Environment

Public Works and Government Services Canada

Phase III Environmental Site Assessment
FOX-E, Durban Island, NU
Intermediate DEW Line Site

Prepared by:

AECOM
2540 Kensington Road NW
Calgary, AB, Canada T2N 3S3
www.aecom.com

403 270 9200 tel
403 270 0399 fax

Project Number:

60158564

Date:

December, 2010

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AECOM
17007 – 107th Avenue
Edmonton, AB, Canada T5S 1G3
www.aecom.com

780 486 7000 tel
780 486 7070 fax

December 14, 2010

Giselle Cotta, M.Eng, P.Eng.
Senior Environmental Engineer
Public Works and Government Services Canada
Northern Contaminated Sites
5th Floor, 10025 Jasper Avenue
Edmonton, Alberta T5J 1S6

Dear Ms. Cotta:

Re: Site Investigation Implementation Plan
FOX-E, Durban Island, Former Intermediate DEW Line Site

AECOM Canada Ltd. is pleased to submit our final report outlining the results of the Site Investigation conducted at the FOX-E Durban Island Intermediate DEW Line Site. We thank you for the opportunity to complete this work on behalf of Public Works and Government Services Canada.

Should you have any questions or require additional information, please do not hesitate to contact the undersigned at 780.486.7057.

Sincerely,
AECOM Canada Ltd.



Nick Oke, M.Sc., P.Chem. (Alberta)
Project Manager
nick.oke@aecom.com

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Report Prepared By:

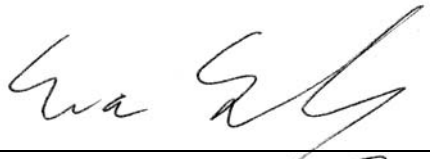


Jenna Morrish, M.Sc., (Eng), E.I.T.
Environmental Engineer



Kristen Tackney, P.Geol. (AB)
Project Geologist

Report Reviewed By:



Eva Schulz, P.Ag. (AB)
Senior Environmental Scientist

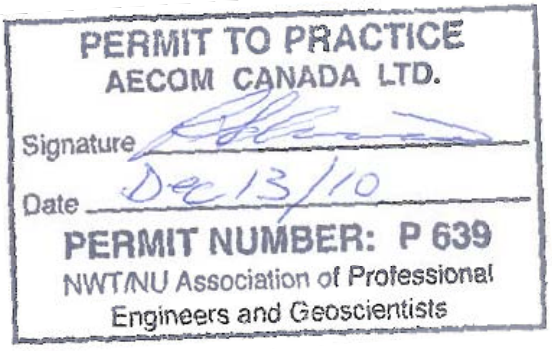


Nelson Ferreira, M.Sc., P.Eng.
Geotechnical Engineer

Report Reviewed By:



Barry Fedorak P.Eng. (NT, NU)
Geotechnical Engineer



Executive Summary

FOX-E Durban Island is located at 67°05' N, 62°07' W, on the eastern side of Durban Island, 2.3 km off the east coast of Baffin Island in the Davis Strait. FOX-E is about 60 km northwest of Cape Dyer (DEW Line Site) and 95 km southeast of the closest community, Qikiqtarjuaq on Broughton Island.

The site was abandoned as part of the DEW Line system in October 1963, and the responsibility for the site was assumed by Indian and Northern Affairs Canada (INAC). The site consists of a module train, water reservoir building, warehouse and garage with POL tanks at the Station and Beach areas. The radar tower has been felled and is lying to the west of the module train.

The site does not have an airstrip and is only accessible by helicopter or by sea. The terrain at Durban Island is composed mainly of deep glacial valleys with associated cirques and high plateaus. The site consists of three main areas; the Station Area on a high plateau, the Old Construction Camp and the Beach Landing Area.

The objective of AECOM's Phase III Environmental Site Assessment (ESA) at FOX-E, Durban Island was to collect all data necessary to develop a detailed Remedial Action Plan (RAP) in accordance with the Abandoned Military Site Remediation Protocol (INAC 2009). The fieldwork for this assessment was conducted from August 11 to 22, 2010.

The investigation and delineation of contaminated soil at FOX-E was completed for the contaminants of concern listed in the INAC Abandoned Military Site Remediation Protocol. The contaminants of concern are: arsenic, cadmium, cobalt, copper, lead, nickel, zinc, PCBs and petroleum hydrocarbons. Delineation of petroleum hydrocarbon (PHC) impacts was completed using the INAC Arctic PHC Evaluation Process, which is included in the INAC Abandoned Military Site Protocol. Typical source areas for these contaminants are well documented from previous DEW Line site investigations and were the focus of the 2010 investigation.

Contaminated soil identified at FOX-E includes:

- Approximately 18 m^3 of Tier II contaminated soil was identified in the Garage and Inuit Building areas.
- Approximately 23 m^3 of Tier I contaminated soil was identified in the Module Train area.
- Approximately 11 m^3 of Tier I/Type A PHC contaminated soil was identified in the Garage area.
- Approximately 378 m^3 of Type B hydrocarbon impacted soils were identified at the Station POL Tanks and Pumphouse, Module Train, Warehouse, Garage, Lobe 3 (buried debris), and Beach POL Tanks areas.

Buried debris was identified at nine locations. Lobes 1 to 7 were located at the Station Area, Lobe 8 was located southwest of the Station Area and Lobe 9 was located at the Old Construction Camp. The total area of buried debris at the Durban Island site is approximately 956 m^2. Once the perimeters of buried debris areas were identified, soil samples were taken in the proximity of the buried debris to identify if leaching of contaminants has historically occurred. Based on the location and physical condition of the buried debris areas and contaminant migration results, each Lobe was designated as Class A, B or C in accordance with the INAC Abandoned Military Site Remediation Protocol. Lobes 1 to 9 were considered a low environmental risk due to the lack of contaminants, lack of evidence of erosion and lack of receptors, and therefore were rated as Class C and can be covered in place. For health and safety reasons, excavation was not conducted in the buried debris areas. However, based on AECOM's extensive history with DEW Line Site remediation and the nature of the activities conducted at the Durban Island site, the following volumes of material types likely to be encountered in these buried debris areas has been estimated:

- Hazardous Materials: 1.5 m^3
- Non-hazardous Materials: 132 m^3

- Contaminated Soil: 133 m^3
- Clean Soil: 392 m^3

Based on the combined results of the surface debris inventory, barrel assessment and demolition inventory, approximately 2,402 m^3 of non-hazardous waste was identified. It should be noted that the non-hazardous debris volumes from the buried debris areas were not included in this calculation, as all of the buried debris lobes were considered low environmental risk and would not require excavation. This material is suitable for disposal in a non-hazardous waste landfill on the Durban Island site. The estimated quantity of hazardous waste at Durban Island is 132 m^3. This item consists mainly of asbestos-containing materials.

The following is a summary of the estimated volume of contaminated soils, hazardous and non-hazardous debris identified at the Durban Island site:

Location	Contaminated Soil Volume (m^3)				Hazardous Material Volume (m^3)	Non-Hazardous Material Volume (m^3)
	Tier I	Tier II	Tier I/Type A	Type B		
Contaminated Soil Areas	23	18	11	378	n/a	n/a
Buried Debris Areas	66	67	-	-	1.5	524
Surface Debris Areas	-	-	-	-	10.5	693
Demolition	-	-	-	-	121	327
Barrels	-	-	-	-	-	1382

Eight potential borrow areas were investigated at Durban Island and seven of the borrow areas are considered suitable for construction. In general, all granular materials required for construction where identified, but will require material processing (mostly screening) to produce the desired material. It is estimated that there is 106,000 m^3 of granular materials available from these borrow areas. The most predominant soil type in the vicinity of work areas is Type 2 and Type 4 granular fill. Most areas contain oversize material (cobbles and boulders) but this is generally well below 10% (trace) of the overall soil matrix. It is anticipated that sufficient volumes have been identified for construction purposes although additional borrow sourcing during construction can be carried out if necessary.

Depending on the remedial options selected, a combination of non-hazardous waste landfills, secure soil disposal facilities for disposal of contaminated soil and landfarms for the treatment of hydrocarbon-contaminated soils may be constructed at Durban Island. Three proposed landfill/landfarm locations were investigated and identified as suitable locations.

In general, the condition of the road ranges from very poor to good. The road tends to be in better condition along areas of flatter terrain, such as the locations around the Old Construction camp, and the Station. The worst road sections occur along the slope of the high plateau where the Station is located. Road repair will be required at Durban Island in order to make the roads safe and accessible during construction.

An Archaeological Impact Assessment (AIA) was completed by Golder Associates Ltd. during the August 2010 site visit. Two heritage resource sites were identified and investigated. The DEW Line Site (MgBs 2) was considered to be of limited significance where MgBs 4, a stone feature located north of the Beach POL Tanks, is considered to be of moderate significance and avoidance during site remediation is recommended.

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1. Introduction

1.1 Location

FOX-E Durban Island is located at 67°05' N, 62°07' W, on the eastern side of Durban Island, 2.3 km off the east coast of Baffin Island in Davis Strait. FOX-E is about 60 km northwest of the Cape Dyer DEW Line site (DYE-M) and 95 km southeast of the closest community, Qikiqtarjuaq on Broughton Island.

The site does not have an airstrip and is only accessible by helicopter or by sea. The terrain at Durban Island is composed mainly of deep glacial valleys with associated cirques and high plateaus. The site consists of three main areas; the Station Area on a high plateau, the Old Construction Camp and the Beach Landing Area.

1.2 Scope of Work

The objective of the Phase III Environmental Site Assessment at FOX-E Durban Island was to collect all data necessary to develop a detailed Remedial Action Plan (RAP), in accordance with the Abandoned Military Site Remediation Protocol (INAC 2009). Therefore, the tasks included in the scope of work for the Phase III ESA included the following:

- Obtain traditional knowledge regarding past and present land use of the sites from Elders of Qikiqtarjuaq;
- Identify, characterize, and quantify all hazardous and non-hazardous materials at the site and in nearby water bodies;
- Identify and delineate contaminated areas;
- Complete a detailed survey;
- Conduct an archaeological assessment (completed by Golder Associates Ltd);
- Document flora and fauna based on literature and professional experience;
- Label and inspect any POL tanks that are registered with the Environment Canada (EC) Storage Tank Regulation requirements;
- Conduct water sampling to determine whether there is a suitable potable water source on-site;
- Identify potential locations for an engineered landfill(s) and/or landfarm;
- Identify borrow sources that may be used for the potential repair of site roads and barge landing areas, as well as for the construction of a potential landfill(s) and/or landfarm;
- Evaluate the condition of site access roads and barge/beach landing areas;
- Evaluate the logistical challenges associated with mobilization, site remediation and demobilization activities;
- Increase local community and Inuit involvement in the program; and,
- Determine the site classification score and category using the CCME National Classification System for Contaminated Sites (NCSCS).

The site is represented on the Figures in Appendix A, which are referenced throughout the report. Data tables summarizing the environmental analytical results received from Maxxam Analytics are in Appendix B. Selected photographs of the site are in Appendix C. Copies of the environmental and geotechnical laboratory reports are included in Appendix D. The results of the geophysical survey are presented in a report prepared by Associated Geosciences Ltd. in Appendix E. The testpit logs are presented in Appendix F. The results of an archaeological assessment performed by Golder Associates Ltd. are presented in Appendix G, and finally the Federal Contaminated Sites Action Plan (FCSAP) Scoring Sheets are presented in Appendix H.

2. Background

2.1 Site Description

FOX-E Durban Island was reserved by the Department of National Defence (DND) for use as an Intermediate DEW Line site in 1956, the station was constructed in 1957, operated until 1963, and in 1965 the land became the responsibility of Department of Indian Affairs and Northern Development (DIAND).

There are two approximately 120 hectare Crown Land parcels on Durban Island, which encompass the abandoned facilities at the Station Area, the Old Construction Camp and the Beach Landing Area. The remains of the 6.6 km gravel road connecting the two parcels are located on Inuit Owned Land (IOL). A 'U' shaped helicopter pad remains at the Station Area. There is no airstrip on Durban Island.

Typical of all Intermediate DEW Line sites, FOX-E Durban Island consisted of a Module Train, Warehouse, Garage, Inuit Huts, four 75,700L Petroleum, Oil and Lubricant (POL) tanks, and a Doppler antenna. A large Water Reservoir and Pumphouse were also part of the station infrastructure as there is no fresh water source at the site, and there are no nearby freshwater lakes in vicinity of the site. Station personnel historically obtained freshwater from the runoff collector stream, which runs beside the Old Construction Camp toward the Beach Landing Area, terminating at the ocean.

2.2 Previous Investigations

The following reports were available for review:

- Andzans Associates. DEW Line Datafile Covering Report. 1984.
- Holtz et al. Removal of Contaminants from DEW Line Sites in Canada's Eastern Arctic. 1986.
- Department of National Defence. FOX-E Military Inspection Form. 1987.
- Environmental Sciences Group. Six Intermediate DEW Line Sites in the Eastern Arctic. 1994.
- Gartner Lee. Contaminated Sites Water Monitoring Program – East Nunavut. 2003, 2004.
- Senes. FOX-E, Durban Island Health Canada PQRA (draft). 2008.
- Senes. FOX-E, Durban Island Ecological Risk Assessment. 2008.
- AECOM. Cost Estimates for Remediation of Eight Nunavut Sites. 2009.
- Environmental Sciences Group. FOX-E, Durban Island Background Geochemistry Report. 2010.

2.3 Description of the Environment

2.3.1 Climate

The FOX-E site is located in a humid, extremely cold climate zone marked by very short, cold summers and is classified as having a high arctic and oceanic high arctic ecoclimate. Average monthly and annual weather data has been measured at a nearby station (Cape Dyer A, Nunavut, 66°35' N, 61°37' W, elevation 392.60 m, data from 1971 to 2000, Canadian Climate Normals, Environment Canada) and summarized in the following table.

Table 1: Meteorology, Precipitation and Temperature profiles at Cape Dyer, Nunavut

Month	Daily Mean (°C)	Daily Maximum (°C)	Daily Minimum (°C)	Extreme Maximum (°C)	Extreme Minimum (°C)	Rainfall (mm)	Snowfall (cm)	Snow Depth at Month-end (cm)
January	-24.2	-19.3	-29.1	1.1	-44.9	0.3	59.2	93
Month	**Daily Mean (°C)**	**Daily Maximum (°C)**	**Daily Minimum (°C)**	**Extreme Maximum (°C)**	**Extreme Minimum (°C)**	**Rainfall (mm)**	**Snowfall (cm)**	**Snow Depth at Month-end (cm)**
February	-25.5	-20.8	-30.2	2.2	-46.9	0	38.1	94
March	-22.9	-17.9	-27.9	2.8	-47.2	0	35.8	94
April	-16.3	-11.1	-21.4	10	-39.7	0.1	49.9	103
May	-6.9	-3.1	-10.5	11.7	-28.3	1.2	56.2	98
June	0.7	3.8	-2.4	17.8	-13.9	8.6	20.9	39
July	5.3	8.7	1.9	19.4	-5.5	34.5	7.4	1
August	4.4	7.5	1.2	18.9	-9.8	34.2	11	1
September	-1.2	1.7	-4	16.6	-18.9	15.2	50.8	20
October	-8.1	-4.2	-11.9	9.3	-31.1	3.4	95.2	52
November	-15.2	-10.7	-19.6	6.2	-39.4	0.9	79.6	70
December	-21.6	-16.8	-26.4	5.6	-45	0.1	62.1	82

2.3.2 Ecoregion

The FOX-E site is part of the Arctic Cordillera ecozone, and specifically, the Davis Highlands Tundra ecoregion. This ecoregion is comprised of the Baffin Mountains extending along the northeastern flank of Baffin and Bylot Islands.

2.3.3 Geology

The surficial geology of Durban Island mainly consists of bedrock outcrops and colluvial blocks and rubble derived from local bedrock with sand and gravel, and glacial erratics and till mixed in by freeze-thaw action. The main work sites (upper and lower) of FOX-E are located in areas of bedrock "blockfields" with fine sand and gravel and occasional glacial deposits of till and erratics. The main access road connecting the work areas travels through areas of exposed bedrock.

The bedrock at Durban Island is comprised of Precambrian metamorphosed sedimentary rocks (metagreywacke, metasiltstone, metapelite), migmatite of sedimentary origin, and minor igneous intrusive rocks (granitoid) of the Hoare Bay Group. The Beach Landing Area and Old Construction Camp is situated on this formation.

The plateaus at higher elevations of central Durban Island contain the erosional remnants of basaltic volcanic rocks of the Cape Dyer Formation, which overlie the Precambrian rocks. The upper main station site is located on bedrock of this formation.

In the northeast corner of Durban Island, about 2 km northeast of the main station site, there are semiconsolidated beds of sedimentary rocks (sandstone, shale, and conglomerate) of the Cape Searle and Quqaluit Formations overlying the Precambrian rocks.

2.3.4 Land Use

According to local knowledge, there has been no traditional land usage since closure of the station in the early 1960's other than possible transient visits by hunters and trappers. Neither hunting nor fishing are significant land use activities in this area since there are more attractive hunting and fishing areas closer to the nearby communities.

2.3.5 Vegetation

Vegetation in the Davis Highlands Tundra ecoregion is characterized by a discontinuous cover of mosses, lichens, and cold-hardy vascular plants such as sedge *(Carex* sp.) and cottongrass (*Eriophorum* sp.). As noted in the 1994 ESG report, on the plateau where the main station buildings are located, the vegetation is very sparse and comprised of mostly lichens and mosses with some isolated tufts of willow (*Salix* sp.) and rush (*Lazula* sp.) plants. In the flatter, low lying areas (beach, construction camp, Dump A), the vegetation is fairly lush with willows, sedges, grasses, rushes, and flowering herbs. The following is a detailed list of the vegetation types found at Durban Island as noted in the 1994 ESG report.

Lichens
Map Lichen
Worm Lichen
Reindeer Lichen
Rock Tripe
Jewel Lichen

Horsetail Family
Variegated Horsetail

Grass Family
Polargrass
Arctic Bluegrass

Sedge Family
Cottongrass

Rush Family
Wood Rush

Willow Family
Arctic Willow
Least Willow

Buckwheat Family
Mountain Sorrel
Bistort

Pink Family
Alpine Mouse-ear Chickweed
Bering Mouse-ear Chickweed
Moss-campion

Mustard Family
Draba

Crowfoot Family
Dwarf Buttercup
Buttercup

Poppy Family
Arctic Poppy

Saxifrage Family
Nodding Saxifrage
Prickly Saxifrage

Rose Family
Mountain Avens
Cinquefoil

Primrose Family
Broad-leaved Willow-herb

Crowberry Family
Crowberry

Blueberry Family
Arctic White Heather
Blueberry

Figwort Family
Hairy Lousewort

Aster Family
Fleabane

2.3.6 Wildlife

The wildlife typically found in this region includes polar bears, seals, whales, arctic fox, arctic hare, caribou, ermine, lemming, ptarmigan, snowy owl, raven, snow bunting, osprey, shorebirds, seabirds, and waterfowl. Evidence of large numbers of Canada geese were noted during the ESG 2009 geochemistry study. During the 2010 assessment, several polar bears and ptarmigans were noted.

3. Investigation

3.1 Contaminated Soil Delineation

3.1.1 Methodology

The investigation and delineation of contaminated soil at Durban Island was completed for the contaminants of concern identified under the INAC Abandoned Military Site Remediation Protocol (AMSRP), which include: arsenic, cadmium, chromium, cobalt, copper, lead, nickel, zinc and PCBs and are evaluated against the DEW Line Clean Up Criteria (DCC). Petroleum hydrocarbons (PHCs) are also included in the AMSRP as contaminants of concern (INAC 2009). A background geochemical assessment was completed in 2009 (ESG 2010) and revealed the necessity for site-specific criteria (SSC) for arsenic, chromium, cobalt, copper and nickel. The SSC are summarized in Table B1 in Appendix B.

Based on historical data collected and past experience, it has been found that PCB and metal contamination in the soil at abandoned northern military sites tends to be restricted to surface or shallow depth, and therefore the assessment was typically focused on the top 0.5 m of soil. Typical source areas for these contaminants are well documented from previous site investigations and were the focus of the 1993 investigation by ESG, and formed the basis of the 2010 AECOM investigation.

Delineation of PHC impacts was completed using the INAC Arctic PHC Evaluation Process, which is a component of the INAC Abandoned Military Site Remediation Protocol (INAC 2009). The INAC methodology is based on total petroleum hydrocarbon (TPH) criteria. TPH identity is broken down according to two types: Type A and Type B. Type A is comprised of heavier, less mobile hydrocarbons (such as lubricating oil) and includes the F3 and F4 hydrocarbon fractions, while Type B is comprised of the lighter, more mobile fractions such as those encountered in fuel oil and includes the F1, F2 and F3 hydrocarbon fractions. The dominant hydrocarbon type is defined by the percentage of the sum of F3 and F4, relative to the sum of F1 to F4 (total TPH). For Type A contaminated soil, the sum of F3 plus F4 must be greater than 70% of the total TPH concentration and the F2 concentration must be less than the F4 concentration.

The manner in which the investigation of PHC impact was completed depended on whether the expected impacts were Type A (F3 and F4 fractions), such as at lubricating oil stains, or fuel oil impacts Type B (F1, F2 and F3 fractions). Type A PHC impacts can often be defined by the limits of visual staining. As such, surficial and shallow depth soil samples were collected within the most heavily impacted area of the stain to identify maximum contaminant concentrations and the depth to which impacts persisted. Type B (fuel oil) impacts were investigated with the collection of surface and depth samples. Initial sample locations were targeted to source areas such as POL pads. If impacts were identified in the source areas (i.e. odour and/or staining), then additional sampling was completed surrounding the source, targeted to intercept expected migration pathways. Although manual excavation did not generally allow for excavation of the full active layer depth, samples were collected as deep as could be achieved. The presence of staining or odour was also noted. Bulk soil samples were collected from two locations on site to determine grain size distribution.

Soil samples were collected from surface locations and shallow test pits excavated by hand. A tag with a numerical identifier was placed where samples were taken to allow the position to be surveyed and to allow location of the samples during the eventual site clean-up. The identifier on each tag corresponds to the individual sample number. Sequential tags were placed where more than one sample was taken at any particular location.

Samples were collected with a metal shovel or trowel that was cleaned between samples with a “soil wash” or wiped, as required. Samples were generally collected over a 0.1 m depth interval and the soil was placed in jars and bags

provided by the laboratory. The jars were completely filled (no headspace) and the samples kept cool until shipment to the laboratory. Field duplicates were collected for approximately 10% of samples, given a separate numerical label and submitted blind to the laboratory. Typically, field duplicate pairs were collected at sample numbers 0/1 (e.g. 10-0010/11). A review of quality assurance and quality control (QA/QC) for field and laboratory methodologies is provided in Section 3.11 and Table B10 in Appendix B.

The intent of the Phase III Environmental Site Assessment (ESA) was to delineate areas of impact that were previously documented by ESG in the 1994 report. The sample locations from the previous investigation were not well identified since most sample tags had been moved from their original locations and reliable survey data was not available. The impacts identified in the ESG summary report (ESG 1994) were minimal with only four samples exceeding the DCC for Tier I PCBs. To ensure all impacts were identified, sampling was completed around all existing buildings, buried debris areas, the barrel storage pad and the Dump A push site. During the course of the 2010 investigation, additional areas where contamination was suspected e.g. surface debris were investigated.

Most structures at Durban Island with the exception of the Inuit Huts are still standing. For most building locations, delineation sampling was completed outward from the edge of existing buildings or from the edge of the debris pile if the structure had been demolished. In areas where the buildings had been demolished (i.e. Inuit Huts), debris was not moved to facilitate the collection of samples inside building limits. The main structure of the Module Train is still intact and as such the support beams are still in place. As is consistent with other northern site investigation, sampling was not conducted under the edge of the building for safety reasons. In addition, it is difficult to obtain representative samples from under the building structure (i.e. difficult to dig a test pit with a shovel).

Soil sampling around lobes of buried debris was carried out by targeting locations both upgradient and downgradient of the lobe. Downgradient sample locations were typically about 8 to 10 m from the edge of the lobe. Generally, samples were collected near surface and at depth (0.3 to 0.6 m).

3.1.2 Results

The results of the contaminated soil delineation are described in the following sections. The contaminant perimeters (and estimated depths) were generated by assuming a linear rate of contaminant concentration decline between adjacent samples (i.e. the concentration difference between adjacent samples was divided by the distance between them to derive a rate of concentration decline/meter and determine the point at which the concentration would be equivalent to the criterion). All environmental samples were collected on Crown Lands with the exception of those collected from geotechnical Test Pit #16 and buried debris Lobe 8 which were collected on Inuit Owned Lands.

Complete summaries of the analytical results for the sample locations shown on Figures 1.0-6.0 in Appendix A can be found in Tables B1 to B3 in Appendix B. An overall summary of the contaminated soil areas identified at Durban Island is presented in Table 2 at the end of Section 3.1.

3.1.2.1 Station POL Tanks and Pumphouse

Five samples were collected by ESG around the Station POL Tanks and Pumphouse in 1993. The samples were analyzed for metals and PCBs and results are below the DCC and SSC for these parameters. Hydrocarbon odours were noted at three of the five sample locations.

A total of 25 samples were collected by AECOM around the Station POL Tanks and Pumphouse (Appendix A, Figure 2.0). Twelve samples were analyzed for PHCs and four for metals. PCBs were not investigated at this location since no impact was previously identified by ESG.

Results indicate that the samples contain metals concentrations below the DCC and SSC; however, Type B PHC concentrations that exceed the Remedial Objectives outlined in the AMSRP (INAC 2009) were noted in four of the 11 samples analyzed (10-0164, 10-0165, 10-0170/71) at concentrations ranging from 4,749 to 6,760 mg/kg. These samples were collected from an area that was visibly stained (Appendix C, E1). Although the area has not been completely delineated to the west, it is anticipated that the impact is limited to the POL pad. The size of the Type B PHC impacted area is estimated to be 63 m^2 and extends to a depth of 0.5 m.

3.1.2.2 Water Reservoir and Pumphouse and Module Train

Seven samples were collected by ESG in 1993 around the Water Reservoir and Pumphouse and Module Train. All of the samples collected had concentrations of metals that are below the DCC and SSC. Tier I PCBs were identified in two locations (G4015 and G4017) and hydrocarbon odours and staining were also noted at these locations.

Thirty-four samples were collected in 2010 to delineate possible impacts in the nearby vicinity (Appendix A, Figure 2.0). Nine samples were analyzed for metals, eight were analyzed for PCBs due to the presence of eggshell white and/or red primer paint chips and 16 were analyzed for PHCs due to the presence of hydrocarbon odour and/or staining. A total of five samples contained Type B PHCs in exceedance of the relevant objective and one sample contained a concentration of total PCBs in excess of the Tier I DCC.

The PCB impacted areas documented in the 1994 ESG report were located along the north and east sides of the Module Train while the impacted area identified in 2010 was located along the south end of the Module Train. Since the PCBs reported in the 1994 report were not confirmed in 2010, the only PCB impacted area of concern is the location at the south end of the Module Train. While this area is not well delineated to the south, it can be assumed that the impacted soil is associated with the paint chip debris that was located in the vicinity of sample number 10-0209. The approximate area of Tier I PCB impact is estimated to be 76 m^2 and extend to a depth of 0.3 m.

Type B PHC impacted soil was identified around the northeast corner of the building. The approximate area of contamination is estimated to be 112 m^2 and extends to a depth of 0.6 m.

The results of grain size distribution for sample 10-0189 showed that soils collected from this area were coarse-grained with 67% of the soil being greater than 75 µm in size.

3.1.2.3 Warehouse

Two samples were collected by ESG in the warehouse area and documented in the 1994 Report. Neither sample had metal or PCB concentrations above the SSC and/or DCC. Sample G4014 was collected northeast of the Warehouse and was noted to have a hydrocarbon odour.

Thirteen samples were collected in 2010 of which two were analyzed for metals and PCBs and five were analyzed for PHCs (Appendix A, Figure 2.0). The samples contained metals and PCB concentrations below the SSC and the DCC. Type B PHC concentrations exceeding the objective were detected in two samples collected at the same location (surface and depth). These samples were collected in the vicinity of above-ground fuel storage tanks and had a strong hydrocarbon odour. The estimated area of impact is 16 m^2 and extends to a depth of 0.6 m.

3.1.2.4 Garage

Six samples were collected by ESG and documented in the 1994 report. The samples were analyzed for metals and PCBs and two samples (G4008 and G4012) had PCB concentrations of 1.7 and 1.8 mg/kg, respectively, which are above the DCC Tier I criterion. Hydrocarbon odours were noted in three locations (G4009, G4010 and G4012).

Nine samples were collected in 2010: eight were analyzed for metals, four for PHCs and five samples were analyzed for PCBs (Appendix A, Figure 2.0). Surface and depth samples (10-0237 and 10-0238) collected in the stained area off of the east corner of the building contained PCB concentrations above the Tier I DCC. The surface sample (10-

0237) also contained Type A PHC above the applicable objective and lead above the Tier I DCC (Appendix C, E42). A Type B PHC impact was noted along the southeast side of the building (10-0236). One sample (10-0232) contained a cadmium concentration in excess of the Tier II DCC. Each of these three impacted areas is not fully delineated, but it is anticipated that the effects are limited to the vicinity of the building. Further sampling (away from the building) was not completed because there were no visual or olfactory indicators that further contamination would be present. The estimated areas of contamination for Tier I PCB and lead/Type A PHC, Type B PHC and Tier II cadmium are 35 m^2, 40 m^2 and 47 m^2, respectively to a depth of 0.3 m.

3.1.2.5 Inuit Huts (South of Station Area)

During their investigation, ESG did not collect samples in the vicinity of these Inuit Huts (Appendix C, E14). In order to confirm the absence of impacts, eleven samples were collected in 2010 and three were analyzed for metals (Appendix A, Figure 2.0). All samples contained concentrations below the DCC and SSC.

3.1.2.6 Antenna

ESG collected one sample (G4019) in the area of the downed antennae, which was documented in their 1994 report. There were no metal or PCB impacts identified. In order to confirm the absence of impacts, five samples were collected in 2010 and one was analyzed for metals (Appendix A, Figure 2.0). This sample contained concentrations below the DCC and SSC.

3.1.2.7 Inuit Building (West of Station Area)

ESG did not collect samples in the vicinity of the Inuit Building west of the Station Area during their investigation. The building has been almost completely demolished with the exception of the base platform (Appendix A, Figure 2.0). It appears that fire damage was incurred on the north corner of the building (Appendix C, E16). In 2010, AECOM collected eight samples to delineate potential impacts. Seven samples were analyzed for metals and four were analyzed for PCBs. PHCs were not investigated at this location since there was no evidence of impact. The PCB analyses returned concentrations that were below the DCC. Sample 10-0256, collected among the burn debris in the north corner contained arsenic and copper concentrations above the SSC. While the area is not fully delineated, it is anticipated that the Tier II concentrations are limited to the area of burned debris. Further sampling was not conducted because there were no visual or olfactory indicators that further contamination would be present. The estimated area of contamination is 14 m^2 and extends to a depth of 0.3 m.

3.1.2.8 Former Barrel Storage Area

ESG did not collect samples from the Former Barrel Storage Area west of the Station Area (Appendix A, Figure 2.0). In 2010, a 6 x 6 m sampling grid was set up to cover the storage area and also targeted two hydrocarbon stains. A total of 13 samples were collected and seven were analyzed for PHCs while four were analyzed for PCBs. The PCB results were below the DCC and the PHC analyses indicated Type A PHC concentrations that were below the remedial objective.

For aesthetic reasons, the small Type A PHC stains may be scarified during site remediation.

3.1.2.9 Inuit Hut (Beach Landing)

ESG collected one sample (G4027) downgradient of the Inuit Hut at the Beach Landing, which is documented in the 1994 report. The sample was analyzed for metals and PCBs and was below criteria for the DCC and SSC.

Six samples were collected in 2010: four were analyzed for metals and PCBs (Appendix A, Figure 5.0). PHCs were not investigated at this location since there was no indication of impact. The PCB and metals results were below the DCC and SSC.

The results of grain size distribution for sample 10-0327 showed that soils collected from this area were coarse-grained with 54% of the soil being greater than 75 µm in size.

3.1.2.10 Barrel Cache (Beach Landing)

A cache of approximately 630 uncrushed barrels is located at the beach landing (Appendix C, E160). Samples were collected from an upgradient surface location and four downgradient test pits (Appendix A, Figure 5.0). The depth samples collected in this area were generally shallow due to the presence of groundwater. Ten samples were collected and three were analyzed for metals, PCBs and PHCs. The PHC results were below the applicable objective and the PCB and metal concentrations were below the DCC and SSC.

Further investigation of potential impacts may be required once the barrels have been removed.

3.1.2.11 Beach POL Tanks

ESG collected seven samples at the beach area during their investigation, including four in the location of the Beach POL Tanks. There were no metal or PCB results noted above the DCC or SSC. Hydrocarbon odours were noted at two of the Beach POL Tanks sample locations, G4022 and G4024.

Thirteen samples were collected surrounding the POL Tanks and the beach in 2010 (Appendix A, Figure 5.0). Nine samples were analyzed for PHCs and two samples were analyzed for metals and PCBs. The PCB and metals results were below the DCC and SSC. PHCs were detected in only three samples and exceeded the objective for Type B PHCs in two samples with concentrations of 2,650 and 5,750 mg/kg. The two areas of impact are denoted by sample tags 10-0347 and 10-0349 and are estimated to be 63 m^2 and 38 m^2 to a depth of 0.7 and 0.3 m, respectively.

3.1.2.12 Sewage Outfall

Only one sample (O4032) was collected from the sewage outfall area by ESG during their investigation, due to the difficulty in accessing the area and the lack of available soil within the rocky outcrops. The sample was analyzed for metals and PCBs and was found to be below the DCC and SSC.

Additional samples were not collected in 2010 as the end of the sewage outfall pipe terminates at the edge of the cliff east of the Dump A Push Point (Appendix A, Figure 2.0).

3.1.2.13 Dump A Push Point

This area is located on the edge of the cliff adjacent to Dump A (Appendix C, E55). The area was investigated to determine if any soil contamination resulted from the “pushing” of waste materials over the cliff with heavy machinery (Appendix A, Figure 2.0).

Eleven samples were collected in a 6 x 6 m grid to identify potential impacts at the Dump A Push Point. Five samples were analyzed for metals and PCBs. PHCs were not investigated at this location since there was no evidence to suggest an impact. The PCB and metal results were below the DCC and SSC.

The results of grain size distribution for sample 10-0293 showed that soils collected from this area were coarse-grained with 70% of the soil being greater than 75 µm in size.

3.1.2.14 Buried Debris Areas

Lobe 1 (Northwest of Garage)
One upgradient and one downgradient test pit were completed for this lobe (Appendix C, E128) and five samples were collected and analyzed for metals, PCBs and PHCs (Appendix A, Figure 2.0). PHC sample results were below the objective and the PCB and metals concentrations were below the DCC and SSC.

Lobe 2 (North of Garage)
One upgradient and one downgradient test pit were completed for this lobe (Appendix C, E126) and four samples were collected and analyzed for metals, PCBs and PHCs (Appendix A, Figure 2.0). All sample results were below the DCC, SSC and PHC remedial objectives.

Lobe 3 (North of Warehouse)
Lobe 3 was identified north of the Warehouse (Appendix C, E124). Two test pits were completed and five samples were collected (Appendix A, Figure 2.0). The depth sample collected from the upgradient test pit contained Type B PHC concentrations that are above the objective with an average concentration of 6,000 mg/kg. The surface sample from the upgradient test pit, as well as the surface and depth samples collected from the downgradient test pit, had below criteria results for PHCs. It should be noted that the upgradient test pit had a strong hydrocarbon odour at depth and is located downgradient of a Type B PHC impacted area that was identified at the Warehouse. There is a potential that these two areas are related. The metals and PCB concentrations in all samples were below the DCC and SSC. The estimated area of contamination is 289 m^2 to a depth of 0.7 m.

Lobe 4 (North of Water Reservoir and Pumphouse)
Six samples were collected from three test pits (one upgradient and two downgradient) and four were analyzed for metals, PCBs and PHCs (Appendix A, Figure 2.0). All samples contained concentrations of metals, PCBs and PHCs below the DCC, SSC and PHC remedial objectives. See photo E122 in Appendix C.

Lobe 5 (West of Antenna)
Eleven samples were collected from five test pits and seven samples (from three test pits) were analyzed for metals, PCBs and PHCs (Appendix A, Figure 2.0). PCB and metal concentrations were below the DCC and SSC. PHCs were detected in three samples but had concentrations below the applicable remediation criteria. See photo E151 in Appendix C.

Lobe 6 (Southwest of Antenna)
Lobe 6 was identified southeast of Lobe 5 (Appendix C, E152). Samples were collected from one downgradient test pit and analyzed for metals, PCBs and PHCs (Appendix A, Figure 2.0). An upgradient test pit was not completed because the downgradient test pits completed for Lobe 5 were in close proximity. PCB and metal results were below the DCC and SSC. PHCs were detected in the surface sample at concentrations below the remedial objectives.

Lobe 7 (South of Inuit Huts (South of Station Area))
Several samples were collected upgradient around the Inuit Huts south of the Station Area to assess potential surface soil impacts and were found to be below relevant criteria for metals (Appendix A, Figure 2.0). Three samples were collected from the upgradient test pit of Lobe 7 but were not analyzed because there were no impacts identified upgradient. A downgradient test pit was not completed in this area due to the proximity of the lobe to the edge of the cliff (Appendix C, E156).

Lobe 8 (Barrel Cache (West of Station Area))
ESG collected two samples (G4020 and G4021) in this area in 1993. Samples were analyzed for metals and PCBs and contained concentrations that were lower than the DCC and SSC. No hydrocarbon odours or staining were noted.

Lobe 8 was identified to be northwest of the Barrel Cache (Appendix C, E253) on Inuit Owned Lands (Appendix A, Figure 3.0). Four samples were collected from one upgradient and one downgradient test pit and were analyzed for metals, PHCs and PCBs. All sample results were below the DCC, SSC and PHC remedial objectives.

Soil samples were also collected from the surface and depth of Geotechnical Test Pit #16 (on Inuit Owned Lands) due to an observed hydrocarbon odour (Appendix A, Figure 3.0). The samples were analyzed for metals, PCBs and PHCs and were found to contain concentrations lower than the DCC, SSC and PHC remedial objectives.

Lobe 9 – South of Dump C

Five samples were collected from two test pits and were analyzed for metals, PCBs and PHCs (Appendix A, Figure 4.0). The results indicated that all parameters contained concentrations lower than the DCC, SSC and PHC remedial objectives. See photo E241 in Appendix C.

Table 2 presents a summary of the contaminated soil areas.

Table 2: Summary of Contaminated Soil Areas at Durban Island

Location	Reference Sample Number	Contaminants	Tier II			Tier I			Tier I/Type A PHC			Type B PHC			Comments
			Area (m^2)	**Depth (m)**	**Volume (m^3)**	**Area (m^2)**	**Depth (m)**	**Volume (m^3)**	**Area (m^2)**	**Depth (m)**	**Volume (m^3)**	**Area (m^2)**	**Depth (m)**	**Volume (m^3)**	
Station POL Tanks and Pumphouse	(10-0164; 10-0170/71), 10-0165	Type B PHC										63	0.5	31.5	Further Delineation Required
Water Reservoir and Pumphouse and Module Train	10-0209	PCB				76	0.3	22.8							Further Delineation Required
Water Reservoir and Pumphouse and Module Train	10-0199 to 10-0202 and 10-0212	Type B PHC										112	0.6	67.2	
Warehouse	(10-0226;10-0227)	Type B PHC										16	0.6	9.6	
Garage	(10-0237;10-0238)	PCB, Pb, Type A PHC							35	0.3	10.5				Further Delineation Required
Garage	10-0236	Type B PHC										40	0.3	12.0	Further Delineation Required
Garage	10-0232	Cd	47	0.3	14.1										Further Delineation Required
Inuit Building (West of Station Area)	10-0256	As, Cu	14	0.3	4.2										Further Delineation Required
Beach POL Tanks	10-0347	Type B PHC										63	0.7	44.1	
Beach POL Tanks	10-0349	Type B PHC										38	0.3	11.4	
Lobe 3	10-0310/11	Type B PHC										289	0.7	202.3	Further Delineation Required

3.2 Assessment of Existing Buried Debris Areas (Dumps)

The assessment of buried debris areas at Durban Island was completed with the goal of classifying the buried debris locations according to the three categories specified under the INAC Abandoned Military Site Remediation Protocol:

- Class A: buried debris is located in an unstable, high erosion location. Remediation will involve relocation of buried debris to an engineered landfill.
- Class B: the buried debris is in a suitable, stable location, but there is evidence of contaminant migration. Remedial solutions include the installation of an engineered containment system, or relocation, whichever is deemed more cost effective.
- Class C: the buried debris is in a suitable, stable location, and there is no evidence of contaminant migration. In such cases, the debris may be left in place, with the placement of additional granular cover as required.

3.2.1 Methodology

Prior to the field investigation, historical air photos were reviewed to identify potential buried debris locations in addition to those previously identified. In general, these areas are associated with disturbed ground and not associated with borrow extraction. The identification and limits of these areas were used to target areas for geophysical surveys, and were referred to in the site investigation plan as ‘areas for investigation’.

Upon arrival on-site, each of the potential buried debris locations were ground-truthed to confirm that geophysical surveys were required, and if so, the geophysical survey boundaries were identified. The geophysical survey was completed using a GSM-19 Overhauser Effect Gradiometer with integrated GPS. The total field and vertical magnetic gradient survey data were collected at one second intervals as the operator walked over areas suspected of containing buried metallic debris. The magnetic survey data was used to identify the size and configuration of the buried debris. The magnetic anomaly perimeters were laid out in the field with pin-flags and the lobes identified numerically (Lobe 1 to Lobe 9) prior to the initiation of the intrusive investigations. Each anomaly perimeter was modified as required to omit areas where metallic surface debris was situated within the surveyed area. The locations of the pin flags were surveyed.

To investigate a buried debris location as a potential contaminant source, soil samples were collected up and downgradient of each identified anomaly. Downgradient concentrations of naturally occurring inorganic elements (inorganics), were compared with upgradient concentrations, as well as average concentrations for all buried debris assessment samples at the site to identify potential contaminant migration away from the lobes. Where a downgradient concentration was three times the concentration of the average, it was flagged as potential evidence of contaminant migration and further investigated in terms of its location, whether there was continued evidence of contaminant migration further downgradient, and whether there were multiple elevated contaminants. If any anthropogenic contaminants were detected in downgradient samples, this was considered evidence of contaminant migration, unless there was an upgradient source (whose inputs would be captured by the upgradient sample).

Where potential contamination was suspected based on staining or specific debris exposure, samples were also collected to identify and delineate contamination. To help in establishing the environmental risk a particular buried debris area poses, information regarding downgradient aquatic and terrestrial habitat was noted, as well as physical characteristics that affect the potential for contaminant migration. The geotechnical stability of the buried debris location was also assessed, including evidence of, or potential for, erosion or slope failure.

3.2.2 Results

There were nine buried debris lobes identified during the 2010 field investigation at Durban Island. All buried debris areas, with the exception of Lobe 8 which is on Inuit Owned Land, are located on Crown Lands. The results of the dump assessments and the specific volumes associated with the waste component breakdowns are summarized in Table 3 on the next page.

