02/02	2016/02/02	Jolly John
1,3-Dichloropropene Sum	CALC	4359885	N/A	2016/02/01	Automated Statchk

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

Maxxam Job #: B616805
Report Date: 2016/02/04

Stantec Consulting Ltd
Client Project #: 122511222
Site Location: 344 WELLINGTON
Sampler Initials: AH

TEST SUMMARY

Maxxam ID: BSQ126
Sample ID: BH16-5 SS2
Matrix: Soil

Collected: 2016/01/26
Shipped:
Received: 2016/01/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	4367008	2016/02/02	2016/02/03	Manoj Gera
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4362018	N/A	2016/02/02	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4361402	2016/01/28	2016/01/28	Arezoo Habibagahi
Strong Acid Leachable Metals by ICPMS	ICP/MS	4366750	2016/02/02	2016/02/02	Grace Bu
Acid Extractable Metals Analysis by ICP	ICP	4366683	2016/02/02	2016/02/02	Azita Fazaeli
MOISTURE	BAL	4361398	N/A	2016/01/29	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4361404	2016/01/28	2016/01/28	Liliana Gaburici
Polychlorinated Biphenyl in Soil	GC/ECD	4365378	2016/02/01	2016/02/01	Li Peng
pH CaCl2 EXTRACT	AT	4365310	2016/02/01	2016/02/01	Neil Dassanayake
Volatile Organic Compounds in Soil	GC/MS	4361712	N/A	2016/01/30	Anna Gabrielyan

Maxxam ID: BSQ127
Sample ID: BH16-6 SS2
Matrix: Soil

Collected: 2016/01/26
Shipped:
Received: 2016/01/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4360430	N/A	2016/02/04	Paul Rubinato
Hot Water Extractable Boron	ICP	4366681	2016/02/02	2016/02/02	Jolly John
1,3-Dichloropropene Sum	CALC	4359885	N/A	2016/02/01	Automated Statchk
Hexavalent Chromium in Soil by IC	IC/SPEC	4367008	2016/02/02	2016/02/03	Manoj Gera
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4362018	N/A	2016/02/02	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4361402	2016/01/28	2016/01/29	Arezoo Habibagahi
Strong Acid Leachable Metals by ICPMS	ICP/MS	4366750	2016/02/02	2016/02/02	Grace Bu
Acid Extractable Metals Analysis by ICP	ICP	4366683	2016/02/02	2016/02/02	Azita Fazaeli
MOISTURE	BAL	4361398	N/A	2016/01/29	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4361404	2016/01/28	2016/01/28	Liliana Gaburici
Polychlorinated Biphenyl in Soil	GC/ECD	4365378	2016/02/01	2016/02/01	Li Peng
pH CaCl2 EXTRACT	AT	4365310	2016/02/01	2016/02/01	Neil Dassanayake
Volatile Organic Compounds in Soil	GC/MS	4361712	N/A	2016/01/30	Anna Gabrielyan

Maxxam ID: BSQ128
Sample ID: BH16-7 SS2
Matrix: Soil

Collected: 2016/01/26
Shipped:
Received: 2016/01/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4360430	N/A	2016/02/04	Paul Rubinato
Hot Water Extractable Boron	ICP	4366681	2016/02/02	2016/02/02	Jolly John
1,3-Dichloropropene Sum	CALC	4359885	N/A	2016/02/01	Automated Statchk
Hexavalent Chromium in Soil by IC	IC/SPEC	4367008	2016/02/02	2016/02/03	Manoj Gera
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4362018	N/A	2016/02/02	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4361402	2016/01/28	2016/01/28	Arezoo Habibagahi
Strong Acid Leachable Metals by ICPMS	ICP/MS	4366750	2016/02/02	2016/02/02	Grace Bu
Acid Extractable Metals Analysis by ICP	ICP	4366683	2016/02/02	2016/02/02	Azita Fazaeli
MOISTURE	BAL	4361398	N/A	2016/01/29	Liliana Gaburici

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

Maxxam Job #: B616805
Report Date: 2016/02/04

Stantec Consulting Ltd
Client Project #: 122511222
Site Location: 344 WELLINGTON
Sampler Initials: AH

TEST SUMMARY

Maxxam ID: BSQ128 **Collected:** 2016/01/26
Sample ID: BH16-7 SS2 **Shipped:**
Matrix: Soil **Received:** 2016/01/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4361404	2016/01/28	2016/01/28	Liliana Gaburici
Polychlorinated Biphenyl in Soil	GC/ECD	4365378	2016/02/01	2016/02/01	Li Peng
pH CaCl2 EXTRACT	AT	4365310	2016/02/01	2016/02/01	Neil Dassanayake
Volatile Organic Compounds in Soil	GC/MS	4361712	N/A	2016/01/30	Anna Gabrielyan

Maxxam ID: BSQ128 Dup **Collected:** 2016/01/26
Sample ID: BH16-7 SS2 **Shipped:**
Matrix: Soil **Received:** 2016/01/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hot Water Extractable Boron	ICP	4366681	2016/02/02	2016/02/02	Jolly John

Maxxam ID: BSQ129 **Collected:** 2016/01/26
Sample ID: BH16-7 **Shipped:**
Matrix: Soil **Received:** 2016/01/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4360430	N/A	2016/02/04	Paul Rubinato
Hot Water Extractable Boron	ICP	4366681	2016/02/02	2016/02/02	Jolly John
1,3-Dichloropropene Sum	CALC	4359885	N/A	2016/02/01	Automated Statchk
Hexavalent Chromium in Soil by IC	IC/SPEC	4367008	2016/02/02	2016/02/03	Manoj Gera
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4362018	N/A	2016/02/02	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4361402	2016/01/28	2016/01/28	Arezoo Habibagahi
Strong Acid Leachable Metals by ICPMS	ICP/MS	4366750	2016/02/02	2016/02/02	Grace Bu
Acid Extractable Metals Analysis by ICP	ICP	4366683	2016/02/02	2016/02/02	Azita Fazaeli
MOISTURE	BAL	4361398	N/A	2016/01/29	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4361404	2016/01/28	2016/01/28	Liliana Gaburici
Polychlorinated Biphenyl in Soil	GC/ECD	4365378	2016/02/01	2016/02/01	Li Peng
pH CaCl2 EXTRACT	AT	4365310	2016/02/01	2016/02/01	Neil Dassanayake
Volatile Organic Compounds in Soil	GC/MS	4361712	N/A	2016/01/30	Anna Gabrielyan

Maxxam ID: BSQ130 **Collected:** 2016/01/26
Sample ID: BH16-8 SS3 **Shipped:**
Matrix: Soil **Received:** 2016/01/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4360430	N/A	2016/02/04	Paul Rubinato
Hot Water Extractable Boron	ICP	4366681	2016/02/02	2016/02/02	Jolly John
1,3-Dichloropropene Sum	CALC	4359885	N/A	2016/02/01	Automated Statchk
Hexavalent Chromium in Soil by IC	IC/SPEC	4367008	2016/02/02	2016/02/03	Manoj Gera
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4362018	N/A	2016/02/02	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4361402	2016/01/28	2016/01/28	Arezoo Habibagahi
Strong Acid Leachable Metals by ICPMS	ICP/MS	4366750	2016/02/02	2016/02/02	Grace Bu
Acid Extractable Metals Analysis by ICP	ICP	4366683	2016/02/02	2016/02/02	Azita Fazaeli

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

Maxxam Job #: B616805
Report Date: 2016/02/04

Stantec Consulting Ltd
Client Project #: 122511222
Site Location: 344 WELLINGTON
Sampler Initials: AH

TEST SUMMARY

Maxxam ID: BSQ130
Sample ID: BH16-8 SS3
Matrix: Soil

Collected: 2016/01/26
Shipped:
Received: 2016/01/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
MOISTURE	BAL	4361398	N/A	2016/01/29	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4361404	2016/01/28	2016/01/28	Liliana Gaburici
Polychlorinated Biphenyl in Soil	GC/ECD	4365378	2016/02/01	2016/02/01	Li Peng
pH CaCl2 EXTRACT	AT	4365685	2016/02/01	2016/02/01	Neil Dassanayake
Volatile Organic Compounds in Soil	GC/MS	4361712	N/A	2016/01/30	Anna Gabrielyan

Maxxam ID: BSQ131
Sample ID: BH16-9 SS3
Matrix: Soil

Collected: 2016/01/26
Shipped:
Received: 2016/01/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4360430	N/A	2016/02/04	Paul Rubinato
Hot Water Extractable Boron	ICP	4366681	2016/02/02	2016/02/02	Jolly John
1,3-Dichloropropene Sum	CALC	4359885	N/A	2016/02/01	Automated Statchk
Hexavalent Chromium in Soil by IC	IC/SPEC	4367008	2016/02/02	2016/02/03	Manoj Gera
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4362018	N/A	2016/02/02	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4361402	2016/01/28	2016/01/29	Arezoo Habibagahi
Strong Acid Leachable Metals by ICPMS	ICP/MS	4366750	2016/02/02	2016/02/02	Grace Bu
Acid Extractable Metals Analysis by ICP	ICP	4366683	2016/02/02	2016/02/02	Azita Fazaeli
MOISTURE	BAL	4361398	N/A	2016/01/29	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4361404	2016/01/28	2016/01/28	Liliana Gaburici
Polychlorinated Biphenyl in Soil	GC/ECD	4365378	2016/02/01	2016/02/01	Li Peng
pH CaCl2 EXTRACT	AT	4365310	2016/02/01	2016/02/01	Neil Dassanayake
Volatile Organic Compounds in Soil	GC/MS	4361712	N/A	2016/01/30	Anna Gabrielyan

Maxxam ID: BSQ132
Sample ID: BH16-4 SS6
Matrix: Soil

Collected: 2016/01/27
Shipped:
Received: 2016/01/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4360430	N/A	2016/02/04	Paul Rubinato
Hot Water Extractable Boron	ICP	4366681	2016/02/02	2016/02/02	Jolly John
Hexavalent Chromium in Soil by IC	IC/SPEC	4367008	2016/02/02	2016/02/03	Manoj Gera
Strong Acid Leachable Metals by ICPMS	ICP/MS	4366750	2016/02/02	2016/02/02	Grace Bu
Acid Extractable Metals Analysis by ICP	ICP	4366683	2016/02/02	2016/02/02	Azita Fazaeli
MOISTURE	BAL	4361398	N/A	2016/01/29	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4361404	2016/01/28	2016/01/28	Liliana Gaburici
pH CaCl2 EXTRACT	AT	4365310	2016/02/01	2016/02/01	Neil Dassanayake

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

Maxxam Job #: B616805
Report Date: 2016/02/04

Stantec Consulting Ltd
Client Project #: 122511222
Site Location: 344 WELLINGTON
Sampler Initials: AH

TEST SUMMARY

Maxxam ID: BSQ133 **Collected:** 2016/01/27
Sample ID: BH16-4 SS2 **Shipped:**
Matrix: Soil **Received:** 2016/01/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	4359885	N/A	2016/02/01	Automated Statchk
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4362018	N/A	2016/02/02	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4361402	2016/01/28	2016/01/29	Arezoo Habibagahi
MOISTURE	BAL	4361398	N/A	2016/01/29	Liliana Gaburici
Volatile Organic Compounds in Soil	GC/MS	4361712	N/A	2016/01/30	Anna Gabrielyan

Maxxam ID: BSQ136 **Collected:** 2016/01/27
Sample ID: BH16-3 SS2 **Shipped:**
Matrix: Soil **Received:** 2016/01/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4360430	N/A	2016/02/04	Paul Rubinato
Hot Water Extractable Boron	ICP	4366681	2016/02/02	2016/02/02	Jolly John
1,3-Dichloropropene Sum	CALC	4359885	N/A	2016/02/01	Automated Statchk
Hexavalent Chromium in Soil by IC	IC/SPEC	4367008	2016/02/02	2016/02/03	Manoj Gera
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4362018	N/A	2016/02/02	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4361402	2016/01/28	2016/01/29	Arezoo Habibagahi
Strong Acid Leachable Metals by ICPMS	ICP/MS	4366750	2016/02/02	2016/02/02	Grace Bu
Acid Extractable Metals Analysis by ICP	ICP	4366683	2016/02/02	2016/02/02	Azita Fazaeli
MOISTURE	BAL	4361398	N/A	2016/01/29	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4361404	2016/01/28	2016/01/28	Liliana Gaburici
Polychlorinated Biphenyl in Soil	GC/ECD	4365378	2016/02/01	2016/02/01	Li Peng
pH CaCl2 EXTRACT	AT	4365685	2016/02/01	2016/02/01	Neil Dassanayake
Volatile Organic Compounds in Soil	GC/MS	4361712	N/A	2016/01/30	Anna Gabrielyan

Maxxam ID: BSQ136 Dup **Collected:** 2016/01/27
Sample ID: BH16-3 SS2 **Shipped:**
Matrix: Soil **Received:** 2016/01/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extractable Metals Analysis by ICP	ICP	4366683	2016/02/02	2016/02/02	Azita Fazaeli

Maxxam ID: BSQ137 **Collected:** 2016/01/27
Sample ID: BH16-3 SS4 **Shipped:**
Matrix: Soil **Received:** 2016/01/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4360430	N/A	2016/02/04	Paul Rubinato
Hot Water Extractable Boron	ICP	4366681	2016/02/02	2016/02/02	Jolly John
1,3-Dichloropropene Sum	CALC	4359885	N/A	2016/02/01	Automated Statchk
Hexavalent Chromium in Soil by IC	IC/SPEC	4367008	2016/02/02	2016/02/03	Manoj Gera
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4362018	N/A	2016/02/02	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4361402	2016/01/28	2016/01/29	Arezoo Habibagahi
Strong Acid Leachable Metals by ICPMS	ICP/MS	4366750	2016/02/02	2016/02/02	Grace Bu

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

Maxxam Job #: B616805
Report Date: 2016/02/04

Stantec Consulting Ltd
Client Project #: 122511222
Site Location: 344 WELLINGTON
Sampler Initials: AH

TEST SUMMARY

Maxxam ID: BSQ137 **Collected:** 2016/01/27
Sample ID: BH16-3 SS4 **Shipped:**
Matrix: Soil **Received:** 2016/01/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extractable Metals Analysis by ICP	ICP	4366683	2016/02/02	2016/02/02	Azita Fazaeli
MOISTURE	BAL	4361398	N/A	2016/01/29	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4361404	2016/01/28	2016/01/28	Liliana Gaburici
pH CaCl2 EXTRACT	AT	4365685	2016/02/01	2016/02/01	Neil Dassanayake
Volatile Organic Compounds in Soil	GC/MS	4361712	N/A	2016/01/30	Anna Gabrielyan

Maxxam ID: BSQ137 Dup **Collected:** 2016/01/27
Sample ID: BH16-3 SS4 **Shipped:**
Matrix: Soil **Received:** 2016/01/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	4366750	2016/02/02	2016/02/02	Grace Bu

Maxxam ID: BSQ138 **Collected:** 2016/01/27
Sample ID: BH16-2 SS2 **Shipped:**
Matrix: Soil **Received:** 2016/01/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4360430	N/A	2016/02/04	Paul Rubinato
Hot Water Extractable Boron	ICP	4366681	2016/02/02	2016/02/02	Jolly John
1,3-Dichloropropene Sum	CALC	4359885	N/A	2016/02/01	Automated Statchk
Hexavalent Chromium in Soil by IC	IC/SPEC	4367008	2016/02/02	2016/02/03	Manoj Gera
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4362018	N/A	2016/02/02	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4361402	2016/01/28	2016/01/29	Arezoo Habibagahi
Strong Acid Leachable Metals by ICPMS	ICP/MS	4366750	2016/02/02	2016/02/02	Grace Bu
Acid Extractable Metals Analysis by ICP	ICP	4366683	2016/02/02	2016/02/02	Azita Fazaeli
MOISTURE	BAL	4361398	N/A	2016/01/29	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4361404	2016/01/28	2016/01/28	Liliana Gaburici
Polychlorinated Biphenyl in Soil	GC/ECD	4365378	2016/02/01	2016/02/01	Li Peng
pH CaCl2 EXTRACT	AT	4365685	2016/02/01	2016/02/01	Neil Dassanayake
Volatile Organic Compounds in Soil	GC/MS	4361712	N/A	2016/01/30	Anna Gabrielyan

Maxxam ID: BSQ139 **Collected:** 2016/01/27
Sample ID: BH16-2 SS4 **Shipped:**
Matrix: Soil **Received:** 2016/01/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4360430	N/A	2016/02/04	Paul Rubinato
Hot Water Extractable Boron	ICP	4366681	2016/02/02	2016/02/02	Jolly John
1,3-Dichloropropene Sum	CALC	4359885	N/A	2016/02/01	Automated Statchk
Hexavalent Chromium in Soil by IC	IC/SPEC	4367008	2016/02/02	2016/02/03	Manoj Gera
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4362018	N/A	2016/02/02	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4361402	2016/01/28	2016/01/29	Arezoo Habibagahi
Strong Acid Leachable Metals by ICPMS	ICP/MS	4366750	2016/02/02	2016/02/02	Grace Bu

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

Maxxam Job #: B616805
Report Date: 2016/02/04

Stantec Consulting Ltd
Client Project #: 122511222
Site Location: 344 WELLINGTON
Sampler Initials: AH

TEST SUMMARY

Maxxam ID: BSQ139 **Collected:** 2016/01/27
Sample ID: BH16-2 SS4 **Shipped:**
Matrix: Soil **Received:** 2016/01/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extractable Metals Analysis by ICP	ICP	4366683	2016/02/02	2016/02/02	Azita Fazaeli
MOISTURE	BAL	4361398	N/A	2016/01/29	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4361404	2016/01/28	2016/01/28	Liliana Gaburici
pH CaCl2 EXTRACT	AT	4365310	2016/02/01	2016/02/01	Neil Dassanayake
Volatile Organic Compounds in Soil	GC/MS	4361712	N/A	2016/01/30	Anna Gabrielyan

Maxxam ID: BSQ140 **Collected:** 2016/01/27
Sample ID: BH16-1 SS2 **Shipped:**
Matrix: Soil **Received:** 2016/01/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4360430	N/A	2016/02/04	Paul Rubinato
Hot Water Extractable Boron	ICP	4366681	2016/02/02	2016/02/02	Jolly John
1,3-Dichloropropene Sum	CALC	4359885	N/A	2016/02/01	Automated Statchk
Hexavalent Chromium in Soil by IC	IC/SPEC	4367008	2016/02/02	2016/02/03	Manoj Gera
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4362018	N/A	2016/02/02	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4361402	2016/01/28	2016/01/29	Arezoo Habibagahi
Strong Acid Leachable Metals by ICPMS	ICP/MS	4366750	2016/02/02	2016/02/02	Grace Bu
Acid Extractable Metals Analysis by ICP	ICP	4366683	2016/02/02	2016/02/02	Azita Fazaeli
MOISTURE	BAL	4361398	N/A	2016/01/29	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4361404	2016/01/28	2016/01/28	Liliana Gaburici
Polychlorinated Biphenyl in Soil	GC/ECD	4365378	2016/02/01	2016/02/01	Li Peng
pH CaCl2 EXTRACT	AT	4365310	2016/02/01	2016/02/01	Neil Dassanayake
Volatile Organic Compounds in Soil	GC/MS	4361712	N/A	2016/01/30	Anna Gabrielyan

Maxxam ID: BSQ140 Dup **Collected:** 2016/01/27
Sample ID: BH16-1 SS2 **Shipped:**
Matrix: Soil **Received:** 2016/01/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	4367008	2016/02/02	2016/02/03	Manoj Gera

Maxxam ID: BSQ141 **Collected:** 2016/01/27
Sample ID: BH16-1 SS5 **Shipped:**
Matrix: Soil **Received:** 2016/01/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4360430	N/A	2016/02/04	Paul Rubinato
Hot Water Extractable Boron	ICP	4366681	2016/02/02	2016/02/02	Jolly John
1,3-Dichloropropene Sum	CALC	4359885	N/A	2016/02/01	Automated Statchk
Hexavalent Chromium in Soil by IC	IC/SPEC	4367008	2016/02/02	2016/02/03	Manoj Gera
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4362018	N/A	2016/02/02	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4361402	2016/01/28	2016/01/29	Arezoo Habibagahi
Strong Acid Leachable Metals by ICPMS	ICP/MS	4366750	2016/02/02	2016/02/02	Grace Bu

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

Maxxam Job #: B616805
Report Date: 2016/02/04

Stantec Consulting Ltd
Client Project #: 122511222
Site Location: 344 WELLINGTON
Sampler Initials: AH

TEST SUMMARY

Maxxam ID: BSQ141
Sample ID: BH16-1 SS5
Matrix: Soil

Collected: 2016/01/27
Shipped:
Received: 2016/01/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extractable Metals Analysis by ICP	ICP	4366683	2016/02/02	2016/02/02	Azita Fazaeli
MOISTURE	BAL	4361398	N/A	2016/01/29	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4361404	2016/01/28	2016/01/28	Liliana Gaburici
pH CaCl2 EXTRACT	AT	4365685	2016/02/01	2016/02/01	Neil Dassanayake
Volatile Organic Compounds in Soil	GC/MS	4361712	N/A	2016/01/30	Anna Gabrielyan

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

Maxxam Job #: B616805
Report Date: 2016/02/04

Stantec Consulting Ltd
Client Project #: 122511222
Site Location: 344 WELLINGTON
Sampler Initials: AH

GENERAL COMMENTS

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

Package 1	0.3°C

Custody seal was not present on the cooler.

