Phase II Environmental Site Assessment, Former Military Site, Border Beacon, NL

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Executive Summary

Stassinu Stantec Limited Parternership (Stantec) was retained by Newfoundland and Labrador Department of Municipal Affairs and Environment (NLDMAE) to conduct a Phase II Environmental Site Assessment (ESA) at the former military site located at Border Beacon, Newfoundland and Labrador (NL) (see Drawing No. 121414915.200-EE-01 in Appendix A), herein referred to as the "Site". The purpose of the Phase II ESA investigation was to determine current environmental conditions of the property. It is our understanding that NLDMAE has a requirement to assess the former military site at Border Beacon to collect the information necessary to be eligible for Federal Contaminated Sites Action Plan (FCSAP) funding.

Site Description

The former United States (U.S.) Military Mid Canada Line (MCL) Radar Site 212 known as Border Beacon is located approximately 190 km west of the Town of Hopedale, NL (see Drawing No. 121414915.200-EE-01 in Appendix A). Border Beacon consisted of an Upper Site, which contained radar equipment and ancillary support services, and a Lower Site along the shores of Ashuapun Lake which contained an airstrip, camp, antennae, fuel storage facility, and other support structures. The Lower Site acted as a supply area for the communications equipment located at the Upper Site. The investigated property has a combined area of approximately 100 ha. The Sites are remote and are accessible only by helicopter at the Upper Site and by bush plane or helicopter at the Lower Site.

Description of Site Work

Stantec's scope of work for the current investigation, as per the work plan included in Stantec's Proposal dated July 11, 2017, included the following:

- Complete Phase II subsurface test pit investigation for the purpose of investigating potential subsurface soil impacts associated with various historical operations and activities;
- Collect representative soil samples from test pits;
- Collect representative surface soil samples in specified areas of the Site;
- Collect representative sediment and surface water samples from potentially impacted ponds and lakes, as identified in Stantec's Proposal;
- Submit selected soil, sediment, and surface water samples for laboratory analysis of COPCs;
- Collect representative vegetation samples; and,
- Prepare a report detailing all observations, conclusions, and recommendations made during the investigation.

Conclusions

Based on information gathered and observations made, the Phase II ESA has revealed evidence of actual environmental contamination associated with the Site. The findings and results of the Phase II ESA are summarized as follows:

1. The stratigraphy at Upper Site consists generally of a silty sand till veneer with frequent cobbles and boulders directly overlying bedrock. The Lower Site is comprised of a glacial esker, and was levelled off to form the gravel runway. The stratigraphy at the Lower Site consists generally of reworked sand and gravel likely disturbed during the construction of the airstrip. This layer was approximately 0.2 - 0.3 m thick and was underlain by a thin 0.2 - 0.3 m layer of black to brown sand and gravel with occasional peat deposits. The current investigation did not exceed 0.5 m below ground surface (mbgs), but previous reports indicate that this layer is generally underlain by thick stratified deposits of dense, grey, fine to medium grained glacio-fluvial silty sand with silt lensing. Bedrock was not encountered in test pits at the Lower Site during the current investigation.
2. Concentrations of MTBE, VOCs, PCBs, pesticides and herbicides, and asbestos in environmental media were either non-detect or were detected at concentrations below the applicable guidelines in the samples analyzed.
3. Concentrations of TPH in select soil, sediment, and surface water samples exceeded the applicable generic regulatory guidelines and may present risks to human or ecological health on the Site, as follows:

    a. Petroleum hydrocarbon impacts were identified in surface soil in exceedance of the applicable RBCA Tier I RBSLs and/or Tier I ESLs for a commercial site with coarse grained soil, non-potable water and either gasoline/fuel oil/lube oil impacts at the Camp / Antenna Areas and AES Compound (4,477 m^3), Waste Disposal Sites (79 m^3), and Upper Site (39 m^3).

    b. Petroleum hydrocarbon impacts were identified in freshwater sediment in exceedance of the applicable RBCA Tier I Sediment ESLs for the Protection of Freshwater and Marine Aquatic Life (Typical sediment) at the Waste Disposal Sites (78 m^3) and Upper Site (2 m^3).

    c. Petroleum hydrocarbon impacts were identified in surface water in exceedance of the applicable RBCA Tier I ESLs (freshwater and marine aquatic life) for fuel oil/lube oil impacts at the Waste Disposal Sites, but the areal extent of impacts was not assessed as part of the current investigation.

4. Concentrations of PAHs in select soil and sediment samples exceeded the applicable generic regulatory guidelines and may present risks to human or ecological health on the Site, as follows:

    a. PAH impacts were identified in soil in exceedance of the applicable CCME SQGs for the Protection of Environmental and Human Health for Commercial land use at the Camp / Antenna Areas and AES Compound (707 m^3) and the Waste Disposal Sites (236 m^3).

    b. PAH impacts were identified in freshwater sediment in exceedance of the applicable CCME PEL for Freshwater Sediment at the Upper Site (2 m^3).

5. Concentrations of Metals in select soil, sediment, and surface water samples exceeded the applicable generic regulatory guidelines and may present risks to human or ecological health on the Site, as follows:

    a. Metals impacts were identified in surface soil in exceedance of the applicable CCME SQGs for the Protection of Environmental and Human Health for Commercial land use at the Camp / Antenna Areas and AES Compound (236 m^3) and the Upper Site (39 m^3).

c. Metals impacts were identified in surface water in exceedance of the applicable CCME WQG for the protection of Freshwater Aquatic Life the Upper Site (13 m^2). Metals impacts identified in surface water in exceedance of the applicable CCME WQG for the protection of Freshwater Aquatic Life were also identified in Lake Ashuapun at the Lower Site – General Area, the Unknown Foundation / Building, and the Waste Disposal Sites, but the areal extent of impacts was not assessed as part of the current investigation.

6. Concentrations of General Chemistry in select surface water samples exceeded the applicable generic regulatory guidelines and may present risks to human or ecological health on the Site, as follows:

   a. General chemistry impacts were identified in surface water in exceedance of the applicable CCME WQG for the protection of Freshwater Aquatic Life at the Waste Disposal Sites, but the areal extent of impacts was not assessed as part of the current investigation.

The volumes of impacted material provided herein are estimates generated based on the available site data. Based on the permeability of the soils at the Site and historical land use, additional delineation is recommended to refine the extent of impacts (larger or smaller) at the Site. In particular, the vertical extent of impacts should be investigated with a borehole/monitor well program and should include a groundwater assessment.

Further, liquid PHC products stored in drums and tanks were identified at the Site. A number of these drums are in poor repair and the potential for further release of PHC products increases as the drums continue to weather. It is recommended that the drums and the contents of the drums are removed in the near future.

Due to limited time imposed by poor weather conditions and constraints of helicopter fly-time during the field program, no samples were collected from the Drums / Debris Area – South of Airstrip as recommended in Stantec's Proposal. It is recommended that environmental media is assessed in the area surrounding the drum/debris and the structure adjacent to the drum/debris area as part of future site assessment. In addition, it is recommended that the unidentified dump site to the southwest of the work area (as shown on Drawing No. 121414915.200-EE-01 in Appendix A) is assessed.

Abbreviations

AENV	Alberta Environment
B[a]P TPE	Benzo(a)pyrene Total Potency Equivalent
BTEX	Benzene, toluene, ethylbenzene, and xylenes
CCME	Canadian Council of Ministers of the Environment
CCME SQG	Canadian Council of Ministers of the Environment Soil Quality Guidelines
CCME WQG	Canadian Council of Ministers of the Environment Water Quality Guidelines
CEQG	Canadian Environmental Quality Guidelines
COPC	Contaminant of potential concern
ESA	Environmental Site Assessment
FCSAP	Federal Contaminated Sites Action Plan
RBCA	Risk Based Corrective Action
RDL	Reportable detection limit
RPD	Relative percent difference
mbgs	meters below ground surface
MOE	Ontario Ministers of the Environment
MTBE	Methyl t-butyl ether
NLDMAE	Newfoundland and Labrador Department of Municipal Affairs and Environment
PHC	Petroleum Hydrocarbon
PAH	Polycyclic Aromatic Hydrocarbon
PCB	Polychlorinated Biphenyl
QA/QC	Quality assurance / quality control
Tier I ESL	Tier I Ecological Screening Level
Tier I RBSL	Tier I Risk Based Screening Level
TOC	Total Organic Carbon
TPH	Total Petroleum Hydrocarbons
TPH Frac.	TPH Fractionation
VOC	Volatile Organic Compound

1.0 INTRODUCTION

Stassinu Stantec Limited Parternship (Stantec) was retained by Newfoundland and Labrador Department of Municipal Affairs and Environment (NLDMAE) to conduct a Phase II Environmental Site Assessment (ESA) at the former military site located at Border Beacon, Newfoundland and Labrador (NL) (see Drawing No. 121414915.200-EE-01 in Appendix A), herein referred to as the "Site". The purpose of the Phase II ESA investigation was to determine current environmental conditions of the property. It is our understanding that NLDMAE has a requirement to assess the former military site at Border Beacon to collect the information necessary to be eligible for Federal Contaminated Sites Action Plan (FCSAP) funding to further assess and/or remediate the Site as required.

1.1 Background

Based on the requirements of FCSAP funding, the assessment must follow the Federal Approach to Contaminated Sites (FACS) which constitutes a ten-step process. Under this approach, a Phase I ESA would first be completed to document site history and identify potential and/or actual environmental issues on or around the Site. A Phase I ESA would constitute Step 1 (Identify Suspect Sites) and Step 2 (Historical Review) of the FACS. A Phase II intrusive investigation would then be conducted to confirm the presence or absence of contaminants of concern in soil, groundwater, surface water, and sediment at potential areas of concern identified in the Phase I ESA for the purpose of defining environmental conditions on the property. A Phase II ESA would constitute Step 3 (Initial Testing) and Step 4 (Canadian Council of the Ministers of the Environment (CCME) National Classification System for Contaminated Sites (NCSCS)).

Two Phase I ESAs previously conducted at the Site (JWEL, 1998, and GHD, 2016) identified potential for several environmental issues associated with historical use and storage of petroleum hydrocarbons, solid waste, metals, chemical spills, preserved wood, and polychlorinated biphenyls (PCBs). As a result, Stantec was subsequently retained by NLDMAE to complete a Phase II ESA.

1.2 Site Description

1.2.1 Property Description and Land Use

The former United States (U.S.) Military Mid Canada Line (MCL) Radar Site 212 known as Border Beacon is located approximately 190 km west of the Town of Hopedale, NL (see Drawing No. 121414915.200-EE-01 in Appendix A). Border Beacon consisted of an Upper Site, which contained radar equipment and ancillary support services, and a Lower Site along the shores of Ashuapun Lake which contained an airstrip, camp, antennae, fuel storage facility, and other support structures. The Lower Site acted as a supply area for the communications equipment located at the Upper Site. The investigated property has a combined area of approximately 100 ha. The Sites are remote and are accessible only by helicopter at the Upper Site and by bush plane or helicopter at the Lower Site.

The Site was operated from the mid-1950s until 1964, when the Upper Site burned down. Since the shutdown in 1964, sections of the Lower Site were briefly used as a Transport Canada weather station, a hunting outfitter, and since 1992 an area northeast of the airstrip has been used as a seasonal Innu camp and healing center. Between 1994 and 1999, Department of National Defense operated a fuel cache along the south edge of the airstrip. In 1998, the province of Newfoundland and Labrador transferred administration and control of five (5) parcels of land at the Lower Site to Environment Canada for a weather station, including the length of the airstrip and a small area north of the airstrip. Further Details of historical land use for the Site are contained in Phase I ESAs (JWEL, 1998, and GHD, 2016).

Based on previous environmental reports and field work completed as part of the current investigation, the overall Site was divided into five (5) smaller study sites for the purpose of the Phase II ESA investigation. These sites are summarized in Table 1.1 and their locations with respect to the overall site are shown on Drawings No. 121414915.200-EE-01 and 121414915.200-EE-02 in Appendix A. In addition to the sites listed below, the boundaries of the land parcels granted to the Government of Canada at the Lower Site are shown in Drawing No. 121414915.200-EE-02.

Table 1.1 Site Inventory

Area	Site Inventory	Drawing
Lower Site – General Area	Gravel airstrip, two (2) full drums, one (1) pile of empty drums, abandoned 3,540 L tank, Ashuapun Lake shoreline	Drawing No. 121414915.200-EE-02
Camp / Antenna Areas and AES Compound	Camp fuel shed building #1, 12 ASTs (4,500 L each), camp garage building #2 with 900 L tank (full), former re-fueling area with 200 L drum (full), four (4) piles of drums (some full and leaking), dyked 113,516 L tank, one (1) antenna, four (4) former antennae, one (1) cellular tower, two (2) former ASTs (4,546 L each), former camp building #3, shed, former above-ground septic tank, former camp building #4, AES building #1 storage, AES building #2 equipment	Drawing No. 121414915.200-EE-03
Unknown Foundation / Building	East end of former airstrip, unknown foundation, building, Ashuapun Lake shoreline	Drawing No. 121414915.200-EE-04
Waste Disposal Sites	Buried debris, drum / waste disposal site – site #1, solid waste disposal area – site #2, solid waste disposal area site #3 (trenches), former SAR drum storage area (former 3,456L SAR tanks), three (3) ponds	Drawing No. 121414915.200-EE-05
Upper Site	Three (3) former antenna towers, five (5) former diesel ASTs (6,818 L each), four (4) former diesel ASTs (9,547 L each), former operations building, former emergency shelter, buried metal debris, tower	Drawing No. 121414915.200-EE-06

1.2.2 Geology, Topography, and Drainage

Based on available surficial geology maps, the native surficial soils at the Site consist of a mixture of undifferentiated till at the Upper Site and glaciofluvial gravel and sand at the Lower Site (Klassen et. al., 1992). The characteristic permeability of these soils is moderate to high.

Based on observations made during the current and previous investigations, the stratigraphy at the Upper Site consists generally of a silty sand till veneer with frequent cobbles and boulders directly overlying bedrock. The Lower Site is comprised of a glacial esker and was levelled off to form the gravel runway. The stratigraphy at the Lower Site consists generally of reworked sand and gravel likely disturbed during the construction of the airstrip. This layer was approximately 0.2 - 0.3 m thick and was underlain by a thin 0.2 - 0.3 m layer of black to brown sand and gravel with occasional peat deposits. The current investigation did not exceed 0.5 m below ground surface (mbgs), but previous reports indicate that this layer is generally underlain by thick stratified deposits of dense, grey, fine to medium grained glacio-fluvial silty sand with silt lensing (JWEL, 2002). Bedrock was not encountered in test pits at the Lower Site during the current investigation.

Bedrock in the area consists of undifferentiated Archean and Paleoproterozoic metamorphic gneiss of the Southeastern Churchill Province (Wardle et. al., 1997). Exposed bedrock is common throughout the Upper Site.

Topography at the Lower Site varies depending on the direction towards the water bodies surrounding the site; in general, the areas north and south of the airstrip drain to the waters of Ashuapun Lake on their respective sides. Slopes at the Upper Site range from moderate to extremely steep toward the south to an inlet feeding Ashuapun Lake. The Site ranges in elevation from 480 m above sea level (masl) at the airstrip of the Lower Site to 650 masl at the Upper Site.

1.3 Previous Environmental Assessments

Several environmental assessment reports have been produced (mainly since 1996) relating to potential and actual contamination in the vicinity of the former military site. Previous site investigations have discussed the history of the site, including operations and infrastructure, documented land transfers, and have confirmed the presence of petroleum hydrocarbons and metals in soil and metals in surface water at the former military site at concentrations that exceed current regulatory guidelines. PCBs were also identified in soil but at concentrations below current regulatory guidelines. Previous environmental reports completed for Border Beacon include the following:

- Government of Newfoundland and Labrador, 1981. PCB Spills and General Environmental Mismanagement at EX-USAF Bases in Labrador;
- Government of Newfoundland and Labrador, 1996. Environmental Inspection, Abandoned Military Sites in Labrador;
- Jacques Whitford, 1998. Phase I Environmental Site Assessment, Border Beacon, Labrador;
- Jacques Whitford, 2002. Site Investigation & Detailed Qualitative Risk Assessment, Border Beacon, Labrador;

- Dillon Consulting, 2010. Site Investigation Report, Former DND Fuel Cache Site; and,
- GHD Ltd., 2016. Phase I Environmental Site Assessment, Former US Military Mid Canada Line Radar Site 212, Border Beacon, NL.

The identified environmental issues at the former military site were not sufficiently defined in previous environmental assessment reports to enable the completion of NCSCS classification.

1.4 Project Objectives

In general, the project objectives set forth in the Terms of Reference (TOR) prepared by NLDMAE for the former military site in Border Beacon, NL, were as follows:

1. Determine specific areas of environmental concern and areas of potential environmental concern at the Site;
2. Verify the presence/absence of contaminants of potential concern (COPCs) at the Site;
3. Complete the NCSCS scoring worksheets for the Site;
4. Estimate the volume and areas of impacted media at each Site;
5. Create a preliminary conceptual site model identifying actual and potential contaminants, identify and evaluate migration pathways, potential receptors of concern, and exposure pathways (human and ecological); and,
6. Make recommendations for the Site regarding additional work required to complete site characterization and delineation at the Sites (provide recommendations for a detailed testing program (Step 5 of the FACS)).

1.5 Scope of Work

Stantec's scope of work for the current investigation, as per the work plan included in Stantec's Proposal dated July 11, 2017, included the following:

- Complete a Phase II subsurface test pit investigation for the purpose of investigating potential subsurface soil impacts associated with various historical operations and activities;
- Collect representative soil samples from test pits;
- Collect representative surface soil samples in specified areas of the Site;
- Collect representative sediment and surface water samples from potentially impacted ponds and lakes, as identified in Stantec's Proposal;
- Submit selected soil, sediment, and surface water samples for laboratory analysis of COPCs;
- Collect representative vegetation samples; and,
- Prepare a report detailing all observations, conclusions, and recommendations made during the investigation.

Due to limited time imposed by poor weather conditions and constraints of helicopter fly-time during the field program, no samples were collected from the Drums / Debris Area – South of Airstrip as recommended in Stantec's Proposal. Also, as discussed in the work plan included in Stantec's Proposal, no work was completed in the area of the Innu camp along the shore of Ashuapun Lake to the northeast of the airstrip.

1.6 Regulatory Framework

The NLDMAE outlined soil and groundwater remediation criteria for petroleum hydrocarbons and other COPCs on February 22, 2005 under policy directive *PPD05-01*. These criteria are outlined in the *Guidance Document for the Management of Impacted Sites, Version 2.0* (January 2014). The purpose of this guidance document is to provide a clear process for the management of impacted sites in Newfoundland and Labrador that result in the satisfactory resolution of environmental contamination, which may present an unacceptable risk to human health and ecological receptors. The guidance document incorporates recent scientific and regulatory advances in this area that have resulted from work at the international, national, and regional levels.

1.6.1 Petroleum Hydrocarbons

For petroleum hydrocarbons, the NLDMAE guidance document recommends the current version of the Atlantic RBCA (Risk-Based Corrective Action) guidance. The current version of the Atlantic RBCA guidance (Version 3 User Guidance Document, July 2012, revised 2015) is used as part of the current assessment.

Human Health Screening

The Atlantic RBCA guidance document contains risk-based screening levels (RBSLs) for evaluating human exposure to sites impacted with TPH and BTEX. These guidelines are contained in “Tier I RBSL Tables” that are based on default conditions for typical sites and exposure pathways and are classified by receptor characteristics, groundwater usage, and soil type. In addition, the TPH guidelines are dependent on the nature of the hydrocarbon type (*i.e.*, the guidelines vary for gasoline, fuel oil, and lube oil).

If site concentrations exceed the Tier I RBSLs, the site may be remediated to the Tier I RBSLs or a Tier II human health risk assessment may be completed to determine more appropriate clean-up levels. A Tier II human health risk assessment may include comparison of the site concentrations to the Tier II Pathway-Specific Screening Level (PSSL) tables or development of Site-Specific Target Levels (SSTLs) using the Atlantic RBCA Toolkit Version 3.2. PSSLs are only appropriate for sites where the exposure pathways assumed in the Tier I RBSL tables are not complete (*e.g.*, if a property has no building on site, there would be no potential for on-site indoor air exposure).

Users of the Tier I RBSLs or Tier II PSSLs are required to confirm that site conditions are compatible with the default site conditions used to generate the screening guidelines. If significant differences exist, the site should be evaluated using a site-specific risk assessment approach. As documented in the Site Assessment and Tier I/II Checklist presented in Appendix B, and as requested by NLDMAE, the human health Tier I RBSLs for a commercial site with non-potable groundwater and coarse-grained soil are applicable for the site.

Ecological Screening

The current version of the *Atlantic RBCA guidance document* (Version 3.0, July 2012, revised January 2015) includes an Ecological Screening Protocol for Petroleum Impacted Sites in Atlantic Canada. While the RBSLs, the PSSLs, and the Atlantic RBCA Toolkit assess risks to human health, the goal of the Ecological Screening Protocol is to assess potential risks to the environment (specifically ecological receptors). While this protocol is not an ecological risk assessment, the protocol provides a decision-making framework that will result in one of the following three conclusions:

- The site does not pose a risk to ecological receptors/habitat and no further action is necessary related to the environment;
- The site should be remediated to Tier I ecological screening levels; or,
- The site should undergo further assessment in terms of quantifying ecological risks at the site (e.g., further delineation, quantitative ecological risk assessment).

The three parts of the ecological screening protocol are:

- Part I: Identification of petroleum hydrocarbon hazards in site media or site-influenced media;
- Part II: Identification of habitat and ecological receptors on or near a site; and,
- Part III: Identification of exposure pathways by which ecological receptors could come into contact with site petroleum hydrocarbons.

In accordance with the Atlantic RBCA requirements, the Ecological Screening Protocol has been completed and is included in Appendix B. A discussion of ecological screening levels (ESLs) is summarized in Table 1.2. Based on this evaluation, the ESLs for the Protection of Plants and Soil Invertebrates; Direct Soil Contact, the Protection of Wildlife (mammals and birds) and Livestock; Soil and Food Ingestion, Plant and Invertebrate Direct Contact with Shallow Groundwater, the Protection of Freshwater and Marine Aquatic Life from groundwater and surface water impacts, and the Protection of Freshwater and Marine Aquatic Life from sediment impacts are applicable for this site.

Table 1.2 Ecological Screening Level Applicability within 200 m of the Site

Pathway	Are ESLs Applicable?	Rationale
Protection of Plants and Soil Invertebrates; Direct Soil Contact (Table 1a)*	Yes	The Upper Site and Lower Site are both surrounded by tundra, forest, and plains. Site hydrocarbons in surface soil may come into contact with terrestrial plants and invertebrates in these areas.
Protection of Wildlife (mammals and birds) and Livestock; Soil and Food Ingestion (Table 1b)*	Yes	The Upper Site and Lower Site are both surrounded by tundra, forest, and plains. Site hydrocarbons in surface soil may come into contact with wildlife in these areas.
Plant and Invertebrate Direct Contact with Shallow Groundwater (Table 2)*	Yes	Groundwater was not encountered at the maximum test pit depth of 0.5 mbgs. Depth to groundwater is unknown and PHC impacts are not fully delineated. It is possible that there are impacts to shallow groundwater. Groundwater sampling was not included in the scope of work for the current investigation.

Table 1.2 Ecological Screening Level Applicability within 200 m of the Site

Pathway	Are ESLs Applicable?	Rationale
Protection of Freshwater and Marine Aquatic Life from groundwater and surface water impacts (Table 3a and Table 3b)*	Yes	The waters of Ashuapun Lake surround the airstrip at the Lower Site and several ponds are located in the Waste Disposal Site.
Protection of Freshwater and Marine Aquatic Life from sediment impacts (Table 4)*	Yes	Freshwater sediments were encountered on the shores of Ashuapun Lake and the ponds in the Waste Disposal Site.
Note: *Table references based on *Atlantic RBCA Version 3 User Guidance (Appendix 2).*		

1.6.2 Other Contaminants

In addition to petroleum hydrocarbons, environmental media at the site was analyzed for MTBE, VOCs, PAHs, metals, PCBs, pesticides, total organic carbon, asbestos, and general chemistry. In the absence of provincial guidelines, the applicable criteria are considered to be the Canadian Council of Ministers of the Environment (CCME) Canadian Environmental Quality Guidelines (CCME Guidelines; 1999 and subsequent updates) and its associated documents. The CCME guidelines provide limits for contaminants in environmental media and are intended to maintain, improve, and/or protect environmental quality, and human and ecological health at contaminated sites in general. These criteria include numerical values for the assessment and remediation of soil and water in the context of agricultural, residential/parkland, commercial, and industrial land uses. In addition to land use, the CCME include numerical values depending on soil texture (i.e., coarse or fine-grained soils). Environmental soil and water quality guidelines are derived using toxicological data to determine the threshold level to key receptors. These criteria include the CCME Canadian Soil Quality Guidelines (SQGs), 1999, and Water Quality Guidelines (WQGs), 1999. The latest update of the CCME SQGs and WQGs can be obtained on-line at http://ceqg-rcqe.ccme.ca/. The NLDMAE Guidance Document indicates that in most instances, the CCME Environmental Quality Guidelines (CEQG) provide the basis for Tier I assessment.

Where there are no CCME guidelines available, guidelines from other Canadian Jurisdictions were applied using a hierarchical approach. If there was no guideline for a given COPC, the next jurisdiction in the hierarchy was referenced until an appropriate guideline was available.

The following hierarchy was used for establishing screening levels for contaminants (other than petroleum hydrocarbons) in soil, groundwater, sediment, and surface water:

1. CCME Canadian Environmental Quality Guidelines (CEQGs) for soil, surface water, and sediment (1999, and subsequent updates);
2. Alberta Environment Tier I Soil and Groundwater Remediation Guidelines (AENV, 2016);
3. Ontario Ministry of the Environment (MOE) Soil, Ground Water and Sediment Standards for Use under Part XV.1 of the Environmental Protection Act (OMOE, 2011); and,

4. British Columbia (BC) Ministry of the Environment Contaminated Sites Regulation (BC, 1996, updated 2014) – Generic Numerical Standards for soil, surface water, sediment and vapour.

As per the NLDMAE Request for Proposals (RFP), the CCME CEQGs were given top priority. AENV guidelines use a target cancer risk of 1E-05 (1 in 100,000) for human health which is similar to the Atlantic PIRI and Heath Canada (2004) methods. Ontario MOE and BC use a target cancer risk of 1E-06 (1 in 1,000,000) for human health. This, combined with the fact that the AENV guidelines are based on published screening levels derived for a full range of pathways for both human and ecological receptors, and that they regularly use Canadian Toxicity Reference Values and Canadian derivation methods is the reason AENV guidelines were given second priority for "Other Contaminants". AENV guidelines were used only when criteria were not available from the RBCA or CCME CEQGs. The Ontario guidelines were selected above the BC guidelines because they include a wider range of pathways.

For each jurisdiction, the most conservative values for a commercial non-potable site were used to screen COPCs. The differentiation between human health and ecologically-based guidelines was not made at the Tier I level for "Other Contaminants" (other than petroleum hydrocarbons).

The specific guidelines applied for each media were selected from the list of jurisdictions above (where available) and are listed below.

Soil

The following guidelines (in order of preference) were used for the screening of contaminants (other than petroleum hydrocarbons) in soil.

1. CCME Canadian Soil Quality Guidelines (1999, and subsequent updates) and Interim Remediation Criteria (1991) for non-potable, commercial land use for protection of human/ecological health. The CCME Interim Remediation Criteria are guideline values that have not yet been replaced by more scientifically defensible CSQGs. In the absence of CSQGs for the protection of human and/or ecological health, these values are to be applied for screening purposes.
2. Alberta Environment (AENV, 2016) Surface Soil Remediation Guidelines for Commercial land use (Table A-4, assuming non-potable groundwater).
3. Ontario Ministry of the Environment (MOE, 2011) Soil Standards for Use under Part XV.1 of the Environmental Protection Act for the protection of human health - Table 3: Full Depth, Non-Potable Water Scenario, Commercial/Industrial Land Use.
4. British Columbia Ministry of the Environment (BC, 1996, updated 2014) Contaminated Sites Regulation Schedule 4: Generic Numerical Soil Standards: Commercial.

Surface Water

The following guidelines (in order of preference) were used for the screening of contaminants (other than petroleum hydrocarbons) in surface water.

1. CCME Canadian Water Quality Guidelines for the Protection of Freshwater Aquatic Life (1999, and subsequent updates).
2. Alberta Environment (AENV, 2014) Environmental Quality Guidelines for Alberta Surface Waters.
3. British Columbia Ministry of the Environment (BC, 1996, updated 2014) Contaminated Sites Regulation Schedule 6: Generic Numerical Water Standards - Aquatic Life.

Sediment

The following guidelines (in order of preference) were used for the screening of contaminants (other than petroleum hydrocarbons) in sediment.

1. CCME Canadian Sediment Quality Guidelines for the Protection of Freshwater and Marine Aquatic Life (1999, and subsequent updates), Probable Effects Levels (PELs).
2. Alberta Environment (AENV, 2014) Environmental Quality Guidelines for Alberta Surface Waters, Probable Effects Levels (PELs).
3. Ontario Provincial Sediment Quality Guidelines (2008) Lowest Effects Level (LEL).

2.0 METHODOLOGY

The Phase II ESA involved the excavation of test pits, associated soil sampling and analysis, as well as collection of surface soil, freshwater sediment, and surface water. The field component of the Phase II ESA was completed between October 25, 2017 and October 26, 2017. A detailed description of work completed for each area is provided in Sections 4 to 8. Field work was conducted by Stantec field technicians in accordance with Stantec's Standard Operating Procedures. Helicopter services for site access were provided by Canadian Helicopters Ltd. of St. John's, NL.

For the purposes of the Phase II ESA, the Site was divided into five (5) areas, as follows:

1. Lower Site – General Area
2. Camp / Antenna Areas and AES Compound
3. Unknown Foundation / Building
4. Waste Disposal Sites
5. Upper Site

An unidentified dump site outside the current scope of work was observed to the southwest of the work area defined in Drawing No. 121414915.200-EE-02. The location of the unidentified dump site is shown in Drawing No. 121414915.200-EE-01 and an aerial photograph of the area is included in Appendix C. This area was not sampled, and observations were limited to a helicopter fly-by.

The results of the investigation completed in each area are discussed in Sections 4 to 8. Approximate test pit locations were selected by Stantec in target areas of concern. Actual test pit locations were established in the field by Stantec. Drawings showing the layout of each individual area and actual sampling locations are provided in Appendix A (Drawings No. 121414915.200-EE-01 to 121414915.200-EE-06). Photographs of each location are shown in Appendix C.

2.1 Test Pit Excavation and Sampling Program

Due to the remoteness of the Site and the cost of mobilization of heavy equipment, test pits were excavated using hand tools. Test pits were excavated to approximately 0.5 mbgs and were backfilled with excavated material once completed. Sub-surface conditions encountered in the test pits were recorded by field personnel at the time of excavating. The locations of the test pits were established in the field by field personnel with GPS and by visual identification of areas of potential environmental concern. Coordinates of all sample locations are provided in Appendix D.

Soils were sampled from the test pits by bulk sample methods. Soil samples were recovered from the test pits at 0.25 m intervals over their respective depths, the number of which varied with the test pit depth (one (1) to two (2)). The soil samples were visually examined in the field for any evidence of impacts. The samples were placed in clean glass jars and vials with methanol preservative, where applicable. The samples were placed on ice in sample coolers and returned to the Stantec's office in St. John's, NL for sample selection and submission to the laboratory. Soil samples were submitted to an accredited commercial laboratory for analysis of the required COPCs.

2.2 Surface Soil Sampling

Near surface (i.e., 0 - 0.1 m depth) bulk soil samples were collected in suspected impacted areas at the Site (denoted “SS”). The near surface soil samples were collected manually using clean sampling equipment. The soil samples were visually examined in the field for any evidence of impacts. The samples were placed in clean glass jars. The samples were placed on ice in sample coolers and returned to Stantec’s office in St. John’s, NL for sample selection and submission to the laboratory. Soil samples were submitted to an accredited commercial laboratory for analysis of the required COPCs.

2.3 Sediment and Surface Water Sampling

A freshwater sediment and surface water sampling program was carried out as part of the Phase II site investigation. This included the collection of freshwater sediment and surface water samples from the shoreline of Ashuapun Lake and ponds throughout the Site.

Freshwater sediment samples were collected using bulk sampling methods beneath approximately 0.3 m of water. Samples were collected from the sediment/water interface to 0.15 m below the bottom of the water column. All samples were examined for any field evidence of impacts. The samples were placed in clean glass jars. The samples were placed on ice in sample coolers prior to sample selection and submission to the laboratory. Sediment samples were submitted to an accredited commercial laboratory for analysis of the required COPCs.

Surface water samples were collected into clean, new sample bottles with a sodium bisulphate or nitric acid preservative, where applicable. The samples were placed on ice in sample coolers prior to sample selection and submission to the laboratory. Surface water samples were submitted to an accredited commercial laboratory for required laboratory analysis of the required COPCs.

2.4 Laboratory Analysis

Laboratory analysis was completed by Maxxam Analytics at their laboratories in St. John’s, NL, Bedford, NS, and Mississauga, Ontario (ON). Tables 4.1 to 8.1 herein provide a summary of laboratory work completed at the various areas of the Site as part of the Phase II ESA. Results of laboratory analysis are shown in Tables E.1 to E.22 in Appendix E. Methodologies utilized by Maxxam Analytics in analysis of the samples are noted on laboratory reports in Appendix F. Chain of custody documents for submitted samples are also provided in Appendix F.

Field duplicate sampling was completed for approximately 10% of the total number of samples being analyzed. Replicate (laboratory duplicate) sampling is a standard QA/QC procedure that was also carried out by the analytical laboratories for 10% of the total number of samples analyzed. The laboratory duplicates are denoted by the extension “Lab Dup”. The field duplicates were submitted blindly using the IDs presented in Table 2.1.

Table 2.1 Summary of Field Duplicate Samples Collected

Sample Matrix	Sample ID	Duplicate Sample	Laboratory Analysis Completed
Soil	BB-SS30	BB-SS301	TPH/BTEX, PAHs, Metals, PCBs
	BB-TP7-BS2	BB-TP71-BS2	TPH/BTEX, Metals, PCBs
	BB-TP10-BS2	BB-TP101-BS2	TPH/BTEX, MTBE, VOCs, PAHs
	BB-TP12-BS1	BB-TP121-BS1	TPH/BTEX, Metals, PCBs
	BB-TP15-BS1	BB-TP151-BS1	TPH/BTEX
	BB-TP16-BS1	BB-TP161-BS1	TPH/BTEX, Metals, PCBs
	BB-TP20-BS2	BB-TP201-BS2	TPH/BTEX, Metals, PCBs
	BB-TP22-BS2	BB-TP221-BS2	TPH/BTEX, Metals, PCBs
Freshwater Sediment	BB-SED5	BB-SED51	TPH, PAH, Metals, PCBs

Analytical results for duplicate samples are provided in analytical summary tables in Appendix E. Duplicate samples were collected at the same location as the Sample IDs listed above, therefore duplicate samples are not shown on Drawings No. 121414915.200-EE-02 to 121414915.200-EE-06.

2.4.1 Quality Assurance/Quality Control Sampling Program

Results of the QA/QC for laboratory and field duplicates for PHCs and metals for soil and sediment, and general chemistry for groundwater are presented in Table 2.2 and Table 2.3. Laboratory duplicates are used to assess the precision of the laboratory. The field duplicate samples were used to assess the precision of the sampling and analytical procedures. Typically, the relative percent difference (RPD) is calculated for the concentrations in the original sample and its duplicate. The RPD was calculated using the following formula:

$$RPD = \left| \frac{C_1 - C_2}{(C_1 + C_2)/2} \right| \times 100$$

Where: C1 is the concentration in the original sample;

C2 is the concentration in the sample duplicate.

If the results for either or both the original sample and the duplicate were less than the laboratory reportable detection limit (RDL), the RPD was not calculated. RPDs were only calculated if both analytical results were greater than five times the RDL. For laboratory duplicate samples, CCME (2016) recommends an RPD limit of up to 30% for soil and sediment, and 20% for groundwater. For field duplicate samples, CCME (2016) recommends an RPD limit of up to 60% for soil and sediment, and 40% for groundwater. Higher RPDs may be expected due to the natural heterogeneity of soil type (e.g., grain size) and contaminant distribution. A high RPD can also be expected when analyte concentrations are close to the analytical detection limit.

Table 2.2 Relative Percent Differences in Laboratory Duplicate Samples

Analysis	Matrix (acceptable RPD)	Range of %RPD	Number of analytes within acceptable RPD	Acceptable Duplicate Correlation?
Petroleum Hydrocarbons	Soil (30%)	5 to 23	15 of 15	Yes
Metals	Soil (30%)	0 to 99	24 of 25	Yes
General Chemistry	Groundwater (20%)	0 to 2	3 of 3	Yes

Table 2.3 Relative Percent Differences in Field Duplicate Samples

Analysis	Matrix (acceptable RPD)	Range of %RPD	Number of analytes within acceptable RPD	Acceptable Duplicate Correlation?
Petroleum Hydrocarbons	Soil (60%)	4 to 19	15 of 15	Yes
Metals	Soil (60%)	0 to 106	32 of 24	Yes
Petroleum Hydrocarbons	Sediment (60%)	32 to 150	1 of 5	No
Metals	Sediment (60%)	2 to 136	6 of 7	Yes

In general, the duplicate results agree closely with their corresponding samples and confirm the representativeness of the sampling procedures. The lack of acceptable duplicate correlation in one sediment sample (BB-SED5) is likely the result of contaminant distribution rather than sampling methodology. This is reinforced by the acceptable duplicate correlation of metals in the same sample. All individual parameters in the duplicates were classified the same (either above or below guidelines). The overall data quality is considered acceptable.

3.0 POTENTIAL EXPOSURE PATHWAYS AND CONCEPTUAL SITE MODEL

A complete exposure pathway is one that meets the following four criteria (USEPA, 1989):

- a contaminant source must be present;
- transport mechanisms and media must be available to move the chemicals from the source to the receptors;
- an opportunity must exist for the receptors to contact the affected media; and
- a means must exist by which the chemical is taken up by receptors, such as direct contact, ingestion, or inhalation.

To better understand the results of the assessment, exposure pathways have been assessed for ecological and human health receptors (Tables 3.1 and 3.2, respectively). Conceptual site models identify complete exposure pathways following in Figures 3-1 and 3-2.

Table 3.1 Potential Exposure Scenarios - Ecological Receptors

Exposure Pathway Description	Complete Pathway?	Justification
Ingestion of soil	Yes	Terrestrial receptors (birds and mammals) may ingest soil. Plant and soil invertebrate communities may come in contact with impacted surface soils.
Direct exposure to soil		
Ingestion of soil invertebrates, vegetation, or small mammals/birds living at the site and exposed to contaminated soil	Yes	Terrestrial receptors (birds and mammals) may ingest soil invertebrates, vegetation, and small mammals/birds that have been exposed to impacts in surface soil.
Ingestion of surface water, freshwater, sediments, plants, or invertebrates	Yes	Terrestrial receptors (birds and mammals) may come into contact with and ingest surface water (Ashuapun Lake and ponds at the Site). Aquatic communities are directly exposed to surface water and may ingest sediment while benthic communities are directly exposed to sediments.
Direct exposure to surface water or freshwater sediments		
Direct exposure to groundwater	Yes	Terrestrial plants and soil invertebrate communities may come in direct contact with impacted groundwater.

Table 3.2 Potential Exposure Scenarios - Human Receptors

Exposure Pathway Description	Pathway Complete for Offsite Visitor?	Justification
Ingestion of vegetation/ garden produce grown in impacted soil	No	Edible produce is not grown on the site.
Ingestion of animals who consume vegetation grown in impacted soil	Yes	Animals at the Site may be hunted as food.
Incidental Ingestion of soil/dust	Yes	Impacts are present in surface soil (ground surface to at least 0.5 mbgs).
Dermal contact with soil/dust		
Indirect dermal contact with soil/dust being tracked indoors		
Inhalation of vapours (indoors)	No	Buildings at the site are not occupied.
Inhalation of vapours and particulates (outdoors)	Yes	Impacts are present in surface soil (ground surface to at least 0.5 mbgs).
Dermal contact with/Ingestion of surface water or sediment	Yes	Humans could contact surface water or sediments within Ashuapun Lake or ponds at the Site.
Ingestion and dermal contact with groundwater	No	Groundwater at, and in the vicinity of the Site is not currently being used or expected to be used as a source of potable water.
Ingestion of fish	Yes	Users of the site could fish on Ashuapun Lake.

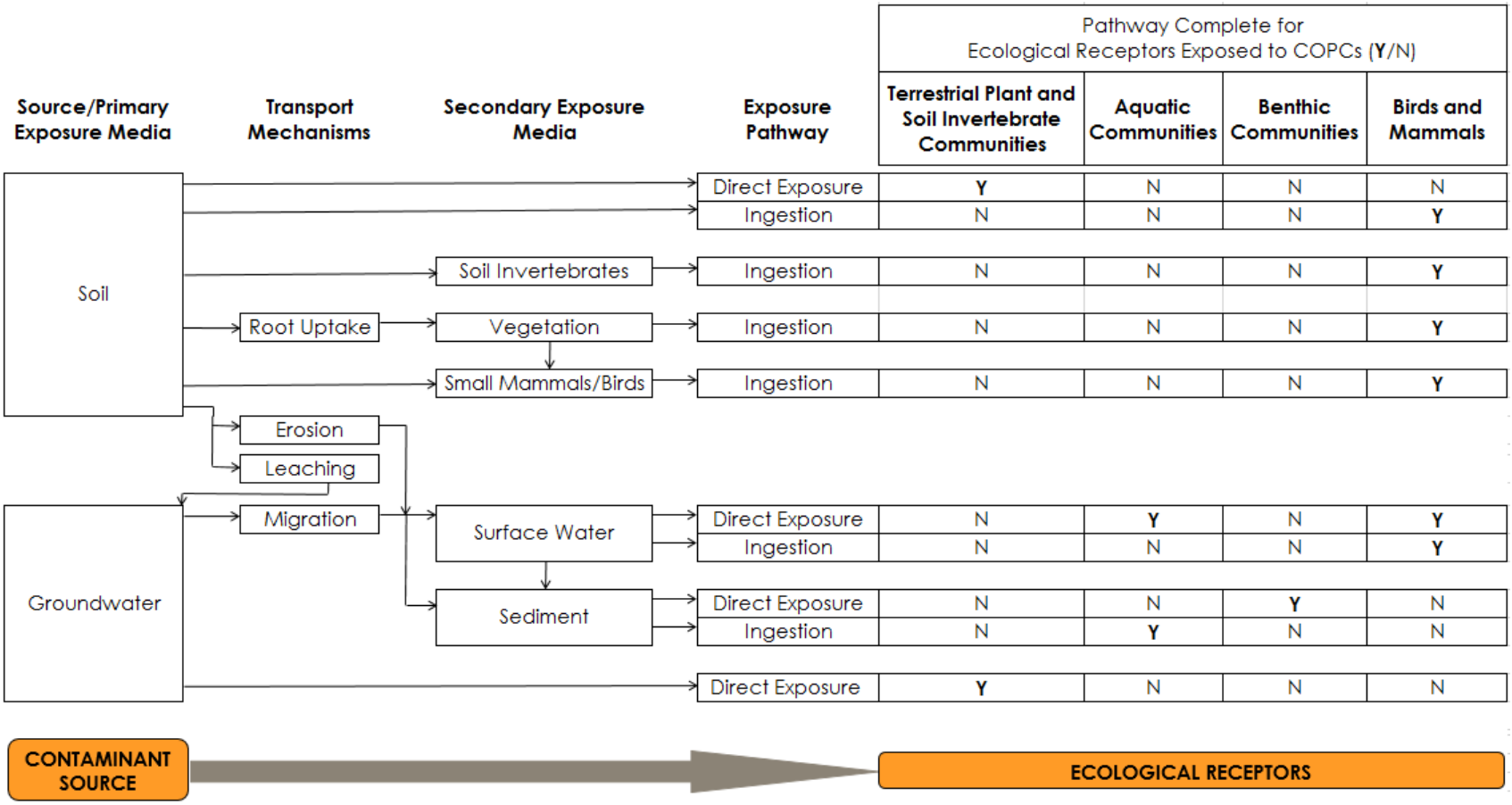

Figure 3-1 Conceptual Site Model for Ecological Receptors

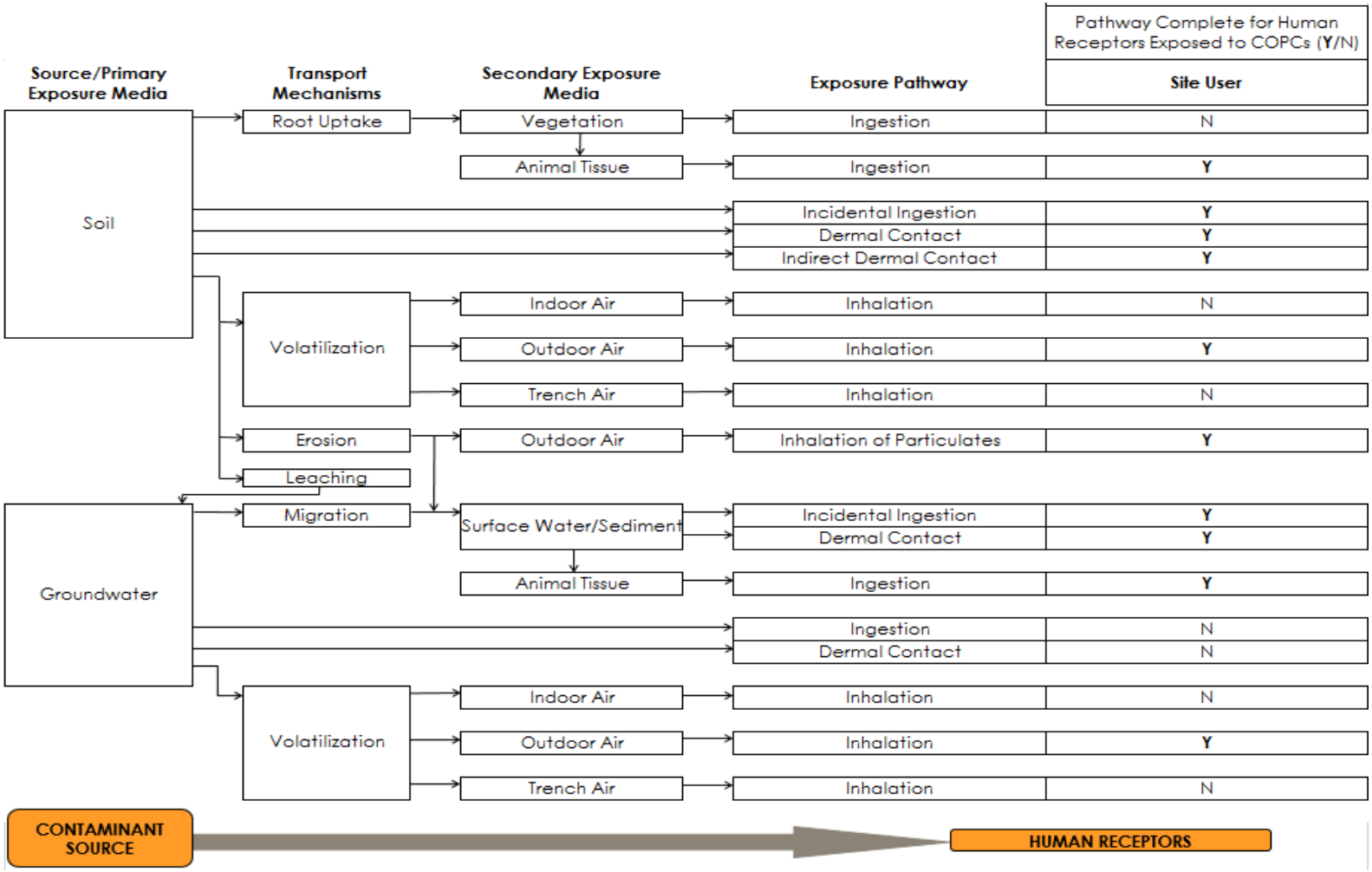

Figure 3-2 Conceptual Site Model for Human Receptors

4.0 LOWER SITE – GENERAL AREA

4.1 Site Description

The Lower Site – General Area consists of site locations at the Lower Site that are not included in Camp / Antenna Areas and AES Compound, Unknown Foundation / Building, or Waste Disposal Sites. The main feature of the Lower Site – General Area is the 1,220-meter gravel airstrip running east to west which has provided access to the Lower Site since it's construction in the 1950s. Site surfaces consist mainly of sand and gravel with lichen, and sparse low-lying shrub cover. Areas of interest at this location include two (2) full drums, one (1) pile of empty drums located near the east end of the airstrip, an abandoned 3,540 L tank along the south-central boundary of the airstrip, and the shoreline of Ashuapun Lake, located to the north, east, and south of the airstrip. Locations of these features are shown in Drawing No. 121414915.200-EE-02 in Appendix A.

4.2 Description of Site Work

Field work at the Lower Site – General Area consisted of the excavation of two (2) test pits with corresponding soil sampling, the collection of 10 surface soil samples, the collection of two (2) sediment samples with corresponding surface water samples, and one (1) vegetation sample. The sample locations and general site features are shown on Drawing No. 121414915.200-EE-02 in Appendix A.

The laboratory analysis schedule completed for the Lower Site – General Area is presented in Table 4.1.

Table 4.1 Summary of Laboratory Work – Lower Site – General Area

Sample Locations	Sample Matrix		
	Soil/Sediment	Water	Vegetation
Soil: BB-SS1 to BB-SS10 BB-TP1 and BB-TP49 *Sediment:* BB-SED1 and BB-SED2 *Water:* BB-SW1 and BB-SW2 *Vegetation:* BB-VEG1	Soil TPH/BTEX (10), MTBE (4), VOCs (4), PAHs (4), Metals (4), PCB (5), TOC (1) Sediment TPH/BTEX (2), PAHs (2), Metals (2), PCB (2)	Surface Water TPH/BTEX (2), General Chemistry (2), VOCs (2), PAH (2), Metals (2), PCBs (2)	Vegetation Metals (1), PCBs (1)

4.3 Results

4.3.1 Laboratory Analytical Results

Results of the laboratory analysis of soil, sediment, surface water, and vegetation samples for the identified COPCs are presented in Appendix E and are summarized below. The corresponding analytical reports from Maxxam Analytics and their sub-contractors are presented in Appendix F.

4.3.1.1 Soil Analytical Results

Petroleum Hydrocarbons in Soil

Petroleum hydrocarbon (TPH/BTEX) analysis was conducted on 10 soil samples collected from the Lower Site – General Area as part of the current investigation (BB-SS1, BB-SS3 to BB-SS6, BB-SS8 to BB-SS10, BB-TP1-BS2, and BB-TP49-BS2). Also, one (1) laboratory duplicate sample (BB-SS9 Lab-Dup) was analyzed. Results of the laboratory analysis of soil samples for petroleum hydrocarbons are presented in Table E.1 in Appendix E.

TPH was detected in one (1) of the 11 soil samples analyzed at a concentration of 23 mg/kg (BB-SS8). The laboratory analytical reports indicated that products impacting the sample resembled possible lube oil fraction. The detected concentration of TPH did not exceed the applicable Tier I RBSLs.

BTEX parameters were not detected in the soil samples analyzed.

The detected concentration of petroleum hydrocarbon parameters in sample BB-SS8 was below the applicable Tier I ESLs for the Protection of Plants and Soil Invertebrates (Table 1a) and the Tier I ESLs for the Protection of Wildlife and Livestock (Table 1b).

MTBE in Soil

MTBE analysis was conducted on four (4) soil samples collected from the Lower Site – General Area as part of the current investigation (BB-SS1, BB-SS3, BB-SS8, and BB-SS10). Results of the laboratory analysis of soil samples for MTBE are presented in Table E.3 in Appendix E.

MTBE was not detected in the soil samples analyzed.

VOCs in Soil

VOC analysis was conducted on four (4) soil samples collected from the Lower Site – General Area as part of the current investigation (BB-SS1, BB-SS3, BB-SS8, and BB-SS10). Results of the laboratory analysis of soil samples for VOCs are presented in Table E.4 in Appendix E.

VOCs were not detected in the soil samples analyzed.

PAHs in Soil

PAH analysis was conducted on four (4) soil samples collected from the Lower Site – General Area as part of the current investigation (BB-SS1, BB-SS3, BB-SS8, and BB-SS10). Also, one (1) laboratory duplicate sample (BB-SS10 Lab-Dup) was analyzed. Results of the laboratory analysis of soil samples for PAHs are presented in Table E.5 in Appendix E.

PAHs were not detected in the soil samples analyzed.

Metals in Soil

Metals analysis was conducted on four (4) soil samples collected from the Lower Site – General Area as part of the current investigation (BB-SS1, BB-SS3, BB-SS8, and BB-SS10). Results of the laboratory analysis of soil samples for metals are presented in Table E.6 in Appendix E.

Concentrations of various metals were detected in all four (4) samples. None of the detected concentrations of metals in soils exceeded the applicable guidelines for a commercial site, where such guidelines exist.

PCBs in Soil

PCB analysis was conducted on five (5) soil samples collected from the Lower Site – General Area as part of the current investigation (BB-SS1 to BB-SS3, BB-SS7, and BB-SS10). Also, one (1) laboratory duplicate sample (BB-SS3 Lab-Dup) was analyzed. Results of the laboratory analysis of soil samples for PCBs are presented in Table E.7 in Appendix E.

PCBs were not detected in the soil samples analyzed.

TOC in Soil

TOC analysis was conducted on one (1) soil sample collected from the Lower Site – General Area as part of the current investigation (BB-SS3). Results of the laboratory analysis of the soil sample for TOC are presented in Table E.9 in Appendix E.

The concentration of TOC detected in sample BB-SS3 was 24 g/kg. There are no applicable guidelines for TOC in soil.

4.3.1.2 Sediment Analytical Results

Petroleum Hydrocarbons in Sediment

Petroleum hydrocarbon (TPH/BTEX) analysis was conducted on two (2) sediment samples collected from the Lower Site – General Area as part of the current investigation (BB-SED1 and BB-SED2). Also, one (1) laboratory duplicate sample (BB-SED1 Lab-Dup) was analyzed. Results of the laboratory analysis of sediment samples for petroleum hydrocarbons are presented in Table E.11 in Appendix E.

TPH and BTEX parameters were not detected in the sediment samples analyzed.

PAHs in Sediment

PAH analysis was conducted on two (2) sediment samples collected from the Lower Site – General Area as part of the current investigation (BB-SED1 and BB-SED2). Also, one (1) laboratory duplicate sample (BB-SED1 Lab-Dup) was analyzed. Results of the laboratory analysis of sediment samples for PAHs are presented in Table E.12 in Appendix E.

PAH parameters were not detected in the sediment samples analyzed.

Metals in Sediment

Metals analysis was conducted on two (2) sediment samples collected from the Lower Site – General Area as part of the current investigation (BB-SED1 and BB-SED2). Results of the laboratory analysis of sediment samples for metals are presented in Table E.13 in Appendix E.

Concentrations of various metals were detected in both samples. None of the detected concentrations of metals in sediment exceeded the applicable guidelines, where such guidelines exist.

PCBs in Sediment

PCB analysis was conducted on two (2) sediment samples collected from the Lower Site – General Area as part of the current investigation (BB-SED1 and BB-SED2). Results of the laboratory analysis of sediment samples for PCBs are presented in Table E.14 in Appendix E.

PCBs were not detected in the sediment samples analyzed.

4.3.1.3 Surface Water Analytical Results

Petroleum Hydrocarbons in Surface Water

Petroleum hydrocarbon (TPH/BTEX) analysis was conducted on two (2) surface water samples collected from Ashuapun Lake at the Lower Site – General Area as part of the current investigation (BB-SW1 and BB-SW2). Also, one (1) laboratory duplicate sample (BB-SW1 Lab-Dup) was analyzed. Results of the laboratory analysis of surface water samples for petroleum hydrocarbons are presented in Table E.15 in Appendix E.

TPH and BTEX parameters were not detected in the surface water samples analyzed.

General Chemistry in Surface Water

General chemistry analysis was conducted on two (2) surface water samples collected from the Lower Site – General Area as part of the current investigation (BB-SW1 and BB-SW2). Results of the laboratory analysis of surface water samples for general chemistry are presented in Table E.16 in Appendix E.

None of the detected concentrations of general chemistry parameters in surface water exceeded the applicable guidelines, where such guidelines exist.

VOCs in Surface Water

VOC analysis was conducted on two (2) surface water samples collected from the Lower Site – General Area as part of the current investigation (BB-SW1 and BB-SW2). Results of the laboratory analysis of surface water samples for VOCs are presented in Table E.17 in Appendix E.

VOC parameters were not detected in the surface water samples analyzed.

PAHs in Surface Water

PAH analysis was conducted on two (2) surface water samples collected from the Lower Site – General Area as part of the current investigation (BB-SW1 and BB-SW2). Results of the laboratory analysis of surface water samples for PAHs are presented in Table E.18 in Appendix E.

PAH parameters were not detected in the surface water samples analyzed.

Metals in Surface Water

Metals analysis was conducted on two (2) surface water samples collected from the Lower Site – General Area as part of the current investigation (BB-SW1 and BB-SW2). Results of the laboratory analysis of surface water samples for metals are presented in Table E.19 in Appendix E.

Concentrations of various metals were detected in both samples. The concentration of aluminum in surface water sample BB-SW2 (110 µg/L) exceeded the CCME WQG for the Protection of Freshwater Aquatic Life of 100 µg/L. Note that the guideline for aluminum in surface water is dependent on the pH of the sample and as such, may change between site locations.

None of the remaining detected concentrations of metals in surface water exceeded the applicable CCME Water Quality Guidelines, where such guidelines exist.

PCBs in Surface Water

PCB analysis was conducted on two (2) surface water samples collected from the Lower Site – General Area as part of the current investigation (BB-SW1 and BB-SW2). Results of the laboratory analysis of surface water samples for PCBs are presented in Table E.20 in Appendix E.

PCBs were not detected in the surface water samples analyzed. There are no applicable guidelines for PCBs in surface water.

4.3.1.4 Vegetation Analytical Results

Metals in Vegetation

Metals analysis was conducted on one (1) vegetation sample collected from the Lower Site – General Area as part of the current investigation (BB-VEG1). Results of the laboratory analysis of vegetation samples for metals are presented in Table E.21 in Appendix E.

Concentrations of various metals were detected in the vegetation sample analyzed. There are no applicable guidelines for metals in vegetation.

PCBs in Vegetation

PCB analysis was conducted on one (1) vegetation sample collected from the Lower Site – General Area as part of the current investigation (BB-VEG1). Results of the laboratory analysis of vegetation samples for PCBs are presented in Table E.22 in Appendix E.

PCBs were not detected in the vegetation sample analyzed. There are no applicable guidelines for PCBs in vegetation.

4.3.2 Summary of Exceedances

The Phase II ESA identified one (1) COPC in environmental media at the Lower Site – General Area with concentrations exceeding the applicable criteria-based guidelines for a commercial site, where such guidelines exist. The exceedance recorded in surface water during the current investigation is summarized in Table 4.2.

Table 4.2 Surface Water Sample Exceedances – Lower Site – General Area

Sample No.	Parameter	Conc. (µg/L)	Referenced Guidelines (µg/L)[1]
BB-SW2	Aluminum	110	100 (CCME WQG)
Referenced Guidelines: [1] CCME WQGs for the Protection of Freshwater Aquatic Life (1999 and updates).			

The location of the metals exceedance at the Lower Site – General Area is shown on Drawing No. 121414915.200-EE-02 in Appendix A. However, further delineation is required to estimate the extent of potential metals impacts in Ashuapun Lake.

5.0 CAMP / ANTENNA AREAS AND AES COMPOUND

5.1 Site Description

The Camp / Antenna Areas and AES Compound is located near the northwest corner of the airstrip at the Lower Site. Site surfaces consist mainly of gravel with lichen, and low-lying shrub cover. Although details of the infrastructure at the Lower Site between 1958 to 1965 are unknown, based on an investigation of the site in 1980 it is assumed this area consisted primarily of camp accommodations, a communication/weather station, a maintenance garage, and a re-fueling area. Areas of interest at this location include the camp fuel shed building, approximately 30 drums (some half-filled) along the south wall of the camp fuel shed building, 12 ASTs (4,500 L each), a camp garage building with a full 900 L AST, the former re-fueling area, a full 200 L drum adjacent to the re-fueling area, four (4) full drums (at least one (1) is full and leaking) south of the former re-fueling area, a dyked 113,516 L tank, one (1) antenna, four (4) former antennae, two (2) former ASTs (4,546 L each), two (2) former camp accommodation buildings, a shed, a former above-ground septic tank, an atmospheric environment services (AES) storage building, and an AES equipment building. Locations of these features are shown in Drawing No. 121414915.200-EE-03 in Appendix A.

5.2 Description of Site Work

Field work at the Camp / Antenna Areas and AES Compound consisted of the excavation of 18 test pits with corresponding soil sampling and the collection of 17 surface soil samples. The sample locations and general site features are shown on Drawing No. 121414915.200-EE-03 in Appendix A.

The laboratory analysis schedule completed for the Camp / Antenna Areas and AES Compound is presented in Table 5.1.

Table 5.1 Summary of Laboratory Work – Camp / Antenna Areas and AES Compound

Sample Locations	Sample Matrix
	Soil
Soil: BB-SS24 to BB-SS40 BB-TP17 to BB-TP28 BB-TP30 to BB-TP35	<u>Soil</u> TPH/BTEX (36), TPH Frac. (1), MTBE (3), VOCs (4), PAHs (13), Metals (24), PCB (27), TOC (1), Asbestos (3)

5.3 Results

5.3.1 Laboratory Analytical Results

Results of the laboratory analysis of soil, sediment, surface water, and vegetation samples for the identified COPCs are presented in Appendix E and are summarized below. The corresponding analytical reports from Maxxam Analytics and their sub-contractors are presented in Appendix F.

5.3.1.1 Soil Analytical Results

Petroleum Hydrocarbons in Soil

Petroleum hydrocarbon (TPH/BTEX) analysis was conducted on 37 soil samples collected from the Camp / Antenna Areas and AES Compound as part of the current investigation (BB-SS24 to BB-SS37, BB-SS40, BB-SS301, BB-TP17-BS2, BB-TP18-BS2, BB-TP19-BS2, BB-TP20-BS2, BB-TP21-BS2, BB-TP22-BS2, BB-TP23-BS2, BB-TP24-BS2, BB-TP25-BS2, BB-TP26-BS2, BB-TP27-BS2, BB-TP28-BS2, BB-TP30-BS2, BB-TP31-BS2, BB-TP32-BS2, BB-TP33-BS2, BB-TP34-BS2, BB-TP35-BS1, BB-TP35-BS2, BB-TP201-BS2, and BB-TP221-BS2). Also, five (5) laboratory duplicate samples (BB-SS40 Lab-Dup, BB-TP221-BS2 Lab-Dup, BB-TP25-BS2 Lab-Dup, BB-TP35-BS1 Lab-Dup, and BB-TP35-BS2 Lab-Dup) were analyzed. Results of the laboratory analysis of soil samples for petroleum hydrocarbons are presented in Table E.1 in Appendix E.

Petroleum hydrocarbon fractionation (TPH Fract./BTEX) was conducted on one (1) soil sample collected from the Camp / Antenna Areas and AES Compound as part of the current investigation (BB-SS38). Also, one (1) laboratory duplicate sample (BB-SS38 Lab-Dup) was analyzed. Results of the laboratory analysis of soil samples for petroleum hydrocarbon fractionation are presented in Table E.2 in Appendix E.

TPH was detected in 26 of the 44 soil samples analyzed at concentrations ranging from 50 mg/kg to 35,000 mg/kg. The laboratory analytical reports indicated that products impacting the samples generally resembled weathered fuel oil and/or lube oil range. The concentrations of TPH in samples BB-SS27 (7,800 mg/kg), BB-SS29 (6,100 mg/kg), BB-SS33 (4,300 mg/kg), BB-TP17-BS2 (7,600 mg/kg), BB-TP20-BS2 (6,000 mg/kg), BB-TP201-BS2 (6,300 mg/kg), BB-TP28-BS2 (6,400 mg/kg), and BB-TP31-BS2 (35,000 mg/kg) exceeded the applicable Tier I RBSL for a commercial site with non-potable groundwater, coarse grained soil, and fuel oil impacts of 4,000 mg/kg. None of the remaining detected concentrations of TPH exceeded the applicable Tier I RBSLs.

BTEX parameters were detected in one (1) soil sample (BB-TP31-BS2). None of the detected concentrations of BTEX parameters exceeded the applicable Tier I RBSLs.

Concentrations of hydrocarbon fraction F2 and/or F3 exceeded the applicable Tier I ESLs for the Protection of Plants and Soil Invertebrates (Table 1a) (260 mg/kg and 1,700 mg/kg respectively) in soil samples BB-SS24 (F2 = 2,100 mg/kg), BB-SS25 (F3 = 4,560 mg/kg), BB-SS27 (F2 = 6,300 mg/kg), BB-SS29 (F2 = 4,300 mg/kg, F3 = 1,820 mg/kg), BB-SS33 (F2 = 4,100 mg/kg), BB-SS40 (F2 = 1,100 mg/kg), BB-TP17-BS2 (F2 = 4,600 mg/kg, F3 = 2,900 mg/kg), BB-TP20-BS2 (F2 = 2,900 mg/kg, F3 = 3,010 mg/kg),

BB-TP201-BS2 (F2 = 3,200 mg/kg, F3 = 3,070 mg/kg), BB-TP22-BS2 (F2 = 1,200 mg/kg), BB-TP221-BS2 (F2 = 1,100 mg/kg), BB-TP23-BS2 (F2 = 1,400 mg/kg), BB-TP24-BS2 (F2 = 3,400 mg/kg), BB-TP25-BS2 (F2 = 2,700 mg/kg), BB-TP25-BS2 Lab-Dup (F2 = 3,200 mg/kg), BB-TP28-BS2 (F2 = 5,600 mg/kg), BB-TP31-BS2 (F2 = 32,000 mg/kg, F3 = 2,900 mg/kg), BB-SS38 (F2 = 814 mg/kg), and BB-SS38 Lab-Dup (F2 = 934 mg/kg). Concentrations of hydrocarbon fraction F2 also exceeded the applicable Tier I ESLs for the Protection of Wildlife and Livestock (Table 1b) (9,800 mg/kg) in soil sample BB-TP31-BS2 (32,000 mg/kg).

MTBE in Soil

MTBE analysis was conducted on three (3) soil samples collected from the Camp / Antenna Areas and AES Compound as part of the current investigation (BB-SS38, BB-TP26-BS1, and BB-TP28-BS1). Also, one (1) laboratory duplicate sample (BB-TP28-BS1 Lab-Dup) was analyzed. Results of the laboratory analysis of soil samples for MTBE are presented in Table E.3 in Appendix E.

MTBE was not detected in the soil samples analyzed.

VOCs in Soil

VOC analysis was conducted on four (4) soil samples collected from the Camp / Antenna Areas and AES Compound as part of the current investigation (BB-SS38, BB-TP26-BS1, BB-TP28-BS1, and BB-TP33-BS2). Also, one (1) laboratory duplicate sample (BB-TP28-BS1 Lab-Dup) was analyzed. Results of the laboratory analysis of soil samples for VOCs are presented in Table E.4 in Appendix E.

VOCs were not detected in the soil samples analyzed.

PAHs in Soil

PAH analysis was conducted on 13 soil samples collected from the Camp / Antenna Areas and AES Compound as part of the current investigation (BB-SS24, BB-SS26 to BB-SS28, BB-SS30, BB-SS301, BB-SS31, BB-SS32, BB-SS35, BB-SS36, BB-SS40, BB-TP17-BS1, and BB-TP35-BS1). Also, one (1) laboratory duplicate sample (BB-SS31 Lab-Dup) was analyzed. Results of the laboratory analysis of soil samples for PAHs are presented in Table E.5 in Appendix E.

PAH parameters were detected in five (5) of the 14 soil samples analyzed. As per the CCME PAH guidance document, potentially carcinogenic PAHs were assessed cumulatively by multiplying concentrations of potentially carcinogenic PAHs by benzo(a)pyrene (B[a]P) Potency Equivalence Factors (PEFs) and summing the products to produce a B[a]P total potency equivalent (TPE). The non-carcinogenic PAHs were assessed individually by comparing concentrations to applicable human health guidelines from other jurisdictions and to the applicable CCME SQGs for the protection of ecological health.

Concentrations of naphthalene in soil samples BB-SS40 (0.027 mg/kg) and BB-TP17-BS1 (0.023 mg/kg) exceeded the applicable CCME SQGs for a commercial site for the protection of environmental health of 0.013 mg/kg. Non-detected concentrations of naphthalene in soil samples BB-SS24 and BB-SS27 had RDLs exceeding the applicable CCME SQG due to matrix/co-extractive interference during laboratory

analysis. For the purposes of delineation, given the proximity of sample BB-SS24 to the naphthalene exceedance observed in BB-TP17, sample BB-SS24 is considered to exceed CCME SQGs for PAHs.

All detected concentrations of individual PAH parameters were below the applicable guidelines for the protection of human health from other jurisdictions, where such guidelines exist. The calculated B[a]P TPEs were below the applicable CCME SQG (all land uses).

Metals in Soil

Metals analysis was conducted on 24 soil samples collected from the Camp / Antenna Areas and AES Compound as part of the current investigation (BB-SS30, BB-SS301, BB-TP17-BS1, BB-TP18-BS1, BB-TP19-BS1, BB-TP20-BS1, BB-TP20-BS2, BB-TP201-BS2, BB-TP21-BS1, BB-TP22-BS1, BB-TP22-BS2, BB-TP221-BS2, BB-TP23-BS1, BB-TP24-BS1, BB-TP25-BS1, BB-TP26-BS1, BB-TP27-BS1, BB-TP28-BS1, BB-TP30-BS1, BB-TP31-BS1, BB-TP32-BS1, BB-TP33-BS1, BB-TP34-BS1, and BB-TP35-BS1). Also, two (2) laboratory duplicate samples (BB-TP19-BS1 Lab-Dup and BB-TP19-BS1 Lab-Dup2) were analyzed. Results of the laboratory analysis of soil samples for metals are presented in Table E.6 in Appendix E.

Concentrations of various metals were detected in all 26 samples. The following exceedances were observed:

- The concentration of arsenic in soil sample BB-TP26-BS1 (45 mg/kg) exceeded the CCME commercial SQG of 26 mg/kg and
- The concentration of zinc in soil sample BB-TP26-BS1 (900 mg/kg) exceeded the CCME commercial SQG of 360 mg/kg.

None of the remaining detected concentrations of metals in soil exceeded the applicable CCME SQGs for a commercial site, where such guidelines exist.

PCBs in Soil

PCB analysis was conducted on 27 soil samples collected from the Camp / Antenna Areas and AES Compound as part of the current investigation (BB-SS30, BB-SS301, BB-TP17-BS1, BB-TP18-BS1, BB-TP18-BS2, BB-TP19-BS1, BB-TP20-BS1, BB-TP20-BS2, BB-TP201-BS2, BB-TP21-BS1, BB-TP22-BS1, BB-TP22-BS2, BB-TP221-BS2, BB-TP23-BS1, BB-TP24-BS1, BB-TP25-BS1, BB-TP25-BS2, BB-TP26-BS1, BB-TP27-BS2, BB-TP28-BS1, BB-TP30-BS1, BB-TP31-BS1, BB-TP32-BS1, BB-TP32-BS1, BB-TP32-BS2, BB-TP33-BS1, and BB-TP34-BS1). Also, one (1) laboratory duplicate sample (BB-TP28-BS1 Lab-Dup) was analyzed. Results of the laboratory analysis of soil samples for PCBs are presented in Table E.7 in Appendix E.

PCBs were detected in 12 of the 28 soil samples analyzed at concentrations ranging from 0.063 µg/g to 0.46 µg/g. None of the detected concentrations of PCBs in soil exceeded the applicable CCME SQGs for a commercial site of 33 µg/g.

TOC in Soil

TOC analysis was conducted on one (1) soil sample collected from the Camp / Antenna Areas and AES Compound as part of the current investigation (BB-TP35-BS1). Results of the laboratory analysis of the soil sample for TOC are presented in Table E.9 in Appendix E.

The concentration of TOC detected in sample BB-TP35-BS1 was 20 g/kg. There are no applicable guidelines for TOC in soil.

Asbestos in Soil

Asbestos analysis was conducted on three (3) soil samples collected from the Camp / Antenna Areas and AES Compound as part of the current investigation (BB-SS25, BB-SS34, and BB-TP25-BS1). Results of the laboratory analysis of the soil samples for asbestos are presented in Table E.10 in Appendix E.

Asbestos was not detected in the soil samples analyzed. There are no applicable guidelines for asbestos in soil.

5.3.2 Summary of Exceedances

The Phase II ESA identified several COPCs in environmental media at the Camp / Antenna Areas and AES Compound with concentrations exceeding the applicable criteria-based guidelines for a commercial site, where such guidelines exist. The exceedances recorded in soil during the current investigation are summarized in Table 5.2. Where an individual parameter exceeds more than one guideline, only the most conservative guideline is shown as the referenced guideline.

Table 5.2 Soil Sample Exceedances – Camp / Antenna Areas and AES Compound

Sample No.	Sample Depth (mbgs)	Parameter	Conc. (mg/kg)	Referenced Guidelines (mg/kg)[1,2,3]
BB-SS24	0 – 0.1	F2 Naphthalene	2,100 nd (0.040)	260 (Tier I ESL, Table 1a) 0.013 (CCME SQG)
BB-SS25	0 – 0.1	F3	4,560	1,700 (Tier I ESL, Table 1a)
BB-SS27	0 – 0.1	F2 TPH	6,300 7,800	260 (Tier I ESL, Table 1a) 4,000 (Tier I RBSL, Table 4a, fuel oil impacts)
BB-SS29	0 – 0.1	F2 F3 TPH	4,300 1,820 6,100	260 (Tier I ESL, Table 1a) 1,700 (Tier I ESL, Table 1a) 4,000 (Tier I RBSL, Table 4a, fuel oil impacts)
BB-SS33	0 – 0.1	F2 TPH	4,100 4,300	260 (Tier I ESL, Table 1a) 4,000 (Tier I RBSL, Table 4a, fuel oil impacts)
BB-SS38	0 – 0.1	F2	814	260 (Tier I ESL, Table 1a)
BB-SS38 Lab-Dup	-	F2	934	260 (Tier I ESL, Table 1a)
BB-SS40	0 – 0.1	F2 Naphthalene	1,100 0.027	260 (Tier I ESL, Table 1a) 0.013 (CCME SQG)

Table 5.2 Soil Sample Exceedances – Camp / Antenna Areas and AES Compound

Sample No.	Sample Depth (mbgs)	Parameter	Conc. (mg/kg)	Referenced Guidelines (mg/kg)[1,2,3]
BB-TP17-BS1	0 – 0.25	Naphthalene	0.023	0.013 (CCME SQG)
BB-TP17-BS2	0.25 – 0.5	F2 F3 TPH	4,600 2,900 7,600	260 (Tier I ESL, Table 1a) 1,700 (Tier I ESL, Table 1a) 4,000 (Tier I RBSL, Table 4a, fuel oil impacts)
BB-TP20-BS2	0.25 – 0.5	F2 F3 TPH	2,900 3,010 6,000	260 (Tier I ESL, Table 1a) 1,700 (Tier I ESL, Table 1a) 4,000 (Tier I RBSL, Table 4a, fuel oil impacts)
BB-TP201-BS2	0.25 – 0.5	F2 F3 TPH	3,200 3,070 6,300	260 (Tier I ESL, Table 1a) 1,700 (Tier I ESL, Table 1a) 4,000 (Tier I RBSL, Table 4a, fuel oil impacts)
BB-TP22-BS2	0.25 – 0.5	F2	1,200	260 (Tier I ESL, Table 1a)
BB-TP221-BS2	0.25 – 0.5	F2	1,100	260 (Tier I ESL, Table 1a)
BB-TP23-BS2	0.25 – 0.5	F2	1,400	260 (Tier I ESL, Table 1a)
BB-TP24-BS2	0.25 – 0.5	F2	3,400	260 (Tier I ESL, Table 1a)
BB-TP25-BS2	0.25 – 0.5	F2	2,700	260 (Tier I ESL, Table 1a)
BB-TP25-BS2 Lab-Dup	-	F2	3,200	260 (Tier I ESL, Table 1a)
BB-TP26-BS1	0 – 0.25	Arsenic Zinc	45 900	26 (CCME SQG) 360 (CCME SQG)
BB-TP28-BS2	0.25 – 0.5	F2 TPH	5,600 6,400	260 (Tier I ESL, Table 1a) 4,000 (Tier I RBSL, Table 4a, fuel oil impacts)
BB-TP31-BS2	0.25 – 0.5	F2 F3 TPH	32,000 2,900 35,000	260 (Tier I ESL, Table 1a) 1,700 (Tier I ESL, Table 1a) 4,000 (Tier I RBSL, Table 4a, fuel oil impacts)

Referenced Guidelines:

[1] Atlantic Partnership in RBCA Tier I ESLs for the Protection of Plants and Soil Invertebrates, Table 1a (2012 and updates).

[2] CCME SQGs for the Protection of Environmental and Human Health for Commercial land use (1999 and updates).

[3] Atlantic Partnership in RBCA Tier I RBSLs for a commercial site with non-potable groundwater, coarse grained soil, and gasoline/fuel oil/lube oil impacts, Table 4a (2012 and updates).

The approximate extents of PHC, PAH, and metals impacts in soil at the Camp / Antenna Areas and AES Compound are shown on Drawing No. 121414915.200-EE-03 in Appendix A.

6.0 UNKNOWN FOUNDATION / BUILDING

6.1 Site Description

The Unknown Foundation / Building is located from the eastern edge of the airstrip to the shores of Ashuapun Lake approximately 225 m east of the airstrip. The use of this area as it relates to former military operations is not known. Site surfaces consist of lichen and low-lying shrub covering sandy soil. This location includes part of the airstrip, a foundation from an unknown building along the shore of Ashuapun Lake, and a ruined building adjacent to the foundation. Locations of these features are shown in Drawing No. 121414915.200-EE-04 in Appendix A. This area also includes some gravel trails and Innu buildings along the southern shoreline; these areas were not assessed as part of the current investigation.

6.2 Description of Site Work

Field work at the Unknown Foundation / Building consisted of the excavation of three (3) test pits with corresponding soil sampling, the collection of two (2) surface soil samples and the collection of one (1) sediment sample with corresponding surface water sample. The sample locations and general site features are shown on Drawing No. 121414915.200-EE-04 in Appendix A.

The laboratory analysis schedule completed for Unknown Foundation / Building is presented in Table 6.1.

Table 6.1 Summary of Laboratory Work – Lower Site – Unknown Foundation / Building

Sample Locations	Sample Matrix	
	Soil/Sediment	**Water**
Soil: BB-SS41 and BB-SS42 BB-TP36 to BB-TP38 *Sediment:* BB-SED9 *Water:* BB-SW9	Soil TPH/BTEX (4), MTBE (1), VOCs (1), PAHs (1), Metals (3), PCB (4) Sediment TPH/BTEX (1), PAHs (1), Metals (1), PCB (1)	Surface Water TPH/BTEX (1), General Chemistry (1), VOCs (1), PAH (1), Metals (1), PCBs (1)

6.3 Results

6.3.1 Laboratory Analytical Results

Results of the laboratory analysis of soil, sediment, and surface water samples for the identified COPCs are presented in Appendix E and are summarized below. The corresponding analytical reports from Maxxam Analytics in Appendix F.

6.3.1.1 Soil Analytical Results

Petroleum Hydrocarbons in Soil

Petroleum hydrocarbon (TPH/BTEX) analysis was conducted on four (4) soil samples collected from the Unknown Foundation / Building as part of the current investigation (BB-TP36-BS1, BB-TP36-BS2, BB-TP37-BS2, and BB-TP38-BS2). Results of the laboratory analysis of soil samples for petroleum hydrocarbons are presented in Table E.1 in Appendix E.

TPH and BTEX parameters were not detected in the soil samples analyzed.

MTBE in Soil

MTBE analysis was conducted on one (1) soil sample collected from the Unknown Foundation / Building as part of the current investigation (BB-TP36-BS1). Results of the laboratory analysis of soil samples for MTBE are presented in Table E.3 in Appendix E.

MTBE was not detected in the soil sample analyzed.

VOCs in Soil

VOC analysis was conducted on one (1) soil sample collected from the Unknown Foundation / Building as part of the current investigation (BB-TP36-BS1). Results of the laboratory analysis of soil samples for VOCs are presented in Table E.4 in Appendix E.

VOCs were not detected in the soil sample analyzed.

PAHs in Soil

PAH analysis was conducted on one (1) soil sample collected from the Unknown Foundation / Building as part of the current investigation (BB-TP36-BS1). Also, one (1) laboratory duplicate sample (BB-TP36-BS1 Lab-Dup) was analyzed. Results of the laboratory analysis of soil samples for PAHs are presented in Table E.5 in Appendix E.

PAHs were not detected in the soil samples analyzed.

Metals in Soil

Metals analysis was conducted on three (3) soil samples collected from the Unknown Foundation / Building as part of the current investigation (BB-TP36-BS1, BB-TP37-BS1, and BB-TP38-BS1). Results of the laboratory analysis of soil samples for metals are presented in Table E.6 in Appendix E.

Concentrations of various metals were detected in all three (3) samples. None of the detected concentrations of metals in soils exceeded the applicable guidelines for a commercial site, where such guidelines exist.

PCBs in Soil

PCB analysis was conducted on four (4) soil samples collected from the Unknown Foundation / Building as part of the current investigation (BB-SS41, BB-SS42, BB-TP35-BS1, and BB-TP36-BS1). Also, one (1) laboratory duplicate sample (BB-TP36-BS1 Lab-Dup) was analyzed. Results of the laboratory analysis of soil samples for PCBs are presented in Table E.7 in Appendix E.

PCBs were not detected in the soil samples analyzed.

6.3.1.2 Sediment Analytical Results

Petroleum Hydrocarbons in Sediment

Petroleum hydrocarbon (TPH/BTEX) analysis was conducted on one (1) sediment sample collected from the Unknown Foundation / Building as part of the current investigation (BB-SED9). Also, one (1) laboratory duplicate sample (BB-SED9 Lab-Dup) was analyzed. Results of the laboratory analysis of sediment samples for petroleum hydrocarbons are presented in Table E.11 in Appendix E.

TPH and BTEX parameters were not detected in the sediment samples analyzed.

PAHs in Sediment

PAH analysis was conducted on one (1) sediment sample collected from the Unknown Foundation / Building as part of the current investigation (BB-SED9). Results of the laboratory analysis of sediment samples for PAHs are presented in Table E.12 in Appendix E.

PAH parameters were not detected in the sediment sample analyzed.

Metals in Sediment

Metals analysis was conducted on one (1) sediment sample collected from the Unknown Foundation / Building as part of the current investigation (BB-SED9). Results of the laboratory analysis of sediment samples for metals are presented in Table E.13 in Appendix E.

Concentrations of various metals were detected the sample. None of the detected concentrations of metals in sediment exceeded the applicable guidelines, where such guidelines exist.

PCBs in Sediment

PCB analysis was conducted on one (1) sediment sample collected from the Unknown Foundation / Building as part of the current investigation (BB-SED9). Results of the laboratory analysis of sediment samples for PCBs are presented in Table E.14 in Appendix E.

PCBs were not detected in the sediment sample analyzed.

6.3.1.3 Surface Water Analytical Results

Petroleum Hydrocarbons in Surface Water

Petroleum hydrocarbon (TPH/BTEX) analysis was conducted on one (1) surface water sample collected from Ashuapun Lake at the Unknown Foundation / Building as part of the current investigation (BB-SW9). Results of the laboratory analysis of surface water samples for petroleum hydrocarbons are presented in Table E.15 in Appendix E.

TPH and BTEX parameters were not detected in the surface water sample analyzed.

General Chemistry in Surface Water

General chemistry analysis was conducted on one (1) surface water sample collected from the Unknown Foundation / Building as part of the current investigation (BB-SW9). Results of the laboratory analysis of surface water samples for general chemistry are presented in Table E.16 in Appendix E.

None of the detected concentrations of general chemistry parameters in surface water exceeded the applicable guidelines, where such guidelines exist.

VOCs in Surface Water

VOC analysis was conducted on one (1) surface water sample collected from the Unknown Foundation / Building as part of the current investigation (BB-SW9). Results of the laboratory analysis of surface water samples for VOCs are presented in Table E.17 in Appendix E.

VOC parameters were not detected in the surface water sample analyzed.

PAHs in Surface Water

PAH analysis was conducted on one (1) surface water sample collected from the Unknown Foundation / Building as part of the current investigation (BB-SW9). Results of the laboratory analysis of surface water samples for PAHs are presented in Table E.18 in Appendix E.

PAH parameters were not detected in the surface water sample analyzed.

Metals in Surface Water

Metals analysis was conducted on one (1) surface water sample collected from the Unknown Foundation / Building as part of the current investigation (BB-SW9). Results of the laboratory analysis of surface water samples for metals are presented in Table E.19 in Appendix E.

Concentrations of various metals were detected in the sample. The concentration of aluminum in surface water sample BB-SW9 (160 µg/L) exceeded the CCME Water Quality Guideline for the Protection of Freshwater Aquatic Life of 100 µg/L. Note that the guideline for aluminum in surface water is dependent on the pH of the sample and as such, may change between site locations.

None of the remaining detected concentrations of metals in surface water exceeded the applicable CCME Water Quality Guidelines, where such guidelines exist.

PCBs in Surface Water

PCB analysis was conducted on one (1) surface water sample collected from the Unknown Foundation / Building as part of the current investigation (BB-SW9). Results of the laboratory analysis of surface water samples for PCBs are presented in Table E.20 in Appendix E.

PCBs were not detected in the surface water sample analyzed. There are no applicable guidelines for PCBs in surface water.

6.3.2 Summary of Exceedances

The Phase II ESA identified one (1) COPC in environmental media at the Unknown Foundation / Building with concentrations exceeding the applicable criteria-based guidelines for a commercial site, where such guidelines exist. The exceedance recorded in surface water during the current investigation is summarized in Table 6.2.

Table 6.2 Surface Water Sample Exceedances – Unknown Foundation / Building

Sample No.	Parameter	Conc. (µg/L)	Referenced Guidelines (µg/L)[1]
BB-SW9	Aluminum	160	100 (CCME WQG)
Referenced Guidelines: [1] CCME WQGs for the Protection of Freshwater Aquatic Life (1999 and updates).			

The location of metals exceedance at the Unknown Foundation / Building is shown on Drawing No. 121414915.200-EE-04 in Appendix A. However, further delineation is required to estimate the extent of potential metals impacts in Ashuapun Lake.

7.0 WASTE DISPOSAL SITES

7.1 Site Description

The Waste Disposal Sites are located to the southwest of the airstrip. Site surfaces consist of gravel, lichen, and small shrubs. During site operations, empty drums and solid waste were disposed in unlined landfills (Site#1 and Site#2 respectively). Stressed vegetation was noted in the immediate area of Site#1 and Site#2. General debris and refuse were also reportedly disposed in open trenches (Site#3) adjacent to an unnamed pond. This location also contains other buried debris, a former Search and Rescue (SAR) drum storage area, and three unnamed ponds. Locations of these features are shown in Drawing No. 121414915.200-EE-05 in Appendix A. A previous investigation by JWEL (2002) at the former SAR fuel cache (labelled as "Former SAR Drum Storage Area" on Drawing No. 121414915.200-EE-05 in Appendix A) noted upward of 1,000 drums at Site#1; observations made during the current assessment are consistent with previously reported drum quantities.

7.2 Description of Site Work

Field work at the Waste Disposal Sites consisted of the excavation of 15 test pits with corresponding soil sampling, the collection of 11 surface soil samples, the collection of three (3) sediment samples with corresponding surface water samples, and two (2) vegetation sample. The sample locations and general site features are shown on Drawing No. 121414915.200-EE-05 in Appendix A.

The laboratory analysis schedule completed for the Waste Disposal Sites is presented in Table 7.1.

Table 7.1 Summary of Laboratory Work – Waste Disposal Sites

Sample Locations	Sample Matrix		
	Soil/Sediment	Water	Vegetation
Soil: BB-SS13 to BB-SS23 BB-TP3 to BB-TP16 BB-TP50 *Sediment:* BB-SED10 to BB-SED12 *Water:* BB-SW10 to BB-SW12 *Vegetation:* BB-VEG4 and BB-VEG5	Soil TPH/BTEX (33), TPH Frac. (1), MTBE (7), VOCs (7), PAHs (13), Metals (27), PCB (19), Pesticides (2), TOC (1), Asbestos (3) Sediment TPH/BTEX (3), PAHs (3), Metals (3), PCB (3)	Surface Water TPH/BTEX (3), General Chemistry (3), VOCs (3), PAH (3), Metals (3), PCBs (3)	Vegetation Metals (2), PCBs (2)

7.3 Results

7.3.1 Laboratory Analytical Results

Results of the laboratory analysis of soil, sediment, surface water, and vegetation samples for the identified COPCs are presented in Appendix E and are summarized below. The corresponding analytical reports from Maxxam Analytics and their sub-contractors are presented in Appendix F.

7.3.1.1 Soil Analytical Results

Petroleum Hydrocarbons in Soil

Petroleum hydrocarbon (TPH/BTEX) analysis was conducted on 33 soil samples collected from the Waste Disposal Sites as part of the current investigation (BB-SS13 to BB-SS23, BB-TP3-BS2, BB-TP4-BS2, BB-TP5-BS2, BB-TP6-BS2, BB-TP7-BS1, BB-TP71-BS1, BB-TP7-BS2, BB-TP8-BS2, BB-TP9-BS2, BB-TP10-BS2, BB-TP101-BS2, BB-TP11-BS2, BB-TP12-BS1, BB-TP121-BS1, BB-TP12-BS2, BB-TP13-BS2, BB-TP14-BS2, BB-TP15-BS2, BB-TP151-BS2, BB-TP16-BS2, BB-TP161-BS2, and BB-TP50-BS2). Also, three (3) laboratory duplicate sample (BB-SS17 Lab-Dup, BB-SS19 Lab-Dup, and BB-TP14-BS2 Lab-Dup) were analyzed. Results of the laboratory analysis of soil samples for petroleum hydrocarbons are presented in Table E.1 in Appendix E.

Petroleum hydrocarbon fractionation (TPH Fract./BTEX) was conducted on one (1) soil sample collected from the Waste Disposal Sites as part of the current investigation (BB-TP8-BS1). Results of the laboratory analysis of soil samples for petroleum hydrocarbon fractionation are presented in Table E.2 in Appendix E.

TPH was detected in 16 of the 37 soil samples analyzed at concentrations ranging from 21 mg/kg to 2,600 mg/kg. The laboratory analytical reports indicated that products impacting the samples generally resembled weathered fuel oil and/or lube oil. The detected concentrations of TPH did not exceed the applicable Tier I RBSLs.

BTEX parameters were not detected in the soil samples analyzed.

Concentrations of hydrocarbon fraction F2 exceeded the applicable Tier I ESLs for the Protection of Plants and Soil Invertebrates (Table 1a) (260 mg/kg) in soil samples BB-TP16-BS2 (1,800 mg/kg) and BB-TP161-BS2 (2,000 mg/kg).

MTBE in Soil

MTBE analysis was conducted on seven (7) soil samples collected from the Waste Disposal Sites as part of the current investigation (BB-SS17, BB-SS23, BB-TP3-BS1, BB-TP10-BS2, BB-TP101-BS2, BB-TP13-BS1, and BB-TP14-BS1). Results of the laboratory analysis of soil samples for MTBE are presented in Table E.3 in Appendix E.

MTBE was not detected in the soil samples analyzed.

VOCs in Soil

VOC analysis was conducted on seven (7) soil samples collected from the Waste Disposal Sites as part of the current investigation (BB-SS17, BB-SS23, BB-TP3-BS1, BB-TP10-BS2, BB-TP101-BS2, BB-TP13-BS1, and BB-TP14-BS1). Results of the laboratory analysis of soil samples for VOCs are presented in Table E.4 in Appendix E.

VOCs were not detected in the soil samples analyzed.

PAHs in Soil

PAH analysis was conducted on 13 soil samples collected from the Waste Disposal Sites as part of the current investigation (BB-SS13, BB-SS15, BB-SS17, BB-SS23, BB-TP10-BS2, BB-TP101-BS2, BB-TP12-BS1, BB-TP13-BS2, BB-TP14-BS1, BB-TP15-BS1, BB-TP15-BS2, BB-TP151-BS2, and BB-TP16-BS1). Results of the laboratory analysis of soil samples for PAHs are presented in Table E.5 in Appendix E.

PAH parameters were detected in two (2) of the 13 soil samples analyzed. As per the CCME PAH guidance document, potentially carcinogenic PAHs were assessed cumulatively by multiplying concentrations of potentially carcinogenic PAHs by benzo(a)pyrene (B[a]P) Potency Equivalence Factors (PEFs) and summing the products to produce a B[a]P total potency equivalent (TPE). The non-carcinogenic PAHs were assessed individually by comparing concentrations to applicable human health guidelines from other jurisdictions and to the applicable CCME SQGs for the protection of ecological health.

Concentrations of naphthalene and phenanthrene in soil sample BB-TP16-BS1 (0.11 mg/kg and 0.55 mg/kg respectively) exceeded the applicable CCME SQGs for a commercial site for the protection of environmental health of 0.013 mg/kg and 0.046 mg/kg respectively. Non-detected concentrations of fluorene in soil sample BB-TP16-BS1 had RDLs exceeding the applicable CCME SQG due to matrix/co-extractive interference during laboratory analysis.

All detected concentrations of individual PAH parameters were below the applicable guidelines for the protection of human health from other jurisdictions, where such guidelines exist. The calculated B[a]P TPEs were below the applicable CCME SQG (all land uses).

Metals in Soil

Metals analysis was conducted on 27 soil samples collected from the Waste Disposal Sites as part of the current investigation (BB-SS13 to BB-SS23, BB-TP3-BS1, BB-TP4-BS1, BB-TP5-BS1, BB-TP6-BS1, BB-TP7-BS1, BB-TP71-BS1, BB-TP8-BS1, BB-TP12-BS1, BB-TP121-BS1, BB-TP13-BS1, BB-TP14-BS1, BB-TP15-BS1, BB-TP16-BS1, BB-TP16-BS2, BB-TP161-BS2, and BB-TP50-BS1). Results of the laboratory analysis of soil samples for metals are presented in Table E.6 in Appendix E. Also, two (2) laboratory duplicate samples (BB-SS17 Lab-Dup and BB-TP4-BS1 Lab-Dup) were analyzed.

Concentrations of various metals were detected in all 29 samples. None of the detected concentrations of metals in soils exceeded the applicable guidelines for a commercial site, where such guidelines exist.

PCBs in Soil

PCB analysis was conducted on 19 soil samples collected from the Waste Disposal Sites as part of the current investigation (BB-SS13 to BB-SS16, BB-SS18 to BB-SS20, BB-SS23, BB-TP5-BS1, BB-TP7-BS1, BB-TP71-BS1, BB-TP8-BS1, BB-TP9-BS1, BB-TP12-BS1, BB-TP121-BS1, BB-TP13-BS2, TP15-BS1, BB-TP16-BS2, and BB-TP161-BS2). Also, one (1) laboratory duplicate sample (BB-TP9-BS1 Lab-Dup) was analyzed. Results of the laboratory analysis of soil samples for PCBs are presented in Table E.7 in Appendix E.

PCBs were detected in two (2) soil samples analyzed at concentrations ranging from 0.21 µg/g to 0.68 µg/g. None of the detected concentrations of PCBs in soil exceeded the applicable CCME SQGs for a commercial site of 33 µg/g.

Pesticides in Soil

Pesticide analysis was conducted on two (2) soil samples collected from the Waste Disposal Sites as part of the current investigation (BB-SS15 and BB-TP7-BS1). Results of the laboratory analysis of soil samples for pesticides are presented in Table E.8 in Appendix E.

Pesticides were not detected in the soil samples analyzed. Non-detected concentrations of endosulfan I and II in soil samples BB-SS15 and BB-TP7-BS1 had standard RDLs exceeding the applicable AENV Tier I guideline. For the purposes of delineation, given the lack of detection of other pesticide and herbicide parameters in both samples, these samples are not considered to exceed the applicable AENV Tier I guideline.

TOC in Soil

TOC analysis was conducted on one (1) soil sample collected from the Waste Disposal Sites as part of the current investigation (BB-TP4-BS1). Results of the laboratory analysis of the soil sample for TOC are presented in Table E.9 in Appendix E.

The concentration of TOC detected in sample BB-TP4-BS1 was 14 g/kg. There are no applicable guidelines for TOC in soil.

Asbestos in Soil

Asbestos analysis was conducted on three (3) soil samples collected from the Waste Disposal Sites as part of the current investigation (BB-SS14, BB-SS18, and BB-SS21). Results of the laboratory analysis of the soil samples for asbestos are presented in Table E.10 in Appendix E.

Asbestos was not detected in the soil samples analyzed. There are no applicable guidelines for asbestos in soil.

7.3.1.2 Sediment Analytical Results

Petroleum Hydrocarbons in Sediment

Petroleum hydrocarbon (TPH/BTEX) analysis was conducted on three (3) sediment samples collected from the Waste Disposal Sites as part of the current investigation (BB-SED10 to BB-SED12). Results of the laboratory analysis of sediment samples for petroleum hydrocarbons are presented in Table E.11 in Appendix E.

TPH was detected in one (1) of the three (3) soil samples analyzed at a concentration of 83 mg/kg. The laboratory analytical reports indicated that product impacting the sample resembled the lube oil range. The concentrations of TPH in sample BB-SED12 (83 mg/kg) exceeded the applicable Tier I ESL for the Protection of Freshwater Aquatic Life – typical sediment type, and lube oil impacts of 43 mg/kg. TPH was not detected in the other sediment samples analyzed.

BTEX parameters were not detected in the sediment samples analyzed.

PAHs in Sediment

PAH analysis was conducted on three (3) sediment samples collected from the Waste Disposal Sites as part of the current investigation (BB-SED10 to BB-SED12). Results of the laboratory analysis of sediment samples for PAHs are presented in Table E.12 in Appendix E.

PAH parameters were not detected in the sediment samples analyzed.

Metals in Sediment

Metals analysis was conducted on three (3) sediment samples collected from the Waste Disposal Sites as part of the current investigation (BB-SED10 to BB-SED12). Results of the laboratory analysis of sediment samples for metals are presented in Table E.13 in Appendix E.

Concentrations of various metals were detected in both samples. None of the detected concentrations of metals in sediment exceeded the applicable guidelines, where such guidelines exist.

PCBs in Sediment

PCB analysis was conducted on three (3) sediment samples collected from the Waste Disposal Sites as part of the current investigation (BB-SED10 to BB-SED12). Results of the laboratory analysis of sediment samples for PCBs are presented in Table E.14 in Appendix E.

PCBs were not detected in the sediment samples analyzed.

7.3.1.3 Surface Water Analytical Results

Petroleum Hydrocarbons in Surface Water

Petroleum hydrocarbon (TPH/BTEX) analysis was conducted on three (3) surface water samples collected from ponds at the Waste Disposal Sites as part of the current investigation (BB-SW10 to BB-SW12). Results of the laboratory analysis of surface water samples for petroleum hydrocarbons are presented in Table E.15 in Appendix E.

TPH was detected in one (1) of the three (3) surface water samples analyzed at a concentration of 0.98 mg/L. The laboratory analytical reports indicated that product impacting the sample did not resemble the fuel or lube oil range. The concentrations of TPH in sample BB-SW12 (0.98 mg/L) exceeded the applicable Tier I ESL for the Protection of Freshwater Aquatic Life Surface Water guideline for fuel oil and lube oil impacts of 0.1 mg/L. TPH was not detected in the other surface water samples analyzed.

BTEX parameters were detected in one (1) surface water sample (BB-SW12). None of the detected concentrations of BTEX parameters exceeded the applicable Tier I ESLs.

General Chemistry in Surface Water

General chemistry analysis was conducted on three (3) surface water samples collected from the Waste Disposal Sites as part of the current investigation (BB-SW10 to BB-SW12). Also, one (1) laboratory duplicate sample (BB-SW11 Lap-Dup) was analyzed. Results of the laboratory analysis of surface water samples for general chemistry are presented in Table E.16 in Appendix E.

pH measured in the four (4) samples ranged from 5.93 to 6.18, all of which fall outside the applicable guideline of 6.5 to 9.0.

None of the other detected concentrations of general chemistry parameters in surface water exceeded the applicable guidelines, where such guidelines exist.

VOCs in Surface Water

VOC analysis was conducted on three (3) surface water samples collected from the Waste Disposal Sites as part of the current investigation (BB-SW10 to BB-SW12). Results of the laboratory analysis of surface water samples for VOCs are presented in Table E.17 in Appendix E.

VOC parameters were not detected in the surface water samples analyzed.

PAHs in Surface Water

PAH analysis was conducted on three (3) surface water samples collected from the Waste Disposal Sites as part of the current investigation (BB-SW10 to BB-SW12). Results of the laboratory analysis of surface water samples for PAHs are presented in Table E.18 in Appendix E.

PAH parameters were not detected in the surface water samples analyzed.

Metals in Surface Water

Metals analysis was conducted on three (3) surface water samples collected from the Waste Disposal Sites as part of the current investigation (BB-SW10 to BB-SW12). Results of the laboratory analysis of surface water samples for metals are presented in Table E.19 in Appendix E.

Concentrations of various metals were detected in all three (3) samples. The following exceedances were observed:

- The concentration of aluminum in surface water samples BB-SW10 (450 µg/L) and BB-SW12 (6,000 µg/L) exceeded the CCME WQG for the Protection of Freshwater Aquatic Life of 5 µg/L;
- The concentration of cadmium in surface water sample BB-SW12 (0.91 µg/L) exceeded the CCME WQG for the Protection of Freshwater Aquatic Life of 0.04 µg/L;
- The concentration of copper in surface water sample BB-SW12 (38 µg/L) exceeded the CCME WQG for the Protection of Freshwater Aquatic Life of 2 µg/L;
- The concentration of iron in surface water samples BB-SW10 (640 µg/L) and BB-SW12 (8,000 µg/L) exceeded the CCME WQG for the Protection of Freshwater Aquatic Life of 300 µg/L;
- The concentration of lead in surface water samples BB-SW10 (1.2 µg/L) and BB-SW12 (38 µg/L) exceeded the CCME WQG for the Protection of Freshwater Aquatic Life of 1 µg/L; and,
- The concentration of zinc in surface water sample BB-SW12 (54 µg/L) exceeded the CCME WQG for the Protection of Freshwater Aquatic Life of 30 µg/L.

None of the remaining detected concentrations of metals in surface water exceeded the applicable CCME Water Quality Guidelines, where such guidelines exist. Note that the guidelines for aluminum, cadmium, copper, and lead in surface water are dependent on the pH or hardness of the sample and as such, may change between site locations.

PCBs in Surface Water

PCB analysis was conducted on three (3) surface water samples collected from the Waste Disposal Sites as part of the current investigation (BB-SW10 to BB-SW12). Results of the laboratory analysis of surface water samples for PCBs are presented in Table E.20 in Appendix E.

PCBs were not detected in the surface water samples analyzed. There are no applicable guidelines for PCBs in surface water.

7.3.1.4 Vegetation Analytical Results

Metals in Vegetation

Metals analysis was conducted on two (2) vegetation samples collected from the Waste Disposal Sites as part of the current investigation (BB-VEG4 and BB-VEG5). Results of the laboratory analysis of vegetation samples for metals are presented in Table E.21 in Appendix E.

Concentrations of various metals were detected in the vegetation samples analyzed. There are no applicable guidelines for metals in vegetation.

PCBs in Vegetation

PCB analysis was conducted on two (2) vegetation samples collected from the Waste Disposal Sites as part of the current investigation (BB-VEG4 and BB-VEG5). Results of the laboratory analysis of vegetation samples for PCBs are presented in Table E.22 in Appendix E.

PCBs were detected in vegetation sample BB-VEG5 (0.15 µg/g). There are no applicable guidelines for PCBs in vegetation.

7.3.2 Summary of Exceedances

The Phase II ESA identified several COPCs in environmental media at the Waste Disposal Sites with concentrations exceeding the applicable criteria-based guidelines for a commercial site, where such guidelines exist. The exceedances recorded in soil, sediment, and surface water during the current investigation are summarized in Table 7.2, Table 7.3, and Table 7.4 respectively.

Table 7.2 Soil Sample Exceedances – Waste Disposal Sites

Sample No.	Parameter	Conc. (mg/kg)	Referenced Guidelines (mg/kg)[1, 2]
BB-TP16-BS1	Naphthalene Phenanthrene	0.11 0.55	0.013 (CCME SQG) 0.046 (CCME SQG)
BB-TP16-BS2	F2	1,800	260 (Tier I ESL, Table 1a)
BB-TP161-BS2	F2	2,000	260 (Tier I ESL, Table 1a)

Referenced Guidelines:

[1] CCME SQGs for the Protection of Environmental and Human Health for Commercial land use (1999 and updates).

[2] Atlantic Partnership in RBCA Tier I ESLs for the Protection of Plants and Soil Invertebrates, Table 1a (2012 and updates).

Table 7.3 Sediment Sample Exceedances – Waste Disposal Sites

Sample No.	Parameter	Conc. (mg/kg)	Referenced Guidelines (mg/kg)[1]
BB-SED12	TPH	83	43 (Tier I ESL, Table 4)

Referenced Guidelines:

[1] Atlantic Partnership in RBCA Tier I Sediment ESLs for the Protection of Freshwater and Marine Aquatic Life – Typical sediment type for lube oil, Table 4 (July 2012, January 2015).

Table 7.4 Surface Water Sample Exceedances – Waste Disposal Sites

Sample No.	Parameter	Conc. (µg/L)	Referenced Guidelines (µg/L)[1,2,3]
BB-SW10	pH Aluminum Iron Lead	5.93 (unitless) 450 640 1.2	6.5 – 9.0 (unitless) (AENV Guidelines for Surface Water) 5 (CCME WQG) 300 (CCME WQG) 1 (CCME WQG)
BB-SW11	pH	6.18 (unitless)	6.5 – 9.0 (unitless) (AENV Guidelines for Surface Water)
BB-SW11 Lab-Dup	pH	6.06 (unitless)	6.5 – 9.0 (unitless) (AENV Guidelines for Surface Water, 2014)
BB-SW12	TPH pH Aluminum Cadmium Copper Iron Lead Zinc	0.98 (mg/L) 5.69 6,000 0.91 38 8,000 38 54	0.1 (mg/L) (Tier I ESL, Table 3a) 6.5 – 9.0 (unitless) (AENV Guidelines for Surface Water, 2014) 5 (CCME WQG) 0.04 (CCME WQG) 2 (CCME WQG) 300 (CCME WQG) 1 (CCME WQG) 30 (CCME WQG)

Referenced Guidelines:

[1] Alberta Environmental Quality Guidelines for Surface Waters (2014).

[2] Canadian Council of Ministers of the Environment (CCME) WQGs for the Protection of Freshwater Aquatic Life (1999 and updates).

[3] Atlantic Partnership in RBCA Tier I ESLs for the Protection of Freshwater and Marine Aquatic Life, Table 3a (2012 and updates).

The approximate extents of PHC, pH, PAH, and metals impacts in soil, sediment, and surface water at the Waste Disposal Sites are shown on Drawing No. 121414915.200-EE-05 in Appendix A.

8.0 UPPER SITE

8.1 Site Description

The Upper Site is located approximately 3 km west of the Lower Site, and approximately 170 m higher elevation than the Lower Site. Site surfaces consist of exposed bedrock, boulders, lichen, and till. Details of infrastructure at the Upper Site is limited, but it is assumed that during site operations, the Upper Site would have consisted of an operations building, an emergency shelter, and four communication antennae. The operations building would have included a sleeping area, kitchen, power generation, and radio equipment. The power generator at the Upper Site was fueled by nine (9) ASTs. The Upper Site was destroyed in a fire in 1964 and was razed and buried on-site as part of a 1987 decommissioning program. During the current investigation, the Upper Site consisted of several short concrete support pillars in the area of the former operations building and buried metal debris scattered across the Site. A small localized depression located at the south edge of the Upper Site appeared to collect surface water runoff from the Site. Locations of these features are shown on Drawing No. 121414915.200-EE-06 in Appendix A.

8.2 Description of Site Work

Field work at the Upper Site consisted of the excavation of six (6) test pits with corresponding soil sampling, the collection of eight (8) surface soil samples, the collection of two (2) sediment samples with a corresponding surface water sample, and two (2) vegetation samples. The sample locations and general site features are shown on Drawing No. 121414915.200-EE-06 in Appendix A.

The laboratory analysis schedule completed for Upper Site is presented in Table 8.1.

Table 8.1 Summary of Laboratory Work – Upper Site

Sample Locations	Sample Matrix		
	Soil/Sediment	Water	Vegetation
Soil: BB-SS43 to BB-SS50 BB-TP39 to BB-TP44 *Sediment:* BB-SED5 *Water:* BB-SW5 *Vegetation:* BB-VEG8 and BB-VEG9	Soil TPH/BTEX (11), TPH Frac. (1), MTBE (3), VOCs (3), PAHs (8), Metals (11), PCB (13), Pesticides (1), TOC (1), Asbestos (2) Sediment TPH/BTEX (2), PAHs (2), Metals (2), PCB (2),	Surface Water TPH/BTEX (1), General Chemistry (1), VOCs (1), PAH (1), Metals (1), PCBs (1)	Vegetation Metals (1), PCBs (1)

8.3 Results

8.3.1 Laboratory Analytical Results

Results of the laboratory analysis of soil, sediment, surface water, and vegetation samples for the identified COPCs are presented in Appendix E and are summarized below. The corresponding analytical reports from Maxxam Analytics and their sub-contractors are presented in Appendix F.

8.3.1.1 Soil Analytical Results

Petroleum Hydrocarbons in Soil

Petroleum hydrocarbon (TPH/BTEX) analysis was conducted on 11 soil samples collected from the Upper Site as part of the current investigation (BB-SS43 to BB-SS48, BB-TP39-BS1, BB-TP41-BS1, BB-TP42-BS1, BB-TP43-BS1, and BB-TP44-BS1). Results of the laboratory analysis of soil samples for petroleum hydrocarbons are presented in Table E.1 in Appendix E.

Petroleum hydrocarbon fractionation (TPH Fract./BTEX) was conducted on one (1) soil sample collected from the Upper Site as part of the current investigation (BB-TP40-BS1). Results of the laboratory analysis of soil samples for petroleum hydrocarbon fractionation are presented in Table E.2 in Appendix E.

TPH was detected in 10 of the 12 soil samples analyzed at concentrations ranging from 20 mg/kg to 31,000 mg/kg. The laboratory analytical reports indicated that products impacting the samples generally resembled the weathered fuel oil and/or lube oil fractions. The concentrations of TPH in sample BB-SS46 (31,000 mg/kg) exceeded the applicable Tier I RBSL for a commercial site with non-potable groundwater, coarse grained soil, and fuel oil impacts of 4,000 mg/kg. None of the remaining detected concentrations of TPH exceeded the applicable Tier I RBSLs.

BTEX parameters were detected in one (1) soil sample (BB-SS48). None of the detected concentrations of BTEX parameters exceeded the applicable Tier I RBSLs.

Concentrations of hydrocarbon fraction F2 and F3 exceeded the applicable Tier I ESLs for the Protection of Plants and Soil Invertebrates (Table 1a) (260 mg/kg and 1,700 mg/kg respectively) in soil sample BB-SS46 (F2 = 790 mg/kg, F3 = 30,100 mg/kg). Concentrations of hydrocarbon fraction F3 also exceeded the applicable Tier I ESLs for the Protection of Wildlife and Livestock (Table 1b) (16,000 mg/kg) in soil sample BB-SS46 (30,100 mg/kg).

MTBE in Soil

MTBE analysis was conducted on three (3) soil samples collected from the Upper Site as part of the current investigation (BB-TP39-BS1, BB-TP42-BS1, and BB-TP44-BS1). Results of the laboratory analysis of soil samples for MTBE are presented in Table E.3 in Appendix E.

MTBE was not detected in the soil samples analyzed.

VOCs in Soil

VOC analysis was conducted on three (3) soil samples collected from the Upper Site as part of the current investigation (BB-TP39-BS1, BB-TP42-BS1, and BB-TP44-BS1). Results of the laboratory analysis of soil samples for VOCs are presented in Table E.4 in Appendix E.

VOCs were not detected in the soil samples analyzed.

PAHs in Soil

PAH analysis was conducted on eight (8) soil samples collected from the Upper Site as part of the current investigation (BB-SS43, BB-SS46, BB-SS48 to BB-SS50, BB-TP39-BS1, BB-TP41-BS1, and BB-TP43-BS1). Results of the laboratory analysis of soil samples for PAHs are presented in Table E.5 in Appendix E.

PAHs parameters were detected in three (3) of the eight (8) soil samples analyzed. As per the CCME PAH guidance document, potentially carcinogenic PAHs were assessed cumulatively by multiplying concentrations of potentially carcinogenic PAHs by benzo(a)pyrene (B[a]P) Potency Equivalence Factors (PEFs) and summing the products to produce a B[a]P total potency equivalent (TPE). The non-carcinogenic PAHs were assessed individually by comparing concentrations to applicable human health guidelines from other jurisdictions and to the applicable CCME SQGs for the protection of ecological health. None of the detected concentrations of PAHs in the soil samples analyzed exceeded the applicable guideline, where such guideline exists.

Metals in Soil

Metals analysis was conducted on 11 soil samples collected from the Upper Site as part of the current investigation (BB-SS43, BB-SS44, BB-SS46 to BB-SS48, BB-TP39-BS1, BB-TP40-BS1, BB-TP41-BS1, BB-TP42-BS1, BB-TP43-BS1, and BB-TP44-BS1). Also, two (2) laboratory duplicates samples (BB-TP41-BS1 Lab-Dup and BB-TP41-BS1 Lab-Dup 2) were analyzed. Results of the laboratory analysis of soil samples for metals are presented in Table E.6 in Appendix E.

Concentrations of various metals were detected in all 13 samples. The following exceedances were observed:

- The concentration of cadmium in soil sample BB-SS44 (61 mg/kg) exceeded the CCME commercial SQG of 22 mg/kg;
- The concentration of chromium in soil sample BB-SS44 (190 mg/kg) exceeded the CCME commercial SQG of 87 mg/kg;
- The concentration of copper in soil samples BB-SS44 (6,900 mg/kg), BB-TP41-BS1 (530 mg/kg), BB-TP41-BS1 Lab-Dup (180 mg/kg), and BB-TP41-BS1 Lab-Dup 2 (470 mg/kg) exceeded the CCME commercial SQG of 91 mg/kg;
- The concentration of nickel in soil sample BB-SS44 (290 mg/kg) exceeded the CCME commercial SQG of 89 mg/kg;
- The concentration of silver in soil sample BB-SS44 (69 mg/kg) exceeded the CCME commercial SQG of 40 mg/kg; and,
- The concentration of zinc in soil samples BB-SS44 (8,000 mg/kg), BB-TP41-BS1 (1,000 mg/kg), and BB-TP41-BS1 Lab-Dup (1,200 mg/kg) exceeded the CCME commercial SQG of 360 mg/kg.

None of the remaining detected concentrations of metals in soil exceeded the applicable CCME commercial SQGs, where such guidelines exist.

PCBs in Soil

PCB analysis was conducted on 13 soil samples collected from the Upper Site as part of the current investigation (BB-SS43, BB-SS44, BB-SS46 to BB-SS50, BB-TP39-BS1, BB-TP40-BS1, BB-TP41-BS1, BB-TP42-BS1, BB-TP43-BS1, and BB-TP44-BS1). Results of the laboratory analysis of soil samples for PCBs are presented in Table E.7 in Appendix E.

PCBs were detected in soil sample BB-SS48 (0.066 µg/g). The detected concentration of PCBs in soil did not exceed the applicable CCME SQGs for a commercial site of 33 µg/g.

Pesticides in Soil

Pesticide analysis was conducted on one (1) soil sample collected from the Upper Site as part of the current investigation (BB-SS46). Results of the laboratory analysis of soil samples for pesticides are presented in Table E.8 in Appendix E.

Pesticides were not detected in the soil sample analyzed. Non-detected concentrations of endosulfan I and II in soil sample BB-SS46 had elevated RDLs exceeding the applicable AENV Tier I guideline. For the purposes of delineation, given the lack of detection of other pesticide and herbicide parameters in the sample and at other locations at the Site, this sample is not considered to exceed the applicable AENV Tier I guideline.

TOC in Soil

TOC analysis was conducted on one (1) soil sample collected from the Upper Site as part of the current investigation (BB-TP41-BS1). Results of the laboratory analysis of the soil sample for TOC are presented in Table E.9 in Appendix E.