Table 3: Summary of Buried Debris Areas at Durban Island

	Existing Buried Debris Areas								
	Lobe 1	**Lobe 2**	**Lobe 3**	**Lobe 4**	**Lobe 5**	**Lobe 6**	**Lobe 7**	**Lobe 8**	**Lobe 9**
Reference Drawing	Figure 2.0 Station Area	Figure 2.0 Station Area	Figure 2.0 Station Area	Figure 2.0 Station Area	Figure 2.0 Station Area	Figure 2.0 Station Area	Figure 2.0 Station Area	Figure 3.0 Southwest of Station Area	Figure 4.0 Old Construction Camp
Photo Reference	E128	E126	E124	E122	E151	E152	E156	E253	E241
Estimated Landfill Extent (m^2)	122	74	101	145	120	50	95	117	132
Estimated Depth	0.5	0.5	0.5	0.5	0.5	0.5	1	0.5	1.5
Estimated Volume of Hazardous Soil	n/a (0%)	0.5 m^3 (1%)	0.5 m^3 (1%)	n/a (0%)	n/a (0%)	0.5 m^3 (1%)	n/a (0%)	n/a (0%)	n/a (0%)
Estimated Volume of Tier II Contaminated Soil	6 m^3 (10%)	4 m^3 (10%)	6m^3 (12%)	7 m^3 (10%)	6 m^3 (10%)	3 m^3 (10%)	10 m^3 (10%)	6 m^3 (10%)	20 m^3 (10%)
Estimated Volume of Tier I Contaminated Soil	6 m^3 (10%)	4 m^3 (10%)	5 m^3 (10%)	7 m^3 (10%)	6 m^3 (10%)	3 m^3 (10%)	10 m^3 (10%)	6 m^3 (10%)	20 m^3 (10%)
Estimated Volume of Non-Hazardous Soil	12 m^3 (20%)	7 m^3 (20%)	10 m^3 (20%)	15 m^3 (20%)	12 m^3 (20%)	5 m^3 (20%)	19 m^3 (20%)	12 m^3 (20%)	40 m^3 (20%)
Estimated Volume of Clean Soil	37 m^3 (60%)	22 m^3 (59%)	29 m^3 (57%)	44 m^3 (60%)	36 m^3 (60%)	15 m^3 (59%)	57 m^3 (60%)	35 m^3 (60%)	119 m^3 (60%)
Presence of Contaminants	There was no surface staining or evidence of contaminant migration from this lobe. Soil samples were collected from one upgradient and one downgradient test pit. All samples were below applicable criteria and do not indicate an impact as a result of the buried debris.	There was no surface staining or evidence of contaminant migration from this lobe. Soil samples were collected from one upgradient and one downgradient test pit. All samples were below applicable criteria and do not indicate an impact as a result of the buried debris.	There was no surface staining or evidence of contaminant migration from this lobe. Soil samples were collected from one upgradient and one downgradient test pit. The depth sample of the upgradient test pit exceeded the relevant objective for Type B PHC. All other samples were below applicable criteria. It is assumed that the upgradient impact is connected to the hydrocarbon impact upgradient near the Warehouse.	There was no surface staining or evidence of contaminant migration from this lobe. Soil samples were collected from one upgradient and two downgradient test pits. All samples were below applicable criteria and do not indicate an impact as a result of the buried debris.	There was no surface staining or evidence of contaminant migration from this lobe. Soil samples were collected from one upgradient and four downgradient test pits. All samples were below applicable criteria and do not indicate an impact as a result of the buried debris.	There was no surface staining or evidence of contaminant migration from this lobe. Soil samples were collected from one downgradient test pit. All samples were below applicable criteria and do not indicate an impact as a result of the buried debris.	There was no surface staining or evidence of contaminant migration from this lobe. Soil samples were collected from one upgradient test pits. A downgradient test pit was not completed since the edge of the lobe is approximately 4 m from the edge of the southern cliff. All samples were below applicable criteria and do not indicate an impact as a result of the buried debris.	There was no surface staining or evidence of contaminant migration from this lobe. Soil samples were collected from one downgradient test pit. All samples were below applicable criteria and do not indicate an impact as a result of the buried debris. The area does not look disturbed	There was no surface staining or evidence of contaminant migration from this lobe. Soil samples were collected from one downgradient test pit. All samples were below applicable criteria and do not indicate an impact as a result of the buried debris.
Presence of Exposed Debris	There was minimal surface debris consisting of metal scrap, wood and clothing.	There was minimal surface debris consisting of metal scrap, wood, painted wood and glass.	There was minimal surface debris on the lobe which consisted of metal scrap, wood and a few crushed barrels. There is more condensed surface debris upgradient of the lobe consisting of cable, wooden beams, barrels and scrap metal.	There was minimal surface debris consisting of metal scrap, wood and a few crushed barrels.	There was minimal surface debris consisting of metal scrap, wood and a fire extinguisher.	There was minimal surface debris consisting of metal scrap, painted wood and a piece of tarp.	There was minimal surface debris consisting of metal and wood.	No surface debris was noted.	There was minimal surface debris consisting wood pieces.
Topography	The slope is generally flat with a gentle 5-6% slope to the NW.	The slope is generally flat with a gentle 5-6% slope to the NW.	The slope is generally flat with a gentle 5-6% slope to the NW.	The slope is generally flat with a gentle 1-2% slope to the NW.	The slope is generally flat with a gentle 1-2% slope to the SW.	The slope is generally flat with a gentle 1-2% slope to the SW.	The slope is generally flat with a gentle 5-6% slope to the SW.	The slope is generally flat with a gentle 5-6% slope to the NW.	The slope is generally flat with a gentle 8-10% slope to the SE.
Cover Material	sand and gravel	gravel and cobbles	gravel and cobbles	gravel and sand	sand and gravel	gravel and cobbles	sand and gravel	cobbles and gravel	sand and gravel
Vegetation Cover	There is less than 5% vegetation over on the lobe.	There is less than 5% vegetation over on the lobe.	There is less than 5% vegetation over on the lobe.	There is less than 5% vegetation over on the lobe.	There is less than 5% vegetation over on the lobe.	There is less than 5% vegetation over on the lobe.	There is less than 5% vegetation over on the lobe.	There is less than 5% vegetation over on the lobe.	There is approximately 80% vegetation cover on the lobe.
Evidence of Erosion	There is no evidence of erosion.	There is no evidence of erosion.	There is no evidence of erosion.	There is no evidence of erosion.	There is no evidence of erosion.	There is no evidence of erosion.	There is no evidence of erosion.	There is no evidence of erosion.	There is no evidence of erosion.
Annual Precipitation	600 mm	600 mm	600 mm	600 mm	600 mm	600 mm	600 mm	600 mm	600 mm
Distance to Downgradient Waterbodies	N/A - there are no downgradient receptors.	N/A - there are no downgradient receptors.	N/A - there are no downgradient receptors.	N/A - there are no downgradient receptors.	N/A - there are no downgradient receptors.	N/A - there are no downgradient receptors.	N/A - there are no downgradient receptors.	N/A - there are no downgradient receptors.	N/A - there are no downgradient receptors.
Distance to freshwater/marine habitat	> 1 km northwest down the cliff toward the ocean.	> 1 km northwest down the cliff toward the ocean.	> 1 km northwest down the cliff toward the ocean.	> 1 km northwest down the cliff toward the ocean.	Approximately 1.8 km southeast down the cliff at Dump A.	Approximately 1.8 km southeast down the cliff at Dump A.	Approximately 1.8 km southeast down the cliff at Dump A.	> 1 km northwest down the cliff toward the ocean.	Approximately 940 m away from the ocean to the south.
Terrestrial Habitat	Polar Bear, Caribou, Arctic Fox, Hare and Lemming are among the wildlife known to frequent the general area.	Polar Bear, Arctic Fox, Hare and Lemming are among the wildlife known to frequent the general area.	Polar Bear, Arctic Fox, Hare and Lemming are among the wildlife known to frequent the general area.	Polar Bear, Arctic Fox, Hare and Lemming are among the wildlife known to frequent the general area.	Polar Bear, Arctic Fox, Hare and Lemming are among the wildlife known to frequent the general area.	Polar Bear, Arctic Fox, Hare and Lemming are among the wildlife known to frequent the general area.	Polar Bear, Arctic Fox, Hare and Lemming are among the wildlife known to frequent the general area.	Polar Bear, Arctic Fox, Hare and Lemming are among the wildlife known to frequent the general area.	Polar Bear, Arctic Fox, Hare and Lemming are among the wildlife known to frequent the general area.
Land Use	hunting and fishing	hunting and fishing	hunting and fishing	hunting and fishing	hunting and fishing	hunting and fishing	hunting and fishing	hunting and fishing	hunting and fishing
Comments	Based on the lack of contamination and the stability of the lobe, if is being classified as Class C.	Based on the lack of contamination and the stability of the lobe, if is being classified as Class C.	Based on the lack of contamination and the stability of the lobe, if is being classified as Class C.	Based on the lack of contamination and the stability of the lobe, if is being classified as Class C.	Based on the lack of contamination and the stability of the lobe, if is being classified as Class C.	Based on the lack of contamination and the stability of the lobe, if is being classified as Class C.	Based on the lack of contamination and the stability of the lobe, if is being classified as Class C.	Based on the lack of contamination and the stability of the lobe, if is being classified as Class C.	Based on the lack of contamination and the stability of the lobe, if is being classified as Class C.

3.3 Surface Debris and Barrel Assessment

3.3.1 Surface Debris Assessment

A surface debris inventory was completed by collecting hand-held GPS waypoints where debris was visible or where debris fields appeared to terminate. A total volume and description of debris types, including hazardous and non-hazardous debris, was recorded for each debris area and has been summarized in Table 4. Barrels within the debris areas were not included in the surface debris inventory as these barrels were included in the barrel assessment inventory.

At FOX-E, there are total of twenty surface debris areas with the majority of surface debris residing in Dump A and Dump E. Dump A, B and E and Surface Debris Areas 8-11 reside outside of Crown Lands. Excluding Dump A and E, the surface debris areas are typically either located near the Station Area or in the vicinity of the Old Construction Camp and Beach Landing areas. Some surface debris is located near the access road along its entire length from the Station Area to the Beach Landing, excluding other delineated debris areas. In general, the majority of road debris is within 30 m of either side of the access road and resides outside of Crown Lands. The debris area perimeters, as well as concentrated areas of debris within delineated debris areas, are shown on Figures 2.0-6.0 and are based on the hand-held GPS points. There may be ordnance (blast caps) material in Debris Area #3 from some previous blasting activities at the location shown on Figure 3.0.

Dump A contained the majority of surface debris (and barrels) present on site, representing a significant component of the total volume of surficial non-hazardous and hazardous material. Dump A is located southeast of the Station Area, starting at the crest of the plateau extending over 1.5 km to the east, down the slope of the plateau as shown on Figure 6.0. The terrain within and around Dump A made it difficult to access during the site investigation with steep slopes of 3H:1V to 4H:1V and the surface consisted of a cobble and boulder field that tended to be loose. In this regard, care had to be taken to safely access and travel within the dump. Access will also be difficult during construction as the dump likely can only be accessed by foot from a helicopter as construction equipment likely cannot access this area without extreme difficulty.

Debris within Dump A was originally pushed off the crest of the plateau (Dump A Push Point) and was transported and naturally sorted by gravity down the slope producing zones with varying types of debris as shown in Figure 6.0. In general, the majority of hazardous and non-hazardous debris is located at higher elevations with less concentrated debris at lower elevations. Conversely, the number of barrels present was minimal at higher elevations increasing in numbers at lower elevations. Dump E is located adjacent to Dump A (to the west) and is significantly smaller in terms of size and volume of surface debris. The surface debris in the lower portion of Dump E was incorporated into the Dump A inventory as noted on Figure 6.0.

Photos and video were taken for the larger surface debris areas. Table 4 presents an inventory of surface debris by location. It should be noted that the surface debris covered extensive areas, in particular in the vicinity of the access road and the vicinity of Dump A. In many areas, extensive hand picking of small debris will be required during site clean-up. The extent of debris in some locations prevented a detailed inventory from being completed. However, while there is always the potential to miss debris during the investigation, we are confident that the majority of the areas containing debris have been identified.

Table 4: Summary of Surface Debris Areas at Durban Island

Debris Areas	Photo and Video Reference	Description of Components	Location	Estimated Aerial Extent of Debris (m^2)	Estimated Uncrushed Volume (m^3)	Estimated Non-Hazardous Crushed Volume (m^3)	Estimated Hazardous Crushed Volume (m^3)	Comments
1	Photo 188 and 189 at WP833 and WP834, Mov09	Debris: Tin cans, wood, electrical wire, fiberglass, rope	Southeast of Station POL Tanks	6,251	8	4	-	Sparsely scattered debris with higher concentrations of surface debris near the edge of the plateau.
2	Photo 191 Inuit Huts, Photo 192 Clay Ceramic with white powder at Inuit Building, Photo 193 Inuit Building, Mov 11-13	Debris: Tin cans, wood (timbers, planking, post), fiberglass, glass, concrete, metal wire, metal pipes, scrap metal, components of a piece of construction equipment, electrical wire and conduit, 2 electrical panels, stoves, counter tops, plumbing, Asbestos floor tiles, clay ceramic with unknown white powder, fire extinguisher.	Station Area including Inuit Huts and Inuit Building, not including the Antenna	38,520	70	50	2	Sparsely scattered debris except at areas of concentrated debris at the Inuit Huts, Inuit Building, and push point for Dump E. The Inuit Huts are demolished with remnants of a wood raft floor and it appears the Inuit Huts had electrical and water services, likely buried. The Inuit Building is also demolished with the remnants of a wood floor on concrete pads and is partially burnt.
3	Photo 203 Blast Drill Holes, Photo 204 Blasted Hole with Timber Foundation, Photo 205a, Mov16, Mov 17	Debris: Wood (planking, timber piles, etc.), rubber, glass, plastic, corrugated sheet metal, scrap metal, heater unit, large gas tank for vehicles (0.6m x 1.2m), mostly wood	North of Station Area	62,152	30	20	-	Sparsely scattered debris with higher concentrations of surface debris as you move towards the Station Area, especially around the Buried Debris Lobes. A large hole containing timber posts is present at WP956 that appears to have been blasted and may have been an attempt at a groundwater well. There are blast drill holes and detention cords in the area and there may be ordnance (blast caps) in the area. The timber posts within the large hole may have been a foundation to support a structure. There were no remnants of the structure nearby.
4	Photo 206	Debris: Scrap metal, timber pallets, acrylic looking substance	West of Station Area	2,269	3	2		
5	Photo 207 – 209, Mov 18	Debris: Tin cans, scrap metal, wood, destroyed battery, metal wire, fabric, mostly metal	West of Station Area	7,300	13	8.5	0.5	Sparsely scattered debris with two concentrated pockets of surface debris.
6	Photo 210, 211, Mov 19	Debris: Tin cans, scrap metal, wood, mostly metal	Northwest of Station Area, along edge of plateau	792	3	2	-	Concentrated debris area very close to the edge of the plateau (shear face)
7	-	Debris: mostly wood, some scrap metal	Southwest of Station Area, Former Barrel Storage Area	24,889	6	5	-	Very sparsely scattered debris in a large area, mostly within disturbed area. There is some partially buried debris within Former Barrel Storage Area such wood planks, barrels, and tracks to an old piece of equipment.
8	-	Debris: metal cables, scrap metal, wood, equipment track pads	BA 1 - Old Borrow Area, South of Access Road	95,920	3	2	-	Very sparsely scattered debris in a large area.
9	-	Debris: scrap metal and mostly wood fragments	BA 1 - Old Borrow Area, North of Access Road	27,614	3	2	-	Very sparsely scattered debris in a large area.
10	Photo 249	Debris: mostly wood, some scrap metal and tin cans	Off Drawings	1,613	0.75	0.5	-	Very sparsely scattered debris in a large area.
11	Photo 250	Debris wood fragments	Barrel Cache, west of Station Area	1,892	0.75	0.5	-	Very small volume of debris within barrel cache.
12	Photo E198	Debris: wood, scrap metal, furnace, rubber equipment tracks, rope, canvas	Area around and including the Inuit Hut at the Beach Landing	8,624	18	15	-	Some of the debris has been partially buried caused by surface runoff depositing transported material in this area.
13	Photo E207	Debris: wood, scrap metal, cables	Beach Landing east of road to Beach POL Tanks	8,768	4	3.5	-	Most of the debris has been partially buried caused by surface runoff depositing transported material in this area.
14	Photo E209	Debris: wood, scrap metal, metal bed frames, metal cables, timber poles	In vicinity of Beach POL Tanks	4,543	5	2	2	Some of the debris has been partially buried caused by surface runoff depositing transported material in this area.
15	Photo E261	Debris: wood, scrap metal, electrical cables, equipment track, wood weir, rubber	South of Dump B, East of Dump D	13,538	21	18	-	Wood Weir is located in runoff stream. May have been used to pond fresh water for potable water.
Road Debris	Photo 211 (2), Photo 212, Photo 236, Mov28	Debris: mostly wood, scrap metal, a metal sled near Road Section #4	Within 30 m of Access Road from Station Area to Beach Landing Area, excluding areas within other debris areas	N/A	30	20		-
Dump A	Photo 181 -186, Photo 200, 202 add Photos E50, E62, E67, E73, E75, E84, E89, E95, E142, E174, E175, E180, E184-E192	Debris: Barrels, tin cans, wood, rubber tires, plumbing, metal pipe values (painted), batteries, fibreglass, fire extinguisher, glass, rubber equipment tracks, paint cans, oil filters, rubber, mercury lamps, electrical wires and switches, grinding wheels, small compressed gas cylinder (50mm diam.), metal sled, plastic, metal cables, Styrofoam, fabric, metal tanks of various sizes, demolished vehicles, fire repressing tank (with exposed white powder, 03m diam x 0.75m), pieces of machinery,	South of Station, below plateau	26,5610	-	355	5	Figure 6.0 provides additional information such as the terrain profile, debris zones, photo location and orientation, locations of hazardous material.
Dump B	Photos E229, E233, E234-E237	Debris: wood (beams, timbers), scrap metal, equipment tracks, machine parts, metal cables, electrical wire, metal hauling truck boxes	Old Construction Camp, East of Road	6,803	52	35	-	Most of the debris is located in a concentrated area around the metal hauling truck boxes, but some debris does extend into the steam east of the area.
Dump C	Photos E242-E243, E247-E249	Debris: wood, scrap metal, tin cans, metal strapping	Near Old Construction Camp, West of Road	7,016	32	27	-	Some of the debris is partially buried and has been partially covered in vegetation.
Dump D	Photos E240, E251, E252, E265-E275	Debris: Barrels, wood, scrap metal, rubber, electrical cable, rope, machine parts, seat cushions, wooden crates, metal cables, wooden tables, equipment tracks, metal garbage cans, wooden cable spoils, tin cans, compressed gas cylinder , plumbing, metal strapping, stoves	Southwest of Dump B at Old Construction Camp Area	22,293	80	62	-	Some of the debris is partially buried.
Dump E	Photo 201	Debris: scrap metal, wood.	South of Station, below plateau west of Dump A	44,624	200 at top (not including bottom part)	59	1	Lower portion of Dump E surface debris assessment incorporated into Dump A inventory as noted on Figure 6.0. The surface debris in the remaining area was estimated from a Helicopter fly by.
TOTALS		-	693	10.5				

3.3.2 Barrel Assessment

The 2010 site investigation identified numerous barrels located at the Station Area, along the road, at Dump A, D and E, at the Old Construction Camp and at the Beach Landing for an approximate total of 6,910. The majority of the barrels were located at Dump A (3,010) and Dump D (2,828). Where reasonable, the barrels were inspected for contents (a total of 528 barrels were inspected). Of those barrels that were inspected for contents, approximately 60 barrels were identified to have liquid contents. Barrels that were identified to have liquid were marked with flagging tape and/or duct tape. The majority of the barrels at Dumps A, D, and E were not inspected for contents due to safety concerns.

In total, six barrel samples were collected and analyzed for the parameters outlined in the Barrel Protocol (INAC 2009) all from barrels located at the Station Area. A summary of the analytical results for the samples collected from the barrels is located in Table B4 in Appendix B. The following table summarizes the collected barrel samples:

Table 5: Barrel Assessment Summary

Sample Number	Location	Depth of Contents (cm)	Description of Contents	Comments	Analytical Results
B1	537652 E 7442597 N	10	Aqueous	Rusty sediment	The aqueous contents contain 110 ppm lead and must be **shipped south for disposal**.
B2	537654 E 7442598 N	10	Aqueous	Rusty sediment	No exceedances for the parameters tested under the Barrel Protocol Criteria
B3	5537646 E 7442602 N	8	Aqueous	Rusty sediment, slight hydrocarbon odour	No exceedances for the parameters tested under the Barrel Protocol Criteria
B4	537642 E 7442606 N	50	Aqueous	Rusty sediment	No exceedances for the parameters tested under the Barrel Protocol Criteria
B5	537526 E 7442527 N	40	Aqueous	Clear liquid is more viscous than water and has a solvent-like smell. Container is a ~10 L plastic jug.	No exceedances for the parameters tested under the Barrel Protocol Criteria
B6	537652 E 7442597 N	20	Organic/Aqueous	Dark brown organic layer and clear aqueous phase	No exceedances for the parameters tested under the Barrel Protocol Criteria

Sample B1, collected from a barrel located at the Station Area, contained 110 ppm lead. The Barrel Protocol Criteria and Disposal Summary which is included in the AMSRP states that an aqueous sample with greater than 100 ppm lead needs to be shipped south for disposal.

3.4 Demolition Assessment

3.4.1 Methodology

The demolition investigation conducted an inventory of the site facilities that would require dismantling for disposal. The investigation noted the construction, and any anticipated special disposal requirements, with the collection of samples for applicable analysis to confirm disposal requirements. The following lists the components of the completed demolition assessment:

- Inventory existing buildings; confirm size, foundation and construction material.
- Identify and estimate quantity of hazardous and non-hazardous materials.
- Confirm the identity of potentially contaminated PCB amended painted materials (PAP) with collection of paint samples and note the amount of paint coverage.
- Identify all asbestos-containing material; note where asbestos material is painted with PAP.
- Confirm the identity of potentially leachable lead material with collection of painted substrate samples.
- Confirm number, size, and construction material of roadway culverts.

The INAC Protocol states that PCB painted materials are considered regulated under CEPA when the component (paint and substrate) contain greater than 50 ppm total. However, the new PCB Regulations (SOR/2008-273) that came into effect on September 17, 2008 in Part 1 Section 1(2) states, "*For the purposes of these Regulations, if a solid or a liquid containing PCBs is composed of several matrices, the concentration of PCBs is based on the mass of the matrix in which the PCBs are located*." This means that for classification of waste painted with PCB amended paint, the mass of the substrate cannot be factored in with the mass of the paint to determine a total PCB concentration for the painted item as a whole, as has been done previously. As a result, compared to previous assessments, there will be more significant volumes of hazardous demolition materials that will require removal from the site based on the new regulations. AECOM has provided hazardous waste volumes based on the new and old regulations.

3.4.2 Summary

Facilities inventoried for demolition include the Module Train, Garage, Warehouse, POL Tanks and Pumphouse (Station Area and Beach Landing), Antenna and guide wire anchor pads, Water Reservoir and Pumphouse, Inuit Building and Huts and other associated facilities. Paint, asbestos and concrete samples were collected for analysis to determine the materials that would be considered hazardous materials.

A total of 12 paint samples were collected during the site investigation for PCB concentration determination and leachable lead testing. Samples were collected on materials suspected to be painted with PCB amended paint and the sample location, paint colour, percent paint coverage, extent of painted substrate was noted for each sample. At least one paint sample was collected from the major structures present on site, excluding the Garage.

Asbestos pipe insulation was widespread throughout the Garage, Warehouse, Module Train, and Water Reservoir and Pumphouse. The location and volume of asbestos pipe insulation present was inventoried and a total of two asbestos samples were collected. Other potential asbestos-containing items were also inventoried and included asbestos core doors, wallboard near furnaces, floor tiles, and painted asbestos. One concrete sample was collected from the electrical room in the Module Train.

Table 6 presents a summary of the demolition requirements at FOX-E.

Table 6: Summary of Demolition Assessment at Durban Island

				No Substrate Consideration		Substrate Consideration				
				Estimated Volumes (m^3)						
Structure	Photo Reference	Description of Components	Hazardous Material	Non-Hazardous (Crushed)	Total Hazardous (Crushed)	Non-Hazardous (Crushed)	Hazardous PAP (Crushed)-	Hazardous Asbestos (Crushed)	Hazardous PAP Asbestos (Crushed)	Comments
Antenna and Guide Wire Anchor Pads	Photo 194- Photo 197, Photo E40	Structural steel and associated hardware, guide wires, guide wire anchors (concrete pads:3.92m x 3.92m x 0.4m thick)	none	80	-	80	-		-	Results from the orange and white paint samples collected from the Antenna contained concentrations of PCBs below the relevant criterion.
Module Train	Photo 52-61,67-74, 85-94, 96-99, 101, 104-112, 114, 116-119, 121, 122 (2), 123, 126-129, 132-142, Photos E35, E36, E38, E159	25 m L x9 m W x 4.6 m H, metal cladding and insulated plywood paneling, timber crib foundation (creosote), Building contained electrical cabinets; 8 x CO2 tanks, 2 generators, 4 x diesel tanks, 7 water tanks Motors in small water storage room	PCB paint, both adhered and flaked on the walls, floor and structures such as tanks, generators, and the asbestos wrapped pipe. There is an estimated 250 lineal meters of asbestos wrapped pipe in the module train that was visible	93	86	108	55	3	13	Results from the paint samples collected from the interior and exterior were all above the relevant PCB criterion with the exception of one grey paint sample collected from the metal cabinets in the electrical room. The concrete sample collected from a stained area in the electrical room contained a total PCB concentration of 331 mg/kg which is above the relevant criterion.
Garage	Photo 1, 4, 5, 8, 9, 11, 12, 14, 16 (2), 18, 21 - 24	12.7 m L x 10.5 m, concrete floor with grating in half the floor and grating within the access ramps; interior and exterior metal cladding (insulated), 3 CO2 tank, 2 diesel tanks, furnace, generator	PCB paint, both adhered and flaked on the walls and structures such as tanks, generators, and the asbestos wrapped pipe. There is an estimated 9 lineal meters of asbestos wrapped pipe in the garage that was visible	57	5	59	1	1	1	No substrate samples were collected from this location.
Warehouse	Photo 25 – 27, 29, 31, 30 (2), 31 (2), 36 – 41, 43 – 45, 47 – 51, Photo E39	13.3 m L x 9.4 m W; metal cladding and insulated, plywood paneling, concrete, timber cribing and steel (beam) foundation, 1 x CO2 tank, 2 diesel tank, furnace; water tanks, 2.8m x 4.6m washroom unit is attached to the east end of Warehouse	PCB paint, both adhered and flaked on the plywood interior walls, tanks, and the asbestos wrapped pipe. There is an estimated 15 lineal meters of asbestos wrapped pipe in the washroom addition that was visible	39	14	38	13	2	0	An insulation sample was collected from the interior walls and was found to contain no chrysotile.
Windcone	-	Steel windcone	none	2	-	2	-	-	-	
Water Reservoir Tank and Pumphouse	Photo 146 – 155, 157 – 160, 162, 163, 166 – 171, Photos E29, E30 and E34	5.0 m diameter x 3.0 H Insulated tank; 2.0 m W x 2.0 m L pump house, fibreglass cladding and insulated, concrete pad, 2 diesel tanks, 2 x CO2 tanks, steam generator	PCB paint, both adhered and flaked on the walls, ceiling, concrete floor generators, and the fiberglass wrapped pipe. There is an estimated 60 lineal meters of fiberglass wrapped pipe in the Water Reservoir Tank and Pump House that was visible	29	7	31	0	5	0	Results from the paint samples from the interior were all greater than the relevant PCB criterion. A piping insulation sample was collected from the interior and was found to contain 40 % chrysotile.
Station POL Tanks (x2) and Pumphouse	Photo 172, 173, 175 – 188, Photo E24	5.0 m diameter x 3.0 H tank (x2); 2.0 m W x 2.0 m L pump house, metal cladding; fuel pump, 6 large valves, piping, timber crib foundation, and no roof	PCB paint, both adhered and flaked on the walls, timber cribbing, fuel pump, piping, and valves.	7	6	7	0	6	0	Results from the paint sample collected from the exterior of the Station POL Tank contained PCBs below the criterion but leachable lead of 68 mg/L which is above the TDG criterion (5 mg/L).
Beach POL Tanks (x2)	Photos E211-E219	5.0 m diameter x 3.0 H tank (x2); and 4 valves		10	3	10	-	3	-	No substrate samples were collected from this location.
Dump B Gravel Boxes	Photos E236, E237 and E255			10	-	10	-	-	-	A paint sample was collected and analyzed for PCBs and was found to contain concentrations less than the applicable criterion.
Total:				327	121	345	69	20	14	

A complete summary of the paint and asbestos test results are presented in Table B5 in Appendix B. Of all the paint samples that were collected and analyzed for PCBs, only two contained concentrations below the applicable CEPA criterion. One paint sample collected from a Station POL Tank contained leachable lead at 68 mg/L which is above the relevant TDG criterion. The piping insulation in the Water Reservoir and Pumphouse was found to be asbestos-containing. A concrete sample collected from the Module Train electrical room was found to contain PCBs at a concentration of 3,301 mg/kg.

3.5 Summary of Hazardous and Non-Hazardous Wastes Materials

Based on the combined volumes of surface debris inventory, barrel assessment, and demolition inventory, the anticipated breakdown of hazardous versus non-hazardous debris at the FOX-E site is as follows:

- The total volume of non-hazardous waste is estimated to be 2,402 m^3 (crushed). This includes demolition waste, surface debris, debris at dump areas and barrels.
- The total volume of hazardous waste is estimated to be 132 m^3 (crushed).

Sample locations are identified on Figures 2.0-6.0 in Appendix A.

3.5.1 Alternative Summary of Hazardous and Non-Hazardous Waste Materials

Based on the combined volumes of surface debris inventory, barrel assessment, and demolition inventory, the anticipated breakdown of hazardous versus non-hazardous debris considering substrate calculations at the FOX-E site is as follows:

- The total volume of non-hazardous waste is estimated to be 2,420 m^3 (crushed). This includes demolition waste, surface debris, debris at dump areas and barrels.
- The total volume of hazardous waste is estimated to be 114 m^3 (crushed).

3.6 Surface Water Assessment

3.6.1 Methodology

Five grab water samples were collected to assess potential contaminant levels. Corresponding sediment samples were not collected due to the abundance of rocks and limited fine material (Appendix C, E220). Soil samples were not collected from the test pit south of the beach Barrel Cache since it filled with groundwater upon completing the test pit (Appendix C, E223).

3.6.2 Results

3.6.2.1 Surface Water

Five water samples were collected from five locations in addition to one field blank. One sample was collected from the ocean south of the Barrel Cache at the Beach Landing (Appendix C, E220). Freshwater samples were also collected from a test pit south of the Barrel Cache at the beach (Appendix C, E223), the blast hole north of the Main Station (Appendix C, E167), the creek between the two beach landing areas (Appendix C, E224) and the creek east of Dump B at the Old Construction Camp area (Appendix C, E238). The results are described in detail below.

Marine

One marine sample was collected at Durban Island south of the Barrel Cache at the beach. The sample was submitted for routine chemistry, dissolved metals, PCB and hydrocarbon analyses and the results are summarized in Tables B6 to B9 in Appendix B. The results were compared to the CCME Guidelines for Protection of Aquatic Life for Marine Environments to establish the general quality of the water.

The samples were within range for the pH guideline of 7.0 to 8.7 and below the Nitrate-N guideline of 3.600 mg/L. Neither PCBs nor hydrocarbons were detected in the marine sample. The water sample was originally analyzed for metals by ICP, and not ICPMS which returns lower detection limits. Since this was a laboratory error, the sample was reanalyzed by ICPMS within the applicable sample holding time at no cost to the project. All metals results were below the applicable guidelines with the exception of arsenic, cadmium and chromium. Despite the reanalysis, the detection limits for arsenic, cadmium and chromium still exceed the applicable guidelines and therefore, cannot be classified.

The results for the marine sample indicate that there are no impacts from station activities.

Freshwater

Freshwater samples were collected from two streams, one test pit and one blast hole. The samples were submitted for routine chemistry, dissolved metals, PCB and hydrocarbon analyses and the results are summarized in Tables B6 to B9 in Appendix B. The results were compared to both the CCME Guidelines for the Protection of Aquatic Life for Freshwater environments as well as the Guidelines for Canadian Drinking Water Quality.

The analytical results for sample W3, collected from a test pit south of the Barrel Cache at the beach, indicate that the iron concentration is equal to the applicable guideline with a value of 0.3 mg/L. As was the case with the marine sample, the freshwater samples were originally analyzed for metals by ICP, and not ICPMS which returns lower detection limits. Since this was a laboratory error, the samples were reanalyzed by ICPMS within the applicable sample holding time at no cost to the project. The original results showed that the iron concentration was lower at 0.02 mg/L. PCB and PHC concentrations were below the laboratory detection limits. All other routine and dissolved metals results were below the applicable guidelines with the exception of cadmium and selenium. Despite the reanalysis, the detection limits for cadmium and selenium still exceed the applicable guidelines and therefore, cannot be classified.

The results for the freshwater samples indicate that there are no impacts from station activities.

3.7 Assessment of Granular Borrow Sources

Granular fill is required for construction of new landfills, remediation/re-grading of existing dumps and debris areas, as general backfill for excavation areas, and for landfarm construction. It is anticipated that, where possible, existing disturbed areas will be utilized before exploiting undeveloped areas to minimize environmental impacts associated with clean-up construction.

3.7.1 Methodology

A review of the historical aerial photography for the site was completed as part of the site investigation planning. The aerial photo review provided the evaluation of terrain types, potential borrow sources, and potential areas for the

construction of new landfills or landfarms. Aerial photo interpretation of the main station area was difficult due to thick snow cover at the time the air photo was taken. In this regard, a complete evaluation of site conditions in the vicinity of the main station area was not feasible during the site investigation planning. Identification and confirmation of the potential borrow areas as suitable sources of granular fill material were completed during the site investigation. Additional borrow sources were also identified during the site investigation program. The site investigation consisted of excavating a total of 28 shallow testpits using hand tools (shovel). Representative soil samples were collected from 20 testpits for laboratory index testing. The testpit depths varied from 0.6 m to 1.4 m, and were terminated due to frozen ground, seepage or sloughing, or refusal on rock or boulders. The testpits were backfilled with excavated soils after completion.

Photographs were taken of each borrow area, excavated testpits, and of the excavated material. Selected site photographs are in Appendix C.

Laboratory testing was conducted on selected soil samples to determine soil types encountered in each borrow area. The laboratory testing generally included determination of moisture contents, particle size distribution (sieve and hydrometer analysis), Standard Proctor maximum dry density, and soil salinity. The laboratory test results are presented in Appendix D and are also shown on testpit logs in Appendix F.

3.7.2 Granular Material Types and Specifications

The granular material types and their typical uses are as follows:

3.7.2.1 Type 1 Granular Fill

Type 1 Granular Fill typically consists of coarse gravel or cobble size material used for erosion protection on finished slopes or within drainage courses. The gradation requirements of Type 1 Granular Fill may vary significantly depending on the material availability and specific application. If used at this site, Type 1 Granular Fill would likely consist of oversize material from the production of other granular materials or possibly talus (fallen material) at the toe of slopes. If Type 1 Granular Fill material is short on site, finished slopes may be flattened by using Type 2 Granular Fill material without armouring. The grain size distribution shown in Table 7 is recommended:

Table 7: Grain Size Distribution Limits - Type 1 Granular Fill

Particle Size (mm)	% Passing
500	100
200	40-100
100	20-70
50	0-50
10	0-10

3.7.2.2 Type 2 Granular Fill

Type 2 Granular Fill is well graded sand and gravel used for construction of berms and cover. Type 2 Granular Fill should have a grain size distribution within the limits presented on Table 8.

Table 8: Grain Size Distribution Limits - Type 2 Granular Fill

Particle Size (mm)	% Passing
250	100
50	60-100
5	25-60
0.425	8-37
0.08	2-25

3.7.2.3 Type 3 Granular Fill

Type 3 Granular Fill is a select material with a maximum particle size of 200 mm. It is generally obtained from excavations or other approved sources and is used for general site grading and backfilling excavations. Type 2 and Type 4 Granular Fills are acceptable alternatives for Type 3 Granular Fill.

3.7.2.4 Type 4 Granular Fill

Type 4 Granular Fill is a non-saline, well graded sand and silt with some gravel used for construction of containment berms and backfill of key trench excavations for the Tier II Soil Disposal Facility. If used as backfill for the key trench excavations, the water content of Type 4 Granular Fill must be adjusted to achieve a minimum degree of saturation of 90%. Type 4 Granular Fill may be wet and soft at the time of construction and it may be necessary to air-dry it, if used for construction of berms, so that it can be placed and compacted according to the specifications. The material should have a maximum salinity of 5 parts per thousand (5 ppt) and have a grain size distribution within the limits presented on Table 10.

Table 10: Grain Size Distribution Limits – Type 4 Granular Fill

Particle Size (mm)	% Passing
100	100
50	80-100
12.5	55-95
5	45-90
2	35-85
0.425	25-75
0.08	15-40

3.7.2.5 Type 5 Granular Fill

Type 5 Granular Fill is used for geomembrane bedding and should consist of rounded particles with a maximum size less than 25 mm. This type of fill material should be free from angular particles, stones larger than 25 mm in diameter, waste or other deleterious materials. Type 5 Granular Fill material should have a particle size distribution with the limits presented on Table 11.

Table 11: Grain Size Distribution Limits – Type 5 Granular Fill

Particle Size (mm)	% Passing
25	100
5	80-100
1	40-80
0.425	15-70
0.15	0-55
0.08	0-10

3.7.2.6 Type 6 Granular Fill

Type 6 Granular Fill is generally used as an intermediate cover within landfills and is obtained from excavations or other sources generally consisting of gravel or sand in an unfrozen state and free of deleterious material. The maximum particle size of the material should be less than 150 mm with less than 8% of the material, by weight, passing 0.08 mm sieve.

3.7.3 Borrow Area Locations

Eight borrow areas were identified and investigated as part of the site investigation. Four of the borrow areas are located within the vicinity of the Station in proximity to the majority of work areas while the remaining four borrow areas are located near the old construction camp and beach area. Borrow areas 1, 2, and 8 are located on IOL. Borrow Area 1 is located in a large existing borrow area that was likely used to construct the existing access road and gravel pad at the station. Due to the large size of Borrow Area 1 and the variability of the available material, four smaller sections (BA-1A to -1D) have been identified within Borrow Area 1.

Obtaining representative samples of material with cobbles/boulders (particles greater than 75 mm) is difficult since representative ASTM samples sizes of material of this size would need to be in the order of hundreds of kg, increasing in size with the maximum particle size present. Properly sampling material with particles greater than 75 mm was deemed not to be practical for the purposes of this site investigation and therefore, cobble/boulder fractions (> 75 mm) were not sampled but were visually estimated during the site investigation and combined with the lab sieve analyses results for the < 75 mm material sampled to produce a comprehensive gradation of the material in the borrow areas. The suitability and availability of the material types identified within borrow areas will have to be confirmed during the construction phase. The combined visual estimate for cobble/boulder (> 75 mm) and the sieve analyses gradations are shown on the testpit logs in Appendix F.

The locations of the borrow areas and the correlating testpits are shown on Figures 3.0, 4.0, and 5.0 in Appendix A. Each of the borrow areas is described in the following sections and are summarized in Table 6.

3.7.3.1 Borrow Area 1 (BA-1)

BA-1 is situated west of the main station site and south of the main access road with easy accessibility as shown on Figure 3.0. BA-1 is subdivided into four sections; BA-1A, BA-1B, BA-1C, and BA-1D.

BA-1 is bound to the west by a steep ridge. The northern quarter of BA-1 slopes and drains towards the access road and the southern three quarters of the area slopes and drains towards the ocean.

The western portion of the BA-1A is undisturbed and the eastern portion of the area appears to have been previously mined. BA-1B and BA-1C are undisturbed and BA-1D appears to have been previously mined. BA-1B, BA-1C, and BA-1D are not easily accessible from the existing access road and may require construction of an access road into the borrow area if used during construction.

A total of five testpits were excavated in BA-1 to characterize the subsurface material and to determine groundwater and permafrost conditions; TP-03 and TP-17 (BA-1A), TP-02 and TP-04 (BA-1B), and TP-01 (BA-1D). Subsurface stratigraphy in the borrow area is variable but generally consists of gravel and sand with differing fractions of cobbles and silt. The testpits were terminated at depths from 0.4 m to 1.37 m due to seepage and sloughing or refusal at bedrock. Seepage was encountered in TP-03 and TP-17 at a depth of 0.4 m and in TP-04 at a depth of 0.7 m. Seepage was not encountered in TP-01 or TP-02.

All sections of BA-1 contained cobbles/boulders (> 75 mm nominal size) and estimates of the cobbles/boulders were performed onsite. The visual estimates of cobbles/boulders were combined with the sieve analyses results and the combined gradations are shown on the testpit logs in Appendix F.

The combined gradations for BA-1A and BA-1B have 10.2 % to 14.9 % silt/clay, 35.1 % to 41.3 % sand, 23.7 % to 37.5 % gravel, and 10 % to 30 % cobbles/boulders indicating that BA-1A and BA-1B contain material generally suitable as Type 2 Granular Fill with minimal screening required to meet gradation limits. BA-1C was visually identified on site as a potential source of Type 1 Granular Fill. The combined gradations of BA-1D have 7.4 % to 7.6 % silt/clay, 64.9 % to 66.9 % sand, 22.7 % to 23.4 % gravel, and 2.0 % to 5.0 % cobbles/boulders indicating that BA-1D contains material suitable as Type 5 Granular Fill with minimal screening required to meet gradation limits. The grain size distribution curves of the sieve analyses results, visual estimates and gradation limits of Granular Fill types are shown on Figures 7 to 11 in Appendix A.

The average moisture content of the soil samples (< 75 mm size) for BA- 1 was approximately 10.8 %.
Due to the poor drainage within the borrow and the nature of the material, the contractor may have to manage drainage and runoff within and around the borrow area and moisture conditioning may be required during construction.

Appendix C contains select photos showing the BA-1 site and locations and conditions of the testpits; BA-1A (G138, G140) with TP-03 (G17, G19) and TP-17 (G151, G152), BA-1B (G143) with TP-02 (G8, G13) and TP-04 (G25, G27), BA-1C (G142), and BA-1D (G147) and material excavated from TP-01 (G6).

The identified area of BA-1A is approximately 40,000 m^2 in size. Assuming an average thickness of 0.8 m of material, the total volume of material that can be obtained from this area is approximately 32,000 m^3 (prior to processing).

The identified area of BA-1B is approximately 12,000 m^2 in size. Assuming an average thickness of 1.2 m of material, the total volume of material that can be obtained from this area is approximately 14,400 m^3 (prior to processing).

The identified area of BA-1C is approximately 7,500 m^2 in size. Assuming an average thickness of 0.3 m, the volume of Type 1 Fill that can be obtained from this area is approximately 2,300 m^3 (prior to processing). .

The identified area of BA-1D is approximately 18,000 m^2 in size. Assuming an average thickness of 0.6 m of material, the total volume of material that can be obtained from this area is approximately 10,800 m^3 (prior to processing).

The depth of the watertable, frozen ground, and/or bedrock may influence the availability of estimated volumes of material in the borrow areas.

3.7.3.2 Borrow Area 2 (BA-2)

BA-2 is located west of the main station site and north of an access road as shown on Figure 3.0. The area is easily accessible by the existing access road and has been previously disturbed and appears to have been previously mined.

Two testpits (TP-05, TP-06) were excavated in this borrow area to characterize the subsurface material and to determine groundwater and permafrost conditions. Subsurface stratigraphy in the borrow area consisted of an uneven cover of peat with gravel and cobbles at surface underlain by sand with variable amounts of silt, gravel, and cobbles. The testpits were terminated at depths of 0.85 m and 1.28 m due to refusal on frozen ground. Seepage was encountered in TP-06 at an approximate depth of 1.0 m. Seepage was not encountered in TP-05.

This borrow area contained trace material cobbles/boulders in the vicinity of TP-06 and a visual estimate of the material fractions cobbles/boulders was performed onsite. The visual estimate was combined with the sieve analysis results and the combined gradation is shown on the testpit log in Appendix F. The combined gradations for BA-2 have 5.4 % to 17.2 % silt/clay, 48.2 % to 75.5 % sand, 14.6 % to 19.1 % gravel, and 0 % to 20 % cobbles/boulders indicating that BA-2 contains material generally suitable as Type 4 and Type 5 Granular Fill. The grain size distribution curves of the sieve analyses results, visual estimates, and gradation limits of Granular Fill types are shown on Figures 12 and 13 in Appendix A.

The average moisture content of the soil samples (< 75 mm size) was approximately 13.3 %. Due to the poor drainage within the borrow and the nature of the material, the contractor may have to manage drainage and runoff within and around the borrow area and moisture conditioning may be required during construction.