Results relate only to the items tested.

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

Maxxam Job #: B616805
Report Date: 2016/02/04

QUALITY ASSURANCE REPORT

Stantec Consulting Ltd
Client Project #: 122511222
Site Location: 344 WELLINGTON
Sampler Initials: AH

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4361402	o-Terphenyl	2016/01/28	118	30 - 130	118	30 - 130	113	%				
4361404	D10-Anthracene	2016/01/28	75	50 - 130	81	50 - 130	85	%				
4361404	D14-Terphenyl (FS)	2016/01/28	78	50 - 130	84	50 - 130	87	%				
4361404	D8-Acenaphthylene	2016/01/28	71	50 - 130	79	50 - 130	82	%				
4361712	4-Bromofluorobenzene	2016/01/30	101	60 - 140	101	60 - 140	102	%				
4361712	D10-o-Xylene	2016/01/30	94	60 - 130	101	60 - 130	100	%				
4361712	D4-1,2-Dichloroethane	2016/01/30	95	60 - 140	99	60 - 140	98	%				
4361712	D8-Toluene	2016/01/30	102	60 - 140	101	60 - 140	88	%				
4362018	1,4-Difluorobenzene	2016/02/01	112	60 - 140	109	60 - 140	113	%				
4362018	4-Bromofluorobenzene	2016/02/01	96	60 - 140	107	60 - 140	111	%				
4362018	D10-Ethylbenzene	2016/02/01	82	30 - 130	84	30 - 130	86	%				
4362018	D4-1,2-Dichloroethane	2016/02/01	106	60 - 140	105	60 - 140	106	%				
4365378	Decachlorobiphenyl	2016/02/01	81	60 - 130	91	60 - 130	79	%				
4361398	Moisture	2016/01/29							10	50		
4361402	F2 (C10-C16 Hydrocarbons)	2016/01/28	89	50 - 130	82	80 - 120	<10	ug/g	NC	50		
4361402	F3 (C16-C34 Hydrocarbons)	2016/01/28	89	50 - 130	82	80 - 120	<50	ug/g	NC	50		
4361402	F4 (C34-C50 Hydrocarbons)	2016/01/28	89	50 - 130	82	80 - 120	<50	ug/g	NC	50		
4361404	1-Methylnaphthalene	2016/01/28	75	50 - 130	80	50 - 130	<0.0050	ug/g	NC	40		
4361404	2-Methylnaphthalene	2016/01/28	79	50 - 130	83	50 - 130	<0.0050	ug/g	NC	40		
4361404	Acenaphthene	2016/01/28	69	50 - 130	73	50 - 130	<0.0050	ug/g	8.8	40		
4361404	Acenaphthylene	2016/01/28	66	50 - 130	71	50 - 130	<0.0050	ug/g	NC	40		
4361404	Anthracene	2016/01/28	71	50 - 130	74	50 - 130	<0.0050	ug/g	17	40		
4361404	Benzo(a)anthracene	2016/01/28	76	50 - 130	75	50 - 130	<0.0050	ug/g	8.6	40		
4361404	Benzo(a)pyrene	2016/01/28	85	50 - 130	81	50 - 130	<0.0050	ug/g	14	40		
4361404	Benzo(b/j)fluoranthene	2016/01/28	91	50 - 130	81	50 - 130	<0.0050	ug/g	16	40		
4361404	Benzo(g,h,i)perylene	2016/01/28	73	50 - 130	83	50 - 130	<0.0050	ug/g	21	40		
4361404	Benzo(k)fluoranthene	2016/01/28	93	50 - 130	83	50 - 130	<0.0050	ug/g	10	40		
4361404	Chrysene	2016/01/28	77	50 - 130	76	50 - 130	<0.0050	ug/g	11	40		
4361404	Dibenz(a,h)anthracene	2016/01/28	72	50 - 130	84	50 - 130	<0.0050	ug/g	NC	40		
4361404	Fluoranthene	2016/01/28	81	50 - 130	78	50 - 130	<0.0050	ug/g	3.3	40		
4361404	Fluorene	2016/01/28	74	50 - 130	78	50 - 130	<0.0050	ug/g	26	40		

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

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4361404	Indeno(1,2,3-cd)pyrene	2016/01/28	79	50 - 130	87	50 - 130	<0.0050	ug/g	17	40		
4361404	Naphthalene	2016/01/28	70	50 - 130	74	50 - 130	<0.0050	ug/g	NC	40		
4361404	Phenanthrene	2016/01/28	77	50 - 130	76	50 - 130	<0.0050	ug/g	9.7	40		
4361404	Pyrene	2016/01/28	78	50 - 130	76	50 - 130	<0.0050	ug/g	11	40		
4361712	1,1,1,2-Tetrachloroethane	2016/01/30	95	60 - 140	98	60 - 130	<0.050	ug/g	NC	50		
4361712	1,1,1-Trichloroethane	2016/01/30	92	60 - 140	89	60 - 130	<0.050	ug/g	NC	50		
4361712	1,1,2,2-Tetrachloroethane	2016/01/30	89	60 - 140	100	60 - 130	<0.050	ug/g	NC	50		
4361712	1,1,2-Trichloroethane	2016/01/30	90	60 - 140	97	60 - 130	<0.050	ug/g	NC	50		
4361712	1,1-Dichloroethane	2016/01/30	79	60 - 140	82	60 - 130	<0.050	ug/g	NC	50		
4361712	1,1-Dichloroethylene	2016/01/30	93	60 - 140	105	60 - 130	<0.050	ug/g	NC	50		
4361712	1,2-Dichlorobenzene	2016/01/30	92	60 - 140	95	60 - 130	<0.050	ug/g	NC	50		
4361712	1,2-Dichloroethane	2016/01/30	90	60 - 140	97	60 - 130	<0.050	ug/g	NC	50		
4361712	1,2-Dichloropropane	2016/01/30	90	60 - 140	95	60 - 130	<0.050	ug/g	NC	50		
4361712	1,3-Dichlorobenzene	2016/01/30	92	60 - 140	93	60 - 130	<0.050	ug/g	NC	50		
4361712	1,4-Dichlorobenzene	2016/01/30	92	60 - 140	94	60 - 130	<0.050	ug/g	NC	50		
4361712	Acetone (2-Propanone)	2016/01/30	84	60 - 140	101	60 - 140	<0.50	ug/g	NC	50		
4361712	Benzene	2016/01/30	90	60 - 140	94	60 - 130	<0.0060	ug/g	NC	50		
4361712	Bromodichloromethane	2016/01/30	90	60 - 140	95	60 - 130	<0.050	ug/g	NC	50		
4361712	Bromoform	2016/01/30	89	60 - 140	98	60 - 130	<0.050	ug/g	NC	50		
4361712	Bromomethane	2016/01/30	76	60 - 140	90	60 - 140	<0.050	ug/g	NC	50		
4361712	Carbon Tetrachloride	2016/01/30	94	60 - 140	96	60 - 130	<0.050	ug/g	NC	50		
4361712	Chlorobenzene	2016/01/30	94	60 - 140	98	60 - 130	<0.050	ug/g	NC	50		
4361712	Chloroform	2016/01/30	87	60 - 140	89	60 - 130	<0.050	ug/g	NC	50		
4361712	cis-1,2-Dichloroethylene	2016/01/30	77	60 - 140	81	60 - 130	<0.050	ug/g	NC	50		
4361712	cis-1,3-Dichloropropene	2016/01/30	80	60 - 140	85	60 - 130	<0.030	ug/g	NC	50		
4361712	Dibromochloromethane	2016/01/30	91	60 - 140	97	60 - 130	<0.050	ug/g	NC	50		
4361712	Dichlorodifluoromethane (FREON 12)	2016/01/30	80	60 - 140	106	60 - 140	<0.050	ug/g	NC	50		
4361712	Ethylbenzene	2016/01/30	95	60 - 140	97	60 - 130	<0.010	ug/g	NC	50		
4361712	Ethylene Dibromide	2016/01/30	90	60 - 140	97	60 - 130	<0.050	ug/g	NC	50		
4361712	Hexane	2016/01/30	86	60 - 140	103	60 - 130	<0.050	ug/g	NC	50		
4361712	Methyl Ethyl Ketone (2-Butanone)	2016/01/30	69	60 - 140	82	60 - 140	<0.50	ug/g	NC	50		

Maxxam Job #: B616805
Report Date: 2016/02/04

QUALITY ASSURANCE REPORT(CONT'D)

Stantec Consulting Ltd
Client Project #: 122511222
Site Location: 344 WELLINGTON
Sampler Initials: AH

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4361712	Methyl Isobutyl Ketone	2016/01/30	82	60 - 140	96	60 - 130	<0.50	ug/g	NC	50		
4361712	Methyl t-butyl ether (MTBE)	2016/01/30	92	60 - 140	93	60 - 130	<0.050	ug/g	NC	50		
4361712	Methylene Chloride(Dichloromethane)	2016/01/30	81	60 - 140	92	60 - 130	<0.050	ug/g	NC	50		
4361712	o-Xylene	2016/01/30	93	60 - 140	96	60 - 130	<0.020	ug/g	NC	50		
4361712	p+m-Xylene	2016/01/30	92	60 - 140	95	60 - 130	<0.020	ug/g	NC	50		
4361712	Styrene	2016/01/30	91	60 - 140	95	60 - 130	<0.050	ug/g	NC	50		
4361712	Tetrachloroethylene	2016/01/30	94	60 - 140	96	60 - 130	<0.050	ug/g	NC	50		
4361712	Toluene	2016/01/30	92	60 - 140	95	60 - 130	<0.020	ug/g	NC	50		
4361712	Total Xylenes	2016/01/30					<0.020	ug/g	NC	50		
4361712	trans-1,2-Dichloroethylene	2016/01/30	91	60 - 140	98	60 - 130	<0.050	ug/g	NC	50		
4361712	trans-1,3-Dichloropropene	2016/01/30	81	60 - 140	84	60 - 130	<0.040	ug/g	NC	50		
4361712	Trichloroethylene	2016/01/30	89	60 - 140	92	60 - 130	<0.010	ug/g	NC	50		
4361712	Trichlorofluoromethane (FREON 11)	2016/01/30	102	60 - 140	106	60 - 130	<0.050	ug/g	NC	50		
4361712	Vinyl Chloride	2016/01/30	82	60 - 140	103	60 - 130	<0.020	ug/g	NC	50		
4362018	F1 (C6-C10) - BTEX	2016/02/01							NC	50		
4362018	F1 (C6-C10)	2016/02/01	115	60 - 140	106	80 - 120	<10	ug/g	NC	50		
4365310	Available (CaCl2) pH	2016/02/01			99	97 - 103			0.31	N/A		
4365378	Aroclor 1242	2016/02/01					<0.010	ug/g	NC	50		
4365378	Aroclor 1248	2016/02/01					<0.010	ug/g	NC	50		
4365378	Aroclor 1254	2016/02/01					<0.010	ug/g	NC	50		
4365378	Aroclor 1260	2016/02/01	72	60 - 130	82	60 - 130	<0.010	ug/g	NC	50		
4365378	Total PCB	2016/02/01	72	60 - 130	82	60 - 130	<0.010	ug/g	NC	50		
4365685	Available (CaCl2) pH	2016/02/01			99	97 - 103			1.4	N/A		
4366681	Hot Water Ext. Boron (B)	2016/02/02	106	75 - 125	103	75 - 125	<0.050	ug/g	NC	40		
4366683	Acid Extractable Sulphur (S)	2016/02/02	NC	75 - 125	100	80 - 120	<50	ug/g	NC	30		
4366750	Acid Extractable Antimony (Sb)	2016/02/02	102	75 - 125	98	80 - 120	<0.20	ug/g	NC	30		
4366750	Acid Extractable Arsenic (As)	2016/02/02	106	75 - 125	101	80 - 120	<1.0	ug/g	NC	30		
4366750	Acid Extractable Barium (Ba)	2016/02/02	NC	75 - 125	92	80 - 120	<0.50	ug/g	2.0	30		
4366750	Acid Extractable Beryllium (Be)	2016/02/02	103	75 - 125	95	80 - 120	<0.20	ug/g	NC	30		
4366750	Acid Extractable Cadmium (Cd)	2016/02/02	103	75 - 125	96	80 - 120	<0.10	ug/g	NC	30		
4366750	Acid Extractable Chromium (Cr)	2016/02/02	NC	75 - 125	97	80 - 120	<1.0	ug/g	0.83	30		

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

Maxxam Job #: B616805
Report Date: 2016/02/04

QUALITY ASSURANCE REPORT(CONT'D)

Stantec Consulting Ltd
Client Project #: 122511222
Site Location: 344 WELLINGTON
Sampler Initials: AH

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4366750	Acid Extractable Cobalt (Co)	2016/02/02	100	75 - 125	98	80 - 120	<0.10	ug/g	1.3	30		
4366750	Acid Extractable Copper (Cu)	2016/02/02	100	75 - 125	99	80 - 120	<0.50	ug/g	1.5	30		
4366750	Acid Extractable Lead (Pb)	2016/02/02	102	75 - 125	100	80 - 120	<1.0	ug/g	0.81	30		
4366750	Acid Extractable Mercury (Hg)	2016/02/02	111	75 - 125	108	80 - 120	<0.050	ug/g	NC	30		
4366750	Acid Extractable Molybdenum (Mo)	2016/02/02	105	75 - 125	96	80 - 120	<0.50	ug/g	NC	30		
4366750	Acid Extractable Nickel (Ni)	2016/02/02	100	75 - 125	97	80 - 120	<0.50	ug/g	3.8	30		
4366750	Acid Extractable Selenium (Se)	2016/02/02	101	75 - 125	98	80 - 120	<0.50	ug/g	NC	30		
4366750	Acid Extractable Silver (Ag)	2016/02/02	104	75 - 125	100	80 - 120	<0.20	ug/g	NC	30		
4366750	Acid Extractable Thallium (Tl)	2016/02/02	99	75 - 125	99	80 - 120	<0.050	ug/g	NC	30		
4366750	Acid Extractable Tin (Sn)	2016/02/02	106	75 - 125	98	80 - 120	<5.0	ug/g	NC	30		
4366750	Acid Extractable Uranium (U)	2016/02/02	102	75 - 125	100	80 - 120	<0.050	ug/g	1.2	30		
4366750	Acid Extractable Vanadium (V)	2016/02/02	NC	75 - 125	99	80 - 120	<5.0	ug/g	5.1	30		
4366750	Acid Extractable Zinc (Zn)	2016/02/02	NC	75 - 125	111	80 - 120	<5.0	ug/g	NC	30		
4367008	Chromium (VI)	2016/02/03	68 (1)	75 - 125	95	80 - 120	<0.2	ug/g	NC	35	86	75 - 125

N/A = Not Applicable

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

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

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

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

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

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

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) The matrix spike recovery was below the lower control limit. This may be due in part to the reducing environment of the sample. The matrix spike was reanalyzed to confirm result.

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

Maxxam Job #: B616805
Report Date: 2016/02/04

Stantec Consulting Ltd
Client Project #: 122511222
Site Location: 344 WELLINGTON
Sampler Initials: AH

VALIDATION SIGNATURE PAGE

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

Cristina Carriere, Scientific Services

Paul Rubinato, Analyst, Maxxam Analytics

Steve Roberts, Ottawa Lab Manager

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

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

Your Project #: 122511222
Site Location: 344 WELLINGTON
Your C.O.C. #: 546828-02-01

Attention:Jill Peters-Dechman

Stantec Consulting Ltd
1331 Clyde Avenue
Suite 400
Ottawa, ON
K2C 3G4

Report Date: 2016/02/04
Report #: R3877406
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B617237
Received: 2016/01/27, 12:34

Sample Matrix: Soil
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Semivolatile Organic Compounds (TCLP) (1)	1	2016/01/29	2016/01/30	CAM SOP-00301	EPA 8270D m
Cyanide (WAD) in Leachates (1)	1	N/A	2016/01/29	CAM SOP-00457	OMOE 3015 m
Fluoride by ISE in Leachates (1)	1	2016/01/29	2016/01/29	CAM SOP-00449	SM 22 4500-F- C m
Mercury (TCLP Leachable) (mg/L) (1)	1	N/A	2016/01/29	CAM SOP-00453	EPA 7470A m
Total Metals in TCLP Leachate by ICPMS (1)	1	2016/01/29	2016/01/29	CAM SOP-00447	EPA 6020A m
Ignitability of a Sample (1)	1	2016/02/03	2016/02/03	CAM SOP-00432	EPA 1030 Rev. 0 m
Moisture (1)	1	N/A	2016/02/01	CAM SOP-00445	Carter 2nd ed 51.2 m
Nitrate(NO3) + Nitrite(NO2) in Leachate (1)	1	N/A	2016/01/29	CAM SOP-00440	SM 22 4500-NO3I/NO2B
Polychlorinated Biphenyl in Soil (1)	1	2016/01/29	2016/01/29	CAM SOP-00309	EPA 8082A m
TCLP - % Solids (1)	1	2016/01/28	2016/01/29	CAM SOP-00401	EPA 1311 Update I m
TCLP - Extraction Fluid (1)	1	N/A	2016/01/29	CAM SOP-00401	EPA 1311 Update I m
TCLP - Initial and final pH (1)	1	N/A	2016/01/29	CAM SOP-00401	EPA 1311 Update I m
TCLP Zero Headspace Extraction (1)	1	2016/01/28	2016/01/29	CAM SOP-00430	EPA 1311 m
VOCs in ZHE Leachates (1)	1	2016/01/29	2016/01/29	CAM SOP000226	EPA 8260C m

Remarks:

Maxxam Analytics has performed all analytical testing herein in accordance with ISO 17025 and the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act. All methodologies comply with this document and are validated for use in the laboratory. The methods and techniques employed in this analysis conform to the performance criteria (detection limits, accuracy and precision) as outlined in the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act.

Maxxam Analytics is accredited for all specific parameters as required by Ontario Regulation 153/04. Maxxam Analytics is limited in liability to the actual cost of analysis unless otherwise agreed in writing. There is no other warranty expressed or implied. Samples will be retained at Maxxam Analytics for three weeks from receipt of data or as per contract.