The concentration of TOC detected in sample BB-TP41-BS1 was 13 g/kg. There are no applicable guidelines for TOC in soil.

Asbestos in Soil

Asbestos analysis was conducted on two (2) soil samples collected from the Upper Site as part of the current investigation (BB-SS45 and BB-TP42-BS1). Results of the laboratory analysis of the soil samples for asbestos are presented in Table E.10 in Appendix E.

Asbestos was not detected in the soil samples analyzed. There are no applicable guidelines for asbestos in soil.

8.3.1.2 Sediment Analytical Results

Petroleum Hydrocarbons in Sediment

Petroleum hydrocarbon (TPH/BTEX) analysis was conducted on two (2) sediment samples collected from the Upper Site as part of the current investigation (BB-SED5 and BB-SED51). Results of the laboratory analysis of sediment samples for petroleum hydrocarbons are presented in Table E.11 in Appendix E.

TPH was detected in both sediment samples analyzed at concentrations ranging from 5,900 mg/kg to 33,000 mg/kg. The laboratory analytical reports indicated that product impacting the samples generally resembled the weathered fuel oil fraction and possible lube oil fraction. The concentrations of TPH in samples BB-SED5 (33,000 mg/kg) and BB-SED51 (5,900 mg/kg) exceeded the applicable Tier I ESL for the Protection of Freshwater Aquatic Life – typical sediment type, and fuel oil impacts of 25 mg/kg. Note that BB-SED51 is a blind field duplicate sample of BB-SED5 and were collected at the same location.

BTEX parameters were not detected in the sediment samples analyzed.

PAHs in Sediment

PAH analysis was conducted on two (2) sediment samples collected from the Upper Site as part of the current investigation (BB-SED5 and BB-SED51). Results of the laboratory analysis of sediment samples for PAHs are presented in Table E.12 in Appendix E.

Various PAH parameters were detected in the sediment samples analyzed. The concentration of 2-Methylnaphthalene (0.23 mg/kg) detected in BB-SED51 exceeded the applicable CCME PEL of 0.201 mg/kg. Non-detected concentrations of 2-Methylnaphthalene, acenaphthene, acenaphthylene, and benzo (g,h,i)perylene in sediment sample BB-SED5 had RDLs exceeding the applicable CCME PELs due to matrix/co-extractive interference during laboratory analysis. Considering BB-SED51 is a field duplicate of BB-SED5 and that concentrations of PAH in BB-SED51 exceeded the applicable CCME PEL, sediment sample BB-SED5 is considered to exceed CCME PELs for PAHs.

Metals in Sediment

Metals analysis was conducted on two (2) sediment samples collected from the Upper Site as part of the current investigation (BB-SED5 and BB-SED51). Results of the laboratory analysis of sediment samples for metals are presented in Table E.13 in Appendix E.

Concentrations of various metals were detected in both samples. None of the detected concentrations of metals in sediment exceeded the applicable guidelines, where such guidelines exist.

PCBs in Sediment

PCB analysis was conducted on two (2) sediment samples collected from the Upper Site as part of the current investigation (BB-SED5 and BB-SED51). Results of the laboratory analysis of sediment samples for PCBs are presented in Table E.14 in Appendix E.

PCBs were not detected in the sediment samples analyzed.

8.3.1.3 Surface Water Analytical Results

Petroleum Hydrocarbons in Surface Water

Petroleum hydrocarbon (TPH/BTEX) analysis was conducted on one (1) surface water sample collected from a pond, south of the former site structures at the Upper Site, as part of the current investigation (BB-SW5). Results of the laboratory analysis of surface water samples for petroleum hydrocarbons are presented in Table E.15 in Appendix E.

TPH and BTEX parameters were not detected in the surface water samples analyzed.

General Chemistry in Surface Water

General chemistry analysis was conducted on one (1) surface water samples collected from the Upper Site as part of the current investigation (BB-SW5). Also, one (1) laboratory duplicate sample (BB-SW5 Lab-Dup) was analyzed. Results of the laboratory analysis of surface water samples for general chemistry are presented in Table E.16 in Appendix E.

None of the detected concentrations of general chemistry parameters in surface water exceeded the applicable guidelines, where such guidelines exist.

VOCs in Surface Water

VOC analysis was conducted on one (1) surface water samples collected from the Upper Site as part of the current investigation (BB-SW5). Results of the laboratory analysis of surface water samples for VOCs are presented in Table E.17 in Appendix E.

VOC parameters were not detected in the surface water samples analyzed.

PAHs in Surface Water

PAH analysis was conducted on one (1) surface water samples collected from the Upper Site as part of the current investigation (BB-SW5). Results of the laboratory analysis of surface water samples for PAHs are presented in Table E.18 in Appendix E.

PAH parameters were not detected in the surface water samples analyzed.

Metals in Surface Water

Metals analysis was conducted on one (1) surface water sample collected from the Upper Site as part of the current investigation (BB-SW5). Results of the laboratory analysis of surface water samples for metals are presented in Table E.19 in Appendix E.

Concentrations of various metals were detected in the sample. The concentration of aluminum in surface water sample BB-SW5 (180 µg/L) exceeded the CCME WQG for the Protection of Freshwater Aquatic Life

of 5 µg/L. Note that the guideline for aluminum in surface water is dependent on the pH of the sample and as such, may change between site locations.

None of the remaining detected concentrations of metals in surface water exceeded the applicable CCME Water Quality Guidelines, where such guidelines exist.

PCBs in Surface Water

PCB analysis was conducted on one (1) surface water sample collected from the Upper Site as part of the current investigation (BB-SW5). Results of the laboratory analysis of surface water samples for PCBs are presented in Table E.20 in Appendix E.

PCBs were not detected in the surface water sample analyzed. There are no applicable guidelines for PCBs in surface water.

8.3.1.4 Vegetation Analytical Results

Metals in Vegetation

Metals analysis was conducted on one (1) vegetation sample collected from the Upper Site as part of the current investigation (BB-VEG8). Also, one (1) laboratory duplicate sample was analyzed. Results of the laboratory analysis of vegetation samples for metals are presented in Table E.21 in Appendix E.

Concentrations of various metals were detected in the vegetation samples analyzed. There are no applicable guidelines for metals in vegetation.

PCBs in Vegetation

PCB analysis was conducted on one (1) vegetation sample collected from the Upper Site as part of the current investigation (BB-VEG8). Results of the laboratory analysis of vegetation samples for PCBs are presented in Table E.22 in Appendix E.

PCBs were not detected in the vegetation sample analyzed. There are no applicable guidelines for PCBs in vegetation.

8.3.2 Summary of Exceedances

The Phase II ESA identified several COPCs in environmental media at the Upper Site with concentrations exceeding the applicable criteria-based guidelines for a commercial site, where such guidelines exist. The exceedances recorded in soil, sediment, and surface water during the current investigation are summarized in Table 8.2, Table 8.3, and Table 8.4 respectively. Where an individual parameter exceeds more than one guideline, only the most conservative guideline is shown as the referenced guideline.

Table 8.2 Soil Sample Exceedances – Upper Site

Sample No.	Parameter	Conc. (mg/kg)	Referenced Guidelines (mg/kg)[1,2,3]
BB-SS46	F2 F3 TPH	790 30,100 31,000	260 (Tier I ESL, Table 1a) 1,700 (Tier I ESL, Table 1a) 4,000 (Tier I RBSL, Table 4a, fuel oil impacts)
BB-SS44	Cadmium Chromium Copper Nickel Silver Zinc	61 190 6,900 290 69 8,000	22 (CCME SQG) 87 (CCME SQG) 91 (CCME SQG) 89 (CCME SQG) 40 (CCME SQG) 360 (CCME SQG)
BB-TP41-BS1	Copper Zinc	530 1,000	91 (CCME SQG) 360 (CCME SQG)
BB-TP41-BS1 Lab-Dup	Copper Zinc	180 1,200	91 (CCME SQG) 360 (CCME SQG)
BB-TP41-BS1 Lab-Dup 2	Copper	470	91 (CCME SQG)

Referenced Guidelines:

[1] Atlantic Partnership in RBCA Tier I ESLs for the Protection of Plants and Soil Invertebrates, Table 1a (2012 and updates).

[2] Atlantic Partnership in RBCA Tier I RBSLs for a commercial site with non-potable groundwater, coarse grained soil, and gasoline/fuel oil/lube oil impacts, Table 4a (2012 and updates).

[3] CCME SQGs for the Protection of Environmental and Human Health for Commercial land use (1999 and updates).

Table 8.3 Sediment Sample Exceedances – Upper Site

Sample No.	Parameter	Conc. (mg/kg)	Referenced Guidelines (mg/kg)[1,2]
BB-SED5	TPH	33,000	25 (Tier I ESL, Table 4)
BB-SED51	TPH 2-Methylnaphthalene	5,900 0.23	25 (Tier I ESL, Table 4) 0.201 (CCME PEL)

Referenced Guidelines:

[1] Atlantic Partnership in RBCA Tier I Sediment ESLs for the Protection of Freshwater and Marine Aquatic Life – Typical sediment type for fuel oil, Table 4 (July 2012, January 2015).

[2] CCME Sediment Quality Guidelines for the Protection of Aquatic Life – Probably Effects Levels for Freshwater Sediment (PEL) (1999 and updates).

Table 8.4 Surface Water Sample Exceedances – Upper Site

Sample No.	Parameter	Conc. (µg/L)	Referenced Guidelines (mg/L)[1]
BB-SW5	Aluminum	180	5 (CCME WQG)

Referenced Guidelines:

[1] Canadian Council of Ministers of the Environment (CCME) WQGs for the Protection of Freshwater Aquatic Life (1999 and updates).

The approximate extents of PHC, PAH, and metals impacts in soil, sediment, and surface water at the Upper Site are shown on Drawing No. 121414915.200-EE-06 in Appendix A.

9.0 SUMMARY OF EXCEEDANCES

The Phase II ESA identified several COPCs in environmental media at the Site with concentrations exceeding the applicable criteria-based guidelines for a commercial site, where such guidelines exist. Based on the identified areas of impacted media, volumes of impacted soil and sediment were estimated, and areas of impacted surface water were estimated. The following assumptions were made when calculating volume and area estimates:

- Estimated areas of impacted material (m^2) were taken from Drawings No. 121414915.200-EE-02 to 121414915.200-EE-06 in Appendix A. Further delineation would be required to refine these areas (larger or smaller). For initial estimations, an impacted radius of 5 m was assumed for individual areas of exceedances. In areas where an impacted sample was adjacent to a non-impacted sample, the limits of impacts are drawn halfway between the samples or with a radius of 5 m; whichever is smaller;
- The depth of impacted soil at the Lower Site extends to the groundwater table, which was not measured during the current investigation. Based on a previous study (JWEL, 2002), groundwater at the Lower Site is expected to range from approximately 1.5 m to greater than 7 m. For current estimations, the average depth to groundwater is estimated to be approximately 3 m;
- The depth of impacted soil at the Upper Site extends to bedrock, which is estimated to be approximately 0.5 m; and,
- The depth of impacts in freshwater sediment was assumed to be 0.15 m.

The estimated volumes (m^3) of impacted soil and sediment and areas (m^2) of impacted surface water identified at the Site as part of the current investigation are summarized in Table 9.1. At the request of NLDMAE, impacts identified within the boundary of the parcels of land granted to the Government of Canada in 1998 were to be presented separately herein. However, no impacts in environmental media were identified within the aforementioned boundary during the current investigation.

Impacted areas that overlap two or more COPCs have volumes listed for each individual COPC in Table 9.1 but are only counted once for the total volume estimate.

Summary of Exceedances
April 18, 2018

Table 9.1 Volume Estimates

COPC	Media	Area ID	Impacted Samples	Volume/Area of Impacted Material
Petroleum Hydrocarbons	Soil	Camp / Antenna Areas and AES Compound	BB-SS24, BB-SS25, BB-SS27, BB-SS29, BB-SS33, BB-SS38, BB-SS40, BB-TP17-BS2, BB-TP20-BS2, BB-TP201-BS2, BB-TP22-BS2, BB-TP221-BS2, BB-TP23-BS2, BB-TP24-BS2, BB-TP25-BS2, BB-TP28-BS2, and BB-TP31-BS2	4,477 m^3
		Waste Disposal Sites	BB-TP16-BS2, BB-TP161-BS2	79 m^3
		Upper Site	BB-SS46	39 m^3
	Freshwater Sediment	Waste Disposal Sites	BB-SED12	78 m^3
		Upper Site	BB-SED5	2 m^3
	Surface Water	Waste Disposal Sites	BB-SW12	Unknown+
PAHs	Soil	Camp / Antenna Areas and AES Compound	BB-SS24, BB-SS40, BB-TP17	707 m^3
		Waste Disposal Sites	BB-TP16	236 m^3
	Freshwater Sediment	Upper Site	BB-SED5	2 m^3
Metals	Soil	Camp / Antenna Areas and AES Compound	BB-TP26	236 m^3
		Upper Site	BB-SS44, BB-TP41	39 m^3
	Surface Water	Lower Site – General Area	BB-SW2	Unknown+
		Unknown Foundation / Building	BB-SW9	Unknown+
		Waste Disposal Sites	BB-SW10, BB-SW12	Unknown+
		Upper Site	BB-SW5	13 m^2
pH	Surface Water	Waste Disposal Sites	BB-SW10, BB-SW11, BB-SW12	Unknown+
Totals			**Soil / Sediment**	**5,040 m^3***
			Surface Water	**Unknown+**

Notes: *Overlapping COPCs are only counted once
+Areal extent of surface water impacts was not calculated for Ashuapun Lake or for large ponds – further delineation is required

10.0 NCSCS SITE CLASSIFICATION SUMMARY

The detailed evaluation form obtained from the National Classification System for Contaminated Sites (NCSCS) was developed by CCME, March 1992 (updated 2008, 2010 v1.3) to provide a nationally consistent ranking of sites in terms of potential remediation requirements. The evaluation process generally considers contaminant sources, exposure pathways, and potential human and environmental receptors, but is not intended to be used as a risk assessment tool. The scoring system reflects the concentrations and potential exposures of contaminants in relation to generic CCME remediation criteria. NCSCS site scores are categorized as shown in Table 10.1.

Table 10.1 NCSCS Scoring Summary (CCME, 2008, v1.3)

Total Score	Class	Priority for Action
>70	Class 1	High
50-69.9	Class 2	Medium
37-49.9	Class 3	Low
<37	Class N	Not a priority
>15% of Responses are “Do not know”	Class INS	Insufficient Information

The site obtained a NCSCS score of 81.0. Based on this score the site is classified as Class 1, indicating a high priority for action. The detailed NCSCS evaluation form is presented in Appendix G.

11.0 CONCLUSIONS AND RECOMMENDATIONS

Based on information gathered and observations made, the Phase II ESA has revealed evidence of actual environmental contamination associated with the Site. The findings and results of the Phase II ESA are summarized as follows:

1. The stratigraphy at Upper Site consists generally of a silty sand till veneer with frequent cobbles and boulders directly overlying bedrock. The Lower Site is comprised of a glacial esker, and was levelled off to form the gravel runway. The stratigraphy at the Lower Site consists generally of reworked sand and gravel likely disturbed during the construction of the airstrip. This layer was approximately 0.2 - 0.3 m thick and was underlain by a thin 0.2 - 0.3 m layer of black to brown sand and gravel with occasional peat deposits. The current investigation did not exceed 0.5 m below ground surface (mbgs), but previous reports indicate that this layer is generally underlain by thick stratified deposits of dense, grey, fine to medium grained glacio-fluvial silty sand with silt lensing. Bedrock was not encountered in test pits at the Lower Site during the current investigation.
2. Concentrations of MTBE, VOCs, PCBs, pesticides and herbicides, and asbestos in environmental media were either non-detect or were detected at concentrations below the applicable guidelines in the samples analyzed.
3. Concentrations of TPH in select soil, sediment, and surface water samples exceeded the applicable generic regulatory guidelines and may present risks to human or ecological health on the Site, as follows:

    a. Petroleum hydrocarbon impacts were identified in surface soil in exceedance of the applicable RBCA Tier I RBSLs and/or Tier I ESLs for a commercial site with coarse grained soil, non-potable water and either gasoline/fuel oil/lube oil impacts at the Camp / Antenna Areas and AES Compound (4,477 m^3), Waste Disposal Sites (79 m^3), and Upper Site (39 m^3).

    b. Petroleum hydrocarbon impacts were identified in freshwater sediment in exceedance of the applicable RBCA Tier I Sediment ESLs for the Protection of Freshwater and Marine Aquatic Life (Typical sediment) at the Waste Disposal Sites (78 m^3) and Upper Site (2 m^3).

    c. Petroleum hydrocarbon impacts were identified in surface water in exceedance of the applicable RBCA Tier I ESLs (freshwater and marine aquatic life) for fuel oil/lube oil impacts at the Waste Disposal Sites, but the areal extent of impacts was not assessed as part of the current investigation.

4. Concentrations of PAHs in select soil and sediment samples exceeded the applicable generic regulatory guidelines and may present risks to human or ecological health on the Site, as follows:

    a. PAH impacts were identified in soil in exceedance of the applicable CCME SQGs for the Protection of Environmental and Human Health for Commercial land use at the Camp / Antenna Areas and AES Compound (707 m^3) and the Waste Disposal Sites (236 m^3).

    b. PAH impacts were identified in freshwater sediment in exceedance of the applicable CCME PEL for Freshwater Sediment at the Upper Site (2 m^3).

5. Concentrations of Metals in select soil, sediment, and surface water samples exceeded the applicable generic regulatory guidelines and may present risks to human or ecological health on the Site, as follows:

    a. Metals impacts were identified in surface soil in exceedance of the applicable CCME SQGs for the Protection of Environmental and Human Health for Commercial land use at the Camp / Antenna Areas and AES Compound (236 m^3) and the Upper Site (39 m^3).

    b. Metals impacts were identified in surface water in exceedance of the applicable CCME WQG for the protection of Freshwater Aquatic Life the Upper Site (13 m^2). Metals impacts identified in surface water in exceedance of the applicable CCME WQG for the protection of Freshwater Aquatic Life were also identified in Lake Ashuapun at the Lower Site – General Area, the Unknown Foundation / Building, and the Waste Disposal Sites, but the areal extent of impacts was not assessed as part of the current investigation.

6. Concentrations of General Chemistry in select surface water samples exceeded the applicable generic regulatory guidelines and may present risks to human or ecological health on the Site, as follows:

    a. General chemistry impacts were identified in surface water in exceedance of the applicable CCME WQG for the protection of Freshwater Aquatic Life at the Waste Disposal Sites, but the areal extent of impacts was not assessed as part of the current investigation.

The volumes of impacted material provided herein are estimates generated based on the available site data. Based on the permeability of the soils at the Site and historical land use, additional delineation is recommended to refine the extent of impacts (larger or smaller) at the Site. In particular, the vertical extent of impacts should be investigated with a borehole/monitor well program and should include a groundwater assessment.

Further, liquid PHC products stored in drums and tanks were identified at the Site. A number of these drums are in poor repair and the potential for further release of PHC products increases as the drums continue to weather. It is recommended that the drums and the contents of the drums are removed in the near future.

Due to limited time imposed by poor weather conditions and constraints of helicopter fly-time during the field program, no samples were collected from the Drums / Debris Area – South of Airstrip. It is recommended that environmental media is assessed in the area surrounding the drum/debris and the structure adjacent to the drum/debris area as part of future site assessment. In addition, it is recommended that the unidentified dump site to the southwest of the work area (as shown on Drawing No. 121414915.200-EE-01 in Appendix A) is assessed.

12.0 CLOSURE

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.

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.

Closure
April 18, 2018

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.

This report was prepared by Aaron Power, EIT., and reviewed by Robert Macleod, M.Sc., P.Geo. and Jim Slade, P.Eng., P.Geo.

Respectfully submitted,

STANTEC CONSULTING LTD.

Aaron Power, EIT.
Environmental Engineer in Training

Jim Slade, P.Eng., P.Geo.
Principal, Senior Environmental Engineer

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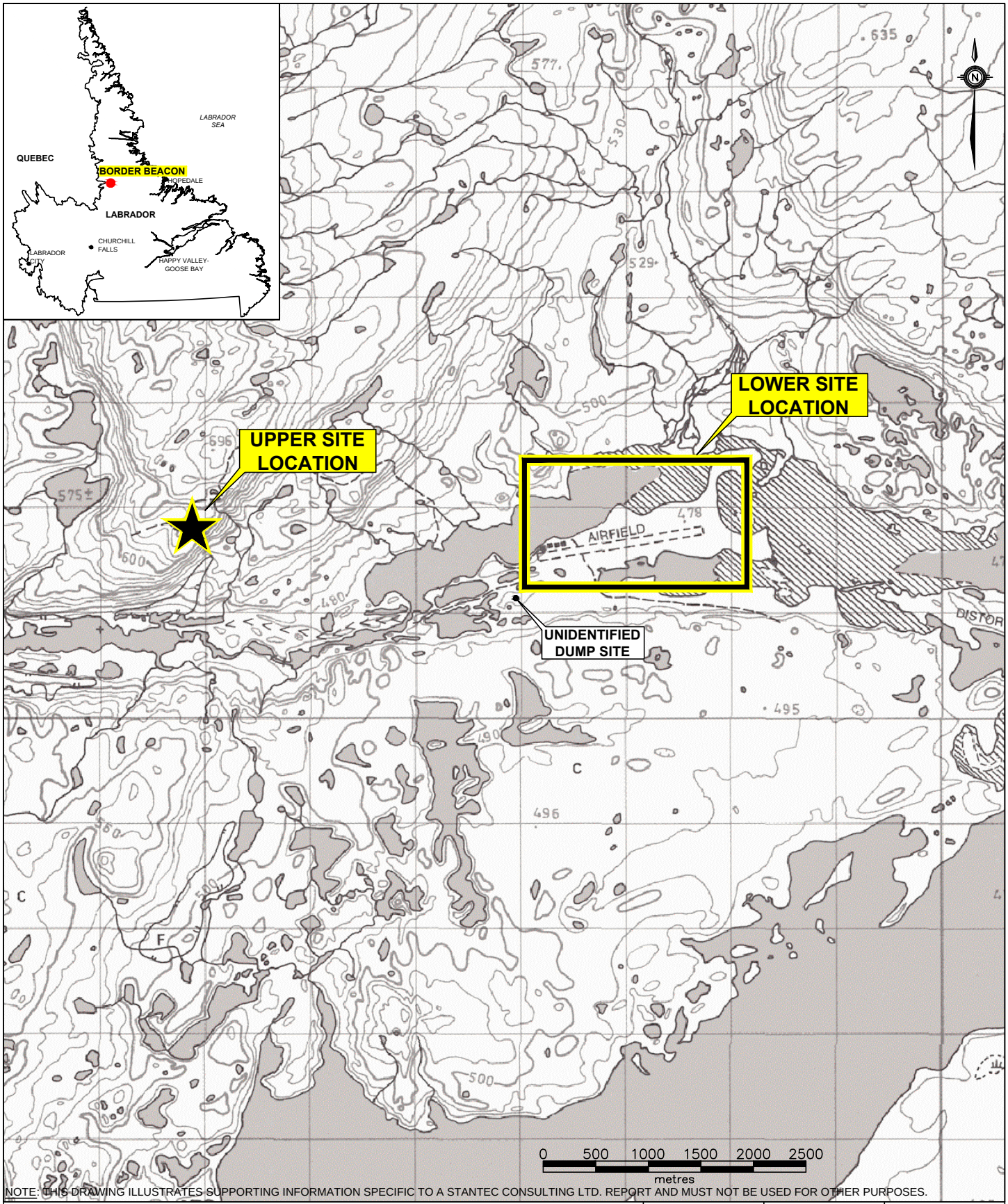
APPENDIX A

Drawings



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DRAWING TITLE: SITE LOCATION PLAN	Stantec		

11APR18 11:00AM

LEGEND

- TEST PIT
- SURFACE SOIL SAMPLE
- SEDIMENT SAMPLE
- SURFACE WATER SAMPLE
- VEGETATION / BERRY SAMPLE
- METALS EXCEEDANCE IN SURFACE WATER
- 1998 ENVIRONMENT CANADA LAND TRANSFER (APPROXIMATE)

ASHUAPUN LAKE

BB-SED1
BB-SW1
BB-SED2
BB-SW2
BB-SS8
BB-VEG1
BB-SS10
1 FULL DRUM
SEE DRAWING No. 121414915.200-EE-04
SEE DRAWING No. 121414915.200-EE-03
BB-SS3
1998 ENVIRONMENT CANADA LAND TRANSFER (APPROXIMATE)
1 FULL DRUM
EMPTY DRUMS
BB-SS9
BB-SS7
GRAVEL AIR STRIP
BB-TP49
BB-SS4
BB-SS1
BB-TP1
BB-SS6
BB-SS5
BB-SS2
APPROXIMATE LOCATION OF ABANDONED 3,540L TANK
SEE DRAWING No. 121414915.200-EE-05

ASHUAPUN LAKE

0 50 100 150 200 250
metres

MAP DATA: ©2017 DigitalGlobe, 2017 HERE

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PROJECT TITLE: PHASE II ENVIRONMENTAL SITE ASSESSMENT, SITE 212, BORDER BEACON, NL

DRAWING TITLE: SAMPLE LOCATION AND EXCEEDANCE PLAN - LOWER SITE - GENERAL AREA

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N.M.	-	A.P.
DRAWING No:	CAD FILE:	
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Stantec

20FEB18 2:00PM

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CLIENT:
NEWFOUNDLAND AND LABRADOR DEPARTMENT OF MUNICIPAL AFFAIRS AND ENVIRONMENT

PROJECT TITLE:
PHASE II ENVIRONMENTAL SITE ASSESSMENT, SITE 212, BORDER BEACON, NL

DRAWING TITLE:
SAMPLE LOCATION AND EXCEEDANCE PLAN - CAMP / ANTENNA AREAS AND AES COMPOUND

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PROJECT TITLE:
PHASE II ENVIRONMENTAL SITE ASSESSMENT, SITE 212, BORDER BEACON, NL

DRAWING TITLE:
SAMPLE LOCATION AND EXCEEDANCE PLAN - UNKNOWN FOUNDATION / BUILDING

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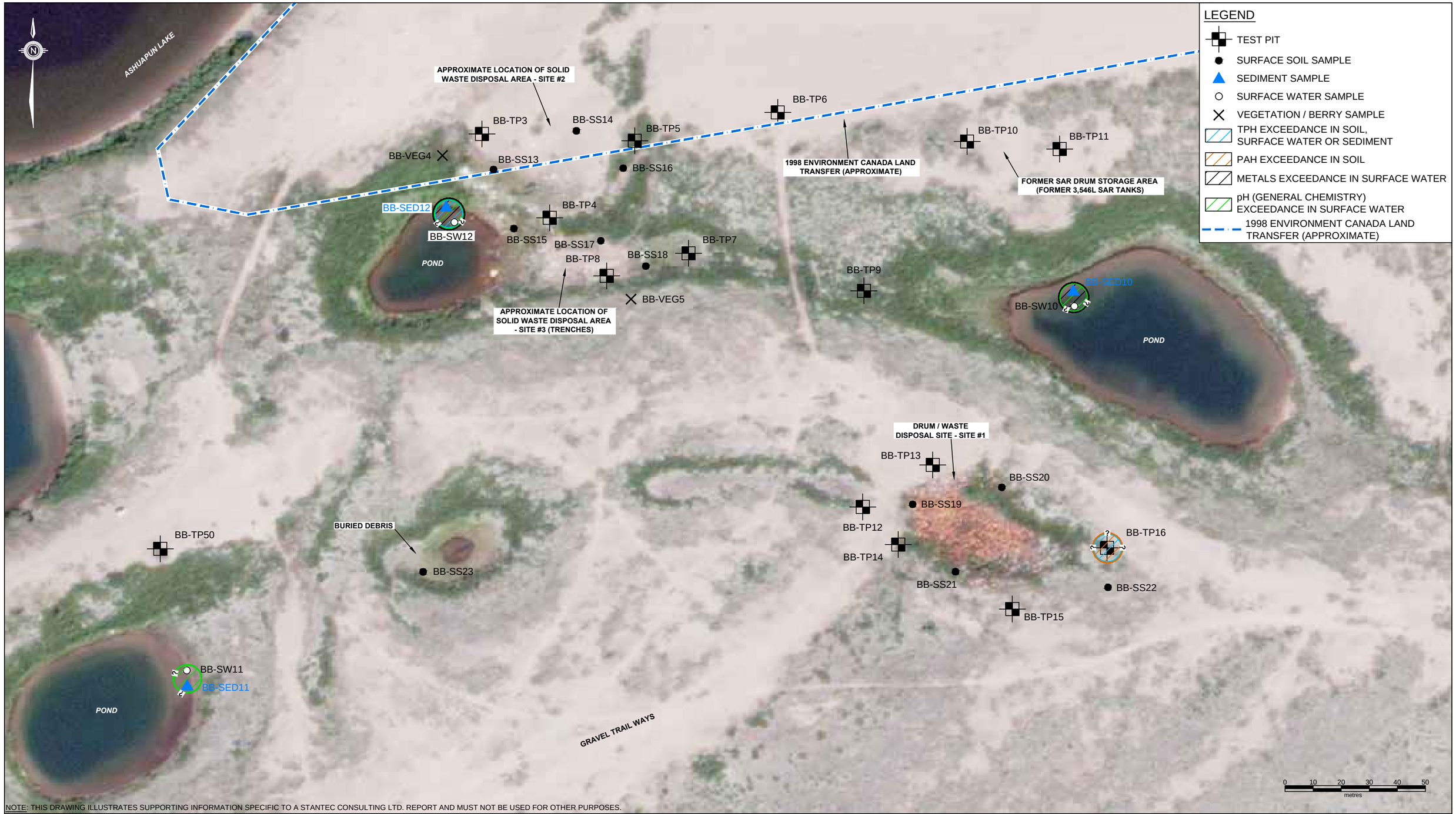

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NEWFOUNDLAND AND LABRADOR DEPARTMENT OF MUNICIPAL AFFAIRS AND ENVIRONMENT

PROJECT TITLE:
PHASE II ENVIRONMENTAL SITE ASSESSMENT, SITE 212, BORDER BEACON, NL

DRAWING TITLE:
SAMPLE LOCATION AND EXCEEDANCE PLAN - WASTE DISPOSAL SITES

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NEWFOUNDLAND AND LABRADOR DEPARTMENT OF MUNICIPAL AFFAIRS AND ENVIRONMENT

PROJECT TITLE:
PHASE II ENVIRONMENTAL SITE ASSESSMENT, SITE 212, BORDER BEACON, NL

DRAWING TITLE:
SAMPLE LOCATION AND EXCEEDANCE PLAN - UPPER SITE

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APPENDIX B

Screening Checklists

SITE ASSESSMENT & TIER I/II TABLE CHECKLIST

Site Location:	Border Beacon, NL
Site Professional:	Jim Slade, P.Eng., P.Geo.
Date:	April 18, 2018

METHOD USED	
Tier I RBSL	✓
Tier II PSSL	
Tier II SSTL	

Minimum Site Assessment Requirements		
Issue	**Yes Or No***	**Comment**
PID, owner, location identified	Yes	
Current and anticipated future land use identified	Yes	
Review of underground services as conduits	Yes	
Historical review completed	Yes	
Local groundwater use identified	Yes	
Adjacent land uses and receptors identified	Yes	
Ecological screening completed	Yes	
Soil and groundwater samples from all source areas obtained	No	Groundwater not assessed as part of the current investigation. Recommended for future work.
Soil and groundwater impacts delineated to Tier I RBSLs for potential receptor (adjacent property receptor may be lower Tier I RBSLs)	No	Soil only
Groundwater flow direction and gradient established	Yes	Assumed based on local topography
Combination of surface and sub-surface soil samples analyzed	No	Maximum sample depth 0.5 mbgs. Boreholes recommended for future work.
Free product observations made in soil and groundwater	Yes	
Low lab detection level for benzene in soil if potable water area	N/A	Non-potable area
Grain size and organic carbon analysis completed on soil	No	Used most conservative grain-size for RBSL. Total organic carbon analysis complete.
TPH fractionation done on soil and water if calculating Tier II SSTL	N/A	TPH fractionation done
Scale site plan showing all relevant site features	Yes	
Receptor building characteristics obtained (storeys, floor condition, ceiling height, *etc*.)	Yes	

Mandatory Conditions		
Issue	**Yes or No***	**Comment**
Non-aqueous phase liquids not present in groundwater	No	Groundwater not assessed as part of the current investigation. Recommended for future work.
Potable water free of objectionable taste and odour	N/A	Non-potable site
Soils do not contain liquid and/or free petroleum product	No	Free product observed at the site from leaking drums.
Residual hydrocarbons do not create objectionable odours or explosive conditions in indoor or outdoor air	Yes	
Surface soil not stained	No	Staining observed
No dirt basement floors, sumps with dirt bottoms, *etc*.	Yes	
Confirmed that correct TPH type selected in RBSL or PSSL Table	Yes	
Confirmed that correct soil type selected in RBSL or PSSL Table	Yes	

Defaults Site Characteristics and Exposure Scenarios		
Issue	**Yes Or No***	**Comment**
Depth to groundwater approximately 3.0 metres	Unknown	Based on previous reports, groundwater at the site ranges between 1.5 mbgs to approximately 7 mbgs
Impacted soil thickness is less than 3.0 metres	No	Vertical delineation not performed
Default foundation crack fraction is appropriate	Yes	
Default foundation thickness is appropriate	Yes	
Two floors exist if using a residential scenario	N/A	Not a residential site
Hydrocarbon impacts above RBSL or PSSL Table soil values are not within 0.3 m of foundation walls or floor slab	No	Impacts may be present within 0.3 m of buildings at the Camp / Antenna Areas and AES Compound – however, building are not used.
Confirmed that RBSL or PSSL Table criteria is correct for adjacent property receptors (i.e., use residential at property line if adjacent property is residential)	Yes	
Where exposure pathways have been eliminated at Tier II, detailed explanation provided in report explain why pathways are not relevant	N/A	
Where PSSLs tables are used based on elimination or control of a pathway that could be reopened by changes in site use, this condition is specified as a limitation in the report	N/A	
Where Tier II SSTLs have been calculated by changing default values, the report includes the parameter changed, the default value, the site-specific value used, and the rationale and/or detailed written justification	N/A	

* If no, indicate in comment section if and where in report the issue is addressed.
Consult the Best Management Practices (Appendix 2) for additional details.

SUMMARY TABLE - RESULTS OF ECOLOGICAL SCREENING PROTOCOL FOR PETROLEUM IMPACTED SITES

Instructions to Practitioners: This table is intended to summarize the results of the Ecological Screening Protocol and must be completed in consultation with guidance provided in the protocol. Users should include this completed table in their Environmental Assessment or Closure Report. Details and explanations are to be provided in the body of the Report.

Ecological Screening Component		Yes or No	Report name and location of details and explanations
Part I - Identification of petroleum hydrocarbons in media			
1.	Do site characterization data indicate the presence of PHC in site surface soil (depth < 1.5 m) above the appropriate screening levels in Tables 1a and 1b?	Yes	Exceedances noted in surface soil at the Camp / Antenna Areas and AES Compound (Refer to Tables E.1 and E.2, Appendix E).
2.	Do site characterization data indicate the presence of PHC in shallow site groundwater (depth < 3.0 m) above appropriate ecological screening levels that were derived for the protection of terrestrial plants and soil invertebrates in contact with site groundwater in Table 2?	N/A	Groundwater not assessed as part of the current investigation. Recommended for future work.
3.	Do existing site characterization data indicate the presence of PHC in site groundwater above appropriate ecological screening levels derived for the protection of aquatic receptors in Table 3a/3b?		
4.	Do site characterization data indicate the presence of PHC in site surface water above the appropriate screening levels in Table 3?	Yes	Exceedances noted in surface water at the Waste Disposal Sites (Refer to Table E.15, Appendix E).
5.	Does site characterization indicate the presence of PHC in on-site or adjacent sediments above the appropriate screening levels in Table 4?	Yes	Exceedances noted in sediments at the Waste Disposal Sites and the Upper Site (Refer to Table E.11, Appendix E).
IF ALL ANSWERS IN PART I ARE"NO" THEN NO FURTHER ACTION IS REQUIRED			
Part II - Identification of habitat and ecological receptors			
1.	Are the following habitat types or conditions present on the site or proximate to site within a minimum of 200 metres? • wetland habitats • aquatic habitats • forested habitats • grassland habitats • provincial/national parks or ecological reserves • known rare, threatened or endangered species • other known critical or sensitive habitat other local or regional receptor or habitat concerns	Yes	The Site is surrounded by tundra, forest, and plains. The Lower Site is surrounded by the waters of Ashuapun Lake. Site hydrocarbons in surface soil, surface water, sediment, and groundwater may come into contact with wildlife in these areas (Refer to Table 1.2 in the body of the text).

Ecological Screening Component		Yes or No	Report name and location of details and explanations
Part II - Identification of habitat and ecological receptors cont'd			
2a.	Are there visible indications of stressed vegetation on the site?	Yes	Stressed vegetation observed at the Waste Disposal Sites (Refer to Section 7.1 in the body of the text).
2b.	Is there evidence that the site vegetation community differs from what would be expected?	No	
2c.	Are there indications that the site soil cannot support a soil invertebrate community?	No	
3.	Is there evidence that terrestrial plants in the habitats above are likely to be in root contact with site groundwater above screening levels?	No	Groundwater not assessed as part of the current investigation. Recommended for future work.
4.	Would wildlife receptors be expected to forage on or near the contaminated areas of the site?	Yes	
Part III - Identification of exposure pathways for ecological receptors			
1a.	Is it reasonable to conclude that site hydrocarbons in surface soil with concentrations exceeding applicable screening levels, will come into contact with terrestrial plants and invertebrates in a suitable habitat?	Yes	
1b.	Is it reasonable to conclude that site hydrocarbons in surface soil with concentrations exceeding applicable screening levels, will come into contact with mammalian, avian or herptile terrestrial receptors within an agricultural land use in a suitable habitat?	No	Agricultural land is not present within 200 m of the Site.
2.	Is it reasonable to conclude that dissolved hydrocarbons in site groundwater with concentrations exceeding applicable screening levels will come into contact with plants or soil invertebrates in a suitable habitat?	Unknown	Groundwater not assessed as part of the current investigation. Recommended for future work.
3.	Is it reasonable to conclude that dissolved hydrocarbons in site groundwater with concentrations exceeding applicable screening levels will come into contact with aquatic receptors or aquatic receptor habitat?	Unknown	Groundwater not assessed as part of the current investigation. Recommended for future work.
4.	Is it reasonable to conclude that site petroleum hydrocarbon contamination could impact aquatic receptors or aquatic habitat in surface water bodies via the following: a. surface runoff (*e.g.*, erosion, windblown contaminants) b. groundwater flow c. preferential overland flow pathways (*e.g.* drainage ditch, slope, swale) d. preferential subsurface flow pathways (*e.g.* culvert, trench, sewer line, pipelines, swales) such that aqueous media concentrations would potentially exceed surface water and/or sediment quality screening levels?	Yes	Possible unassessed preferential overland or subsurface flow pathways.
5.	Are there site specific conditions present, which were not considered in any section above that should require further ecological assessment?	No	
IF ALL ANSWERS IN PART III ARE"NO" THEN NO FURTHER ACTION IS REQUIRED			

APPENDIX C

Photos

Photo 1 – Lower Site – General Area: airstrip and Ashuapun Lake. Looking east.

Photo 2 – Lower Site – General Area: airstrip and Ashuapun Lake. Looking northwest.

Photo 3 – Camp / Antenna Areas and AES Compound: west side of airstrip, existing structures visible near shoreline of Ashuapun Lake. Looking west.

Photo 4 – Camp / Antenna Areas and AES Compound: from left to right, Camp Fuel Shed, Camp Garage Building, Ten 4,500 L ASTs, and Dyked 113,516 L Tank

Photo 5 – Camp / Antenna Areas and AES Compound: Camp Fuel Shed with approximately 30 empty drums on the south side of the structure. Looking east.

Photo 6 – Camp / Antenna Areas and AES Compound: Interior of Camp Fuel Shed (Building #1). Looking north.

Photo 7 – Camp / Antenna Areas and AES Compound: Camp Garage Building. ASTs and Dyked Tank visible in background. Looking northeast.

Photo 8 – Camp / Antenna Areas and AES Compound: Interior of Camp Garage Building. Looking north.

Photo 9 – Camp / Antenna Areas and AES Compound: Full 900L AST lying against south-facing exterior wall of Camp Garage Building. Looking north.

Photo 10 – Camp / Antenna Areas and AES Compound: ten 4,500 L ASTs and Dyked 113,516 L Tank in background, re-fueling Area in foreground. Looking north.

Photo 11 – Camp / Antenna Areas and AES Compound: four (4) full drums southeast of former re-fueling area. One (1) drum leaking. Looking north.

Photo 12 – Unknown Foundation / Building: One (1) empty drum approximately 100 m north of the foundation. Looking west.

Photo 13 – Waste Disposal Sites: aerial view of Waste Disposal Sites. Drum / Waste Disposal Site (Site #1) visible near bottom-center of photograph. Looking west.

Photo 14 – Waste Disposal Sites: aerial view of Solid Waste Disposal Area (Site #3) Trenches. Looking southeast.

Photo 15 – Waste Disposal Sites: Solid Waste Disposal Area (Site#3) Trenches. Looking west.

Photo 16 – Waste Disposal Sites: Drum / Waste Diposal Site (Site #1). Looking east.

Photo 17 – Upper Site: concrete slab and pillars of Former Operations Building. Looking northwest.

Photo 18 – Upper Site: concrete slab and pillars of Former Operations Building. Looking southwest.

Photo 19 – Upper Site: buried metal debris near eastern former antenna tower.

Photo 20 – Upper Site: buried metal debris at Former Operations Building. Looking south.

Photo 21 – Unidentified Dump Site southwest of the Lower Site: miscellaneous debris. Looking south.

APPENDIX D

Coordinates of Sample Locations

Table D.1 Coordinates of Sample Locations
Phase II Environmental Site Assessment
Former Military Site, Border Beacon, NL
Stantec Project No. 121414915.200

Sample ID	Northing	Easting
BB-SED1	6132144.015	487203.2352
BB-SED2	6132160.319	487441.0506
BB-SED5	6131990.486	483008.1627
BB-SED9	6132007.643	488059.2414
BB-SED10	6131633.88	486416.2005
BB-SED11	6131499.064	486099.842
BB-SED12	6131663.571	486194.0302
BB-SS1	6131802.855	486217.9002
BB-SS2	6131768.543	486334.0923
BB-SS3	6131955.086	486684.7843
BB-SS4	6131837.302	486683.1384
BB-SS5	6131775.029	486731.566
BB-SS6	6131788.189	486845.7921
BB-SS7	6131887.451	487020.1484
BB-SS8	6132092.925	487259.2597
BB-SS9	6131906.337	487459.7179
BB-SS10	6132057.82	487770.3148
BB-SS11	6132062.214	487781.5524
BB-SS13	6131680.18	486209.3474
BB-SS14	6131693.869	486238.7255
BB-SS15	6131658.926	486216.6394
BB-SS16	6131681.039	486255.7187
BB-SS17	6131654.733	486247.4371
BB-SS18	6131645.696	486263.6612
BB-SS19	6131560.942	486358.6394
BB-SS20	6131566.669	486390.7767
BB-SS21	6131536.749	486374.1256
BB-SS22	6131531.187	486428.219
BB-SS23	6131536.822	486184.452
BB-SS24	6131875.495	486345.192
BB-SS25	6131858.833	486348.6236
BB-SS26	6131884.405	486359.8882
BB-SS27	6131892.921	486381.4962
BB-SS28	6131889.966	486424.2919
BB-SS29	6131890.97	486443.2375
BB-SS30	6131911.068	486456.7091
BB-SS31	6131889.625	486464.8486
BB-SS32	6131900.915	486506.8855
BB-SS33	6131877.635	486517.9316
BB-SS34	6131900.1	486521.5666
BB-SS35	6131899.137	486532.3179
BB-SS36	6131903.556	486577.1296
BB-SS37	6131910.007	486584.639
BB-SS38	6131878.778	486387.7391
BB-SS40	6131889.232	486602.9242
BB-SS41	6132009.715	488029.001
BB-SS42	6131990.24	488039.2442
BB-SS43	6131969.309	482936.3137
BB-SS44	6132001.585	482926.3409
BB-SS45	6132000.19	482903.1053
BB-SS46	6132004.905	482852.4524
BB-SS47	6132076.802	482922.2328
BB-SS48	6132010.361	482965.0446
BB-SS49	6132088.47	482936.4897
BB-SS50	6132135.969	482941.0979

Sample ID	Northing	Easting
BB-SW1	6132144.015	487203.2352
BB-SW2	6132160.319	487441.0506
BB-SW5	6131990.486	483008.1627
BB-SW9	6132007.643	488059.2414
BB-SW10	6131633.88	486416.2005
BB-SW11	6131499.064	486099.842
BB-SW12	6131663.571	486194.0302
BB-TP1	6131784.373	486880.151
BB-TP3	6131692.759	486205.3356
BB-TP4	6131662.767	486229.3585
BB-TP5	6131690.35	486259.6687
BB-TP6	6131700.293	486310.7425
BB-TP7	6131650.135	486278.77
BB-TP8	6131642.243	486249.7374
BB-TP9	6131636.911	486341.3691
BB-TP10	6131690.059	486378.077
BB-TP11	6131687.302	486411.1501
BB-TP12	6131559.749	486340.7826
BB-TP13	6131574.614	486365.8083
BB-TP14	6131546.336	486353.6867
BB-TP15	6131523.527	486394.2925
BB-TP16	6131545.373	486427.9302
BB-TP17	6131877.447	486349.7551
BB-TP18	6131895.665	486356.8581
BB-TP19	6131885.101	486372.4734
BB-TP20	6131900.518	486369.7122
BB-TP21	6131900.142	486388.9303
BB-TP22	6131889.669	486387.6126
BB-TP23	6131890.912	486408.0684
BB-TP24	6131903.278	486415.7962
BB-TP25	6131881.771	486441.5042
BB-TP26	6131899.952	486457.1041
BB-TP28	6131906.618	486511.4084
BB-TP30	6131883.561	486522.3804
BB-TP31	6131913.366	486572.9319
BB-TP32	6131921.24	486585.5385
BB-TP33	6131895.843	486596.0192
BB-TP34	6131883.391	486597.977
BB-TP35	6131815.158	486475.8457
BB-TP36	6131956.726	487786.2408
BB-TP37	6132018.75	488020.0547
BB-TP38	6131987.496	488047.4865
BB-TP39	6132004.134	482897.9892
BB-TP40	6132006.911	482904.9181
BB-TP41	6132012.06	482926.2811
BB-TP42	6132033.967	482919.4611
BB-TP43	6132015.85	482937.3987
BB-TP44	6132007.095	482939.0991
BB-TP49	6131859.908	487246.5194
BB-TP50	6131544.825	486090.6249
BB-VEG1	6132060.1	486939.1832
BB-VEG4	6131685.094	486191.1963
BB-VEG5	6131634.054	486258.3287
BB-VEG8	6132040.345	482923.5317
BB-VEG9	6131983.161	482909.5991

*All coordinates are in UTM-20

APPENDIX E

Laboratory Analytical Summary Tables

Table E.1 Results of Laboratory Analysis of Petroleum Hydrocarbons in Soil
Phase II Environmental Site Assessment
Former Military Site, Border Beacon, NL
Stantec Project No. 121414915.200

Sample ID	Sample Depth (m)	BTEX Parameters (mg/kg)				Total Petroleum Hydrocarbons (mg/kg)					Resemblance
		Benzene	Toluene	Ethyl-benzene	Xylenes	F1 (C_6-C_{10})	F2 (C_{10}-C_{16})	F3 (C_{16}-C_{32})	Returned to baseline?[4]	Modified TPH[5]	
RDL		0.025	0.025	0.025	0.05	2.5	10	25	-	15	-
Tier I ESLs - Plants and Soil Inv. [1]		180	250	300	350	320	260	1,700	-	-	-
Tier I ESLs - Wildlife and Livestock [2]		18	980	640	2,600	11,000	9,800	16,000	-	-	-
Tier I RBSLs [3]		2.5	10,000	10,000	110	-	-	-	-	870/4,000/ 10,000	-
Lower Site - General Area											
BB-SS1	0 - 0.1	nd	nd	nd	nd	nd	nd	nd	-	nd	-
BB-SS3	0 - 0.1	nd	nd	nd	nd	nd	nd	nd	-	nd	-
BB-SS4	0 - 0.1	nd	nd	nd	nd	nd	nd	nd	-	nd	-
BB-SS5	0 - 0.1	nd	nd	nd	nd	nd	nd	nd	-	nd	-
BB-SS6	0 - 0.1	nd	nd	nd	nd	nd	nd	nd	-	nd	-
BB-SS8	0 - 0.1	nd	nd	nd	nd	nd	nd	23	Yes	23	PLO
BB-SS9	0 - 0.1	nd	nd	nd	nd	nd	nd	nd	-	nd	-
BB-SS9 Lab-Dup	-	-	-	-	-	-	nd	nd	-	-	-
BB-SS10	0 - 0.1	nd	nd	nd	nd	nd	nd	nd	-	nd	-
BB-TP1-BS2	0.25 - 0.50	nd	nd	nd	nd	nd	nd	nd	-	nd	-
BB-TP49-BS2	0.25 - 0.50	nd	nd	nd	nd	nd	nd	nd	-	nd	-
Camp / Antenna Areas and AES Compound											
BB-SS24	0 - 0.1	nd	nd	nd	nd	nd	2,100	1,040	No	3,200	WFO. LO
BB-SS25	0 - 0.1	nd	nd	nd	nd	nd	56	4,560	No	4,600	LO
BB-SS26	0 - 0.1	nd	nd	nd	nd	nd	42	98	Yes	140	WFO. LO
BB-SS27	0 - 0.1	nd	nd	nd	nd	nd	6,300	1,500	Yes	7,800	WFO. LO
BB-SS28	0 - 0.1	nd	nd	nd	nd	nd	33	18	Yes	51	FO
BB-SS29	0 - 0.1	nd	nd	nd	nd	4	4,300	1,820	Yes	6,100	FO
BB-SS30	0 - 0.1	nd	nd	nd	nd	nd	nd	nd	-	nd	-
BB-SS301	0 - 0.1	nd	nd	nd	nd	nd	nd	nd	-	nd	-
BB-SS31	0 - 0.1	nd	nd	nd	nd	nd	nd	nd	-	nd	-
BB-SS32	0 - 0.1	nd	nd	nd	nd	nd	nd	50	Yes	50	LO
BB-SS33	0 - 0.1	nd	nd	nd	nd	12	4,100	233	Yes	4,300	WFO
BB-SS34	0 - 0.1	nd	nd	nd	nd	nd	nd	nd	-	nd	-
BB-SS35	0 - 0.1	nd	nd	nd	nd	nd	nd	nd	-	nd	-
BB-SS36	0 - 0.1	nd	nd	nd	nd	nd	nd	nd	-	nd	-
BB-SS37	0 - 0.1	nd	nd	nd	nd	nd	nd	97	Yes	98	FO/LO. LO
BB-SS40	0 - 0.1	nd	nd	nd	nd	52	1,100	92	Yes	1,300	FO
BB-SS40 Lab-Dup	-	nd	nd	nd	nd	65	-	nd	-	-	-
BB-TP17-BS2	0.25 - 0.50	nd	nd	nd	nd	130	4,600	2,900	Yes	7,600	WFO. LO
BB-TP18-BS2	0.25 - 0.50	nd	nd	nd	nd	nd	67	80	Yes	150	WFO. LO
BB-TP19-BS2	0.25 - 0.50	nd	nd	nd	nd	3	240	1,400	No	1,600	WFO. LO
BB-TP20-BS2	0.25 - 0.50	nd	nd	nd	nd	20	2,900	3,010	Yes	6,000	WFO. LO
BB-TP201-BS2	0.25 - 0.50	nd	nd	nd	nd	23	3,200	3,070	Yes	6,300	WFO. LO
BB-TP21-BS2	0.25 - 0.50	nd	nd	nd	nd	nd	nd	nd	-	nd	-
BB-TP22-BS2	0.25 - 0.50	nd	nd	nd	nd	27	1,200	230	Yes	1,400	WFO
BB-TP221-BS2	0.25 - 0.50	nd	nd	nd	nd	16	1,100	213	Yes	1,300	WFO. PLO
BB-TP221-BS2 Lab-Dup	-	nd	nd	nd	nd	17	-	nd	-	-	-
BB-TP23-BS2	0.25 - 0.50	nd	nd	nd	nd	4	1,400	140	Yes	1,500	WFO
BB-TP24-BS2	0.25 - 0.50	nd	nd	nd	nd	54	3,400	428	Yes	3,900	WFO
BB-TP25-BS2	0.25 - 0.50	nd	nd	nd	nd	6	2,700	516	Yes	3,200	WFO
BB-TP25-BS2 Lab-Dup	-	-	-	-	-	-	3,200	628	-	-	-
BB-TP26-BS2	0.25 - 0.50	nd	nd	nd	nd	nd	nd	nd	-	nd	-
BB-TP27-BS2	0.25 - 0.50	nd	nd	nd	nd	nd	12	57	Yes	70	WFO. LO
BB-TP28-BS2	0.25 - 0.50	nd	nd	nd	nd	89	5,600	717	Yes	6,400	WFO
BB-TP30-BS2	0.25 - 0.50	nd	nd	nd	nd	nd	nd	nd	-	nd	-
BB-TP31-BS2	0.25 - 0.50	nd	nd	nd	0.06	66	**32,000**	2,900	Yes	35,000	FO
BB-TP32-BS2	0.25 - 0.50	nd	nd	nd	nd	nd	nd	nd	-	nd	-
BB-TP33-BS2	0.25 - 0.50	nd	nd	nd	nd	nd	nd	220	No	220	LO
BB-TP34-BS2	0.25 - 0.50	nd	nd	nd	nd	nd	nd	nd	-	nd	-
BB-TP35-BS1	0 - 0.25	nd	nd	nd	nd	nd	nd	nd	-	nd	-
BB-TP35-BS1 Lab-Dup	-	nd	nd	nd	nd	nd	-	nd	-	-	-
BB-TP35-BS2	0.25 - 0.50	nd	nd	nd	nd	nd	nd	nd	-	nd	-
BB-TP35-BS2 Lab-Dup	-	-	-	-	-	-	nd	nd	-	-	-
Unknown Foundation / Building											
BB-TP36-BS1	0 - 0.25	nd	nd	nd	nd	nd	nd	nd	-	nd	-
BB-TP36-BS2	0.25 - 0.50	nd	nd	nd	nd	nd	nd	nd	-	nd	-
BB-TP37-BS2	0.25 - 0.50	nd	nd	nd	nd	nd	nd	nd	-	nd	-
BB-TP38-BS2	0.25 - 0.50	nd	nd	nd	nd	nd	nd	nd	-	nd	-

Notes:

1 = Atlantic Partnership in RBCA (Risk-Based Corrective Action) Implementation (PIRI) Tier I Soil Ecological Screening Levels (ESLs) for the Protection of Plants and Soil Invertebrates; Direct Soil Contact (Table 1a), for a commercial site with coarse grained soil (July 2012, revised January 2015). Screening levels apply to the top 1.5 m of the soil profile.

2 = Atlantic Partnership in RBCA Implementation Tier I Soil ESLs for the Protection of Wildlife (mammals and birds) and Livestock; Soil and food ingestion (Table 1b), for an agricultural site with coarse grained soil (July 2012, revised January 2015). Note: guidelines only exist for agricultural land use. Screening levels apply to the top 1.5 m of the soil profile.

3 = Atlantic Partnership in RBCA Implementation Tier I Risk-Based Screening Levels (RBSLs) (Table 4a) for a commercial site with non-potable groundwater, coarse grained soil, and gasoline/fuel oil / lube oil impacts (July 2012, revised January 2015).

4 = Atlantic Partnership in RBCA Implementation analytical method does not analyze for >C_{32}. Laboratory certificate indicates (Yes or No) whether chromatogram for each sample returns to baseline after C_{32}. Samples are considered to have returned to baseline if the area from C_{32}-C_{36} is less than 10% of the area from C_{10}-C_{32}.

5 = Modified TPH = TPH C_6 - C_{32} (excluding BTEX).
"-" = not analyzed, not applicable or no applicable guideline.
RDL = Reportable Detection Limit.
nd = Not detected above RDL.
Underlined = Value exceeds Tier I ESLs - Plants and Soil Invertebrates (surface soil only).
Bold = Value exceeds Tier I ESLs - Wildlife and Livestock (surface soil only).
Shaded = Value exceeds Tier I RBSLs.

Resemblance:
PLO = Possible lube oil fraction.
LO = Lube oil fraction / One product in lube oil range.
ULO = Unidentified compound(s) in lube oil range.
WFO = Weathered fuel oil fraction.
FO = Fuel oil fraction / One product in the fuel oil range.
FO/LO = One product in fuel/lube oil range.

Table E.1 Results of Laboratory Analysis of Petroleum Hydrocarbons in Soil
Phase II Environmental Site Assessment
Former Military Site, Border Beacon, NL
Stantec Project No. 121414915.200

Sample ID	Sample Depth (m)	BTEX Parameters (mg/kg)				Total Petroleum Hydrocarbons (mg/kg)					Resemblance
		Benzene	Toluene	Ethyl-benzene	Xylenes	F1 (C_6-C_{10})	F2 (C_{10}-C_{16})	F3 (C_{16}-C_{32})	Returned to baseline?[4]	Modified TPH[5]	
RDL		0.025	0.025	0.025	0.05	2.5	10	25	-	15	-
Tier I ESLs - Plants and Soil Inv. [1]		180	250	300	350	320	260	1,700	-	-	-
Tier I ESLs - Wildlife and Livestock [2]		18	980	640	2,600	11,000	9,800	16,000	-	-	-
Tier I RBSLs [3]		2.5	10,000	10,000	110	-	-	-	-	870/4,000/ 10,000	-
Waste Disposal Sites											
BB-SS13	0 - 0.1	nd	nd	nd	nd	nd	nd	nd	-	nd	-
BB-SS14	0 - 0.1	nd	nd	nd	nd	nd	nd	nd	-	nd	-
BB-SS15	0 - 0.1	nd	nd	nd	nd	nd	nd	290	No	290	LO
BB-SS16	0 - 0.1	nd	nd	nd	nd	nd	nd	21	Yes	21	PLO
BB-SS17	0 - 0.1	nd	nd	nd	nd	nd	nd	nd	-	nd	-
BB-SS17 Lab-Dup	-	-	-	-	-	nd	nd	nd	-	-	-
BB-SS18	0 - 0.1	nd	nd	nd	nd	nd	nd	31	Yes	31	ULO
BB-SS19	0 - 0.1	nd	nd	nd	nd	nd	nd	312	No	310	LO
BB-SS19 Lab-Dup	-	nd	nd	nd	nd	nd	-	nd	-	-	-
BB-SS20	0 - 0.1	nd	nd	nd	nd	nd	nd	79	Yes	79	LO
BB-SS21	0 - 0.1	nd	nd	nd	nd	nd	nd	46	Yes	46	PLO
BB-SS22	0 - 0.1	nd	nd	nd	nd	nd	nd	21	Yes	21	PLO
BB-SS23	0 - 0.1	nd	nd	nd	nd	nd	nd	24	Yes	24	PLO
BB-TP3-BS2	0.25 - 0.50	nd	nd	nd	nd	nd	nd	nd	-	nd	-
BB-TP4-BS2	0.25 - 0.50	nd	nd	nd	nd	nd	nd	nd	-	nd	-
BB-TP5-BS2	0.25 - 0.50	nd	nd	nd	nd	nd	nd	nd	-	nd	-
BB-TP6-BS2	0.25 - 0.50	nd	nd	nd	nd	nd	nd	nd	-	nd	-
BB-TP7-BS1	0 - 0.25	nd	nd	nd	nd	nd	nd	31	Yes	31	ULO. PLO
BB-TP71-BS1	0 - 0.25	nd	nd	nd	nd	nd	nd	28	Yes	28	PLO
BB-TP7-BS2	0.25 - 0.50	nd	nd	nd	nd	nd	nd	nd	-	nd	-
BB-TP8-BS2	0.25 - 0.50	nd	nd	nd	nd	nd	nd	140	Yes	140	FO. LO
BB-TP9-BS2	0.25 - 0.50	nd	nd	nd	nd	nd	nd	nd	-	nd	-
BB-TP10-BS2	0.25 - 0.50	nd	nd	nd	nd	nd	nd	nd	-	nd	-
BB-TP101-BS2	0.25 - 0.50	nd	nd	nd	nd	nd	nd	nd	-	nd	-
BB-TP11-BS2	0.25 - 0.50	nd	nd	nd	nd	nd	nd	nd	-	nd	-
BB-TP12-BS1	0 - 0.25	nd	nd	nd	nd	nd	nd	nd	-	nd	-
BB-TP121-BS1	0 - 0.25	nd	nd	nd	nd	nd	nd	nd	-	nd	-
BB-TP12-BS2	0.25 - 0.50	nd	nd	nd	nd	nd	nd	nd	-	nd	-
BB-TP13-BS2	0.25 - 0.50	nd	nd	nd	nd	nd	nd	nd	-	nd	-
BB-TP14-BS2	0.25 - 0.50	nd	nd	nd	nd	nd	nd	27	Yes	27	ULO
BB-TP14-BS2 Lab-Dup	-	nd	nd	nd	nd	nd	-	nd	-	-	-
BB-TP15-BS2	0.25 - 0.50	nd	nd	nd	nd	nd	nd	27	Yes	27	ULO
BB-TP151-BS2	0.25 - 0.50	nd	nd	nd	nd	nd	nd	nd	-	nd	-
BB-TP16-BS2	0.25 - 0.50	nd	nd	nd	nd	130	1,800	430	Yes	2,300	WFO
BB-TP161-BS2	0.25 - 0.50	nd	nd	nd	nd	140	2,000	521	Yes	2,600	WFO
BB-TP50-BS2	0.25 - 0.50	nd	nd	nd	nd	nd	nd	nd	-	nd	-
Upper Site											
BB-SS43	0 - 0.1	nd	nd	nd	nd	nd	nd	nd	-	nd	-
BB-SS44	0 - 0.1	nd	nd	nd	nd	nd	nd	38	Yes	38	ULO. PLO
BB-SS45	0 - 0.1	nd	nd	nd	nd	nd	nd	616	No	620	LO
BB-SS46	0 - 0.1	nd	nd	nd	nd	nd	790	**30,100**	No	31,000	FO. LO
BB-SS47	0 - 0.1	nd	nd	nd	nd	nd	nd	45	Yes	45	ULO. PLO
BB-SS48	0 - 0.1	nd	0.04	nd	0.10	3	150	97	Yes	250	WFO
BB-TP39-BS1	0 - 0.25	nd	nd	nd	nd	nd	nd	204	No	200	LO
BB-TP41-BS1	0 - 0.25	nd	nd	nd	nd	nd	nd	20	Yes	20	PLO
BB-TP42-BS1	0 - 0.25	nd	nd	nd	nd	nd	nd	36	Yes	36	PLO
BB-TP43-BS1	0 - 0.25	nd	nd	nd	nd	nd	nd	33	Yes	33	PLO
BB-TP44-BS1	0 - 0.25	nd	nd	nd	nd	nd	nd	nd	-	nd	-

Notes:

1 = Atlantic Partnership in RBCA (Risk-Based Corrective Action) Implementation (PIRI) Tier I Soil Ecological Screening Levels (ESLs) for the Protection of Plants and Soil Invertebrates; Direct Soil Contact (Table 1a), for a commercial site with coarse grained soil (July 2012, revised January 2015). Screening levels apply to the top 1.5 m of the soil profile.

2 = Atlantic Partnership in RBCA Implementation Tier I Soil ESLs for the Protection of Wildlife (mammals and birds) and Livestock; Soil and food ingestion (Table 1b), for an agricultural site with coarse grained soil (July 2012, revised January 2015). Note: guidelines only exist for agricultural land use. Screening levels apply to the top 1.5 m of the soil profile.

3 = Atlantic Partnership in RBCA Implementation Tier I Risk-Based Screening Levels (RBSLs) (Table 4a) for a commercial site with non-potable groundwater, coarse grained soil, and gasoline/fuel oil / lube oil impacts (July 2012, revised January 2015).

4 = Atlantic Partnership in RBCA Implementation analytical method does not analyze for >C_{32}. Laboratory certificate indicates (Yes or No) whether chromatogram for each sample returns to baseline after C_{32}. Samples are considered to have returned to baseline if the area from C_{32}-C_{36} is less than 10% of the area from C_{10}-C_{32}.

5 = Modified TPH = TPH C_6 - C_{32} (excluding BTEX).
"-" = not analyzed, not applicable or no applicable guideline.
RDL = Reportable Detection Limit.
nd = Not detected above RDL.
Underlined = Value exceeds Tier I ESLs - Plants and Soil Invertebrates (surface soil only).
Bold = Value exceeds Tier I ESLs - Wildlife and Livestock (surface soil only).
Shaded = Value exceeds Tier I RBSLs.

Resemblance:

PLO = Possible lube oil fraction.
LO = Lube oil fraction / One product in lube oil range.
ULO = Unidentified compound(s) in lube oil range.
WFO = Weathered fuel oil fraction.
FO = Fuel oil fraction / One product in the fuel oil range.
FO/LO = One product in fuel/lube oil range.

Table E.2 Results of Laboratory Analysis of Petroleum Hydrocarbon Fractionation in Soil
Phase II Environmental Site Assessment
Former Military Site, Border Beacon, NL
Stantec Project No. 121414915.200

Parameters	RDL	Units	Tier I ESLs - Plants and Soil Inv. [1]	Tier I ESLs - Wildlife and Livestock [2]	Tier I RBSLs [3]	Camp / Antenna Areas and AES Compound		Waste Disposal Sites	Upper Site
						BB-SS38	BB-SS38 Lab-Dup	BB-TP8-BS1	BB-TP40-BS1
					Sample Depth:	0 - 0.1	-	0 - 0.25	0 - 0.25
Benzene	0.025	mg/kg	180	18	2.5	nd	-	nd	nd
Toluene	0.025	mg/kg	250	980	10,000	nd	-	nd	nd
Ethylbenzene	0.025	mg/kg	300	640	10,000	nd	-	nd	nd
Xylenes	0.05	mg/kg	350	2,600	110	nd	-	nd	nd
Modified TPH - Tier I[4]	15	mg/kg	-	-	870/4,000/ 10,000	1,100	-	1,700	81
> C_8-C_{10} Aromatic	0.1	mg/kg	-	-	-	nd	-	nd	nd
> C_{10}-C_{12} Aromatic	4.0	mg/kg	-	-	-	nd (20)	nd (20)	nd (20)	nd (20)
> C_{12}-C_{16} Aromatic	15	mg/kg	-	-	-	92	110	23	nd
> C_{16}-C_{21} Aromatic	15	mg/kg	-	-	-	56	66	99	nd
> C_{21}-C_{32} Aromatic	15	mg/kg	-	-	-	31	35	450	50
> C_6-C_8 Aliphatic	1	mg/kg	-	-	-	nd	-	nd	nd
> C_8-C_{10} Aliphatic	1	mg/kg	-	-	-	nd	-	nd	nd
> C_{10}-C_{12} Aliphatic	8.0	mg/kg	-	-	-	22	24	nd	nd
> C_{12}-C_{16} Aliphatic	15	mg/kg	-	-	-	700	800	76	nd
> C_{16}-C_{21} Aliphatic	15	mg/kg	-	-	-	170	190	220	nd
> C_{21}-C_{32} Aliphatic	15	mg/kg	-	-	-	65	68	860	31
F1 (C_6-C_{10})	-	mg/kg	320	11,000	-	nd	-	nd	nd
F2 (C_{10}-C_{16})	-	mg/kg	260	9,800	-	814	934	99	nd
F3 (C_{16}-C_{32})	-	mg/kg	1,700	16,000	-	322	359	1,629	81
					Returned to Baseline?[5]	Yes	-	No	Yes
					Resemblance	WFO	-	FO/LO. LO	ULO. PLO

Notes:

1 = Atlantic Partnership in RBCA (Risk-Based Corrective Action) Implementation (PIRI) Tier I Soil Ecological Screening Levels (ESLs) for the Protection of Plants and Soil Invertebrates; Direct Soil Contact (Table 1a), for a commercial site with coarse grained soil (July 2012, revised January 2015). Screening levels apply to the top 1.5 m of the soil profile.

2 = Atlantic Partnership in RBCA Implementation Tier I Soil ESLs for the Protection of Wildlife (mammals and birds) and Livestock; Soil and food ingestion (Table 1b), for an agricultural site with coarse grained soil (July 2012, revised January 2015). Note: guidelines only exist for agricultural land use. Screening levels apply to the top 1.5 m of the soil profile.

3 = Atlantic Partnership in RBCA Implementation Tier I Risk-Based Screening Levels (RBSLs) (Table 4a) for a commercial site with non-potable groundwater, coarse grained soil, and gasoline/fuel oil / lube oil impacts (July 2012, revised January 2015).

4 = Modified TPH = TPH C_6 - C_{32} (excluding BTEX)

5 = Atlantic Partnership in RBCA Implementation analytical method does not analyze for >C_{32}. Laboratory certificate indicates (Yes or No) whether chromatogram for each sample returns to baseline after C_{32}. Samples are considered to have returned to baseline if the area from C_{32}-C_{36} is less than 10% of the area from C_{10}-C_{32}.

RDL = Reportable Detection Limit.

nd (#) = Not detected above elevated RDL shown.

nd = Not detected above standard RDL.

"-" = not analyzed, not applicable or no applicable guideline.

Underlined = Value exceeds Tier I ESLs - Plants and Soil Invertebrates (surface soil only).

Bold = Value exceeds Tier I ESLs - Wildlife and Livestock (surface soil only).

Shaded = Value exceeds Tier I RBSLs .

Resemblance:

WFO = Weathered fuel oil fraction.

FO/LO = One product in fuel/lube oil range. ULO = Unidentified compounds in lube oil range.

LO = Lube oil fraction. PLO = Possible lube oil fraction.

Table E.3 Results of Laboratory Analysis of MTBE in Soil
Phase II Environmental Site Assessment
Former Military Site, Border Beacon, NL
Stantec Project No. 121414915.200

Sample ID	Sample Depth	Methyl t-butyl ether (MTBE)
	RDL	0.025
	Units	mg/kg
	Guideline	0.57 [1]
Lower Site - General Area		
BB-SS1	0 - 0.1	nd
BB-SS3	0 - 0.1	nd
BB-SS8	0 - 0.1	nd
BB-SS10	0 - 0.1	nd
Camp / Antenna Areas and AES Compound		
BB-SS38	0 - 0.1	nd
BB-TP26-BS1	0 - 0.25	nd
BB-TP28-BS1	0 - 0.25	nd
BB-TP28-BS1 Lab-Dup	-	nd
Unknown Foundation / Building		
BB-TP36-BS1	0 - 0.25	nd
Waste Disposal Sites		
BB-SS17	0 - 0.1	nd
BB-SS23	0 - 0.1	nd
BB-TP3-BS1	0 - 0.25	nd
BB-TP10-BS2	0.25 - 0.50	nd
BB-TP101-BS2	0.25 - 0.50	nd
BB-TP13-BS1	0 - 0.25	nd
BB-TP14-BS1	0 - 0.25	nd
Upper Site		
BB-TP39-BS1	0 - 0.25	nd
BB-TP42-BS1	0 - 0.25	nd
BB-TP44-BS1	0 - 0.25	nd

Notes:

1 = Alberta Tier I Soil and Groundwater Remediation Guidelines: Table A-4 Surface Soil Remediation Guidelines for Commercial Land Use - All Exposure Pathways (2016) (Assuming non-potable groundwater).

RDL = Reportable Detection Limit.
nd = Not detected above RDL.
"-" = Not analyzed, not applicable or no applicable guideline.

Table E.4 Results of Laboratory Analysis of VOCs in Soil
Phase II Environmental Site Assessment
Former Military Site, Border Beacon, NL
Stantec Project No. 121414915.200

Volatile Organics	RDL	Units	Guideline	Lower Site - General Area				Camp / Antenna Areas and AES Compound					Unknown Foundation / Building	Waste Disposal Site							Upper Site		
				BB-SS1	BB-SS3	BB-SS8	BB-SS10	BB-SS38	BB-TP26-BS1	BB-TP28-BS1	BB-TP28-BS1 Lab-Dup	BB-TP33-BS2	BB-TP36-BS1	BB-SS17	BB-SS23	BB-TP3-BS1	BB-TP10-BS2	BB-TP101-BS2	BB-TP13-BS1	BB-TP14-BS1	BB-TP39-BS1	BB-TP42-BS1	BB-TP44-BS1
			Sample depth (m)	0 - 0.1	0 - 0.1	0 - 0.1	0 - 0.1	0 - 0.1	0 - 0.25	0 - 0.25	-	0.25 - 0.50	0 - 0.25	0 - 0.1	0 - 0.1	0 - 0.25	0.25 - 0.50	0.25 - 0.50	0 - 0.25	0 - 0.25	0 - 0.25	0 - 0.25	0 - 0.25
1,1,1-Trichloroethane	25	µg/kg	50,000 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-Tetrachloroethane	25	µg/kg	50,000 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-Trichloroethane	25	µg/kg	50,000 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1-Dichloroethane	25	µg/kg	50,000 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1-Dichloroethylene	25	µg/kg	50,000 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,2-Dichlorobenzene	25	µg/kg	10,000 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,2-Dichloroethane	25	µg/kg	50,000 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,2-Dichloropropane	25	µg/kg	50,000 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,3-Dichlorobenzene	25	µg/kg	10,000 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,4-Dichlorobenzene	25	µg/kg	10,000 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Benzene	25	µg/kg	2,500[2], 180,000[3], 18,000[4]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Bromodichloromethane	25	µg/kg	18,000 [6]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Bromoform	25	µg/kg	610 [6]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Bromomethane	50	µg/kg	50 [6]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Carbon Tetrachloride	25	µg/kg	50,000 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Chlorobenzene	25	µg/kg	10,000 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Chloroethane	200	µg/kg	-	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Chloroform	25	µg/kg	50,000 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
cis-1,2-Dichloroethylene	25	µg/kg	55,000 [6]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
cis-1,3-Dichloropropene	25	µg/kg	180 [6]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Dibromochloromethane	25	µg/kg	2,500 [5]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Ethylbenzene	25	µg/kg	10,000,000[2], 300,000[3], 640,000[4]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Ethylene Dibromide	25	µg/kg	50 [6]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Methylene Chloride (Dichloromethane)	25	µg/kg	50,000 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd (50)	nd	nd	nd (50)	nd	nd (50)
o-Xylene	25	µg/kg	110,000[2], 350,000[3], 2,600,000[4]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
p+m-Xylene	25	µg/kg		nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Styrene	25	µg/kg	50,000 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Tetrachloroethylene (PCE)	25	µg/kg	600 [5]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Toluene	25	µg/kg	10,000,000[2], 250,000[3], 980,000[4]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
trans-1,2-Dichloroethylene	25	µg/kg	50,000 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
trans-1,3-Dichloropropene	25	µg/kg	180 [6]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Trichloroethylene (TCE)	10	µg/kg	10 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Trichlorofluoromethane (FREON 11)	25	µg/kg	32,000 [6]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Vinyl Chloride	20	µg/kg	4.3 [5]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd

Notes:

1 = Canadian Council of Ministers of the Environment (CCME) Canadian Soil Quality Guidelines (SQGs) for the Protection of Environmental and Human Health for comercial land use (1999 and Updates).
2 = Atlantic Partnership in RBCA (Risk-Based Corrective Action) Implementation Tier I Risk-Based Screening Levels (RBSLs) (Table 4a) for a commercial site with non-potable groundwater (July 2012, revised January 2015).
3 = Atlantic Partnership in RBCA Implementation (PIRI) Tier I Soil Ecological Screening Levels (ESLs) for the Protection of Plants and Soil Invertebrates; Direct Soil Contact (Table 1a), for a commercial site with coarse grained soil (July 2012, revised January 2015). Screening levels apply to the top 1.5 m of the soil profile.
4 = Atlantic Partnership in RBCA Implementation Tier I Soil ESLs for the Protection of Wildlife (mammals and birds) and Livestock; Soil and food ingestion (Table 1b), for an agricultural site with coarse grained soil (July 2012, revised January 2015). Note: guidelines only exist for agricultural land use. Screening levels apply to the top 1.5 m of the soil profile.
5 = Alberta Tier I Soil and Groundwater Remediation Guidelines: Table A-4 Surface Soil Remediation Guidelines for Comercial Land Use - All Exposure Pathways (2016) (assuming non-potable groundwater).
6 = Soil and Groundwater Standards for Use at Contaminated Sites in Ontario: Table 3 - Full Depth, Non-Potable Water Scenario, Commercial/Industrial Land Use (2011).
RDL = Reportable Detection Limit.
nd (#) = Not detected above elevated RDL shown.
nd = not detected above standard RDL.
"-" = Not analyzed, not applicable or no applicable guideline.
Shaded = Value exceeds the applicable guideline.
Underlined/Italicized = RDL exceeds the applicable guideline.

Table E.5 Results of Laboratory Analysis of PAHs in Soil
Phase II Environmental Site Assessment
Former Military Site, Border Beacon, NL
Stantec Project No. 121414915.200

Parameters	RDL	Units	B(a)P PEF	HH Guidelines	CCME $CSQG_{EH}$	Lower Site - General Area					Camp / Antenna Areas and AES Compound								
						BB-SS1	BB-SS3	BB-SS8	BB-SS10	BB-SS10 Lab-Dup	BB-SS24	BB-SS26	BB-SS27	BB-SS28	BB-SS30	BB-SS301	BB-SS31	BB-SS31 Lab-Dup	BB-SS32
Sample Depth (m):						0 - 0.1	0 - 0.1	0 - 0.1	0 - 0.1	-	0 - 0.1	0 - 0.1	0 - 0.1	0 - 0.1	0 - 0.1	0 - 0.1	0 - 0.1	-	0 - 0.1
Non-Carcinogenic PAHs																			
1-Methylnaphthalene	0.010	mg/kg	-	160 [3]	-	nd	nd	nd	nd	nd	nd (0.090)	nd	nd (0.15)	nd	nd	nd	nd	nd	nd
2-Methylnaphthalene	0.010	mg/kg	-	160 [3]	-	nd	nd	nd	nd	nd	nd (0.17)	nd	nd (0.32)	nd	nd	nd	nd	nd	nd
Acenaphthene	0.010	mg/kg	-	43,000 [2]	0.28 [1]	nd	nd	nd	nd	nd	nd (0.060)	nd	nd (0.12)	nd	nd	nd	nd	nd	nd
Acenaphthylene	0.010	mg/kg	-	6.6 [3]	320 [1]	nd	nd	nd	nd	nd	nd (0.050)	nd	nd (0.090)	nd	nd	nd	nd	nd	nd
Anthracene	0.010	mg/kg	-	37,000 [2]	32 [1]	nd	nd	nd	nd	nd	nd	nd	nd (0.020)	nd	nd	nd	nd	nd	nd
Fluoranthene	0.010	mg/kg	-	5,300 [2]	180 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.017
Fluorene	0.010	mg/kg	-	4,100 [2]	0.25 [1]	nd	nd	nd	nd	nd	nd (0.090)	nd	nd (0.20)	nd	nd	nd	nd	nd	nd
Naphthalene	0.010	mg/kg	-	25 [2]	0.013 [1]	nd	nd	nd	nd	nd	*nd (0.040)*	nd	*nd (0.21)*	nd	nd	nd	nd	nd	nd
Perylene	0.010	mg/kg	-	-	-	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Phenanthrene	0.010	mg/kg	-	-	0.046 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Pyrene	0.010	mg/kg	-	3,200 [2]	100 [1]	nd	nd	nd	nd	nd	0.016	nd	0.016	nd	nd	nd	nd	nd	0.015
Carcinogenic PAHs																			
Benzo(a)anthracene	0.010	mg/kg	0.1	-	10 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Benzo(a)pyrene	0.010	mg/kg	1	-	72 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Benzo(b)fluoranthene	0.010	mg/kg	0.1	-	10 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Benzo(g,h,i)perylene	0.010	mg/kg	0.01	-	13 [3]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Benzo(j)fluoranthene	0.010	mg/kg	0.1	-	-	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Benzo(k)fluoranthene	0.010	mg/kg	0.1	-	10 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Chrysene	0.010	mg/kg	0.01	-	14 [3]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.012
Dibenzo(a,h,)anthracene	0.010	mg/kg	1	-	10 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Indeno(1,2,3-c,d) pyrene	0.010	mg/kg	0.1	-	10 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
B(a)P TPE			-	5.3 [1,4]	-	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01

Notes:

1 = Canadian Council of Ministers of the Environment (CCME) Canadian Soil Quality Guidelines (SQGs) for the Protection of Environmental and Human Health for Commercial land use (1999 and Updates).

2 = Alberta Tier I Soil and Groundwater Remediation Guidelines: Table A-4 Surface Soil Remediation Guidelines for Commercial Land Use - All Exposure Pathways (2016) assuming non-potable groundwater.

3 = Soil and Groundwater Standards for Use at Contaminated Sites in Ontario: Table 3 - Full Depth, Non-Potable Water Scenario, Commercial/Industrial Land Use (2011).

4 = Carcinogenic PAHs assessed as B[a]P TPE for Human Health.

Based on CCME guidelines for ingestion, inhalation and dermal exposures. Where a parameter is not detected, 1/2 of the RDL is used in the TPE calculation. Values were not multiplied by a factor of 3, as there was no evidence of creosote treated wood on the property.

B(a)P TPE = Benzo(a)pyrene Total Potency Equivalent concentration.

RDL = Reportable Detection Limit; nd = Not detected above the standard RDL;

nd (#) = Not detected above elevated RDL shown.

nd = Not detected above standard RDL.

"-" = Not applicable or no applicable guideline.

Bold = Value exceeds the Human Health guideline

Shaded = Value exceed the Ecological guideline

Underlined/Italicized = RDL exceeds the Human Health or Ecological guideline

Table E.5 Results of Laboratory Analysis of PAHs in Soil
Phase II Environmental Site Assessment
Former Military Site, Border Beacon, NL
Stantec Project No. 121414915.200

Parameters	RDL	Units	B(a)P PEF	HH Guidelines	CCME $CSQG_{EH}$	Camp / Antenna Areas and AES Compound					Unknown Foundation / Building		Waste Disposal Sites							
						BB-SS35	BB-SS36	BB-SS40	BB-TP17-BS1	BB-TP35-BS1	BB-TP36-BS1	BB-TP36-BS1 Lab-Dup	BB-SS13	BB-SS15	BB-SS17	BB-SS23	BB-TP10-BS2	BB-TP101-BS2	BB-TP12-BS1	BB-TP13-BS2	BB-TP14-BS1
Sample Depth (m):						0 - 0.1	0 - 0.1	0 - 0.1	0 - 0.25	0 - 0.25	0 - 0.25	-	0 - 0.1	0 - 0.1	0 - 0.1	0 - 0.1	0.25 - 0.50	0.25 - 0.50	0 - 0.25	0.25 - 0.50	0 - 0.25
Non-Carcinogenic PAHs																				
1-Methylnaphthalene	0.010	mg/kg	-	160 [3]	-	nd	nd	nd (0.030)	nd (0.12)	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
2-Methylnaphthalene	0.010	mg/kg	-	160 [3]	-	nd	nd	nd (0.050)	nd (0.32)	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Acenaphthene	0.010	mg/kg	-	43,000 [2]	0.28 [1]	nd	nd	nd (0.050)	0.26	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Acenaphthylene	0.010	mg/kg	-	6.6 [3]	320 [1]	nd	nd	nd (0.050)	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Anthracene	0.010	mg/kg	-	37,000 [2]	32 [1]	nd	nd	nd	nd (0.040)	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Fluoranthene	0.010	mg/kg	-	5,300 [2]	180 [1]	nd	nd	nd	0.012	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Fluorene	0.010	mg/kg	-	4,100 [2]	0.25 [1]	nd	nd	nd	nd (0.11)	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Naphthalene	0.010	mg/kg	-	25 [2]	0.013 [1]	nd	nd	0.027	0.023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Perylene	0.010	mg/kg	-	-	-	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Phenanthrene	0.010	mg/kg	-	-	0.046 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Pyrene	0.010	mg/kg	-	3,200 [2]	100 [1]	nd	nd	0.015	0.028	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Carcinogenic PAHs																				
Benzo(a)anthracene	0.010	mg/kg	0.1	-	10 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Benzo(a)pyrene	0.010	mg/kg	1	-	72 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Benzo(b)fluoranthene	0.010	mg/kg	0.1	-	10 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Benzo(g,h,i)perylene	0.010	mg/kg	0.01	-	13 [3]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Benzo(j)fluoranthene	0.010	mg/kg	0.1	-	-	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Benzo(k)fluoranthene	0.010	mg/kg	0.1	-	10 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Chrysene	0.010	mg/kg	0.01	-	14 [3]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Dibenzo(a,h,)anthracene	0.010	mg/kg	1	-	10 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Indeno(1,2,3-c,d) pyrene	0.010	mg/kg	0.1	-	10 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
B(a)P TPE			-	5.3 [1,4]	-	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01

Notes:

1 = Canadian Council of Ministers of the Environment (CCME) Canadian Soil Quality Guidelines (SQGs) for the Protection of Environmental and Human Health for Commercial land use (1999 and Updates).

2 = Alberta Tier I Soil and Groundwater Remediation Guidelines: Table A-4 Surface Soil Remediation Guidelines for Commercial Land Use - All Exposure Pathways (2016) assuming non-potable groundwater.

3 = Soil and Groundwater Standards for Use at Contaminated Sites in Ontario: Table 3 - Full Depth, Non-Potable Water Scenario, Commercial/Industrial Land Use (2011).

4 = Carcinogenic PAHs assessed as B[a]P TPE for Human Health.

Based on CCME guidelines for ingestion, inhalation and dermal exposures. Where a parameter is not detected, 1/2 of the RDL is used in the TPE calculation. Values were not multiplied by a factor of 3, as there was no evidence of creosote treated wood on the property.

B(a)P TPE = Benzo(a)pyrene Total Potency Equivalent concentration.

RDL = Reportable Detection Limit; nd = Not detected above the standard RDL;

nd (#) = Not detected above elevated RDL shown.

nd = Not detected above standard RDL.

"-" = Not applicable or no applicable guideline.

Bold = Value exceeds the Human Health guideline

Shaded = Value exceed the Ecological guideline

Underlined/Italicized = RDL exceeds the Human Health or Ecological guideline

Table E.5 Results of Laboratory Analysis of PAHs in Soil
Phase II Environmental Site Assessment
Former Military Site, Border Beacon, NL
Stantec Project No. 121414915.200

Parameters	RDL	Units	B(a)P PEF	HH Guidelines	CCME $CSQG_{EH}$	Waste Disposal Sites				Upper Site							
						BB-TP15-BS1	BB-TP15-BS2	BB-TP151-BS2	BB-TP16-BS1	BB-SS43	BB-SS46	BB-SS48	BB-SS49	BB-SS50	BB-TP39-BS1	BB-TP41-BS1	BB-TP43-BS1
Sample Depth (m):						0 - 0.25	0.25 - 0.50	0.25 - 0.50	0 - 0.25	0 - 0.1	0 - 0.1	0 - 0.1	0 - 0.1	0 - 0.1	0 - 0.25	0 - 0.25	0 - 0.25
Non-Carcinogenic PAHs																	
1-Methylnaphthalene	0.010	mg/kg	-	160 [3]	-	0.012	nd	nd	nd (0.21)	nd	nd	nd	nd	nd	nd	nd	nd
2-Methylnaphthalene	0.010	mg/kg	-	160 [3]	-	0.023	nd	nd	nd (0.50)	nd	nd (0.050)	0.018	nd	nd	nd	nd	nd
Acenaphthene	0.010	mg/kg	-	43,000 [2]	0.28 [1]	nd	nd	nd	nd (0.070)	nd	nd	nd	nd	nd	nd	nd	nd
Acenaphthylene	0.010	mg/kg	-	6.6 [3]	320 [1]	nd	nd	nd	nd (0.16)	nd	nd	nd	nd	nd	nd	nd	nd
Anthracene	0.010	mg/kg	-	37,000 [2]	32 [1]	nd	nd	nd	nd (0.020)	nd	nd (0.020)	nd	nd	nd	nd	nd	nd
Fluoranthene	0.010	mg/kg	-	5,300 [2]	180 [1]	nd	nd	nd	0.025	nd	0.045	nd	nd	nd	nd	0.012	nd
Fluorene	0.010	mg/kg	-	4,100 [2]	0.25 [1]	nd	nd	nd	*nd (1.0)*	nd	nd (0.040)	nd	nd	nd	nd	nd	nd
Naphthalene	0.010	mg/kg	-	25 [2]	0.013 [1]	nd	nd	nd	0.11	nd	nd	nd	nd	nd	nd	nd	nd
Perylene	0.010	mg/kg	-	-	-	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Phenanthrene	0.010	mg/kg	-	-	0.046 [1]	nd	nd	nd	0.55	nd	nd	nd	nd	nd	nd	nd	nd
Pyrene	0.010	mg/kg	-	3,200 [2]	100 [1]	nd	nd	nd	0.016	nd	0.21	nd	nd	nd	nd	nd	nd
Carcinogenic PAHs																	
Benzo(a)anthracene	0.010	mg/kg	0.1	-	10 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Benzo(a)pyrene	0.010	mg/kg	1	-	72 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Benzo(b)fluoranthene	0.010	mg/kg	0.1	-	10 [1]	nd	nd	nd	nd	nd	0.019	nd	nd	nd	nd	nd	nd
Benzo(g,h,i)perylene	0.010	mg/kg	0.01	-	13 [3]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Benzo(j)fluoranthene	0.010	mg/kg	0.1	-	-	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Benzo(k)fluoranthene	0.010	mg/kg	0.1	-	10 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Chrysene	0.010	mg/kg	0.01	-	14 [3]	nd	nd	nd	nd	nd	0.14	nd	nd	nd	nd	nd	nd
Dibenzo(a,h,)anthracene	0.010	mg/kg	1	-	10 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Indeno(1,2,3-c,d) pyrene	0.010	mg/kg	0.1	-	10 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
B(a)P TPE			-	5.3 [1,4]	-	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01

Notes:

1 = Canadian Council of Ministers of the Environment (CCME) Canadian Soil Quality Guidelines (SQGs) for the Protection of Environmental and Human Health for Commercial land use (1999 and Updates).

2 = Alberta Tier I Soil and Groundwater Remediation Guidelines: Table A-4 Surface Soil Remediation Guidelines for Commercial Land Use - All Exposure Pathways (2016) assuming non-potable groundwater.

3 = Soil and Groundwater Standards for Use at Contaminated Sites in Ontario: Table 3 - Full Depth, Non-Potable Water Scenario, Commercial/Industrial Land Use (2011).

4 = Carcinogenic PAHs assessed as B[a]P TPE for Human Health.

Based on CCME guidelines for ingestion, inhalation and dermal exposures. Where a parameter is not detected, 1/2 of the RDL is used in the TPE calculation. Values were not multiplied by a factor of 3, as there was no evidence of creosote treated wood on the property.

B(a)P TPE = Benzo(a)pyrene Total Potency Equivalent concentration.

RDL = Reportable Detection Limit; nd = Not detected above the standard RDL;

nd (#) = Not detected above elevated RDL shown.

nd = Not detected above standard RDL.

"-" = Not applicable or no applicable guideline.

Bold = Value exceeds the Human Health guideline

Shaded = Value exceed the Ecological guideline

Underlined/Italicized = RDL exceeds the Human Health or Ecological guideline

Table E.6 Results of Laboratory Analysis of Available Metals in Soil

Phase II Environmental Site Assessment
Former Military Site, Border Beacon, NL
Stantec Project No. 121414915.200

Parameters	RDL	Units	Guideline	Lower Site - General Area				Camp / Antenna Areas and AES Compound											
				BB-SS1	BB-SS3	BB-SS8	BB-SS10	BB-SS30	BB-SS301	BB-TP17-BS1	BB-TP18-BS1	BB-TP19-BS1	BB-TP19-BS1 Lab-Dup	BB-TP19-BS1 Lab-Dup 2	BB-TP20-BS1	BB-TP20-BS2	BB-TP201-BS2	BB-TP21-BS1	BB-TP22-BS1	BB-TP22-BS2
			Sample Depth (m):	0 - 0.1	0 - 0.1	0 - 0.1	0 - 0.1	0 - 0.1	0 - 0.1	0 - 0.25	0 - 0.25	0 - 0.25	-	0 - 0.1	0 - 0.25	0.25 - 0.50	0.25 - 0.50	0 - 0.25	0 - 0.25	0.25 - 0.50
Aluminum	10	mg/kg	-	7,600	5,800	8,500	7,500	3,600	3,400	6,700	3,800	4,000	5,000	-	4,300	4,200	3,800	5,400	4,900	4,400
Antimony	2	mg/kg	40 [1]	nd	nd	nd	nd	nd	nd	nd	nd	19	*2.1*	*nd*	nd	3.9	nd	nd	nd	nd
Arsenic	2	mg/kg	26 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	nd	nd	nd	nd	nd	nd
Barium	5	mg/kg	2000 [1]	32	32	28	21	31	42	38	35	81	100	-	220	200	180	69	41	30
Beryllium	2	mg/kg	8 [2]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	nd	nd	nd	nd	nd	nd
Bismuth	2	mg/kg	-	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	nd	nd	nd	nd	nd	nd
Boron	50	mg/kg	120 [3]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	nd	nd	nd	nd	nd	nd
Cadmium	0.3	mg/kg	22 [1]	nd	nd	nd	nd	nd	nd	nd	nd	1.2	1.6	-	nd	nd	nd	nd	nd	nd
Chromium	2	mg/kg	87 [1]	13	5.9	6.6	6.8	5	4.6	7.2	4.1	4.4	*8.8*	7.9	4.9	5	4.8	8.4	5.1	7.1
Cobalt	1	mg/kg	300 [1]	3.6	2.1	1.9	1.6	2.3	2.3	2.4	1.5	2.4	2.5	-	2	2.1	2.1	3.4	3.3	2.6
Copper	2	mg/kg	91 [1]	6.6	3.8	4	2.9	18	5.3	5.8	4.1	9.6	13	-	10	7.9	6.6	9.9	12	5.8
Iron	50	mg/kg	-	17,000	12,000	14,000	14,000	9,600	9,400	12,000	8,900	8,100	11,000	-	10,000	10,000	9,900	14,000	12,000	10,000
Lead	0.5	mg/kg	600 [1]	14	5.8	7.8	7.5	7.6	6.4	12	7.9	25	*48*	*41*	18	18	17	6.4	80	31
Lithium	2	mg/kg	-	11	9	8.2	8.7	8.3	7.6	12	7.4	8	9.3	-	9.2	9.3	9	11	9.9	8.4
Manganese	2	mg/kg	-	160	99	100	100	110	110	120	86	90	110	-	100	110	100	160	130	120
Mercury	0.1	mg/kg	50 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	nd	nd	nd	nd	nd	nd
Molybdenum	2	mg/kg	40 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	nd	nd	nd	nd	nd	nd
Nickel	2	mg/kg	89 [1]	5.2	4	3.2	2.5	6.2	3.4	3.4	2.1	3.2	3.9	-	3.9	3.2	2.8	5.7	5.3	4
Rubidium	2	mg/kg	-	5.5	7.1	4.7	3.5	4.4	4.9	6.3	4.5	4.2	4.6	-	5.3	5.5	4.6	9.3	5.6	4.2
Selenium	1	mg/kg	2.9 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	nd	nd	nd	nd	nd	nd
Silver	0.5	mg/kg	40 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	nd	nd	nd	nd	nd	nd
Strontium	5	mg/kg	-	7.4	nd	5.2	5.2	nd	nd	6.3	nd	5.9	7	-	7.6	5.9	5.9	10	nd	nd
Thallium	0.1	mg/kg	1 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	nd	nd	nd	nd	nd	nd
Tin	2	mg/kg	300 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	nd	nd	nd	nd	nd	nd
Uranium	0.1	mg/kg	300 [1]	0.83	0.47	0.61	0.67	0.59	0.59	0.71	0.48	0.41	0.5	-	0.63	0.54	0.52	1.1	0.61	0.59
Vanadium	2	mg/kg	130 [1]	23	13	15	15	7.3	8.3	13	8.5	6.4	*12*	*11*	9.3	8.5	9.1	16	9.4	11
Zinc	5	mg/kg	360 [1]	34	22	23	24	89	27	53	25	94	120	-	110	73	64	62	100	43

Notes:

1 = Canadian Council of Ministers of the Environment (CCME) Canadian Soil Quality Guidelines (SQGs) for the Protection of Environmental and Human Health for Commercial land use (1999 and updates).

2 = Canadian Council of Ministers of the Environment (CCME) Interim remediation criteria that have not yet been replaced by SQGs (1991). Commercial land use.

3 = Soil and Groundwater Standards for Use at Contaminated Sites in Ontario: Table 3 - Full Depth, Non-Potable Water Scenario, Commercial/Industrial Land Use (2011)

RDL = Reportable Detection Limit.
nd = Not detected above RDL.
"-" = Not analyzed, not applicable or no applicable guideline.
Shaded = Value exceeds applicable guideline
Italicized/Underlined = Poor relative percent difference in laboratory initiated duplicate samples due to sample inhomogeneity

Table E.6 Results of Laboratory Analysis of Available Metals in Soil

Phase II Environmental Site Assessment
Former Military Site, Border Beacon, NL
Stantec Project No. 121414915.200

Parameters	RDL	Units	Guideline	Camp / Antenna Areas and AES Compound													Unknown Foundation / Building		
				BB-TP221-BS2	BB-TP23-BS1	BB-TP24-BS1	BB-TP25-BS1	BB-TP26-BS1	BB-TP27-BS1	BB-TP28-BS1	BB-TP30-BS1	BB-TP31-BS1	BB-TP32-BS1	BB-TP33-BS1	BB-TP34-BS1	BB-TP35-BS1	BB-TP36-BS1	BB-TP37-BS1	BB-TP38-BS1
			Sample Depth (m):	0.25 - 0.50	0 - 0.25	0 - 0.25	0 - 0.25	0 - 0.25	0 - 0.25	0 - 0.25	0 - 0.25	0 - 0.25	0 - 0.25	0 - 0.25	0 - 0.25	0 - 0.25	0 - 0.25	0 - 0.25	0 - 0.25
Aluminum	10	mg/kg	-	5,300	7,900	5,600	4,900	4,600	4,800	4,300	5,300	3,000	6,000	5,200	8,900	7,200	2,500	2,800	4,600
Antimony	2	mg/kg	40 [1]	nd	nd	nd	nd	2	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Arsenic	2	mg/kg	26 [1]	nd	nd	nd	nd	45	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Barium	5	mg/kg	2000 [1]	43	28	31	32	36	52	37	38	44	130	22	28	20	24	22	18
Beryllium	2	mg/kg	8 [2]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Bismuth	2	mg/kg	-	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Boron	50	mg/kg	120 [3]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Cadmium	0.3	mg/kg	22 [1]	nd	nd	nd	nd	nd	nd	nd	nd	1.6	nd	nd	nd	nd	nd	nd	nd
Chromium	2	mg/kg	87 [1]	6.2	9.3	5.7	4.3	6.6	6.5	4.7	8.4	3.9	7	5	7.5	4.1	2.5	nd	3.6
Cobalt	1	mg/kg	300 [1]	2.6	3.5	2.1	2.1	2.4	2.7	2.5	3.2	1.7	2.4	1.3	2.6	1.7	1.2	nd	1.5
Copper	2	mg/kg	91 [1]	6.2	9.1	5.1	7.7	70	19	7.5	11	5.4	5.7	3.3	4.4	2.7	4	nd	2.3
Iron	50	mg/kg	-	12,000	16,000	11,000	11,000	11,000	12,000	11,000	12,000	8,800	13,000	11,000	15,000	11,000	7,100	7,100	11,000
Lead	0.5	mg/kg	600 [1]	25	14	11	14	41	9.4	6.4	8.4	12	8.5	6.1	8.4	6.4	5.2	4.4	6.3
Lithium	2	mg/kg	-	9.7	10	8.4	9.9	9.4	9.8	10	9.4	7.2	9.3	8.3	9.4	9.9	7.9	6.7	9.1
Manganese	2	mg/kg	-	140	150	100	110	120	120	130	140	92	130	74	140	90	84	63	86
Mercury	0.1	mg/kg	50 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Molybdenum	2	mg/kg	40 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Nickel	2	mg/kg	89 [1]	3.4	5	3.6	2.8	3.7	3.9	3.8	6.3	2.7	3.6	2.4	4.1	2.5	nd	nd	nd
Rubidium	2	mg/kg	-	6.3	4.5	4.7	5.2	5.9	6.4	5.9	5.5	6.3	5.3	4.6	5.5	5.4	4.1	3.6	4.2
Selenium	1	mg/kg	2.9 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Silver	0.5	mg/kg	40 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Strontium	5	mg/kg	-	6.4	6.6	6.6	6.2	6.6	5.8	5.3	7.5	6	6.8	nd	5.7	nd	nd	nd	nd
Thallium	0.1	mg/kg	1 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Tin	2	mg/kg	300 [1]	nd	nd	nd	nd	33	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Uranium	0.1	mg/kg	300 [1]	0.61	0.77	0.51	0.7	0.49	0.67	0.64	0.64	0.58	0.7	0.41	0.59	0.38	0.8	0.5	0.65
Vanadium	2	mg/kg	130 [1]	13	25	11	8.1	10	11	9.1	13	8.3	14	11	17	9.4	4.7	4.1	8.4
Zinc	5	mg/kg	360 [1]	50	45	42	93	900	31	31	91	43	33	30	28	24	22	17	25

Notes:

1 = Canadian Council of Ministers of the Environment (CCME) Canadian Soil Quality Guidelines (SQGs) for the Protection of Environmental and Human Health for Commercial land use (1999 and updates).

2 = Canadian Council of Ministers of the Environment (CCME) Interim remediation criteria that have not yet been replaced by SQGs (1991). Commercial land use.

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Table E.6 Results of Laboratory Analysis of Available Metals in Soil

Phase II Environmental Site Assessment
Former Military Site, Border Beacon, NL
Stantec Project No. 121414915.200

Parameters	RDL	Units	Guideline	Waste Disposal Sites														
				BB-SS13	BB-SS14	BB-SS15	BB-SS16	BB-SS17	BB-SS17 Lab-Dup	BB-SS18	BB-SS19	BB-SS20	BB-SS21	BB-SS22	BB-SS23	BB-TP3-BS1	BB-TP4-BS1	BB-TP4-BS1 Lab-Dup
			Sample Depth (m):	0 - 0.1	0 - 0.1	0 - 0.1	0 - 0.1	0 - 0.1	-	0 - 0.1	0 - 0.1	0 - 0.1	0 - 0.1	0 - 0.1	0 - 0.1	0 - 0.25	0 - 0.25	-
Aluminum	10	mg/kg	-	5,400	3,300	3,600	3,800	4,400	3,800	5,100	5,400	3,000	4,400	5,400	5,200	7,000	4,800	5,100
Antimony	2	mg/kg	40 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Arsenic	2	mg/kg	26 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Barium	5	mg/kg	2000 [1]	37	24	40	21	32	26	13	27	14	20	17	19	28	22	21
Beryllium	2	mg/kg	8 [2]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Bismuth	2	mg/kg	-	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Boron	50	mg/kg	120 [3]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Cadmium	0.3	mg/kg	22 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Chromium	2	mg/kg	87 [1]	6.1	3	4.6	3.6	4.5	3.9	4.3	5.9	3.4	4.3	3.3	4.6	6.9	3.9	5
Cobalt	1	mg/kg	300 [1]	3	2.3	1.2	1.2	1.9	1.7	nd	2.1	nd	1.2	1	1.1	2.2	1.7	1.7
Copper	2	mg/kg	91 [1]	8.5	4.3	4.8	2.8	5.2	4.7	nd	4.2	7.2	2.4	nd	2.1	5.9	15	16
Iron	50	mg/kg	-	12,000	7,700	7,400	8,100	11,000	8,700	6,700	12,000	5,800	11,000	9,100	9,200	11,000	9,500	10,000
Lead	0.5	mg/kg	600 [1]	11	5.4	14	5.7	8.8	7.1	7.1	11	5.9	7.9	4.4	5.2	8.1	12	15
Lithium	2	mg/kg	-	11	9.1	5.4	6.9	11	9.5	3	9.7	2.3	6.6	5.8	5.4	11	9.5	9.2
Manganese	2	mg/kg	-	140	100	54	75	110	88	39	120	32	77	75	54	120	82	85
Mercury	0.1	mg/kg	50 [1]	nd	nd	0.29	nd	nd	nd	nd	0.13	nd	nd	nd	nd	nd	nd	nd
Molybdenum	2	mg/kg	40 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Nickel	2	mg/kg	89 [1]	4.4	2.8	2.3	nd	2.7	2.7	nd	3.2	2.9	2.2	nd	2.1	3.6	2.6	3.1
Rubidium	2	mg/kg	-	5.9	3.9	3.5	4.3	6.3	5.5	2.7	5	4.6	4.8	5.4	3.4	5.2	4.5	4.3
Selenium	1	mg/kg	2.9 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Silver	0.5	mg/kg	40 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Strontium	5	mg/kg	-	5.8	nd	5.1	nd	6.1	nd	nd	nd	nd	nd	nd	nd	5.8	nd	nd
Thallium	0.1	mg/kg	1 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Tin	2	mg/kg	300 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Uranium	0.1	mg/kg	300 [1]	1	0.57	0.39	0.37	0.9	*0.62*	0.29	0.62	0.27	0.4	0.32	0.34	0.7	0.45	0.52
Vanadium	2	mg/kg	130 [1]	11	5.9	7.3	6.6	8	7	8.2	11	6.6	10	8.9	10	11	7.3	8.7
Zinc	5	mg/kg	360 [1]	41	24	23	21	30	29	12	28	56	22	15	16	31	37	44

Notes:

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2 = Canadian Council of Ministers of the Environment (CCME) Interim remediation criteria that have not yet been replaced by SQGs (1991). Commercial land use.

3 = Soil and Groundwater Standards for Use at Contaminated Sites in Ontario: Table 3 - Full Depth, Non-Potable Water Scenario, Commercial/Industrial Land Use (2011)

RDL = Reportable Detection Limit.
nd = Not detected above RDL.
"-" = Not analyzed, not applicable or no applicable guideline.
Shaded = Value exceeds applicable guideline
Italicized/Underlined = Poor relative percent difference in laboratory initiated duplicate samples due to sample inhomogeneity

Table E.6 Results of Laboratory Analysis of Available Metals in Soil

Phase II Environmental Site Assessment
Former Military Site, Border Beacon, NL
Stantec Project No. 121414915.200

Parameters	RDL	Units	Guideline	Waste Disposal Sites													
				BB-TP5-BS1	BB-TP6-BS1	BB-TP7-BS1	BB-TP71-BS1	BB-TP8-BS1	BB-TP12-BS1	BB-TP121-BS1	BB-TP13-BS1	BB-TP14-BS1	BB-TP15-BS1	BB-TP16-BS1	BB-TP16-BS2	BB-TP161-BS2	BB-TP50-BS1
			Sample Depth (m):	0 - 0.25	0 - 0.25	0 - 0.25	0 - 0.25	0 - 0.25	0 - 0.25	0 - 0.25	0 - 0.25	0 - 0.25	0 - 0.25	0 - 0.25	0.25 - 0.50	0.25 - 0.50	0 - 0.25
Aluminum	10	mg/kg	-	4,500	9,100	5,400	6,100	4,200	4,200	3,900	6,900	3,600	3,200	4,300	4,900	5,100	4,900
Antimony	2	mg/kg	40 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Arsenic	2	mg/kg	26 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Barium	5	mg/kg	2000 [1]	26	48	15	22	82	25	30	19	17	27	18	30	24	20
Beryllium	2	mg/kg	8 [2]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Bismuth	2	mg/kg	-	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Boron	50	mg/kg	120 [3]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Cadmium	0.3	mg/kg	22 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Chromium	2	mg/kg	87 [1]	4.4	14	3.7	3.4	6.2	3.8	3.8	4.7	3.2	2.8	3	5	4.3	3.5
Cobalt	1	mg/kg	300 [1]	1.4	5.8	nd	nd	2	1.7	1.5	1.5	nd	nd	nd	1.4	1.6	1.4
Copper	2	mg/kg	91 [1]	3.1	16	nd	nd	10	4.3	3.5	2.7	nd	nd	nd	2.9	6.3	3.5
Iron	50	mg/kg	-	9,500	16,000	9,500	8,600	10,000	10,000	8,000	11,000	7,300	7,300	8,600	8,900	8,900	9,900
Lead	0.5	mg/kg	600 [1]	6	9.7	5.1	5.4	44	6.3	5.4	6.7	5.8	5.8	5.4	15	5.8	6.6
Lithium	2	mg/kg	-	7.8	14	5.6	5.7	8.8	9.1	8.2	9.1	4.2	4	4.7	8.6	8.1	6.7
Manganese	2	mg/kg	-	79	210	59	53	110	110	92	84	37	48	48	83	79	83
Mercury	0.1	mg/kg	50 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Molybdenum	2	mg/kg	40 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Nickel	2	mg/kg	89 [1]	2.4	8.6	nd	nd	3.1	2.4	2.3	2.5	nd	nd	nd	2.3	3.6	5.2
Rubidium	2	mg/kg	-	5.1	8.1	3.9	3.8	5.1	4.4	4.6	4.9	3.8	4.5	3.6	3.9	4.3	5.8
Selenium	1	mg/kg	2.9 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Silver	0.5	mg/kg	40 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Strontium	5	mg/kg	-	nd	8.8	nd	nd	5.6	nd	5.1	nd	nd	nd	nd	nd	nd	nd
Thallium	0.1	mg/kg	1 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Tin	2	mg/kg	300 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Uranium	0.1	mg/kg	300 [1]	0.52	0.88	0.3	0.31	0.52	0.59	0.53	0.46	0.27	0.3	0.27	0.55	0.63	0.39
Vanadium	2	mg/kg	130 [1]	8.8	22	9.3	8.8	9.9	8.2	7.4	11	7.7	6.6	9	7.4	7.6	8.9
Zinc	5	mg/kg	360 [1]	21	41	15	13	75	24	23	22	15	12	12	21	43	20

Notes:

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2 = Canadian Council of Ministers of the Environment (CCME) Interim remediation criteria that have not yet been replaced by SQGs (1991). Commercial land use.

3 = Soil and Groundwater Standards for Use at Contaminated Sites in Ontario: Table 3 - Full Depth, Non-Potable Water Scenario, Commercial/Industrial Land Use (2011)

RDL = Reportable Detection Limit.
nd = Not detected above RDL.
"-" = Not analyzed, not applicable or no applicable guideline.
Shaded = Value exceeds applicable guideline
Italicized/Underlined = Poor relative percent difference in laboratory initiated duplicate samples due to sample inhomogeneity

Table E.6 Results of Laboratory Analysis of Available Metals in Soil

Phase II Environmental Site Assessment
Former Military Site, Border Beacon, NL
Stantec Project No. 121414915.200

Parameters	RDL	Units	Guideline	Upper Site												
				BB-SS43	BB-SS44	BB-SS46	BB-SS47	BB-SS48	BB-TP39-BS1	BB-TP40-BS1	BB-TP41-BS1	BB-TP41-BS1 Lab-Dup	BB-TP41-BS1 Lab-Dup 2	BB-TP42-BS1	BB-TP43-BS1	BB-TP44-BS1
			Sample Depth (m):	0 - 0.1	0 - 0.1	0 - 0.1	0 - 0.1	0 - 0.1	0 - 0.25	0 - 0.25	0 - 0.25	-	0 - 0.1	0 - 0.25	0 - 0.25	0 - 0.25
Aluminum	10	mg/kg	-	10,000	34,000	6,800	7,300	6,800	8,800	8,600	12,000	13,000	-	6,400	6,300	6,500
Antimony	2	mg/kg	40 [1]	nd	22	nd	nd	nd	nd	nd	nd	nd	-	nd	nd	nd
Arsenic	2	mg/kg	26 [1]	nd	3.4	nd	nd	2.1	nd	nd	7.5	9	-	nd	nd	nd
Barium	5	mg/kg	2000 [1]	68	200	350	100	110	130	110	240	240	-	97	80	77
Beryllium	2	mg/kg	8 [2]	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	nd	nd	nd
Bismuth	2	mg/kg	-	nd	4.4	nd	nd	nd	nd	nd	nd	nd	-	nd	nd	nd
Boron	50	mg/kg	120 [3]	nd	190	nd	nd	nd	nd	nd	nd	nd	-	nd	nd	nd
Cadmium	0.3	mg/kg	22 [1]	nd	61	nd	nd	nd	nd	nd	1.1	1.4	-	nd	nd	nd
Chromium	2	mg/kg	87 [1]	24	190	26	22	14	27	27	3.4	5.3	-	20	18	19
Cobalt	1	mg/kg	300 [1]	4.5	13	3.9	5.3	6.5	6.2	5.2	2.3	2.9	-	4.7	3.6	3.9
Copper	2	mg/kg	91 [1]	8.8	6,900	9.6	36	21	21	71	530	*180*	470	12	15	13
Iron	50	mg/kg	-	18,000	43,000	15,000	17,000	29,000	20,000	19,000	46,000	47,000	-	15,000	14,000	15,000
Lead	0.5	mg/kg	600 [1]	5.8	550	5.9	10	9.2	16	12	75	88	-	6	5.6	5.2
Lithium	2	mg/kg	-	7.5	7.8	6.7	7.3	16	7.7	6.8	100	100	-	6.3	8.4	6.4
Manganese	2	mg/kg	-	140	530	130	160	410	180	140	620	650	-	140	110	120
Mercury	0.1	mg/kg	50 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	nd	nd	nd
Molybdenum	2	mg/kg	40 [1]	nd	nd	nd	nd	nd	nd	nd	nd	2.2	-	nd	nd	nd
Nickel	2	mg/kg	89 [1]	8.7	290	10	8.9	6.2	11	9.5	3.1	nd	-	7.3	8.3	7.6
Rubidium	2	mg/kg	-	8.9	12	11	14	24	15	14	100	110	-	12	9.8	9.9
Selenium	1	mg/kg	2.9 [1]	nd	4.1	nd	nd	nd	nd	nd	nd	nd	-	nd	nd	nd
Silver	0.5	mg/kg	40 [1]	nd	69	nd	nd	nd	nd	nd	nd	nd	-	nd	nd	nd
Strontium	5	mg/kg	-	12	25	11	12	8.8	18	13	9.9	9.8	-	13	12	12
Thallium	0.1	mg/kg	1 [1]	nd	0.1	nd	0.12	0.18	0.13	0.12	0.94	0.97	-	nd	nd	nd
Tin	2	mg/kg	300 [1]	nd	250	nd	nd	nd	nd	nd	5.9	7.9	-	nd	nd	nd
Uranium	0.1	mg/kg	300 [1]	0.58	0.8	0.37	0.52	1.3	0.77	0.64	4.1	4.7	-	0.65	0.64	0.64
Vanadium	2	mg/kg	130 [1]	34	25	30	32	21	38	41	2.5	2.5	-	28	25	27
Zinc	5	mg/kg	360 [1]	33	8,000	94	94	220	130	150	1,000	1,200	-	30	89	32

Notes:

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2 = Canadian Council of Ministers of the Environment (CCME) Interim remediation criteria that have not yet been replaced by SQGs (1991). Commercial land use.

3 = Soil and Groundwater Standards for Use at Contaminated Sites in Ontario: Table 3 - Full Depth, Non-Potable Water Scenario, Commercial/Industrial Land Use (2011)

RDL = Reportable Detection Limit.
nd = Not detected above RDL.
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Italicized/Underlined = Poor relative percent difference in laboratory initiated duplicate samples due to sample inhomogeneity

Table E.7 Results of Laboratory Analysis of PCBs in Soil
Phase II Environmental Site Assessment
Former Military Site, Border Beacon, NL
Stantec Project No. 121414915.200

Parameters	RDL	Units	Guideline[1]	Lower Site - General Area						Camp / Antenna Areas and AES Compound											
				BB-SS1	BB-SS2	BB-SS3	BB-SS3 Lab-Dup	BB-SS7	BB-SS10	BB-SS30	BB-SS301	BB-TP17-BS1	BB-TP18-BS1	BB-TP18-BS2	BB-TP19-BS1	BB-TP20-BS1	BB-TP20-BS2	BB-TP201-BS2	BB-TP21-BS1	BB-TP22-BS1	BB-TP22-BS2
Sample Depth (m):				0 - 0.1	0 - 0.1	0 - 0.1	-	0 - 0.1	0 - 0.1	0 - 0.1	0 - 0.1	0 - 0.25	0 - 0.25	0.25 - 0.50	0 - 0.25	0 - 0.25	0.25 - 0.50	0.25 - 0.50	0 - 0.25	0 - 0.25	0.25 - 0.50
Aroclor 1016	0.050	µg/g	-	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Aroclor 1221	0.050	µg/g	-	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Aroclor 1232	0.050	µg/g	-	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Aroclor 1248	0.050	µg/g	-	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Aroclor 1242	0.050	µg/g	-	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Aroclor 1254	0.050	µg/g	-	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.063	0.10	0.074	0.12	0.14	nd	0.092	0.23
Aroclor 1260	0.050	µg/g	-	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.059	nd	nd	nd	nd	nd	nd
Calculated Total PCB	0.050	µg/g	33	nd	nd	nd	-	nd	nd	nd	nd	nd	nd	0.063	0.16	0.074	0.12	0.14	nd	0.092	0.23

Notes:

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RDL = Reportable Detection Limit

nd = Not detected above RDL

"-" = Not applicable or no applicable guideline.