Salinity testing was conducted on soil samples from TP-05 and TP-06. The samples both had a salinity of 0.1 ppt indicating that the borrow material is non-saline.

Appendix C contains select photos showing the BA-2 site (G48, G53, G58, and G59) and locations and conditions of testpits TP-05 (G30, G34) and TP-06 (G36, G38).

The identified area is approximately 11,300 m^2 in size. Assuming an average thickness of 1.0 m of material, the total volume of material that can be obtained from this area is approximately 11,300 m^3 (prior to processing). The depth of the watertable, frozen ground, and/or bedrock may influence the availability of estimated volumes of material in the borrow area.

3.7.3.3 Borrow Area 3 (BA-3)

BA-3 is located west of the main station site, north of an access road, between proposed landfills 1 and 3 as shown on Figure 3.0. The area is easily accessible by the existing access road, however the access road is wet and in poor condition and will require significant improvement for future use. The area is undisturbed, relatively flat, very wet with standing water at surface.

One testpit (TP-13) was excavated in this borrow area to characterize the subsurface material and to determine groundwater and permafrost conditions. Subsurface stratigraphy in the borrow area consisted of silty sandy gravel. The testpit was terminated at a depth of 0.61 m due to seepage and sloughing. Seepage was encountered in the testpit at an approximate depth of 0.2 m.

This borrow area contained trace cobbles/boulders and a visual estimate of the cobbles/boulders fraction was performed onsite. The visual estimate was combined with the sieve analysis results and the combined gradation is shown on the testpit log in Appendix F. The combined gradation for BA-3 has 23.8 % silt/clay, 22.0 % sand, 44.3 % gravel, and 10 % cobbles/boulders indicating that BA-3 contains material generally suitable as Type 4 Granular Fill with minimal required screening and may also be suitable as Type 2 Granular Fill at the fine end of the specification. The grain size distribution curve of the sieve analysis results, visual estimates, and gradation limits of Granular Fill types are shown on Figure 14 in Appendix A.

The moisture content of the soil sample (< 75 mm diameter) was approximately 17.1 %. This borrow area was wet and had standing water at surface at the time of the investigation. The contractor may have to manage drainage and runoff within and around the borrow area and moisture conditioning may be required during construction.

Salinity testing was conducted on a soil samples from TP-13. The sample had a salinity of 0.2 ppt indicating that the borrow material is non-saline.

Appendix C contains select photos showing the BA-3 site and location and condition of TP-13 (G115, G117).

The identified area is approximately 6,000 m^2 in size. Assuming an average thickness of 0.6 m of material, the total volume of material that can be obtained from this area is approximately 3,600 m^3 (prior to processing).The depth of the watertable, frozen ground, and/or bedrock may influence the availability of estimated volumes of material in the borrow area.

3.7.3.4 Borrow Area 4 (BA-4)

BA-4 is located west of the main station site, approximately 150 m north of an access road, and north of Potential Landfill Area 1 as shown on Figure 3.0. The area is undisturbed, easily accessible by the existing access road, and gently sloping to the west.

One testpit (TP-09) was excavated in this borrow area to characterize the subsurface material and to determine groundwater and permafrost conditions. Subsurface stratigraphy in the borrow area consisted of silty sand with some gravel, cobbles, and boulders underlain by a sand and boulder layer. The testpit was terminated at a depth of 1.0 m due to seepage and sloughing. Seepage was encountered in the testpit at an approximate depth of 0.6 m.

This borrow area contained cobbles/boulders and a visual estimate of the cobbles/boulders fraction was performed onsite. The visual estimate was combined with the sieve analysis results and the combined gradation is shown on the testpit log in Appendix F. The combined gradation for BA-4 has 15.0 % silt/clay, 24.0 % sand, 6.0 % gravel, and 55.0 % cobbles/boulders indicating that BA- 4 contains material that may be suitable as Type 3 Granular Fill with considerable screening (up to 40 %) of oversize material required to meet gradation limits. The screened oversize material may be suitable for use as Type 1 Granular Fill. The grain size distribution curve of the sieve analysis results and visual estimates are shown on Figure 15 in Appendix A.

The moisture content of the soil sample (< 75 mm diameter) was approximately 17.8 %. The material tends to be wet due to the poor drainage within the borrow and the nature of the material. The contractor may have to manage drainage and runoff within and around the borrow area and moisture conditioning may be required during construction.

Appendix C contains select photos showing the condition of and material excavated from TP-09 (G86, G87).

The identified area is approximately 2,500 m^2 in size. Assuming an average thickness of 1.0 m of material, the total volume of material that can be obtained from this area is approximately 2,500 m^3 (prior to processing). The depth of

the watertable, frozen ground, and/or bedrock may influence the availability of estimated volumes of material in the borrow area.

Considering the amount of processing that may be required to obtain material suitable for use as granular fill, this area may be unsuitable for development as a borrow area.

3.7.3.5 Borrow Area 5 (BA-5)

BA-5 is located east of an access road leading to the main beach landing area as shown on Figure 5.0. The area is easily accessible by the existing access road and appears to have been previously disturbed and appears to have previously mined. The area slopes gently towards the ocean.

Two testpits (TP-19, TP-20) were excavated in this borrow area to characterize the subsurface material and to determine groundwater and permafrost conditions. Subsurface stratigraphy in the borrow area consisted of sandy, clayey silt and silty sand. The testpits were terminated at depths of 1.19 m and 1.16 m due to seepage. Seepage was encountered in both testpits at an approximate depth of 1.0 m.

Sieve analyses were conducted on samples from both testpits. The samples had 2.5 % and 6.1 % gravel, 30.6 % and 54.3 % sand, 49.9 % and 30.7 % silt, and 17.0 % and 8.9 % clay. The sand and silt encountered within this area is non-granular and does not fall within the gradation limits of the Granular Fill material types.

The average moisture content of the soil samples was approximately 17.6 % indicating that the materials in this borrow area would require moisture conditioning if used during construction. Salinity testing was conducted on soil samples from TP-19 and TP-20. The samples had a salinities of 1.0 ppt and 1.1 ppt indicating that the borrow material is non-saline.

Appendix C contains select photos showing the BA-5 site (G198, G199) and locations and conditions of testpits TP-19 (G189, G194) and TP-20 (G195, G197).

Considering the non-granular composition and high moisture content, the materials available in this area are not suitable for construction purposes.

3.7.3.6 Borrow Area 6 (BA-6)

BA-6 is located west of an access road leading to the secondary beach landing area as shown on Figure 5.0. The area is undisturbed and easily accessible by the existing access road. The area slopes gently towards the ocean.

Three testpits (TP-21 to TP-23) were excavated in this borrow area to characterize the subsurface material and to determine groundwater and permafrost conditions. Subsurface stratigraphy in the borrow area generally consisted silty gravelly sand. The testpits were terminated at depths from 0.98 m to 1.1 m due refusal at a boulder layer or seepage. Seepage was encountered in TP-22 and TP-23 at an approximate depth of 1.0 m. Seepage was not encountered in TP-21.

This borrow area contained trace cobbles/boulders and visual estimates of the cobbles/boulders fractions were performed onsite. The visual estimates were combined with the sieve analyses results and the combined gradations are shown on the testpit logs in Appendix F. The combined gradations for BA-6 have 16.6 % to 26.8 % silt/clay, 42.4 % to 48.8 % sand, 19.4 % to 33.8 % gravel, and 3 % to 10 % cobbles/boulders indicating that BA-6 contains material generally suitable as Type 4 Granular Fill with minimal screening required to meet gradation limits. The grain size distribution curves of the sieve analyses results, visual estimates, and gradation limits of Type 4 Fill are shown on Figures 18, 19, and 20 in Appendix A.

The average moisture content of the soil samples (< 75 mm diameter) was approximately 10.7 %. The contractor may have to manage drainage and runoff within and around the borrow area and moisture conditioning may be required during construction.

Salinity testing was conducted on soil samples from TP-21, TP-22, and TP-23. The samples had a salinities of 0.2 ppt, 0.4 ppt, and 0.2 ppt, respectively, indicating that the borrow material is non-saline.

Appendix C contains select photos showing the BA-6 site (G225 and G226) and locations and conditions of testpits TP-21 (G217, G218), TP-22 (G221, G224), and TP-23 (G232, G233).

The identified area is approximately 20,000 m^2 in size. Assuming an average thickness of 1.0 m of material, the material that can be obtained from this area is approximately 20,000 m^3 (prior to processing). The depth of the watertable, frozen ground, and/or bedrock may influence the availability of estimated volumes of material in the borrow area.

3.7.3.7 Borrow Area 7 (BA-7)

BA-7 is located west of an access road, north of the beach as shown on Figure 4.0. The area is easily accessible by the existing main access road and has been previously disturbed, is likely the location of the old construction camp or laydown area. The area slopes gently to the south towards the ocean. This area was investigated as a potential alternate site for the construction camp/laydown area but could be used as a potential source for borrow material prior to construction.

Two testpits (TP-24, TP-25) were excavated in this borrow area to characterize the subsurface material and to determine groundwater and permafrost conditions. Subsurface stratigraphy in the borrow area consisted of cobbly gravel and sand to sand with some gravel and cobbles. The testpits were both terminated at a depth of 1.0 m due to refusal at a boulder layer. Seepage was not encountered in either of the testpits.

This borrow area contained cobbles/boulders and visual estimates of the cobbles/boulders fractions were performed onsite. The visual estimates were combined with the sieve analyses results and the combined gradations are shown on the testpit logs in Appendix F. The combined gradations for BA-7 have 4.5 % to 7.9 % silt/clay, 25.8 % to 31.6 % sand, 25.5 % to 27.8 % gravel, and 35 % to 42 % cobbles/boulders indicating that BA-7 contains material generally suitable as Type 2 Granular Fill with minimal screening required to meet gradation limits. The grain size distribution curves of the sieve analyses results, visual estimates, and gradation limits of Type 2 Granular Fill are shown on Figures 21 and 22 in Appendix A.

The average moisture content of the soil samples (< 75 mm) was approximately 11.6 %. The contractor may have to manage drainage and runoff within and around the borrow area and moisture conditioning may be required during construction

Appendix C contains select photos showing the BA-7 site (G258 and G261) and locations and conditions of testpits TP-24 (G294, G296) and TP-25 (G290, G292).

The identified area is approximately 5,600 m^2 in size. Assuming an average thickness of 1.0 m of material, the total volume of material that can be obtained from this area is approximately 5,600 m^3 (prior to processing). The depth of the watertable, frozen ground, and/or bedrock may influence the availability of estimated volumes of material in the borrow area.

3.7.3.8 Borrow Area 8 (BA-8)

BA-8 is located west of an access road, north of a former construction camp as shown on Figure 4.0. The area is easily accessible by the existing access road and had been disturbed by probable excavation and blasting during previous mining activities. The area slopes gently south towards the ocean.

Three testpits (TP-26 to TP-28) were excavated in this borrow area to characterize the subsurface material and to determine groundwater and permafrost conditions. Subsurface stratigraphy in the borrow area generally consisted of gravel and sand with variable amounts of cobbles. The testpits were terminated at depths from 0.69 m to 1.28 m due refusal at bedrock or a boulder layer. Seepage was not encountered in the testpits.

This borrow area contained cobbles/boulders and visual estimates of the cobbles/boulders fractions were performed onsite. The visual estimates were combined with the sieve analyses results and the combined gradations are shown on the testpit logs in Appendix F. The combined gradations for BA-8 have 3.0 % to 11.4 % silt/clay, 13.7 % to 41.7 % sand, 29.3 % to 68.3 % gravel, and 15 % to 25 % cobbles/boulders indicating that BA-8 contains material generally suitable as Type 2 Granular Fill with minimal screening required to meet gradation limits. The grain size distribution curves of the sieve analyses results, visual estimates, and gradation limits of Type 2 Granular Fill are shown on Figures 23, 24, and 25 in Appendix A.

The average moisture content of the soil samples (< 75 mm diameter) was approximately 4.5 %. The contractor may have to manage site drainage and runoff and moisture conditioning may be required during construction.

Appendix C contains select photos showing the BA-8 site (G272, G275, G277, and G280) and locations and conditions of testpits TP-26 (G268, G270), TP-27 (G285, G286), and TP-28 (G287, G289).

The identified area is approximately 4,000 m^2 in size. Assuming an average thickness of 1.0 m of material, the total volume of material that can be obtained from this area is approximately 4,000 m^3 (prior to processing). The depth of the watertable, frozen ground, and/or bedrock may influence the availability of estimated volumes of material in the borrow area.

3.7.4 Summary of Borrow Materials

The soil types encountered in the borrow areas generally comprise Type 2 and Type 4 Granular Fills. A summary of granular material that can be obtained from the potential borrow areas is presented in Table 12.

Table 12: Borrow Area Summary

Borrow Area		Available Potential Granular Fill Type[1]	Area (m^2)	Depth (m)	Volume (m^3)	Comments
BA-1	BA-1A	2	40,000	0.8	32,000	Undisturbed
	BA-1B	2	12,000	1.2	14,400	Undisturbed
	BA-1C	1	7,500	0.3	2,300	Undisturbed
	BA-1D	5	18,000	0.6	10,800	Disturbed
BA-2		4, 5	11,300	1.0	11,300	Disturbed
BA-3		2, 4	6,000	0.6	3,600	Undisturbed
BA-4		1, 3	2,500	1.0	2,500	Undisturbed
BA-5		--	5,000	1.2	6,000[2]	Disturbed
BA-6		4	20,000	1.0	20,000	Undisturbed
BA-7		2	5,600	1.0	5,600	Disturbed
BA-8		2	4,000	1.0	4,000	Disturbed

[1] Processing (blending and screening) will likely be required to produce the desired material type in the majority of borrow areas.

[2] Material from Borrow Area 5 has been determined as unsuitable for construction use.

3.8 Assessment of Proposed Landfill Locations

It is anticipated that the final clean-up of the site will incorporate a non-hazardous waste landfill (NHWLF) for the disposal of demolition material and debris. Depending on the contaminated soil volumes a secure soil disposal facility (SSDF) for Tier II (and potentially hydrocarbon) contaminated soil and/or a landfarm for the treatment of hydrocarbon impacted soils may be required. None of these facilities (SSDF and landfarm) will be permitted to accept hazardous soil or hazardous demolition material (other than double bagged asbestos).

3.8.1 Methodology

For investigation purposes, it was assumed that each of the facilities noted above would be required for site clean-up. During site investigation planning, potential locations could not be identified due to thick snow cover at the time the air photo was taken. In this regard, a complete evaluation of site conditions in the vicinity of the main station area was not feasible during the site investigation planning. Landfill locations were identified and investigated during the field program, noting grade, surface hydrology, vegetation cover, and subsurface soil, permafrost and groundwater conditions. Subsurface conditions were observed with the excavation of testpits. The potential landfill areas were assessed on a conceptual basis for the purpose of selecting the preferred location once the final remedial volumes have been defined. While the volume of contaminated soil will dictate the final size of the SSDF and landfarm, it is the requirement for the landfill in the final design that will most greatly influence the location for each facility. For example, based on soil conditions, there may be a preferred location for an SSDF that would preclude the construction of a NHWLF at that particular location.

Information requirements investigated during the 2010 field program considered the following issues:

- Is the area of sufficient size based on disposal facilities constructed on similar sites? In this regard, it is anticipated that an SSDF and NHWLF will have footprints in the order of 3,500 m^2. The footprint for a landfarm may in the order of 15,000 m^2.

- Does the area have suitable soil and groundwater conditions for the facility under consideration? For example, it is important to reach either saturated ground or ice rich permafrost in an area where a perimeter cut-off trench is required e.g. SSDF.
- Is the area in a location with limited surface water run-off or where surface run-off can be redirected away from the facility? Drainage should not be impeded.
- Does the location have relatively flat topography? In some cases, a uniformly but gently sloping ground surface may be preferable to achieve good drainage on final covers without having to heighten upgradient berms.
- Is there an appropriate setback distance from water bodies?
- Does the location avoid or minimize the possibility of previously contaminated soil or sub-surface migration of contaminants below the facility where it may be detected in post-construction monitoring?
- Is the area in close proximity to work areas (landfill excavation, demolition, contaminated soil excavation, etc.)?
- Is there good access for construction equipment?
- Is the area disturbed or undisturbed? Preference is generally given to previously disturbed areas to minimize the impact on natural environment.

A description of each site under consideration with respect to the design issues identified above is provided in the following sections.

3.8.2 Non-Hazardous Waste Landfill

It is our understanding that a non-hazardous landfill (NHWLF) will be constructed to accept waste that primarily includes material from the demolition of existing structures, surface debris and any debris sorted out from landfill excavations. The majority of the waste would be treated and untreated wood, metal, concrete and empty (cleaned) crushed barrels. Asbestos from demolition of buildings is considered to be non-hazardous if properly packaged and therefore can be disposed of in the NHWLF. Creosote coated timbers (utility poles) would be wrapped in plastic prior to their disposal in the NHWLF.

3.8.2.1 Design Considerations

The landfill should be located in an area where concentrated surface water run-on does not occur e.g. within the confines of a natural drainage course or where its construction could impede natural drainage. Ponding of water as a result of construction should be avoided as this may impact the thermal stability of the ground leading to post-construction settlements.

The landfill cover and berms can be constructed using the Type 2 Granular Fill available on site. The recommended gradation for the gravel fill is provided in Section 3.7.2. All granular fill should be placed in horizontal lifts not exceeding 250 mm and compacted to a minimum of 95 % of Standard Proctor Dry Density (ASTM D698). The landfill footprint should be graded and any organic material removed prior to fill placement. The extent of grading should be kept to a minimum to avoid disturbance to the permafrost. Below grade cells are not recommended. Any boulders or oversize material should be pushed aside and wasted or saved for final armouring.

The berms should be constructed with exterior sideslopes of 3H:1V and interior slopes of 1.5H:1V with a minimum final top width of 2 m. Staging berm construction to achieve the design height may be desirable until waste volumes have been better established towards the end of the clean-up operation. Doing so may allow the overall height of the landfill to be reduced by incorporating the top of the berm into the final cover. Unless the environmental assessment of the debris material would suggest that the environmental impact from leachate is unacceptable, the landfill cover does not need to be designed for freeze-back and minimum cover thickness of 1.0 m is acceptable. Depending on the final berm height, it should not be necessary to armour the Type 2 Granular Fill with Type 1 material.

In the case of the NHWLF, leachate is any liquid produced when water comes into contact with the waste contained within the landfill. Because the waste is in a dry condition, leachate contribution from decomposing or compressing debris is negligible. Because the waste material is primarily non-putrescible and the environment within the landfill is non-acidic, the potential for the generation of hazardous leachate is considered very low. The design objectives are therefore to minimize the amount of water coming into contact with the waste by minimizing infiltration by careful site selection and promoting surface water run-off by compacting and properly grading the final cover. Leachate collection is not considered necessary.

Landfill gas generation is not considered to be a significant factor in the design of the NHWLF and gas collection/venting systems are not considered necessary. The rate of decomposition of any biodegradable waste within the landfill cell and any associated gas generation will be extremely slow as compared with landfills in the south. The potential for gas generation and associated odours is best controlled by minimizing infiltration of water into the landfill. Any gas that is generated will dissipate through the permeable cover soils.

Settlement of the landfill surface can lead to ponding water and increased infiltration. To minimize this potential, large debris should be reduced in size such that the maximum lift of debris across the landfill cell is 0.5 m. Each lift of debris should be compacted with tracked equipment to reduce void space/size. Free draining intermediate fill should be placed to a uniform thickness of 0.15 m thick across each lift of debris and worked into the underlying debris using track mounted equipment. The intermediate fill lift should be inspected to confirm that large void spaces have been filled. The intermediate fill should be non-frost susceptible to reduce the potential for seasonal frost jacking of debris. The final thickness of the debris and intermediate fill layers should not exceed 3 m. The preferred gradation for the intermediate fill is provided in Section 3.7.2.

3.8.3 Secure Soil Disposal Facility

Soils contaminated with heavy metals are known to be present on the site. If the volume of these Tier II contaminated soils is significant, then a Secure Soil Disposal Facility (SSDF), consisting of a lined containment system, is typically constructed. The design objective for this facility would be to encapsulate the contaminated soil with a geomembrane and sufficient granular cover to allow it to freeze-back over time. Additional containment would be provided by a frozen core of saturated soil keyed into permafrost or saturated ground. The design will result in little to no infiltration of moisture into the land-filled soil and as such, leachate generation is not expected in either the short term (before freeze-back) or in the long term. In this regard, leachate and gas control measures are not required.

3.8.3.1 Design Considerations

The landfill should be located in an area where concentrated surface water run-on does not occur e.g. within the confines of a natural drainage course or where its construction could impede natural drainage. Ponding of water as a result of construction should be avoided as this may impact the thermal stability of the ground leading to post-construction settlements.

The landfill berms should be constructed with Type 2 Granular Fill incorporating a core of Type 4 Granular Fill. The core material should have a minimum degree of saturation of 90 % and be compacted to a minimum of 95 % of Standard Proctor Maximum Dry Density (SPMDD). All granular fill should be placed in horizontal lifts not exceeding 250 mm and compacted to a minimum of 95 % of SPMDD (ASTM D698). The berms should be constructed with exterior sideslopes of 3H:1V and interior slopes of 1.5H:1V with a minimum final top width of 2 m. If the final berm is limited in height, Type 1 Granular Fill for armouring the finished slopes may not be required.

The landfill footprint should be graded and any organic material removed prior to fill placement. The extent of grading should be kept to a minimum to avoid disturbance to the permafrost. Below grade cells are not

recommended. Any boulders or oversize material should be pushed aside and wasted or saved for future incorporation as armouring. The Type 4 Granular Fill needs to be keyed into either saturated ground or ice rich permafrost. In this regard, preferred locations may be in lower lying areas where a shallower depth to the groundwater table or frozen soil is expected.

The geomembrane should be protected using a non-woven geotextile and a sand layer meeting the grading specifications described in Section 3.7.2. The bedding sand may be obtained by screening source material encountered in Borrow Areas 1, 3, and 6 to meet the grading requirements, for Type 5 Granular Fill. The landfill cover should be constructed using Type 2 Granular Fill available on site. It is anticipated that the final cover above the contaminated soil will be in the order of 4.0 m thick to maintain the active layer within the cover material. The final cover thickness should be confirmed using thermal modelling during detailed design.

3.8.4 Landfarm

Hydrocarbon impacted soils have been found on site. Depending on the volume of impacted soil, a landfarm may be a suitable remedial option for soil treatment.

3.8.4.1 Design Considerations

The landfarm would consist of a containment cell with perimeter berms in the order of 1 to 1.5 m high. Because the total thickness of contaminated soil is generally limited to about 400 mm, the landfarm footprint may be of considerable size. The landfarm footprint should be uniformly graded (reshaped) towards the downgradient side and any organic material removed prior to fill placement. The extent of grading should be kept to a minimum to avoid disturbance to the permafrost. It is not anticipated that any fill material will be required to achieve the cell floor grades. Any boulders or oversize material should be pushed aside.

The berms should be constructed using Type 4 Granular Fill with exterior sideslopes of 3H:1V and interior slopes of 2H:1V with a minimum final top width of 2 m. The landfarm berm should be keyed into permafrost. Once land-farming is complete, the granular berms should be collapsed and the liner removed for disposal in the NHWLF. All granular fill should be placed in horizontal lifts not exceeding 250 mm and compacted to a minimum of 95 % of SPMDD (ASTM D698) at or near optimum moisture content. The final landfarm surface should be graded at 2 % to 4 % towards the outside edge(s) and uniformly compacted with the random action of tracked equipment.

3.8.5 Recommended Landfill/Landfarm Locations

Three potential landfill locations (LF-1, LF-2, and LF-3) were identified and evaluated during the field program. The potential location for LF-3 is on IOL. The locations of landfills are shown on Figure 3.0.

The preferred location for a Landfarm is LF-1 with an alternative site proposed at LF-2. LF-2 was also investigated as a potential location for a NHWLF and an alternate location for a SSDF. LF-3 was investigated as the preferred location for a SSDF and an alternative location for an NHWLF.

3.8.5.1 Proposed Landfarm Location (LF-1)

The preferred location (LF-1) for a landfarm is located west of the main station site and north of an existing access road as shown on Figure 3.0. The western portion of the area is undisturbed and the eastern portion of the area has evidence of previous excavation. The area is bound to the west by a steep ridge. The proposed LF-1 site is in a well drained, relatively flat area, gently sloping to the northwest. The area has easy accessibility to existing access roads, the main station site, and borrow sources.

Four testpits (TP-08 and TP-10 to TP-12) were excavated in this area to determine subsurface soil, groundwater and permafrost conditions. Subsurface stratigraphy in the landfill area consisted of silty sand to sand with some silt and variable amounts of gravel, cobbles, and boulders. The testpits were terminated at depths from 0.82 m to 0.94 m due to seepage and sloughing. Seepage was encountered in all testpits at depths ranging from 0.56 m to 0.66 m and frozen ground was not encountered in any of the testpits. A zone of seepage is common above frozen ground in permafrost areas and should be expected at this location.

Appendix C contains select photos showing the LF-1 site and locations and conditions of testpits TP-08 (G79, G82), TP-10 (G89, G91), TP-11 (G93, G95), and TP-12 (G112, G114).

Because of the permeability of these soils, the landfarm should be constructed with Type 4 Granular Fill to allow for a perimeter containment system. The Type 4 berms need to be keyed into the permafrost which is anticipated to be less than 1.5m below ground. If at some locations the permafrost is deeper than 1.5 m the berms will have to be keyed into the existing ground by at least 1.5 m in consideration of the freeze-back that will occur during the first season.

The investigated area for the LF-1 is approximately 27,500 m^2 therefore a landfarm can be constructed at this site. Considering the foundation conditions (soils and depth to groundwater), size of the area and its proximity to roads, borrow areas, and the main station site, the LF-1 site is suitable from a geotechnical perspective for construction of a landfarm facility.

3.8.5.2 Proposed Landfarm, SSDF, and NHWLF Location (LF-2)

The LF-2 location can be considered as the preferred location for a NHWLF and an alternative location for construction of a landfarm or SSDF. LF-2 is located west of the main station site and north of an existing access road as shown on Figure 3.0. The area is a well drained, disturbed area with sporadic concentrations of wood and metal debris. The eastern limit of the area is in close proximity to a barrel cache. The LF-2 location is on a relatively flat ground which slopes gently to the north (towards the main access road). The area has easy accessibility to the main station site, access roads, and borrows sources.

Two testpits (TP-12 and TP-14) were excavated at this location to determine subsurface soil, groundwater and permafrost conditions. Subsurface stratigraphy in the landfill area was variable consisted of silty, bouldery sand to gravel with some cobbles and sand underlain by gravelly sand and cobbles with some boulders. Oversize material (cobbles/boulders) was observed in the landfill area and estimates of the oversize fractions were performed onsite. The oversize estimate gradations are shown on the testpit logs in Appendix F. The testpits were terminated at depths from 0.82 m and 0.91 m due to seepage and sloughing. Seepage was encountered in both testpits at depths of 0.66 m to 0.69 m and frozen ground was not encountered in the testpits. A zone of seepage is common above frozen ground in permafrost areas and should be expected at this location.

Appendix C contains select photos showing the LF-2 site and locations and conditions of testpits TP-12 (G112, G114) and TP-14 (G120, G124).

A perimeter containment system is required for the landfarm and the SSDF. The liner has to be keyed into the permafrost. If at some locations the permafrost is deeper than 1.5 m the liner will have to be keyed into the existing ground by at least 1.5 m in consideration of the freeze-back that will occur during the first season.

The investigated area for the LF-2 site is approximately 24,500 m^2 therefore a landfarm, SSDF or a NHWLF can be constructed at this location. This area may be considered a suitable location for construction of a NHWLF, SSDF or

landfarm considering the foundation conditions (soils and depth to groundwater), size of the area, proximity to roads, borrow areas, and the main station site.

3.8.5.3 Proposed SSDF and NHWLF Location (LF-3)

The preferred location (LF-3) of a SSDF and an alternate location for a NHWLF is located west of the main station site and south of an existing access road as shown on Figure 3.0. The proposed LF-3 site is in an undisturbed, well drained, relatively flat area, gently sloping to the northwest. The western limit of the area is in close proximity to a barrel cache. The area has easy accessibility to existing access roads, the main station site, and borrow sources.

Three testpits (TP-15, TP-16, and TP-18) were excavated at this location to determine subsurface soil, groundwater and permafrost conditions. Subsurface stratigraphy in the landfill area consisted of variable proportions of silt, gravel, and cobbles. Oversize material (cobbles/boulders) was observed in the landfill area and estimates of the oversize fractions were performed onsite. The oversize estimate gradations are shown on the testpit logs in Appendix F. The testpits were terminated at depths from 0.73 m and 0.82 m due to seepage. Seepage was encountered in the testpits at depths from 0.41 m to 0.61 m and frozen ground was not encountered in any of the testpits. A zone of seepage is common above frozen ground in permafrost areas and should be expected at this location.

Appendix C contains select photos showing the LF-3 site and locations and conditions of testpits TP-15 (G127, G131), TP-16 (G132, G133) and TP-18 (G156, G158).

The investigated area for the LF-3 is approximately 6,000 m^2 therefore a SSDF or a NHWLF can be constructed at this site. From a geotechnical perspective, this area is suitable for construction of SSDF or NHWLF considering the foundation conditions (soils and depth to groundwater) proximity to roads, borrow areas, and the main station site.

3.9 Assessment of Site Access

3.9.1 Existing Roadway Evaluation

The site is accessible through a gravel access road connecting the Station to the beach landing area (Figure 1.0). The road starts at the Station and runs to the west along the upper plateau where it then descends the slope of the plateau into a valley. From the toe of the valley, the road passes through the Old Construction camp into an outwash plain, terminating at the beach landing area.

A visual inspection was conducted to evaluate the general condition of the gravel road and assess the maintenance/upgrading required for movement of construction equipment, haul trucks and other vehicles likely to be used during the construction activities. Video of the entire length of road was captured and key areas were photographed during the inspection. Videos and photos of the road have been indexed and selected photographs are included in Appendix C.

In general, the condition of the road ranges from very poor to good. The road tends to be in better condition along areas of flatter terrain, such as the locations around the Old Construction camp, and the Station. The worst road sections occur along the slope of the high plateau where the Station is located. The roads were assessed based on four factors that may negatively impact the serviceability of the road and are as follows:

- Road Width – the width of the road may restrict movement of vehicular or track equipment on-site depending on the size of the equipment. Narrow sections of road may need to be widened to facilitate movement of

construction equipment. The roads were categorized based on the size of vehicle or tracked equipment that could safely travel along a section of road, i.e. ranging from impassable with a pick-up truck to passable with heavy construction equipment. The minimum width along narrow road sections was also recorded.

- Road Surface – areas with exposed bedrock, rough surfaces (cobbles, boulders), and soft ground were recorded.
- Erosion and Drainage Features – erosion features and drainage conditions were noted and included erosion gullies, erosion channels, road ditches, collapsed culverts, washouts, visible seepage, and sinkholes.
- Steep and High Side Slopes – steep and high side slopes may restrict the ability to widen narrow road sections. In this regard, steep and high side slopes were only noted in narrow road sections where side slopes were steeper than 3H:1V and greater than 3m in height.

The road condition assessment has been separated into four distinct sections for the purpose of this report. The road sections and key features identified in the road condition assessment are shown in plan on Figure 1.0. Results of the road assessment are summarized in Table 13. The individual road sections are described below:

Table 13: Summary of Access Road Assessments at Durban Island

Road Section (length of section)	Condition	Passable Equipment	Steep and High Side Slopes	Erosion and Drainage Features	Road Surface	Figure #	Video #
1 – Station to the crest of the plateau slope (1,718 m)	good	Heavy equipment	-	No discernable road ditches, one collapsed culvert	-	Photo 247	MOV042
2 – Crest of plateau slope to toe of the slope (2,760 m)	Very poor to poor	Un-passable, only passable with a quad	Side slopes of 1H:1V and 1H:2V with heights between 3m and 30m. Sections of road may be exposed to rock falls and potentially unstable slopes	Erosion gullies, channels, sink holes, washouts, collapsed culverts, poor drainage	Long sections of exposed bedrock, boulders, and cobbles. Evidence of rock falls and slides on to the road. Evidence of slump blocks on steep side slopes.	Photo 206, 211(2), 212, 213, 218, 219 - 221, 225, 226, 228, 234, 235, 237, 239, 240	MOV020 – MOV033
3 – Toe of the plateau slope to the end of the old construction camp (1,342 m)	Fair to good	Heavy equipment	Side slopes of 3H:1V with heights between 1m and 15m for the first half of this section	Minor erosion features, fair drainage, except in the vicinity of the old construction camp where there is poor drainage and ponding water.	Fairly rough in sections. Soft road conditions in the vicinity of the old construction camp.	Photo 241 - 243	MOC034-036 (first half)
4 – Old construction camp to beach landing area (793 m)	Poor to Fair	Pick-up truck	-	Erosion gullies, channels, washouts, very poor drainage, collapsed culverts	Fairly rough and soft road condition in sections.	Photo 245, 246	MOV037-MOV041

3.9.1.1 Road Section 1 – Station to the Crest of the Plateau Slope

Road Section 1 starts at the Station atop the plateau, passes through Borrow Areas 1 and 2, and terminates at the crest of the plateau as shown on Figures 1.0 and 3.0. The road is in good condition requiring minor repair or upgrading for use during construction. In particular, minor erosion features and localized areas of poor drainage are present but can be easily addressed during construction activities. Constructing a road ditch and additional culverts may be required during construction.

3.9.1.2 Road Section 2 – Crest of the Station Plateau to the Toe of Slope

Road section 2 is situated along the slope of the Station plateau, starting at the crest and ending at the toe of the plateau as shown on Figure 1.0. This section of road is very poor to poor and is considered to be un-passable with construction equipment (single or two-way traffic) in its current state. Some personnel during the site investigation were uncomfortable traveling along this section of road in an ATV due to the steep slopes and heights.

This section of road will require moderate to major upgrades/repairs before the road will be considered to be safe or serviceable. Rock falls, slides, and bedrock outcrops limit the passable road width to as little as 1.5m, especially along the upper portion of the road which tends to be narrower. Road widths will need to be widened to facilitate one way or two way traffic. The road at the two switchbacks was constructed into a bedrock face that was likely blasted (Appendix C, Photos 218, 228 and 229). The passable area at the switchbacks is limited and it may difficult for construction equipment to navigate the tight bend safely. Blasting and scaling may be required to widen the road at the switchbacks or other areas where widening the road to the outside is not feasible.

Portions of the road may be prone to rock falls and slides (either rock or surficial soils) and would need to be monitored during construction, especially after rainfall events since this section of road passes through an area of significant runoff from the Station plateau area (Appendix C, Photos 206 and 226). Safety nets, etc. may be required if sections of the road exhibit frequent rock falls. Mitigation measures may also be required if slides are deemed to be a hazard. It is recommended that a road hazard assessment be completed on this section of road during mobilization to site, as a minimum, and recommendations from the hazard assessment be implemented at the start of construction.

A large washout (Appendix C, Photo 240) will need to be repaired and two timber bridges (Appendix C, Photos 225 and 237) will need to be upgraded along this section of road. A proper ditch along the inside of the road and additional culverts and bridges may be required to protect the road from runoff, especially where major erosion features are present.

3.9.1.3 Road Section 3 – Toe of Station Plateau Slope to End of Old Construction Camp

Road Section 3 starts at toe of the station plateau slope, passes through the Old Construction Camp area, ending near the south end of the Old Construction Camp as shown on Figures 1.0 and 4.0. The road is in fair to good condition requiring minor repair or upgrading for use during construction (Appendix C, Photo 242). Minor erosion features and localized areas of poor drainage are present within the Old Construction Camp area (Appendix C, Photo 243). Poor drainage has created soft road conditions and loss of road topping. The localized areas would require more effort to repair but can be easily addressed during construction with the construction of drainage ditches, swales and additional culverts. The road may need to be raised in low lying areas where drainage improvements are not viable.

3.9.1.4 Road Section 4 – Old Construction Camp to the Beach Landing Area

Road Section 4 starts near Old Construction Camp, passes through an outwash plain, terminating at the beach landing area (Figures 1.0 and 5.0). The road is poor to fair condition (Appendix C, Photo 246) and includes major erosion features such as erosion gullies, channels, loss of road topping and one major washout (Appendix C, Photo 245). The erosion features are a result of a large amount of runoff originating from the nearby plateaus that tends to concentrate through the valley upslope of the road, creating an outwash plain. Soft road conditions are present in

localized areas due to the amount of water that passes through this area. Construction of drainage ditches and swales and installation of additional culverts will be required to facilitate movement of construction equipment and portions of the road may need to be widened if two-way traffic is required. The road will also likely need to be raised in low lying areas where drainage improvements are not viable or where there is a potential for overtopping creating washout conditions.

3.9.2 Beach Landing Area

The preferred beach landing area is southeast of the Beach POL tanks where barges historically accessed the site. The area is in good condition with little upgrading required (Appendix C, G161 and G162).

3.9.3 Construction Camp and Laydown Area

Two potential camp areas have been identified as suitable locations for the Construction camp and/or laydown areas. Potential Construction Camp Area 1 is located at the Station in the vicinity of the Garage and Warehouse buildings as shown on Figure 2.0. This location is easily accessible and is in close proximity to the majority of work areas that will be part of the construction activities. This area consists of a gravel pad, is generally flat and would require minimum grading (Appendix C, G255 and G259). The existing garage and warehouse could also be utilized by the Contractor as a mechanic shop and general storage, respectively. Selected photographs of (Photos G96, G97, G105, and G107) have been included in Appendix C. Some surface debris will have to be removed. Transporting the camp from the beach area may not be feasible due to the distance and the condition of the gravel road, especially the road section along the slope of the Station Plateau which is steep and narrow.

Potential Construction Camp Area 2 is located north of the beach area and west of the site access road as shown on Figure 4.0. This location is easily accessible from the beach landing and would provide a good location for upgrading the worst sections of the access road. This area gently slopes towards the beach, consists of surficial granular material (sand to cobbles), and the SE portion is partially disturbed and may be the remnant of an old borrow area. Minor grading will be required to improve drainage and runoff will need to be managed during construction. Selected photographs of (Photos G257 and G263) have been included in Appendix C. Potential Construction Camp Area 2 is a considerable distance from the Station where the majority of construction activities will take place and therefore would require personnel to travel greater distances along difficult road sections.

3.10 Traditional Land Use

Based on discussion with the bear monitors Johnny Kooneeliusie and Loasie Audlakiak, from Qikiqtarjuaq, there has been no traditional land usage since closure of the Station in the early 1960's other than perhaps transient visits by hunters and trappers. Neither hunting nor fishing are significant land use activities in this area since there are more attractive hunting and fishing areas closer to the nearby communities. To their knowledge there is no known residents of Qikiqtarjuaq that may have worked at the Station when it was operating.

3.11 Environmental Data Quality Assurance and Quality Control (QA/QC) Procedures

3.11.1 QA/QC Procedures and Evaluation

In order to confirm that the sampling and analytical data collected for Durban Island was interpretable, defensible and comparable, a Quality Assurance and Quality Control (QA/QC) program was implemented for the project.

QA/QC measures were taken in both the collection and analysis of the environmental sampling program. The following sections outline the QA/QC program completed during the investigation.

3.11.2 Summary of AECOM QA/QC Program & Results

Quality Control (QC) measures used in the collection, preservation, shipment, and analysis of samples included the following:

- Sampling techniques were performed in accordance with standard written AECOM protocols;
- Field notes were recorded during the investigation;
- All samples were kept cool prior to shipment to the laboratory;
- Samples were assigned unique sample control numbers and transported under chain of custody procedures; and
- The analytical laboratory has proficiency certification issued by the Canadian Association for Environmental Analytical Laboratories (CAEAL) for the specific analyses conducted.

Quality Assurance (QA) measures established for the investigation included collection of a field blank for water samples to ensure there are not environmental factors that could lead to inflated results. Also, duplicate field samples were collected for approximately 10% of the total samples collected. A blind duplicate sample consists of a second aliquot of an individual sample that is submitted to the analytical laboratory under a separate label such that the analytical laboratory has no prior knowledge that it is a duplicate. Duplicate soil samples from numerous locations were submitted to the laboratory for analysis.

The relative percent difference (RPD) between duplicate results was used to assess overall sampling precision. The RPD is a measure of the variability between two duplicate analyses and is calculated by the following equation:

$$RPD = 100 \times \left(\frac{(x - y)}{(x + y)/2} \right)$$

Where x is the primary results and y is the blind duplicate result.

Table B10 in Appendix B compares sample analysis between the original samples and their duplicates. Acceptable RPD values vary based on the analytical parameters, the sample matrix and the concentrations of analytes in the sample. For metals in soils acceptable RPD values are 35% and for organics in soils (PHCs and PCBs), the acceptable RPD values are 50%. Only when concentrations are at least ten times the method detection limit are RPD calculations considered valid.

3.11.2.1 Field Blank and Field Duplicate Samples

One field blank was collected for the water samples. All parameters analyzed (routine chemistry, dissolved metals, PCBs and PHCs) had concentrations that were below the laboratory detection limit which suggests that there were no environmental factors present to interfere with the sample results.

During the field program, 21 field duplicates for soil samples were collected and 13 field duplicates were analyzed to provide an indication of the overall sampling and analytical precision. The blind field duplicates were analyzed for various parameters based on their location and expected contaminant(s) present. RPD was calculated for all parameters analyzed in each sample set. For the majority of the parameter results, the RPD values were below 35% for metals and below 50% for PHCs and PCBs. The results of these calculations are summarized in Table B10 in Appendix B.

One of the 13 duplicates was found to have exceedances in alert criteria. A set of duplicate samples collected from the Building Train at the Main Station with sample numbers 10-0210 and 10-0211 exceeded the recommended alert

criteria for PCB aroclors 1254 and 1260 with resulting RPDs of 55 and 95%, respectively. Based on the field notes the material type in this area was composed of gravels and sands. The coarse nature of this material provides explanation as to why it may have been difficult to obtain a homogeneous sample. It is also possible that the paint chips observed at the sampling location may have been included with the soil sample and interfered with the analysis.

Eleven other duplicate sets did have calculated RPDs that were above the recommended alert criteria; however, the concentrations of one or both samples in the duplicate set were less than ten times the detection limit. The RPD is therefore not considered to be strictly valid.

All other parameters within the duplicate sets had acceptable values for RPD.

3.11.2.2 Laboratory QA/QC

Maxxam Analytics (Maxxam) was the analytical laboratory used for the 2010 sampling program. Maxxam ran matrix spike samples, spiked blank samples, method blank samples and QC standard samples to determine analytical accuracy. All results were within acceptable limits. The laboratory also ran laboratory duplicate samples to ascertain analytical precision and again, all results were within acceptable limits. Method blank samples were run to confirm that there was no carry-over from analysis to analysis, and that analytes were not introduced due to the reagents or methods used. The blank analyses were observed to be less than the laboratory detection limit.