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) This test was performed by Maxxam Analytics Mississauga

Your Project #: 122511222
Site Location: 344 WELLINGTON
Your C.O.C. #: 546828-02-01

Attention:Jill Peters-Dechman

Stantec Consulting Ltd
1331 Clyde Avenue
Suite 400
Ottawa, ON
K2C 3G4

Report Date: 2016/02/04
Report #: R3877406
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B617237
Received: 2016/01/27, 12:34

Encryption Key

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

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

Maxxam Job #: B617237
Report Date: 2016/02/04

Stantec Consulting Ltd
Client Project #: 122511222
Site Location: 344 WELLINGTON
Sampler Initials: AH

O.REG 558 TCLP VOLATILE ORGANICS (SOIL)

Maxxam ID		BSS343		
Sampling Date		2016/01/27 10:00		
COC Number		546828-02-01		
	UNITS	**558**	**RDL**	**QC Batch**
Charge/Prep Analysis				
Amount Extracted (Wet Weight) (g)	N/A	25	N/A	4361595
Volatile Organics				
Leachable Benzene	mg/L	<0.020	0.020	4363156
Leachable Carbon Tetrachloride	mg/L	<0.020	0.020	4363156
Leachable Chlorobenzene	mg/L	<0.020	0.020	4363156
Leachable Chloroform	mg/L	<0.020	0.020	4363156
Leachable 1,2-Dichlorobenzene	mg/L	<0.050	0.050	4363156
Leachable 1,4-Dichlorobenzene	mg/L	<0.050	0.050	4363156
Leachable 1,2-Dichloroethane	mg/L	<0.050	0.050	4363156
Leachable 1,1-Dichloroethylene	mg/L	<0.020	0.020	4363156
Leachable Methylene Chloride(Dichloromethane)	mg/L	<0.20	0.20	4363156
Leachable Methyl Ethyl Ketone (2-Butanone)	mg/L	<1.0	1.0	4363156
Leachable Tetrachloroethylene	mg/L	<0.020	0.020	4363156
Leachable Trichloroethylene	mg/L	<0.020	0.020	4363156
Leachable Vinyl Chloride	mg/L	<0.020	0.020	4363156
Surrogate Recovery (%)				
Leachable 4-Bromofluorobenzene	%	95		4363156
Leachable D4-1,2-Dichloroethane	%	103		4363156
Leachable D8-Toluene	%	100		4363156

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

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

Maxxam Job #: B617237
Report Date: 2016/02/04

Stantec Consulting Ltd
Client Project #: 122511222
Site Location: 344 WELLINGTON
Sampler Initials: AH

O.REG 558 TCLP INORGANICS PACKAGE (SOIL)

Maxxam ID		BSS343		
Sampling Date		2016/01/27 10:00		
COC Number		546828-02-01		
	UNITS	558	RDL	QC Batch
Inorganics				
Leachable Fluoride (F-)	mg/L	0.16	0.10	4363328
Leachable Free Cyanide	mg/L	<0.010	0.010	4363334
Leachable Nitrite (N)	mg/L	<0.10	0.10	4363333
Leachable Nitrate (N)	mg/L	<1.0	1.0	4363333
Leachable Nitrate + Nitrite (N)	mg/L	<1.0	1.0	4363333
Metals				
Leachable Mercury (Hg)	mg/L	<0.0010	0.0010	4363303
Leachable Arsenic (As)	mg/L	<0.20	0.20	4363351
Leachable Barium (Ba)	mg/L	0.38	0.20	4363351
Leachable Boron (B)	mg/L	0.38	0.10	4363351
Leachable Cadmium (Cd)	mg/L	<0.050	0.050	4363351
Leachable Chromium (Cr)	mg/L	<0.10	0.10	4363351
Leachable Lead (Pb)	mg/L	<0.10	0.10	4363351
Leachable Selenium (Se)	mg/L	<0.10	0.10	4363351
Leachable Silver (Ag)	mg/L	<0.010	0.010	4363351
Leachable Uranium (U)	mg/L	<0.010	0.010	4363351

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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

Maxxam Job #: B617237
Report Date: 2016/02/04

Stantec Consulting Ltd
Client Project #: 122511222
Site Location: 344 WELLINGTON
Sampler Initials: AH

O.REG 558 TCLP LEACHATE PREPARATION (SOIL)

Maxxam ID		BSS343		
Sampling Date		2016/01/27 10:00		
COC Number		546828-02-01		
	UNITS	558	RDL	QC Batch
Inorganics				
Final pH	pH	4.90		4363307
Initial pH	pH	9.22		4363307
TCLP - % Solids	%	100	0.2	4363292
TCLP Extraction Fluid	N/A	FLUID 1		4363306

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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

Maxxam Job #: B617237
Report Date: 2016/02/04

Stantec Consulting Ltd
Client Project #: 122511222
Site Location: 344 WELLINGTON
Sampler Initials: AH

O.REG 558 TCLP SEMI-VOLATILE ORGANICS (SOIL)

Maxxam ID		BSS343		
Sampling Date		2016/01/27 10:00		
COC Number		546828-02-01		
	UNITS	558	RDL	QC Batch
Semivolatile Organics				
Leachable Benzo(a)pyrene	ug/L	<0.10	0.10	4363950
Leachable m/p-Cresol	ug/L	<2.5	2.5	4363950
Leachable o-Cresol	ug/L	<2.5	2.5	4363950
Leachable Cresol Total	ug/L	<2.5	2.5	4363950
Leachable 2,4-Dichlorophenol	ug/L	<2.5	2.5	4363950
Leachable 2,4-Dinitrotoluene	ug/L	<10	10	4363950
Leachable Hexachlorobenzene	ug/L	<10	10	4363950
Leachable Hexachlorobutadiene	ug/L	<10	10	4363950
Leachable Hexachloroethane	ug/L	<10	10	4363950
Leachable Nitrobenzene	ug/L	<10	10	4363950
Leachable Pentachlorophenol	ug/L	<2.5	2.5	4363950
Leachable Pyridine	ug/L	<10	10	4363950
Leachable 2,3,4,6-Tetrachlorophenol	ug/L	<2.5	2.5	4363950
Leachable 2,4,5-Trichlorophenol	ug/L	<0.50	0.50	4363950
Leachable 2,4,6-Trichlorophenol	ug/L	<2.5	2.5	4363950
Surrogate Recovery (%)				
Leachable 2,4,6-Tribromophenol	%	80		4363950
Leachable 2-Fluorobiphenyl	%	64		4363950
Leachable 2-Fluorophenol	%	59		4363950
Leachable D14-Terphenyl (FS)	%	87		4363950
Leachable D5-Nitrobenzene	%	83		4363950
Leachable D5-Phenol	%	31		4363950

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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

Maxxam Job #: B617237
Report Date: 2016/02/04

Stantec Consulting Ltd
Client Project #: 122511222
Site Location: 344 WELLINGTON
Sampler Initials: AH

RESULTS OF ANALYSES OF SOIL

Maxxam ID		BSS343		
Sampling Date		2016/01/27 10:00		
COC Number		546828-02-01		
	UNITS	**558**	**RDL**	**QC Batch**
Inorganics				
Moisture	%	19	1.0	4366150

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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

Maxxam Job #: B617237
Report Date: 2016/02/04

Stantec Consulting Ltd
Client Project #: 122511222
Site Location: 344 WELLINGTON
Sampler Initials: AH

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		BSS343		
Sampling Date		2016/01/27 10:00		
COC Number		546828-02-01		
	UNITS	558	RDL	QC Batch
PCBs				
Aroclor 1016	ug/g	<0.010	0.010	4363825
Aroclor 1221	ug/g	<0.010	0.010	4363825
Aroclor 1232	ug/g	<0.010	0.010	4363825
Aroclor 1242	ug/g	<0.010	0.010	4363825
Aroclor 1248	ug/g	<0.010	0.010	4363825
Aroclor 1254	ug/g	<0.010	0.010	4363825
Aroclor 1260	ug/g	<0.010	0.010	4363825
Aroclor 1262	ug/g	<0.010	0.010	4363825
Aroclor 1268	ug/g	<0.010	0.010	4363825
Total PCB	ug/g	<0.010	0.010	4363825
Surrogate Recovery (%)				
Decachlorobiphenyl	%	83		4363825

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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

Maxxam Job #: B617237
Report Date: 2016/02/04

Stantec Consulting Ltd
Client Project #: 122511222
Site Location: 344 WELLINGTON
Sampler Initials: AH

MISCELLANEOUS (SOIL)

Maxxam ID		BSS343	
Sampling Date		2016/01/27 10:00	
COC Number		546828-02-01	
	UNITS	**558**	**QC Batch**
Inorganics			
Ignitability	N/A	NF/NI	4368557
QC Batch = Quality Control Batch			

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

Maxxam Job #: B617237
Report Date: 2016/02/04

Stantec Consulting Ltd
Client Project #: 122511222
Site Location: 344 WELLINGTON
Sampler Initials: AH

TEST SUMMARY

Maxxam ID: BSS343
Sample ID: 558
Matrix: Soil

Collected: 2016/01/27
Shipped:
Received: 2016/01/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Semivolatile Organic Compounds (TCLP)	GC/MS	4363950	2016/01/29	2016/01/30	Wendy Zhao
Cyanide (WAD) in Leachates	SKAL/CN	4363334	N/A	2016/01/29	Xuanhong Qiu
Fluoride by ISE in Leachates	ISE	4363328	2016/01/29	2016/01/29	Surinder Rai
Mercury (TCLP Leachable) (mg/L)	CV/AA	4363303	N/A	2016/01/29	Ron Morrison
Total Metals in TCLP Leachate by ICPMS	ICP1/MS	4363351	2016/01/29	2016/01/29	Cristina Petran
Ignitability of a Sample	BAL	4368557	2016/02/03	2016/02/03	Chamika Deeyagaha
Moisture	BAL	4366150	N/A	2016/02/01	Valentina Kaftani
Nitrate(NO3) + Nitrite(NO2) in Leachate	LACH	4363333	N/A	2016/01/29	Anastasia Hamanov
Polychlorinated Biphenyl in Soil	GC/ECD	4363825	2016/01/29	2016/01/29	Sarah Huang
TCLP - % Solids	BAL	4363292	2016/01/28	2016/01/29	Lakhvir Kaler
TCLP - Extraction Fluid		4363306	N/A	2016/01/29	Lakhvir Kaler
TCLP - Initial and final pH	PH	4363307	N/A	2016/01/29	Lakhvir Kaler
TCLP Zero Headspace Extraction		4361595	2016/01/28	2016/01/29	Fozia Tabasum
VOCs in ZHE Leachates	GC/MS	4363156	2016/01/29	2016/01/29	Rebecca Schultz

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

Maxxam Job #: B617237
Report Date: 2016/02/04

Stantec Consulting Ltd
Client Project #: 122511222
Site Location: 344 WELLINGTON
Sampler Initials: AH

GENERAL COMMENTS

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

Package 1	0.3°C

Custody seal was not present on the cooler.

Sample BSS343-01 : NF/NI = Non Flammable and Non Ignitable

Results relate only to the items tested.

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

Maxxam Job #: B617237
Report Date: 2016/02/04

QUALITY ASSURANCE REPORT

Stantec Consulting Ltd
Client Project #: 122511222
Site Location: 344 WELLINGTON
Sampler Initials: AH

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		Leachate Blank	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	Value	UNITS
4363156	Leachable 4-Bromofluorobenzene	2016/01/29	100	70 - 130	97	70 - 130	94	%				
4363156	Leachable D4-1,2-Dichloroethane	2016/01/29	96	70 - 130	101	70 - 130	101	%				
4363156	Leachable D8-Toluene	2016/01/29	99	70 - 130	100	70 - 130	99	%				
4363825	Decachlorobiphenyl	2016/01/29	79	60 - 130	89	60 - 130	76	%				
4363950	Leachable 2,4,6-Tribromophenol	2016/01/30	89	10 - 130	87	10 - 130	81	%				
4363950	Leachable 2-Fluorobiphenyl	2016/01/30	73	30 - 130	71	30 - 130	79	%				
4363950	Leachable 2-Fluorophenol	2016/01/30	66	10 - 130	60	10 - 130	60	%				
4363950	Leachable D14-Terphenyl (FS)	2016/01/30	89	30 - 130	86	30 - 130	81	%				
4363950	Leachable D5-Nitrobenzene	2016/01/30	89	30 - 130	85	30 - 130	86	%				
4363950	Leachable D5-Phenol	2016/01/30	35	10 - 130	32	10 - 130	31	%				
4363156	Leachable 1,1-Dichloroethylene	2016/01/29	105	70 - 130	106	70 - 130	<0.020	mg/L	NC	30		
4363156	Leachable 1,2-Dichlorobenzene	2016/01/29	98	70 - 130	101	70 - 130	<0.050	mg/L	NC	30		
4363156	Leachable 1,2-Dichloroethane	2016/01/29	92	70 - 130	101	70 - 130	<0.050	mg/L	NC	30		
4363156	Leachable 1,4-Dichlorobenzene	2016/01/29	100	70 - 130	102	70 - 130	<0.050	mg/L	NC	30		
4363156	Leachable Benzene	2016/01/29	97	70 - 130	100	70 - 130	<0.020	mg/L	NC	30		
4363156	Leachable Carbon Tetrachloride	2016/01/29	103	70 - 130	107	70 - 130	<0.020	mg/L	NC	30		
4363156	Leachable Chlorobenzene	2016/01/29	101	70 - 130	103	70 - 130	<0.020	mg/L	NC	30		
4363156	Leachable Chloroform	2016/01/29	99	70 - 130	103	70 - 130	<0.020	mg/L	NC	30		
4363156	Leachable Methyl Ethyl Ketone (2-Butanone)	2016/01/29	91	60 - 140	92	60 - 140	<1.0	mg/L	NC	30		
4363156	Leachable Methylene Chloride(Dichloromethane)	2016/01/29	89	70 - 130	84	70 - 130	<0.20	mg/L	NC	30		
4363156	Leachable Tetrachloroethylene	2016/01/29	102	70 - 130	106	70 - 130	<0.020	mg/L	NC	30		
4363156	Leachable Trichloroethylene	2016/01/29	98	70 - 130	99	70 - 130	<0.020	mg/L	NC	30		
4363156	Leachable Vinyl Chloride	2016/01/29	108	70 - 130	99	70 - 130	<0.020	mg/L	NC	30		
4363303	Leachable Mercury (Hg)	2016/01/29	111	75 - 125	90	80 - 120	<0.0010	mg/L	NC	25	<0.0010	mg/L
4363328	Leachable Fluoride (F-)	2016/01/29	98	80 - 120	98	80 - 120	<0.10	mg/L	NC	25	<0.10	mg/L
4363333	Leachable Nitrate (N)	2016/01/29	101	80 - 120	102	80 - 120	<1.0	mg/L	NC	25	<1.0	mg/L
4363333	Leachable Nitrate + Nitrite (N)	2016/01/29	NC	80 - 120	103	80 - 120	<1.0	mg/L	NC	25	<1.0	mg/L
4363333	Leachable Nitrite (N)	2016/01/29	107	80 - 120	109	80 - 120	<0.10	mg/L	NC	25	<0.10	mg/L
4363334	Leachable Free Cyanide	2016/01/29	102	80 - 120	106	80 - 120	<0.0020	mg/L	NC	20	0.014, RDL=0.010	mg/L

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

Maxxam Job #: B617237
Report Date: 2016/02/04

QUALITY ASSURANCE REPORT(CONT'D)

Stantec Consulting Ltd
Client Project #: 122511222
Site Location: 344 WELLINGTON
Sampler Initials: AH

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		Leachate Blank	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	Value	UNITS
4363351	Leachable Arsenic (As)	2016/01/29	97	80 - 120	91	80 - 120	<0.20	mg/L	NC	35	<0.20	mg/L
4363351	Leachable Barium (Ba)	2016/01/29	NC	80 - 120	97	80 - 120	<0.20	mg/L	NC	35	<0.20	mg/L
4363351	Leachable Boron (B)	2016/01/29	85	80 - 120	98	80 - 120	<0.10	mg/L	NC	35	<0.10	mg/L
4363351	Leachable Cadmium (Cd)	2016/01/29	97	80 - 120	95	80 - 120	<0.050	mg/L	NC	35	<0.050	mg/L
4363351	Leachable Chromium (Cr)	2016/01/29	94	80 - 120	93	80 - 120	<0.10	mg/L	NC	35	<0.10	mg/L
4363351	Leachable Lead (Pb)	2016/01/29	92	80 - 120	93	80 - 120	<0.10	mg/L	NC	35	<0.10	mg/L
4363351	Leachable Selenium (Se)	2016/01/29	99	80 - 120	96	80 - 120	<0.10	mg/L	NC	35	<0.10	mg/L
4363351	Leachable Silver (Ag)	2016/01/29	98	80 - 120	90	80 - 120	<0.010	mg/L	NC	35	<0.010	mg/L
4363351	Leachable Uranium (U)	2016/01/29	94	80 - 120	94	80 - 120	<0.010	mg/L	NC	35	<0.010	mg/L
4363825	Aroclor 1016	2016/01/29					<0.010	ug/g				
4363825	Aroclor 1221	2016/01/29					<0.010	ug/g				
4363825	Aroclor 1232	2016/01/29					<0.010	ug/g				
4363825	Aroclor 1242	2016/01/29					<0.010	ug/g	NC	50		
4363825	Aroclor 1248	2016/01/29					<0.010	ug/g	NC	50		
4363825	Aroclor 1254	2016/01/29					<0.010	ug/g	NC	50		
4363825	Aroclor 1260	2016/01/29	74	60 - 130	80	60 - 130	<0.010	ug/g	NC	50		
4363825	Aroclor 1262	2016/01/29					<0.010	ug/g				
4363825	Aroclor 1268	2016/01/29					<0.010	ug/g				
4363825	Total PCB	2016/01/29	74	60 - 130	80	60 - 130	<0.010	ug/g	NC	50		
4363950	Leachable 2,3,4,6-Tetrachlorophenol	2016/01/30	107	10 - 130	102	10 - 130	<2.5	ug/L	NC	40		
4363950	Leachable 2,4,5-Trichlorophenol	2016/01/30	83	10 - 130	77	10 - 130	<0.50	ug/L	NC	40		
4363950	Leachable 2,4,6-Trichlorophenol	2016/01/30	80	10 - 130	77	10 - 130	<2.5	ug/L	NC	40		
4363950	Leachable 2,4-Dichlorophenol	2016/01/30	82	10 - 130	76	10 - 130	<2.5	ug/L	NC	40		
4363950	Leachable 2,4-Dinitrotoluene	2016/01/30	86	30 - 130	82	30 - 130	<10	ug/L	NC	40		
4363950	Leachable Benzo(a)pyrene	2016/01/30	103	30 - 130	99	30 - 130	<0.10	ug/L	NC	40		
4363950	Leachable Cresol Total	2016/01/30					<2.5	ug/L	NC	40		
4363950	Leachable Hexachlorobenzene	2016/01/30	87	30 - 130	83	30 - 130	<10	ug/L	NC	40		
4363950	Leachable Hexachlorobutadiene	2016/01/30	79	30 - 130	76	30 - 130	<10	ug/L	NC	40		
4363950	Leachable Hexachloroethane	2016/01/30	74	30 - 130	70	30 - 130	<10	ug/L	NC	40		
4363950	Leachable m/p-Cresol	2016/01/30	70	10 - 130	65	10 - 130	<2.5	ug/L	NC	40		
4363950	Leachable Nitrobenzene	2016/01/30	88	30 - 130	85	30 - 130	<10	ug/L	NC	40		

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

Maxxam Job #: B617237
Report Date: 2016/02/04

QUALITY ASSURANCE REPORT(CONT'D)

Stantec Consulting Ltd
Client Project #: 122511222
Site Location: 344 WELLINGTON
Sampler Initials: AH

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		Leachate Blank	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	Value	UNITS
4363950	Leachable o-Cresol	2016/01/30	84	10 - 130	78	10 - 130	<2.5	ug/L	NC	40		
4363950	Leachable Pentachlorophenol	2016/01/30	93	30 - 130	89	30 - 130	<2.5	ug/L	NC	40		
4363950	Leachable Pyridine	2016/01/30	23	10 - 130	20	10 - 130	<10	ug/L	NC	40		
4366150	Moisture	2016/02/01							NC	20		

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

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

Leachate Blank: A blank matrix containing all reagents used in the leaching procedure. Used to determine any process contamination.

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

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

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

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

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

Maxxam Job #: B617237
Report Date: 2016/02/04

Stantec Consulting Ltd
Client Project #: 122511222
Site Location: 344 WELLINGTON
Sampler Initials: AH

VALIDATION SIGNATURE PAGE

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

Cristina Carriere

Cristina Carriere, Scientific Services

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

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

Appendix G

Sieve Analysis

Stantec
2781 Lancaster Road, Suite 200
Ottawa ON, K1B 1A7

Sieve Analysis
LS 602
ASTM C136

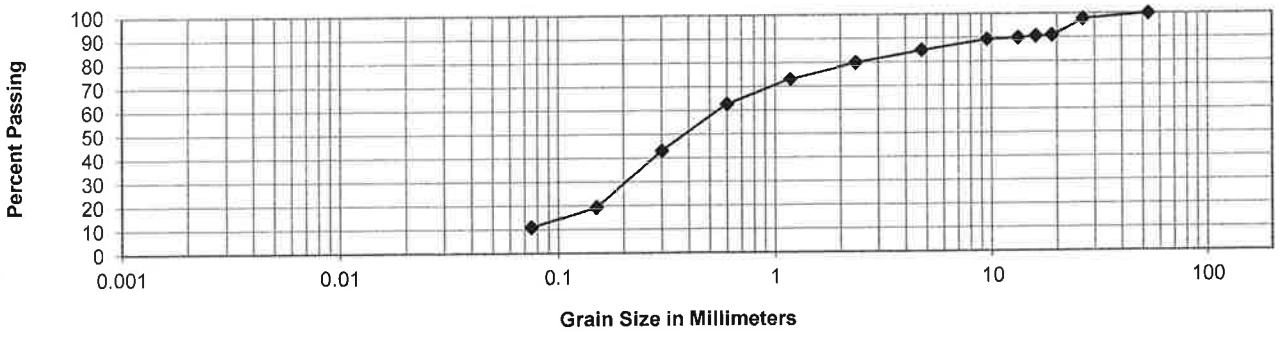
Client:	**Public Works & Government Services Canada**	Project Number:	**122511222**
Project:	**Phase III ESA - 344 Wellington**		
Material Type:	**Soils / Aggregates:**		
Proposed Use:	**Fill/Granulars**		
Source:	**BH16-01**		
Sample Number:	**SA-1**		
Sampled Depth:	**2'-6'**		
Sampled By:	**Alistair Hart, Stantec**	Tested By:	**Denis Rodriguez**
Date Sampled:	**January 26, 2016**	Date Tested:	**February 10, 2016**

Sieve Test Data		Wash Test Data		
Sample Weight Before Sieve, (g):	**1477.2**	Sample Weight Before Wash, (g):	**267.7**	**Corrected**
Sample Weight After Sieve, (g):	**1474.6**	Sample Weight After Wash, (g):	**237.6**	
Percent Loss In Sieve, (%):	**0.18**	Percent Passing No. 200, (%):	**11.2**	**9.5**

Sieve Analysis

Sieve No.	Size of Opening		Wt. Retained	Cum Wt. Retained	Percent Passing	No Envelope	
	Inches	mm	g	g	%	Minimum	Maximum
	6	150					
	4	106					
	3	76.2					
	2	53.0	0.0	0.0	100.0		
	1	26.5	33.4	33.4	97.7		
	3/4	19.0	100.8	134.2	90.9		
	5/8	16.0	5.4	139.6	90.5		
	1/2	13.2	8.9	148.5	89.9		
	3/8	9.5	10.6	159.1	89.2		
+4	0.187	4.75	63.9	223.0	84.9		
		- 4.75	1251.6	1474.6			
8	0.0937	2.36		15.8	79.9		
16	0.0469	1.18		36.8	73.2		
30	0.234	0.600		70.1	62.7		
50	0.0117	0.300		131.9	43.1		
100	0.0059	0.150		206.7	19.3		
200	0.0029	0.075		233.3	10.9		
		Pan		237.4			

Classification of Sample: % Gravel: **15.1** % Sand: **74.0** % Silt and Clay: **10.9**



Remarks:

Laboratory Supervisor: Brian Prevost **Date:** February 12/2016

V:\01224\active\other_pc_projects\122511222\Laboratory Tesing\Sieve Analysis Split, Materials. July 2012.xlsx

Appendix H

NCSCS Score Sheet

CCME National Classification System for Contaminated Sites (2008, 2010 v 1.2)
Pre-Screening Checklist

Question	Response (yes / no)	Comment
1. Are **Radioactive material**, **Bacterial contamination** or **Biological hazards** likely to be present at the site?	No	If yes, do not proceed through the NCSCS. Contact applicable regulatory agency immediately.
2. Are there **no contamination exceedances** (known or suspected)? Determination of exceedances may be based on: 1) CCME environmental quality guidelines; 2) equivalent provincial guidelines/standards if no CCME guideline exists for a specific chemical in a relevant medium; or 3) toxicity benchmarks derived from the literature for chemicals not covered by CCME or provincial guidelines/standards.	No	If yes (i.e., there are no exceedances), do not proceed through the NCSCS.
3. Have **partial/incompleted or no environmental site investigations** been conducted for the Site?	No	If yes, do not proceed through the NCSCS.
4. Is there direct and signficant evidence of **impacts to humans** at the site, or off-site due to migration of contaminants from the site?	No	If yes, automatically rate the site as Class 1, a priority for remediation or risk management, regardless of the total score obtained should one be calculated (e.g., for comparison with other Class 1 sites).
5. Is there direct and significant evidence of **impacts to ecological receptors** at the site, or off-site due to migration of contaminants from the site?	No	Some low levels of impact to ecological receptors are considered acceptable, particularly on commercial and industrial land uses. However, if ecological effects are considered to be severe, the site may be categorized as Class 1, regardless of the numerical total NCSCS score. For the purpose of application of the NCSCS, effects that would be considered severe include observed effects on survival, growth or reproduction which could threaten the viability of a population of ecological receptors at the site. Other evidence that qualifies as severe adverse effects may be determined based on professional judgement and in consultation with the relevant jurisdiction.
6. Are there indicators of significant **adverse effects in the exposure zone** (i.e., the zone in which receptors may come into contact with contaminants)? Some examples are as follows: -Hydrocarbon sheen or NAPL in the exposure zone -Severely stressed biota or devoid of biota; -Presence of material at ground surface or sediment with suspected high concentration of contaminants such as ore tailings, sandblasting grit, slag, and coal tar.	No	If yes, automatically rate the site as Class 1, a priority for remediation or risk management, regardless of the total score obtained should one be calculated (e.g., for comparison with other Class 1 sites).
7. Do measured concentrations of volatiles or unexploded ordnances represent an **explosion hazard**?	No	If yes, automatically rate the site as Class 1, a priority for remediation or risk management, and do not continue until the safety risks have been addressed. Consult your jurisdiction's occupational health and safety guidance or legislation on exposive hazards and measurement of lower explosive limits.