Table E.7 Results of Laboratory Analysis of PCBs in Soil
Phase II Environmental Site Assessment
Former Military Site, Border Beacon, NL
Stantec Project No. 121414915.200

Parameters	RDL	Units	Guideline[1]	Camp / Antenna Areas and AES Compound															
				BB-TP221-BS2	BB-TP23-BS1	BB-TP24-BS1	BB-TP25-BS1	BB-TP25-BS2	BB-TP26-BS1	BB-TP27-BS1	BB-TP27-BS2	BB-TP28-BS1	BB-TP28-BS1 Lab-Dup	BB-TP30-BS1	BB-TP31-BS1	BB-TP32-BS1	BB-TP32-BS2	BB-TP33-BS1	BB-TP34-BS1
Sample Depth (m):				0.25 - 0.50	0 - 0.25	0 - 0.25	0 - 0.25	0.25 - 0.50	0 - 0.25	0 - 0.25	0.25 - 0.50	0 - 0.25	-	0 - 0.25	0 - 0.25	0 - 0.25	0.25 - 0.50	0 - 0.25	0 - 0.25
Aroclor 1016	0.050	µg/g	-	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Aroclor 1221	0.050	µg/g	-	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Aroclor 1232	0.050	µg/g	-	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Aroclor 1248	0.050	µg/g	-	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Aroclor 1242	0.050	µg/g	-	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Aroclor 1254	0.050	µg/g	-	0.23	nd	nd	0.097	0.17	0.46	nd	nd	nd	nd	nd	0.18	nd	nd	nd	nd
Aroclor 1260	0.050	µg/g	-	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Calculated Total PCB	0.050	µg/g	33	0.23	nd	nd	0.097	0.17	0.46	nd	nd	nd	-	nd	0.18	nd	nd	nd	nd

Notes:

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RDL = Reportable Detection Limit

nd = Not detected above RDL

"-" = Not applicable or no applicable guideline.

Table E.7 Results of Laboratory Analysis of PCBs in Soil
Phase II Environmental Site Assessment
Former Military Site, Border Beacon, NL
Stantec Project No. 121414915.200

Parameters	RDL	Units	Guideline[1]	Unknown Foundation / Building					Waste Disposal Sites												
				BB-TP35-BS1	BB-SS41	BB-SS42	BB-TP36-BS1	BB-TP36-BS1 Lab-Dup	BB-SS13	BB-SS14	BB-SS15	BB-SS16	BB-SS18	BB-SS19	BB-SS20	BB-SS23	BB-TP5-BS1	BB-TP7-BS1	BB-TP71-BS1	BB-TP8-BS1	BB-TP9-BS1
Sample Depth (m):				0 - 0.25	0 - 0.1	0 - 0.1	0 - 0.25	-	0 - 0.1	0 - 0.1	0 - 0.1	0 - 0.1	0 - 0.1	0 - 0.1	0 - 0.1	0 - 0.1	0 - 0.25	0 - 0.25	0 - 0.25	0 - 0.25	0 - 0.25
Aroclor 1016	0.050	µg/g	-	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Aroclor 1221	0.050	µg/g	-	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Aroclor 1232	0.050	µg/g	-	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Aroclor 1248	0.050	µg/g	-	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Aroclor 1242	0.050	µg/g	-	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Aroclor 1254	0.050	µg/g	-	nd	nd	nd	nd	nd	nd	nd	0.21	nd	nd	nd	nd	nd	nd	nd	nd	0.68	nd
Aroclor 1260	0.050	µg/g	-	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Calculated Total PCB	0.050	µg/g	33	nd	nd	nd	nd	-	nd	nd	0.21	nd	nd	nd	nd	nd	nd	nd	nd	0.68	nd

Notes:

1 = Canadian Council of Ministers of the Environment (CCME) Canadian Soil Quality Guidelines (SQGs) for the Protection of Environmental and Human Health for Commercial land use (1999 and Updates).

RDL = Reportable Detection Limit

nd = Not detected above RDL

"-" = Not applicable or no applicable guideline.

Table E.7 Results of Laboratory Analysis of PCBs in Soil
Phase II Environmental Site Assessment
Former Military Site, Border Beacon, NL
Stantec Project No. 121414915.200

Parameters	RDL	Units	Guideline[1]	Waste Disposal Sites							Upper Site									
				BB-TP9-BS1 Lab-Dup	BB-TP12-BS1	BB-TP121-BS1	BB-TP13-BS2	BB-TP15-BS1	BB-TP16-BS2	BB-TP161-BS2	BB-SS43	BB-SS44	BB-SS46	BB-SS47	BB-SS48	BB-SS49	BB-SS50	BB-TP39-BS1	BB-TP40-BS1	BB-TP41-BS1	BB-TP42-BS1
Sample Depth (m):				-	0 - 0.25	0 - 0.25	0.25 - 0.50	0 - 0.25	0.25 - 0.50	0.25 - 0.50	0 - 0.1	0 - 0.1	0 - 0.1	0 - 0.1	0 - 0.1	0 - 0.1	0 - 0.1	0 - 0.25	0 - 0.25	0 - 0.25	0 - 0.25
Aroclor 1016	0.050	µg/g	-	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Aroclor 1221	0.050	µg/g	-	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Aroclor 1232	0.050	µg/g	-	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Aroclor 1248	0.050	µg/g	-	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Aroclor 1242	0.050	µg/g	-	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Aroclor 1254	0.050	µg/g	-	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.066	nd	nd	nd	nd	nd	nd
Aroclor 1260	0.050	µg/g	-	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Calculated Total PCB	0.050	µg/g	33	-	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.066	nd	nd	nd	nd	nd	nd

Notes:

1 = Canadian Council of Ministers of the Environment (CCME) Canadian Soil Quality Guidelines (SQGs) for the Protection of Environmental and Human Health for Commercial land use (1999 and Updates).

RDL = Reportable Detection Limit

nd = Not detected above RDL

"-" = Not applicable or no applicable guideline.

Table E.7 Results of Laboratory Analysis of PCBs in Soil
Phase II Environmental Site Assessment
Former Military Site, Border Beacon, NL
Stantec Project No. 121414915.200

Parameters	RDL	Units	Guideline[1]	Upper Site	
				BB-TP43-BS1	BB-TP44-BS1
			Sample Depth (m):	0 - 0.25	0 - 0.25
Aroclor 1016	0.050	µg/g	-	nd	nd
Aroclor 1221	0.050	µg/g	-	nd	nd
Aroclor 1232	0.050	µg/g	-	nd	nd
Aroclor 1248	0.050	µg/g	-	nd	nd
Aroclor 1242	0.050	µg/g	-	nd	nd
Aroclor 1254	0.050	µg/g	-	nd	nd
Aroclor 1260	0.050	µg/g	-	nd	nd
Calculated Total PCB	0.050	µg/g	33	nd	nd

Notes:

1 = Canadian Council of Ministers of the Environment (CCME) Canadian Soil Quality Guidelines (SQGs) for the Protection of Environmental and Human Health for Commercial land use (1999 and Updates).

RDL = Reportable Detection Limit

nd = Not detected above RDL

"-" = Not applicable or no applicable guideline.

Table E.8 Results of Laboratory Analysis of Organochlorinated Pesticides in Soil
Phase II Environmental Site Assessment
Former Military Site, Border Beacon, NL
Stantec Project No. 121414915.200

Organochlorinated Pesticides	RDL	Units	Guideline	Waste Disposal Sites		Upper Site
				BB-SS15	BB-TP7-BS1	BB-SS46
			Sample depth (m)	0 - 0.1	0 - 0.25	0 - 0.1
Pesticides and Herbicides						
Aldrin	0.0020	ug/g	5.1[2]	nd (0.0030)	nd	nd (0.020)
a-Chlordane	0.0020	ug/g	0.05[3]	nd (0.0030)	nd	nd (0.020)
g-Chlordane	0.0020	ug/g		nd (0.0030)	nd	nd (0.020)
o,p-DDD	0.0020	ug/g	-	nd (0.0030)	nd	nd (0.020)
p,p-DDD	0.0020	ug/g	-	nd (0.0030)	nd	nd (0.020)
o,p-DDE	0.0020	ug/g	-	nd (0.0030)	nd	nd (0.020)
p,p-DDE	0.0020	ug/g	-	nd (0.0030)	nd	nd (0.020)
o,p-DDT	0.0020	ug/g	-	nd (0.0030)	nd	nd (0.020)
p,p-DDT	0.0020	ug/g	-	nd (0.0030)	nd	nd (0.020)
Dieldrin	0.0020	ug/g	5.1[2]	nd (0.0030)	nd	nd (0.020)
Lindane	0.0020	ug/g	10[2]	nd (0.0030)	nd	nd (0.020)
Endosulfan I (alpha)	0.0020	ug/g	0.0015[2]	*nd (0.0030)*	*nd*	*nd (0.020)*
Endosulfan II (beta)	0.0020	ug/g		*nd (0.0030)*	*nd*	*nd (0.020)*
Endrin	0.0020	ug/g	15[2]	nd (0.0030)	nd	nd (0.020)
Heptachlor	0.0020	ug/g	0.19[3]	nd (0.0030)	nd	nd (0.020)
Heptachlor epoxide	0.0020	ug/g	0.69[2]	nd (0.0030)	nd	nd (0.020)
Hexachlorobenzene	0.0020	ug/g	0.66[3]	nd (0.0030)	nd	nd (0.020)
Methoxychlor	0.0050	ug/g	0.056[2]	nd (0.0075)	nd	nd (0.050)
alpha-BHC	0.0020	ug/g	-	nd (0.0030)	nd	nd (0.020)
beta-BHC	0.0020	ug/g	-	nd (0.0030)	nd	nd (0.020)
delta-BHC	0.0020	ug/g	-	nd (0.0030)	nd	nd (0.020)
Endosulfan sulfate	0.0020	ug/g	-	nd (0.0030)	nd	nd (0.020)
Endrin aldehyde	0.0020	ug/g	-	nd (0.0030)	nd	nd (0.020)
Endrin ketone	0.0020	ug/g	-	nd (0.0030)	nd	nd (0.020)
Mirex	0.0020	ug/g	-	nd (0.0030)	nd	nd (0.020)
Octachlorostyrene	0.0020	ug/g	-	nd (0.0030)	nd	nd (0.020)
Toxaphene	0.08	ug/g	7.3[2]	nd (0.12)	nd	nd (0.80)
Calculated Parameters						
Aldrin + Dieldrin	0.0020	ug/g	-	nd (0.0030)	nd	nd (0.020)
Chlordane (Total)	0.0020	ug/g	0.05[3]	nd (0.0030)	nd	nd (0.020)
DDT+ Metabolites	0.0020	ug/g	12[1]	nd (0.0030)	nd	nd (0.020)
Heptachlor + Heptachlor epoxide	0.0020	ug/g	-	nd (0.0030)	nd	nd (0.020)
o,p-DDD + p,p-DDD	0.0020	ug/g	4.6[3]	nd (0.0030)	nd	nd (0.020)
o,p-DDE + p,p-DDE	0.0020	ug/g	0.52[3]	nd (0.0030)	nd	nd (0.020)
o,p-DDT + p,p-DDT	0.0020	ug/g	0.14[3]	nd (0.0030)	nd	nd (0.020)
Total Endosulfan	0.0020	ug/g	-	nd (0.0030)	nd	nd (0.020)

Notes:

1 = Canadian Council of Ministers of the Environment (CCME) Canadian Soil Quality Guidelines (SQGs) for the Protection of Environmental and Human Health for commercial land use (1999 and Updates).

2 = Alberta Tier I Soil and Groundwater Remediation Guidelines: Table A-4 Surface Soil Remediation Guidelines for Commercial Land Use - All Exposure Pathways, coarse-grained soil (2016) (assuming non-potable groundwater).

3 = Soil and Groundwater Standards for Use at Contaminated Sites in Ontario: Table 3 - Full Depth, Non-Potable Water Scenario, Commercial/Industrial Land Use (2011).

RDL = Reportable Detection Limit.
nd (#) = Not detected above elevated RDL shown.
nd = Not detected above standard RDL.
"-" = Not analyzed, not applicable or no applicable guideline.
Underlined/Italicized = RDL exceeds the applicable guideline.

Table E.9 Results of Laboratory Analysis of Total Organic Carbon in Soil
Phase II Environmental Site Assessment
Former Military Site, Border Beacon, NL
Stantec Project No. 121414915.200

Sample ID	Sample Depth	TOC
	RDL	500
	Units	mg/kg
Lower Site - General Area		
BB-SS3	0 - 0.1	24,000
Camp / Antenna Areas and AES Compound		
BB-TP35-BS1	0 - 0.25	20,000
Waste Disposal Sites		
BB-TP4-BS1	0 - 0.25	14,000
Upper Site		
BB-TP41-BS1	0 - 0.25	13,000

Notes:
RDL = Reportable Detection Limit.
nd = Not detected above RDL.
"-" = Not analyzed, not applicable or no applicable guideline.

Table E.10 Results of Laboratory Analysis of Asbestos in Soil
Phase II Environmental Site Assessment
Former Military Site, Border Beacon, NL
Stantec Project No. 121414915.200

Sample ID	Sample Depth	Asbestos
	RDL	NA
	Units	mg/kg
Camp / Antenna Areas and AES Compound		
BB-SS25	0 - 0.1	nd
BB-SS34	0 - 0.1	nd
BB-TP25-BS1	0 - 0.25	nd
Waste Disposal Sites		
BB-SS14	0 - 0.1	nd
BB-SS18	0 - 0.1	nd
BB-SS21	0 - 0.1	nd
Upper Site		
BB-SS45	0 - 0.1	nd
BB-TP42-BS1	0 - 0.25	nd

Notes:
RDL = Reportable Detection Limit. No detection limit given.
nd = None Detected.

Table E.11 Results of Laboratory Analysis of Petroleum Hydrocarbons in Freshwater Sediment
Phase II Environmental Site Assessment
Former Military Site, Border Beacon, NL
Stantec Project No. 121414915.200

Sample ID	BTEX Parameters (mg/kg)				Total Petroleum Hydrocarbons (mg/kg)					Resemblance	Triple silica gel cleanup?[4]
	Benzene	Toluene	Ethyl-benzene	Xylenes	F1 (C_6-C_{10})	F2 (C_{10}-C_{16})	F3 (C_{16}-C_{32})	Returned to baseline?[2]	Modified TPH[3]		
RDL	0.025	0.025	0.025	0.05	2.5	10	25	-	15	-	-
Tier I ESLs - Aquatic Life[1]	1.2	1.4	1.2	1.3	-	-	-	-	15/25/43	-	-
Lower Site - General Area											
BB-SED1	nd	nd	nd	nd	nd	nd	nd	-	nd	-	Y
BB-SED1 Lab-Dup	-	-	-	-	-	nd	nd	-	-	-	Y
BB-SED2	nd	nd	nd	nd	nd	nd	nd	-	nd	-	Y
Unknown Foundation / Building											
BB-SED9	nd	nd	nd	nd	nd	nd	nd	-	nd	-	Y
BB-SED9 Lab-Dup	nd	nd	nd	nd	nd	-	-	-	-	-	Y
Waste Disposal Sites											
BB-SED10	nd	nd	nd	nd	nd	nd	nd	-	nd	-	Y
BB-SED11	nd	nd	nd	nd	nd	nd	nd	-	nd	-	Y
BB-SED12	nd	nd	nd	nd	nd	nd	83	Yes	83	ULO. LO	Y
Upper Site											
BB-SED5	nd	nd	nd	nd	nd	28,000	4,860	Yes	33,000	WFOF	Y
BB-SED51	nd	nd	nd	nd	nd	4,000	1,960	Yes	5,900	WFOF. PLO	Y

Notes:

1 = Atlantic Partnership in RBCA (Risk-Based Corrective Action) Implementation (PIRI) Tier I Sediment Ecological Screening Levels (ESLs) for the Protection of Freshwater and Marine Aquatic Life - Typical sediment type for gasoline/fuel oil/lube oil (July 2012, January 2015).

2= Atlantic Partners in RBCA (Risk-Based Corrective Action) Implementation (PIRI) analytical method does not analyze for >C_{32}. Laboratory certificate indicates (Yes or No) whether chromatogram for each sample returns to baseline after C_{32}. Samples are considered to have returned to baseline if the area from C_{32}-C_{36} is less than 10% of the area from C_{10}-C_{32}.

3 = Modified TPH = TPH C_6 - C_{32} (excluding BTEX).
RDL = Reportable Detection Limit.
"-" = not analyzed, not applicable or no applicable guideline.
nd = Not detected above RDL.
Shaded = Value exceeds applicable guideline.

Resemblance:
WFOF = Weathered fuel oil fraction.
ULO = Unidentified compounds in lube oil range.
PLO = Possible lube oil fraction.

Table E.12 Results of Laboratory Analysis of PAHs in Freshwater Sediment
Phase II Environmental Site Assessment
Former Military Site, Border Beacon, NL
Stantec Project No. 121414915.200

Parameters	RDL	Units	Guideline	Lower Site - General Area			Unknown Foundation / Building	Waste Disposal Sites			Upper Site	
				BB-SED1	BB-SED1 Lab-Dup	BB-SED2	BB-SED9	BB-SED10	BB-SED11	BB-SED12	BB-SED5	BB-SED51
1-Methylnaphthalene	0.010	mg/kg	-	nd	nd	nd	nd	nd	nd	nd	nd (0.66)	0.21
2-Methylnaphthalene	0.010	mg/kg	0.201 [1]	nd	nd	nd	nd	nd	nd	nd	*nd (0.44)*	0.23
Acenaphthene	0.010	mg/kg	0.0889 [1]	nd	nd	nd	nd	nd	nd	nd	*nd (0.40)*	nd
Acenaphthylene	0.010	mg/kg	0.128 [1]	nd	nd	nd	nd	nd	nd	nd	*nd (0.28)*	nd
Anthracene	0.010	mg/kg	0.245 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd
Fluoranthene	0.010	mg/kg	2.355 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd
Fluorene	0.010	mg/kg	0.144 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd
Naphthalene	0.010	mg/kg	0.391 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd
Perylene	0.010	mg/kg	-	nd	nd	nd	nd	nd	nd	nd	nd	nd
Phenanthrene	0.010	mg/kg	0.515 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd
Pyrene	0.010	mg/kg	0.875 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd
Benzo(a)anthracene	0.010	mg/kg	0.385 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd
Benzo(a)pyrene	0.010	mg/kg	0.782 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd
Benzo(b)fluoranthene	0.010	mg/kg	-	nd	nd	nd	nd	nd	nd	nd	nd	nd
Benzo(g,h,i)perylene	0.010	mg/kg	0.17 [2]	nd	nd	nd	nd	nd	nd	nd	*nd (0.43)*	nd
Benzo(j)fluoranthene	0.010	mg/kg	-	nd	nd	nd	nd	nd	nd	nd	nd	nd
Benzo(k)fluoranthene	0.010	mg/kg	0.24 [2]	nd	nd	nd	nd	nd	nd	nd	nd (0.070)	nd
Chrysene	0.010	mg/kg	0.862 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd
Dibenzo(a,h,)anthracene	0.010	mg/kg	0.135 [1]	nd	nd	nd	nd	nd	nd	nd	nd	nd
Indeno(1,2,3-c,d) pyrene	0.010	mg/kg	0.2 [2]	nd	nd	nd	nd	nd	nd	nd	0.07	nd

Notes:

1 = Canadian Council of Ministers of the Environment (CCME) Canadian Sediment Quality Guidelines for the Protection of Aquatic Life - Probable Effects Levels for Freshwater Sediment (PEL) (1999 and updates).

2 = Ontario Provincial Sediment Quality Guidelines (2008) Lowest Effects Level (LEL).
RDL = Reportable Detection Limit.
nd = Not detected above standard RDL.
nd (#) = Not detected above elevated RDL shown.
"-" = not analyzed, not applicable or no applicable guideline.

Shaded = Value exceeds the applicable guideline.
Underlined/Italicized = RDL exceeds the applicable guideline.

Table E.13 Results of Laboratory Analysis of Available Metals in Freshwater Sediment
Phase II Environmental Site Assessment
Former Military Site, Border Beacon, NL
Stantec Project No. 121414915.200

Parameters	RDL	Units	Guideline	Lower Site - General Area		Unknown Foundation / Building	Waste Disposal Sites			Upper Site	
				BB-SED1	BB-SED2	BB-SED9	BB-SED10	BB-SED11	BB-SED12	BB-SED5	BB-SED51
Aluminum	10	mg/kg	-	4,600	3,900	2,700	5,300	5,400	3,700	5,900	5,600
Antimony	2.0	mg/kg	-	nd	nd	nd	nd	nd	nd	nd	nd
Arsenic	2.0	mg/kg	17 [1]	nd	nd	nd	nd	nd	nd	nd	nd
Barium	5.0	mg/kg	-	110	46	32	25	29	18	170	200
Beryllium	2.0	mg/kg	-	nd	nd	nd	nd	nd	nd	nd	nd
Bismuth	2.0	mg/kg	-	nd	nd	nd	nd	nd	nd	nd	nd
Boron	50	mg/kg	-	nd	nd	nd	nd	nd	nd	nd	nd
Cadmium	0.3	mg/kg	3.5 [1]	nd	nd	nd	nd	nd	nd	nd	0.38
Chromium	2.0	mg/kg	90 [1]	8.1	17	5.9	6.2	6.7	4.4	9.7	10
Cobalt	1.0	mg/kg	-	2.7	2.7	1.6	1.9	2	1.4	3.1	4.1
Copper	2.0	mg/kg	197 [1]	5.9	5.3	3.1	5.6	4.8	13	9.5	14
Iron	50	mg/kg	-	14,000	15,000	12,000	12,000	10,000	11,000	8,300	8,100
Lead	0.5	mg/kg	91.3 [1]	5.4	5.4	4.6	8	7	19	5.7	30
Lithium	2.0	mg/kg	-	11	11	8.6	8.6	8.4	7.9	nd	nd
Manganese	2.0	mg/kg	460 [3]	150	160	92	100	99	79	32	46
Mercury	0.1	mg/kg	0.486 [1]	nd	nd	nd	nd	nd	nd	0.11	0.16
Molybdenum	2.0	mg/kg	-	nd	nd	nd	nd	nd	nd	nd	nd
Nickel	2.0	mg/kg	16 [3]	3.8	3.2	2.3	3.4	3.4	3	5	7
Rubidium	2.0	mg/kg	-	8.9	7.7	4.1	5.1	5.7	3.9	2.6	4.3
Selenium	1.0	mg/kg	-	nd	nd	nd	nd	nd	nd	nd	nd
Silver	0.5	mg/kg	2 [2]	nd	nd	nd	nd	nd	nd	nd	nd
Strontium	5.0	mg/kg	-	11	5.4	nd	7.5	5.2	nd	29	34
Thallium	0.1	mg/kg	-	nd	nd	nd	nd	nd	nd	nd	nd
Tin	2.0	mg/kg	-	nd	nd	nd	nd	nd	nd	nd	2.2
Uranium	0.1	mg/kg	-	1.3	0.96	0.79	0.8	0.95	0.52	0.64	0.45
Vanadium	2.0	mg/kg	-	16	18	16	12	13	11	9.6	9.8
Zinc	5.0	mg/kg	315 [1]	36	38	25	35	33	41	98	180

Notes:

1 = Canadian Council of Ministers of the Environment (CCME) Canadian Sediment Quality Guidelines for the Protection of Aquatic Life - Probable Effects Levels for Freshwater Sediment (PEL) (1999 and updates).

2 = AENV Environmental Quality Guidelines for Alberta Surface Waters (2014) PEL.

3 = Ontario Provinical Sediment Quality Guidelines (2008) Lowest Effects Level (LEL).

RDL = Reportable Detection Limit.

nd = Not detected above RDL.

"-" = not analyzed, not applicable or no applicable guideline.

Table E.14 Results of Laboratory Analysis of PCBs in Freshwater Sediment
Phase II Environmental Site Assessment
Former Military Site, Border Beacon, NL
Stantec Project No. 121414915.200

Parameters	RDL	Units	Guideline[1]	Lower Site - General Area		Unknown Foundation / Building	Waste Disposal Sites			Upper Site	
				BB-SED1	BB-SED2	BB-SED9	BB-SED10	BB-SED11	BB-SED12	BB-SED5	BB-SED51
Aroclor 1016	0.05	mg/kg	-	nd	nd	nd	nd	nd	nd	nd	nd
Aroclor 1221	0.05	mg/kg	-	nd	nd	nd	nd	nd	nd	nd	nd
Aroclor 1232	0.05	mg/kg	-	nd	nd	nd	nd	nd	nd	nd	nd
Aroclor 1248	0.05	mg/kg	-	nd	nd	nd	nd	nd	nd	nd	nd
Aroclor 1242	0.05	mg/kg	-	nd	nd	nd	nd	nd	nd	nd	nd
Aroclor 1254	0.05	mg/kg	-	nd	nd	nd	nd	nd	nd	nd	nd
Aroclor 1260	0.05	mg/kg	-	nd	nd	nd	nd	nd	nd	nd	nd
Calculated Total PCB	0.05	mg/kg	0.277	nd	nd	nd	nd	nd	nd	nd	nd

Notes:

1 = Canadian Council of Ministers of the Environment (CCME) Canadian Sediment Quality Guidelines for the Protection of Aquatic Life - Probable Effects Levels for Marine Sediment (PEL) (1999 and updates).

RDL = Reportable Detection Limit.

nd = Not detected above RDL.

"-" = Not analyzed, not applicable or no applicable guideline.

Table E.15 Results of Laboratory Analysis of Petroleum Hydrocarbons in Surface Water
Phase II Environmental Site Assessment
Former Military Site, Border Beacon, NL
Stantec Project No. 121414915.200

Sample ID	BTEX Parameters (mg/L)				Total Petroleum Hydrocarbons (mg/L)					Resemblance
	Benzene	Toluene	Ethyl-benzene	Xylenes	F1 (C_6-C_{10})	F2 (C_{10}-C_{16})	F3 (C_{16}-C_{32})	Returned to baseline?[2]	Modified TPH[3]	
RDL	0.0010	0.0010	0.0010	0.0020	0.010	0.050	0.15	-	0.10	-
Tier I ESLs - Aquatic Life [1]	2.1	0.77	0.32	0.33	-	-	-	-	1.5 / 0.10 / 0.10	-
Lower Site - General Area										
BB-SW1	nd	nd	nd	nd	nd	nd	nd	-	nd	-
BB-SW1 Lab-Dup	nd	nd	nd	nd	nd	nd	nd	-	-	-
BB-SW2	nd	nd	nd	nd	nd	nd	nd	-	nd	-
Unknown Foundation / Building										
BB-SW9	nd	nd	nd	nd	nd	nd	nd	-	nd	-
Waste Disposal Sites										
BB-SW10	nd	nd	nd	nd	nd	nd	nd	-	nd	-
BB-SW11	nd	nd	nd	nd	nd	nd	nd	-	nd	-
BB-SW12	nd	0.0010	nd	nd	nd	nd	0.98	Yes	0.98	NR FO/LO
Upper Site										
BB-SW5	nd	nd	nd	nd	nd	nd	nd	-	nd	-

Notes:

1 = Atlantic Partnership in RBCA (Risk-Based Corrective Action) Implementation (PIRI) Tier I Ecological Screening Levels (ESLs) for the Protection of Freshwater and Marine Aquatic Life (Table 3a), Surface Water guidelines for gasoline/diesel/lube oil (July 2012. revised January 2015).

2 =Atlantic Partnership in RBCA Implementation analytical method does not analyze for >C_{32}. Laboratory certificate indicates (Yes or No) whether chromatogram for each sample returns to baseline after C_{32}. Samples are considered to have returned to baseline if the area from C_{32}-C_{36} is less than 10% of the area from C_{10}-C_{32}.

3 = Modified TPH = TPH C_6 - C_{32} (excluding BTEX).

RDL = Reportable Detection Limit.

nd = Not detected above RDL.

"-" = Not analyzed, not applicable or no applicable guideline.

Shaded = Value exceeds applicable guideline.

Resemblance:

NR FO/LO = No resemblance to petroleum products in fuel/lube oil range.

Table E.16 Results of Laboratory Analysis of General Chemistry in Surface Water
Phase II Environmental Site Assessment
Former Military Site, Border Beacon, NL
Stantec Project No. 121414915.200

Parameters	RDL	Units	Guideline[1]	Lower Site - General Area		Unknown Foundation / Building	Waste Disposal Sites				Upper Site	
				BB-SW1	BB-SW2	BB-SW9	BB-SW10	BB-SW11	BB-SW11 Lab-Dup	BB-SW12	BB-SW5	BB-SW5 Lab-Dup
Calculated Parameters												
Anion Sum	N/A	me/L	-	0.19	0.17	0.12	0.00	0.00	-	0.00	0.00	-
Bicarb. Alkalinity (calc. as CaCO3)	1	mg/L	-	9.5	8.2	6	nd	nd	-	nd	nd	-
Calculated TDS	1	mg/L	-	13	12	9	1	2	-	11	5	-
Carb. Alkalinity (calc. as CaCO3)	1	mg/L	-	nd	nd	nd	nd	nd	-	nd	nd	-
Cation Sum	N/A	me/L	-	0.18	0.16	0.11	0.04	0.03	-	0.44	0.09	-
Hardness (CaCO3)	1	mg/L	-	6.7	6.1	3.7	nd	nd	-	6.6	3.5	-
Ion Balance (% Difference)	N/A	%	-	2.7	3.03	4.35	100	100	-	100	100	-
Langelier Index (@ 20C)		N/A	-	-3.18	-3.33	-3.83	-	-	-	-	-	-
Langelier Index (@ 4C)		N/A	-	-3.43	-3.58	-4.08	-	-	-	-	-	-
Saturation pH (@ 20C)		N/A	-	9.96	10.1	10.4	-	-	-	-	-	-
Saturation pH (@ 4C)		N/A	-	10.2	10.3	10.7	-	-	-	-	-	-
Inorganics												
Total Alkalinity (Total as CaCO3)	5	mg/L	20 [1, 6]	9.5	8.2	6	nd	nd	-	nd	nd	nd
Dissolved Chloride (Cl)	1	mg/L	120 [3]	nd	nd	nd	nd	nd	-	nd	nd	nd
Colour	5	TCU	narrative [3,4]	7.1	5.5	nd	nd	nd	-	nd	44	44
Nitrate + Nitrite	0.05	mg/L	400 [7]	nd	0.15	0.073	nd	nd	-	nd	nd	nd
Nitrogen (Ammonia Nitrogen)	0.05	mg/L	-	nd	nd	0.055	nd	nd	-	nd	nd	-
Total Organic Carbon (C)	0.5	mg/L	-	3.2	2.5	3.8	5.6	2.8	-	18	13	-
Orthophosphate (P)	0.01	mg/L	-	nd	nd	nd	nd	nd	-	nd	nd	nd
pH	N/A	pH	6.5 - 9.0 [3]	6.78	6.73	6.59	5.93	6.18	6.06	5.69	6.38	-
Reactive Silica (SiO2)	0.5	mg/L	-	3.7	3	2.6	nd	1.1	-	nd	3.1	3.1
Dissolved Sulphate (SO4)	2	mg/L	218/309 [1,2]	nd	nd	nd	nd	nd	-	nd	nd	nd
Turbidity	0.1	NTU	narrative [3,5]	0.55	0.34	0.59	1.9	0.86	-	170	0.6	-
Conductivity	1	uS/cm	-	19	15	9	2.8	5.1	4.9	9.1	13	-

Notes:

1 = Alberta Environmental Quality Guidelines for Alberta Surface Waters (2014).

2 = Varies with water hardness. For hardness < 30 mg/L, gudeline = 128 mg/L; for hardness between 31 and 75 mg/L, guideline = 218 mg/L; for hardness between 76 and 180 mg/L, guideline = 218 mg/L; for hardness between 181 and 250 mg/L, guideline = 429 mg/L; and, for hardness > 250 mg/L, guideline determined based on site water (not known).

3 = CCME Water Quality Guidelines for the Protection of Freshwater Aquatic Life.

4 = CCME guideline for colour is narrative: the mean absorbance of filtered water samples at 456 nm shall not be significantly higher than the seasonally adjusted expected value for the system under consideration. The seasonally adjusted expected value of the system under consideration is not known.

5 = CCME guideline for turbidity is narrative: maximum increase of 8 NTUs from background levels when background levels are between 8 and 80 NTUs. Background levels of turbidity are not known.

6 = Total Alkalinity guideline is a minumum value.

7 = British Columbia Ministry of the Environment Contaminated Sites Regulation Schedule 6 : Generic Numerical Water Standards: Aquatic Life.

RDL = Reportable Detection Limit.

nd = Not detected above RDL.

"-" = not analyzed, not applicable or no applicable guideline.

Shaded = Value exceed applicable guideline.

Table E.17 Results of Laboratory Analysis of VOCs in Surface Water
Phase II Environmental Site Assessment
Former Military Site, Border Beacon, NL
Stantec Project No. 121414915.200

Volatile Organics	RDL	Units	Guideline	Lower Site - General Area		Unknown Foundation / Building	Waste Disposal Sites			Upper Site
				BB-SW1	BB-SW2	BB-SW9	BB-SW10	BB-SW11	BB-SW12	BB-SW5
Chlorobenzenes										
1,2-Dichlorobenzene	0.5	µg/L	0.7 [1]	nd	nd	nd	nd	nd	nd	nd
1,3-Dichlorobenzene	1	µg/L	150 [1]	nd	nd	nd	nd	nd	nd	nd
1,4-Dichlorobenzene	1	µg/L	26 [1]	nd	nd	nd	nd	nd	nd	nd
Chlorobenzene	1	µg/L	1.3 [2]	nd	nd	nd	nd	nd	nd	nd
Volatile Organics										
1,1,1-Trichloroethane	1	µg/L	-	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-Tetrachloroethane	0.5	µg/L	-	nd	nd	nd	nd	nd	nd	nd
1,1,2-Trichloroethane	1	µg/L	-	nd	nd	nd	nd	nd	nd	nd
1,1-Dichloroethane	2	µg/L	-	nd	nd	nd	nd	nd	nd	nd
1,1-Dichloroethylene	0.5	µg/L	-	nd	nd	nd	nd	nd	nd	nd
1,2-Dichloroethane	1	µg/L	100 [1]	nd	nd	nd	nd	nd	nd	nd
1,2-Dichloropropane	0.5	µg/L	-	nd	nd	nd	nd	nd	nd	nd
Benzene	1	µg/L	2,100 [3]	nd	nd	nd	nd	nd	nd	nd
Bromodichloromethane	1	µg/L	-	nd	nd	nd	nd	nd	nd	nd
Bromoform	1	µg/L	-	nd	nd	nd	nd	nd	nd	nd
Bromomethane	0.5	µg/L	-	nd	nd	nd	nd	nd	nd	nd
Carbon Tetrachloride	0.5	µg/L	13.3 [1]	nd	nd	nd	nd	nd	nd	nd
Chloroethane	8	µg/L	-	nd	nd	nd	nd	nd	nd	nd
Chloroform	1	µg/L	1.8 [1]	nd	nd	nd	nd	nd	nd	nd
Chloromethane	8	µg/L	-	nd	nd	nd	nd	nd	nd	nd
cis-1,2-Dichloroethylene	0.5	µg/L	-	nd	nd	nd	nd	nd	nd	nd
cis-1,3-Dichloropropene	0.5	µg/L	-	nd	nd	nd	nd	nd	nd	nd
Dibromochloromethane	1	µg/L	-	nd	nd	nd	nd	nd	nd	nd
Ethylbenzene	1	µg/L	320 [3]	nd	nd	nd	nd	nd	nd	nd
Ethylene Dibromide	0.2	µg/L		nd	nd	nd	nd	nd	nd	nd
Methylene Chloride(Dichloromethane)	3	µg/L	98.1 [1]	nd	nd	nd	nd	nd	nd	nd
o-Xylene	1	µg/L	330 [3]	nd	nd	nd	nd	nd	nd	nd
p+m-Xylene	2	µg/L	330 [3]	nd	nd	nd	nd	nd	nd	nd
Styrene	1	µg/L	72 [1]	nd	nd	nd	nd	nd	nd	nd
Tetrachloroethylene	1	µg/L	110 [1]	nd	nd	nd	nd	nd	nd	nd
Toluene	1	µg/L	770 [3]	nd	nd	nd	nd	nd	nd	nd
trans-1,2-Dichloroethylene	0.5	µg/L	-	nd	nd	nd	nd	nd	nd	nd
trans-1,3-Dichloropropene	0.5	µg/L	-	nd	nd	nd	nd	nd	nd	nd
Trichloroethylene	1	µg/L	21 [1]	nd	nd	nd	nd	nd	nd	nd
Trichlorofluoromethane (FREON 11)	8	µg/L	-	nd	nd	nd	nd	nd	nd	nd
Vinyl Chloride	0.5	µg/L	-	nd	nd	nd	nd	nd	nd	nd

Notes:

1 = Canadian Council of Ministers of the Environment (CCME) Water Quality Guidelines for the protection of freshwater aquatic life (1999 and updates).

2 = Alberta Environmental Quality Guidelines for Alberta Surface Waters (2014).

3 = Atlantic RBCA Tier I Surface Water Ecological Screening Levels (ESLs) for the Protection of Freshwater and Marine Aquatic Life (Table 3a) (July 2012, revised January 2015).

RDL = Reportable Detection Limit.

nd = not detected above RDL.

"-" = Not analyzed, not applicable or no applicable guideline.

Table E.18 Results of Laboratory Analysis of PAHs in Surface Water
Phase II Environmental Site Assessment
Former Military Site, Border Beacon, NL
Stantec Project No. 121414915.200

Parameters	RDL	Units	Guideline[1]	Lower Site - General Area		Unknown Foundation / Building	Waste Disposal Sites			Upper Site
				BB-SW1	BB-SW2	BB-SW9	BB-SW10	BB-SW11	BB-SW12	BB-SW5
1-Methylnaphthalene	0.050	µg/L	-	nd	nd	nd	nd	nd	nd	nd
2-Methylnaphthalene	0.050	µg/L	-	nd	nd	nd	nd	nd	nd	nd
Acenaphthene	0.010	µg/L	5.8 [1]	nd	nd	nd	nd	nd	nd	nd
Acenaphthylene	0.010	µg/L	-	nd	nd	nd	nd	nd	nd	nd
Anthracene	0.010	µg/L	0.012 [1]	nd	nd	nd	nd	nd	nd	nd
Benzo(a)anthracene	0.010	µg/L	0.018 [1]	nd	nd	nd	nd	nd	nd	nd
Benzo(a)pyrene	0.010	µg/L	0.015 [1]	nd	nd	nd	nd	nd	nd	nd
Benzo(b)fluoranthene	0.010	µg/L	-	nd	nd	nd	nd	nd	nd	nd
Benzo(g,h,i)perylene	0.010	µg/L	-	nd	nd	nd	nd	nd	nd	nd
Benzo(j)fluoranthene	0.010	µg/L	-	nd	nd	nd	nd	nd	nd	nd
Benzo(k)fluoranthene	0.010	µg/L	-	nd	nd	nd	nd	nd	nd	nd
Chrysene	0.010	µg/L	1 [2]	nd	nd	nd	nd	nd	nd	nd
Dibenzo(a,h,)anthracene	0.010	µg/L	-	nd	nd	nd	nd	nd	nd	nd
Fluoranthene	0.010	µg/L	0.04 [1]	nd	nd	nd	nd	nd	nd	nd
Fluorene	0.010	µg/L	3 [1]	nd	nd	nd	nd	nd	nd	nd
Indeno(1,2,3-c,d) pyrene	0.010	µg/L	-	nd	nd	nd	nd	nd	nd	nd
Naphthalene	0.20	µg/L	1.1 [1]	nd	nd	nd	nd	nd	nd	nd
Perylene	0.010	µg/L	-	nd	nd	nd	nd	nd	nd	nd
Phenanthrene	0.010	µg/L	0.4 [1]	nd	nd	nd	nd	nd	nd	nd
Pyrene	0.010	µg/L	0.025 [1]	nd	nd	nd	nd	nd	nd	nd

Notes:

1 = Canadian Council of Ministers of the Environment (CCME) Water Quality Guidelines for the protection of freshwater aquatic life (1999 and updates).

2 = British Columbia Ministry of the Environment Contaminated Sites Regulation Schedule 6 : Generic Numerical Water Standards: Aquatic Life.

RDL = Reportable Detection Limit.

nd = Not detected above RDL.

"-" = Not analyzed, not applicable or no applicable guideline.

Table E.19 Results of Laboratory Analysis of Total Metals in Surface Water
Phase II Environmental Site Assessment
Former Military Site, Border Beacon, NL
Stantec Project No. 121414915.200

Parameters	RDL	Units	Guideline[1]	Lower Site - General Area		Unknown Foundation / Building	Waste Disposal Sites			Upper Site
				BB-SW1	BB-SW2	BB-SW9	BB-SW10	BB-SW11	BB-SW12	BB-SW5
pH [2]:				6.78	6.73	6.59	5.93	6.18	5.69	6.38
Hardness (mg/L as $CaCO_3$) [2]:				6.7	6.1	3.7	0.5	0.5	6.6	3.5
Aluminum Guideline[3]				100	100	100	100	100	100	100
Cadmium Guideline[4]				0.04	0.04	0.04	0.04	0.04	0.04	0.04
Copper Guideline[5]				2.00	2.00	2.00	2.00	2.00	2.00	2.00
Lead Guideline[6]				1.0	1.0	1.0	1.0	1.0	1.0	1.0
Nickel Guideline[7]				25	25	25	25	25	25	25
Aluminum	5	µg/L	5 - 100 [1,3]	28	110	160	450	59	6,000	180
Antimony	1	µg/L	200 [8]	nd	nd	nd	nd	nd	nd	nd
Arsenic	1	µg/L	5 [1]	nd	nd	nd	nd	nd	1.4	nd
Barium	1	µg/L	10,000 [8]	21	21	19	2.6	2.8	29	12
Beryllium	1	µg/L	56 [8]	nd	nd	nd	nd	nd	nd	nd
Bismuth	2	µg/L	-	nd	nd	nd	nd	nd	nd	nd
Boron	50	µg/L	1500 [1]	nd	nd	nd	nd	nd	nd	nd
Cadmium	0.01	µg/L	0.04 - 0.37 [1,4]	nd	nd	nd	nd	0.022	0.91	0.03
Calcium	100	µg/L	-	2,100	1,900	1,200	130	280	1,200	1,000
Chromium	1	µg/L	-	nd	nd	nd	nd	1.3	7	nd
Cobalt	0.4	µg/L	2.5 [9]	nd	nd	nd	nd	nd	1.2	0.4
Copper	2	µg/L	2 - 4 [1,5]	nd	nd	nd	nd	nd	38	nd
Iron	50	µg/L	300 [1]	nd	100	230	640	71	8,000	95
Lead	0.5	µg/L	1 - 7 [1,6]	nd	nd	nd	1.2	nd	38	nd
Magnesium	100	µg/L	-	330	300	180	nd	nd	860	220
Manganese	2	µg/L	-	2.3	3.1	8	4.8	2.9	44	11
Molybdenum	2	µg/L	73 [1]	nd	nd	nd	nd	nd	nd	nd
Nickel	2	µg/L	25 - 150 [1,7]	nd	nd	nd	nd	nd	5.2	nd
Phosphorous	100	µg/L	-	nd	nd	nd	nd	nd	840	nd
Potassium	100	µg/L	-	290	260	170	nd	120	430	nd
Selenium	1	µg/L	1 [1]	nd	nd	nd	nd	nd	nd	nd
Silver	0.1	µg/L	0.25 [1]	nd	nd	nd	nd	nd	0.13	nd
Sodium	100	µg/L	-	790	680	450	150	240	280	310
Strontium	2	µg/L	-	13	11	8.6	nd	nd	6.3	7.8
Thallium	0.1	µg/L	0.8 [1]	nd	nd	nd	nd	nd	nd	nd
Tin	2	µg/L	-	nd	nd	nd	nd	nd	nd	nd
Titanium	2	µg/L	1,000 [8]	nd	4.8	14	29	3.9	390	2.3
Uranium	0.1	µg/L	15 [1]	nd	nd	nd	nd	nd	0.88	nd
Vanadium	2	µg/L	-	nd	nd	nd	nd	nd	8.3	nd
Zinc	5	ug/L	30 [1]	nd	nd	nd	nd	nd	54	39

Notes:

1 = Canadian Council of Ministers of the Environment (CCME) Water Quality Guidelines for the Protection of Freshwater Aquatic Life (1999 and updates).

2 = From Table E.16.

3 = Aluminum guideline = 5 µg/L at pH<6.5, or 100 µg/L at pH>=6.5.

4 = Cadmium guideline [µg/L] = $10^{0.83[\log(\text{hardness})]-2.46}$, for water hardness between 17 and 280 mg/L as CaCO3.

5 = Copper guideline [µg/L] = $0.2 * e^{0.8545[\ln(\text{hardness})]-1.465}$, for water hardness between 82 and 180 mg/L as $CaCO_3$.

6 = Lead guideline [µg/L] = $e^{1.273[\ln(\text{hardness})]-4.705}$, for water hardness between 60 and 180 mg/L as $CaCO_3$.

7 = Nickel guideline [µg/L] = $e^{0.76[\ln(\text{hardness})]+1.06}$, for hardness between 60 and 180 mg/L as $CaCO_3$.

8 = Alberta Environmental Quality Guidelines for Alberta Surface Waters (2014).

9 = British Columbia Ministry of the Environment Contaminated Sites Regulation Schedule 6 : Generic Numerical Water Standards: Aquatic Life.

RDL = Reportable Detection Limit.

nd = Not detected above RDL.

"-" = Not analyzed, not applicable or no applicable guideline.

Shaded = Value exceed applicable guideline.

Table E.20 Results of Laboratory Analysis of PCBs in Surface Water
Phase II Environmental Site Assessment
Former Military Site, Border Beacon, NL
Stantec Project No. 121414915.200

Parameters	RDL	Units	Guideline[1]	Lower Site - General Area		Unknown Foundation / Building	Waste Disposal Sites			Upper Site
				BB-SW1	BB-SW2	BB-SW9	BB-SW10	BB-SW11	BB-SW12	BB-SW5
Aroclor 1016	0.05	ug/L	-	nd	nd	nd	nd	nd	nd	nd
Aroclor 1221	0.05	ug/L	-	nd	nd	nd	nd	nd	nd	nd
Aroclor 1232	0.05	ug/L	-	nd	nd	nd	nd	nd	nd	nd
Aroclor 1248	0.05	ug/L	-	nd	nd	nd	nd	nd	nd	nd
Aroclor 1242	0.05	ug/L	-	nd	nd	nd	nd	nd	nd	nd
Aroclor 1254	0.05	ug/L	-	nd	nd	nd	nd	nd	nd	nd
Aroclor 1260	0.05	ug/L	-	nd	nd	nd	nd	nd	nd	nd
Calculated Total PCB	0.05	ug/L	-	nd	nd	nd	nd	nd	nd	nd

Notes:
RDL = Reportable Detection Limit.
nd = Not detected above RDL.
"-" = Not analyzed, not applicable or no applicable guideline.

Table E.21 Results of Laboratory Analysis of Available Metals in Vegetation
Phase II Environmental Site Assessment
Former Military Site, Border Beacon, NL
Stantec Project No. 121414915.200

Parameters	RDL	Units	Guideline[1]	Lower Site - General Area	Waste Disposal Sites		Upper Site	
				BB-VEG1	BB-VEG4	BB-VEG5	BB-VEG8	BB-VEG8 Lab-Dup
Aluminum	10	mg/kg	-	260	830	3,000	400	500
Antimony	2	mg/kg	-	nd	nd	nd	nd	nd
Arsenic	2	mg/kg	-	nd	nd	nd	nd	nd
Barium	5	mg/kg	-	31	62	74	120	130
Beryllium	2	mg/kg	-	nd	nd	nd	nd	nd
Boron	5	mg/kg	-	nd	nd	nd	8.6	8.8
Cadmium	0.3	mg/kg	-	nd	nd	6	0.69	0.82
Chromium	2	mg/kg	-	nd	nd	2.9	nd	nd
Cobalt	1	mg/kg	-	nd	nd	nd	nd	1.1
Copper	2	mg/kg	-	2.6	4.2	9	7.3	7.6
Iron	50	mg/kg	-	470	1,600	2,900	710	970
Lead	0.5	mg/kg	-	nd	2	7.7	1.1	1.4
Lithium	2	mg/kg	-	nd	nd	2.5	nd	nd
Manganese	2	mg/kg	-	130	85	120	290	310
Molybdenum	2	mg/kg	-	nd	nd	5.4	nd	nd
Nickel	2	mg/kg	-	2.2	nd	4.1	nd	2
Selenium	2	mg/kg	-	nd	nd	nd	nd	nd
Silver	0.5	mg/kg	-	nd	nd	nd	nd	nd
Strontium	5	mg/kg	-	12	12	13	22	26
Thallium	0.1	mg/kg	-	nd	nd	nd	nd	nd
Uranium	0.1	mg/kg	-	nd	nd	0.1	nd	nd
Vanadium	2	mg/kg	-	nd	2.1	2.4	nd	nd
Zinc	5	mg/kg	-	16	39	280	370	420

Notes:

1 = No applicable guideline for metals in vegetation.

RDL = Reportable Detection Limit.

nd = Not detected above RDL.

"-" = Not analyzed, not applicable or no applicable guideline.

Table E.22 Results of Laboratory Analysis of PCBs in Vegetation
Phase II Environmental Site Assessment
Former Military Site, Border Beacon, NL
Stantec Project No. 121414915.200

Parameters	RDL	Units	Guideline	Lower Site - General Area	Waste Disposal Sites		Upper Site
				BB-VEG1	BB-VEG4	BB-VEG5	BB-VEG8
Aroclor 1016	0.050	µg/g	-	nd (0.25)	nd (0.15)	nd	nd (0.25)
Aroclor 1221	0.050	µg/g	-	nd (0.25)	nd (0.15)	nd	nd (0.25)
Aroclor 1232	0.050	µg/g	-	nd (0.25)	nd (0.15)	nd	nd (0.25)
Aroclor 1248	0.050	µg/g	-	nd (0.25)	nd (0.15)	nd	nd (0.25)
Aroclor 1242	0.050	µg/g	-	nd (0.25)	nd (0.15)	nd	nd (0.25)
Aroclor 1254	0.050	µg/g	-	nd (0.25)	nd (0.15)	0.15	nd (0.25)
Aroclor 1260	0.050	µg/g	-	nd (0.25)	nd (0.15)	nd	nd (0.25)
Calculated Total PCB	0.050	µg/g	-	nd (0.25)	nd (0.15)	0.15	nd (0.25)

Notes:

1 = No applicable guideline for PCBs in vegetation.
RDL = Reportable Detection Limit.
nd = Not detected above the standard RDL.
nd (#) = Not detected above elevated RDL shown.
mbgs = metres below ground surface.
"-" = Not applicable or no applicable guideline.

APPENDIX F

Laboratory Analytical Reports and Chain of Custody Documentation

Maxxam
A Bureau Veritas Group Company

Your Project #: 121414915.200.002
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL

Attention:Jim Slade

Stantec Consulting Ltd
141 Kelsey Drive
St. John's, NL
A1B 0L2

Report Date: 2017/11/08
Report #: R4836841
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7O4860
Received: 2017/11/01, 14:30

Sample Matrix: Water
Samples Received: 7

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
TEH in Water (PIRI)	5	2017/11/06	2017/11/07	ATL SOP 00198	Atl. RBCA v3.1 m
TEH in Water (PIRI)	2	2017/11/06	2017/11/08	ATL SOP 00198	Atl. RBCA v3.1 m
VPH in Water (PIRI)	7	N/A	2017/11/06	ATL SOP 00200	Atl. RBCA v3.1 m
ModTPH (T1) Calc. for Water	5	N/A	2017/11/07	N/A	Atl. RBCA v3 m
ModTPH (T1) Calc. for Water	2	N/A	2017/11/08	N/A	Atl. RBCA v3 m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Maxxam Analytics International Corporation o/a Maxxam Analytics 49-55 Elizabeth Ave, Suite 101A, St.John's, NL, Canada A1A 1W9 Tel: 709-754-0203 Toll Free: 888-492-7227 Fax: 709-754-8612 www.maxxamanalytics.com

Your Project #: 121414915.200.002
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL

Attention:Jim Slade

Stantec Consulting Ltd
141 Kelsey Drive
St. John's, NL
A1B 0L2

Report Date: 2017/11/08
Report #: R4836841
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7O4860
Received: 2017/11/01, 14:30

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Paula Chaplin, Project Manager
Email: PChaplin@maxxam.ca
Phone# (709)754-8615
==========
This report has been generated and distributed using a secure automated process.
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 49-55 Elizabeth Ave, Suite 101A, St.John's, NL, Canada A1A 1W9 Tel: 709-754-0203 Toll Free: 888-492-7227 Fax: 709-754-8612 www.maxxamanalytics.com

Maxxam Job #: B7O4860
Report Date: 2017/11/08

Stantec Consulting Ltd
Client Project #: 121414915.200.002
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

RBCA HYDROCARBONS IN WATER (WATER)

Maxxam ID		FLR793	FLR793	FLR794	FLR795	FLR796	FLR797			
Sampling Date		2017/10/26	2017/10/26	2017/10/26	2017/10/26	2017/10/26	2017/10/26			
	UNITS	**BB-SW1**	**BB-SW1 Lab-Dup**	**BB-SW2**	**BB-SW5**	**BB-SW9**	**BB-SW10**	**RDL**	**QC Batch**	**MDL**
Petroleum Hydrocarbons										
Benzene	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	5249733	N/A
Toluene	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	5249733	N/A
Ethylbenzene	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	5249733	N/A
Total Xylenes	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0020	5249733	N/A
C6 - C10 (less BTEX)	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	5249733	N/A
>C10-C16 Hydrocarbons	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	5250078	N/A
>C16-C21 Hydrocarbons	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	5250078	N/A
>C21-<C32 Hydrocarbons	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	5250078	N/A
Modified TPH (Tier1)	mg/L	<0.10		<0.10	<0.10	<0.10	<0.10	0.10	5244526	N/A
Reached Baseline at C32	mg/L	NA	NA	NA	NA	NA	NA	N/A	5250078	N/A
Surrogate Recovery (%)										
Isobutylbenzene - Extractable	%	100	95	104	101	104	95		5250078	
n-Dotriacontane - Extractable	%	101	95	106	101	106	95		5250078	
Isobutylbenzene - Volatile	%	94	98	95	97	98	96		5249733	

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

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Maxxam Job #: B7O4860
Report Date: 2017/11/08

Stantec Consulting Ltd
Client Project #: 121414915.200.002
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

RBCA HYDROCARBONS IN WATER (WATER)

Maxxam ID		FLR798	FLR799			
Sampling Date		2017/10/26	2017/10/26			
	UNITS	**BB-SW11**	**BB-SW12**	**RDL**	**QC Batch**	**MDL**
Petroleum Hydrocarbons						
Benzene	mg/L	<0.0010	<0.0010	0.0010	5249733	N/A
Toluene	mg/L	<0.0010	0.0010	0.0010	5249733	N/A
Ethylbenzene	mg/L	<0.0010	<0.0010	0.0010	5249733	N/A
Total Xylenes	mg/L	<0.0020	<0.0020	0.0020	5249733	N/A
C6 - C10 (less BTEX)	mg/L	<0.010	<0.010	0.010	5249733	N/A
>C10-C16 Hydrocarbons	mg/L	<0.050	<0.050	0.050	5250078	N/A
>C16-C21 Hydrocarbons	mg/L	<0.050	0.15	0.050	5250078	N/A
>C21-<C32 Hydrocarbons	mg/L	<0.10	0.83	0.10	5250078	N/A
Modified TPH (Tier1)	mg/L	<0.10	0.98	0.10	5244526	N/A
Reached Baseline at C32	mg/L	NA	Yes	N/A	5250078	N/A
Hydrocarbon Resemblance	mg/L		COMMENT (1)	N/A	5250078	N/A
Surrogate Recovery (%)						
Isobutylbenzene - Extractable	%	99	89		5250078	
n-Dotriacontane - Extractable	%	94	104 (2)		5250078	
Isobutylbenzene - Volatile	%	92	84		5249733	

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) No resemblance to petroleum products in fuel oil /lube oil range.
(2) TEH sample contained sediment.

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Maxxam Job #: B7O4860
Report Date: 2017/11/08

Stantec Consulting Ltd
Client Project #: 121414915.200.002
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

TEST SUMMARY

Maxxam ID: FLR793 **Collected:** 2017/10/26
Sample ID: BB-SW1 **Shipped:**
Matrix: Water **Received:** 2017/11/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Water (PIRI)	GC/FID	5250078	2017/11/06	2017/11/08	Susan Piercey
VPH in Water (PIRI)	PTGC/MS	5249733	N/A	2017/11/06	Annette Clarke
ModTPH (T1) Calc. for Water	CALC	5244526	N/A	2017/11/08	Automated Statchk

Maxxam ID: FLR793 Dup **Collected:** 2017/10/26
Sample ID: BB-SW1 **Shipped:**
Matrix: Water **Received:** 2017/11/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Water (PIRI)	GC/FID	5250078	2017/11/06	2017/11/07	Susan Piercey
VPH in Water (PIRI)	PTGC/MS	5249733	N/A	2017/11/06	Annette Clarke

Maxxam ID: FLR794 **Collected:** 2017/10/26
Sample ID: BB-SW2 **Shipped:**
Matrix: Water **Received:** 2017/11/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Water (PIRI)	GC/FID	5250078	2017/11/06	2017/11/08	Susan Piercey
VPH in Water (PIRI)	PTGC/MS	5249733	N/A	2017/11/06	Annette Clarke
ModTPH (T1) Calc. for Water	CALC	5244526	N/A	2017/11/08	Automated Statchk

Maxxam ID: FLR795 **Collected:** 2017/10/26
Sample ID: BB-SW5 **Shipped:**
Matrix: Water **Received:** 2017/11/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Water (PIRI)	GC/FID	5250078	2017/11/06	2017/11/07	Susan Piercey
VPH in Water (PIRI)	PTGC/MS	5249733	N/A	2017/11/06	Annette Clarke
ModTPH (T1) Calc. for Water	CALC	5244526	N/A	2017/11/07	Automated Statchk

Maxxam ID: FLR796 **Collected:** 2017/10/26
Sample ID: BB-SW9 **Shipped:**
Matrix: Water **Received:** 2017/11/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Water (PIRI)	GC/FID	5250078	2017/11/06	2017/11/07	Susan Piercey
VPH in Water (PIRI)	PTGC/MS	5249733	N/A	2017/11/06	Annette Clarke
ModTPH (T1) Calc. for Water	CALC	5244526	N/A	2017/11/07	Automated Statchk

Maxxam ID: FLR797 **Collected:** 2017/10/26
Sample ID: BB-SW10 **Shipped:**
Matrix: Water **Received:** 2017/11/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Water (PIRI)	GC/FID	5250078	2017/11/06	2017/11/07	Susan Piercey

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Maxxam Job #: B7O4860
Report Date: 2017/11/08

Stantec Consulting Ltd
Client Project #: 121414915.200.002
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

TEST SUMMARY

Maxxam ID: FLR797
Sample ID: BB-SW10
Matrix: Water

Collected: 2017/10/26
Shipped:
Received: 2017/11/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
VPH in Water (PIRI)	PTGC/MS	5249733	N/A	2017/11/06	Annette Clarke
ModTPH (T1) Calc. for Water	CALC	5244526	N/A	2017/11/07	Automated Statchk

Maxxam ID: FLR798
Sample ID: BB-SW11
Matrix: Water

Collected: 2017/10/26
Shipped:
Received: 2017/11/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Water (PIRI)	GC/FID	5250078	2017/11/06	2017/11/07	Susan Piercey
VPH in Water (PIRI)	PTGC/MS	5249733	N/A	2017/11/06	Annette Clarke
ModTPH (T1) Calc. for Water	CALC	5244526	N/A	2017/11/07	Automated Statchk

Maxxam ID: FLR799
Sample ID: BB-SW12
Matrix: Water

Collected: 2017/10/26
Shipped:
Received: 2017/11/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Water (PIRI)	GC/FID	5250078	2017/11/06	2017/11/07	Susan Piercey
VPH in Water (PIRI)	PTGC/MS	5249733	N/A	2017/11/06	Annette Clarke
ModTPH (T1) Calc. for Water	CALC	5244526	N/A	2017/11/07	Automated Statchk

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Maxxam Job #: B7O4860
Report Date: 2017/11/08

Stantec Consulting Ltd
Client Project #: 121414915.200.002
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

GENERAL COMMENTS

Results relate only to the items tested.

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Maxxam Job #: B7O4860
Report Date: 2017/11/08

QUALITY ASSURANCE REPORT

Stantec Consulting Ltd
Client Project #: 121414915.200.002
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5249733	Isobutylbenzene - Volatile	2017/11/06	96	70 - 130	105	70 - 130	100	%		
5250078	Isobutylbenzene - Extractable	2017/11/07	96	30 - 130	97	30 - 130	100	%		
5250078	n-Dotriacontane - Extractable	2017/11/07	101	30 - 130	103	30 - 130	100	%		
5249733	Benzene	2017/11/06	85	70 - 130	95	70 - 130	<0.0010	mg/L	NC	40
5249733	C6 - C10 (less BTEX)	2017/11/06					<0.010	mg/L	NC	40
5249733	Ethylbenzene	2017/11/06	85	70 - 130	95	70 - 130	<0.0010	mg/L	NC	40
5249733	Toluene	2017/11/06	85	70 - 130	95	70 - 130	<0.0010	mg/L	NC	40
5249733	Total Xylenes	2017/11/06	82	70 - 130	95	70 - 130	<0.0020	mg/L	NC	40
5250078	>C10-C16 Hydrocarbons	2017/11/07	72	70 - 130	91	70 - 130	<0.050	mg/L	NC	40
5250078	>C16-C21 Hydrocarbons	2017/11/07	88	70 - 130	106	70 - 130	<0.050	mg/L	NC	40
5250078	>C21-<C32 Hydrocarbons	2017/11/07	62 (1)	70 - 130	83	70 - 130	<0.10	mg/L	NC	40

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

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

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

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

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

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

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Maxxam Job #: B7O4860
Report Date: 2017/11/08

Stantec Consulting Ltd
Client Project #: 121414915.200.002
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

VALIDATION SIGNATURE PAGE

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

Paula Chaplin, Project Manager

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

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Your Project #: 121414915.200.002
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Your C.O.C. #: N/A

Attention:Jim Slade

Stantec Consulting Ltd
141 Kelsey Drive
St. John's, NL
A1B 0L2

Report Date: 2017/11/20
Report #: R4868251
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7O7508
Received: 2017/11/02, 10:11

Sample Matrix: Water
Samples Received: 7

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Carbonate, Bicarbonate and Hydroxide (1)	4	N/A	2017/11/07	N/A	SM 22 4500-CO2 D
Carbonate, Bicarbonate and Hydroxide (1)	3	N/A	2017/11/08	N/A	SM 22 4500-CO2 D
Alkalinity (1)	7	N/A	2017/11/13	ATL SOP 00013	EPA 310.2 R1974 m
Benzo(b/j)fluoranthene Sum (water) (1)	7	N/A	2017/11/18	N/A	Auto Calc.
Chloride (1)	7	N/A	2017/11/14	ATL SOP 00014	SM 22 4500-Cl- E m
Colour (1)	7	N/A	2017/11/15	ATL SOP 00020	SM 22 2120C m
Conductance - water (1)	4	N/A	2017/11/07	ATL SOP 00004	SM 22 2510B m
Conductance - water (1)	3	N/A	2017/11/08	ATL SOP 00004	SM 22 2510B m
Hardness (calculated as CaCO3) (1)	7	N/A	2017/11/09	ATL SOP 00048	SM 22 2340 B
Metals Water Total MS (1)	7	2017/11/08	2017/11/08	ATL SOP 00058	EPA 6020A R1 m
Ion Balance (% Difference) (1)	7	N/A	2017/11/16	N/A	Auto Calc.
Anion and Cation Sum (1)	7	N/A	2017/11/10	N/A	Auto Calc.
Nitrogen Ammonia - water (1)	2	N/A	2017/11/09	ATL SOP 00015	EPA 350.1 R2 m
Nitrogen Ammonia - water (1)	5	N/A	2017/11/10	ATL SOP 00015	EPA 350.1 R2 m
Nitrogen - Nitrate + Nitrite (1)	7	N/A	2017/11/15	ATL SOP 00016	USGS SOPINCF0452.2 m
Nitrogen - Nitrite (1)	7	N/A	2017/11/14	ATL SOP 00017	SM 22 4500-NO2- B m
Nitrogen - Nitrate (as N) (1)	7	N/A	2017/11/16	ATL SOP 00018	ASTM D3867-16
PAH in Water by GC/MS (SIM) (1)	7	2017/11/02	2017/11/17	ATL SOP 00103	EPA 8270D 2007 m
PCBs in water by GC/ECD (1)	6	2017/11/02	2017/11/09	ATL SOP 00107	EPA 8082A m
PCBs in water by GC/ECD (1)	1	2017/11/03	2017/11/09	ATL SOP 00107	EPA 8082A m
PCB Aroclor sum (water) (1)	7	N/A	2017/11/09	N/A	Auto Calc.
pH (1, 2)	4	N/A	2017/11/07	ATL SOP 00003	SM 22 4500-H+ B m
pH (1, 2)	3	N/A	2017/11/08	ATL SOP 00003	SM 22 4500-H+ B m
Phosphorus - ortho (1)	7	N/A	2017/11/15	ATL SOP 00021	SM 22 4500-P E m
Sat. pH and Langelier Index (@ 20C) (1)	4	N/A	2017/11/14	ATL SOP 00049	Auto Calc.
Sat. pH and Langelier Index (@ 20C) (1)	3	N/A	2017/11/16	ATL SOP 00049	Auto Calc.
Sat. pH and Langelier Index (@ 4C) (1)	4	N/A	2017/11/14	ATL SOP 00049	Auto Calc.
Sat. pH and Langelier Index (@ 4C) (1)	3	N/A	2017/11/16	ATL SOP 00049	Auto Calc.
Reactive Silica (1)	7	N/A	2017/11/13	ATL SOP 00022	EPA 366.0 m
Sulphate (1)	7	N/A	2017/11/14	ATL SOP 00023	ASTM D516-16 m

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Your Project #: 121414915.200.002
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Your C.O.C. #: N/A

Attention:Jim Slade

Stantec Consulting Ltd
141 Kelsey Drive
St. John's, NL
A1B 0L2

Report Date: 2017/11/20
Report #: R4868251
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7O7508
Received: 2017/11/02, 10:11

Sample Matrix: Water
Samples Received: 7

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Total Dissolved Solids (TDS calc) (1)	7	N/A	2017/11/16	N/A	Auto Calc.
Organic carbon - Total (TOC) (1, 3)	7	N/A	2017/11/13	ATL SOP 00037	SM 22 5310C m
Turbidity (1)	4	N/A	2017/11/07	ATL SOP 00011	EPA 180.1 R2 m
Turbidity (1)	3	N/A	2017/11/08	ATL SOP 00011	EPA 180.1 R2 m
Volatile Organic Compounds in Water (1)	7	N/A	2017/11/07	ATL SOP 00133	EPA 8260C R3 m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Maxxam Bedford
(2) The APHA Standard Method require pH to be analyzed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the APHA Standard Method holding time.
(3) TOC / DOC present in the sample should be considered as non-purgeable TOC / DOC.

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Your Project #: 121414915.200.002
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Your C.O.C. #: N/A

Attention:Jim Slade

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141 Kelsey Drive
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A1B 0L2

Report Date: 2017/11/20
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Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7O7508
Received: 2017/11/02, 10:11

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Heather Macumber, Senior Project Manager
Email: HMacumber@maxxam.ca
Phone# (902)420-0203 Ext:226
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Maxxam Job #: B7O7508
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.002
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

ATLANTIC RCAP-MS TOTAL METALS IN WATER (WATER)

Maxxam ID		FMF459		FMF460			FMF461			
Sampling Date		2017/10/26		2017/10/26			2017/10/26			
COC Number		N/A		N/A			N/A			
	UNITS	**BB-SW1**	**QC Batch**	**BB-SW2**	**RDL**	**QC Batch**	**BB-SW5**	**RDL**	**QC Batch**	**MDL**
Calculated Parameters										
Anion Sum	me/L	0.190	5248645	0.170	N/A	5248645	0.00	N/A	5248645	N/A
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	9.5	5248641	8.2	1.0	5248641	<1.0	1.0	5248641	0.20
Calculated TDS	mg/L	13	5248649	12	1.0	5248649	5.0	1.0	5248649	0.20
Carb. Alkalinity (calc. as CaCO3)	mg/L	<1.0	5248641	<1.0	1.0	5248641	<1.0	1.0	5248641	0.20
Cation Sum	me/L	0.180	5248645	0.160	N/A	5248645	0.0900	N/A	5248645	N/A
Hardness (CaCO3)	mg/L	6.7	5248643	6.1	1.0	5248643	3.5	1.0	5248643	1.0
Ion Balance (% Difference)	%	2.70	5248644	3.03	N/A	5248644	100	N/A	5248644	N/A
Langelier Index (@ 20C)	N/A	-3.18	5248647	-3.33		5248647	NC		5248647	
Langelier Index (@ 4C)	N/A	-3.43	5248648	-3.58		5248648	NC		5248648	
Nitrate (N)	mg/L	<0.050	5248646	0.15	0.050	5248646	<0.050	0.050	5248646	N/A
Saturation pH (@ 20C)	N/A	9.96	5248647	10.1		5248647	NC		5248647	
Saturation pH (@ 4C)	N/A	10.2	5248648	10.3		5248648	NC		5248648	
Inorganics										
Total Alkalinity (Total as CaCO3)	mg/L	9.5	5262344	8.2	5.0	5262344	<5.0	5.0	5262344	N/A
Dissolved Chloride (Cl)	mg/L	<1.0	5262347	<1.0	1.0	5262347	<1.0	1.0	5262347	N/A
Colour	TCU	7.1	5262368	5.5	5.0	5262368	44	5.0	5262368	N/A
Nitrate + Nitrite (N)	mg/L	<0.050	5262373	0.15	0.050	5262373	<0.050	0.050	5262373	N/A
Nitrite (N)	mg/L	<0.010	5262374	<0.010	0.010	5262374	<0.010	0.010	5262374	N/A
Nitrogen (Ammonia Nitrogen)	mg/L	<0.050	5255129	<0.050	0.050	5255129	<0.050	0.050	5255129	N/A
Total Organic Carbon (C)	mg/L	3.2	5262669	2.5	0.50	5262669	13 (1)	5.0	5262669	N/A
Orthophosphate (P)	mg/L	<0.010	5262371	<0.010	0.010	5262371	<0.010	0.010	5262371	N/A
pH	pH	6.78	5251682	6.73	N/A	5254013	6.38	N/A	5251680	N/A
Reactive Silica (SiO2)	mg/L	3.7	5262364	3.0	0.50	5262364	3.1	0.50	5262364	N/A
Dissolved Sulphate (SO4)	mg/L	<2.0	5262350	<2.0	2.0	5262350	<2.0	2.0	5262350	N/A
Turbidity	NTU	0.55	5251686	0.34	0.10	5254027	0.60	0.10	5251686	0.10
Conductivity	uS/cm	19	5251683	15	1.0	5254014	13	1.0	5251681	N/A
Metals										
Total Aluminum (Al)	ug/L	28	5254035	110	5.0	5254035	180	5.0	5254035	N/A
Total Antimony (Sb)	ug/L	<1.0	5254035	<1.0	1.0	5254035	<1.0	1.0	5254035	N/A
Total Arsenic (As)	ug/L	<1.0	5254035	<1.0	1.0	5254035	<1.0	1.0	5254035	N/A
Total Barium (Ba)	ug/L	21	5254035	21	1.0	5254035	12	1.0	5254035	N/A
Total Beryllium (Be)	ug/L	<1.0	5254035	<1.0	1.0	5254035	<1.0	1.0	5254035	N/A
Total Bismuth (Bi)	ug/L	<2.0	5254035	<2.0	2.0	5254035	<2.0	2.0	5254035	N/A

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) Reporting limit was increased due to turbidity.

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Maxxam Job #: B7O7508
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.002
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

ATLANTIC RCAP-MS TOTAL METALS IN WATER (WATER)

Maxxam ID		FMF459		FMF460			FMF461			
Sampling Date		2017/10/26		2017/10/26			2017/10/26			
COC Number		N/A		N/A			N/A			
	UNITS	**BB-SW1**	**QC Batch**	**BB-SW2**	**RDL**	**QC Batch**	**BB-SW5**	**RDL**	**QC Batch**	**MDL**
Total Boron (B)	ug/L	<50	5254035	<50	50	5254035	<50	50	5254035	N/A
Total Cadmium (Cd)	ug/L	<0.010	5254035	<0.010	0.010	5254035	0.030	0.010	5254035	N/A
Total Calcium (Ca)	ug/L	2100	5254035	1900	100	5254035	1000	100	5254035	N/A
Total Chromium (Cr)	ug/L	<1.0	5254035	<1.0	1.0	5254035	<1.0	1.0	5254035	N/A
Total Cobalt (Co)	ug/L	<0.40	5254035	<0.40	0.40	5254035	0.40	0.40	5254035	N/A
Total Copper (Cu)	ug/L	<2.0	5254035	<2.0	2.0	5254035	<2.0	2.0	5254035	N/A
Total Iron (Fe)	ug/L	<50	5254035	100	50	5254035	95	50	5254035	N/A
Total Lead (Pb)	ug/L	<0.50	5254035	<0.50	0.50	5254035	<0.50	0.50	5254035	N/A
Total Magnesium (Mg)	ug/L	330	5254035	300	100	5254035	220	100	5254035	N/A
Total Manganese (Mn)	ug/L	2.3	5254035	3.1	2.0	5254035	11	2.0	5254035	N/A
Total Molybdenum (Mo)	ug/L	<2.0	5254035	<2.0	2.0	5254035	<2.0	2.0	5254035	N/A
Total Nickel (Ni)	ug/L	<2.0	5254035	<2.0	2.0	5254035	<2.0	2.0	5254035	N/A
Total Phosphorus (P)	ug/L	<100	5254035	<100	100	5254035	<100	100	5254035	N/A
Total Potassium (K)	ug/L	290	5254035	260	100	5254035	<100	100	5254035	N/A
Total Selenium (Se)	ug/L	<1.0	5254035	<1.0	1.0	5254035	<1.0	1.0	5254035	N/A
Total Silver (Ag)	ug/L	<0.10	5254035	<0.10	0.10	5254035	<0.10	0.10	5254035	N/A
Total Sodium (Na)	ug/L	790	5254035	680	100	5254035	310	100	5254035	N/A
Total Strontium (Sr)	ug/L	13	5254035	11	2.0	5254035	7.8	2.0	5254035	N/A
Total Thallium (Tl)	ug/L	<0.10	5254035	<0.10	0.10	5254035	<0.10	0.10	5254035	N/A
Total Tin (Sn)	ug/L	<2.0	5254035	<2.0	2.0	5254035	<2.0	2.0	5254035	N/A
Total Titanium (Ti)	ug/L	<2.0	5254035	4.8	2.0	5254035	2.3	2.0	5254035	N/A
Total Uranium (U)	ug/L	<0.10	5254035	<0.10	0.10	5254035	<0.10	0.10	5254035	N/A
Total Vanadium (V)	ug/L	<2.0	5254035	<2.0	2.0	5254035	<2.0	2.0	5254035	N/A
Total Zinc (Zn)	ug/L	<5.0	5254035	<5.0	5.0	5254035	39	5.0	5254035	N/A

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Maxxam Job #: B7O7508
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.002
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

ATLANTIC RCAP-MS TOTAL METALS IN WATER (WATER)

Maxxam ID		FMF461				FMF462		FMF463			
Sampling Date		2017/10/26				2017/10/26		2017/10/26			
COC Number		N/A				N/A		N/A			
	UNITS	**BB-SW5 Lab-Dup**	**RDL**	**QC Batch**	**MDL**	**BB-SW9**	**RDL**	**BB-SW10**	**RDL**	**QC Batch**	**MDL**
Calculated Parameters											
Anion Sum	me/L					0.120	N/A	0.00	N/A	5248645	N/A
Bicarb. Alkalinity (calc. as CaCO3)	mg/L					6.0	1.0	<1.0	1.0	5248641	0.20
Calculated TDS	mg/L					9.0	1.0	1.0	1.0	5248649	0.20
Carb. Alkalinity (calc. as CaCO3)	mg/L					<1.0	1.0	<1.0	1.0	5248641	0.20
Cation Sum	me/L					0.110	N/A	0.0400	N/A	5248645	N/A
Hardness (CaCO3)	mg/L					3.7	1.0	<1.0	1.0	5248643	1.0
Ion Balance (% Difference)	%					4.35	N/A	100	N/A	5248644	N/A
Langelier Index (@ 20C)	N/A					-3.83		NC		5248647	
Langelier Index (@ 4C)	N/A					-4.08		NC		5248648	
Nitrate (N)	mg/L					0.073	0.050	<0.050	0.050	5248646	N/A
Saturation pH (@ 20C)	N/A					10.4		NC		5248647	
Saturation pH (@ 4C)	N/A					10.7		NC		5248648	
Inorganics											
Total Alkalinity (Total as CaCO3)	mg/L	<5.0	5.0	5262344	N/A	6.0	5.0	<5.0	5.0	5262344	N/A
Dissolved Chloride (Cl)	mg/L	<1.0	1.0	5262347	N/A	<1.0	1.0	<1.0	1.0	5262347	N/A
Colour	TCU	44	5.0	5262368	N/A	<5.0	5.0	<5.0	5.0	5262368	N/A
Nitrate + Nitrite (N)	mg/L	<0.050	0.050	5262373	N/A	0.073	0.050	<0.050	0.050	5262373	N/A
Nitrite (N)	mg/L	<0.010	0.010	5262374	N/A	<0.010	0.010	<0.010	0.010	5262374	N/A
Nitrogen (Ammonia Nitrogen)	mg/L					0.055	0.050	<0.050	0.050	5255129	N/A
Total Organic Carbon (C)	mg/L					3.8	0.50	5.6 (1)	5.0	5262669	N/A
Orthophosphate (P)	mg/L	<0.010	0.010	5262371	N/A	<0.010	0.010	<0.010	0.010	5262371	N/A
pH	pH					6.59	N/A	5.93	N/A	5254013	N/A
Reactive Silica (SiO2)	mg/L	3.1	0.50	5262364	N/A	2.6	0.50	<0.50	0.50	5262364	N/A
Dissolved Sulphate (SO4)	mg/L	<2.0	2.0	5262350	N/A	<2.0	2.0	<2.0	2.0	5262350	N/A
Turbidity	NTU					0.59	0.10	1.9	0.10	5254026	0.10
Conductivity	uS/cm					9.0	1.0	2.8	1.0	5254014	N/A
Metals											
Total Aluminum (Al)	ug/L					160	5.0	450	5.0	5254035	N/A
Total Antimony (Sb)	ug/L					<1.0	1.0	<1.0	1.0	5254035	N/A
Total Arsenic (As)	ug/L					<1.0	1.0	<1.0	1.0	5254035	N/A
Total Barium (Ba)	ug/L					19	1.0	2.6	1.0	5254035	N/A
Total Beryllium (Be)	ug/L					<1.0	1.0	<1.0	1.0	5254035	N/A

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Maxxam Job #: B7O7508
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.002
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

ATLANTIC RCAP-MS TOTAL METALS IN WATER (WATER)

Maxxam ID		FMF461				FMF462		FMF463			
Sampling Date		2017/10/26				2017/10/26		2017/10/26			
COC Number		N/A				N/A		N/A			
	UNITS	**BB-SW5 Lab-Dup**	**RDL**	**QC Batch**	**MDL**	**BB-SW9**	**RDL**	**BB-SW10**	**RDL**	**QC Batch**	**MDL**
Total Bismuth (Bi)	ug/L					<2.0	2.0	<2.0	2.0	5254035	N/A
Total Boron (B)	ug/L					<50	50	<50	50	5254035	N/A
Total Cadmium (Cd)	ug/L					<0.010	0.010	<0.010	0.010	5254035	N/A
Total Calcium (Ca)	ug/L					1200	100	130	100	5254035	N/A
Total Chromium (Cr)	ug/L					<1.0	1.0	<1.0	1.0	5254035	N/A
Total Cobalt (Co)	ug/L					<0.40	0.40	<0.40	0.40	5254035	N/A
Total Copper (Cu)	ug/L					<2.0	2.0	<2.0	2.0	5254035	N/A
Total Iron (Fe)	ug/L					230	50	640	50	5254035	N/A
Total Lead (Pb)	ug/L					<0.50	0.50	1.2	0.50	5254035	N/A
Total Magnesium (Mg)	ug/L					180	100	<100	100	5254035	N/A
Total Manganese (Mn)	ug/L					8.0	2.0	4.8	2.0	5254035	N/A
Total Molybdenum (Mo)	ug/L					<2.0	2.0	<2.0	2.0	5254035	N/A
Total Nickel (Ni)	ug/L					<2.0	2.0	<2.0	2.0	5254035	N/A
Total Phosphorus (P)	ug/L					<100	100	<100	100	5254035	N/A
Total Potassium (K)	ug/L					170	100	<100	100	5254035	N/A
Total Selenium (Se)	ug/L					<1.0	1.0	<1.0	1.0	5254035	N/A
Total Silver (Ag)	ug/L					<0.10	0.10	<0.10	0.10	5254035	N/A
Total Sodium (Na)	ug/L					450	100	150	100	5254035	N/A
Total Strontium (Sr)	ug/L					8.6	2.0	<2.0	2.0	5254035	N/A
Total Thallium (Tl)	ug/L					<0.10	0.10	<0.10	0.10	5254035	N/A
Total Tin (Sn)	ug/L					<2.0	2.0	<2.0	2.0	5254035	N/A
Total Titanium (Ti)	ug/L					14	2.0	29	2.0	5254035	N/A
Total Uranium (U)	ug/L					<0.10	0.10	<0.10	0.10	5254035	N/A
Total Vanadium (V)	ug/L					<2.0	2.0	<2.0	2.0	5254035	N/A
Total Zinc (Zn)	ug/L					<5.0	5.0	<5.0	5.0	5254035	N/A

RDL = Reportable Detection Limit
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N/A = Not Applicable

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Maxxam Job #: B7O7508
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.002
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

ATLANTIC RCAP-MS TOTAL METALS IN WATER (WATER)

Maxxam ID		FMF464				FMF464				FMF465			
Sampling Date		2017/10/26				2017/10/26				2017/10/26			
COC Number		N/A				N/A				N/A			
	UNITS	**BB-SW11**	**RDL**	**QC Batch**	**MDL**	**BB-SW11 Lab-Dup**	**RDL**	**QC Batch**	**MDL**	**BB-SW12**	**RDL**	**QC Batch**	**MDL**
Calculated Parameters													
Anion Sum	me/L	0.00	N/A	5248645	N/A					0.00		5248645	
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	<1.0	1.0	5248641	0.20					<1.0	1.0	5248641	0.20
Calculated TDS	mg/L	2.0	1.0	5248649	0.20					11	1.0	5248649	0.20
Carb. Alkalinity (calc. as CaCO3)	mg/L	<1.0	1.0	5248641	0.20					<1.0	1.0	5248641	0.20
Cation Sum	me/L	0.0300	N/A	5248645	N/A					0.440	N/A	5248645	N/A
Hardness (CaCO3)	mg/L	<1.0	1.0	5248643	1.0					6.6	1.0	5248643	1.0
Ion Balance (% Difference)	%	100	N/A	5248644	N/A					100	N/A	5248644	N/A
Langelier Index (@ 20C)	N/A	NC		5248647						NC		5248647	
Langelier Index (@ 4C)	N/A	NC		5248648						NC		5248648	
Nitrate (N)	mg/L	<0.050	0.050	5248646	N/A					<0.050	0.050	5248646	N/A
Saturation pH (@ 20C)	N/A	NC		5248647						NC		5248647	
Saturation pH (@ 4C)	N/A	NC		5248648						NC		5248648	
Inorganics													
Total Alkalinity (Total as CaCO3)	mg/L	<5.0	5.0	5262344	N/A					<5.0	5.0	5262344	N/A
Dissolved Chloride (Cl)	mg/L	<1.0	1.0	5262347	N/A					<1.0	1.0	5262347	N/A
Colour	TCU	<5.0	5.0	5262368	N/A					<5.0	5.0	5262368	N/A
Nitrate + Nitrite (N)	mg/L	<0.050	0.050	5262373	N/A					<0.050	0.050	5262373	N/A
Nitrite (N)	mg/L	<0.010	0.010	5262374	N/A					<0.010	0.010	5262374	N/A
Nitrogen (Ammonia Nitrogen)	mg/L	<0.050	0.050	5255129	N/A					<0.050	0.050	5255129	N/A
Total Organic Carbon (C)	mg/L	2.8	0.50	5262669	N/A					18 (1)	5.0	5262669	N/A
Orthophosphate (P)	mg/L	<0.010	0.010	5262371	N/A					<0.010	0.010	5262371	N/A
pH	pH	6.18	N/A	5251682	N/A	6.06	N/A	5251682	N/A	5.69	N/A	5251682	N/A
Reactive Silica (SiO2)	mg/L	1.1	0.50	5262364	N/A					<0.50	0.50	5262364	N/A
Dissolved Sulphate (SO4)	mg/L	<2.0	2.0	5262350	N/A					<2.0	2.0	5262350	N/A
Turbidity	NTU	0.86	0.10	5251686	0.10					170	1.0	5251686	0.10
Conductivity	uS/cm	5.1	1.0	5251683	N/A	4.9	1.0	5251683	N/A	9.1	1.0	5251683	N/A
Metals													
Total Aluminum (Al)	ug/L	59	5.0	5254035	N/A					6000	5.0	5254035	N/A
Total Antimony (Sb)	ug/L	<1.0	1.0	5254035	N/A					<1.0	1.0	5254035	N/A
Total Arsenic (As)	ug/L	<1.0	1.0	5254035	N/A					1.4	1.0	5254035	N/A
Total Barium (Ba)	ug/L	2.8	1.0	5254035	N/A					29	1.0	5254035	N/A
Total Beryllium (Be)	ug/L	<1.0	1.0	5254035	N/A					<1.0	1.0	5254035	N/A

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Maxxam Job #: B7O7508
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.002
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

ATLANTIC RCAP-MS TOTAL METALS IN WATER (WATER)

Maxxam ID		FMF464				FMF464				FMF465			
Sampling Date		2017/10/26				2017/10/26				2017/10/26			
COC Number		N/A				N/A				N/A			
	UNITS	**BB-SW11**	**RDL**	**QC Batch**	**MDL**	**BB-SW11 Lab-Dup**	**RDL**	**QC Batch**	**MDL**	**BB-SW12**	**RDL**	**QC Batch**	**MDL**
Total Bismuth (Bi)	ug/L	<2.0	2.0	5254035	N/A					<2.0	2.0	5254035	N/A
Total Boron (B)	ug/L	<50	50	5254035	N/A					<50	50	5254035	N/A
Total Cadmium (Cd)	ug/L	0.022	0.010	5254035	N/A					0.91	0.010	5254035	N/A
Total Calcium (Ca)	ug/L	280	100	5254035	N/A					1200	100	5254035	N/A
Total Chromium (Cr)	ug/L	1.3	1.0	5254035	N/A					7.0	1.0	5254035	N/A
Total Cobalt (Co)	ug/L	<0.40	0.40	5254035	N/A					1.2	0.40	5254035	N/A
Total Copper (Cu)	ug/L	<2.0	2.0	5254035	N/A					38	2.0	5254035	N/A
Total Iron (Fe)	ug/L	71	50	5254035	N/A					8000	50	5254035	N/A
Total Lead (Pb)	ug/L	<0.50	0.50	5254035	N/A					38	0.50	5254035	N/A
Total Magnesium (Mg)	ug/L	<100	100	5254035	N/A					860	100	5254035	N/A
Total Manganese (Mn)	ug/L	2.9	2.0	5254035	N/A					44	2.0	5254035	N/A
Total Molybdenum (Mo)	ug/L	<2.0	2.0	5254035	N/A					<2.0	2.0	5254035	N/A
Total Nickel (Ni)	ug/L	<2.0	2.0	5254035	N/A					5.2	2.0	5254035	N/A
Total Phosphorus (P)	ug/L	<100	100	5254035	N/A					840	100	5254035	N/A
Total Potassium (K)	ug/L	120	100	5254035	N/A					430	100	5254035	N/A
Total Selenium (Se)	ug/L	<1.0	1.0	5254035	N/A					<1.0	1.0	5254035	N/A
Total Silver (Ag)	ug/L	<0.10	0.10	5254035	N/A					0.13	0.10	5254035	N/A
Total Sodium (Na)	ug/L	240	100	5254035	N/A					280	100	5254035	N/A
Total Strontium (Sr)	ug/L	<2.0	2.0	5254035	N/A					6.3	2.0	5254035	N/A
Total Thallium (Tl)	ug/L	<0.10	0.10	5254035	N/A					<0.10	0.10	5254035	N/A
Total Tin (Sn)	ug/L	<2.0	2.0	5254035	N/A					<2.0	2.0	5254035	N/A
Total Titanium (Ti)	ug/L	3.9	2.0	5254035	N/A					390	2.0	5254035	N/A
Total Uranium (U)	ug/L	<0.10	0.10	5254035	N/A					0.88	0.10	5254035	N/A
Total Vanadium (V)	ug/L	<2.0	2.0	5254035	N/A					8.3	2.0	5254035	N/A
Total Zinc (Zn)	ug/L	<5.0	5.0	5254035	N/A					54	5.0	5254035	N/A

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Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.002
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

ATLANTIC VOC IN WATER (WATER)

Maxxam ID		FMF459	FMF460	FMF461	FMF462	FMF463	FMF464			
Sampling Date		2017/10/26	2017/10/26	2017/10/26	2017/10/26	2017/10/26	2017/10/26			
COC Number		N/A	N/A	N/A	N/A	N/A	N/A			
	UNITS	**BB-SW1**	**BB-SW2**	**BB-SW5**	**BB-SW9**	**BB-SW10**	**BB-SW11**	**RDL**	**QC Batch**	**MDL**
Chlorobenzenes										
1,2-Dichlorobenzene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5251708	N/A
1,3-Dichlorobenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	5251708	N/A
1,4-Dichlorobenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	5251708	N/A
Chlorobenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	5251708	N/A
Volatile Organics										
1,1,1-Trichloroethane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	5251708	N/A
1,1,2,2-Tetrachloroethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5251708	N/A
1,1,2-Trichloroethane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	5251708	N/A
1,1-Dichloroethane	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	5251708	N/A
1,1-Dichloroethylene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5251708	1.0
1,2-Dichloroethane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	5251708	N/A
1,2-Dichloropropane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5251708	N/A
Benzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	5251708	N/A
Bromodichloromethane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	5251708	0.20
Bromoform	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	5251708	0.20
Bromomethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5251708	N/A
Carbon Tetrachloride	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5251708	N/A
Chloroethane	ug/L	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	8.0	5251708	N/A
Chloroform	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	5251708	0.20
Chloromethane	ug/L	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	8.0	5251708	N/A
cis-1,2-Dichloroethylene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5251708	N/A
cis-1,3-Dichloropropene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5251708	N/A
Dibromochloromethane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	5251708	0.20
Ethylbenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	5251708	N/A
Ethylene Dibromide	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5251708	0.50
Methyl t-butyl ether (MTBE)	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	5251708	N/A
Methylene Chloride(Dichloromethane)	ug/L	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	3.0	5251708	N/A
o-Xylene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	5251708	N/A
p+m-Xylene	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	5251708	N/A
Styrene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	5251708	N/A
Tetrachloroethylene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	5251708	N/A
Toluene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	5251708	N/A
Total Trihalomethanes	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	5251708	N/A

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

Maxxam Analytics International Corporation o/a Maxxam Analytics 49-55 Elizabeth Ave, Suite 101A, St.John's, NL, Canada A1A 1W9 Tel: 709-754-0203 Toll Free: 888-492-7227 Fax: 709-754-8612 www.maxxamanalytics.com

Maxxam Job #: B7O7508
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.002
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

ATLANTIC VOC IN WATER (WATER)

Maxxam ID		FMF459	FMF460	FMF461	FMF462	FMF463	FMF464			
Sampling Date		2017/10/26	2017/10/26	2017/10/26	2017/10/26	2017/10/26	2017/10/26			
COC Number		N/A	N/A	N/A	N/A	N/A	N/A			
	UNITS	**BB-SW1**	**BB-SW2**	**BB-SW5**	**BB-SW9**	**BB-SW10**	**BB-SW11**	**RDL**	**QC Batch**	**MDL**
Total Xylenes	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	5251708	1.0
trans-1,2-Dichloroethylene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5251708	N/A
trans-1,3-Dichloropropene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5251708	N/A
Trichloroethylene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	5251708	N/A
Trichlorofluoromethane (FREON 11)	ug/L	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	8.0	5251708	N/A
Vinyl Chloride	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5251708	2.0
Surrogate Recovery (%)										
4-Bromofluorobenzene	%	99	99	99	99	99	99		5251708	
D4-1,2-Dichloroethane	%	98	99	97	101	97	98		5251708	
D8-Toluene	%	99	99	100	99	99	100		5251708	

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ATLANTIC VOC IN WATER (WATER)

Maxxam ID		FMF465			
Sampling Date		2017/10/26			
COC Number		N/A			
	UNITS	**BB-SW12**	**RDL**	**QC Batch**	**MDL**
Chlorobenzenes					
1,2-Dichlorobenzene	ug/L	<0.50	0.50	5251708	N/A
1,3-Dichlorobenzene	ug/L	<1.0	1.0	5251708	N/A
1,4-Dichlorobenzene	ug/L	<1.0	1.0	5251708	N/A
Chlorobenzene	ug/L	<1.0	1.0	5251708	N/A
Volatile Organics					
1,1,1-Trichloroethane	ug/L	<1.0	1.0	5251708	N/A
1,1,2,2-Tetrachloroethane	ug/L	<0.50	0.50	5251708	N/A
1,1,2-Trichloroethane	ug/L	<1.0	1.0	5251708	N/A
1,1-Dichloroethane	ug/L	<2.0	2.0	5251708	N/A
1,1-Dichloroethylene	ug/L	<0.50	0.50	5251708	1.0
1,2-Dichloroethane	ug/L	<1.0	1.0	5251708	N/A
1,2-Dichloropropane	ug/L	<0.50	0.50	5251708	N/A
Benzene	ug/L	<1.0	1.0	5251708	N/A
Bromodichloromethane	ug/L	<1.0	1.0	5251708	0.20
Bromoform	ug/L	<1.0	1.0	5251708	0.20
Bromomethane	ug/L	<0.50	0.50	5251708	N/A
Carbon Tetrachloride	ug/L	<0.50	0.50	5251708	N/A
Chloroethane	ug/L	<8.0	8.0	5251708	N/A
Chloroform	ug/L	<1.0	1.0	5251708	0.20
Chloromethane	ug/L	<8.0	8.0	5251708	N/A
cis-1,2-Dichloroethylene	ug/L	<0.50	0.50	5251708	N/A
cis-1,3-Dichloropropene	ug/L	<0.50	0.50	5251708	N/A
Dibromochloromethane	ug/L	<1.0	1.0	5251708	0.20
Ethylbenzene	ug/L	<1.0	1.0	5251708	N/A
Ethylene Dibromide	ug/L	<0.20	0.20	5251708	0.50
Methyl t-butyl ether (MTBE)	ug/L	<2.0	2.0	5251708	N/A
Methylene Chloride(Dichloromethane)	ug/L	<3.0	3.0	5251708	N/A
o-Xylene	ug/L	<1.0	1.0	5251708	N/A
p+m-Xylene	ug/L	<2.0	2.0	5251708	N/A
Styrene	ug/L	<1.0	1.0	5251708	N/A
Tetrachloroethylene	ug/L	<1.0	1.0	5251708	N/A
Toluene	ug/L	<1.0	1.0	5251708	N/A
Total Trihalomethanes	ug/L	<1.0	1.0	5251708	N/A

RDL = Reportable Detection Limit
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Maxxam Job #: B7O7508
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.002
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

ATLANTIC VOC IN WATER (WATER)

Maxxam ID		FMF465			
Sampling Date		2017/10/26			
COC Number		N/A			
	UNITS	**BB-SW12**	**RDL**	**QC Batch**	**MDL**
Total Xylenes	ug/L	<1.0	1.0	5251708	1.0
trans-1,2-Dichloroethylene	ug/L	<0.50	0.50	5251708	N/A
trans-1,3-Dichloropropene	ug/L	<0.50	0.50	5251708	N/A
Trichloroethylene	ug/L	<1.0	1.0	5251708	N/A
Trichlorofluoromethane (FREON 11)	ug/L	<8.0	8.0	5251708	N/A
Vinyl Chloride	ug/L	<0.50	0.50	5251708	2.0
Surrogate Recovery (%)					
4-Bromofluorobenzene	%	99		5251708	
D4-1,2-Dichloroethane	%	97		5251708	
D8-Toluene	%	100		5251708	

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Maxxam Job #: B7O7508
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.002
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

SEMI-VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		FMF459	FMF460	FMF461	FMF462	FMF463	FMF464			
Sampling Date		2017/10/26	2017/10/26	2017/10/26	2017/10/26	2017/10/26	2017/10/26			
COC Number		N/A	N/A	N/A	N/A	N/A	N/A			
	UNITS	**BB-SW1**	**BB-SW2**	**BB-SW5**	**BB-SW9**	**BB-SW10**	**BB-SW11**	**RDL**	**QC Batch**	**MDL**
Polyaromatic Hydrocarbons										
1-Methylnaphthalene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	5251868	N/A
2-Methylnaphthalene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	5251868	N/A
Acenaphthene	ug/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	5251868	N/A
Acenaphthylene	ug/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	5251868	N/A
Anthracene	ug/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	5251868	N/A
Benzo(a)anthracene	ug/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	5251868	N/A
Benzo(a)pyrene	ug/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	5251868	N/A
Benzo(b)fluoranthene	ug/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	5251868	N/A
Benzo(b/j)fluoranthene	ug/L	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	5248675	N/A
Benzo(g,h,i)perylene	ug/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	5251868	N/A
Benzo(j)fluoranthene	ug/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	5251868	N/A
Benzo(k)fluoranthene	ug/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	5251868	N/A
Chrysene	ug/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	5251868	N/A
Dibenz(a,h)anthracene	ug/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	5251868	N/A
Fluoranthene	ug/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	5251868	N/A
Fluorene	ug/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	5251868	N/A
Indeno(1,2,3-cd)pyrene	ug/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	5251868	N/A
Naphthalene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5251868	N/A
Perylene	ug/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	5251868	N/A
Phenanthrene	ug/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	5251868	N/A
Pyrene	ug/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	5251868	N/A
Surrogate Recovery (%)										
D10-Anthracene	%	90	76	59	82	79	83		5251868	
D14-Terphenyl	%	86	76	80	85	79	80		5251868	
D8-Acenaphthylene	%	78	74	55	82	79	84		5251868	

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Maxxam Job #: B7O7508
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.002
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

SEMI-VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		FMF465			
Sampling Date		2017/10/26			
COC Number		N/A			
	UNITS	**BB-SW12**	**RDL**	**QC Batch**	**MDL**
Polyaromatic Hydrocarbons					
1-Methylnaphthalene	ug/L	<0.050	0.050	5251868	N/A
2-Methylnaphthalene	ug/L	<0.050	0.050	5251868	N/A
Acenaphthene	ug/L	<0.010	0.010	5251868	N/A
Acenaphthylene	ug/L	<0.010	0.010	5251868	N/A
Anthracene	ug/L	<0.010	0.010	5251868	N/A
Benzo(a)anthracene	ug/L	<0.010	0.010	5251868	N/A
Benzo(a)pyrene	ug/L	<0.010	0.010	5251868	N/A
Benzo(b)fluoranthene	ug/L	<0.010	0.010	5251868	N/A
Benzo(b/j)fluoranthene	ug/L	<0.020	0.020	5248675	N/A
Benzo(g,h,i)perylene	ug/L	<0.010	0.010	5251868	N/A
Benzo(j)fluoranthene	ug/L	<0.010	0.010	5251868	N/A
Benzo(k)fluoranthene	ug/L	<0.010	0.010	5251868	N/A
Chrysene	ug/L	<0.010	0.010	5251868	N/A
Dibenz(a,h)anthracene	ug/L	<0.010	0.010	5251868	N/A
Fluoranthene	ug/L	<0.010	0.010	5251868	N/A
Fluorene	ug/L	<0.010	0.010	5251868	N/A
Indeno(1,2,3-cd)pyrene	ug/L	<0.010	0.010	5251868	N/A
Naphthalene	ug/L	<0.20	0.20	5251868	N/A
Perylene	ug/L	<0.010	0.010	5251868	N/A
Phenanthrene	ug/L	<0.010	0.010	5251868	N/A
Pyrene	ug/L	<0.010	0.010	5251868	N/A
Surrogate Recovery (%)					
D10-Anthracene	%	83		5251868	
D14-Terphenyl	%	86		5251868	
D8-Acenaphthylene	%	80		5251868	

RDL = Reportable Detection Limit
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N/A = Not Applicable

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Maxxam Job #: B7O7508
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.002
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

POLYCHLORINATED BIPHENYLS BY GC-ECD (WATER)

Maxxam ID		FMF459	FMF460	FMF461	FMF462	FMF463	FMF464			
Sampling Date		2017/10/26	2017/10/26	2017/10/26	2017/10/26	2017/10/26	2017/10/26			
COC Number		N/A	N/A	N/A	N/A	N/A	N/A			
	UNITS	**BB-SW1**	**BB-SW2**	**BB-SW5**	**BB-SW9**	**BB-SW10**	**BB-SW11**	**RDL**	**QC Batch**	**MDL**
PCBs										
Aroclor 1016	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	5249888	N/A
Aroclor 1221	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	5249888	N/A
Aroclor 1232	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	5249888	N/A
Aroclor 1248	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	5249888	N/A
Aroclor 1242	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	5249888	N/A
Aroclor 1254	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	5249888	N/A
Aroclor 1260	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	5249888	N/A
Calculated Total PCB	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	5248676	N/A
Surrogate Recovery (%)										
Decachlorobiphenyl	%	75	63 (1)	59	78	71	73		5249888	

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) PCB sample analysed past recommended hold time as per client request.

Maxxam ID		FMF465			
Sampling Date		2017/10/26			
COC Number		N/A			
	UNITS	**BB-SW12**	**RDL**	**QC Batch**	**MDL**
PCBs					
Aroclor 1016	ug/L	<0.050	0.050	5249888	N/A
Aroclor 1221	ug/L	<0.050	0.050	5249888	N/A
Aroclor 1232	ug/L	<0.050	0.050	5249888	N/A
Aroclor 1248	ug/L	<0.050	0.050	5249888	N/A
Aroclor 1242	ug/L	<0.050	0.050	5249888	N/A
Aroclor 1254	ug/L	<0.050	0.050	5249888	N/A
Aroclor 1260	ug/L	<0.050	0.050	5249888	N/A
Calculated Total PCB	ug/L	<0.050	0.050	5248676	N/A
Surrogate Recovery (%)					
Decachlorobiphenyl	%	62 (1)		5249888	

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) PCB sample contained sediment.

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Maxxam Job #: B7O7508
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.002
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

TEST SUMMARY

Maxxam ID: FMF459
Sample ID: BB-SW1
Matrix: Water

Collected: 2017/10/26
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Carbonate, Bicarbonate and Hydroxide	CALC	5248641	N/A	2017/11/07	Automated Statchk
Alkalinity	KONE	5262344	N/A	2017/11/13	Nancy Rogers
Benzo(b/j)fluoranthene Sum (water)	CALC	5248675	N/A	2017/11/18	Automated Statchk
Chloride	KONE	5262347	N/A	2017/11/14	Nancy Rogers
Colour	KONE	5262368	N/A	2017/11/15	Nancy Rogers
Conductance - water	AT	5251683	N/A	2017/11/07	Julia McGovern
Hardness (calculated as CaCO3)		5248643	N/A	2017/11/09	Automated Statchk
Metals Water Total MS	CICP/MS	5254035	2017/11/08	2017/11/08	Mike Leblanc
Ion Balance (% Difference)	CALC	5248644	N/A	2017/11/16	Automated Statchk
Anion and Cation Sum	CALC	5248645	N/A	2017/11/10	Automated Statchk
Nitrogen Ammonia - water	KONE	5255129	N/A	2017/11/10	Mary Clancey
Nitrogen - Nitrate + Nitrite	KONE	5262373	N/A	2017/11/15	Nancy Rogers
Nitrogen - Nitrite	KONE	5262374	N/A	2017/11/14	Nancy Rogers
Nitrogen - Nitrate (as N)	CALC	5248646	N/A	2017/11/16	Automated Statchk
PAH in Water by GC/MS (SIM)	GC/MS	5251868	2017/11/02	2017/11/17	Gina Thompson
PCBs in water by GC/ECD	GC/ECD	5249888	2017/11/02	2017/11/09	Lisa Gates
PCB Aroclor sum (water)	CALC	5248676	N/A	2017/11/09	Automated Statchk
pH	AT	5251682	N/A	2017/11/07	Julia McGovern
Phosphorus - ortho	KONE	5262371	N/A	2017/11/15	Nancy Rogers
Sat. pH and Langelier Index (@ 20C)	CALC	5248647	N/A	2017/11/16	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	5248648	N/A	2017/11/16	Automated Statchk
Reactive Silica	KONE	5262364	N/A	2017/11/13	Nancy Rogers
Sulphate	KONE	5262350	N/A	2017/11/14	Nancy Rogers
Total Dissolved Solids (TDS calc)	CALC	5248649	N/A	2017/11/16	Automated Statchk
Organic carbon - Total (TOC)	TECH	5262669	N/A	2017/11/13	Luke MacPherson
Turbidity	TURB	5251686	N/A	2017/11/07	Julia McGovern
Volatile Organic Compounds in Water	HS/MS	5251708	N/A	2017/11/07	Amanda Swales

Maxxam ID: FMF460
Sample ID: BB-SW2
Matrix: Water

Collected: 2017/10/26
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Carbonate, Bicarbonate and Hydroxide	CALC	5248641	N/A	2017/11/08	Automated Statchk
Alkalinity	KONE	5262344	N/A	2017/11/13	Nancy Rogers
Benzo(b/j)fluoranthene Sum (water)	CALC	5248675	N/A	2017/11/18	Automated Statchk
Chloride	KONE	5262347	N/A	2017/11/14	Nancy Rogers
Colour	KONE	5262368	N/A	2017/11/15	Nancy Rogers
Conductance - water	AT	5254014	N/A	2017/11/08	Julia McGovern
Hardness (calculated as CaCO3)		5248643	N/A	2017/11/09	Automated Statchk
Metals Water Total MS	CICP/MS	5254035	2017/11/08	2017/11/08	Mike Leblanc
Ion Balance (% Difference)	CALC	5248644	N/A	2017/11/16	Automated Statchk
Anion and Cation Sum	CALC	5248645	N/A	2017/11/10	Automated Statchk
Nitrogen Ammonia - water	KONE	5255129	N/A	2017/11/10	Mary Clancey

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Maxxam Job #: B7O7508
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.002
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

TEST SUMMARY

Maxxam ID: FMF460
Sample ID: BB-SW2
Matrix: Water

Collected: 2017/10/26
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Nitrogen - Nitrate + Nitrite	KONE	5262373	N/A	2017/11/15	Nancy Rogers
Nitrogen - Nitrite	KONE	5262374	N/A	2017/11/14	Nancy Rogers
Nitrogen - Nitrate (as N)	CALC	5248646	N/A	2017/11/16	Automated Statchk
PAH in Water by GC/MS (SIM)	GC/MS	5251868	2017/11/02	2017/11/17	Gina Thompson
PCBs in water by GC/ECD	GC/ECD	5249888	2017/11/03	2017/11/09	Lisa Gates
PCB Aroclor sum (water)	CALC	5248676	N/A	2017/11/09	Automated Statchk
pH	AT	5254013	N/A	2017/11/08	Julia McGovern
Phosphorus - ortho	KONE	5262371	N/A	2017/11/15	Nancy Rogers
Sat. pH and Langelier Index (@ 20C)	CALC	5248647	N/A	2017/11/16	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	5248648	N/A	2017/11/16	Automated Statchk
Reactive Silica	KONE	5262364	N/A	2017/11/13	Nancy Rogers
Sulphate	KONE	5262350	N/A	2017/11/14	Nancy Rogers
Total Dissolved Solids (TDS calc)	CALC	5248649	N/A	2017/11/16	Automated Statchk
Organic carbon - Total (TOC)	TECH	5262669	N/A	2017/11/13	Luke MacPherson
Turbidity	TURB	5254027	N/A	2017/11/08	Julia McGovern
Volatile Organic Compounds in Water	HS/MS	5251708	N/A	2017/11/07	Amanda Swales

Maxxam ID: FMF461
Sample ID: BB-SW5
Matrix: Water

Collected: 2017/10/26
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Carbonate, Bicarbonate and Hydroxide	CALC	5248641	N/A	2017/11/07	Automated Statchk
Alkalinity	KONE	5262344	N/A	2017/11/13	Nancy Rogers
Benzo(b/j)fluoranthene Sum (water)	CALC	5248675	N/A	2017/11/18	Automated Statchk
Chloride	KONE	5262347	N/A	2017/11/14	Nancy Rogers
Colour	KONE	5262368	N/A	2017/11/15	Nancy Rogers
Conductance - water	AT	5251681	N/A	2017/11/07	Julia McGovern
Hardness (calculated as CaCO3)		5248643	N/A	2017/11/09	Automated Statchk
Metals Water Total MS	CICP/MS	5254035	2017/11/08	2017/11/08	Mike Leblanc
Ion Balance (% Difference)	CALC	5248644	N/A	2017/11/16	Automated Statchk
Anion and Cation Sum	CALC	5248645	N/A	2017/11/10	Automated Statchk
Nitrogen Ammonia - water	KONE	5255129	N/A	2017/11/10	Mary Clancey
Nitrogen - Nitrate + Nitrite	KONE	5262373	N/A	2017/11/15	Nancy Rogers
Nitrogen - Nitrite	KONE	5262374	N/A	2017/11/14	Nancy Rogers
Nitrogen - Nitrate (as N)	CALC	5248646	N/A	2017/11/16	Automated Statchk
PAH in Water by GC/MS (SIM)	GC/MS	5251868	2017/11/02	2017/11/17	Gina Thompson
PCBs in water by GC/ECD	GC/ECD	5249888	2017/11/02	2017/11/09	Lisa Gates
PCB Aroclor sum (water)	CALC	5248676	N/A	2017/11/09	Automated Statchk
pH	AT	5251680	N/A	2017/11/07	Julia McGovern
Phosphorus - ortho	KONE	5262371	N/A	2017/11/15	Nancy Rogers
Sat. pH and Langelier Index (@ 20C)	CALC	5248647	N/A	2017/11/14	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	5248648	N/A	2017/11/14	Automated Statchk
Reactive Silica	KONE	5262364	N/A	2017/11/13	Nancy Rogers

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Maxxam Job #: B7O7508
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.002
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

TEST SUMMARY

Maxxam ID: FMF461
Sample ID: BB-SW5
Matrix: Water

Collected: 2017/10/26
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Sulphate	KONE	5262350	N/A	2017/11/14	Nancy Rogers
Total Dissolved Solids (TDS calc)	CALC	5248649	N/A	2017/11/16	Automated Statchk
Organic carbon - Total (TOC)	TECH	5262669	N/A	2017/11/13	Luke MacPherson
Turbidity	TURB	5251686	N/A	2017/11/07	Julia McGovern
Volatile Organic Compounds in Water	HS/MS	5251708	N/A	2017/11/07	Amanda Swales

Maxxam ID: FMF461 Dup
Sample ID: BB-SW5
Matrix: Water

Collected: 2017/10/26
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	KONE	5262344	N/A	2017/11/13	Nancy Rogers
Chloride	KONE	5262347	N/A	2017/11/14	Nancy Rogers
Colour	KONE	5262368	N/A	2017/11/15	Nancy Rogers
Nitrogen - Nitrate + Nitrite	KONE	5262373	N/A	2017/11/15	Nancy Rogers
Nitrogen - Nitrite	KONE	5262374	N/A	2017/11/14	Nancy Rogers
Phosphorus - ortho	KONE	5262371	N/A	2017/11/15	Nancy Rogers
Reactive Silica	KONE	5262364	N/A	2017/11/13	Nancy Rogers
Sulphate	KONE	5262350	N/A	2017/11/14	Nancy Rogers

Maxxam ID: FMF462
Sample ID: BB-SW9
Matrix: Water

Collected: 2017/10/26
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Carbonate, Bicarbonate and Hydroxide	CALC	5248641	N/A	2017/11/08	Automated Statchk
Alkalinity	KONE	5262344	N/A	2017/11/13	Nancy Rogers
Benzo(b/j)fluoranthene Sum (water)	CALC	5248675	N/A	2017/11/18	Automated Statchk
Chloride	KONE	5262347	N/A	2017/11/14	Nancy Rogers
Colour	KONE	5262368	N/A	2017/11/15	Nancy Rogers
Conductance - water	AT	5254014	N/A	2017/11/08	Julia McGovern
Hardness (calculated as CaCO3)		5248643	N/A	2017/11/09	Automated Statchk
Metals Water Total MS	CICP/MS	5254035	2017/11/08	2017/11/08	Mike Leblanc
Ion Balance (% Difference)	CALC	5248644	N/A	2017/11/16	Automated Statchk
Anion and Cation Sum	CALC	5248645	N/A	2017/11/10	Automated Statchk
Nitrogen Ammonia - water	KONE	5255129	N/A	2017/11/10	Mary Clancey
Nitrogen - Nitrate + Nitrite	KONE	5262373	N/A	2017/11/15	Nancy Rogers
Nitrogen - Nitrite	KONE	5262374	N/A	2017/11/14	Nancy Rogers
Nitrogen - Nitrate (as N)	CALC	5248646	N/A	2017/11/16	Automated Statchk
PAH in Water by GC/MS (SIM)	GC/MS	5251868	2017/11/02	2017/11/17	Gina Thompson
PCBs in water by GC/ECD	GC/ECD	5249888	2017/11/02	2017/11/09	Lisa Gates
PCB Aroclor sum (water)	CALC	5248676	N/A	2017/11/09	Automated Statchk
pH	AT	5254013	N/A	2017/11/08	Julia McGovern
Phosphorus - ortho	KONE	5262371	N/A	2017/11/15	Nancy Rogers

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Maxxam Job #: B7O7508
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.002
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

TEST SUMMARY

Maxxam ID: FMF462
Sample ID: BB-SW9
Matrix: Water

Collected: 2017/10/26
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Sat. pH and Langelier Index (@ 20C)	CALC	5248647	N/A	2017/11/16	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	5248648	N/A	2017/11/16	Automated Statchk
Reactive Silica	KONE	5262364	N/A	2017/11/13	Nancy Rogers
Sulphate	KONE	5262350	N/A	2017/11/14	Nancy Rogers
Total Dissolved Solids (TDS calc)	CALC	5248649	N/A	2017/11/16	Automated Statchk
Organic carbon - Total (TOC)	TECH	5262669	N/A	2017/11/13	Luke MacPherson
Turbidity	TURB	5254026	N/A	2017/11/08	Julia McGovern
Volatile Organic Compounds in Water	HS/MS	5251708	N/A	2017/11/07	Amanda Swales

Maxxam ID: FMF463
Sample ID: BB-SW10
Matrix: Water

Collected: 2017/10/26
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Carbonate, Bicarbonate and Hydroxide	CALC	5248641	N/A	2017/11/08	Automated Statchk
Alkalinity	KONE	5262344	N/A	2017/11/13	Nancy Rogers
Benzo(b/j)fluoranthene Sum (water)	CALC	5248675	N/A	2017/11/18	Automated Statchk
Chloride	KONE	5262347	N/A	2017/11/14	Nancy Rogers
Colour	KONE	5262368	N/A	2017/11/15	Nancy Rogers
Conductance - water	AT	5254014	N/A	2017/11/08	Julia McGovern
Hardness (calculated as CaCO3)		5248643	N/A	2017/11/09	Automated Statchk
Metals Water Total MS	CICP/MS	5254035	2017/11/08	2017/11/08	Mike Leblanc
Ion Balance (% Difference)	CALC	5248644	N/A	2017/11/16	Automated Statchk
Anion and Cation Sum	CALC	5248645	N/A	2017/11/10	Automated Statchk
Nitrogen Ammonia - water	KONE	5255129	N/A	2017/11/10	Mary Clancey
Nitrogen - Nitrate + Nitrite	KONE	5262373	N/A	2017/11/15	Nancy Rogers
Nitrogen - Nitrite	KONE	5262374	N/A	2017/11/14	Nancy Rogers
Nitrogen - Nitrate (as N)	CALC	5248646	N/A	2017/11/16	Automated Statchk
PAH in Water by GC/MS (SIM)	GC/MS	5251868	2017/11/02	2017/11/17	Gina Thompson
PCBs in water by GC/ECD	GC/ECD	5249888	2017/11/02	2017/11/09	Lisa Gates
PCB Aroclor sum (water)	CALC	5248676	N/A	2017/11/09	Automated Statchk
pH	AT	5254013	N/A	2017/11/08	Julia McGovern
Phosphorus - ortho	KONE	5262371	N/A	2017/11/15	Nancy Rogers
Sat. pH and Langelier Index (@ 20C)	CALC	5248647	N/A	2017/11/14	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	5248648	N/A	2017/11/14	Automated Statchk
Reactive Silica	KONE	5262364	N/A	2017/11/13	Nancy Rogers
Sulphate	KONE	5262350	N/A	2017/11/14	Nancy Rogers
Total Dissolved Solids (TDS calc)	CALC	5248649	N/A	2017/11/16	Automated Statchk
Organic carbon - Total (TOC)	TECH	5262669	N/A	2017/11/13	Luke MacPherson
Turbidity	TURB	5254026	N/A	2017/11/08	Julia McGovern
Volatile Organic Compounds in Water	HS/MS	5251708	N/A	2017/11/07	Amanda Swales

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Maxxam Job #: B7O7508
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.002
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

TEST SUMMARY

Maxxam ID: FMF464
Sample ID: BB-SW11
Matrix: Water

Collected: 2017/10/26
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Carbonate, Bicarbonate and Hydroxide	CALC	5248641	N/A	2017/11/07	Automated Statchk
Alkalinity	KONE	5262344	N/A	2017/11/13	Nancy Rogers
Benzo(b/j)fluoranthene Sum (water)	CALC	5248675	N/A	2017/11/18	Automated Statchk
Chloride	KONE	5262347	N/A	2017/11/14	Nancy Rogers
Colour	KONE	5262368	N/A	2017/11/15	Nancy Rogers
Conductance - water	AT	5251683	N/A	2017/11/07	Julia McGovern
Hardness (calculated as CaCO3)		5248643	N/A	2017/11/09	Automated Statchk
Metals Water Total MS	CICP/MS	5254035	2017/11/08	2017/11/08	Mike Leblanc
Ion Balance (% Difference)	CALC	5248644	N/A	2017/11/16	Automated Statchk
Anion and Cation Sum	CALC	5248645	N/A	2017/11/10	Automated Statchk
Nitrogen Ammonia - water	KONE	5255129	N/A	2017/11/09	Mary Clancey
Nitrogen - Nitrate + Nitrite	KONE	5262373	N/A	2017/11/15	Nancy Rogers
Nitrogen - Nitrite	KONE	5262374	N/A	2017/11/14	Nancy Rogers
Nitrogen - Nitrate (as N)	CALC	5248646	N/A	2017/11/16	Automated Statchk
PAH in Water by GC/MS (SIM)	GC/MS	5251868	2017/11/02	2017/11/17	Gina Thompson
PCBs in water by GC/ECD	GC/ECD	5249888	2017/11/02	2017/11/09	Lisa Gates
PCB Aroclor sum (water)	CALC	5248676	N/A	2017/11/09	Automated Statchk
pH	AT	5251682	N/A	2017/11/07	Julia McGovern
Phosphorus - ortho	KONE	5262371	N/A	2017/11/15	Nancy Rogers
Sat. pH and Langelier Index (@ 20C)	CALC	5248647	N/A	2017/11/14	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	5248648	N/A	2017/11/14	Automated Statchk
Reactive Silica	KONE	5262364	N/A	2017/11/13	Nancy Rogers
Sulphate	KONE	5262350	N/A	2017/11/14	Nancy Rogers
Total Dissolved Solids (TDS calc)	CALC	5248649	N/A	2017/11/16	Automated Statchk
Organic carbon - Total (TOC)	TECH	5262669	N/A	2017/11/13	Luke MacPherson
Turbidity	TURB	5251686	N/A	2017/11/07	Julia McGovern
Volatile Organic Compounds in Water	HS/MS	5251708	N/A	2017/11/07	Amanda Swales

Maxxam ID: FMF464 Dup
Sample ID: BB-SW11
Matrix: Water

Collected: 2017/10/26
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Conductance - water	AT	5251683	N/A	2017/11/07	Julia McGovern
pH	AT	5251682	N/A	2017/11/07	Julia McGovern

Maxxam ID: FMF465
Sample ID: BB-SW12
Matrix: Water

Collected: 2017/10/26
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Carbonate, Bicarbonate and Hydroxide	CALC	5248641	N/A	2017/11/07	Automated Statchk
Alkalinity	KONE	5262344	N/A	2017/11/13	Nancy Rogers
Benzo(b/j)fluoranthene Sum (water)	CALC	5248675	N/A	2017/11/18	Automated Statchk

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Maxxam Job #: B7O7508
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.002
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

TEST SUMMARY

Maxxam ID: FMF465
Sample ID: BB-SW12
Matrix: Water

Collected: 2017/10/26
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chloride	KONE	5262347	N/A	2017/11/14	Nancy Rogers
Colour	KONE	5262368	N/A	2017/11/15	Nancy Rogers
Conductance - water	AT	5251683	N/A	2017/11/07	Julia McGovern
Hardness (calculated as CaCO3)		5248643	N/A	2017/11/09	Automated Statchk
Metals Water Total MS	CICP/MS	5254035	2017/11/08	2017/11/08	Mike Leblanc
Ion Balance (% Difference)	CALC	5248644	N/A	2017/11/16	Automated Statchk
Anion and Cation Sum	CALC	5248645	N/A	2017/11/10	Automated Statchk
Nitrogen Ammonia - water	KONE	5255129	N/A	2017/11/09	Mary Clancey
Nitrogen - Nitrate + Nitrite	KONE	5262373	N/A	2017/11/15	Nancy Rogers
Nitrogen - Nitrite	KONE	5262374	N/A	2017/11/14	Nancy Rogers
Nitrogen - Nitrate (as N)	CALC	5248646	N/A	2017/11/16	Automated Statchk
PAH in Water by GC/MS (SIM)	GC/MS	5251868	2017/11/02	2017/11/17	Gina Thompson
PCBs in water by GC/ECD	GC/ECD	5249888	2017/11/02	2017/11/09	Lisa Gates
PCB Aroclor sum (water)	CALC	5248676	N/A	2017/11/09	Automated Statchk
pH	AT	5251682	N/A	2017/11/07	Julia McGovern
Phosphorus - ortho	KONE	5262371	N/A	2017/11/15	Nancy Rogers
Sat. pH and Langelier Index (@ 20C)	CALC	5248647	N/A	2017/11/14	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	5248648	N/A	2017/11/14	Automated Statchk
Reactive Silica	KONE	5262364	N/A	2017/11/13	Nancy Rogers
Sulphate	KONE	5262350	N/A	2017/11/14	Nancy Rogers
Total Dissolved Solids (TDS calc)	CALC	5248649	N/A	2017/11/16	Automated Statchk
Organic carbon - Total (TOC)	TECH	5262669	N/A	2017/11/13	Luke MacPherson
Turbidity	TURB	5251686	N/A	2017/11/07	Julia McGovern
Volatile Organic Compounds in Water	HS/MS	5251708	N/A	2017/11/07	Amanda Swales

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Maxxam Job #: B7O7508
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Sampler Initials: RP

GENERAL COMMENTS

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

Package 1	9.2°C

Sample BB-SW2 received past the recommended hold time for PAH and PCB.