4. Conclusions

The conclusions included in this report are based on the information and data collected during the Phase III Environmental Assessment at the Durban Island Intermediate DEW Line site. The following is a summary of the conclusions:

- Approximately 18 m^3 of Tier II contaminated soil was identified in the Garage and Inuit Building areas.
- Approximately 23 m^3 of Tier I contaminated soil was identified in the Module Train area.
- Approximately 11 m^3 of Tier I/Type A hydrocarbon contaminated soil was identified in the Garage area.
- Approximately 378 m^3 of Type B hydrocarbon impacted soils were identified at the Station POL Tanks, Module Train, Warehouse, Garage, Lobe 3, and Beach POL Tank areas.
- Nine existing buried debris areas were identified and investigated. The results indicate that all of these lobes were considered a low environmental risk, and therefore were classified as Class C.
- It is estimated the volume of non-hazardous waste is 2,402 m^3.
- It is estimated the volume of hazardous debris is 132 m^3.
- Eight potential borrow areas were identified (Borrow No.'s 1, 2, 3, 4, 5, 6, 7, and 8). The borrow investigation identified primarily Type 2 and Type 4 Granular Fill and limited quantities of Types 1, 3 and 5 Granular Fill.
- It is estimated that 106,000 m^3 of granular materials are available from the investigated borrow areas.
- Three proposed landfill/landfarm locations were investigated and identified as suitable locations.
- There is no airstrip at the Durban Island Site and air access was facilitated by helicopter for the site investigation. The area at the Beach is expected to be suitable for landing of barges.
- In general, the condition of the existing road ranges from very poor to good. The road tends to be in better condition along areas of flatter terrain, such as the locations around the Old Construction Camp, and the Station Area. The worst road sections occur along the slope of the high plateau where the Station is located. Significant roadway improvements including widening (blasting side slopes), grading, adding fill and improving drainage infrastructure will have to be undertaken in order for the road to be passable by construction equipment during remediation. Currently, portions of the road section from the crest of the plateau slope to the toe of the slope are only passable by ATV due to considerable erosion features. The switchbacks are not safely navigable by construction equipment and will need significant improvements to allow even single-lane traffic.
- The National Classification System for Contaminated Sites was used to classify Durban Island as a Class 2 Site (Medium Priority for Action).
- Where possible, activities during remediation should be conducted on Crown Lands, as activities on IOL will require land use permits. The following table illustrates the location of various site features with respect to IOL versus Crown Land:

Table 14: Summary of Site Features with Respect to Ownership

Site Feature	Inuit Owned Land	Crown Land
Contaminated Soil Areas	None	11 areas identified
Buried Debris Areas	Lobe 8	Lobes 1 – 7 and 9
Surface Debris Areas	8 – 11 and Dumps A, B and E	1 – 7, 12 – 15 and Dumps C and D
Proposed Borrow Areas	BA-1, 2 and 8	BA-3 to BA-7
Proposed Landfill Locations	LF-3	LF-1 and LF-2
Road Sections	2, portions of 1 and 3	4, portions of 1 and 3

Recommendations regarding preferred remedial options will be completed as part of the development of the Remedial Action Plan.

5. References

Dyke, A.S., J.T. Andrews and G.H. Miller, 1982. *Quaternary Geology of Cumberland Peninsula, Baffin Island, District of Franklin.* Geological Survey of Canada Memoir 403, 32 p. and Map1536A, 1:500,000 scale.

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Environmental Sciences Group, 1994. *Environmental Study of Abandoned DEW Line Sites: Six Intermediate Sites in the Eastern Arctic.*

Environmental Sciences Group, 2010. *Background Geochemical Assessment of FOX-E Durban Island, Nunavut.*

Indian and Northern Affairs Canada, 2009. *Abandoned Military Site Remediation Protocol.*

Appendix A

Figures

B SIZE 11" x 17" (279.4mm x 431.8mm)

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Saved By: hasslerb

ISS/REV: 0B

AECOM FILE NAME: 60158564-00-C-F01-R0B.dwg

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534 000 E
535 000 E
536 000 E
537 000 E
538 000 E
539 000 E

7 442 000 N
7 441 000 N
7 440 000 N

0 150 300 m

SCALE 1:15000

ROAD SECTION 1
ROAD SECTION 2
ROAD SECTION 3
ROAD SECTION 4

CROWN LANDS
INUIT OWNED LANDS

INUIT OWNED LANDS
CROWN LANDS

DUMP A

FIGURE 2.0
STATION AREA

FIGURE 3.0
SOUTHWEST OF STATION AREA

FIGURE 4.0
OLD CONSTRUCTION CAMP

FIGURE 5.0
BEACH LANDING

FIGURE 6.0
DUMP A - PLAN

LEGEND:

- SITE GRID (1000m INTERVAL)
- PARCEL BOUNDARY
- POTENTIAL LANDFILL AREAS
- DEBRIS AREAS
- FIGURE SHEET LIMITS
- ROAD SECTION LIMITS

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FOX-E Durban Island Site Investigation

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Overall Site Plan
Figure 1.0

B SIZE 11" x 17" (279.4mm x 431.8mm)
PLOT: 10/12/14 9:05:26 AM
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GENERAL NOTES:

1. CONTOURS ARE SHOWN AT A 0.5m INTERVAL.

LEGEND:

- SITE GRID (100m INTERVAL)
- DEBRIS AREA
- BURIED DEBRIS AREA
- POTENTIAL CAMP AREA
- 10-0000 SAMPLE LOCATION (BELOW CRITERIA)
- 10-0000 SAMPLE LOCATION (NOT ANALYZED)
- 10-0000 TIER I
- 10-0000 TIER II
- 10-0000 TIER I / TYPE A PHC
- 10-0000 TYPE B PHC
- TP-14 TEST PIT LOCATION
- EXISTING POWER POLE
- TIER I ESTIMATED AREA OF CONTAMINATION
- TIER I / TYPE A PHC ESTIMATED AREA OF CONTAMINATION
- TIER II ESTIMATED AREA OF CONTAMINATION
- TYPE B PHC ESTIMATED AREA OF CONTAMINATION

0 12.5 25 m SCALE 1:1250

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Station Area
Figure 2.0

B SIZE 11" x 17" (279.4mm x 431.8mm)
PLOT: 10/12/14 9:29:46 AM
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ISS/REV: 0A
AECOM FILE NAME: 60158564-00-C-F03-R0B.dwg

GENERAL NOTES:

1. CONTOURS ARE SHOWN AT A 1.0m INTERVAL.

LEGEND:

- SITE GRID (500m INTERVAL)
- DEBRIS AREAS
- POTENTIAL BORROW AREA
- POTENTIAL LANDFILL AREA
- PARCEL BOUNDARY
- 10-0000 SAMPLE LOCATION (BELOW CRITERIA)
- 10-0000 SAMPLE LOCATION (NOT ANALYZED)
- TP-9 TEST PIT LOCATION

SCALE 1:5000
0 50 100 m

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N 7 441 000
N 7 442 000
N 7 442 500
E 536 000
E 536 500
E 537 000
E 537 500

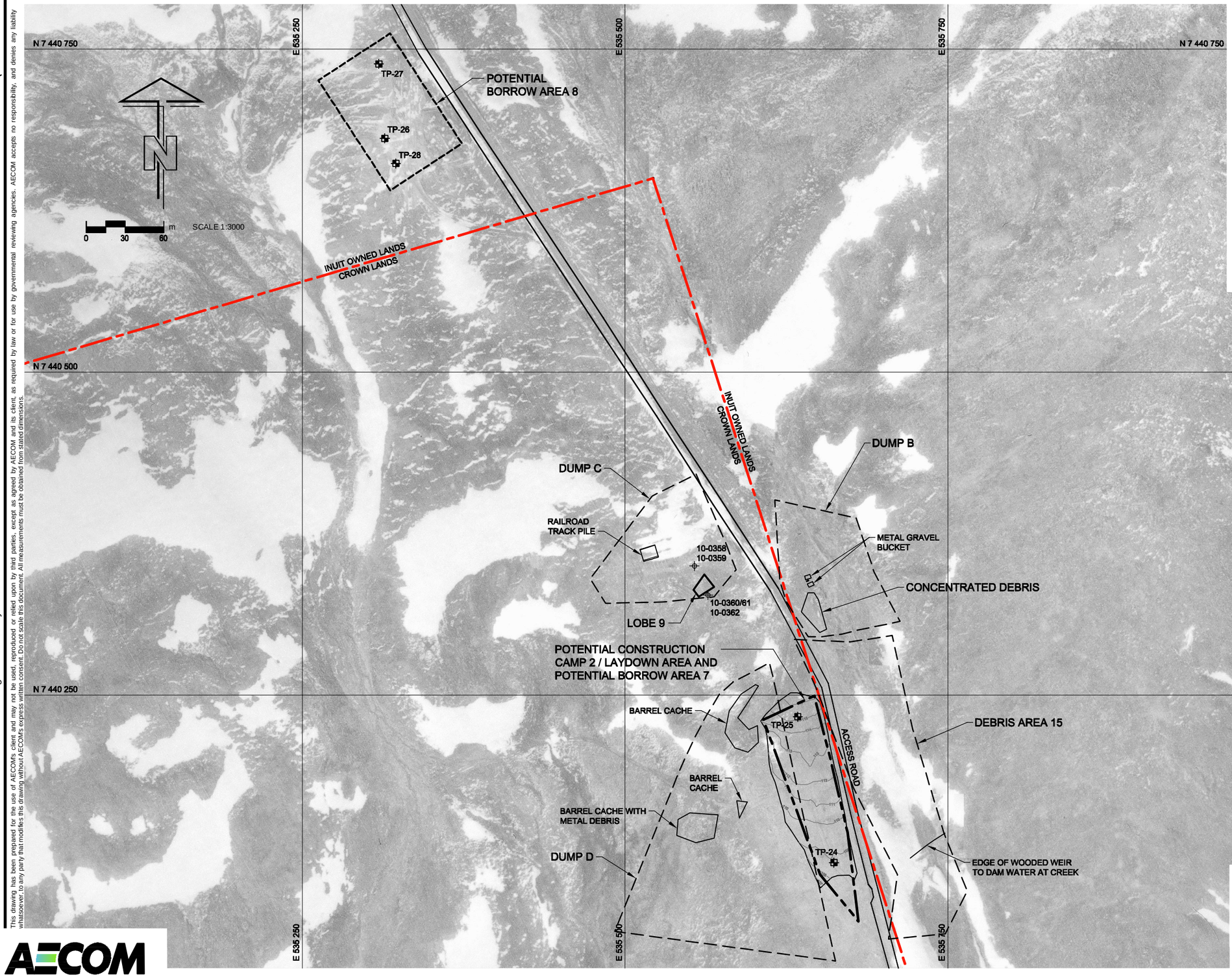
CULVERTS (2)
ACCESS ROAD
POTENTIAL BORROW AREA 1
POTENTIAL BORROW AREA 2
POTENTIAL BORROW AREA 4
POTENTIAL LANDFILL AREA 1
POTENTIAL LANDFILL AREA 2
POTENTIAL LANDFILL AREA 3
POTENTIAL LANDFILL AREA 4
DEBRIS AREA 1
DEBRIS AREA 2
DEBRIS AREA 3
DEBRIS AREA 4
DEBRIS AREA 5
DEBRIS AREA 6
DEBRIS AREA 7
DEBRIS AREA 8
DEBRIS AREA 9
DEBRIS AREA 10
DEBRIS AREA 11
LOBE 8
BARREL CACHE
FORMER BARREL STORAGE AREA
ABOVE GROUND CABLE
WIND SOCK
HELIPAD
INUIT OWNED LANDS
CROWN LANDS
1A
1B
1C
1D
TP-1
TP-2
TP-3
TP-4
TP-5
TP-6
TP-7
TP-8
TP-9
TP-10
TP-11
TP-12
TP-13
TP-14
TP-15
TP-16
TP-17
TP-18
10-0325
10-0326
10-0323
10-0324
10-0356
10-0357
10-0275
10-0270/71
10-0266
10-0267
10-0272
10-0264
10-0265

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AECOM

Southwest of Station Area
Figure 3.0

B SIZE 11" x 17" (279.4mm x 431.8mm)
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GENERAL NOTES:

1. CONTOURS ARE SHOWN AT A 1.0m INTERVAL.

LEGEND:

- SITE GRID (250m INTERVAL)
- DEBRIS AREAS
- BURIED DEBRIS AREA
- POTENTIAL BORROW AREA
- CONCENTRATED DEBRIS AREA
- CONSTRUCTION SITE LAYDOWN AREA
- PARCEL BOUNDARY
- 10-0000 — SAMPLE LOCATION (BELOW CRITERIA)
- TP-26 — TEST PIT LOCATION

AECOM

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Old Construction Camp
Figure 4.0

B SIZE 11" x 17" (279.4mm x 431.8mm)

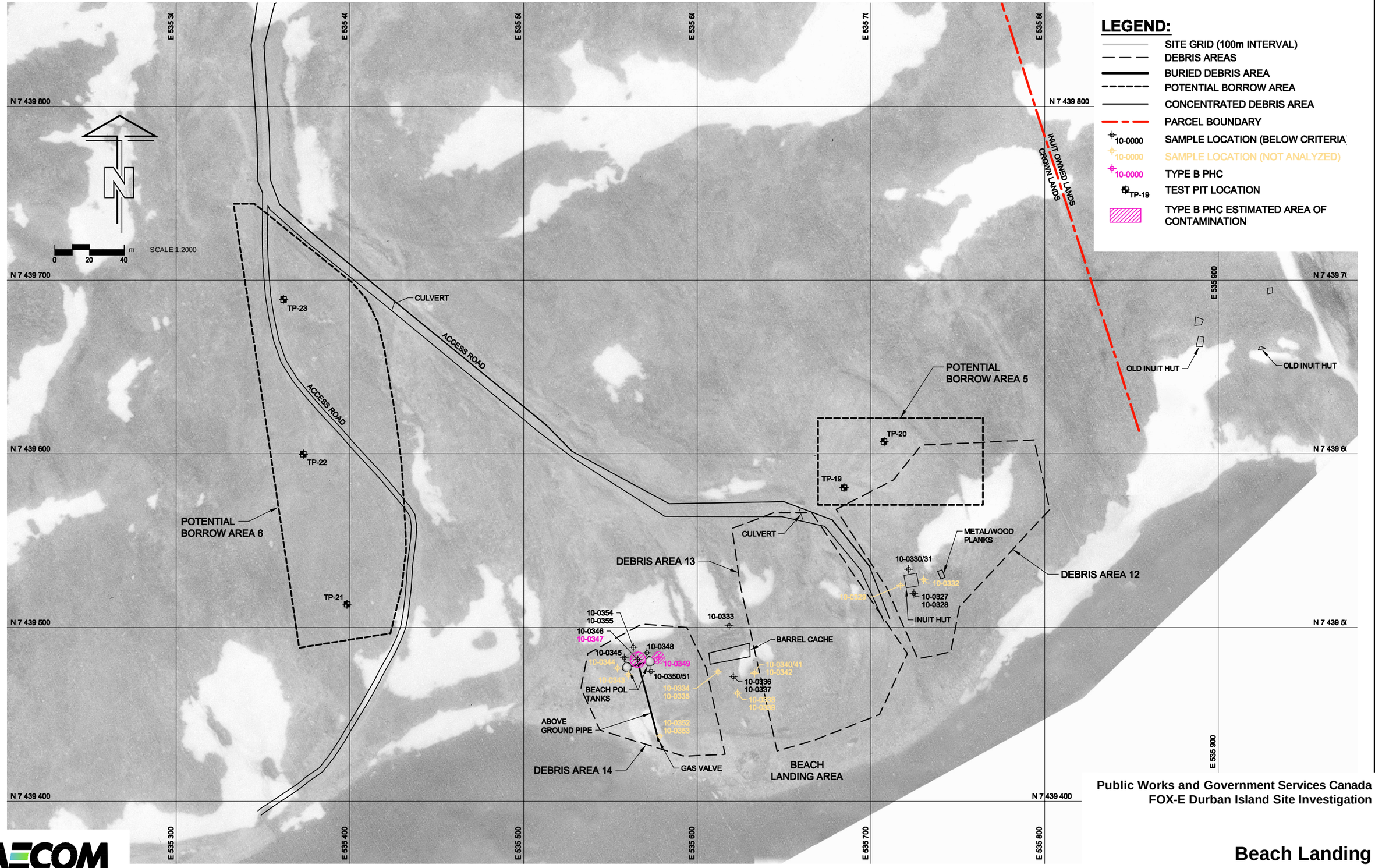
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ISS/REV: 0A

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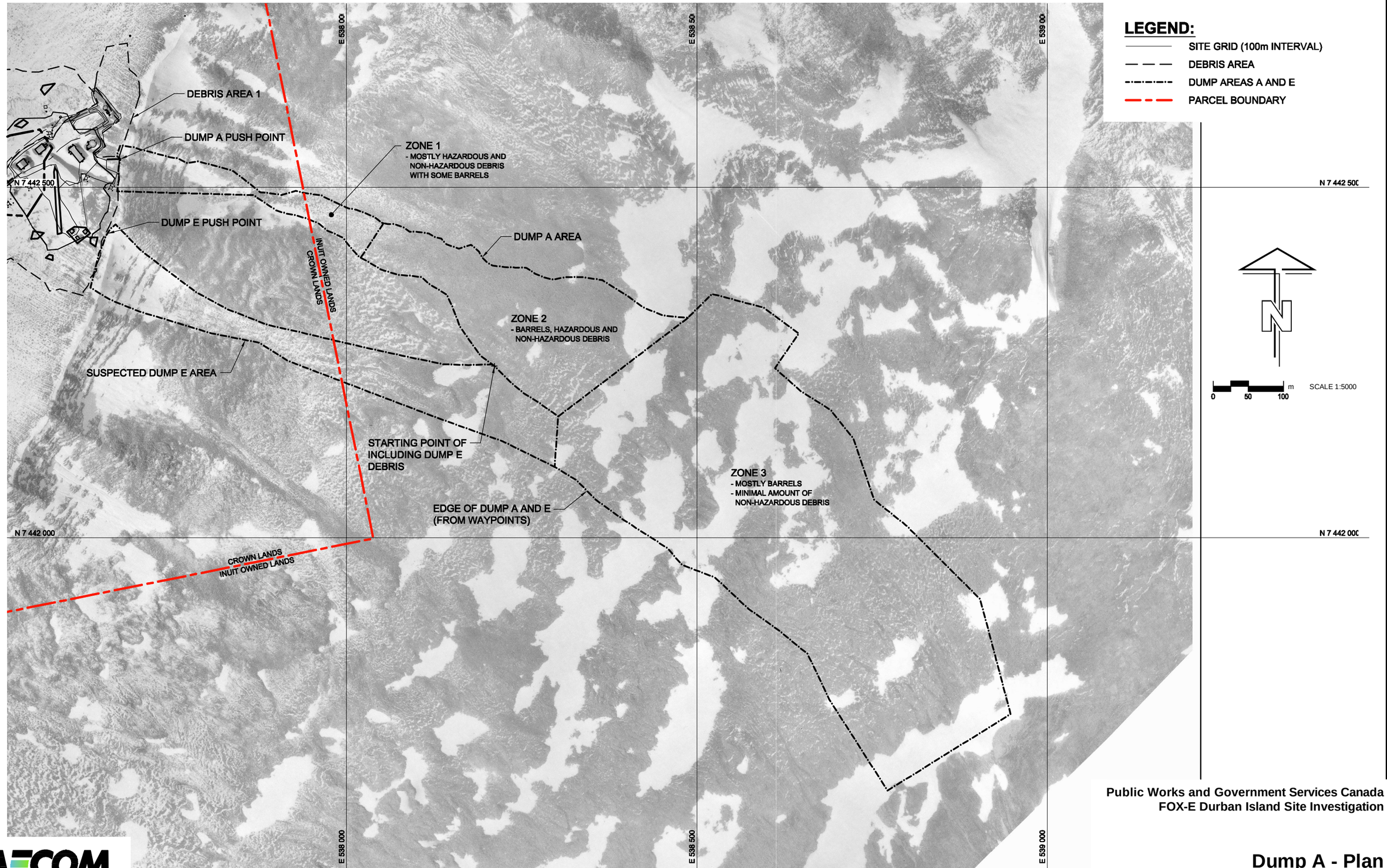


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Beach Landing
Figure 5.0

B SIZE 11" x 17" (279.4mm x 431.8mm)
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ISS/REV: 0A
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Dump A - Plan
Figure 6.0

AECOM

FOX-E DURBAN ISLAND DEW LINE SITE

GRAIN SIZE DISTRIBUTION CURVES - BORROW AREA 1A (TYPE 2 MATERIAL)

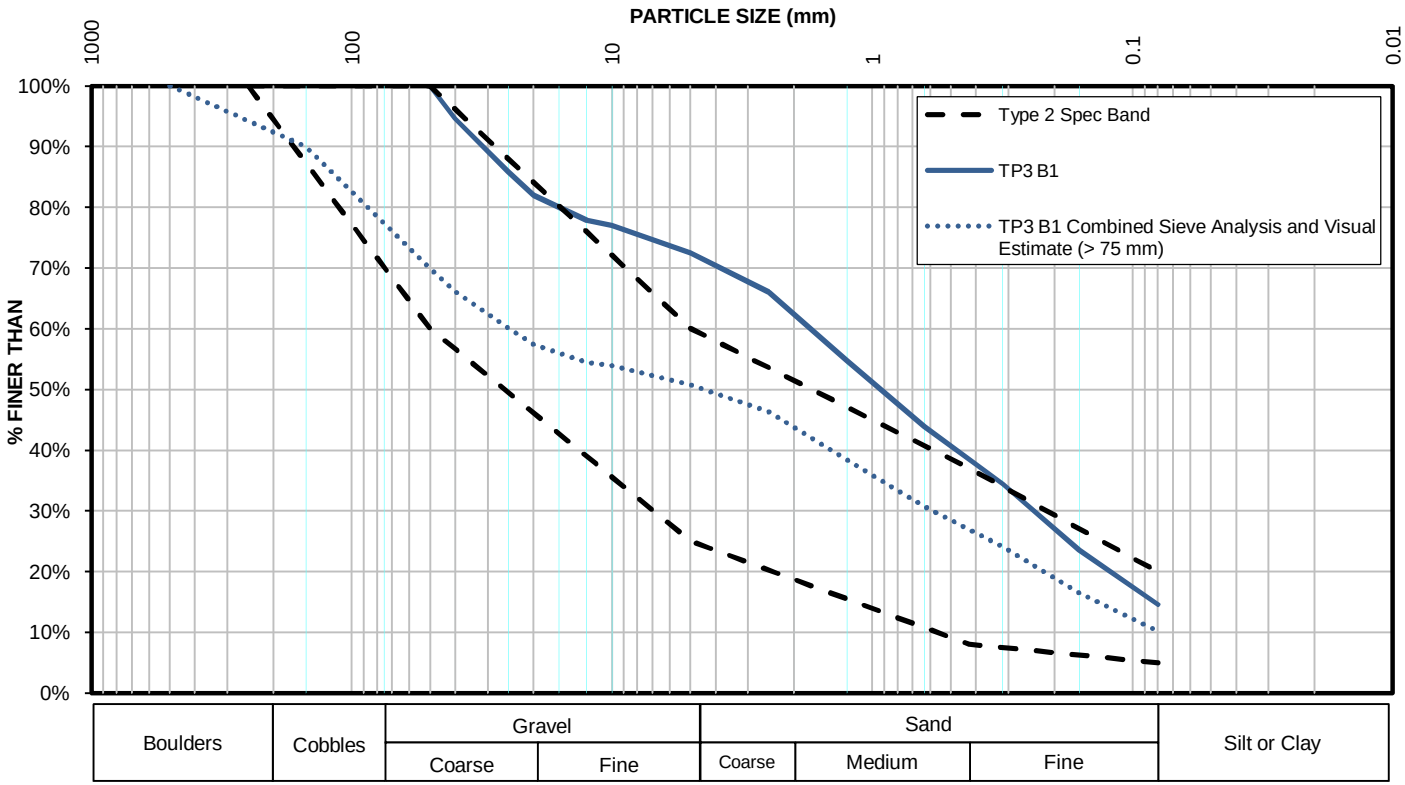


Figure 7

AECOM

FOX-E DURBAN ISLAND DEW LINE SITE

GRAIN SIZE DISTRIBUTION CURVES - BORROW AREA 1A (TYPE 2 MATERIAL)

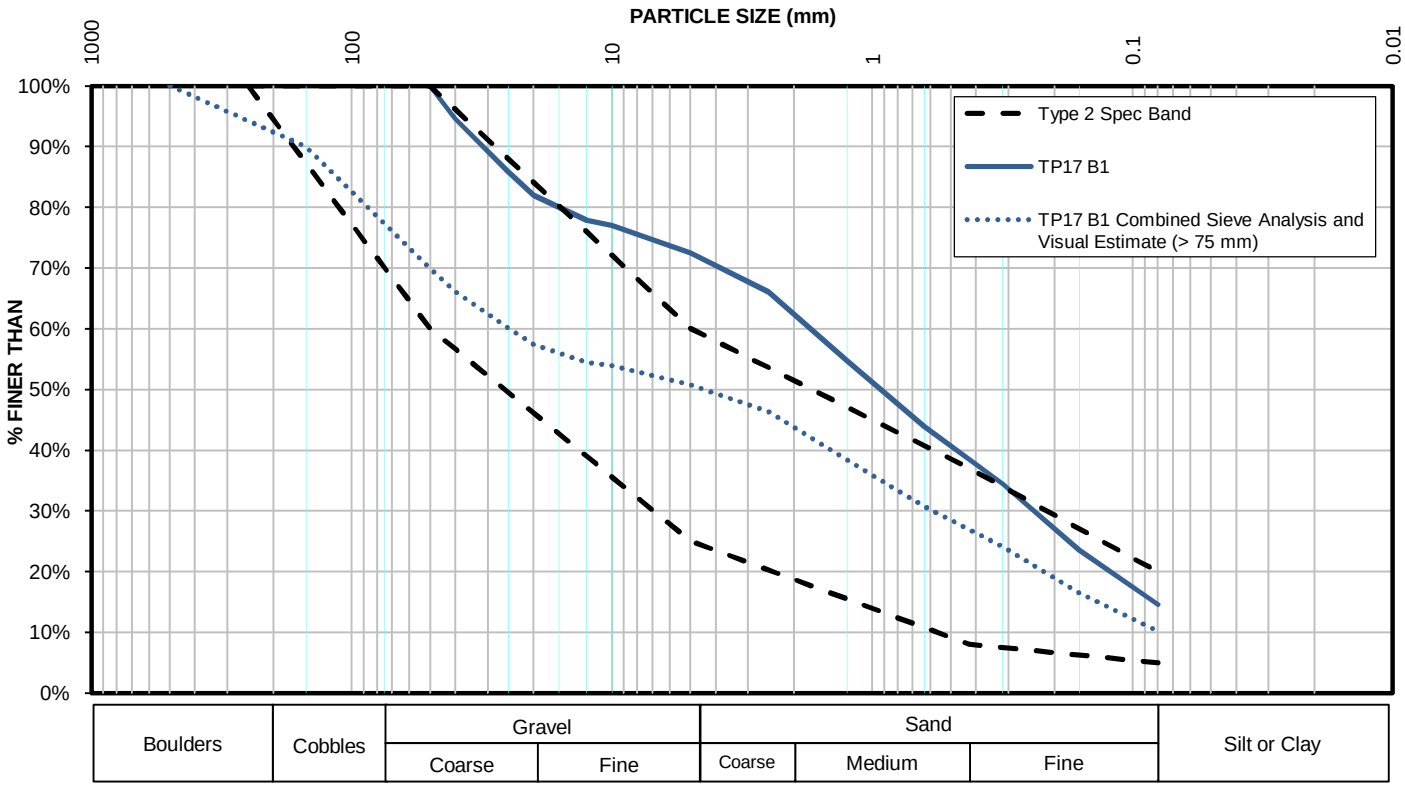


Figure 8

AECOM

FOX-E DURBAN ISLAND DEW LINE SITE

GRAIN SIZE DISTRIBUTION CURVES - BORROW AREA 1B (TYPE 2 MATERIAL)

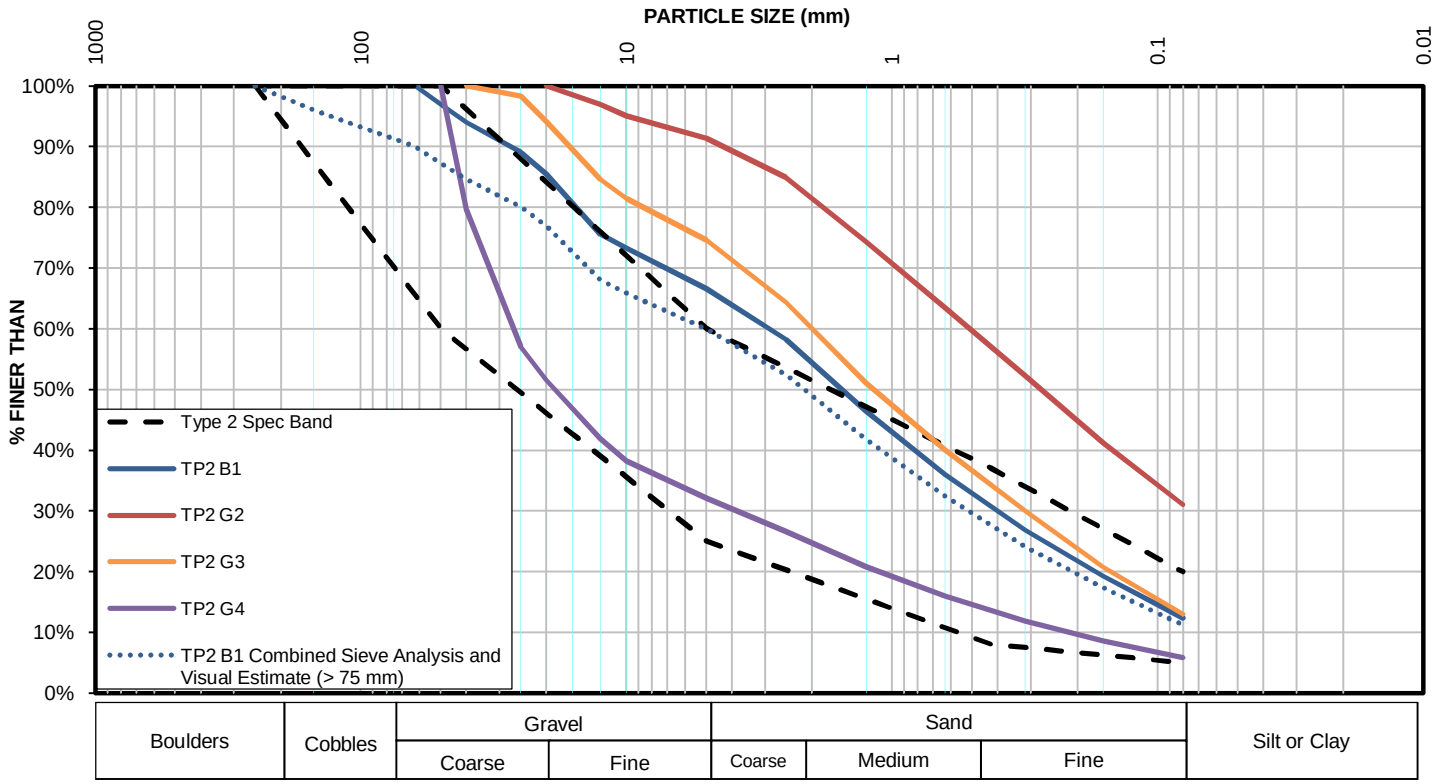


Figure 9

AECOM

FOX-E DURBAN ISLAND DEW LINE SITE

GRAIN SIZE DISTRIBUTION CURVES - BORROW AREA 1B (TYPE 2 MATERIAL)

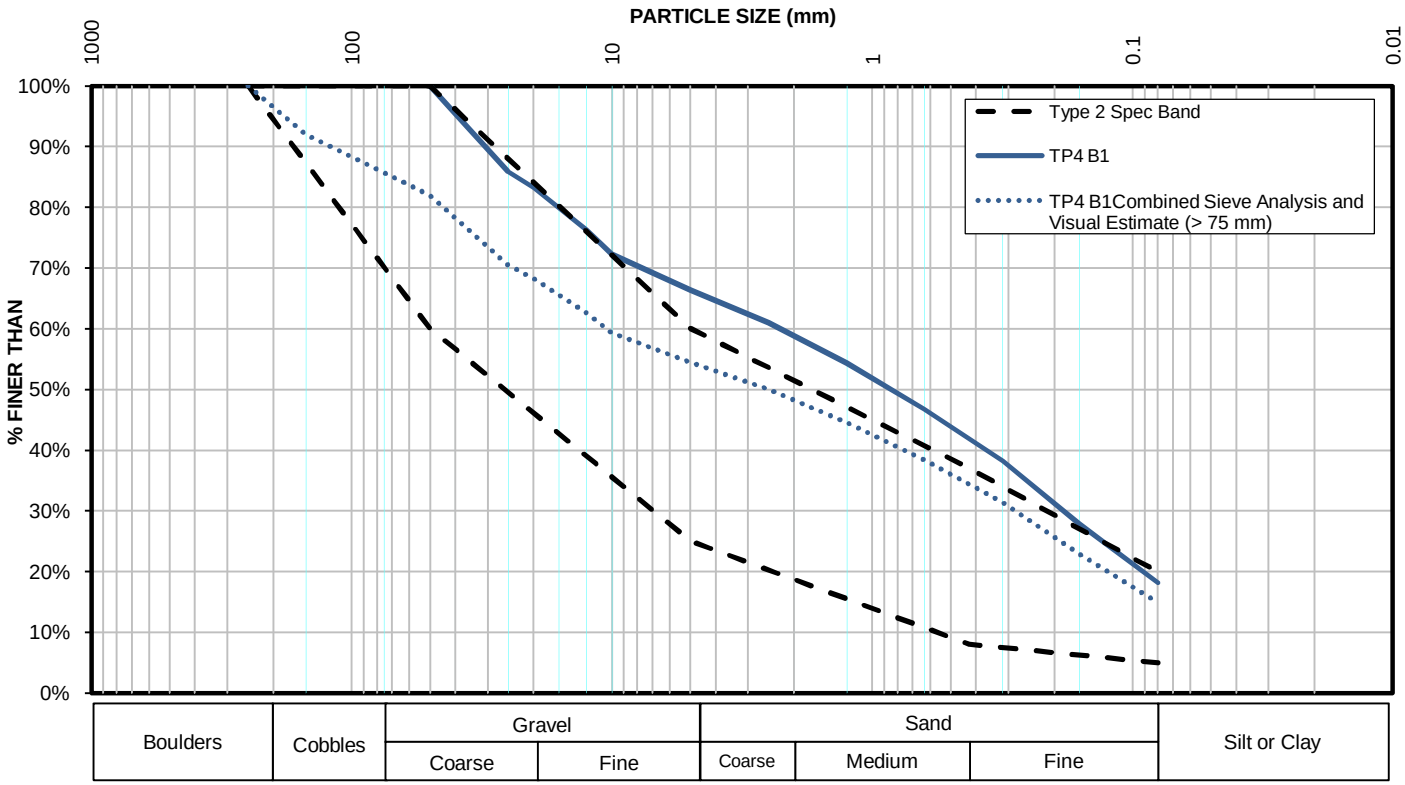


Figure 10

AECOM

FOX-E DURBAN ISLAND DEW LINE SITE

GRAIN SIZE DISTRIBUTION CURVES - BORROW AREA 1D (TYPE 5 MATERIAL)

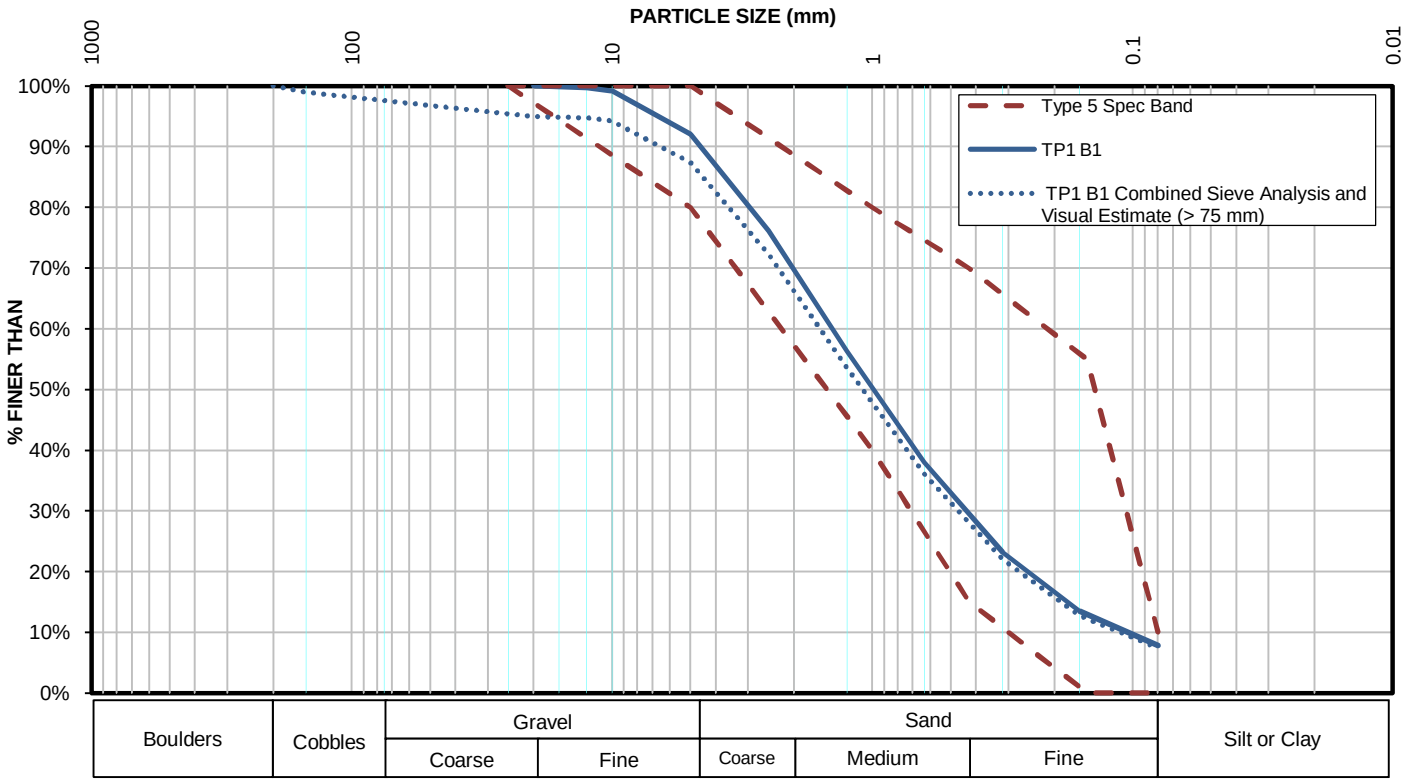


Figure 11

AECOM

FOX-E DURBAN ISLAND DEW LINE SITE

GRAIN SIZE DISTRIBUTION CURVES - BORROW AREA 2 (TYPE 5 MATERIAL)

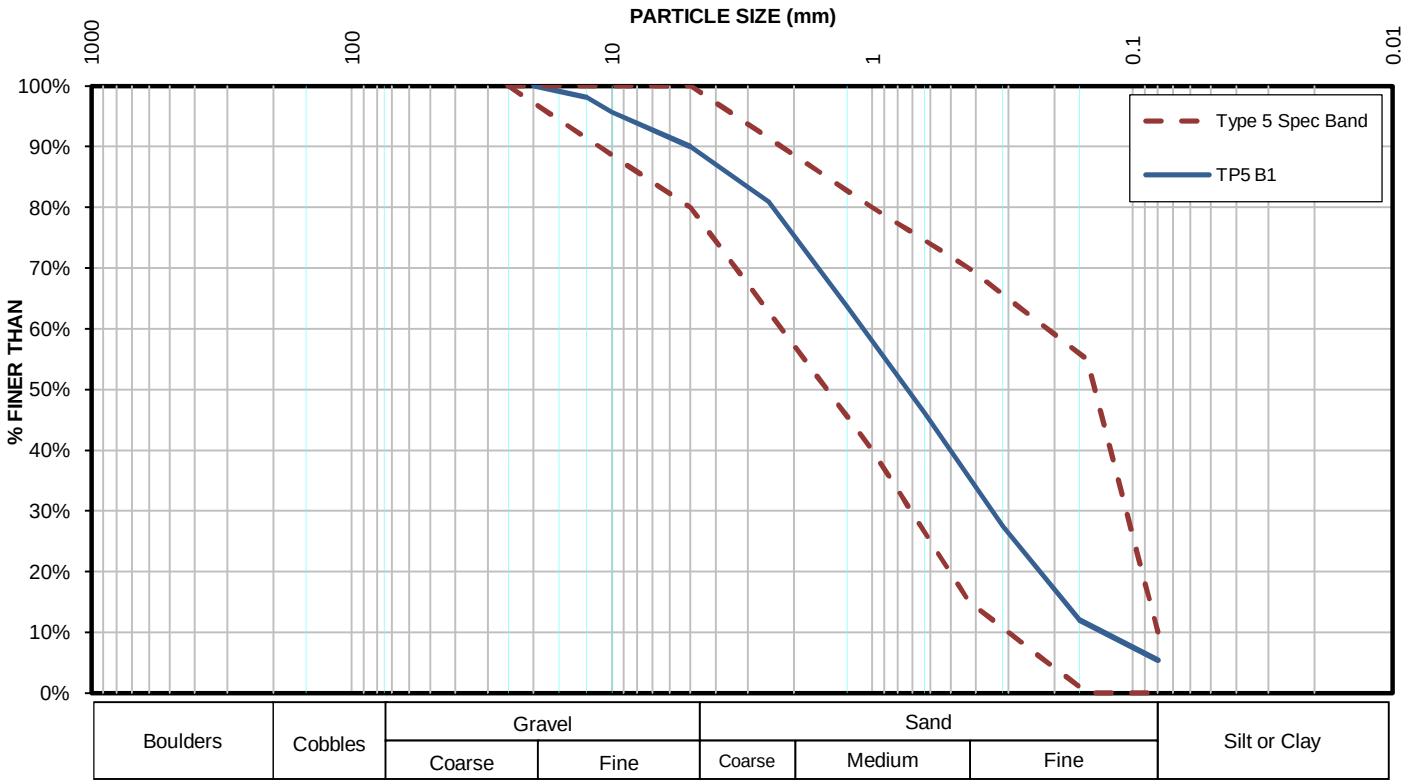


Figure 12

AECOM

FOX-E DURBAN ISLAND DEW LINE SITE

GRAIN SIZE DISTRIBUTION CURVES - BORROW AREA 2 (TYPE 4 MATERIAL)

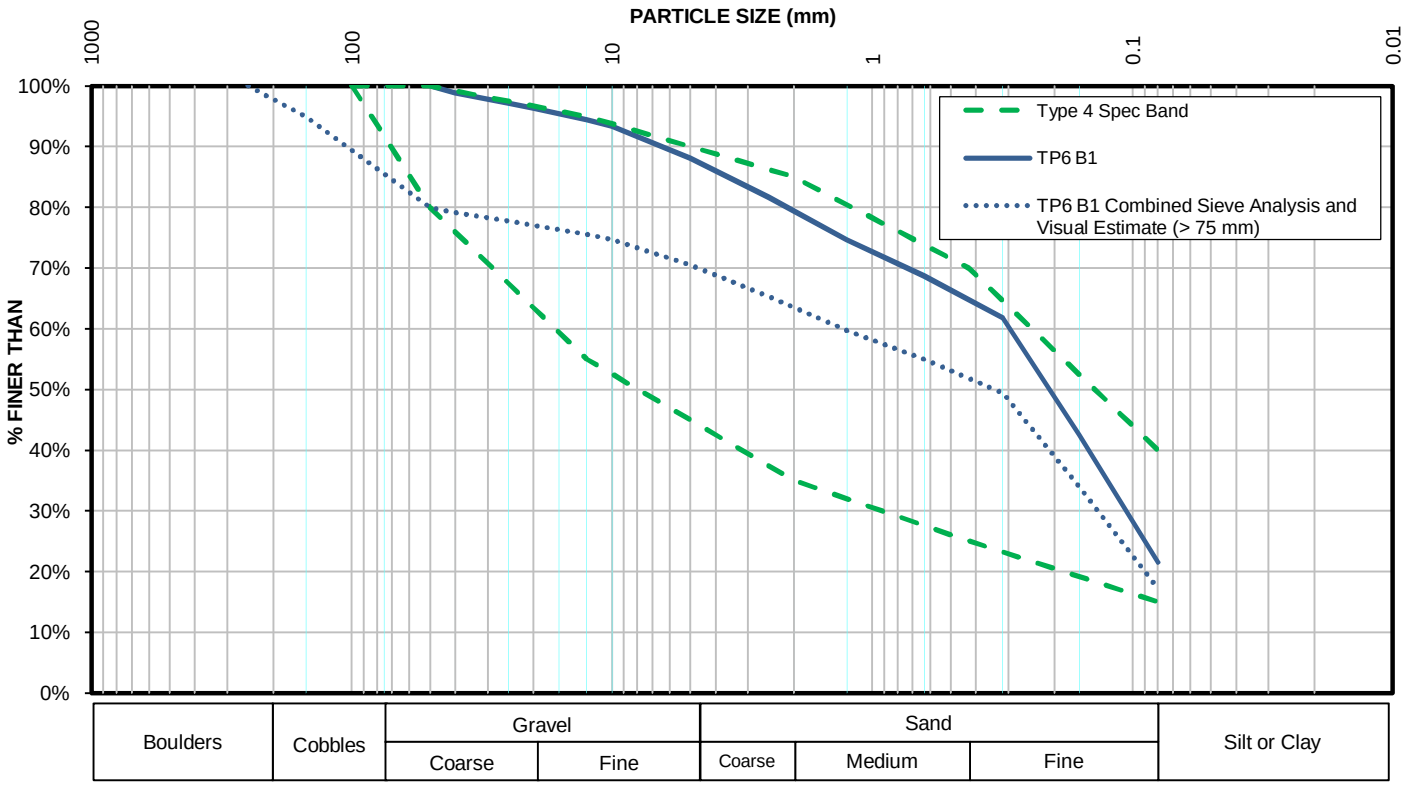


Figure 13

AECOM

FOX-E DURBAN ISLAND DEW LINE SITE

GRAIN SIZE DISTRIBUTION CURVES - BORROW AREA 3 (TYPE 4 MATERIAL)