If none of the above applies, proceed with the NCSCS scoring.

CCME National Classification System for Contaminated Sites (2008, 2010 v 1.2)
Summary of Site Conditions

Subject Site:	**Federal Real Property # 08837001**	
Civic Address: *(or other description of location)*	344 Wellington Street, Ottawa, Ontario	
Site Common Name : *(if applicable)*	West Memorial Building	
Site Owner or Custodian: *(Organization and Contact Person)*	Public Services and Procurement Canada	
Legal description *or* metes and bounds:	Plan 14111, Lot 1 to Lot 9, Lot 11, Lot 14, Lot 15, BLK B, BLK C, S/S Wellington	
Approximate Site area:	8.2 hectares	
PID(s): *(or Parcel Identification Numbers [PIN] if untitled Crown land)*	unknown	
Centre of site: *(provide latitude/longitude or UTM coordinates)*	Latitude: Longitude:	45 25'09.79" N 75 42'33.85" W
	UTM Coordinate:	
Site Land Use:	Current:	Vacant multi-storey office building
	Proposed:	Federal Government Office
Site Plan	**To delineate the bounds of the Site a site plan MUST be attached. The plan must be drawn to scale indicating the boundaries in relation to well-defined reference points and/or legal descriptions. Delineation of the contamination should also be indicated on the site plan.**	
Provide a brief description of the Site:	The West Memorial Building is located at 344 Wellington Street, Ottawa, Ontario. The total area of the Site is 8.2 hectares. The Site is bound by Wellington Street to the north, Lyon Street to the east, Sparks Street to the south, and Bay Street to the west. The Site consists of a multi-storey office building, with a footprint that covers approximately 98% of the Site area. The building is currently vacant but may be renovated for future federal government office and courtroom space. Reportedly, there are two basement levels under the entire footprint of the building.	

CCME National Classification System for Contaminated Sites (2008, 2010 v 1.2)
Summary of Site Conditions

Affected media and Contaminants of Potential Concern (COPC):	Soil is the only confirmed affected media on the site. Groundwater has not been investigated. COPCs are PAHs, pH, and metals

Please fill in the "letter" that best describes the level of information available for the site being assessed:

Site Letter Grade **C**

If letter grade is F, do not continue, you must have a minimum of a Phase I Environmental Site Assessment or equivalent.

Scoring Completed By:	Stantec Consulting Ltd.
Date Scoring Completed:	24-Feb-16

CCME National Classification System for Contaminated Sites (2008, 2010 v 1.2)
User's Guide - Instructions

1) Please review the following overview of contents. The revised CCME National Classification System for Contaminated Sites (NCSCS) consists of a pre-screening checklist, summary of site conditions, summary score sheet, and three instruction/worksheet pages for the user to fill out: Contaminant Characteristics, Migration Potential and Exposure. For ease of printing, the method of evaluation for scoring each section of the worksheet is provided in a separate Instructions tab. Reference material is also provided to assist with the evaluation. A brief description of each sheet is as follows:

Pre-Screening Checklist - Used to determine if the Site can either be considered a Class 1 site (to be remediated immediately) or more information must be collected before the Site can be ranked, or other hazards exist at the Site that must be addressed first before the Site can be ranked using the revised NCSCS.

Site Description Sheet - Summarizes Site information. It also indicates the level of information available (Site Letter Grade) for the site to conduct the NCSCS scoring evaluation. The known/potential contaminants of concern and affected media will also be summarized here.

Contaminant Characteristics Instructions & Worksheet - Prompts the user for information related to the contaminants of potential concern (COPC) found at the site.

Migration Potential Instructions & Worksheet - Prompts the user for information related to physical transport processes which may move contamination to neighboring sites or re-distribute contamination within a site. Migration potential includes many of the exposure pathways, but is not limited to exposure pathways. Migration potential does not require clearly defined receptors.

Exposure Instructions & Worksheet - Prompts the user for information related to exposure pathways and receptors which may be located on the site.

Summary Score Sheet - Generates a total site score by adding up the scores generated on each of the three worksheets and provides the corresponding Site Classification. It also provides an estimate of certainty in the score provided (Certainty Percentage).

Reference Material - Additional information which may be useful to refer to when conducting the evaluation.
- Contaminant Hazard Ranking
- Examples of Persistent Substances
- Examples of Substances in the Various Chemical Classes
- Chemical-specific Properties
- Range of Values of Hydraulic Conductivity and Permeability

The worksheet titles and sub headings are as follows.

I. Contaminant Characteristics

1. Residency Media
2. Chemical Hazard
3. Contaminant Exceedance Factor
4. Contaminant Quantity
5. Modifying Factors

II. Migration Potential

1. Groundwater Movement
2. Surface water Movement
3. Soil
4. Vapour
5. Sediment Movement
6. Modifying Factors

III. Exposure

1. Human Receptors
   - A. Known Impact
   - B Potential
     - a. Land Use
     - b. Accessibility
     - c. Exposure Route
2. Human Modifying Factors
3. Ecological Receptors
   - A. Known Impact
   - B. Potential
     - a. Terrestrial
     - b. Aquatic
4. Ecological Modifying Factors
   - a. Species at Risk
   - b. Aesthetics
5. Other Receptors
   - a. Permafrost

CCME National Classification System for Contaminated Sites (2008, 2010 v 1.2)
User's Guide - Instructions

2) This is an electronic form which will prompt the user for information. Based on the answers provided, a score is calculated for the contaminated site in question. In most cases, the user will be asked to select amongst two or more choices in a drop down checklist. To access the drop down checklist, move the mouse towards the right side of the "action box". If a drop down is available, an arrow will appear, which must be selected to access the drop down choices. An "action box" requires input from the user. All action boxes have an amber background.

action box

3) When assigning scores for each factor, it is highly recommended to give a rationale (a column has been provided for this purpose in Worksheets I, II and III). Information that would be useful in justifying the scores assigned may include: a statement of any assumptions, a description of site-specific information, and references for any data sources (e.g., site visit, personal interview, site assessment reports, or other documents consulted).

4) The Site Letter Grade is related to the level of information available for the Site (as defined by the User) and provides an indication of completeness of information based on the level of investigation and remediation work that has been carried out at the site. More detailed descriptions of the various categories are provided below.

Site Letter Grade:	*Detailed Descriptions:*
F	***Pre Phase I ESA –*** No environmental investigations have been conducted or there are only partial or incomplete Phase I ESA for the Site. It is not recommended to continue through the NCSCS when insufficient data are available. In these cases, it will generally be necessary to conduct a Phase I ESA or other site investigation tasks in order to complete the NCSCS scoring.
E	***Phase I ESA –*** A preliminary desk-top type study has been conducted, involving non-intrusive data collection to determine whether there is a potential for the Site to be contaminated and to provide information to direct any intrusive investigations. Data collected may include a review of available information on current site conditions and history of the property, a site inspection and interviews with personnel familiar with the Site. [Note: This stage is similar to "Phase I: Site Information Assessment" as described in Guidance Document on the Management of Contaminated Sites in Canada (CCME 1997).]
D	***Limited Phase II ESA –*** An initial intrusive investigation and assessment of the property has been conducted, generally focusing on potential sources of contamination, to determine whether there is contamination present above the relevant screening guidelines or criteria, and to broadly define soil and groundwater conditions; samples have been collected and analyzed to identify, characterize and quantify contamination that may be present in air, soil, groundwater, surface water or building materials. [Note: This stage is similar to "Phase II: Reconnaissance Testing Program" as described in Guidance Document on the Management of Contaminated Sites in Canada (CCME 1997).]
C	***Detailed Phase II ESA –*** Further intrusive investigations have been conducted to characterize and delineate the contamination, to obtain detailed information on the soil and groundwater conditions, to identify the contaminant pathways, and to provide other information required to develop a remediation plan. [Note: This stage is similar to "Phase III: Detailed Testing Program" as described in Guidance Document on the Management of Contaminated Sites in Canada (CCME 1997).]
B	***Risk Assessment with or without Remedial Plan or Risk Management Strategy –*** A risk assessment has been completed, and if the risk was found to be unacceptable, a site-specific remedial action plan has been designed to mitigate environmental and health concerns associated with the Site, or a risk management strategy has been developed.
A	***Confirmation Sampling –*** Remedial work, monitoring, and/or compliance testing have been conducted and confirmatory sampling demonstrates whether contamination has been removed or stabilized effectively and whether cleanup or risk management objectives have been attained.

5) A few terms are used throughout which require definition, they are as follows:

Known - refers to scores that are assigned based on documented scientific and/or technical observations

Potential - refers to scores that are assigned when something is not known, though it may be suspected

Allowed Potential - If, in a given category, known and potential scores are provided by the user, the checklist will typically default to the "known" score. If a "known" score is provided, the "allowed potential" score will equal zero. Exceptions can be found within the Modifying Factors categories in each worksheet where there are often several independent questions. Therefore, "known" and "potential" scores are allowed to contribute to the total modifying factor score.

Raw - refers to score totals which have not been adjusted down to the total maximum score for the given category. In most cases the possible total raw score is greater than the maximum allowed

CCME National Classification System for Contaminated Sites (2008, 2010 v 1.2)
User's Guide - Instructions

Note: For some questions in the worksheets, the option selected will determine whether a "known" or "potential" score is assigned. In these cases, if "Do Not Know" is selected, a score will automatically be listed as "potential", whereas all of the other options in the list will provide a "known" score.

6) Certainty Percentage: The ratio of “Known” to “Potential” responses reflects the relative certainty, or confidence, of the resulting final score and the classification. The NCSCS system defines this ratio as the “Certainty Percentage”. The Certainty Percentage is generated from the number of sections assigned scores based on “known” information divided by the total number of sections. A high percentage indicates that more is known about the Site, and therefore there is more confidence in the ranking, whereas a low percentage suggests that the ranking should be treated with caution.

7) Site Classification Categories: Sites should not be ranked relative to one another. Sites must be classifed on their individual characteristics in order to determine the appropriate classification (Class 1, 2, 3, or N) according to their priority for action, or Class INS (Insufficient Information) for sites that require further information before they can be classifed. The classification groupings are as follows:

Class 1 - High Priority for Action (Total NCSCS Score greater than 70)

The available information indicates that action (e.g., futher site characterization, risk management, remediation, etc.) is required to address existing concerns. Typically, Class 1 sites indicate high concern for several factors, and measured or observed impacts have been documented.

Class 2 - Medium Priority for Action (Total NCSCS Score between 50 and 69.9)

The available information indicates that there is high potential for adverse impacts, although the threat to human health and the environment is generally not imminent. There will tend not to be indication of off-site contamination, however, the potential for this was rated high and therefore some action is likely required.

Class 3 - Low Priority for Action (Total NCSCS Score between 37 and 49.9)

The available information indicates that this site is currently not a high concern. However, additional investigation may be carried out to confirm the site classification, and some degree of action may be required.

Class N - Not a Priority for Action (Total NCSCS Score less than 37)

The available information indicates there is probably no significant environmental impact or human health threats. There is likely no need for action unless new information becomes available indicating greater concerns, in which case the site should be re-examined.

Class INS - Insufficient Information (>15% of Responses are "Do Not Know")

There is insufficient information to classify the site. In this event, additional information is required to address data gaps.

8) Additional Complementary Tools to the NCSCS

The CCME Soil Quality Index (SoQI) is a complementary tool that focuses more on evaluating the relative hazard, by comparing contaminant concentrations with their respective soil quality guidelines. The SoQI uses three factors for its calculations, namely: 1) scope (% of contaminants that do not meet their respective guidelines), 2) frequency (% of individual tests of contaminants that do not meet their respective guidelines), and 3) amplitude (the amount by which the contaminants do not meet their respective guidelines). The soil quality index can be used to compare different contaminated sites with similar types of contamination as well as to see if the jurisdictional requirements have been met after remediation of a particular site.

The NCSCS was not developed for and is not readily applicable for the assessment of sites with a significant marine or aquatic component. Environmental conditions at marine and aquatic sites are best measured in the bed sediments as they act as long-term reservoirs of chemicals to the aquatic environment and to organisms living in or having direct contact with sediments. The CCME Sediment Quality Index (SeQI) provides a convenient means of summarizing sediment quality data and can complement the NCSCS. The SeQI provides a mathematical framework for assessing sediment quality conditions by comparing contaminant concentrations with their respective sediment quality guidelines.

CCME National Classification System (2008, 2010 v 1.2)

(I) Contaminant Characteristics

Federal Real Property # 08837001

Definition	Score	Rationale for Score (document any assumptions, reports, or site-specific information; provide references)	Method of Evaluation	Notes
1. Residency Media (replaces physical state)				
Which of the following residency media are known (or strongly suspected) to have one or more exceedances of the applicable CCME guidelines? **yes** = has an exceedance or strongly suspected to have an exceedance **no** = does not have an exceedance or strongly suspected not to have an exceedance		Soil analytical results indicated that numerous samples exceeded the CCME guidelines for at least one PAH parameter and for at least one metal. One soil sample exceeded the pH range. No groundwater sampling has been conducted on the Site. No surface water or sediment is present at the Site.	The overall score is calculated by adding the individual scores from each residency media (having one or more exceedance of the most conservative media specific and land-use appropriate CCME guideline). Summary tables of the Canadian Environmental Quality Guidelines for soil, water (aquatic life, non-potable groundwater environments, and agricultural water uses) and sediment are available on the CCME website at http://www.ccme.ca/publications/ceqg_rcqe.html?category_id=124. For potable groundwater environments, guidelines for Canadian Drinking Water Quality (for comparison with groundwater monitoring data) are available on the Health Canada website at http://www.hc-sc.gc.ca/ewh-semt/pubs/water-eau/doc_sup-appui/sum_guide-res_recom/index_e.html.	An increasing number of residency media containing chemical exceedances often equates to a greater potential risk due to an increase in the number of potential exposure pathways.
A. Soil	Yes			
Yes No Do Not Know				
B. Groundwater	Do Not Know			
Yes No Do Not Know				
C. Surface water	No			
Yes No Do Not Know				
D. Sediment	No			
Yes No Do Not Know				
"Known" -score	2			
"Potential" - score	1			
2. Chemical Hazard				
What is the relative degree of chemical hazard of the contaminant in the list of hazard rankings proposed by the Federal Contaminated Sites Action Plan (FCSAP)?	High	Metals: Lead is considered to have a high hazard ranking, and copper and zinc both have a low hazard rating. PAHs: acenaphthene, fluorene, naphthalene, and phenanthrene have medium hazard ratings.	The relative degree of chemical hazard should be selected based on the most hazardous contaminant known or suspected to be present at the site. The degree of hazard has been defined by the Federal Contaminated Sites Action Plan (FCSAP) and a list of substances with their associated hazard (Low, Medium and High) has been provided as a separate sheet in this file. *See Attached Reference Material for Contaminant Hazard Rankings.*	Hazard as defined in the revised NCS pertains to the physical properties of a chemical which can cause harm. Properties can include toxic potency, propensity to biomagnify, persistence in the environment, etc. Although there is some overlap between hazard and contaminant exceedance factor below, it will not be possible to derive contaminant exceedance factors for many substances which have a designated chemical hazard designation, but don't have a CCME guideline. The purpose of this category is to avoid missing a measure of toxic potential.
High Medium Low Do Not Know				
"Known" -score	8			
"Potential" - score	---			
3. Contaminant Exceedence Factor				
What is the ratio between the measured contaminant concentration and the applicable CCME guidelines (or other "standards")?	Low (1x to 10x	The greatest ratio between the measured contaminant concentration and the applicable CCME guideline is copper in sample BH16-6 SS2 (830 µg/g compared to 91 µg/g)	Ranking of contaminant "exceedance" is determined by comparing contaminant concentrations with the *most conservative media-specific and land-use appropriate CCME* environmental quality guidelines. **Ranking should be based on contaminant with greatest exceedance of CCME guidelines.** Ranking of contaminant hazard as high, medium and low is as follows: High = One or more measured contaminant concentration is greater than 100 X appropriate CCME guidelines Medium = One or more measured contaminant concentration is 10 - 99.99 X appropriate CCME guidelines Low = One or more measured contaminant concentration is 1 - 9.99 X appropriate CCME guidelines Mobile NAPL = Contaminant is a non-aqueous phase liquid (i.e., due to its low solubility, it does not dissolve in water, but remains as a separate liquid) and is present at a sufficiently high saturation (i.e., greater than residual NAPL saturation) such that there is significant potential for mobility either downwards or laterally. Other standards may include local background concentration or published toxicity benchmarks. Results of toxicity testing with site samples can be used as an alternative. This approach is only relevant for contaminants that do not biomagnify in the food web, since toxicity tests would not indicate potential effects at higher trophic levels. High = lethality observed. Medium = no lethality, but sub lethal effects observed. Low = neither lethal nor sub lethal effects observed.	In the event that elevated levels of a material with no associated CCME guidelines are present, check provincial and USEPA environmental criteria. Hazard Quotients (sometimes referred to as a screening quotient in risk assessments) refer to the ratio of measured concentration to the concentration believed to be the threshold for toxicity. A similar calculation is used here to determine the contaminant exceedance factor (CEF). Concentrations greater than one times the applicable CCME guideline (i.e., CEF=>1) indicate that risks are possible. Mobile NAPL has the highest associated score (8) because of its highly concentrated nature and potential for increase in the size of the impacted zone.
Mobile NAPL High (>100x) Medium (10x to 100x) Low (1x to 10x) Do Not Know				
"Known" -score	2			
"Potential" - score	---			

CCME National Classification System (2008, 2010 v 1.2)