Sample FMF461 [BB-SW5] : RCAp Ion Balance acceptable. Anion/cation agreement within 0.2 meq/L.

Sample FMF463 [BB-SW10] : RCAp Ion Balance acceptable. Anion/cation agreement within 0.2 meq/L.

Sample FMF464 [BB-SW11] : RCAp Ion Balance acceptable. Anion/cation agreement within 0.2 meq/L.

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

Stantec Consulting Ltd
Client Project #: 121414915.200.002
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

			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
5249888	Decachlorobiphenyl	2017/11/09	81	30 - 130	79	30 - 130	85	%				
5251708	4-Bromofluorobenzene	2017/11/07	100	70 - 130	99	70 - 130	99	%				
5251708	D4-1,2-Dichloroethane	2017/11/07	104	70 - 130	101	70 - 130	101	%				
5251708	D8-Toluene	2017/11/07	97	70 - 130	97	70 - 130	97	%				
5251868	D10-Anthracene	2017/11/14	89	50 - 130	98	50 - 130	95	%				
5251868	D14-Terphenyl	2017/11/14	95 (1)	50 - 130	96	50 - 130	91	%				
5251868	D8-Acenaphthylene	2017/11/14	97	50 - 130	97	50 - 130	90	%				
5249888	Aroclor 1016	2017/11/09					<0.050	ug/L	NC	40		
5249888	Aroclor 1221	2017/11/09					<0.050	ug/L	NC	40		
5249888	Aroclor 1232	2017/11/09					<0.050	ug/L	NC	40		
5249888	Aroclor 1242	2017/11/09					<0.050	ug/L	NC	40		
5249888	Aroclor 1248	2017/11/09					<0.050	ug/L	NC	40		
5249888	Aroclor 1254	2017/11/09	80	30 - 130	92	30 - 130	<0.050	ug/L	NC	40		
5249888	Aroclor 1260	2017/11/09					<0.050	ug/L	NC	40		
5251680	pH	2017/11/07							0.88	N/A	100	97 - 103
5251681	Conductivity	2017/11/07			104	80 - 120	1.4, RDL=1.0	uS/cm	0.34	25		
5251682	pH	2017/11/07							1.9	N/A	100	97 - 103
5251683	Conductivity	2017/11/07			105	80 - 120	1.4, RDL=1.0	uS/cm	4.1	25		
5251686	Turbidity	2017/11/07			94	80 - 120	<0.10	NTU	9.5	20	93	80 - 120
5251708	1,1,1-Trichloroethane	2017/11/07	107	70 - 130	113	70 - 130	<1.0	ug/L	NC	40		
5251708	1,1,2,2-Tetrachloroethane	2017/11/07	102	70 - 130	104	70 - 130	<0.50	ug/L	NC	40		
5251708	1,1,2-Trichloroethane	2017/11/07	103	70 - 130	108	70 - 130	<1.0	ug/L	NC	40		
5251708	1,1-Dichloroethane	2017/11/07	107	70 - 130	113	70 - 130	<2.0	ug/L	NC	40		
5251708	1,1-Dichloroethylene	2017/11/07	108	70 - 130	114	70 - 130	<0.50	ug/L	NC	40		
5251708	1,2-Dichlorobenzene	2017/11/07	92	70 - 130	97	70 - 130	<0.50	ug/L	NC	40		
5251708	1,2-Dichloroethane	2017/11/07	100	70 - 130	104	70 - 130	<1.0	ug/L	NC	40		
5251708	1,2-Dichloropropane	2017/11/07	97	70 - 130	103	70 - 130	<0.50	ug/L	NC	40		
5251708	1,3-Dichlorobenzene	2017/11/07	91	70 - 130	97	70 - 130	<1.0	ug/L	NC	40		
5251708	1,4-Dichlorobenzene	2017/11/07	89	70 - 130	95	70 - 130	<1.0	ug/L	NC	40		
5251708	Benzene	2017/11/07	96	70 - 130	102	70 - 130	<1.0	ug/L	NC	40		
5251708	Bromodichloromethane	2017/11/07	101	70 - 130	106	70 - 130	<1.0	ug/L	NC	40		

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Maxxam Job #: B7O7508
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QUALITY ASSURANCE REPORT(CONT'D)

Stantec Consulting Ltd
Client Project #: 121414915.200.002
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

			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
5251708	Bromoform	2017/11/07	103	70 - 130	107	70 - 130	<1.0	ug/L	NC	40		
5251708	Bromomethane	2017/11/07	102	60 - 140	104	60 - 140	<0.50	ug/L	NC	40		
5251708	Carbon Tetrachloride	2017/11/07	104	70 - 130	111	70 - 130	<0.50	ug/L	NC	40		
5251708	Chlorobenzene	2017/11/07	95	70 - 130	100	70 - 130	<1.0	ug/L	NC	40		
5251708	Chloroethane	2017/11/07	98	60 - 140	102	60 - 140	<8.0	ug/L	NC	40		
5251708	Chloroform	2017/11/07	97	70 - 130	102	70 - 130	<1.0	ug/L	NC	40		
5251708	Chloromethane	2017/11/07	101	60 - 140	102	60 - 140	<8.0	ug/L	NC	40		
5251708	cis-1,2-Dichloroethylene	2017/11/07	107	70 - 130	112	70 - 130	<0.50	ug/L	NC	40		
5251708	cis-1,3-Dichloropropene	2017/11/07	104	70 - 130	105	70 - 130	<0.50	ug/L	NC	40		
5251708	Dibromochloromethane	2017/11/07	103	70 - 130	108	70 - 130	<1.0	ug/L	NC	40		
5251708	Ethylbenzene	2017/11/07	98	70 - 130	103	70 - 130	<1.0	ug/L	NC	40		
5251708	Ethylene Dibromide	2017/11/07	101	70 - 130	104	70 - 130	<0.20	ug/L	NC	40		
5251708	Methyl t-butyl ether (MTBE)	2017/11/07	120	70 - 130	125	70 - 130	<2.0	ug/L	NC	40		
5251708	Methylene Chloride(Dichloromethane)	2017/11/07	106	70 - 130	111	70 - 130	<3.0	ug/L	NC	40		
5251708	o-Xylene	2017/11/07	97	70 - 130	102	70 - 130	<1.0	ug/L	NC	40		
5251708	p+m-Xylene	2017/11/07	97	70 - 130	103	70 - 130	<2.0	ug/L	NC	40		
5251708	Styrene	2017/11/07	102	70 - 130	107	70 - 130	<1.0	ug/L	NC	40		
5251708	Tetrachloroethylene	2017/11/07	100	70 - 130	107	70 - 130	<1.0	ug/L	NC	40		
5251708	Toluene	2017/11/07	102	70 - 130	108	70 - 130	<1.0	ug/L	NC	40		
5251708	Total Trihalomethanes	2017/11/07					<1.0	ug/L	NC	40		
5251708	Total Xylenes	2017/11/07					<1.0	ug/L	NC	40		
5251708	trans-1,2-Dichloroethylene	2017/11/07	107	70 - 130	113	70 - 130	<0.50	ug/L	NC	40		
5251708	trans-1,3-Dichloropropene	2017/11/07	94	70 - 130	93	70 - 130	<0.50	ug/L	NC	40		
5251708	Trichloroethylene	2017/11/07	101	70 - 130	108	70 - 130	<1.0	ug/L	NC	40		
5251708	Trichlorofluoromethane (FREON 11)	2017/11/07	98	60 - 140	103	60 - 140	<8.0	ug/L	NC	40		
5251708	Vinyl Chloride	2017/11/07	109	60 - 140	114	60 - 140	<0.50	ug/L	NC	40		
5251868	1-Methylnaphthalene	2017/11/14	89	30 - 130	92	30 - 130	<0.050	ug/L	NC	40		
5251868	2-Methylnaphthalene	2017/11/14	94	30 - 130	99	30 - 130	<0.050	ug/L	NC	40		
5251868	Acenaphthene	2017/11/14	98	30 - 130	102	30 - 130	<0.010	ug/L	NC	40		
5251868	Acenaphthylene	2017/11/14	100	30 - 130	104	30 - 130	<0.010	ug/L	NC	40		
5251868	Anthracene	2017/11/14	95	30 - 130	104	30 - 130	<0.010	ug/L	NC	40		

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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
5251868	Benzo(a)anthracene	2017/11/14	108	30 - 130	114	30 - 130	<0.010	ug/L	NC	40		
5251868	Benzo(a)pyrene	2017/11/14	84	30 - 130	93	30 - 130	<0.010	ug/L	NC	40		
5251868	Benzo(b)fluoranthene	2017/11/14	87	30 - 130	104	30 - 130	<0.010	ug/L	NC	40		
5251868	Benzo(g,h,i)perylene	2017/11/14	82	30 - 130	91	30 - 130	<0.010	ug/L	NC	40		
5251868	Benzo(j)fluoranthene	2017/11/14	89	30 - 130	97	30 - 130	<0.010	ug/L	NC	40		
5251868	Benzo(k)fluoranthene	2017/11/14	84	30 - 130	91	30 - 130	<0.010	ug/L	NC	40		
5251868	Chrysene	2017/11/14	101	30 - 130	104	30 - 130	<0.010	ug/L	NC	40		
5251868	Dibenz(a,h)anthracene	2017/11/14	77	30 - 130	86	30 - 130	<0.010	ug/L	NC	40		
5251868	Fluoranthene	2017/11/14	113	30 - 130	109	30 - 130	<0.010	ug/L	NC	40		
5251868	Fluorene	2017/11/14	97	30 - 130	98	30 - 130	<0.010	ug/L	NC	40		
5251868	Indeno(1,2,3-cd)pyrene	2017/11/14	80	30 - 130	90	30 - 130	<0.010	ug/L	NC	40		
5251868	Naphthalene	2017/11/14	91	30 - 130	91	30 - 130	<0.20	ug/L	NC	40		
5251868	Perylene	2017/11/14	80	30 - 130	92	30 - 130	<0.010	ug/L	NC	40		
5251868	Phenanthrene	2017/11/14	107	30 - 130	100	30 - 130	<0.010	ug/L	NC	40		
5251868	Pyrene	2017/11/14	108	30 - 130	106	30 - 130	<0.010	ug/L	NC	40		
5254013	pH	2017/11/08							1.4	N/A	100	97 - 103
5254014	Conductivity	2017/11/08			102	80 - 120	1.5, RDL=1.0	uS/cm	1.5	25		
5254026	Turbidity	2017/11/08			94	80 - 120	<0.10	NTU	4.9	20	94	80 - 120
5254027	Turbidity	2017/11/08			94	80 - 120	<0.10	NTU	3.2	20	93	80 - 120
5254035	Total Aluminum (Al)	2017/11/08	102	80 - 120	98	80 - 120	<5.0	ug/L	16	20		
5254035	Total Antimony (Sb)	2017/11/08	100	80 - 120	100	80 - 120	<1.0	ug/L	NC	20		
5254035	Total Arsenic (As)	2017/11/08	99	80 - 120	97	80 - 120	<1.0	ug/L	NC	20		
5254035	Total Barium (Ba)	2017/11/08	100	80 - 120	98	80 - 120	<1.0	ug/L	0.48	20		
5254035	Total Beryllium (Be)	2017/11/08	103	80 - 120	100	80 - 120	<1.0	ug/L	NC	20		
5254035	Total Bismuth (Bi)	2017/11/08	106	80 - 120	104	80 - 120	<2.0	ug/L	NC	20		
5254035	Total Boron (B)	2017/11/08	105	80 - 120	105	80 - 120	<50	ug/L	NC	20		
5254035	Total Cadmium (Cd)	2017/11/08	98	80 - 120	97	80 - 120	<0.010	ug/L	NC	20		
5254035	Total Calcium (Ca)	2017/11/08	105	80 - 120	104	80 - 120	<100	ug/L	1.7	20		
5254035	Total Chromium (Cr)	2017/11/08	101	80 - 120	100	80 - 120	<1.0	ug/L	NC	20		
5254035	Total Cobalt (Co)	2017/11/08	103	80 - 120	102	80 - 120	<0.40	ug/L	NC	20		
5254035	Total Copper (Cu)	2017/11/08	100	80 - 120	99	80 - 120	<2.0	ug/L	NC	20		

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QUALITY ASSURANCE REPORT(CONT'D)

Stantec Consulting Ltd
Client Project #: 121414915.200.002
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

			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
5254035	Total Iron (Fe)	2017/11/08	105	80 - 120	103	80 - 120	<50	ug/L	2.5	20		
5254035	Total Lead (Pb)	2017/11/08	99	80 - 120	98	80 - 120	<0.50	ug/L	NC	20		
5254035	Total Magnesium (Mg)	2017/11/08	105	80 - 120	104	80 - 120	<100	ug/L	3.0	20		
5254035	Total Manganese (Mn)	2017/11/08	103	80 - 120	101	80 - 120	<2.0	ug/L	4.1	20		
5254035	Total Molybdenum (Mo)	2017/11/08	105	80 - 120	105	80 - 120	<2.0	ug/L	NC	20		
5254035	Total Nickel (Ni)	2017/11/08	103	80 - 120	101	80 - 120	<2.0	ug/L	NC	20		
5254035	Total Phosphorus (P)	2017/11/08	105	80 - 120	103	80 - 120	<100	ug/L	NC	20		
5254035	Total Potassium (K)	2017/11/08	107	80 - 120	104	80 - 120	<100	ug/L	3.6	20		
5254035	Total Selenium (Se)	2017/11/08	102	80 - 120	98	80 - 120	<1.0	ug/L	NC	20		
5254035	Total Silver (Ag)	2017/11/08	100	80 - 120	98	80 - 120	<0.10	ug/L	NC	20		
5254035	Total Sodium (Na)	2017/11/08	104	80 - 120	103	80 - 120	<100	ug/L	3.2	20		
5254035	Total Strontium (Sr)	2017/11/08	103	80 - 120	101	80 - 120	<2.0	ug/L	9.8	20		
5254035	Total Thallium (Tl)	2017/11/08	104	80 - 120	103	80 - 120	<0.10	ug/L	NC	20		
5254035	Total Tin (Sn)	2017/11/08	104	80 - 120	105	80 - 120	<2.0	ug/L	NC	20		
5254035	Total Titanium (Ti)	2017/11/08	103	80 - 120	103	80 - 120	<2.0	ug/L	NC	20		
5254035	Total Uranium (U)	2017/11/08	104	80 - 120	103	80 - 120	<0.10	ug/L	NC	20		
5254035	Total Vanadium (V)	2017/11/08	105	80 - 120	102	80 - 120	<2.0	ug/L	NC	20		
5254035	Total Zinc (Zn)	2017/11/08	98	80 - 120	98	80 - 120	<5.0	ug/L	NC	20		
5255129	Nitrogen (Ammonia Nitrogen)	2017/11/09	107	80 - 120	114	80 - 120	<0.050	mg/L	1.8	20		
5262344	Total Alkalinity (Total as CaCO3)	2017/11/13	106	80 - 120	108	80 - 120	<5.0	mg/L	NC	25		
5262347	Dissolved Chloride (Cl)	2017/11/14	103	80 - 120	104	80 - 120	<1.0	mg/L	NC	25	112	80 - 120
5262350	Dissolved Sulphate (SO4)	2017/11/14	109	80 - 120	103	80 - 120	<2.0	mg/L	NC	25		
5262364	Reactive Silica (SiO2)	2017/11/13	99	80 - 120	95	80 - 120	<0.50	mg/L	0.62	25		
5262368	Colour	2017/11/15			98	80 - 120	<5.0	TCU	0.50	20		
5262371	Orthophosphate (P)	2017/11/15	97	80 - 120	102	80 - 120	<0.010	mg/L	NC	25		
5262373	Nitrate + Nitrite (N)	2017/11/15	104	80 - 120	107	80 - 120	<0.050	mg/L	NC	25		
5262374	Nitrite (N)	2017/11/14	105	80 - 120	106	80 - 120	<0.010	mg/L	NC	25		

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QUALITY ASSURANCE REPORT(CONT'D)

Stantec Consulting Ltd
Client Project #: 121414915.200.002
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

			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
5262669	Total Organic Carbon (C)	2017/11/13	97	80 - 120	101	80 - 120	<0.50	mg/L	15	20		

N/A = Not Applicable

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

(1) PAH sample decanted due to sediment.

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Client Project #: 121414915.200.002
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

VALIDATION SIGNATURE PAGE

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

Kevin MacDonald, Inorganics Supervisor

Phil Deveau, Scientific Specialist (Organics)

Rosemarie MacDonald, Scientific Specialist (Organics)

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

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Your Project #: 121414915.200.002
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Your C.O.C. #: N/A

Attention:Jim Slade

Stantec Consulting Ltd
141 Kelsey Drive
St. John's, NL
A1B 0L2

Report Date: 2017/11/20
Report #: R4868468
Version: 2 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7O7509
Received: 2017/11/02, 10:11

Sample Matrix: SEDIMENT
Samples Received: 8

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Benzo(b/j)fluoranthene Sum (soil) (1)	1	N/A	2017/11/09	N/A	Auto Calc.
Benzo(b/j)fluoranthene Sum (soil) (1)	7	N/A	2017/11/20	N/A	Auto Calc.
TEH in Soil (PIRI) (1, 2)	8	2017/11/08	2017/11/09	ATL SOP 00111	Atl. RBCA v3.1 m
Metals Solids Acid Extr. ICPMS (1)	8	2017/11/08	2017/11/08	ATL SOP 00058	EPA 6020A R1 m
Moisture (1)	7	N/A	2017/11/06	ATL SOP 00001	OMOE Handbook 1983 m
Moisture (1)	1	N/A	2017/11/07	ATL SOP 00001	OMOE Handbook 1983 m
PAH Compounds by GCMS (SIM) (1, 2)	1	2017/11/07	2017/11/09	ATL SOP 00102	EPA 8270D 2007 m
PAH Compounds by GCMS (SIM) (1, 2)	7	2017/11/08	2017/11/17	ATL SOP 00102	EPA 8270D 2007 m
PCBs in soil by GC/ECD (1, 2)	5	2017/11/06	2017/11/07	ATL SOP 00106	EPA 8082A 2007 m
PCBs in soil by GC/ECD (1, 2)	3	2017/11/07	2017/11/09	ATL SOP 00106	EPA 8082A 2007 m
PCB Aroclor sum (soil) (1)	5	N/A	2017/11/07	N/A	Auto Calc.
PCB Aroclor sum (soil) (1)	3	N/A	2017/11/09	N/A	Auto Calc.
ModTPH (T1) Calc. for Soil (1)	8	N/A	2017/11/09	N/A	Atl. RBCA v3.1 m
VPH in Soil (PIRI) - Field Preserved (3)	3	N/A	2017/11/07	ATL SOP 00199	Atl. RBCA v3.1 m
VPH in Soil (PIRI) - Field Preserved (3)	5	N/A	2017/11/08	ATL SOP 00199	Atl. RBCA v3.1 m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested.

Maxxam Analytics International Corporation o/a Maxxam Analytics 49-55 Elizabeth Ave, Suite 101A, St.John's, NL, Canada A1A 1W9 Tel: 709-754-0203 Toll Free: 888-492-7227 Fax: 709-754-8612 www.maxxamanalytics.com

Maxxam
A Bureau Veritas Group Company

Your Project #: 121414915.200.002
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Your C.O.C. #: N/A

Attention:Jim Slade

Stantec Consulting Ltd
141 Kelsey Drive
St. John's, NL
A1B 0L2

Report Date: 2017/11/20
Report #: R4868468
Version: 2 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7O7509
Received: 2017/11/02, 10:11

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 Bedford
(2) Soils are reported on a dry weight basis unless otherwise specified.
(3) No lab extraction date is given for C6-C10/BTEX and VOC samples that are field preserved with methanol. Extraction date is date sampled unless otherwise stated.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Heather Macumber, Senior Project Manager
Email: HMacumber@maxxam.ca
Phone# (902)420-0203 Ext:226

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

Maxxam Job #: B7O7509
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.002
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

RBCA HYDROCARBONS IN SOIL (FIELD PRES.)

Maxxam ID		FMF466				FMF466				FMF467			
Sampling Date		2017/10/26				2017/10/26				2017/10/26			
COC Number		N/A				N/A				N/A			
	UNITS	**BB-SED1**	**RDL**	**QC Batch**	**MDL**	**BB-SED1 Lab-Dup**	**RDL**	**QC Batch**	**MDL**	**BB-SED2**	**RDL**	**QC Batch**	**MDL**
Inorganics													
Moisture	%	16	1.0	5250087	0.20	17	1.0	5250087	0.20	12	1.0	5250087	0.20
Petroleum Hydrocarbons													
Benzene	mg/kg	<0.025	0.025	5250527	N/A					<0.025	0.025	5250527	N/A
Toluene	mg/kg	<0.025	0.025	5250527	N/A					<0.025	0.025	5250527	N/A
Ethylbenzene	mg/kg	<0.025	0.025	5250527	0.025					<0.025	0.025	5250527	0.025
Total Xylenes	mg/kg	<0.050	0.050	5250527	N/A					<0.050	0.050	5250527	N/A
C6 - C10 (less BTEX)	mg/kg	<2.5	2.5	5250527	N/A					<2.5	2.5	5250527	N/A
>C10-C16 Hydrocarbons	mg/kg	<10	10	5254294	N/A	<10	10	5254294	N/A	<10	10	5254294	N/A
>C16-C21 Hydrocarbons	mg/kg	<10	10	5254294	N/A	<10	10	5254294	N/A	<10	10	5254294	N/A
>C21-<C32 Hydrocarbons	mg/kg	<15	15	5254294	N/A	<15	15	5254294	N/A	<15	15	5254294	N/A
Modified TPH (Tier1)	mg/kg	<15	15	5248651	N/A					<15	15	5248651	N/A
Reached Baseline at C32	mg/kg	NA	N/A	5254294	N/A					NA	N/A	5254294	N/A
Hydrocarbon Resemblance	mg/kg	NA	N/A	5254294	N/A					NA	N/A	5254294	N/A
Surrogate Recovery (%)													
Isobutylbenzene - Extractable	%	98		5254294		96		5254294		88		5254294	
n-Dotriacontane - Extractable	%	112		5254294		110		5254294		102		5254294	
Isobutylbenzene - Volatile	%	96		5250527						92		5250527	

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

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Maxxam Job #: B7O7509
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.002
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

RBCA HYDROCARBONS IN SOIL (FIELD PRES.)

Maxxam ID		FMF468		FMF469				FMF469			
Sampling Date		2017/10/26		2017/10/26				2017/10/26			
COC Number		N/A		N/A				N/A			
	UNITS	**BB-SED5**	**QC Batch**	**BB-SED9**	**RDL**	**QC Batch**	**MDL**	**BB-SED9 Lab-Dup**	**RDL**	**QC Batch**	**MDL**
Inorganics											
Moisture	%	82	5250087	17	1.0	5250087	0.20				
Petroleum Hydrocarbons											
Benzene	mg/kg	<0.025	5250527	<0.025	0.025	5252167	N/A	<0.025	0.025	5252167	N/A
Toluene	mg/kg	<0.025	5250527	<0.025	0.025	5252167	N/A	<0.025	0.025	5252167	N/A
Ethylbenzene	mg/kg	<0.025	5250527	<0.025	0.025	5252167	0.025	<0.025	0.025	5252167	0.025
Total Xylenes	mg/kg	<0.050	5250527	<0.050	0.050	5252167	N/A	<0.050	0.050	5252167	N/A
C6 - C10 (less BTEX)	mg/kg	<2.5	5250527	<2.5	2.5	5252167	N/A	<2.5	2.5	5252167	N/A
>C10-C16 Hydrocarbons	mg/kg	28000	5254294	<10	10	5254294	N/A				
>C16-C21 Hydrocarbons	mg/kg	4600	5254294	<10	10	5254294	N/A				
>C21-<C32 Hydrocarbons	mg/kg	260	5254294	<15	15	5254294	N/A				
Modified TPH (Tier1)	mg/kg	33000	5248651	<15	15	5248651	N/A				
Reached Baseline at C32	mg/kg	Yes	5254294	NA	N/A	5254294	N/A				
Hydrocarbon Resemblance	mg/kg	COMMENT (1)	5254294	NA	N/A	5254294	N/A				
Surrogate Recovery (%)											
Isobutylbenzene - Extractable	%	96	5254294	84		5254294					
n-Dotriacontane - Extractable	%	114	5254294	100		5254294					
Isobutylbenzene - Volatile	%	73	5250527	97		5252167		97		5252167	

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable
(1) Weathered fuel oil fraction.

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Maxxam Job #: B7O7509
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.002
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

RBCA HYDROCARBONS IN SOIL (FIELD PRES.)

Maxxam ID		FMF470	FMF471	FMF472		FMF564			
Sampling Date		2017/10/26	2017/10/26	2017/10/26		2017/10/26			
COC Number		N/A	N/A	N/A		N/A			
	UNITS	**BB-SED10**	**BB-SED11**	**BB-SED12**	**QC Batch**	**BB-SED51**	**RDL**	**QC Batch**	**MDL**
Inorganics									
Moisture	%	14	11	17	5250087	83	1.0	5250284	0.20
Petroleum Hydrocarbons									
Benzene	mg/kg	<0.025	<0.025	<0.025	5252167	<0.025	0.025	5252167	N/A
Toluene	mg/kg	<0.025	<0.025	<0.025	5252167	<0.025	0.025	5252167	N/A
Ethylbenzene	mg/kg	<0.025	<0.025	<0.025	5252167	<0.025	0.025	5252167	0.025
Total Xylenes	mg/kg	<0.050	<0.050	<0.050	5252167	<0.050	0.050	5252167	N/A
C6 - C10 (less BTEX)	mg/kg	<2.5	<2.5	<2.5	5252167	<2.5	2.5	5252167	N/A
>C10-C16 Hydrocarbons	mg/kg	<10	<10	<10	5254294	4000	10	5254294	N/A
>C16-C21 Hydrocarbons	mg/kg	<10	<10	13	5254294	1600	10	5254294	N/A
>C21-<C32 Hydrocarbons	mg/kg	<15	<15	70	5254294	360	15	5254294	N/A
Modified TPH (Tier1)	mg/kg	<15	<15	83	5248651	5900	15	5248871	N/A
Reached Baseline at C32	mg/kg	NA	NA	Yes	5254294	Yes	N/A	5254294	N/A
Hydrocarbon Resemblance	mg/kg	NA	NA	COMMENT (1)	5254294	COMMENT (2)	N/A	5254294	N/A
Surrogate Recovery (%)									
Isobutylbenzene - Extractable	%	89	88	88	5254294	92		5254294	
n-Dotriacontane - Extractable	%	110	103	107	5254294	110		5254294	
Isobutylbenzene - Volatile	%	81	90	94	5252167	51 (3)		5252167	

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) Unidentified compound(s) in lube oil range. Lube oil fraction.
(2) Weathered fuel oil fraction. Possible lube oil fraction.
(3) Surrogate recovery not within acceptance limits; moisture exceeds 50%.

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Maxxam Job #: B7O7509
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.002
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

ELEMENTS BY ATOMIC SPECTROSCOPY (SEDIMENT)

Maxxam ID		FMF466	FMF467	FMF468	FMF469	FMF470	FMF471			
Sampling Date		2017/10/26	2017/10/26	2017/10/26	2017/10/26	2017/10/26	2017/10/26			
COC Number		N/A	N/A	N/A	N/A	N/A	N/A			
	UNITS	**BB-SED1**	**BB-SED2**	**BB-SED5**	**BB-SED9**	**BB-SED10**	**BB-SED11**	**RDL**	**QC Batch**	**MDL**
Metals										
Acid Extractable Aluminum (Al)	mg/kg	4600	3900	5900	2700	5300	5400	10	5254023	N/A
Acid Extractable Antimony (Sb)	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	5254023	N/A
Acid Extractable Arsenic (As)	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	5254023	N/A
Acid Extractable Barium (Ba)	mg/kg	110	46	170	32	25	29	5.0	5254023	N/A
Acid Extractable Beryllium (Be)	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	5254023	N/A
Acid Extractable Bismuth (Bi)	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	5254023	N/A
Acid Extractable Boron (B)	mg/kg	<50	<50	<50	<50	<50	<50	50	5254023	N/A
Acid Extractable Cadmium (Cd)	mg/kg	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	0.30	5254023	N/A
Acid Extractable Chromium (Cr)	mg/kg	8.1	17	9.7	5.9	6.2	6.7	2.0	5254023	N/A
Acid Extractable Cobalt (Co)	mg/kg	2.7	2.7	3.1	1.6	1.9	2.0	1.0	5254023	N/A
Acid Extractable Copper (Cu)	mg/kg	5.9	5.3	9.5	3.1	5.6	4.8	2.0	5254023	N/A
Acid Extractable Iron (Fe)	mg/kg	14000	15000	8300	12000	12000	10000	50	5254023	N/A
Acid Extractable Lead (Pb)	mg/kg	5.4	5.4	5.7	4.6	8.0	7.0	0.50	5254023	N/A
Acid Extractable Lithium (Li)	mg/kg	11	11	<2.0	8.6	8.6	8.4	2.0	5254023	N/A
Acid Extractable Manganese (Mn)	mg/kg	150	160	32	92	100	99	2.0	5254023	N/A
Acid Extractable Mercury (Hg)	mg/kg	<0.10	<0.10	0.11	<0.10	<0.10	<0.10	0.10	5254023	N/A
Acid Extractable Molybdenum (Mo)	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	5254023	N/A
Acid Extractable Nickel (Ni)	mg/kg	3.8	3.2	5.0	2.3	3.4	3.4	2.0	5254023	N/A
Acid Extractable Rubidium (Rb)	mg/kg	8.9	7.7	2.6	4.1	5.1	5.7	2.0	5254023	N/A
Acid Extractable Selenium (Se)	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	5254023	N/A
Acid Extractable Silver (Ag)	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5254023	N/A
Acid Extractable Strontium (Sr)	mg/kg	11	5.4	29	<5.0	7.5	5.2	5.0	5254023	N/A
Acid Extractable Thallium (Tl)	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	5254023	N/A
Acid Extractable Tin (Sn)	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	5254023	N/A
Acid Extractable Uranium (U)	mg/kg	1.3	0.96	0.64	0.79	0.80	0.95	0.10	5254023	N/A
Acid Extractable Vanadium (V)	mg/kg	16	18	9.6	16	12	13	2.0	5254023	N/A
Acid Extractable Zinc (Zn)	mg/kg	36	38	98	25	35	33	5.0	5254023	N/A

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

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Maxxam Job #: B7O7509
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.002
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

ELEMENTS BY ATOMIC SPECTROSCOPY (SEDIMENT)

Maxxam ID		FMF472	FMF564			
Sampling Date		2017/10/26	2017/10/26			
COC Number		N/A	N/A			
	UNITS	**BB-SED12**	**BB-SED51**	**RDL**	**QC Batch**	**MDL**
Metals						
Acid Extractable Aluminum (Al)	mg/kg	3700	5600	10	5254023	N/A
Acid Extractable Antimony (Sb)	mg/kg	<2.0	<2.0	2.0	5254023	N/A
Acid Extractable Arsenic (As)	mg/kg	<2.0	<2.0	2.0	5254023	N/A
Acid Extractable Barium (Ba)	mg/kg	18	200	5.0	5254023	N/A
Acid Extractable Beryllium (Be)	mg/kg	<2.0	<2.0	2.0	5254023	N/A
Acid Extractable Bismuth (Bi)	mg/kg	<2.0	<2.0	2.0	5254023	N/A
Acid Extractable Boron (B)	mg/kg	<50	<50	50	5254023	N/A
Acid Extractable Cadmium (Cd)	mg/kg	<0.30	0.38	0.30	5254023	N/A
Acid Extractable Chromium (Cr)	mg/kg	4.4	10	2.0	5254023	N/A
Acid Extractable Cobalt (Co)	mg/kg	1.4	4.1	1.0	5254023	N/A
Acid Extractable Copper (Cu)	mg/kg	13	14	2.0	5254023	N/A
Acid Extractable Iron (Fe)	mg/kg	11000	8100	50	5254023	N/A
Acid Extractable Lead (Pb)	mg/kg	19	30	0.50	5254023	N/A
Acid Extractable Lithium (Li)	mg/kg	7.9	<2.0	2.0	5254023	N/A
Acid Extractable Manganese (Mn)	mg/kg	79	46	2.0	5254023	N/A
Acid Extractable Mercury (Hg)	mg/kg	<0.10	0.16	0.10	5254023	N/A
Acid Extractable Molybdenum (Mo)	mg/kg	<2.0	<2.0	2.0	5254023	N/A
Acid Extractable Nickel (Ni)	mg/kg	3.0	7.0	2.0	5254023	N/A
Acid Extractable Rubidium (Rb)	mg/kg	3.9	4.3	2.0	5254023	N/A
Acid Extractable Selenium (Se)	mg/kg	<1.0	<1.0	1.0	5254023	N/A
Acid Extractable Silver (Ag)	mg/kg	<0.50	<0.50	0.50	5254023	N/A
Acid Extractable Strontium (Sr)	mg/kg	<5.0	34	5.0	5254023	N/A
Acid Extractable Thallium (Tl)	mg/kg	<0.10	<0.10	0.10	5254023	N/A
Acid Extractable Tin (Sn)	mg/kg	<2.0	2.2	2.0	5254023	N/A
Acid Extractable Uranium (U)	mg/kg	0.52	0.45	0.10	5254023	N/A
Acid Extractable Vanadium (V)	mg/kg	11	9.8	2.0	5254023	N/A
Acid Extractable Zinc (Zn)	mg/kg	41	180	5.0	5254023	N/A

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

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Stantec Consulting Ltd
Client Project #: 121414915.200.002
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

SEMI-VOLATILE ORGANICS BY GC-MS (SEDIMENT)

Maxxam ID		FMF466				FMF466				FMF467			
Sampling Date		2017/10/26				2017/10/26				2017/10/26			
COC Number		N/A				N/A				N/A			
	UNITS	**BB-SED1**	**RDL**	**QC Batch**	**MDL**	**BB-SED1 Lab-Dup**	**RDL**	**QC Batch**	**MDL**	**BB-SED2**	**RDL**	**QC Batch**	**MDL**
Polyaromatic Hydrocarbons													
1-Methylnaphthalene	mg/kg	<0.010	0.010	5252364	N/A	<0.010	0.010	5252364	N/A	<0.010	0.010	5254065	N/A
2-Methylnaphthalene	mg/kg	<0.010	0.010	5252364	N/A	<0.010	0.010	5252364	N/A	<0.010	0.010	5254065	N/A
Acenaphthene	mg/kg	<0.010	0.010	5252364	N/A	<0.010	0.010	5252364	N/A	<0.010	0.010	5254065	N/A
Acenaphthylene	mg/kg	<0.010	0.010	5252364	N/A	<0.010	0.010	5252364	N/A	<0.010	0.010	5254065	N/A
Anthracene	mg/kg	<0.010	0.010	5252364	N/A	<0.010	0.010	5252364	N/A	<0.010	0.010	5254065	N/A
Benzo(a)anthracene	mg/kg	<0.010	0.010	5252364	N/A	<0.010	0.010	5252364	N/A	<0.010	0.010	5254065	N/A
Benzo(a)pyrene	mg/kg	<0.010	0.010	5252364	N/A	<0.010	0.010	5252364	N/A	<0.010	0.010	5254065	N/A
Benzo(b)fluoranthene	mg/kg	<0.010	0.010	5252364	N/A	<0.010	0.010	5252364	N/A	<0.010	0.010	5254065	N/A
Benzo(b/j)fluoranthene	mg/kg	<0.020	0.020	5248691	N/A					<0.020	0.020	5248691	N/A
Benzo(g,h,i)perylene	mg/kg	<0.010	0.010	5252364	N/A	<0.010	0.010	5252364	N/A	<0.010	0.010	5254065	N/A
Benzo(j)fluoranthene	mg/kg	<0.010	0.010	5252364	N/A	<0.010	0.010	5252364	N/A	<0.010	0.010	5254065	N/A
Benzo(k)fluoranthene	mg/kg	<0.010	0.010	5252364	N/A	<0.010	0.010	5252364	N/A	<0.010	0.010	5254065	N/A
Chrysene	mg/kg	<0.010	0.010	5252364	N/A	<0.010	0.010	5252364	N/A	<0.010	0.010	5254065	N/A
Dibenz(a,h)anthracene	mg/kg	<0.010	0.010	5252364	N/A	<0.010	0.010	5252364	N/A	<0.010	0.010	5254065	N/A
Fluoranthene	mg/kg	<0.010	0.010	5252364	N/A	<0.010	0.010	5252364	N/A	<0.010	0.010	5254065	N/A
Fluorene	mg/kg	<0.010	0.010	5252364	N/A	<0.010	0.010	5252364	N/A	<0.010	0.010	5254065	N/A
Indeno(1,2,3-cd)pyrene	mg/kg	<0.010	0.010	5252364	N/A	<0.010	0.010	5252364	N/A	<0.010	0.010	5254065	N/A
Naphthalene	mg/kg	<0.010	0.010	5252364	N/A	<0.010	0.010	5252364	N/A	<0.010	0.010	5254065	N/A
Perylene	mg/kg	<0.010	0.010	5252364	N/A	<0.010	0.010	5252364	N/A	<0.010	0.010	5254065	N/A
Phenanthrene	mg/kg	<0.010	0.010	5252364	N/A	<0.010	0.010	5252364	N/A	<0.010	0.010	5254065	N/A
Pyrene	mg/kg	<0.010	0.010	5252364	N/A	<0.010	0.010	5252364	N/A	<0.010	0.010	5254065	N/A
Surrogate Recovery (%)													
D10-Anthracene	%	92		5252364		99		5252364		111		5254065	
D14-Terphenyl (FS)	%	86		5252364		88		5252364		110		5254065	
D8-Acenaphthylene	%	89		5252364		92		5252364		98		5254065	

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

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Maxxam Job #: B7O7509
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.002
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

SEMI-VOLATILE ORGANICS BY GC-MS (SEDIMENT)

Maxxam ID		FMF468		FMF469	FMF470	FMF471	FMF472			
Sampling Date		2017/10/26		2017/10/26	2017/10/26	2017/10/26	2017/10/26			
COC Number		N/A		N/A	N/A	N/A	N/A			
	UNITS	**BB-SED5**	**RDL**	**BB-SED9**	**BB-SED10**	**BB-SED11**	**BB-SED12**	**RDL**	**QC Batch**	**MDL**
Polyaromatic Hydrocarbons										
1-Methylnaphthalene	mg/kg	<0.66 (1)	0.66	<0.010	<0.010	<0.010	<0.010	0.010	5254065	N/A
2-Methylnaphthalene	mg/kg	<0.44 (1)	0.44	<0.010	<0.010	<0.010	<0.010	0.010	5254065	N/A
Acenaphthene	mg/kg	<0.40 (1)	0.40	<0.010	<0.010	<0.010	<0.010	0.010	5254065	N/A
Acenaphthylene	mg/kg	<0.28 (1)	0.28	<0.010	<0.010	<0.010	<0.010	0.010	5254065	N/A
Anthracene	mg/kg	<0.010	0.010	<0.010	<0.010	<0.010	<0.010	0.010	5254065	N/A
Benzo(a)anthracene	mg/kg	<0.010	0.010	<0.010	<0.010	<0.010	<0.010	0.010	5254065	N/A
Benzo(a)pyrene	mg/kg	<0.010	0.010	<0.010	<0.010	<0.010	<0.010	0.010	5254065	N/A
Benzo(b)fluoranthene	mg/kg	<0.010	0.010	<0.010	<0.010	<0.010	<0.010	0.010	5254065	N/A
Benzo(b/j)fluoranthene	mg/kg	<0.020	0.020	<0.020	<0.020	<0.020	<0.020	0.020	5248691	N/A
Benzo(g,h,i)perylene	mg/kg	<0.010	0.010	<0.010	<0.010	<0.010	<0.010	0.010	5254065	N/A
Benzo(j)fluoranthene	mg/kg	<0.010	0.010	<0.010	<0.010	<0.010	<0.010	0.010	5254065	N/A
Benzo(k)fluoranthene	mg/kg	<0.010	0.010	<0.010	<0.010	<0.010	<0.010	0.010	5254065	N/A
Chrysene	mg/kg	<0.010	0.010	<0.010	<0.010	<0.010	<0.010	0.010	5254065	N/A
Dibenz(a,h)anthracene	mg/kg	<0.010	0.010	<0.010	<0.010	<0.010	<0.010	0.010	5254065	N/A
Fluoranthene	mg/kg	<0.010	0.010	<0.010	<0.010	<0.010	<0.010	0.010	5254065	N/A
Fluorene	mg/kg	<0.43 (1)	0.43	<0.010	<0.010	<0.010	<0.010	0.010	5254065	N/A
Indeno(1,2,3-cd)pyrene	mg/kg	<0.010	0.010	<0.010	<0.010	<0.010	<0.010	0.010	5254065	N/A
Naphthalene	mg/kg	<0.070 (1)	0.070	<0.010	<0.010	<0.010	<0.010	0.010	5254065	N/A
Perylene	mg/kg	<0.010	0.010	<0.010	<0.010	<0.010	<0.010	0.010	5254065	N/A
Phenanthrene	mg/kg	<0.010	0.010	<0.010	<0.010	<0.010	<0.010	0.010	5254065	N/A
Pyrene	mg/kg	0.070	0.010	<0.010	<0.010	<0.010	<0.010	0.010	5254065	N/A
Surrogate Recovery (%)										
D10-Anthracene	%	103		109	108	109	107		5254065	
D14-Terphenyl (FS)	%	108		105	106	107	107		5254065	
D8-Acenaphthylene	%	99		96	94	93	96		5254065	

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) Elevated PAH RDL(s) due to matrix / co-extractive interference.

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Maxxam Job #: B7O7509
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.002
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

SEMI-VOLATILE ORGANICS BY GC-MS (SEDIMENT)

Maxxam ID		FMF564			
Sampling Date		2017/10/26			
COC Number		N/A			
	UNITS	**BB-SED51**	**RDL**	**QC Batch**	**MDL**
Polyaromatic Hydrocarbons					
1-Methylnaphthalene	mg/kg	0.21	0.010	5254065	N/A
2-Methylnaphthalene	mg/kg	0.23	0.010	5254065	N/A
Acenaphthene	mg/kg	<0.010	0.010	5254065	N/A
Acenaphthylene	mg/kg	<0.010	0.010	5254065	N/A
Anthracene	mg/kg	<0.010	0.010	5254065	N/A
Benzo(a)anthracene	mg/kg	<0.010	0.010	5254065	N/A
Benzo(a)pyrene	mg/kg	<0.010	0.010	5254065	N/A
Benzo(b)fluoranthene	mg/kg	<0.010	0.010	5254065	N/A
Benzo(b/j)fluoranthene	mg/kg	<0.020	0.020	5248860	N/A
Benzo(g,h,i)perylene	mg/kg	<0.010	0.010	5254065	N/A
Benzo(j)fluoranthene	mg/kg	<0.010	0.010	5254065	N/A
Benzo(k)fluoranthene	mg/kg	<0.010	0.010	5254065	N/A
Chrysene	mg/kg	<0.010	0.010	5254065	N/A
Dibenz(a,h)anthracene	mg/kg	<0.010	0.010	5254065	N/A
Fluoranthene	mg/kg	<0.010	0.010	5254065	N/A
Fluorene	mg/kg	<0.010	0.010	5254065	N/A
Indeno(1,2,3-cd)pyrene	mg/kg	<0.010	0.010	5254065	N/A
Naphthalene	mg/kg	<0.010	0.010	5254065	N/A
Perylene	mg/kg	<0.010	0.010	5254065	N/A
Phenanthrene	mg/kg	<0.010	0.010	5254065	N/A
Pyrene	mg/kg	<0.010	0.010	5254065	N/A
Surrogate Recovery (%)					
D10-Anthracene	%	104		5254065	
D14-Terphenyl (FS)	%	105		5254065	
D8-Acenaphthylene	%	100		5254065	

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

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Maxxam Job #: B7O7509
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.002
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

POLYCHLORINATED BIPHENYLS BY GC-ECD (SEDIMENT)

Maxxam ID		FMF466	FMF467	FMF468	FMF469	FMF470		FMF471			
Sampling Date		2017/10/26	2017/10/26	2017/10/26	2017/10/26	2017/10/26		2017/10/26			
COC Number		N/A	N/A	N/A	N/A	N/A		N/A			
	UNITS	**BB-SED1**	**BB-SED2**	**BB-SED5**	**BB-SED9**	**BB-SED10**	**QC Batch**	**BB-SED11**	**RDL**	**QC Batch**	**MDL**
PCBs											
Aroclor 1016	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	5250338	<0.050	0.050	5251900	N/A
Aroclor 1221	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	5250338	<0.050	0.050	5251900	N/A
Aroclor 1232	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	5250338	<0.050	0.050	5251900	N/A
Aroclor 1248	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	5250338	<0.050	0.050	5251900	N/A
Aroclor 1242	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	5250338	<0.050	0.050	5251900	N/A
Aroclor 1254	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	5250338	<0.050	0.050	5251900	N/A
Aroclor 1260	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	5250338	<0.050	0.050	5251900	N/A
Calculated Total PCB	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	5248668	<0.050	0.050	5248668	N/A
Surrogate Recovery (%)											
Decachlorobiphenyl	%	100	106	100	99	103	5250338	92		5251900	

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

Maxxam ID		FMF472		FMF564			
Sampling Date		2017/10/26		2017/10/26			
COC Number		N/A		N/A			
	UNITS	**BB-SED12**	**QC Batch**	**BB-SED51**	**RDL**	**QC Batch**	**MDL**
PCBs							
Aroclor 1016	ug/g	<0.050	5251900	<0.050	0.050	5251900	N/A
Aroclor 1221	ug/g	<0.050	5251900	<0.050	0.050	5251900	N/A
Aroclor 1232	ug/g	<0.050	5251900	<0.050	0.050	5251900	N/A
Aroclor 1248	ug/g	<0.050	5251900	<0.050	0.050	5251900	N/A
Aroclor 1242	ug/g	<0.050	5251900	<0.050	0.050	5251900	N/A
Aroclor 1254	ug/g	<0.050	5251900	<0.050	0.050	5251900	N/A
Aroclor 1260	ug/g	<0.050	5251900	<0.050	0.050	5251900	N/A
Calculated Total PCB	ug/g	<0.050	5248668	<0.050	0.050	5248864	N/A
Surrogate Recovery (%)							
Decachlorobiphenyl	%	93	5251900	86		5251900	

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

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Maxxam Job #: B7O7509
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.002
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

TEST SUMMARY

Maxxam ID: FMF466
Sample ID: BB-SED1
Matrix: SEDIMENT

Collected: 2017/10/26
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Benzo(b/j)fluoranthene Sum (soil)	CALC	5248691	N/A	2017/11/09	Automated Statchk
TEH in Soil (PIRI)	GC/FID	5254294	2017/11/08	2017/11/09	Crystal Matthews
Metals Solids Acid Extr. ICPMS	ICP/MS	5254023	2017/11/08	2017/11/08	Mike Leblanc
Moisture	BAL	5250087	N/A	2017/11/06	Jacob Henley
PAH Compounds by GCMS (SIM)	GC/MS	5252364	2017/11/07	2017/11/09	Gina Thompson
PCBs in soil by GC/ECD	GC/ECD	5250338	2017/11/06	2017/11/07	Chloe Bramble
PCB Aroclor sum (soil)	CALC	5248668	N/A	2017/11/07	Automated Statchk
ModTPH (T1) Calc. for Soil	CALC	5248651	N/A	2017/11/09	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5250527	N/A	2017/11/07	Matthew Cloutier

Maxxam ID: FMF466 Dup
Sample ID: BB-SED1
Matrix: SEDIMENT

Collected: 2017/10/26
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5254294	2017/11/08	2017/11/09	Crystal Matthews
Moisture	BAL	5250087	N/A	2017/11/06	Jacob Henley
PAH Compounds by GCMS (SIM)	GC/MS	5252364	2017/11/07	2017/11/09	Gina Thompson

Maxxam ID: FMF467
Sample ID: BB-SED2
Matrix: SEDIMENT

Collected: 2017/10/26
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Benzo(b/j)fluoranthene Sum (soil)	CALC	5248691	N/A	2017/11/20	Automated Statchk
TEH in Soil (PIRI)	GC/FID	5254294	2017/11/08	2017/11/09	Crystal Matthews
Metals Solids Acid Extr. ICPMS	ICP/MS	5254023	2017/11/08	2017/11/08	Mike Leblanc
Moisture	BAL	5250087	N/A	2017/11/06	Jacob Henley
PAH Compounds by GCMS (SIM)	GC/MS	5254065	2017/11/08	2017/11/17	Robin Smith-Armstrong
PCBs in soil by GC/ECD	GC/ECD	5250338	2017/11/06	2017/11/07	Chloe Bramble
PCB Aroclor sum (soil)	CALC	5248668	N/A	2017/11/07	Automated Statchk
ModTPH (T1) Calc. for Soil	CALC	5248651	N/A	2017/11/09	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5250527	N/A	2017/11/07	Matthew Cloutier

Maxxam ID: FMF468
Sample ID: BB-SED5
Matrix: SEDIMENT

Collected: 2017/10/26
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Benzo(b/j)fluoranthene Sum (soil)	CALC	5248691	N/A	2017/11/20	Automated Statchk
TEH in Soil (PIRI)	GC/FID	5254294	2017/11/08	2017/11/09	Crystal Matthews
Metals Solids Acid Extr. ICPMS	ICP/MS	5254023	2017/11/08	2017/11/08	Mike Leblanc
Moisture	BAL	5250087	N/A	2017/11/06	Jacob Henley
PAH Compounds by GCMS (SIM)	GC/MS	5254065	2017/11/08	2017/11/17	Robin Smith-Armstrong

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Maxxam Job #: B7O7509
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.002
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

TEST SUMMARY

Maxxam ID: FMF468
Sample ID: BB-SED5
Matrix: SEDIMENT

Collected: 2017/10/26
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PCBs in soil by GC/ECD	GC/ECD	5250338	2017/11/06	2017/11/07	Chloe Bramble
PCB Aroclor sum (soil)	CALC	5248668	N/A	2017/11/07	Automated Statchk
ModTPH (T1) Calc. for Soil	CALC	5248651	N/A	2017/11/09	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5250527	N/A	2017/11/07	Matthew Cloutier

Maxxam ID: FMF469
Sample ID: BB-SED9
Matrix: SEDIMENT

Collected: 2017/10/26
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Benzo(b/j)fluoranthene Sum (soil)	CALC	5248691	N/A	2017/11/20	Automated Statchk
TEH in Soil (PIRI)	GC/FID	5254294	2017/11/08	2017/11/09	Crystal Matthews
Metals Solids Acid Extr. ICPMS	ICP/MS	5254023	2017/11/08	2017/11/08	Mike Leblanc
Moisture	BAL	5250087	N/A	2017/11/06	Jacob Henley
PAH Compounds by GCMS (SIM)	GC/MS	5254065	2017/11/08	2017/11/17	Robin Smith-Armstrong
PCBs in soil by GC/ECD	GC/ECD	5250338	2017/11/06	2017/11/07	Chloe Bramble
PCB Aroclor sum (soil)	CALC	5248668	N/A	2017/11/07	Automated Statchk
ModTPH (T1) Calc. for Soil	CALC	5248651	N/A	2017/11/09	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5252167	N/A	2017/11/08	Matthew Cloutier

Maxxam ID: FMF469 Dup
Sample ID: BB-SED9
Matrix: SEDIMENT

Collected: 2017/10/26
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5252167	N/A	2017/11/08	Matthew Cloutier

Maxxam ID: FMF470
Sample ID: BB-SED10
Matrix: SEDIMENT

Collected: 2017/10/26
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Benzo(b/j)fluoranthene Sum (soil)	CALC	5248691	N/A	2017/11/20	Automated Statchk
TEH in Soil (PIRI)	GC/FID	5254294	2017/11/08	2017/11/09	Crystal Matthews
Metals Solids Acid Extr. ICPMS	ICP/MS	5254023	2017/11/08	2017/11/08	Mike Leblanc
Moisture	BAL	5250087	N/A	2017/11/06	Jacob Henley
PAH Compounds by GCMS (SIM)	GC/MS	5254065	2017/11/08	2017/11/17	Robin Smith-Armstrong
PCBs in soil by GC/ECD	GC/ECD	5250338	2017/11/06	2017/11/07	Chloe Bramble
PCB Aroclor sum (soil)	CALC	5248668	N/A	2017/11/07	Automated Statchk
ModTPH (T1) Calc. for Soil	CALC	5248651	N/A	2017/11/09	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5252167	N/A	2017/11/08	Matthew Cloutier

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Maxxam Job #: B7O7509
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.002
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

TEST SUMMARY

Maxxam ID: FMF471
Sample ID: BB-SED11
Matrix: SEDIMENT

Collected: 2017/10/26
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Benzo(b/j)fluoranthene Sum (soil)	CALC	5248691	N/A	2017/11/20	Automated Statchk
TEH in Soil (PIRI)	GC/FID	5254294	2017/11/08	2017/11/09	Crystal Matthews
Metals Solids Acid Extr. ICPMS	ICP/MS	5254023	2017/11/08	2017/11/08	Mike Leblanc
Moisture	BAL	5250087	N/A	2017/11/06	Jacob Henley
PAH Compounds by GCMS (SIM)	GC/MS	5254065	2017/11/08	2017/11/17	Robin Smith-Armstrong
PCBs in soil by GC/ECD	GC/ECD	5251900	2017/11/07	2017/11/09	Lisa Gates
PCB Aroclor sum (soil)	CALC	5248668	N/A	2017/11/09	Automated Statchk
ModTPH (T1) Calc. for Soil	CALC	5248651	N/A	2017/11/09	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5252167	N/A	2017/11/08	Matthew Cloutier

Maxxam ID: FMF472
Sample ID: BB-SED12
Matrix: SEDIMENT

Collected: 2017/10/26
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Benzo(b/j)fluoranthene Sum (soil)	CALC	5248691	N/A	2017/11/20	Automated Statchk
TEH in Soil (PIRI)	GC/FID	5254294	2017/11/08	2017/11/09	Crystal Matthews
Metals Solids Acid Extr. ICPMS	ICP/MS	5254023	2017/11/08	2017/11/08	Mike Leblanc
Moisture	BAL	5250087	N/A	2017/11/06	Jacob Henley
PAH Compounds by GCMS (SIM)	GC/MS	5254065	2017/11/08	2017/11/17	Robin Smith-Armstrong
PCBs in soil by GC/ECD	GC/ECD	5251900	2017/11/07	2017/11/09	Lisa Gates
PCB Aroclor sum (soil)	CALC	5248668	N/A	2017/11/09	Automated Statchk
ModTPH (T1) Calc. for Soil	CALC	5248651	N/A	2017/11/09	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5252167	N/A	2017/11/08	Matthew Cloutier

Maxxam ID: FMF564
Sample ID: BB-SED51
Matrix: SEDIMENT

Collected: 2017/10/26
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Benzo(b/j)fluoranthene Sum (soil)	CALC	5248860	N/A	2017/11/20	Automated Statchk
TEH in Soil (PIRI)	GC/FID	5254294	2017/11/08	2017/11/09	Crystal Matthews
Metals Solids Acid Extr. ICPMS	ICP/MS	5254023	2017/11/08	2017/11/08	Mike Leblanc
Moisture	BAL	5250284	N/A	2017/11/07	Tyler Johnson
PAH Compounds by GCMS (SIM)	GC/MS	5254065	2017/11/08	2017/11/17	Robin Smith-Armstrong
PCBs in soil by GC/ECD	GC/ECD	5251900	2017/11/07	2017/11/09	Lisa Gates
PCB Aroclor sum (soil)	CALC	5248864	N/A	2017/11/09	Automated Statchk
ModTPH (T1) Calc. for Soil	CALC	5248871	N/A	2017/11/09	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5252167	N/A	2017/11/08	Matthew Cloutier

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Maxxam Job #: B7O7509
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.002
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

GENERAL COMMENTS

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

Package 1	9.2°C

TEH Analysis: Silica gel clean-up performed prior to analysis as per client request.

Results relate only to the items tested.

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Maxxam Job #: B7O7509
Report Date: 2017/11/20

QUALITY ASSURANCE REPORT

Stantec Consulting Ltd
Client Project #: 121414915.200.002
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5250338	Decachlorobiphenyl	2017/11/07	96	30 - 130	94	30 - 130	98	%		
5250527	Isobutylbenzene - Volatile	2017/11/07	87	60 - 130	99	60 - 130	110	%		
5251900	Decachlorobiphenyl	2017/11/09	91	30 - 130	90	30 - 130	92	%		
5252167	Isobutylbenzene - Volatile	2017/11/08	94	60 - 130	95	60 - 130	98	%		
5252364	D10-Anthracene	2017/11/09	99	50 - 130	101	50 - 130	118	%		
5252364	D14-Terphenyl (FS)	2017/11/09	98	50 - 130	98	50 - 130	108	%		
5252364	D8-Acenaphthylene	2017/11/09	90	50 - 130	99	50 - 130	106	%		
5254065	D10-Anthracene	2017/11/17	108	50 - 130	109	50 - 130	112	%		
5254065	D14-Terphenyl (FS)	2017/11/17	102	50 - 130	103	50 - 130	109	%		
5254065	D8-Acenaphthylene	2017/11/17	99	50 - 130	97	50 - 130	100	%		
5254294	Isobutylbenzene - Extractable	2017/11/09	91	30 - 130	90	30 - 130	90	%		
5254294	n-Dotriacontane - Extractable	2017/11/09	106	30 - 130	105	30 - 130	103	%		
5250087	Moisture	2017/11/06							1.2	25
5250284	Moisture	2017/11/07							1.4	25
5250338	Aroclor 1016	2017/11/07					<0.050	ug/g	NC	50
5250338	Aroclor 1221	2017/11/07					<0.050	ug/g	NC	50
5250338	Aroclor 1232	2017/11/07					<0.050	ug/g	NC	50
5250338	Aroclor 1242	2017/11/07					<0.050	ug/g	NC	50
5250338	Aroclor 1248	2017/11/07					<0.050	ug/g	NC	50
5250338	Aroclor 1254	2017/11/07	NC	30 - 130	89	30 - 130	<0.050	ug/g	NC	50
5250338	Aroclor 1260	2017/11/07					<0.050	ug/g	4.6	50
5250527	Benzene	2017/11/07	71	60 - 130	84	60 - 140	<0.025	mg/kg	NC	50
5250527	C6 - C10 (less BTEX)	2017/11/07					<2.5	mg/kg	NC	50
5250527	Ethylbenzene	2017/11/07	73	60 - 130	84	60 - 140	<0.025	mg/kg	NC	50
5250527	Toluene	2017/11/07	72	60 - 130	83	60 - 140	<0.025	mg/kg	NC	50
5250527	Total Xylenes	2017/11/07	74	60 - 130	83	60 - 140	<0.050	mg/kg	NC	50
5251900	Aroclor 1016	2017/11/09					<0.050	ug/g	NC	50
5251900	Aroclor 1221	2017/11/09					<0.050	ug/g	NC	50
5251900	Aroclor 1232	2017/11/09					<0.050	ug/g	NC	50
5251900	Aroclor 1242	2017/11/09					<0.050	ug/g	NC	50
5251900	Aroclor 1248	2017/11/09					<0.050	ug/g	NC	50

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Maxxam Job #: B7O7509
Report Date: 2017/11/20

QUALITY ASSURANCE REPORT(CONT'D)

Stantec Consulting Ltd
Client Project #: 121414915.200.002
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5251900	Aroclor 1254	2017/11/09	96	30 - 130	94	30 - 130	<0.050	ug/g	NC	50
5251900	Aroclor 1260	2017/11/09					<0.050	ug/g	NC	50
5252167	Benzene	2017/11/08	76	60 - 130	77	60 - 140	<0.025	mg/kg	NC	50
5252167	C6 - C10 (less BTEX)	2017/11/08					<2.5	mg/kg	NC	50
5252167	Ethylbenzene	2017/11/08	77	60 - 130	76	60 - 140	<0.025	mg/kg	NC	50
5252167	Toluene	2017/11/08	76	60 - 130	76	60 - 140	<0.025	mg/kg	NC	50
5252167	Total Xylenes	2017/11/08	79	60 - 130	76	60 - 140	<0.050	mg/kg	NC	50
5252364	1-Methylnaphthalene	2017/11/09	85	30 - 130	88	30 - 130	<0.010	mg/kg	NC	50
5252364	2-Methylnaphthalene	2017/11/09	91	30 - 130	94	30 - 130	<0.010	mg/kg	NC	50
5252364	Acenaphthene	2017/11/09	90	30 - 130	94	30 - 130	<0.010	mg/kg	NC	50
5252364	Acenaphthylene	2017/11/09	90	30 - 130	99	30 - 130	<0.010	mg/kg	NC	50
5252364	Anthracene	2017/11/09	93	30 - 130	92	30 - 130	<0.010	mg/kg	NC	50
5252364	Benzo(a)anthracene	2017/11/09	89	30 - 130	85	30 - 130	<0.010	mg/kg	NC	50
5252364	Benzo(a)pyrene	2017/11/09	85	30 - 130	86	30 - 130	<0.010	mg/kg	NC	50
5252364	Benzo(b)fluoranthene	2017/11/09	89	30 - 130	82	30 - 130	<0.010	mg/kg	NC	50
5252364	Benzo(g,h,i)perylene	2017/11/09	92	30 - 130	89	30 - 130	<0.010	mg/kg	NC	50
5252364	Benzo(j)fluoranthene	2017/11/09	87	30 - 130	91	30 - 130	<0.010	mg/kg	NC	50
5252364	Benzo(k)fluoranthene	2017/11/09	85	30 - 130	87	30 - 130	<0.010	mg/kg	NC	50
5252364	Chrysene	2017/11/09	87	30 - 130	84	30 - 130	<0.010	mg/kg	NC	50
5252364	Dibenz(a,h)anthracene	2017/11/09	87	30 - 130	85	30 - 130	<0.010	mg/kg	NC	50
5252364	Fluoranthene	2017/11/09	95	30 - 130	93	30 - 130	<0.010	mg/kg	NC	50
5252364	Fluorene	2017/11/09	94	30 - 130	96	30 - 130	<0.010	mg/kg	NC	50
5252364	Indeno(1,2,3-cd)pyrene	2017/11/09	90	30 - 130	85	30 - 130	<0.010	mg/kg	NC	50
5252364	Naphthalene	2017/11/09	89	30 - 130	93	30 - 130	<0.010	mg/kg	NC	50
5252364	Perylene	2017/11/09	82	30 - 130	85	30 - 130	<0.010	mg/kg	NC	50
5252364	Phenanthrene	2017/11/09	95	30 - 130	97	30 - 130	<0.010	mg/kg	NC	50
5252364	Pyrene	2017/11/09	94	30 - 130	91	30 - 130	<0.010	mg/kg	NC	50
5254023	Acid Extractable Aluminum (Al)	2017/11/08					<10	mg/kg	17	35
5254023	Acid Extractable Antimony (Sb)	2017/11/08	95	75 - 125	95	75 - 125	<2.0	mg/kg	NC	35
5254023	Acid Extractable Arsenic (As)	2017/11/08	97	75 - 125	97	75 - 125	<2.0	mg/kg	NC	35
5254023	Acid Extractable Barium (Ba)	2017/11/08	73 (1)	75 - 125	91	75 - 125	<5.0	mg/kg	21	35

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5254023	Acid Extractable Beryllium (Be)	2017/11/08	97	75 - 125	93	75 - 125	<2.0	mg/kg	NC	35
5254023	Acid Extractable Bismuth (Bi)	2017/11/08	98	75 - 125	96	75 - 125	<2.0	mg/kg	NC	35
5254023	Acid Extractable Boron (B)	2017/11/08	94	75 - 125	98	75 - 125	<50	mg/kg	NC	35
5254023	Acid Extractable Cadmium (Cd)	2017/11/08	99	75 - 125	96	75 - 125	<0.30	mg/kg	NC	35
5254023	Acid Extractable Chromium (Cr)	2017/11/08	96	75 - 125	97	75 - 125	<2.0	mg/kg	14	35
5254023	Acid Extractable Cobalt (Co)	2017/11/08	98	75 - 125	98	75 - 125	<1.0	mg/kg	12	35
5254023	Acid Extractable Copper (Cu)	2017/11/08	97	75 - 125	96	75 - 125	<2.0	mg/kg	9.0	35
5254023	Acid Extractable Iron (Fe)	2017/11/08					<50	mg/kg	22	35
5254023	Acid Extractable Lead (Pb)	2017/11/08	91	75 - 125	92	75 - 125	<0.50	mg/kg	21	35
5254023	Acid Extractable Lithium (Li)	2017/11/08	95	75 - 125	97	75 - 125	<2.0	mg/kg	16	35
5254023	Acid Extractable Manganese (Mn)	2017/11/08	NC	75 - 125	98	75 - 125	<2.0	mg/kg	24	35
5254023	Acid Extractable Mercury (Hg)	2017/11/08	97	75 - 125	101	75 - 125	<0.10	mg/kg	NC	35
5254023	Acid Extractable Molybdenum (Mo)	2017/11/08	96	75 - 125	94	75 - 125	<2.0	mg/kg	NC	35
5254023	Acid Extractable Nickel (Ni)	2017/11/08	98	75 - 125	98	75 - 125	<2.0	mg/kg	1.6	35
5254023	Acid Extractable Rubidium (Rb)	2017/11/08	98	75 - 125	96	75 - 125	<2.0	mg/kg	14	35
5254023	Acid Extractable Selenium (Se)	2017/11/08	101	75 - 125	98	75 - 125	<1.0	mg/kg	NC	35
5254023	Acid Extractable Silver (Ag)	2017/11/08	99	75 - 125	96	75 - 125	<0.50	mg/kg	NC	35
5254023	Acid Extractable Strontium (Sr)	2017/11/08	93	75 - 125	96	75 - 125	<5.0	mg/kg	20	35
5254023	Acid Extractable Thallium (Tl)	2017/11/08	99	75 - 125	97	75 - 125	<0.10	mg/kg	NC	35
5254023	Acid Extractable Tin (Sn)	2017/11/08	99	75 - 125	98	75 - 125	<2.0	mg/kg	NC	35
5254023	Acid Extractable Uranium (U)	2017/11/08	95	75 - 125	93	75 - 125	<0.10	mg/kg	37 (2)	35
5254023	Acid Extractable Vanadium (V)	2017/11/08	96	75 - 125	96	75 - 125	<2.0	mg/kg	13	35
5254023	Acid Extractable Zinc (Zn)	2017/11/08	92	75 - 125	97	75 - 125	<5.0	mg/kg	5.0	35
5254065	1-Methylnaphthalene	2017/11/17	93	30 - 130	91	30 - 130	<0.010	mg/kg	NC	50
5254065	2-Methylnaphthalene	2017/11/17	99	30 - 130	97	30 - 130	<0.010	mg/kg	NC	50
5254065	Acenaphthene	2017/11/17	94	30 - 130	92	30 - 130	<0.010	mg/kg	NC	50
5254065	Acenaphthylene	2017/11/17	100	30 - 130	101	30 - 130	<0.010	mg/kg	NC	50
5254065	Anthracene	2017/11/17	100	30 - 130	100	30 - 130	<0.010	mg/kg	NC	50
5254065	Benzo(a)anthracene	2017/11/17	90	30 - 130	87	30 - 130	<0.010	mg/kg	NC	50
5254065	Benzo(a)pyrene	2017/11/17	93	30 - 130	90	30 - 130	<0.010	mg/kg	NC	50
5254065	Benzo(b)fluoranthene	2017/11/17	95	30 - 130	92	30 - 130	<0.010	mg/kg	NC	50

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5254065	Benzo(g,h,i)perylene	2017/11/17	91	30 - 130	87	30 - 130	<0.010	mg/kg	NC	50
5254065	Benzo(j)fluoranthene	2017/11/17	99	30 - 130	99	30 - 130	<0.010	mg/kg	NC	50
5254065	Benzo(k)fluoranthene	2017/11/17	98	30 - 130	96	30 - 130	<0.010	mg/kg	NC	50
5254065	Chrysene	2017/11/17	92	30 - 130	90	30 - 130	<0.010	mg/kg	NC	50
5254065	Dibenz(a,h)anthracene	2017/11/17	89	30 - 130	84	30 - 130	<0.010	mg/kg	NC	50
5254065	Fluoranthene	2017/11/17	96	30 - 130	92	30 - 130	<0.010	mg/kg	NC	50
5254065	Fluorene	2017/11/17	98	30 - 130	98	30 - 130	<0.010	mg/kg	NC	50
5254065	Indeno(1,2,3-cd)pyrene	2017/11/17	87	30 - 130	82	30 - 130	<0.010	mg/kg	NC	50
5254065	Naphthalene	2017/11/17	95	30 - 130	94	30 - 130	<0.010	mg/kg	NC	50
5254065	Perylene	2017/11/17	96	30 - 130	94	30 - 130	<0.010	mg/kg	NC	50
5254065	Phenanthrene	2017/11/17	97	30 - 130	95	30 - 130	<0.010	mg/kg	NC	50
5254065	Pyrene	2017/11/17	99	30 - 130	99	30 - 130	<0.010	mg/kg	NC	50
5254294	>C10-C16 Hydrocarbons	2017/11/09	82	30 - 130	85	30 - 130	<10	mg/kg	NC	50
5254294	>C16-C21 Hydrocarbons	2017/11/09	97	30 - 130	98	30 - 130	<10	mg/kg	NC	50
5254294	>C21-<C32 Hydrocarbons	2017/11/09	122	30 - 130	122	30 - 130	<15	mg/kg	NC	50

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

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

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

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

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

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

(1) Recovery is within QC acceptance limits. < 10 % of compounds in multi-component analysis in violation.

(2) Poor RPD due to sample inhomogeneity. < 10 % of compounds in multi-component analysis in violation.

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Maxxam Job #: B7O7509
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.002
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

VALIDATION SIGNATURE PAGE

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

Mike MacGillivray, Scientific Specialist (Inorganics)

Paula Chaplin, Project Manager

Phil Deveau, Scientific Specialist (Organics)

Rosemarie MacDonald, Scientific Specialist (Organics)

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Your Project #: 121414915.200.003
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Your C.O.C. #: N/A

Attention:Jim Slade

Stantec Consulting Ltd
141 Kelsey Drive
St. John's, NL
A1B 0L2

Report Date: 2017/11/20
Report #: R4868651
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7O7511
Received: 2017/11/02, 10:11

Sample Matrix: Soil
Samples Received: 133

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Benzo(b/j)fluoranthene Sum (soil) (1)	39	N/A	2017/11/20	N/A	Auto Calc.
TEH in Soil (AA PIRI) (1)	1	2017/11/08	2017/11/11	ATL SOP 00116	Atl. RBCA v3.1 m
TEH in Soil (AA PIRI) (1)	2	2017/11/08	2017/11/12	ATL SOP 00116	Atl. RBCA v3.1 m
TEH in Soil (PIRI) (1, 4)	1	2017/11/06	2017/11/08	ATL SOP 00111	Atl. RBCA v3.1 m
TEH in Soil (PIRI) (1, 4)	37	2017/11/07	2017/11/07	ATL SOP 00111	Atl. RBCA v3.1 m
TEH in Soil (PIRI) (1, 4)	50	2017/11/07	2017/11/08	ATL SOP 00111	Atl. RBCA v3.1 m
TEH in Soil (PIRI) (1, 4)	3	2017/11/08	2017/11/09	ATL SOP 00111	Atl. RBCA v3.1 m
TEH in Soil (PIRI) (1, 4)	4	2017/11/08	2017/11/10	ATL SOP 00111	Atl. RBCA v3.1 m
Metals Solids Acid Extr. ICPMS (1)	28	2017/11/08	2017/11/08	ATL SOP 00058	EPA 6020A R1 m
Metals Solids Acid Extr. ICPMS (1)	23	2017/11/08	2017/11/09	ATL SOP 00058	EPA 6020A R1 m
Metals Solids Acid Extr. ICPMS (1)	13	2017/11/09	2017/11/09	ATL SOP 00058	EPA 6020A R1 m
Metals Solids Acid Extr. ICPMS (1)	2	2017/11/10	2017/11/10	ATL SOP 00058	EPA 6020A R1 m
Metals Solids Acid Extr. ICPMS (1)	3	2017/11/13	2017/11/14	ATL SOP 00058	EPA 6020A R1 m
Moisture (1)	22	N/A	2017/11/06	ATL SOP 00001	OMOE Handbook 1983 m
Moisture (1)	96	N/A	2017/11/07	ATL SOP 00001	OMOE Handbook 1983 m
Moisture (1)	2	N/A	2017/11/08	ATL SOP 00001	OMOE Handbook 1983 m
Moisture (1)	8	N/A	2017/11/09	ATL SOP 00001	OMOE Handbook 1983 m
OC Pesticides (Selected) & PCB (2, 5)	1	2017/11/11	2017/11/12	CAM SOP-00307	SW846 8081, 8082
OC Pesticides (Selected) & PCB (2, 5)	2	2017/11/11	2017/11/14	CAM SOP-00307	SW846 8081, 8082
OC Pesticides Summed Parameters (2)	1	N/A	2017/11/06	CAM SOP-00307	EPA 8081/8082 m
OC Pesticides Summed Parameters (2)	2	N/A	2017/11/07	CAM SOP-00307	EPA 8081/8082 m
PAH Compounds by GCMS (SIM) (1, 4)	1	2017/11/06	2017/11/17	ATL SOP 00102	EPA 8270D 2007 m
PAH Compounds by GCMS (SIM) (1, 4)	6	2017/11/08	2017/11/17	ATL SOP 00102	EPA 8270D 2007 m
PAH Compounds by GCMS (SIM) (1, 4)	32	2017/11/08	2017/11/18	ATL SOP 00102	EPA 8270D 2007 m
PCBs in soil by GC/ECD (1, 4)	16	2017/11/07	2017/11/09	ATL SOP 00106	EPA 8082A 2007 m
PCBs in soil by GC/ECD (1, 4)	20	2017/11/08	2017/11/09	ATL SOP 00106	EPA 8082A 2007 m
PCBs in soil by GC/ECD (1, 4)	19	2017/11/08	2017/11/10	ATL SOP 00106	EPA 8082A 2007 m
PCBs in soil by GC/ECD (1, 4)	3	2017/11/08	2017/11/14	ATL SOP 00106	EPA 8082A 2007 m
PCBs in soil by GC/ECD (1, 4)	10	2017/11/09	2017/11/10	ATL SOP 00106	EPA 8082A 2007 m
PCB Aroclor sum (soil) (1)	34	N/A	2017/11/09	N/A	Auto Calc.

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Your Project #: 121414915.200.003
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Your C.O.C. #: N/A

Attention:Jim Slade

Stantec Consulting Ltd
141 Kelsey Drive
St. John's, NL
A1B 0L2

Report Date: 2017/11/20
Report #: R4868651
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7O7511
Received: 2017/11/02, 10:11

Sample Matrix: Soil
Samples Received: 133

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
PCB Aroclor sum (soil) (1)	28	N/A	2017/11/10	N/A	Auto Calc.
PCB Aroclor sum (soil) (1)	5	N/A	2017/11/14	N/A	Auto Calc.
PCB Aroclor sum (soil) (1)	1	N/A	2017/11/16	N/A	Auto Calc.
Asbestos (bulk) by PLM (Sub fr Bedford) (3)	8	N/A	2017/11/08		
Total Organic Carbon in Soil (2)	4	N/A	2017/11/09	CAM SOP-00468	BCMOE TOC Aug 2014
ModTPH (T1) Calc. for Soil (1)	12	N/A	2017/11/08	N/A	Atl. RBCA v3.1 m
ModTPH (T1) Calc. for Soil (1)	15	N/A	2017/11/09	N/A	Atl. RBCA v3.1 m
ModTPH (T1) Calc. for Soil (1)	19	N/A	2017/11/10	N/A	Atl. RBCA v3.1 m
ModTPH (T1) Calc. for Soil (1)	21	N/A	2017/11/11	N/A	Atl. RBCA v3.1 m
ModTPH (T1) Calc. for Soil (1)	21	N/A	2017/11/13	N/A	Atl. RBCA v3.1 m
ModTPH (T1) Calc. for Soil (1)	7	N/A	2017/11/14	N/A	Atl. RBCA v3.1 m
ModTPH (T2) Calc. for Soil (1)	3	N/A	2017/11/14	N/A	Atl. RBCA v3 m
VOCs in Soil - Field Preserved (1, 6)	15	N/A	2017/11/08	ATL SOP 00133	EPA 8260C R3 m
VOCs in Soil - Field Preserved (1, 6)	3	N/A	2017/11/10	ATL SOP 00133	EPA 8260C R3 m
VOCs in Soil - Field Preserved (1, 6)	1	N/A	2017/11/12	ATL SOP 00133	EPA 8260C R3 m
VPH in Soil (PIRI2) - Field Preserved (1, 6)	3	N/A	2017/11/14	ATL SOP 00120	Atl. RBCA v3.1 m
VPH in Soil (PIRI) - Field Preserved (6)	12	N/A	2017/11/08	ATL SOP 00199	Atl. RBCA v3.1 m
VPH in Soil (PIRI) - Field Preserved (6)	20	N/A	2017/11/09	ATL SOP 00199	Atl. RBCA v3.1 m
VPH in Soil (PIRI) - Field Preserved (6)	36	N/A	2017/11/10	ATL SOP 00199	Atl. RBCA v3.1 m
VPH in Soil (PIRI) - Field Preserved (6)	20	N/A	2017/11/13	ATL SOP 00199	Atl. RBCA v3.1 m
VPH in Soil (PIRI) - Field Preserved (6)	7	N/A	2017/11/14	ATL SOP 00199	Atl. RBCA v3.1 m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed

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Maxxam
A Bureau Veritas Group Company

Your Project #: 121414915.200.003
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Your C.O.C. #: N/A

Attention:Jim Slade

Stantec Consulting Ltd
141 Kelsey Drive
St. John's, NL
A1B 0L2

Report Date: 2017/11/20
Report #: R4868651
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7O7511
Received: 2017/11/02, 10:11

or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Maxxam Bedford
(2) This test was performed by Maxxam Analytics Mississauga
(3) This test was performed by Sub Bedford to EMSL
(4) Soils are reported on a dry weight basis unless otherwise specified.
(5) Chlordane (Total) = Alpha Chlordane + Gamma Chlordane
(6) No lab extraction date is given for C6-C10/BTEX and VOC samples that are field preserved with methanol. Extraction date is date sampled unless otherwise stated.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Heather Macumber, Senior Project Manager
Email: HMacumber@maxxam.ca
Phone# (902)420-0203 Ext:226

==========

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 #: B7O7511
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.003
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

ATLANTIC FRACTIONATION IN S (FIELD PRES)

Maxxam ID		FMF531				FMF531			
Sampling Date		2017/10/25				2017/10/25			
COC Number		N/A				N/A			
	UNITS	**BB-SS38**	**RDL**	**QC Batch**	**MDL**	**BB-SS38 Lab-Dup**	**RDL**	**QC Batch**	**MDL**
Inorganics									
Moisture	%	9.1	1.0	5250284	0.20				
Petroleum Hydrocarbons									
Benzene	mg/kg	<0.025	0.025	5262740	0.010				
Toluene	mg/kg	<0.025	0.025	5262740	0.010				
Ethylbenzene	mg/kg	<0.025	0.025	5262740	0.010				
Total Xylenes	mg/kg	<0.050	0.050	5262740	0.010				
Aliphatic >C6-C8	mg/kg	<1.0	1.0	5262740	0.020				
Aliphatic >C8-C10	mg/kg	<1.0	1.0	5262740	0.080				
>C8-C10 Aromatics (-EX)	mg/kg	<0.50	0.50	5262740	0.020				
Aliphatic >C10-C12	mg/kg	22	8.0	5254196	1.6	24	8.0	5254196	1.6
Aliphatic >C12-C16	mg/kg	700	15	5254196	3.0	800	15	5254196	3.0
Aliphatic >C16-C21	mg/kg	170	15	5254196	3.0	190	15	5254196	3.0
Aliphatic >C21-<C32	mg/kg	65	15	5254196	3.0	68	15	5254196	3.0
Aromatic >C10-C12	mg/kg	<20 (1)	20	5254196	0.80	<20 (1)	20	5254196	0.80
Aromatic >C12-C16	mg/kg	92	15	5254196	3.0	110	15	5254196	3.0
Aromatic >C16-C21	mg/kg	56	15	5254196	3.0	66	15	5254196	3.0
Aromatic >C21-<C32	mg/kg	31	15	5254196	3.0	35	15	5254196	3.0
Modified TPH (Tier 2)	mg/kg	1100	20	5248872	3.0				
Reached Baseline at C32	mg/kg	Yes	N/A	5254196	N/A				
Hydrocarbon Resemblance	mg/kg	COMMENT (2)	N/A	5254196	N/A				
Surrogate Recovery (%)									
Isobutylbenzene - Extractable	%	87		5254196		94		5254196	
n-Dotriacontane - Extractable	%	92		5254196		91		5254196	
Isobutylbenzene - Volatile	%	97 (3)		5262740					

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable
(1) Elevated TEH RDL(s) due to detected levels in the method blank.
(2) Weathered fuel oil fraction.
(3) VPH samples were extracted using a flat-bed shaker instead of the accelerated mechanical shaker due to matrix incompatibility.

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Maxxam Job #: B7O7511
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.003
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

ATLANTIC FRACTIONATION IN S (FIELD PRES)

Maxxam ID		FMF661		FMF777			
Sampling Date		2017/10/25		2017/10/26			
COC Number		N/A		N/A			
	UNITS	**BB-TP8-BS1**	**QC Batch**	**BB-TP40-BS1**	**RDL**	**QC Batch**	**MDL**
Inorganics							
Moisture	%	9.0	5250300	23	1.0	5251723	0.20
Petroleum Hydrocarbons							
Benzene	mg/kg	<0.025	5262740	<0.025	0.025	5262740	0.010
Toluene	mg/kg	<0.025	5262740	<0.025	0.025	5262740	0.010
Ethylbenzene	mg/kg	<0.025	5262740	<0.025	0.025	5262740	0.010
Total Xylenes	mg/kg	<0.050	5262740	<0.050	0.050	5262740	0.010
Aliphatic >C6-C8	mg/kg	<1.0	5262740	<1.0	1.0	5262740	0.020
Aliphatic >C8-C10	mg/kg	<1.0	5262740	<1.0	1.0	5262740	0.080
>C8-C10 Aromatics (-EX)	mg/kg	<0.50	5262740	<0.50	0.50	5262740	0.020
Aliphatic >C10-C12	mg/kg	<8.0	5254196	<8.0	8.0	5254196	1.6
Aliphatic >C12-C16	mg/kg	76	5254196	<15	15	5254196	3.0
Aliphatic >C16-C21	mg/kg	220	5254196	<15	15	5254196	3.0
Aliphatic >C21-<C32	mg/kg	860	5254196	31	15	5254196	3.0
Aromatic >C10-C12	mg/kg	<20 (1)	5254196	<20 (1)	20	5254196	0.80
Aromatic >C12-C16	mg/kg	23	5254196	<15	15	5254196	3.0
Aromatic >C16-C21	mg/kg	99	5254196	<15	15	5254196	3.0
Aromatic >C21-<C32	mg/kg	450	5254196	50	15	5254196	3.0
Modified TPH (Tier 2)	mg/kg	1700	5248872	81	20	5248872	3.0
Reached Baseline at C32	mg/kg	No	5254196	Yes	N/A	5254196	N/A
Hydrocarbon Resemblance	mg/kg	COMMENT (2)	5254196	COMMENT (3)	N/A	5254196	N/A
Surrogate Recovery (%)							
Isobutylbenzene - Extractable	%	97	5254196	99		5254196	
n-Dotriacontane - Extractable	%	101 (4)	5254196	102		5254196	
Isobutylbenzene - Volatile	%	88 (5)	5262740	121 (5)		5262740	

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) Elevated TEH RDL(s) due to detected levels in the method blank.
(2) One product in fuel / lube range. Lube oil fraction.
(3) Unidentified compound(s) in lube oil range. Possible lube oil fraction.
(4) TEH samples were extracted using a flat-bed shaker instead of the accelerated mechanical shaker due to matrix incompatibility.
(5) VPH samples were extracted using a flat-bed shaker instead of the accelerated mechanical shaker due to matrix incompatibility.

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Maxxam Job #: B7O7511
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.003
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

RBCA HYDROCARBONS IN SOIL (FIELD PRES.)

Maxxam ID		FMF475	FMF476	FMF477	FMF478				FMF478			
Sampling Date		2017/10/25	2017/10/25	2017/10/26	2017/10/26				2017/10/26			
COC Number		N/A	N/A	N/A	N/A				N/A			
	UNITS	**BB-SS4**	**BB-SS5**	**BB-SS6**	**BB-SS9**	**RDL**	**QC Batch**	**MDL**	**BB-SS9 Lab-Dup**	**RDL**	**QC Batch**	**MDL**
Inorganics												
Moisture	%	11	13	9.0	3.9	1.0	5250087	0.20				
Petroleum Hydrocarbons												
Benzene	mg/kg	<0.025	<0.025	<0.025	<0.025	0.025	5252167	N/A				
Toluene	mg/kg	<0.025	<0.025	<0.025	<0.025	0.025	5252167	N/A				
Ethylbenzene	mg/kg	<0.025	<0.025	<0.025	<0.025	0.025	5252167	0.025				
Total Xylenes	mg/kg	<0.050	<0.050	<0.050	<0.050	0.050	5252167	N/A				
C6 - C10 (less BTEX)	mg/kg	<2.5	<2.5	<2.5	<2.5	2.5	5252167	N/A				
>C10-C16 Hydrocarbons	mg/kg	<10	<10	<10	<10	10	5251864	N/A	<10	10	5251864	N/A
>C16-C21 Hydrocarbons	mg/kg	<10	<10	<10	<10	10	5251864	N/A	<10	10	5251864	N/A
>C21-<C32 Hydrocarbons	mg/kg	<15	<15	<15	<15	15	5251864	N/A	<15	15	5251864	N/A
Modified TPH (Tier1)	mg/kg	<15	<15	<15	<15	15	5248701	N/A				
Reached Baseline at C32	mg/kg	NA	NA	NA	NA	N/A	5251864	N/A				
Hydrocarbon Resemblance	mg/kg	NA	NA	NA	NA	N/A	5251864	N/A				
Surrogate Recovery (%)												
Isobutylbenzene - Extractable	%	105	105	105	99		5251864		101		5251864	
n-Dotriacontane - Extractable	%	111	108	116	107 (1)		5251864		111 (1)		5251864	
Isobutylbenzene - Volatile	%	104	85	83	93		5252167					

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable
(1) TEH samples were extracted using a flat-bed shaker instead of the accelerated mechanical shaker due to matrix incompatibility.

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Maxxam Job #: B7O7511
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.003
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

RBCA HYDROCARBONS IN SOIL (FIELD PRES.)

Maxxam ID		FMF479	FMF480	FMF502	FMF503	FMF504	FMF505			
Sampling Date		2017/10/26	2017/10/26	2017/10/25	2017/10/25	2017/10/26	2017/10/26			
COC Number		N/A	N/A	N/A	N/A	N/A	N/A			
	UNITS	**BB-TP1-BS2**	**BB-TP49-BS2**	**BB-SS1**	**BB-SS3**	**BB-SS8**	**BB-SS10**	**RDL**	**QC Batch**	**MDL**
Inorganics										
Moisture	%	4.1	3.2	7.1	12	18	13	1.0	5250087	0.20
Petroleum Hydrocarbons										
Benzene	mg/kg	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	0.025	5252167	N/A
Toluene	mg/kg	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	0.025	5252167	N/A
Ethylbenzene	mg/kg	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	0.025	5252167	0.025
Total Xylenes	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	5252167	N/A
C6 - C10 (less BTEX)	mg/kg	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	2.5	5252167	N/A
>C10-C16 Hydrocarbons	mg/kg	<10	<10	<10	<10	<10	<10	10	5251864	N/A
>C16-C21 Hydrocarbons	mg/kg	<10	<10	<10	<10	<10	<10	10	5251864	N/A
>C21-<C32 Hydrocarbons	mg/kg	<15	<15	<15	<15	23	<15	15	5251864	N/A
Modified TPH (Tier1)	mg/kg	<15	<15	<15	<15	23	<15	15	5248701	N/A
Reached Baseline at C32	mg/kg	NA	NA	NA	NA	Yes	NA	N/A	5251864	N/A
Hydrocarbon Resemblance	mg/kg	NA	NA	NA	NA	COMMENT (1)	NA	N/A	5251864	N/A
Surrogate Recovery (%)										
Isobutylbenzene - Extractable	%	102	101	100	109	97	105		5251864	
n-Dotriacontane - Extractable	%	107 (2)	107	108	118	105	112		5251864	
Isobutylbenzene - Volatile	%	84	90	88	82	98	85		5252167	

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) Possible lube oil fraction.
(2) TEH samples were extracted using a flat-bed shaker instead of the accelerated mechanical shaker due to matrix incompatibility.

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Maxxam Job #: B7O7511
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.003
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

RBCA HYDROCARBONS IN SOIL (FIELD PRES.)

Maxxam ID		FMF506		FMF507		FMF508			
Sampling Date		2017/10/25		2017/10/25		2017/10/25			
COC Number		N/A		N/A		N/A			
	UNITS	**BB-SS13**	**QC Batch**	**BB-SS14**	**QC Batch**	**BB-SS15**	**RDL**	**QC Batch**	**MDL**
Inorganics									
Moisture	%	5.5	5250087	3.3	5254746	32	1.0	5249990	0.20
Petroleum Hydrocarbons									
Benzene	mg/kg	<0.025	5252167	<0.025	5254968	<0.025	0.025	5252167	N/A
Toluene	mg/kg	<0.025	5252167	<0.025	5254968	<0.025	0.025	5252167	N/A
Ethylbenzene	mg/kg	<0.025	5252167	<0.025	5254968	<0.025	0.025	5252167	0.025
Total Xylenes	mg/kg	<0.050	5252167	<0.050	5254968	<0.050	0.050	5252167	N/A
C6 - C10 (less BTEX)	mg/kg	<2.5	5252167	<2.5	5254968	<2.5	2.5	5252167	N/A
>C10-C16 Hydrocarbons	mg/kg	<10	5251864	<10	5255256	<10	10	5251864	N/A
>C16-C21 Hydrocarbons	mg/kg	<10	5251864	<10	5255256	40	10	5251864	N/A
>C21-<C32 Hydrocarbons	mg/kg	<15	5251864	<15	5255256	250	15	5251864	N/A
Modified TPH (Tier1)	mg/kg	<15	5248701	<15	5254330	290	15	5248701	N/A
Reached Baseline at C32	mg/kg	NA	5251864	NA	5255256	No	N/A	5251864	N/A
Hydrocarbon Resemblance	mg/kg	NA	5251864	NA	5255256	COMMENT (1)	N/A	5251864	N/A
Surrogate Recovery (%)									
Isobutylbenzene - Extractable	%	105	5251864	100	5255256	108		5251864	
n-Dotriacontane - Extractable	%	113	5251864	92	5255256	106		5251864	
Isobutylbenzene - Volatile	%	86	5252167	101	5254968	114		5252167	

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) Lube oil fraction.

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Maxxam Job #: B7O7511
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.003
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

RBCA HYDROCARBONS IN SOIL (FIELD PRES.)

Maxxam ID		FMF509		FMF510				FMF510			
Sampling Date		2017/10/25		2017/10/25				2017/10/25			
COC Number		N/A		N/A				N/A			
	UNITS	**BB-SS16**	**QC Batch**	**BB-SS17**	**RDL**	**QC Batch**	**MDL**	**BB-SS17 Lab-Dup**	**RDL**	**QC Batch**	**MDL**
Inorganics											
Moisture	%	18	5249990	10	1.0	5249990	0.20				
Petroleum Hydrocarbons											
Benzene	mg/kg	<0.025	5254968	<0.025	0.025	5254968	N/A				
Toluene	mg/kg	<0.025	5254968	<0.025	0.025	5254968	N/A				
Ethylbenzene	mg/kg	<0.025	5254968	<0.025	0.025	5254968	0.025				
Total Xylenes	mg/kg	<0.050	5254968	<0.050	0.050	5254968	N/A				
C6 - C10 (less BTEX)	mg/kg	<2.5	5254968	<2.5	2.5	5254968	N/A				
>C10-C16 Hydrocarbons	mg/kg	<10	5251864	<10	10	5251860	N/A	<10	10	5251860	N/A
>C16-C21 Hydrocarbons	mg/kg	<10	5251864	<10	10	5251860	N/A	<10	10	5251860	N/A
>C21-<C32 Hydrocarbons	mg/kg	21	5251864	<15	15	5251860	N/A	<15	15	5251860	N/A
Modified TPH (Tier1)	mg/kg	21	5248701	<15	15	5248870	N/A				
Reached Baseline at C32	mg/kg	Yes	5251864	NA	N/A	5251860	N/A				
Hydrocarbon Resemblance	mg/kg	COMMENT (1)	5251864	NA	N/A	5251860	N/A				
Surrogate Recovery (%)											
Isobutylbenzene - Extractable	%	102	5251864	98		5251860		97		5251860	
n-Dotriacontane - Extractable	%	107	5251864	112		5251860		117		5251860	
Isobutylbenzene - Volatile	%	93	5254968	102		5254968					

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable
(1) Possible lube oil fraction.

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Stantec Consulting Ltd
Client Project #: 121414915.200.003
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

RBCA HYDROCARBONS IN SOIL (FIELD PRES.)

Maxxam ID		FMF511		FMF512				FMF512			
Sampling Date		2017/10/25		2017/10/25				2017/10/25			
COC Number		N/A		N/A				N/A			
	UNITS	**BB-SS18**	**QC Batch**	**BB-SS19**	**RDL**	**QC Batch**	**MDL**	**BB-SS19 Lab-Dup**	**RDL**	**QC Batch**	**MDL**
Inorganics											
Moisture	%	18	5254746	13	1.0	5249990	0.20				
Petroleum Hydrocarbons											
Benzene	mg/kg	<0.025	5254968	<0.025	0.025	5254968	N/A	<0.025	0.025	5254968	N/A
Toluene	mg/kg	<0.025	5254968	<0.025	0.025	5254968	N/A	<0.025	0.025	5254968	N/A
Ethylbenzene	mg/kg	<0.025	5254968	<0.025	0.025	5254968	0.025	<0.025	0.025	5254968	0.025
Total Xylenes	mg/kg	<0.050	5254968	<0.050	0.050	5254968	N/A	<0.050	0.050	5254968	N/A
C6 - C10 (less BTEX)	mg/kg	<2.5	5254968	<2.5	2.5	5254968	N/A	<2.5	2.5	5254968	N/A
>C10-C16 Hydrocarbons	mg/kg	<10	5255256	<10	10	5251864	N/A				
>C16-C21 Hydrocarbons	mg/kg	<10	5255256	22	10	5251864	N/A				
>C21-<C32 Hydrocarbons	mg/kg	31	5255256	290	15	5251864	N/A				
Modified TPH (Tier1)	mg/kg	31	5254330	310	15	5248870	N/A				
Reached Baseline at C32	mg/kg	Yes	5255256	No	N/A	5251864	N/A				
Hydrocarbon Resemblance	mg/kg	COMMENT (1)	5255256	COMMENT (2)	N/A	5251864	N/A				
Surrogate Recovery (%)											
Isobutylbenzene - Extractable	%	99	5255256	105		5251864					
n-Dotriacontane - Extractable	%	93	5255256	109		5251864					
Isobutylbenzene - Volatile	%	102	5254968	101		5254968		101		5254968	

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable
(1) Unidentified compound(s) in lube oil range.
(2) Lube oil fraction.

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Maxxam Job #: B7O7511
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.003
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

RBCA HYDROCARBONS IN SOIL (FIELD PRES.)

Maxxam ID		FMF513		FMF514		FMF515			
Sampling Date		2017/10/25		2017/10/25		2017/10/25			
COC Number		N/A		N/A		N/A			
	UNITS	**BB-SS20**	**QC Batch**	**BB-SS21**	**QC Batch**	**BB-SS22**	**RDL**	**QC Batch**	**MDL**
Inorganics									
Moisture	%	19	5249990	15	5254746	8.9	1.0	5249990	0.20
Petroleum Hydrocarbons									
Benzene	mg/kg	<0.025	5254968	<0.025	5254968	<0.025	0.025	5254968	N/A
Toluene	mg/kg	<0.025	5254968	<0.025	5254968	<0.025	0.025	5254968	N/A
Ethylbenzene	mg/kg	<0.025	5254968	<0.025	5254968	<0.025	0.025	5254968	0.025
Total Xylenes	mg/kg	<0.050	5254968	<0.050	5254968	<0.050	0.050	5254968	N/A
C6 - C10 (less BTEX)	mg/kg	<2.5	5254968	<2.5	5254968	<2.5	2.5	5254968	N/A
>C10-C16 Hydrocarbons	mg/kg	<10	5251864	<10	5255256	<10	10	5251864	N/A
>C16-C21 Hydrocarbons	mg/kg	<10	5251864	<10	5255256	<10	10	5251864	N/A
>C21-<C32 Hydrocarbons	mg/kg	79	5251864	46	5255256	21	15	5251864	N/A
Modified TPH (Tier1)	mg/kg	79	5248870	46	5254330	21	15	5248870	N/A
Reached Baseline at C32	mg/kg	Yes	5251864	Yes	5255256	Yes	N/A	5251864	N/A
Hydrocarbon Resemblance	mg/kg	COMMENT (1)	5251864	COMMENT (2)	5255256	COMMENT (2)	N/A	5251864	N/A
Surrogate Recovery (%)									
Isobutylbenzene - Extractable	%	105	5251864	100	5255256	102		5251864	
n-Dotriacontane - Extractable	%	115	5251864	112 (3)	5255256	107		5251864	
Isobutylbenzene - Volatile	%	98	5254968	96	5254968	98		5254968	

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) Lube oil fraction.
(2) Possible lube oil fraction.
(3) TEH samples were extracted using a flat-bed shaker instead of the accelerated mechanical shaker due to matrix incompatibility.

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Report Date: 2017/11/20

Stantec Consulting Ltd
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Sampler Initials: RP

RBCA HYDROCARBONS IN SOIL (FIELD PRES.)

Maxxam ID		FMF516	FMF517		FMF518			
Sampling Date		2017/10/26	2017/10/25		2017/10/25			
COC Number		N/A	N/A		N/A			
	UNITS	**BB-SS23**	**BB-SS24**	**QC Batch**	**BB-SS25**	**RDL**	**QC Batch**	**MDL**
Inorganics								
Moisture	%	9.9	6.6	5249990	8.6	1.0	5254746	0.20
Petroleum Hydrocarbons								
Benzene	mg/kg	<0.025	<0.025	5254968	<0.025	0.025	5254968	N/A
Toluene	mg/kg	<0.025	<0.025	5254968	<0.025	0.025	5254968	N/A
Ethylbenzene	mg/kg	<0.025	<0.025	5254968	<0.025	0.025	5254968	0.025
Total Xylenes	mg/kg	<0.050	<0.050	5254968	<0.050	0.050	5254968	N/A
C6 - C10 (less BTEX)	mg/kg	<2.5	<2.5	5254968	<2.5	2.5	5254968	N/A
>C10-C16 Hydrocarbons	mg/kg	<10	2100	5251864	56	10	5255256	N/A
>C16-C21 Hydrocarbons	mg/kg	<10	660	5251864	260	10	5255256	N/A
>C21-<C32 Hydrocarbons	mg/kg	24	380	5251864	4300	15	5255256	N/A
Modified TPH (Tier1)	mg/kg	24	3200	5248870	4600	15	5254330	N/A
Reached Baseline at C32	mg/kg	Yes	No	5251864	No	N/A	5255256	N/A
Hydrocarbon Resemblance	mg/kg	COMMENT (1)	COMMENT (2)	5251864	COMMENT (3)	N/A	5255256	N/A
Surrogate Recovery (%)								
Isobutylbenzene - Extractable	%	102	113	5251864	98		5255256	
n-Dotriacontane - Extractable	%	107	112	5251864	32 (4)		5255256	
Isobutylbenzene - Volatile	%	96	60	5254968	81		5254968	

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) Possible lube oil fraction.
(2) Weathered fuel oil fraction. Lube oil fraction.
(3) Lube oil fraction.
(4) TEH samples were extracted using a flat-bed shaker instead of the accelerated mechanical shaker due to matrix incompatibility. TEH surrogate(s) not within acceptance limits due to sample dilution / product interference.

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Sampler Initials: RP

RBCA HYDROCARBONS IN SOIL (FIELD PRES.)

Maxxam ID		FMF519			FMF520				FMF520			
Sampling Date		2017/10/25			2017/10/25				2017/10/25			
COC Number		N/A			N/A				N/A			
	UNITS	**BB-SS26**	**RDL**	**QC Batch**	**BB-SS27**	**RDL**	**QC Batch**	**MDL**	**BB-SS27 Lab-Dup**	**RDL**	**QC Batch**	**MDL**
Inorganics												
Moisture	%	5.7	1.0	5249990	17	1.0	5250300	0.20	15	1.0	5250300	0.20
Petroleum Hydrocarbons												
Benzene	mg/kg	<0.025	0.025	5254968	<0.025	0.025	5254968	N/A				
Toluene	mg/kg	<0.025	0.025	5254968	<0.025	0.025	5254968	N/A				
Ethylbenzene	mg/kg	<0.025	0.025	5254968	<0.025	0.025	5254968	0.025				
Total Xylenes	mg/kg	<0.050	0.050	5254968	<0.050	0.050	5254968	N/A				
C6 - C10 (less BTEX)	mg/kg	<2.5	2.5	5254968	<2.5	2.5	5254968	N/A				
>C10-C16 Hydrocarbons	mg/kg	42	10	5251864	6300	50	5251864	N/A				
>C16-C21 Hydrocarbons	mg/kg	38	10	5251864	1200	50	5251864	N/A				
>C21-<C32 Hydrocarbons	mg/kg	60	15	5251864	300	75	5251864	N/A				
Modified TPH (Tier1)	mg/kg	140	15	5248870	7800	75	5248870	N/A				
Reached Baseline at C32	mg/kg	Yes	N/A	5251864	Yes	N/A	5251864	N/A				
Hydrocarbon Resemblance	mg/kg	COMMENT (1)	N/A	5251864	COMMENT (1)	N/A	5251864	N/A				
Surrogate Recovery (%)												
Isobutylbenzene - Extractable	%	102		5251864	113		5251864					
n-Dotriacontane - Extractable	%	118		5251864	106 (2)		5251864					
Isobutylbenzene - Volatile	%	91		5254968	64		5254968					

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable
(1) Weathered fuel oil fraction. Lube oil fraction.
(2) Elevated TEH RDL(s) due to sample dilution.

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RBCA HYDROCARBONS IN SOIL (FIELD PRES.)

Maxxam ID		FMF521	FMF522	FMF523	FMF524	FMF525			
Sampling Date		2017/10/25	2017/10/25	2017/10/25	2017/10/25	2017/10/25			
COC Number		N/A	N/A	N/A	N/A	N/A			
	UNITS	**BB-SS28**	**BB-SS29**	**BB-SS30**	**BB-SS31**	**BB-SS32**	**RDL**	**QC Batch**	**MDL**
Inorganics									
Moisture	%	6.7	5.9	6.0	13	12	1.0	5250300	0.20
Petroleum Hydrocarbons									
Benzene	mg/kg	<0.025	<0.025	<0.025	<0.025	<0.025	0.025	5254968	N/A
Toluene	mg/kg	<0.025	<0.025	<0.025	<0.025	<0.025	0.025	5254968	N/A
Ethylbenzene	mg/kg	<0.025	<0.025	<0.025	<0.025	<0.025	0.025	5254968	0.025
Total Xylenes	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	5254968	N/A
C6 - C10 (less BTEX)	mg/kg	<2.5	3.7	<2.5	<2.5	<2.5	2.5	5254968	N/A
>C10-C16 Hydrocarbons	mg/kg	33	4300	<10	<10	<10	10	5251860	N/A
>C16-C21 Hydrocarbons	mg/kg	18	1700	<10	<10	<10	10	5251860	N/A
>C21-<C32 Hydrocarbons	mg/kg	<15	120	<15	<15	50	15	5251860	N/A
Modified TPH (Tier1)	mg/kg	51	6100	<15	<15	50	15	5248870	N/A
Reached Baseline at C32	mg/kg	Yes	Yes	NA	NA	Yes	N/A	5251860	N/A
Hydrocarbon Resemblance	mg/kg	COMMENT (1)	COMMENT (1)	NA	NA	COMMENT (2)	N/A	5251860	N/A
Surrogate Recovery (%)									
Isobutylbenzene - Extractable	%	101	98	108	97	96		5251860	
n-Dotriacontane - Extractable	%	120	124	129	122 (3)	128		5251860	
Isobutylbenzene - Volatile	%	95	43 (4)	95	101	92		5254968	

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) Fuel oil fraction.
(2) Lube oil fraction.
(3) TEH samples were extracted using a flat-bed shaker instead of the accelerated mechanical shaker due to matrix incompatibility.
(4) Surrogate recovery not within acceptance limits due to matrix/co-extractive interference.

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Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

RBCA HYDROCARBONS IN SOIL (FIELD PRES.)

Maxxam ID		FMF526		FMF527		FMF528	FMF529			
Sampling Date		2017/10/25		2017/10/25		2017/10/25	2017/10/25			
COC Number		N/A		N/A		N/A	N/A			
	UNITS	**BB-SS33**	**QC Batch**	**BB-SS34**	**QC Batch**	**BB-SS35**	**BB-SS36**	**RDL**	**QC Batch**	**MDL**
Inorganics										
Moisture	%	7.4	5250300	15	5254746	9.8	13	1.0	5250300	0.20
Petroleum Hydrocarbons										
Benzene	mg/kg	<0.025	5254968	<0.025	5254968	<0.025	<0.025	0.025	5257383	N/A
Toluene	mg/kg	<0.025	5254968	<0.025	5254968	<0.025	<0.025	0.025	5257383	N/A
Ethylbenzene	mg/kg	<0.025	5254968	<0.025	5254968	<0.025	<0.025	0.025	5257383	0.025
Total Xylenes	mg/kg	<0.050	5254968	<0.050	5254968	<0.050	<0.050	0.050	5257383	N/A
C6 - C10 (less BTEX)	mg/kg	12	5254968	<2.5	5254968	<2.5	<2.5	2.5	5257383	N/A
>C10-C16 Hydrocarbons	mg/kg	4100	5251860	<10	5255256	<10	<10	10	5251860	N/A
>C16-C21 Hydrocarbons	mg/kg	210	5251860	<10	5255256	<10	<10	10	5251860	N/A
>C21-<C32 Hydrocarbons	mg/kg	23	5251860	<15	5255256	<15	<15	15	5251860	N/A
Modified TPH (Tier1)	mg/kg	4300	5248870	<15	5254330	<15	<15	15	5248870	N/A
Reached Baseline at C32	mg/kg	Yes	5251860	NA	5255256	NA	NA	N/A	5251860	N/A
Hydrocarbon Resemblance	mg/kg	COMMENT (1)	5251860	NA	5255256	NA	NA	N/A	5251860	N/A
Surrogate Recovery (%)										
Isobutylbenzene - Extractable	%	96	5251860	100	5255256	97	97		5251860	
n-Dotriacontane - Extractable	%	120	5251860	93 (2)	5255256	117	122		5251860	
Isobutylbenzene - Volatile	%	42 (3)	5254968	99	5254968	100	95		5257383	

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) Weathered fuel oil fraction.
(2) TEH samples were extracted using a flat-bed shaker instead of the accelerated mechanical shaker due to matrix incompatibility.
(3) Surrogate recovery not within acceptance limits due to matrix/co-extractive interference.

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RBCA HYDROCARBONS IN SOIL (FIELD PRES.)

Maxxam ID		FMF530		FMF532				FMF532			
Sampling Date		2017/10/25		2017/10/25				2017/10/25			
COC Number		N/A		N/A				N/A			
	UNITS	**BB-SS37**	**QC Batch**	**BB-SS40**	**RDL**	**QC Batch**	**MDL**	**BB-SS40 Lab-Dup**	**RDL**	**QC Batch**	**MDL**
Inorganics											
Moisture	%	12	5250300	10	1.0	5250284	0.20				
Petroleum Hydrocarbons											
Benzene	mg/kg	<0.025	5257383	<0.025	0.025	5257383	N/A	<0.025	0.025	5257383	N/A
Toluene	mg/kg	<0.025	5257383	<0.025	0.025	5257383	N/A	<0.025	0.025	5257383	N/A
Ethylbenzene	mg/kg	<0.025	5257383	<0.025	0.025	5257383	0.025	<0.025	0.025	5257383	0.025
Total Xylenes	mg/kg	<0.050	5257383	<0.050	0.050	5257383	N/A	<0.050	0.050	5257383	N/A
C6 - C10 (less BTEX)	mg/kg	<2.5	5257383	52	2.5	5257383	N/A	65	2.5	5257383	N/A
>C10-C16 Hydrocarbons	mg/kg	<10	5251860	1100	10	5251860	N/A				
>C16-C21 Hydrocarbons	mg/kg	13	5251860	74	10	5251860	N/A				
>C21-<C32 Hydrocarbons	mg/kg	84	5251860	18	15	5251860	N/A				
Modified TPH (Tier1)	mg/kg	98	5248870	1300	15	5248870	N/A				
Reached Baseline at C32	mg/kg	Yes	5251860	Yes	N/A	5251860	N/A				
Hydrocarbon Resemblance	mg/kg	COMMENT (1)	5251860	COMMENT (2)	N/A	5251860	N/A				
Surrogate Recovery (%)											
Isobutylbenzene - Extractable	%	98	5251860	93		5251860					
n-Dotriacontane - Extractable	%	122	5251860	123 (3)		5251860					
Isobutylbenzene - Volatile	%	92	5257383	61		5257383		61		5257383	

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable
(1) One product in fuel / lube range. Lube oil fraction.
(2) Fuel oil fraction.
(3) TEH samples were extracted using a flat-bed shaker instead of the accelerated mechanical shaker due to matrix incompatibility.