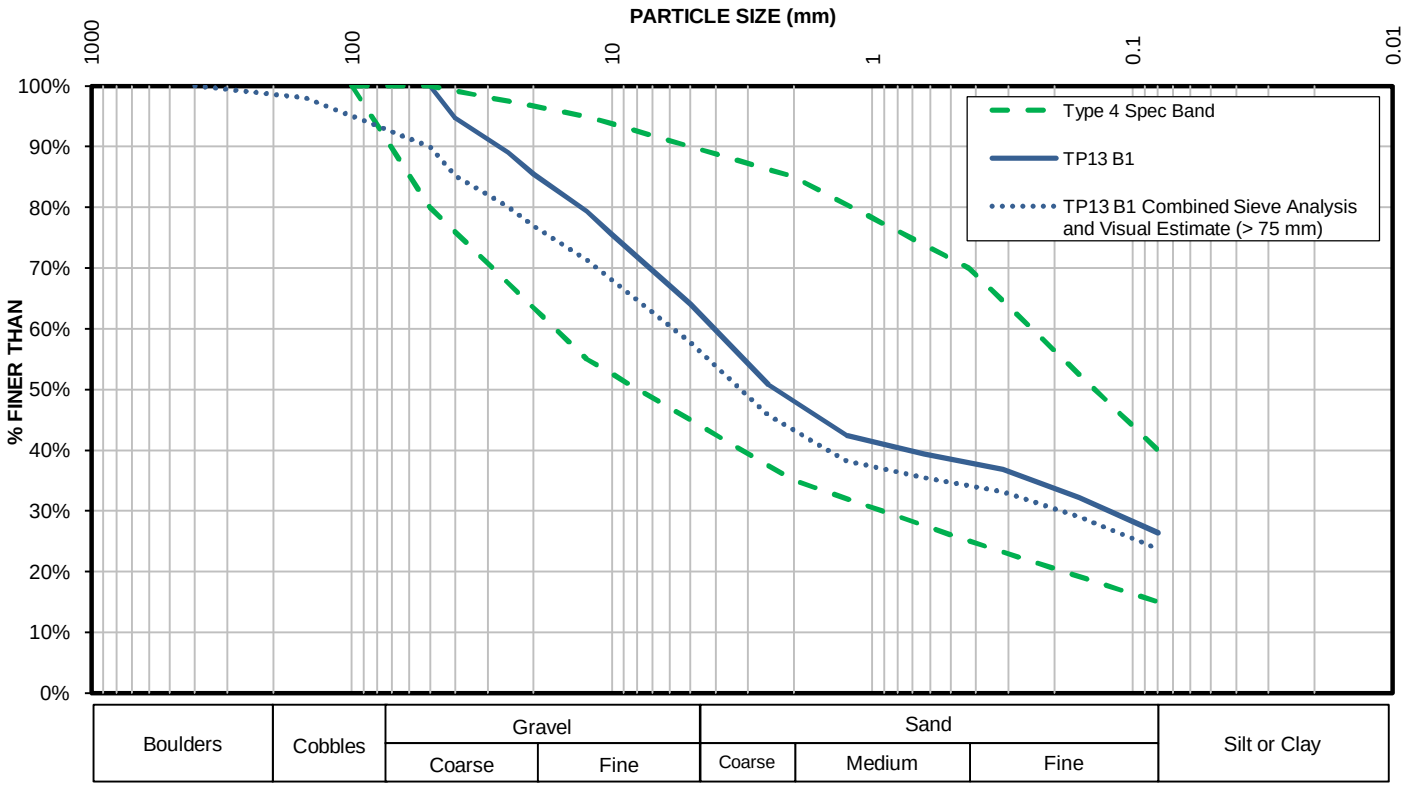


Figure 14

AECOM

FOX-E DURBAN ISLAND DEW LINE SITE

GRAIN SIZE DISTRIBUTION CURVES - BORROW AREA 4

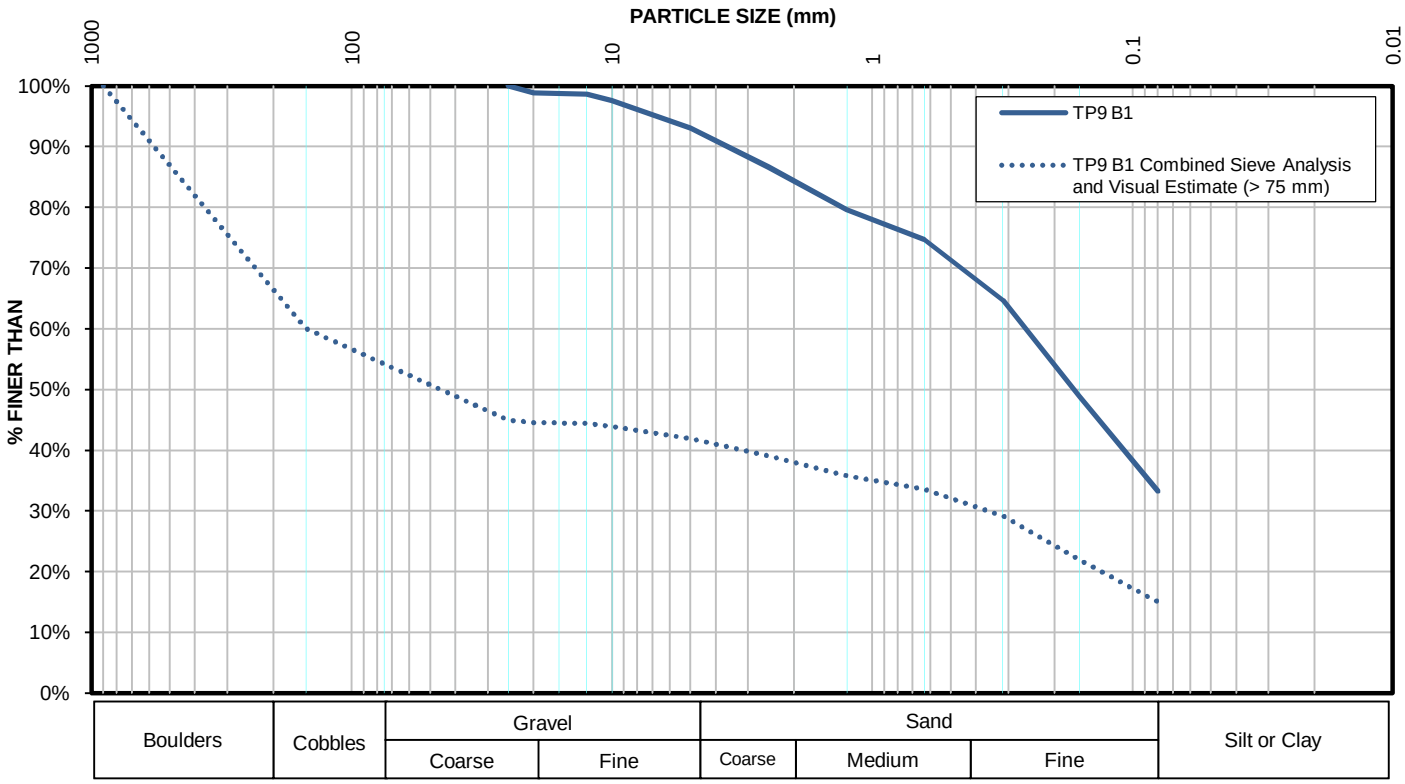


Figure 15

AECOM

FOX-E DURBAN ISLAND DEW LINE SITE

GRAIN SIZE DISTRIBUTION CURVES - BORROW AREA 5 (NON GRANULAR MATERIAL)

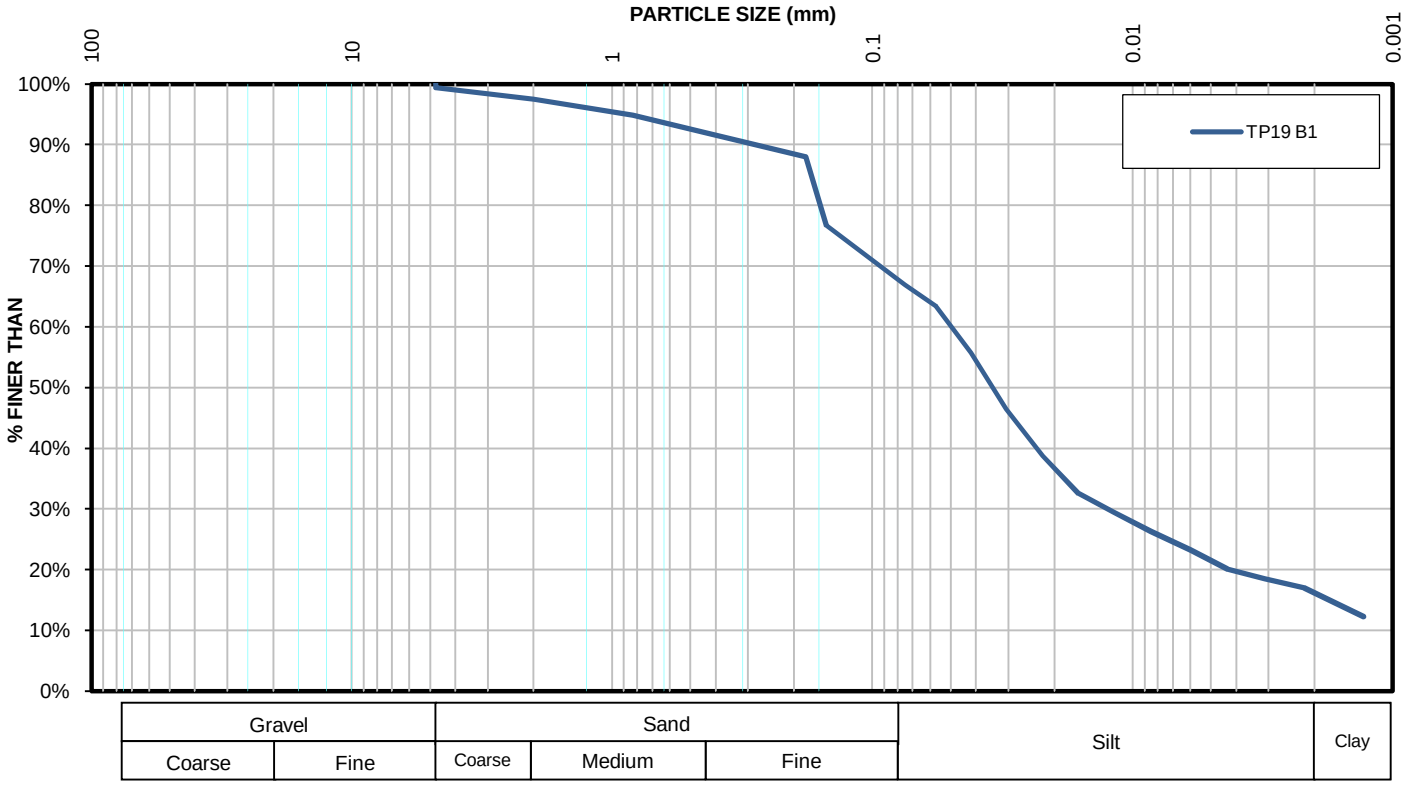


Figure 16

AECOM

FOX-E DURBAN ISLAND DEW LINE SITE

GRAIN SIZE DISTRIBUTION CURVES - BORROW AREA 5 (NON GRANULAR MATERIAL)

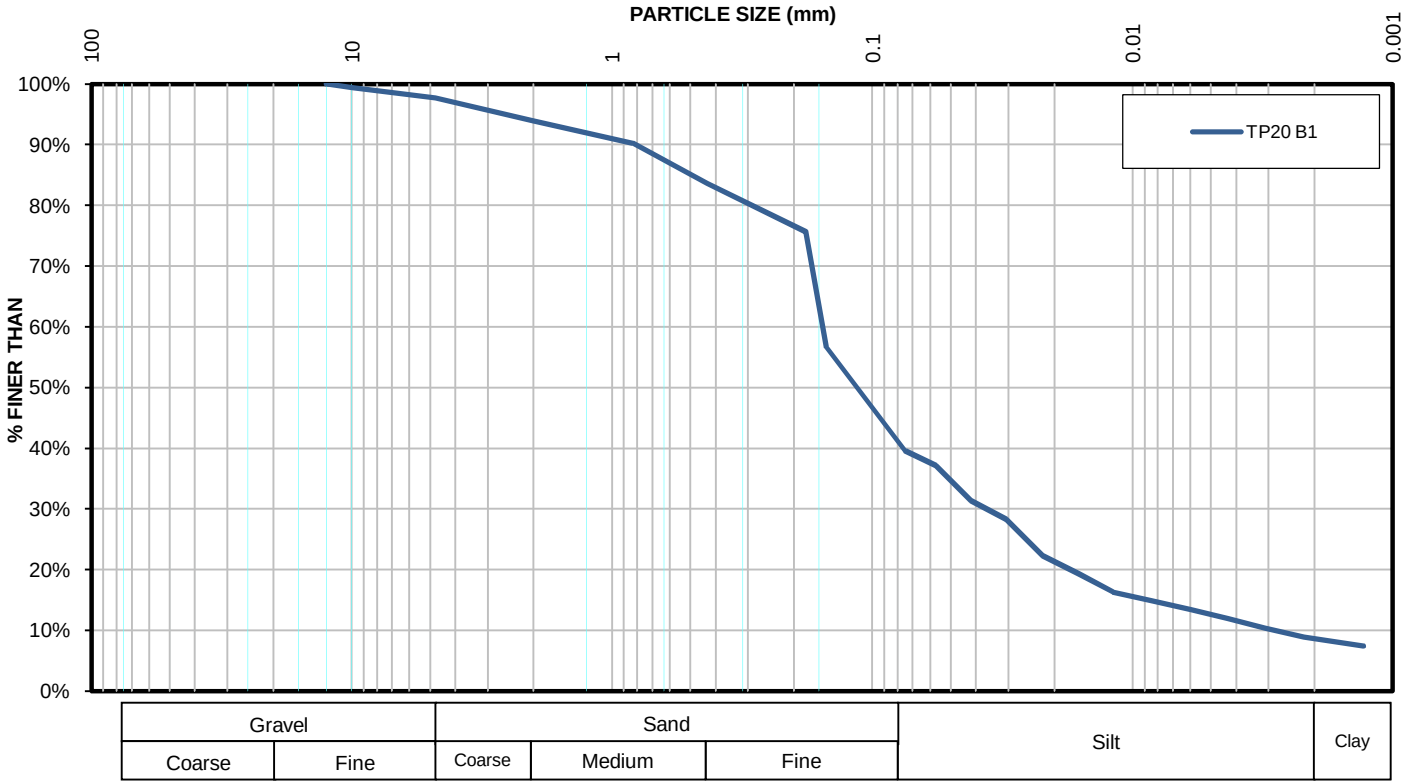


Figure 17

AECOM

FOX-E DURBAN ISLAND DEW LINE SITE

GRAIN SIZE DISTRIBUTION CURVES - BORROW AREA 6 (TYPE 4 MATERIAL)

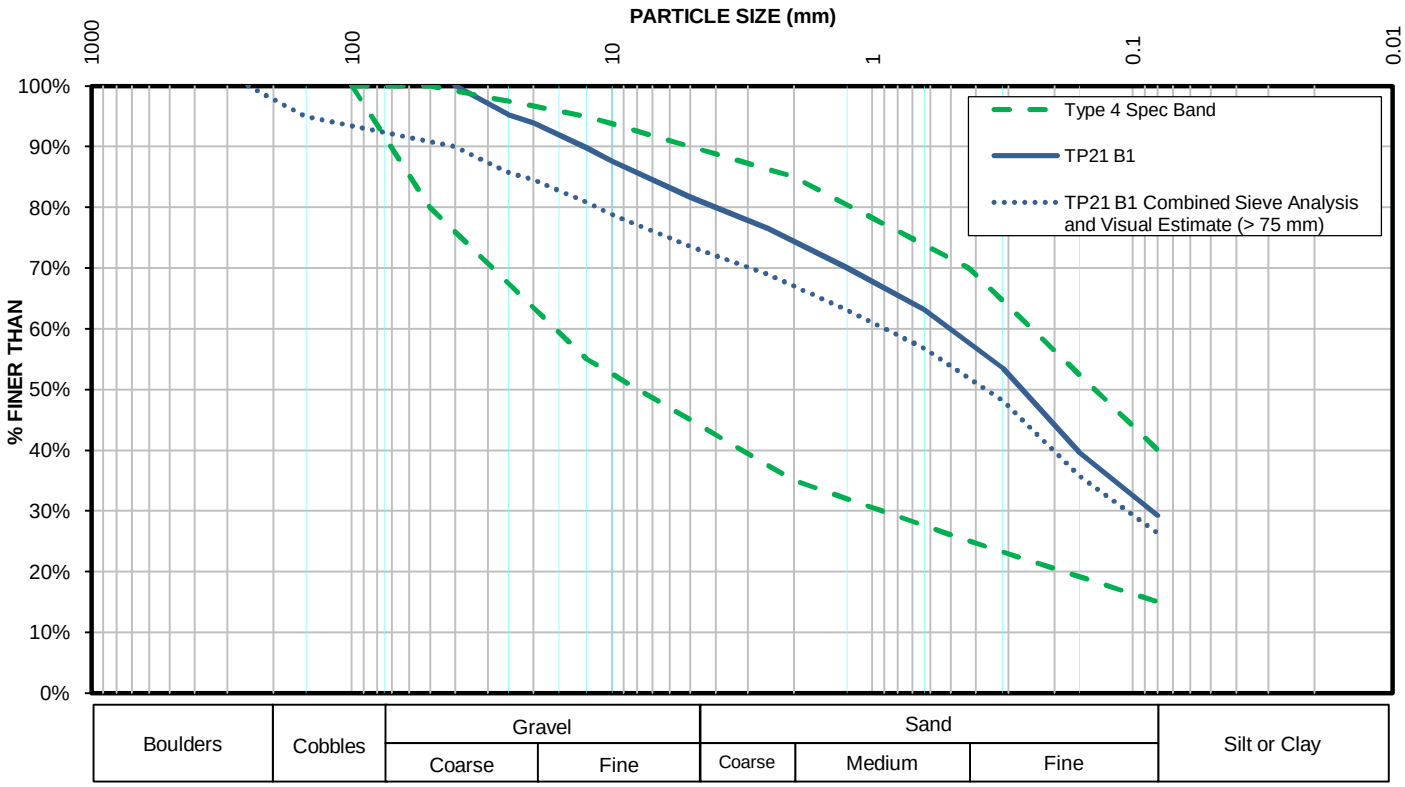


Figure 18

AECOM

FOX-E DURBAN ISLAND DEW LINE SITE

GRAIN SIZE DISTRIBUTION CURVES - BORROW AREA 6 (TYPE 4 MATERIAL)

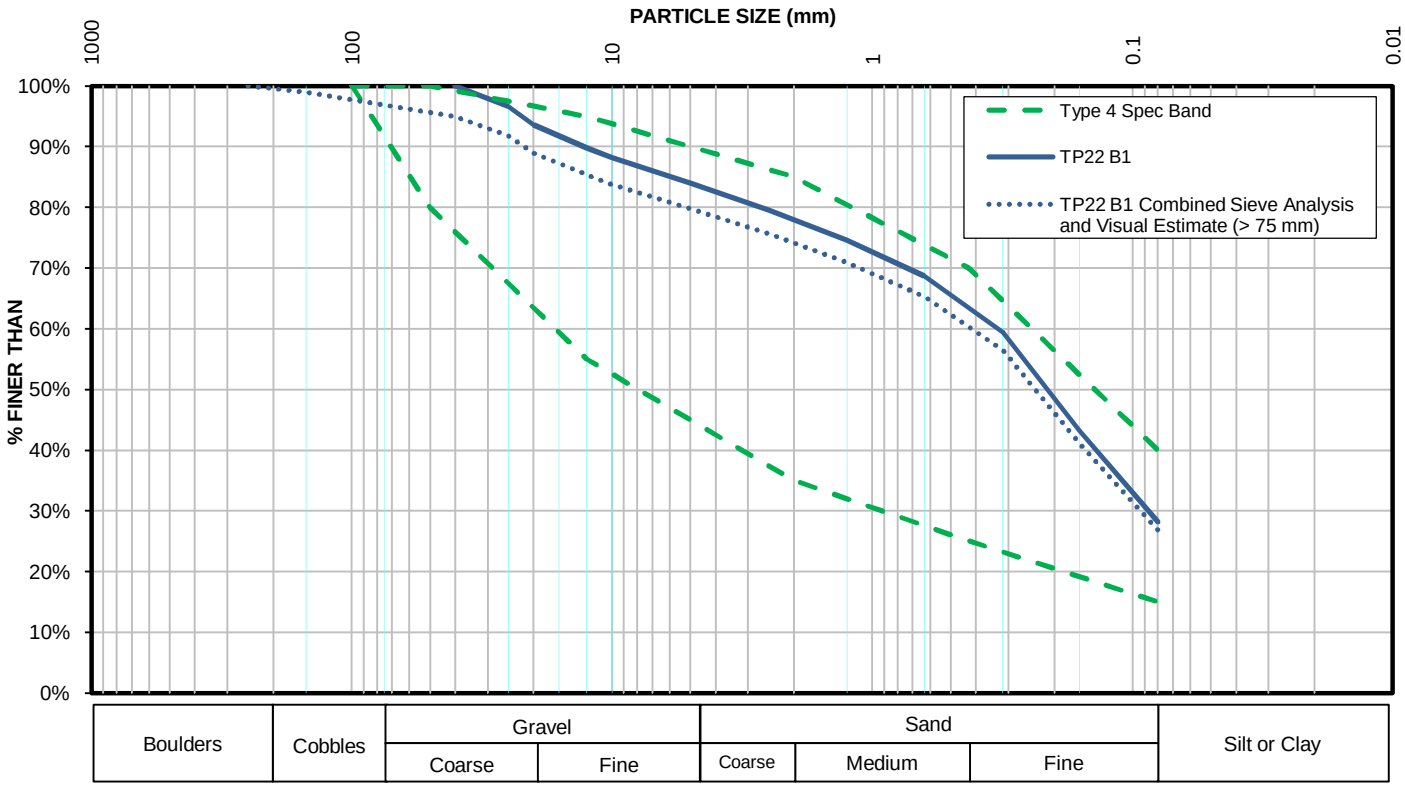


Figure 19

AECOM

FOX-E DURBAN ISLAND DEW LINE SITE

GRAIN SIZE DISTRIBUTION CURVES - BORROW AREA 6 (TYPE 4 MATERIAL)

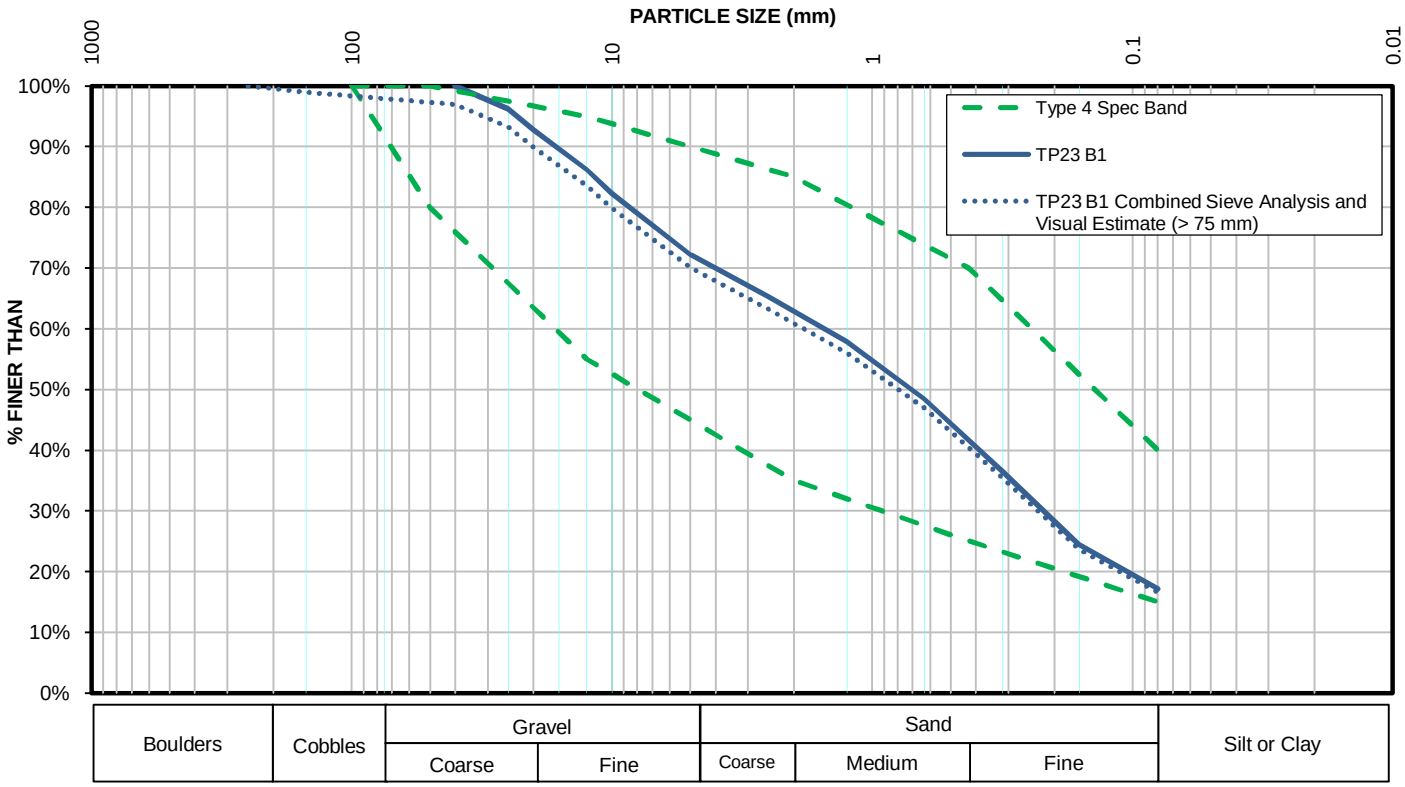


Figure 20

AECOM

FOX-E DURBAN ISLAND DEW LINE SITE

GRAIN SIZE DISTRIBUTION CURVES - BORROW AREA 7 (TYPE 2 MATERIAL)

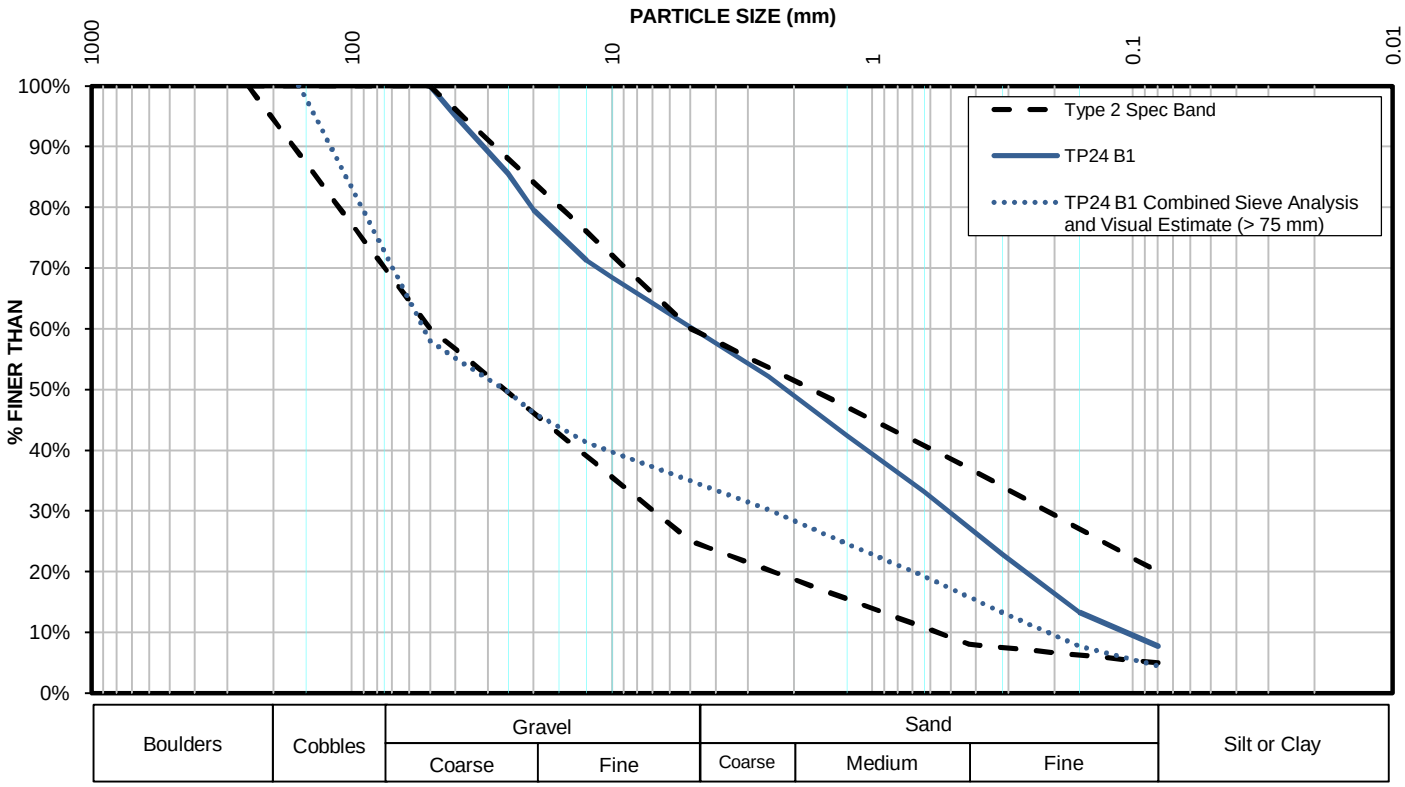


Figure 21

AECOM

FOX-E DURBAN ISLAND DEW LINE SITE

GRAIN SIZE DISTRIBUTION CURVES - BORROW AREA 7 (TYPE 2 MATERIAL)

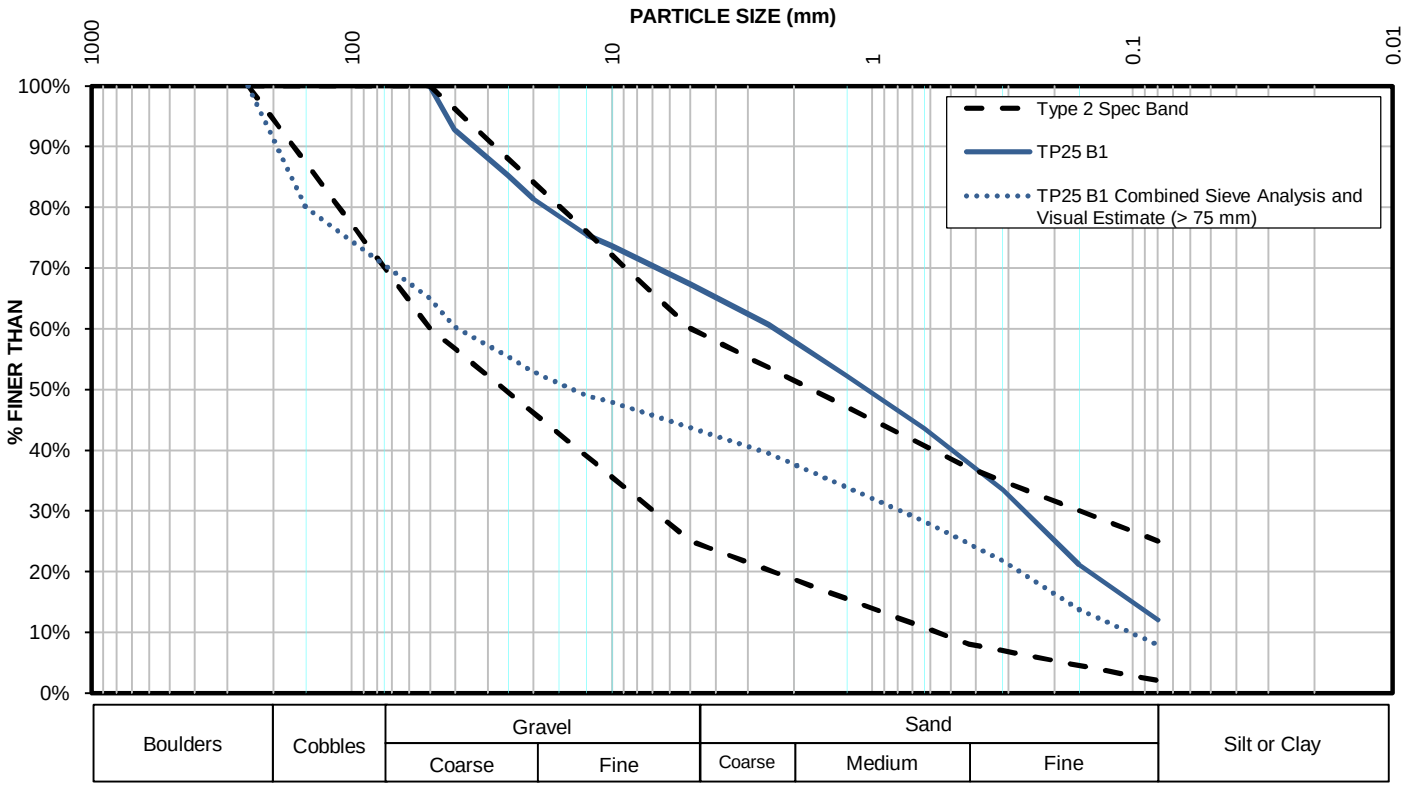


Figure 22

AECOM

FOX-E DURBAN ISLAND DEW LINE SITE

GRAIN SIZE DISTRIBUTION CURVES - BORROW AREA 8 (TYPE 2 MATERIAL)

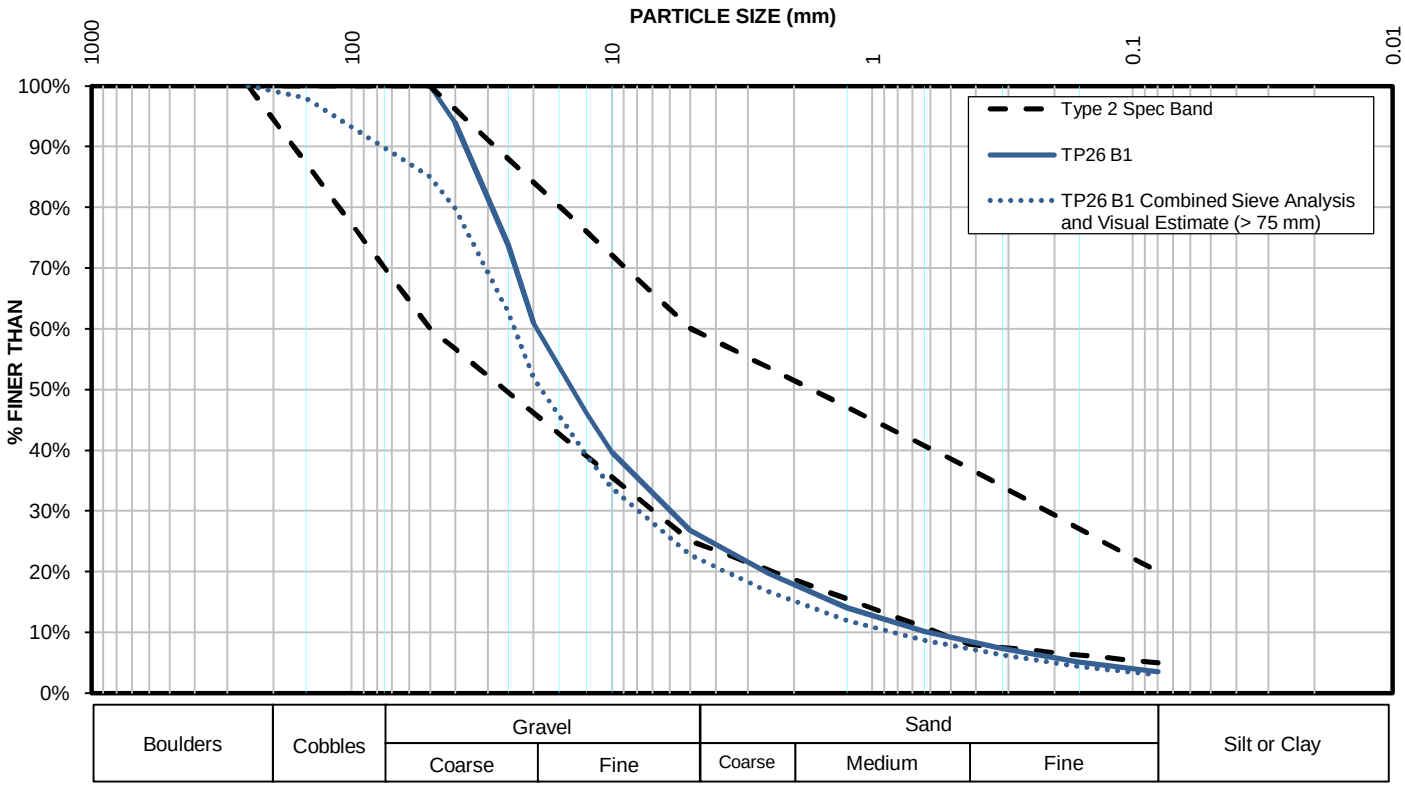


Figure 23

AECOM

FOX-E DURBAN ISLAND DEW LINE SITE

GRAIN SIZE DISTRIBUTION CURVES - BORROW AREA 8 (TYPE 2 MATERIAL)

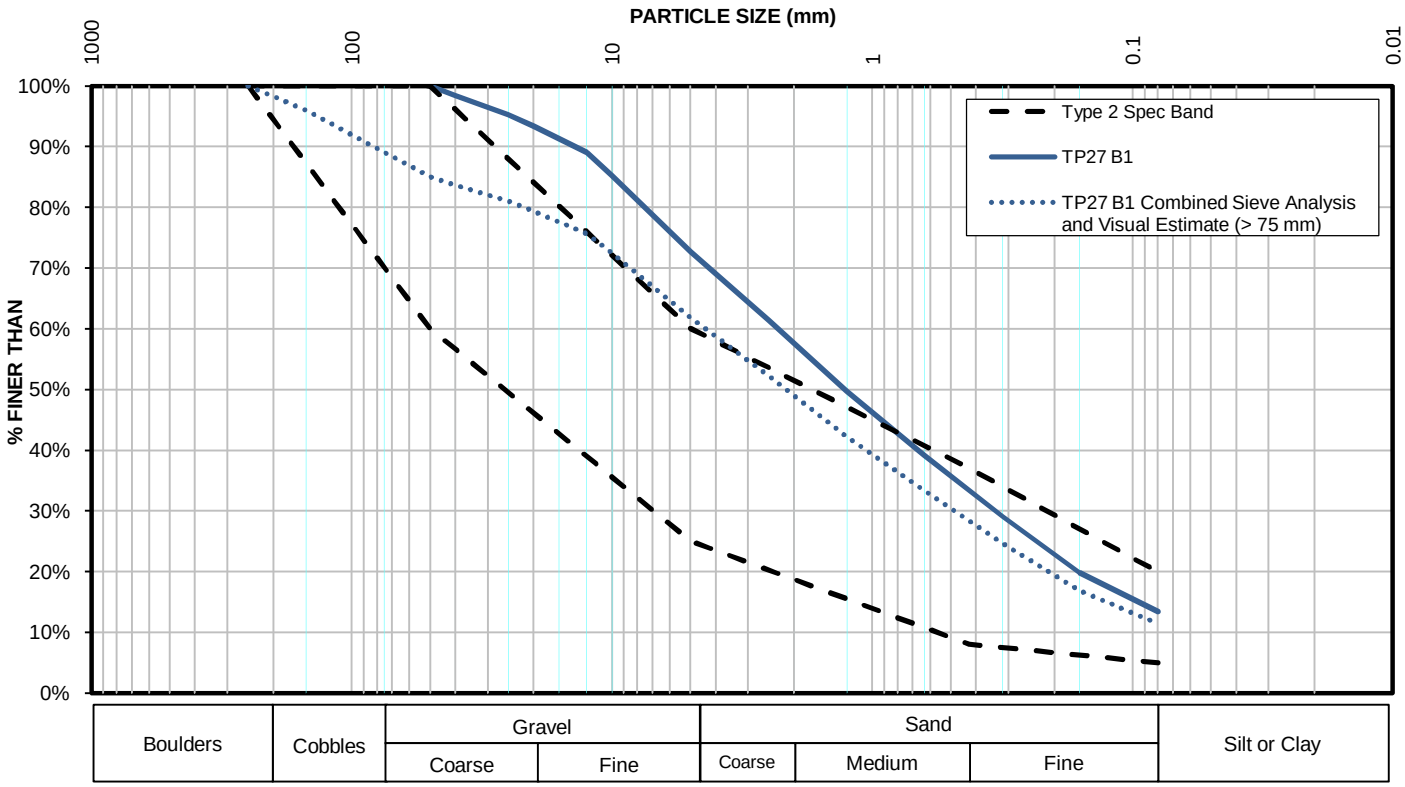


Figure 24

AECOM

FOX-E DURBAN ISLAND DEW LINE SITE

GRAIN SIZE DISTRIBUTION CURVES - BORROW AREA 8 (TYPE 2 MATERIAL)