(I) Contaminant Characteristics

Federal Real Property # 08837001

Definition	Score	Rationale for Score (document any assumptions, reports, or site-specific information; provide references)	Method of Evaluation	Notes
4. Contaminant Quantity (known or strongly suspected)				
What is the known or strongly suspected quantity of all contaminants? >10 hectare (ha) or 5000 m^3 2 to 10 ha or 1000 to 5000 m^3 <2 ha or 1000 m^3 Do Not Know	2 to 10 ha or 1000 to 5000 m3	Volume of impacted soil is approximately 2,400 m3.	Measure or estimate the area or quantity of total contamination (i.e, all contaminants known or strongly suspected to be present on the site). The "Area of Contamination" is defined as the area or volume of contaminated media (soil, sediment, groundwater, surface water) exceeding appropriate environmental criteria.	A larger quantity of a potentially toxic substance can result in a larger frequency of exposure as well as a greater probability of migration, therefore, larger quantities of these substances earn a higher score.
"Known" -score	6			
"Potential" - score	---			
5. Modifying Factors				
Does the chemical fall in the class of persistent chemicals based on its behavior in the environment? Yes No Do Not Know	No	No concentrations of persistent chemicals exceeded the CCME guidelines.	Persistent chemicals, e.g., PCBs, chlorinated pesticides etc. either do not degrade or take longer to degrade, and therefore may be available to cause effects for a longer period of time. Canadian Environmental Protection Act (CEPA) classifies a chemical as persistent when it has at least one of the following characteristics: (a) in air, (i) its half-life is equal to or greater than 2 days, or (ii) it is subject to atmospheric transport from its source to a remote area; (b) in water, its half-life is equal to or greater than 182 days; (c) in sediments, its half-life is equal to or greater than 365 days; or (d) in soil, its half-life is equal to or greater than 182 days. This list does not include metals or metalloids, which in their elemental form do not degrade. However metals and metalloids form chemical species in the environment, many of which are not readily bioavailable.	*Examples of Persistent Substances are provided in attached Reference Materials*
Are there contaminants present that could cause damage to utilities and infrastructure, either now or in the future, given their location? Yes No Do Not Know	No	It is unlikely that PAHs or metals would cause damage to utilites or infrastructure.		Some contaminants may react or absorb into underground utilities and infrastructure. For example, organic solvents may degrade some plastics, and salts could cause corrosion of metal.
How many different contaminant classes have representative CCME guideline exceedances? one two to four five or more Do Not Know	two to four	Inorganic substances and PAHs	For the purposes of the revised NCS ranking system, the following chemicals represent distinct chemical "classes": inorganic substances (including metals), volatile petroleum hydrocarbons, light extractable petroleum hydrocarbons, heavy extractable petroleum hydrocarbons, PAHs, phenolic substances, chlorinated hydrocarbons, halogenated methanes, phthalate esters, pesticides.	*Refer to the Reference Material sheet for a list of example substances that fall under the various chemical classes.*
"Known" - Score	2			
"Potential" - Score	---			

Contaminant Characteristic Total

Raw Total Scores- "Known"	20
Raw Total Scores- "Potential"	1
Raw Combined Total Scores	21
Total Score (Raw Combined / 40 * 33)	**17.3**

CCME National Classification System (2008, 2010 v 1.2)

(II) Migration Potential (Evaluation of contaminant migration pathways)

Federal Real Property # 08837001

Definition	Score	Rationale for Score (document any assumptions, reports, or site-specific information; provide references)	Method Of Evaluation	Notes
1. Groundwater Movement				
A. Known COPC exceedances and an operable groundwater pathway within and/or beyond the property boundary.				
i) For **potable groundwater environments**, 1) groundwater concentrations exceed background concentrations and 1X the Guideline for Canadian Drinking Water Quality (GCDWQ) or 2) there is known contact of contaminants with groundwater, based on physical evidence of groundwater contamination. For **non-potable environments** (typically urban environments with municipal services), 1) groundwater concentrations exceed 1X the applicable non potable guidelines or modified generic guidelines (which exclude ingestion of drinking water pathway) or 2) there is known contact of contaminants with groundwater, based on physical evidence of groundwater impacts.	12	Based on Ontario well records in the general vicinity of the Site, the water table is located in the bedrock at approximately 8 to 10 metres below grade. Groundwater is non-potable in this area of Ottawa. However, there is an aquatic receiving environment (Ottawa River) located approximately 250 metres north of the Site.	Review chemical data and evaluate groundwater quality. The evaluation method concentrates on 1) a potable or non-potable groundwater environment; 2) the groundwater flow system and its potential to be an exposure pathway to known or potential receptors An aquifer is defined as a geologic unit that yields groundwater in usable quantities and drinking water quality. The aquifer can currently be used as a potable water supply or could have the potential for use in the future. Non-potable groundwater environments are defined as areas that are serviced with a reliable alternative water supply (most commonly provided in urban areas). The evaluation of a non-potable environment will be based on a site specific basis. Physical evidence includes significant sheens, liquid phase contamination, or contaminant saturated soils. Seeps and springs are considered part of the groundwater pathway. In Arctic environments, the potability and evaluation of the seasonal active layer (above the permafrost) as a groundwater exposure pathway will be considered on a site-specific basis.	The 1992 NCS rationale evaluated the off-site migration as a regulatory issue. The exposure assessment and classification of hazards should be evaluated regardless of the property boundaries. Someone experienced must provide a thorough description of the sources researched to determine the presence/absence of a groundwater supply source in the vicinity of the contaminated site. This information must be documented in the NCS Site Classification Worksheet including contact names, phone numbers, e-mail correspondence and/or reference maps/reports and other resources such as internet links. Note that for potable groundwater that also daylights into a nearby surface water body, the more stringent guidelines for both drinking water and protection of aquatic life should be considered. **Selected References** Potable Environments Guidelines for Canadian Drinking Water Quality: www.hc-sc.gc.ca/ewh-semt/pubs/water-eau/doc_sup-appui/sum_guide-res_recom/index_e.html Non-Potable Environments Canadian Water Quality Guidelines for Protection of Aquatic Life. CCME. 1999 www.ccme.ca Compilation and Review of Canadian Remediation Guidelines, Standards and Regulations. Science Applications International Corporation (SAIC Canada), report to Environment Canada, January 4, 2002.
ii) Same as (i) except the information is not known but strongly suspected based on indirect observations.	9			
iii) Meets GCDWQ for **potable environments**; meets non-potable criteria or modified generic criteria (excludes ingestion of drinking water pathway) for **non-potable environments** **or** Absence of groundwater exposure pathway (i.e., there is no aquifer (see definition at right) at the site or there is an adequate isolating layer between the aquifer and the contamination, and within 5 km of the site there are no aquatic receiving environments and the groundwater does not daylight).	0			
	Go to Potential			
Score	---			
NOTE: If a score is assigned here for Known COPC Exceedances, then you can skip Part B (Potential for groundwater pathway) and go to Section 2 (Surface Water Pathway)				
B. Potential for groundwater pathway.				
a. Relative Mobility High Moderate Low Insignificant Do Not Know		Log Koc for the PAHs range from 3.3 to 4.14. Soil pH ranges from 7.03 to 7.9, excluding one sample with soil pH of 9.14 but no metals exceeded the CCME guidelines in this soil sample. Between Log Koc and pH, "moderate" was selected for the Site.	Organics Koc (L/kg) / Metals with higher mobility at acidic conditions / Metals with higher mobility at alkaline conditions Koc < 500 (i.e., log Koc < 2.7) — pH < 5 — pH > 8.5 Koc = 500 to 5000 (i.e., log Koc = 2.7 to 3.7) — pH = 5 to 6 — pH = 7.5 to 8.5 Koc = 5,000 to 100,000 (i.e., log Koc = 3.7 to 5) — pH > 6 — pH < 7.5 Koc > 100,000 (i.e., log Koc > 5)	Reference: US EPA Soil Screening Guidance (Part 5 - Table 39) If a score of zero is assigned for relative mobility, it is still recommended that the following sections on potential for groundwater pathway be evaluated and scored. Although the Koc of an individual contaminant may suggest that it will be relatively immobile, it is possible that, with complex mixtures, there could be enhanced mobility due to co-solvent effects. Therefore, the Koc cannot be relied on solely as a measure of mobility. An evaluation of other factors such as containment, thickness of confining layer, hydraulic conductivities and precipitation infiltration rate are still useful in predicting potential for groundwater migration, even if a contaminant is expected to have insignificant mobility based on its chemistry alone.
	Moderate			
Score	2			
b. Presence of engineered sub-surface containment? No containment Partial containment Full containment Do Not Know			Review the existing engineered systems or natural attenuation processes for the site and determine if full or partial containment is achieved. Full containment is defined as an engineered system or natural attenuation processes, monitored as being effective, which provide for full capture and/or treatment of contaminants. All chemicals of concern must be contained for "Full Containment" scoring. Natural attenuation must have sufficient data, and reports cited with monitoring data to support steady state conditions and the attenuation processes. If there is no containment or insufficient natural attenuation process, this category is evaluated as high. If there is less than full containment or if uncertain, then evaluate as medium. In Arctic environments, permafrost will be evaluated, as appropriate, based on detailed evaluations, effectiveness and reliability to contain/control contaminant migration.	Someone experienced must provide a thorough description of the sources researched to determine the containment of the source at the contaminated site. This information must be documented in the NCS Site Classification Worksheet including contact names, phone numbers, e-mail correspondence and/or reference maps, geotechnical reports or natural attenuation studies and other resources such as internet links. **Selected Resources:** United States Environmental Protection Agency (USEPA) 1998. Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Groundwater. EPA/600/R-98/128. Environment Canada – Ontario Region – Natural Attenuation Technical Assistance Bulletins (TABS) Number 19 –21.
	No containment			
Score	3			
c. Thickness of confining layer over aquifer of concern or groundwater exposure pathway 3 m or less including no confining layer or discontinuous confining layer 3 to 10 m > 10 m Do Not Know		As noted above, groundwater is located approximately 8 to 10 metres below grade.	The term "confining layer" refers to geologic material with little or no permeability or hydraulic conductivity (such as unfractured clay); water does not pass through this layer or the rate of movement is extremely slow. Measure the thickness and extent of materials that will impede the migration of contaminants to the groundwater exposure pathway. The evaluation of this category is based on: 1) The presence and thickness of saturated subsurface materials that impede the vertical migration of contaminants to lower aquifer units which can or are used as drinking water sources or 2) The presence and thickness of unsaturated subsurface materials that impede the vertical migration of contaminants from the source location to the saturated zone (e.g., water table aquifer, first hydrostratigraphic unit or other groundwater pathway).	
	3 to 10 m			
Score	0.5			
d. Hydraulic conductivity of confining layer >10^{-4} cm/s or no confining layer 10^{-4} to 10^{-6} cm/s <10^{-6} cm/s Do Not Know		According to the Geological Survey of Canada's Map 1508A - Ottawa/Hull, scale 1:125,000, the bedrock geology at the Site consists of limestone with some shaley partings: some sandstone in basal parts. According to permeability indeces, the hydraulic conductivities of these rocks ranges from 10 ^ -8cm/s to 10 ^ -4cm/s.	Determine the nature of geologic materials and estimate hydraulic conductivity from published material (or use "Range of Values of Hydraulic Conductivity and Permeability" figure in the Reference Material sheet). Unfractured clays should be scored low. Silts should be scored medium. Sand, gravel should be scored high. The evaluation of this category is based on: 1) The presence and hydraulic conductivity ("K") of saturated subsurface materials that impede the vertical migration of contaminants to lower aquifer units which can or are used as a drinking water source, groundwater exposure pathway or 2) The presence and permeability ("k") of unsaturated subsurface materials that impede the vertical migration of contaminants from the source location to the saturated water table aquifer, first hydrostratigraphic unit or other groundwater pathway.	
	10-4 to 10-6 cm/s			
Score	0.5			

Definition	Score	Rationale for Score (document any assumptions, reports, or site-specific information; provide references)	Method Of Evaluation	Notes
B. Potential for groundwater pathway.				
e. Precipitation infiltration rate (Annual precipitation factor x surface soil relative permeability factor) High Moderate Low Very Low None Do Not Know	Low	approximately 1134.5 mm per year average = 1.1 pavement (building) = 0, sand = 0.6 so average = 0.3 infiltration rate = 1.1 x 0.3 = 0.33	<u>Precipitation</u> Refer to Environment Canada precipitation records for relevant areas. Divide annual precipitation by 1000 and round to nearest tenth (e.g., 667 mm = 0.7 score). <u>Permeability</u> For surface soil relative permeability (i.e., infiltration) assume: gravel (1), sand (0.6), loam (0.3) and pavement or clay (0). Multiply the surface soil relative permeability factor with precipitation factor to obtain the score for precipitation infiltration rate.	
Score	0.4			
f. Hydraulic conductivity of aquifer $>10^{-2}$ cm/s 10^{-2} to 10^{-4} cm/s $<10^{-4}$ cm/s Do Not Know	<10-4 cm/s	According to the Geological Survey of Canada's Map 1508A - Ottawa/Hull, scale 1:125,000, the bedrock geology at the Site consists of limestone with some shaley partings: some sandstone in basal parts. According to permeability indeces, the hydraulic conductivities of these rocks ranges from 10 ^ -8cm/s to 10 ^ -4cm/s.	Determine the nature of geologic materials and estimate hydraulic conductivity of all aquifers of concern from published material (refer to "Range of Values of Hydraulic Conductivity and Permeability" in the Reference Material sheet).	
Score	0			
Potential groundwater pathway total	6.4			
Allowed Potential score	6.4	Note: If a "known" score is provided, the "potential" score is disallowed.		
Groundwater pathway total	**6.4**			
2. Surface Water Movement				
A. Demonstrated migration of COPC in surface water above background conditions				
Known concentrations of surface water: i) Concentrations exceed background concentrations and exceed CCME CWQG for protection of aquatic life, irrigation, livestock water, and/or recreation (whichever uses are applicable at the site) by >1 X; or There is known contact of contaminants with surface water based on site observations. or In the absence of CWQG, chemicals have been proven to be toxic based on site specific testing (e.g. toxicity testing; or other indicator testing of exposure).	12	A surface water body is located approximately 250 metres north of the Site - go to potential.	Collect all available information on quality of surface water near to site. Evaluate available data against Canadian Water Quality Guidelines (select appropriate guidelines based on local water use, e.g., recreation, irrigation, aquatic life, livestock watering, etc.). The evaluation method concentrates on the surface water flow system and its potential to be an exposure pathway. Contamination is present on the surface (above ground) and has the potential to impact surface water bodies. Surface water is defined as a water body that supports one of the following uses: recreation, irrigation, livestock watering, aquatic life.	General Notes: Someone experienced must provide a thorough description of the sources researched to classify the surface water body in the vicinity of the contaminated site. This information must be documented in the NCS Site Classification Worksheet including contact names, phone numbers, e-mail correspondence and/or reference maps/reports and other resource such as internet links. Selected References: CCME. 1999. Canadian Water Quality Guidelines for the Protection of Aquatic Life <u>www.ccme.ca</u> CCME. 1999. Canadian Water Quality Guidelines for the Protection of Agricultural Water Uses (Irrigation and Livestock Water) <u>www.ccme.ca</u> Health and Welfare Canada. 1992. Guidelines for Canadian Recreational Water Quality.
ii) Same as (i) except the information is not known but <u>strongly suspected</u> based on indirect observations.	8			
iii) Meets CWQG or absence of surface water exposure pathway (i.e., Distance to nearest surface water is > 5 km.)	0			
Score	Go to Potential ---			
NOTE: If a score is assigned here for Demonstrated Migration in Surface Water, then you can skip Part B (Potential for migration of COPCs in surface water) and go to Section 3 (Surface Soils)				
B. Potential for migration of COPCs in surface water				
a. Presence of containment No containment Partial containment Full containment Do Not Know	No containment	No containment.	Review the existing engineered systems and relate these structures to site conditions and proximity to surface water and determine if full containment is achieved: score low if there is full containment such as capping, berms, dikes; score medium if there is partial containment such as natural barriers, trees, ditches, sedimentation ponds; score high if there are no intervening barriers between the site and nearby surface water. Full containment must include containment of all chemicals.	
Score	5			
b. Distance to Surface Water 0 to <100 m 100 - 300 m >300 m Do Not Know	100 - 300 m	Based on Google Earth, the Ottawa River is approximately 250 m north of the site.	Review available mapping and survey data to determine distance to nearest surface water bodies.	
Score	2			
c. Topography Contaminants above ground level and slope is steep Contaminants at or below ground level and slope is steep Contaminants above ground level and slope is intermediate Contaminants at or below ground level and slope is intermediate Contaminants above ground level and slope is flat Contaminants at or below ground level and slope is flat Do Not Know	At/below and flat	The site is flat	Review engineering documents on the topography of the site and the slope of surrounding terrain. Steep slope = >50% Intermediate slope = between 5 and 50% Flat slope = < 5% Note: Type of fill placement (e.g., trench, above ground, etc.).	
Score	0			
d. Run-off potential High (rainfall run-off score > 0.6) Moderate (0.4 < rainfall run-off score <0.6) Low (0.2 < rainfall run-off score <0.4) Very Low (0 < rainfall run-off score < 0.2) None (rainfall run-off score = 0) Do Not Know	High	approximately 1134.5 mm per year average = 1.1 pavement (building) = 1, sand = 0.3 so average = 0.65 run-off potential = 1.1 x 0.65 = 0.715	<u>Rainfall</u> Refer to Environment Canada precipitation records for relevant areas. Divide rainfall by 1000 and round to nearest tenth (e.g., 667 mm = 0.7 score). The former definition of "annual rainfall" did not include the precipitation as snow. This minor adjustment has been made. The second modification was the inclusion of permeability of surface materials as an evaluation factor. <u>Permeability</u> For infiltration assume: gravel (0), sand (0.3), loam (0.6) and pavement or clay (1). Multiply the infiltration factor with precipitation factor to obtain rainfall run off score.	Selected Sources: Environment Canada web page link: <u>www.msc.ec.gc.ca</u> Snow to rainfall conversion apply ratio of 15 (snow):1(water)
Score	1			
e. Flood potential 1 in 2 years 1 in 10 years 1 in 50 years Not in floodplain Do Not Know	Not in floodplain	The site is not located on a flood plain according to Flood Hazard Maps.	Review published data such as flood plain mapping or flood potential (e.g., spring or mountain run-off) and Conservation Authority records to evaluate flood potential of nearby water courses both up and down gradient. Rate zero if site not in flood plain.	
Score	0			
Potential surface water pathway total	8			
Allowed Potential score	8	Note: If a "known" score is provided, the "potential" score is disallowed.		
Surface water pathway total	**8**			

CCME National Classification System (2008, 2010 v 1.2)

(II) Migration Potential (Evaluation of contaminant migration pathways)

Federal Real Property # 08837001

Definition	Score	Rationale for Score (document any assumptions, reports, or site-specific information; provide references)	Method Of Evaluation	Notes
3. Surface Soils (potential for dust, dermal and ingestion exposure)				
A. Demonstrated concentrations of COPC in surface soils (top 1.5 m)				
COPCs measured in surface soils exceed the CCME soil quality guideline. Strongly suspected that soils exceed guidelines COPCs in surface soils does not exceed the CCME soil quality guideline or is not present (i.e., bedrock). Score	12 9 0 12 12	Soil analytical results indicated that concentrations of metals and PAHs in surface soils exceeded the CCME guidelines.	Collect all available information on quality of surface soils (i.e., top 1.5 metres) at the site. Evaluate available data against Canadian Soil Quality Guidelines. Select appropriate guidelines based on current (or proposed future) land use (i.e, agricultural, residential/parkland, commercial, or industrial), and soil texture if applicable (i.e., coarse or fine).	Selected References: CCME. 1999. Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health www.ccme.ca
NOTE: If a score is assigned here for Demonstrated Concentrations in Surface Soils, then you can skip Part B (Potential for a surface soils migration pathway) and go to Section 4 (Vapour)				
B. Potential for a surface soils (top 1.5 m) migration pathway				
a. Are the soils in question covered? Exposed Vegetated Landscaped Paved Do Not Know Score	 Landscaped 2		Consult engineering or risk assessment reports for the site. Alternatively, review photographs or perform a site visit. Landscaped surface soils must include a minimum of 0.5 m of topsoil.	The possibility of contaminants in blowing snow have not been included in the revised NCS as it is difficult to assess what constitutes an unacceptable concentration and secondly, spills to snow or ice are most efficiently mitigated while freezing conditions remain.
b. For what proportion of the year does the site remain covered by snow? 0 to 10% of the year 10 to 30% of the year More than 30% of the year Do Not Know Score	 >30% of year 0		Consult climatic information for the site. The increments represent the full span from soils which are always wet or covered with snow (and therefore less likely to generate dust) to those soils which are predominantly dry and not covered by snow (and therefore are more likely to generate dust).	
Potential surface soil pathway total Allowed Potential score **Soil pathway total**	2 --- **12**	**Note: If a "known" score is provided, the "potential" score is disallowed.**		
4. Vapour				
A. Demonstrated COPCs in vapour.				
Vapour has been measured (indoor or outdoor) in concentrations exceeding risk based concentrations. Strongly suspected (based on observations and/or modelling) Vapour has not been measured and volatile hydrocarbons have not been found in site soils or groundwater. Score	12 9 0 0 0	The contaminants are not volatile.	Consult previous investigations, including human health risk assessments, for reports of vapours detected.	
NOTE: If a score is assigned here for Demonstrated COPCs in Vapour, then you can skip Part B (Potential for COPCs in vapour) and go to Section 5 (Sediment)				
B. Potential for COPCs in vapour				
a. Relative Volatility based on Henry's Law Constant, H' (dimensionless) High (H' > 1.0E-1) Moderate (H' = 1.0E-1 to 1.0E-3) Low (H' < 1.0E-3) Not Volatile Do Not Know Score	 Not Volatile 0	The contaminants are not volatile	Reference: US EPA Soil Screening Guidance (Part 5 - Table 36) *Provided in Attached Reference Materials*	If the Henry's Law Constant for a substance indicates that it is not volatile, and a score of zero is assigned here for relative volatility, then the other three questions in this section on Potential for COPCs will be automatically assigned scores of zero and you can skip to section 5.
b. What is the soil grain size? Fine Coarse Do Not Know Score	 Coarse 0	coarse - based on visual observations and grain size analysis	Review soil permeability data in engineering reports. The greater the permeability of soils, the greater the possible movement of vapours. Fine-grained soils are defined as those which contain greater than 50% by mass particles less than 75 µm mean diameter (D50 < 75 µm). Coarse-grained soils are defined as those which contain greater than 50% by mass particles greater than 75 µm mean diameter (D50 > 75 µm).	
c. Is the depth to the source less than 10m? Yes No Do Not Know Score	 Yes 0		Review groundwater depths below grade for the site.	
d. Are there any preferential pathways? Yes No Do Not Know Score	 Yes 0		Visit the site during dry summer conditions and/or review available photographs. Where bedrock is present, fractures would likely act as preferential pathyways.	Preferential pathways refer to areas where vapour migration is more likely to occur because there is lower resistance to flow than in the surrounding materials. For example, underground conduits such as sewer and utility lines, drains, or septic systems may serve as preferential pathways. Features of the building itself that may also be preferential pathways include earthen floors, expansion joints, wall cracks, or foundation perforations for subsurface features such as utility pipes, sumps, and drains.
Potential vapour pathway total Allowed Potential score **Vapour pathway total**	0 --- **0**	Note: If a "known" score is provided, the "potential" score is disallowed.		