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RBCA HYDROCARBONS IN SOIL (FIELD PRES.)

Maxxam ID		FMF535	FMF536		FMF537			
Sampling Date		2017/10/26	2017/10/26		2017/10/26			
COC Number		N/A	N/A		N/A			
	UNITS	**BB-SS43**	**BB-SS44**	**QC Batch**	**BB-SS45**	**RDL**	**QC Batch**	**MDL**
Inorganics								
Moisture	%	17	24	5250284	25	1.0	5254746	0.20
Petroleum Hydrocarbons								
Benzene	mg/kg	<0.025	<0.025	5257383	<0.025	0.025	5257383	N/A
Toluene	mg/kg	<0.025	<0.025	5257383	<0.025	0.025	5257383	N/A
Ethylbenzene	mg/kg	<0.025	<0.025	5257383	<0.025	0.025	5257383	0.025
Total Xylenes	mg/kg	<0.050	<0.050	5257383	<0.050	0.050	5257383	N/A
C6 - C10 (less BTEX)	mg/kg	<2.5	<2.5	5257383	<2.5	2.5	5257383	N/A
>C10-C16 Hydrocarbons	mg/kg	<10	<10	5251860	<10	10	5255256	N/A
>C16-C21 Hydrocarbons	mg/kg	<10	<10	5251860	36	10	5255256	N/A
>C21-<C32 Hydrocarbons	mg/kg	<15	38	5251860	580	15	5255256	N/A
Modified TPH (Tier1)	mg/kg	<15	38	5248870	620	15	5254330	N/A
Reached Baseline at C32	mg/kg	NA	Yes	5251860	No	N/A	5255256	N/A
Hydrocarbon Resemblance	mg/kg	NA	COMMENT (1)	5251860	COMMENT (2)	N/A	5255256	N/A
Surrogate Recovery (%)								
Isobutylbenzene - Extractable	%	96	94	5251860	99		5255256	
n-Dotriacontane - Extractable	%	121	126	5251860	105		5255256	
Isobutylbenzene - Volatile	%	90	100	5257383	89		5257383	

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) Unidentified compound(s) in lube oil range. Possible lube oil fraction.
(2) Lube oil fraction.

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RBCA HYDROCARBONS IN SOIL (FIELD PRES.)

Maxxam ID		FMF538		FMF539	FMF650	FMF652			
Sampling Date		2017/10/26		2017/10/26	2017/10/26	2017/10/25			
COC Number		N/A		N/A	N/A	N/A			
	UNITS	**BB-SS46**	**RDL**	**BB-SS47**	**BB-SS48**	**BB-TP3-BS2**	**RDL**	**QC Batch**	**MDL**
Inorganics									
Moisture	%	15	1.0	20	7.1	7.0	1.0	5250284	0.20
Petroleum Hydrocarbons									
Benzene	mg/kg	<0.025	0.025	<0.025	<0.025	<0.025	0.025	5257383	N/A
Toluene	mg/kg	<0.025	0.025	<0.025	0.035	<0.025	0.025	5257383	N/A
Ethylbenzene	mg/kg	<0.025	0.025	<0.025	<0.025	<0.025	0.025	5257383	0.025
Total Xylenes	mg/kg	<0.050	0.050	<0.050	0.10	<0.050	0.050	5257383	N/A
C6 - C10 (less BTEX)	mg/kg	<2.5	2.5	<2.5	3.4	<2.5	2.5	5257383	N/A
>C10-C16 Hydrocarbons	mg/kg	790	200	<10	150	<10	10	5251860	N/A
>C16-C21 Hydrocarbons	mg/kg	2100	200	<10	77	<10	10	5251860	N/A
>C21-<C32 Hydrocarbons	mg/kg	28000	300	45	20	<15	15	5251860	N/A
Modified TPH (Tier1)	mg/kg	31000	300	45	250	<15	15	5248870	N/A
Reached Baseline at C32	mg/kg	No	N/A	Yes	Yes	NA	N/A	5251860	N/A
Hydrocarbon Resemblance	mg/kg	COMMENT (1)	N/A	COMMENT (2)	COMMENT (3)	NA	N/A	5251860	N/A
Surrogate Recovery (%)									
Isobutylbenzene - Extractable	%	94		98	98	102		5251860	
n-Dotriacontane - Extractable	%	201 (4)		126	122	125		5251860	
Isobutylbenzene - Volatile	%	46 (5)		96	80	79		5257383	

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) One product in fuel oil range. Lube oil fraction.
(2) Unidentified compound(s) in lube oil range. Possible lube oil fraction.
(3) Weathered fuel oil fraction.
(4) Elevated TEH RDL(s) due to sample dilution. TEH surrogate(s) not within acceptance limits due to sample dilution / product interference.
(5) Surrogate recovery not within acceptance limits due to matrix/co-extractive interference.

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Maxxam Job #: B7O7511
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.003
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

RBCA HYDROCARBONS IN SOIL (FIELD PRES.)

Maxxam ID		FMF652				FMF654	FMF656	FMF658			
Sampling Date		2017/10/25				2017/10/25	2017/10/25	2017/10/25			
COC Number		N/A				N/A	N/A	N/A			
	UNITS	**BB-TP3-BS2 Lab-Dup**	**RDL**	**QC Batch**	**MDL**	**BB-TP4-BS2**	**BB-TP5-BS2**	**BB-TP6-BS2**	**RDL**	**QC Batch**	**MDL**
Inorganics											
Moisture	%	6.9	1.0	5250284	0.20	3.9	15	8.0	1.0	5250284	0.20
Petroleum Hydrocarbons											
Benzene	mg/kg					<0.025	<0.025	<0.025	0.025	5257383	N/A
Toluene	mg/kg					<0.025	<0.025	<0.025	0.025	5257383	N/A
Ethylbenzene	mg/kg					<0.025	<0.025	<0.025	0.025	5257383	0.025
Total Xylenes	mg/kg					<0.050	<0.050	<0.050	0.050	5257383	N/A
C6 - C10 (less BTEX)	mg/kg					<2.5	<2.5	<2.5	2.5	5257383	N/A
>C10-C16 Hydrocarbons	mg/kg					<10	<10	<10	10	5251860	N/A
>C16-C21 Hydrocarbons	mg/kg					<10	<10	<10	10	5251860	N/A
>C21-<C32 Hydrocarbons	mg/kg					<15	<15	<15	15	5251860	N/A
Modified TPH (Tier1)	mg/kg					<15	<15	<15	15	5248870	N/A
Reached Baseline at C32	mg/kg					NA	NA	NA	N/A	5251860	N/A
Hydrocarbon Resemblance	mg/kg					NA	NA	NA	N/A	5251860	N/A
Surrogate Recovery (%)											
Isobutylbenzene - Extractable	%					99	103	105		5251860	
n-Dotriacontane - Extractable	%					121	101	129 (1)		5251860	
Isobutylbenzene - Volatile	%					76	94	80		5257383	

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable
(1) TEH samples were extracted using a flat-bed shaker instead of the accelerated mechanical shaker due to matrix incompatibility.

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RBCA HYDROCARBONS IN SOIL (FIELD PRES.)

Maxxam ID		FMF659	FMF660		FMF662	FMF664	FMF665			
Sampling Date		2017/10/25	2017/10/25		2017/10/25	2017/10/25	2017/10/25			
COC Number		N/A	N/A		N/A	N/A	N/A			
	UNITS	**BB-TP7-BS1**	**BB-TP7-BS2**	**QC Batch**	**BB-TP8-BS2**	**BB-TP9-BS2**	**BB-TP10-BS2**	**RDL**	**QC Batch**	**MDL**
Inorganics										
Moisture	%	11	9.1	5250284	5.3	11	2.7	1.0	5250300	0.20
Petroleum Hydrocarbons										
Benzene	mg/kg	<0.025	<0.025	5257383	<0.025	<0.025	<0.025	0.025	5257394	N/A
Toluene	mg/kg	<0.025	<0.025	5257383	<0.025	<0.025	<0.025	0.025	5257394	N/A
Ethylbenzene	mg/kg	<0.025	<0.025	5257383	<0.025	<0.025	<0.025	0.025	5257394	0.025
Total Xylenes	mg/kg	<0.050	<0.050	5257383	<0.050	<0.050	<0.050	0.050	5257394	N/A
C6 - C10 (less BTEX)	mg/kg	<2.5	<2.5	5257383	<2.5	<2.5	<2.5	2.5	5257394	N/A
>C10-C16 Hydrocarbons	mg/kg	<10	<10	5251735	<10	<10	<10	10	5251735	N/A
>C16-C21 Hydrocarbons	mg/kg	<10	<10	5251735	20	<10	<10	10	5251735	N/A
>C21-<C32 Hydrocarbons	mg/kg	31	<15	5251735	120	<15	<15	15	5251735	N/A
Modified TPH (Tier1)	mg/kg	31	<15	5248870	140	<15	<15	15	5248870	N/A
Reached Baseline at C32	mg/kg	Yes	NA	5251735	Yes	NA	NA	N/A	5251735	N/A
Hydrocarbon Resemblance	mg/kg	COMMENT (1)	NA	5251735	COMMENT (2)	NA	NA	N/A	5251735	N/A
Surrogate Recovery (%)										
Isobutylbenzene - Extractable	%	105	105	5251735	100	102	100		5251735	
n-Dotriacontane - Extractable	%	108	106	5251735	97	105	105		5251735	
Isobutylbenzene - Volatile	%	76	85	5257383	110	111	99		5257394	

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) Unidentified compound(s) in lube oil range. Possible lube oil fraction.
(2) One product in fuel oil range. Lube oil fraction.

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RBCA HYDROCARBONS IN SOIL (FIELD PRES.)

Maxxam ID		FMF666	FMF667	FMF675	FMF677		FMF679			
Sampling Date		2017/10/25	2017/10/25	2017/10/25	2017/10/25		2017/10/25			
COC Number		N/A	N/A	N/A	N/A		N/A			
	UNITS	**BB-TP11-BS2**	**BB-TP12-BS1**	**BB-TP12-BS2**	**BB-TP13-BS2**	**QC Batch**	**BB-TP14-BS2**	**RDL**	**QC Batch**	**MDL**
Inorganics										
Moisture	%	4.3	12	3.0	3.8	5250300	15	1.0	5250749	0.20
Petroleum Hydrocarbons										
Benzene	mg/kg	<0.025	<0.025	<0.025	<0.025	5257394	<0.025	0.025	5257394	N/A
Toluene	mg/kg	<0.025	<0.025	<0.025	<0.025	5257394	<0.025	0.025	5257394	N/A
Ethylbenzene	mg/kg	<0.025	<0.025	<0.025	<0.025	5257394	<0.025	0.025	5257394	0.025
Total Xylenes	mg/kg	<0.050	<0.050	<0.050	<0.050	5257394	<0.050	0.050	5257394	N/A
C6 - C10 (less BTEX)	mg/kg	<2.5	<2.5	<2.5	<2.5	5257394	<2.5	2.5	5257394	N/A
>C10-C16 Hydrocarbons	mg/kg	<10	<10	<10	<10	5251735	<10	10	5251735	N/A
>C16-C21 Hydrocarbons	mg/kg	<10	<10	<10	<10	5251735	<10	10	5251735	N/A
>C21-<C32 Hydrocarbons	mg/kg	<15	<15	<15	<15	5251735	27	15	5251735	N/A
Modified TPH (Tier1)	mg/kg	<15	<15	<15	<15	5248870	27	15	5248870	N/A
Reached Baseline at C32	mg/kg	NA	NA	NA	NA	5251735	Yes	N/A	5251735	N/A
Hydrocarbon Resemblance	mg/kg	NA	NA	NA	NA	5251735	COMMENT (1)	N/A	5251735	N/A
Surrogate Recovery (%)										
Isobutylbenzene - Extractable	%	112	98	99	112	5251735	101		5251735	
n-Dotriacontane - Extractable	%	116	103	105	118 (2)	5251735	104		5251735	
Isobutylbenzene - Volatile	%	100	106	97	83	5257394	88		5257394	

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) Unidentified compound(s) in lube oil range.
(2) TEH samples were extracted using a flat-bed shaker instead of the accelerated mechanical shaker due to matrix incompatibility.

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RBCA HYDROCARBONS IN SOIL (FIELD PRES.)

Maxxam ID		FMF679				FMF681	FMF683			
Sampling Date		2017/10/25				2017/10/25	2017/10/25			
COC Number		N/A				N/A	N/A			
	UNITS	**BB-TP14-BS2 Lab-Dup**	**RDL**	**QC Batch**	**MDL**	**BB-TP15-BS2**	**BB-TP16-BS2**	**RDL**	**QC Batch**	**MDL**
Inorganics										
Moisture	%					9.5	7.0	1.0	5250749	0.20
Petroleum Hydrocarbons										
Benzene	mg/kg	<0.025	0.025	5257394	N/A	<0.025	<0.025	0.025	5257394	N/A
Toluene	mg/kg	<0.025	0.025	5257394	N/A	<0.025	<0.025	0.025	5257394	N/A
Ethylbenzene	mg/kg	<0.025	0.025	5257394	0.025	<0.025	<0.025	0.025	5257394	0.025
Total Xylenes	mg/kg	<0.050	0.050	5257394	N/A	<0.050	<0.050	0.050	5257394	N/A
C6 - C10 (less BTEX)	mg/kg	<2.5	2.5	5257394	N/A	<2.5	130	2.5	5257394	N/A
>C10-C16 Hydrocarbons	mg/kg					<10	1800	10	5251735	N/A
>C16-C21 Hydrocarbons	mg/kg					<10	430	10	5251735	N/A
>C21-<C32 Hydrocarbons	mg/kg					27	<15	15	5251735	N/A
Modified TPH (Tier1)	mg/kg					27	2300	15	5248870	N/A
Reached Baseline at C32	mg/kg					Yes	Yes	N/A	5251735	N/A
Hydrocarbon Resemblance	mg/kg					COMMENT (1)	COMMENT (2)	N/A	5251735	N/A
Surrogate Recovery (%)										
Isobutylbenzene - Extractable	%					114	89		5251735	
n-Dotriacontane - Extractable	%					116	107		5251735	
Isobutylbenzene - Volatile	%	111		5257394		104	71		5257394	

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable
(1) Unidentified compound(s) in lube oil range.
(2) Weathered fuel oil fraction.

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Maxxam Job #: B7O7511
Report Date: 2017/11/20

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RBCA HYDROCARBONS IN SOIL (FIELD PRES.)

Maxxam ID		FMF685		FMF687	FMF689			
Sampling Date		2017/10/25		2017/10/25	2017/10/25			
COC Number		N/A		N/A	N/A			
	UNITS	**BB-TP17-BS2**	**QC Batch**	**BB-TP18-BS2**	**BB-TP19-BS2**	**RDL**	**QC Batch**	**MDL**
Inorganics								
Moisture	%	9.2	5250749	12	6.3	1.0	5250749	0.20
Petroleum Hydrocarbons								
Benzene	mg/kg	<0.025	5257394	<0.025	<0.025	0.025	5257394	N/A
Toluene	mg/kg	<0.025	5257394	<0.025	<0.025	0.025	5257394	N/A
Ethylbenzene	mg/kg	<0.025	5257394	<0.025	<0.025	0.025	5257394	0.025
Total Xylenes	mg/kg	<0.050	5257394	<0.050	<0.050	0.050	5257394	N/A
C6 - C10 (less BTEX)	mg/kg	130	5257394	<2.5	3.1	2.5	5257394	N/A
>C10-C16 Hydrocarbons	mg/kg	4600	5251735	67	240	10	5251735	N/A
>C16-C21 Hydrocarbons	mg/kg	1300	5251735	36	200	10	5251735	N/A
>C21-<C32 Hydrocarbons	mg/kg	1600	5251735	44	1200	15	5251735	N/A
Modified TPH (Tier1)	mg/kg	7600	5248870	150	1600	15	5248871	N/A
Reached Baseline at C32	mg/kg	Yes	5251735	Yes	No	N/A	5251735	N/A
Hydrocarbon Resemblance	mg/kg	COMMENT (1)	5251735	COMMENT (1)	COMMENT (1)	N/A	5251735	N/A
Surrogate Recovery (%)								
Isobutylbenzene - Extractable	%	105	5251735	102	117		5251735	
n-Dotriacontane - Extractable	%	126	5251735	103	127		5251735	
Isobutylbenzene - Volatile	%	64	5257394	109	93		5257394	

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) Weathered fuel oil fraction. Lube oil fraction.

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RBCA HYDROCARBONS IN SOIL (FIELD PRES.)

Maxxam ID		FMF691	FMF693	FMF709	FMF711			
Sampling Date		2017/10/25	2017/10/25	2017/10/25	2017/10/25			
COC Number		N/A	N/A	N/A	N/A			
	UNITS	**BB-TP20-BS2**	**BB-TP21-BS2**	**BB-TP22-BS2**	**BB-TP23-BS2**	**RDL**	**QC Batch**	**MDL**
Inorganics								
Moisture	%	7.4	2.5	5.8	5.2	1.0	5250749	0.20
Petroleum Hydrocarbons								
Benzene	mg/kg	<0.025	<0.025	<0.025	<0.025	0.025	5257394	N/A
Toluene	mg/kg	<0.025	<0.025	<0.025	<0.025	0.025	5257394	N/A
Ethylbenzene	mg/kg	<0.025	<0.025	<0.025	<0.025	0.025	5257394	0.025
Total Xylenes	mg/kg	<0.050	<0.050	<0.050	<0.050	0.050	5257394	N/A
C6 - C10 (less BTEX)	mg/kg	20	<2.5	27	3.9	2.5	5257394	N/A
>C10-C16 Hydrocarbons	mg/kg	2900	<10	1200	1400	10	5252171	N/A
>C16-C21 Hydrocarbons	mg/kg	2400	<10	190	140	10	5252171	N/A
>C21-<C32 Hydrocarbons	mg/kg	610	<15	40	<15	15	5252171	N/A
Modified TPH (Tier1)	mg/kg	6000	<15	1400	1500	15	5248871	N/A
Reached Baseline at C32	mg/kg	Yes	NA	Yes	Yes	N/A	5252171	N/A
Hydrocarbon Resemblance	mg/kg	COMMENT (1)	NA	COMMENT (2)	COMMENT (2)	N/A	5252171	N/A
Surrogate Recovery (%)								
Isobutylbenzene - Extractable	%	100	106	100	99		5252171	
n-Dotriacontane - Extractable	%	113	111	102 (3)	110 (3)		5252171	
Isobutylbenzene - Volatile	%	50 (4)	91	101	70		5257394	

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) Weathered fuel oil fraction. Lube oil fraction.
(2) Weathered fuel oil fraction.
(3) TEH samples were extracted using a flat-bed shaker instead of the accelerated mechanical shaker due to matrix incompatibility.
(4) Surrogate recovery not within acceptance limits due to matrix/co-extractive interference.

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RBCA HYDROCARBONS IN SOIL (FIELD PRES.)

Maxxam ID		FMF713				FMF713			
Sampling Date		2017/10/25				2017/10/25			
COC Number		N/A				N/A			
	UNITS	**BB-TP24-BS2**	**RDL**	**QC Batch**	**MDL**	**BB-TP24-BS2 Lab-Dup**	**RDL**	**QC Batch**	**MDL**
Inorganics									
Moisture	%	7.2	1.0	5250793	0.20	7.4	1.0	5250793	0.20
Petroleum Hydrocarbons									
Benzene	mg/kg	<0.025	0.025	5257394	N/A				
Toluene	mg/kg	<0.025	0.025	5257394	N/A				
Ethylbenzene	mg/kg	<0.025	0.025	5257394	0.025				
Total Xylenes	mg/kg	<0.050	0.050	5257394	N/A				
C6 - C10 (less BTEX)	mg/kg	54	2.5	5257394	N/A				
>C10-C16 Hydrocarbons	mg/kg	3400	10	5252171	N/A				
>C16-C21 Hydrocarbons	mg/kg	370	10	5252171	N/A				
>C21-<C32 Hydrocarbons	mg/kg	58	15	5252171	N/A				
Modified TPH (Tier1)	mg/kg	3900	15	5248871	N/A				
Reached Baseline at C32	mg/kg	Yes	N/A	5252171	N/A				
Hydrocarbon Resemblance	mg/kg	COMMENT (1)	N/A	5252171	N/A				
Surrogate Recovery (%)									
Isobutylbenzene - Extractable	%	102		5252171					
n-Dotriacontane - Extractable	%	106		5252171					
Isobutylbenzene - Volatile	%	55 (2)		5257394					

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable
(1) Weathered fuel oil fraction.
(2) Surrogate recovery not within acceptance limits due to matrix/co-extractive interference.

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RBCA HYDROCARBONS IN SOIL (FIELD PRES.)

Maxxam ID		FMF715				FMF715			
Sampling Date		2017/10/25				2017/10/25			
COC Number		N/A				N/A			
	UNITS	**BB-TP25-BS2**	**RDL**	**QC Batch**	**MDL**	**BB-TP25-BS2 Lab-Dup**	**RDL**	**QC Batch**	**MDL**
Inorganics									
Moisture	%	9.5	1.0	5250793	0.20				
Petroleum Hydrocarbons									
Benzene	mg/kg	<0.025	0.025	5257394					
Toluene	mg/kg	<0.025	0.025	5257394	N/A				
Ethylbenzene	mg/kg	<0.025	0.025	5257394	0.025				
Total Xylenes	mg/kg	<0.050	0.050	5257394	N/A				
C6 - C10 (less BTEX)	mg/kg	6.1	2.5	5257394	N/A				
>C10-C16 Hydrocarbons	mg/kg	2700	10	5251735	N/A	3200	10	5251735	N/A
>C16-C21 Hydrocarbons	mg/kg	470	10	5251735	N/A	570	10	5251735	N/A
>C21-<C32 Hydrocarbons	mg/kg	46	15	5251735	N/A	58	15	5251735	N/A
Modified TPH (Tier1)	mg/kg	3200	15	5248871	N/A				
Reached Baseline at C32	mg/kg	Yes	N/A	5251735	N/A				
Hydrocarbon Resemblance	mg/kg	COMMENT (1)	N/A	5251735	N/A				
Surrogate Recovery (%)									
Isobutylbenzene - Extractable	%	123		5251735		105		5251735	
n-Dotriacontane - Extractable	%	113		5251735		111		5251735	
Isobutylbenzene - Volatile	%	62		5257394					

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable
(1) Weathered fuel oil fraction.

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Maxxam Job #: B7O7511
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.003
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

RBCA HYDROCARBONS IN SOIL (FIELD PRES.)

Maxxam ID		FMF717		FMF724		FMF726		FMF728			
Sampling Date		2017/10/25		2017/10/25		2017/10/25		2017/10/25			
COC Number		N/A		N/A		N/A		N/A			
	UNITS	**BB-TP26-BS2**	**QC Batch**	**BB-TP27-BS2**	**RDL**	**BB-TP28-BS2**	**RDL**	**BB-TP30-BS2**	**RDL**	**QC Batch**	**MDL**
Inorganics											
Moisture	%	9.5	5250793	7.2	1.0	5.7	1.0	5.0	1.0	5250793	0.20
Petroleum Hydrocarbons											
Benzene	mg/kg	<0.025	5257394	<0.025	0.025	<0.025	0.025	<0.025	0.025	5259325	N/A
Toluene	mg/kg	<0.025	5257394	<0.025	0.025	<0.025	0.025	<0.025	0.025	5259325	N/A
Ethylbenzene	mg/kg	<0.025	5257394	<0.025	0.025	<0.025	0.025	<0.025	0.025	5259325	0.025
Total Xylenes	mg/kg	<0.050	5257394	<0.050	0.050	<0.050	0.050	<0.050	0.050	5259325	N/A
C6 - C10 (less BTEX)	mg/kg	<2.5	5257394	<2.5	2.5	89	2.5	<2.5	2.5	5259325	N/A
>C10-C16 Hydrocarbons	mg/kg	<10	5252171	12	10	5600	50	<10	10	5252171	N/A
>C16-C21 Hydrocarbons	mg/kg	<10	5252171	11	10	620	50	<10	10	5252171	N/A
>C21-<C32 Hydrocarbons	mg/kg	<15	5252171	46	15	97	75	<15	15	5252171	N/A
Modified TPH (Tier1)	mg/kg	<15	5248871	70	15	6400	75	<15	15	5248871	N/A
Reached Baseline at C32	mg/kg	NA	5252171	Yes	N/A	Yes	N/A	NA	N/A	5252171	N/A
Hydrocarbon Resemblance	mg/kg	NA	5252171	COMMENT (1)	N/A	COMMENT (2)	N/A	NA	N/A	5252171	N/A
Surrogate Recovery (%)											
Isobutylbenzene - Extractable	%	102	5252171	102		105		102		5252171	
n-Dotriacontane - Extractable	%	107 (3)	5252171	103		108 (4)		108		5252171	
Isobutylbenzene - Volatile	%	99	5257394	108		24 (5)		103		5259325	

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) Weathered fuel oil fraction. Lube oil fraction.
(2) Weathered fuel oil fraction.
(3) TEH samples were extracted using a flat-bed shaker instead of the accelerated mechanical shaker due to matrix incompatibility.
(4) Elevated TEH RDL(s) due to sample dilution.
(5) Surrogate recovery not within acceptance limits due to matrix/co-extractive interference.

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RBCA HYDROCARBONS IN SOIL (FIELD PRES.)

Maxxam ID		FMF730		FMF753				FMF755			
Sampling Date		2017/10/25		2017/10/25				2017/10/25			
COC Number		N/A		N/A				N/A			
	UNITS	**BB-TP31-BS2**	**RDL**	**BB-TP32-BS2**	**RDL**	**QC Batch**	**MDL**	**BB-TP33-BS2**	**RDL**	**QC Batch**	**MDL**
Inorganics											
Moisture	%	15	1.0	7.7	1.0	5250793	0.20				
Petroleum Hydrocarbons											
Benzene	mg/kg	<0.025	0.025	<0.025	0.025	5259325	N/A	<0.025	0.025	5259325	N/A
Toluene	mg/kg	<0.025	0.025	<0.025	0.025	5259325	N/A	<0.025	0.025	5259325	N/A
Ethylbenzene	mg/kg	<0.025	0.025	<0.025	0.025	5259325	0.025	<0.025	0.025	5259325	0.025
Total Xylenes	mg/kg	0.057	0.050	<0.050	0.050	5259325	N/A	<0.050	0.050	5259325	N/A
C6 - C10 (less BTEX)	mg/kg	66	2.5	<2.5	2.5	5259325	N/A	<2.5	2.5	5259325	N/A
>C10-C16 Hydrocarbons	mg/kg	32000	200	<10	10	5252171	N/A	<10	10	5252171	N/A
>C16-C21 Hydrocarbons	mg/kg	2900	200	<10	10	5252171	N/A	20	10	5252171	N/A
>C21-<C32 Hydrocarbons	mg/kg	<300	300	<15	15	5252171	N/A	200	15	5252171	N/A
Modified TPH (Tier1)	mg/kg	35000	300	<15	15	5248871	N/A	220	15	5248871	N/A
Reached Baseline at C32	mg/kg	Yes	N/A	NA	N/A	5252171	N/A	No	N/A	5252171	N/A
Hydrocarbon Resemblance	mg/kg	COMMENT (1)	N/A	NA	N/A	5252171	N/A	COMMENT (2)	N/A	5252171	N/A
Surrogate Recovery (%)											
Isobutylbenzene - Extractable	%	70		101		5252171		101		5252171	
n-Dotriacontane - Extractable	%	103 (3)		106		5252171		108		5252171	
Isobutylbenzene - Volatile	%	16 (4)		103		5259325		99		5259325	

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) Fuel oil fraction.
(2) Lube oil fraction.
(3) Elevated TEH RDL(s) due to sample dilution.
(4) Surrogate recovery not within acceptance limits due to matrix/co-extractive interference.

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RBCA HYDROCARBONS IN SOIL (FIELD PRES.)

Maxxam ID		FMF757		FMF758				FMF758			
Sampling Date		2017/10/25		2017/10/25				2017/10/25			
COC Number		N/A		N/A				N/A			
	UNITS	**BB-TP34-BS2**	**QC Batch**	**BB-TP35-BS1**	**RDL**	**QC Batch**	**MDL**	**BB-TP35-BS1 Lab-Dup**	**RDL**	**QC Batch**	**MDL**
Inorganics											
Moisture	%	4.2	5250793	11	1.0	5250793	0.20				
Petroleum Hydrocarbons											
Benzene	mg/kg	<0.025	5259325	<0.025	0.025	5259325	N/A	<0.025	0.025	5259325	N/A
Toluene	mg/kg	<0.025	5259325	<0.025	0.025	5259325	N/A	<0.025	0.025	5259325	N/A
Ethylbenzene	mg/kg	<0.025	5259325	<0.025	0.025	5259325	0.025	<0.025	0.025	5259325	0.025
Total Xylenes	mg/kg	<0.050	5259325	<0.050	0.050	5259325	N/A	<0.050	0.050	5259325	N/A
C6 - C10 (less BTEX)	mg/kg	<2.5	5259325	<2.5	2.5	5259325	N/A	<2.5	2.5	5259325	N/A
>C10-C16 Hydrocarbons	mg/kg	<10	5252171	<10	10	5251735	N/A				
>C16-C21 Hydrocarbons	mg/kg	<10	5252171	<10	10	5251735	N/A				
>C21-<C32 Hydrocarbons	mg/kg	<15	5252171	<15	15	5251735	N/A				
Modified TPH (Tier1)	mg/kg	<15	5248871	<15	15	5248871	N/A				
Reached Baseline at C32	mg/kg	NA	5252171	NA	N/A	5251735	N/A				
Hydrocarbon Resemblance	mg/kg	NA	5252171	NA	N/A	5251735	N/A				
Surrogate Recovery (%)											
Isobutylbenzene - Extractable	%	103	5252171	103		5251735					
n-Dotriacontane - Extractable	%	112	5252171	107		5251735					
Isobutylbenzene - Volatile	%	100	5259325	100		5259325		100		5259325	

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

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Maxxam Job #: B7O7511
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.003
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Sampler Initials: RP

RBCA HYDROCARBONS IN SOIL (FIELD PRES.)

Maxxam ID		FMF759				FMF759			
Sampling Date		2017/10/25				2017/10/25			
COC Number		N/A				N/A			
	UNITS	**BB-TP35-BS2**	**RDL**	**QC Batch**	**MDL**	**BB-TP35-BS2 Lab-Dup**	**RDL**	**QC Batch**	**MDL**
Inorganics									
Moisture	%	6.5	1.0	5251723	0.20				
Petroleum Hydrocarbons									
Benzene	mg/kg	<0.025	0.025	5259325	N/A				
Toluene	mg/kg	<0.025	0.025	5259325	N/A				
Ethylbenzene	mg/kg	<0.025	0.025	5259325	0.025				
Total Xylenes	mg/kg	<0.050	0.050	5259325	N/A				
C6 - C10 (less BTEX)	mg/kg	<2.5	2.5	5259325	N/A				
>C10-C16 Hydrocarbons	mg/kg	<10	10	5252175	N/A	<10	10	5252175	N/A
>C16-C21 Hydrocarbons	mg/kg	<10	10	5252175	N/A	<10	10	5252175	N/A
>C21-<C32 Hydrocarbons	mg/kg	<15	15	5252175	N/A	<15	15	5252175	N/A
Modified TPH (Tier1)	mg/kg	<15	15	5248871	N/A				
Reached Baseline at C32	mg/kg	NA	N/A	5252175	N/A				
Hydrocarbon Resemblance	mg/kg	NA	N/A	5252175	N/A				
Surrogate Recovery (%)									
Isobutylbenzene - Extractable	%	95		5252175		102		5252175	
n-Dotriacontane - Extractable	%	75 (1)		5252175		82 (1)		5252175	
Isobutylbenzene - Volatile	%	104		5259325					

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable
(1) TEH samples were extracted using a flat-bed shaker instead of the accelerated mechanical shaker due to matrix incompatibility.

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RBCA HYDROCARBONS IN SOIL (FIELD PRES.)

Maxxam ID		FMF760				FMF761	FMF773	FMF775			
Sampling Date		2017/10/26				2017/10/26	2017/10/26	2017/10/26			
COC Number		N/A				N/A	N/A	N/A			
	UNITS	**BB-TP36-BS1**	**RDL**	**QC Batch**	**MDL**	**BB-TP36-BS2**	**BB-TP37-BS2**	**BB-TP38-BS2**	**RDL**	**QC Batch**	**MDL**
Inorganics											
Moisture	%					2.9	9.0	8.4	1.0	5251723	0.20
Petroleum Hydrocarbons											
Benzene	mg/kg	<0.025	0.025	5259325		<0.025	<0.025	<0.025	0.025	5259325	N/A
Toluene	mg/kg	<0.025	0.025	5259325	N/A	<0.025	<0.025	<0.025	0.025	5259325	N/A
Ethylbenzene	mg/kg	<0.025	0.025	5259325	0.025	<0.025	<0.025	<0.025	0.025	5259325	0.025
Total Xylenes	mg/kg	<0.050	0.050	5259325	N/A	<0.050	<0.050	<0.050	0.050	5259325	N/A
C6 - C10 (less BTEX)	mg/kg	<2.5	2.5	5259325	N/A	<2.5	<2.5	<2.5	2.5	5259325	N/A
>C10-C16 Hydrocarbons	mg/kg	<10	10	5252175	N/A	<10	<10	<10	10	5252175	N/A
>C16-C21 Hydrocarbons	mg/kg	<10	10	5252175	N/A	<10	<10	<10	10	5252175	N/A
>C21-<C32 Hydrocarbons	mg/kg	<15	15	5252175	N/A	<15	<15	<15	15	5252175	N/A
Modified TPH (Tier1)	mg/kg	<15	15	5248871	N/A	<15	<15	<15	15	5248871	N/A
Reached Baseline at C32	mg/kg	NA	N/A	5252175	N/A	NA	NA	NA	N/A	5252175	N/A
Hydrocarbon Resemblance	mg/kg	NA	N/A	5252175	N/A	NA	NA	NA	N/A	5252175	N/A
Surrogate Recovery (%)											
Isobutylbenzene - Extractable	%	101		5252175		101	102	103		5252175	
n-Dotriacontane - Extractable	%	78		5252175		78	79	82		5252175	
Isobutylbenzene - Volatile	%	102		5259325		83	120	89		5259325	

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

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Sampler Initials: RP

RBCA HYDROCARBONS IN SOIL (FIELD PRES.)

Maxxam ID		FMF776	FMF778		FMF779			
Sampling Date		2017/10/26	2017/10/26		2017/10/26			
COC Number		N/A	N/A		N/A			
	UNITS	**BB-TP39-BS1**	**BB-TP41-BS1**	**QC Batch**	**BB-TP42-BS1**	**RDL**	**QC Batch**	**MDL**
Inorganics								
Moisture	%	15	6.3	5251723	14	1.0	5254746	0.20
Petroleum Hydrocarbons								
Benzene	mg/kg	<0.025	<0.025	5259325	<0.025	0.025	5259325	N/A
Toluene	mg/kg	<0.025	<0.025	5259325	<0.025	0.025	5259325	N/A
Ethylbenzene	mg/kg	<0.025	<0.025	5259325	<0.025	0.025	5259325	0.025
Total Xylenes	mg/kg	<0.050	<0.050	5259325	<0.050	0.050	5259325	N/A
C6 - C10 (less BTEX)	mg/kg	<2.5	<2.5	5259325	<2.5	2.5	5259325	N/A
>C10-C16 Hydrocarbons	mg/kg	<10	<10	5252175	<10	10	5255256	N/A
>C16-C21 Hydrocarbons	mg/kg	24	<10	5252175	<10	10	5255256	N/A
>C21-<C32 Hydrocarbons	mg/kg	180	20	5252175	36	15	5255256	N/A
Modified TPH (Tier1)	mg/kg	200	20	5248871	36	15	5254330	N/A
Reached Baseline at C32	mg/kg	No	Yes	5252175	Yes	N/A	5255256	N/A
Hydrocarbon Resemblance	mg/kg	COMMENT (1)	COMMENT (2)	5252175	COMMENT (2)	N/A	5255256	N/A
Surrogate Recovery (%)								
Isobutylbenzene - Extractable	%	90	98	5252175	103		5255256	
n-Dotriacontane - Extractable	%	92	82 (3)	5252175	121 (3)		5255256	
Isobutylbenzene - Volatile	%	80	97	5259325	105		5259325	

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) Lube oil fraction.
(2) Possible lube oil fraction.
(3) TEH samples were extracted using a flat-bed shaker instead of the accelerated mechanical shaker due to matrix incompatibility.

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RBCA HYDROCARBONS IN SOIL (FIELD PRES.)

Maxxam ID		FMF780	FMF781	FMF783	FMF802		FMF803			
Sampling Date		2017/10/26	2017/10/26	2017/10/26	2017/10/25		2017/10/25			
COC Number		N/A	N/A	N/A	N/A		N/A			
	UNITS	**BB-TP43-BS1**	**BB-TP44-BS1**	**BB-TP50-BS2**	**BB-SS301**	**QC Batch**	**BB-TP121-BS1**	**RDL**	**QC Batch**	**MDL**
Inorganics										
Moisture	%	20	13	6.6	4.7	5251723	9.6	1.0	5251723	0.20
Petroleum Hydrocarbons										
Benzene	mg/kg	<0.025	<0.025	<0.025	<0.025	5259325	<0.025	0.025	5259923	N/A
Toluene	mg/kg	<0.025	<0.025	<0.025	<0.025	5259325	<0.025	0.025	5259923	N/A
Ethylbenzene	mg/kg	<0.025	<0.025	<0.025	<0.025	5259325	<0.025	0.025	5259923	0.025
Total Xylenes	mg/kg	<0.050	<0.050	<0.050	<0.050	5259325	<0.050	0.050	5259923	N/A
C6 - C10 (less BTEX)	mg/kg	<2.5	<2.5	<2.5	<2.5	5259325	<2.5	2.5	5259923	N/A
>C10-C16 Hydrocarbons	mg/kg	<10	<10	<10	<10	5252175	<10	10	5252175	N/A
>C16-C21 Hydrocarbons	mg/kg	<10	<10	<10	<10	5252175	<10	10	5252175	N/A
>C21-<C32 Hydrocarbons	mg/kg	33	<15	<15	<15	5252175	<15	15	5252175	N/A
Modified TPH (Tier1)	mg/kg	33	<15	<15	<15	5248871	<15	15	5248871	N/A
Reached Baseline at C32	mg/kg	Yes	NA	NA	NA	5252175	NA	N/A	5252175	N/A
Hydrocarbon Resemblance	mg/kg	COMMENT (1)	NA	NA	NA	5252175	NA	N/A	5252175	N/A
Surrogate Recovery (%)										
Isobutylbenzene - Extractable	%	98	102	101	96	5252175	95		5252175	
n-Dotriacontane - Extractable	%	88	81	84	91 (2)	5252175	90		5252175	
Isobutylbenzene - Volatile	%	103	96	111	79	5259325	111		5259923	

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) Possible lube oil fraction.
(2) TEH samples were extracted using a flat-bed shaker instead of the accelerated mechanical shaker due to matrix incompatibility.

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RBCA HYDROCARBONS IN SOIL (FIELD PRES.)

Maxxam ID		FMF804	FMF805	FMF806	FMF807	FMF808			
Sampling Date		2017/10/25	2017/10/25	2017/10/25	2017/10/25	2017/10/25			
COC Number		N/A	N/A	N/A	N/A	N/A			
	UNITS	**BB-TP101-BS2**	**BB-TP201-BS2**	**BB-TP71-BS1**	**BB-TP151-BS2**	**BB-TP161-BS2**	**RDL**	**QC Batch**	**MDL**
Inorganics									
Moisture	%	2.8	7.1	14	10	7.2	1.0	5251723	0.20
Petroleum Hydrocarbons									
Benzene	mg/kg	<0.025	<0.025	<0.025	<0.025	<0.025	0.025	5259923	N/A
Toluene	mg/kg	<0.025	<0.025	<0.025	<0.025	<0.025	0.025	5259923	N/A
Ethylbenzene	mg/kg	<0.025	<0.025	<0.025	<0.025	<0.025	0.025	5259923	0.025
Total Xylenes	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	5259923	N/A
C6 - C10 (less BTEX)	mg/kg	<2.5	23	<2.5	<2.5	140	2.5	5259923	N/A
>C10-C16 Hydrocarbons	mg/kg	<10	3200	<10	<10	2000	10	5252175	N/A
>C16-C21 Hydrocarbons	mg/kg	<10	2500	<10	<10	500	10	5252175	N/A
>C21-<C32 Hydrocarbons	mg/kg	<15	570	28	<15	21	15	5252175	N/A
Modified TPH (Tier1)	mg/kg	<15	6300	28	<15	2600	15	5248871	N/A
Reached Baseline at C32	mg/kg	NA	Yes	Yes	NA	Yes	N/A	5252175	N/A
Hydrocarbon Resemblance	mg/kg	NA	COMMENT (1)	COMMENT (2)	NA	COMMENT (3)	N/A	5252175	N/A
Surrogate Recovery (%)									
Isobutylbenzene - Extractable	%	96	92	98	99	90		5252175	
n-Dotriacontane - Extractable	%	86	110	89	88	103		5252175	
Isobutylbenzene - Volatile	%	109	38 (4)	117	104	74		5259923	

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) Weathered fuel oil fraction. Lube oil fraction.
(2) Possible lube oil fraction.
(3) Weathered fuel oil fraction.
(4) Surrogate recovery not within acceptance limits due to matrix/co-extractive interference.

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Maxxam Job #: B7O7511
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.003
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

RBCA HYDROCARBONS IN SOIL (FIELD PRES.)

Maxxam ID		FMF809				FMF809			
Sampling Date		2017/10/25				2017/10/25			
COC Number		N/A				N/A			
	UNITS	**BB-TP221-BS2**	**RDL**	**QC Batch**	**MDL**	**BB-TP221-BS2 Lab-Dup**	**RDL**	**QC Batch**	**MDL**
Inorganics									
Moisture	%	6.2	1.0	5251729	0.20				
Petroleum Hydrocarbons									
Benzene	mg/kg	<0.025	0.025	5259923	N/A	<0.025	0.025	5259923	N/A
Toluene	mg/kg	<0.025	0.025	5259923	N/A	<0.025	0.025	5259923	N/A
Ethylbenzene	mg/kg	<0.025	0.025	5259923	0.025	<0.025	0.025	5259923	0.025
Total Xylenes	mg/kg	<0.050	0.050	5259923	N/A	<0.050	0.050	5259923	N/A
C6 - C10 (less BTEX)	mg/kg	16	2.5	5259923	N/A	17	2.5	5259923	N/A
>C10-C16 Hydrocarbons	mg/kg	1100	10	5252175	N/A				
>C16-C21 Hydrocarbons	mg/kg	170	10	5252175	N/A				
>C21-<C32 Hydrocarbons	mg/kg	43	15	5252175	N/A				
Modified TPH (Tier1)	mg/kg	1300	15	5248871	N/A				
Reached Baseline at C32	mg/kg	Yes	N/A	5252175	N/A				
Hydrocarbon Resemblance	mg/kg	COMMENT (1)	N/A	5252175	N/A				
Surrogate Recovery (%)									
Isobutylbenzene - Extractable	%	93		5252175					
n-Dotriacontane - Extractable	%	94		5252175					
Isobutylbenzene - Volatile	%	70		5259923		75		5259923	

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable
(1) Weathered fuel oil fraction. Possible lube oil fraction.

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Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

ATLANTIC VOC IN SOIL (FIELD PRES.)

Maxxam ID		FMF502	FMF503	FMF504	FMF505	FMF510	FMF516			
Sampling Date		2017/10/25	2017/10/25	2017/10/26	2017/10/26	2017/10/25	2017/10/26			
COC Number		N/A	N/A	N/A	N/A	N/A	N/A			
	UNITS	**BB-SS1**	**BB-SS3**	**BB-SS8**	**BB-SS10**	**BB-SS17**	**BB-SS23**	**RDL**	**QC Batch**	**MDL**
Volatile Organics										
1,1,1-Trichloroethane	ug/kg	<25	<25	<25	<25	<25	<25	25	5254656	0.00010
1,1,2,2-Tetrachloroethane	ug/kg	<25	<25	<25	<25	<25	<25	25	5254656	0.00040
1,1,2-Trichloroethane	ug/kg	<25	<25	<25	<25	<25	<25	25	5254656	0.00040
1,1-Dichloroethane	ug/kg	<25	<25	<25	<25	<25	<25	25	5254656	0.00010
1,1-Dichloroethylene	ug/kg	<25	<25	<25	<25	<25	<25	25	5254656	0.00010
1,2-Dichlorobenzene	ug/kg	<25	<25	<25	<25	<25	<25	25	5254656	0.00020
1,2-Dichloroethane	ug/kg	<25	<25	<25	<25	<25	<25	25	5254656	0.00010
1,2-Dichloropropane	ug/kg	<25	<25	<25	<25	<25	<25	25	5254656	0.00020
1,3-Dichlorobenzene	ug/kg	<25	<25	<25	<25	<25	<25	25	5254656	0.00020
1,4-Dichlorobenzene	ug/kg	<25	<25	<25	<25	<25	<25	25	5254656	0.00030
Benzene	ug/kg	<25	<25	<25	<25	<25	<25	25	5254656	0.00010
Bromodichloromethane	ug/kg	<25	<25	<25	<25	<25	<25	25	5254656	0.00020
Bromoform	ug/kg	<25	<25	<25	<25	<25	<25	25	5254656	0.00030
Bromomethane	ug/kg	<50	<50	<50	<50	<50	<50	50	5254656	0.00040
Carbon Tetrachloride	ug/kg	<25	<25	<25	<25	<25	<25	25	5254656	0.00010
Chlorobenzene	ug/kg	<25	<25	<25	<25	<25	<25	25	5254656	0.00010
Chloroethane	ug/kg	<200	<200	<200	<200	<200	<200	200	5254656	0.00030
Chloroform	ug/kg	<25	<25	<25	<25	<25	<25	25	5254656	0.00010
cis-1,2-Dichloroethylene	ug/kg	<25	<25	<25	<25	<25	<25	25	5254656	0.00010
cis-1,3-Dichloropropene	ug/kg	<25	<25	<25	<25	<25	<25	25	5254656	0.00020
Dibromochloromethane	ug/kg	<25	<25	<25	<25	<25	<25	25	5254656	0.00030
Ethylbenzene	ug/kg	<25	<25	<25	<25	<25	<25	25	5254656	0.00010
Ethylene Dibromide	ug/kg	<25	<25	<25	<25	<25	<25	25	5254656	0.00040
Methyl t-butyl ether (MTBE)	ug/kg	<25	<25	<25	<25	<25	<25	25	5254656	0.00010
Methylene Chloride(Dichloromethane)	ug/kg	<25	<25	<25	<25	<25	<25	25	5254656	0.00020
o-Xylene	ug/kg	<25	<25	<25	<25	<25	<25	25	5254656	0.00010
p+m-Xylene	ug/kg	<25	<25	<25	<25	<25	<25	25	5254656	0.00010
Styrene	ug/kg	<25	<25	<25	<25	<25	<25	25	5254656	0.00020
Tetrachloroethylene	ug/kg	<25	<25	<25	<25	<25	<25	25	5254656	0.00030
Toluene	ug/kg	<25	<25	<25	<25	<25	<25	25	5254656	0.00010
Total Xylenes	ug/kg	<50	<50	<50	<50	<50	<50	50	5254656	N/A
trans-1,2-Dichloroethylene	ug/kg	<25	<25	<25	<25	<25	<25	25	5254656	0.00020

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

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Maxxam Job #: B7O7511
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.003
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

ATLANTIC VOC IN SOIL (FIELD PRES.)

Maxxam ID		FMF502	FMF503	FMF504	FMF505	FMF510	FMF516			
Sampling Date		2017/10/25	2017/10/25	2017/10/26	2017/10/26	2017/10/25	2017/10/26			
COC Number		N/A	N/A	N/A	N/A	N/A	N/A			
	UNITS	**BB-SS1**	**BB-SS3**	**BB-SS8**	**BB-SS10**	**BB-SS17**	**BB-SS23**	**RDL**	**QC Batch**	**MDL**
trans-1,3-Dichloropropene	ug/kg	<25	<25	<25	<25	<25	<25	25	5254656	0.00030
Trichloroethylene	ug/kg	<10	<10	<10	<10	<10	<10	10	5254656	0.00020
Trichlorofluoromethane (FREON 11)	ug/kg	<25	<25	<25	<25	<25	<25	25	5254656	0.00030
Vinyl Chloride	ug/kg	<20	<20	<20	<20	<20	<20	20	5254656	0.00020
Surrogate Recovery (%)										
4-Bromofluorobenzene	%	103	102	102	103	102	102		5254656	
D10-o-Xylene	%	105	103	105	88 (1)	102 (1)	106		5254656	
D4-1,2-Dichloroethane	%	86	87	93	99	90	91		5254656	
D8-Toluene	%	100	98	100	111	98	97		5254656	

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) VOC samples were extracted using a flat-bed shaker instead of the accelerated mechanical shaker due to matrix incompatibility.

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Stantec Consulting Ltd
Client Project #: 121414915.200.003
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

ATLANTIC VOC IN SOIL (FIELD PRES.)

Maxxam ID		FMF531				FMF651			
Sampling Date		2017/10/25				2017/10/25			
COC Number		N/A				N/A			
	UNITS	**BB-SS38**	**RDL**	**QC Batch**	**MDL**	**BB-TP3-BS1**	**RDL**	**QC Batch**	**MDL**
Inorganics									
Moisture	%					6.6	1.0	5250284	0.20
Volatile Organics									
1,1,1-Trichloroethane	ug/kg	<25	25	5254656	0.00010	<25	25	5254656	0.00010
1,1,2,2-Tetrachloroethane	ug/kg	<25	25	5254656	0.00040	<25	25	5254656	0.00040
1,1,2-Trichloroethane	ug/kg	<25	25	5254656	0.00040	<25	25	5254656	0.00040
1,1-Dichloroethane	ug/kg	<25	25	5254656	0.00010	<25	25	5254656	0.00010
1,1-Dichloroethylene	ug/kg	<25	25	5254656	0.00010	<25	25	5254656	0.00010
1,2-Dichlorobenzene	ug/kg	<25	25	5254656	0.00020	<25	25	5254656	0.00020
1,2-Dichloroethane	ug/kg	<25	25	5254656	0.00010	<25	25	5254656	0.00010
1,2-Dichloropropane	ug/kg	<25	25	5254656	0.00020	<25	25	5254656	0.00020
1,3-Dichlorobenzene	ug/kg	<25	25	5254656	0.00020	<25	25	5254656	0.00020
1,4-Dichlorobenzene	ug/kg	<25	25	5254656	0.00030	<25	25	5254656	0.00030
Benzene	ug/kg	<25	25	5254656	0.00010	<25	25	5254656	0.00010
Bromodichloromethane	ug/kg	<25	25	5254656	0.00020	<25	25	5254656	0.00020
Bromoform	ug/kg	<25	25	5254656	0.00030	<25	25	5254656	0.00030
Bromomethane	ug/kg	<50	50	5254656	0.00040	<50	50	5254656	0.00040
Carbon Tetrachloride	ug/kg	<25	25	5254656	0.00010	<25	25	5254656	0.00010
Chlorobenzene	ug/kg	<25	25	5254656	0.00010	<25	25	5254656	0.00010
Chloroethane	ug/kg	<200	200	5254656	0.00030	<200	200	5254656	0.00030
Chloroform	ug/kg	<25	25	5254656	0.00010	<25	25	5254656	0.00010
cis-1,2-Dichloroethylene	ug/kg	<25	25	5254656	0.00010	<25	25	5254656	0.00010
cis-1,3-Dichloropropene	ug/kg	<25	25	5254656	0.00020	<25	25	5254656	0.00020
Dibromochloromethane	ug/kg	<25	25	5254656	0.00030	<25	25	5254656	0.00030
Ethylbenzene	ug/kg	<25	25	5254656	0.00010	<25	25	5254656	0.00010
Ethylene Dibromide	ug/kg	<25	25	5254656	0.00040	<25	25	5254656	0.00040
Methyl t-butyl ether (MTBE)	ug/kg	<25	25	5254656	0.00010	<25	25	5254656	0.00010
Methylene Chloride(Dichloromethane)	ug/kg	<25	25	5254656	0.00020	<25	25	5254656	0.00020
o-Xylene	ug/kg	<25	25	5254656	0.00010	<25	25	5254656	0.00010
p+m-Xylene	ug/kg	<25	25	5254656	0.00010	<25	25	5254656	0.00010
Styrene	ug/kg	<25	25	5254656	0.00020	<25	25	5254656	0.00020
Tetrachloroethylene	ug/kg	<25	25	5254656	0.00030	<25	25	5254656	0.00030
Toluene	ug/kg	<25	25	5254656	0.00010	<25	25	5254656	0.00010
Total Xylenes	ug/kg	<50	50	5254656	N/A	<50	50	5254656	N/A

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

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ATLANTIC VOC IN SOIL (FIELD PRES.)

Maxxam ID		FMF531				FMF651			
Sampling Date		2017/10/25				2017/10/25			
COC Number		N/A				N/A			
	UNITS	**BB-SS38**	**RDL**	**QC Batch**	**MDL**	**BB-TP3-BS1**	**RDL**	**QC Batch**	**MDL**
trans-1,2-Dichloroethylene	ug/kg	<25	25	5254656	0.00020	<25	25	5254656	0.00020
trans-1,3-Dichloropropene	ug/kg	<25	25	5254656	0.00030	<25	25	5254656	0.00030
Trichloroethylene	ug/kg	<10	10	5254656	0.00020	<10	10	5254656	0.00020
Trichlorofluoromethane (FREON 11)	ug/kg	<25	25	5254656	0.00030	<25	25	5254656	0.00030
Vinyl Chloride	ug/kg	<20	20	5254656	0.00020	<20	20	5254656	0.00020
Surrogate Recovery (%)									
4-Bromofluorobenzene	%	103		5254656		102		5254656	
D10-o-Xylene	%	102		5254656		121 (1)		5254656	
D4-1,2-Dichloroethane	%	90		5254656		82		5254656	
D8-Toluene	%	97		5254656		107		5254656	

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) VOC samples were extracted using a flat-bed shaker instead of the accelerated mechanical shaker due to matrix incompatibility.

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Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.003
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

ATLANTIC VOC IN SOIL (FIELD PRES.)

Maxxam ID		FMF665				FMF676		FMF678			
Sampling Date		2017/10/25				2017/10/25		2017/10/25			
COC Number		N/A				N/A		N/A			
	UNITS	**BB-TP10-BS2**	**RDL**	**QC Batch**	**MDL**	**BB-TP13-BS1**	**QC Batch**	**BB-TP14-BS1**	**RDL**	**QC Batch**	**MDL**
Inorganics											
Moisture	%					16	5250300	20	1.0	5250749	0.20
Volatile Organics											
1,1,1-Trichloroethane	ug/kg	<25	25	5254656	0.00010	<25	5254656	<25	25	5254656	0.00010
1,1,2,2-Tetrachloroethane	ug/kg	<25	25	5254656	0.00040	<25	5254656	<25	25	5254656	0.00040
1,1,2-Trichloroethane	ug/kg	<25	25	5254656	0.00040	<25	5254656	<25	25	5254656	0.00040
1,1-Dichloroethane	ug/kg	<25	25	5254656	0.00010	<25	5254656	<25	25	5254656	0.00010
1,1-Dichloroethylene	ug/kg	<25	25	5254656	0.00010	<25	5254656	<25	25	5254656	0.00010
1,2-Dichlorobenzene	ug/kg	<25	25	5254656	0.00020	<25	5254656	<25	25	5254656	0.00020
1,2-Dichloroethane	ug/kg	<25	25	5254656	0.00010	<25	5254656	<25	25	5254656	0.00010
1,2-Dichloropropane	ug/kg	<25	25	5254656	0.00020	<25	5254656	<25	25	5254656	0.00020
1,3-Dichlorobenzene	ug/kg	<25	25	5254656	0.00020	<25	5254656	<25	25	5254656	0.00020
1,4-Dichlorobenzene	ug/kg	<25	25	5254656	0.00030	<25	5254656	<25	25	5254656	0.00030
Benzene	ug/kg	<25	25	5254656	0.00010	<25	5254656	<25	25	5254656	0.00010
Bromodichloromethane	ug/kg	<25	25	5254656	0.00020	<25	5254656	<25	25	5254656	0.00020
Bromoform	ug/kg	<25	25	5254656	0.00030	<25	5254656	<25	25	5254656	0.00030
Bromomethane	ug/kg	<50	50	5254656	0.00040	<50	5254656	<50	50	5254656	0.00040
Carbon Tetrachloride	ug/kg	<25	25	5254656	0.00010	<25	5254656	<25	25	5254656	0.00010
Chlorobenzene	ug/kg	<25	25	5254656	0.00010	<25	5254656	<25	25	5254656	0.00010
Chloroethane	ug/kg	<200	200	5254656	0.00030	<200	5254656	<200	200	5254656	0.00030
Chloroform	ug/kg	<25	25	5254656	0.00010	<25	5254656	<25	25	5254656	0.00010
cis-1,2-Dichloroethylene	ug/kg	<25	25	5254656	0.00010	<25	5254656	<25	25	5254656	0.00010
cis-1,3-Dichloropropene	ug/kg	<25	25	5254656	0.00020	<25	5254656	<25	25	5254656	0.00020
Dibromochloromethane	ug/kg	<25	25	5254656	0.00030	<25	5254656	<25	25	5254656	0.00030
Ethylbenzene	ug/kg	<25	25	5254656	0.00010	<25	5254656	<25	25	5254656	0.00010
Ethylene Dibromide	ug/kg	<25	25	5254656	0.00040	<25	5254656	<25	25	5254656	0.00040
Methyl t-butyl ether (MTBE)	ug/kg	<25	25	5254656	0.00010	<25	5254656	<25	25	5254656	0.00010
Methylene Chloride(Dichloromethane)	ug/kg	<25	25	5254656	0.00020	<25	5254656	<25	25	5254656	0.00020
o-Xylene	ug/kg	<25	25	5254656	0.00010	<25	5254656	<25	25	5254656	0.00010
p+m-Xylene	ug/kg	<25	25	5254656	0.00010	<25	5254656	<25	25	5254656	0.00010
Styrene	ug/kg	<25	25	5254656	0.00020	<25	5254656	<25	25	5254656	0.00020
Tetrachloroethylene	ug/kg	<25	25	5254656	0.00030	<25	5254656	<25	25	5254656	0.00030
Toluene	ug/kg	<25	25	5254656	0.00010	<25	5254656	<25	25	5254656	0.00010
Total Xylenes	ug/kg	<50	50	5254656	N/A	<50	5254656	<50	50	5254656	N/A

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

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Maxxam Job #: B7O7511
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.003
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

ATLANTIC VOC IN SOIL (FIELD PRES.)

Maxxam ID		FMF665				FMF676		FMF678			
Sampling Date		2017/10/25				2017/10/25		2017/10/25			
COC Number		N/A				N/A		N/A			
	UNITS	**BB-TP10-BS2**	**RDL**	**QC Batch**	**MDL**	**BB-TP13-BS1**	**QC Batch**	**BB-TP14-BS1**	**RDL**	**QC Batch**	**MDL**
trans-1,2-Dichloroethylene	ug/kg	<25	25	5254656	0.00020	<25	5254656	<25	25	5254656	0.00020
trans-1,3-Dichloropropene	ug/kg	<25	25	5254656	0.00030	<25	5254656	<25	25	5254656	0.00030
Trichloroethylene	ug/kg	<10	10	5254656	0.00020	<10	5254656	<10	10	5254656	0.00020
Trichlorofluoromethane (FREON 11)	ug/kg	<25	25	5254656	0.00030	<25	5254656	<25	25	5254656	0.00030
Vinyl Chloride	ug/kg	<20	20	5254656	0.00020	<20	5254656	<20	20	5254656	0.00020
Surrogate Recovery (%)											
4-Bromofluorobenzene	%	102		5254656		102	5254656	102		5254656	
D10-o-Xylene	%	102 (1)		5254656		108 (1)	5254656	101		5254656	
D4-1,2-Dichloroethane	%	81		5254656		84	5254656	84		5254656	
D8-Toluene	%	99		5254656		100	5254656	100		5254656	

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) VOC samples were extracted using a flat-bed shaker instead of the accelerated mechanical shaker due to matrix incompatibility.

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Maxxam Job #: B7O7511
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.003
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

ATLANTIC VOC IN SOIL (FIELD PRES.)

Maxxam ID		FMF716	FMF725				FMF725			
Sampling Date		2017/10/25	2017/10/25				2017/10/25			
COC Number		N/A	N/A				N/A			
	UNITS	**BB-TP26-BS1**	**BB-TP28-BS1**	**RDL**	**QC Batch**	**MDL**	**BB-TP28-BS1 Lab-Dup**	**RDL**	**QC Batch**	**MDL**
Inorganics										
Moisture	%	10	4.3	1.0	5250793	0.20				
Volatile Organics										
1,1,1-Trichloroethane	ug/kg	<25	<25	25	5254656	0.00010	<25	25	5254656	0.00010
1,1,2,2-Tetrachloroethane	ug/kg	<25	<25	25	5254656	0.00040	<25	25	5254656	0.00040
1,1,2-Trichloroethane	ug/kg	<25	<25	25	5254656	0.00040	<25	25	5254656	0.00040
1,1-Dichloroethane	ug/kg	<25	<25	25	5254656	0.00010	<25	25	5254656	0.00010
1,1-Dichloroethylene	ug/kg	<25	<25	25	5254656	0.00010	<25	25	5254656	0.00010
1,2-Dichlorobenzene	ug/kg	<25	<25	25	5254656	0.00020	<25	25	5254656	0.00020
1,2-Dichloroethane	ug/kg	<25	<25	25	5254656	0.00010	<25	25	5254656	0.00010
1,2-Dichloropropane	ug/kg	<25	<25	25	5254656	0.00020	<25	25	5254656	0.00020
1,3-Dichlorobenzene	ug/kg	<25	<25	25	5254656	0.00020	<25	25	5254656	0.00020
1,4-Dichlorobenzene	ug/kg	<25	<25	25	5254656	0.00030	<25	25	5254656	0.00030
Benzene	ug/kg	<25	<25	25	5254656	0.00010	<25	25	5254656	0.00010
Bromodichloromethane	ug/kg	<25	<25	25	5254656	0.00020	<25	25	5254656	0.00020
Bromoform	ug/kg	<25	<25	25	5254656	0.00030	<25	25	5254656	0.00030
Bromomethane	ug/kg	<50	<50	50	5254656	0.00040	<50	50	5254656	0.00040
Carbon Tetrachloride	ug/kg	<25	<25	25	5254656	0.00010	<25	25	5254656	0.00010
Chlorobenzene	ug/kg	<25	<25	25	5254656	0.00010	<25	25	5254656	0.00010
Chloroethane	ug/kg	<200	<200	200	5254656	0.00030	<200	200	5254656	0.00030
Chloroform	ug/kg	<25	<25	25	5254656	0.00010	<25	25	5254656	0.00010
cis-1,2-Dichloroethylene	ug/kg	<25	<25	25	5254656	0.00010	<25	25	5254656	0.00010
cis-1,3-Dichloropropene	ug/kg	<25	<25	25	5254656	0.00020	<25	25	5254656	0.00020
Dibromochloromethane	ug/kg	<25	<25	25	5254656	0.00030	<25	25	5254656	0.00030
Ethylbenzene	ug/kg	<25	<25	25	5254656	0.00010	<25	25	5254656	0.00010
Ethylene Dibromide	ug/kg	<25	<25	25	5254656	0.00040	<25	25	5254656	0.00040
Methyl t-butyl ether (MTBE)	ug/kg	<25	<25	25	5254656	0.00010	<25	25	5254656	0.00010
Methylene Chloride(Dichloromethane)	ug/kg	<25	<25	25	5254656	0.00020	<25	25	5254656	0.00020
o-Xylene	ug/kg	<25	<25	25	5254656	0.00010	<25	25	5254656	0.00010
p+m-Xylene	ug/kg	<25	<25	25	5254656	0.00010	<25	25	5254656	0.00010
Styrene	ug/kg	<25	<25	25	5254656	0.00020	<25	25	5254656	0.00020
Tetrachloroethylene	ug/kg	<25	<25	25	5254656	0.00030	<25	25	5254656	0.00030
Toluene	ug/kg	<25	<25	25	5254656	0.00010	<25	25	5254656	0.00010

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

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Maxxam Job #: B7O7511
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.003
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

ATLANTIC VOC IN SOIL (FIELD PRES.)

Maxxam ID		FMF716	FMF725				FMF725			
Sampling Date		2017/10/25	2017/10/25				2017/10/25			
COC Number		N/A	N/A				N/A			
	UNITS	**BB-TP26-BS1**	**BB-TP28-BS1**	**RDL**	**QC Batch**	**MDL**	**BB-TP28-BS1 Lab-Dup**	**RDL**	**QC Batch**	**MDL**
Total Xylenes	ug/kg	<50	<50	50	5254656	N/A	<50	50	5254656	N/A
trans-1,2-Dichloroethylene	ug/kg	<25	<25	25	5254656	0.00020	<25	25	5254656	0.00020
trans-1,3-Dichloropropene	ug/kg	<25	<25	25	5254656	0.00030	<25	25	5254656	0.00030
Trichloroethylene	ug/kg	<10	<10	10	5254656	0.00020	<10	10	5254656	0.00020
Trichlorofluoromethane (FREON 11)	ug/kg	<25	<25	25	5254656	0.00030	<25	25	5254656	0.00030
Vinyl Chloride	ug/kg	<20	<20	20	5254656	0.00020	<20	20	5254656	0.00020
Surrogate Recovery (%)										
4-Bromofluorobenzene	%	102	100		5254656		100		5254656	
D10-o-Xylene	%	101 (1)	98 (1)		5254656		105 (1)		5254656	
D4-1,2-Dichloroethane	%	86	88		5254656		94		5254656	
D8-Toluene	%	99	87		5254656		101		5254656	

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable
(1) VOC samples were extracted using a flat-bed shaker instead of the accelerated mechanical shaker due to matrix incompatibility.

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Maxxam Job #: B7O7511
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.003
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

ATLANTIC VOC IN SOIL (FIELD PRES.)

Maxxam ID		FMF755		FMF760				FMF760			
Sampling Date		2017/10/25		2017/10/26				2017/10/26			
COC Number		N/A		N/A				N/A			
	UNITS	**BB-TP33-BS2**	**QC Batch**	**BB-TP36-BS1**	**RDL**	**QC Batch**	**MDL**	**BB-TP36-BS1 Lab-Dup**	**RDL**	**QC Batch**	**MDL**
Inorganics											
Moisture	%	15	5250793	4.3	1.0	5251723	0.20	4.7	1.0	5251723	0.20
Volatile Organics											
1,1,1-Trichloroethane	ug/kg	<25	5254656	<25	25	5254656	0.00010				
1,1,2,2-Tetrachloroethane	ug/kg	<25	5254656	<25	25	5254656	0.00040				
1,1,2-Trichloroethane	ug/kg	<25	5254656	<25	25	5254656	0.00040				
1,1-Dichloroethane	ug/kg	<25	5254656	<25	25	5254656	0.00010				
1,1-Dichloroethylene	ug/kg	<25	5254656	<25	25	5254656	0.00010				
1,2-Dichlorobenzene	ug/kg	<25	5254656	<25	25	5254656	0.00020				
1,2-Dichloroethane	ug/kg	<25	5254656	<25	25	5254656	0.00010				
1,2-Dichloropropane	ug/kg	<25	5254656	<25	25	5254656	0.00020				
1,3-Dichlorobenzene	ug/kg	<25	5254656	<25	25	5254656	0.00020				
1,4-Dichlorobenzene	ug/kg	<25	5254656	<25	25	5254656	0.00030				
Benzene	ug/kg	<25	5254656	<25	25	5254656	0.00010				
Bromodichloromethane	ug/kg	<25	5254656	<25	25	5254656	0.00020				
Bromoform	ug/kg	<25	5254656	<25	25	5254656	0.00030				
Bromomethane	ug/kg	<50	5254656	<50	50	5254656	0.00040				
Carbon Tetrachloride	ug/kg	<25	5254656	<25	25	5254656	0.00010				
Chlorobenzene	ug/kg	<25	5254656	<25	25	5254656	0.00010				
Chloroethane	ug/kg	<200	5254656	<200	200	5254656	0.00030				
Chloroform	ug/kg	<25	5254656	<25	25	5254656	0.00010				
cis-1,2-Dichloroethylene	ug/kg	<25	5254656	<25	25	5254656	0.00010				
cis-1,3-Dichloropropene	ug/kg	<25	5254656	<25	25	5254656	0.00020				
Dibromochloromethane	ug/kg	<25	5254656	<25	25	5254656	0.00030				
Ethylbenzene	ug/kg	<25	5254656	<25	25	5254656	0.00010				
Ethylene Dibromide	ug/kg	<25	5254656	<25	25	5254656	0.00040				
Methyl t-butyl ether (MTBE)	ug/kg	<25	5254656	<25	25	5254656	0.00010				
Methylene Chloride(Dichloromethane)	ug/kg	<25	5254656	<25	25	5254656	0.00020				
o-Xylene	ug/kg	<25	5254656	<25	25	5254656	0.00010				
p+m-Xylene	ug/kg	<25	5254656	<25	25	5254656	0.00010				
Styrene	ug/kg	<25	5254656	<25	25	5254656	0.00020				
Tetrachloroethylene	ug/kg	<25	5254656	<25	25	5254656	0.00030				
Toluene	ug/kg	<25	5254656	<25	25	5254656	0.00010				

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

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Maxxam Job #: B7O7511
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.003
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

ATLANTIC VOC IN SOIL (FIELD PRES.)

Maxxam ID		FMF755		FMF760				FMF760			
Sampling Date		2017/10/25		2017/10/26				2017/10/26			
COC Number		N/A		N/A				N/A			
	UNITS	**BB-TP33-BS2**	**QC Batch**	**BB-TP36-BS1**	**RDL**	**QC Batch**	**MDL**	**BB-TP36-BS1 Lab-Dup**	**RDL**	**QC Batch**	**MDL**
Total Xylenes	ug/kg	<50	5254656	<50	50	5254656	N/A				
trans-1,2-Dichloroethylene	ug/kg	<25	5254656	<25	25	5254656	0.00020				
trans-1,3-Dichloropropene	ug/kg	<25	5254656	<25	25	5254656	0.00030				
Trichloroethylene	ug/kg	<10	5254656	<10	10	5254656	0.00020				
Trichlorofluoromethane (FREON 11)	ug/kg	<25	5254656	<25	25	5254656	0.00030				
Vinyl Chloride	ug/kg	<20	5254656	<20	20	5254656	0.00020				
Surrogate Recovery (%)											
4-Bromofluorobenzene	%	102	5254656	103		5254656					
D10-o-Xylene	%	98	5254656	102		5254656					
D4-1,2-Dichloroethane	%	87	5254656	87		5254656					
D8-Toluene	%	99	5254656	98		5254656					

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

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Maxxam Job #: B7O7511
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.003
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

ATLANTIC VOC IN SOIL (FIELD PRES.)

Maxxam ID		FMF776			FMF779			FMF781			
Sampling Date		2017/10/26			2017/10/26			2017/10/26			
COC Number		N/A			N/A			N/A			
	UNITS	**BB-TP39-BS1**	**RDL**	**QC Batch**	**BB-TP42-BS1**	**RDL**	**QC Batch**	**BB-TP44-BS1**	**RDL**	**QC Batch**	**MDL**
Volatile Organics											
1,1,1-Trichloroethane	ug/kg	<25	25	5257688	<25	25	5260420	<25	25	5257688	0.00010
1,1,2,2-Tetrachloroethane	ug/kg	<25	25	5257688	<25	25	5260420	<25	25	5257688	0.00040
1,1,2-Trichloroethane	ug/kg	<25	25	5257688	<25	25	5260420	<25	25	5257688	0.00040
1,1-Dichloroethane	ug/kg	<25	25	5257688	<25	25	5260420	<25	25	5257688	0.00010
1,1-Dichloroethylene	ug/kg	<25	25	5257688	<25	25	5260420	<25	25	5257688	0.00010
1,2-Dichlorobenzene	ug/kg	<25	25	5257688	<25	25	5260420	<25	25	5257688	0.00020
1,2-Dichloroethane	ug/kg	<25	25	5257688	<25	25	5260420	<25	25	5257688	0.00010
1,2-Dichloropropane	ug/kg	<25	25	5257688	<25	25	5260420	<25	25	5257688	0.00020
1,3-Dichlorobenzene	ug/kg	<25	25	5257688	<25	25	5260420	<25	25	5257688	0.00020
1,4-Dichlorobenzene	ug/kg	<25	25	5257688	<25	25	5260420	<25	25	5257688	0.00030
Benzene	ug/kg	<25	25	5257688	<25	25	5260420	<25	25	5257688	0.00010
Bromodichloromethane	ug/kg	<25	25	5257688	<25	25	5260420	<25	25	5257688	0.00020
Bromoform	ug/kg	<25	25	5257688	<25	25	5260420	<25	25	5257688	0.00030
Bromomethane	ug/kg	<50	50	5257688	<50	50	5260420	<50	50	5257688	0.00040
Carbon Tetrachloride	ug/kg	<25	25	5257688	<25	25	5260420	<25	25	5257688	0.00010
Chlorobenzene	ug/kg	<25	25	5257688	<25	25	5260420	<25	25	5257688	0.00010
Chloroethane	ug/kg	<200	200	5257688	<200	200	5260420	<200	200	5257688	0.00030
Chloroform	ug/kg	<25	25	5257688	<25	25	5260420	<25	25	5257688	0.00010
cis-1,2-Dichloroethylene	ug/kg	<25	25	5257688	<25	25	5260420	<25	25	5257688	0.00010
cis-1,3-Dichloropropene	ug/kg	<25	25	5257688	<25	25	5260420	<25	25	5257688	0.00020
Dibromochloromethane	ug/kg	<25	25	5257688	<25	25	5260420	<25	25	5257688	0.00030
Ethylbenzene	ug/kg	<25	25	5257688	<25	25	5260420	<25	25	5257688	0.00010
Ethylene Dibromide	ug/kg	<25	25	5257688	<25	25	5260420	<25	25	5257688	0.00040
Methyl t-butyl ether (MTBE)	ug/kg	<25	25	5257688	<25	25	5260420	<25	25	5257688	0.00010
Methylene Chloride(Dichloromethane)	ug/kg	<50 (1)	50	5257688	<25	25	5260420	<50 (1)	50	5257688	0.00020
o-Xylene	ug/kg	<25	25	5257688	<25	25	5260420	<25	25	5257688	0.00010
p+m-Xylene	ug/kg	<25	25	5257688	<25	25	5260420	<25	25	5257688	0.00010
Styrene	ug/kg	<25	25	5257688	<25	25	5260420	<25	25	5257688	0.00020
Tetrachloroethylene	ug/kg	<25	25	5257688	<25	25	5260420	<25	25	5257688	0.00030
Toluene	ug/kg	<25	25	5257688	<25	25	5260420	<25	25	5257688	0.00010
Total Xylenes	ug/kg	<50	50	5257688	<50	50	5260420	<50	50	5257688	N/A
trans-1,2-Dichloroethylene	ug/kg	<25	25	5257688	<25	25	5260420	<25	25	5257688	0.00020

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) Elevated VOC RDL(s) due to detected levels in the method blank.

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Maxxam Job #: B7O7511
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.003
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

ATLANTIC VOC IN SOIL (FIELD PRES.)

Maxxam ID		FMF776			FMF779			FMF781			
Sampling Date		2017/10/26			2017/10/26			2017/10/26			
COC Number		N/A			N/A			N/A			
	UNITS	**BB-TP39-BS1**	**RDL**	**QC Batch**	**BB-TP42-BS1**	**RDL**	**QC Batch**	**BB-TP44-BS1**	**RDL**	**QC Batch**	**MDL**
trans-1,3-Dichloropropene	ug/kg	<25	25	5257688	<25	25	5260420	<25	25	5257688	0.00030
Trichloroethylene	ug/kg	<10	10	5257688	<10	10	5260420	<10	10	5257688	0.00020
Trichlorofluoromethane (FREON 11)	ug/kg	<25	25	5257688	<25	25	5260420	<25	25	5257688	0.00030
Vinyl Chloride	ug/kg	<20	20	5257688	<20	20	5260420	<20	20	5257688	0.00020
Surrogate Recovery (%)											
4-Bromofluorobenzene	%	102		5257688	99		5260420	100		5257688	
D10-o-Xylene	%	92		5257688	127		5260420	104		5257688	
D4-1,2-Dichloroethane	%	99		5257688	101		5260420	95		5257688	
D8-Toluene	%	95		5257688	100		5260420	95		5257688	

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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ATLANTIC VOC IN SOIL (FIELD PRES.)

Maxxam ID		FMF804			
Sampling Date		2017/10/25			
COC Number		N/A			
	UNITS	**BB-TP101-BS2**	**RDL**	**QC Batch**	**MDL**
Volatile Organics					
1,1,1-Trichloroethane	ug/kg	<25	25	5257688	0.00010
1,1,2,2-Tetrachloroethane	ug/kg	<25	25	5257688	0.00040
1,1,2-Trichloroethane	ug/kg	<25	25	5257688	0.00040
1,1-Dichloroethane	ug/kg	<25	25	5257688	0.00010
1,1-Dichloroethylene	ug/kg	<25	25	5257688	0.00010
1,2-Dichlorobenzene	ug/kg	<25	25	5257688	0.00020
1,2-Dichloroethane	ug/kg	<25	25	5257688	0.00010
1,2-Dichloropropane	ug/kg	<25	25	5257688	0.00020
1,3-Dichlorobenzene	ug/kg	<25	25	5257688	0.00020
1,4-Dichlorobenzene	ug/kg	<25	25	5257688	0.00030
Benzene	ug/kg	<25	25	5257688	0.00010
Bromodichloromethane	ug/kg	<25	25	5257688	0.00020
Bromoform	ug/kg	<25	25	5257688	0.00030
Bromomethane	ug/kg	<50	50	5257688	0.00040
Carbon Tetrachloride	ug/kg	<25	25	5257688	0.00010
Chlorobenzene	ug/kg	<25	25	5257688	0.00010
Chloroethane	ug/kg	<200	200	5257688	0.00030
Chloroform	ug/kg	<25	25	5257688	0.00010
cis-1,2-Dichloroethylene	ug/kg	<25	25	5257688	0.00010
cis-1,3-Dichloropropene	ug/kg	<25	25	5257688	0.00020
Dibromochloromethane	ug/kg	<25	25	5257688	0.00030
Ethylbenzene	ug/kg	<25	25	5257688	0.00010
Ethylene Dibromide	ug/kg	<25	25	5257688	0.00040
Methyl t-butyl ether (MTBE)	ug/kg	<25	25	5257688	0.00010
Methylene Chloride(Dichloromethane)	ug/kg	<50 (1)	50	5257688	0.00020
o-Xylene	ug/kg	<25	25	5257688	0.00010
p+m-Xylene	ug/kg	<25	25	5257688	0.00010
Styrene	ug/kg	<25	25	5257688	0.00020
Tetrachloroethylene	ug/kg	<25	25	5257688	0.00030
Toluene	ug/kg	<25	25	5257688	0.00010
Total Xylenes	ug/kg	<50	50	5257688	N/A
trans-1,2-Dichloroethylene	ug/kg	<25	25	5257688	0.00020

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) Elevated VOC RDL(s) due to detected levels in the method blank.

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Maxxam Job #: B7O7511
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.003
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

ATLANTIC VOC IN SOIL (FIELD PRES.)

Maxxam ID		FMF804			
Sampling Date		2017/10/25			
COC Number		N/A			
	UNITS	**BB-TP101-BS2**	**RDL**	**QC Batch**	**MDL**
trans-1,3-Dichloropropene	ug/kg	<25	25	5257688	0.00030
Trichloroethylene	ug/kg	<10	10	5257688	0.00020
Trichlorofluoromethane (FREON 11)	ug/kg	<25	25	5257688	0.00030
Vinyl Chloride	ug/kg	<20	20	5257688	0.00020
Surrogate Recovery (%)					
4-Bromofluorobenzene	%	101		5257688	
D10-o-Xylene	%	91		5257688	
D4-1,2-Dichloroethane	%	97		5257688	
D8-Toluene	%	94		5257688	

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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RESULTS OF ANALYSES OF SOIL

Maxxam ID		FMF474	FMF481				FMF503			
Sampling Date		2017/10/25	2017/10/26				2017/10/25			
COC Number		N/A	N/A				N/A			
	UNITS	**BB-SS2**	**BB-SS7**	**RDL**	**QC Batch**	**MDL**	**BB-SS3**	**RDL**	**QC Batch**	**MDL**
Inorganics										
Moisture	%	9.0	7.7	1.0	5250087	0.20				
Total Organic Carbon	mg/kg						24000	500	5255034	100

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		FMF507	FMF511	FMF514	FMF518	FMF527		
Sampling Date		2017/10/25	2017/10/25	2017/10/25	2017/10/25	2017/10/25		
COC Number		N/A	N/A	N/A	N/A	N/A		
	UNITS	**BB-SS14**	**BB-SS18**	**BB-SS21**	**BB-SS25**	**BB-SS34**	**QC Batch**	**MDL**
Subcontracted Analysis								
Subcontract Parameter	N/A	ATTACHED	ATTACHED	ATTACHED	ATTACHED	ATTACHED	5253048	N/A

QC Batch = Quality Control Batch
N/A = Not Applicable

Maxxam ID		FMF533	FMF534				FMF537		
Sampling Date		2017/10/26	2017/10/26				2017/10/26		
COC Number		N/A	N/A				N/A		
	UNITS	**BB-SS41**	**BB-SS42**	**RDL**	**QC Batch**	**MDL**	**BB-SS45**	**QC Batch**	**MDL**
Inorganics									
Moisture	%	18	17	1.0	5250284	0.20			
Subcontracted Analysis									
Subcontract Parameter	N/A						ATTACHED	5253048	N/A

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

Maxxam ID		FMF653				FMF655		FMF663			
Sampling Date		2017/10/25				2017/10/25		2017/10/25			
COC Number		N/A				N/A		N/A			
	UNITS	**BB-TP4-BS1**	**RDL**	**QC Batch**	**MDL**	**BB-TP5-BS1**	**QC Batch**	**BB-TP9-BS1**	**RDL**	**QC Batch**	**MDL**
Inorganics											
Moisture	%					16	5250284	35	1.0	5250300	0.20
Total Organic Carbon	mg/kg	14000	500	5255034	100						

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B7O7511
Report Date: 2017/11/20

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Sampler Initials: RP

RESULTS OF ANALYSES OF SOIL

Maxxam ID		FMF680	FMF682	FMF682	FMF684	FMF686	FMF688			
Sampling Date		2017/10/25	2017/10/25	2017/10/25	2017/10/25	2017/10/25	2017/10/25			
COC Number		N/A	N/A	N/A	N/A	N/A	N/A			
	UNITS	**BB-TP15-BS1**	**BB-TP16-BS1**	**BB-TP16-BS1 Lab-Dup**	**BB-TP17-BS1**	**BB-TP18-BS1**	**BB-TP19-BS1**	**RDL**	**QC Batch**	**MDL**
Inorganics										
Moisture	%	14	18	16	9.7	9.0	9.3	1.0	5250749	0.20

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

Maxxam ID		FMF690	FMF692	FMF694	FMF710		FMF712			
Sampling Date		2017/10/25	2017/10/25	2017/10/25	2017/10/25		2017/10/25			
COC Number		N/A	N/A	N/A	N/A		N/A			
	UNITS	**BB-TP20-BS1**	**BB-TP21-BS1**	**BB-TP22-BS1**	**BB-TP23-BS1**	**QC Batch**	**BB-TP24-BS1**	**RDL**	**QC Batch**	**MDL**
Inorganics										
Moisture	%	8.6	16	9.4	7.9	5250749	11	1.0	5250793	0.20

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		FMF714		FMF718	FMF727	FMF729	FMF752			
Sampling Date		2017/10/25		2017/10/25	2017/10/25	2017/10/25	2017/10/25			
COC Number		N/A		N/A	N/A	N/A	N/A			
	UNITS	**BB-TP25-BS1**	**QC Batch**	**BB-TP27-BS1**	**BB-TP30-BS1**	**BB-TP31-BS1**	**BB-TP32-BS1**	**RDL**	**QC Batch**	**MDL**
Inorganics										
Moisture	%	7.9	5254746	9.4	9.7	13	10	1.0	5250793	0.20
Subcontracted Analysis										
Subcontract Parameter	N/A	ATTACHED	5253048							

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		FMF754	FMF756				FMF758	FMF778			
Sampling Date		2017/10/25	2017/10/25				2017/10/25	2017/10/26			
COC Number		N/A	N/A				N/A	N/A			
	UNITS	**BB-TP33-BS1**	**BB-TP34-BS1**	**RDL**	**QC Batch**	**MDL**	**BB-TP35-BS1**	**BB-TP41-BS1**	**RDL**	**QC Batch**	**MDL**
Inorganics											
Moisture	%	16	13	1.0	5250793	0.20					
Total Organic Carbon	mg/kg						20000	13000	500	5255034	100

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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RESULTS OF ANALYSES OF SOIL

Maxxam ID		FMF779			FMG284	FMG290			
Sampling Date		2017/10/26			2017/10/25	2017/10/25			
COC Number		N/A			N/A	N/A			
	UNITS	**BB-TP42-BS1**	**QC Batch**	**MDL**	**BB-SS49**	**BB-SS50**	**RDL**	**QC Batch**	**MDL**
Inorganics									
Moisture	%				8.5	12	1.0	5254064	0.20
Subcontracted Analysis									
Subcontract Parameter	N/A	ATTACHED	5253048	N/A					

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

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ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		FMF502	FMF503	FMF504	FMF505	FMF506			
Sampling Date		2017/10/25	2017/10/25	2017/10/26	2017/10/26	2017/10/25			
COC Number		N/A	N/A	N/A	N/A	N/A			
	UNITS	**BB-SS1**	**BB-SS3**	**BB-SS8**	**BB-SS10**	**BB-SS13**	**RDL**	**QC Batch**	**MDL**
Metals									
Acid Extractable Aluminum (Al)	mg/kg	7600	5800	8500	7500	5400	10	5254023	N/A
Acid Extractable Antimony (Sb)	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	5254023	N/A
Acid Extractable Arsenic (As)	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	5254023	N/A
Acid Extractable Barium (Ba)	mg/kg	32	32	28	21	37	5.0	5254023	N/A
Acid Extractable Beryllium (Be)	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	5254023	N/A
Acid Extractable Bismuth (Bi)	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	5254023	N/A
Acid Extractable Boron (B)	mg/kg	<50	<50	<50	<50	<50	50	5254023	N/A
Acid Extractable Cadmium (Cd)	mg/kg	<0.30	<0.30	<0.30	<0.30	<0.30	0.30	5254023	N/A
Acid Extractable Chromium (Cr)	mg/kg	13	5.9	6.6	6.8	6.1	2.0	5254023	N/A
Acid Extractable Cobalt (Co)	mg/kg	3.6	2.1	1.9	1.6	3.0	1.0	5254023	N/A
Acid Extractable Copper (Cu)	mg/kg	6.6	3.8	4.0	2.9	8.5	2.0	5254023	N/A
Acid Extractable Iron (Fe)	mg/kg	17000	12000	14000	14000	12000	50	5254023	N/A
Acid Extractable Lead (Pb)	mg/kg	14	5.8	7.8	7.5	11	0.50	5254023	N/A
Acid Extractable Lithium (Li)	mg/kg	11	9.0	8.2	8.7	11	2.0	5254023	N/A
Acid Extractable Manganese (Mn)	mg/kg	160	99	100	100	140	2.0	5254023	N/A
Acid Extractable Mercury (Hg)	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	5254023	N/A
Acid Extractable Molybdenum (Mo)	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	5254023	N/A
Acid Extractable Nickel (Ni)	mg/kg	5.2	4.0	3.2	2.5	4.4	2.0	5254023	N/A
Acid Extractable Rubidium (Rb)	mg/kg	5.5	7.1	4.7	3.5	5.9	2.0	5254023	N/A
Acid Extractable Selenium (Se)	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	5254023	N/A
Acid Extractable Silver (Ag)	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5254023	N/A
Acid Extractable Strontium (Sr)	mg/kg	7.4	<5.0	5.2	5.2	5.8	5.0	5254023	N/A
Acid Extractable Thallium (Tl)	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	5254023	N/A
Acid Extractable Tin (Sn)	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	5254023	N/A
Acid Extractable Uranium (U)	mg/kg	0.83	0.47	0.61	0.67	1.0	0.10	5254023	N/A
Acid Extractable Vanadium (V)	mg/kg	23	13	15	15	11	2.0	5254023	N/A
Acid Extractable Zinc (Zn)	mg/kg	34	22	23	24	41	5.0	5254023	N/A

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

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Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.003
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		FMF507		FMF508	FMF509	FMF510	FMF510			
Sampling Date		2017/10/25		2017/10/25	2017/10/25	2017/10/25	2017/10/25			
COC Number		N/A		N/A	N/A	N/A	N/A			
	UNITS	**BB-SS14**	**QC Batch**	**BB-SS15**	**BB-SS16**	**BB-SS17**	**BB-SS17 Lab-Dup**	**RDL**	**QC Batch**	**MDL**
Metals										
Acid Extractable Aluminum (Al)	mg/kg	3300	5262457	3600	3800	4400	3800	10	5254023	N/A
Acid Extractable Antimony (Sb)	mg/kg	<2.0	5262457	<2.0	<2.0	<2.0	<2.0	2.0	5254023	N/A
Acid Extractable Arsenic (As)	mg/kg	<2.0	5262457	<2.0	<2.0	<2.0	<2.0	2.0	5254023	N/A
Acid Extractable Barium (Ba)	mg/kg	24	5262457	40	21	32	26	5.0	5254023	N/A
Acid Extractable Beryllium (Be)	mg/kg	<2.0	5262457	<2.0	<2.0	<2.0	<2.0	2.0	5254023	N/A
Acid Extractable Bismuth (Bi)	mg/kg	<2.0	5262457	<2.0	<2.0	<2.0	<2.0	2.0	5254023	N/A
Acid Extractable Boron (B)	mg/kg	<50	5262457	<50	<50	<50	<50	50	5254023	N/A
Acid Extractable Cadmium (Cd)	mg/kg	<0.30	5262457	<0.30	<0.30	<0.30	<0.30	0.30	5254023	N/A
Acid Extractable Chromium (Cr)	mg/kg	3.0	5262457	4.6	3.6	4.5	3.9	2.0	5254023	N/A
Acid Extractable Cobalt (Co)	mg/kg	2.3	5262457	1.2	1.2	1.9	1.7	1.0	5254023	N/A
Acid Extractable Copper (Cu)	mg/kg	4.3	5262457	4.8	2.8	5.2	4.7	2.0	5254023	N/A
Acid Extractable Iron (Fe)	mg/kg	7700	5262457	7400	8100	11000	8700	50	5254023	N/A
Acid Extractable Lead (Pb)	mg/kg	5.4	5262457	14	5.7	8.8	7.1	0.50	5254023	N/A
Acid Extractable Lithium (Li)	mg/kg	9.1	5262457	5.4	6.9	11	9.5	2.0	5254023	N/A
Acid Extractable Manganese (Mn)	mg/kg	100	5262457	54	75	110	88	2.0	5254023	N/A
Acid Extractable Mercury (Hg)	mg/kg	<0.10	5262457	0.29	<0.10	<0.10	<0.10	0.10	5254023	N/A
Acid Extractable Molybdenum (Mo)	mg/kg	<2.0	5262457	<2.0	<2.0	<2.0	<2.0	2.0	5254023	N/A
Acid Extractable Nickel (Ni)	mg/kg	2.8	5262457	2.3	<2.0	2.7	2.7	2.0	5254023	N/A
Acid Extractable Rubidium (Rb)	mg/kg	3.9	5262457	3.5	4.3	6.3	5.5	2.0	5254023	N/A
Acid Extractable Selenium (Se)	mg/kg	<1.0	5262457	<1.0	<1.0	<1.0	<1.0	1.0	5254023	N/A
Acid Extractable Silver (Ag)	mg/kg	<0.50	5262457	<0.50	<0.50	<0.50	<0.50	0.50	5254023	N/A
Acid Extractable Strontium (Sr)	mg/kg	<5.0	5262457	5.1	<5.0	6.1	<5.0	5.0	5254023	N/A
Acid Extractable Thallium (Tl)	mg/kg	<0.10	5262457	<0.10	<0.10	<0.10	<0.10	0.10	5254023	N/A
Acid Extractable Tin (Sn)	mg/kg	<2.0	5262457	<2.0	<2.0	<2.0	<2.0	2.0	5254023	N/A
Acid Extractable Uranium (U)	mg/kg	0.57	5262457	0.39	0.37	0.90	0.62 (1)	0.10	5254023	N/A
Acid Extractable Vanadium (V)	mg/kg	5.9	5262457	7.3	6.6	8.0	7.0	2.0	5254023	N/A
Acid Extractable Zinc (Zn)	mg/kg	24	5262457	23	21	30	29	5.0	5254023	N/A

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable
(1) Poor RPD due to sample inhomogeneity. < 10 % of compounds in multi-component analysis in violation.

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Sampler Initials: RP

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		FMF511		FMF512	FMF513		FMF514			
Sampling Date		2017/10/25		2017/10/25	2017/10/25		2017/10/25			
COC Number		N/A		N/A	N/A		N/A			
	UNITS	**BB-SS18**	**QC Batch**	**BB-SS19**	**BB-SS20**	**QC Batch**	**BB-SS21**	**RDL**	**QC Batch**	**MDL**
Metals										
Acid Extractable Aluminum (Al)	mg/kg	5100	5258994	5400	3000	5254032	4400	10	5262457	N/A
Acid Extractable Antimony (Sb)	mg/kg	<2.0	5258994	<2.0	<2.0	5254032	<2.0	2.0	5262457	N/A
Acid Extractable Arsenic (As)	mg/kg	<2.0	5258994	<2.0	<2.0	5254032	<2.0	2.0	5262457	N/A
Acid Extractable Barium (Ba)	mg/kg	13	5258994	27	14	5254032	20	5.0	5262457	N/A
Acid Extractable Beryllium (Be)	mg/kg	<2.0	5258994	<2.0	<2.0	5254032	<2.0	2.0	5262457	N/A
Acid Extractable Bismuth (Bi)	mg/kg	<2.0	5258994	<2.0	<2.0	5254032	<2.0	2.0	5262457	N/A
Acid Extractable Boron (B)	mg/kg	<50	5258994	<50	<50	5254032	<50	50	5262457	N/A
Acid Extractable Cadmium (Cd)	mg/kg	<0.30	5258994	<0.30	<0.30	5254032	<0.30	0.30	5262457	N/A
Acid Extractable Chromium (Cr)	mg/kg	4.3	5258994	5.9	3.4	5254032	4.3	2.0	5262457	N/A
Acid Extractable Cobalt (Co)	mg/kg	<1.0	5258994	2.1	<1.0	5254032	1.2	1.0	5262457	N/A
Acid Extractable Copper (Cu)	mg/kg	<2.0	5258994	4.2	7.2	5254032	2.4	2.0	5262457	N/A
Acid Extractable Iron (Fe)	mg/kg	6700	5258994	12000	5800	5254032	11000	50	5262457	N/A
Acid Extractable Lead (Pb)	mg/kg	7.1	5258994	11	5.9	5254032	7.9	0.50	5262457	N/A
Acid Extractable Lithium (Li)	mg/kg	3.0	5258994	9.7	2.3	5254032	6.6	2.0	5262457	N/A
Acid Extractable Manganese (Mn)	mg/kg	39	5258994	120	32	5254032	77	2.0	5262457	N/A
Acid Extractable Mercury (Hg)	mg/kg	<0.10	5258994	0.13	<0.10	5254032	<0.10	0.10	5262457	N/A
Acid Extractable Molybdenum (Mo)	mg/kg	<2.0	5258994	<2.0	<2.0	5254032	<2.0	2.0	5262457	N/A
Acid Extractable Nickel (Ni)	mg/kg	<2.0	5258994	3.2	2.9	5254032	2.2	2.0	5262457	N/A
Acid Extractable Rubidium (Rb)	mg/kg	2.7	5258994	5.0	4.6	5254032	4.8	2.0	5262457	N/A
Acid Extractable Selenium (Se)	mg/kg	<1.0	5258994	<1.0	<1.0	5254032	<1.0	1.0	5262457	N/A
Acid Extractable Silver (Ag)	mg/kg	<0.50	5258994	<0.50	<0.50	5254032	<0.50	0.50	5262457	N/A
Acid Extractable Strontium (Sr)	mg/kg	<5.0	5258994	<5.0	<5.0	5254032	<5.0	5.0	5262457	N/A
Acid Extractable Thallium (Tl)	mg/kg	<0.10	5258994	<0.10	<0.10	5254032	<0.10	0.10	5262457	N/A
Acid Extractable Tin (Sn)	mg/kg	<2.0	5258994	<2.0	<2.0	5254032	<2.0	2.0	5262457	N/A
Acid Extractable Uranium (U)	mg/kg	0.29	5258994	0.62	0.27	5254032	0.40	0.10	5262457	N/A
Acid Extractable Vanadium (V)	mg/kg	8.2	5258994	11	6.6	5254032	10	2.0	5262457	N/A
Acid Extractable Zinc (Zn)	mg/kg	12	5258994	28	56	5254032	22	5.0	5262457	N/A

RDL = Reportable Detection Limit
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N/A = Not Applicable

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Maxxam Job #: B7O7511
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.003
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		FMF515	FMF516	FMF523	FMF535		FMF536			
Sampling Date		2017/10/25	2017/10/26	2017/10/25	2017/10/26		2017/10/26			
COC Number		N/A	N/A	N/A	N/A		N/A			
	UNITS	**BB-SS22**	**BB-SS23**	**BB-SS30**	**BB-SS43**	**RDL**	**BB-SS44**	**RDL**	**QC Batch**	**MDL**
Metals										
Acid Extractable Aluminum (Al)	mg/kg	5400	5200	3600	10000	10	34000	10	5254032	N/A
Acid Extractable Antimony (Sb)	mg/kg	<2.0	<2.0	<2.0	<2.0	2.0	22	2.0	5254032	N/A
Acid Extractable Arsenic (As)	mg/kg	<2.0	<2.0	<2.0	<2.0	2.0	3.4	2.0	5254032	N/A
Acid Extractable Barium (Ba)	mg/kg	17	19	31	68	5.0	200	5.0	5254032	N/A
Acid Extractable Beryllium (Be)	mg/kg	<2.0	<2.0	<2.0	<2.0	2.0	<2.0	2.0	5254032	N/A
Acid Extractable Bismuth (Bi)	mg/kg	<2.0	<2.0	<2.0	<2.0	2.0	4.4	2.0	5254032	N/A
Acid Extractable Boron (B)	mg/kg	<50	<50	<50	<50	50	190	50	5254032	N/A
Acid Extractable Cadmium (Cd)	mg/kg	<0.30	<0.30	<0.30	<0.30	0.30	61	0.30	5254032	N/A
Acid Extractable Chromium (Cr)	mg/kg	3.3	4.6	5.0	24	2.0	190	2.0	5254032	N/A
Acid Extractable Cobalt (Co)	mg/kg	1.0	1.1	2.3	4.5	1.0	13	1.0	5254032	N/A
Acid Extractable Copper (Cu)	mg/kg	<2.0	2.1	18	8.8	2.0	6900	20	5254032	N/A
Acid Extractable Iron (Fe)	mg/kg	9100	9200	9600	18000	50	43000	50	5254032	N/A
Acid Extractable Lead (Pb)	mg/kg	4.4	5.2	7.6	5.8	0.50	550	0.50	5254032	N/A
Acid Extractable Lithium (Li)	mg/kg	5.8	5.4	8.3	7.5	2.0	7.8	2.0	5254032	N/A
Acid Extractable Manganese (Mn)	mg/kg	75	54	110	140	2.0	530	2.0	5254032	N/A
Acid Extractable Mercury (Hg)	mg/kg	<0.10	<0.10	<0.10	<0.10	0.10	<0.10	0.10	5254032	N/A
Acid Extractable Molybdenum (Mo)	mg/kg	<2.0	<2.0	<2.0	<2.0	2.0	<2.0	2.0	5254032	N/A
Acid Extractable Nickel (Ni)	mg/kg	<2.0	2.1	6.2	8.7	2.0	290	2.0	5254032	N/A
Acid Extractable Rubidium (Rb)	mg/kg	5.4	3.4	4.4	8.9	2.0	12	2.0	5254032	N/A
Acid Extractable Selenium (Se)	mg/kg	<1.0	<1.0	<1.0	<1.0	1.0	4.1	1.0	5254032	N/A
Acid Extractable Silver (Ag)	mg/kg	<0.50	<0.50	<0.50	<0.50	0.50	69	5.0	5254032	N/A
Acid Extractable Strontium (Sr)	mg/kg	<5.0	<5.0	<5.0	12	5.0	25	5.0	5254032	N/A
Acid Extractable Thallium (Tl)	mg/kg	<0.10	<0.10	<0.10	<0.10	0.10	0.10	0.10	5254032	N/A
Acid Extractable Tin (Sn)	mg/kg	<2.0	<2.0	<2.0	<2.0	2.0	250	2.0	5254032	N/A
Acid Extractable Uranium (U)	mg/kg	0.32	0.34	0.59	0.58	0.10	0.80	0.10	5254032	N/A
Acid Extractable Vanadium (V)	mg/kg	8.9	10	7.3	34	2.0	25	2.0	5254032	N/A
Acid Extractable Zinc (Zn)	mg/kg	15	16	89	33	5.0	8000	5.0	5254032	N/A

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Maxxam Job #: B7O7511
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.003
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		FMF538	FMF539	FMF650	FMF651	FMF653	FMF653			
Sampling Date		2017/10/26	2017/10/26	2017/10/26	2017/10/25	2017/10/25	2017/10/25			
COC Number		N/A	N/A	N/A	N/A	N/A	N/A			
	UNITS	**BB-SS46**	**BB-SS47**	**BB-SS48**	**BB-TP3-BS1**	**BB-TP4-BS1**	**BB-TP4-BS1 Lab-Dup**	**RDL**	**QC Batch**	**MDL**
Metals										
Acid Extractable Aluminum (Al)	mg/kg	6800	7300	6800	7000	4800	5100	10	5254032	N/A
Acid Extractable Antimony (Sb)	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	5254032	N/A
Acid Extractable Arsenic (As)	mg/kg	<2.0	<2.0	2.1	<2.0	<2.0	<2.0	2.0	5254032	N/A
Acid Extractable Barium (Ba)	mg/kg	350	100	110	28	22	21	5.0	5254032	N/A
Acid Extractable Beryllium (Be)	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	5254032	N/A
Acid Extractable Bismuth (Bi)	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	5254032	N/A
Acid Extractable Boron (B)	mg/kg	<50	<50	<50	<50	<50	<50	50	5254032	N/A
Acid Extractable Cadmium (Cd)	mg/kg	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	0.30	5254032	N/A
Acid Extractable Chromium (Cr)	mg/kg	26	22	14	6.9	3.9	5.0	2.0	5254032	N/A
Acid Extractable Cobalt (Co)	mg/kg	3.9	5.3	6.5	2.2	1.7	1.7	1.0	5254032	N/A
Acid Extractable Copper (Cu)	mg/kg	9.6	36	21	5.9	15	16	2.0	5254032	N/A
Acid Extractable Iron (Fe)	mg/kg	15000	17000	29000	11000	9500	10000	50	5254032	N/A
Acid Extractable Lead (Pb)	mg/kg	5.9	10	9.2	8.1	12	15	0.50	5254032	N/A
Acid Extractable Lithium (Li)	mg/kg	6.7	7.3	16	11	9.5	9.2	2.0	5254032	N/A
Acid Extractable Manganese (Mn)	mg/kg	130	160	410	120	82	85	2.0	5254032	N/A
Acid Extractable Mercury (Hg)	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	5254032	N/A
Acid Extractable Molybdenum (Mo)	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	5254032	N/A
Acid Extractable Nickel (Ni)	mg/kg	10	8.9	6.2	3.6	2.6	3.1	2.0	5254032	N/A
Acid Extractable Rubidium (Rb)	mg/kg	11	14	24	5.2	4.5	4.3	2.0	5254032	N/A
Acid Extractable Selenium (Se)	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	5254032	N/A
Acid Extractable Silver (Ag)	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5254032	N/A
Acid Extractable Strontium (Sr)	mg/kg	11	12	8.8	5.8	<5.0	<5.0	5.0	5254032	N/A
Acid Extractable Thallium (Tl)	mg/kg	<0.10	0.12	0.18	<0.10	<0.10	<0.10	0.10	5254032	N/A
Acid Extractable Tin (Sn)	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	5254032	N/A
Acid Extractable Uranium (U)	mg/kg	0.37	0.52	1.3	0.70	0.45	0.52	0.10	5254032	N/A
Acid Extractable Vanadium (V)	mg/kg	30	32	21	11	7.3	8.7	2.0	5254032	N/A
Acid Extractable Zinc (Zn)	mg/kg	94	94	220	31	37	44	5.0	5254032	N/A

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

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Maxxam Job #: B7O7511
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.003
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		FMF655	FMF657	FMF659		FMF661	FMF667			
Sampling Date		2017/10/25	2017/10/25	2017/10/25		2017/10/25	2017/10/25			
COC Number		N/A	N/A	N/A		N/A	N/A			
	UNITS	**BB-TP5-BS1**	**BB-TP6-BS1**	**BB-TP7-BS1**	**QC Batch**	**BB-TP8-BS1**	**BB-TP12-BS1**	**RDL**	**QC Batch**	**MDL**
Metals										
Acid Extractable Aluminum (Al)	mg/kg	4500	9100	5400	5254032	4200	4200	10	5254226	N/A
Acid Extractable Antimony (Sb)	mg/kg	<2.0	<2.0	<2.0	5254032	<2.0	<2.0	2.0	5254226	N/A
Acid Extractable Arsenic (As)	mg/kg	<2.0	<2.0	<2.0	5254032	<2.0	<2.0	2.0	5254226	N/A
Acid Extractable Barium (Ba)	mg/kg	26	48	15	5254032	82	25	5.0	5254226	N/A
Acid Extractable Beryllium (Be)	mg/kg	<2.0	<2.0	<2.0	5254032	<2.0	<2.0	2.0	5254226	N/A
Acid Extractable Bismuth (Bi)	mg/kg	<2.0	<2.0	<2.0	5254032	<2.0	<2.0	2.0	5254226	N/A
Acid Extractable Boron (B)	mg/kg	<50	<50	<50	5254032	<50	<50	50	5254226	N/A
Acid Extractable Cadmium (Cd)	mg/kg	<0.30	<0.30	<0.30	5254032	<0.30	<0.30	0.30	5254226	N/A
Acid Extractable Chromium (Cr)	mg/kg	4.4	14	3.7	5254032	6.2	3.8	2.0	5254226	N/A
Acid Extractable Cobalt (Co)	mg/kg	1.4	5.8	<1.0	5254032	2.0	1.7	1.0	5254226	N/A
Acid Extractable Copper (Cu)	mg/kg	3.1	16	<2.0	5254032	10	4.3	2.0	5254226	N/A
Acid Extractable Iron (Fe)	mg/kg	9500	16000	9500	5254032	10000	10000	50	5254226	N/A
Acid Extractable Lead (Pb)	mg/kg	6.0	9.7	5.1	5254032	44	6.3	0.50	5254226	N/A
Acid Extractable Lithium (Li)	mg/kg	7.8	14	5.6	5254032	8.8	9.1	2.0	5254226	N/A
Acid Extractable Manganese (Mn)	mg/kg	79	210	59	5254032	110	110	2.0	5254226	N/A
Acid Extractable Mercury (Hg)	mg/kg	<0.10	<0.10	<0.10	5254032	<0.10	<0.10	0.10	5254226	N/A
Acid Extractable Molybdenum (Mo)	mg/kg	<2.0	<2.0	<2.0	5254032	<2.0	<2.0	2.0	5254226	N/A
Acid Extractable Nickel (Ni)	mg/kg	2.4	8.6	<2.0	5254032	3.1	2.4	2.0	5254226	N/A
Acid Extractable Rubidium (Rb)	mg/kg	5.1	8.1	3.9	5254032	5.1	4.4	2.0	5254226	N/A
Acid Extractable Selenium (Se)	mg/kg	<1.0	<1.0	<1.0	5254032	<1.0	<1.0	1.0	5254226	N/A
Acid Extractable Silver (Ag)	mg/kg	<0.50	<0.50	<0.50	5254032	<0.50	<0.50	0.50	5254226	N/A
Acid Extractable Strontium (Sr)	mg/kg	<5.0	8.8	<5.0	5254032	5.6	<5.0	5.0	5254226	N/A
Acid Extractable Thallium (Tl)	mg/kg	<0.10	<0.10	<0.10	5254032	<0.10	<0.10	0.10	5254226	N/A
Acid Extractable Tin (Sn)	mg/kg	<2.0	<2.0	<2.0	5254032	<2.0	<2.0	2.0	5254226	N/A
Acid Extractable Uranium (U)	mg/kg	0.52	0.88	0.30	5254032	0.52	0.59	0.10	5254226	N/A
Acid Extractable Vanadium (V)	mg/kg	8.8	22	9.3	5254032	9.9	8.2	2.0	5254226	N/A
Acid Extractable Zinc (Zn)	mg/kg	21	41	15	5254032	75	24	5.0	5254226	N/A

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Maxxam Job #: B7O7511
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Stantec Consulting Ltd
Client Project #: 121414915.200.003
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		FMF676	FMF678	FMF680	FMF682	FMF683			
Sampling Date		2017/10/25	2017/10/25	2017/10/25	2017/10/25	2017/10/25			
COC Number		N/A	N/A	N/A	N/A	N/A			
	UNITS	**BB-TP13-BS1**	**BB-TP14-BS1**	**BB-TP15-BS1**	**BB-TP16-BS1**	**BB-TP16-BS2**	**RDL**	**QC Batch**	**MDL**
Metals									
Acid Extractable Aluminum (Al)	mg/kg	6900	3600	3200	4300	4900	10	5254226	N/A
Acid Extractable Antimony (Sb)	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	5254226	N/A
Acid Extractable Arsenic (As)	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	5254226	N/A
Acid Extractable Barium (Ba)	mg/kg	19	17	27	18	30	5.0	5254226	N/A
Acid Extractable Beryllium (Be)	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	5254226	N/A
Acid Extractable Bismuth (Bi)	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	5254226	N/A
Acid Extractable Boron (B)	mg/kg	<50	<50	<50	<50	<50	50	5254226	N/A
Acid Extractable Cadmium (Cd)	mg/kg	<0.30	<0.30	<0.30	<0.30	<0.30	0.30	5254226	N/A
Acid Extractable Chromium (Cr)	mg/kg	4.7	3.2	2.8	3.0	5.0	2.0	5254226	N/A
Acid Extractable Cobalt (Co)	mg/kg	1.5	<1.0	<1.0	<1.0	1.4	1.0	5254226	N/A
Acid Extractable Copper (Cu)	mg/kg	2.7	<2.0	<2.0	<2.0	2.9	2.0	5254226	N/A
Acid Extractable Iron (Fe)	mg/kg	11000	7300	7300	8600	8900	50	5254226	N/A
Acid Extractable Lead (Pb)	mg/kg	6.7	5.8	5.8	5.4	15	0.50	5254226	N/A
Acid Extractable Lithium (Li)	mg/kg	9.1	4.2	4.0	4.7	8.6	2.0	5254226	N/A
Acid Extractable Manganese (Mn)	mg/kg	84	37	48	48	83	2.0	5254226	N/A
Acid Extractable Mercury (Hg)	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	5254226	N/A
Acid Extractable Molybdenum (Mo)	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	5254226	N/A
Acid Extractable Nickel (Ni)	mg/kg	2.5	<2.0	<2.0	<2.0	2.3	2.0	5254226	N/A
Acid Extractable Rubidium (Rb)	mg/kg	4.9	3.8	4.5	3.6	3.9	2.0	5254226	N/A
Acid Extractable Selenium (Se)	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	5254226	N/A
Acid Extractable Silver (Ag)	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5254226	N/A
Acid Extractable Strontium (Sr)	mg/kg	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	5254226	N/A
Acid Extractable Thallium (Tl)	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	5254226	N/A
Acid Extractable Tin (Sn)	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	5254226	N/A
Acid Extractable Uranium (U)	mg/kg	0.46	0.27	0.30	0.27	0.55	0.10	5254226	N/A
Acid Extractable Vanadium (V)	mg/kg	11	7.7	6.6	9.0	7.4	2.0	5254226	N/A
Acid Extractable Zinc (Zn)	mg/kg	22	15	12	12	21	5.0	5254226	N/A

RDL = Reportable Detection Limit
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ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		FMF684	FMF686	FMF688	FMF688			
Sampling Date		2017/10/25	2017/10/25	2017/10/25	2017/10/25			
COC Number		N/A	N/A	N/A	N/A			
	UNITS	**BB-TP17-BS1**	**BB-TP18-BS1**	**BB-TP19-BS1**	**BB-TP19-BS1 Lab-Dup**	**RDL**	**QC Batch**	**MDL**
Metals								
Acid Extractable Aluminum (Al)	mg/kg	6700	3800	4000	5000	10	5254226	N/A
Acid Extractable Antimony (Sb)	mg/kg	<2.0	<2.0	19	2.1 (1)	2.0	5254226	N/A
Acid Extractable Arsenic (As)	mg/kg	<2.0	<2.0	<2.0	<2.0	2.0	5254226	N/A
Acid Extractable Barium (Ba)	mg/kg	38	35	81	100	5.0	5254226	N/A
Acid Extractable Beryllium (Be)	mg/kg	<2.0	<2.0	<2.0	<2.0	2.0	5254226	N/A
Acid Extractable Bismuth (Bi)	mg/kg	<2.0	<2.0	<2.0	<2.0	2.0	5254226	N/A
Acid Extractable Boron (B)	mg/kg	<50	<50	<50	<50	50	5254226	N/A
Acid Extractable Cadmium (Cd)	mg/kg	<0.30	<0.30	1.2	1.6	0.30	5254226	N/A
Acid Extractable Chromium (Cr)	mg/kg	7.2	4.1	4.4	8.8 (1)	2.0	5254226	N/A
Acid Extractable Cobalt (Co)	mg/kg	2.4	1.5	2.4	2.5	1.0	5254226	N/A
Acid Extractable Copper (Cu)	mg/kg	5.8	4.1	9.6	13	2.0	5254226	N/A
Acid Extractable Iron (Fe)	mg/kg	12000	8900	8100	11000	50	5254226	N/A
Acid Extractable Lead (Pb)	mg/kg	12	7.9	25	48 (1)	0.50	5254226	N/A
Acid Extractable Lithium (Li)	mg/kg	12	7.4	8.0	9.3	2.0	5254226	N/A
Acid Extractable Manganese (Mn)	mg/kg	120	86	90	110	2.0	5254226	N/A
Acid Extractable Mercury (Hg)	mg/kg	<0.10	<0.10	<0.10	<0.10	0.10	5254226	N/A
Acid Extractable Molybdenum (Mo)	mg/kg	<2.0	<2.0	<2.0	<2.0	2.0	5254226	N/A
Acid Extractable Nickel (Ni)	mg/kg	3.4	2.1	3.2	3.9	2.0	5254226	N/A
Acid Extractable Rubidium (Rb)	mg/kg	6.3	4.5	4.2	4.6	2.0	5254226	N/A
Acid Extractable Selenium (Se)	mg/kg	<1.0	<1.0	<1.0	<1.0	1.0	5254226	N/A
Acid Extractable Silver (Ag)	mg/kg	<0.50	<0.50	<0.50	<0.50	0.50	5254226	N/A
Acid Extractable Strontium (Sr)	mg/kg	6.3	<5.0	5.9	7.0	5.0	5254226	N/A
Acid Extractable Thallium (Tl)	mg/kg	<0.10	<0.10	<0.10	<0.10	0.10	5254226	N/A
Acid Extractable Tin (Sn)	mg/kg	<2.0	<2.0	<2.0	<2.0	2.0	5254226	N/A
Acid Extractable Uranium (U)	mg/kg	0.71	0.48	0.41	0.50	0.10	5254226	N/A
Acid Extractable Vanadium (V)	mg/kg	13	8.5	6.4	12 (1)	2.0	5254226	N/A
Acid Extractable Zinc (Zn)	mg/kg	53	25	94	120	5.0	5254226	N/A

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable
(1) Poor RPD due to sample inhomogeneity. Result verified by repeat digestion and analysis.