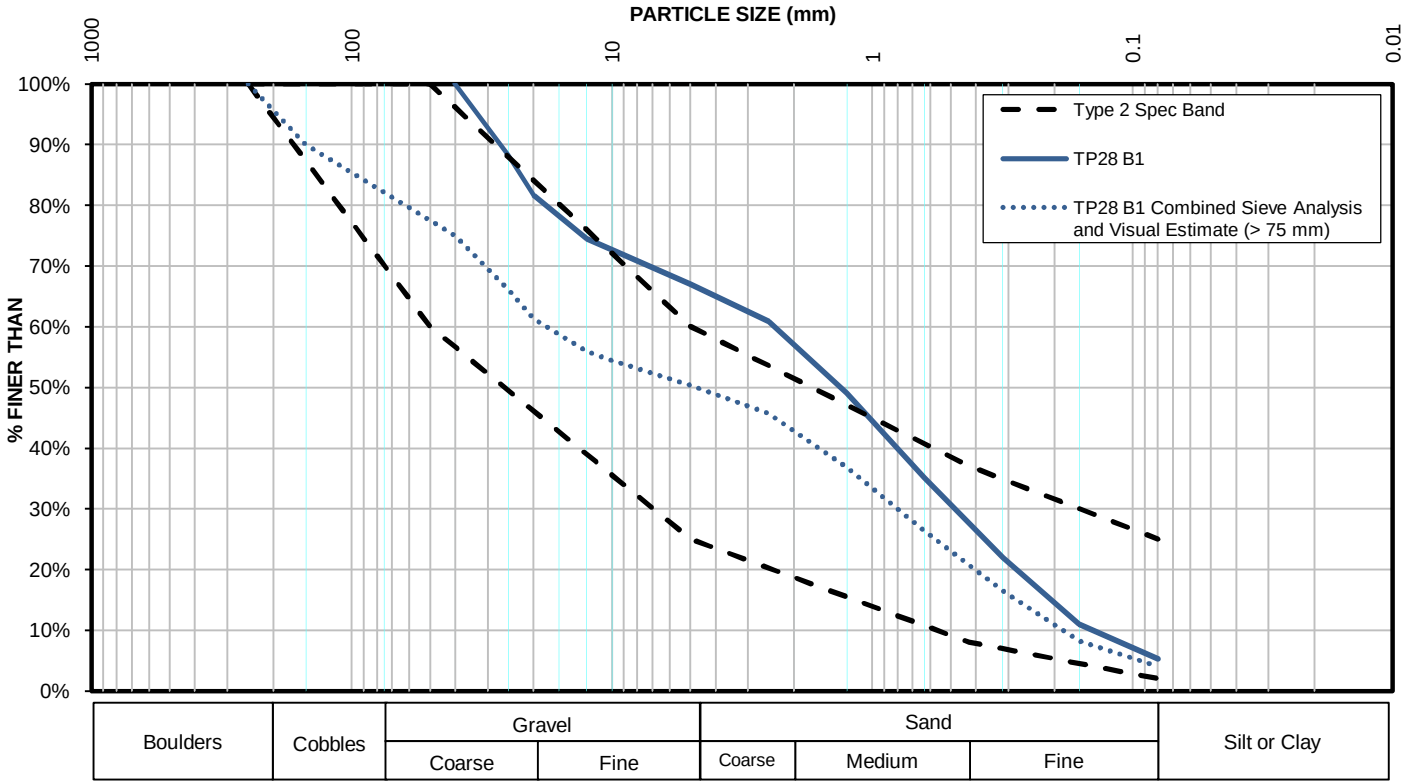


Figure 25

AECOM

FOX-E DURBAN ISLAND DEW LINE SITE

GRAIN SIZE DISTRIBUTION CURVES - Landfill 1

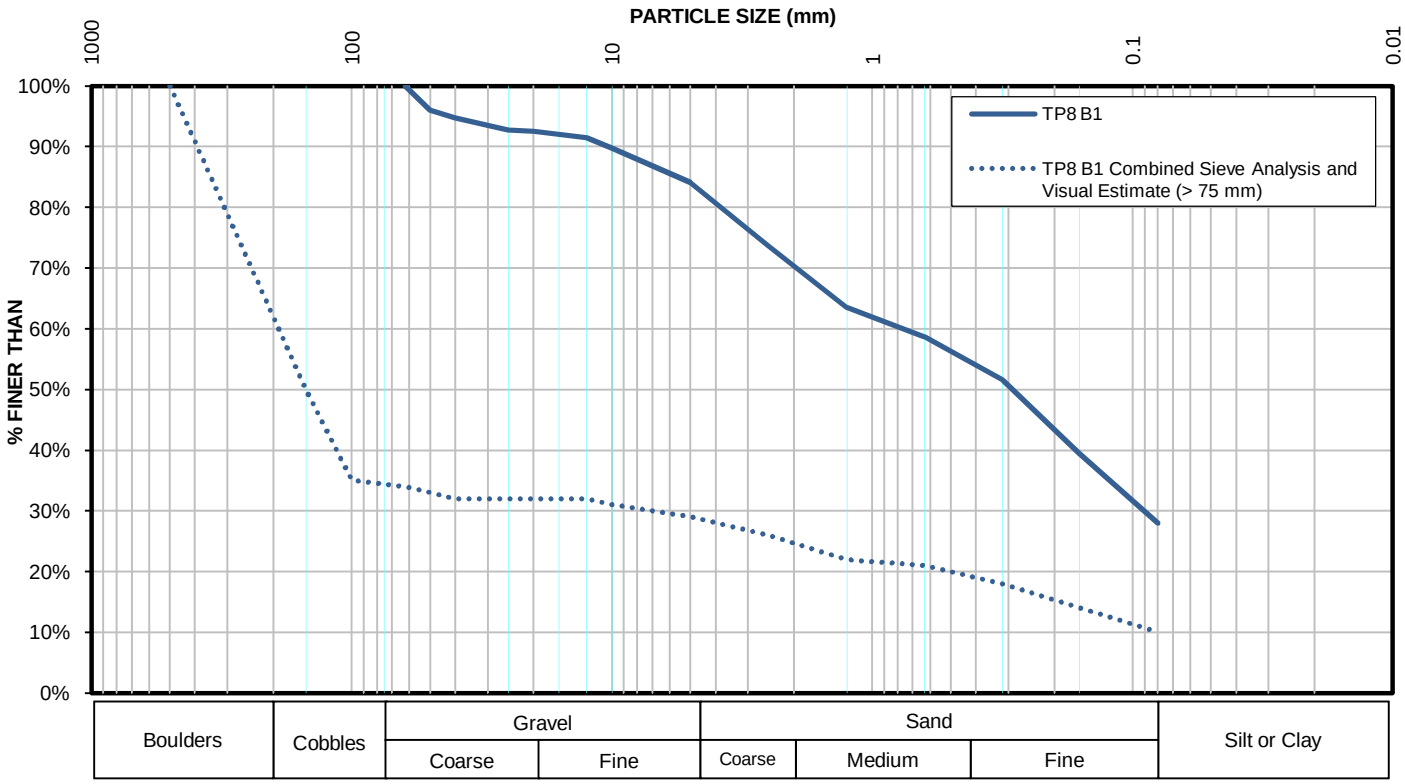


Figure 26

Appendix B

Data Summary Tables

Table B1: Soil and Sediment Metal Results

Sample #	Area	Depth [m]	Comments	As [mg/kg]	Cd [mg/kg]	Cr [mg/kg]	Co [mg/kg]	Cu [mg/kg]	Pb [mg/kg]	Ni [mg/kg]	Zn [mg/kg]
TDG for Leachable Lead[1]											
Tier II[2]				**30**	**5.0**	**250**	**50**	**100**	**500**	**100**	**500**
Site Specific Tier II[3]				**31**		**343**	**91**	**159**		**1632**	
Tier I[2]									**200**		
10-0158	Station POL Tanks and Pumphouse	0.1									
10-0159	Station POL Tanks and Pumphouse	0.5	depth 0158	5	0.1	75	19	38	31	84	90
10-0160	Station POL Tanks and Pumphouse	0.1	duplicate 0161								
10-0161	Station POL Tanks and Pumphouse	0.1	duplicate 0160								
10-0162	Station POL Tanks and Pumphouse	0.1									
10-0163	Station POL Tanks and Pumphouse	0.1									
10-0164	Station POL Tanks and Pumphouse	0.1		5	<0.1	62	17	27	97	82	75
10-0165	Station POL Tanks and Pumphouse	0.1									
10-0166	Station POL Tanks and Pumphouse	0.1									
10-0167	Station POL Tanks and Pumphouse	0.1									
10-0168	Station POL Tanks and Pumphouse	0.1									
10-0169	Station POL Tanks and Pumphouse	0.1									
10-0170	Station POL Tanks and Pumphouse	0.4	duplicate 0171; depth 0164	3	<0.1	58	15	31	65	80	71
10-0171	Station POL Tanks and Pumphouse	0.4	duplicate 0170; depth 0164	3	<0.1	57	16	30	46	78	70
10-0172	Station POL Tanks and Pumphouse	0.1									
10-0173	Station POL Tanks and Pumphouse	0.6	depth 0172								
10-0174	Station POL Tanks and Pumphouse	0.1									
10-0175	Station POL Tanks and Pumphouse	0.6	depth 0174								
10-0176	Station POL Tanks and Pumphouse	0.1									
10-0177	Station POL Tanks and Pumphouse	0.5	depth 0176								
10-0178	Station POL Tanks and Pumphouse	0.1									
10-0179	Station POL Tanks and Pumphouse	0.7	depth 0178								
10-0180	Station POL Tanks and Pumphouse	0.1	duplicate 0181								
10-0181	Station POL Tanks and Pumphouse	0.1	duplicate 0180								
10-0182	Station POL Tanks and Pumphouse	0.65	depth 0180/81								
10-0183	Water Reservoir and Pumphouse	0.1									
10-0184	Water Reservoir and Pumphouse	0.1									
10-0185	Water Reservoir and Pumphouse	0.1									
10-0186	Water Reservoir and Pumphouse	0.1									
10-0187	Water Reservoir and Pumphouse	0.1									
10-0188	Water Reservoir and Pumphouse	0.5	depth 0187								
10-0189	Water Reservoir and Pumphouse	0.1									
10-0190	Water Reservoir and Pumphouse	0.1	duplicate 0191	<1	0.6	79	33	75	7	240	87
10-0191	Water Reservoir and Pumphouse	0.1	duplicate 0190	<1	0.5	77	35	71	5	260	74
10-0192	Module Train	0.1		1	2.1	79	31	60	12	230	190
10-0193	Module Train	0.1		2	0.3	73	28	61	16	210	88
10-0194	Module Train	0.1									
10-0195	Module Train	0.1									
10-0196	Module Train	0.1									
10-0197	Module Train	0.1		3	0.2	75	20	37	18	85	130
10-0198	Module Train	0.45	depth 0197	3	0.2	64	20	33	16	60	130
10-0199	Module Train	0.1									
10-0200	Module Train	0.1	duplicate 0201								
10-0201	Module Train	0.1	duplicate 0200								

Table B1: Soil and Sediment Metal Results

Sample #	Area	Depth [m]	Comments	As [mg/kg]	Cd [mg/kg]	Cr [mg/kg]	Co [mg/kg]	Cu [mg/kg]	Pb [mg/kg]	Ni [mg/kg]	Zn [mg/kg]
TDG for Leachable Lead[1]											
Tier II[2]				**30**	**5.0**	**250**	**50**	**100**	**500**	**100**	**500**
Site Specific Tier II[3]				**31**		**343**	**91**	**159**		**1632**	
Tier I[2]									**200**		
10-0202	Module Train	0.1									
10-0203	Module Train	0.1									
10-0204	Module Train	0.1									
10-0205	Module Train	0.1									
10-0206	Module Train	0.1									
10-0207	Module Train	0.4	depth 0206								
10-0208	Module Train	0.1									
10-0209	Module Train	0.1		2	1.3	69	20	40	26	120	330
10-0210	Module Train	0.1	duplicate 0211	4	0.4	89	23	47	15	130	140
10-0211	Module Train	0.1	duplicate 0210	4	0.4	91	23	46	15	130	130
10-0212	Module Train	0.5	depth 0200/01								
10-0213	Module Train	0.1									
10-0214	Module Train	0.3	depth 0213								
10-0215	Module Train	0.1									
10-0216	Module Train	0.5	depth 0215								
10-0217	Warehouse	0.1									
10-0218	Warehouse	0.1									
10-0219	Warehouse	0.1									
10-0220	Warehouse	0.1	duplicate 0221								
10-0221	Warehouse	0.1	duplicate 0220								
10-0222	Warehouse	0.1		4	0.9	60	16	37	16	110	100
10-0223	Warehouse	0.3	depth 0222	4	0.9	63	16	30	11	92	77
10-0224	Warehouse	0.1									
10-0225	Warehouse	0.1									
10-0226	Warehouse	0.1									
10-0227	Warehouse	0.5	depth 0226								
10-0228	Warehouse	0.1									
10-0229	Warehouse	0.3	depth 0228								
10-0230	Garage	0.1	duplicate 0231		3.3				53		
10-0231	Garage	0.1	duplicate 0230		2.8				56		
10-0232	Garage	0.1		3	**13.0**	83	24	50	61	160	150
10-0233	Garage	0.1			1.5						
10-0234	Garage	0.1									
10-0235	Garage	0.1		4	3.8	95	28	130	170	180	210
10-0236	Garage	0.1							82		
10-0237	Garage	0.1		3	3.0	95	29	73	**230**	250	300
10-0238	Garage	0.4	depth 0237	6	0.9	89	28	51	78	260	130
10-0239	Inuit Huts (South of Station Area)	0.1		3	0.3	99	29	68	30	280	140
10-0240	Inuit Huts (South of Station Area)	0.1	duplicate 0241								
10-0241	Inuit Huts (South of Station Area)	0.1	duplicate 0240								
10-0242	Inuit Huts (South of Station Area)	0.1									
10-0243	Inuit Huts (South of Station Area)	0.1									
10-0244	Inuit Huts (South of Station Area)	0.1									
10-0245	Inuit Huts (South of Station Area)	0.1									

Table B1: Soil and Sediment Metal Results

Sample #	Area	Depth [m]	Comments	As [mg/kg]	Cd [mg/kg]	Cr [mg/kg]	Co [mg/kg]	Cu [mg/kg]	Pb [mg/kg]	Ni [mg/kg]	Zn [mg/kg]
TDG for Leachable Lead[1]											
Tier II[2]				**30**	**5.0**	**250**	**50**	**100**	**500**	**100**	**500**
Site Specific Tier II[3]				**31**		**343**	**91**	**159**		**1632**	
Tier I[2]									**200**		
10-0246	Inuit Huts (South of Station Area)	0.1									
10-0247	Inuit Huts (South of Station Area)	0.1									
10-0248	Inuit Huts (South of Station Area)	0.1		7	0.4	110	24	49	14	130	120
10-0249	Inuit Huts (South of Station Area)	0.3	depth 0239	1	<0.1	130	57	47	7	790	65
10-0250	Antenna	0.1	duplicate 0251								
10-0251	Antenna	0.1	duplicate 0250								
10-0252	Antenna	0.1									
10-0253	Antenna	0.1									
10-0254	Antenna	0.1		<1	0.8	120	60	45	13	820	110
10-0255	Inuit Building (West of Station Area)	0.1		2				51			
10-0256	Inuit Building (West of Station Area)	0.1		**60**	0.4	120	40	**160**	79	75	450
10-0257	Inuit Building (West of Station Area)	0.4	depth 0256	23	0.3	110	26	91	37	69	220
10-0258	Inuit Building (West of Station Area)	0.1		1				55			
10-0259	Inuit Building (West of Station Area)	0.1		2				51			
10-0260	Inuit Building (West of Station Area)	0.1	duplicate 0261	4	0.2	120	40	55	11	450	90
10-0261	Inuit Building (West of Station Area)	0.1	duplicate 0260	4	0.1	120	42	54	13	460	90
10-0262	Inuit Building (West of Station Area)	0.1									
10-0263	Former Barrel Storage Area	0.1									
10-0264	Former Barrel Storage Area	0.1									
10-0265	Former Barrel Storage Area	0.4	depth 0264								
10-0266	Former Barrel Storage Area	0.1									
10-0267	Former Barrel Storage Area	0.3	depth 0266								
10-0268	Former Barrel Storage Area	0.1									
10-0269	Former Barrel Storage Area	0.1									
10-0270	Former Barrel Storage Area	0.1	duplicate 0271								
10-0271	Former Barrel Storage Area	0.1	duplicate 0270								
10-0272	Former Barrel Storage Area	0.1									
10-0273	Former Barrel Storage Area	0.1									
10-0274	Former Barrel Storage Area	0.1									
10-0275	Former Barrel Storage Area	0.1									
10-0276	Lobe 5 (West of Antenna)	0.1		2	0.3	79	26	34	22	100	210
10-0277	Lobe 5 (West of Antenna)	0.4	depth 0276	<1	<0.1	130	64	42	4	920	68
10-0278	Lobe 5 (West of Antenna)	0.1		2	0.2	81	23	35	41	63	190
10-0279	Lobe 5 (West of Antenna)	0.55	depth 0278	<1	<0.1	130	59	45	4	790	63
10-0280	Lobe 5 (West of Antenna)	0.1	duplicate 0281	2	0.2	84	29	35	26	140	170
10-0281	Lobe 5 (West of Antenna)	0.1	duplicate 0280	2	0.2	81	25	34	19	130	160
10-0282	Lobe 5 (West of Antenna)	0.4	depth 0280/81	<1	<0.1	130	59	47	4	800	59
10-0283	Lobe 5 (West of Antenna)	0.1									
10-0284	Lobe 5 (West of Antenna)	0.3	depth 0283								
10-0285	Lobe 5 (West of Antenna)	0.1									
10-0286	Lobe 5 (West of Antenna)	0.3	depth 0285								
10-0287	Lobe 6 (Southwest of Antenna)	0.1		<1	<0.1	140	71	54	3	710	54
10-0288	Lobe 6 (Southwest of Antenna)	0.5	depth 0288	<1	<0.1	120	61	48	2	830	48
10-0289	Lobe 7 (South of Inuit Huts (South of Station Area))	0.1									

Table B1: Soil and Sediment Metal Results

Sample #	Area	Depth [m]	Comments	As [mg/kg]	Cd [mg/kg]	Cr [mg/kg]	Co [mg/kg]	Cu [mg/kg]	Pb [mg/kg]	Ni [mg/kg]	Zn [mg/kg]
TDG for Leachable Lead[1]											
Tier II[2]				**30**	**5.0**	**250**	**50**	**100**	**500**	**100**	**500**
Site Specific Tier II[3]				**31**		**343**	**91**	**159**		**1632**	
Tier I[2]									**200**		
10-0290	Lobe 7 (South of Inuit Huts (South of Station Area))	0.3	duplicate 0291; depth 0289								
10-0291	Lobe 7 (South of Inuit Huts (South of Station Area))	0.3	duplicate 0290; depth 0289								
10-0292	Dump A Push Point	0.1									
10-0293	Dump A Push Point	0.1		3	0.7	77	26	47	21	180	120
10-0294	Dump A Push Point	0.1		3	0.4	88	26	45	30	190	150
10-0295	Dump A Push Point	0.1									
10-0296	Dump A Push Point	0.1		2	1.3	72	22	39	25	150	130
10-0297	Dump A Push Point	0.1									
10-0298	Dump A Push Point	0.1									
10-0299	Dump A Push Point	0.1		2	0.3	66	19	32	18	94	110
10-0300	Dump A Push Point	0.1	duplicate 0301								
10-0301	Dump A Push Point	0.1	duplicate 0300								
10-0302	Dump A Push Point	0.25	depth 0300/01	2	0.4	93	34	37	13	370	91
10-0303	Lobe 4 (North of Water Reservoir and Pumphouse)	0.1		1	0.2	140	57	49	9	720	67
10-0304	Lobe 4 (North of Water Reservoir and Pumphouse)	0.45	depth 0303	1	0.1	120	47	53	8	570	63
10-0305	Lobe 4 (North of Water Reservoir and Pumphouse)	0.1									
10-0306	Lobe 4 (North of Water Reservoir and Pumphouse)	0.5	depth 0305								
10-0307	Lobe 4 (North of Water Reservoir and Pumphouse)	0.1		<1	<0.1	160	71	43	1	960	51
10-0308	Lobe 4 (North of Water Reservoir and Pumphouse)	0.45	depth 0307	<1	<0.1	160	67	51	1	920	52
10-0309	Lobe 3 (North of Warehouse)	0.1		<1	<0.1	140	61	43	2	850	48
10-0310	Lobe 3 (North of Warehouse)	0.6	duplicate 0311; depth 0309	<1	0.1	160	65	43	3	930	64
10-0311	Lobe 3 (North of Warehouse)	0.6	duplicate 0311; depth 0309	<1	0.1	150	63	44	3	910	58
10-0312	Lobe 3 (North of Warehouse)	0.1		<1	<0.1	180	69	52	1	940	49
10-0313	Lobe 3 (North of Warehouse)	0.45	depth 0312	<1	<0.1	180	67	49	1	930	47
10-0314	Lobe 2 (North of Garage)	0.1		2	0.6	120	42	59	65	520	150
10-0315	Lobe 2 (North of Garage)	0.5		1	0.3	130	50	61	39	640	110
10-0316	Lobe 2 (North of Garage)	0.1		<1	0.1	140	56	57	41	800	57
10-0317	Lobe 2 (North of Garage)	0.5		<1	<0.1	140	57	59	9	800	62
10-0318	Lobe 1 (Northwest of Garage)	0.1		<1	<0.1	160	64	56	2	850	51
10-0319	Lobe 1 (Northwest of Garage)	0.5		<1	<0.1	170	67	50	1	940	49
10-0320	Lobe 1 (Northwest of Garage)	0.1	duplicate 0321	<1	<0.1	150	60	54	2	880	50
10-0321	Lobe 1 (Northwest of Garage)	0.1	duplicate 0320	<1	<0.1	140	59	56	2	770	48
10-0322	Lobe 1 (Northwest of Garage)	0.6		<1	<0.1	140	58	47	3	800	52
10-0323	Lobe 8 (Barrel Cache (West of Station Area))	0.1		<1	<0.1	73	42	70	1	290	46
10-0324	Lobe 8 (Barrel Cache (West of Station Area))	0.4		<1	<0.1	73	43	88	1	290	51
10-0325	Lobe 8 (Barrel Cache (West of Station Area))	0.1		<1	<0.1	73	43	77	2	280	50
10-0326	Lobe 8 (Barrel Cache (West of Station Area))	0.6		<1	<0.1	69	42	66	1	280	44
10-0327	Inuit Hut (Beach Landing)	0.1		3	0.5	62	13	22	7	60	61
10-0328	Inuit Hut (Beach Landing)	0.45	depth 0327	4	<0.1	71	14	26	7	64	66
10-0329	Inuit Hut (Beach Landing)	0.1									
10-0330	Inuit Hut (Beach Landing)	0.1		2	<0.1	48	11	17	6	55	51
10-0331	Inuit Hut (Beach Landing)	0.1		2	<0.1	47	11	16	6	56	45
10-0332	Inuit Hut (Beach Landing)	0.1									
10-0333	Barrel Cache Area (Beach Landing)	0.1		3	<0.1	62	14	22	7	63	56

Table B1: Soil and Sediment Metal Results

Sample #	Area	Depth [m]	Comments	As [mg/kg]	Cd [mg/kg]	Cr [mg/kg]	Co [mg/kg]	Cu [mg/kg]	Pb [mg/kg]	Ni [mg/kg]	Zn [mg/kg]
TDG for Leachable Lead[1]											
Tier II[2]				**30**	**5.0**	**250**	**50**	**100**	**500**	**100**	**500**
Site Specific Tier II[3]				**31**		**343**	**91**	**159**		**1632**	
Tier I[2]									**200**		
10-0334	Barrel Cache Area (Beach Landing)	0.1									
10-0335	Barrel Cache Area (Beach Landing)	0.4	depth 0334								
10-0336	Barrel Cache Area (Beach Landing)	0.1		3	<0.1	72	15	26	7	66	66
10-0337	Barrel Cache Area (Beach Landing)	0.35	depth 0336	3	<0.1	78	15	27	8	61	68
10-0338	Barrel Cache Area (Beach Landing)	0.1									
10-0339	Barrel Cache Area (Beach Landing)	0.6	depth 0338								
10-0340	Barrel Cache Area (Beach Landing)	0.1	duplicate 0341								
10-0341	Barrel Cache Area (Beach Landing)	0.1	duplicate 0340								
10-0342	Barrel Cache Area (Beach Landing)	0.4	depth 0340/41								
10-0343	Beach POL Tanks	0.1									
10-0344	Beach POL Tanks	0.1									
10-0345	Beach POL Tanks	0.1									
10-0346	Beach POL Tanks	0.1		2	<0.1	56	12	24	28	57	67
10-0347	Beach POL Tanks	0.6	depth 0346	3	<0.1	56	13	23	23	76	54
10-0348	Beach POL Tanks	0.1									
10-0349	Beach POL Tanks	0.1									
10-0350	Beach POL Tanks	0.1	duplicate 0351								
10-0351	Beach POL Tanks	0.1	duplicate 0350								
10-0352	Beach POL Tanks	0.1									
10-0353	Beach POL Tanks	0.4	depth 0352								
10-0354	Beach POL Tanks	0.1									
10-0355	Beach POL Tanks	0.4	depth 0354								
10-0356	Geotech Test Pit #16	0.1		<1	<0.1	77	46	100	1	280	54
10-0357	Geotech Test Pit #16	0.6		<1	<0.1	66	39	82	1	230	49
10-0358	Lobe 9 (South of Dump C)	0.1		6	0.2	110	25	54	15	160	110
10-0359	Lobe 9 (South of Dump C)	0.6		4	<0.1	96	22	46	6	150	79
10-0360	Lobe 9 (South of Dump C)	0.1		6	0.6	120	23	64	14	110	280
10-0361	Lobe 9 (South of Dump C)	0.1		6	0.7	150	26	72	14	120	370
10-0362	Lobe 9 (South of Dump C)	0.5		5	0.2	130	23	63	11	110	170

Notes:

Samples with no results were collected and put on hold at the laboratory to be analyzed as needed.

[1] Transportation of Dangerous Goods Regulations (SOR/2008-34)

[2] Dew Line Cleanup Criteira (DCC) for Soil (INAC 2009)

[3] Site Specific Criteria (SSC) (ESG 2010)

Table B2: Soil and Sediment PCB Results

Sample #	Area	Depth [m]	Comments	Aroclor 1242 [mg/kg]	Aroclor 1254 [mg/kg]	Aroclor 1260 [mg/kg]	PCB Total [mg/kg]
CEPA[(1)]							**50**
Tier II[(2)]							**5.0**
Tier I[(2)]							**1.0**
10-0158	Station POL Tanks and Pumphouse	0.1					
10-0159	Station POL Tanks and Pumphouse	0.5	depth 0158				
10-0160	Station POL Tanks and Pumphouse	0.1	duplicate 0161				
10-0161	Station POL Tanks and Pumphouse	0.1	duplicate 0160				
10-0162	Station POL Tanks and Pumphouse	0.1					
10-0163	Station POL Tanks and Pumphouse	0.1					
10-0164	Station POL Tanks and Pumphouse	0.1					
10-0165	Station POL Tanks and Pumphouse	0.1					
10-0166	Station POL Tanks and Pumphouse	0.1					
10-0167	Station POL Tanks and Pumphouse	0.1					
10-0168	Station POL Tanks and Pumphouse	0.1					
10-0169	Station POL Tanks and Pumphouse	0.1					
10-0170	Station POL Tanks and Pumphouse	0.4	duplicate 0171; depth 0164				
10-0171	Station POL Tanks and Pumphouse	0.4	duplicate 0170; depth 0164				
10-0172	Station POL Tanks and Pumphouse	0.1					
10-0173	Station POL Tanks and Pumphouse	0.6	depth 0172				
10-0174	Station POL Tanks and Pumphouse	0.1					
10-0175	Station POL Tanks and Pumphouse	0.6	depth 0174				
10-0176	Station POL Tanks and Pumphouse	0.1					
10-0177	Station POL Tanks and Pumphouse	0.5	depth 0176				
10-0178	Station POL Tanks and Pumphouse	0.1					
10-0179	Station POL Tanks and Pumphouse	0.7	depth 0178				
10-0180	Station POL Tanks and Pumphouse	0.1	duplicate 0181				
10-0181	Station POL Tanks and Pumphouse	0.1	duplicate 0180				
10-0182	Station POL Tanks and Pumphouse	0.65	depth 0180/81				
10-0183	Water Reservoir and Pumphouse	0.1					
10-0184	Water Reservoir and Pumphouse	0.1					
10-0185	Water Reservoir and Pumphouse	0.1					
10-0186	Water Reservoir and Pumphouse	0.1					
10-0187	Water Reservoir and Pumphouse	0.1					
10-0188	Water Reservoir and Pumphouse	0.5	depth 0187				
10-0189	Water Reservoir and Pumphouse	0.1					
10-0190	Water Reservoir and Pumphouse	0.1	duplicate 0191	<0.01	0.11	0.01	0.13
10-0191	Water Reservoir and Pumphouse	0.1	duplicate 0190	<0.01	0.06	0.01	0.07
10-0192	Module Train	0.1					
10-0193	Module Train	0.1					
10-0194	Module Train	0.1					
10-0195	Module Train	0.1					
10-0196	Module Train	0.1					
10-0197	Module Train	0.1		<0.01	0.09	0.04	0.13
10-0198	Module Train	0.45	depth 0197	<0.01	0.03	0.01	0.04
10-0199	Module Train	0.1					
10-0200	Module Train	0.1	duplicate 0201				
10-0201	Module Train	0.1	duplicate 0200				

Table B2: Soil and Sediment PCB Results

Sample #	Area	Depth [m]	Comments	Aroclor 1242 [mg/kg]	Aroclor 1254 [mg/kg]	Aroclor 1260 [mg/kg]	PCB Total [mg/kg]
CEPA[(1)]							**50**
Tier II[(2)]							**5.0**
Tier I[(2)]							**1.0**
10-0202	Module Train	0.1					
10-0203	Module Train	0.1					
10-0204	Module Train	0.1					
10-0205	Module Train	0.1					
10-0206	Module Train	0.1					
10-0207	Module Train	0.4	depth 0206				
10-0208	Module Train	0.1		<0.01	0.10	0.05	0.15
10-0209	Module Train	0.1		<0.1	1.2	0.3	**1.4**
10-0210	Module Train	0.1	duplicate 0211	<0.01	0.35	0.28	0.62
10-0211	Module Train	0.1	duplicate 0210	<0.1	0.2	0.1	0.4
10-0212	Module Train	0.5	depth 0200/01				
10-0213	Module Train	0.1					
10-0214	Module Train	0.3	depth 0213				
10-0215	Module Train	0.1					
10-0216	Module Train	0.5	depth 0215				
10-0217	Warehouse	0.1					
10-0218	Warehouse	0.1					
10-0219	Warehouse	0.1					
10-0220	Warehouse	0.1	duplicate 0221				
10-0221	Warehouse	0.1	duplicate 0220				
10-0222	Warehouse	0.1		<0.01	0.34	0.02	0.36
10-0223	Warehouse	0.3	depth 0222	<0.01	0.03	0.01	0.04
10-0224	Warehouse	0.1					
10-0225	Warehouse	0.1					
10-0226	Warehouse	0.1					
10-0227	Warehouse	0.5	depth 0226				
10-0228	Warehouse	0.1					
10-0229	Warehouse	0.3	depth 0228				
10-0230	Garage	0.1	duplicate 0231	<0.1	0.9	<0.1	0.9
10-0231	Garage	0.1	duplicate 0230	<0.1	0.7	<0.1	0.7
10-0232	Garage	0.1					
10-0233	Garage	0.1					
10-0234	Garage	0.1					
10-0235	Garage	0.1					
10-0236	Garage	0.1		<0.01	0.46	<0.01	0.46
10-0237	Garage	0.1		<0.1	3.3	<0.1	**3.3**
10-0238	Garage	0.4	depth 0237	<0.1	1.5	<0.1	**1.5**
10-0239	Inuit Huts (South of Station Area)	0.1					
10-0240	Inuit Huts (South of Station Area)	0.1	duplicate 0241				
10-0241	Inuit Huts (South of Station Area)	0.1	duplicate 0240				
10-0242	Inuit Huts (South of Station Area)	0.1					
10-0243	Inuit Huts (South of Station Area)	0.1					
10-0244	Inuit Huts (South of Station Area)	0.1					
10-0245	Inuit Huts (South of Station Area)	0.1					

Table B2: Soil and Sediment PCB Results

Sample #	Area	Depth [m]	Comments	Aroclor 1242 [mg/kg]	Aroclor 1254 [mg/kg]	Aroclor 1260 [mg/kg]	PCB Total [mg/kg]
CEPA[(1)]							**50**
Tier II[(2)]							**5.0**
Tier I[(2)]							**1.0**
10-0246	Inuit Huts (South of Station Area)	0.1					
10-0247	Inuit Huts (South of Station Area)	0.1					
10-0248	Inuit Huts (South of Station Area)	0.1					
10-0249	Inuit Huts (South of Station Area)	0.3	depth 0239				
10-0250	Antenna	0.1	duplicate 0251				
10-0251	Antenna	0.1	duplicate 0250				
10-0252	Antenna	0.1					
10-0253	Antenna	0.1					
10-0254	Antenna	0.1					
10-0255	Inuit Building (West of Station Area)	0.1					
10-0256	Inuit Building (West of Station Area)	0.1		<0.01	0.15	<0.01	0.15
10-0257	Inuit Building (West of Station Area)	0.4	depth 0256	<0.01	0.05	<0.01	0.05
10-0258	Inuit Building (West of Station Area)	0.1					
10-0259	Inuit Building (West of Station Area)	0.1					
10-0260	Inuit Building (West of Station Area)	0.1	duplicate 0261	<0.01	0.11	<0.01	0.11
10-0261	Inuit Building (West of Station Area)	0.1	duplicate 0260	<0.01	0.11	<0.01	0.11
10-0262	Inuit Building (West of Station Area)	0.1					
10-0263	Former Barrel Storage Area	0.1					
10-0264	Former Barrel Storage Area	0.1		<0.01	<0.01	<0.01	<0.01
10-0265	Former Barrel Storage Area	0.4	depth 0264	<0.01	<0.01	<0.01	<0.01
10-0266	Former Barrel Storage Area	0.1		<0.01	<0.01	<0.01	<0.01
10-0267	Former Barrel Storage Area	0.3	depth 0266	<0.01	<0.01	<0.01	<0.01
10-0268	Former Barrel Storage Area	0.1					
10-0269	Former Barrel Storage Area	0.1					
10-0270	Former Barrel Storage Area	0.1	duplicate 0271				
10-0271	Former Barrel Storage Area	0.1	duplicate 0270				
10-0272	Former Barrel Storage Area	0.1					
10-0273	Former Barrel Storage Area	0.1					
10-0274	Former Barrel Storage Area	0.1					
10-0275	Former Barrel Storage Area	0.1					
10-0276	Lobe 5 (West of Antenna)	0.1		<0.01	<0.01	<0.01	<0.01
10-0277	Lobe 5 (West of Antenna)	0.4	depth 0276	<0.01	<0.01	<0.01	<0.01
10-0278	Lobe 5 (West of Antenna)	0.1		<0.01	<0.01	<0.01	<0.01
10-0279	Lobe 5 (West of Antenna)	0.55	depth 0278	<0.01	<0.01	<0.01	<0.01
10-0280	Lobe 5 (West of Antenna)	0.1	duplicate 0281	<0.01	<0.01	<0.01	<0.01
10-0281	Lobe 5 (West of Antenna)	0.1	duplicate 0280	<0.01	<0.01	<0.01	<0.01
10-0282	Lobe 5 (West of Antenna)	0.4	depth 0280/81	<0.01	<0.01	<0.01	<0.01
10-0283	Lobe 5 (West of Antenna)	0.1					
10-0284	Lobe 5 (West of Antenna)	0.3	depth 0283				
10-0285	Lobe 5 (West of Antenna)	0.1					
10-0286	Lobe 5 (West of Antenna)	0.3	depth 0285				
10-0287	Lobe 6 (Southwest of Antenna)	0.1		<0.01	<0.01	<0.01	<0.01
10-0288	Lobe 6 (Southwest of Antenna)	0.5	depth 0288	<0.01	<0.01	<0.01	<0.01
10-0289	Lobe 7 (South of Inuit Huts (South of Station Area))	0.1					

Table B2: Soil and Sediment PCB Results

Sample #	Area	Depth [m]	Comments	Aroclor 1242 [mg/kg]	Aroclor 1254 [mg/kg]	Aroclor 1260 [mg/kg]	PCB Total [mg/kg]
CEPA[(1)]							**50**
Tier II[(2)]							**5.0**
Tier I[(2)]							**1.0**
10-0290	Lobe 7 (South of Inuit Huts (South of Station Area))	0.3	duplicate 0291; depth 0289				
10-0291	Lobe 7 (South of Inuit Huts (South of Station Area))	0.3	duplicate 0290; depth 0289				
10-0292	Dump A Push Point	0.1					
10-0293	Dump A Push Point	0.1		<0.01	0.21	0.03	0.25
10-0294	Dump A Push Point	0.1		<0.01	0.49	0.05	0.54
10-0295	Dump A Push Point	0.1					
10-0296	Dump A Push Point	0.1		<0.01	0.60	0.03	0.63
10-0297	Dump A Push Point	0.1					
10-0298	Dump A Push Point	0.1					
10-0299	Dump A Push Point	0.1		<0.01	0.16	<0.01	0.16
10-0300	Dump A Push Point	0.1	duplicate 0301				
10-0301	Dump A Push Point	0.1	duplicate 0300				
10-0302	Dump A Push Point	0.25	depth 0300/01	<0.01	0.31	0.02	0.33
10-0303	Lobe 4 (North of Water Reservoir and Pumphouse)	0.1		<0.01	0.08	0.02	0.10
10-0304	Lobe 4 (North of Water Reservoir and Pumphouse)	0.45	depth 0303	<0.01	0.02	<0.01	0.02
10-0305	Lobe 4 (North of Water Reservoir and Pumphouse)	0.1					
10-0306	Lobe 4 (North of Water Reservoir and Pumphouse)	0.5	depth 0305				
10-0307	Lobe 4 (North of Water Reservoir and Pumphouse)	0.1		<0.01	<0.01	<0.01	<0.01
10-0308	Lobe 4 (North of Water Reservoir and Pumphouse)	0.45	depth 0307	<0.01	<0.01	<0.01	<0.01
10-0309	Lobe 3 (North of Warehouse)	0.1		<0.01	<0.01	<0.01	<0.01
10-0310	Lobe 3 (North of Warehouse)	0.6	duplicate 0311; depth 0309	<0.05	<0.05	<0.05	<0.05
10-0311	Lobe 3 (North of Warehouse)	0.6	duplicate 0311; depth 0309	<0.05	<0.05	<0.05	<0.05
10-0312	Lobe 3 (North of Warehouse)	0.1		<0.01	<0.01	<0.01	<0.01
10-0313	Lobe 3 (North of Warehouse)	0.45	depth 0312	<0.01	<0.01	<0.01	<0.01
10-0314	Lobe 2 (North of Garage)	0.1		<0.05	0.65	0.07	0.72
10-0315	Lobe 2 (North of Garage)	0.5		0.05	0.05	0.05	0.05
10-0316	Lobe 2 (North of Garage)	0.1		<0.01	0.4	0.03	0.43
10-0317	Lobe 2 (North of Garage)	0.5		<0.01	<0.01	<0.01	<0.01
10-0318	Lobe 1 (Northwest of Garage)	0.1		<0.01	<0.01	<0.01	<0.01
10-0319	Lobe 1 (Northwest of Garage)	0.5		<0.01	<0.01	<0.01	<0.01
10-0320	Lobe 1 (Northwest of Garage)	0.1	duplicate 0321	<0.01	<0.01	<0.01	<0.01
10-0321	Lobe 1 (Northwest of Garage)	0.1	duplicate 0320	<0.01	<0.01	<0.01	<0.01
10-0322	Lobe 1 (Northwest of Garage)	0.6		<0.01	<0.01	<0.01	<0.01
10-0323	Lobe 8 (Barrel Cache (West of Station Area))	0.1		<0.01	<0.01	<0.01	<0.01
10-0324	Lobe 8 (Barrel Cache (West of Station Area))	0.4		<0.01	<0.01	<0.01	<0.01
10-0325	Lobe 8 (Barrel Cache (West of Station Area))	0.1		<0.01	<0.01	<0.01	<0.01
10-0326	Lobe 8 (Barrel Cache (West of Station Area))	0.6		<0.01	<0.01	<0.01	<0.01
10-0327	Inuit Hut (Beach Landing)	0.1		<0.01	<0.01	<0.01	<0.01
10-0328	Inuit Hut (Beach Landing)	0.45	depth 0327	<0.01	<0.01	<0.01	<0.01
10-0329	Inuit Hut (Beach Landing)	0.1					
10-0330	Inuit Hut (Beach Landing)	0.1		<0.01	0.01	0.02	0.03
10-0331	Inuit Hut (Beach Landing)	0.1		<0.01	0.02	0.02	0.04
10-0332	Inuit Hut (Beach Landing)	0.1					
10-0333	Barrel Cache Area (Beach Landing)	0.1		<0.01	<0.01	<0.01	<0.01

Table B2: Soil and Sediment PCB Results

Sample #	Area	Depth [m]	Comments	Aroclor 1242 [mg/kg]	Aroclor 1254 [mg/kg]	Aroclor 1260 [mg/kg]	PCB Total [mg/kg]
CEPA[(1)]							**50**
Tier II[(2)]							**5.0**
Tier I[(2)]							**1.0**
10-0334	Barrel Cache Area (Beach Landing)	0.1					
10-0335	Barrel Cache Area (Beach Landing)	0.4	depth 0334				
10-0336	Barrel Cache Area (Beach Landing)	0.1		<0.01	<0.01	<0.01	<0.01
10-0337	Barrel Cache Area (Beach Landing)	0.35	depth 0336	<0.01	<0.01	<0.01	<0.01
10-0338	Barrel Cache Area (Beach Landing)	0.1					
10-0339	Barrel Cache Area (Beach Landing)	0.6	depth 0338				
10-0340	Barrel Cache Area (Beach Landing)	0.1	duplicate 0341				
10-0341	Barrel Cache Area (Beach Landing)	0.1	duplicate 0340				
10-0342	Barrel Cache Area (Beach Landing)	0.4	depth 0340/41				
10-0343	Beach POL Tanks	0.1					
10-0344	Beach POL Tanks	0.1					
10-0345	Beach POL Tanks	0.1					
10-0346	Beach POL Tanks	0.1		<0.01	<0.01	<0.01	<0.01
10-0347	Beach POL Tanks	0.6	depth 0346	<0.01	<0.01	<0.01	<0.01
10-0348	Beach POL Tanks	0.1					
10-0349	Beach POL Tanks	0.1					
10-0350	Beach POL Tanks	0.1	duplicate 0351				
10-0351	Beach POL Tanks	0.1	duplicate 0350				
10-0352	Beach POL Tanks	0.1					
10-0353	Beach POL Tanks	0.4	depth 0352				
10-0354	Beach POL Tanks	0.1					
10-0355	Beach POL Tanks	0.4	depth 0354				
10-0356	Geotech Test Pit #16	0.1		<0.01	<0.01	<0.01	<0.01
10-0357	Geotech Test Pit #16	0.6		<0.01	<0.01	<0.01	<0.01
10-0358	Lobe 9 (South of Dump C)	0.1		<0.01	<0.01	<0.01	<0.01
10-0359	Lobe 9 (South of Dump C)	0.6		<0.01	<0.01	<0.01	<0.01
10-0360	Lobe 9 (South of Dump C)	0.1		<0.01	<0.01	<0.01	<0.01
10-0361	Lobe 9 (South of Dump C)	0.1		<0.01	<0.01	<0.01	<0.01
10-0362	Lobe 9 (South of Dump C)	0.5		<0.01	<0.01	<0.01	<0.01

Notes:

Samples with no results were collected and put on hold at the laboratory to be analyzed as needed.