(II) Migration Potential (Evaluation of contaminant migration pathways)

Federal Real Property # 08837001

Definition	Score	Rationale for Score (document any assumptions, reports, or site-specific information; provide references)	Method Of Evaluation	Notes
5. Sediment Movement				
A. Demonstrated migration of sediments containing COPCs				
There is evidence to suggest that sediments originally deposited to the site (exceeding the CCME sediment quality guidelines) have migrated.	12	An aquatic receiving environment is located 250 metres north of the Site - go to potential.	Review sediment assessment reports. Evidence of migration of contaminants in sediments must be reported by someone experienced in this area.	Usually not considered a significant concern in lakes/marine environments, but could be very important in rivers where transport downstream could be significant.
Strongly suspected (based on observations and/or modelling)	9			
Sediments have been contained and there is no indication that sediments will migrate in future. **or** Absence of sediment exposure pathway (i.e., within 5 km of the site there are no aquatic receiving environments, and therefore no sediments).	0			
	Go to Potential			
Score	---			
NOTE: If a score is assigned here for Demonstrated Migration of Sediments, then you can skip Part B (Potential for Sediment Migration) and go to Section 6 (Modifying Factors)				
B. Potential for sediment migration				
a. Are the sediments having COPC exceedances capped with sediments having no exceedances ("clean sediments")?	Do Not Know		Review existing sediment assessments. If sediment coring has been completed, it may indicate that historically contaminated sediments have been covered over by newer "clean" sediments. This assessment will require that cores collected demonstrate a low concentration near the top and higher concentration with sediment depth.	
Yes No Do Not Know	2			
b. For lakes and marine habitats, are the contaminated sediments in shallow water and therefore likely to be affected by tidal action, wave action or propeller wash?	No		Review existing sediment assessments. If the sediments present at the site are in a river, select "no" for this question.	
Yes No Do Not Know	0			
c. For rivers, are the contaminated sediments in an area prone to sediment scouring?	Do Not Know		Review existing sediment assessments. It is important that the assessment is made under worst case flows (high yearly flows). Under high yearly flows, areas which are commonly depositional may become	
Yes No Do Not Know	2			
Potential sediment pathway total	4			
Allowed Potential score	4	Note: If a "known" score is provided, the "potential" score is disallowed.		
Sediment pathway total	**4**			
6. Modifying Factors				
Are there subsurface utility conduits in the area affected by contamination?	Yes		Consult existing engineering reports. Subsurface utilities can act as conduits for contaminant migration.	
Yes No Do Not Know				
Known	4			
Potential	0			

Migration Potential Total

Raw "known" total	16	
Raw "potential" total	18.4	
Raw combined total	34.4	Note: If "Known" and "Potential" scores are provided, the checklist defaults to known. Therefore, the total "Potential" Score may not reflect the sum of the individual "Potential" scores.
Total (max 33)	**17.7**	

CCME National Classification System (2008, 2010 v 1.2)

(III) Exposure (Demonstrates the presence of an exposure pathway and receptors)

Federal Real Property # 08837001

Definition	Score	Rationale for Score (document any assumptions, reports, or site-specific information; provide references)	Method Of Evaluation	Notes
1. Human				
A. Known exposure				
Documented adverse impact or high quantified exposure which has or will result in an adverse effect, injury or harm or impairment of the safety to humans as a result of the contaminated site. (Class 1 Site*)	22		*Where adverse effects on humans are documented, the site should be automatically designated as a Class 1 site (i.e., action required). There is no need to proceed through the NCS in this case. However, a scoring guideline (22) is provided in case a numerical score for the site is still desired (e.g., for comparison with other Class 1 sites). This category can be based on the outcomes of risk assessments and applies to studies which have reported Hazard Quotients >1 for noncarcinogenic chemicals and incremental cancer risks that exceed acceptable levels defined by the jurisdiction for carcinogenic chemicals (for most jurisdictions this is typically either $>10^{-5}$ or $>10^{-6}$). Known impacts can also be evaluated based on blood testing (e.g. blood lead >10 ug/dL) or other health based testing.	Known adverse impact includes domestic and traditional food sources. Adverse effects based on food chain transfer to humans and/or animals can be scored in this category. However, the weight of evidence must show a direct link of a contaminated food source/supply and subsequent ingestion/transfer to humans. Any associated adverse effects to the environment are scored separately later in this worksheet. Someone experienced must provide a thorough description of the sources researched to evaluate and determine the quantified exposure/impact (adverse effect) in the vicinity of the contaminated site. **Selected References:** Health Canada – Federal Contaminated Site Risk Assessment in Canada Parts 1 and 2 Guidance on Human Heath Screening Level Risk Assessments (www.hc-sc.gc.ca/ewh-semt/pubs/contamsite/index_e.html) United States Environmental Protection Agency, Integrated Risk Information System (IRIS) – http://toxnet.nml.nih.gov
Same as above, but "Strongly Suspected" based on observations or indirect evidence.	10			
No quantified or suspected exposures/impacts in humans.	0			
	Go to Potential			
Score	---			
NOTE: If a score is assigned here for Known Exposure, then you can skip Part B (Potential for Human Exposure) and go to Section 2 (Human Exposure Modifying Factors)				
B. Potential for human exposure				
a) Land use (provides an indication of potential human exposure scenarios) Agricultural Residential / Parkland Commercial Industrial Do Not Know		Site and adjacent properties are used for commercial purposes.	Review zoning and land use maps over the distances indicated. If the proposed future land use is more "sensitive" than the current land use, evaluate this factor assuming the proposed future use is in place. Agricultural land use is defined as uses of land where the activities are related to the productive capability of the land or facility (e.g., greenhouse) and are agricultural in nature, or activities related to the feeding and housing of animals as livestock. Residential/Parkland land uses are defined as uses of land on which dwelling on a permanent, temporary, or seasonal basis is the activity (residential), as well as uses on which the activities are recreational in nature and require the natural or human designed capability of the land to sustain that activity (parkland). Commercial/Industrial land uses are defined as land on which the activities are related to the buying, selling, or trading of merchandise or services (commercial), as well as land uses which are related to the production, manufacture, or storage of materials (industrial).	This is the main "receptor" factor used in site scoring. A higher score implies a greater exposure and/or exposure of more sensitive human receptors (e.g., children).
	Commercial			
Score	1			
b. Indicate the level of accessibility to the contaminated portion of the site (e.g., the potential for coming in contact with contamination) Limited barriers to prevent site access; contamination not covered Moderate access or no intervening barriers, contaminants are covered. Remote locations in which contaminants not covered. Controlled access or remote location and contaminants are covered Do Not Know		Surface soils are accessible from the sidewalk. There is no fence or cover (asphalt or concrete) to block access to the contaminants.	Review location and structures and contaminants at the site and determine if there are intervening barriers between the site and humans. A low rating should be assigned to a (covered) site surrounded by a fence or in a remote location, whereas a high score should be assigned to a site that has no cover, fence, natural barriers or buffer.	
	Access, not covered			
Score	2			
B. Potential for human exposure				
c) Potential for intake of contaminated soil, water, sediment or foods for operable or potentially operable pathways, as identified in Worksheet II (Migration Potential). i) direct contact Is dermal contact with contaminated surface water, groundwater, sediments or soils anticipated? Yes No Do Not Know		It is possible for someone to make dermal contact with the soils.	If soils or potable groundwater are present exceeding their respective CCME guidelines, dermal contact is assumed. Exposure to surface water, non-potable groundwater or sediments exceeding their respective CCME guidelines will depend on the site. Select "Yes" if dermal exposure to surface water, non-potable groundwater or sediments is expected. For instance, dermal contact with sediments would not be expected in an active port. Only soils in the top 1.5 m are defined by CCME (2003) as surface soils. If contaminated soils are only located deeper than 1.5 m, direct contact with soils is not anticipated to be an operable contaminant exposure pathway.	Exposure via the skin is generally believed to be a minor exposure route. However for some organic contaminants, skin exposure can play a very important component of overall exposure. Dermal exposure can occur while swimming in contaminated waters, bathing with contaminated surface water/groundwater and digging in contaminated dirt, etc.
	Yes			
Score	3			
ii) inhalation (i.e., inhalation of dust, vapour) Vapour - Are there inhabitable buildings on the site within 30 m of soils or groundwater with volatile contamination as determined in Worksheet II (Migration Potential)? Yes No Do Not Know		The contaminants are not volatile.	If inhabitable buildings are on the site within 30 m of soils or groundwater exceeding their respective guidelines for volatile chemicals, there is a potential of risk to human health (Health Canada, 2004). Review site investigations for location of soil samples (having exceedances of volatile substances) relative to buildings. Refer to (II) Migration Potential worksheet, 4B.a), *Potential for COPCs in Vapour* for a definition of volatility.	Exposure via the lungs (inhalation) can be a very important exposure pathway. Inhalation can be via both particulates (dust) and gas (vapours). Vapours can be a problem where buildings have been built on former industrial sites or where volatile contaminants have migrated below buildings resulting in the potential for vapour intrusion. Assesses the potential for humans to be exposed to vapours originating from site soils. The closer the receptor is to a source of volatile chemicals in soil, the greater the potential of exposure. Also, coarser-grained soil will convey vapour much more efficiently in the soil than finer grained material such as clays and silts. General Notes; Someone experienced must provide a thorough description of the sources researched to determine the presence/absence of a vapour migration and/or dust generation in the vicinity of the contaminated site. This information must be documented in the NCS Site Classification Worksheet including contact names, phone numbers, e-mail correspondence and/or reference maps/reports and other resource such as internet links. Selected References; Canadian Council of Ministers of the Environment (CCME). 2006. Protocol for the Derivation of Environmental and Human Health Soil Quality Guidelines. PN 1332. www.ccme.ca Golder, 2004. Soil Vapour Intrusion Guidance for Health Canada Screening Level Risk Assessment (SLRA) Submitted to Health Canada, Burnaby, BC
	No			
Score	0			
Dust - If there is contaminated surface soil (e.g. top 1.5 m) , indicate whether the soil is fine or coarse textured. If it is known that surface soil is not contaminated, enter a score of zero. Fine Coarse Surface soil is not contaminated or absent (bedrock) Do Not Know Texture			Consult grain size data for the site. If soils (containing exceedances of the CCME soil quality guidelines) predominantly consist of fine material (having a median grain size of 75 microns; as defined by CCME (2006)) then these soils are more likely to generate dusts.	
	Coarse			
Score	1			
inhalation total	1			

(III) Exposure (Demonstrates the presence of an exposure pathway and receptors)

Federal Real Property # 08837001

Definition	Score	Rationale for Score (document any assumptions, reports, or site-specific information; provide references)	Method Of Evaluation	Notes
B. Potential for human exposure				
iii) Ingestion (i.e., ingestion of food items, water and soils [for children]), including traditional foods.		There are no drinking water wells within 5km of the Site.	Review available site data to determine if drinking water (groundwater, surface water, private, commercial or municipal supply) is known or suspected to be contaminated above Guidelines for Canadian Drinking Water Quality. If drinking water supply is known to be contaminated, some immediate action (e.g., provision of alternate drinking water supply) should be initiated to reduce or eliminate exposure. The evaluation of significant potential for exceedances of the water supply in the future may be based on the capture zones of the drinking water wells; contaminant travel times; computer modelling of flow and contaminant transport.	**Selected References:** Guidelines for Canadian Drinking Water Quality: www.hc-sc.gc.ca/hecs-sesc/water/publications/drinking_water_quality_guidelines/toc.htm Drinking water can be an extremely important exposure pathway to humans. If site groundwater or surface water is not used for drinking, then this pathway is considered to be inoperable. Consider both wild foods such as salmon, venison, caribou, as well as agricultural sources of food items if the contaminated site is on or adjacent to agricultural land uses.
Drinking Water: Choose a score based on the proximity to a drinking water supply, to indicate the potential for contamination (present or future).				
0 to 100 m				
100 to 300 m				
300 m to 1 km				
1 to 5 km				
No drinking water present				
Do Not Know				
	No drinking water present			
Score	0			
Is an alternative water supply readily available?		Municipally supplied tap water.		
Yes				
No				
Do Not Know	Yes			
Score	0			
Is human ingestion of contaminated soils possible?		Contaminated soils are located within the top 1.5 m.	If contaminated soils are located within the top 1.5 m, it is assumed that ingestion of soils is an operable exposure pathway. Exposure to soils deeper than 1.5 m is possible, but less likely, and the duration is shorter. Refer to human health risk assessment reports for the site in question.	
Yes				
No				
Do Not Know	Yes			
Score	3			
Are food items consumed by people, such as plants, domestic animals or wildlife harvested from the contaminated land and its surroundings?			Use human health risk assessment reports (or others) to determine if there is significant reliance on traditional food sources associated with the site. Is the food item in question going to spend a large proportion of its time at the site (e.g., large mammals may spend a very small amount of time at a small contaminated site)? Human health risk assessment reports for the site in question will also provide information on potential bioaccumulation of the COPC in question.	
Yes				
No				
Do Not Know	No			
Score	0			
Ingestion total	3			
Human Health Total "Potential" Score	10	Note if a "Known" Human Health score is provided, the "Potential" score is disallowed.		
Allowed "Potential" Score	10			
2. Human Exposure Modifying Factors				
a) Strong reliance of local people on natural resources for survival (i.e., food, water, shelter, etc.)	No	The Site is located in very developed urban area.		
Yes				
No				
Do Not Know				
Known	0			
Potential	---			
Raw Human "known" total	0			
Raw Human "potential" total	10			
Raw Human Exposure Total Score	10			
Human Health Total (max 22)	**10.0**			
3. Ecological				
A. Known exposure				
Documented adverse impact or high quantified exposure which has or will result in an adverse effect, injury or harm or impairment of the safety to terrestrial or aquatic organisms as a result of the contaminated site.	18		Some low levels of impact to ecological receptors are considered acceptable, particularly on commercial and industrial land uses. However, if ecological effects are deemed to be severe, the site may be categorized as class one (i.e., a priority for remediation or risk management), regardless of the numerical total NCS score. For the purpose of application of the NCS, effects that would be considered severe include observed effects on survival, growth or reproduction which could threaten the viability of a population of ecological receptors at the site. Other evidence that qualifies as severe adverse effects may be determined based on professional judgement and in consultation with the relevant jurisdiction. If ecological effects are determined to be severe and an automatic Class 1 is assigned, there is no need to proceed through the NCS. However, a scoring guideline (18) is provided in case a numerical score for the site is still desired (e.g., for comparison with other Class 1 sites).	CCME, 1999: Canadian Water Quality Guidelines for the Protection of Aquatic Life. www.ccme.ca CCME, 1999: Canadian Water Quality Guidelines for the Protection of Agricultural Water Uses. www.ccme.ca Sensitive receptors- review: Canadian Council on Ecological Areas; www.ccea.org. Ecological effects should be evaluated at a population or community level, as opposed to at the level of individuals. For example, population-level effects could include reduced reproduction, growth or survival in a species. Community-level effects could include reduced species diversity or relative abundances. Further discussion of ecological assessment endpoints is provided in *A Framework for Ecological Risk Assessment: General Guidance* (CCME 1996). Notes: Someone experienced must provide a thorough description of the sources researched to classify the environmental receptors in the vicinity of the contaminated site. This information must be documented in the NCS Site Classification Worksheet including contact names, phone numbers, e-mail correspondence and/or reference maps/reports and other resource such as internet links.
Same as above, but "Strongly Suspected" based on observations or indirect evidence.	12		This category can be based on the outcomes of risk assessments and applies to studies which have reported Hazard Quotients >1. Alternatively, known impacts can also be evaluated based on a weight of evidence assessment involving a combination of site observations, tissue testing, toxicity testing and quantitative community assessments. Scoring of adverse effects on individual rare or endangered species will be completed on a case-by-case basis with full scientific justification.	
No quantified or suspected exposures/impacts in terrestrial or aquatic organisms	0		This category can be based on the outcomes of risk assessments and applies to studies which have reported Hazard Quotients of less than 1 and no other observable or measurable sign of impacts. Alternatively, it can be based on a combination of other lines of evidence showing no adverse effects, such as site observations, tissue testing, toxicity testing and quantitative community assessments.	
	Go to Potential			
Score	---			
NOTE: If a score is assigned here for Known Exposure, then you can skip Part B (Potential for Ecological Exposure) and go to Section 4 (Ecological Exposure Modifying Factors)				

(III) Exposure (Demonstrates the presence of an exposure pathway and receptors)

Federal Real Property # 08837001

Definition	Score	Rationale for Score (document any assumptions, reports, or site-specific information; provide references)	Method Of Evaluation	Notes
B. Potential for ecological exposure (for the contaminated portion of the site)				
a) Terrestrial			Review zoning and land use maps. If the proposed future land use is more "sensitive" than the current land use, evaluate this factor assuming the proposed future use is in place (indicate in the worksheet that future land use is the consideration).	
i) Land use				
Agricultural (or Wild lands) Residential/Parkland Commercial Industrial Do Not Know	Commercial		Agricultural land use is defined as uses of land where the activities are related to the productive capability of the land or facility (e.g., greenhouse) and are agricultural in nature, or activities related to the feeding and housing of animals as livestock. Wild lands are grouped with agricultural land due to the similarities in receptors that would be expected to occur there (e.g., herbivorous mammals and birds) and the similar need for a high level of protection to ensure ecological functioning. Residential/Parkland land uses are defined as uses of land on which dwelling on a permanent, temporary, or seasonal basis is the activity (residential), as well as uses on which the activities are recreational in nature and require the natural or human designed capability of the land to sustain that activity (parkland). Commercial/Industrial land uses are defined as land on which the activities are related to the buying, selling, or trading of merchandise or services (commercial), as well as land uses which are related to the production, manufacture, or storage of materials (industrial).	
Score	1			
ii) Uptake potential		Contamination confirmed within the top 1.5m of soil.		
Direct Contact - Are plants and/or soil invertebrates likely exposed to contaminated soils at the site?	Yes		If contaminated soils are located within the top 1.5 m, it is assumed that direct contact of soils with plants and soil invertebrates is an operable exposure pathway. Exposure to soils deeper than 1.5 m is possible, but less likely.	
Yes No Do Not Know				
Score	1			
iii) Ingestion (i.e., wildlife or domestic animals ingesting contaminated food items, soils or water)				
Are terrestrial animals likely to be ingesting contaminated water at the site?			Refer to an Ecological Risk Assessment for the site. If there is contaminated surface water at the site, assume that terrestrial organisms will ingest it.	
Yes No Do Not Know	No			
Score	0			
Are terrestrial animals likely to be ingesting contaminated soils at the site?			Refer to an Ecological Risk Assessment report. Most animals will co-ingest some soil while eating plant matter or soil invertebrates.	
Yes No Do Not Know	Yes			
Score	1			
Can the contamination identified bioaccumulate?		Fluorene Log(Kow)=4.21	Bioaccumulation of contaminants within food items is considered possible if: 1) The Log(Kow) of the contaminant is greater than 4 (as per the chemical characteristics work sheet) and concentrations in soils exceed the most conservative CCME soil quality guideline for the intended land use, or 2) The contaminant in collected tissue samples exceeds the Canadian Tissue Residue Guidelines.	
Yes No Do Not Know	Yes			
Score	1			
Distance to sensitive terrestrial ecological area			It is considered that within 300 m of a site, there is a concern for contamination. Therefore an environmental receptor located within this area of the site will be subject to further evaluations. It is also considered that any environmental receptor located greater than 5 km will not be a concern for evaluation. Review Conservation Authority mapping and literature including Canadian Council on Ecological Areas link: www.ccea.org.	Environmental receptors include: local, regional or provincial species of interest or significance; arctic environments (on a site specific basis); nature preserves, habitats for species at risk, sensitive forests, natural parks or forests.
0 to 300 m 300 m to 1 km 1 to 5 km > 5 km Do Not Know	Do Not Know			
Score	1.5			
Raw Terrestrial Total Potential	5.5	Note if a "Known" Ecological Effects score is provided, the "Potential" score is disallowed.		
Allowed Terrestrial Total Potential	5.5			
B. Potential for ecological exposure (for the contaminated portion of the site)				
b) Aquatic			"Sensitive aquatic environments" include those in or adjacent to shellfish or fish harvesting areas, marine parks, ecological reserves and fish migration paths. Also includes those areas deemed to have ecological significance such as for fish food resources, spawning areas or having rare or endangered species. "Typical aquatic environments" include those in areas other than those listed above.	
i) Classification of aquatic environment				
Sensitive Typical Not Applicable (no aquatic environment present) Do Not Know	Not Applicable (no aquatic environme			
Score	0			
ii) Uptake potential		Groundwater not encountered during the Phase III ESA and is not known to daylight to an aquatic environment at the Site.		
Does groundwater daylighting to an aquatic environment exceed the CCME water quality guidelines for the protection of aquatic life at the point of contact?			Groundwater concentrations of contaminants at the point of contact with an aquatic receiving environment can be estimated in three ways: 1) by comparing collected nearshore groundwater concentrations to the CCME water quality guidelines (this will be a conservative comparison, as contaminant concentrations in groundwater often decrease between nearshore wells and the point of discharge). 2) by conducting groundwater modeling to estimate the concentration of groundwater immediately before discharge. 3) by installing water samplers, "peepers", in the sediments in the area of daylighting groundwater.	
Yes No (or Not Applicable) Do Not Know	No			
Score	0			
Distance from the contaminated site to an important surface water resource		The Site is about 250 m from the Ottawa River.	It is considered that within 300 m of a site, there is a concern for contamination. Therefore an environmental receptor or important water resource located within this area of the site will be subject to further evaluation. It is also considered that any environmental receptor located greater than 5 km away will not be a concern for evaluation. Review Conservation Authority mapping and literature including Canadian Council on Ecological Areas link: www.ccea.org.	Environmental receptors include: local, regional or provincial species of interest or significance, sensitive wetlands and fens and other aquatic environments.
0 to 300 m 300 m to 1 km 1 to 5 km > 5 km Do Not Know	0 to 300 m			
Score	3			
Are aquatic species (i.e., forage fish, invertebrates or plants) that are consumed by predatory fish or wildlife consumers, such as mammals and birds, likely to accumulate contaminants in their tissues?		Fluorene Log(Kow)=4.21	Bioaccumulation of food items is possible if: 1) The Log(Kow) of the contaminant is greater than 4 (as per the chemical characteristics work sheet) and concentrations in sediments exceed the CCME ISQGs. 2) The contaminant in collected tissue samples exceeds the CCME tissue quality guidelines.	
Yes No Do Not Know	Yes			
Score	1			
Raw Aquatic Total Potential	4	Note if a "Known" Ecological Effects score is provided, the "Potential" score is disallowed.		
Allowed Aquatic Total Potential	4			