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Maxxam Job #: B7O7511
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.003
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		FMF688				FMF690	FMF691	FMF692			
Sampling Date		2017/10/25				2017/10/25	2017/10/25	2017/10/25			
COC Number		N/A				N/A	N/A	N/A			
	UNITS	**BB-TP19-BS1 Lab-Dup 2**	**RDL**	**QC Batch**	**MDL**	**BB-TP20-BS1**	**BB-TP20-BS2**	**BB-TP21-BS1**	**RDL**	**QC Batch**	**MDL**
Metals											
Acid Extractable Aluminum (Al)	mg/kg					4300	4200	5400	10	5254032	N/A
Acid Extractable Antimony (Sb)	mg/kg	<2.0 (1)	2.0	5254226	N/A	<2.0	3.9	<2.0	2.0	5254032	N/A
Acid Extractable Arsenic (As)	mg/kg					<2.0	<2.0	<2.0	2.0	5254032	N/A
Acid Extractable Barium (Ba)	mg/kg					220	200	69	5.0	5254032	N/A
Acid Extractable Beryllium (Be)	mg/kg					<2.0	<2.0	<2.0	2.0	5254032	N/A
Acid Extractable Bismuth (Bi)	mg/kg					<2.0	<2.0	<2.0	2.0	5254032	N/A
Acid Extractable Boron (B)	mg/kg					<50	<50	<50	50	5254032	N/A
Acid Extractable Cadmium (Cd)	mg/kg					<0.30	<0.30	<0.30	0.30	5254032	N/A
Acid Extractable Chromium (Cr)	mg/kg	7.9	2.0	5254226	N/A	4.9	5.0	8.4	2.0	5254032	N/A
Acid Extractable Cobalt (Co)	mg/kg					2.0	2.1	3.4	1.0	5254032	N/A
Acid Extractable Copper (Cu)	mg/kg					10	7.9	9.9	2.0	5254032	N/A
Acid Extractable Iron (Fe)	mg/kg					10000	10000	14000	50	5254032	N/A
Acid Extractable Lead (Pb)	mg/kg	41 (1)	0.50	5254226	N/A	18	18	6.4	0.50	5254032	N/A
Acid Extractable Lithium (Li)	mg/kg					9.2	9.3	11	2.0	5254032	N/A
Acid Extractable Manganese (Mn)	mg/kg					100	110	160	2.0	5254032	N/A
Acid Extractable Mercury (Hg)	mg/kg					<0.10	<0.10	<0.10	0.10	5254032	N/A
Acid Extractable Molybdenum (Mo)	mg/kg					<2.0	<2.0	<2.0	2.0	5254032	N/A
Acid Extractable Nickel (Ni)	mg/kg					3.9	3.2	5.7	2.0	5254032	N/A
Acid Extractable Rubidium (Rb)	mg/kg					5.3	5.5	9.3	2.0	5254032	N/A
Acid Extractable Selenium (Se)	mg/kg					<1.0	<1.0	<1.0	1.0	5254032	N/A
Acid Extractable Silver (Ag)	mg/kg					<0.50	<0.50	<0.50	0.50	5254032	N/A
Acid Extractable Strontium (Sr)	mg/kg					7.6	5.9	10	5.0	5254032	N/A
Acid Extractable Thallium (Tl)	mg/kg					<0.10	<0.10	<0.10	0.10	5254032	N/A
Acid Extractable Tin (Sn)	mg/kg					<2.0	<2.0	<2.0	2.0	5254032	N/A
Acid Extractable Uranium (U)	mg/kg					0.63	0.54	1.1	0.10	5254032	N/A
Acid Extractable Vanadium (V)	mg/kg	11 (1)	2.0	5254226	N/A	9.3	8.5	16	2.0	5254032	N/A
Acid Extractable Zinc (Zn)	mg/kg					110	73	62	5.0	5254032	N/A

RDL = Reportable Detection Limit
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Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable
(1) Poor RPD due to sample inhomogeneity.

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Maxxam Job #: B7O7511
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.003
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		FMF694	FMF709		FMF710	FMF712			
Sampling Date		2017/10/25	2017/10/25		2017/10/25	2017/10/25			
COC Number		N/A	N/A		N/A	N/A			
	UNITS	**BB-TP22-BS1**	**BB-TP22-BS2**	**QC Batch**	**BB-TP23-BS1**	**BB-TP24-BS1**	**RDL**	**QC Batch**	**MDL**
Metals									
Acid Extractable Aluminum (Al)	mg/kg	4900	4400	5254032	7900	5600	10	5254057	N/A
Acid Extractable Antimony (Sb)	mg/kg	<2.0	<2.0	5254032	<2.0	<2.0	2.0	5254057	N/A
Acid Extractable Arsenic (As)	mg/kg	<2.0	<2.0	5254032	<2.0	<2.0	2.0	5254057	N/A
Acid Extractable Barium (Ba)	mg/kg	41	30	5254032	28	31	5.0	5254057	N/A
Acid Extractable Beryllium (Be)	mg/kg	<2.0	<2.0	5254032	<2.0	<2.0	2.0	5254057	N/A
Acid Extractable Bismuth (Bi)	mg/kg	<2.0	<2.0	5254032	<2.0	<2.0	2.0	5254057	N/A
Acid Extractable Boron (B)	mg/kg	<50	<50	5254032	<50	<50	50	5254057	N/A
Acid Extractable Cadmium (Cd)	mg/kg	<0.30	<0.30	5254032	<0.30	<0.30	0.30	5254057	N/A
Acid Extractable Chromium (Cr)	mg/kg	5.1	7.1	5254032	9.3	5.7	2.0	5254057	N/A
Acid Extractable Cobalt (Co)	mg/kg	3.3	2.6	5254032	3.5	2.1	1.0	5254057	N/A
Acid Extractable Copper (Cu)	mg/kg	12	5.8	5254032	9.1	5.1	2.0	5254057	N/A
Acid Extractable Iron (Fe)	mg/kg	12000	10000	5254032	16000	11000	50	5254057	N/A
Acid Extractable Lead (Pb)	mg/kg	80	31	5254032	14	11	0.50	5254057	N/A
Acid Extractable Lithium (Li)	mg/kg	9.9	8.4	5254032	10	8.4	2.0	5254057	N/A
Acid Extractable Manganese (Mn)	mg/kg	130	120	5254032	150	100	2.0	5254057	N/A
Acid Extractable Mercury (Hg)	mg/kg	<0.10	<0.10	5254032	<0.10	<0.10	0.10	5254057	N/A
Acid Extractable Molybdenum (Mo)	mg/kg	<2.0	<2.0	5254032	<2.0	<2.0	2.0	5254057	N/A
Acid Extractable Nickel (Ni)	mg/kg	5.3	4.0	5254032	5.0	3.6	2.0	5254057	N/A
Acid Extractable Rubidium (Rb)	mg/kg	5.6	4.2	5254032	4.5	4.7	2.0	5254057	N/A
Acid Extractable Selenium (Se)	mg/kg	<1.0	<1.0	5254032	<1.0	<1.0	1.0	5254057	N/A
Acid Extractable Silver (Ag)	mg/kg	<0.50	<0.50	5254032	<0.50	<0.50	0.50	5254057	N/A
Acid Extractable Strontium (Sr)	mg/kg	<5.0	<5.0	5254032	6.6	6.6	5.0	5254057	N/A
Acid Extractable Thallium (Tl)	mg/kg	<0.10	<0.10	5254032	<0.10	<0.10	0.10	5254057	N/A
Acid Extractable Tin (Sn)	mg/kg	<2.0	<2.0	5254032	<2.0	<2.0	2.0	5254057	N/A
Acid Extractable Uranium (U)	mg/kg	0.61	0.59	5254032	0.77	0.51	0.10	5254057	N/A
Acid Extractable Vanadium (V)	mg/kg	9.4	11	5254032	25	11	2.0	5254057	N/A
Acid Extractable Zinc (Zn)	mg/kg	100	43	5254032	45	42	5.0	5254057	N/A

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

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Maxxam Job #: B7O7511
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.003
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		FMF714		FMF716	FMF718	FMF725	FMF727			
Sampling Date		2017/10/25		2017/10/25	2017/10/25	2017/10/25	2017/10/25			
COC Number		N/A		N/A	N/A	N/A	N/A			
	UNITS	**BB-TP25-BS1**	**QC Batch**	**BB-TP26-BS1**	**BB-TP27-BS1**	**BB-TP28-BS1**	**BB-TP30-BS1**	**RDL**	**QC Batch**	**MDL**
Metals										
Acid Extractable Aluminum (Al)	mg/kg	4900	5258994	4600	4800	4300	5300	10	5254057	N/A
Acid Extractable Antimony (Sb)	mg/kg	<2.0	5258994	2.0	<2.0	<2.0	<2.0	2.0	5254057	N/A
Acid Extractable Arsenic (As)	mg/kg	<2.0	5258994	45	<2.0	<2.0	<2.0	2.0	5254057	N/A
Acid Extractable Barium (Ba)	mg/kg	32	5258994	36	52	37	38	5.0	5254057	N/A
Acid Extractable Beryllium (Be)	mg/kg	<2.0	5258994	<2.0	<2.0	<2.0	<2.0	2.0	5254057	N/A
Acid Extractable Bismuth (Bi)	mg/kg	<2.0	5258994	<2.0	<2.0	<2.0	<2.0	2.0	5254057	N/A
Acid Extractable Boron (B)	mg/kg	<50	5258994	<50	<50	<50	<50	50	5254057	N/A
Acid Extractable Cadmium (Cd)	mg/kg	<0.30	5258994	<0.30	<0.30	<0.30	<0.30	0.30	5254057	N/A
Acid Extractable Chromium (Cr)	mg/kg	4.3	5258994	6.6	6.5	4.7	8.4	2.0	5254057	N/A
Acid Extractable Cobalt (Co)	mg/kg	2.1	5258994	2.4	2.7	2.5	3.2	1.0	5254057	N/A
Acid Extractable Copper (Cu)	mg/kg	7.7	5258994	70	19	7.5	11	2.0	5254057	N/A
Acid Extractable Iron (Fe)	mg/kg	11000	5258994	11000	12000	11000	12000	50	5254057	N/A
Acid Extractable Lead (Pb)	mg/kg	14	5258994	41	9.4	6.4	8.4	0.50	5254057	N/A
Acid Extractable Lithium (Li)	mg/kg	9.9	5258994	9.4	9.8	10	9.4	2.0	5254057	N/A
Acid Extractable Manganese (Mn)	mg/kg	110	5258994	120	120	130	140	2.0	5254057	N/A
Acid Extractable Mercury (Hg)	mg/kg	<0.10	5258994	<0.10	<0.10	<0.10	<0.10	0.10	5254057	N/A
Acid Extractable Molybdenum (Mo)	mg/kg	<2.0	5258994	<2.0	<2.0	<2.0	<2.0	2.0	5254057	N/A
Acid Extractable Nickel (Ni)	mg/kg	2.8	5258994	3.7	3.9	3.8	6.3	2.0	5254057	N/A
Acid Extractable Rubidium (Rb)	mg/kg	5.2	5258994	5.9	6.4	5.9	5.5	2.0	5254057	N/A
Acid Extractable Selenium (Se)	mg/kg	<1.0	5258994	<1.0	<1.0	<1.0	<1.0	1.0	5254057	N/A
Acid Extractable Silver (Ag)	mg/kg	<0.50	5258994	<0.50	<0.50	<0.50	<0.50	0.50	5254057	N/A
Acid Extractable Strontium (Sr)	mg/kg	6.2	5258994	6.6	5.8	5.3	7.5	5.0	5254057	N/A
Acid Extractable Thallium (Tl)	mg/kg	<0.10	5258994	<0.10	<0.10	<0.10	<0.10	0.10	5254057	N/A
Acid Extractable Tin (Sn)	mg/kg	<2.0	5258994	33	<2.0	<2.0	<2.0	2.0	5254057	N/A
Acid Extractable Uranium (U)	mg/kg	0.70	5258994	0.49	0.67	0.64	0.64	0.10	5254057	N/A
Acid Extractable Vanadium (V)	mg/kg	8.1	5258994	10	11	9.1	13	2.0	5254057	N/A
Acid Extractable Zinc (Zn)	mg/kg	93	5258994	900	31	31	91	5.0	5254057	N/A

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

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Maxxam Job #: B7O7511
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.003
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		FMF729	FMF752	FMF754	FMF756	FMF758			
Sampling Date		2017/10/25	2017/10/25	2017/10/25	2017/10/25	2017/10/25			
COC Number		N/A	N/A	N/A	N/A	N/A			
	UNITS	**BB-TP31-BS1**	**BB-TP32-BS1**	**BB-TP33-BS1**	**BB-TP34-BS1**	**BB-TP35-BS1**	**RDL**	**QC Batch**	**MDL**
Metals									
Acid Extractable Aluminum (Al)	mg/kg	3000	6000	5200	8900	7200	10	5254057	N/A
Acid Extractable Antimony (Sb)	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	5254057	N/A
Acid Extractable Arsenic (As)	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	5254057	N/A
Acid Extractable Barium (Ba)	mg/kg	44	130	22	28	20	5.0	5254057	N/A
Acid Extractable Beryllium (Be)	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	5254057	N/A
Acid Extractable Bismuth (Bi)	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	5254057	N/A
Acid Extractable Boron (B)	mg/kg	<50	<50	<50	<50	<50	50	5254057	N/A
Acid Extractable Cadmium (Cd)	mg/kg	1.6	<0.30	<0.30	<0.30	<0.30	0.30	5254057	N/A
Acid Extractable Chromium (Cr)	mg/kg	3.9	7.0	5.0	7.5	4.1	2.0	5254057	N/A
Acid Extractable Cobalt (Co)	mg/kg	1.7	2.4	1.3	2.6	1.7	1.0	5254057	N/A
Acid Extractable Copper (Cu)	mg/kg	5.4	5.7	3.3	4.4	2.7	2.0	5254057	N/A
Acid Extractable Iron (Fe)	mg/kg	8800	13000	11000	15000	11000	50	5254057	N/A
Acid Extractable Lead (Pb)	mg/kg	12	8.5	6.1	8.4	6.4	0.50	5254057	N/A
Acid Extractable Lithium (Li)	mg/kg	7.2	9.3	8.3	9.4	9.9	2.0	5254057	N/A
Acid Extractable Manganese (Mn)	mg/kg	92	130	74	140	90	2.0	5254057	N/A
Acid Extractable Mercury (Hg)	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	5254057	N/A
Acid Extractable Molybdenum (Mo)	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	5254057	N/A
Acid Extractable Nickel (Ni)	mg/kg	2.7	3.6	2.4	4.1	2.5	2.0	5254057	N/A
Acid Extractable Rubidium (Rb)	mg/kg	6.3	5.3	4.6	5.5	5.4	2.0	5254057	N/A
Acid Extractable Selenium (Se)	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	5254057	N/A
Acid Extractable Silver (Ag)	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5254057	N/A
Acid Extractable Strontium (Sr)	mg/kg	6.0	6.8	<5.0	5.7	<5.0	5.0	5254057	N/A
Acid Extractable Thallium (Tl)	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	5254057	N/A
Acid Extractable Tin (Sn)	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	5254057	N/A
Acid Extractable Uranium (U)	mg/kg	0.58	0.70	0.41	0.59	0.38	0.10	5254057	N/A
Acid Extractable Vanadium (V)	mg/kg	8.3	14	11	17	9.4	2.0	5254057	N/A
Acid Extractable Zinc (Zn)	mg/kg	43	33	30	28	24	5.0	5254057	N/A

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

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Maxxam Job #: B7O7511
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.003
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		FMF760		FMF762	FMF774	FMF776	FMF777			
Sampling Date		2017/10/26		2017/10/26	2017/10/26	2017/10/26	2017/10/26			
COC Number		N/A		N/A	N/A	N/A	N/A			
	UNITS	**BB-TP36-BS1**	**QC Batch**	**BB-TP37-BS1**	**BB-TP38-BS1**	**BB-TP39-BS1**	**BB-TP40-BS1**	**RDL**	**QC Batch**	**MDL**
Metals										
Acid Extractable Aluminum (Al)	mg/kg	2500	5256537	2800	4600	8800	8600	10	5256774	N/A
Acid Extractable Antimony (Sb)	mg/kg	<2.0	5256537	<2.0	<2.0	<2.0	<2.0	2.0	5256774	N/A
Acid Extractable Arsenic (As)	mg/kg	<2.0	5256537	<2.0	<2.0	<2.0	<2.0	2.0	5256774	N/A
Acid Extractable Barium (Ba)	mg/kg	24	5256537	22	18	130	110	5.0	5256774	N/A
Acid Extractable Beryllium (Be)	mg/kg	<2.0	5256537	<2.0	<2.0	<2.0	<2.0	2.0	5256774	N/A
Acid Extractable Bismuth (Bi)	mg/kg	<2.0	5256537	<2.0	<2.0	<2.0	<2.0	2.0	5256774	N/A
Acid Extractable Boron (B)	mg/kg	<50	5256537	<50	<50	<50	<50	50	5256774	N/A
Acid Extractable Cadmium (Cd)	mg/kg	<0.30	5256537	<0.30	<0.30	<0.30	<0.30	0.30	5256774	N/A
Acid Extractable Chromium (Cr)	mg/kg	2.5	5256537	<2.0	3.6	27	27	2.0	5256774	N/A
Acid Extractable Cobalt (Co)	mg/kg	1.2	5256537	<1.0	1.5	6.2	5.2	1.0	5256774	N/A
Acid Extractable Copper (Cu)	mg/kg	4.0	5256537	<2.0	2.3	21	71	2.0	5256774	N/A
Acid Extractable Iron (Fe)	mg/kg	7100	5256537	7100	11000	20000	19000	50	5256774	N/A
Acid Extractable Lead (Pb)	mg/kg	5.2	5256537	4.4	6.3	16	12	0.50	5256774	N/A
Acid Extractable Lithium (Li)	mg/kg	7.9	5256537	6.7	9.1	7.7	6.8	2.0	5256774	N/A
Acid Extractable Manganese (Mn)	mg/kg	84	5256537	63	86	180	140	2.0	5256774	N/A
Acid Extractable Mercury (Hg)	mg/kg	<0.10	5256537	<0.10	<0.10	<0.10	<0.10	0.10	5256774	N/A
Acid Extractable Molybdenum (Mo)	mg/kg	<2.0	5256537	<2.0	<2.0	<2.0	<2.0	2.0	5256774	N/A
Acid Extractable Nickel (Ni)	mg/kg	<2.0	5256537	<2.0	<2.0	11	9.5	2.0	5256774	N/A
Acid Extractable Rubidium (Rb)	mg/kg	4.1	5256537	3.6	4.2	15	14	2.0	5256774	N/A
Acid Extractable Selenium (Se)	mg/kg	<1.0	5256537	<1.0	<1.0	<1.0	<1.0	1.0	5256774	N/A
Acid Extractable Silver (Ag)	mg/kg	<0.50	5256537	<0.50	<0.50	<0.50	<0.50	0.50	5256774	N/A
Acid Extractable Strontium (Sr)	mg/kg	<5.0	5256537	<5.0	<5.0	18	13	5.0	5256774	N/A
Acid Extractable Thallium (Tl)	mg/kg	<0.10	5256537	<0.10	<0.10	0.13	0.12	0.10	5256774	N/A
Acid Extractable Tin (Sn)	mg/kg	<2.0	5256537	<2.0	<2.0	<2.0	<2.0	2.0	5256774	N/A
Acid Extractable Uranium (U)	mg/kg	0.80	5256537	0.50	0.65	0.77	0.64	0.10	5256774	N/A
Acid Extractable Vanadium (V)	mg/kg	4.7	5256537	4.1	8.4	38	41	2.0	5256774	N/A
Acid Extractable Zinc (Zn)	mg/kg	22	5256537	17	25	130	150	5.0	5256774	N/A

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

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Maxxam Job #: B7O7511
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.003
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		FMF778	FMF778				FMF778			
Sampling Date		2017/10/26	2017/10/26				2017/10/26			
COC Number		N/A	N/A				N/A			
	UNITS	**BB-TP41-BS1**	**BB-TP41-BS1 Lab-Dup**	**RDL**	**QC Batch**	**MDL**	**BB-TP41-BS1 Lab-Dup 2**	**RDL**	**QC Batch**	**MDL**
Metals										
Acid Extractable Aluminum (Al)	mg/kg	12000	13000	10	5256537	N/A				
Acid Extractable Antimony (Sb)	mg/kg	<2.0	<2.0	2.0	5256537	N/A				
Acid Extractable Arsenic (As)	mg/kg	7.5	9.0	2.0	5256537	N/A				
Acid Extractable Barium (Ba)	mg/kg	240	240	5.0	5256537	N/A				
Acid Extractable Beryllium (Be)	mg/kg	<2.0	<2.0	2.0	5256537	N/A				
Acid Extractable Bismuth (Bi)	mg/kg	<2.0	<2.0	2.0	5256537	N/A				
Acid Extractable Boron (B)	mg/kg	<50	<50	50	5256537	N/A				
Acid Extractable Cadmium (Cd)	mg/kg	1.1	1.4	0.30	5256537	N/A				
Acid Extractable Chromium (Cr)	mg/kg	3.4	5.3	2.0	5256537	N/A				
Acid Extractable Cobalt (Co)	mg/kg	2.3	2.9	1.0	5256537	N/A				
Acid Extractable Copper (Cu)	mg/kg	530	180 (1)	2.0	5256537	N/A	470	2.0	5256537	N/A
Acid Extractable Iron (Fe)	mg/kg	46000	47000	50	5256537	N/A				
Acid Extractable Lead (Pb)	mg/kg	75	88	0.50	5256537	N/A				
Acid Extractable Lithium (Li)	mg/kg	100	100	2.0	5256537	N/A				
Acid Extractable Manganese (Mn)	mg/kg	620	650	2.0	5256537	N/A				
Acid Extractable Mercury (Hg)	mg/kg	<0.10	<0.10	0.10	5256537	N/A				
Acid Extractable Molybdenum (Mo)	mg/kg	<2.0	2.2	2.0	5256537	N/A				
Acid Extractable Nickel (Ni)	mg/kg	3.1	<2.0	2.0	5256537	N/A				
Acid Extractable Rubidium (Rb)	mg/kg	100	110	2.0	5256537	N/A				
Acid Extractable Selenium (Se)	mg/kg	<1.0	<1.0	1.0	5256537	N/A				
Acid Extractable Silver (Ag)	mg/kg	<0.50	<0.50	0.50	5256537	N/A				
Acid Extractable Strontium (Sr)	mg/kg	9.9	9.8	5.0	5256537	N/A				
Acid Extractable Thallium (Tl)	mg/kg	0.94	0.97	0.10	5256537	N/A				
Acid Extractable Tin (Sn)	mg/kg	5.9	7.9	2.0	5256537	N/A				
Acid Extractable Uranium (U)	mg/kg	4.1	4.7	0.10	5256537	N/A				
Acid Extractable Vanadium (V)	mg/kg	2.5	2.5	2.0	5256537	N/A				
Acid Extractable Zinc (Zn)	mg/kg	1000	1200	5.0	5256537	N/A				

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable
(1) Poor RPD due to sample inhomogeneity. Result confirmed by repeat digestion and analysis

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Maxxam Job #: B7O7511
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.003
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		FMF779		FMF780	FMF781		FMF782			
Sampling Date		2017/10/26		2017/10/26	2017/10/26		2017/10/26			
COC Number		N/A		N/A	N/A		N/A			
	UNITS	**BB-TP42-BS1**	**QC Batch**	**BB-TP43-BS1**	**BB-TP44-BS1**	**QC Batch**	**BB-TP50-BS1**	**RDL**	**QC Batch**	**MDL**
Metals										
Acid Extractable Aluminum (Al)	mg/kg	6400	5262457	6300	6500	5256774	4900	10	5256537	N/A
Acid Extractable Antimony (Sb)	mg/kg	<2.0	5262457	<2.0	<2.0	5256774	<2.0	2.0	5256537	N/A
Acid Extractable Arsenic (As)	mg/kg	<2.0	5262457	<2.0	<2.0	5256774	<2.0	2.0	5256537	N/A
Acid Extractable Barium (Ba)	mg/kg	97	5262457	80	77	5256774	20	5.0	5256537	N/A
Acid Extractable Beryllium (Be)	mg/kg	<2.0	5262457	<2.0	<2.0	5256774	<2.0	2.0	5256537	N/A
Acid Extractable Bismuth (Bi)	mg/kg	<2.0	5262457	<2.0	<2.0	5256774	<2.0	2.0	5256537	N/A
Acid Extractable Boron (B)	mg/kg	<50	5262457	<50	<50	5256774	<50	50	5256537	N/A
Acid Extractable Cadmium (Cd)	mg/kg	<0.30	5262457	<0.30	<0.30	5256774	<0.30	0.30	5256537	N/A
Acid Extractable Chromium (Cr)	mg/kg	20	5262457	18	19	5256774	3.5	2.0	5256537	N/A
Acid Extractable Cobalt (Co)	mg/kg	4.7	5262457	3.6	3.9	5256774	1.4	1.0	5256537	N/A
Acid Extractable Copper (Cu)	mg/kg	12	5262457	15	13	5256774	3.5	2.0	5256537	N/A
Acid Extractable Iron (Fe)	mg/kg	15000	5262457	14000	15000	5256774	9900	50	5256537	N/A
Acid Extractable Lead (Pb)	mg/kg	6.0	5262457	5.6	5.2	5256774	6.6	0.50	5256537	N/A
Acid Extractable Lithium (Li)	mg/kg	6.3	5262457	8.4	6.4	5256774	6.7	2.0	5256537	N/A
Acid Extractable Manganese (Mn)	mg/kg	140	5262457	110	120	5256774	83	2.0	5256537	N/A
Acid Extractable Mercury (Hg)	mg/kg	<0.10	5262457	<0.10	<0.10	5256774	<0.10	0.10	5256537	N/A
Acid Extractable Molybdenum (Mo)	mg/kg	<2.0	5262457	<2.0	<2.0	5256774	<2.0	2.0	5256537	N/A
Acid Extractable Nickel (Ni)	mg/kg	7.3	5262457	8.3	7.6	5256774	5.2	2.0	5256537	N/A
Acid Extractable Rubidium (Rb)	mg/kg	12	5262457	9.8	9.9	5256774	5.8	2.0	5256537	N/A
Acid Extractable Selenium (Se)	mg/kg	<1.0	5262457	<1.0	<1.0	5256774	<1.0	1.0	5256537	N/A
Acid Extractable Silver (Ag)	mg/kg	<0.50	5262457	<0.50	<0.50	5256774	<0.50	0.50	5256537	N/A
Acid Extractable Strontium (Sr)	mg/kg	13	5262457	12	12	5256774	<5.0	5.0	5256537	N/A
Acid Extractable Thallium (Tl)	mg/kg	<0.10	5262457	<0.10	<0.10	5256774	<0.10	0.10	5256537	N/A
Acid Extractable Tin (Sn)	mg/kg	<2.0	5262457	<2.0	<2.0	5256774	<2.0	2.0	5256537	N/A
Acid Extractable Uranium (U)	mg/kg	0.65	5262457	0.64	0.64	5256774	0.39	0.10	5256537	N/A
Acid Extractable Vanadium (V)	mg/kg	28	5262457	25	27	5256774	8.9	2.0	5256537	N/A
Acid Extractable Zinc (Zn)	mg/kg	30	5262457	89	32	5256774	20	5.0	5256537	N/A

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

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Maxxam Job #: B7O7511
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.003
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		FMF802	FMF803		FMF805		FMF806			
Sampling Date		2017/10/25	2017/10/25		2017/10/25		2017/10/25			
COC Number		N/A	N/A		N/A		N/A			
	UNITS	**BB-SS301**	**BB-TP121-BS1**	**QC Batch**	**BB-TP201-BS2**	**QC Batch**	**BB-TP71-BS1**	**RDL**	**QC Batch**	**MDL**
Metals										
Acid Extractable Aluminum (Al)	mg/kg	3400	3900	5256537	3800	5256774	6100	10	5254226	N/A
Acid Extractable Antimony (Sb)	mg/kg	<2.0	<2.0	5256537	<2.0	5256774	<2.0	2.0	5254226	N/A
Acid Extractable Arsenic (As)	mg/kg	<2.0	<2.0	5256537	<2.0	5256774	<2.0	2.0	5254226	N/A
Acid Extractable Barium (Ba)	mg/kg	42	30	5256537	180	5256774	22	5.0	5254226	N/A
Acid Extractable Beryllium (Be)	mg/kg	<2.0	<2.0	5256537	<2.0	5256774	<2.0	2.0	5254226	N/A
Acid Extractable Bismuth (Bi)	mg/kg	<2.0	<2.0	5256537	<2.0	5256774	<2.0	2.0	5254226	N/A
Acid Extractable Boron (B)	mg/kg	<50	<50	5256537	<50	5256774	<50	50	5254226	N/A
Acid Extractable Cadmium (Cd)	mg/kg	<0.30	<0.30	5256537	<0.30	5256774	<0.30	0.30	5254226	N/A
Acid Extractable Chromium (Cr)	mg/kg	4.6	3.8	5256537	4.8	5256774	3.4	2.0	5254226	N/A
Acid Extractable Cobalt (Co)	mg/kg	2.3	1.5	5256537	2.1	5256774	<1.0	1.0	5254226	N/A
Acid Extractable Copper (Cu)	mg/kg	5.3	3.5	5256537	6.6	5256774	<2.0	2.0	5254226	N/A
Acid Extractable Iron (Fe)	mg/kg	9400	8000	5256537	9900	5256774	8600	50	5254226	N/A
Acid Extractable Lead (Pb)	mg/kg	6.4	5.4	5256537	17	5256774	5.4	0.50	5254226	N/A
Acid Extractable Lithium (Li)	mg/kg	7.6	8.2	5256537	9.0	5256774	5.7	2.0	5254226	N/A
Acid Extractable Manganese (Mn)	mg/kg	110	92	5256537	100	5256774	53	2.0	5254226	N/A
Acid Extractable Mercury (Hg)	mg/kg	<0.10	<0.10	5256537	<0.10	5256774	<0.10	0.10	5254226	N/A
Acid Extractable Molybdenum (Mo)	mg/kg	<2.0	<2.0	5256537	<2.0	5256774	<2.0	2.0	5254226	N/A
Acid Extractable Nickel (Ni)	mg/kg	3.4	2.3	5256537	2.8	5256774	<2.0	2.0	5254226	N/A
Acid Extractable Rubidium (Rb)	mg/kg	4.9	4.6	5256537	4.6	5256774	3.8	2.0	5254226	N/A
Acid Extractable Selenium (Se)	mg/kg	<1.0	<1.0	5256537	<1.0	5256774	<1.0	1.0	5254226	N/A
Acid Extractable Silver (Ag)	mg/kg	<0.50	<0.50	5256537	<0.50	5256774	<0.50	0.50	5254226	N/A
Acid Extractable Strontium (Sr)	mg/kg	<5.0	5.1	5256537	5.9	5256774	<5.0	5.0	5254226	N/A
Acid Extractable Thallium (Tl)	mg/kg	<0.10	<0.10	5256537	<0.10	5256774	<0.10	0.10	5254226	N/A
Acid Extractable Tin (Sn)	mg/kg	<2.0	<2.0	5256537	<2.0	5256774	<2.0	2.0	5254226	N/A
Acid Extractable Uranium (U)	mg/kg	0.59	0.53	5256537	0.52	5256774	0.31	0.10	5254226	N/A
Acid Extractable Vanadium (V)	mg/kg	8.3	7.4	5256537	9.1	5256774	8.8	2.0	5254226	N/A
Acid Extractable Zinc (Zn)	mg/kg	27	23	5256537	64	5256774	13	5.0	5254226	N/A

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

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Maxxam Job #: B7O7511
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.003
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		FMF808		FMF809			
Sampling Date		2017/10/25		2017/10/25			
COC Number		N/A		N/A			
	UNITS	**BB-TP161-BS2**	**QC Batch**	**BB-TP221-BS2**	**RDL**	**QC Batch**	**MDL**
Metals							
Acid Extractable Aluminum (Al)	mg/kg	5100	5256537	5300	10	5254226	N/A
Acid Extractable Antimony (Sb)	mg/kg	<2.0	5256537	<2.0	2.0	5254226	N/A
Acid Extractable Arsenic (As)	mg/kg	<2.0	5256537	<2.0	2.0	5254226	N/A
Acid Extractable Barium (Ba)	mg/kg	24	5256537	43	5.0	5254226	N/A
Acid Extractable Beryllium (Be)	mg/kg	<2.0	5256537	<2.0	2.0	5254226	N/A
Acid Extractable Bismuth (Bi)	mg/kg	<2.0	5256537	<2.0	2.0	5254226	N/A
Acid Extractable Boron (B)	mg/kg	<50	5256537	<50	50	5254226	N/A
Acid Extractable Cadmium (Cd)	mg/kg	<0.30	5256537	<0.30	0.30	5254226	N/A
Acid Extractable Chromium (Cr)	mg/kg	4.3	5256537	6.2	2.0	5254226	N/A
Acid Extractable Cobalt (Co)	mg/kg	1.6	5256537	2.6	1.0	5254226	N/A
Acid Extractable Copper (Cu)	mg/kg	6.3	5256537	6.2	2.0	5254226	N/A
Acid Extractable Iron (Fe)	mg/kg	8900	5256537	12000	50	5254226	N/A
Acid Extractable Lead (Pb)	mg/kg	5.8	5256537	25	0.50	5254226	N/A
Acid Extractable Lithium (Li)	mg/kg	8.1	5256537	9.7	2.0	5254226	N/A
Acid Extractable Manganese (Mn)	mg/kg	79	5256537	140	2.0	5254226	N/A
Acid Extractable Mercury (Hg)	mg/kg	<0.10	5256537	<0.10	0.10	5254226	N/A
Acid Extractable Molybdenum (Mo)	mg/kg	<2.0	5256537	<2.0	2.0	5254226	N/A
Acid Extractable Nickel (Ni)	mg/kg	3.6	5256537	3.4	2.0	5254226	N/A
Acid Extractable Rubidium (Rb)	mg/kg	4.3	5256537	6.3	2.0	5254226	N/A
Acid Extractable Selenium (Se)	mg/kg	<1.0	5256537	<1.0	1.0	5254226	N/A
Acid Extractable Silver (Ag)	mg/kg	<0.50	5256537	<0.50	0.50	5254226	N/A
Acid Extractable Strontium (Sr)	mg/kg	<5.0	5256537	6.4	5.0	5254226	N/A
Acid Extractable Thallium (Tl)	mg/kg	<0.10	5256537	<0.10	0.10	5254226	N/A
Acid Extractable Tin (Sn)	mg/kg	<2.0	5256537	<2.0	2.0	5254226	N/A
Acid Extractable Uranium (U)	mg/kg	0.63	5256537	0.61	0.10	5254226	N/A
Acid Extractable Vanadium (V)	mg/kg	7.6	5256537	13	2.0	5254226	N/A
Acid Extractable Zinc (Zn)	mg/kg	43	5256537	50	5.0	5254226	N/A

RDL = Reportable Detection Limit
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N/A = Not Applicable

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Maxxam Job #: B7O7511
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Stantec Consulting Ltd
Client Project #: 121414915.200.003
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

SEMI-VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		FMF502	FMF503	FMF504	FMF505				FMF505			
Sampling Date		2017/10/25	2017/10/25	2017/10/26	2017/10/26				2017/10/26			
COC Number		N/A	N/A	N/A	N/A				N/A			
	UNITS	**BB-SS1**	**BB-SS3**	**BB-SS8**	**BB-SS10**	**RDL**	**QC Batch**	**MDL**	**BB-SS10 Lab-Dup**	**RDL**	**QC Batch**	**MDL**
Polyaromatic Hydrocarbons												
1-Methylnaphthalene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	5254065	N/A	<0.010	0.010	5254065	N/A
2-Methylnaphthalene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	5254065	N/A	<0.010	0.010	5254065	N/A
Acenaphthene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	5254065	N/A	<0.010	0.010	5254065	N/A
Acenaphthylene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	5254065	N/A	<0.010	0.010	5254065	N/A
Anthracene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	5254065	N/A	<0.010	0.010	5254065	N/A
Benzo(a)anthracene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	5254065	N/A	<0.010	0.010	5254065	N/A
Benzo(a)pyrene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	5254065	N/A	<0.010	0.010	5254065	N/A
Benzo(b)fluoranthene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	5254065	N/A	<0.010	0.010	5254065	N/A
Benzo(b/j)fluoranthene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	5248691	N/A				
Benzo(g,h,i)perylene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	5254065	N/A	<0.010	0.010	5254065	N/A
Benzo(j)fluoranthene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	5254065	N/A	<0.010	0.010	5254065	N/A
Benzo(k)fluoranthene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	5254065	N/A	<0.010	0.010	5254065	N/A
Chrysene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	5254065	N/A	<0.010	0.010	5254065	N/A
Dibenz(a,h)anthracene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	5254065	N/A	<0.010	0.010	5254065	N/A
Fluoranthene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	5254065	N/A	<0.010	0.010	5254065	N/A
Fluorene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	5254065	N/A	<0.010	0.010	5254065	N/A
Indeno(1,2,3-cd)pyrene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	5254065	N/A	<0.010	0.010	5254065	N/A
Naphthalene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	5254065	N/A	<0.010	0.010	5254065	N/A
Perylene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	5254065	N/A	<0.010	0.010	5254065	N/A
Phenanthrene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	5254065	N/A	<0.010	0.010	5254065	N/A
Pyrene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	5254065	N/A	<0.010	0.010	5254065	N/A
Surrogate Recovery (%)												
D10-Anthracene	%	109	108	98	108		5254065		98		5254065	
D14-Terphenyl (FS)	%	105	105	98	104		5254065		99		5254065	
D8-Acenaphthylene	%	96	98	91	95		5254065		97		5254065	

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

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Maxxam Job #: B7O7511
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.003
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

SEMI-VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		FMF506	FMF508	FMF510	FMF516		FMF517			
Sampling Date		2017/10/25	2017/10/25	2017/10/25	2017/10/26		2017/10/25			
COC Number		N/A	N/A	N/A	N/A		N/A			
	UNITS	**BB-SS13**	**BB-SS15**	**BB-SS17**	**BB-SS23**	**RDL**	**BB-SS24**	**RDL**	**QC Batch**	**MDL**
Polyaromatic Hydrocarbons										
1-Methylnaphthalene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	<0.090 (1)	0.090	5254065	N/A
2-Methylnaphthalene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	<0.17 (1)	0.17	5254065	N/A
Acenaphthene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	<0.060 (1)	0.060	5254065	N/A
Acenaphthylene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	<0.050 (1)	0.050	5254065	N/A
Anthracene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	<0.010	0.010	5254065	N/A
Benzo(a)anthracene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	<0.010	0.010	5254065	N/A
Benzo(a)pyrene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	<0.010	0.010	5254065	N/A
Benzo(b)fluoranthene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	<0.010	0.010	5254065	N/A
Benzo(b/j)fluoranthene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	<0.020	0.020	5248691	N/A
Benzo(g,h,i)perylene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	<0.010	0.010	5254065	N/A
Benzo(j)fluoranthene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	<0.010	0.010	5254065	N/A
Benzo(k)fluoranthene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	<0.010	0.010	5254065	N/A
Chrysene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	<0.010	0.010	5254065	N/A
Dibenz(a,h)anthracene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	<0.010	0.010	5254065	N/A
Fluoranthene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	<0.010	0.010	5254065	N/A
Fluorene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	<0.090 (1)	0.090	5254065	N/A
Indeno(1,2,3-cd)pyrene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	<0.010	0.010	5254065	N/A
Naphthalene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	<0.040 (1)	0.040	5254065	N/A
Perylene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	<0.010	0.010	5254065	N/A
Phenanthrene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	<0.010	0.010	5254065	N/A
Pyrene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	0.016	0.010	5254065	N/A
Surrogate Recovery (%)										
D10-Anthracene	%	109	105	106	99		101		5254065	
D14-Terphenyl (FS)	%	105	104	106	100		103		5254065	
D8-Acenaphthylene	%	102	94	96	95		103		5254065	

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) Elevated PAH RDL(s) due to matrix / co-extractive interference.

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Maxxam Job #: B7O7511
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.003
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

SEMI-VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		FMF519		FMF520		FMF521		FMF523	FMF524			
Sampling Date		2017/10/25		2017/10/25		2017/10/25		2017/10/25	2017/10/25			
COC Number		N/A		N/A		N/A		N/A	N/A			
	UNITS	**BB-SS26**	**RDL**	**BB-SS27**	**RDL**	**BB-SS28**	**QC Batch**	**BB-SS30**	**BB-SS31**	**RDL**	**QC Batch**	**MDL**
Polyaromatic Hydrocarbons												
1-Methylnaphthalene	mg/kg	<0.010	0.010	<0.15 (1)	0.15	<0.010	5254065	<0.010	<0.010	0.010	5254068	N/A
2-Methylnaphthalene	mg/kg	<0.010	0.010	<0.32 (1)	0.32	<0.010	5254065	<0.010	<0.010	0.010	5254068	N/A
Acenaphthene	mg/kg	<0.010	0.010	<0.12 (1)	0.12	<0.010	5254065	<0.010	<0.010	0.010	5254068	N/A
Acenaphthylene	mg/kg	<0.010	0.010	<0.090 (1)	0.090	<0.010	5254065	<0.010	<0.010	0.010	5254068	N/A
Anthracene	mg/kg	<0.010	0.010	<0.020 (1)	0.020	<0.010	5254065	<0.010	<0.010	0.010	5254068	N/A
Benzo(a)anthracene	mg/kg	<0.010	0.010	<0.010	0.010	<0.010	5254065	<0.010	<0.010	0.010	5254068	N/A
Benzo(a)pyrene	mg/kg	<0.010	0.010	<0.010	0.010	<0.010	5254065	<0.010	<0.010	0.010	5254068	N/A
Benzo(b)fluoranthene	mg/kg	<0.010	0.010	<0.010	0.010	<0.010	5254065	<0.010	<0.010	0.010	5254068	N/A
Benzo(b/j)fluoranthene	mg/kg	<0.020	0.020	<0.020	0.020	<0.020	5248691	<0.020	<0.020	0.020	5248691	N/A
Benzo(g,h,i)perylene	mg/kg	<0.010	0.010	<0.010	0.010	<0.010	5254065	<0.010	<0.010	0.010	5254068	N/A
Benzo(j)fluoranthene	mg/kg	<0.010	0.010	<0.010	0.010	<0.010	5254065	<0.010	<0.010	0.010	5254068	N/A
Benzo(k)fluoranthene	mg/kg	<0.010	0.010	<0.010	0.010	<0.010	5254065	<0.010	<0.010	0.010	5254068	N/A
Chrysene	mg/kg	<0.010	0.010	<0.010	0.010	<0.010	5254065	<0.010	<0.010	0.010	5254068	N/A
Dibenz(a,h)anthracene	mg/kg	<0.010	0.010	<0.010	0.010	<0.010	5254065	<0.010	<0.010	0.010	5254068	N/A
Fluoranthene	mg/kg	<0.010	0.010	<0.010	0.010	<0.010	5254065	<0.010	<0.010	0.010	5254068	N/A
Fluorene	mg/kg	<0.010	0.010	<0.20 (1)	0.20	<0.010	5254065	<0.010	<0.010	0.010	5254068	N/A
Indeno(1,2,3-cd)pyrene	mg/kg	<0.010	0.010	<0.010	0.010	<0.010	5254065	<0.010	<0.010	0.010	5254068	N/A
Naphthalene	mg/kg	<0.010	0.010	<0.21 (1)	0.21	<0.010	5254065	<0.010	<0.010	0.010	5254068	N/A
Perylene	mg/kg	<0.010	0.010	<0.010	0.010	<0.010	5254065	<0.010	<0.010	0.010	5254068	N/A
Phenanthrene	mg/kg	<0.010	0.010	<0.010	0.010	<0.010	5254065	<0.010	<0.010	0.010	5254068	N/A
Pyrene	mg/kg	<0.010	0.010	0.016	0.010	<0.010	5254065	<0.010	<0.010	0.010	5254068	N/A
Surrogate Recovery (%)												
D10-Anthracene	%	108		99		109	5254065	98	97		5254068	
D14-Terphenyl (FS)	%	104		102		106	5254065	101	100		5254068	
D8-Acenaphthylene	%	97		95		100	5254065	95	95		5254068	

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) Elevated PAH RDL(s) due to matrix / co-extractive interference.

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Maxxam Job #: B7O7511
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.003
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

SEMI-VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		FMF524				FMF525	FMF528	FMF529			
Sampling Date		2017/10/25				2017/10/25	2017/10/25	2017/10/25			
COC Number		N/A				N/A	N/A	N/A			
	UNITS	**BB-SS31 Lab-Dup**	**RDL**	**QC Batch**	**MDL**	**BB-SS32**	**BB-SS35**	**BB-SS36**	**RDL**	**QC Batch**	**MDL**
Polyaromatic Hydrocarbons											
1-Methylnaphthalene	mg/kg	<0.010	0.010	5254068	N/A	<0.010	<0.010	<0.010	0.010	5254068	N/A
2-Methylnaphthalene	mg/kg	<0.010	0.010	5254068	N/A	<0.010	<0.010	<0.010	0.010	5254068	N/A
Acenaphthene	mg/kg	<0.010	0.010	5254068	N/A	<0.010	<0.010	<0.010	0.010	5254068	N/A
Acenaphthylene	mg/kg	<0.010	0.010	5254068	N/A	<0.010	<0.010	<0.010	0.010	5254068	N/A
Anthracene	mg/kg	<0.010	0.010	5254068	N/A	<0.010	<0.010	<0.010	0.010	5254068	N/A
Benzo(a)anthracene	mg/kg	<0.010	0.010	5254068	N/A	<0.010	<0.010	<0.010	0.010	5254068	N/A
Benzo(a)pyrene	mg/kg	<0.010	0.010	5254068	N/A	<0.010	<0.010	<0.010	0.010	5254068	N/A
Benzo(b)fluoranthene	mg/kg	<0.010	0.010	5254068	N/A	<0.010	<0.010	<0.010	0.010	5254068	N/A
Benzo(b/j)fluoranthene	mg/kg					<0.020	<0.020	<0.020	0.020	5248691	N/A
Benzo(g,h,i)perylene	mg/kg	<0.010	0.010	5254068	N/A	<0.010	<0.010	<0.010	0.010	5254068	N/A
Benzo(j)fluoranthene	mg/kg	<0.010	0.010	5254068	N/A	<0.010	<0.010	<0.010	0.010	5254068	N/A
Benzo(k)fluoranthene	mg/kg	<0.010	0.010	5254068	N/A	<0.010	<0.010	<0.010	0.010	5254068	N/A
Chrysene	mg/kg	<0.010	0.010	5254068	N/A	0.012	<0.010	<0.010	0.010	5254068	N/A
Dibenz(a,h)anthracene	mg/kg	<0.010	0.010	5254068	N/A	<0.010	<0.010	<0.010	0.010	5254068	N/A
Fluoranthene	mg/kg	<0.010	0.010	5254068	N/A	0.017	<0.010	<0.010	0.010	5254068	N/A
Fluorene	mg/kg	<0.010	0.010	5254068	N/A	<0.010	<0.010	<0.010	0.010	5254068	N/A
Indeno(1,2,3-cd)pyrene	mg/kg	<0.010	0.010	5254068	N/A	<0.010	<0.010	<0.010	0.010	5254068	N/A
Naphthalene	mg/kg	<0.010	0.010	5254068	N/A	<0.010	<0.010	<0.010	0.010	5254068	N/A
Perylene	mg/kg	<0.010	0.010	5254068	N/A	<0.010	<0.010	<0.010	0.010	5254068	N/A
Phenanthrene	mg/kg	<0.010	0.010	5254068	N/A	<0.010	<0.010	<0.010	0.010	5254068	N/A
Pyrene	mg/kg	<0.010	0.010	5254068	N/A	0.015	<0.010	<0.010	0.010	5254068	N/A
Surrogate Recovery (%)											
D10-Anthracene	%	95		5254068		95	95	94		5254068	
D14-Terphenyl (FS)	%	96		5254068		102	99	100		5254068	
D8-Acenaphthylene	%	93		5254068		92	94	98		5254068	

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

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Maxxam Job #: B7O7511
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.003
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

SEMI-VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		FMF532		FMF535		FMF538			FMF650			
Sampling Date		2017/10/25		2017/10/26		2017/10/26			2017/10/26			
COC Number		N/A		N/A		N/A			N/A			
	UNITS	**BB-SS40**	**RDL**	**BB-SS43**	**RDL**	**BB-SS46**	**RDL**	**QC Batch**	**BB-SS48**	**RDL**	**QC Batch**	**MDL**
Polyaromatic Hydrocarbons												
1-Methylnaphthalene	mg/kg	<0.030 (1)	0.030	<0.010	0.010	<0.010	0.010	5254068	<0.010	0.010	5254739	N/A
2-Methylnaphthalene	mg/kg	<0.050 (1)	0.050	<0.010	0.010	<0.050 (1)	0.050	5254068	0.018	0.010	5254739	N/A
Acenaphthene	mg/kg	<0.050 (1)	0.050	<0.010	0.010	<0.010	0.010	5254068	<0.010	0.010	5254739	N/A
Acenaphthylene	mg/kg	<0.050 (1)	0.050	<0.010	0.010	<0.010	0.010	5254068	<0.010	0.010	5254739	N/A
Anthracene	mg/kg	<0.010	0.010	<0.010	0.010	<0.020 (1)	0.020	5254068	<0.010	0.010	5254739	N/A
Benzo(a)anthracene	mg/kg	<0.010	0.010	<0.010	0.010	<0.010	0.010	5254068	<0.010	0.010	5254739	N/A
Benzo(a)pyrene	mg/kg	<0.010	0.010	<0.010	0.010	<0.010	0.010	5254068	<0.010	0.010	5254739	N/A
Benzo(b)fluoranthene	mg/kg	<0.010	0.010	<0.010	0.010	0.019	0.010	5254068	<0.010	0.010	5254739	N/A
Benzo(b/j)fluoranthene	mg/kg	<0.020	0.020	<0.020	0.020	<0.020	0.020	5248691	<0.020	0.020	5248691	N/A
Benzo(g,h,i)perylene	mg/kg	<0.010	0.010	<0.010	0.010	<0.010	0.010	5254068	<0.010	0.010	5254739	N/A
Benzo(j)fluoranthene	mg/kg	<0.010	0.010	<0.010	0.010	<0.010	0.010	5254068	<0.010	0.010	5254739	N/A
Benzo(k)fluoranthene	mg/kg	<0.010	0.010	<0.010	0.010	<0.010	0.010	5254068	<0.010	0.010	5254739	N/A
Chrysene	mg/kg	<0.010	0.010	<0.010	0.010	0.14	0.010	5254068	<0.010	0.010	5254739	N/A
Dibenz(a,h)anthracene	mg/kg	<0.010	0.010	<0.010	0.010	<0.010	0.010	5254068	<0.010	0.010	5254739	N/A
Fluoranthene	mg/kg	<0.010	0.010	<0.010	0.010	0.045	0.010	5254068	<0.010	0.010	5254739	N/A
Fluorene	mg/kg	<0.010	0.010	<0.010	0.010	<0.040 (1)	0.040	5254068	<0.010	0.010	5254739	N/A
Indeno(1,2,3-cd)pyrene	mg/kg	<0.010	0.010	<0.010	0.010	<0.010	0.010	5254068	<0.010	0.010	5254739	N/A
Naphthalene	mg/kg	0.027	0.010	<0.010	0.010	<0.010	0.010	5254068	<0.010	0.010	5254739	N/A
Perylene	mg/kg	<0.010	0.010	<0.010	0.010	<0.010	0.010	5254068	<0.010	0.010	5254739	N/A
Phenanthrene	mg/kg	<0.010	0.010	<0.010	0.010	<0.010	0.010	5254068	<0.010	0.010	5254739	N/A
Pyrene	mg/kg	0.015	0.010	<0.010	0.010	0.21	0.010	5254068	<0.010	0.010	5254739	N/A
Surrogate Recovery (%)												
D10-Anthracene	%	93		97		88		5254068	98		5254739	
D14-Terphenyl (FS)	%	95		100		93		5254068	99		5254739	
D8-Acenaphthylene	%	96		93		94		5254068	99		5254739	

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) Elevated PAH RDL(s) due to matrix / co-extractive interference.

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Maxxam Job #: B7O7511
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.003
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

SEMI-VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		FMF665	FMF667	FMF677	FMF678	FMF680	FMF681			
Sampling Date		2017/10/25	2017/10/25	2017/10/25	2017/10/25	2017/10/25	2017/10/25			
COC Number		N/A	N/A	N/A	N/A	N/A	N/A			
	UNITS	**BB-TP10-BS2**	**BB-TP12-BS1**	**BB-TP13-BS2**	**BB-TP14-BS1**	**BB-TP15-BS1**	**BB-TP15-BS2**	**RDL**	**QC Batch**	**MDL**
Polyaromatic Hydrocarbons										
1-Methylnaphthalene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.012	<0.010	0.010	5254068	N/A
2-Methylnaphthalene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.023	<0.010	0.010	5254068	N/A
Acenaphthene	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	5254068	N/A
Acenaphthylene	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	5254068	N/A
Anthracene	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	5254068	N/A
Benzo(a)anthracene	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	5254068	N/A
Benzo(a)pyrene	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	5254068	N/A
Benzo(b)fluoranthene	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	5254068	N/A
Benzo(b/j)fluoranthene	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	5248691	N/A
Benzo(g,h,i)perylene	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	5254068	N/A
Benzo(j)fluoranthene	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	5254068	N/A
Benzo(k)fluoranthene	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	5254068	N/A
Chrysene	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	5254068	N/A
Dibenz(a,h)anthracene	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	5254068	N/A
Fluoranthene	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	5254068	N/A
Fluorene	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	5254068	N/A
Indeno(1,2,3-cd)pyrene	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	5254068	N/A
Naphthalene	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	5254068	N/A
Perylene	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	5254068	N/A
Phenanthrene	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	5254068	N/A
Pyrene	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	5254068	N/A
Surrogate Recovery (%)										
D10-Anthracene	%	97	94	95	99	96	95		5254068	
D14-Terphenyl (FS)	%	100	100	99	104	105	101		5254068	
D8-Acenaphthylene	%	94	97	96	98	97	93		5254068	

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

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Maxxam Job #: B7O7511
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.003
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

SEMI-VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		FMF682		FMF684		FMF758		FMF760			
Sampling Date		2017/10/25		2017/10/25		2017/10/25		2017/10/26			
COC Number		N/A		N/A		N/A		N/A			
	UNITS	**BB-TP16-BS1**	**RDL**	**BB-TP17-BS1**	**RDL**	**BB-TP35-BS1**	**QC Batch**	**BB-TP36-BS1**	**RDL**	**QC Batch**	**MDL**
Polyaromatic Hydrocarbons											
1-Methylnaphthalene	mg/kg	<0.21 (1)	0.21	<0.12 (1)	0.12	<0.010	5254068	<0.010	0.010	5254739	N/A
2-Methylnaphthalene	mg/kg	<0.50 (1)	0.50	<0.32 (1)	0.32	<0.010	5254068	<0.010	0.010	5254739	N/A
Acenaphthene	mg/kg	<0.070 (1)	0.070	0.26	0.010	<0.010	5254068	<0.010	0.010	5254739	N/A
Acenaphthylene	mg/kg	<0.16 (1)	0.16	<0.010	0.010	<0.010	5254068	<0.010	0.010	5254739	N/A
Anthracene	mg/kg	<0.020 (1)	0.020	<0.040 (1)	0.040	<0.010	5254068	<0.010	0.010	5254739	N/A
Benzo(a)anthracene	mg/kg	<0.010	0.010	<0.010	0.010	<0.010	5254068	<0.010	0.010	5254739	N/A
Benzo(a)pyrene	mg/kg	<0.010	0.010	<0.010	0.010	<0.010	5254068	<0.010	0.010	5254739	N/A
Benzo(b)fluoranthene	mg/kg	<0.010	0.010	<0.010	0.010	<0.010	5254068	<0.010	0.010	5254739	N/A
Benzo(b/j)fluoranthene	mg/kg	<0.020	0.020	<0.020	0.020	<0.020	5248691	<0.020	0.020	5248691	N/A
Benzo(g,h,i)perylene	mg/kg	<0.010	0.010	<0.010	0.010	<0.010	5254068	<0.010	0.010	5254739	N/A
Benzo(j)fluoranthene	mg/kg	<0.010	0.010	<0.010	0.010	<0.010	5254068	<0.010	0.010	5254739	N/A
Benzo(k)fluoranthene	mg/kg	<0.010	0.010	<0.010	0.010	<0.010	5254068	<0.010	0.010	5254739	N/A
Chrysene	mg/kg	<0.010	0.010	<0.010	0.010	<0.010	5254068	<0.010	0.010	5254739	N/A
Dibenz(a,h)anthracene	mg/kg	<0.010	0.010	<0.010	0.010	<0.010	5254068	<0.010	0.010	5254739	N/A
Fluoranthene	mg/kg	0.025	0.010	0.012	0.010	<0.010	5254068	<0.010	0.010	5254739	N/A
Fluorene	mg/kg	<1.0 (1)	1.0	<0.11 (1)	0.11	<0.010	5254068	<0.010	0.010	5254739	N/A
Indeno(1,2,3-cd)pyrene	mg/kg	<0.010	0.010	<0.010	0.010	<0.010	5254068	<0.010	0.010	5254739	N/A
Naphthalene	mg/kg	0.11	0.010	0.023	0.010	<0.010	5254068	<0.010	0.010	5254739	N/A
Perylene	mg/kg	<0.010	0.010	<0.010	0.010	<0.010	5254068	<0.010	0.010	5254739	N/A
Phenanthrene	mg/kg	0.55	0.010	<0.010	0.010	<0.010	5254068	<0.010	0.010	5254739	N/A
Pyrene	mg/kg	0.016	0.010	0.028	0.010	<0.010	5254068	<0.010	0.010	5254739	N/A
Surrogate Recovery (%)											
D10-Anthracene	%	88		89		91	5254068	98		5254739	
D14-Terphenyl (FS)	%	98		97		98	5254068	99		5254739	
D8-Acenaphthylene	%	98		100		94	5254068	97		5254739	

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) Elevated PAH RDL(s) due to matrix / co-extractive interference.

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Maxxam Job #: B7O7511
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.003
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

SEMI-VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		FMF760				FMF776	FMF778		FMF780			
Sampling Date		2017/10/26				2017/10/26	2017/10/26		2017/10/26			
COC Number		N/A				N/A	N/A		N/A			
	UNITS	**BB-TP36-BS1 Lab-Dup**	**RDL**	**QC Batch**	**MDL**	**BB-TP39-BS1**	**BB-TP41-BS1**	**QC Batch**	**BB-TP43-BS1**	**RDL**	**QC Batch**	**MDL**
Polyaromatic Hydrocarbons												
1-Methylnaphthalene	mg/kg	<0.010	0.010	5254739	N/A	<0.010	<0.010	5254739	<0.010	0.010	5254739	N/A
2-Methylnaphthalene	mg/kg	<0.010	0.010	5254739	N/A	<0.010	<0.010	5254739	<0.010	0.010	5254739	N/A
Acenaphthene	mg/kg	<0.010	0.010	5254739	N/A	<0.010	<0.010	5254739	<0.010	0.010	5254739	N/A
Acenaphthylene	mg/kg	<0.010	0.010	5254739	N/A	<0.010	<0.010	5254739	<0.010	0.010	5254739	N/A
Anthracene	mg/kg	<0.010	0.010	5254739	N/A	<0.010	<0.010	5254739	<0.010	0.010	5254739	N/A
Benzo(a)anthracene	mg/kg	<0.010	0.010	5254739	N/A	<0.010	<0.010	5254739	<0.010	0.010	5254739	N/A
Benzo(a)pyrene	mg/kg	<0.010	0.010	5254739	N/A	<0.010	<0.010	5254739	<0.010	0.010	5254739	N/A
Benzo(b)fluoranthene	mg/kg	<0.010	0.010	5254739	N/A	<0.010	<0.010	5254739	<0.010	0.010	5254739	N/A
Benzo(b/j)fluoranthene	mg/kg					<0.020	<0.020	5248691	<0.020	0.020	5248860	N/A
Benzo(g,h,i)perylene	mg/kg	<0.010	0.010	5254739	N/A	<0.010	<0.010	5254739	<0.010	0.010	5254739	N/A
Benzo(j)fluoranthene	mg/kg	<0.010	0.010	5254739	N/A	<0.010	<0.010	5254739	<0.010	0.010	5254739	N/A
Benzo(k)fluoranthene	mg/kg	<0.010	0.010	5254739	N/A	<0.010	<0.010	5254739	<0.010	0.010	5254739	N/A
Chrysene	mg/kg	<0.010	0.010	5254739	N/A	<0.010	<0.010	5254739	<0.010	0.010	5254739	N/A
Dibenz(a,h)anthracene	mg/kg	<0.010	0.010	5254739	N/A	<0.010	<0.010	5254739	<0.010	0.010	5254739	N/A
Fluoranthene	mg/kg	<0.010	0.010	5254739	N/A	<0.010	0.012	5254739	<0.010	0.010	5254739	N/A
Fluorene	mg/kg	<0.010	0.010	5254739	N/A	<0.010	<0.010	5254739	<0.010	0.010	5254739	N/A
Indeno(1,2,3-cd)pyrene	mg/kg	<0.010	0.010	5254739	N/A	<0.010	<0.010	5254739	<0.010	0.010	5254739	N/A
Naphthalene	mg/kg	<0.010	0.010	5254739	N/A	<0.010	<0.010	5254739	<0.010	0.010	5254739	N/A
Perylene	mg/kg	<0.010	0.010	5254739	N/A	<0.010	<0.010	5254739	<0.010	0.010	5254739	N/A
Phenanthrene	mg/kg	<0.010	0.010	5254739	N/A	<0.010	<0.010	5254739	<0.010	0.010	5254739	N/A
Pyrene	mg/kg	<0.010	0.010	5254739	N/A	<0.010	<0.010	5254739	<0.010	0.010	5254739	N/A
Surrogate Recovery (%)												
D10-Anthracene	%	101		5254739		94	100	5254739	98		5254739	
D14-Terphenyl (FS)	%	100		5254739		99	102	5254739	100		5254739	
D8-Acenaphthylene	%	99		5254739		93	98	5254739	95		5254739	

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

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Maxxam Job #: B7O7511
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.003
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

SEMI-VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		FMF802	FMF804	FMF807		FMG284	FMG290			
Sampling Date		2017/10/25	2017/10/25	2017/10/25		2017/10/25	2017/10/25			
COC Number		N/A	N/A	N/A		N/A	N/A			
	UNITS	**BB-SS301**	**BB-TP101-BS2**	**BB-TP151-BS2**	**QC Batch**	**BB-SS49**	**BB-SS50**	**RDL**	**QC Batch**	**MDL**
Polyaromatic Hydrocarbons										
1-Methylnaphthalene	mg/kg	<0.010	<0.010	<0.010	5254068	<0.010	<0.010	0.010	5254739	N/A
2-Methylnaphthalene	mg/kg	<0.010	<0.010	<0.010	5254068	<0.010	<0.010	0.010	5254739	N/A
Acenaphthene	mg/kg	<0.010	<0.010	<0.010	5254068	<0.010	<0.010	0.010	5254739	N/A
Acenaphthylene	mg/kg	<0.010	<0.010	<0.010	5254068	<0.010	<0.010	0.010	5254739	N/A
Anthracene	mg/kg	<0.010	<0.010	<0.010	5254068	<0.010	<0.010	0.010	5254739	N/A
Benzo(a)anthracene	mg/kg	<0.010	<0.010	<0.010	5254068	<0.010	<0.010	0.010	5254739	N/A
Benzo(a)pyrene	mg/kg	<0.010	<0.010	<0.010	5254068	<0.010	<0.010	0.010	5254739	N/A
Benzo(b)fluoranthene	mg/kg	<0.010	<0.010	<0.010	5254068	<0.010	<0.010	0.010	5254739	N/A
Benzo(b/j)fluoranthene	mg/kg	<0.020	<0.020	<0.020	5248860	<0.020	<0.020	0.020	5254216	N/A
Benzo(g,h,i)perylene	mg/kg	<0.010	<0.010	<0.010	5254068	<0.010	<0.010	0.010	5254739	N/A
Benzo(j)fluoranthene	mg/kg	<0.010	<0.010	<0.010	5254068	<0.010	<0.010	0.010	5254739	N/A
Benzo(k)fluoranthene	mg/kg	<0.010	<0.010	<0.010	5254068	<0.010	<0.010	0.010	5254739	N/A
Chrysene	mg/kg	<0.010	<0.010	<0.010	5254068	<0.010	<0.010	0.010	5254739	N/A
Dibenz(a,h)anthracene	mg/kg	<0.010	<0.010	<0.010	5254068	<0.010	<0.010	0.010	5254739	N/A
Fluoranthene	mg/kg	<0.010	<0.010	<0.010	5254068	<0.010	<0.010	0.010	5254739	N/A
Fluorene	mg/kg	<0.010	<0.010	<0.010	5254068	<0.010	<0.010	0.010	5254739	N/A
Indeno(1,2,3-cd)pyrene	mg/kg	<0.010	<0.010	<0.010	5254068	<0.010	<0.010	0.010	5254739	N/A
Naphthalene	mg/kg	<0.010	<0.010	<0.010	5254068	<0.010	<0.010	0.010	5254739	N/A
Perylene	mg/kg	<0.010	<0.010	<0.010	5254068	<0.010	<0.010	0.010	5254739	N/A
Phenanthrene	mg/kg	<0.010	<0.010	<0.010	5254068	<0.010	<0.010	0.010	5254739	N/A
Pyrene	mg/kg	<0.010	<0.010	<0.010	5254068	<0.010	<0.010	0.010	5254739	N/A
Surrogate Recovery (%)										
D10-Anthracene	%	90	103	90	5254068	89	98		5254739	
D14-Terphenyl (FS)	%	98	107	93	5254068	94	101		5254739	
D8-Acenaphthylene	%	96	101	90	5254068	98	96		5254739	

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

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Maxxam Job #: B7O7511
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.003
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		FMF474	FMF481	FMF502	FMF503				FMF503			
Sampling Date		2017/10/25	2017/10/26	2017/10/25	2017/10/25				2017/10/25			
COC Number		N/A	N/A	N/A	N/A				N/A			
	UNITS	**BB-SS2**	**BB-SS7**	**BB-SS1**	**BB-SS3**	**RDL**	**QC Batch**	**MDL**	**BB-SS3 Lab-Dup**	**RDL**	**QC Batch**	**MDL**
PCBs												
Aroclor 1016	ug/g	<0.050	<0.050	<0.050	<0.050	0.050	5251900	N/A	<0.050	0.050	5251900	N/A
Aroclor 1221	ug/g	<0.050	<0.050	<0.050	<0.050	0.050	5251900	N/A	<0.050	0.050	5251900	N/A
Aroclor 1232	ug/g	<0.050	<0.050	<0.050	<0.050	0.050	5251900	N/A	<0.050	0.050	5251900	N/A
Aroclor 1248	ug/g	<0.050	<0.050	<0.050	<0.050	0.050	5251900	N/A	<0.050	0.050	5251900	N/A
Aroclor 1242	ug/g	<0.050	<0.050	<0.050	<0.050	0.050	5251900	N/A	<0.050	0.050	5251900	N/A
Aroclor 1254	ug/g	<0.050	<0.050	<0.050	<0.050	0.050	5251900	N/A	<0.050	0.050	5251900	N/A
Aroclor 1260	ug/g	<0.050	<0.050	<0.050	<0.050	0.050	5251900	N/A	<0.050	0.050	5251900	N/A
Calculated Total PCB	ug/g	<0.050	<0.050	<0.050	<0.050	0.050	5248668	N/A				
Surrogate Recovery (%)												
Decachlorobiphenyl	%	94	92	89	89		5251900		92		5251900	

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

Maxxam ID		FMF505	FMF506		FMF507		FMF508	FMF509			
Sampling Date		2017/10/26	2017/10/25		2017/10/25		2017/10/25	2017/10/25			
COC Number		N/A	N/A		N/A		N/A	N/A			
	UNITS	**BB-SS10**	**BB-SS13**	**QC Batch**	**BB-SS14**	**QC Batch**	**BB-SS15**	**BB-SS16**	**RDL**	**QC Batch**	**MDL**
PCBs											
Aroclor 1016	ug/g	<0.050	<0.050	5251900	<0.050	5262301	<0.050	<0.050	0.050	5251900	N/A
Aroclor 1221	ug/g	<0.050	<0.050	5251900	<0.050	5262301	<0.050	<0.050	0.050	5251900	N/A
Aroclor 1232	ug/g	<0.050	<0.050	5251900	<0.050	5262301	<0.050	<0.050	0.050	5251900	N/A
Aroclor 1248	ug/g	<0.050	<0.050	5251900	<0.050	5262301	<0.050	<0.050	0.050	5251900	N/A
Aroclor 1242	ug/g	<0.050	<0.050	5251900	<0.050	5262301	<0.050	<0.050	0.050	5251900	N/A
Aroclor 1254	ug/g	<0.050	<0.050	5251900	<0.050	5262301	0.21	<0.050	0.050	5251900	N/A
Aroclor 1260	ug/g	<0.050	<0.050	5251900	<0.050	5262301	<0.050	<0.050	0.050	5251900	N/A
Calculated Total PCB	ug/g	<0.050	<0.050	5248668	<0.050	5254217	0.21	<0.050	0.050	5248668	N/A
Surrogate Recovery (%)											
Decachlorobiphenyl	%	89	90	5251900	79	5262301	94	96		5251900	

RDL = Reportable Detection Limit
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N/A = Not Applicable

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Maxxam Job #: B7O7511
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Stantec Consulting Ltd
Client Project #: 121414915.200.003
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		FMF511		FMF512	FMF513	FMF516	FMF523	FMF533			
Sampling Date		2017/10/25		2017/10/25	2017/10/25	2017/10/26	2017/10/25	2017/10/26			
COC Number		N/A		N/A	N/A	N/A	N/A	N/A			
	UNITS	**BB-SS18**	**QC Batch**	**BB-SS19**	**BB-SS20**	**BB-SS23**	**BB-SS30**	**BB-SS41**	**RDL**	**QC Batch**	**MDL**
PCBs											
Aroclor 1016	ug/g	<0.050	5262301	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	5251900	N/A
Aroclor 1221	ug/g	<0.050	5262301	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	5251900	N/A
Aroclor 1232	ug/g	<0.050	5262301	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	5251900	N/A
Aroclor 1248	ug/g	<0.050	5262301	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	5251900	N/A
Aroclor 1242	ug/g	<0.050	5262301	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	5251900	N/A
Aroclor 1254	ug/g	<0.050	5262301	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	5251900	N/A
Aroclor 1260	ug/g	<0.050	5262301	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	5251900	N/A
Calculated Total PCB	ug/g	<0.050	5254217	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	5248668	N/A
Surrogate Recovery (%)											
Decachlorobiphenyl	%	77	5262301	97	94	91	91	91		5251900	

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

Maxxam ID		FMF534	FMF535	FMF536		FMF538		FMF539			
Sampling Date		2017/10/26	2017/10/26	2017/10/26		2017/10/26		2017/10/26			
COC Number		N/A	N/A	N/A		N/A		N/A			
	UNITS	**BB-SS42**	**BB-SS43**	**BB-SS44**	**QC Batch**	**BB-SS46**	**QC Batch**	**BB-SS47**	**RDL**	**QC Batch**	**MDL**
PCBs											
Aroclor 1016	ug/g	<0.050	<0.050	<0.050	5251900	<0.050	5257219	<0.050	0.050	5256649	N/A
Aroclor 1221	ug/g	<0.050	<0.050	<0.050	5251900	<0.050	5257219	<0.050	0.050	5256649	N/A
Aroclor 1232	ug/g	<0.050	<0.050	<0.050	5251900	<0.050	5257219	<0.050	0.050	5256649	N/A
Aroclor 1248	ug/g	<0.050	<0.050	<0.050	5251900	<0.050	5257219	<0.050	0.050	5256649	N/A
Aroclor 1242	ug/g	<0.050	<0.050	<0.050	5251900	<0.050	5257219	<0.050	0.050	5256649	N/A
Aroclor 1254	ug/g	<0.050	<0.050	<0.050	5251900	<0.050	5257219	<0.050	0.050	5256649	N/A
Aroclor 1260	ug/g	<0.050	<0.050	<0.050	5251900	<0.050	5257219	<0.050	0.050	5256649	N/A
Calculated Total PCB	ug/g	<0.050	<0.050	<0.050	5248668	<0.050	5248668	<0.050	0.050	5248668	N/A
Surrogate Recovery (%)											
Decachlorobiphenyl	%	83	90	92	5251900	56 (1)	5257219	92		5256649	

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) PCB surrogate not within acceptance limits. Analysis was repeated with similar results.

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Maxxam Job #: B7O7511
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.003
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		FMF650		FMF655	FMF659	FMF661	FMF663			
Sampling Date		2017/10/26		2017/10/25	2017/10/25	2017/10/25	2017/10/25			
COC Number		N/A		N/A	N/A	N/A	N/A			
	UNITS	**BB-SS48**	**QC Batch**	**BB-TP5-BS1**	**BB-TP7-BS1**	**BB-TP8-BS1**	**BB-TP9-BS1**	**RDL**	**QC Batch**	**MDL**
PCBs										
Aroclor 1016	ug/g	<0.050	5256649	<0.050	<0.050	<0.050	<0.050	0.050	5254136	N/A
Aroclor 1221	ug/g	<0.050	5256649	<0.050	<0.050	<0.050	<0.050	0.050	5254136	N/A
Aroclor 1232	ug/g	<0.050	5256649	<0.050	<0.050	<0.050	<0.050	0.050	5254136	N/A
Aroclor 1248	ug/g	<0.050	5256649	<0.050	<0.050	<0.050	<0.050	0.050	5254136	N/A
Aroclor 1242	ug/g	<0.050	5256649	<0.050	<0.050	<0.050	<0.050	0.050	5254136	N/A
Aroclor 1254	ug/g	0.066	5256649	<0.050	<0.050	0.68	<0.050	0.050	5254136	N/A
Aroclor 1260	ug/g	<0.050	5256649	<0.050	<0.050	<0.050	<0.050	0.050	5254136	N/A
Calculated Total PCB	ug/g	0.066	5248668	<0.050	<0.050	0.68	<0.050	0.050	5248668	N/A
Surrogate Recovery (%)										
Decachlorobiphenyl	%	85	5256649	94	95	79	100		5254136	

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

Maxxam ID		FMF663				FMF667	FMF677	FMF680			
Sampling Date		2017/10/25				2017/10/25	2017/10/25	2017/10/25			
COC Number		N/A				N/A	N/A	N/A			
	UNITS	**BB-TP9-BS1 Lab-Dup**	**RDL**	**QC Batch**	**MDL**	**BB-TP12-BS1**	**BB-TP13-BS2**	**BB-TP15-BS1**	**RDL**	**QC Batch**	**MDL**
PCBs											
Aroclor 1016	ug/g	<0.050	0.050	5254136	N/A	<0.050	<0.050	<0.050	0.050	5254136	N/A
Aroclor 1221	ug/g	<0.050	0.050	5254136	N/A	<0.050	<0.050	<0.050	0.050	5254136	N/A
Aroclor 1232	ug/g	<0.050	0.050	5254136	N/A	<0.050	<0.050	<0.050	0.050	5254136	N/A
Aroclor 1248	ug/g	<0.050	0.050	5254136	N/A	<0.050	<0.050	<0.050	0.050	5254136	N/A
Aroclor 1242	ug/g	<0.050	0.050	5254136	N/A	<0.050	<0.050	<0.050	0.050	5254136	N/A
Aroclor 1254	ug/g	<0.050	0.050	5254136	N/A	<0.050	<0.050	<0.050	0.050	5254136	N/A
Aroclor 1260	ug/g	<0.050	0.050	5254136	N/A	<0.050	<0.050	<0.050	0.050	5254136	N/A
Calculated Total PCB	ug/g					<0.050	<0.050	<0.050	0.050	5248668	N/A
Surrogate Recovery (%)											
Decachlorobiphenyl	%	103		5254136		83	83	90		5254136	

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

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Maxxam Job #: B7O7511
Report Date: 2017/11/20

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Sampler Initials: RP

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		FMF683	FMF684	FMF686		FMF687	FMF688			
Sampling Date		2017/10/25	2017/10/25	2017/10/25		2017/10/25	2017/10/25			
COC Number		N/A	N/A	N/A		N/A	N/A			
	UNITS	**BB-TP16-BS2**	**BB-TP17-BS1**	**BB-TP18-BS1**	**QC Batch**	**BB-TP18-BS2**	**BB-TP19-BS1**	**RDL**	**QC Batch**	**MDL**
PCBs										
Aroclor 1016	ug/g	<0.050	<0.050	<0.050	5254136	<0.050	<0.050	0.050	5254136	N/A
Aroclor 1221	ug/g	<0.050	<0.050	<0.050	5254136	<0.050	<0.050	0.050	5254136	N/A
Aroclor 1232	ug/g	<0.050	<0.050	<0.050	5254136	<0.050	<0.050	0.050	5254136	N/A
Aroclor 1248	ug/g	<0.050	<0.050	<0.050	5254136	<0.050	<0.050	0.050	5254136	N/A
Aroclor 1242	ug/g	<0.050	<0.050	<0.050	5254136	<0.050	<0.050	0.050	5254136	N/A
Aroclor 1254	ug/g	<0.050	<0.050	<0.050	5254136	0.063	0.10	0.050	5254136	N/A
Aroclor 1260	ug/g	<0.050	<0.050	<0.050	5254136	<0.050	0.059	0.050	5254136	N/A
Calculated Total PCB	ug/g	<0.050	<0.050	<0.050	5248668	0.063	0.16	0.050	5248864	N/A
Surrogate Recovery (%)										
Decachlorobiphenyl	%	90	62 (1)	72	5254136	87	76		5254136	

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) PCB surrogate not within acceptance limits. Sample past recommended hold time for repeat analysis.

Maxxam ID		FMF690	FMF691	FMF692	FMF694	FMF709	FMF710			
Sampling Date		2017/10/25	2017/10/25	2017/10/25	2017/10/25	2017/10/25	2017/10/25			
COC Number		N/A	N/A	N/A	N/A	N/A	N/A			
	UNITS	**BB-TP20-BS1**	**BB-TP20-BS2**	**BB-TP21-BS1**	**BB-TP22-BS1**	**BB-TP22-BS2**	**BB-TP23-BS1**	**RDL**	**QC Batch**	**MDL**
PCBs										
Aroclor 1016	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	5254136	N/A
Aroclor 1221	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	5254136	N/A
Aroclor 1232	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	5254136	N/A
Aroclor 1248	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	5254136	N/A
Aroclor 1242	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	5254136	N/A
Aroclor 1254	ug/g	0.074	0.12	<0.050	0.092	0.23	<0.050	0.050	5254136	N/A
Aroclor 1260	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	5254136	N/A
Calculated Total PCB	ug/g	0.074	0.12	<0.050	0.092	0.23	<0.050	0.050	5248864	N/A
Surrogate Recovery (%)										
Decachlorobiphenyl	%	73	71	81	84	88	88		5254136	

RDL = Reportable Detection Limit
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N/A = Not Applicable

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POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		FMF712		FMF714		FMF715		FMF716			
Sampling Date		2017/10/25		2017/10/25		2017/10/25		2017/10/25			
COC Number		N/A		N/A		N/A		N/A			
	UNITS	**BB-TP24-BS1**	**QC Batch**	**BB-TP25-BS1**	**QC Batch**	**BB-TP25-BS2**	**QC Batch**	**BB-TP26-BS1**	**RDL**	**QC Batch**	**MDL**
PCBs											
Aroclor 1016	ug/g	<0.050	5254136	<0.050	5262301	<0.050	5254136	<0.050	0.050	5254900	N/A
Aroclor 1221	ug/g	<0.050	5254136	<0.050	5262301	<0.050	5254136	<0.050	0.050	5254900	N/A
Aroclor 1232	ug/g	<0.050	5254136	<0.050	5262301	<0.050	5254136	<0.050	0.050	5254900	N/A
Aroclor 1248	ug/g	<0.050	5254136	<0.050	5262301	<0.050	5254136	<0.050	0.050	5254900	N/A
Aroclor 1242	ug/g	<0.050	5254136	<0.050	5262301	<0.050	5254136	<0.050	0.050	5254900	N/A
Aroclor 1254	ug/g	<0.050	5254136	0.097	5262301	0.17	5254136	0.46	0.050	5254900	N/A
Aroclor 1260	ug/g	<0.050	5254136	<0.050	5262301	<0.050	5254136	<0.050	0.050	5254900	N/A
Calculated Total PCB	ug/g	<0.050	5248864	0.097	5254217	0.17	5248864	0.46	0.050	5248864	N/A
Surrogate Recovery (%)											
Decachlorobiphenyl	%	94	5254136	78	5262301	96	5254136	90		5254900	

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

Maxxam ID		FMF718	FMF724	FMF725				FMF725			
Sampling Date		2017/10/25	2017/10/25	2017/10/25				2017/10/25			
COC Number		N/A	N/A	N/A				N/A			
	UNITS	**BB-TP27-BS1**	**BB-TP27-BS2**	**BB-TP28-BS1**	**RDL**	**QC Batch**	**MDL**	**BB-TP28-BS1 Lab-Dup**	**RDL**	**QC Batch**	**MDL**
PCBs											
Aroclor 1016	ug/g	<0.050	<0.050	<0.050	0.050	5254900	N/A	<0.050	0.050	5254900	N/A
Aroclor 1221	ug/g	<0.050	<0.050	<0.050	0.050	5254900	N/A	<0.050	0.050	5254900	N/A
Aroclor 1232	ug/g	<0.050	<0.050	<0.050	0.050	5254900	N/A	<0.050	0.050	5254900	N/A
Aroclor 1248	ug/g	<0.050	<0.050	<0.050	0.050	5254900	N/A	<0.050	0.050	5254900	N/A
Aroclor 1242	ug/g	<0.050	<0.050	<0.050	0.050	5254900	N/A	<0.050	0.050	5254900	N/A
Aroclor 1254	ug/g	<0.050	<0.050	<0.050	0.050	5254900	N/A	<0.050	0.050	5254900	N/A
Aroclor 1260	ug/g	<0.050	<0.050	<0.050	0.050	5254900	N/A	<0.050	0.050	5254900	N/A
Calculated Total PCB	ug/g	<0.050	<0.050	<0.050	0.050	5248864	N/A				
Surrogate Recovery (%)											
Decachlorobiphenyl	%	98	84	87		5254900		92		5254900	

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

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POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		FMF727	FMF729	FMF752	FMF753	FMF754	FMF756			
Sampling Date		2017/10/25	2017/10/25	2017/10/25	2017/10/25	2017/10/25	2017/10/25			
COC Number		N/A	N/A	N/A	N/A	N/A	N/A			
	UNITS	**BB-TP30-BS1**	**BB-TP31-BS1**	**BB-TP32-BS1**	**BB-TP32-BS2**	**BB-TP33-BS1**	**BB-TP34-BS1**	**RDL**	**QC Batch**	**MDL**
PCBs										
Aroclor 1016	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	5254900	N/A
Aroclor 1221	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	5254900	N/A
Aroclor 1232	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	5254900	N/A
Aroclor 1248	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	5254900	N/A
Aroclor 1242	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	5254900	N/A
Aroclor 1254	ug/g	<0.050	0.18	<0.050	<0.050	<0.050	<0.050	0.050	5254900	N/A
Aroclor 1260	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	5254900	N/A
Calculated Total PCB	ug/g	<0.050	0.18	<0.050	<0.050	<0.050	<0.050	0.050	5248864	N/A
Surrogate Recovery (%)										
Decachlorobiphenyl	%	91	91	91	91	86	84		5254900	

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

Maxxam ID		FMF758		FMF760				FMF760			
Sampling Date		2017/10/25		2017/10/26				2017/10/26			
COC Number		N/A		N/A				N/A			
	UNITS	**BB-TP35-BS1**	**QC Batch**	**BB-TP36-BS1**	**RDL**	**QC Batch**	**MDL**	**BB-TP36-BS1 Lab-Dup**	**RDL**	**QC Batch**	**MDL**
PCBs											
Aroclor 1016	ug/g	<0.050	5254900	<0.050	0.050	5256649	N/A	<0.050	0.050	5256649	N/A
Aroclor 1221	ug/g	<0.050	5254900	<0.050	0.050	5256649	N/A	<0.050	0.050	5256649	N/A
Aroclor 1232	ug/g	<0.050	5254900	<0.050	0.050	5256649	N/A	<0.050	0.050	5256649	N/A
Aroclor 1248	ug/g	<0.050	5254900	<0.050	0.050	5256649	N/A	<0.050	0.050	5256649	N/A
Aroclor 1242	ug/g	<0.050	5254900	<0.050	0.050	5256649	N/A	<0.050	0.050	5256649	N/A
Aroclor 1254	ug/g	<0.050	5254900	<0.050	0.050	5256649	N/A	<0.050	0.050	5256649	N/A
Aroclor 1260	ug/g	<0.050	5254900	<0.050	0.050	5256649	N/A	<0.050	0.050	5256649	N/A
Calculated Total PCB	ug/g	<0.050	5248864	<0.050	0.050	5248864	N/A				
Surrogate Recovery (%)											
Decachlorobiphenyl	%	89	5254900	88		5256649		88		5256649	

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

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POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		FMF776	FMF777	FMF778		FMF779			
Sampling Date		2017/10/26	2017/10/26	2017/10/26		2017/10/26			
COC Number		N/A	N/A	N/A		N/A			
	UNITS	**BB-TP39-BS1**	**BB-TP40-BS1**	**BB-TP41-BS1**	**QC Batch**	**BB-TP42-BS1**	**RDL**	**QC Batch**	**MDL**
PCBs									
Aroclor 1016	ug/g	<0.050	<0.050	<0.050	5256649	<0.050	0.050	5256649	N/A
Aroclor 1221	ug/g	<0.050	<0.050	<0.050	5256649	<0.050	0.050	5256649	N/A
Aroclor 1232	ug/g	<0.050	<0.050	<0.050	5256649	<0.050	0.050	5256649	N/A
Aroclor 1248	ug/g	<0.050	<0.050	<0.050	5256649	<0.050	0.050	5256649	N/A
Aroclor 1242	ug/g	<0.050	<0.050	<0.050	5256649	<0.050	0.050	5256649	N/A
Aroclor 1254	ug/g	<0.050	<0.050	<0.050	5256649	<0.050	0.050	5256649	N/A
Aroclor 1260	ug/g	<0.050	<0.050	<0.050	5256649	<0.050	0.050	5256649	N/A
Calculated Total PCB	ug/g	<0.050	<0.050	<0.050	5248864	<0.050	0.050	5254217	N/A
Surrogate Recovery (%)									
Decachlorobiphenyl	%	88	88	86	5256649	90		5256649	

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

Maxxam ID		FMF780	FMF781		FMF802	FMF803	FMF805			
Sampling Date		2017/10/26	2017/10/26		2017/10/25	2017/10/25	2017/10/25			
COC Number		N/A	N/A		N/A	N/A	N/A			
	UNITS	**BB-TP43-BS1**	**BB-TP44-BS1**	**QC Batch**	**BB-SS301**	**BB-TP121-BS1**	**BB-TP201-BS2**	**RDL**	**QC Batch**	**MDL**
PCBs										
Aroclor 1016	ug/g	<0.050	<0.050	5256649	<0.050	<0.050	<0.050	0.050	5254900	N/A
Aroclor 1221	ug/g	<0.050	<0.050	5256649	<0.050	<0.050	<0.050	0.050	5254900	N/A
Aroclor 1232	ug/g	<0.050	<0.050	5256649	<0.050	<0.050	<0.050	0.050	5254900	N/A
Aroclor 1248	ug/g	<0.050	<0.050	5256649	<0.050	<0.050	<0.050	0.050	5254900	N/A
Aroclor 1242	ug/g	<0.050	<0.050	5256649	<0.050	<0.050	<0.050	0.050	5254900	N/A
Aroclor 1254	ug/g	<0.050	<0.050	5256649	<0.050	<0.050	0.14	0.050	5254900	N/A
Aroclor 1260	ug/g	<0.050	<0.050	5256649	<0.050	<0.050	<0.050	0.050	5254900	N/A
Calculated Total PCB	ug/g	<0.050	<0.050	5248864	<0.050	<0.050	0.14	0.050	5248864	N/A
Surrogate Recovery (%)										
Decachlorobiphenyl	%	92	89	5256649	86	82	82		5254900	

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

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Maxxam Job #: B7O7511
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.003
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		FMF806	FMF808	FMF809		FMG284	FMG290			
Sampling Date		2017/10/25	2017/10/25	2017/10/25		2017/10/25	2017/10/25			
COC Number		N/A	N/A	N/A		N/A	N/A			
	UNITS	**BB-TP71-BS1**	**BB-TP161-BS2**	**BB-TP221-BS2**	**QC Batch**	**BB-SS49**	**BB-SS50**	**RDL**	**QC Batch**	**MDL**
PCBs										
Aroclor 1016	ug/g	<0.050	<0.050	<0.050	5254900	<0.050	<0.050	0.050	5254900	N/A
Aroclor 1221	ug/g	<0.050	<0.050	<0.050	5254900	<0.050	<0.050	0.050	5254900	N/A
Aroclor 1232	ug/g	<0.050	<0.050	<0.050	5254900	<0.050	<0.050	0.050	5254900	N/A
Aroclor 1248	ug/g	<0.050	<0.050	<0.050	5254900	<0.050	<0.050	0.050	5254900	N/A
Aroclor 1242	ug/g	<0.050	<0.050	<0.050	5254900	<0.050	<0.050	0.050	5254900	N/A
Aroclor 1254	ug/g	<0.050	<0.050	0.23	5254900	<0.050	<0.050	0.050	5254900	N/A
Aroclor 1260	ug/g	<0.050	<0.050	<0.050	5254900	<0.050	<0.050	0.050	5254900	N/A
Calculated Total PCB	ug/g	<0.050	<0.050	0.23	5248864	<0.050	<0.050	0.050	5254217	N/A
Surrogate Recovery (%)										
Decachlorobiphenyl	%	88	87	82	5254900	85	80		5254900	

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

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ORGANOCHLORINATED PESTICIDES BY GC-ECD (SOIL)

Maxxam ID		FMF508		FMF538		FMF659			
Sampling Date		2017/10/25		2017/10/26		2017/10/25			
COC Number		N/A		N/A		N/A			
	UNITS	**BB-SS15**	**RDL**	**BB-SS46**	**RDL**	**BB-TP7-BS1**	**RDL**	**QC Batch**	**MDL**
Calculated Parameters									
Aldrin + Dieldrin	ug/g	<0.0030	0.0030	<0.020	0.020	<0.0020	0.0020	5248859	N/A
Chlordane (Total)	ug/g	<0.0030	0.0030	<0.020	0.020	<0.0020	0.0020	5248859	N/A
DDT+ Metabolites	ug/g	<0.0030	0.0030	<0.020	0.020	<0.0020	0.0020	5248859	N/A
Heptachlor + Heptachlor epoxide	ug/g	<0.0030	0.0030	<0.020	0.020	<0.0020	0.0020	5248859	N/A
o,p-DDD + p,p-DDD	ug/g	<0.0030	0.0030	<0.020	0.020	<0.0020	0.0020	5248859	N/A
o,p-DDE + p,p-DDE	ug/g	<0.0030	0.0030	<0.020	0.020	<0.0020	0.0020	5248859	N/A
o,p-DDT + p,p-DDT	ug/g	<0.0030	0.0030	<0.020	0.020	<0.0020	0.0020	5248859	N/A
Total Endosulfan	ug/g	<0.0030	0.0030	<0.020	0.020	<0.0020	0.0020	5248859	N/A
Pesticides & Herbicides									
Aldrin	ug/g	<0.0030	0.0030	<0.020	0.020	<0.0020	0.0020	5261373	0.00040
a-Chlordane	ug/g	<0.0030	0.0030	<0.020	0.020	<0.0020	0.0020	5261373	0.00040
g-Chlordane	ug/g	<0.0030	0.0030	<0.020	0.020	<0.0020	0.0020	5261373	0.00040
o,p-DDD	ug/g	<0.0030	0.0030	<0.020	0.020	<0.0020	0.0020	5261373	0.00040
p,p-DDD	ug/g	<0.0030	0.0030	<0.020	0.020	<0.0020	0.0020	5261373	0.00040
o,p-DDE	ug/g	<0.0030	0.0030	<0.020	0.020	<0.0020	0.0020	5261373	0.00040
p,p-DDE	ug/g	<0.0030	0.0030	<0.020	0.020	<0.0020	0.0020	5261373	0.00040
o,p-DDT	ug/g	<0.0030	0.0030	<0.020	0.020	<0.0020	0.0020	5261373	0.00040
p,p-DDT	ug/g	<0.0030	0.0030	<0.020	0.020	<0.0020	0.0020	5261373	0.00040
Dieldrin	ug/g	<0.0030	0.0030	<0.020	0.020	<0.0020	0.0020	5261373	0.00040
Lindane	ug/g	<0.0030	0.0030	<0.020	0.020	<0.0020	0.0020	5261373	0.00040
Endosulfan I (alpha)	ug/g	<0.0030	0.0030	<0.020	0.020	<0.0020	0.0020	5261373	0.00040
Endosulfan II (beta)	ug/g	<0.0030	0.0030	<0.020	0.020	<0.0020	0.0020	5261373	0.00040
Endrin	ug/g	<0.0030	0.0030	<0.020	0.020	<0.0020	0.0020	5261373	0.00040
Heptachlor	ug/g	<0.0030	0.0030	<0.020	0.020	<0.0020	0.0020	5261373	0.00040
Heptachlor epoxide	ug/g	<0.0030	0.0030	<0.020	0.020	<0.0020	0.0020	5261373	0.00040
Hexachlorobenzene	ug/g	<0.0030	0.0030	<0.020	0.020	<0.0020	0.0020	5261373	0.00040
Methoxychlor	ug/g	<0.0075	0.0075	<0.050	0.050	<0.0050	0.0050	5261373	0.0016
alpha-BHC	ug/g	<0.0030	0.0030	<0.020	0.020	<0.0020	0.0020	5261373	0.00040
beta-BHC	ug/g	<0.0030	0.0030	<0.020	0.020	<0.0020	0.0020	5261373	0.00040
delta-BHC	ug/g	<0.0030	0.0030	<0.020	0.020	<0.0020	0.0020	5261373	0.00040
Endosulfan sulfate	ug/g	<0.0030	0.0030	<0.020	0.020	<0.0020	0.0020	5261373	0.00040
Endrin aldehyde	ug/g	<0.0030	0.0030	<0.020	0.020	<0.0020	0.0020	5261373	0.00040
Endrin ketone	ug/g	<0.0030	0.0030	<0.020	0.020	<0.0020	0.0020	5261373	0.00040

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

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Maxxam Job #: B7O7511
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.003
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

ORGANOCHLORINATED PESTICIDES BY GC-ECD (SOIL)

Maxxam ID		FMF508		FMF538		FMF659			
Sampling Date		2017/10/25		2017/10/26		2017/10/25			
COC Number		N/A		N/A		N/A			
	UNITS	**BB-SS15**	**RDL**	**BB-SS46**	**RDL**	**BB-TP7-BS1**	**RDL**	**QC Batch**	**MDL**
Mirex	ug/g	<0.0030	0.0030	<0.020	0.020	<0.0020	0.0020	5261373	0.00040
Octachlorostyrene	ug/g	<0.0030	0.0030	<0.020	0.020	<0.0020	0.0020	5261373	0.00040
Toxaphene	ug/g	<0.12	0.12	<0.80	0.80	<0.080	0.080	5261373	0.020
Surrogate Recovery (%)									
2,4,5,6-Tetrachloro-m-xylene	%	93		95		87		5261373	
Decachlorobiphenyl	%	109		78		106		5261373	

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B7O7511
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.003
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

TEST SUMMARY

Maxxam ID: FMF474
Sample ID: BB-SS2
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	5250087	N/A	2017/11/06	Jacob Henley
PCBs in soil by GC/ECD	GC/ECD	5251900	2017/11/07	2017/11/09	Lisa Gates
PCB Aroclor sum (soil)	CALC	5248668	N/A	2017/11/09	Automated Statchk

Maxxam ID: FMF475
Sample ID: BB-SS4
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5251864	2017/11/07	2017/11/08	Brittany Matthews
Moisture	BAL	5250087	N/A	2017/11/06	Jacob Henley
ModTPH (T1) Calc. for Soil	CALC	5248701	N/A	2017/11/08	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5252167	N/A	2017/11/08	Matthew Cloutier

Maxxam ID: FMF476
Sample ID: BB-SS5
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5251864	2017/11/07	2017/11/08	Brittany Matthews
Moisture	BAL	5250087	N/A	2017/11/06	Jacob Henley
ModTPH (T1) Calc. for Soil	CALC	5248701	N/A	2017/11/08	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5252167	N/A	2017/11/08	Matthew Cloutier

Maxxam ID: FMF477
Sample ID: BB-SS6
Matrix: Soil

Collected: 2017/10/26
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5251864	2017/11/07	2017/11/08	Brittany Matthews
Moisture	BAL	5250087	N/A	2017/11/06	Jacob Henley
ModTPH (T1) Calc. for Soil	CALC	5248701	N/A	2017/11/08	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5252167	N/A	2017/11/08	Matthew Cloutier

Maxxam ID: FMF478
Sample ID: BB-SS9
Matrix: Soil

Collected: 2017/10/26
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5251864	2017/11/07	2017/11/08	Brittany Matthews
Moisture	BAL	5250087	N/A	2017/11/06	Jacob Henley
ModTPH (T1) Calc. for Soil	CALC	5248701	N/A	2017/11/08	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5252167	N/A	2017/11/08	Matthew Cloutier

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Maxxam Job #: B7O7511
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.003
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

TEST SUMMARY

Maxxam ID: FMF478 Dup
Sample ID: BB-SS9
Matrix: Soil

Collected: 2017/10/26
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5251864	2017/11/07	2017/11/08	Brittany Matthews

Maxxam ID: FMF479
Sample ID: BB-TP1-BS2
Matrix: Soil

Collected: 2017/10/26
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5251864	2017/11/07	2017/11/08	Brittany Matthews
Moisture	BAL	5250087	N/A	2017/11/06	Jacob Henley
ModTPH (T1) Calc. for Soil	CALC	5248701	N/A	2017/11/08	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5252167	N/A	2017/11/08	Matthew Cloutier

Maxxam ID: FMF480
Sample ID: BB-TP49-BS2
Matrix: Soil

Collected: 2017/10/26
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5251864	2017/11/07	2017/11/08	Brittany Matthews
Moisture	BAL	5250087	N/A	2017/11/06	Jacob Henley
ModTPH (T1) Calc. for Soil	CALC	5248701	N/A	2017/11/08	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5252167	N/A	2017/11/08	Matthew Cloutier

Maxxam ID: FMF481
Sample ID: BB-SS7
Matrix: Soil

Collected: 2017/10/26
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	5250087	N/A	2017/11/06	Jacob Henley
PCBs in soil by GC/ECD	GC/ECD	5251900	2017/11/07	2017/11/09	Lisa Gates
PCB Aroclor sum (soil)	CALC	5248668	N/A	2017/11/09	Automated Statchk

Maxxam ID: FMF502
Sample ID: BB-SS1
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Benzo(b/j)fluoranthene Sum (soil)	CALC	5248691	N/A	2017/11/20	Automated Statchk
TEH in Soil (PIRI)	GC/FID	5251864	2017/11/07	2017/11/08	Brittany Matthews
Metals Solids Acid Extr. ICPMS	ICP/MS	5254023	2017/11/08	2017/11/08	Mike Leblanc
Moisture	BAL	5250087	N/A	2017/11/06	Jacob Henley
PAH Compounds by GCMS (SIM)	GC/MS	5254065	2017/11/08	2017/11/17	Robin Smith-Armstrong
PCBs in soil by GC/ECD	GC/ECD	5251900	2017/11/07	2017/11/09	Lisa Gates
PCB Aroclor sum (soil)	CALC	5248668	N/A	2017/11/09	Automated Statchk
ModTPH (T1) Calc. for Soil	CALC	5248701	N/A	2017/11/08	Automated Statchk
VOCs in Soil - Field Preserved	HS/MS	5254656	N/A	2017/11/08	Amanda Swales

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Stantec Consulting Ltd
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Sampler Initials: RP

TEST SUMMARY

Maxxam ID: FMF502
Sample ID: BB-SS1
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5252167	N/A	2017/11/08	Matthew Cloutier

Maxxam ID: FMF503
Sample ID: BB-SS3
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Benzo(b/j)fluoranthene Sum (soil)	CALC	5248691	N/A	2017/11/20	Automated Statchk
TEH in Soil (PIRI)	GC/FID	5251864	2017/11/07	2017/11/08	Brittany Matthews
Metals Solids Acid Extr. ICPMS	ICP/MS	5254023	2017/11/08	2017/11/08	Mike Leblanc
Moisture	BAL	5250087	N/A	2017/11/06	Jacob Henley
PAH Compounds by GCMS (SIM)	GC/MS	5254065	2017/11/08	2017/11/17	Robin Smith-Armstrong
PCBs in soil by GC/ECD	GC/ECD	5251900	2017/11/07	2017/11/09	Lisa Gates
PCB Aroclor sum (soil)	CALC	5248668	N/A	2017/11/09	Automated Statchk
Total Organic Carbon in Soil	COMB	5255034	N/A	2017/11/09	Sarabjit Raina
ModTPH (T1) Calc. for Soil	CALC	5248701	N/A	2017/11/08	Automated Statchk
VOCs in Soil - Field Preserved	HS/MS	5254656	N/A	2017/11/08	Amanda Swales
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5252167	N/A	2017/11/08	Matthew Cloutier

Maxxam ID: FMF503 Dup
Sample ID: BB-SS3
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PCBs in soil by GC/ECD	GC/ECD	5251900	2017/11/07	2017/11/09	Lisa Gates

Maxxam ID: FMF504
Sample ID: BB-SS8
Matrix: Soil

Collected: 2017/10/26
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Benzo(b/j)fluoranthene Sum (soil)	CALC	5248691	N/A	2017/11/20	Automated Statchk
TEH in Soil (PIRI)	GC/FID	5251864	2017/11/07	2017/11/08	Brittany Matthews
Metals Solids Acid Extr. ICPMS	ICP/MS	5254023	2017/11/08	2017/11/08	Mike Leblanc
Moisture	BAL	5250087	N/A	2017/11/06	Jacob Henley
PAH Compounds by GCMS (SIM)	GC/MS	5254065	2017/11/06	2017/11/17	Robin Smith-Armstrong
ModTPH (T1) Calc. for Soil	CALC	5248701	N/A	2017/11/08	Automated Statchk
VOCs in Soil - Field Preserved	HS/MS	5254656	N/A	2017/11/08	Amanda Swales
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5252167	N/A	2017/11/08	Matthew Cloutier

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Maxxam Job #: B7O7511
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.003
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

TEST SUMMARY

Maxxam ID: FMF505
Sample ID: BB-SS10
Matrix: Soil

Collected: 2017/10/26
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Benzo(b/j)fluoranthene Sum (soil)	CALC	5248691	N/A	2017/11/20	Automated Statchk
TEH in Soil (PIRI)	GC/FID	5251864	2017/11/07	2017/11/08	Brittany Matthews
Metals Solids Acid Extr. ICPMS	ICP/MS	5254023	2017/11/08	2017/11/08	Mike Leblanc
Moisture	BAL	5250087	N/A	2017/11/06	Jacob Henley
PAH Compounds by GCMS (SIM)	GC/MS	5254065	2017/11/08	2017/11/17	Robin Smith-Armstrong
PCBs in soil by GC/ECD	GC/ECD	5251900	2017/11/07	2017/11/09	Lisa Gates
PCB Aroclor sum (soil)	CALC	5248668	N/A	2017/11/09	Automated Statchk
ModTPH (T1) Calc. for Soil	CALC	5248701	N/A	2017/11/08	Automated Statchk
VOCs in Soil - Field Preserved	HS/MS	5254656	N/A	2017/11/08	Amanda Swales
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5252167	N/A	2017/11/08	Matthew Cloutier

Maxxam ID: FMF505 Dup
Sample ID: BB-SS10
Matrix: Soil

Collected: 2017/10/26
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PAH Compounds by GCMS (SIM)	GC/MS	5254065	2017/11/08	2017/11/17	Robin Smith-Armstrong

Maxxam ID: FMF506
Sample ID: BB-SS13
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Benzo(b/j)fluoranthene Sum (soil)	CALC	5248691	N/A	2017/11/20	Automated Statchk
TEH in Soil (PIRI)	GC/FID	5251864	2017/11/07	2017/11/08	Brittany Matthews
Metals Solids Acid Extr. ICPMS	ICP/MS	5254023	2017/11/08	2017/11/08	Mike Leblanc
Moisture	BAL	5250087	N/A	2017/11/06	Jacob Henley
PAH Compounds by GCMS (SIM)	GC/MS	5254065	2017/11/08	2017/11/17	Robin Smith-Armstrong
PCBs in soil by GC/ECD	GC/ECD	5251900	2017/11/07	2017/11/09	Lisa Gates
PCB Aroclor sum (soil)	CALC	5248668	N/A	2017/11/09	Automated Statchk
ModTPH (T1) Calc. for Soil	CALC	5248701	N/A	2017/11/08	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5252167	N/A	2017/11/08	Matthew Cloutier

Maxxam ID: FMF507
Sample ID: BB-SS14
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5255256	2017/11/08	2017/11/09	Crystal Matthews
Metals Solids Acid Extr. ICPMS	ICP/MS	5262457	2017/11/13	2017/11/14	Bryon Angevine
Moisture	BAL	5254746	N/A	2017/11/09	David Balfour
PCBs in soil by GC/ECD	GC/ECD	5262301	2017/11/08	2017/11/14	Lisa Gates
PCB Aroclor sum (soil)	CALC	5254217	N/A	2017/11/14	Automated Statchk
Asbestos (bulk) by PLM (Sub fr Bedford)		5253048	N/A	2017/11/08	Eric Dearman

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Maxxam Job #: B7O7511
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.003
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

TEST SUMMARY

Maxxam ID: FMF507 **Collected:** 2017/10/25
Sample ID: BB-SS14 **Shipped:**
Matrix: Soil **Received:** 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
ModTPH (T1) Calc. for Soil	CALC	5254330	N/A	2017/11/10	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5254968	N/A	2017/11/09	Matthew Cloutier

Maxxam ID: FMF508 **Collected:** 2017/10/25
Sample ID: BB-SS15 **Shipped:**
Matrix: Soil **Received:** 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Benzo(b/j)fluoranthene Sum (soil)	CALC	5248691	N/A	2017/11/20	Automated Statchk
TEH in Soil (PIRI)	GC/FID	5251864	2017/11/07	2017/11/08	Brittany Matthews
Metals Solids Acid Extr. ICPMS	ICP/MS	5254023	2017/11/08	2017/11/08	Mike Leblanc
Moisture	BAL	5249990	N/A	2017/11/06	Jacob Henley
OC Pesticides (Selected) & PCB	GC/ECD	5261373	2017/11/11	2017/11/12	Joy Zhang
OC Pesticides Summed Parameters	CALC	5248859	N/A	2017/11/06	Rosemarie MacDonald
PAH Compounds by GCMS (SIM)	GC/MS	5254065	2017/11/08	2017/11/17	Robin Smith-Armstrong
PCBs in soil by GC/ECD	GC/ECD	5251900	2017/11/07	2017/11/09	Lisa Gates
PCB Aroclor sum (soil)	CALC	5248668	N/A	2017/11/16	Rosemarie MacDonald
ModTPH (T1) Calc. for Soil	CALC	5248701	N/A	2017/11/08	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5252167	N/A	2017/11/08	Matthew Cloutier

Maxxam ID: FMF509 **Collected:** 2017/10/25
Sample ID: BB-SS16 **Shipped:**
Matrix: Soil **Received:** 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5251864	2017/11/07	2017/11/08	Brittany Matthews
Metals Solids Acid Extr. ICPMS	ICP/MS	5254023	2017/11/08	2017/11/08	Mike Leblanc
Moisture	BAL	5249990	N/A	2017/11/06	Jacob Henley
PCBs in soil by GC/ECD	GC/ECD	5251900	2017/11/07	2017/11/09	Lisa Gates
PCB Aroclor sum (soil)	CALC	5248668	N/A	2017/11/09	Automated Statchk
ModTPH (T1) Calc. for Soil	CALC	5248701	N/A	2017/11/09	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5254968	N/A	2017/11/09	Matthew Cloutier

Maxxam ID: FMF510 **Collected:** 2017/10/25
Sample ID: BB-SS17 **Shipped:**
Matrix: Soil **Received:** 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Benzo(b/j)fluoranthene Sum (soil)	CALC	5248691	N/A	2017/11/20	Automated Statchk
TEH in Soil (PIRI)	GC/FID	5251860	2017/11/07	2017/11/07	Crystal Matthews
Metals Solids Acid Extr. ICPMS	ICP/MS	5254023	2017/11/08	2017/11/08	Mike Leblanc
Moisture	BAL	5249990	N/A	2017/11/06	Jacob Henley
PAH Compounds by GCMS (SIM)	GC/MS	5254065	2017/11/08	2017/11/17	Robin Smith-Armstrong
ModTPH (T1) Calc. for Soil	CALC	5248870	N/A	2017/11/09	Automated Statchk

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Report Date: 2017/11/20

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TEST SUMMARY

Maxxam ID: FMF510 **Collected:** 2017/10/25
Sample ID: BB-SS17 **Shipped:**
Matrix: Soil **Received:** 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
VOCs in Soil - Field Preserved	HS/MS	5254656	N/A	2017/11/08	Amanda Swales
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5254968	N/A	2017/11/09	Matthew Cloutier

Maxxam ID: FMF510 Dup **Collected:** 2017/10/25
Sample ID: BB-SS17 **Shipped:**
Matrix: Soil **Received:** 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5251860	2017/11/07	2017/11/07	Crystal Matthews
Metals Solids Acid Extr. ICPMS	ICP/MS	5254023	2017/11/08	2017/11/08	Mike Leblanc

Maxxam ID: FMF511 **Collected:** 2017/10/25
Sample ID: BB-SS18 **Shipped:**
Matrix: Soil **Received:** 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5255256	2017/11/08	2017/11/09	Crystal Matthews
Metals Solids Acid Extr. ICPMS	ICP/MS	5258994	2017/11/10	2017/11/10	Bryon Angevine
Moisture	BAL	5254746	N/A	2017/11/09	David Balfour
PCBs in soil by GC/ECD	GC/ECD	5262301	2017/11/08	2017/11/14	Lisa Gates
PCB Aroclor sum (soil)	CALC	5254217	N/A	2017/11/14	Automated Statchk
Asbestos (bulk) by PLM (Sub fr Bedford)		5253048	N/A	2017/11/08	Eric Dearman
ModTPH (T1) Calc. for Soil	CALC	5254330	N/A	2017/11/10	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5254968	N/A	2017/11/09	Matthew Cloutier

Maxxam ID: FMF512 **Collected:** 2017/10/25
Sample ID: BB-SS19 **Shipped:**
Matrix: Soil **Received:** 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5251864	2017/11/07	2017/11/08	Brittany Matthews
Metals Solids Acid Extr. ICPMS	ICP/MS	5254032	2017/11/08	2017/11/08	Bryon Angevine
Moisture	BAL	5249990	N/A	2017/11/06	Jacob Henley
PCBs in soil by GC/ECD	GC/ECD	5251900	2017/11/07	2017/11/09	Lisa Gates
PCB Aroclor sum (soil)	CALC	5248668	N/A	2017/11/09	Automated Statchk
ModTPH (T1) Calc. for Soil	CALC	5248870	N/A	2017/11/09	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5254968	N/A	2017/11/09	Matthew Cloutier

Maxxam ID: FMF512 Dup **Collected:** 2017/10/25
Sample ID: BB-SS19 **Shipped:**
Matrix: Soil **Received:** 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5254968	N/A	2017/11/09	Matthew Cloutier

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TEST SUMMARY

Maxxam ID: FMF513
Sample ID: BB-SS20
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5251864	2017/11/07	2017/11/08	Brittany Matthews
Metals Solids Acid Extr. ICPMS	ICP/MS	5254032	2017/11/08	2017/11/09	Bryon Angevine
Moisture	BAL	5249990	N/A	2017/11/06	Jacob Henley
PCBs in soil by GC/ECD	GC/ECD	5251900	2017/11/07	2017/11/09	Lisa Gates
PCB Aroclor sum (soil)	CALC	5248668	N/A	2017/11/09	Automated Statchk
ModTPH (T1) Calc. for Soil	CALC	5248870	N/A	2017/11/09	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5254968	N/A	2017/11/09	Matthew Cloutier

Maxxam ID: FMF514
Sample ID: BB-SS21
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5255256	2017/11/08	2017/11/10	Crystal Matthews
Metals Solids Acid Extr. ICPMS	ICP/MS	5262457	2017/11/13	2017/11/14	Bryon Angevine
Moisture	BAL	5254746	N/A	2017/11/09	David Balfour
Asbestos (bulk) by PLM (Sub fr Bedford)		5253048	N/A	2017/11/08	Eric Dearman
ModTPH (T1) Calc. for Soil	CALC	5254330	N/A	2017/11/13	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5254968	N/A	2017/11/09	Matthew Cloutier

Maxxam ID: FMF515
Sample ID: BB-SS22
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5251864	2017/11/07	2017/11/08	Brittany Matthews
Metals Solids Acid Extr. ICPMS	ICP/MS	5254032	2017/11/08	2017/11/09	Bryon Angevine
Moisture	BAL	5249990	N/A	2017/11/06	Jacob Henley
ModTPH (T1) Calc. for Soil	CALC	5248870	N/A	2017/11/09	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5254968	N/A	2017/11/09	Matthew Cloutier

Maxxam ID: FMF516
Sample ID: BB-SS23
Matrix: Soil

Collected: 2017/10/26
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Benzo(b/j)fluoranthene Sum (soil)	CALC	5248691	N/A	2017/11/20	Automated Statchk
TEH in Soil (PIRI)	GC/FID	5251864	2017/11/07	2017/11/08	Brittany Matthews
Metals Solids Acid Extr. ICPMS	ICP/MS	5254032	2017/11/08	2017/11/09	Bryon Angevine
Moisture	BAL	5249990	N/A	2017/11/06	Jacob Henley
PAH Compounds by GCMS (SIM)	GC/MS	5254065	2017/11/08	2017/11/18	Robin Smith-Armstrong
PCBs in soil by GC/ECD	GC/ECD	5251900	2017/11/07	2017/11/09	Lisa Gates
PCB Aroclor sum (soil)	CALC	5248668	N/A	2017/11/09	Automated Statchk
ModTPH (T1) Calc. for Soil	CALC	5248870	N/A	2017/11/09	Automated Statchk

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TEST SUMMARY

Maxxam ID: FMF516
Sample ID: BB-SS23
Matrix: Soil

Collected: 2017/10/26
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
VOCs in Soil - Field Preserved	HS/MS	5254656	N/A	2017/11/08	Amanda Swales
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5254968	N/A	2017/11/09	Matthew Cloutier

Maxxam ID: FMF517
Sample ID: BB-SS24
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Benzo(b/j)fluoranthene Sum (soil)	CALC	5248691	N/A	2017/11/20	Automated Statchk
TEH in Soil (PIRI)	GC/FID	5251864	2017/11/07	2017/11/08	Brittany Matthews
Moisture	BAL	5249990	N/A	2017/11/06	Jacob Henley
PAH Compounds by GCMS (SIM)	GC/MS	5254065	2017/11/08	2017/11/18	Robin Smith-Armstrong
ModTPH (T1) Calc. for Soil	CALC	5248870	N/A	2017/11/09	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5254968	N/A	2017/11/09	Matthew Cloutier

Maxxam ID: FMF518
Sample ID: BB-SS25
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5255256	2017/11/08	2017/11/10	Crystal Matthews
Moisture	BAL	5254746	N/A	2017/11/09	David Balfour
Asbestos (bulk) by PLM (Sub fr Bedford)		5253048	N/A	2017/11/08	Eric Dearman
ModTPH (T1) Calc. for Soil	CALC	5254330	N/A	2017/11/10	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5254968	N/A	2017/11/09	Matthew Cloutier