(1) Canadian Environmental Protection Act, 1999

(2) Dew Line Cleanup Criteira (DCC) for Soil (INAC 2009)

Table B3: Soil and Sediment PHC Results

Sample #	Area	Depth [m]	Comments	Benzene [mg/kg]	Toluene [mg/kg]	Ethylbenzene [mg/kg]	Xylene [mg/kg]	F1 [mg/kg]	F1 minus BTEX [mg/kg]	F2 [mg/kg]	F3 [mg/kg]	F4 [mg/kg]	F4G[4] [mg/kg]	Total TPH		
														Dominant TPH Type	TYPE A [mg/kg]	TYPE B [mg/kg]
PHCs - Protection of Freshwater Aquatic Life [1]									**1290**	**330**						**330**
PHCs - Protection of Terrestrial Wildlife [2]																**2500**
PHCs - Human Health										**11000**	**20000**				**20000**	
PHCs - Management Limit [3]																**5000**
10-0158	Station POL Tanks and Pumphouse	0.1														
10-0159	Station POL Tanks and Pumphouse	0.5	depth 0158	<0.005	<0.02	<0.01	<0.04	<10	<10	92	130	<10		Type B		222
10-0160	Station POL Tanks and Pumphouse	0.1	duplicate 0161													
10-0161	Station POL Tanks and Pumphouse	0.1	duplicate 0160													
10-0162	Station POL Tanks and Pumphouse	0.1		<0.005	<0.02	<0.01	<0.04	<10	<10	290	580	27		Type B		870
10-0163	Station POL Tanks and Pumphouse	0.1														
10-0164	Station POL Tanks and Pumphouse	0.1		<0.005	<0.02	<0.01	<0.04	39	39	4200	510	44		Type B		**4749**
10-0165	Station POL Tanks and Pumphouse	0.1		<0.1	<0.1	<0.1	<0.1	<10	<10	2300	640	110		Type B		**2940**
10-0166	Station POL Tanks and Pumphouse	0.1														
10-0167	Station POL Tanks and Pumphouse	0.1		<0.005	<0.02	<0.01	<0.04	<10	<10	240	520	100		Type B		760
10-0168	Station POL Tanks and Pumphouse	0.1														
10-0169	Station POL Tanks and Pumphouse	0.1														
10-0170	Station POL Tanks and Pumphouse	0.4	duplicate 0171; depth 0164	<0.005	<0.02	<0.01	<0.04	180	180	5600	590	95		Type B		**6370**
10-0171	Station POL Tanks and Pumphouse	0.4	duplicate 0170; depth 0164	<0.005	<0.02	<0.01	0.07	210	210	6000	550	86		Type B		**6760**
10-0172	Station POL Tanks and Pumphouse	0.1														
10-0173	Station POL Tanks and Pumphouse	0.6	depth 0172													
10-0174	Station POL Tanks and Pumphouse	0.1		<0.005	<0.02	<0.01	<0.04	<10	<10	85	290	<10		Type B		375
10-0175	Station POL Tanks and Pumphouse	0.6	depth 0174	<0.005	<0.02	<0.01	<0.04	<10	<10	20	99	<10		Type B		119
10-0176	Station POL Tanks and Pumphouse	0.1														
10-0177	Station POL Tanks and Pumphouse	0.5	depth 0176													
10-0178	Station POL Tanks and Pumphouse	0.1														
10-0179	Station POL Tanks and Pumphouse	0.7	depth 0178													
10-0180	Station POL Tanks and Pumphouse	0.1	duplicate 0181	<0.005	<0.02	<0.01	<0.04	<10	<10	<10	27	<10		neither	27	27
10-0181	Station POL Tanks and Pumphouse	0.1	duplicate 0180	<0.005	<0.02	<0.01	<0.04	<10	<10	<10	1000	590	950	Type A	1950	
10-0182	Station POL Tanks and Pumphouse	0.65	depth 0180/81	<0.005	<0.02	<0.01	<0.04	<10	<10	11	1900	1000	1900	Type A	3800	
10-0183	Water Reservoir and Pumphouse	0.1														
10-0184	Water Reservoir and Pumphouse	0.1														
10-0185	Water Reservoir and Pumphouse	0.1														
10-0186	Water Reservoir and Pumphouse	0.1														
10-0187	Water Reservoir and Pumphouse	0.1														
10-0188	Water Reservoir and Pumphouse	0.5	depth 0187													
10-0189	Water Reservoir and Pumphouse	0.1														
10-0190	Water Reservoir and Pumphouse	0.1	duplicate 0191													
10-0191	Water Reservoir and Pumphouse	0.1	duplicate 0190													
10-0192	Module Train	0.1		<0.005	<0.02	<0.01	<0.04	<10	<10	83	220	41		Type B		303
10-0193	Module Train	0.1		<0.002	<0.002	<0.002	<0.002	<10	<10	14	170	35		Type B		184
10-0194	Module Train	0.1														
10-0195	Module Train	0.1														
10-0196	Module Train	0.1		<0.005	<0.02	<0.01	<0.04	<10	<10	46	150	25		Type B		196
10-0197	Module Train	0.1		<0.005	<0.02	<0.01	<0.04	<10	<10	56	330	120		Type A	450	
10-0198	Module Train	0.45	depth 0197	<0.005	<0.02	<0.01	<0.04	<10	<10	12	30	<10		Type B		42
10-0199	Module Train	0.1		<0.005	<0.02	<0.01	<0.04	91	91	8200	1400	23		Type B		**9691**
10-0200	Module Train	0.1	duplicate 0201	<0.005	<0.02	<0.01	<0.04	17	17	8000	1600	30		Type B		**9617**
10-0201	Module Train	0.1	duplicate 0200	<0.005	<0.02	<0.01	<0.04	10	10	6700	1500	37		Type B		**8210**
10-0202	Module Train	0.1		<0.1	<0.1	<0.1	<0.1	<10	<10	1900	1900	420		Type B		**3800**
10-0203	Module Train	0.1														
10-0204	Module Train	0.1														
10-0205	Module Train	0.1		<0.005	<0.02	<0.01	<0.04	<10	<10	710	140	<10		Type B		850
10-0206	Module Train	0.1														
10-0207	Module Train	0.4	depth 0206													
10-0208	Module Train	0.1														
10-0209	Module Train	0.1		<0.005	<0.02	<0.01	0.21	<10	<10	<10	77	13		Type A	90	
10-0210	Module Train	0.1	duplicate 0211													
10-0211	Module Train	0.1	duplicate 0210													
10-0212	Module Train	0.5	depth 0200/01	<0.005	<0.02	<0.01	<0.04	280	280	4000	430	<10		Type B		**4710**
10-0213	Module Train	0.1		<0.002	<0.002	<0.002	<0.002	<10	<10	<10	18	<10		neither	18	18
10-0214	Module Train	0.3	depth 0213	<0.005	<0.02	<0.01	<0.04	78	78	1500	110	<10		Type B		1688

Table B3: Soil and Sediment PHC Results

Sample #	Area	Depth [m]	Comments	Benzene [mg/kg]	Toluene [mg/kg]	Ethylbenzene [mg/kg]	Xylene [mg/kg]	F1 [mg/kg]	F1 minus BTEX [mg/kg]	F2 [mg/kg]	F3 [mg/kg]	F4 [mg/kg]	F4G[4] [mg/kg]	Total TPH		
														Dominant TPH Type	TYPE A [mg/kg]	TYPE B [mg/kg]
PHCs - Protection of Freshwater Aquatic Life [1]									**1290**	**330**						**330**
PHCs - Protection of Terrestrial Wildlife [2]																**2500**
PHCs - Human Health										**11000**	**20000**				**20000**	
PHCs - Management Limit [3]																**5000**
10-0215	Module Train	0.1		<0.005	<0.02	<0.01	<0.04	<10	<10	52	310	86		Type A	396	
10-0216	Module Train	0.5	depth 0215	<0.005	<0.02	<0.01	<0.04	<10	<10	220	130	26		Type B		350
10-0217	Warehouse	0.1														
10-0218	Warehouse	0.1														
10-0219	Warehouse	0.1														
10-0220	Warehouse	0.1	duplicate 0221													
10-0221	Warehouse	0.1	duplicate 0220													
10-0222	Warehouse	0.1														
10-0223	Warehouse	0.3	depth 0222													
10-0224	Warehouse	0.1														
10-0225	Warehouse	0.1		<0.002	<0.002	<0.002	<0.002	<10	<10	<10	12	<10		neither	12	12
10-0226	Warehouse	0.1		<0.005	<0.02	<0.01	<0.04	130	130	8400	840	10		Type B		**9370**
10-0227	Warehouse	0.5	depth 0226	<0.005	<0.02	<0.01	<0.04	260	260	5800	540	17		Type B		**6600**
10-0228	Warehouse	0.1		<0.002	<0.002	<0.002	<0.002	<10	<10	<10	24	<10		neither	24	24
10-0229	Warehouse	0.3	depth 0228	<0.002	<0.002	<0.002	<0.002	<10	<10	<10	43	<10		neither	43	43
10-0230	Garage	0.1	duplicate 0231													
10-0231	Garage	0.1	duplicate 0230													
10-0232	Garage	0.1														
10-0233	Garage	0.1														
10-0234	Garage	0.1														
10-0235	Garage	0.1		<0.005	<0.02	<0.01	<0.04	<10	<10	1200	7800	1500		Type A	9300	
10-0236	Garage	0.1		<0.005	<0.02	<0.01	<0.04	<10	<10	2600	3600	320		Type B		**6200**
10-0237	Garage	0.1		<0.005	<0.02	<0.01	<0.04	10	10	940	20000	6700	23000	Type A	**43000**	
10-0238	Garage	0.4	depth 0237	<0.005	<0.02	<0.01	<0.04	22	22	1800	13000	4100		Type A	17100	
10-0239	Inuit Huts (South of Station Area)	0.1														
10-0240	Inuit Huts (South of Station Area)	0.1	duplicate 0241													
10-0241	Inuit Huts (South of Station Area)	0.1	duplicate 0240													
10-0242	Inuit Huts (South of Station Area)	0.1														
10-0243	Inuit Huts (South of Station Area)	0.1														
10-0244	Inuit Huts (South of Station Area)	0.1														
10-0245	Inuit Huts (South of Station Area)	0.1														
10-0246	Inuit Huts (South of Station Area)	0.1														
10-0247	Inuit Huts (South of Station Area)	0.1														
10-0248	Inuit Huts (South of Station Area)	0.1														
10-0249	Inuit Huts (South of Station Area)	0.3	depth 0239													
10-0250	Antenna	0.1	duplicate 0251													
10-0251	Antenna	0.1	duplicate 0250													
10-0252	Antenna	0.1														
10-0253	Antenna	0.1														
10-0254	Antenna	0.1														
10-0255	Inuit Building (West of Station Area)	0.1		<0.002	<0.002	<0.002	<0.002									
10-0256	Inuit Building (West of Station Area)	0.1		<0.005	<0.02	<0.01	<0.04	<10	<10	22	76	170	670	Type A	246	
10-0257	Inuit Building (West of Station Area)	0.4	depth 0256	<0.005	<0.02	<0.01	<0.04	<10	<10	21	38	<10		Type B		59
10-0258	Inuit Building (West of Station Area)	0.1														
10-0259	Inuit Building (West of Station Area)	0.1														
10-0260	Inuit Building (West of Station Area)	0.1	duplicate 0261													
10-0261	Inuit Building (West of Station Area)	0.1	duplicate 0260													
10-0262	Inuit Building (West of Station Area)	0.1														
10-0263	Former Barrel Storage Area	0.1														
10-0264	Former Barrel Storage Area	0.1		<0.005	<0.02	<0.01	<0.04	<10	<10	59	11000	940		Type A	11940	
10-0265	Former Barrel Storage Area	0.4	depth 0264	<0.005	<0.02	<0.01	<0.04	<10	<10	38	1800	180		Type A	1980	
10-0266	Former Barrel Storage Area	0.1		<0.005	<0.02	<0.01	<0.04	<10	<10	32	18000	1000		Type A	19000	
10-0267	Former Barrel Storage Area	0.3	depth 0266	<0.005	<0.02	<0.01	<0.04	<10	<10	32	6700	380		Type A	7080	
10-0268	Former Barrel Storage Area	0.1														
10-0269	Former Barrel Storage Area	0.1														
10-0270	Former Barrel Storage Area	0.1	duplicate 0271	<0.005	<0.02	<0.01	<0.04	<10	<10	78	520	170		Type A	690	
10-0271	Former Barrel Storage Area	0.1	duplicate 0270	<0.005	<0.02	<0.01	<0.04	<10	<10	82	520	170		Type A	690	

Table B3: Soil and Sediment PHC Results

Sample #	Area	Depth [m]	Comments	Benzene [mg/kg]	Toluene [mg/kg]	Ethylbenzene [mg/kg]	Xylene [mg/kg]	F1 [mg/kg]	F1 minus BTEX [mg/kg]	F2 [mg/kg]	F3 [mg/kg]	F4 [mg/kg]	F4G[4] [mg/kg]	Total TPH		
														Dominant TPH Type	TYPE A [mg/kg]	TYPE B [mg/kg]
PHCs - Protection of Freshwater Aquatic Life [1]									**1290**	**330**						**330**
PHCs - Protection of Terrestrial Wildlife [2]																**2500**
PHCs - Human Health										**11000**	**20000**				**20000**	
PHCs - Management Limit [3]																**5000**
10-0272	Former Barrel Storage Area	0.1		<0.005	<0.02	<0.01	<0.04	<10	<10	29	1000	400	1200	Type A	1400	
10-0273	Former Barrel Storage Area	0.1														
10-0274	Former Barrel Storage Area	0.1														
10-0275	Former Barrel Storage Area	0.1														
10-0276	Lobe 5 (West of Antenna)	0.1		<0.002	<0.002	<0.002	<0.002	<10	<10	<10	<10	<10				
10-0277	Lobe 5 (West of Antenna)	0.4	depth 0276	<0.002	<0.002	<0.002	<0.002	<10	<10	<10	<10	<10				
10-0278	Lobe 5 (West of Antenna)	0.1		<0.002	<0.002	<0.002	<0.002	<10	<10	13	100	<10		Type B		113
10-0279	Lobe 5 (West of Antenna)	0.55	depth 0278	<0.002	<0.002	<0.002	<0.002	<10	<10	230	79	<10		Type B		309
10-0280	Lobe 5 (West of Antenna)	0.1	duplicate 0281	<0.002	<0.002	<0.002	<0.002	<10	<10	<10	<10	<10				
10-0281	Lobe 5 (West of Antenna)	0.1	duplicate 0280	<0.002	<0.002	<0.002	<0.002	<10	<10	<10	<10	<10				
10-0282	Lobe 5 (West of Antenna)	0.4	depth 0280/81	<0.002	<0.002	<0.002	<0.002	<10	<10	<10	99	<10		neither	99	99
10-0283	Lobe 5 (West of Antenna)	0.1														
10-0284	Lobe 5 (West of Antenna)	0.3	depth 0283													
10-0285	Lobe 5 (West of Antenna)	0.1														
10-0286	Lobe 5 (West of Antenna)	0.3	depth 0285													
10-0287	Lobe 6 (Southwest of Antenna)	0.1		<0.002	<0.002	<0.002	<0.002	<10	<10	<10	40	<10		neither	40	40
10-0288	Lobe 6 (Southwest of Antenna)	0.5	depth 0288	<0.002	<0.002	<0.002	<0.002	<10	<10	<10	<10	<10				
10-0289	Lobe 7 (South of Inuit Huts (South of Station Area))	0.1														
10-0290	Lobe 7 (South of Inuit Huts (South of Station Area))	0.3	duplicate 0291; depth 0289													
10-0291	Lobe 7 (South of Inuit Huts (South of Station Area))	0.3	duplicate 0290; depth 0289													
10-0292	Dump A Push Point	0.1														
10-0293	Dump A Push Point	0.1														
10-0294	Dump A Push Point	0.1														
10-0295	Dump A Push Point	0.1														
10-0296	Dump A Push Point	0.1														
10-0297	Dump A Push Point	0.1														
10-0298	Dump A Push Point	0.1														
10-0299	Dump A Push Point	0.1														
10-0300	Dump A Push Point	0.1	duplicate 0301													
10-0301	Dump A Push Point	0.1	duplicate 0300													
10-0302	Dump A Push Point	0.25	depth 0300/01													
10-0303	Lobe 4 (North of Water Reservoir and Pumphouse)	0.1		<0.002	<0.002	<0.002	<0.002	<10	<10	<10	66	<10		neither	66	66
10-0304	Lobe 4 (North of Water Reservoir and Pumphouse)	0.45	depth 0303	<0.002	<0.002	<0.002	<0.002	<10	<10	<10	27	<10		neither	27	27
10-0305	Lobe 4 (North of Water Reservoir and Pumphouse)	0.1														
10-0306	Lobe 4 (North of Water Reservoir and Pumphouse)	0.5	depth 0305													
10-0307	Lobe 4 (North of Water Reservoir and Pumphouse)	0.1		<0.002	<0.002	<0.002	<0.002	<10	<10	<10	<10	<10				
10-0308	Lobe 4 (North of Water Reservoir and Pumphouse)	0.45	depth 0307	<0.002	<0.002	<0.002	<0.002	<10	<10	<10	<10	<10				
10-0309	Lobe 3 (North of Warehouse)	0.1		<0.002	<0.002	<0.002	<0.002	<10	<10	16	130	11		Type B		146
10-0310	Lobe 3 (North of Warehouse)	0.6	duplicate 0311; depth 0309	<0.002	<0.002	<0.002	<0.002	<10	<10	1700	4000	490		Type B		**5700**
10-0311	Lobe 3 (North of Warehouse)	0.6	duplicate 0311; depth 0309	<0.002	<0.002	<0.002	<0.002	<10	<10	2000	4300	580		Type B		**6300**
10-0312	Lobe 3 (North of Warehouse)	0.1		<0.002	<0.002	<0.002	<0.002	<10	<10	<10	<10	<10				
10-0313	Lobe 3 (North of Warehouse)	0.45	depth 0312	<0.002	<0.002	<0.002	<0.002	12	12	950	56	<10		Type B		1018
10-0314	Lobe 2 (North of Garage)	0.1		<0.002	<0.002	<0.002	<0.002	<10	<10	<10	1400	380		Type A	1780	
10-0315	Lobe 2 (North of Garage)	0.5		<0.002	<0.002	<0.002	<0.002	<10	<10	18	2500	690		Type A	3190	
10-0316	Lobe 2 (North of Garage)	0.1														
10-0317	Lobe 2 (North of Garage)	0.5														
10-0318	Lobe 1 (Northwest of Garage)	0.1		<0.002	<0.002	<0.002	<0.002	<10	<10	<10	<10	<10				
10-0319	Lobe 1 (Northwest of Garage)	0.5								<10	<10	<10				
10-0320	Lobe 1 (Northwest of Garage)	0.1	duplicate 0321	<0.002	<0.002	<0.002	<0.002	<10	<10	<10	<10	<10				
10-0321	Lobe 1 (Northwest of Garage)	0.1	duplicate 0320	<0.002	<0.002	<0.002	<0.002	<10	<10	<10	<10	<10				
10-0322	Lobe 1 (Northwest of Garage)	0.6		<0.002	<0.002	<0.002	<0.002	<10	<10	<10	<10	<10				
10-0323	Lobe 8 (Barrel Cache (West of Station Area))	0.1		<0.002	<0.002	<0.002	<0.002	<10	<10	<10	<10	<10				
10-0324	Lobe 8 (Barrel Cache (West of Station Area))	0.4		<0.002	<0.002	<0.002	<0.002	<10	<10	<10	<10	<10				
10-0325	Lobe 8 (Barrel Cache (West of Station Area))	0.1		<0.002	<0.002	<0.002	<0.002	<10	<10	<10	<10	<10				
10-0326	Lobe 8 (Barrel Cache (West of Station Area))	0.6														
10-0327	Inuit Hut (Beach Landing)	0.1														
10-0328	Inuit Hut (Beach Landing)	0.45	depth 0327													

Table B3: Soil and Sediment PHC Results

Sample #	Area	Depth [m]	Comments	Benzene [mg/kg]	Toluene [mg/kg]	Ethylbenzene [mg/kg]	Xylene [mg/kg]	F1 [mg/kg]	F1 minus BTEX [mg/kg]	F2 [mg/kg]	F3 [mg/kg]	F4 [mg/kg]	F4G[4] [mg/kg]	Total TPH		
														Dominant TPH Type	TYPE A [mg/kg]	TYPE B [mg/kg]
PHCs - Protection of Freshwater Aquatic Life [1]									**1290**	**330**						**330**
PHCs - Protection of Terrestrial Wildlife [2]																**2500**
PHCs - Human Health										**11000**	**20000**				**20000**	
PHCs - Management Limit [3]																**5000**
10-0329	Inuit Hut (Beach Landing)	0.1														
10-0330	Inuit Hut (Beach Landing)	0.1														
10-0331	Inuit Hut (Beach Landing)	0.1														
10-0332	Inuit Hut (Beach Landing)	0.1														
10-0333	Barrel Cache Area (Beach Landing)	0.1		<0.002	<0.002	<0.002	<0.002	<10	<10	<10	<10	<10				
10-0334	Barrel Cache Area (Beach Landing)	0.1														
10-0335	Barrel Cache Area (Beach Landing)	0.4	depth 0334													
10-0336	Barrel Cache Area (Beach Landing)	0.1		<0.002	<0.002	<0.002	<0.002	<10	<10	<10	<10	<10				
10-0337	Barrel Cache Area (Beach Landing)	0.35	depth 0336	<0.002	<0.002	<0.002	<0.002	<10	<10	<10	<10	<10				
10-0338	Barrel Cache Area (Beach Landing)	0.1														
10-0339	Barrel Cache Area (Beach Landing)	0.6	depth 0338													
10-0340	Barrel Cache Area (Beach Landing)	0.1	duplicate 0341													
10-0341	Barrel Cache Area (Beach Landing)	0.1	duplicate 0340													
10-0342	Barrel Cache Area (Beach Landing)	0.4	depth 0340/41													
10-0343	Beach POL Tanks	0.1														
10-0344	Beach POL Tanks	0.1														
10-0345	Beach POL Tanks	0.1		<0.002	<0.002	<0.002	<0.002	<10	<10	<10	<10	<10				
10-0346	Beach POL Tanks	0.1		<0.002	<0.002	<0.002	<0.002	<10	<10	1100	360	<10		Type B		1460
10-0347	Beach POL Tanks	0.6	depth 0346	<0.002	<0.002	<0.002	<0.002	130	130	5200	420	<10		Type B		**5750**
10-0348	Beach POL Tanks	0.1		<0.002	<0.002	<0.002	<0.002	<10	<10	<10	<10	<10				
10-0349	Beach POL Tanks	0.1		<0.002	<0.002	<0.002	<0.002	<10	<10	2300	350	<10		Type B		**2650**
10-0350	Beach POL Tanks	0.1	duplicate 0351	<0.002	<0.002	<0.002	<0.002	<10	<10	<10	<10	<10				
10-0351	Beach POL Tanks	0.1	duplicate 0350	<0.002	<0.002	<0.002	<0.002	<10	<10	<10	<10	<10				
10-0352	Beach POL Tanks	0.1														
10-0353	Beach POL Tanks	0.4	depth 0352													
10-0354	Beach POL Tanks	0.1		<0.002	<0.002	<0.002	<0.002	<10	<10	<10	<10	<10				
10-0355	Beach POL Tanks	0.4	depth 0354	<0.002	0.002	<0.002	<0.002	<10	<10	<10	<10	<10				
10-0356	Geotech Test Pit #16	0.1		<0.002	<0.002	<0.002	<0.002	<10	<10	<10	<10	<10				
10-0357	Geotech Test Pit #16	0.6		<0.002	<0.002	<0.002	<0.002	<10	<10	<10	<10	<10				
10-0358	Lobe 9 (South of Dump C)	0.1		<0.002	<0.002	<0.002	<0.002	<10	<10	<10	75	22		Type A	97	
10-0359	Lobe 9 (South of Dump C)	0.6		<0.002	<0.002	<0.002	<0.002	<10	<10	<10	<10	<10				
10-0360	Lobe 9 (South of Dump C)	0.1		<0.002	<0.002	<0.002	<0.002	<10	<10	<10	<10	<10				
10-0361	Lobe 9 (South of Dump C)	0.1		<0.002	<0.002	<0.002	<0.002	<10	<10	<10	22	<10		neither	22	22
10-0362	Lobe 9 (South of Dump C)	0.5		<0.002	<0.002	<0.002	<0.002	<10	<10	<10	<10	<10				

Notes:

[1] Within 30 m of a water body

[2] For surface soils to 0.5 m depth

[3] Below 0.5 m depth, a value of 5000 mg/kg may be applied based on professional judgement

[4] In cases where results for both F4 and F4G were reported, the greater of the two results was used for classification purposes.
Samples with no results were collected and put on hold at the laboratory to be analyzed as needed.
All PHC Remedial Objectives were obtained from the Abandoned Military Site Remediation Protocol (INAC 2009)

Table B4: Barrel Results

Sample #	Comments	Alcohol							Glycol				Aroclor 1242 [mg/kg]	Aroclor 1254 [mg/kg]	Aroclor 1260 [mg/kg]	PCB Total [mg/kg]	Chlorine [mg/L]	Cadmium [ppm]	Chromium [ppm]	Lead [ppm]
		Methanol [%]	Ethanol [%]	1-Propanol [%]	n-Propanol [%]	1-Butanol [%]	n-Butanol [%]	Total Alcohol [%]	Ethylene Glycol [%]	Propylene Glycol [%]	Triethylene Glycol [%]	Total Glycols [%]								
Barrel Protocol Criteria[(1)]								**2**				**2**				**2**	**1000**	**2**	**10**	**100**
B1	Aqueous - rusty sediment	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<2	<2	<2	<2	5	<0.02	3.7	**110**
B2	Aqueous - rusty sediment	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<2	<2	<2	<2	8	<0.02	3.6	0.2
B3	Aqueous - rusty sediment	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<2	<2	<2	<2	8	<0.02	2.1	0.8
B4	Aqueous - rusty sediment	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<1	<1	<1	<1	5	<0.02	0.11	<0.1
B5	Aqueous - clear, viscous	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<300	<300	<300	<300	28	<2	<5	<10
B6	Organic & Aqueous - dark brown and clear	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<5000	<5000	<5000	<5000	29	<0.02	<0.05	0.2

Notes:

(1) Barrel Protocol Criteria and Disposal Summary (INAC 2009)

Table B5: Structural PCB and Lead Results

Sample #	Area	Comments	Pb [%]	Lead Leachable [mg/L]	Aroclor 1242 [mg/kg]	Aroclor 1254 [mg/kg]	Aroclor 1260 [mg/kg]	PCB Total [mg/kg]	Asbestos [% Chrysotile]
CEPA[(1)]								**50**	
TDG for Leachable Lead[(2)]				**5**					
P1	POL Tanks at Main Station	silver paint	17	**68.0**	<0.2	0.8	<0.1	0.8	
P2	Interior of Water Reservoir Building	grey paint	2.4		<100	511	<100	**511**	
P3	Interior of Module Train (Kitchen)	peach paint	0.03		<10000	60800	<10000	**60800**	
P4	Interior of Module Train (Kitchen)	white paint	0.32		<1000	9120	<1000	**9120**	
P5	Interior of Module Train (Kitchen)	mint green paint	0.43		<1000	6390	<1000	**6390**	
P6	Interior of Module Train (Kitchen)	red paint	0.38		<1000	7190	<1000	**7190**	
P7[(3)]	Interior of Module Train (Kitchen)	red primer, dark and light grey paint	0.33		<100	<100	866	**1000**	
A1	Interior of Warehouse (East Wall)	insulation from wall of garage							ND
C1	Interior of Module Train (North Room)	stained concrete next to generator			<10	331	<10	**331**	
A2	Interior of Water Reservoir Building	piping insulation							40
P8	Interior of Water Reservoir Building (Tank)	silver paint	0.16		<100	4080	<100	**4080**	
P9	Interior of Module Train (Electrical Room)	grey paint	0.40		<1	33	<1	33	
P10	Antenna	orange paint	12		<0.1	0.9	<0.1	0.9	
P11	Antenna	white paint	5.3		<0.1	1.1	0.2	1.3	
P12	Gravel Boxes at Dump B	yellow paint	1.9		<0.1	0.1	0.1	0.2	

Notes:

ND None Detected

(1) Canadian Environmental Protection Act, 1999

(2) Transportation of Dangerous Goods Regulations (SOR/2008-34)

(3) Sample contains 137 mg/kg Aroclor 1248

Table B6: Water Routine Results

Sample #	Area	Comments	Alkalinity (Total as CaCO3) [mg/L]	Hardness [mg/L]	Ion Balance [%]	Electrical Conductivity [umho/cm]	TDS [mg/L]	Orthophosphate [mg/L]	pH	Sulfate [mg/L]	Chloride [mg/L]	Nitrite-N [mg/L]	Nitrate-N [mg/L]	Nitrate + Nitrite-N [mg/L]
Canadian Water Quality Guidelines for the Protection of Aquatic Life - Marine (December, 2007)									**7.0-8.7**				**3.600**	
W2	Ocean - South of Barrel Cache		92	4800	1.26	42700	26200	0.02	7.8	1900	14000	<0.01	<0.1	<0.1
Canadian Water Quality Guidelines for the Protection of Aquatic Life - Freshwater (December, 2007)									**6.5-9**			**0.060**	**2.900**	
Guidelines for Canadian Drinking Water Quality (May, 2008)							**500**		**6.5-8.5**	**500**	**250**	**3.2**	**10**	
W1	Blast Hole North of Main Station		52	51	NC	129	69	0.01	7.9	2	7	<0.01	<0.1	<0.1
W3	Test Pit - Downgradient of Barrel Cache		13	52	NC	220	109	<0.01	7.1	22	37	<0.01	<0.1	<0.1
W4	Creek Between Two Beach Landings		7	14	NC	63	32	<0.01	7.3	9	5	<0.01	<0.1	<0.1
W5	Creek East of Dump B		6	13	NC	57	32	<0.01	7.1	8	7	<0.01	<0.1	<0.1
FB	Collected at Dump B		<1	<1	NC	<1	<1	<0.01	5.9	<1	<1	<0.01	<0.1	<0.1

Notes:

NC Not Calculated

Table B7: Water Element Results

Sample #	Area	Comments	Aluminum [mg/L]	Antimony [mg/L]	Arsenic [mg/L]	Barium [mg/L]	Beryllium [mg/L]	Bismuth [mg/L]	Boron [mg/L]	Cadmium [mg/L]	Calcium [mg/L]	Chromium [mg/L]	Cobalt [mg/L]	Copper [mg/L]	Iron [mg/L]	Lead [mg/L]	Magnesium [mg/L]
Canadian Water Quality Guidelines for the Protection of Aquatic Life - Marine (December, 2007)					**0.0125**					**0.00012**		**0.056**[2]					
W2	Ocean - South of Barrel Cache		<0.1	<0.01	<0.02	<0.1	<0.01	<0.02	3.5	<0.002	340	<0.1	<0.01	<0.02	<2	<0.01	1100
Canadian Water Quality Guidelines for the Protection of Aquatic Life - Freshwater (December, 2007)			**0.1**[1]		**0.0050**					**0.000017**		**0.0089**[2]		**0.002**[3]	**0.300**	**0.001**[4]	
Guidelines for Canadian Drinking Water Quality (May, 2008)				**0.006**	**0.010**	**1**			**5**	**0.005**		**0.05**		**1.0**	**0.3**	**0.01**	
W1	Blast Hole North of Main Station		0.01	<0.0005	<0.001	<0.005	<0.0005	<0.001	<0.01	<0.0001	9.4	<0.005	<0.0005	<0.001	<0.1	<0.0005	7.8
W3	Test Pit - Downgradient of Barrel Cache		0.38	<0.0005	<0.001	0.023	<0.0005	<0.001	0.019	<0.0001	8.6	<0.005	<0.0005	<0.001	0.3	<0.0005	8.4
W4	Creek Between Two Beach Landings		0.009	<0.0005	<0.001	<0.005	<0.0005	<0.001	<0.01	<0.0001	2.8	<0.005	<0.0005	<0.001	<0.1	<0.0005	1.8
W5	Creek East of Dump B		<0.005	<0.0005	<0.001	0.019	<0.0005	<0.001	<0.01	<0.0001	3.0	<0.005	<0.0005	<0.001	<0.1	<0.0005	1.5
FB	Collected at Dump B		<0.005	<0.0005	<0.001	<0.005	<0.0005	<0.001	<0.01	<0.0001	<0.2	<0.005	<0.0005	<0.001	<0.1	<0.0005	<0.05

Sample #	Area	Comments	Manganese [mg/L]	Molybdenum [mg/L]	Nickel [mg/L]	Phosphorous [mg/L]	Potassium [mg/L]	Selenium [mg/L]	Silicon [mg/L]	Silver [mg/L]	Sodium [mg/L]	Strontium [mg/L]	Sulphur [6] [mg/L]	Tin [mg/L]	Titanium [mg/L]	Vanadium [mg/L]	Zinc [mg/L]
Canadian Water Quality Guidelines for the Protection of Aquatic Life - Marine (December, 2007)																	
W2	Ocean - South of Barrel Cache		<0.04	<0.02	<0.02	<2	330	<0.04	<1	<0.002	8800	<6	724	<0.02	<0.01	0.027	<0.1
Canadian Water Quality Guidelines for the Protection of Aquatic Life - Freshwater (December, 2007)				**0.073**	**0.025**[5]			**0.0010**		**0.0001**							**0.030**
Guidelines for Canadian Drinking Water Quality (May, 2008)			**0.05**					**0.01**			**200**						**5**
W1	Blast Hole North of Main Station		<0.002	<0.001	<0.001	<0.1	0.25	<0.002	3.9	<0.0001	4.9	0.008	0.7	<0.001	<0.005	<0.001	<0.005
W3	Test Pit - Downgradient of Barrel Cache		<0.002	<0.001	0.001	<0.1	3.3	<0.002	2.8	<0.0001	17	0.038	7.5	<0.001	0.017	<0.001	<0.005
W4	Creek Between Two Beach Landings		<0.002	<0.001	0.001	<0.1	0.93	<0.002	2.5	<0.0001	4.2	0.01	3.1	<0.001	<0.005	<0.001	<0.005
W5	Creek East of Dump B		<0.002	<0.001	<0.001	<0.1	1.3	<0.002	2.0	<0.0001	4.1	0.01	2.7	<0.001	<0.005	<0.001	<0.005
FB	Collected at Dump B		<0.002	<0.001	<0.001	<0.1	<0.2	<0.002	2.0	<0.0001	<0.1	<0.001	<0.5	<0.001	<0.005	<0.001	<0.005

Notes:

[1] Aluminum guideline for pH at ≥6.5

[2] Chromium guideline for Trivalent chromium (Cr(III))

[3] Copper guideline based on hardness - most stringent guideline is applied

[4] Lead guideline based on hardness - most stringent guideline is applied

[5] Nickel guideline based on hardness - most stringent guideline is applied

[6] Sulphur results are from lab report B0B8665. All other results are from lab report B0E2466 where samples were reanalyzed to obtain lower detection limits.

Detection limit exceeds applicable guideline.

Table B8: Water PCB Results

Sample #	Area	Comments	Aroclor 1242 [ug/L]	Aroclor 1254 [ug/L]	Aroclor 1260 [ug/L]	PCB Total [ug/L]
Canadian Water Quality Guidelines for the Protection of Aquatic Life - Marine (December, 2007)						
W2	Ocean - South of Barrel Cache		<0.05	<0.05	<0.05	<0.05
Canadian Water Quality Guidelines for the Protection of Aquatic Life - Freshwater (December, 2007)						
Guidelines for Canadian Drinking Water Quality (May, 2008)						
W1	Blast Hole North of Main Station		<0.05	<0.05	<0.05	<0.05
W2	Ocean - South of Barrel Cache		<0.05	<0.05	<0.05	<0.05
W3	Test Pit - Downgradient of Barrel Cache		<0.05	<0.05	<0.05	<0.05
W4	Creek Between Two Beach Landings		<0.05	<0.05	<0.05	<0.05
W5	Creek East of Dump B		<0.05	<0.05	<0.05	<0.05
FB	Collected at Dump B		<0.05	<0.05	<0.05	<0.05

Table B9: Water PHC Results

Sample #	Area	Comments	Benzene [ug/L]	Toluene [ug/L]	Ethylbenzene [ug/L]	Xylene [ug/L]	F1 [ug/L]	F1 minus BTEX [ug/L]	F2 [ug/L]	F3 [ug/L]	F4 [ug/L]
Canadian Water Quality Guidelines for the Protection of Aquatic Life - Marine (December, 2007)			**0.110**	**0.215**	**0.025**						
W2	Ocean - South of Barrel Cache		<0.2	<0.2	<0.2	<0.4	<100	<100	<100	<100	<100
Canadian Water Quality Guidelines for the Protection of Aquatic Life - Freshwater (December, 2007)			**0.370**	**0.0020**	**0.090**						
Guidelines for Canadian Drinking Water Quality (May, 2008)			**5**	**24**	**2.4**	**300**					
W1	Blast Hole North of Main Station		<0.2	<0.2	<0.2	<0.4	<100	<100	<100	<100	<100
W3	Test Pit - Downgradient of Barrel Cache		<0.2	<0.2	<0.2	<0.4	<100	<100	<100	<100	<100
W4	Creek Between Two Beach Landings		<0.2	<0.2	<0.2	<0.4	<100	<100	<100	<100	<100
W5	Creek East of Dump B		<0.2	<0.2	<0.2	<0.4	<100	<100	<100	<100	<100
FB	Collected at Dump B		<0.2	<0.2	<0.2	<0.4	<100	<100	<100	<100	<100

Table B10: QA/QC Results

Sample #	Area	Metals								PCBs				PHCs								
		As [mg/kg]	Cd [mg/kg]	Cr [mg/kg]	Co [mg/kg]	Cu [mg/kg]	Pb [mg/kg]	Ni [mg/kg]	Zn [mg/kg]	Aroclor 1242 [mg/kg]	Aroclor 1254 [mg/kg]	Aroclor 1260 [mg/kg]	PCB Total [mg/kg]	Benzene [mg/kg]	Toluene [mg/kg]	Ethylbenzene [mg/kg]	Xylene [mg/kg]	F1 [mg/kg]	F1 minus BTEX [mg/kg]	F2 [mg/kg]	F3 [mg/kg]	F4 [mg/kg]
Method Detection Limit		**1**	**0.1**	**1**	**0.1**	**0.5**	**1**	**0.5**	**5**	**0.01/0.1/0.05**	**0.01/0.05**	**0.01/0.05**	**0.01/0.05**	**0.005/0.002**	**0.02/0.002**	**0.01/0.002**	**0.04/0.002**	**10**	**10**	**10**	**10**	**10**
10-0170	Main Station - POL Tanks and Pumphouse	3	<0.1	58	15	31	65	80	71					<0.005	<0.02	<0.01	<0.04	180	180	5600	590	95
10-0171	Main Station - POL Tanks and Pumphouse	3	<0.1	57	16	30	46	78	70					<0.005	<0.02	<0.01	0.07	210	210	6000	550	86
		0	N/A	2	6	3	34	3	1					N/A	N/A	N/A	N/A	15	15	7	7	**10**
10-0180	Main Station - POL Tanks and Pumphouse													<0.005	<0.02	<0.01	<0.04	<10	<10	<10	27	<10
10-0181	Main Station - POL Tanks and Pumphouse													<0.005	<0.02	<0.01	<0.04	<10	<10	<10	1000	590
														N/A	N/A	N/A	N/A	N/A	N/A	N/A	**189**	N/A
10-0190	Main Station - Water Reservoir Building	<1	0.6	79	33	75	7	240	87	<0.01	0.11	0.01	0.13									
10-0191	Main Station - Water Reservoir Building	<1	0.5	77	35	71	5	260	74	<0.01	0.06	0.01	0.07									
		N/A	**18**	3	6	5	**33**	8	16	N/A	**59**	**0**	**60**									
10-0200	Main Station - Module Train													<0.005	<0.02	<0.01	<0.04	17	17	8000	1600	30
10-0201	Main Station - Module Train													<0.005	<0.02	<0.01	<0.04	10	10	6700	1500	37
														N/A	N/A	N/A	N/A	**52**	**52**	18	6	**21**
10-0210	Main Station - Module Train	4	0.4	89	23	47	15	130	140	<0.01	0.35	0.28	0.62									
10-0211	Main Station - Module Train	4	0.4	91	23	46	15	130	130	<0.1	0.2	0.1	0.4									
		0	**0**	2	0	2	0	0	7	N/A	**55**	**95**	43									
10-0260	Inuit Building West of Main Station	4	0.2	120	40	55	11	450	90	<0.01	0.11	<0.01	0.11									
10-0261	Inuit Building West of Main Station	4	0.1	120	42	54	13	460	90	<0.01	0.11	<0.01	0.11									
		0	**67**	0	5	2	17	2	0	N/A	0	N/A	0									
10-0270	West of Main Station - Barrel Storage Area													<0.005	<0.02	<0.01	<0.04	<10	<10	78	520	170
10-0271	West of Main Station - Barrel Storage Area													<0.005	<0.02	<0.01	<0.04	<10	<10	82	520	170
														N/A	N/A	N/A	N/A	N/A	N/A	**5**	0	0
10-0280	Lobe 5 - West of Antenna	2	0.2	84	29	35	26	140	170	<0.01	<0.01	<0.01	<0.01	<0.002	<0.002	<0.002	<0.002	<10	<10	<10	<10	<10
10-0281	Lobe 5 - West of Antenna	2	0.2	81	25	34	19	130	160	<0.01	<0.01	<0.01	<0.01	<0.002	<0.002	<0.002	<0.002	<10	<10	<10	<10	<10
		0	**0**	4	15	3	31	7	6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10-0310	Lobe 3 - North of Warehouse	<1	0.1	160	65	43	3	930	64	<0.05	<0.05	<0.05	<0.05	<0.002	<0.002	<0.002	<0.002	<10	<10	1700	4000	490
10-0311	Lobe 3 - North of Warehouse	<1	0.1	150	63	44	3	910	58	<0.05	<0.05	<0.05	<0.05	<0.002	<0.002	<0.002	<0.002	<10	<10	2000	4300	580
		N/A	**0**	6	3	2	**0**	2	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	16	7	17
10-0320	Lobe 1 - Northwest of Garage	<1	<0.1	150	60	54	2	880	50	<0.01	<0.01	<0.01	<0.01	<0.002	<0.002	<0.002	<0.002	<10	<10	<10	<10	<10
10-0321	Lobe 1 - Northwest of Garage	<1	<0.1	140	59	56	2	770	48	<0.01	<0.01	<0.01	<0.01	<0.002	<0.002	<0.002	<0.002	<10	<10	<10	<10	<10
		N/A	N/A	7	2	4	**0**	13	**4**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10-0330	Beach - Inuit Hut	2	<0.1	48	11	17	6	55	51	<0.01	0.01	0.02	0.03									
10-0331	Beach - Inuit Hut	2	<0.1	47	11	16	6	56	45	<0.01	0.02	0.02	0.04									
		0	N/A	2	0	6	**0**	2	**13**	N/A	**67**	**0**	**29**									
10-0350	Beach - POL Tanks													<0.002	<0.002	<0.002	<0.002	<10	<10	<10	<10	<10
10-0351	Beach - POL Tanks													<0.002	<0.002	<0.002	<0.002	<10	<10	<10	<10	<10
														N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10-0360	Lobe 9 - South of Dump C	6	0.6	120	23	64	14	110	280	<0.01	<0.01	<0.01	<0.01	<0.002	<0.002	<0.002	<0.002	<10	<10	<10	<10	<10
10-0361	Lobe 9 - South of Dump C	6	0.7	150	26	72	14	120	370	<0.01	<0.01	<0.01	<0.01	<0.002	<0.002	<0.002	<0.002	<10	<10	<10	22	<10
		0	**15**	22	12	12	0	9	28	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Average RPD for the Site	0	17	5	5	4	13	5	9	N/A	45	32	33	N/A	N/A	N/A	N/A	34	34	11	42	12

Notes:

N/A RPD not calculated because results are less than method detection limit

RPD Relative Percent Difference

Acceptable RPD values vary based on the analytical parameters, the sample matrix, and the concentrations of analytes in the samples.

Acceptable RPD values are below 35% for metals and 50% for PHCs and PCBs.

BOLD Indicates the RPD exceeds the recommended alert criteria (when the concentrations are at least ten times the method detection limit).

BOLD Indicates that concentrations are <10 times the method detection limit; therefore the calculated RPD is not strictly valid.