CCME National Classification System (2008, 2010 v 1.2)

(III) Exposure (Demonstrates the presence of an exposure pathway and receptors)

Federal Real Property # 08837001

Definition	Score	Rationale for Score (document any assumptions, reports, or site-specific information; provide references)	Method Of Evaluation	Notes
4. Ecological Exposure Modifying Factors				
a) Known occurrence of a species at risk.			Consult any ecological risk assessment reports. If information is not present, utilize on-line databases such as Eco Explorer. Regional, Provincial (Environment Ministries), or Federal staff (Fisheries and Oceans or Environment Canada) should be able to provide some guidance.	Species at risk include those that are extirpated, endangered, threatened, or of special concern. For a list of species at risk, consult Schedule 1 of the federal Species at Risk Act (http://www.sararegistry.gc.ca/species/schedules_e.cfm?id=1). Many provincial governments may also provide regionally applicable lists of species at risk. For example, in British Columbia, consult: BCMWLAP. 2005. Endangered Species and Ecosystems in British Columbia. Provincial red and blue lists. Ministry of Sustainable Resource Management and Water, Land and Air Protection. http://srmwww.gov.bc.ca/atrisk/red-blue.htm
Is there a potential for a species at risk to be present at the site?				
Yes				
No				
Do Not Know	Do Not Know			
Score	--- 1			
b) Potential impact of aesthetics (e.g., enrichment of a lake or tainting of food flavor).				
Is there evidence of aesthetic impact to receiving water bodies?	No		Documentation may consist of environmental investigation reports, press articles, petitions or other records.	This Item will require some level of documentation by user, including contact names, addresses, phone numbers, e-mail addresses. Evidence of changes must be documented, please attach copy of report containing relevant information.
Yes				
No	0			
Do Not Know	---			
Is there evidence of olfactory impact (i.e., unpleasant smell)?	No		Examples of olfactory change can include the smell of a COPC or an increase in the rate of decay in an aquatic habitat.	
Yes				
No	0			
Do Not Know	---			
Is there evidence of increase in plant growth in the lake or water body?	No		A distinct increase of plant growth in an aquatic environment may suggest enrichment. Nutrients e.g., nitrogen or phosphorous releases to an aquatic body can act as a fertilizer.	
Yes				
No	0			
Do Not Know	---			
Is there evidence that fish or meat taken from or adjacent to the site smells or tastes different?	No		Some contaminants can result in a distinctive change in the way food gathered from the site tastes or smells.	
Yes	0			
No	---			
Do Not Know				
Ecological Modifying Factors Total - Known	**0**			
Ecological Modifying Factors Total - Potential	**1**			
Raw Ecological Total - Known	0			
Raw Ecological Total - Potential	10.5			
Raw Ecological Total	10.5			
Ecological Total (Max 18)	**10.5**			
5. Other Potential Contaminant Receptors				
a) Exposure of permafrost (leading to erosion and structural concerns)				Plants and lichens provide a natural insulating layer which will help prevent thawing of the permafrost during the summer. Plants and lichens may also absorb less solar radiation. Solar radiation is turned into heat which can also cause underlying permafrost to melt.
Are there improvements (roads, buildings) at the site dependant upon the permafrost for structural integrity?	No		Consult engineering reports, site plans or air photos of the site. When permafrost melts, the stability of the soil decreases, leading to erosion. Human structures, such as roads and/or buildings are often dependent on the stability that the permafrost provides.	
Yes				
No	0			
Do Not Know	---			
Is there a physical pathway which can transport soils released by damaged permafrost to a nearby aquatic environment?	No		Melting permafrost leads to a decreased stability of underlying soils. Wind or surface run-off erosion can carry soils into nearby aquatic habitats. The increased soil loadings into a river can cause an increase in total dissolved solids and a resulting decrease in aquatic habitat quality. In addition, the erosion can bring contaminants from soils to aquatic environments.	
Yes				
No	0			
Do Not Know	---			
Other Potential Receptors Total - Known	**0**			
Other Potential Receptors Total - Potential	**0**			

Exposure Total	
Raw Human Health + Ecological Total - Known	0
Raw Human Health + Ecological Total - Potential	20.5
Raw Total	20.5
Exposure Total (max 34)	**15.2**

Only includes "Allowed potential" - if a "Known" score was supplied under a given category then the "Potential" score was not included.

CCME National Classification System (2008, 2010 v 1.2)
Score Summary

Scores from individual worksheets are tallied in this worksheet.
Refer to this sheet after filling out the revised NCS completely.

I. Contaminant Characteristics	Known	Potential
1. Residency Media	2	1
2. Chemical Hazard	8	---
3. Contaminant Exceedance Factor	2	---
4. Contaminant Quantity	6	---
5. Modifying Factors	2	---
Raw Total Score	20	1
Raw Total Score (Known + Potential)	21	
Adjusted Total Score (Raw Total / 40 *33)	**17.3**	(max 33)

II. Migration Potential	Known	Potential
1. Groundwater Movement	---	6.4
2. Surface Water Movement	---	8
3. Soil	12	---
4. Vapour	0	---
5. Sediment Movement	---	4
6. Modifying Factors	4	0
Raw Total Score	16	18.4
Raw Total Score (Known + Potential)	34.4	
Adjusted Total Score (Raw Total / 64 * 33)	**17.7**	(max 33)

III. Exposure	Known	Potential
1. Human Receptors		
A. Known Impact	---	
B Potential		
a. Land Use		1
b. Accessibility		2
c. Exposure Route		
i. Direct Contact		3
ii. Inhalation		1
iii. Ingestion		3
2. Human Receptors Modifying Factors	0	---
Raw Total Human Score	0	10
Raw Total Human Score (Known + Potential)	10	
Adjusted Total Human Score	10.0	(maximum 22)
3. Ecological Receptors		
A. Known Impact	---	
B. Potential		
a. Terrestrial		5.5
b. Aquatic		4
4. Ecological Receptors Modifying Factors	0	1
Raw Total Ecological Score	0	10.5
Raw Total Ecological Score (Known + Potential)	10.5	
Adjusted Total Ecological Score	10.5	(maximum 18)
5. Other Receptors	0	0
Total Other Receptors Score (Known + Potential)	0	
Total Exposure Score (Human + Ecological + Other)	**20.5**	
Adjusted Total Exposure Score (Total Exposure / 46 * 34)	**15.2**	(max 34)

Site Score

Federal Real Property # 08837001

Site Letter Grade	**C**
Certainty Percentage	**69%**
% Responses that are "Do Not Know"	**-2%**
Total NCSCS Score for site	**50.2**
Site Classification Category	**2**

Site Classification Categories*:

Class 1 - High Priority for Action (Total NCS Score >70)
Class 2 - Medium Priority for Action (Total NCS Score 50 - 69.9)
Class 3 - Low Priority for Action (Total NCS Score 37 - 49.9)
Class N - Not a Priority for Action (Total NCS Score <37)
Class INS - Insufficient Information (>15% of responses are "Do Not Know")

* NOTE: The term "action" in the above categories does not necessarily refer to remediation, but could also include risk assessment, risk management or further site characterization and data collection.

CCME National Classification System (2008, 2010 v 1.2)

Contaminant Hazard Ranking

(Based on the Proposed Hazard Ranking developed for the FCSAP Contaminated Sites Classification System)

This information is used in Sheet I (Contaminant Characteristics), section 2 (Chemical Hazard).

Chemical/Parameter	Hazard	CEPA	Carcinogenicity	Notes
Acetaldehyde	H	*	PHC	
Acetone	L			
Acrolein	H	*		
Acrylonitrile	H	*	PHC	
Alachlor	M			
Aldicarb	H			
Aldrin	H			
Allyl Alcohol	H			
Aluminum	L			
Ammonia	L	*		
Antimony	H			
Arsenic	H	*		
Atrazine	M			
Azinphos-Methyl	H			
Barium	L			
Bendiocarb	H			
Benzene	H	*	CHC	BTEX
Benzidine	H	*	CHC	
Beryllium	H		CHC	
Biphenyl, 1,1-	M			
2,3,4,5-Bis(2-Butylene)tetrahydro-2-furfural	H			
Bis(Chloromethyl)Ether	H	*	CHC	
Bis(2-Chloroethyl)Ether	H		CHC	
Bis(2-Chloroisopropyl)Ether	H			
Bis(2-Ethylhexyl)Phthalate	H	*		PH
Boron	L			
Bromacil	M			
Bromate	M			
Bromochlorodifluoromethane	M	*		HM
Bromochloromethane	H	*		HM
Bromodichloromethane	H			HM
Bromoform (Tribromomethane)	H		PHC	HM
Bromomethane	M			HM
Bromotrifluoromethane	M	*		HM
Bromoxynil	H			
Butadiene, 1,3-	H	*	CHC	
Cadmium	H	*	CHC	
Carbofuran	M			
Carbon Tetrachloride (Tetrachloromethane)	H		PHC	HM
Captafol	M			
Chloramines	M	*		
Chloride	L			

Chemical/Parameter	Hazard	CEPA	Carcinogenicity	Notes
Chloroaniline, P-	H			
Chlorobenzene (mono)	M			
Chlorobenzilate	M			
Chlorodimeform	M			
Chloroform	H		PHC	HM
Chloromethane	M			
Chloromethyl Methyl Ether	M	*		
(4-Chlorophenyl)Cyclopropylmethanone, O-((4-Nitrophenyl)Methyl)Oxime	H			
Chlorinated Benzenes				
Monochlorobenzene	M			
Dichlorobenzene, 1,2- (O-DCB)	M			
Dichlorobenzene, 1,3- (M-DCB)	M			
Dichlorobenzene, 1,4- (P-DCB)	H			
Trichlorobenzene, 1,2,3-	M			
Trichlorobenzene, 1,2,4-	M			
Trichlorobenzene, 1,3,5-	M			
Tetrachlorobenzene, 1,2,3,4-	M			
Tetrachlorobenzene, 1,2,3,5-	M			
Tetrachlorobenzene, 1,2,4,5-	M			
Pentachlorobenzene	M			
Hexachlorobenzene	H			
Chlorinated Ethanes				
Dichloroethane, 1,1-	M			
Dichloroethane, 1,2- (Ethylene Dichloride (EDC))	H		PHC	
Trichloroethane, 1,1,1-	H	*		
Trichloroethane, 1,1,2-	M			
Tetrachloroethane, 1,1,1,2-	M			
Tetrachloroethane, 1,1,2,2-	M			
Chlorinated Ethenes				
Monochloroethene (Vinyl Chloride)	H	*	CHC	
Dichloroeth(yl)ene, 1,1-	H			
Dichloroeth(yl)ene, 1,2- (cis or trans)	M			
Trichloroeth(yl)ene (TCE)	H	*		
Tetrachloroeth(yl)ene (PCE)	H	*		
Chlorinated Phenols		*		
Monochlorophenols	M			
Chlorophenol, 2-	M			
Dichlorophenols				
Dichlorophenol, 2,4-	M			
Trichlorophenols				
Trichlorophenol, 2,4,5-	H			
Trichlorophenol, 2,4,6-	H		PHC	
Tetrachlorophenols				
Tetrachlorophenol, 2,3,4,6-	H			
Pentachlorophenol (PCP)	H			
Chloromethane	M			HM
Chlorophenol, 2-	M			CP
Chlorothalonil	H			

Chemical/Parameter	Hazard	CEPA	Carcinogenicity	Notes
Chlorpyrifos	H			
Chromium (Total)	M	*		
Chromium (III)	L	*		
Chromium (VI)	H	*	CHC	
Coal Tar	H		CHC	Refer to PAHs
Cobalt	L			
Copper	L			
Creosote	M	*		Refer to PAHs
Crocidolite	L			
Cyanide (Free)	H			
Cyanazine	M			
Dibenzofuran	H	*		DF
Dibromoethane, 1,2- (Ethylene Dibromide (EDB))	H		PHC	
1,2-Dibromo-3-Chloropropane	H		PHC	
Dibromochloromethane	M	*		HM
Dibromotetrafluoroethane	M			
Dichlorobenzene, 1,2- (O-DCB)	M			CB
Dichlorobenzene, 1,3- (M-DCB)	M			CB
Dichlorobenzene, 1,4- (P-DCB)	H			CB
Dichlorobenzidine, 3,3'-	H		PHC	
DDD	H			
DDE	H			
DDT	H		PHC	
Deltamethrin	M			
Diazinon	M			
Dicamba	H			
Dichloroethane, 1,1-	H			CEA
Dichloroethane, 1,2- (EDC)	H		PHC	CEA
Dichloroeth(yl)ene, 1,1-	H			CEE
Dichloroeth(yl)ene, Cis-1,2-	M			CEE
Dichloroeth(yl)ene, Trans-1,2-	M			CEE
Dichloromethane (Methylene Chloride)	H		PHC	HM
Dichlorophenol, 2,4-	M			CP
Dichloropropane, 1,2-	H			
Dichloropropene, 1,3-	H		PHC	
Diclofop-Methyl	H			
Didecyl Dimethyl Ammonium Chloride	H			
Dieldrin	H			
Dimethoate	H			
Diethyl Phthalate	M			PH
Diethylene Glycol	L			GL
Dimethyl Phthalate	M			PH
Dimethylphenol, 2,4-	L			
Dinitrophenol, 2,4-	M			
Dinitrotoluene, 2,4-	H			
Dinoseb	H			
Di-n-octyl Phthalate	H			
Dioxane, 1,4-	H		PHC	
Dioxins/Furans	H			
Diquat	M			

Chemical/Parameter	Hazard	CEPA	Carcinogenicity	Notes
Diuron	M			
Endosulfan	H			
Endrin	H			
Ethylbenzene	M			BTEX
Ethylene Dibromide (EDB)	H		PHC	
Ethylene Glycol	L			GL
Ethylene Oxide	H		CHC	
Fluoroacetamide	M			
Fluorides	L	*		
Glycols				
Ethylene Glycol	L			
Diethylene Glycol	L			
Propylene Glycol	L			
Glyphosate	M			
Halogenated Methanes				
Bromochlorodifluoromethane	M	*		
Bromochloromethane	M	*		
Bromodichloromethane	H		PHC	
Bromomethane	M			
Bromotrifluoromethane	M	*		
Chloroform	M		PHC	HM
Chloromethane	M			
Dibromochloromethane	M			
Dichloromethane (Methylene Chloride)	H		PHC	
Methyl Bromide	M	*		
Tetrachloromethane (Carbon Tetrachloride)	H			
Tribromomethane (Bromoform)	H			
Trihalomethanes (THM)	M			
Heptachlor	H			
Heptachlor Epoxide	H			
Hexachlorobenzene	H		PHC	
Hexachlorobutadiene	H			
Hexachlorocyclohexane, Gamma	H		PHC	
Hexachloroethane	H		PHC	
Hydrobromofluorocarbons (HBFCS)	M	*		
Hydrochlorofluorocarbons (HCFCS)	M	*		
3-Iodo-2-propynyl Butyl Carbamate	H			
Iron	L			
Lead	H	*		neurotoxins / teratogens
Lead Arsenate	H			
Leptophos	H			
Lindane	H			
Linuron	H			
Lithium	L			
Malathion	M			
Manganese	L			

Chemical/Parameter	Hazard	CEPA	Carcinogenicity	Notes
Mercury	H	*		
Methamidophos	H			
Methoxylchlor	H			
Methyl Bromide (Bromomethane)	M	*		
2-Methyl-4-chloro-phenoxy Acetic Acid	M			
Methyl Ethyl Ketone	L			
Methyl Isobutyl Ketone	L			
Methyl Mercury	H			
Methyl-Parathion	H			
Methyl Tert Butyl Ether (MTBE)	M			
Metolachlor	M			
Metribuzin	H			
Molybdenum	L			
Monochloramine	M			
Monocrotophos	H			
Nickel	H	*		CEPA - inhalation
Nitrilotriacetic Acid	H		PHC	
Nitrate	L			
Nitrite	M			
Nonylphenol + Ethoxylates	H	*		
Organotins				
Tributyltin	H			
Tricyclohexyltin	H			
Triphenyltin	H			
Parathion	H			
Paraquat (as Dichloride)	H			
Pentachlorobenzene	M			CB
Pentachlorophenol (PCP)	H			CP
Petroleum Hydrocarbons				Ranking based upon fraction of toxic and mobile components in product. Lighter compounds such as benzene are more toxic and mobile.
Petroleum Hydrocarbons (Gasoline)	H			
Petroleum Hydrocarbons (Kerosene incl. Jet Fuels)	H			
Petroleum Hydrocarbons (Diesel incl Heating Oil)	M			
Petroleum Hydrocarbons (Heavy Oils)	L			
Petroleum Hydrocarbons (CCME F1)	H			
Petroleum Hydrocarbons (CCME F2)	M			
Petroleum Hydrocarbons (CCME F3)	L			
Petroleum Hydrocarbons (CCME F4)	L			
Phenol	L			
Phenoxy Herbicides	M			
Phorate	H			
Phosphamidon	H			
Phthalate Esters				
Bis(2-Ethylhexyl)Phthalate	H	*		
Diethyl Phthalate	H			
Dimethyl Phthalate	H			
Di-n-octyl Phthalate	H			
Polybrominated Biphenyls (PBB)	H	*		
Polychlorinated Biphenyls (PCB)	H			

Chemical/Parameter	Hazard	CEPA	Carcinogenicity	Notes
Polychlorinated Terphenyls	H	*		
Polycyclic Aromatic Hydrocarbons	H	*	PHC	
Acenaphthene	M			
Acenaphthylene	M			
Acridine	H			
Anthracene	M			
Benzo(a)anthracene	H		PHC	
Benzo(a)pyrene	H		PHC	
Benzo(b)fluoranthene	H		PHC	
Benzo(g,h,i)perylene	H			
Benzo(k)fluoranthene	H		PHC	
Chrysene	M			
Dibenzo(a,h)anthracene	H		PHC	
Fluoranthene	M			
Fluorene	M			
Indeno(1,2,3-c,d)pyrene	H		PHC	
Methylnaphthalenes	M			
Naphthalene	M			
Phenanthrene	M			
Pyrene	M			
Quinoline	H			
Propylene Glycol	L			GL
Radium	H			
Radon	H			
Selenium	M			
Silver	L			
Simazine	M			
Sodium	L			
Strontium-90	H			
Strychnine	H			
Styrene	H			
Sulphate	L			
Sulphide	L			
2,3,7,8-Tetrachlorodibenzo-p-dioxins (TCDD)	H	*		DF
Tebuthiuron	H			
Tetrachloroeth(yl)ene (PCE)	H	*		CEE
Tetraethyl Lead	H			
Tetrachlorobenzene, 1,2,3,4-	H			CB
Tetrachlorobenzene, 1,2,3,5-	H			CB
Tetrachlorobenzene, 1,2,4,5-	H			CB
Tetrachloroethane, 1,1,1,2-	M			CEA
Tetrachloroethane, 1,1,2,2-	M			CEA
Tetrachlorophenol, 2,3,4,6-	H			CP
Tetramethyl Lead	H	*		
Thallium	M			
Thiophene	M			
Tin	L			
Toluene	M			BTEX
Toxaphene	H			

Chemical/Parameter	Hazard	CEPA	Carcinogenicity	Notes
Triallate	M			
Tribromomethane (Bromoform)	H			HM
Tributyltetradecylphosphonium Chloride	H	*		
Trichlorobenzene, 1,2,3-	H			CB
Trichlorobenzene, 1,2,4-	H			CB
Trichlorobenzene, 1,3,5-	H			CB
Trichloroethane, 1,1,1-	H	*		CEA
Trichloroethane, 1,1,2-	M			CEA
Trichloroeth(yl)ene (TCE)	H	*		CEE
Tricyclohexyltin Hydroxide	H			
Trichlorophenol, 2,4,5-	H			CP
Trichlorophenol, 2,4,6-	H		PHC	CP
Trifluralin	H			
Trihalomethanes (THM)	M			
Tris(2,3-Dibromopropyl)phosphate	H			
Tritium	L			
Uranium (Non-radioactive) / (Radioactive)	M/H			
Vanadium	M			
Vinyl Chloride	H	*	CHC	CEE
Xylenes	M			BTEX
Zinc	L			

H = High Hazard
M = Medium Hazard
L = Low Hazard
Hazard ratings based on a number of factors including potential human and ecological health effects.