Maxxam ID: FMF519
Sample ID: BB-SS26
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Benzo(b/j)fluoranthene Sum (soil)	CALC	5248691	N/A	2017/11/20	Automated Statchk
TEH in Soil (PIRI)	GC/FID	5251864	2017/11/07	2017/11/08	Brittany Matthews
Moisture	BAL	5249990	N/A	2017/11/06	Jacob Henley
PAH Compounds by GCMS (SIM)	GC/MS	5254065	2017/11/08	2017/11/18	Robin Smith-Armstrong
ModTPH (T1) Calc. for Soil	CALC	5248870	N/A	2017/11/09	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5254968	N/A	2017/11/09	Matthew Cloutier

Maxxam ID: FMF520
Sample ID: BB-SS27
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Benzo(b/j)fluoranthene Sum (soil)	CALC	5248691	N/A	2017/11/20	Automated Statchk
TEH in Soil (PIRI)	GC/FID	5251864	2017/11/07	2017/11/08	Brittany Matthews

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TEST SUMMARY

Maxxam ID: FMF520
Sample ID: BB-SS27
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	5250300	N/A	2017/11/07	David Balfour
PAH Compounds by GCMS (SIM)	GC/MS	5254065	2017/11/08	2017/11/18	Robin Smith-Armstrong
ModTPH (T1) Calc. for Soil	CALC	5248870	N/A	2017/11/09	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5254968	N/A	2017/11/09	Matthew Cloutier

Maxxam ID: FMF520 Dup
Sample ID: BB-SS27
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	5250300	N/A	2017/11/07	David Balfour

Maxxam ID: FMF521
Sample ID: BB-SS28
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Benzo(b/j)fluoranthene Sum (soil)	CALC	5248691	N/A	2017/11/20	Automated Statchk
TEH in Soil (PIRI)	GC/FID	5251860	2017/11/07	2017/11/07	Crystal Matthews
Moisture	BAL	5250300	N/A	2017/11/07	David Balfour
PAH Compounds by GCMS (SIM)	GC/MS	5254065	2017/11/08	2017/11/18	Robin Smith-Armstrong
ModTPH (T1) Calc. for Soil	CALC	5248870	N/A	2017/11/09	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5254968	N/A	2017/11/09	Matthew Cloutier

Maxxam ID: FMF522
Sample ID: BB-SS29
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5251860	2017/11/07	2017/11/07	Crystal Matthews
Moisture	BAL	5250300	N/A	2017/11/07	David Balfour
ModTPH (T1) Calc. for Soil	CALC	5248870	N/A	2017/11/09	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5254968	N/A	2017/11/09	Matthew Cloutier

Maxxam ID: FMF523
Sample ID: BB-SS30
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Benzo(b/j)fluoranthene Sum (soil)	CALC	5248691	N/A	2017/11/20	Automated Statchk
TEH in Soil (PIRI)	GC/FID	5251860	2017/11/07	2017/11/07	Crystal Matthews
Metals Solids Acid Extr. ICPMS	ICP/MS	5254032	2017/11/08	2017/11/09	Bryon Angevine
Moisture	BAL	5250300	N/A	2017/11/07	David Balfour
PAH Compounds by GCMS (SIM)	GC/MS	5254068	2017/11/08	2017/11/18	Robin Smith-Armstrong
PCBs in soil by GC/ECD	GC/ECD	5251900	2017/11/07	2017/11/09	Lisa Gates

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TEST SUMMARY

Maxxam ID: FMF523
Sample ID: BB-SS30
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PCB Aroclor sum (soil)	CALC	5248668	N/A	2017/11/09	Automated Statchk
ModTPH (T1) Calc. for Soil	CALC	5248870	N/A	2017/11/09	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5254968	N/A	2017/11/09	Matthew Cloutier

Maxxam ID: FMF524
Sample ID: BB-SS31
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Benzo(b/j)fluoranthene Sum (soil)	CALC	5248691	N/A	2017/11/20	Automated Statchk
TEH in Soil (PIRI)	GC/FID	5251860	2017/11/07	2017/11/07	Crystal Matthews
Moisture	BAL	5250300	N/A	2017/11/07	David Balfour
PAH Compounds by GCMS (SIM)	GC/MS	5254068	2017/11/08	2017/11/18	Robin Smith-Armstrong
ModTPH (T1) Calc. for Soil	CALC	5248870	N/A	2017/11/09	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5254968	N/A	2017/11/09	Matthew Cloutier

Maxxam ID: FMF524 Dup
Sample ID: BB-SS31
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PAH Compounds by GCMS (SIM)	GC/MS	5254068	2017/11/08	2017/11/18	Robin Smith-Armstrong

Maxxam ID: FMF525
Sample ID: BB-SS32
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Benzo(b/j)fluoranthene Sum (soil)	CALC	5248691	N/A	2017/11/20	Automated Statchk
TEH in Soil (PIRI)	GC/FID	5251860	2017/11/07	2017/11/07	Crystal Matthews
Moisture	BAL	5250300	N/A	2017/11/07	David Balfour
PAH Compounds by GCMS (SIM)	GC/MS	5254068	2017/11/08	2017/11/18	Robin Smith-Armstrong
ModTPH (T1) Calc. for Soil	CALC	5248870	N/A	2017/11/09	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5254968	N/A	2017/11/09	Matthew Cloutier

Maxxam ID: FMF526
Sample ID: BB-SS33
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5251860	2017/11/07	2017/11/07	Crystal Matthews
Moisture	BAL	5250300	N/A	2017/11/07	David Balfour
ModTPH (T1) Calc. for Soil	CALC	5248870	N/A	2017/11/09	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5254968	N/A	2017/11/09	Matthew Cloutier

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Maxxam Job #: B7O7511
Report Date: 2017/11/20

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TEST SUMMARY

Maxxam ID: FMF527
Sample ID: BB-SS34
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5255256	2017/11/08	2017/11/09	Crystal Matthews
Moisture	BAL	5254746	N/A	2017/11/09	David Balfour
Asbestos (bulk) by PLM (Sub fr Bedford)		5253048	N/A	2017/11/08	Eric Dearman
ModTPH (T1) Calc. for Soil	CALC	5254330	N/A	2017/11/10	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5254968	N/A	2017/11/09	Matthew Cloutier

Maxxam ID: FMF528
Sample ID: BB-SS35
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Benzo(b/j)fluoranthene Sum (soil)	CALC	5248691	N/A	2017/11/20	Automated Statchk
TEH in Soil (PIRI)	GC/FID	5251860	2017/11/07	2017/11/08	Crystal Matthews
Moisture	BAL	5250300	N/A	2017/11/07	David Balfour
PAH Compounds by GCMS (SIM)	GC/MS	5254068	2017/11/08	2017/11/18	Robin Smith-Armstrong
ModTPH (T1) Calc. for Soil	CALC	5248870	N/A	2017/11/10	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5257383	N/A	2017/11/10	Matthew Cloutier

Maxxam ID: FMF529
Sample ID: BB-SS36
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Benzo(b/j)fluoranthene Sum (soil)	CALC	5248691	N/A	2017/11/20	Automated Statchk
TEH in Soil (PIRI)	GC/FID	5251860	2017/11/07	2017/11/08	Crystal Matthews
Moisture	BAL	5250300	N/A	2017/11/07	David Balfour
PAH Compounds by GCMS (SIM)	GC/MS	5254068	2017/11/08	2017/11/18	Robin Smith-Armstrong
ModTPH (T1) Calc. for Soil	CALC	5248870	N/A	2017/11/10	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5257383	N/A	2017/11/10	Matthew Cloutier

Maxxam ID: FMF530
Sample ID: BB-SS37
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5251860	2017/11/07	2017/11/08	Crystal Matthews
Moisture	BAL	5250300	N/A	2017/11/07	David Balfour
ModTPH (T1) Calc. for Soil	CALC	5248870	N/A	2017/11/10	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5257383	N/A	2017/11/10	Matthew Cloutier

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TEST SUMMARY

Maxxam ID: FMF531 **Collected:** 2017/10/25
Sample ID: BB-SS38 **Shipped:**
Matrix: Soil **Received:** 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (AA PIRI)	GC/FID	5254196	2017/11/08	2017/11/11	Marsha (Skinner) Harnum
Moisture	BAL	5250284	N/A	2017/11/07	Tyler Johnson
ModTPH (T2) Calc. for Soil	CALC	5248872	N/A	2017/11/14	Automated Statchk
VOCs in Soil - Field Preserved	HS/MS	5254656	N/A	2017/11/08	Amanda Swales
VPH in Soil (PIRI2) - Field Preserved	PTGC/MS	5262740	N/A	2017/11/14	Thea Holland

Maxxam ID: FMF531 Dup **Collected:** 2017/10/25
Sample ID: BB-SS38 **Shipped:**
Matrix: Soil **Received:** 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (AA PIRI)	GC/FID	5254196	2017/11/08	2017/11/11	Marsha (Skinner) Harnum

Maxxam ID: FMF532 **Collected:** 2017/10/25
Sample ID: BB-SS40 **Shipped:**
Matrix: Soil **Received:** 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Benzo(b/j)fluoranthene Sum (soil)	CALC	5248691	N/A	2017/11/20	Automated Statchk
TEH in Soil (PIRI)	GC/FID	5251860	2017/11/07	2017/11/08	Crystal Matthews
Moisture	BAL	5250284	N/A	2017/11/07	Tyler Johnson
PAH Compounds by GCMS (SIM)	GC/MS	5254068	2017/11/08	2017/11/18	Robin Smith-Armstrong
ModTPH (T1) Calc. for Soil	CALC	5248870	N/A	2017/11/10	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5257383	N/A	2017/11/10	Matthew Cloutier

Maxxam ID: FMF532 Dup **Collected:** 2017/10/25
Sample ID: BB-SS40 **Shipped:**
Matrix: Soil **Received:** 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5257383	N/A	2017/11/10	Matthew Cloutier

Maxxam ID: FMF533 **Collected:** 2017/10/26
Sample ID: BB-SS41 **Shipped:**
Matrix: Soil **Received:** 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	5250284	N/A	2017/11/07	Tyler Johnson
PCBs in soil by GC/ECD	GC/ECD	5251900	2017/11/07	2017/11/09	Lisa Gates
PCB Aroclor sum (soil)	CALC	5248668	N/A	2017/11/09	Automated Statchk

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Report Date: 2017/11/20

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TEST SUMMARY

Maxxam ID: FMF534
Sample ID: BB-SS42
Matrix: Soil

Collected: 2017/10/26
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	5250284	N/A	2017/11/07	Tyler Johnson
PCBs in soil by GC/ECD	GC/ECD	5251900	2017/11/07	2017/11/09	Lisa Gates
PCB Aroclor sum (soil)	CALC	5248668	N/A	2017/11/09	Automated Statchk

Maxxam ID: FMF535
Sample ID: BB-SS43
Matrix: Soil

Collected: 2017/10/26
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Benzo(b/j)fluoranthene Sum (soil)	CALC	5248691	N/A	2017/11/20	Automated Statchk
TEH in Soil (PIRI)	GC/FID	5251860	2017/11/07	2017/11/08	Crystal Matthews
Metals Solids Acid Extr. ICPMS	ICP/MS	5254032	2017/11/08	2017/11/09	Bryon Angevine
Moisture	BAL	5250284	N/A	2017/11/07	Tyler Johnson
PAH Compounds by GCMS (SIM)	GC/MS	5254068	2017/11/08	2017/11/18	Robin Smith-Armstrong
PCBs in soil by GC/ECD	GC/ECD	5251900	2017/11/07	2017/11/09	Lisa Gates
PCB Aroclor sum (soil)	CALC	5248668	N/A	2017/11/09	Automated Statchk
ModTPH (T1) Calc. for Soil	CALC	5248870	N/A	2017/11/10	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5257383	N/A	2017/11/10	Matthew Cloutier

Maxxam ID: FMF536
Sample ID: BB-SS44
Matrix: Soil

Collected: 2017/10/26
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5251860	2017/11/07	2017/11/08	Crystal Matthews
Metals Solids Acid Extr. ICPMS	ICP/MS	5254032	2017/11/08	2017/11/09	Bryon Angevine
Moisture	BAL	5250284	N/A	2017/11/07	Tyler Johnson
PCBs in soil by GC/ECD	GC/ECD	5251900	2017/11/07	2017/11/09	Lisa Gates
PCB Aroclor sum (soil)	CALC	5248668	N/A	2017/11/09	Automated Statchk
ModTPH (T1) Calc. for Soil	CALC	5248870	N/A	2017/11/10	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5257383	N/A	2017/11/10	Matthew Cloutier

Maxxam ID: FMF537
Sample ID: BB-SS45
Matrix: Soil

Collected: 2017/10/26
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5255256	2017/11/08	2017/11/10	Crystal Matthews
Moisture	BAL	5254746	N/A	2017/11/09	David Balfour
Asbestos (bulk) by PLM (Sub fr Bedford)		5253048	N/A	2017/11/08	Eric Dearman
ModTPH (T1) Calc. for Soil	CALC	5254330	N/A	2017/11/10	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5257383	N/A	2017/11/10	Matthew Cloutier

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TEST SUMMARY

Maxxam ID: FMF538
Sample ID: BB-SS46
Matrix: Soil

Collected: 2017/10/26
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Benzo(b/j)fluoranthene Sum (soil)	CALC	5248691	N/A	2017/11/20	Automated Statchk
TEH in Soil (PIRI)	GC/FID	5251860	2017/11/07	2017/11/08	Crystal Matthews
Metals Solids Acid Extr. ICPMS	ICP/MS	5254032	2017/11/08	2017/11/09	Bryon Angevine
Moisture	BAL	5250284	N/A	2017/11/07	Tyler Johnson
OC Pesticides (Selected) & PCB	GC/ECD	5261373	2017/11/11	2017/11/14	Joy Zhang
OC Pesticides Summed Parameters	CALC	5248859	N/A	2017/11/07	Automated Statchk
PAH Compounds by GCMS (SIM)	GC/MS	5254068	2017/11/08	2017/11/18	Robin Smith-Armstrong
PCBs in soil by GC/ECD	GC/ECD	5257219	2017/11/09	2017/11/10	Lisa Gates
PCB Aroclor sum (soil)	CALC	5248668	N/A	2017/11/14	Automated Statchk
ModTPH (T1) Calc. for Soil	CALC	5248870	N/A	2017/11/11	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5257383	N/A	2017/11/10	Matthew Cloutier

Maxxam ID: FMF539
Sample ID: BB-SS47
Matrix: Soil

Collected: 2017/10/26
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5251860	2017/11/07	2017/11/08	Crystal Matthews
Metals Solids Acid Extr. ICPMS	ICP/MS	5254032	2017/11/08	2017/11/09	Bryon Angevine
Moisture	BAL	5250284	N/A	2017/11/07	Tyler Johnson
PCBs in soil by GC/ECD	GC/ECD	5256649	2017/11/09	2017/11/10	Lisa Gates
PCB Aroclor sum (soil)	CALC	5248668	N/A	2017/11/10	Automated Statchk
ModTPH (T1) Calc. for Soil	CALC	5248870	N/A	2017/11/10	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5257383	N/A	2017/11/10	Matthew Cloutier

Maxxam ID: FMF650
Sample ID: BB-SS48
Matrix: Soil

Collected: 2017/10/26
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Benzo(b/j)fluoranthene Sum (soil)	CALC	5248691	N/A	2017/11/20	Automated Statchk
TEH in Soil (PIRI)	GC/FID	5251860	2017/11/07	2017/11/08	Crystal Matthews
Metals Solids Acid Extr. ICPMS	ICP/MS	5254032	2017/11/08	2017/11/09	Bryon Angevine
Moisture	BAL	5250284	N/A	2017/11/07	Tyler Johnson
PAH Compounds by GCMS (SIM)	GC/MS	5254739	2017/11/08	2017/11/18	Robin Smith-Armstrong
PCBs in soil by GC/ECD	GC/ECD	5256649	2017/11/09	2017/11/10	Lisa Gates
PCB Aroclor sum (soil)	CALC	5248668	N/A	2017/11/10	Automated Statchk
ModTPH (T1) Calc. for Soil	CALC	5248870	N/A	2017/11/10	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5257383	N/A	2017/11/10	Matthew Cloutier

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TEST SUMMARY

Maxxam ID: FMF651 **Collected:** 2017/10/25
Sample ID: BB-TP3-BS1 **Shipped:**
Matrix: Soil **Received:** 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Metals Solids Acid Extr. ICPMS	ICP/MS	5254032	2017/11/08	2017/11/09	Bryon Angevine
Moisture	BAL	5250284	N/A	2017/11/07	Tyler Johnson
VOCs in Soil - Field Preserved	HS/MS	5254656	N/A	2017/11/08	Amanda Swales

Maxxam ID: FMF652 **Collected:** 2017/10/25
Sample ID: BB-TP3-BS2 **Shipped:**
Matrix: Soil **Received:** 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5251860	2017/11/06	2017/11/08	Crystal Matthews
Moisture	BAL	5250284	N/A	2017/11/07	Tyler Johnson
ModTPH (T1) Calc. for Soil	CALC	5248870	N/A	2017/11/10	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5257383	N/A	2017/11/10	Matthew Cloutier

Maxxam ID: FMF652 Dup **Collected:** 2017/10/25
Sample ID: BB-TP3-BS2 **Shipped:**
Matrix: Soil **Received:** 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	5250284	N/A	2017/11/07	Tyler Johnson

Maxxam ID: FMF653 **Collected:** 2017/10/25
Sample ID: BB-TP4-BS1 **Shipped:**
Matrix: Soil **Received:** 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Metals Solids Acid Extr. ICPMS	ICP/MS	5254032	2017/11/08	2017/11/09	Bryon Angevine
Total Organic Carbon in Soil	COMB	5255034	N/A	2017/11/09	Sarabjit Raina

Maxxam ID: FMF653 Dup **Collected:** 2017/10/25
Sample ID: BB-TP4-BS1 **Shipped:**
Matrix: Soil **Received:** 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Metals Solids Acid Extr. ICPMS	ICP/MS	5254032	2017/11/08	2017/11/09	Bryon Angevine

Maxxam ID: FMF654 **Collected:** 2017/10/25
Sample ID: BB-TP4-BS2 **Shipped:**
Matrix: Soil **Received:** 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5251860	2017/11/07	2017/11/08	Crystal Matthews
Moisture	BAL	5250284	N/A	2017/11/07	Tyler Johnson
ModTPH (T1) Calc. for Soil	CALC	5248870	N/A	2017/11/10	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5257383	N/A	2017/11/10	Matthew Cloutier

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TEST SUMMARY

Maxxam ID: FMF655
Sample ID: BB-TP5-BS1
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Metals Solids Acid Extr. ICPMS	ICP/MS	5254032	2017/11/08	2017/11/09	Bryon Angevine
Moisture	BAL	5250284	N/A	2017/11/07	Tyler Johnson
PCBs in soil by GC/ECD	GC/ECD	5254136	2017/11/08	2017/11/09	Lisa Gates
PCB Aroclor sum (soil)	CALC	5248668	N/A	2017/11/09	Automated Statchk

Maxxam ID: FMF656
Sample ID: BB-TP5-BS2
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5251860	2017/11/07	2017/11/08	Crystal Matthews
Moisture	BAL	5250284	N/A	2017/11/07	Tyler Johnson
ModTPH (T1) Calc. for Soil	CALC	5248870	N/A	2017/11/10	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5257383	N/A	2017/11/10	Matthew Cloutier

Maxxam ID: FMF657
Sample ID: BB-TP6-BS1
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Metals Solids Acid Extr. ICPMS	ICP/MS	5254032	2017/11/08	2017/11/09	Bryon Angevine

Maxxam ID: FMF658
Sample ID: BB-TP6-BS2
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5251860	2017/11/07	2017/11/08	Crystal Matthews
Moisture	BAL	5250284	N/A	2017/11/07	Tyler Johnson
ModTPH (T1) Calc. for Soil	CALC	5248870	N/A	2017/11/10	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5257383	N/A	2017/11/10	Matthew Cloutier

Maxxam ID: FMF659
Sample ID: BB-TP7-BS1
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5251735	2017/11/07	2017/11/08	Crystal Matthews
Metals Solids Acid Extr. ICPMS	ICP/MS	5254032	2017/11/08	2017/11/09	Bryon Angevine
Moisture	BAL	5250284	N/A	2017/11/07	Tyler Johnson
OC Pesticides (Selected) & PCB	GC/ECD	5261373	2017/11/11	2017/11/14	Joy Zhang
OC Pesticides Summed Parameters	CALC	5248859	N/A	2017/11/07	Automated Statchk
PCBs in soil by GC/ECD	GC/ECD	5254136	2017/11/08	2017/11/09	Lisa Gates
PCB Aroclor sum (soil)	CALC	5248668	N/A	2017/11/14	Automated Statchk
ModTPH (T1) Calc. for Soil	CALC	5248870	N/A	2017/11/10	Automated Statchk

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TEST SUMMARY

Maxxam ID: FMF659 **Collected:** 2017/10/25
Sample ID: BB-TP7-BS1 **Shipped:**
Matrix: Soil **Received:** 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5257383	N/A	2017/11/10	Matthew Cloutier

Maxxam ID: FMF660 **Collected:** 2017/10/25
Sample ID: BB-TP7-BS2 **Shipped:**
Matrix: Soil **Received:** 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5251735	2017/11/07	2017/11/07	Crystal Matthews
Moisture	BAL	5250284	N/A	2017/11/07	Tyler Johnson
ModTPH (T1) Calc. for Soil	CALC	5248870	N/A	2017/11/10	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5257383	N/A	2017/11/10	Matthew Cloutier

Maxxam ID: FMF661 **Collected:** 2017/10/25
Sample ID: BB-TP8-BS1 **Shipped:**
Matrix: Soil **Received:** 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (AA PIRI)	GC/FID	5254196	2017/11/08	2017/11/12	Marsha (Skinner) Harnum
Metals Solids Acid Extr. ICPMS	ICP/MS	5254226	2017/11/08	2017/11/08	Bryon Angevine
Moisture	BAL	5250300	N/A	2017/11/07	David Balfour
PCBs in soil by GC/ECD	GC/ECD	5254136	2017/11/08	2017/11/09	Lisa Gates
PCB Aroclor sum (soil)	CALC	5248668	N/A	2017/11/09	Automated Statchk
ModTPH (T2) Calc. for Soil	CALC	5248872	N/A	2017/11/14	Automated Statchk
VPH in Soil (PIRI2) - Field Preserved	PTGC/MS	5262740	N/A	2017/11/14	Thea Holland

Maxxam ID: FMF662 **Collected:** 2017/10/25
Sample ID: BB-TP8-BS2 **Shipped:**
Matrix: Soil **Received:** 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5251735	2017/11/07	2017/11/07	Crystal Matthews
Moisture	BAL	5250300	N/A	2017/11/07	David Balfour
ModTPH (T1) Calc. for Soil	CALC	5248870	N/A	2017/11/11	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5257394	N/A	2017/11/10	Matthew Cloutier

Maxxam ID: FMF663 **Collected:** 2017/10/25
Sample ID: BB-TP9-BS1 **Shipped:**
Matrix: Soil **Received:** 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	5250300	N/A	2017/11/07	David Balfour
PCBs in soil by GC/ECD	GC/ECD	5254136	2017/11/08	2017/11/09	Lisa Gates
PCB Aroclor sum (soil)	CALC	5248668	N/A	2017/11/09	Automated Statchk

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Maxxam Job #: B7O7511
Report Date: 2017/11/20

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Client Project #: 121414915.200.003
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Sampler Initials: RP

TEST SUMMARY

Maxxam ID: FMF663 Dup
Sample ID: BB-TP9-BS1
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PCBs in soil by GC/ECD	GC/ECD	5254136	2017/11/08	2017/11/09	Lisa Gates

Maxxam ID: FMF664
Sample ID: BB-TP9-BS2
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5251735	2017/11/07	2017/11/08	Crystal Matthews
Moisture	BAL	5250300	N/A	2017/11/07	David Balfour
ModTPH (T1) Calc. for Soil	CALC	5248870	N/A	2017/11/11	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5257394	N/A	2017/11/10	Matthew Cloutier

Maxxam ID: FMF665
Sample ID: BB-TP10-BS2
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Benzo(b/j)fluoranthene Sum (soil)	CALC	5248691	N/A	2017/11/20	Automated Statchk
TEH in Soil (PIRI)	GC/FID	5251735	2017/11/07	2017/11/07	Crystal Matthews
Moisture	BAL	5250300	N/A	2017/11/07	David Balfour
PAH Compounds by GCMS (SIM)	GC/MS	5254068	2017/11/08	2017/11/18	Robin Smith-Armstrong
ModTPH (T1) Calc. for Soil	CALC	5248870	N/A	2017/11/11	Automated Statchk
VOCs in Soil - Field Preserved	HS/MS	5254656	N/A	2017/11/08	Amanda Swales
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5257394	N/A	2017/11/10	Matthew Cloutier

Maxxam ID: FMF666
Sample ID: BB-TP11-BS2
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5251735	2017/11/07	2017/11/07	Crystal Matthews
Moisture	BAL	5250300	N/A	2017/11/07	David Balfour
ModTPH (T1) Calc. for Soil	CALC	5248870	N/A	2017/11/11	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5257394	N/A	2017/11/10	Matthew Cloutier

Maxxam ID: FMF667
Sample ID: BB-TP12-BS1
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Benzo(b/j)fluoranthene Sum (soil)	CALC	5248691	N/A	2017/11/20	Automated Statchk
TEH in Soil (PIRI)	GC/FID	5251735	2017/11/07	2017/11/07	Crystal Matthews
Metals Solids Acid Extr. ICPMS	ICP/MS	5254226	2017/11/08	2017/11/08	Bryon Angevine
Moisture	BAL	5250300	N/A	2017/11/07	David Balfour
PAH Compounds by GCMS (SIM)	GC/MS	5254068	2017/11/08	2017/11/18	Robin Smith-Armstrong

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TEST SUMMARY

Maxxam ID: FMF667
Sample ID: BB-TP12-BS1
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PCBs in soil by GC/ECD	GC/ECD	5254136	2017/11/08	2017/11/09	Lisa Gates
PCB Aroclor sum (soil)	CALC	5248668	N/A	2017/11/09	Automated Statchk
ModTPH (T1) Calc. for Soil	CALC	5248870	N/A	2017/11/11	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5257394	N/A	2017/11/10	Matthew Cloutier

Maxxam ID: FMF675
Sample ID: BB-TP12-BS2
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5251735	2017/11/07	2017/11/07	Crystal Matthews
Moisture	BAL	5250300	N/A	2017/11/07	David Balfour
ModTPH (T1) Calc. for Soil	CALC	5248870	N/A	2017/11/11	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5257394	N/A	2017/11/10	Matthew Cloutier

Maxxam ID: FMF676
Sample ID: BB-TP13-BS1
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Metals Solids Acid Extr. ICPMS	ICP/MS	5254226	2017/11/08	2017/11/08	Bryon Angevine
Moisture	BAL	5250300	N/A	2017/11/07	David Balfour
VOCs in Soil - Field Preserved	HS/MS	5254656	N/A	2017/11/08	Amanda Swales

Maxxam ID: FMF677
Sample ID: BB-TP13-BS2
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Benzo(b/j)fluoranthene Sum (soil)	CALC	5248691	N/A	2017/11/20	Automated Statchk
TEH in Soil (PIRI)	GC/FID	5251735	2017/11/07	2017/11/07	Crystal Matthews
Moisture	BAL	5250300	N/A	2017/11/07	David Balfour
PAH Compounds by GCMS (SIM)	GC/MS	5254068	2017/11/08	2017/11/18	Robin Smith-Armstrong
PCBs in soil by GC/ECD	GC/ECD	5254136	2017/11/08	2017/11/09	Lisa Gates
PCB Aroclor sum (soil)	CALC	5248668	N/A	2017/11/09	Automated Statchk
ModTPH (T1) Calc. for Soil	CALC	5248870	N/A	2017/11/11	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5257394	N/A	2017/11/10	Matthew Cloutier

Maxxam ID: FMF678
Sample ID: BB-TP14-BS1
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Benzo(b/j)fluoranthene Sum (soil)	CALC	5248691	N/A	2017/11/20	Automated Statchk
Metals Solids Acid Extr. ICPMS	ICP/MS	5254226	2017/11/08	2017/11/08	Bryon Angevine

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TEST SUMMARY

Maxxam ID: FMF678
Sample ID: BB-TP14-BS1
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	5250749	N/A	2017/11/07	David Balfour
PAH Compounds by GCMS (SIM)	GC/MS	5254068	2017/11/08	2017/11/18	Robin Smith-Armstrong
VOCs in Soil - Field Preserved	HS/MS	5254656	N/A	2017/11/08	Amanda Swales

Maxxam ID: FMF679
Sample ID: BB-TP14-BS2
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5251735	2017/11/07	2017/11/07	Crystal Matthews
Moisture	BAL	5250749	N/A	2017/11/07	David Balfour
ModTPH (T1) Calc. for Soil	CALC	5248870	N/A	2017/11/11	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5257394	N/A	2017/11/10	Matthew Cloutier

Maxxam ID: FMF679 Dup
Sample ID: BB-TP14-BS2
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5257394	N/A	2017/11/10	Matthew Cloutier

Maxxam ID: FMF680
Sample ID: BB-TP15-BS1
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Benzo(b/j)fluoranthene Sum (soil)	CALC	5248691	N/A	2017/11/20	Automated Statchk
Metals Solids Acid Extr. ICPMS	ICP/MS	5254226	2017/11/08	2017/11/08	Bryon Angevine
Moisture	BAL	5250749	N/A	2017/11/07	David Balfour
PAH Compounds by GCMS (SIM)	GC/MS	5254068	2017/11/08	2017/11/18	Robin Smith-Armstrong
PCBs in soil by GC/ECD	GC/ECD	5254136	2017/11/08	2017/11/09	Lisa Gates
PCB Aroclor sum (soil)	CALC	5248668	N/A	2017/11/09	Automated Statchk

Maxxam ID: FMF681
Sample ID: BB-TP15-BS2
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Benzo(b/j)fluoranthene Sum (soil)	CALC	5248691	N/A	2017/11/20	Automated Statchk
TEH in Soil (PIRI)	GC/FID	5251735	2017/11/07	2017/11/07	Crystal Matthews
Moisture	BAL	5250749	N/A	2017/11/07	David Balfour
PAH Compounds by GCMS (SIM)	GC/MS	5254068	2017/11/08	2017/11/18	Robin Smith-Armstrong
ModTPH (T1) Calc. for Soil	CALC	5248870	N/A	2017/11/11	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5257394	N/A	2017/11/10	Matthew Cloutier

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TEST SUMMARY

Maxxam ID: FMF682
Sample ID: BB-TP16-BS1
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Benzo(b/j)fluoranthene Sum (soil)	CALC	5248691	N/A	2017/11/20	Automated Statchk
Metals Solids Acid Extr. ICPMS	ICP/MS	5254226	2017/11/08	2017/11/08	Bryon Angevine
Moisture	BAL	5250749	N/A	2017/11/07	David Balfour
PAH Compounds by GCMS (SIM)	GC/MS	5254068	2017/11/08	2017/11/18	Robin Smith-Armstrong

Maxxam ID: FMF682 Dup
Sample ID: BB-TP16-BS1
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	5250749	N/A	2017/11/07	David Balfour

Maxxam ID: FMF683
Sample ID: BB-TP16-BS2
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5251735	2017/11/07	2017/11/07	Crystal Matthews
Metals Solids Acid Extr. ICPMS	ICP/MS	5254226	2017/11/08	2017/11/08	Bryon Angevine
Moisture	BAL	5250749	N/A	2017/11/07	David Balfour
PCBs in soil by GC/ECD	GC/ECD	5254136	2017/11/08	2017/11/09	Lisa Gates
PCB Aroclor sum (soil)	CALC	5248668	N/A	2017/11/09	Automated Statchk
ModTPH (T1) Calc. for Soil	CALC	5248870	N/A	2017/11/11	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5257394	N/A	2017/11/10	Matthew Cloutier

Maxxam ID: FMF684
Sample ID: BB-TP17-BS1
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Benzo(b/j)fluoranthene Sum (soil)	CALC	5248691	N/A	2017/11/20	Automated Statchk
Metals Solids Acid Extr. ICPMS	ICP/MS	5254226	2017/11/08	2017/11/08	Bryon Angevine
Moisture	BAL	5250749	N/A	2017/11/07	David Balfour
PAH Compounds by GCMS (SIM)	GC/MS	5254068	2017/11/08	2017/11/18	Robin Smith-Armstrong
PCBs in soil by GC/ECD	GC/ECD	5254136	2017/11/08	2017/11/09	Lisa Gates
PCB Aroclor sum (soil)	CALC	5248668	N/A	2017/11/09	Automated Statchk

Maxxam ID: FMF685
Sample ID: BB-TP17-BS2
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5251735	2017/11/07	2017/11/07	Crystal Matthews
Moisture	BAL	5250749	N/A	2017/11/07	David Balfour
ModTPH (T1) Calc. for Soil	CALC	5248870	N/A	2017/11/11	Automated Statchk

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TEST SUMMARY

Maxxam ID: FMF685
Sample ID: BB-TP17-BS2
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5257394	N/A	2017/11/10	Matthew Cloutier

Maxxam ID: FMF686
Sample ID: BB-TP18-BS1
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Metals Solids Acid Extr. ICPMS	ICP/MS	5254226	2017/11/08	2017/11/09	Bryon Angevine
Moisture	BAL	5250749	N/A	2017/11/07	David Balfour
PCBs in soil by GC/ECD	GC/ECD	5254136	2017/11/08	2017/11/09	Lisa Gates
PCB Aroclor sum (soil)	CALC	5248668	N/A	2017/11/09	Automated Statchk

Maxxam ID: FMF687
Sample ID: BB-TP18-BS2
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5251735	2017/11/07	2017/11/08	Crystal Matthews
Moisture	BAL	5250749	N/A	2017/11/07	David Balfour
PCBs in soil by GC/ECD	GC/ECD	5254136	2017/11/08	2017/11/09	Lisa Gates
PCB Aroclor sum (soil)	CALC	5248864	N/A	2017/11/09	Automated Statchk
ModTPH (T1) Calc. for Soil	CALC	5248871	N/A	2017/11/11	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5257394	N/A	2017/11/10	Matthew Cloutier

Maxxam ID: FMF688
Sample ID: BB-TP19-BS1
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Metals Solids Acid Extr. ICPMS	ICP/MS	5254226	2017/11/08	2017/11/09	Bryon Angevine
Moisture	BAL	5250749	N/A	2017/11/07	David Balfour
PCBs in soil by GC/ECD	GC/ECD	5254136	2017/11/08	2017/11/09	Lisa Gates
PCB Aroclor sum (soil)	CALC	5248864	N/A	2017/11/09	Automated Statchk

Maxxam ID: FMF688 Dup
Sample ID: BB-TP19-BS1
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Metals Solids Acid Extr. ICPMS	ICP/MS	5254226	2017/11/08	2017/11/09	Bryon Angevine

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TEST SUMMARY

Maxxam ID: FMF688 Dup2
Sample ID: BB-TP19-BS1
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Metals Solids Acid Extr. ICPMS	ICP/MS	5254226	2017/11/08	2017/11/09	Bryon Angevine

Maxxam ID: FMF689
Sample ID: BB-TP19-BS2
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5251735	2017/11/07	2017/11/07	Crystal Matthews
Moisture	BAL	5250749	N/A	2017/11/07	David Balfour
ModTPH (T1) Calc. for Soil	CALC	5248871	N/A	2017/11/11	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5257394	N/A	2017/11/10	Matthew Cloutier

Maxxam ID: FMF690
Sample ID: BB-TP20-BS1
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Metals Solids Acid Extr. ICPMS	ICP/MS	5254032	2017/11/08	2017/11/09	Bryon Angevine
Moisture	BAL	5250749	N/A	2017/11/07	David Balfour
PCBs in soil by GC/ECD	GC/ECD	5254136	2017/11/08	2017/11/09	Lisa Gates
PCB Aroclor sum (soil)	CALC	5248864	N/A	2017/11/09	Automated Statchk

Maxxam ID: FMF691
Sample ID: BB-TP20-BS2
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5252171	2017/11/07	2017/11/08	Crystal Matthews
Metals Solids Acid Extr. ICPMS	ICP/MS	5254032	2017/11/08	2017/11/09	Bryon Angevine
Moisture	BAL	5250749	N/A	2017/11/07	David Balfour
PCBs in soil by GC/ECD	GC/ECD	5254136	2017/11/08	2017/11/09	Lisa Gates
PCB Aroclor sum (soil)	CALC	5248864	N/A	2017/11/09	Automated Statchk
ModTPH (T1) Calc. for Soil	CALC	5248871	N/A	2017/11/11	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5257394	N/A	2017/11/10	Matthew Cloutier

Maxxam ID: FMF692
Sample ID: BB-TP21-BS1
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Metals Solids Acid Extr. ICPMS	ICP/MS	5254032	2017/11/08	2017/11/09	Bryon Angevine
Moisture	BAL	5250749	N/A	2017/11/07	David Balfour
PCBs in soil by GC/ECD	GC/ECD	5254136	2017/11/08	2017/11/09	Lisa Gates
PCB Aroclor sum (soil)	CALC	5248864	N/A	2017/11/09	Automated Statchk

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TEST SUMMARY

Maxxam ID: FMF693 **Collected:** 2017/10/25
Sample ID: BB-TP21-BS2 **Shipped:**
Matrix: Soil **Received:** 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5252171	2017/11/07	2017/11/07	Crystal Matthews
Moisture	BAL	5250749	N/A	2017/11/07	David Balfour
ModTPH (T1) Calc. for Soil	CALC	5248871	N/A	2017/11/11	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5257394	N/A	2017/11/10	Matthew Cloutier

Maxxam ID: FMF694 **Collected:** 2017/10/25
Sample ID: BB-TP22-BS1 **Shipped:**
Matrix: Soil **Received:** 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Metals Solids Acid Extr. ICPMS	ICP/MS	5254032	2017/11/08	2017/11/09	Bryon Angevine
Moisture	BAL	5250749	N/A	2017/11/07	David Balfour
PCBs in soil by GC/ECD	GC/ECD	5254136	2017/11/08	2017/11/09	Lisa Gates
PCB Aroclor sum (soil)	CALC	5248864	N/A	2017/11/09	Automated Statchk

Maxxam ID: FMF709 **Collected:** 2017/10/25
Sample ID: BB-TP22-BS2 **Shipped:**
Matrix: Soil **Received:** 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5252171	2017/11/07	2017/11/07	Crystal Matthews
Metals Solids Acid Extr. ICPMS	ICP/MS	5254032	2017/11/08	2017/11/09	Bryon Angevine
Moisture	BAL	5250749	N/A	2017/11/07	David Balfour
PCBs in soil by GC/ECD	GC/ECD	5254136	2017/11/08	2017/11/09	Lisa Gates
PCB Aroclor sum (soil)	CALC	5248864	N/A	2017/11/09	Automated Statchk
ModTPH (T1) Calc. for Soil	CALC	5248871	N/A	2017/11/11	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5257394	N/A	2017/11/10	Matthew Cloutier

Maxxam ID: FMF710 **Collected:** 2017/10/25
Sample ID: BB-TP23-BS1 **Shipped:**
Matrix: Soil **Received:** 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Metals Solids Acid Extr. ICPMS	ICP/MS	5254057	2017/11/08	2017/11/08	Bryon Angevine
Moisture	BAL	5250749	N/A	2017/11/07	David Balfour
PCBs in soil by GC/ECD	GC/ECD	5254136	2017/11/08	2017/11/09	Lisa Gates
PCB Aroclor sum (soil)	CALC	5248864	N/A	2017/11/09	Automated Statchk

Maxxam ID: FMF711 **Collected:** 2017/10/25
Sample ID: BB-TP23-BS2 **Shipped:**
Matrix: Soil **Received:** 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5252171	2017/11/07	2017/11/07	Crystal Matthews
Moisture	BAL	5250749	N/A	2017/11/07	David Balfour

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Maxxam Job #: B7O7511
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.003
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

TEST SUMMARY

Maxxam ID: FMF711 **Collected:** 2017/10/25
Sample ID: BB-TP23-BS2 **Shipped:**
Matrix: Soil **Received:** 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
ModTPH (T1) Calc. for Soil	CALC	5248871	N/A	2017/11/11	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5257394	N/A	2017/11/10	Matthew Cloutier

Maxxam ID: FMF712 **Collected:** 2017/10/25
Sample ID: BB-TP24-BS1 **Shipped:**
Matrix: Soil **Received:** 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Metals Solids Acid Extr. ICPMS	ICP/MS	5254057	2017/11/08	2017/11/08	Bryon Angevine
Moisture	BAL	5250793	N/A	2017/11/07	Tyler Johnson
PCBs in soil by GC/ECD	GC/ECD	5254136	2017/11/08	2017/11/09	Lisa Gates
PCB Aroclor sum (soil)	CALC	5248864	N/A	2017/11/09	Automated Statchk

Maxxam ID: FMF713 **Collected:** 2017/10/25
Sample ID: BB-TP24-BS2 **Shipped:**
Matrix: Soil **Received:** 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5252171	2017/11/07	2017/11/07	Crystal Matthews
Moisture	BAL	5250793	N/A	2017/11/07	Tyler Johnson
ModTPH (T1) Calc. for Soil	CALC	5248871	N/A	2017/11/11	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5257394	N/A	2017/11/10	Matthew Cloutier

Maxxam ID: FMF713 Dup **Collected:** 2017/10/25
Sample ID: BB-TP24-BS2 **Shipped:**
Matrix: Soil **Received:** 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	5250793	N/A	2017/11/07	Tyler Johnson

Maxxam ID: FMF714 **Collected:** 2017/10/25
Sample ID: BB-TP25-BS1 **Shipped:**
Matrix: Soil **Received:** 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Metals Solids Acid Extr. ICPMS	ICP/MS	5258994	2017/11/10	2017/11/10	Bryon Angevine
Moisture	BAL	5254746	N/A	2017/11/09	David Balfour
PCBs in soil by GC/ECD	GC/ECD	5262301	2017/11/08	2017/11/14	Lisa Gates
PCB Aroclor sum (soil)	CALC	5254217	N/A	2017/11/14	Automated Statchk
Asbestos (bulk) by PLM (Sub fr Bedford)		5253048	N/A	2017/11/08	Eric Dearman

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Maxxam Job #: B7O7511
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.003
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

TEST SUMMARY

Maxxam ID: FMF715 **Collected:** 2017/10/25
Sample ID: BB-TP25-BS2 **Shipped:**
Matrix: Soil **Received:** 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5251735	2017/11/07	2017/11/07	Crystal Matthews
Moisture	BAL	5250793	N/A	2017/11/07	Tyler Johnson
PCBs in soil by GC/ECD	GC/ECD	5254136	2017/11/08	2017/11/09	Lisa Gates
PCB Aroclor sum (soil)	CALC	5248864	N/A	2017/11/09	Automated Statchk
ModTPH (T1) Calc. for Soil	CALC	5248871	N/A	2017/11/11	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5257394	N/A	2017/11/10	Matthew Cloutier

Maxxam ID: FMF715 Dup **Collected:** 2017/10/25
Sample ID: BB-TP25-BS2 **Shipped:**
Matrix: Soil **Received:** 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5251735	2017/11/07	2017/11/07	Crystal Matthews

Maxxam ID: FMF716 **Collected:** 2017/10/25
Sample ID: BB-TP26-BS1 **Shipped:**
Matrix: Soil **Received:** 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Metals Solids Acid Extr. ICPMS	ICP/MS	5254057	2017/11/08	2017/11/08	Bryon Angevine
Moisture	BAL	5250793	N/A	2017/11/07	Tyler Johnson
PCBs in soil by GC/ECD	GC/ECD	5254900	2017/11/08	2017/11/10	Lisa Gates
PCB Aroclor sum (soil)	CALC	5248864	N/A	2017/11/10	Automated Statchk
VOCs in Soil - Field Preserved	HS/MS	5254656	N/A	2017/11/08	Amanda Swales

Maxxam ID: FMF717 **Collected:** 2017/10/25
Sample ID: BB-TP26-BS2 **Shipped:**
Matrix: Soil **Received:** 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5252171	2017/11/07	2017/11/08	Crystal Matthews
Moisture	BAL	5250793	N/A	2017/11/07	Tyler Johnson
ModTPH (T1) Calc. for Soil	CALC	5248871	N/A	2017/11/11	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5257394	N/A	2017/11/10	Matthew Cloutier

Maxxam ID: FMF718 **Collected:** 2017/10/25
Sample ID: BB-TP27-BS1 **Shipped:**
Matrix: Soil **Received:** 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Metals Solids Acid Extr. ICPMS	ICP/MS	5254057	2017/11/08	2017/11/08	Bryon Angevine
Moisture	BAL	5250793	N/A	2017/11/07	Tyler Johnson
PCBs in soil by GC/ECD	GC/ECD	5254900	2017/11/08	2017/11/10	Lisa Gates
PCB Aroclor sum (soil)	CALC	5248864	N/A	2017/11/10	Automated Statchk

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Report Date: 2017/11/20

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TEST SUMMARY

Maxxam ID: FMF724
Sample ID: BB-TP27-BS2
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5252171	2017/11/07	2017/11/08	Crystal Matthews
Moisture	BAL	5250793	N/A	2017/11/07	Tyler Johnson
PCBs in soil by GC/ECD	GC/ECD	5254900	2017/11/08	2017/11/10	Lisa Gates
PCB Aroclor sum (soil)	CALC	5248864	N/A	2017/11/10	Automated Statchk
ModTPH (T1) Calc. for Soil	CALC	5248871	N/A	2017/11/13	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5259325	N/A	2017/11/13	Matthew Cloutier

Maxxam ID: FMF725
Sample ID: BB-TP28-BS1
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Metals Solids Acid Extr. ICPMS	ICP/MS	5254057	2017/11/08	2017/11/08	Bryon Angevine
Moisture	BAL	5250793	N/A	2017/11/07	Tyler Johnson
PCBs in soil by GC/ECD	GC/ECD	5254900	2017/11/08	2017/11/10	Lisa Gates
PCB Aroclor sum (soil)	CALC	5248864	N/A	2017/11/10	Automated Statchk
VOCs in Soil - Field Preserved	HS/MS	5254656	N/A	2017/11/08	Amanda Swales

Maxxam ID: FMF725 Dup
Sample ID: BB-TP28-BS1
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PCBs in soil by GC/ECD	GC/ECD	5254900	2017/11/08	2017/11/10	Lisa Gates
VOCs in Soil - Field Preserved	HS/MS	5254656	N/A	2017/11/08	Amanda Swales

Maxxam ID: FMF726
Sample ID: BB-TP28-BS2
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5252171	2017/11/07	2017/11/08	Crystal Matthews
Moisture	BAL	5250793	N/A	2017/11/07	Tyler Johnson
ModTPH (T1) Calc. for Soil	CALC	5248871	N/A	2017/11/13	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5259325	N/A	2017/11/13	Matthew Cloutier

Maxxam ID: FMF727
Sample ID: BB-TP30-BS1
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Metals Solids Acid Extr. ICPMS	ICP/MS	5254057	2017/11/08	2017/11/08	Bryon Angevine
Moisture	BAL	5250793	N/A	2017/11/07	Tyler Johnson
PCBs in soil by GC/ECD	GC/ECD	5254900	2017/11/08	2017/11/10	Lisa Gates
PCB Aroclor sum (soil)	CALC	5248864	N/A	2017/11/10	Automated Statchk

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TEST SUMMARY

Maxxam ID: FMF728
Sample ID: BB-TP30-BS2
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5252171	2017/11/07	2017/11/08	Crystal Matthews
Moisture	BAL	5250793	N/A	2017/11/07	Tyler Johnson
ModTPH (T1) Calc. for Soil	CALC	5248871	N/A	2017/11/13	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5259325	N/A	2017/11/13	Matthew Cloutier

Maxxam ID: FMF729
Sample ID: BB-TP31-BS1
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Metals Solids Acid Extr. ICPMS	ICP/MS	5254057	2017/11/08	2017/11/08	Bryon Angevine
Moisture	BAL	5250793	N/A	2017/11/07	Tyler Johnson
PCBs in soil by GC/ECD	GC/ECD	5254900	2017/11/08	2017/11/10	Lisa Gates
PCB Aroclor sum (soil)	CALC	5248864	N/A	2017/11/10	Automated Statchk

Maxxam ID: FMF730
Sample ID: BB-TP31-BS2
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5252171	2017/11/07	2017/11/08	Crystal Matthews
Moisture	BAL	5250793	N/A	2017/11/07	Tyler Johnson
ModTPH (T1) Calc. for Soil	CALC	5248871	N/A	2017/11/13	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5259325	N/A	2017/11/13	Matthew Cloutier

Maxxam ID: FMF752
Sample ID: BB-TP32-BS1
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Metals Solids Acid Extr. ICPMS	ICP/MS	5254057	2017/11/08	2017/11/08	Bryon Angevine
Moisture	BAL	5250793	N/A	2017/11/07	Tyler Johnson
PCBs in soil by GC/ECD	GC/ECD	5254900	2017/11/08	2017/11/10	Lisa Gates
PCB Aroclor sum (soil)	CALC	5248864	N/A	2017/11/10	Automated Statchk

Maxxam ID: FMF753
Sample ID: BB-TP32-BS2
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5252171	2017/11/07	2017/11/08	Crystal Matthews
Moisture	BAL	5250793	N/A	2017/11/07	Tyler Johnson
PCBs in soil by GC/ECD	GC/ECD	5254900	2017/11/08	2017/11/10	Lisa Gates
PCB Aroclor sum (soil)	CALC	5248864	N/A	2017/11/10	Automated Statchk
ModTPH (T1) Calc. for Soil	CALC	5248871	N/A	2017/11/13	Automated Statchk

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TEST SUMMARY

Maxxam ID: FMF753
Sample ID: BB-TP32-BS2
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5259325	N/A	2017/11/13	Matthew Cloutier

Maxxam ID: FMF754
Sample ID: BB-TP33-BS1
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Metals Solids Acid Extr. ICPMS	ICP/MS	5254057	2017/11/08	2017/11/08	Bryon Angevine
Moisture	BAL	5250793	N/A	2017/11/07	Tyler Johnson
PCBs in soil by GC/ECD	GC/ECD	5254900	2017/11/08	2017/11/10	Lisa Gates
PCB Aroclor sum (soil)	CALC	5248864	N/A	2017/11/10	Automated Statchk

Maxxam ID: FMF755
Sample ID: BB-TP33-BS2
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5252171	2017/11/07	2017/11/08	Crystal Matthews
Moisture	BAL	5250793	N/A	2017/11/07	Tyler Johnson
ModTPH (T1) Calc. for Soil	CALC	5248871	N/A	2017/11/13	Automated Statchk
VOCs in Soil - Field Preserved	HS/MS	5254656	N/A	2017/11/08	Amanda Swales
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5259325	N/A	2017/11/13	Matthew Cloutier

Maxxam ID: FMF756
Sample ID: BB-TP34-BS1
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Metals Solids Acid Extr. ICPMS	ICP/MS	5254057	2017/11/08	2017/11/08	Bryon Angevine
Moisture	BAL	5250793	N/A	2017/11/07	Tyler Johnson
PCBs in soil by GC/ECD	GC/ECD	5254900	2017/11/08	2017/11/10	Lisa Gates
PCB Aroclor sum (soil)	CALC	5248864	N/A	2017/11/10	Automated Statchk

Maxxam ID: FMF757
Sample ID: BB-TP34-BS2
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5252171	2017/11/07	2017/11/08	Crystal Matthews
Moisture	BAL	5250793	N/A	2017/11/07	Tyler Johnson
ModTPH (T1) Calc. for Soil	CALC	5248871	N/A	2017/11/13	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5259325	N/A	2017/11/13	Matthew Cloutier

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TEST SUMMARY

Maxxam ID: FMF758
Sample ID: BB-TP35-BS1
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Benzo(b/j)fluoranthene Sum (soil)	CALC	5248691	N/A	2017/11/20	Automated Statchk
TEH in Soil (PIRI)	GC/FID	5251735	2017/11/07	2017/11/08	Crystal Matthews
Metals Solids Acid Extr. ICPMS	ICP/MS	5254057	2017/11/08	2017/11/08	Bryon Angevine
Moisture	BAL	5250793	N/A	2017/11/07	Tyler Johnson
PAH Compounds by GCMS (SIM)	GC/MS	5254068	2017/11/08	2017/11/18	Robin Smith-Armstrong
PCBs in soil by GC/ECD	GC/ECD	5254900	2017/11/08	2017/11/10	Lisa Gates
PCB Aroclor sum (soil)	CALC	5248864	N/A	2017/11/10	Automated Statchk
Total Organic Carbon in Soil	COMB	5255034	N/A	2017/11/09	Sarabjit Raina
ModTPH (T1) Calc. for Soil	CALC	5248871	N/A	2017/11/13	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5259325	N/A	2017/11/13	Matthew Cloutier

Maxxam ID: FMF758 Dup
Sample ID: BB-TP35-BS1
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5259325	N/A	2017/11/13	Matthew Cloutier

Maxxam ID: FMF759
Sample ID: BB-TP35-BS2
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5252175	2017/11/07	2017/11/07	Crystal Matthews
Moisture	BAL	5251723	N/A	2017/11/07	Rosemarie MacDonald
ModTPH (T1) Calc. for Soil	CALC	5248871	N/A	2017/11/13	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5259325	N/A	2017/11/13	Matthew Cloutier

Maxxam ID: FMF759 Dup
Sample ID: BB-TP35-BS2
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5252175	2017/11/07	2017/11/07	Crystal Matthews

Maxxam ID: FMF760
Sample ID: BB-TP36-BS1
Matrix: Soil

Collected: 2017/10/26
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Benzo(b/j)fluoranthene Sum (soil)	CALC	5248691	N/A	2017/11/20	Automated Statchk
TEH in Soil (PIRI)	GC/FID	5252175	2017/11/07	2017/11/07	Crystal Matthews
Metals Solids Acid Extr. ICPMS	ICP/MS	5256537	2017/11/09	2017/11/09	Bryon Angevine
Moisture	BAL	5251723	N/A	2017/11/07	Rosemarie MacDonald
PAH Compounds by GCMS (SIM)	GC/MS	5254739	2017/11/08	2017/11/18	Robin Smith-Armstrong

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Maxxam Job #: B7O7511
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.003
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

TEST SUMMARY

Maxxam ID: FMF760 **Collected:** 2017/10/26
Sample ID: BB-TP36-BS1 **Shipped:**
Matrix: Soil **Received:** 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PCBs in soil by GC/ECD	GC/ECD	5256649	2017/11/09	2017/11/10	Lisa Gates
PCB Aroclor sum (soil)	CALC	5248864	N/A	2017/11/10	Automated Statchk
ModTPH (T1) Calc. for Soil	CALC	5248871	N/A	2017/11/13	Automated Statchk
VOCs in Soil - Field Preserved	HS/MS	5254656	N/A	2017/11/08	Amanda Swales
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5259325	N/A	2017/11/13	Matthew Cloutier

Maxxam ID: FMF760 Dup **Collected:** 2017/10/26
Sample ID: BB-TP36-BS1 **Shipped:**
Matrix: Soil **Received:** 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	5251723	N/A	2017/11/07	Rosemarie MacDonald
PAH Compounds by GCMS (SIM)	GC/MS	5254739	2017/11/08	2017/11/18	Robin Smith-Armstrong
PCBs in soil by GC/ECD	GC/ECD	5256649	2017/11/09	2017/11/10	Lisa Gates

Maxxam ID: FMF761 **Collected:** 2017/10/26
Sample ID: BB-TP36-BS2 **Shipped:**
Matrix: Soil **Received:** 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5252175	2017/11/07	2017/11/07	Crystal Matthews
Moisture	BAL	5251723	N/A	2017/11/07	Rosemarie MacDonald
ModTPH (T1) Calc. for Soil	CALC	5248871	N/A	2017/11/13	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5259325	N/A	2017/11/13	Matthew Cloutier

Maxxam ID: FMF762 **Collected:** 2017/10/26
Sample ID: BB-TP37-BS1 **Shipped:**
Matrix: Soil **Received:** 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Metals Solids Acid Extr. ICPMS	ICP/MS	5256774	2017/11/09	2017/11/09	Bryon Angevine

Maxxam ID: FMF773 **Collected:** 2017/10/26
Sample ID: BB-TP37-BS2 **Shipped:**
Matrix: Soil **Received:** 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5252175	2017/11/07	2017/11/07	Crystal Matthews
Moisture	BAL	5251723	N/A	2017/11/07	Rosemarie MacDonald
ModTPH (T1) Calc. for Soil	CALC	5248871	N/A	2017/11/13	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5259325	N/A	2017/11/13	Matthew Cloutier

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Maxxam Job #: B7O7511
Report Date: 2017/11/20

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TEST SUMMARY

Maxxam ID: FMF774
Sample ID: BB-TP38-BS1
Matrix: Soil

Collected: 2017/10/26
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Metals Solids Acid Extr. ICPMS	ICP/MS	5256774	2017/11/09	2017/11/09	Bryon Angevine

Maxxam ID: FMF775
Sample ID: BB-TP38-BS2
Matrix: Soil

Collected: 2017/10/26
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5252175	2017/11/07	2017/11/07	Crystal Matthews
Moisture	BAL	5251723	N/A	2017/11/07	Rosemarie MacDonald
ModTPH (T1) Calc. for Soil	CALC	5248871	N/A	2017/11/13	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5259325	N/A	2017/11/13	Matthew Cloutier

Maxxam ID: FMF776
Sample ID: BB-TP39-BS1
Matrix: Soil

Collected: 2017/10/26
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Benzo(b/j)fluoranthene Sum (soil)	CALC	5248691	N/A	2017/11/20	Automated Statchk
TEH in Soil (PIRI)	GC/FID	5252175	2017/11/07	2017/11/08	Crystal Matthews
Metals Solids Acid Extr. ICPMS	ICP/MS	5256774	2017/11/09	2017/11/09	Bryon Angevine
Moisture	BAL	5251723	N/A	2017/11/07	Rosemarie MacDonald
PAH Compounds by GCMS (SIM)	GC/MS	5254739	2017/11/08	2017/11/18	Robin Smith-Armstrong
PCBs in soil by GC/ECD	GC/ECD	5256649	2017/11/09	2017/11/10	Lisa Gates
PCB Aroclor sum (soil)	CALC	5248864	N/A	2017/11/10	Automated Statchk
ModTPH (T1) Calc. for Soil	CALC	5248871	N/A	2017/11/13	Automated Statchk
VOCs in Soil - Field Preserved	HS/MS	5257688	N/A	2017/11/10	Amanda Swales
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5259325	N/A	2017/11/13	Matthew Cloutier

Maxxam ID: FMF777
Sample ID: BB-TP40-BS1
Matrix: Soil

Collected: 2017/10/26
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (AA PIRI)	GC/FID	5254196	2017/11/08	2017/11/12	Marsha (Skinner) Harnum
Metals Solids Acid Extr. ICPMS	ICP/MS	5256774	2017/11/09	2017/11/09	Bryon Angevine
Moisture	BAL	5251723	N/A	2017/11/07	Rosemarie MacDonald
PCBs in soil by GC/ECD	GC/ECD	5256649	2017/11/09	2017/11/10	Lisa Gates
PCB Aroclor sum (soil)	CALC	5248864	N/A	2017/11/10	Automated Statchk
ModTPH (T2) Calc. for Soil	CALC	5248872	N/A	2017/11/14	Automated Statchk
VPH in Soil (PIRI2) - Field Preserved	PTGC/MS	5262740	N/A	2017/11/14	Thea Holland

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TEST SUMMARY

Maxxam ID: FMF778
Sample ID: BB-TP41-BS1
Matrix: Soil

Collected: 2017/10/26
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Benzo(b/j)fluoranthene Sum (soil)	CALC	5248691	N/A	2017/11/20	Automated Statchk
TEH in Soil (PIRI)	GC/FID	5252175	2017/11/07	2017/11/07	Crystal Matthews
Metals Solids Acid Extr. ICPMS	ICP/MS	5256537	2017/11/09	2017/11/09	Bryon Angevine
Moisture	BAL	5251723	N/A	2017/11/07	Rosemarie MacDonald
PAH Compounds by GCMS (SIM)	GC/MS	5254739	2017/11/08	2017/11/18	Robin Smith-Armstrong
PCBs in soil by GC/ECD	GC/ECD	5256649	2017/11/09	2017/11/10	Lisa Gates
PCB Aroclor sum (soil)	CALC	5248864	N/A	2017/11/10	Automated Statchk
Total Organic Carbon in Soil	COMB	5255034	N/A	2017/11/09	Sarabjit Raina
ModTPH (T1) Calc. for Soil	CALC	5248871	N/A	2017/11/13	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5259325	N/A	2017/11/13	Matthew Cloutier

Maxxam ID: FMF778 Dup
Sample ID: BB-TP41-BS1
Matrix: Soil

Collected: 2017/10/26
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Metals Solids Acid Extr. ICPMS	ICP/MS	5256537	2017/11/09	2017/11/09	Bryon Angevine

Maxxam ID: FMF778 Dup2
Sample ID: BB-TP41-BS1
Matrix: Soil

Collected: 2017/10/26
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Metals Solids Acid Extr. ICPMS	ICP/MS	5256537	2017/11/09	2017/11/09	Bryon Angevine

Maxxam ID: FMF779
Sample ID: BB-TP42-BS1
Matrix: Soil

Collected: 2017/10/26
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5255256	2017/11/08	2017/11/10	Crystal Matthews
Metals Solids Acid Extr. ICPMS	ICP/MS	5262457	2017/11/13	2017/11/14	Bryon Angevine
Moisture	BAL	5254746	N/A	2017/11/09	David Balfour
PCBs in soil by GC/ECD	GC/ECD	5256649	2017/11/09	2017/11/10	Lisa Gates
PCB Aroclor sum (soil)	CALC	5254217	N/A	2017/11/10	Automated Statchk
Asbestos (bulk) by PLM (Sub fr Bedford)		5253048	N/A	2017/11/08	Eric Dearman
ModTPH (T1) Calc. for Soil	CALC	5254330	N/A	2017/11/13	Automated Statchk
VOCs in Soil - Field Preserved	HS/MS	5260420	N/A	2017/11/12	Amanda Swales
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5259325	N/A	2017/11/13	Matthew Cloutier

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TEST SUMMARY

Maxxam ID: FMF780
Sample ID: BB-TP43-BS1
Matrix: Soil

Collected: 2017/10/26
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Benzo(b/j)fluoranthene Sum (soil)	CALC	5248860	N/A	2017/11/20	Automated Statchk
TEH in Soil (PIRI)	GC/FID	5252175	2017/11/07	2017/11/07	Crystal Matthews
Metals Solids Acid Extr. ICPMS	ICP/MS	5256774	2017/11/09	2017/11/09	Bryon Angevine
Moisture	BAL	5251723	N/A	2017/11/07	Rosemarie MacDonald
PAH Compounds by GCMS (SIM)	GC/MS	5254739	2017/11/08	2017/11/18	Robin Smith-Armstrong
PCBs in soil by GC/ECD	GC/ECD	5256649	2017/11/09	2017/11/10	Lisa Gates
PCB Aroclor sum (soil)	CALC	5248864	N/A	2017/11/10	Automated Statchk
ModTPH (T1) Calc. for Soil	CALC	5248871	N/A	2017/11/13	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5259325	N/A	2017/11/13	Matthew Cloutier

Maxxam ID: FMF781
Sample ID: BB-TP44-BS1
Matrix: Soil

Collected: 2017/10/26
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5252175	2017/11/07	2017/11/07	Crystal Matthews
Metals Solids Acid Extr. ICPMS	ICP/MS	5256774	2017/11/09	2017/11/09	Bryon Angevine
Moisture	BAL	5251723	N/A	2017/11/07	Rosemarie MacDonald
PCBs in soil by GC/ECD	GC/ECD	5256649	2017/11/09	2017/11/10	Lisa Gates
PCB Aroclor sum (soil)	CALC	5248864	N/A	2017/11/10	Automated Statchk
ModTPH (T1) Calc. for Soil	CALC	5248871	N/A	2017/11/13	Automated Statchk
VOCs in Soil - Field Preserved	HS/MS	5257688	N/A	2017/11/10	Amanda Swales
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5259325	N/A	2017/11/13	Matthew Cloutier

Maxxam ID: FMF782
Sample ID: BB-TP50-BS1
Matrix: Soil

Collected: 2017/10/26
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Metals Solids Acid Extr. ICPMS	ICP/MS	5256537	2017/11/09	2017/11/09	Bryon Angevine

Maxxam ID: FMF783
Sample ID: BB-TP50-BS2
Matrix: Soil

Collected: 2017/10/26
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5252175	2017/11/07	2017/11/07	Crystal Matthews
Moisture	BAL	5251723	N/A	2017/11/07	Rosemarie MacDonald
ModTPH (T1) Calc. for Soil	CALC	5248871	N/A	2017/11/13	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5259325	N/A	2017/11/13	Matthew Cloutier

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TEST SUMMARY

Maxxam ID: FMF802
Sample ID: BB-SS301
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Benzo(b/j)fluoranthene Sum (soil)	CALC	5248860	N/A	2017/11/20	Automated Statchk
TEH in Soil (PIRI)	GC/FID	5252175	2017/11/07	2017/11/07	Crystal Matthews
Metals Solids Acid Extr. ICPMS	ICP/MS	5256537	2017/11/09	2017/11/09	Bryon Angevine
Moisture	BAL	5251723	N/A	2017/11/07	Rosemarie MacDonald
PAH Compounds by GCMS (SIM)	GC/MS	5254068	2017/11/08	2017/11/18	Robin Smith-Armstrong
PCBs in soil by GC/ECD	GC/ECD	5254900	2017/11/08	2017/11/10	Lisa Gates
PCB Aroclor sum (soil)	CALC	5248864	N/A	2017/11/10	Automated Statchk
ModTPH (T1) Calc. for Soil	CALC	5248871	N/A	2017/11/13	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5259325	N/A	2017/11/13	Matthew Cloutier

Maxxam ID: FMF803
Sample ID: BB-TP121-BS1
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5252175	2017/11/07	2017/11/07	Crystal Matthews
Metals Solids Acid Extr. ICPMS	ICP/MS	5256537	2017/11/09	2017/11/09	Bryon Angevine
Moisture	BAL	5251723	N/A	2017/11/07	Rosemarie MacDonald
PCBs in soil by GC/ECD	GC/ECD	5254900	2017/11/08	2017/11/10	Lisa Gates
PCB Aroclor sum (soil)	CALC	5248864	N/A	2017/11/10	Automated Statchk
ModTPH (T1) Calc. for Soil	CALC	5248871	N/A	2017/11/14	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5259923	N/A	2017/11/14	Matthew Cloutier

Maxxam ID: FMF804
Sample ID: BB-TP101-BS2
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Benzo(b/j)fluoranthene Sum (soil)	CALC	5248860	N/A	2017/11/20	Automated Statchk
TEH in Soil (PIRI)	GC/FID	5252175	2017/11/07	2017/11/07	Crystal Matthews
Moisture	BAL	5251723	N/A	2017/11/07	Rosemarie MacDonald
PAH Compounds by GCMS (SIM)	GC/MS	5254068	2017/11/08	2017/11/18	Robin Smith-Armstrong
ModTPH (T1) Calc. for Soil	CALC	5248871	N/A	2017/11/14	Automated Statchk
VOCs in Soil - Field Preserved	HS/MS	5257688	N/A	2017/11/10	Amanda Swales
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5259923	N/A	2017/11/14	Matthew Cloutier

Maxxam ID: FMF805
Sample ID: BB-TP201-BS2
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5252175	2017/11/07	2017/11/08	Crystal Matthews
Metals Solids Acid Extr. ICPMS	ICP/MS	5256774	2017/11/09	2017/11/09	Bryon Angevine
Moisture	BAL	5251723	N/A	2017/11/07	Rosemarie MacDonald

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TEST SUMMARY

Maxxam ID: FMF805 **Collected:** 2017/10/25
Sample ID: BB-TP201-BS2 **Shipped:**
Matrix: Soil **Received:** 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PCBs in soil by GC/ECD	GC/ECD	5254900	2017/11/08	2017/11/10	Lisa Gates
PCB Aroclor sum (soil)	CALC	5248864	N/A	2017/11/10	Automated Statchk
ModTPH (T1) Calc. for Soil	CALC	5248871	N/A	2017/11/14	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5259923	N/A	2017/11/14	Matthew Cloutier

Maxxam ID: FMF806 **Collected:** 2017/10/25
Sample ID: BB-TP71-BS1 **Shipped:**
Matrix: Soil **Received:** 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5252175	2017/11/07	2017/11/07	Crystal Matthews
Metals Solids Acid Extr. ICPMS	ICP/MS	5254226	2017/11/08	2017/11/09	Bryon Angevine
Moisture	BAL	5251723	N/A	2017/11/07	Rosemarie MacDonald
PCBs in soil by GC/ECD	GC/ECD	5254900	2017/11/08	2017/11/10	Lisa Gates
PCB Aroclor sum (soil)	CALC	5248864	N/A	2017/11/10	Automated Statchk
ModTPH (T1) Calc. for Soil	CALC	5248871	N/A	2017/11/14	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5259923	N/A	2017/11/14	Matthew Cloutier

Maxxam ID: FMF807 **Collected:** 2017/10/25
Sample ID: BB-TP151-BS2 **Shipped:**
Matrix: Soil **Received:** 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Benzo(b/j)fluoranthene Sum (soil)	CALC	5248860	N/A	2017/11/20	Automated Statchk
TEH in Soil (PIRI)	GC/FID	5252175	2017/11/07	2017/11/08	Crystal Matthews
Moisture	BAL	5251723	N/A	2017/11/07	Rosemarie MacDonald
PAH Compounds by GCMS (SIM)	GC/MS	5254068	2017/11/08	2017/11/18	Robin Smith-Armstrong
ModTPH (T1) Calc. for Soil	CALC	5248871	N/A	2017/11/14	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5259923	N/A	2017/11/14	Matthew Cloutier

Maxxam ID: FMF808 **Collected:** 2017/10/25
Sample ID: BB-TP161-BS2 **Shipped:**
Matrix: Soil **Received:** 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5252175	2017/11/07	2017/11/08	Crystal Matthews
Metals Solids Acid Extr. ICPMS	ICP/MS	5256537	2017/11/09	2017/11/09	Bryon Angevine
Moisture	BAL	5251723	N/A	2017/11/07	Rosemarie MacDonald
PCBs in soil by GC/ECD	GC/ECD	5254900	2017/11/08	2017/11/10	Lisa Gates
PCB Aroclor sum (soil)	CALC	5248864	N/A	2017/11/10	Automated Statchk
ModTPH (T1) Calc. for Soil	CALC	5248871	N/A	2017/11/14	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5259923	N/A	2017/11/14	Matthew Cloutier

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TEST SUMMARY

Maxxam ID: FMF809
Sample ID: BB-TP221-BS2
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5252175	2017/11/07	2017/11/08	Crystal Matthews
Metals Solids Acid Extr. ICPMS	ICP/MS	5254226	2017/11/08	2017/11/09	Bryon Angevine
Moisture	BAL	5251729	N/A	2017/11/07	David Balfour
PCBs in soil by GC/ECD	GC/ECD	5254900	2017/11/08	2017/11/10	Lisa Gates
PCB Aroclor sum (soil)	CALC	5248864	N/A	2017/11/10	Automated Statchk
ModTPH (T1) Calc. for Soil	CALC	5248871	N/A	2017/11/14	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5259923	N/A	2017/11/14	Matthew Cloutier

Maxxam ID: FMF809 Dup
Sample ID: BB-TP221-BS2
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5259923	N/A	2017/11/14	Matthew Cloutier

Maxxam ID: FMG284
Sample ID: BB-SS49
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Benzo(b/j)fluoranthene Sum (soil)	CALC	5254216	N/A	2017/11/20	Automated Statchk
Moisture	BAL	5254064	N/A	2017/11/08	David Balfour
PAH Compounds by GCMS (SIM)	GC/MS	5254739	2017/11/08	2017/11/18	Robin Smith-Armstrong
PCBs in soil by GC/ECD	GC/ECD	5254900	2017/11/08	2017/11/10	Lisa Gates
PCB Aroclor sum (soil)	CALC	5254217	N/A	2017/11/10	Automated Statchk

Maxxam ID: FMG290
Sample ID: BB-SS50
Matrix: Soil

Collected: 2017/10/25
Shipped:
Received: 2017/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Benzo(b/j)fluoranthene Sum (soil)	CALC	5254216	N/A	2017/11/20	Automated Statchk
Moisture	BAL	5254064	N/A	2017/11/08	David Balfour
PAH Compounds by GCMS (SIM)	GC/MS	5254739	2017/11/08	2017/11/18	Robin Smith-Armstrong
PCBs in soil by GC/ECD	GC/ECD	5254900	2017/11/08	2017/11/10	Lisa Gates
PCB Aroclor sum (soil)	CALC	5254217	N/A	2017/11/10	Automated Statchk

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Maxxam Job #: B7O7511
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.003
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

GENERAL COMMENTS

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

Package 1	9.2°C

Samples BB-SS49 and BB-SS50 were analyzed past the recommended hold time for BTEX analysis.

Sample FMF508 [BB-SS15] : OC pesticide: Detection limits were adjusted for high moisture content.

Sample FMF538 [BB-SS46] : OC Pesticide Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Results relate only to the items tested.

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Maxxam
A Bureau Veritas Group Company

Maxxam Job #: B7O7511
Report Date: 2017/11/20

QUALITY ASSURANCE REPORT

Stantec Consulting Ltd
Client Project #: 121414915.200.003
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

			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
5251735	Isobutylbenzene - Extractable	2017/11/07	115	30 - 130	126	30 - 130	107	%				
5251735	n-Dotriacontane - Extractable	2017/11/07	119	30 - 130	125	30 - 130	109	%				
5251860	Isobutylbenzene - Extractable	2017/11/07	97	30 - 130	102	30 - 130	94	%				
5251860	n-Dotriacontane - Extractable	2017/11/07	118	30 - 130	120	30 - 130	104	%				
5251864	Isobutylbenzene - Extractable	2017/11/07	100	30 - 130	100	30 - 130	89	%				
5251864	n-Dotriacontane - Extractable	2017/11/07	110 (1)	30 - 130	112	30 - 130	97	%				
5251900	Decachlorobiphenyl	2017/11/09	91	30 - 130	90	30 - 130	92	%				
5252167	Isobutylbenzene - Volatile	2017/11/08	94	60 - 130	95	60 - 130	98	%				
5252171	Isobutylbenzene - Extractable	2017/11/07	103	30 - 130	104	30 - 130	88	%				
5252171	n-Dotriacontane - Extractable	2017/11/07	109	30 - 130	111	30 - 130	93	%				
5252175	Isobutylbenzene - Extractable	2017/11/07	101	30 - 130	102	30 - 130	88	%				
5252175	n-Dotriacontane - Extractable	2017/11/07	78 (1)	30 - 130	77	30 - 130	70	%				
5254065	D10-Anthracene	2017/11/17	108	50 - 130	109	50 - 130	112	%				
5254065	D14-Terphenyl (FS)	2017/11/17	102	50 - 130	103	50 - 130	109	%				
5254065	D8-Acenaphthylene	2017/11/17	99	50 - 130	97	50 - 130	100	%				
5254068	D10-Anthracene	2017/11/18	95	50 - 130	97	50 - 130	97	%				
5254068	D14-Terphenyl (FS)	2017/11/18	102	50 - 130	101	50 - 130	100	%				
5254068	D8-Acenaphthylene	2017/11/18	97	50 - 130	95	50 - 130	96	%				
5254136	Decachlorobiphenyl	2017/11/09	103	30 - 130	98	30 - 130	102	%				
5254196	Isobutylbenzene - Extractable	2017/11/11					102	%				
5254196	n-Dotriacontane - Extractable	2017/11/11					99	%				
5254656	4-Bromofluorobenzene	2017/11/08	105	60 - 140	105	60 - 140	102	%				
5254656	D10-o-Xylene	2017/11/08	107 (6)	60 - 130	102	60 - 130	94	%				
5254656	D4-1,2-Dichloroethane	2017/11/08	88	60 - 140	88	60 - 140	87	%				
5254656	D8-Toluene	2017/11/08	102	60 - 140	99	60 - 140	98	%				
5254739	D10-Anthracene	2017/11/18	101	50 - 130	102	50 - 130	105	%				
5254739	D14-Terphenyl (FS)	2017/11/18	103	50 - 130	105	50 - 130	104	%				
5254739	D8-Acenaphthylene	2017/11/18	98	50 - 130	100	50 - 130	103	%				
5254900	Decachlorobiphenyl	2017/11/10	85	30 - 130	97	30 - 130	99	%				
5254968	Isobutylbenzene - Volatile	2017/11/09	98	60 - 130	94	60 - 130	98	%				
5255256	Isobutylbenzene - Extractable	2017/11/09	70	30 - 130	99	30 - 130	92	%				

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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
5255256	n-Dotriacontane - Extractable	2017/11/09	126	30 - 130	93	30 - 130	86	%				
5256649	Decachlorobiphenyl	2017/11/10	87	30 - 130	88	30 - 130	92	%				
5257219	Decachlorobiphenyl	2017/11/10	90	30 - 130	95	30 - 130	100	%				
5257383	Isobutylbenzene - Volatile	2017/11/10	56 (8)	60 - 130	95	60 - 130	115	%				
5257394	Isobutylbenzene - Volatile	2017/11/10	101	60 - 130	100	60 - 130	102	%				
5257688	4-Bromofluorobenzene	2017/11/10	101	60 - 140	105	60 - 140	102	%				
5257688	D10-o-Xylene	2017/11/10	96 (6)	60 - 130	97	60 - 130	93	%				
5257688	D4-1,2-Dichloroethane	2017/11/10	97	60 - 140	97	60 - 140	90	%				
5257688	D8-Toluene	2017/11/10	96	60 - 140	94	60 - 140	98	%				
5259325	Isobutylbenzene - Volatile	2017/11/13	78	60 - 130	84	60 - 130	82	%				
5259923	Isobutylbenzene - Volatile	2017/11/14	74	60 - 130	93	60 - 130	101	%				
5260420	4-Bromofluorobenzene	2017/11/12	116	60 - 140	101	60 - 140	100	%				
5260420	D10-o-Xylene	2017/11/12	100 (6)	60 - 130	104	60 - 130	104	%				
5260420	D4-1,2-Dichloroethane	2017/11/12	118	60 - 140	98	60 - 140	94	%				
5260420	D8-Toluene	2017/11/12	115	60 - 140	100	60 - 140	101	%				
5261373	2,4,5,6-Tetrachloro-m-xylene	2017/11/12	86	50 - 130	85	50 - 130	81	%				
5261373	Decachlorobiphenyl	2017/11/12	99	50 - 130	100	50 - 130	96	%				
5262301	Decachlorobiphenyl	2017/11/14	79	30 - 130	87	30 - 130	91	%				
5262740	Isobutylbenzene - Volatile	2017/11/13			99	60 - 140	98	%				
5249990	Moisture	2017/11/06							7.0	25		
5250087	Moisture	2017/11/06							1.2	25		
5250284	Moisture	2017/11/07							1.4	25		
5250300	Moisture	2017/11/07							15	25		
5250749	Moisture	2017/11/07							6.5	25		
5250793	Moisture	2017/11/07							2.7	25		
5251723	Moisture	2017/11/07							8.9	25		
5251729	Moisture	2017/11/07							6.8	25		
5251735	>C10-C16 Hydrocarbons	2017/11/07	NC	30 - 130	89	30 - 130	<10	mg/kg	19	50		
5251735	>C16-C21 Hydrocarbons	2017/11/07	NC	30 - 130	84	30 - 130	<10	mg/kg	18	50		
5251735	>C21-<C32 Hydrocarbons	2017/11/07	123	30 - 130	106	30 - 130	<15	mg/kg	23	50		
5251860	>C10-C16 Hydrocarbons	2017/11/07	90	30 - 130	87	30 - 130	<10	mg/kg	NC	50		

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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
5251860	>C16-C21 Hydrocarbons	2017/11/07	93	30 - 130	90	30 - 130	<10	mg/kg	NC	50		
5251860	>C21-<C32 Hydrocarbons	2017/11/07	113	30 - 130	112	30 - 130	<15	mg/kg	NC	50		
5251864	>C10-C16 Hydrocarbons	2017/11/08	86	30 - 130	86	30 - 130	<10	mg/kg	NC	50		
5251864	>C16-C21 Hydrocarbons	2017/11/08	81	30 - 130	84	30 - 130	<10	mg/kg	NC	50		
5251864	>C21-<C32 Hydrocarbons	2017/11/08	102	30 - 130	106	30 - 130	<15	mg/kg	NC	50		
5251900	Aroclor 1016	2017/11/09					<0.050	ug/g	NC	50		
5251900	Aroclor 1221	2017/11/09					<0.050	ug/g	NC	50		
5251900	Aroclor 1232	2017/11/09					<0.050	ug/g	NC	50		
5251900	Aroclor 1242	2017/11/09					<0.050	ug/g	NC	50		
5251900	Aroclor 1248	2017/11/09					<0.050	ug/g	NC	50		
5251900	Aroclor 1254	2017/11/09	96	30 - 130	94	30 - 130	<0.050	ug/g	NC	50		
5251900	Aroclor 1260	2017/11/09					<0.050	ug/g	NC	50		
5252167	Benzene	2017/11/08	76	60 - 130	77	60 - 140	<0.025	mg/kg	NC	50		
5252167	C6 - C10 (less BTEX)	2017/11/08					<2.5	mg/kg	NC	50		
5252167	Ethylbenzene	2017/11/08	77	60 - 130	76	60 - 140	<0.025	mg/kg	NC	50		
5252167	Toluene	2017/11/08	76	60 - 130	76	60 - 140	<0.025	mg/kg	NC	50		
5252167	Total Xylenes	2017/11/08	79	60 - 130	76	60 - 140	<0.050	mg/kg	NC	50		
5252171	>C10-C16 Hydrocarbons	2017/11/07	97	30 - 130	98	30 - 130	<10	mg/kg	NC	50		
5252171	>C16-C21 Hydrocarbons	2017/11/07	96	30 - 130	94	30 - 130	<10	mg/kg	NC	50		
5252171	>C21-<C32 Hydrocarbons	2017/11/07	118	30 - 130	119	30 - 130	<15	mg/kg	NC	50		
5252175	>C10-C16 Hydrocarbons	2017/11/07	91	30 - 130	93	30 - 130	<10	mg/kg	NC	50		
5252175	>C16-C21 Hydrocarbons	2017/11/07	83	30 - 130	82	30 - 130	<10	mg/kg	NC	50		
5252175	>C21-<C32 Hydrocarbons	2017/11/07	91	30 - 130	90	30 - 130	<15	mg/kg	NC	50		
5254023	Acid Extractable Aluminum (Al)	2017/11/08					<10	mg/kg	17	35		
5254023	Acid Extractable Antimony (Sb)	2017/11/08	95	75 - 125	95	75 - 125	<2.0	mg/kg	NC	35		
5254023	Acid Extractable Arsenic (As)	2017/11/08	97	75 - 125	97	75 - 125	<2.0	mg/kg	NC	35		
5254023	Acid Extractable Barium (Ba)	2017/11/08	73 (2)	75 - 125	91	75 - 125	<5.0	mg/kg	21	35		
5254023	Acid Extractable Beryllium (Be)	2017/11/08	97	75 - 125	93	75 - 125	<2.0	mg/kg	NC	35		
5254023	Acid Extractable Bismuth (Bi)	2017/11/08	98	75 - 125	96	75 - 125	<2.0	mg/kg	NC	35		
5254023	Acid Extractable Boron (B)	2017/11/08	94	75 - 125	98	75 - 125	<50	mg/kg	NC	35		
5254023	Acid Extractable Cadmium (Cd)	2017/11/08	99	75 - 125	96	75 - 125	<0.30	mg/kg	NC	35		

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
5254023	Acid Extractable Chromium (Cr)	2017/11/08	96	75 - 125	97	75 - 125	<2.0	mg/kg	14	35		
5254023	Acid Extractable Cobalt (Co)	2017/11/08	98	75 - 125	98	75 - 125	<1.0	mg/kg	12	35		
5254023	Acid Extractable Copper (Cu)	2017/11/08	97	75 - 125	96	75 - 125	<2.0	mg/kg	9.0	35		
5254023	Acid Extractable Iron (Fe)	2017/11/08					<50	mg/kg	22	35		
5254023	Acid Extractable Lead (Pb)	2017/11/08	91	75 - 125	92	75 - 125	<0.50	mg/kg	21	35		
5254023	Acid Extractable Lithium (Li)	2017/11/08	95	75 - 125	97	75 - 125	<2.0	mg/kg	16	35		
5254023	Acid Extractable Manganese (Mn)	2017/11/08	NC	75 - 125	98	75 - 125	<2.0	mg/kg	24	35		
5254023	Acid Extractable Mercury (Hg)	2017/11/08	97	75 - 125	101	75 - 125	<0.10	mg/kg	NC	35		
5254023	Acid Extractable Molybdenum (Mo)	2017/11/08	96	75 - 125	94	75 - 125	<2.0	mg/kg	NC	35		
5254023	Acid Extractable Nickel (Ni)	2017/11/08	98	75 - 125	98	75 - 125	<2.0	mg/kg	1.6	35		
5254023	Acid Extractable Rubidium (Rb)	2017/11/08	98	75 - 125	96	75 - 125	<2.0	mg/kg	14	35		
5254023	Acid Extractable Selenium (Se)	2017/11/08	101	75 - 125	98	75 - 125	<1.0	mg/kg	NC	35		
5254023	Acid Extractable Silver (Ag)	2017/11/08	99	75 - 125	96	75 - 125	<0.50	mg/kg	NC	35		
5254023	Acid Extractable Strontium (Sr)	2017/11/08	93	75 - 125	96	75 - 125	<5.0	mg/kg	20	35		
5254023	Acid Extractable Thallium (Tl)	2017/11/08	99	75 - 125	97	75 - 125	<0.10	mg/kg	NC	35		
5254023	Acid Extractable Tin (Sn)	2017/11/08	99	75 - 125	98	75 - 125	<2.0	mg/kg	NC	35		
5254023	Acid Extractable Uranium (U)	2017/11/08	95	75 - 125	93	75 - 125	<0.10	mg/kg	37 (3)	35		
5254023	Acid Extractable Vanadium (V)	2017/11/08	96	75 - 125	96	75 - 125	<2.0	mg/kg	13	35		
5254023	Acid Extractable Zinc (Zn)	2017/11/08	92	75 - 125	97	75 - 125	<5.0	mg/kg	5.0	35		
5254032	Acid Extractable Aluminum (Al)	2017/11/09					<10	mg/kg	7.5	35		
5254032	Acid Extractable Antimony (Sb)	2017/11/09	97	75 - 125	99	75 - 125	<2.0	mg/kg	NC	35		
5254032	Acid Extractable Arsenic (As)	2017/11/09	99	75 - 125	99	75 - 125	<2.0	mg/kg	NC	35		
5254032	Acid Extractable Barium (Ba)	2017/11/09	96	75 - 125	95	75 - 125	<5.0	mg/kg	2.0	35		
5254032	Acid Extractable Beryllium (Be)	2017/11/09	103	75 - 125	98	75 - 125	<2.0	mg/kg	NC	35		
5254032	Acid Extractable Bismuth (Bi)	2017/11/09	101	75 - 125	98	75 - 125	<2.0	mg/kg	NC	35		
5254032	Acid Extractable Boron (B)	2017/11/09	98	75 - 125	98	75 - 125	<50	mg/kg	NC	35		
5254032	Acid Extractable Cadmium (Cd)	2017/11/09	99	75 - 125	99	75 - 125	<0.30	mg/kg	NC	35		
5254032	Acid Extractable Chromium (Cr)	2017/11/09	100	75 - 125	99	75 - 125	<2.0	mg/kg	24	35		
5254032	Acid Extractable Cobalt (Co)	2017/11/09	101	75 - 125	99	75 - 125	<1.0	mg/kg	1.6	35		
5254032	Acid Extractable Copper (Cu)	2017/11/09	105	75 - 125	99	75 - 125	<2.0	mg/kg	9.1	35		
5254032	Acid Extractable Iron (Fe)	2017/11/09					<50	mg/kg	6.4	35		

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
5254032	Acid Extractable Lead (Pb)	2017/11/09	94	75 - 125	96	75 - 125	<0.50	mg/kg	19	35		
5254032	Acid Extractable Lithium (Li)	2017/11/09	103	75 - 125	101	75 - 125	<2.0	mg/kg	2.7	35		
5254032	Acid Extractable Manganese (Mn)	2017/11/09	NC	75 - 125	100	75 - 125	<2.0	mg/kg	3.9	35		
5254032	Acid Extractable Mercury (Hg)	2017/11/09	97	75 - 125	103	75 - 125	<0.10	mg/kg	NC	35		
5254032	Acid Extractable Molybdenum (Mo)	2017/11/09	102	75 - 125	105	75 - 125	<2.0	mg/kg	NC	35		
5254032	Acid Extractable Nickel (Ni)	2017/11/09	104	75 - 125	100	75 - 125	<2.0	mg/kg	16	35		
5254032	Acid Extractable Rubidium (Rb)	2017/11/09	100	75 - 125	96	75 - 125	<2.0	mg/kg	3.9	35		
5254032	Acid Extractable Selenium (Se)	2017/11/09	102	75 - 125	100	75 - 125	<1.0	mg/kg	NC	35		
5254032	Acid Extractable Silver (Ag)	2017/11/09	102	75 - 125	101	75 - 125	<0.50	mg/kg	NC	35		
5254032	Acid Extractable Strontium (Sr)	2017/11/09	103	75 - 125	97	75 - 125	<5.0	mg/kg	NC	35		
5254032	Acid Extractable Thallium (Tl)	2017/11/09	100	75 - 125	99	75 - 125	<0.10	mg/kg	NC	35		
5254032	Acid Extractable Tin (Sn)	2017/11/09	113	75 - 125	98	75 - 125	<2.0	mg/kg	NC	35		
5254032	Acid Extractable Uranium (U)	2017/11/09	98	75 - 125	97	75 - 125	<0.10	mg/kg	14	35		
5254032	Acid Extractable Vanadium (V)	2017/11/09	99	75 - 125	99	75 - 125	<2.0	mg/kg	18	35		
5254032	Acid Extractable Zinc (Zn)	2017/11/09	91	75 - 125	104	75 - 125	<5.0	mg/kg	16	35		
5254057	Acid Extractable Aluminum (Al)	2017/11/08					<10	mg/kg	7.4	35		
5254057	Acid Extractable Antimony (Sb)	2017/11/08	102	75 - 125	99	75 - 125	<2.0	mg/kg	NC	35		
5254057	Acid Extractable Arsenic (As)	2017/11/08	108	75 - 125	101	75 - 125	<2.0	mg/kg	16	35		
5254057	Acid Extractable Barium (Ba)	2017/11/08	95	75 - 125	94	75 - 125	<5.0	mg/kg	10	35		
5254057	Acid Extractable Beryllium (Be)	2017/11/08	104	75 - 125	98	75 - 125	<2.0	mg/kg	NC	35		
5254057	Acid Extractable Bismuth (Bi)	2017/11/08	100	75 - 125	102	75 - 125	<2.0	mg/kg	NC	35		
5254057	Acid Extractable Boron (B)	2017/11/08	99	75 - 125	98	75 - 125	<50	mg/kg	NC	35		
5254057	Acid Extractable Cadmium (Cd)	2017/11/08	105	75 - 125	100	75 - 125	<0.30	mg/kg	NC	35		
5254057	Acid Extractable Chromium (Cr)	2017/11/08	99	75 - 125	100	75 - 125	<2.0	mg/kg	10	35		
5254057	Acid Extractable Cobalt (Co)	2017/11/08	101	75 - 125	101	75 - 125	<1.0	mg/kg	0.46	35		
5254057	Acid Extractable Copper (Cu)	2017/11/08	109	75 - 125	100	75 - 125	<2.0	mg/kg	1.0	35		
5254057	Acid Extractable Iron (Fe)	2017/11/08					<50	mg/kg	2.7	35		
5254057	Acid Extractable Lead (Pb)	2017/11/08	102	75 - 125	96	75 - 125	<0.50	mg/kg	8.9	35		
5254057	Acid Extractable Lithium (Li)	2017/11/08	105	75 - 125	101	75 - 125	<2.0	mg/kg	5.7	35		
5254057	Acid Extractable Manganese (Mn)	2017/11/08	NC	75 - 125	101	75 - 125	<2.0	mg/kg	6.6	35		
5254057	Acid Extractable Mercury (Hg)	2017/11/08	96	75 - 125	102	75 - 125	<0.10	mg/kg				

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
5254057	Acid Extractable Molybdenum (Mo)	2017/11/08	100	75 - 125	101	75 - 125	<2.0	mg/kg	NC	35		
5254057	Acid Extractable Nickel (Ni)	2017/11/08	104	75 - 125	103	75 - 125	<2.0	mg/kg	0.73	35		
5254057	Acid Extractable Rubidium (Rb)	2017/11/08	99	75 - 125	98	75 - 125	<2.0	mg/kg	8.7	35		
5254057	Acid Extractable Selenium (Se)	2017/11/08	100	75 - 125	102	75 - 125	<1.0	mg/kg	NC	35		
5254057	Acid Extractable Silver (Ag)	2017/11/08	100	75 - 125	99	75 - 125	<0.50	mg/kg	NC	35		
5254057	Acid Extractable Strontium (Sr)	2017/11/08	100	75 - 125	99	75 - 125	<5.0	mg/kg	0.30	35		
5254057	Acid Extractable Thallium (Tl)	2017/11/08	101	75 - 125	101	75 - 125	<0.10	mg/kg	NC	35		
5254057	Acid Extractable Tin (Sn)	2017/11/08	133 (2)	75 - 125	99	75 - 125	<2.0	mg/kg	NC	35		
5254057	Acid Extractable Uranium (U)	2017/11/08	97	75 - 125	98	75 - 125	<0.10	mg/kg	7.3	35		
5254057	Acid Extractable Vanadium (V)	2017/11/08	98	75 - 125	99	75 - 125	<2.0	mg/kg	1.4	35		
5254057	Acid Extractable Zinc (Zn)	2017/11/08	108	75 - 125	103	75 - 125	<5.0	mg/kg	5.7	35		
5254064	Moisture	2017/11/08							2.9	25		
5254065	1-Methylnaphthalene	2017/11/17	93	30 - 130	91	30 - 130	<0.010	mg/kg	NC	50		
5254065	2-Methylnaphthalene	2017/11/17	99	30 - 130	97	30 - 130	<0.010	mg/kg	NC	50		
5254065	Acenaphthene	2017/11/17	94	30 - 130	92	30 - 130	<0.010	mg/kg	NC	50		
5254065	Acenaphthylene	2017/11/17	100	30 - 130	101	30 - 130	<0.010	mg/kg	NC	50		
5254065	Anthracene	2017/11/17	100	30 - 130	100	30 - 130	<0.010	mg/kg	NC	50		
5254065	Benzo(a)anthracene	2017/11/17	90	30 - 130	87	30 - 130	<0.010	mg/kg	NC	50		
5254065	Benzo(a)pyrene	2017/11/17	93	30 - 130	90	30 - 130	<0.010	mg/kg	NC	50		
5254065	Benzo(b)fluoranthene	2017/11/17	95	30 - 130	92	30 - 130	<0.010	mg/kg	NC	50		
5254065	Benzo(g,h,i)perylene	2017/11/17	91	30 - 130	87	30 - 130	<0.010	mg/kg	NC	50		
5254065	Benzo(j)fluoranthene	2017/11/17	99	30 - 130	99	30 - 130	<0.010	mg/kg	NC	50		
5254065	Benzo(k)fluoranthene	2017/11/17	98	30 - 130	96	30 - 130	<0.010	mg/kg	NC	50		
5254065	Chrysene	2017/11/17	92	30 - 130	90	30 - 130	<0.010	mg/kg	NC	50		
5254065	Dibenz(a,h)anthracene	2017/11/17	89	30 - 130	84	30 - 130	<0.010	mg/kg	NC	50		
5254065	Fluoranthene	2017/11/17	96	30 - 130	92	30 - 130	<0.010	mg/kg	NC	50		
5254065	Fluorene	2017/11/17	98	30 - 130	98	30 - 130	<0.010	mg/kg	NC	50		
5254065	Indeno(1,2,3-cd)pyrene	2017/11/17	87	30 - 130	82	30 - 130	<0.010	mg/kg	NC	50		
5254065	Naphthalene	2017/11/17	95	30 - 130	94	30 - 130	<0.010	mg/kg	NC	50		
5254065	Perylene	2017/11/17	96	30 - 130	94	30 - 130	<0.010	mg/kg	NC	50		
5254065	Phenanthrene	2017/11/17	97	30 - 130	95	30 - 130	<0.010	mg/kg	NC	50		

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Maxxam Job #: B7O7511
Report Date: 2017/11/20

QUALITY ASSURANCE REPORT(CONT'D)

Stantec Consulting Ltd
Client Project #: 121414915.200.003
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

			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
5254065	Pyrene	2017/11/17	99	30 - 130	99	30 - 130	<0.010	mg/kg	NC	50		
5254068	1-Methylnaphthalene	2017/11/18	93	30 - 130	92	30 - 130	<0.010	mg/kg	NC	50		
5254068	2-Methylnaphthalene	2017/11/18	99	30 - 130	98	30 - 130	<0.010	mg/kg	NC	50		
5254068	Acenaphthene	2017/11/18	95	30 - 130	94	30 - 130	<0.010	mg/kg	NC	50		
5254068	Acenaphthylene	2017/11/18	101	30 - 130	100	30 - 130	<0.010	mg/kg	NC	50		
5254068	Anthracene	2017/11/18	98	30 - 130	99	30 - 130	<0.010	mg/kg	NC	50		
5254068	Benzo(a)anthracene	2017/11/18	93	30 - 130	91	30 - 130	<0.010	mg/kg	NC	50		
5254068	Benzo(a)pyrene	2017/11/18	92	30 - 130	90	30 - 130	<0.010	mg/kg	NC	50		
5254068	Benzo(b)fluoranthene	2017/11/18	94	30 - 130	95	30 - 130	<0.010	mg/kg	NC	50		
5254068	Benzo(g,h,i)perylene	2017/11/18	91	30 - 130	87	30 - 130	<0.010	mg/kg	NC	50		
5254068	Benzo(j)fluoranthene	2017/11/18	105	30 - 130	101	30 - 130	<0.010	mg/kg	NC	50		
5254068	Benzo(k)fluoranthene	2017/11/18	100	30 - 130	93	30 - 130	<0.010	mg/kg	NC	50		
5254068	Chrysene	2017/11/18	93	30 - 130	92	30 - 130	<0.010	mg/kg	NC	50		
5254068	Dibenz(a,h)anthracene	2017/11/18	88	30 - 130	82	30 - 130	<0.010	mg/kg	NC	50		
5254068	Fluoranthene	2017/11/18	97	30 - 130	94	30 - 130	<0.010	mg/kg	NC	50		
5254068	Fluorene	2017/11/18	99	30 - 130	99	30 - 130	<0.010	mg/kg	NC	50		
5254068	Indeno(1,2,3-cd)pyrene	2017/11/18	88	30 - 130	82	30 - 130	<0.010	mg/kg	NC	50		
5254068	Naphthalene	2017/11/18	95	30 - 130	95	30 - 130	<0.010	mg/kg	NC	50		
5254068	Perylene	2017/11/18	96	30 - 130	94	30 - 130	<0.010	mg/kg	NC	50		
5254068	Phenanthrene	2017/11/18	96	30 - 130	98	30 - 130	<0.010	mg/kg	NC	50		
5254068	Pyrene	2017/11/18	100	30 - 130	102	30 - 130	<0.010	mg/kg	NC	50		
5254136	Aroclor 1016	2017/11/09					<0.050	ug/g	NC	50		
5254136	Aroclor 1221	2017/11/09					<0.050	ug/g	NC	50		
5254136	Aroclor 1232	2017/11/09					<0.050	ug/g	NC	50		
5254136	Aroclor 1242	2017/11/09					<0.050	ug/g	NC	50		
5254136	Aroclor 1248	2017/11/09					<0.050	ug/g	NC	50		
5254136	Aroclor 1254	2017/11/09	94	30 - 130	104	30 - 130	<0.050	ug/g	NC	50		
5254136	Aroclor 1260	2017/11/09					<0.050	ug/g	NC	50		
5254196	Aliphatic >C10-C12	2017/11/11			93	30 - 130	<8.0	mg/kg	8.9	50		
5254196	Aliphatic >C12-C16	2017/11/11			96	30 - 130	<15	mg/kg	13	50		
5254196	Aliphatic >C16-C21	2017/11/11			97	30 - 130	<15	mg/kg	6.4	50		

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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
5254196	Aliphatic >C21-<C32	2017/11/11			89	30 - 130	<15	mg/kg	4.2	50		
5254196	Aromatic >C10-C12	2017/11/11			102	30 - 130	<20 (4)	mg/kg	NC (4)	50		
5254196	Aromatic >C12-C16	2017/11/11			93	30 - 130	<15	mg/kg	16	50		
5254196	Aromatic >C16-C21	2017/11/11			87	30 - 130	<15	mg/kg	16	50		
5254196	Aromatic >C21-<C32	2017/11/11			90	30 - 130	<15	mg/kg	13	50		
5254226	Acid Extractable Aluminum (Al)	2017/11/09					<10	mg/kg	21	35		
5254226	Acid Extractable Antimony (Sb)	2017/11/09	NC	75 - 125	101	75 - 125	<2.0	mg/kg	160 (5)	35		
5254226	Acid Extractable Arsenic (As)	2017/11/09	97	75 - 125	96	75 - 125	<2.0	mg/kg	NC	35		
5254226	Acid Extractable Barium (Ba)	2017/11/09	NC	75 - 125	100	75 - 125	<5.0	mg/kg	23	35		
5254226	Acid Extractable Beryllium (Be)	2017/11/09	98	75 - 125	97	75 - 125	<2.0	mg/kg	NC	35		
5254226	Acid Extractable Bismuth (Bi)	2017/11/09	102	75 - 125	102	75 - 125	<2.0	mg/kg	NC	35		
5254226	Acid Extractable Boron (B)	2017/11/09	98	75 - 125	108	75 - 125	<50	mg/kg	NC	35		
5254226	Acid Extractable Cadmium (Cd)	2017/11/09	97	75 - 125	97	75 - 125	<0.30	mg/kg	30	35		
5254226	Acid Extractable Chromium (Cr)	2017/11/09	94	75 - 125	93	75 - 125	<2.0	mg/kg	66 (5)	35		
5254226	Acid Extractable Cobalt (Co)	2017/11/09	93	75 - 125	92	75 - 125	<1.0	mg/kg	7.4	35		
5254226	Acid Extractable Copper (Cu)	2017/11/09	92	75 - 125	90	75 - 125	<2.0	mg/kg	30	35		
5254226	Acid Extractable Iron (Fe)	2017/11/09					<50	mg/kg	31	35		
5254226	Acid Extractable Lead (Pb)	2017/11/09	104	75 - 125	99	75 - 125	<0.50	mg/kg	62 (5)	35		
5254226	Acid Extractable Lithium (Li)	2017/11/09	103	75 - 125	100	75 - 125	<2.0	mg/kg	15	35		
5254226	Acid Extractable Manganese (Mn)	2017/11/09	NC	75 - 125	97	75 - 125	<2.0	mg/kg	22	35		
5254226	Acid Extractable Mercury (Hg)	2017/11/09	96	75 - 125	103	75 - 125	<0.10	mg/kg	NC	35		
5254226	Acid Extractable Molybdenum (Mo)	2017/11/09	94	75 - 125	97	75 - 125	<2.0	mg/kg	NC	35		
5254226	Acid Extractable Nickel (Ni)	2017/11/09	92	75 - 125	91	75 - 125	<2.0	mg/kg	20	35		
5254226	Acid Extractable Rubidium (Rb)	2017/11/09	100	75 - 125	97	75 - 125	<2.0	mg/kg	8.9	35		
5254226	Acid Extractable Selenium (Se)	2017/11/09	96	75 - 125	99	75 - 125	<1.0	mg/kg	NC	35		
5254226	Acid Extractable Silver (Ag)	2017/11/09	96	75 - 125	100	75 - 125	<0.50	mg/kg	NC	35		
5254226	Acid Extractable Strontium (Sr)	2017/11/09	120	75 - 125	100	75 - 125	<5.0	mg/kg	17	35		
5254226	Acid Extractable Thallium (Tl)	2017/11/09	99	75 - 125	100	75 - 125	<0.10	mg/kg	NC	35		
5254226	Acid Extractable Tin (Sn)	2017/11/09	109	75 - 125	102	75 - 125	<2.0	mg/kg	NC	35		
5254226	Acid Extractable Uranium (U)	2017/11/09	103	75 - 125	100	75 - 125	<0.10	mg/kg	20	35		
5254226	Acid Extractable Vanadium (V)	2017/11/09	102	75 - 125	95	75 - 125	<2.0	mg/kg	61 (5)	35		

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
5254226	Acid Extractable Zinc (Zn)	2017/11/09	NC	75 - 125	94	75 - 125	<5.0	mg/kg	27	35		
5254656	1,1,1-Trichloroethane	2017/11/08	101	60 - 140	99	60 - 130	<25	ug/kg	NC	50		
5254656	1,1,2,2-Tetrachloroethane	2017/11/08	86	60 - 140	94	60 - 130	<25	ug/kg	NC	50		
5254656	1,1,2-Trichloroethane	2017/11/08	93	60 - 140	98	60 - 130	<25	ug/kg	NC	50		
5254656	1,1-Dichloroethane	2017/11/08	102	60 - 140	100	60 - 130	<25	ug/kg	NC	50		
5254656	1,1-Dichloroethylene	2017/11/08	107	60 - 140	102	60 - 130	<25	ug/kg	NC	50		
5254656	1,2-Dichlorobenzene	2017/11/08	95	60 - 140	94	60 - 130	<25	ug/kg	NC	50		
5254656	1,2-Dichloroethane	2017/11/08	85	60 - 140	91	60 - 130	<25	ug/kg	NC	50		
5254656	1,2-Dichloropropane	2017/11/08	93	60 - 140	95	60 - 130	<25	ug/kg	NC	50		
5254656	1,3-Dichlorobenzene	2017/11/08	100	60 - 140	96	60 - 130	<25	ug/kg	NC	50		
5254656	1,4-Dichlorobenzene	2017/11/08	99	60 - 140	94	60 - 130	<25	ug/kg	NC	50		
5254656	Benzene	2017/11/08	98	60 - 140	101	60 - 130	<25	ug/kg	NC	50		
5254656	Bromodichloromethane	2017/11/08	92	60 - 140	96	60 - 130	<25	ug/kg	NC	50		
5254656	Bromoform	2017/11/08	92	60 - 140	99	60 - 130	<25	ug/kg	NC	50		
5254656	Bromomethane	2017/11/08	95	60 - 140	99	60 - 140	<50	ug/kg	NC	50		
5254656	Carbon Tetrachloride	2017/11/08	103	60 - 140	99	60 - 130	<25	ug/kg	NC	50		
5254656	Chlorobenzene	2017/11/08	97	60 - 140	98	60 - 130	<25	ug/kg	NC	50		
5254656	Chloroethane	2017/11/08	95	60 - 140	93	60 - 140	<200	ug/kg	NC	50		
5254656	Chloroform	2017/11/08	89	60 - 140	90	60 - 130	<25	ug/kg	NC	50		
5254656	cis-1,2-Dichloroethylene	2017/11/08	103	60 - 140	105	60 - 130	<25	ug/kg	NC	50		
5254656	cis-1,3-Dichloropropene	2017/11/08	96	60 - 140	99	60 - 130	<25	ug/kg	NC	50		
5254656	Dibromochloromethane	2017/11/08	94	60 - 140	100	60 - 130	<25	ug/kg	NC	50		
5254656	Ethylbenzene	2017/11/08	104	60 - 140	97	60 - 130	<25	ug/kg	NC	50		
5254656	Ethylene Dibromide	2017/11/08	92	60 - 140	97	60 - 130	<25	ug/kg	NC	50		
5254656	Methyl t-butyl ether (MTBE)	2017/11/08	98	60 - 140	93	60 - 130	<25	ug/kg	NC	50		
5254656	Methylene Chloride(Dichloromethane)	2017/11/08	120	60 - 140	123	60 - 130	<25	ug/kg	NC	50		
5254656	o-Xylene	2017/11/08	104	60 - 140	100	60 - 130	<25	ug/kg	NC	50		
5254656	p+m-Xylene	2017/11/08	106	60 - 140	99	60 - 130	<25	ug/kg	NC	50		
5254656	Styrene	2017/11/08	105	60 - 140	98	60 - 130	<25	ug/kg	NC	50		
5254656	Tetrachloroethylene	2017/11/08	109	60 - 140	111	60 - 130	<25	ug/kg	NC	50		
5254656	Toluene	2017/11/08	106	60 - 140	101	60 - 130	<25	ug/kg	NC	50		

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Maxxam Job #: B7O7511
Report Date: 2017/11/20

QUALITY ASSURANCE REPORT(CONT'D)

Stantec Consulting Ltd
Client Project #: 121414915.200.003
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

			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
5254656	Total Xylenes	2017/11/08					<50	ug/kg	NC	50		
5254656	trans-1,2-Dichloroethylene	2017/11/08	106	60 - 140	105	60 - 130	<25	ug/kg	NC	50		
5254656	trans-1,3-Dichloropropene	2017/11/08	82	60 - 140	86	60 - 130	<25	ug/kg	NC	50		
5254656	Trichloroethylene	2017/11/08	106	60 - 140	110	60 - 130	<10	ug/kg	NC	50		
5254656	Trichlorofluoromethane (FREON 11)	2017/11/08	97	60 - 140	95	60 - 140	<25	ug/kg	NC	50		
5254656	Vinyl Chloride	2017/11/08	102	60 - 140	101	60 - 140	<20	ug/kg	NC	50		
5254739	1-Methylnaphthalene	2017/11/18	92	30 - 130	94	30 - 130	<0.010	mg/kg	NC	50		
5254739	2-Methylnaphthalene	2017/11/18	99	30 - 130	102	30 - 130	<0.010	mg/kg	NC	50		
5254739	Acenaphthene	2017/11/18	94	30 - 130	98	30 - 130	<0.010	mg/kg	NC	50		
5254739	Acenaphthylene	2017/11/18	100	30 - 130	103	30 - 130	<0.010	mg/kg	NC	50		
5254739	Anthracene	2017/11/18	103	30 - 130	107	30 - 130	<0.010	mg/kg	NC	50		
5254739	Benzo(a)anthracene	2017/11/18	95	30 - 130	98	30 - 130	<0.010	mg/kg	NC	50		
5254739	Benzo(a)pyrene	2017/11/18	94	30 - 130	97	30 - 130	<0.010	mg/kg	NC	50		
5254739	Benzo(b)fluoranthene	2017/11/18	94	30 - 130	97	30 - 130	<0.010	mg/kg	NC	50		
5254739	Benzo(g,h,i)perylene	2017/11/18	92	30 - 130	93	30 - 130	<0.010	mg/kg	NC	50		
5254739	Benzo(j)fluoranthene	2017/11/18	106	30 - 130	109	30 - 130	<0.010	mg/kg	NC	50		
5254739	Benzo(k)fluoranthene	2017/11/18	99	30 - 130	103	30 - 130	<0.010	mg/kg	NC	50		
5254739	Chrysene	2017/11/18	98	30 - 130	99	30 - 130	<0.010	mg/kg	NC	50		
5254739	Dibenz(a,h)anthracene	2017/11/18	85	30 - 130	88	30 - 130	<0.010	mg/kg	NC	50		
5254739	Fluoranthene	2017/11/18	102	30 - 130	103	30 - 130	<0.010	mg/kg	NC	50		
5254739	Fluorene	2017/11/18	99	30 - 130	100	30 - 130	<0.010	mg/kg	NC	50		
5254739	Indeno(1,2,3-cd)pyrene	2017/11/18	86	30 - 130	89	30 - 130	<0.010	mg/kg	NC	50		
5254739	Naphthalene	2017/11/18	94	30 - 130	97	30 - 130	<0.010	mg/kg	NC	50		
5254739	Perylene	2017/11/18	98	30 - 130	102	30 - 130	<0.010	mg/kg	NC	50		
5254739	Phenanthrene	2017/11/18	103	30 - 130	103	30 - 130	<0.010	mg/kg	NC	50		
5254739	Pyrene	2017/11/18	109	30 - 130	109	30 - 130	<0.010	mg/kg	NC	50		
5254746	Moisture	2017/11/09							7.5	25		
5254900	Aroclor 1016	2017/11/10					<0.050	ug/g	NC	50		
5254900	Aroclor 1221	2017/11/10					<0.050	ug/g	NC	50		
5254900	Aroclor 1232	2017/11/10					<0.050	ug/g	NC	50		
5254900	Aroclor 1242	2017/11/10					<0.050	ug/g	NC	50		

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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
5254900	Aroclor 1248	2017/11/10					<0.050	ug/g	NC	50		
5254900	Aroclor 1254	2017/11/10	109	30 - 130	110	30 - 130	<0.050	ug/g	NC	50		
5254900	Aroclor 1260	2017/11/10					<0.050	ug/g	NC	50		
5254968	Benzene	2017/11/09	76	60 - 130	77	60 - 140	<0.025	mg/kg	NC	50		
5254968	C6 - C10 (less BTEX)	2017/11/09					<2.5	mg/kg	NC	50		
5254968	Ethylbenzene	2017/11/09	77	60 - 130	78	60 - 140	<0.025	mg/kg	NC	50		
5254968	Toluene	2017/11/09	77	60 - 130	78	60 - 140	<0.025	mg/kg	NC	50		
5254968	Total Xylenes	2017/11/09	79	60 - 130	77	60 - 140	<0.050	mg/kg	NC	50		
5255034	Total Organic Carbon	2017/11/09					<500	mg/kg	0.95	35	109	75 - 125
5255256	>C10-C16 Hydrocarbons	2017/11/10	NC	30 - 130	90	30 - 130	<10	mg/kg	5.2	50		
5255256	>C16-C21 Hydrocarbons	2017/11/10	NC	30 - 130	83	30 - 130	<10	mg/kg	13	50		
5255256	>C21-<C32 Hydrocarbons	2017/11/10	NC	30 - 130	94	30 - 130	<15	mg/kg	11	50		
5256537	Acid Extractable Aluminum (Al)	2017/11/09					<10	mg/kg	4.5	35		
5256537	Acid Extractable Antimony (Sb)	2017/11/09	85	75 - 125	106	75 - 125	<2.0	mg/kg	NC	35		
5256537	Acid Extractable Arsenic (As)	2017/11/09	96	75 - 125	99	75 - 125	<2.0	mg/kg	18	35		
5256537	Acid Extractable Barium (Ba)	2017/11/09	NC	75 - 125	97	75 - 125	<5.0	mg/kg	1.1	35		
5256537	Acid Extractable Beryllium (Be)	2017/11/09	99	75 - 125	97	75 - 125	<2.0	mg/kg	NC	35		
5256537	Acid Extractable Bismuth (Bi)	2017/11/09	103	75 - 125	104	75 - 125	<2.0	mg/kg	NC	35		
5256537	Acid Extractable Boron (B)	2017/11/09	96	75 - 125	105	75 - 125	<50	mg/kg	NC	35		
5256537	Acid Extractable Cadmium (Cd)	2017/11/09	100	75 - 125	98	75 - 125	<0.30	mg/kg	24	35		
5256537	Acid Extractable Chromium (Cr)	2017/11/09	94	75 - 125	96	75 - 125	<2.0	mg/kg	NC	35		
5256537	Acid Extractable Cobalt (Co)	2017/11/09	94	75 - 125	95	75 - 125	<1.0	mg/kg	22	35		
5256537	Acid Extractable Copper (Cu)	2017/11/09	NC	75 - 125	95	75 - 125	<2.0	mg/kg	98 (7)	35		
5256537	Acid Extractable Iron (Fe)	2017/11/09					<50	mg/kg	2.8	35		
5256537	Acid Extractable Lead (Pb)	2017/11/09	NC	75 - 125	98	75 - 125	<0.50	mg/kg	17	35		
5256537	Acid Extractable Lithium (Li)	2017/11/09	NC	75 - 125	98	75 - 125	<2.0	mg/kg	0.34	35		
5256537	Acid Extractable Manganese (Mn)	2017/11/09	NC	75 - 125	98	75 - 125	<2.0	mg/kg	4.3	35		
5256537	Acid Extractable Mercury (Hg)	2017/11/09	95	75 - 125	99	75 - 125	<0.10	mg/kg	NC	35		
5256537	Acid Extractable Molybdenum (Mo)	2017/11/09	93	75 - 125	104	75 - 125	<2.0	mg/kg	11	35		
5256537	Acid Extractable Nickel (Ni)	2017/11/09	105	75 - 125	96	75 - 125	<2.0	mg/kg	NC	35		
5256537	Acid Extractable Rubidium (Rb)	2017/11/09	NC	75 - 125	99	75 - 125	<2.0	mg/kg	4.5	35		

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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
5256537	Acid Extractable Selenium (Se)	2017/11/09	102	75 - 125	98	75 - 125	<1.0	mg/kg	NC	35		
5256537	Acid Extractable Silver (Ag)	2017/11/09	100	75 - 125	96	75 - 125	<0.50	mg/kg	NC	35		
5256537	Acid Extractable Strontium (Sr)	2017/11/09	98	75 - 125	103	75 - 125	<5.0	mg/kg	1.2	35		
5256537	Acid Extractable Thallium (Tl)	2017/11/09	97	75 - 125	98	75 - 125	<0.10	mg/kg	3.6	35		
5256537	Acid Extractable Tin (Sn)	2017/11/09	NC	75 - 125	101	75 - 125	<2.0	mg/kg	29	35		
5256537	Acid Extractable Uranium (U)	2017/11/09	103	75 - 125	104	75 - 125	<0.10	mg/kg	14	35		
5256537	Acid Extractable Vanadium (V)	2017/11/09	97	75 - 125	98	75 - 125	<2.0	mg/kg	0.67	35		
5256537	Acid Extractable Zinc (Zn)	2017/11/09	NC	75 - 125	104	75 - 125	<5.0	mg/kg	15	35		
5256649	Aroclor 1016	2017/11/10					<0.050	ug/g	NC	50		
5256649	Aroclor 1221	2017/11/10					<0.050	ug/g	NC	50		
5256649	Aroclor 1232	2017/11/10					<0.050	ug/g	NC	50		
5256649	Aroclor 1242	2017/11/10					<0.050	ug/g	NC	50		
5256649	Aroclor 1248	2017/11/10					<0.050	ug/g	NC	50		
5256649	Aroclor 1254	2017/11/10	91	30 - 130	98	30 - 130	<0.050	ug/g	NC	50		
5256649	Aroclor 1260	2017/11/10					<0.050	ug/g	NC	50		
5256774	Acid Extractable Aluminum (Al)	2017/11/09					<10	mg/kg	2.4	35		
5256774	Acid Extractable Antimony (Sb)	2017/11/09	86	75 - 125	96	75 - 125	<2.0	mg/kg	NC	35		
5256774	Acid Extractable Arsenic (As)	2017/11/09	97	75 - 125	97	75 - 125	<2.0	mg/kg	5.6	35		
5256774	Acid Extractable Barium (Ba)	2017/11/09	NC	75 - 125	98	75 - 125	<5.0	mg/kg	41 (3)	35		
5256774	Acid Extractable Beryllium (Be)	2017/11/09	96	75 - 125	99	75 - 125	<2.0	mg/kg	NC	35		
5256774	Acid Extractable Bismuth (Bi)	2017/11/09	99	75 - 125	101	75 - 125	<2.0	mg/kg	NC	35		
5256774	Acid Extractable Boron (B)	2017/11/09	95	75 - 125	102	75 - 125	<50	mg/kg	NC	35		
5256774	Acid Extractable Cadmium (Cd)	2017/11/09	95	75 - 125	97	75 - 125	<0.30	mg/kg	19	35		
5256774	Acid Extractable Chromium (Cr)	2017/11/09	72 (2)	75 - 125	98	75 - 125	<2.0	mg/kg	21	35		
5256774	Acid Extractable Cobalt (Co)	2017/11/09	93	75 - 125	95	75 - 125	<1.0	mg/kg	12	35		
5256774	Acid Extractable Copper (Cu)	2017/11/09	89	75 - 125	95	75 - 125	<2.0	mg/kg	26	35		
5256774	Acid Extractable Iron (Fe)	2017/11/09					<50	mg/kg	1.1	35		
5256774	Acid Extractable Lead (Pb)	2017/11/09	NC	75 - 125	99	75 - 125	<0.50	mg/kg	40 (3)	35		
5256774	Acid Extractable Lithium (Li)	2017/11/09	98	75 - 125	100	75 - 125	<2.0	mg/kg	0.94	35		
5256774	Acid Extractable Manganese (Mn)	2017/11/09	NC	75 - 125	99	75 - 125	<2.0	mg/kg	22	35		
5256774	Acid Extractable Mercury (Hg)	2017/11/09	94	75 - 125	102	75 - 125	<0.10	mg/kg	NC	35		

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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
5256774	Acid Extractable Molybdenum (Mo)	2017/11/09	99	75 - 125	100	75 - 125	<2.0	mg/kg	NC	35		
5256774	Acid Extractable Nickel (Ni)	2017/11/09	94	75 - 125	97	75 - 125	<2.0	mg/kg	0.92	35		
5256774	Acid Extractable Rubidium (Rb)	2017/11/09	100	75 - 125	102	75 - 125	<2.0	mg/kg	11	35		
5256774	Acid Extractable Selenium (Se)	2017/11/09	95	75 - 125	99	75 - 125	<1.0	mg/kg	NC	35		
5256774	Acid Extractable Silver (Ag)	2017/11/09	99	75 - 125	98	75 - 125	<0.50	mg/kg	NC	35		
5256774	Acid Extractable Strontium (Sr)	2017/11/09	103	75 - 125	104	75 - 125	<5.0	mg/kg	15	35		
5256774	Acid Extractable Thallium (Tl)	2017/11/09	99	75 - 125	101	75 - 125	<0.10	mg/kg	3.0	35		
5256774	Acid Extractable Tin (Sn)	2017/11/09	76	75 - 125	103	75 - 125	<2.0	mg/kg	NC	35		
5256774	Acid Extractable Uranium (U)	2017/11/09	102	75 - 125	104	75 - 125	<0.10	mg/kg	6.8	35		
5256774	Acid Extractable Vanadium (V)	2017/11/09	96	75 - 125	98	75 - 125	<2.0	mg/kg	5.6	35		
5256774	Acid Extractable Zinc (Zn)	2017/11/09	NC	75 - 125	99	75 - 125	<5.0	mg/kg	8.4	35		
5257219	Aroclor 1016	2017/11/10					<0.050	ug/g	NC	50		
5257219	Aroclor 1221	2017/11/10					<0.050	ug/g	NC	50		
5257219	Aroclor 1232	2017/11/10					<0.050	ug/g	NC	50		
5257219	Aroclor 1242	2017/11/10					<0.050	ug/g	NC	50		
5257219	Aroclor 1248	2017/11/10					<0.050	ug/g	NC	50		
5257219	Aroclor 1254	2017/11/10	102	30 - 130	106	30 - 130	<0.050	ug/g	NC	50		
5257219	Aroclor 1260	2017/11/10					<0.050	ug/g	NC	50		
5257383	Benzene	2017/11/10	62	60 - 130	80	60 - 140	<0.025	mg/kg	NC	50		
5257383	C6 - C10 (less BTEX)	2017/11/10					<2.5	mg/kg	24	50		
5257383	Ethylbenzene	2017/11/10	61	60 - 130	79	60 - 140	<0.025	mg/kg	NC	50		
5257383	Toluene	2017/11/10	62	60 - 130	79	60 - 140	<0.025	mg/kg	NC	50		
5257383	Total Xylenes	2017/11/10	62	60 - 130	78	60 - 140	<0.050	mg/kg	NC	50		
5257394	Benzene	2017/11/10	66	60 - 130	64	60 - 140	<0.025	mg/kg	NC	50		
5257394	C6 - C10 (less BTEX)	2017/11/10					<2.5	mg/kg	NC	50		
5257394	Ethylbenzene	2017/11/10	67	60 - 130	64	60 - 140	<0.025	mg/kg	NC	50		
5257394	Toluene	2017/11/10	66	60 - 130	64	60 - 140	<0.025	mg/kg	NC	50		
5257394	Total Xylenes	2017/11/10	68	60 - 130	64	60 - 140	<0.050	mg/kg	NC	50		
5257688	1,1,1-Trichloroethane	2017/11/10	114	60 - 140	106	60 - 130	<25	ug/kg	NC	50		
5257688	1,1,2,2-Tetrachloroethane	2017/11/10	90	60 - 140	95	60 - 130	<25	ug/kg	NC	50		
5257688	1,1,2-Trichloroethane	2017/11/10	100	60 - 140	99	60 - 130	<25	ug/kg	NC	50		

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A Bureau Veritas Group Company

Maxxam Job #: B7O7511
Report Date: 2017/11/20

QUALITY ASSURANCE REPORT(CONT'D)

Stantec Consulting Ltd
Client Project #: 121414915.200.003
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

			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
5257688	1,1-Dichloroethane	2017/11/10	110	60 - 140	109	60 - 130	<25	ug/kg	NC	50		
5257688	1,1-Dichloroethylene	2017/11/10	110	60 - 140	109	60 - 130	<25	ug/kg	NC	50		
5257688	1,2-Dichlorobenzene	2017/11/10	96	60 - 140	94	60 - 130	<25	ug/kg	NC	50		
5257688	1,2-Dichloroethane	2017/11/10	96	60 - 140	99	60 - 130	<25	ug/kg	NC	50		
5257688	1,2-Dichloropropane	2017/11/10	97	60 - 140	97	60 - 130	<25	ug/kg	NC	50		
5257688	1,3-Dichlorobenzene	2017/11/10	98	60 - 140	97	60 - 130	<25	ug/kg	NC	50		
5257688	1,4-Dichlorobenzene	2017/11/10	96	60 - 140	95	60 - 130	<25	ug/kg	NC	50		
5257688	Benzene	2017/11/10	102	60 - 140	103	60 - 130	<25	ug/kg	NC	50		
5257688	Bromodichloromethane	2017/11/10	101	60 - 140	100	60 - 130	<25	ug/kg	NC	50		
5257688	Bromoform	2017/11/10	100	60 - 140	107	60 - 130	<25	ug/kg	NC	50		
5257688	Bromomethane	2017/11/10	98	60 - 140	101	60 - 140	<50	ug/kg	NC	50		
5257688	Carbon Tetrachloride	2017/11/10	116	60 - 140	109	60 - 130	<25	ug/kg	NC	50		
5257688	Chlorobenzene	2017/11/10	93	60 - 140	97	60 - 130	<25	ug/kg	NC	50		
5257688	Chloroethane	2017/11/10	102	60 - 140	99	60 - 140	<200	ug/kg	NC	50		
5257688	Chloroform	2017/11/10	101	60 - 140	97	60 - 130	<25	ug/kg	NC	50		
5257688	cis-1,2-Dichloroethylene	2017/11/10	113	60 - 140	111	60 - 130	<25	ug/kg	NC	50		
5257688	cis-1,3-Dichloropropene	2017/11/10	95	60 - 140	99	60 - 130	<25	ug/kg	NC	50		
5257688	Dibromochloromethane	2017/11/10	105	60 - 140	104	60 - 130	<25	ug/kg	NC	50		
5257688	Ethylbenzene	2017/11/10	91	60 - 140	95	60 - 130	<25	ug/kg	NC	50		
5257688	Ethylene Dibromide	2017/11/10	98	60 - 140	98	60 - 130	<25	ug/kg	NC	50		
5257688	Methyl t-butyl ether (MTBE)	2017/11/10	98	60 - 140	101	60 - 130	<25	ug/kg	NC	50		
5257688	Methylene Chloride(Dichloromethane)	2017/11/10	128	60 - 140	137 (9)	60 - 130	<50 (10)	ug/kg	NC (10)	50		
5257688	o-Xylene	2017/11/10	96	60 - 140	98	60 - 130	<25	ug/kg	NC	50		
5257688	p+m-Xylene	2017/11/10	93	60 - 140	96	60 - 130	<25	ug/kg	NC	50		
5257688	Styrene	2017/11/10	92	60 - 140	94	60 - 130	<25	ug/kg	NC	50		
5257688	Tetrachloroethylene	2017/11/10	121	60 - 140	115	60 - 130	<25	ug/kg	NC	50		
5257688	Toluene	2017/11/10	102	60 - 140	98	60 - 130	<25	ug/kg	NC	50		
5257688	Total Xylenes	2017/11/10					<50	ug/kg	NC	50		
5257688	trans-1,2-Dichloroethylene	2017/11/10	114	60 - 140	112	60 - 130	<25	ug/kg	NC	50		
5257688	trans-1,3-Dichloropropene	2017/11/10	80	60 - 140	85	60 - 130	<25	ug/kg	NC	50		
5257688	Trichloroethylene	2017/11/10	113	60 - 140	109	60 - 130	<10	ug/kg	NC	50		

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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
5257688	Trichlorofluoromethane (FREON 11)	2017/11/10	106	60 - 140	102	60 - 140	<25	ug/kg	NC	50		
5257688	Vinyl Chloride	2017/11/10	101	60 - 140	105	60 - 140	<20	ug/kg	NC	50		
5258994	Acid Extractable Aluminum (Al)	2017/11/10					<10	mg/kg	12	35		
5258994	Acid Extractable Antimony (Sb)	2017/11/10	98	75 - 125	97	75 - 125	<2.0	mg/kg	NC	35		
5258994	Acid Extractable Arsenic (As)	2017/11/10	101	75 - 125	99	75 - 125	<2.0	mg/kg	7.3	35		
5258994	Acid Extractable Barium (Ba)	2017/11/10	NC	75 - 125	97	75 - 125	<5.0	mg/kg	9.9	35		
5258994	Acid Extractable Beryllium (Be)	2017/11/10	102	75 - 125	102	75 - 125	<2.0	mg/kg	NC	35		
5258994	Acid Extractable Bismuth (Bi)	2017/11/10	101	75 - 125	100	75 - 125	<2.0	mg/kg	NC	35		
5258994	Acid Extractable Boron (B)	2017/11/10	98	75 - 125	104	75 - 125	<50	mg/kg	NC	35		
5258994	Acid Extractable Cadmium (Cd)	2017/11/10	99	75 - 125	100	75 - 125	<0.30	mg/kg	8.2	35		
5258994	Acid Extractable Chromium (Cr)	2017/11/10	122	75 - 125	98	75 - 125	<2.0	mg/kg	23	35		
5258994	Acid Extractable Cobalt (Co)	2017/11/10	100	75 - 125	99	75 - 125	<1.0	mg/kg	5.5	35		
5258994	Acid Extractable Copper (Cu)	2017/11/10	84	75 - 125	97	75 - 125	<2.0	mg/kg	25	35		
5258994	Acid Extractable Iron (Fe)	2017/11/10					<50	mg/kg	5.8	35		
5258994	Acid Extractable Lead (Pb)	2017/11/10	195 (11)	75 - 125	97	75 - 125	<0.50	mg/kg	11	35		
5258994	Acid Extractable Lithium (Li)	2017/11/10	104	75 - 125	99	75 - 125	<2.0	mg/kg	10	35		
5258994	Acid Extractable Manganese (Mn)	2017/11/10	NC	75 - 125	99	75 - 125	<2.0	mg/kg	12	35		
5258994	Acid Extractable Mercury (Hg)	2017/11/10	98	75 - 125	103	75 - 125	<0.10	mg/kg	NC	35		
5258994	Acid Extractable Molybdenum (Mo)	2017/11/10	95	75 - 125	99	75 - 125	<2.0	mg/kg	NC	35		
5258994	Acid Extractable Nickel (Ni)	2017/11/10	97	75 - 125	98	75 - 125	<2.0	mg/kg	13	35		
5258994	Acid Extractable Rubidium (Rb)	2017/11/10	99	75 - 125	96	75 - 125	<2.0	mg/kg	12	35		
5258994	Acid Extractable Selenium (Se)	2017/11/10	100	75 - 125	100	75 - 125	<1.0	mg/kg	NC	35		
5258994	Acid Extractable Silver (Ag)	2017/11/10	98	75 - 125	97	75 - 125	<0.50	mg/kg	NC	35		
5258994	Acid Extractable Strontium (Sr)	2017/11/10	102	75 - 125	98	75 - 125	<5.0	mg/kg	7.9	35		
5258994	Acid Extractable Thallium (Tl)	2017/11/10	100	75 - 125	99	75 - 125	<0.10	mg/kg	NC	35		
5258994	Acid Extractable Tin (Sn)	2017/11/10	99	75 - 125	104	75 - 125	<2.0	mg/kg	NC	35		
5258994	Acid Extractable Uranium (U)	2017/11/10	103	75 - 125	101	75 - 125	<0.10	mg/kg	13	35		
5258994	Acid Extractable Vanadium (V)	2017/11/10	95	75 - 125	98	75 - 125	<2.0	mg/kg	22	35		
5258994	Acid Extractable Zinc (Zn)	2017/11/10	NC	75 - 125	100	75 - 125	<5.0	mg/kg	8.6	35		
5259325	Benzene	2017/11/13	83	60 - 130	100	60 - 140	<0.025	mg/kg	NC	50		
5259325	C6 - C10 (less BTEX)	2017/11/13					<2.5	mg/kg	NC	50		

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
5259325	Ethylbenzene	2017/11/13	91	60 - 130	89	60 - 140	<0.025	mg/kg	NC	50		
5259325	Toluene	2017/11/13	87	60 - 130	93	60 - 140	<0.025	mg/kg	NC	50		
5259325	Total Xylenes	2017/11/13	93	60 - 130	85	60 - 140	<0.050	mg/kg	NC	50		
5259923	Benzene	2017/11/14	84	60 - 130	93	60 - 140	<0.025	mg/kg	NC	50		
5259923	C6 - C10 (less BTEX)	2017/11/14					<2.5	mg/kg	5.6	50		
5259923	Ethylbenzene	2017/11/14	72	60 - 130	100	60 - 140	<0.025	mg/kg	NC	50		
5259923	Toluene	2017/11/14	79	60 - 130	98	60 - 140	<0.025	mg/kg	NC	50		
5259923	Total Xylenes	2017/11/14	70	60 - 130	97	60 - 140	<0.050	mg/kg	NC	50		
5260420	1,1,1-Trichloroethane	2017/11/12	104	60 - 140	104	60 - 130	<25	ug/kg	NC	50		
5260420	1,1,2,2-Tetrachloroethane	2017/11/12	100	60 - 140	98	60 - 130	<25	ug/kg	NC	50		
5260420	1,1,2-Trichloroethane	2017/11/12	101	60 - 140	100	60 - 130	<25	ug/kg	NC	50		
5260420	1,1-Dichloroethane	2017/11/12	107	60 - 140	107	60 - 130	<25	ug/kg	NC	50		
5260420	1,1-Dichloroethylene	2017/11/12	105	60 - 140	108	60 - 130	<25	ug/kg	NC	50		
5260420	1,2-Dichlorobenzene	2017/11/12	94	60 - 140	95	60 - 130	<25	ug/kg	NC	50		
5260420	1,2-Dichloroethane	2017/11/12	101	60 - 140	100	60 - 130	<25	ug/kg	NC	50		
5260420	1,2-Dichloropropane	2017/11/12	99	60 - 140	100	60 - 130	<25	ug/kg	NC	50		
5260420	1,3-Dichlorobenzene	2017/11/12	95	60 - 140	96	60 - 130	<25	ug/kg	NC	50		
5260420	1,4-Dichlorobenzene	2017/11/12	95	60 - 140	97	60 - 130	<25	ug/kg	NC	50		
5260420	Benzene	2017/11/12	101	60 - 140	102	60 - 130	<25	ug/kg	NC	50		
5260420	Bromodichloromethane	2017/11/12	100	60 - 140	100	60 - 130	<25	ug/kg	NC	50		
5260420	Bromoform	2017/11/12	101	60 - 140	100	60 - 130	<25	ug/kg	NC	50		
5260420	Bromomethane	2017/11/12	91	60 - 140	96	60 - 140	<50	ug/kg	NC	50		
5260420	Carbon Tetrachloride	2017/11/12	103	60 - 140	103	60 - 130	<25	ug/kg	NC	50		
5260420	Chlorobenzene	2017/11/12	99	60 - 140	101	60 - 130	<25	ug/kg	NC	50		
5260420	Chloroethane	2017/11/12	91	60 - 140	94	60 - 140	<200	ug/kg	NC	50		
5260420	Chloroform	2017/11/12	94	60 - 140	93	60 - 130	<25	ug/kg	NC	50		
5260420	cis-1,2-Dichloroethylene	2017/11/12	105	60 - 140	104	60 - 130	<25	ug/kg	NC	50		
5260420	cis-1,3-Dichloropropene	2017/11/12	101	60 - 140	107	60 - 130	<25	ug/kg	NC	50		
5260420	Dibromochloromethane	2017/11/12	104	60 - 140	103	60 - 130	<25	ug/kg	NC	50		
5260420	Ethylbenzene	2017/11/12	104	60 - 140	107	60 - 130	<25	ug/kg	NC	50		
5260420	Ethylene Dibromide	2017/11/12	100	60 - 140	99	60 - 130	<25	ug/kg	NC	50		

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Maxxam Job #: B7O7511
Report Date: 2017/11/20

QUALITY ASSURANCE REPORT(CONT'D)

Stantec Consulting Ltd
Client Project #: 121414915.200.003
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

			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
5260420	Methyl t-butyl ether (MTBE)	2017/11/12	119	60 - 140	117	60 - 130	<25	ug/kg	NC	50		
5260420	Methylene Chloride(Dichloromethane)	2017/11/12	122	60 - 140	121	60 - 130	<25	ug/kg	NC	50		
5260420	o-Xylene	2017/11/12	101	60 - 140	104	60 - 130	<25	ug/kg	NC	50		
5260420	p+m-Xylene	2017/11/12	100	60 - 140	104	60 - 130	<25	ug/kg	NC	50		
5260420	Styrene	2017/11/12	100	60 - 140	103	60 - 130	<25	ug/kg	NC	50		
5260420	Tetrachloroethylene	2017/11/12	107	60 - 140	108	60 - 130	<25	ug/kg	NC	50		
5260420	Toluene	2017/11/12	103	60 - 140	106	60 - 130	<25	ug/kg	NC	50		
5260420	Total Xylenes	2017/11/12					<50	ug/kg	NC	50		
5260420	trans-1,2-Dichloroethylene	2017/11/12	104	60 - 140	105	60 - 130	<25	ug/kg	NC	50		
5260420	trans-1,3-Dichloropropene	2017/11/12	87	60 - 140	93	60 - 130	<25	ug/kg	NC	50		
5260420	Trichloroethylene	2017/11/12	104	60 - 140	106	60 - 130	<10	ug/kg	NC	50		
5260420	Trichlorofluoromethane (FREON 11)	2017/11/12	93	60 - 140	97	60 - 140	<25	ug/kg	NC	50		
5260420	Vinyl Chloride	2017/11/12	94	60 - 140	100	60 - 140	<20	ug/kg	NC	50		
5261373	a-Chlordane	2017/11/12	110	50 - 130	112	50 - 130	<0.0020	ug/g	NC	40		
5261373	Aldrin	2017/11/12	78	50 - 130	81	50 - 130	<0.0020	ug/g	NC	40		
5261373	alpha-BHC	2017/11/12	101	30 - 130	97	30 - 130	<0.0020	ug/g				
5261373	beta-BHC	2017/11/12	101	30 - 130	100	30 - 130	<0.0020	ug/g				
5261373	delta-BHC	2017/11/12	118	30 - 130	110	30 - 130	<0.0020	ug/g				
5261373	Dieldrin	2017/11/12	126	50 - 130	130	50 - 130	<0.0020	ug/g	NC	40		
5261373	Endosulfan I (alpha)	2017/11/12	124	50 - 130	128	50 - 130	<0.0020	ug/g	NC	40		
5261373	Endosulfan II (beta)	2017/11/12	127	50 - 130	121	50 - 130	<0.0020	ug/g	NC	40		
5261373	Endosulfan sulfate	2017/11/12	119	30 - 130	121	30 - 130	<0.0020	ug/g				
5261373	Endrin aldehyde	2017/11/12	108	30 - 130	104	30 - 130	<0.0020	ug/g				
5261373	Endrin ketone	2017/11/12	113	30 - 130	112	30 - 130	<0.0020	ug/g				
5261373	Endrin	2017/11/12	108	50 - 130	112	50 - 130	<0.0020	ug/g	NC	40		
5261373	g-Chlordane	2017/11/12	104	50 - 130	104	50 - 130	<0.0020	ug/g	NC	40		
5261373	Heptachlor epoxide	2017/11/12	103	50 - 130	106	50 - 130	<0.0020	ug/g	NC	40		
5261373	Heptachlor	2017/11/12	84	50 - 130	83	50 - 130	<0.0020	ug/g	NC	40		
5261373	Hexachlorobenzene	2017/11/12	89	50 - 130	87	50 - 130	<0.0020	ug/g	NC	40		
5261373	Lindane	2017/11/12	81	50 - 130	81	50 - 130	<0.0020	ug/g	NC	40		
5261373	Methoxychlor	2017/11/12	124	50 - 130	126	50 - 130	<0.0050	ug/g	NC	40		

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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
5261373	Mirex	2017/11/12	98	30 - 130	92	30 - 130	<0.0020	ug/g				
5261373	o,p-DDD	2017/11/12	117	50 - 130	123	50 - 130	<0.0020	ug/g	NC	40		
5261373	o,p-DDE	2017/11/12	82	50 - 130	82	50 - 130	<0.0020	ug/g	NC	40		
5261373	o,p-DDT	2017/11/12	93	50 - 130	93	50 - 130	<0.0020	ug/g	NC	40		
5261373	Octachlorostyrene	2017/11/12	89	30 - 130	88	30 - 130	<0.0020	ug/g				
5261373	p,p-DDD	2017/11/12	118	50 - 130	121	50 - 130	<0.0020	ug/g	NC	40		
5261373	p,p-DDE	2017/11/12	91	50 - 130	90	50 - 130	<0.0020	ug/g	NC	40		
5261373	p,p-DDT	2017/11/12	105	50 - 130	106	50 - 130	<0.0020	ug/g	NC	40		
5261373	Toxaphene	2017/11/12			126	30 - 130	<0.080	ug/g	NC	50		
5262301	Aroclor 1016	2017/11/14					<0.050	ug/g	NC	50		
5262301	Aroclor 1221	2017/11/14					<0.050	ug/g	NC	50		
5262301	Aroclor 1232	2017/11/14					<0.050	ug/g	NC	50		
5262301	Aroclor 1242	2017/11/14					<0.050	ug/g	NC	50		
5262301	Aroclor 1248	2017/11/14					<0.050	ug/g	NC	50		
5262301	Aroclor 1254	2017/11/14	77	30 - 130	88	30 - 130	<0.050	ug/g	NC	50		
5262301	Aroclor 1260	2017/11/14					<0.050	ug/g	NC	50		
5262457	Acid Extractable Aluminum (Al)	2017/11/14					<10	mg/kg	3.6	35		
5262457	Acid Extractable Antimony (Sb)	2017/11/14	92	75 - 125	107	75 - 125	<2.0	mg/kg	NC	35		
5262457	Acid Extractable Arsenic (As)	2017/11/14	104	75 - 125	101	75 - 125	<2.0	mg/kg	3.1	35		
5262457	Acid Extractable Barium (Ba)	2017/11/14	NC	75 - 125	98	75 - 125	<5.0	mg/kg	5.6	35		
5262457	Acid Extractable Beryllium (Be)	2017/11/14	104	75 - 125	100	75 - 125	<2.0	mg/kg	NC	35		
5262457	Acid Extractable Bismuth (Bi)	2017/11/14	107	75 - 125	105	75 - 125	<2.0	mg/kg	NC	35		
5262457	Acid Extractable Boron (B)	2017/11/14	NC	75 - 125	105	75 - 125	<50	mg/kg	1.8	35		
5262457	Acid Extractable Cadmium (Cd)	2017/11/14	101	75 - 125	100	75 - 125	<0.30	mg/kg	6.7	35		
5262457	Acid Extractable Chromium (Cr)	2017/11/14	104	75 - 125	101	75 - 125	<2.0	mg/kg	4.0	35		
5262457	Acid Extractable Cobalt (Co)	2017/11/14	102	75 - 125	100	75 - 125	<1.0	mg/kg	2.6	35		
5262457	Acid Extractable Copper (Cu)	2017/11/14	103	75 - 125	99	75 - 125	<2.0	mg/kg	1.2	35		
5262457	Acid Extractable Iron (Fe)	2017/11/14					<50	mg/kg	2.6	35		
5262457	Acid Extractable Lead (Pb)	2017/11/14	104	75 - 125	101	75 - 125	<0.50	mg/kg	1.3	35		
5262457	Acid Extractable Lithium (Li)	2017/11/14	113	75 - 125	100	75 - 125	<2.0	mg/kg	2.9	35		
5262457	Acid Extractable Manganese (Mn)	2017/11/14	NC	75 - 125	102	75 - 125	<2.0	mg/kg	3.6	35		

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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
5262457	Acid Extractable Mercury (Hg)	2017/11/14	102	75 - 125	106	75 - 125	<0.10	mg/kg	NC	35		
5262457	Acid Extractable Molybdenum (Mo)	2017/11/14	NC	75 - 125	103	75 - 125	<2.0	mg/kg	4.0	35		
5262457	Acid Extractable Nickel (Ni)	2017/11/14	105	75 - 125	101	75 - 125	<2.0	mg/kg	1.1	35		
5262457	Acid Extractable Rubidium (Rb)	2017/11/14	104	75 - 125	103	75 - 125	<2.0	mg/kg	6.8	35		
5262457	Acid Extractable Selenium (Se)	2017/11/14	106	75 - 125	104	75 - 125	<1.0	mg/kg	NC	35		
5262457	Acid Extractable Silver (Ag)	2017/11/14	101	75 - 125	101	75 - 125	<0.50	mg/kg	NC	35		
5262457	Acid Extractable Strontium (Sr)	2017/11/14	116	75 - 125	102	75 - 125	<5.0	mg/kg	36 (3)	35		
5262457	Acid Extractable Thallium (Tl)	2017/11/14	107	75 - 125	103	75 - 125	<0.10	mg/kg	5.5	35		
5262457	Acid Extractable Tin (Sn)	2017/11/14	106	75 - 125	102	75 - 125	<2.0	mg/kg	NC	35		
5262457	Acid Extractable Uranium (U)	2017/11/14	109	75 - 125	107	75 - 125	<0.10	mg/kg	6.4	35		
5262457	Acid Extractable Vanadium (V)	2017/11/14	105	75 - 125	99	75 - 125	<2.0	mg/kg	1.1	35		
5262457	Acid Extractable Zinc (Zn)	2017/11/14	NC	75 - 125	101	75 - 125	<5.0	mg/kg	1.1	35		
5262740	>C8-C10 Aromatics (-EX)	2017/11/13					<0.50	mg/kg				
5262740	Aliphatic >C6-C8	2017/11/13					<1.0	mg/kg				
5262740	Aliphatic >C8-C10	2017/11/13					<1.0	mg/kg				
5262740	Benzene	2017/11/13			92	60 - 140	<0.025	mg/kg				
5262740	Ethylbenzene	2017/11/13			96	60 - 140	<0.025	mg/kg				
5262740	Toluene	2017/11/13			93	60 - 140	<0.025	mg/kg				

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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
5262740	Total Xylenes	2017/11/13			91	60 - 140	<0.050	mg/kg				

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

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

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

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

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

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

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

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

(1) TEH samples were extracted using a flat-bed shaker instead of the accelerated mechanical shaker due to matrix incompatibility.

(2) Recovery is within QC acceptance limits. < 10 % of compounds in multi-component analysis in violation.

(3) Poor RPD due to sample inhomogeneity. < 10 % of compounds in multi-component analysis in violation.

(4) Elevated TEH RDL(s) due to detected levels in the method blank.

(5) Poor RPD due to sample inhomogeneity. Result verified by repeat digestion and analysis.

(6) VOC samples were extracted using a flat-bed shaker instead of the accelerated mechanical shaker due to matrix incompatibility.

(7) Poor RPD due to sample inhomogeneity. Result confirmed by repeat digestion and analysis

(8) Surrogate recovery not within acceptance limits due to matrix/co-extractive interference.

(9) Spike: < 10 % of compounds in multi-component analysis in violation.

(10) Elevated VOC RDL(s) due to detected levels in the method blank.

(11) Elevated recovery due to sample inhomogeneity confirmed by repeat digestion and analysis.

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Maxxam Job #: B7O7511
Report Date: 2017/11/20

Stantec Consulting Ltd
Client Project #: 121414915.200.003
Site Location: FORMER MILITARY SITE, BORDER BEACON, NL
Sampler Initials: RP

VALIDATION SIGNATURE PAGE

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

Eric Dearman, Scientific Specialist

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

Paula Chaplin, Project Manager

Phil Deveau, Scientific Specialist (Organics)

Rosemarie MacDonald, Scientific Specialist (Organics)

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

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http://www.EMSL.com / torontolab@emsl.com

EMSL Canada Order 551712279
Customer ID: 55PSSC69
Customer PO: JOB # B7O7511
Project ID:

Attn: Heather Macumber
Maxxam Analytics, Inc.
200 Bluewater Road
Suite 105
Bedford, NS B4B 1G9

Proj: JOB # B7O7511

Phone: (902) 832-4852
Fax:
Collected:
Received: 11/07/2017
Analyzed: 11/08/2017

Test Report: Asbestos Analysis of Bulk Materials for Nova Scotia Code of Practice Section 66 OHS Act - Asbestos in the Workplace via EPA600/R-93/116 Method

Client Sample ID: FMF507-02R/BB-SS14 ***Lab Sample ID:*** **551712279-0001**
Sample Description:

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/08/2017	Brown	0%	100%	None Detected	Soil is a problem matrix. Other analytical options are recommended such as EPA 600 PLM/TEM with milling prep

Client Sample ID: FMF511-02R/BB-SS18 ***Lab Sample ID:*** **551712279-0002**
Sample Description:

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/08/2017	Brown	0%	100%	None Detected	Soil is a problem matrix. Other analytical options are recommended such as EPA 600 PLM/TEM with milling prep

Client Sample ID: FMF514-02R/BB-SS21 ***Lab Sample ID:*** **551712279-0003**
Sample Description:

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/08/2017	Brown	0%	100%	None Detected	Soil is a problem matrix. Other analytical options are recommended such as EPA 600 PLM/TEM with milling prep

Client Sample ID: FMF518-02R/BB-SS25 ***Lab Sample ID:*** **551712279-0004**
Sample Description:

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/08/2017	Brown	0%	100%	None Detected	Soil is a problem matrix. Other analytical options are recommended such as EPA 600 PLM/TEM with milling prep

Client Sample ID: FMF527-02R/BB-SS34 ***Lab Sample ID:*** **551712279-0005**
Sample Description:

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/08/2017	Brown	0%	100%	None Detected	Soil is a problem matrix. Other analytical options are recommended such as EPA 600 PLM/TEM with milling prep

Client Sample ID: FMF537-02R/BB-SS45 ***Lab Sample ID:*** **551712279-0006**
Sample Description:

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/08/2017	Brown	0%	100%	None Detected	Soil is a problem matrix. Other analytical options are recommended such as EPA 600 PLM/TEM with milling prep

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EMSL Canada Order 551712279
Customer ID: 55PSSC69
Customer PO: JOB # B7O7511
Project ID:

Test Report: Asbestos Analysis of Bulk Materials for Nova Scotia Code of Practice Section 66 OHS Act - Asbestos in the Workplace via EPA600/R-93/116 Method

Client Sample ID: FMF714-02R/BB-TP25-BS1 ***Lab Sample ID:*** **551712279-0007**

Sample Description:

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/08/2017	Brown	0%	100%	None Detected	Soil is a problem matrix. Other analytical options are recommended such as EPA 600 PLM/TEM with milling prep

Client Sample ID: FMF779-02R/BB-TP42-BS1 ***Lab Sample ID:*** **551712279-0008**

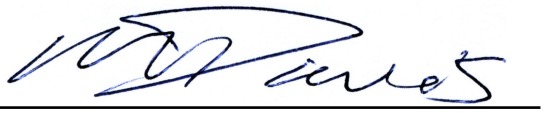
Sample Description:

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/08/2017	Brown	0%	100%	None Detected	Soil is a problem matrix. Other analytical options are recommended such as EPA 600 PLM/TEM with milling prep

Analyst(s):

Shorthri Kalikutty PLM (8)

Reviewed and approved by:



Matthew Davis
or Other Approved Signatory

None Detected = <0.1%. EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted. This report must not be used to claim product endorsement by NVLAP of any agency of the U.S. Government.

Samples analyzed by EMSL Canada Inc. Mississauga, ON NVLAP Lab Code 200877-0

Initial report from: 11/08/201711:01:41

Maxxam
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ATL FCD 00149 / 20

CHAIN OF CUSTODY RECORD

COC #: Page 1 of 18

Invoice Information	Report Information (if differs from invoice)	Project Information (where applicable)	Turnaround Time (TAT) Required
Company Name: Stantec	Company Name: Stantec	Quotation #:	✓ Regular TAT (5 business days) Most analyses
Contact Name: Accounts Payable	Contact Name: Jim Slade	P.O. #/ AFE#: 121414915.200.002	PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS
Address:	Address: 141 Kelsey Drive, St. John's, NL	Project ID: Former Military Site, Border Beacon	IF RUSH please specify date (Surcharges will be applied)
Postal Code:	Postal Code: A1B 0L2	Site Location: Border Beacon, NL	Date Required:
Phone: Fax:	Phone: 709-576-1458 Fax: 709-576-2126	Site #:	Rush Confirmation #
Email: accounts.payable.invoices@stantec.com	Email: james.slade@stantec.com	Sampled By: Randy Patey/Roger Biles	

Laboratory Use Only

CUSTODY SEAL Y / N		COOLER TEMPERATURES			AVERAGE TEMP	INTEGRITY YES / NO
Present	Intact					
		8.3	9.2	10.8		Integrity Checklist By:

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

Analysis Requested

	SAMPLE IDENTIFICATION	DATE SAMPLED (YYYY/MM/DD)	TIME SAMPLED (HH:MM)	MATRIX	# OF CONTAINERS SUBMITTED	FIELD FILTERED &PRESERVED	Lab Filtration Required	RCAP-30 (CIRCLE) TOTAL / DISSOLVED	RCAP-MS (CIRCLE) TOTAL / DISSOLVED	Metals (Water): Total Digest (Default Method) for well water & surface water	Metals (Water): Dissolved for ground water	Metals (Water): Mercury	Metals (Soil): Metals & Mercury Default Acid Extractable (Available) Digest	Metals (Soil): Metals Total Digest - for Ocean sediments (HNO3/HF/HClO4)	Metals (Soil): Mercury Low level by Cold Vapour AA	Metals (Soil): Hot Water Soluble Boron (required for CCME Agricultural)	RBCA Hydrocarbons (BTEX, C6-C32)	Hydrocarbons Soil (Potable), NS Fuel Oil Spill Policy Low Level BTEX, C6-C32	NB Potable Water BTEX, VPH, Low level T E H	PAHs	FWAL PAHs in water (with Acridine, Quinoline)	PCBs	VOCs						HOLD- DO NOT ANALYZE
1	BB-VEG1	Oct.26/17		Vegetation									X									X							
2	BB-VEG2	↓		↓									X									X							
3	BB-VEG3	Oct.26/17											X									X							
4	BB-VEG4	Oct.25/17											X									X							
5	BB-VEG5	↓											X									X							
6	BB-VEG6	↓											X									X							
7	BB-VEG8	Oct.26/17											X									X							
8	BB-VEG9	↓		↓									X									X							
9																													
10																													

RELINQUISHED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	MAXXAM JOB #
				2017/11/1	2 10	

Regulatory Requirements: ☐ PIRI ☐ CCME ☐ Tier 1 ☐ Tier 2 ☐ OTHER (Please Specify)

COMMENTS

White: Maxxam Pink: Client

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ATL FCD 00149 / 20

CHAIN OF CUSTODY RECORD

COC #: Page 2 of 18

Invoice Information	Report Information (if differs from invoice)	Project Information (where applicable)	Turnaround Time (TAT) Required
Company Name: Stantec	Company Name: Stantec	Quotation #:	✓ Regular TAT (5 business days) Most analyses
Contact Name: Accounts Payable	Contact Name: Jim Slade	P.O. #/ AFE#: 121414915.200.002	*PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS
Address:	Address: 141 Kelsey Drive, St. John's, NL	Project ID: Former Military Site, Border Beacon	IF RUSH please specify date (Surcharges will be applied
Postal Code:	Postal Code: A1B 0L2	Site Location: Border Beacon, NL	Date Required:
Phone: Fax:	Phone: 709-576-1458 Fax: 709-576-2126	Site #:	Rush Confirmation #
Email: accounts.payable.invoices@stantec.com	Email: james.slade@stantec.com	Sampled By: Randy Patey/Roger Biles	

Laboratory Use Only

CUSTODY SEAL Y / N		COOLER TEMPERATURES			AVERAGE TEMP	INTEGRITY YES / NO
Present	Intact					Integrity Checklist By:
		8.3	7.2	10.0		

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

Analysis Requested

	SAMPLE IDENTIFICATION	DATE SAMPLED (YYYY/MM/DD)	TIME SAMPLED (HH:MM)	MATRIX	# OF CONTAINERS SUBMITTED	FIELD FILTERED & PRESERVED	Lab Filtration Required	RCAP 30 (CIRCLE) TOTAL / DISSOLVED	RCAP MS (CIRCLE) TOTAL / DISSOLVED	Metals (Water): Total Digest (Default Method) for well water & surface water	Metals (Water): Dissolved for ground water	Metals (Water): Mercury	Metals (Soil): Metals & Mercury Default Acid Extractable (Available) Digest	Metals (Soil): Metals Total Digest - for Ocean sediments (HNO3/HF/HClO4)	Metals (Soil): Mercury Low level by Cold Vapour AA	Metals (Soil): Hot Water Soluble Boron (required for CCME Agricultural)	RBCA Hydrocarbons (BTEX, C6-C32)	Hydrocarbons Soil (Potable), NS Fuel Oil Spill Policy Low Level BTEX, C6-C32	NB Potable Water BTEX, VPH, Low level T E H	PAHs	FWAL PAHs in water (with Acridine, Quinoline)	PCBs	VOCs	HOLD- DO NOT ANALYZE
1	BB-SW1	Oct. 26/17		water					X								X			X		X	X	
2	BB-SW2	↓		↓					X								X			X		X	X	
3	BB-SW5								X								X			X		X	X	
4	BB-SW9								X								X			X		X	X	
5	BB-SW10								X								X			X		X	X	
6	BB-SW11								X								X			X		X	X	
7	BB-SW12			↓					X								X			X		X	X	
8																								
9																								
10																								

Regulatory Requirements

☐ PIRI ☐ CCME
☐ Tier 1
☐ Tier 2
☐ OTHER (Please Specify)

COMMENTS

RELINQUISHED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	MAXXAM JOB #
				2017/11/1	2:30	

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CHAIN OF CUSTODY RECORD

COC #:

Invoice Information

Company Name: Stantec
Contact Name: Accounts Payable
Address:
Postal Code:
Phone: Fax:
Email: accounts.payable.invoices@stantec.com

Report Information (if differs from invoice)

Company Name: Stantec
Contact Name: Jim Slade
Address: 141 Kelsey Drive, St. John's, NL
Postal Code: A1B 0L2
Phone: 709-576-1458 Fax: 709-576-2126
Email: james.slade@stantec.com

Project Information (where applicable)

Quotation #:
P.O. #/ AFE#: 121414915.200.002
Project ID: Former Military Site, Border Beacon
Site Location: Border Beacon, NL
Site #:
Sampled By: Randy Patey/Roger Biles

Turnaround Time (TAT) Required

☑ Regular TAT (5 business days) Most analyses

PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS

IF RUSH please specify date (Surcharges will be applied)

Date Required:

Rush Confirmation #

Laboratory Use Only

CUSTODY SEAL Y / N Present	CUSTODY SEAL Y / N Intact	COOLER TEMPERATURES			AVERAGE TEMP	INTEGRITY YES / NO
		8.3	9.2	10.0		
						Integrity Checklist By:

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

Analysis Requested

	SAMPLE IDENTIFICATION	DATE SAMPLED (YYYY/MM/DD)	TIME SAMPLED (HH:MM)	MATRIX	# OF CONTAINERS SUBMITTED	FIELD FILTERED &PRESERVED	Lab Filtration Required	RCAP-30 (CIRCLE) TOTAL / DISSOLVED	RCAP-MS (CIRCLE) TOTAL / DISSOLVED	Metals (Water): Total Digest (Default Method) for well water & surface water	Metals (Water): Dissolved for ground water	Metals (Water): Mercury	Metals (Soil): Metals & Mercury Default Acid Extractable (Available) Digest	Metals (Soil): Metals Total Digest for Ocean sediments (HNO3/HF/HClO4)	Metals (Soil): Mercury Low level by Cold Vapour AA	Metals (Soil): Hot Water Soluble Boron (required for CCME Agricultural)	RBCA Hydrocarbons (BTEX, C6-C32)	Hydrocarbons Soil (Potable), NS Fuel Oil Spill Policy Low Level BTEX, C6-C32	NB Potable Water BTEX, VPH, Low level T.E.H	PAHs	FWAL PAHs in water (with Acridine, Quinoline)	PCBs	VOCs	Silica gel clean-up				HOLD- DO NOT ANALYZE
1	BB-SED1	Oct. 26/17		Sediment									X				X			X		X		X				
2	BB-SED2	"		"									X				X			X		X		X				
3	BB-SED3S	"		"									X				X			X		X		X				
4	BB-SED9	"		"									X				X			X		X		X				
5	BB-SED10	"		"									X				X			X		X		X				
6	BB-SED11	"		"									X				X			X		X		X				
7	BB-SED12	"		"									X				X			X		X		X				
8																												
9																												
10																												

Regulatory Requirements

☐ PIRI ☐ CCME
☐ Tier 1
☐ Tier 2
☐ OTHER (Please Specify)

COMMENTS

RELINQUISHED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)
				2017/11/1	2:30

MAXXAM JOB #

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ATL FCD 00149 / 20

CHAIN OF CUSTODY RECORD

COC #: Page 4 of 18

Invoice Information	Report Information (if differs from invoice)	Project Information (where applicable)	Turnaround Time (TAT) Required
Company Name: Stantec	Company Name: Stantec	Quotation #:	☑ Regular TAT (5 business days) Most analyses
Contact Name: Accounts Payable	Contact Name: Jim Slade	P.O. #/ AFE#: 121414915.200.003	PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS
Address:	Address: 141 Kelsey Drive, St. John's, NL	Project ID: Former Military Site, Border Beacon	IF RUSH please specify date (Surcharges will be applied)
Postal Code:	Postal Code: A1B 0L2	Site Location: Airstrip, Border Beacon, NL	Date Required:
Phone: Fax:	Phone: 709-576-1458 Fax: 709-576-2126	Site #:	Rush Confirmation #
Email: accounts.payable.invoices@stantec.com	Email: james.slade@stantec.com	Sampled By: Randy Patey/Roger Biles	

Laboratory Use Only

CUSTODY SEAL Y / N Present	CUSTODY SEAL Y / N Intact	COOLER TEMPERATURES			AVERAGE TEMP	INTEGRITY YES / NO
		0.3	5.2	10.0		Integrity Checklist By:

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

Analysis Requested

	SAMPLE IDENTIFICATION	DATE SAMPLED (YYYY/MM/DD)	TIME SAMPLED (HH:MM)	MATRIX	# OF CONTAINERS SUBMITTED	FIELD FILTERED &PRESERVED	Lab Filtration Required	RCAP-30 (CIRCLE) TOTAL / DISSOLVED	RCAP-MS (CIRCLE) TOTAL / DISSOLVED	Metals (Water): Total Digest (Default Method) for well water & surface water	Metals (Water): Dissolved for ground water	Metals (Water): Mercury	Metals (Soil): Metals & Mercury Default Acid Extractable (Available) Digest	Metals (Soil): Metals Total Digest -for Ocean sediments (HNO3/HF/HClO4)	Metals (Soil): Mercury Low level by Cold Vapour AA	Metals (Soil): Hot Water Soluble Boron (required for CCME Agricultural)	RBCA Hydrocarbons (BTEX, C6-C32)	Hydrocarbons Soil (Potable), NS Fuel Oil Spill Policy Low Level BTEX, C6-C32	NB Potable Water BTEX, VPH, Low level T E H	PAHs	FWAL PAHs in water (with Acridine, Quinoline)	PCBs	VOCs	HOLD- DO NOT ANALYZE
1	BB-SS2	Oct. 25/17		Soil													X					X		
2	BB-SS4	"		"													X							
3	BB-SS5	↓		"													X							
4	BB-SS6	Oct. 26/17		"													X							
5	BB-SS9	"		"													X							
6																								
7	TP1-BS2	"		"													X							
8																								
9	TP49-BS2.	"		"													X							
10	BB-SS7	↓		↓																		X		

RELINQUISHED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	MAXXAM JOB #
				2017/11/1	2:10	

Regulatory Requirements: ☐ PIRI ☐ CCME ☐ Tier 1 ☐ Tier 2 ☐ OTHER (Please Specify)

COMMENTS

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CHAIN OF CUSTODY RECORD

COC #: Page 5 of 18

Invoice Information	Report Information (if differs from invoice)	Project Information (where applicable)	Turnaround Time (TAT) Required
Company Name: Stantec	Company Name: Stantec	Quotation #:	☑ Regular TAT (5 business days) Most analyses
Contact Name: Accounts Payable	Contact Name: Jim Slade	P.O. #/ AFE#: 121414915.200.002	PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS
Address:	Address: 141 Kelsey Drive, St. John's, NL	Project ID: Former Military Site, Border Beacon	IF RUSH please specify date (Surcharges will be applied
Postal Code:	Postal Code: A1B 0L2	Site Location: Border Beacon, NL	Date Required:
Phone: Fax:	Phone: 709-576-1458 Fax: 709-576-2126	Site #:	
Email: accounts.payable.invoices@stantec.com	Email: james.slade@stantec.com	Sampled By: Randy Patey/Roger Biles	Rush Confirmation #

Laboratory Use Only

CUSTODY SEAL Y / N		COOLER TEMPERATURES			AVERAGE TEMP	INTEGRITY YES / NO
Present	Intact					
		10.0	8.3	5.2		Integrity Checklist By:

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

Analysis Requested

Regulatory Requirements

☐ PIRI ☐ CCME ☐ Tier 1 ☐ Tier 2 ☐ OTHER (Please Specify)

	SAMPLE IDENTIFICATION	DATE SAMPLED (YYYY/MM/DD)	TIME SAMPLED (HH:MM)	MATRIX	# OF CONTAINERS SUBMITTED	FIELD FILTERED &PRESERVED	Lab Filtration Required	RCAP-30 (CIRCLE) TOTAL / DISSOLVED	RCAP-MS (CIRCLE) TOTAL / DISSOLVED	Metals (Water): Total Digest (Default Method) for well water & surface water	Metals (Water): Dissolved for ground water	Metals (Water): Mercury	Metals (Soil): Metals & Mercury Default Acid Extractable (Available) Digest	Metals (Soil): Metals Total Digest -for Ocean sediments (HNO3/HF/HClO4)	Metals (Soil): Mercury Low level by Cold Vapour AA	Metals (Soil): Hot Water Soluble Boron (required for CCME Agricultural)	RBCA Hydrocarbons (BTEX, C6-C32)	Hydrocarbons Soil (Potable), NS Fuel Oil Spill Policy Low Level BTEX, C6-C32	NB Potable Water BTEX, VPH, Low-level T.E.H	PAHs	FWAL PAHs in water (with Acridine, Quinoline)	PCBs	VOCs	Pesticides.	Asbestos.	TOC		HOLD- DO NOT ANALYZE	COMMENTS
1	BB-551	Oct.25/17		Soil									X				X			X		X	X						
2	BB-553	↓		↓									X				X			X		X	X			X			
3	~~BB-557~~	↓		↓																									
4	BB-558	Oct.24/17		↓									X				X			X			X						
5	BB-5510	↓		↓									X				X			X		X	X						
6	BB-5513	Oct.25/17		↓									X				X			X		X							
7	BB-5514	↓		↓									X				X					X			X				
8	BB-5515	↓		↓									X				X			X		X		X					
9	BB-5516	↓		↓									X				X					X							
10	BB-5517	↓		↓									X				X			X			X						

RELINQUISHED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	MAXXAM JOB #
Pat Patey				2017/11/01	2:10	

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CHAIN OF CUSTODY RECORD

COC #: Page 6 of 18

Invoice Information
Company Name: Stantec
Contact Name: Accounts Payable
Address:
Postal Code:
Phone: Fax:
Email: accounts.payable.invoices@stantec.com

Report Information (if differs from invoice)
Company Name: Stantec
Contact Name: Jim Slade
Address: 141 Kelsey Drive, St. John's, NL
Postal Code: A1B 0L2
Phone: 709-576-1458 Fax: 709-576-2126
Email: james.slade@stantec.com

Project Information (where applicable)
Quotation #:
P.O. #/ AFE#: 121414915.200.002
Project ID: Former Military Site, Border Beacon
Site Location: Border Beacon, NL
Site #:
Sampled By: Randy Patey/Roger Biles

Turnaround Time (TAT) Required
☑ Regular TAT (5 business days) Most analyses
PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS
IF RUSH please specify date (Surcharges will be applied)
Date Required:
Rush Confirmation #

Laboratory Use Only

CUSTODY SEAL Y / N Present	Intact	COOLER TEMPERATURES			AVERAGE TEMP	INTEGRITY YES / NO
		10.0	5.3	9.2		
						Integrity Checklist By:

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

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1	BB-SS18	Oct.25/17		Soil									X				X					X		X				
2	BB-SS19	↓											X				X					X						
3	BB-SS20												X				X					X		·				
4	BB-SS21												X				X					X						
5	BB-SS22	↓											X				X							X				
6	BB-SS23	Oct.26/17											X				X			X		X	X					
7	BB-SS24	Oct.25/17															X			X								
8	BB-SS25	↓															X							X				
9	BB-SS26																X			X								
10	BB-SS27	↓		↓													X			X								

Regulatory Requirements
☐ PIRI ☐ CCME
☐ Tier 1
☐ Tier 2
☐ OTHER (Please Specify)

COMMENTS

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				2017/11/1	2:30	

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CHAIN OF CUSTODY RECORD

COC #: Page 7 of 18

Invoice Information
Company Name: Stantec
Contact Name: Accounts Payable
Address:
Postal Code:
Phone: Fax:
Email: accounts.payable.invoices@stantec.com

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Contact Name: Jim Slade
Address: 141 Kelsey Drive, St. John's, NL
Postal Code: A1B 0L2
Phone: 709-576-1458 Fax: 709-576-2126
Email: james.slade@stantec.com

Project Information (where applicable)
Quotation #:
P.O. #/ AFE#: 121414915.200.002
Project ID: Former Military Site, Border Beacon
Site Location: Border Beacon, NL
Site #:
Sampled By: Randy Patey/Roger Biles

Turnaround Time (TAT) Required
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Date Required:
Rush Confirmation #

Laboratory Use Only

CUSTODY SEAL Y / N Present	Intact	COOLER TEMPERATURES			AVERAGE TEMP	INTEGRITY YES / NO
		10.0	8.3	9.2		Integrity Checklist By:

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

Analysis Requested

Regulatory Requirements
☐ PIRI ☐ CCME ☐ Tier 1 ☐ Tier 2
☐ OTHER (Please Specify)

	SAMPLE IDENTIFICATION	DATE SAMPLED (YYYY/MM/DD)	TIME SAMPLED (HH:MM)	MATRIX	# OF CONTAINERS SUBMITTED	FIELD FILTERED & PRESERVED	Lab Filtration Required	RCAP-30 (CIRCLE) TOTAL / DISSOLVED	RCAP-MS (CIRCLE) TOTAL / DISSOLVED	Metals (Water): Total Digest (Default Method) for well water & surface water	Metals (Water): Dissolved for ground water	Metals (Water): Mercury	Metals (Soil): Metals & Mercury Default Acid Extractable (Available) Digest	Metals (Soil): Metals Total Digest - for Ocean sediments (HNO3/HF/HClO4)	Metals (Soil): Mercury Low level by Cold Vapour AA	Metals (Soil): Hot Water Soluble Boron (required for CCME Agricultural)	RBCA Hydrocarbons (BTEX, C6-C32)	Hydrocarbons Soil (Potable), NS Fuel Oil Spill Policy Low Level BTEX, C6-C32	NB Potable Water BTEX, VPH, Low level T E H	PAHs	FWAL PAHs in water (with Acridine, Quinoline)	PCBs	VOCs	Asbestos			HOLD - DO NOT ANALYZE	COMMENTS
1	BB-SS28	Oct. 25/17		Soil													X			X								
2	BB-SS29																X											
3	BB-SS30												X				X			X		X						
4	BB-SS31																X			X								
5	BB-SS32																X			X								
6	BB-SS33																X											
7	BB-SS34																X											
8	BB-SS35																X							X				
9	BB-SS36																X			X								
10	BB-SS37																X			X								

RELINQUISHED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	MAXXAM JOB #
Kat Pe				2017/11/1	2:15	

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www.maxxam.ca E-mail: Customerservicebedford@maxxam.ca

ATL FCD 00149 / 20

CHAIN OF CUSTODY RECORD

COC #:

Invoice Information

Company Name: Stantec
Contact Name: Accounts Payable
Address:
Postal Code:
Phone: Fax:
Email: accounts.payable.invoices@stantec.com

Report Information (if differs from invoice)

Company Name: Stantec
Contact Name: Jim Slade
Address: 141 Kelsey Drive, St. John's, NL
Postal Code: A1B 0L2
Phone: 709-576-1458 Fax: 709-576-2126
Email: james.slade@stantec.com

Project Information (where applicable)

Quotation #:
P.O. #/ AFE#: 121414915.200.002
Project ID: Former Military Site, Border Beacon
Site Location: Border Beacon, NL
Site #:
Sampled By: Randy Patey/Roger Biles

Turnaround Time (TAT) Required

☑ Regular TAT (5 business days) Most analyses

PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS

IF RUSH please specify date (Surcharges will be applied)

Date Required:

Rush Confirmation #

Laboratory Use Only

CUSTODY SEAL Y / N Present	Intact	COOLER TEMPERATURES			AVERAGE TEMP	INTEGRITY YES / NO
		8.3	10.0	9.2		
						Integrity Checklist By:

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

Analysis Requested

#	SAMPLE IDENTIFICATION	DATE SAMPLED (YYYY/MM/DD)	TIME SAMPLED (HH:MM)	MATRIX	# OF CONTAINERS SUBMITTED	FIELD FILTERED & PRESERVED	Lab Filtration Required	RCAP-30 (CIRCLE) TOTAL / DISSOLVED	RCAP-MS (CIRCLE) TOTAL / DISSOLVED	Metals (Water): Total Digest (Default Method) for well water & surface water	Metals (Water): Dissolved for ground water	Metals (Water): Mercury	Metals (Soil): Metals & Mercury Default Acid Extractable (Available) Digest	Metals (Soil): Metals Total Digest - for Ocean sediments (HNO3/HF/HClO4)	Metals (Soil): Mercury Low level by Cold Vapour AA	Metals (Soil): Hot Water Soluble Boron (required for CCME Agricultural)	RBCA Hydrocarbons (BTEX, C6-C32)	Hydrocarbons Soil (Potable), NS Fuel Oil Spill Policy Low Level BTEX, C6-C32	NB Potable Water BTEX, VPH, Low level T E H	PAHs	FWAL PAHs in water (with Acridine, Quinoline)	PCBs	VOCs	TPH Fractionation	Pesticides	Asbestos		HOLD - DO NOT ANALYZE
1	BB-SS38	Oct.25/17		Soil																			X	X				
2	BB-SS39	↓		↓													X			X								
3	BB-SS40	↓		↓													X			X								
4	BB-SS41	Oct.26/17		↓																		X						
5	BB-SS42	Oct.26/17		↓																		X						
6	BB-SS43	↓		↓									X				X			X		X						
7	BB-SS44	↓		↓									X				X					X						
8	BB-SS45	↓		↓													X									X		
9	BB-SS46	↓		↓									X				X			X		X			X			
10	BB-SS47	↓		↓									X				X					X						

Regulatory Requirements

☐ PIRI ☐ CCME
☐ Tier 1
☐ Tier 2
☐ OTHER (Please Specify)

COMMENTS

RELINQUISHED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	MAXXAM JOB #
[signature]			[signature]	2017/11/1	2:10	

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465 George Street, Sydney, NS B1P 1K5 Tel: 902-567-1255 Fax: 902-539-6904 Toll Free: 1-888-535-7770
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CHAIN OF CUSTODY RECORD

COC #: Page 9 of 18

Invoice Information

Company Name: Stantec
Contact Name: Accounts Payable
Address:
Postal Code:
Phone: Fax:
Email: accounts.payable.invoices@stantec.com

Report Information (if differs from invoice)

Company Name: Stantec
Contact Name: Jim Slade
Address: 141 Kelsey Drive, St. John's, NL
Postal Code: A1B 0L2
Phone: 709-576-1458 Fax: 709-576-2126
Email: james.slade@stantec.com

Project Information (where applicable)

Quotation #:
P.O. #/ AFE#: 121414915.200.002
Project ID: Former Military Site, Border Beacon
Site Location: Border Beacon, NL
Site #:
Sampled By: Randy Patey/Roger Biles

Turnaround Time (TAT) Required

☑ Regular TAT (5 business days) Most analyses

PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS

IF RUSH please specify date (Surcharges will be applied)

Date Required:

Rush Confirmation #

Laboratory Use Only

CUSTODY SEAL Y / N Present	CUSTODY SEAL Y / N Intact	COOLER TEMPERATURES			AVERAGE TEMP	INTEGRITY YES / NO
		10.0	8.3	9.2		Integrity Checklist By:

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

Analysis Requested

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1	BB-SS48	Oct.26/17		Soil									X				X			X		X						
2	BB-TP3-BS1	Oct.25/17											X										X					
3	BB-TP3-BS2																X											
4	BB-TP4-BS1												X											X				
5	BB-TP4-BS2																X											
6	BB-TP5-BS1												X									X						
7	BB-TP5-BS2																X											
8	BB-TP6-BS1												X															
9	BB-TP6-BS2																X											
10	BB-TP7-BS1												X				X					X		X				

Regulatory Requirements

☐ PIRI ☐ CCME
☐ Tier 1
☐ Tier 2
☐ OTHER (Please Specify)

COMMENTS

RELINQUISHED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	MAXXAM JOB #
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CHAIN OF CUSTODY RECORD

COC #:

Invoice Information
Company Name: Stantec
Contact Name: Accounts Payable
Address:
Postal Code:
Phone: Fax:
Email: accounts.payable.invoices@stantec.com

Report Information (if differs from invoice)
Company Name: Stantec
Contact Name: Jim Slade
Address: 141 Kelsey Drive, St. John's, NL
Postal Code: A1B 0L2
Phone: 709-576-1458 Fax: 709-576-2126
Email: james.slade@stantec.com

Project Information (where applicable)
Quotation #:
P.O. #/ AFE#: 121414915.200.002
Project ID: Former Military Site, Border Beacon
Site Location: Border Beacon, NL
Site #:
Sampled By: Randy Patey/Roger Biles

Turnaround Time (TAT) Required
☑ Regular TAT (5 business days) Most analyses
PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS
IF RUSH please specify date (Surcharges will be applied)
Date Required:
Rush Confirmation #

Laboratory Use Only

CUSTODY SEAL Present (Y/N)	CUSTODY SEAL Intact (Y/N)	COOLER TEMPERATURES			AVERAGE TEMP	INTEGRITY YES / NO
		10.0	8.3	9.2		
						Integrity Checklist By:

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

Analysis Requested

Regulatory Requirements
☐ PIRI ☐ CCME
☐ Tier 1
☐ Tier 2
☐ OTHER (Please Specify)

	SAMPLE IDENTIFICATION	DATE SAMPLED (YYYY/MM/DD)	TIME SAMPLED (HH:MM)	MATRIX	# OF CONTAINERS SUBMITTED	FIELD FILTERED &PRESERVED	Lab Filtration Required	RCAP-30 (CIRCLE) TOTAL / DISSOLVED	RCAP-MS (CIRCLE) TOTAL / DISSOLVED	Metals (Water): Total Digest (Default Method) for well water & surface water	Metals (Water): Dissolved for ground water	Metals (Water): Mercury	Metals (Soil): Metals & Mercury Default Acid Extractable (Available) Digest	Metals (Soil): Metals Total Digest for Ocean sediments (HNO3/HF/HClO4)	Metals (Soil): Mercury Low level by Cold Vapour AA	Metals (Soil): Hot Water Soluble Boron (required for CCME Agricultural)	RBCA Hydrocarbons (BTEX, C6-C32)	Hydrocarbons Soil (Potable), NS Fuel Oil Spill Policy Low Level BTEX, C6-C32	NB Potable Water BTEX, VPH, Low level T E H	PAHs	FWAL PAHs in water (with Acridine, Quinoline)	PCBs	VOCs	TPH Fractionation				HOLD- DO NOT ANALYZE	COMMENTS
1	BB-TP7-BS2	Oct. 25/17		Soil													X												
2	BB-TP8-BS1												X									X		X					
3	BB-TP8-BS2																X												
4	BB-TP9-BS1																					X							
5	BB-TP9-BS2																X												
6																													
7	BB-TP10-BS2																X			X			X						
8																													
9	BB-TP11-BS2																X												
10	BB-TP12-BS1												X				X			X		X							

RELINQUISHED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	MAXXAM JOB #
				20171101	1410	

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CHAIN OF CUSTODY RECORD

COC #: Page 11 of 18

Invoice Information	Report Information (if differs from invoice)	Project Information (where applicable)	Turnaround Time (TAT) Required
Company Name: Stantec	Company Name: Stantec	Quotation #:	✓ Regular TAT (5 business days) Most analyses
Contact Name: Accounts Payable	Contact Name: Jim Slade	P.O. #/ AFE#: 121414915.200 002	PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS
Address:	Address: 141 Kelsey Drive, St. John's, NL	Project ID: Former Military Site, Border Beacon	IF RUSH please specify date (Surcharges will be applied)
Postal Code:	Postal Code: A1B 0L2	Site Location: Border Beacon, NL	Date Required:
Phone: Fax:	Phone: 709-576-1458 Fax: 709-576-2126	Site #:	Rush Confirmation #
Email: accounts.payable.invoices@stantec.com	Email: james.slade@stantec.com	Sampled By: Randy Patey/Roger Biles	

Laboratory Use Only

CUSTODY SEAL Y / N Present	CUSTODY SEAL Y / N Intact	COOLER TEMPERATURES			AVERAGE TEMP	INTEGRITY YES / NO
		10.0	8.3	9.2		Integrity Checklist By:

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

Analysis Requested

	SAMPLE IDENTIFICATION	DATE SAMPLED (YYYY/MM/DD)	TIME SAMPLED (HH:MM)	MATRIX	# OF CONTAINERS SUBMITTED	FIELD FILTERED & PRESERVED	Lab Filtration Required	RCAP 30 (CIRCLE) TOTAL / DISSOLVED	RCAP MS (CIRCLE) TOTAL / DISSOLVED	Metals (Water): Total Digest (Default Method) for well water & surface water	Metals (Water): Dissolved for ground water	Metals (Water): Mercury	Metals (Soil): Metals & Mercury (Default Acid Extractable (Available) Digest	Metals (Soil): Metals Total Digest for Ocean sediments (HNO3/HF/HClO4)	Metals (Soil): Mercury Low level by Cold Vapour AA	Metals (Soil): Hot Water Soluble Boron (required for CCME Agricultural)	RBCA Hydrocarbons (BTEX, C6-C32)	Hydrocarbons Soil (Potable), NS Fuel Oil Spill Policy Low Level BTEX C6-C32	NB Potable Water BTEX, VPH, Low level T E H	PAHs	FWAL PAHs in water (with Acridine, Cuneol-se)	PCBs	VOCs	HOLD - DO NOT ANALYZE
1	BB-TP12-BS2	Oct. 25/17		Soil													X							
2	BB-TP13-BS1												X										X	
3	BB-TP13-BS2																X			X		X		
4	BB-TP14-BS1												X											
5	BB-TP14-BS2																X			X			X	
6	BB-TP15-BS1												X							X		X		
7	BB-TP15-BS2																X			X				
8	BB-TP16-BS1												X							X				
9	BB-TP16-BS2												X				X					X		
10	BB-TP17-BS1												X								X	X		

Regulatory Requirements

☐ PIRI ☐ CCME
☐ Tier 1
☐ Tier 2
☐ OTHER (Please Specify)

COMMENTS

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			PMC Chapman	20171101	1410	

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CHAIN OF CUSTODY RECORD

COC #: Page 12 of 18

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Email: accounts.payable.invoices@stantec.com

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Contact Name: Jim Slade
Address: 141 Kelsey Drive, St. John's, NL
Postal Code: A1B 0L2
Phone: 709-576-1458 Fax: 709-576-2126
Email: james.slade@stantec.com

Project Information (where applicable)
Quotation #:
P.O. #/ AFE#: 121414915.200.002
Project ID: Former Military Site, Border Beacon
Site Location: Border Beacon, NL
Site #:
Sampled By: Randy Patey/Roger Biles

Turnaround Time (TAT) Required
☑ Regular TAT (5 business days) Most analyses
PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS
IF RUSH please specify date (Surcharges will be applied)
Date Required:
Rush Confirmation #

Laboratory Use Only

CUSTODY SEAL Y / N Present	CUSTODY SEAL Y / N Intact	COOLER TEMPERATURES			AVERAGE TEMP	INTEGRITY YES / NO
		10.0	8.3	9.2		Integrity Checklist By:

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1	BB-TP17-BS2	Oct. 25/17		Soil													X					X		
2	BB-TP18-BS1												X											
3	BB-TP18-BS2																X					X		
4	BB-TP19-BS1												X									X		
5	BB-TP19-BS2																X					X		
6	BB-TP20-BS1												X											
7	BB-TP20-BS2												X									X		
8	BB-TP21-BS1												X									X		
9	BB-TP21-BS2												X									X		
10	BB-TP22-BS1																X							

Regulatory Requirements: ☐ PIRI ☐ CCME ☐ Tier 1 ☐ Tier 2 ☐ OTHER (Please Specify)

COMMENTS

RELINQUISHED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)
				20171101	1410

MAXXAM JOB #

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CHAIN OF CUSTODY RECORD

COC #:

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Site Location: Border Beacon, NL
Site #:
Sampled By: Randy Patey/Roger Biles

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Laboratory Use Only

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		10.0	8.3	9.2		
						Integrity Checklist By:

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1	BB-TP22-BS2	Oct.25/17		Soil									X				X					X			
2	BB-TP23-BS1	↓		↓									X									X			
3	BB-TP23-BS2																X								
4	BB-TP24-BS1												X									X			
5	BB-TP24-BS2																X								
6	BB-TP25-BS1												X									X		X	
7	BB-TP25-BS2																X					X			
8	BB-TP26-BS1												X									X	X		
9	BB-TP26-BS2																X								
10	BB-TP27-BS1	↓		↓									X									X			

Regulatory Requirements

☐ PIRI ☐ CCME
☐ Tier 1
☐ Tier 2
☐ OTHER (Please Specify)

COMMENTS

RELINQUISHED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	MAXXAM JOB #
[signature]			M Chaplin [signature]	20171101	1410	

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ATL FCD 00149 / 20

CHAIN OF CUSTODY RECORD

COC #: Page 14 of 18

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Date Required:
Rush Confirmation #

Laboratory Use Only

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		10.0	8.3	9.2		
						Integrity Checklist By:

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Analysis Requested

Regulatory Requirements
☐ PIRI ☐ CCME ☐ Tier 1 ☐ Tier 2
☐ OTHER (Please Specify)

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1	BB-TP27-BS2	Oct. 25/17		Soil													X					X				
2	BB-TP28-BS1												X									X	X			
3	BB-TP28-BS2																X					X				
4	BB-TP29-BS1																					X		X		
5	BB-TP29-BS2																X						X			
6	BB-TP30-BS1												X									X				
7	BB-TP30-BS2																X					X				
8	BB-TP31-BS1												X									X				
9	BB-TP31-BS2																X									
10	BB-TP32-BS1												X									X				

RELINQUISHED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	MAXXAM JOB #
Pat Q			PM Chapel	20171101	1410	

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465 George Street, Sydney, NS B1P 1K5 Tel: 902-567-1255 Fax: 902-539-6504 Toll Free: 1-888-535-7770
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CHAIN OF CUSTODY RECORD

COC #:

Invoice Information
Company Name: Stantec
Contact Name: Accounts Payable
Address:
Postal Code:
Phone: Fax:
Email: accounts payable.invoices@stantec.com

Report Information (if differs from invoice)
Company Name: Stantec
Contact Name: Jim Slade
Address: 141 Kelsey Drive, St. John's, NL
Postal Code: A1B 0L2
Phone: 709-576-1458 Fax: 709-576-2126
Email: james.slade@stantec.com

Project Information (where applicable)
Quotation #:
P.O. #/ AFE#: 121414915.200.002
Project ID: Former Military Site, Border Beacon
Site Location: Border Beacon, NL
Site #:
Sampled By: Randy Patey/Roger Biles

Turnaround Time (TAT) Required
☑ Regular TAT (5 business days) Most analyses
PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS
IF RUSH please specify date (Surcharges will be applied)
Date Required:
Rush Confirmation #

Laboratory Use Only

CUSTODY SEAL Y / N Present	Intact	COOLER TEMPERATURES			AVERAGE TEMP	INTEGRITY YES / NO
		10.0	8.3	9.2		Integrity Checklist By:

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

Analysis Requested

	SAMPLE IDENTIFICATION	DATE SAMPLED (YYYY/MM/DD)	TIME SAMPLED (HH:MM)	MATRIX	# OF CONTAINERS SUBMITTED	FIELD FILTERED & PRESERVED	Lab Filtration Required	RCAP-30 (CIRCLE) TOTAL / DISSOLVED	RCAP-MS (CIRCLE) TOTAL / DISSOLVED	Metals (Water): Total Digest (Default Method) for well water & surface water	Metals (Water): Dissolved for ground water	Metals (Water): Mercury	Metals (Soil): Metals & Mercury Default Aqua Regia Extractable (Available) Digest	Metals (Soil): Metals Total Digest for Ocean sediments (HNO3/HF/HClO4)	Metals (Soil): Mercury Low level by Cold Vapour AA	Metals (Soil): Hot Water Soluble Boron (required for CCME Agricultural)	RBCA Hydrocarbons (BTEX, C6-C32)	Hydrocarbons Soil (Potable), NS Fuel Oil Spill Policy Low Level BTEX, C6-C32	NB Potable Water BTEX, VPH, Low level T E H	PAHs	FWAL PAHs in water (with Azridine, Quinoline)	PCBs	VOCs	TOC.	HOLD: DO NOT ANALYZE
1	BB-TP32-BS2	Oct.25/17		Soil													X					X			
2	BB-TP33-BS1	↓		↓									X									X			
3	BB-TP33-BS2																X						X		
4	BB-TP34-BS1												X									X			
5	BB-TP34-BS2																X								
6	BB-TP35-BS1												X				X			X		X		X	
7	BB-TP35-BS2	↓															X								
8	BB-TP36-BS1	Oct.26/17											X				X			X		X	X		
9	BB-TP36-BS2	↓															X								
10	BB-TP37-BS1	↓		↓									X												

RELINQUISHED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)
Kat			PM Chaplin	20171101	1410

Regulatory Requirements
☐ PIRI ☐ CCME
☐ Tier 1
☐ Tier 2
☐ OTHER (Please Specify)

COMMENTS

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CHAIN OF CUSTODY RECORD

COC #: Page 16 of 18

Invoice Information
Company Name: Stantec
Contact Name: Accounts Payable
Address:
Postal Code:
Phone: Fax:
Email: accounts.payable.invoices@stantec.com

Report Information (if differs from invoice)
Company Name: Stantec
Contact Name: Jim Slade
Address: 141 Kelsey Drive, St. John's, NL
Postal Code: A1B 0L2
Phone: 709-576-1458 Fax: 709-576-2126
Email: james.slade@stantec.com

Project Information (where applicable)
Quotation #:
P.O. #/ AFE#: 121414915.200.002
Project ID: Former Military Site, Border Beacon
Site Location: Border Beacon, NL
Site #:
Sampled By: Randy Patey/Roger Biles

Turnaround Time (TAT) Required
☑ Regular TAT (5 business days) Most analyses
PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS
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Date Required:
Rush Confirmation #

Laboratory Use Only

CUSTODY SEAL Present	CUSTODY SEAL Intact	COOLER TEMPERATURES			AVERAGE TEMP	INTEGRITY YES / NO
		10.0	8.3	9.2		Integrity Checklist By:

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

Analysis Requested

	SAMPLE IDENTIFICATION	DATE SAMPLED (YYYY/MM/DD)	TIME SAMPLED (HH:MM)	MATRIX	# OF CONTAINERS SUBMITTED	FIELD FILTERED &PRESERVED	Lab Filtration Required	RCAP-30 (CIRCLE) TOTAL / DISSOLVED	RCAP-MS (CIRCLE) TOTAL / DISSOLVED	Metals (Water): Total Digest (Default Method) for well water & surface water	Metals (Water): Dissolved for ground water	Metals (Water): Mercury	Metals (Soil): Metals & Mercury Default Acid Extractable (Available) Digest	Metals (Soil): Metals Total Digest -for Ocean sediments (HNO3/HF/HClO4)	Metals (Soil): Mercury Low level by Cold Vapour AA	Metals (Soil): Hot Water Soluble Boron (required for CCME Agricultural)	RBCA Hydrocarbons (BTEX, C6-C32)	Hydrocarbons Soil (Potable), NS Fuel Oil Spill Policy Low Level BTEX, C6-C32	NB Potable Water BTEX, VPH, Low level T E H	PAHs	FWAL PAHs in water (with Acridine, Quinoline)	PCBs	VOCs	TPH fractionation	TOC	Arbutus	HOLD- DO NOT ANALYZE
1	BB-TP37-BS2	Oct.26/17		Soil													X										
2	BB-TP38-BS1												X														
3	BB-TP38-BS2																X										
4	BB-TP39-BS1												X				X			X		X	X				
5																											
6	BB-TP40-BS1												X									X		X			
7																											
8	BB-TP41-BS1												X				X			X		X			X		
9																											
10	BB-TP42-BS1	↓		↓									X				X					X	X		X		

RELINQUISHED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)
Pat Chaplin			PM Chaplin	20171101	1410

Regulatory Requirements
☐ PIRI ☐ CCME
☐ Tier 1
☐ Tier 2
☐ OTHER (Please Specify)

COMMENTS

MAXXAM JOB #

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CHAIN OF CUSTODY RECORD

COC #:

Invoice Information		Report Information (if differs from invoice)		Project Information (where applicable)		Turnaround Time (TAT) Required
Company Name:	Stantec	Company Name:	Stantec	Quotation #:		✓ Regular TAT (5 business days) Most analyses
Contact Name:	Accounts Payable	Contact Name:	Jim Slade	P.O. #/ AFE#:	121414915.200.002	PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS
Address:		Address:	141 Kelsey Drive, St. John's, NL	Project ID:	Former Military Site, Border Beacon	IF RUSH please specify date (Surcharges will be applied)
Postal Code:		Postal Code:	A1B 0L2	Site Location:	Border Beacon, NL	Date Required:
Phone:	Fax:	Phone:	709-576-1458 Fax: 709-576-2126	Site #:		
Email:	accounts.payable.invoices@stantec.com	Email:	james.slade@stantec.com	Sampled By:	Randy Patey/Roger Biles	Rush Confirmation #

Laboratory Use Only

CUSTODY SEAL Y / N Present	Intact	COOLER TEMPERATURES			AVERAGE TEMP	INTEGRITY YES / NO
		10.0	8.3	9.2		Integrity Checklist By:

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1				Soil																					
2	BB-TP43-BS1		Oct.26/17	↓									X				X			X		X			
3			↓																						
4	BB-TP44-BS1												X				X					X	X		
5	BB-TP44-BS2		↓														X								
6	BB-TP50-BS1		Oct.26/17										X												
7	BB-TP50-BS2		Oct.26/17	↓													X								
8																									
9																									
10																									

Regulatory Requirements

☐ PIRI ☐ CCME
☐ Tier 1
☐ Tier 2
☐ OTHER (Please Specify)

RELINQUISHED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	MAXXAM JOB #
[signature]			[signature]	20171101	1410	

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Project Information (where applicable)

Quotation #:
P.O. #/ AFE#: 121414915.200.002
Project ID: Former Military Site, Border Beacon
Site Location: Border Beacon, NL
Site #:
Sampled By: Randy Patey/Roger Biles

Turnaround Time (TAT) Required

☑ Regular TAT (5 business days) Most analyses

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Date Required:

Rush Confirmation #

Laboratory Use Only

CUSTODY SEAL Y / N Present	Intact	COOLER TEMPERATURES			AVERAGE TEMP	INTEGRITY YES / NO
		8.3	9.2	6.0		
						Integrity Checklist By:

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

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1	BB-SS301	Oct.25/17		Soil									X				X			X		X							
2	BB-TP121-BS1	〃		↓									X				X					X							
3	BB-TP101-BS2	〃		↓													X			X			X						
4	BB-TP201-BS2	〃		↓									X				X					X							
5	BB-TP71-BS1	〃		↓									X				X					X							
6	BB-TP151-BS2	〃		↓													X			X									
7	BB-TP161-BS2	〃		↓									X				X					X							
8	BB-TP221-BS2	〃		↓									X				X					X							
9	BB-SED451	Oct.26/17		Sediment									X				X			X		X		X					
10																													

Regulatory Requirements

☐ PIRI ☐ CCME
☐ Tier 1
☐ Tier 2
☐ OTHER (Please Specify)

COMMENTS

RELINQUISHED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	MAXXAM JOB #
[signature]						
			[signature]	2017/11/01	1410	

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APPENDIX G

NCSCS Evaluation Form

CCME National Classification System for Contaminated Sites (2008) version 1.3
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; or 4) background concentration.	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 significant 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.
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	To answer “yes”, two scenarios should be satisfied; (1) there has to be a high probability that receptors will be exposed to the contaminant source in the near future, and (2) the predicted impacts to ecological receptors after exposure must be significant (see question 5). A low probability of exposure resulting in significant impacts, or a high probability of exposure but with only low to moderate effects expected should not result in a Class 1 designation, neither would a low probability of exposure resulting in low-to-moderate effects. 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.
7. Do measured concentrations of volatiles or unexploded ordnances represent an **explosion hazard**?	No	If yes, do not proceed through the NCSCS. 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.

Rationale for not proceeding with NCSCS
(document any assumptions, reports, or site-specific information to support selection of "Yes" in Pre-Screening checklist)

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

CCME National Classification System for Contaminated Sites (2008) version 1.3
Summary of Site Conditions

Site:	Site will be identified by:	Site Common Name
Civic Address: *(or other description of location)*	Former US Military Mid Canada Line Radar Site 212, Border Beacon, Newfoundland and Labrador (NL)	
Site Common Name: *(if applicable)*	Border Beacon	
Code identifier: *(e.g., FCSI 8-digit identifier)*	Not applicable	
Site Owner or Custodian: *(Organization and Contact Person)*	Government of Newfoundland and Labrador	
Legal description *or* metes and bounds:	See Drawing No. 121414915-200-EE-02 attached	
Approximate Site area:	Approximately 100 Hectares	
Parcel Identifier(s) [PID]: *(or Parcel Identification Numbers [PIN] if untitled Crown land)*		
Centre of site: *(provide latitude/longitude or UTM coordinates)*	Latitude:_55_____ degrees __19____ min __57____ secs; Longitude:__63____ degrees __12____ min __27____ secs	
	UTM Coordinate: Northing _____ Easting _____	
Site Land Use:	Current:	Commercial
	Proposed:	Commercial
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 Border Beacon site is located to the east of the Labrador-Quebec border and is approximately 190 km west of Hopedale, 200 km northeast of Churchill Falls and 285 km northwest of Happy Valley-Goose Bay (refer to Drawing No. 121414915.200-EE-01, attached). The entire Border Beacon site covers a land area of approximately 100 hectares. The Border Beacon facility was operated by the U.S. Military as a radar site from 1958 to 1965. As little is documented about the site, it is assumed that the upper site was similar to other Mid Canada Line (MCL) stations of the same era and consisted of an operations building, 4 communication antennae towers linked by a cable trough and wood trestle, an emergency shelter, 9 aboveground storage tanks (ASTs) and a helicopter pad. A 1987 document noted that the buildings and towers were to be demolished and buried as part of a decommissioning program. The lower site consisted of an airstrip, a fuel storage facility, accommodations and a fuel pump house. Transport Canada occupied the site in 1965 until the 1970s as a weather station. In 1986, four buildings on the lower site to the northwest of the airstrip were sold to Mr. C.W. House of Goose Bay. From 1994 to 1999, DND operated a fuel cache along the south portion of the airstrip. In 1996, an inspection by the NL Government noted the airstrip, four site buildings, fuel cache, large drum disposal dump (Waste Disposal Site #1), landfill (Waste Disposal Site #2) and refuse/debris in open trenches to the east of the landfill (Waste Disposal Site #3). In 1998, the Province transferred five parcels of land to Environment Canada including the airstrip and a parcel of land approximately 90 m by 180 m located to the north of the airstrip. See Drawing Nos. 121414915.200-EE-02 to 121414915.200-EE-06 attached.	

CCME National Classification System for Contaminated Sites (2008) version 1.3
Summary of Site Conditions

Affected media and Contaminants of Potential Concern (COPC):	Soil: petroleum hydrocarbons, metals, polycyclic aromatic hydrocarbons (PAHs) Surface water: petroleum hydrocarbons, metals Sediment: petroleum hydrocarbons, PAHs

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

Site Letter Grade **D**

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:	Paula Brennan
Date Scoring Completed:	19-Dec-17

CCME National Classification System (2008) version 1.3

(I) Contaminant Characteristics

Site: Border Beacon

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		Based on the results of sampling in 2017, petroleum hydrocarbons, polycyclic aromatic hydrocarbon (PAH) and/or metal parameters have exceeded applicable provincial and/or CCME guidelines in soil, sediment and surface water. Groundwater was not sampled as part of the assessment (Stantec 2017).	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://st-ts.ccme.ca/ 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://hc-sc.gc.ca/ewh-semt/water-eau/drink-potab/guide/index-eng.php	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	Yes			
Yes No Do Not Know				
D. Sediment	Yes			
Yes No Do Not Know				
"Known" -score	6			
"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	The relative degree of chemical hazard for arsenic and nickel is high (Stantec 2017).	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 NCSCS 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	---			

CCME National Classification System (2008) version 1.3

(I) Contaminant Characteristics

Site: Border Beacon

Definition	Score	Rationale for Score (document any assumptions, reports, or site-specific information; provide references)	Method of Evaluation	Notes
3. Contaminant Exceedance Factor				
What is the ratio between the measured contaminant concentration and the applicable CCME guidelines (or other "standards")? NAPL (mobile or immobile) High (>100x) Medium (10x to 100x) Low (1x to 10x) Do Not Know	High (>100x)	The ratio of a measured TPH concentration in sediment (i.e., 33,000 mg/kg) is greater than 100x the applicable guideline of 25 mg/kg (Atlantic RBCA Tier I ESL for Protection of Aquatic Life).	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 NAPL (LNAPL or DNAPL) = 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. Any amount of NAPL should be scored, *i.e* . small amounts and sheens cannot be ignored. The presence of a NAPL (mobile or immoblie or regardless of amount) may be considered unnaceptable by some jurisidcations. If NAPL is present, consult jurisdiction on how to proceed with NCSCS. 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.
"Known" -score	6			
"Potential" - score	---			
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	Contaminated soil and sediment exceeding Tier I RBSLs, Tier I ESLs and/or CCME SQGs/WQGs on Site has not been delineated, but is estimated to be at least approximately 5,000 cubic metres (Stantec 2017).	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	---			

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(I) Contaminant Characteristics

Site: Border Beacon

Definition	Score	Rationale for Score (document any assumptions, reports, or site-specific information; provide references)	Method of Evaluation	Notes
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	Yes	According to Examples of Persistent Substances as provided in attached Reference Materials, persistent chemicals were detected on site above applicable guidelines (Stantec, 2017).	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. Elements do not degrade, therefore treat any metal, metalloid, or halogen COPC as persistent.	*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	Yes	Contaminants such as petroleum hydrocarbons may be suspected to cause damage to utilities or infrastructure if the area is developed in the future (Stantec, 2017).	If answered Yes, in Rationale for Score column document the location and extent of the infrastructure that is/may be damaged, verify the mode of contact between contaminants of potential concern (COPCs) and infrastructure, list the specific COPCs that could cause damage, and note the expected effect on specific 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	five or more	Identified contaminants in sediment, soil and surface water are volatile petroleum hydrocarbons, light extractable petroleum hydrocarbons, heavy extractable petroleum hydrocarbons, inorganic substances (metals) and PAHs (Stantec, 2017).	For the purposes of the revised NCSCS, 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	7
"Potential" - Score	---

Contaminant Characteristic Total

Raw Total Score- "Known"	33	
Raw Total Score- "Potential"	1	
Raw Combined Total Score (Known + Potential)	34	
Adjusted Total Score (Raw Combined / 40 * 33)	**28.1**	maximum 33

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

Site: Border Beacon

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	Go to potential.	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: http://hc-sc.gc.ca/ewh-semt/water-eau/drink-potab/guide/index-eng.php Non-Potable Environments CCME. 1999. Canadian Water Quality Guidelines for Protection of Aquatic Life. http://cegg-rcqe.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 should skip Part B (Potential for groundwater pathway) and go to Section 2 (Surface Water Pathway)				
B. Potential for groundwater pathway.				
a. Relative mobility of contaminant High Moderate Low Insignificant Do Not Know		The relative mobilities of the contaminants (petroleum hydrocarbons, inorganic substances (metals) and PAHs) are low (Stantec, 2017).	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) For PHC fractions; score F1 as Moderate, F2 as Low, and F3 and F4 as Insignificant.	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.
	Low			
Score	1			
b. Presence of engineered sub-surface containment? No containment Partial containment Full containment Do Not Know		No engineered sub-surface containment is present (Stantec, 2017).	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.
	No containment			
Score	3			

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

Site: Border Beacon

Definition	Score	Rationale for Score (document any assumptions, reports, or site-specific information; provide references)	Method Of Evaluation	Notes
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	3 m or less	The confining layer over the groundwater exposure pathway is considered to be 3 m or less (Stantec, 2017).	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).	
Score	1			
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	10-4 to 10-6 cm/s	The hydraulic conductivity of the confining layer is considered to be 10-5 to 10-8 cm/s (sand).	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.	
Score	0.5			
B. Potential for groundwater pathway.				
e. Precipitation infiltration rate (Annual precipitation factor x surface soil relative permeability factor) High (infiltration score > 0.6) Moderate (0.4 < infiltration score ≤ 0.6) Low (0.2 < infiltration score ≤ 0.4) Very Low (0 < infiltration score ≤ 0.2) None (infiltration score = 0) Do Not Know	Moderate	The precipitation infiltration rate is estimated to be moderate. As there is no precipitation data for Border Beacon, the weather station at Goose Bay Airport is used as a reference. Goose Bay's annual preciptiation is approximately 940.4 mm (Environment Canada, 2017). Surface soil relative permeability is 0.6 for sand. The precipitation infiltration rate is 940.4 / 1000 x 0.6 = 0.56.	<u>Precipitation</u> Refer to Environment Canada precipitation records for relevant areas (30 year average preferred). Divide annual precipitation (rainfall + snowfall) 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 (*e.g.,* precipitation factor of 0.7 from above x 0.6 (sand) = 0.42 or "Moderate").	Selected Sources: Environment Canada web page link: <u>http://climate.weather.gc.ca/climate_normals/index_e.html</u> Snow to rainfall conversion apply ratio of 10(snow):1(water) <u>https://www.ec.gc.ca/meteo-weather/default.asp?lang=En&n=108C6C74-1</u>
Score	0.6			
f. Hydraulic conductivity of aquifer >10^{-2} cm/s 10^{-2} to 10^{-4} cm/s <10^{-4} cm/s Do Not Know	10-2 to 10-4 cm/s	Bedrock in the area of the site is undifferentiated metamorphic gneiss in the Southeastern Churchill Province of the Archean and/or Paleoproterozoic age. The hydraulic conductivity of the bedrock layers (assuming to be fractured) is estimated to range from 1.0 x 10-6 cm/sec to 10 x 10-2 cm/sec (Stantec, 2017).	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	1			
Potential groundwater pathway total	7.1			
Allowed Potential score	7.1	Note: If a "known" score is provided, the "potential" score is disallowed.		
Groundwater pathway total	**7.1**			

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

Site: Border Beacon

Definition	Score	Rationale for Score (document any assumptions, reports, or site-specific information; provide references)	Method Of Evaluation	Notes
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	Identified contaminants in surface water exceeeding CCME surface water quality guidelines are petroleum hydrocarbons and inorganic substances (metals) (Stantec, 2017).	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 http://ceqg-rcqe.ccme.ca/ CCME. 1999. Canadian Water Quality Guidelines for the Protection of Agricultural Water Uses (Irrigation and Livestock Water) http://ceqg-rcqe.ccme.ca/ Health and Welfare Canada. 1992. Guidelines for Canadian Recreational Water Quality. http://www.hc-sc.gc.ca/ewh-semt/water-eau/recreat/index-eng.php
ii) Same as (i) except the information is not known but strongly suspected based on indirect observations.	8		Examples of indirect evidence may include observed staining of sediment and/or river banks, but surface water has not been tested.	
iii) Meets CWQG or absence of surface water exposure pathway (*e.g.,* Distance to nearest surface water is > 5 km.)	0			
	12			
Score	12			
NOTE: If a score is assigned here for Demonstrated Migration in Surface Water, then you should 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	Do Not Know	Skip B if A is complete.	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	3			
b. Distance to Surface Water 0 to <100 m 100 - 300 m >300 m Do Not Know	Do Not Know	Skip B if A is complete.	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 Contaminants above ground level and slope is flat Contaminants at or below ground level and slope is flat Do Not Know	Do Not Know	Skip B if A is complete.	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	1			
d. Run-off potential High (run-off score > 0.6) Moderate (0.4 < run-off score ≤ 0.6) Low (0.2 < run-off score ≤ 0.4) Very Low (0 < run-off score ≤ 0.2) None (run-off score = 0) Do Not Know	Do Not Know	Skip B if A is complete.	Precipitation Refer to Environment Canada precipitation records for relevant areas (30 year average preferred). Divide precipitation (rainfall + snowfall) by 1000 and round to nearest tenth (*e.g.* , 667 mm = 0.7 score). Permeability For infiltration assume: gravel (0), sand (0.3), loam (0.6) and pavement or clay (1). Multiply the permeability (infiltration) factor with precipitation factor to obtain Run-off potential score (*e.g.* , precipitation factor of 0.7 from above x 0.6 (loam) = 0.42 or "Moderate").	Selected Sources: Environment Canada web page link: http://climate.weather.gc.ca/climate_normals/index_e.html Snow to rainfall conversion apply ratio of 10(snow):1(water) https://www.ec.gc.ca/meteo-weather/default.asp?lang=En&n=108C6C74-1
Score	0.4			

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

Site: Border Beacon

Definition	Score	Rationale for Score (document any assumptions, reports, or site-specific information; provide references)	Method Of Evaluation	Notes
e. Flood potential 1 in 2 years 1 in 10 years 1 in 50 years not in floodplain Do Not Know		Skip B if A is complete.	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.	
	Do Not Know			
Score	0.5			
Potential surface water pathway total	6.9			
Allowed Potential score	---	Note: If a "known" score is provided, the "potential" score is disallowed.		
Surface water pathway total	**12**			
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.	12	Identified contaminants in surface soils exceeeding CCME soil quality guidelines are petroleum hydrocarbons, inorganic substances (metals) and PAHs (Stantec, 2017).	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). Examples of strongly suspected exceedences of soil guidelines may include evidence of staining, odours, or significant debris infill materials.	Selected References: CCME. 1999. Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health. http://cegg-rcge.ccme.ca/
Strongly suspected that soils exceed guidelines.	9			
COPCs in surface soils does not exceed the CCME soil quality guideline or is not present (i.e., bedrock).	0			
	12			
Score	12			
NOTE: If a score is assigned here for Demonstrated Concentrations in Surface Soils, then you should 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		Skip B if A is complete.	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 NCSCS 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.
	Do Not Know			
Score	4			
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		Skip B if A is complete.	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).	
	Do Not Know			
Score	3			
Potential surface soil pathway total	7			
Allowed Potential score	---	Note: If a "known" score is provided, the "potential" score is disallowed.		
Soil pathway total	**12**			
4. Vapour				
A. Demonstrated COPCs in vapour.				
Vapour has been measured (indoor or outdoor) in concentrations exceeding risk based concentrations.	12	Go to potential.	Consult previous investigations, including human health risk assessments, for reports of vapours detected.	
Strongly suspected (based on observations and/or modelling)	9			
Vapour has not been measured (i.e. not detected) and volatile hydrocarbons have not been found in site soils or groundwater, or vapour has been measured (indoor or outdoor) in concentrations not exceeding risk based concentrations.	0		Due to the potential for significant spatial and temporal variation in soil vapour concentrations, limited vapour monitoring studies (*e.g.,* single point in time "snap-shot") that do not detect vapour at sites where volatiles are suspected, does not necessarily mean that vapours are not an issue at the site. In this case, section B " Potential for COPCs in vapour" should be completed.	
	Go to Potential			
Score	---			
NOTE: If a score is assigned here for Demonstrated COPCs in Vapour, then you should skip Part B (Potential for COPCs in vapour) and go to Section 5 (Sediment)				

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

Site: Border Beacon

Definition	Score	Rationale for Score (document any assumptions, reports, or site-specific information; provide references)	Method Of Evaluation	Notes
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	Moderate	According to the attached Reference Materials, petroleum hydrocarbons (F2) are considered to have moderate volatility.	Reference: US EPA Soil Screening Guidance (Part 5 - Table 36) *Provided in Attached Reference Materials* For PHC fractions; score F1 as High, F2 as Moderate, and F3 and F4 as Not Volatile. Substance is considered Not Volatile (*i.e.* , pathway not a concern) if the product of the water solubility and unitless Henry's law constant does not exceed published or derived tolerable concentration or risk-specific concentration. If NAPL is present, see Appendix D of the CCME soil vapour quality guideline protocol (CCME 2014) for further guidance.	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. Selected References: CCME. 2014. A Protocol for the Derivation of Soil Vapour Quality Guidelines for Protection of Human Exposures via Inhalation of Vapours. Winnipeg, Manitoba. http://ceqg-rcqe.ccme.ca
Score	2.5			
b. What is the soil grain size? Fine Coarse Do Not Know	Coarse	The soil grain size is considered to be coarse (Stantec, 2017).	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).	
Score	4			
c. Is the depth to the source less than 10m? Yes No Do Not Know	Yes	The depth to source is expected to be less than 1 m (Stantec, 2017).	Review groundwater depths below grade for the site.	
Score	2			
d. Are there any preferential pathways? Yes No Do Not Know	Yes	The bedrock on the site is considered to be fractured (Stantec, 2017).	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.
Score	2			
Potential vapour pathway total	10.5			
Allowed Potential score	10.5	Note: If a "known" score is provided, the "potential" score is disallowed.		
Vapour pathway total	**10.5**			
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	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 Sediment meets CCME sediment quality guidelines 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 should skip Part B (Potential for Sediment Migration) and go to Section 6 (Modifying Factors)				

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

Site: Border Beacon

Definition	Score	Rationale for Score (document any assumptions, reports, or site-specific information; provide references)	Method Of Evaluation	Notes
B. Potential for sediment migration				
a. Are the sediments having COPC exceedances capped with sediments having no exceedances ("clean sediments")?	No	Sediments are not capped. Sediments in shallow water are not considered to be likely affected by tidal action, wave action or propeller wash. The sediments are not considered to be in an area prone to sediment scouring.	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	4			
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?	No		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 scoured. If the sediments present at the site are in a lake or marine habitat, select "no" for this question.	
Yes				
No				
Do Not Know	0			
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				
		There are at least three separate dump sites. The buried debris and materials could act as conduits for contaminant migration.		
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	---			

Migration Potential Total

Raw Total Score- "Known"	28	Note: If "Known" and "Potential" scores are provided, the checklist defaults to known. Therefore,
Raw Total Score- "Potential"	21.6	the total "Potential" Score may not reflect the sum of the individual "Potential" scores.
Raw Combined Total Score (Known + Potential)	49.6	
Adjusted Total Score (Raw Combined / 64 * 33)	**25.6**	maximum 33

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

Site: Border Beacon

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	Go to potential.	*Where adverse effects on humans are documented, the site should be automatically designated as a Class 1 site (*i.e.,* action required). Known impacts could include blood test results (*e.g.,* blood lead > 10 µg/dL) or results of other health based studies and tests. There is no need to proceed through the NCSCS in this case. However, a scoring guideline (22) is provided in case a numerical score for the site is still desired. A score of 22 can also be assigned when Hazard Quotients (or Hazard Index) >> 1.0 or incremental lifetime cancer risks considerably exceed acceptable levels defined by the jurisdiction for carcinogenic chemicals.	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.
Same as above, but "Strongly Suspected" based on observations or indirect evidence.	10		The category, "Strongly suspected", can be based on the outcomes of risk assessments and applies to studies which have reported Hazard Quotients (or Hazard Index) > 0.2 (excluding the Estimated Daily Intake) or > 1.0 with Estimated Daily Intake and/or incremental lifetime cancer risks that exceed acceptable levels defined by the jurisdiction for carcinogenic chemicals (for most jurisdictions this is typically either $>10^{-5}$ or $>10^{-6}$).	**Selected References:** Health Canada – Federal Contaminated Site Risk Assessment in Canada Parts 1 and 2 Guidance on Human Heath Screening Level Risk Assessments, available at http://www.hc-sc.gc.ca/ewh-semt/pubs/contamsite/index-eng.php United States Environmental Protection Agency, Integrated Risk Information System (IRIS), available at http://toxnet.nlm.nih.gov
No quantified or suspected exposures/impacts in humans.	0		The category, no exposure/impacts, can be based on the outcomes of risk assessments and applies to studies which have reported Hazard Quotients (or Hazard Index) of ≤ 0.2 (excluding the Estimated Daily Intake) or ≤ 1.0 with Estimated Daily Intake AND incremental lifetime cancer risks for carcinogenic chemicals that are within acceptable levels as defined by the jurisdiction (for most jurisdictions this is less than either 10^{-6} or 10^{-5}).	
	Go to Potential			
Score	---			
NOTE: If a score is assigned here for Known Exposure, then you should 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		The current and proposed land use if commercial (Stantec, 2017).	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). Parkland includes campgrounds, but excludes wildlands such as national or provincial parks. 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		The level of accessibility is considered to be moderate it is considered to be a remote location (only reached by aircraft) and the contaminants are not covered (Stantec, 2017).	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.	
	Mod. access, covered			
Score	1			
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		Direct contact with contaminated surface water, groundwater, sediments or soils is possible (Stantec, 2017).	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			

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

Site: Border Beacon

Definition	Score	Rationale for Score (document any assumptions, reports, or site-specific information; provide references)	Method Of Evaluation	Notes
ii) inhalation (*i.e.,* inhalation of dust, vapour)		Yes there are buildings located within 30 m of soils with petroleum hydrocarbon (F2) contamination (Stantec, 2017).	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. http://ceqg-rcqe.ccme.ca/ Golder, 2004. Soil Vapour Intrusion Guidance for Health Canada Screening Level Risk Assessment (SLRA) Submitted to Health Canada, Burnaby, BC
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	Yes			
Score	3			
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.		Contaminated surface soil is considered to be coarse textured (sand and gravel) (Stantec, 2017).	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.	
Fine Coarse Surface soil is not contaminated or absent (bedrock) Do Not Know Texture	Coarse			
Score	1			
inhalation total	4			
B. Potential for human exposure				
iii) Ingestion (*i.e.,* ingestion of food items, water and soils [for children]), including traditional foods.		No drinking water source is anticipated to be present on the site, but the nearby Innu Healing Camp may use a local drinking water supply source (Stantec, 2017).	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.	**Selected References:** Guidelines for Canadian Drinking Water Quality: http://hc-sc.gc.ca/ewh-semt/water-eau/drink-potab/guide/index-eng.php 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).			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.	
0 to 100 m 100 to 300 m 300 m to 1 km 1 to 5 km No drinking water present No potential for aquifer contamination Do Not Know	100 to 300 m		For aquifers, examples of "No drinking water present" includes municipal bylaws prohibiting water wells for potable water use and naturally non-potable (*e.g.,* saline) shallow groundwater. Groundwater used for drinking water may not be at risk from contamination due to a lack of hydrological connection between contaminated soil or groundwater, or the drinking water is sufficiently up-gradient of the contamination source. Selection of "No potential for aquifer contamination" must be supported with sufficient documentation, *e.g.,* lithological and contaminant properties, well capture zones (map drawn to scale), and capture zone delineation methodology.	
Score	2.5			
Is an alternative water supply readily available?		An alternative water supply is not readily available unless it is brought to the site as needed.		
Yes No Not Applicable Do Not Know	No		Answer Not Applicable if "No drinking water present" or "No potential for aquifer contamination" was selected in previous question.	
Score	1			
Is human ingestion of contaminated soils possible?		Human ingestion of contaminated soils is possible (Stantec, 2017).	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?		It is possible that plants and wildlife are harvested from the contaminated land and surroundings (Stantec, 2017).	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	Yes			
Score	1			
Ingestion total	7.5			
Human Health Total "Potential" Score	16.5	Note if a "Known" Human Health score is provided, the "Potential" score is disallowed.		
Allowed "Potential" Score	16.5			

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

Site: Border Beacon

Definition	Score	Rationale for Score (document any assumptions, reports, or site-specific information; provide references)	Method Of Evaluation	Notes
2. Human Exposure Modifying Factors				
a) Strong reliance of local people on natural resources for survival (*i.e.*, food, water, shelter, etc.) in contaminated area.	Yes	An Innu Healing Camp exists less than 200 m of the site and natural resources may be harvested (Stantec, 2017).		
Yes No Do Not Know				
Human Exposure Modifying Factors - "Known"	6			
Human Exposure Modifying Factors - "Potential"	---			
Raw Human "Known" total	6			
Raw Human "Potential" total	16.5			
Raw Combined Total Human Score	22.5			
Adjusted Total Human Score (max 22)	**22**			
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	Go to potential.	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. 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. 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.	CCME, 1999: Canadian Water Quality Guidelines for the Protection of Aquatic Life. CCME, 1999: Canadian Water Quality Guidelines for the Protection of Agricultural Water Uses. http://ceqg-rcqe.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			
No quantified or suspected exposures/impacts in terrestrial or aquatic organisms	0			
	Go to Potential			
Score	---			
NOTE: If a score is assigned here for Known Exposure, then you should skip Part B (Potential for Ecological Exposure) and go to Section 4 (Ecological Exposure Modifying Factors)				
B. Potential for ecological exposure (for the contaminated portion of the site)				
a) Terrestrial i) Land use Agricultural (or Wild lands) Residential / Parkland Commercial Industrial Do Not Know		The current and proposed land use is commercial (Stantec, 2017).	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). 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).	
	Commercial			
Score	1			
ii) Uptake potential		It is possible that plants and/or soil invertebrates are exposed to contaminated soils at the site (Stantec, 2017).	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.	
Direct Contact - Are plants and/or soil invertebrates likely exposed to contaminated soils at the site? Yes No Do Not Know	Yes			
Score	1			

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

Site: Border Beacon

Definition	Score	Rationale for Score (document any assumptions, reports, or site-specific information; provide references)	Method Of Evaluation	Notes
iii) Ingestion (*i.e.,* wildlife or domestic animals ingesting contaminated food items, soils or water)		Terrestrial animals may ingest contaminated water at the site (Stantec, 2017).		
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	Yes			
Score	1			
Are terrestrial animals likely to be ingesting contaminated soils at the site?		Terrestrial animals may ingest contaminated soils at the site (Stantec, 2017).	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?		Petroleum hydrocarbons, PAHs and metals are not expected to bioaccumulate (Stantec, 2017).	Substances can be considered bioaccumulative if; • There is a Tissue Residue Guideline (TRG) or Soil Quality Guideline for Soil and Food Ingestion for the protection of secondary (SQG_{2C}) and/or tertiary consumers (SQG_{3C}). • Bioaccumulation factor (BAF) or bioconcentration factor (BCF) greater than 5000. • If BAF or BCF is not available, or reliable, the log Kow is equal to or greater than 5. If a literature review indicates that a substance biomagnifies, it should be treated as biomagnifying regardless of whether or not it meets the criteria above. It should also be noted that some substances with a log Kow greater than 5 do not biomagnify. If studies on a substance with a high Kow demonstrate a lack of biomagnification in upper trophic levels, then the substance can be considered not bioaccumulative. Petroleum hydrocarbons F1 to F4 are not considered bioaccumulative.	*See attached Reference Material including log(Kow)* Consult *CEPA (1999) Persistence and Bioaccumulation Regulations* for additional guidance; http://laws-lois.justice.gc.ca/eng/regulations/SOR-2000-107/page-1.html
Yes				
No				
Do Not Know	No			
Score	0			
Distance to sensitive terrestrial ecological area		No sensitive terrestrial ecological areas are known to be within 5 km of the site (http://www.ccea.org/wp-content/uploads/2014/05/CCEA_CANADA_15M_LETTER_CARTS_GOVERNANCE_20161231.pdf) (Stantec, 2017).	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				
	> 5 km			
Score	0.5			
Raw Terrestrial "Potential" total	4.5	Note if a "Known" Ecological Effects score is provided, the "Potential" score is disallowed.		
Allowed Terrestrial "Potential" total	4.5			
B. Potential for ecological exposure (for the contaminated portion of the site)				
b) Aquatic		The aquatic environment is considered to be typical (Stantec, 2017).	"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				
	Typical			
Score	1			

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

Site: Border Beacon

Definition	Score	Rationale for Score (document any assumptions, reports, or site-specific information; provide references)	Method Of Evaluation	Notes
ii) Uptake potential Does groundwater daylighting to an aquatic environment exceed the CCME water quality guidelines for the protection of aquatic life at the point of contact? Yes No (or Not Applicable) Do Not Know	Do Not Know	Potential environmental contamination to groundwater has not been evaluated throughout the site (Stantec, 2017).	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.	
Score	0.5			
Distance from the contaminated site to an important surface water resource 0 to 300 m 300 m to 1 km 1 to 5 km > 5 km Do Not Know	0 to 300 m	Ashuapan Lake is located to the north and east of the site (Stantec, 2017).	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.
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? Yes No Do Not Know	No	Petroleum hydrocarbons, PAHs and metals are not expected to bioaccumulate (Stantec, 2017).	Substances can be considered bioaccumulative if; • There is a Tissue Residue Guideline (TRG) • Bioaccumulation factor (BAF) or bioconcentration factor (BCF) greater than 5000. • If BAF or BCF is not available, or reliable, the log Kow is equal to or greater than 5. If a literature review indicates that a substance biomagnifies, it should be treated as biomagnifying regardless of whether or not it meets the criteria above. It should also be noted that some substances with a log Kow greater than 5 do not biomagnify. If studies on a substance with a high Kow demonstrate a lack of biomagnification in upper trophic levels, then the substance can be considered not bioaccumulative.	*See attached Reference Material including log(Kow)* Consult *CEPA (1999) Persistence and Bioaccumulation Regulations* for additional guidance; http://laws-lois.justice.gc.ca/eng/regulations/SOR-2000-107/page-1.html
Score	0			
Raw Aquatic "Potential" total	4.5	Note if a "Known" Ecological Effects score is provided, the "Potential" score is disallowed.		
Allowed Aquatic "Potential" total	4.5			
4. Ecological Exposure Modifying Factors				
a) Known, or potential, occurrence of a species at risk. Is there a potential for a species at risk to be present at the site, or a known presence? Yes No Do Not Know	Yes 2 ---	An on-line search was conducted in 2017. Species at risk, including the short eared owl and caribou, could potentially be in the Border Beacon area (Stantec, 2017).	Consult any ecological risk assessment reports. If information is not present, utilize on-line databases such as NatureServe Explorer (http://explorer.natureserve.org/). Regional, Provincial (Environment Ministries), or Federal staff (Fisheries and Oceans or Environment Canada) should be able to provide some guidance. To assess the potential for a species at risk to be present, the site (or surroundings) should be located within range of a species at risk (using on-line resources and consultation with knowledgeable government departments or biologists, see above), and there should be an assessment of habitat suitability for any identified potential species at risk.	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, available at: 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://www2.gov.bc.ca/gov/content/environment/plants-animals-ecosystems/species-ecosystems-at-risk

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

Site: Border Beacon

Definition	Score	Rationale for Score (document any assumptions, reports, or site-specific information; provide references)	Method Of Evaluation	Notes
b) Potential impact of aesthetics (*e.g.,* enrichment of a lake or tainting of food flavour).		There's potential staining around some of the smaller ponds downgradient of some of the waste dumps (Stantec, 2017).		
Is there evidence of aesthetic impact to receiving water bodies?	Yes		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	2			
No				
Do Not Know	---			
Is there evidence of olfactory impact (*i.e.,* unpleasant smell)?	No	There's been no known reported evidence of olfactory impact (Stantec, 2017).	Examples of olfactory change can include the smell of a COPC or an increase in the rate of decay in an aquatic habitat.	
Yes	0			
No				
Do Not Know	---			
Is there evidence of increase in plant growth in the lake or water body?	No	There's been no known reported evidence of increase in plant growth in the lake or water body (Stantec, 2017).	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	0			
No				
Do Not Know	---			
Is there evidence that fish or meat taken from or adjacent to the site smells or tastes different?	Do Not Know	There's been no known reported evidence that fish or meat taken from or adjacent to the site smells or tastes different (Stantec, 2017).	Some contaminants can result in a distinctive change in the way food gathered from the site tastes or smells.	
Yes	---			
No				
Do Not Know	1			
Ecological Modifying Factors Total - Known	4			
Ecological Modifying Factors Total - Potential	1			
Raw Ecological "Known" total	4			
Raw Ecological "Potential" total	10			
Raw Combined Total Ecological Score	14			
Adjusted Total Ecological Score (Max 18)	**14**			
5. Other Potential Contaminant Receptors				
a) Exposure of permafrost (leading to erosion and structural concerns)		Discontinuous permafrost (i.e., between 30% and 80% of the ground surface) may be present at the site (Stantec, 2017). No roads or buildings are suspected to be dependant upon the permafrost for structural integrity.		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	0			
No				
Do Not Know	---			
		It is unknown if there is a physical pathway that could transport soils released by damaged permafrost to a nearby aquatic environment.		
Is there a physical pathway which can transport soils released by damaged permafrost to a nearby aquatic environment?	Do Not Know		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				
Do Not Know	1			
Other Potential Receptors Total - Known	0			
Other Potential Receptors Total - Potential	1			

Exposure Total		
Raw Human Health + Ecological Total + Other Receptors - "Known"	10	
Raw Human Health + Ecological Total + Other Receptors - "Potential"	27.5	Only includes "Allowed potential" - if a "Known" score was supplied under a given category then the "Potential" score was not included.
Raw Total Exposure Score (not adjusted)	37.5	HH or Eco Total score has not yet been capped at 22 and 18, respectively.
Adjusted Total Score (Adjusted Total Exposure / 46 * 34)	**27.3**	maximum 34

CCME National Classification System (2008) version 1.3
Score Summary

Site: Border Beacon

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

I. Contaminant Characteristics	Known	Potential
1. Residency Media	6	1
2. Chemical Hazard	8	---
3. Contaminant Exceedance Factor	6	---
4. Contaminant Quantity	6	---
5. Modifying Factors	7	---
Raw Total Score	33	1
Raw Combined Total Score (Known + Potential)	34	
Adjusted Total Score (Raw Combined Total/40*33)	**28.1**	(max 33)

II. Migration Potential	Known	Potential
1. Groundwater Movement	---	7.1
2. Surface Water Movement	12	---
3. Soil	12	---
4. Vapour	---	10.5
5. Sediment Movement	---	4
6. Modifying Factors	4	---
Raw Total Score	28	21.6
Raw Combined Total Score (Known + Potential)	49.6	
Adjusted Total Score (Raw Combined Total/64*33)	**25.6**	(max 33)

III. Exposure	Known	Potential
1. Human Receptors		
A. Known Impact	---	
B Potential		
a. Land Use		1
b. Accessibility		1
c. Exposure Route		
i. Direct Contact		3
ii. Inhalation		4
iii. Ingestion		7.5
2. Human Receptors Modifying Factors	6	---
Raw Total Human Score	6	16.5
Raw Combined Total Human Score (Known + Potential)	22.5	
Adjusted Total Human Score	22	(maximum 22)
3. Ecological Receptors		
A. Known Impact	---	
B. Potential		
a. Terrestrial		4.5
b. Aquatic		4.5
4. Ecological Receptors Modifying Factors	4	1
Raw Total Ecological Score	4	10
Raw Combined Total Ecological Score (Known + Potential)	14	
Adjusted Total Ecological Score	14	(maximum 18)
5. Other Receptors	0	1
Total Other Receptors Score (Known + Potential)	1	
Total Exposure Score (Human + Ecological + Other)	37	
Adjusted Total Score (Total Exposure/46*34)	**27.3**	(maximum 34)

Site Score

Site Letter Grade	**D**
Certainty Percentage	**69%**
% Responses that are "Do Not Know"	**7%**
Total NCSCS Score for site	**81.0**
Site Classification Category	**1**

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", or a site letter grade of F has been assigned)

* 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.