PHC = Potential Human Carcinogen
CHC = Confirmed Human Carcinogen

BTEX = benzene, toluene, ethylbenzene, and xylenes
CB = chlorobenzenes
CEA = chlorinated ethanes
CEE = chlorinated ethenes
CP = chlorophenols
DF = dioxins and furans
GL = glycols
HM = halomethanes
PAH = polycyclic aromatic hydrocarbons
PH = phthalate esters

Examples of Persistent Substances

This information is used in Sheet I (Chemical Characteristics), section 5 (Modifying Factors).

aldrin	dieldrin	PCBs
benzo(a)pyrene	hexachlorobenzene	PCDDs/PCDFs (dioxins and furans)
chlordane	methylmercury	toxaphene
DDT	mirex	alkylated lead
DDE	octachlorostyrene	

Examples of Substances in the Various Chemical Classes

This information is used in Sheet I (Chemical Characteristics), section 5 (Modifying Factors).

Chemical Class	Examples *
inorganic substances (including metals)	arsenic, barium, cadmium, hexavalent chromium, copper, cyanide, fluoride, lead, mercury, nickel, selenium, sulphur, zinc; brines or salts
volatile petroleum hydrocarbons	benzene, toluene, ethylbenzene, xylenes, PHC F1
light extractable petroleum hydrocarbons	PHC F2
heavy extractable petroleum hydrocarbons	PHC F3
PAHs	Benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, dibenz(a,h0anthracene, indeno(1,2,3-c,d)pyrene, naphthalene, phenanthrene, pyrene
phenolic substances	phenol, pentachlorophenol, chlorophenols, nonchlorinated phenols (e.g., 2,4-dinitrophenol, cresol, etc.)
chlorinated hydrocarbons	PCBs, tetrachloroethylene, trichloroethylene, dioxins and furans, trichlorobenzene, tetrachlorobenzene, pentachlorobenzene, hexachlorobenzene
halogenated methanes	carbon tetrachloride, chloroform, dichloromethane
phthalate esters	di-isononyl phthalate (DINP), di-isodecyl phthalate (DIDP), di-2-ethylhexyl phthalate (DEHP)
pesticides	DDT, hexachlorocyclohexane

* Note: Specific chemicals that belong to the various classes are not limited to those listed in this table. These lists are not exhaustive and are meant just to provide examples of substances that are typically encountered.

Chemical-specific Properties
(Adapted from USEPA Soil Screening Criteria)

The information on Koc is used in Sheet II (Migration Potential), section 1,B,a (Relative Mobility).
The information on the dimensionless Henry's law constant is used in Sheet II (Migration Potential), section 4,B,a (Relative Volatility).
The information on log Kow is used in Sheet III (Exposure), section 3,B,a,iii (Potential for Ecological Exposure - terrestrial ingestion), and section 3,B,b,ii (Potential for Ecological Exposure - aquatic uptake potential).

CAS No.	Compound	Solubility in Water @ 20-25°C (mg/L)	Henry's Law Constant (atm-m3/mol)	Dimensionless Henry's law constant (HLC [atm-m3/mol] * 41) (25 °C).	log Kow	Log Koc (L/kg)
83-32-9	Acenaphthene	4.24E+00	1.55E-04	6.36E-03	3.92	3.85
67-64-1	Acetone	1.00E+06	3.88E-05	1.59E-03	-0.24	-0.24
309-00-2	Aldrin	1.80E-01	1.70E-04	6.97E-03	6.5	6.39
120-12-7	Anthracene	4.34E-02	6.50E-05	2.67E-03	4.55	4.47
56-55-3	Benz(a)anthracene	9.40E-03	3.35E-06	1.37E-04	5.7	5.6
71-43-2	Benzene	1.75E+03	5.55E-03	2.28E-01	2.13	1.77
205-99-2	Benzo(b)fluoranthene	1.50E-03	1.11E-04	4.55E-03	6.2	6.09
207-08-9	Benzo(k)fluoranthene	8.00E-04	8.29E-07	3.40E-05	6.2	6.09
65-85-0	Benzoic acid	3.50E+03	1.54E-06	6.31E-05	1.86	—
50-32-8	Benzo(a)pyrene	1.62E-03	1.13E-06	4.63E-05	6.11	6.01
111-44-4	Bis(2-chloroethyl)ether	1.72E+04	1.80E-05	7.38E-04	1.21	1.19
117-81-7	Bis(2-ethylhexyl)phthalate	3.40E-01	1.02E-07	4.18E-06	7.3	7.18
75-27-4	Bromodichloromethane	6.74E+03	1.60E-03	6.56E-02	2.1	1.74
75-25-2	Bromoform	3.10E+03	5.35E-04	2.19E-02	2.35	1.94
71-36-3	Butanol	7.40E+04	8.81E-06	3.61E-04	0.85	0.84
85-68-7	Butyl benzyl phthalate	2.69E+00	1.26E-06	5.17E-05	4.84	4.76
86-74-8	Carbazole	7.48E+00	1.53E-08	6.26E-07	3.59	3.53
75-15-0	Carbon disulfide	1.19E+03	3.03E-02	1.24E+00	2	1.66
56-23-5	Carbon tetrachloride	7.93E+02	3.04E-02	1.25E+00	2.73	2.24
57-74-9	Chlordane	5.60E-02	4.86E-05	1.99E-03	6.32	5.08
106-47-8	*p-Chloroaniline*	5.30E+03	3.31E-07	1.36E-05	1.85	1.82
108-90-7	Chlorobenzene	4.72E+02	3.70E-03	1.52E-01	2.86	2.34
124-48-1	Chlorodibromomethane	2.60E+03	7.83E-04	3.21E-02	2.17	1.8
67-66-3	Chloroform	7.92E+03	3.67E-03	1.50E-01	1.92	1.6
95-57-8	2-Chlorophenol	2.20E+04	3.91E-04	1.60E-02	2.15	—
218-01-9	Chrysene	1.60E-03	9.46E-05	3.88E-03	5.7	5.6
72-54-8	DDD	9.00E-02	4.00E-06	1.64E-04	6.1	6
72-55-9	DDE	1.20E-01	2.10E-05	8.61E-04	6.76	6.65
50-29-3	DDT	2.50E-02	8.10E-06	3.32E-04	6.53	6.42
53-70-3	Dibenz(a,h)anthracene	2.49E-03	1.47E-08	6.03E-07	6.69	6.58
84-74-2	Di-n-butyl phthalate	1.12E+01	9.38E-10	3.85E-08	4.61	4.53
95-50-1	1,2-Dichlorobenzene	1.56E+02	1.90E-03	7.79E-02	3.43	2.79

CAS No.	Compound	Solubility in Water @ 20-25°C (mg/L)	Henry's Law Constant (atm-m3/mol)	Dimensionless Henry's law constant (HLC [atm-m3/mol] * 41) (25 °C).	log Kow	Log Koc (L/kg)
106-46-7	1,4-Dichlorobenzene	7.38E+01	2.43E-03	9.96E-02	3.42	2.79
91-94-1	3,3-Dichlorobenzidine	3.11E+00	4.00E-09	1.64E-07	3.51	2.86
75-34-3	1,1-Dichloroethane	5.06E+03	5.62E-03	2.30E-01	1.79	1.5
107-06-2	1,2-Dichloroethane	8.52E+03	9.79E-04	4.01E-02	1.47	1.24
75-35-4	1,1-Dichloroethylene	2.25E+03	2.61E-02	1.07E+00	2.13	1.77
156-59-2	cis-1,2-Dichloroethylene	3.50E+03	4.08E-03	1.67E-01	1.86	1.55
156-60-5	trans-1,2-Dichloroethylene	6.30E+03	9.38E-03	3.85E-01	2.07	1.72
120-83-2	2,4-Dichlorophenol	4.50E+03	3.16E-06	1.30E-04	3.08	—
78-87-5	1,2-Dichloropropane	2.80E+03	2.80E-03	1.15E-01	1.97	1.64
542-75-6	1,3-Dichloropropene	2.80E+03	1.77E-02	7.26E-01	2	1.66
60-57-1	Dieldrin	1.95E-01	1.51E-05	6.19E-04	5.37	4.33
84-66-2	Diethylphthalate	1.08E+03	4.50E-07	1.85E-05	2.5	2.46
105-67-9	2,4-Dimethylphenol	7.87E+03	2.00E-06	8.20E-05	2.36	2.32
51-28-5	2,4-Dinitrophenol	2.79E+03	4.43E-07	1.82E-05	1.55	—
121-14-2	2,4-Dinitrotoluene	2.70E+02	9.26E-08	3.80E-06	2.01	1.98
606-20-2	2,6-Dinitrotoluene	1.82E+02	7.47E-07	3.06E-05	1.87	1.84
117-84-0	Di-n-octyl phthalate	2.00E-02	6.68E-05	2.74E-03	8.06	7.92
115-29-7	Endosulfan	5.10E-01	1.12E-05	4.59E-04	4.1	3.33
72-20-8	Endrin	2.50E-01	7.52E-06	3.08E-04	5.06	4.09
100-41-4	Ethylbenzene	1.69E+02	7.88E-03	3.23E-01	3.14	2.56
206-44-0	Fluoranthene	2.06E-01	1.61E-05	6.60E-04	5.12	5.03
86-73-7	Fluorene	1.98E+00	6.36E-05	2.61E-03	4.21	4.14
76-44-8	Heptachlor	1.80E-01	1.09E-03	4.47E-02	6.26	6.15
1024-57-3	Heptachlor epoxide	2.00E-01	9.50E-06	3.90E-04	5	4.92
118-74-1	Hexachlorobenzene	6.20E+00	1.32E-03	5.41E-02	5.89	4.74
87-68-3	Hexachloro-1,3-butadiene	3.23E+00	8.15E-03	3.34E-01	4.81	4.73
319-84-6	a-HCH (a-BHC)	2.00E+00	1.06E-05	4.35E-04	3.8	3.09
319-85-7	b-HCH (b-BHC)	2.40E-01	7.43E-07	3.05E-05	3.81	3.1
58-89-9	g -HCH (Lindane)	6.80E+00	1.40E-05	5.74E-04	3.73	3.03
77-47-4	Hexachlorocyclopentadiene	1.80E+00	2.70E-02	1.11E+00	5.39	5.3
67-72-1	Hexachloroethane	5.00E+01	3.89E-03	1.59E-01	4	3.25
193-39-5	Indeno(1,2,3-cd)pyrene	2.20E-05	1.60E-06	6.56E-05	6.65	6.54
78-59-1	Isophorone	1.20E+04	6.64E-06	2.72E-04	1.7	1.67
7439-97-6	Mercury	—	1.14E-02	4.67E-01	—	—
72-43-5	Methoxychlor	4.50E-02	1.58E-05	6.48E-04	5.08	4.99
74-83-9	Methyl bromide	1.52E+04	6.24E-03	2.56E-01	1.19	1.02
75-09-2	Methylene chloride	1.30E+04	2.19E-03	8.98E-02	1.25	1.07
95-48-7	2-Methylphenol	2.60E+04	1.20E-06	4.92E-05	1.99	1.96
91-20-3	Naphthalene	3.10E+01	4.83E-04	1.98E-02	3.36	3.3
98-95-3	Nitrobenzene	2.09E+03	2.40E-05	9.84E-04	1.84	1.81

CAS No.	Compound	Solubility in Water @ 20-25°C (mg/L)	Henry's Law Constant (atm-m3/mol)	Dimensionless Henry's law constant (HLC [atm-m3/mol] * 41) (25 °C).	log Kow	Log Koc (L/kg)
86-30-6	N-Nitrosodiphenylamine	3.51E+01	5.00E-06	2.05E-04	3.16	3.11
621-64-7	N-Nitrosodi-n-propylamine	9.89E+03	2.25E-06	9.23E-05	1.4	1.38
1336-36-3	PCBs	—	—	—	5.58	5.49
87-86-5	Pentachlorophenol	1.95E+03	2.44E-08	1.00E-06	5.09	—
108-95-2	Phenol	8.28E+04	3.97E-07	1.63E-05	1.48	1.46
129-00-0	Pyrene	1.35E-01	1.10E-05	4.51E-04	5.11	5.02
100-42-5	Styrene	3.10E+02	2.75E-03	1.13E-01	2.94	2.89
79-34-5	1,1,2,2-Tetrachloroethane	2.97E+03	3.45E-04	1.41E-02	2.39	1.97
127-18-4	Tetrachloroethylene	2.00E+02	1.84E-02	7.54E-01	2.67	2.19
108-88-3	Toluene	5.26E+02	6.64E-03	2.72E-01	2.75	2.26
8001-35-2	Toxaphene	7.40E-01	6.00E-06	2.46E-04	5.5	5.41
120-82-1	1,2,4-Trichlorobenzene	3.00E+02	1.42E-03	5.82E-02	4.01	3.25
71-55-6	1,1,1-Trichloroethane	1.33E+03	1.72E-02	7.05E-01	2.48	2.04
79-00-5	1,1,2-Trichloroethane	4.42E+03	9.13E-04	3.74E-02	2.05	1.7
79-01-6	Trichloroethylene	1.10E+03	1.03E-02	4.22E-01	2.71	2.22
95-95-4	2,4,5-Trichlorophenol	1.20E+03	4.33E-06	1.78E-04	3.9	—
88-06-2	2,4,6-Trichlorophenol	8.00E+02	7.79E-06	3.19E-04	3.7	—
108-05-4	Vinyl acetate	2.00E+04	5.11E-04	2.10E-02	0.73	0.72
75-01-4	Vinyl chloride	2.76E+03	2.70E-02	1.11E+00	1.5	1.27
108-38-3	m-Xylene	1.61E+02	7.34E-03	3.01E-01	3.2	2.61
95-47-6	o-Xylene	1.78E+02	5.19E-03	2.13E-01	3.13	2.56
106-42-3	p-Xylene	1.85E+02	7.66E-03	3.14E-01	3.17	2.59

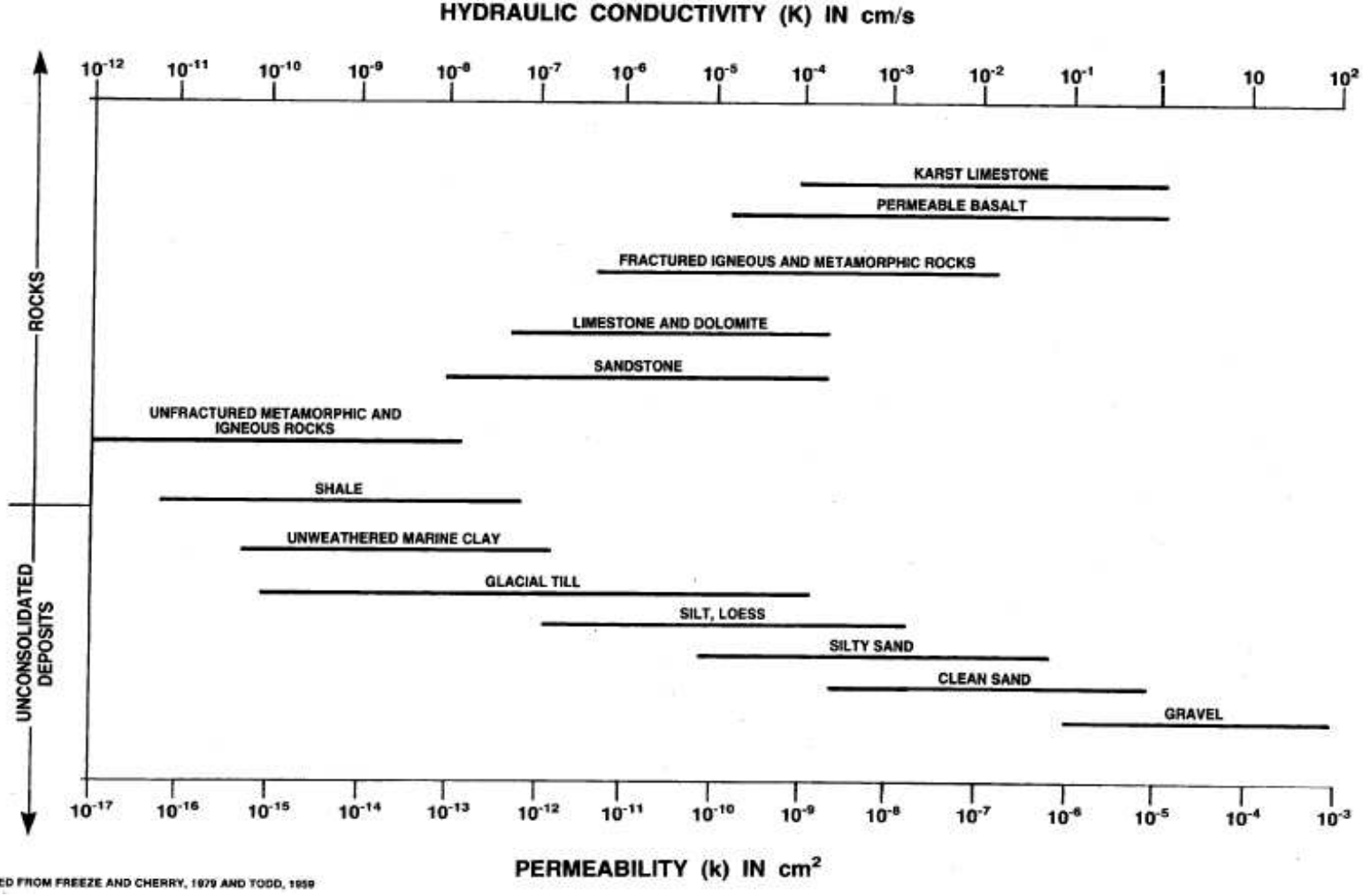
Source: United States Environmental Protection Agency. 1996. Soil Screening Guidance: Technical Background Document. EPA/540/R-95/128 (http://www.epa.gov/superfund/resources/soil/toc.htm#p5)

CAS = Chemical Abstracts Service

Kow = Octanol/water partition coefficient

RANGE OF VALUES OF HYDRAULIC CONDUCTIVITY AND PERMEABILITY

The information on Koc is used in Sheet II (Migration Potential), section 1,B,f (Hydraulic Conductivity)



MODIFIED FROM FREEZE AND CHERRY, 1979 AND TODD, 1959

Appendix I

FCSI Information

FEDERAL CONTAMINATED SITES INVENTORY – 2016 UPDATE

Site 08837001 – West Memorial Building

Field	Existing Response	Update
Status	Initial testing completed. Detailed testing underway.	Detailed testing completed.
Site Status	Active	No update
Classification		Contamination confirmed
SITE DETAILS		
Reporting Organization	PSPC	No update
Reason for Involvement	Federal Real Property	No update
Property Type	Federal (DFRP Property Number 08837)	No update
SITE LOCATION		
Latitude, Longitude	45.419307, -75.706606	No update
Municipality	Ottawa, ON	No update
Federal Electoral District	Ottawa Centre	No update
SITE MANAGEMENT STRATEGY		
Assessment		NCSCS score 50.2; classification Category 2
CONTAMINATION TAB		
Contaminants		PAHs, metals, pH
Contaminant media		Soil
Landfill flag		No
Original amount of contamination		2400 m^3
Amount remediated to date		0 m^3
SUMMARY OF ANNUALLY REPORTED DATA		
Total Expenditures	Assessment $18,638.04	No update
FINANCIAL/ANNUAL INFORMATION - 2014/2015		
Highest Step Completed	03 Initial Testing Program	04 Ph3 Detailed Testing