Appendix C

Photographs

PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
1	13-aug-10

Direction Photo Taken:

east

Description:

Westside exterior of garage



Photo No.	Date:
4	13-aug-10

Direction Photo Taken:

north

Description:

Southside exterior of garage



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
5	13-aug-10

Direction Photo Taken:

west

Description:

Eastside exterior of garage



Photo No.	Date:
8	13-aug-10

Direction Photo Taken:

north

Description:

Interior of garage north wall



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
9	13-aug-10

Direction Photo Taken:

north

Description:

Interior of garage north wall



Photo No.	Date:
11	13-aug-10

Direction Photo Taken:

east

Description:

Interior of garage east wall



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
12	13-aug-10

Direction Photo Taken:

south

Description:

Interior of garage south wall



Photo No.	Date:
14	13-aug-10

Direction Photo Taken:

west

Description:

Interior of garage west wall



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
16 (2)	13-aug-10

Direction Photo Taken:

Description:

Interior of garage - furnace and diesel tank room - two diesel tanks



Photo No.	Date:
18	13-aug-10

Direction Photo Taken:

Description:

Interior of garage - furnace and diesel tank room - red fire tank



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
21	13-aug-10

Direction Photo Taken:

Description:

Interior of garage - generator room - electrical panels on wall



Photo No.	Date:
22	13-aug-10

Direction Photo Taken:

Description:

Interior of garage - generator room - diesel generator



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
23	13-aug-10

Direction Photo Taken:

Description:

Interior of garage - mezzanine flooring



Photo No.	Date:
24	13-aug-10

Direction Photo Taken:

Description:

Interior of garage - overhead lamp with no bulbs



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
25	13-aug-10

Direction Photo Taken:

east

Description:

Westside exterior of warehouse



Photo No.	Date:
26	13-aug-10

Direction Photo Taken:

north

Description:

Southside exterior of warehouse



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
27	13-aug-10

Direction Photo Taken:

west

Description:

Eastside exterior of warehouse



Photo No.	Date:
29	13-aug-10

Direction Photo Taken:

east

Description:

Interior of warehouse - two small bedrooms on east wall



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
31	13-aug-10

Direction Photo Taken:

Description:

Interior of warehouse - unpainted ductwork



Photo No.	Date:
30 (2)	13-aug-10

Direction Photo Taken:

west

Description:

Interior of warehouse - west wall



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
31 (2)	13-aug-10

Direction Photo Taken:

west

Description:

Interior of warehouse - west wall



Photo No.	Date:
36	14-aug-10

Direction Photo Taken:

east

Description:

Interior of warehouse - northeast bedroom of warehouse



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
37	14-aug-10

Direction Photo Taken:

east

Description:

Interior of warehouse - southeast bedroom of warehouse



Photo No.	Date:
38	14-aug-10

Direction Photo Taken:

east

Description:

Interior of warehouse - furnace room



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
39	14-aug-10

Direction Photo Taken:

Description:

Interior of warehouse - furnace room - panel and large switches



Photo No.	Date:
40	14-aug-10

Direction Photo Taken:

Description:

Interior of warehouse - furnace room - other electrical panel



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
41	14-aug-10

Direction Photo Taken:

Description:

Interior of warehouse - furnace room - lined with stone tile



Photo No.	Date:
43	14-aug-10

Direction Photo Taken:

south

Description:

Interior of warehouse - back entrance



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
44	14-aug-10

Direction Photo Taken:

west

Description:

Interior of warehouse - debris on floor



Photo No.	Date:
45	14-aug-10

Direction Photo Taken:

Description:

Washroom attached to warehouse



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
47	14-aug-10

Direction Photo Taken:

Description:

Washroom attached to warehouse



Photo No.	Date:
48	14-aug-10

Direction Photo Taken:

Description:

Washroom attached to warehouse



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
49	14-aug-10

Direction Photo Taken:

Description:

Washroom attached to warehouse

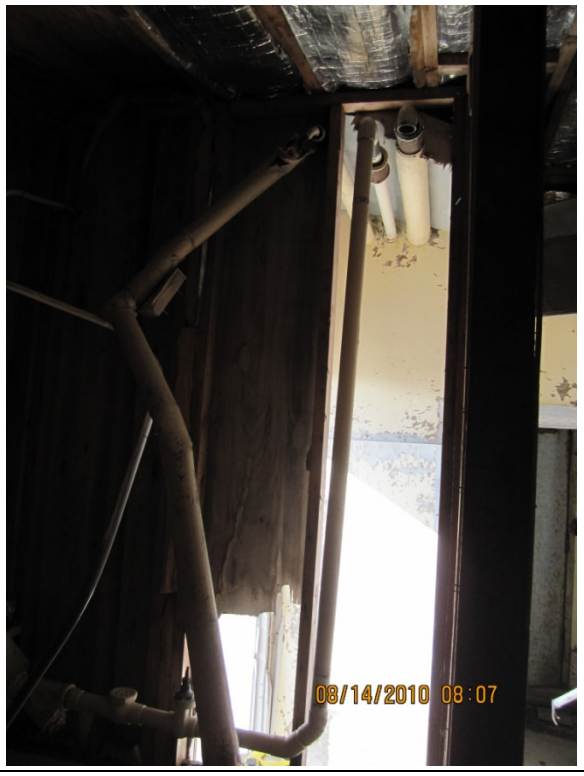


Photo No.	Date:
50	14-aug-10

Direction Photo Taken:

Description:

Washroom attached to warehouse - pipes wrapped with asbestos



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
51	14-aug-10

Direction Photo Taken:

Description:

Washroom attached to warehouse - pipes wrapped with asbestos



Photo No.	Date:
52	14-aug-10

Direction Photo Taken:

Description:

Exterior of mod train - Westside (north end)



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
53	14-aug-10

Direction Photo Taken:

Description:

Exterior of mod train - Westside (south end)



Photo No.	Date:
54	14-aug-10

Direction Photo Taken:

Description:

Exterior of mod train - Southside



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
55	14-aug-10

Direction Photo Taken:

Description:

Exterior of mod train - eastside (south end)



Photo No.	Date:
56	14-aug-10

Direction Photo Taken:

Description:

Exterior of mod train - eastside (north end)



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
57	14-aug-10

Direction Photo Taken:

Description:

Exterior of mod train - north side



Photo No.	Date:
58	14-aug-10

Direction Photo Taken:

Description:

Exterior of mod train - north side stairs



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
59	14-aug-10

Direction Photo Taken:

Description:

Exterior of mod train - Southside stairs



Photo No.	Date:
60	14-aug-10

Direction Photo Taken:

Description:

Exterior of mod train - eastside stairs



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
60 (2)	14-aug-10

Direction Photo Taken:

Description:

Exterior of mod train - Westside stairs



Photo No.	Date:
61	14-aug-10

Direction Photo Taken:

Description:

Exterior of mod train - power house foundation



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
67	14 aug-10

Direction Photo Taken:

Description:

Interior of mod train - power room - two large storage diesel storage tanks



Photo No.	Date:
68	14 aug-10

Direction Photo Taken:

Description:

Interior of mod train - power room - east diesel generator



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
69	14 aug-10

Direction Photo Taken:

Description:

Interior of mod train - power room - west diesel generator



Photo No.	Date:
70	14 aug-10

Direction Photo Taken:

Description:

Interior of mod train - power room - two temperature controls asbestos wrapped



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
71	14 aug-10

Direction Photo Taken:

Description:

Interior of mod train - power room - electrical cabinet

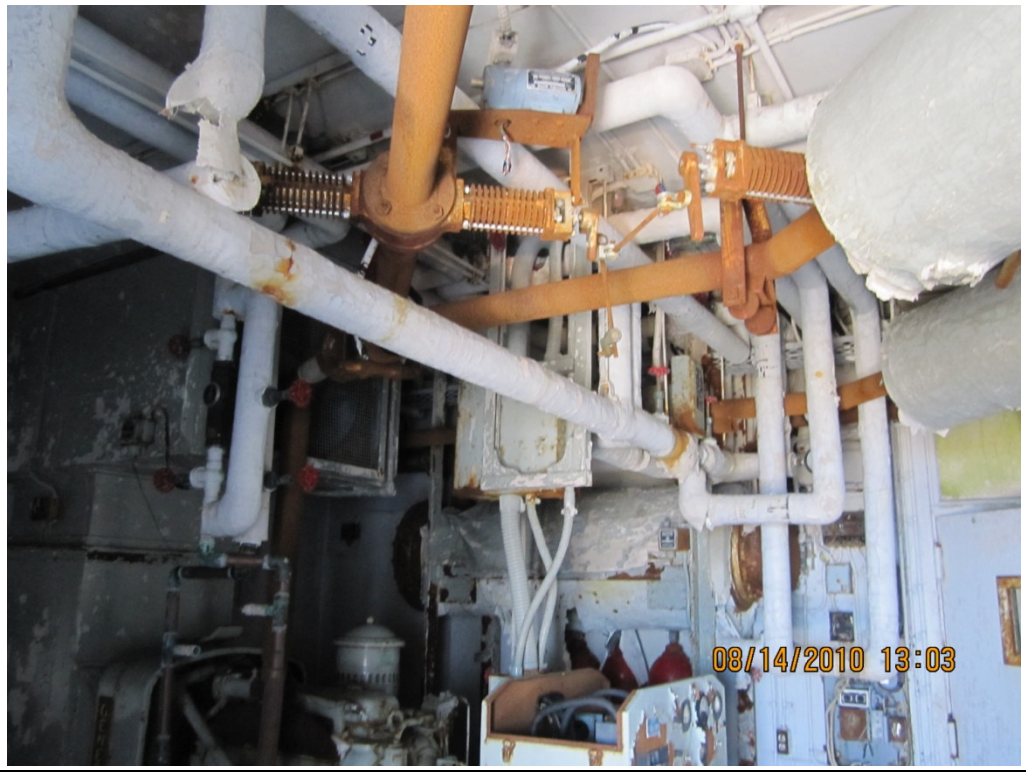


Photo No.	Date:
72	14 aug-10

Direction Photo Taken:

Description:

Interior of mod train - power room - asbestos wrapped plumbing



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
73	14 aug-10

Direction Photo Taken:

Description:

Interior of mod train - power room - asbestos wrapped plumbing



Photo No.	Date:
74	14 aug-10

Direction Photo Taken:

Description:

Interior of mod train - power room - structural steel for equipment w/ PCB paint



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
85	

Direction Photo Taken:

Description:

Interior of mod train - electrical room - panel #1



Photo No.	Date:
86	14-aug-10

Direction Photo Taken:

Description:

Interior of mod train - electrical room - panel #1



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
87	14-aug-10

Direction Photo Taken:

Description:

Interior of mod train - electrical room - panel #1



Photo No.	Date:
88	14-aug-10

Direction Photo Taken:

Description:

Interior of mod train - electrical room - panel #24, southwest corner of room



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
89	14-aug-10

Direction Photo Taken:

Description:

Interior of mod train - electrical room - panel #24, southwest corner of room



Photo No.	Date:
90	14-aug-10

Direction Photo Taken:

Description:

Interior of mod train - electrical room - panel #24, southwest corner of room



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
91	14-aug-10

Direction Photo Taken:

Description:

Interior of mod train - electrical room - panel #24, southwest corner of room



Photo No.	Date:
92	14-aug-10

Direction Photo Taken:

Description:

Interior of mod train - electrical room - panel #24, southwest corner of room



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
93	14-aug-10

Direction Photo Taken:

Description:

Interior of mod train - electrical room - panel #3, centre of Westside of room

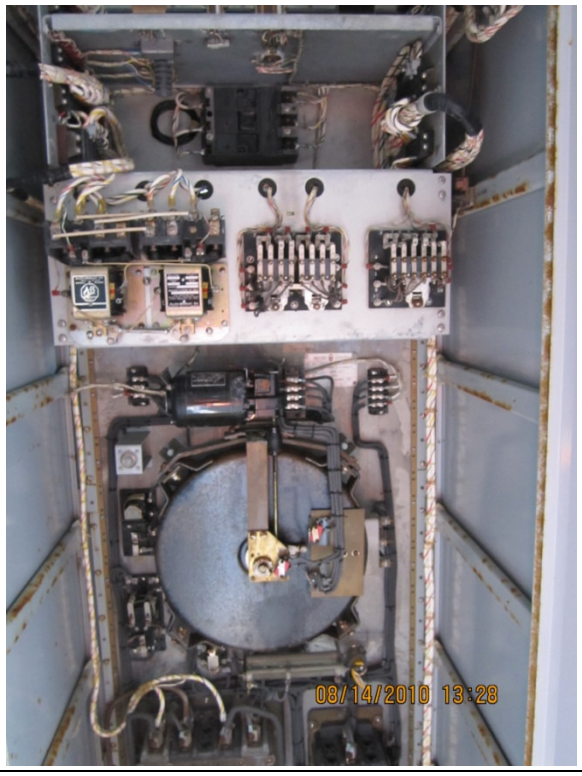


Photo No.	Date:
94	14-aug-10

Direction Photo Taken:

Description:

Interior of mod train - electrical room - panel #3, centre of Westside of room



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
96	14-aug-10

Direction Photo Taken:

Description:

Interior of mod train - electrical room - panel #3, centre of Westside of room

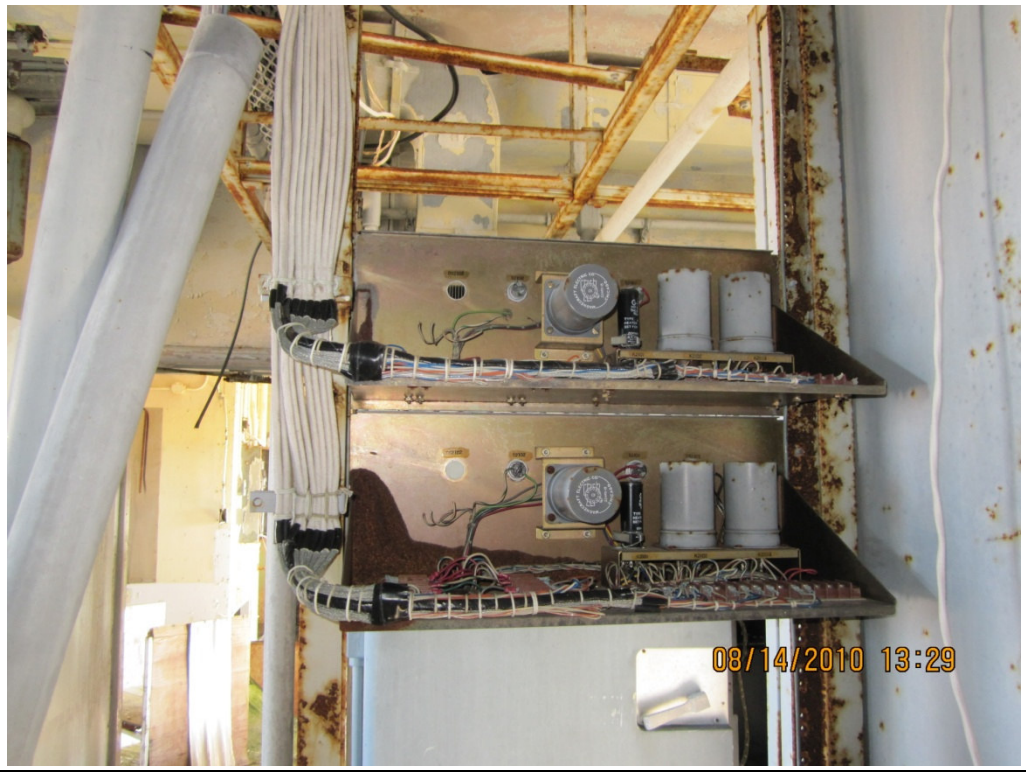


Photo No.	Date:
97	14-aug-10

Direction Photo Taken:

Description:

Interior of mod train - electrical room - panel #3, centre of Westside of room



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
98	14-aug-10

Direction Photo Taken:

Description:

Interior of mod train - electrical room - three electrical boxes



Photo No.	Date:
99	14-aug-10

Direction Photo Taken:

Description:

Interior of mod train - electrical room - steel framing



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
101	14-aug-10

Direction Photo Taken:

Description:

Interior of mod train - electrical room - duct work



Photo No.	Date:
104	14-aug-10

Direction Photo Taken:

Description:

Interior of mod train - electrical room - floors with asbestos tile



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
105	14-aug-10

Direction Photo Taken:

Description:

Interior of mod train - kitchen/dining room - remnants of the kitchen cabinet



Photo No.	Date:
106	14-aug-10

Direction Photo Taken:

Description:

Interior of mod train - kitchen/dining room - hot water tank



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
107	14-aug-10

Direction Photo Taken:

Description:

Interior of mod train - kitchen/dining room - dining area



Photo No.	Date:
108	14-aug-10

Direction Photo Taken:

Description:

Interior of mod train - kitchen/dining room - wall with wood paneling removed



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
109	14-aug-10

Direction Photo Taken:

Description:

Interior of mod train - kitchen/dining room - asbestos tile floor



Photo No.	Date:
110	14-aug-10

Direction Photo Taken:

Description:

Interior of mod train - kitchen/dining room - duct work



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
111	14-aug-10

Direction Photo Taken:

Description:

Interior of mod train - kitchen/dining room - plumbing, asbestos wrapped pipes



Photo No.	Date:
112	14-aug-10

Direction Photo Taken:

Description:

Interior of mod train - kitchen/dining room - plumbing, asbestos wrapped pipes



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
114	14-aug-10

Direction Photo Taken:

Description:

Interior of mod train - kitchen/dining room - electrical panels south wall



Photo No.	Date:
116	14-aug-10

Direction Photo Taken:

Description:

Interior of mod train - washroom - wall with PCB amended paint



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
117	14-aug-10

Direction Photo Taken:

Description:

Interior of mod train - washroom - stainless steel shower stall



Photo No.	Date:
118	14-aug-10

Direction Photo Taken:

Description:

Interior of mod train - washroom - asbestos tile floor



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
119	14-aug-10

Direction Photo Taken:

Description:

Interior of mod train - washroom - porcelain toilet



Photo No.	Date:
121	14-aug-10

Direction Photo Taken:

Description:

Interior of mod train - washroom - steel water tank



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
122 (2)	14-aug-10

Direction Photo Taken:

Description:

Interior of mod train - hallway



Photo No.	Date:
123	14-aug-10

Direction Photo Taken:

Description:

Interior of mod train - exit hallway



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
126	14-aug-10

Direction Photo Taken:

Description:

Interior of mod train - bedroom - walls and ceiling



Photo No.	Date:
127	14-aug-10

Direction Photo Taken:

Description:

Interior of mod train - small water storage room - walls and ceiling



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
128	14-aug-10

Direction Photo Taken:

Description:

Interior of mod train - small water storage room - walls and ceiling



Photo No.	Date:
129	14-aug-10

Direction Photo Taken:

Description:

Interior of mod train - small water storage room - water tank



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
132	14-aug-10

Direction Photo Taken:

Description:

Interior of mod train - small water storage room - large motor



Photo No.	Date:
133	14-aug-10

Direction Photo Taken:

Description:

Interior of mod train - small water storage room - piping



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
134 (2)	14-aug-10

Direction Photo Taken:

Description:

Interior of mod train - small water storage room - asbestos covered piping



Photo No.	Date:
135	14-aug-10

Direction Photo Taken:

Description:

Interior of mod train - water unit



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
136	14-aug-10

Direction Photo Taken:

Description:

Interior of mod train - water unit



Photo No.	Date:
137	14-aug-10

Direction Photo Taken:

Description:

Interior of mod train - water unit



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
138	14-aug-10

Direction Photo Taken:

Description:

Interior of mod train - water unit - small asbestos wrapped tank



Photo No.	Date:
139	14-aug-10

Direction Photo Taken:

Description:

Interior of mod train - water unit - two diesel tanks and supporting steel



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
140	14-aug-10

Direction Photo Taken:

Description:

Interior of mod train - water unit - asbestos covered hot water tank



Photo No.	Date:
141	14-aug-10

Direction Photo Taken:

Description:

Interior of mod train - water unit - steel shell hot water tank



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
142	14-aug-10

Direction Photo Taken:

Description:

Interior of mod train - water unit - asbestos covered piping



Photo No.	Date:
145	14-aug-10

Direction Photo Taken:

Description:

Interior of mod train - water unit - duct



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
146	14-aug-10

Direction Photo Taken:

Description:

Exterior of water tank and pump house - perimeter sum around tank



Photo No.	Date:
147	14-aug-10

Direction Photo Taken:

Description:

Exterior of water tank and pump house - perimeter sum around tank



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
148	14-aug-10

Direction Photo Taken:

Description:

Exterior of water tank and pump house - siphon and pump location



Photo No.	Date:
149	14-aug-10

Direction Photo Taken:

Description:

Exterior of water tank and pump house - diesel tanks



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
150	14-aug-10

Direction Photo Taken:

Description:

Exterior of pump house - majority of metal cladding and insulation on tank removed



Photo No.	Date:
151	14-aug-10

Direction Photo Taken:

south

Description:

Exterior of water tank and pump house - northside



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
152	14-aug-10

Direction Photo Taken:

west

Description:

Exterior of water tank and pump house - eastside



Photo No.	Date:
153	14-aug-10

Direction Photo Taken:

north

Description:

Exterior of water tank and pump house - westside



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
154	14-aug-10

Direction Photo Taken:

east

Description:

Exterior of water tank and pump house - southside



Photo No.	Date:
155	14-aug-10

Direction Photo Taken:

Description:

Interior of pump house



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
157	14-aug-10

Direction Photo Taken:

Description:

Interior of pump house - west wall



Photo No.	Date:
158	14-aug-10

Direction Photo Taken:

Description:

Interior of pump house - north wall



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
159	14-aug-10

Direction Photo Taken:

Description:

Interior of pump house - north wall



Photo No.	Date:
160	14-aug-10

Direction Photo Taken:

Description:

Interior of pump house - south wall



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
162	14-aug-10

Direction Photo Taken:

Description:

Interior of pump house - east wall



Photo No.	Date:
163	14-aug-10

Direction Photo Taken:

Description:

Interior of pump house - ceiling



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
166	15-aug-10

Direction Photo Taken:

Description:

Interior of pump house - fiberglass wrapped pipe



Photo No.	Date:
167	15-aug-10

Direction Photo Taken:

Description:

Interior of pump house - fiberglass wrapped pipe



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
168	15-aug-10

Direction Photo Taken:

Description:

Interior of pump house - steam generator



Photo No.	Date:
169	15-aug-10

Direction Photo Taken:

Description:

Interior of pump house - ducting



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
170	15-aug-10

Direction Photo Taken:

Description:

Interior of pump house - ducting



Photo No.	Date:
171	15-aug-10

Direction Photo Taken:

Description:

Interior of pumphouse - concrete floor



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
172	15-aug-10

Direction Photo Taken:

Description:

Storage tanks



Photo No.	Date:
173	15-aug-10

Direction Photo Taken:

Description:

Storage tanks



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
175	15-aug-10

Direction Photo Taken:

Description:

Exterior of POL pump house - foundation



Photo No.	Date:
176	15-aug-10

Direction Photo Taken:

Description:

Exterior of POL pump house - piping and valves



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
177	15-aug-10

Direction Photo Taken:

Description:

Interior of POL pump house - piping and valves



Photo No.	Date:
178	15-aug-10

Direction Photo Taken:

Description:

Interior of POL pump house - pump on metal stand



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
181	15-aug-10

Direction Photo Taken:

south

Description:

Dump A - from waypoint # 794



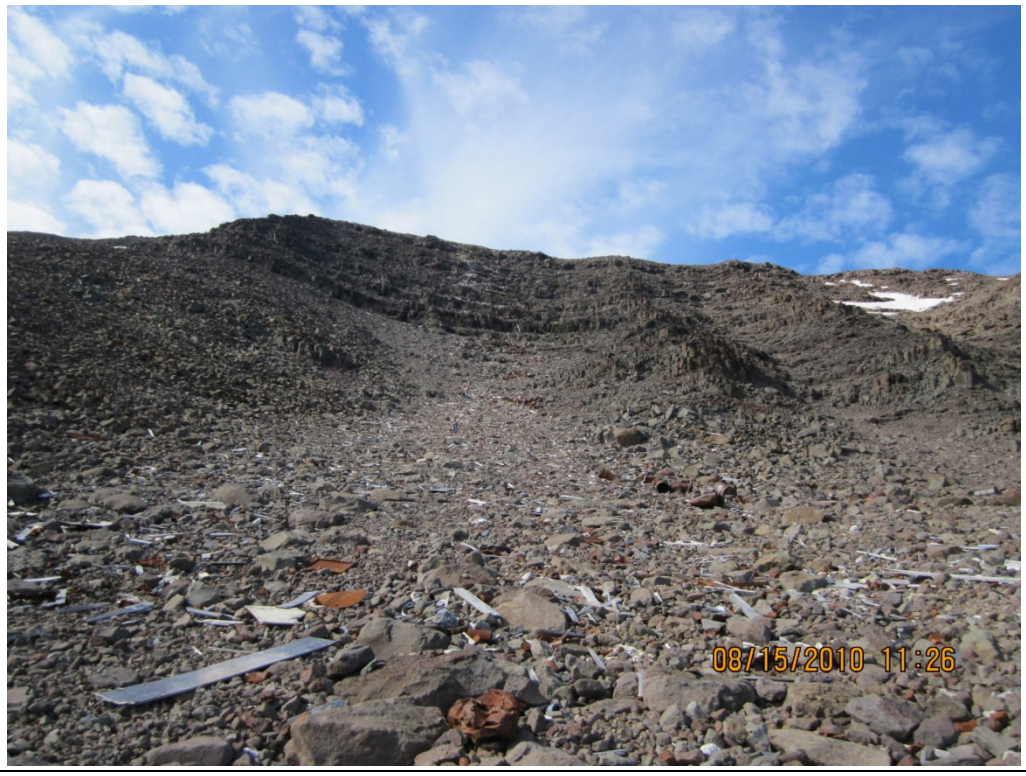
Photo No.	Date:
182	15-aug-10

Direction Photo Taken:

north

Description:

Dump A - from waypoint # 794



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
183	15-aug-10

Direction Photo Taken:

south

Description:

Dump A



Photo No.	Date:
184	15-aug-10

Direction Photo Taken:

north

Description:

Non-concentrated area - from waypoint # 812



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
185	15-aug-10

Direction Photo Taken:

southeast

Description:

Dump A - from waypoint # 815



Photo No.	Date:
186	15-aug-10

Direction Photo Taken:

southwest

Description:

Dump A - from waypoint # 815



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
188	16-aug-10

Direction Photo Taken:

east

Description:

Debris Area # 1 - southeast of POL tanks - from waypoint # 833



Photo No.	Date:
189	16-aug-10

Direction Photo Taken:

east

Description:

Debris Area # 1 - from waypoint # 845



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
191	16-aug-10

Direction Photo Taken:

Description:

Inuit base - south of garage



Photo No.	Date:
192	16-aug-10

Direction Photo Taken:

Description:

Clay ceramic with white powder



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
193	16-aug-10

Direction Photo Taken:

southwest

Description:

Building west of garage - from northside



Photo No.	Date:
194	16-aug-10

Direction Photo Taken:

Description:

Fallen tower and two guild wire anchors



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
195	

Direction Photo Taken:

northwest

Description:

Guild anchor foundation - furthest NW anchor



Photo No.	Date:
196	16-aug-10

Direction Photo Taken:

east

Description:

Fallen tower



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
197	16-aug-10

Direction Photo Taken:

southeast

Description:

Fallen tower



Photo No.	Date:
200	16-aug-10

Direction Photo Taken:

Description:

Dump A



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
201	16-aug-10

Direction Photo Taken:

southwest

Description:

Looking towards Dump E debris - from waypoint # 898



Photo No.	Date:
202	16-aug-10

Direction Photo Taken:

southeast

Description:

Looking at beach plateau



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
203	16-aug-10

Direction Photo Taken:

Description:

Debris Area # 3 - drill holes



Photo No.	Date:
204	16-aug-10

Direction Photo Taken:

Description:

Blasted hole with timber foundation



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
205	16-aug-10

Direction Photo Taken:

southwest

Description:

Debris Area # 4 - from NE corner



Photo No.	Date:
206	17-aug-10

Direction Photo Taken:

north

Description:

Debris Area # 4



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
207	17-aug-10

Direction Photo Taken:

north

Description:

Debris Area # 5



Photo No.	Date:
208	17-aug-10

Direction Photo Taken:

northeast

Description:

Pocket # 1 of Debris Area # 5



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
209	17-aug-10

Direction Photo Taken:

northeast

Description:

Pocket # 2 of Debris Area # 5 - from southwest corner



Photo No.	Date:
210	17-aug-10

Direction Photo Taken:

northwest

Description:

Debris Area # 6



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
211	17-aug-10

Direction Photo Taken:

northwest

Description:

Debris Area # 6



Photo No.	Date:
211 (2)	17-aug-10

Direction Photo Taken:

south

Description:

Major repair section - some vegetation has taken hold



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
212	17-aug-10

Direction Photo Taken:

southeast

Description:

Section # 2 - narrow section of road



Photo No.	Date:
213	17-aug-10

Direction Photo Taken:

northwest

Description:

Section # 2 - narrow section of road



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
218	17-aug-10

Direction Photo Taken:

Description:

Section # 3 - panoramic



Photo No.	Date:
219	17-aug-10

Direction Photo Taken:

Description:

Section # 3 - panoramic



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
220	17-aug-10

Direction Photo Taken:

Description:

Section # 3 - panoramic



Photo No.	Date:
221	17-aug-10

Direction Photo Taken:

Description:

Section # 3 - panoramic



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
225	17-aug-10

Direction Photo Taken:

Description:

Section # 3 - Bridge - from waypoint # 87



Photo No.	Date:
226	17-aug-10

Direction Photo Taken:

northeast

Description:

Section # 3 - marjor erosion/drainage channels across the road



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
228	17-aug-10

Direction Photo Taken:

Description:

Section # 4 - exposed bedrock and rock fill - second switchback



Photo No.	Date:
234	17-aug-10

Direction Photo Taken:

Description:

Section # 4 - panoramic



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
235	17-aug-10

Direction Photo Taken:

Description:

Section # 4 - panoramic



Photo No.	Date:
237	17-aug-10

Direction Photo Taken:

Description:

Section # 5 - bridge # 2 - collapsed



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
239	17-aug-10

Direction Photo Taken:

Description:

Section # 5 - from bridge # 2 to toe of hill



Photo No.	Date:
240	17-aug-10

Direction Photo Taken:

southeast

Description:

major erosion channels and gullies



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
241	17-aug-10

Direction Photo Taken:

east

Description:

Section # 5 - from waypoint # 092



Photo No.	Date:
242	17-aug-10

Direction Photo Taken:

north

Description:

Section # 6 - from waypoint # 093



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
243	17-aug-10

Direction Photo Taken:

south

Description:

Section # 6 - road - from waypoint # 093



Photo No.	Date:
245	17-aug-10

Direction Photo Taken:

east

Description:

Section # 8 - major washout area - three barrel culverts



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
246	17-aug-10

Direction Photo Taken:

northwest

Description:

Section # 8 - runoff across road



Photo No.	Date:
247	17-aug-10

Direction Photo Taken:

west

Description:

Road from station



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
249	17-aug-10

Direction Photo Taken:

northwest

Description:

Debris Area # 10 - from waypoint # 181



Photo No.	Date:
250	17-aug-10

Direction Photo Taken:

northeast

Description:

Debris Area # 11 - barrel cache



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
E1	13-Aug-10

Direction Photo Taken:

southwest

Description:

Test pit (10-0164;10-0170/71) completed in stained area in front of Station POL and Pumphouse



Photo No.	Date:
E14	14-Aug-10

Direction Photo Taken:

south

Description:

Inuit Huts (3) south of the Station Area



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
E16	14-Aug-10

Direction Photo Taken:

southwest

Description:

Inuit Building west of the Main Station. Note how front left corner of building has been burned.



Photo No.	Date:
E24	14-Aug-10

Direction Photo Taken:

east

Description:

Paint sample (P1) collected from Station POL tank.



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
E29	14-Aug-10

Direction Photo Taken:

N/A

Description:

Tank inside Water Reservoir and Pumphouse. Paint sample (P8) collected from tank.



Photo No.	Date:
E30	14-Aug-10

Direction Photo Taken:

N/A

Description:

Paint sample (P2) collected inside Water Reservoir and Pumphouse.



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
E34	14-Aug-10

Direction Photo Taken:

N/A

Description:

Insulated piping in Water Reservoir and Pumphouse. Sample A2 was analyzed for asbestos.



Photo No.	Date:
E35	14-Aug-10

Direction Photo Taken:

N/A

Description:

Paint samples P3, P4 and P5 were collected from the Module Train kitchen.



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
E36	14-Aug-10

Direction Photo Taken:

N/A

Description:

Paint sample P6 was collected from red safety cabinet inside Module Train kitchen.



Photo No.	Date:
E38	14-Aug-10

Direction Photo Taken:

N/A

Description:

Paint sample P7 was collected from exterior support beams of Module Train.



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
E39	14-Aug-10

Direction Photo Taken:

N/A

Description:

Insulation inside Warehouse. Sample A1 was analyzed for asbestos.



Photo No.	Date:
E40	14-Aug-10

Direction Photo Taken:

southeast

Description:

Antenna at Station Area. Paint samples (P10 and P11) were collected from antenna.



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
E42	14-Aug-10

Direction Photo Taken:

northwest

Description:

Stained soil at southeast corner of Warehouse.



Photo No.	Date:
E50	15-Aug-10

Direction Photo Taken:

south

Description:

Photo taken from edge of Dump A Push Point



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
E55	15-Aug-10

Direction Photo Taken:

east

Description:

Dump A Push Point



Photo No.	Date:
E62	15-Aug-10

Direction Photo Taken:

west

Description:

View of Dump A from helicopter landing area.



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
E67	15-Aug-10

Direction Photo Taken:

north

Description:

Top end of Dump A. Debris inventory was completed from this point downward.

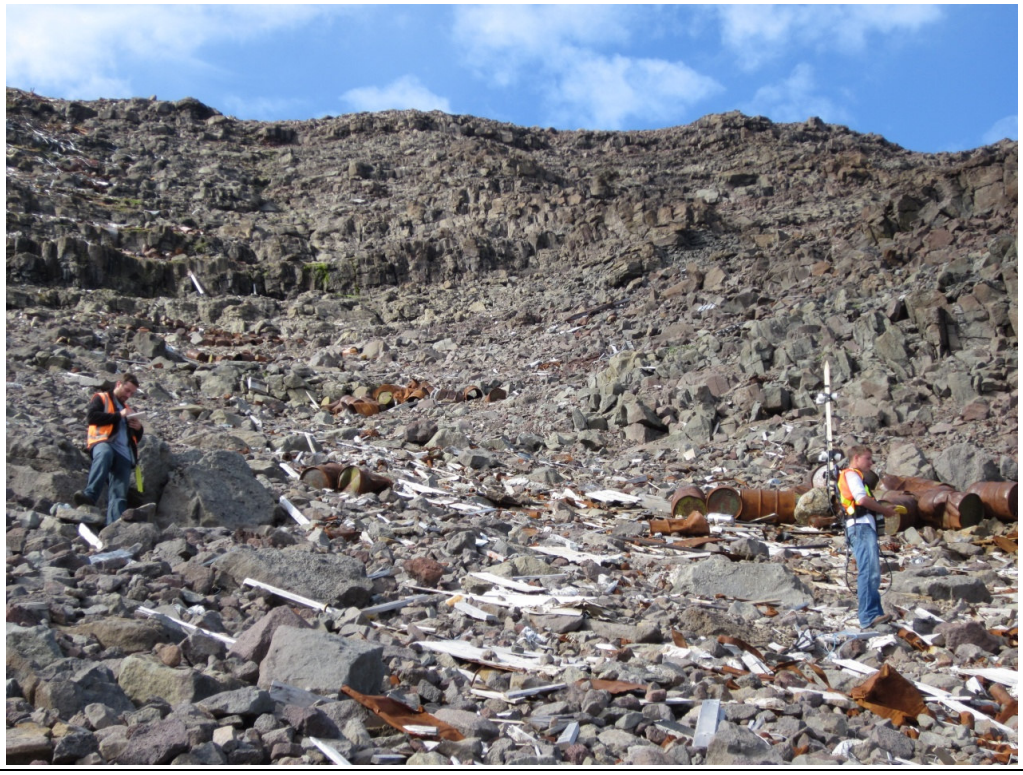


Photo No.	Date:
E73	15-Aug-10

Direction Photo Taken:

east

Description:

Dump A debris inventory (near top section).



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
E75	15-Aug-10

Direction Photo Taken:

north

Description:

Dump A Debris Inventory (near top section).



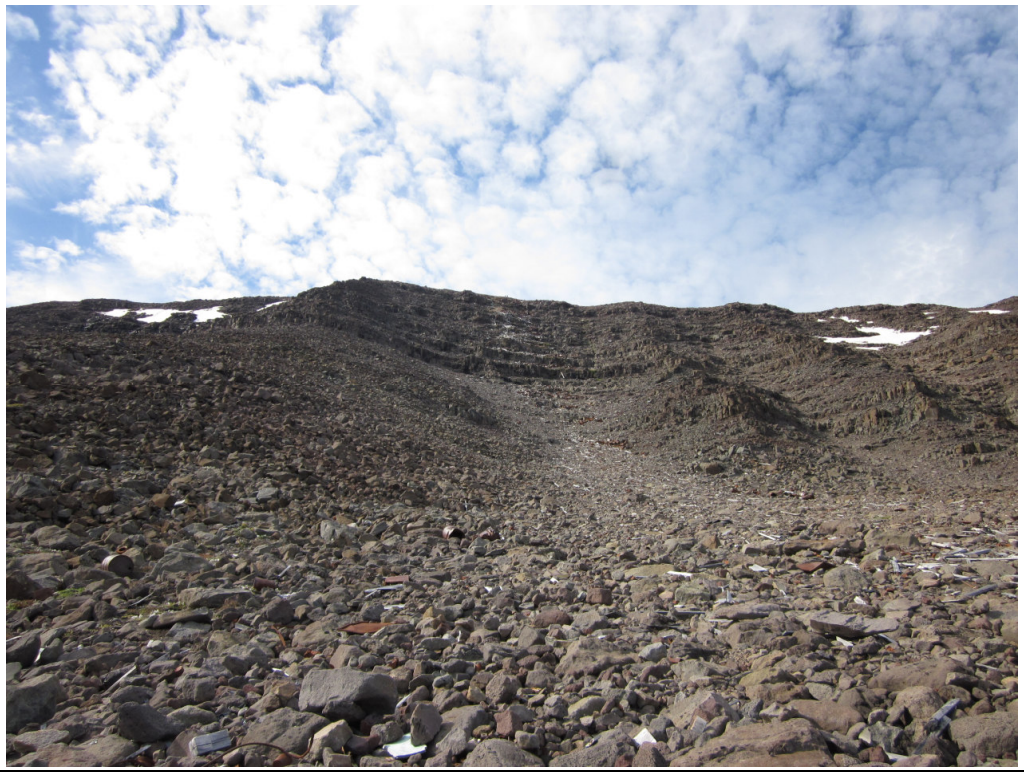
Photo No.	Date:
E84	15-Aug-10

Direction Photo Taken:

north

Description:

Dump A Debris Inventory (view of top section).



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
E89	15-Aug-10

Direction Photo Taken:

south

Description:

Dump A Debris Inventory (view of middle section).



Photo No.	Date:
E95	15-Aug-10

Direction Photo Taken:

southeast

Description:

Dump A Debris Inventory (view of middle section).



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
E122	16-Aug-10

Direction Photo Taken:

north

Description:

Buried debris Lobe 4 – North of Water Reservoir and Pumphouse.



Photo No.	Date:
E124	16-Aug-10

Direction Photo Taken:

south

Description:

Buried debris Lobe 3 – North of Warehouse.



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
E126	16-Aug-10

Direction Photo Taken:

north

Description:

Buried debris Lobe 2 – North of Garage.



Photo No.	Date:
E128	16-Aug-10

Direction Photo Taken:

south

Description:

Buried debris Lobe 1 – Northwest of Garage.



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
E142	16-Aug-10

Direction Photo Taken:

south

Description:

Dump A Debris Inventory (view from end of middle section).



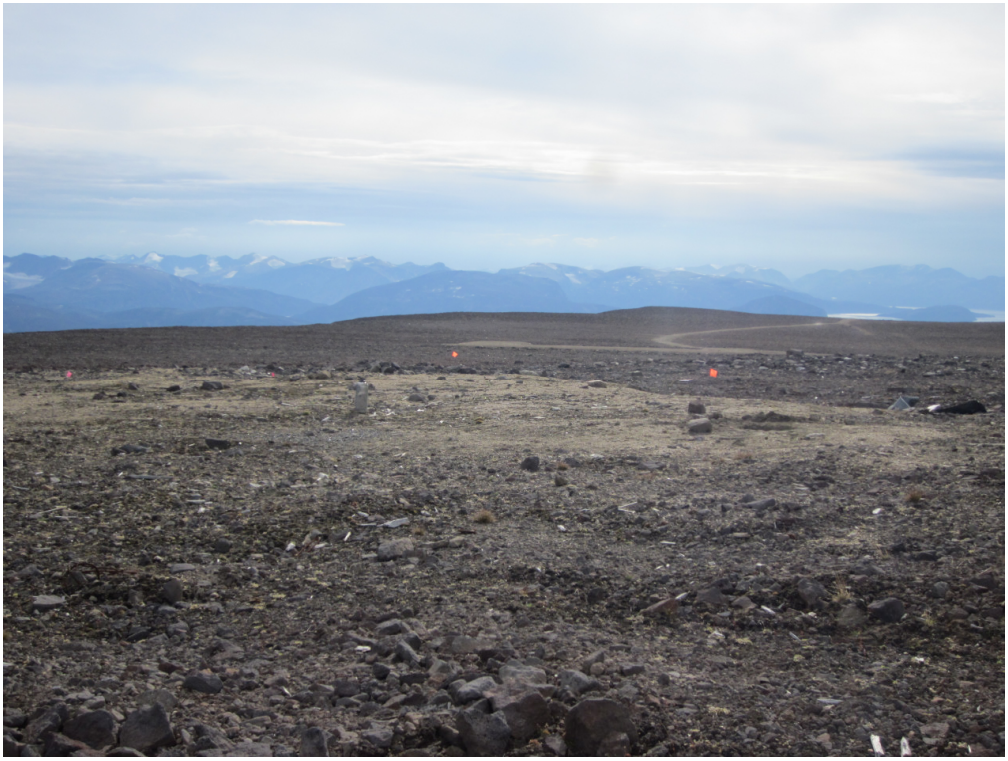
Photo No.	Date:
E151	16-Aug-10

Direction Photo Taken:

west

Description:

Buried debris Lobe 5 – West of Antenna.



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
E152	16-Aug-10

Direction Photo Taken:

west

Description:

Buried debris Lobe 6 – Southwest of Antenna.



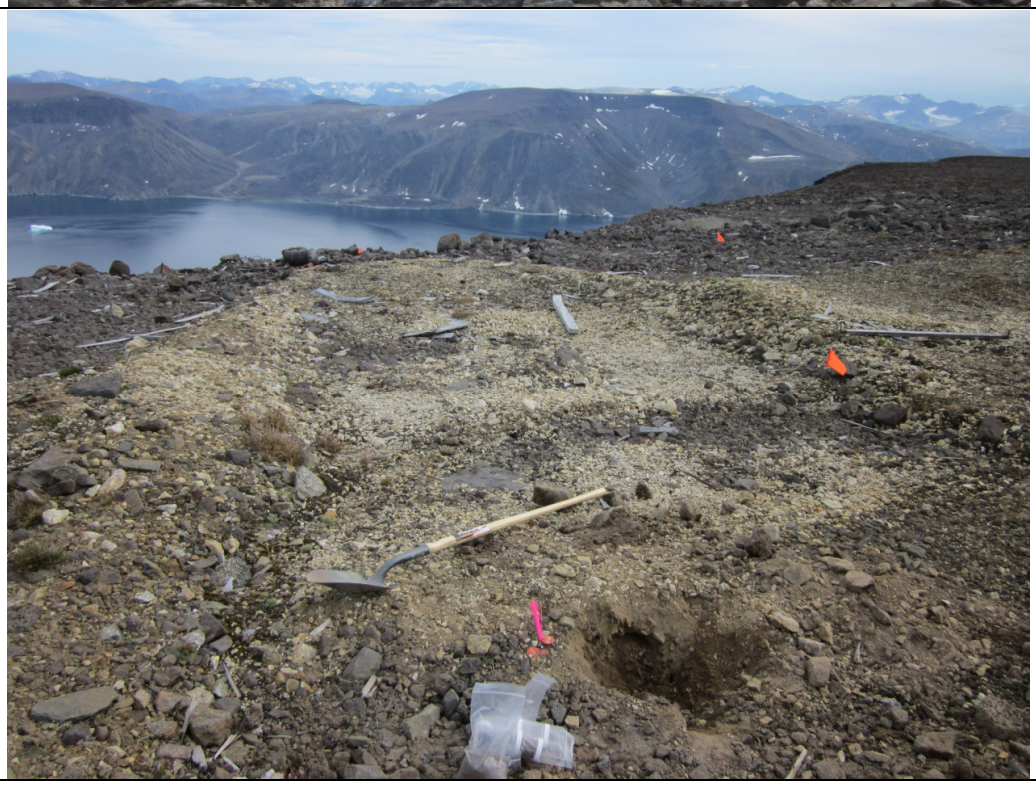
Photo No.	Date:
E156	16-Aug-10

Direction Photo Taken:

southwest

Description:

Buried debris Lobe 7 – South of Eastern Inuit Hut.



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
E159	16-Aug-10

Direction Photo Taken:

N/A

Description:

Concrete sample (C1) collected from generator room in Module Train.



Photo No.	Date:
E160	17-Aug-10

Direction Photo Taken:

south

Description:

Barrel cache at beach (east of POL tanks).



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
E167	21-Aug-10

Direction Photo Taken:

south

Description:

Blast hole north of Station Area.



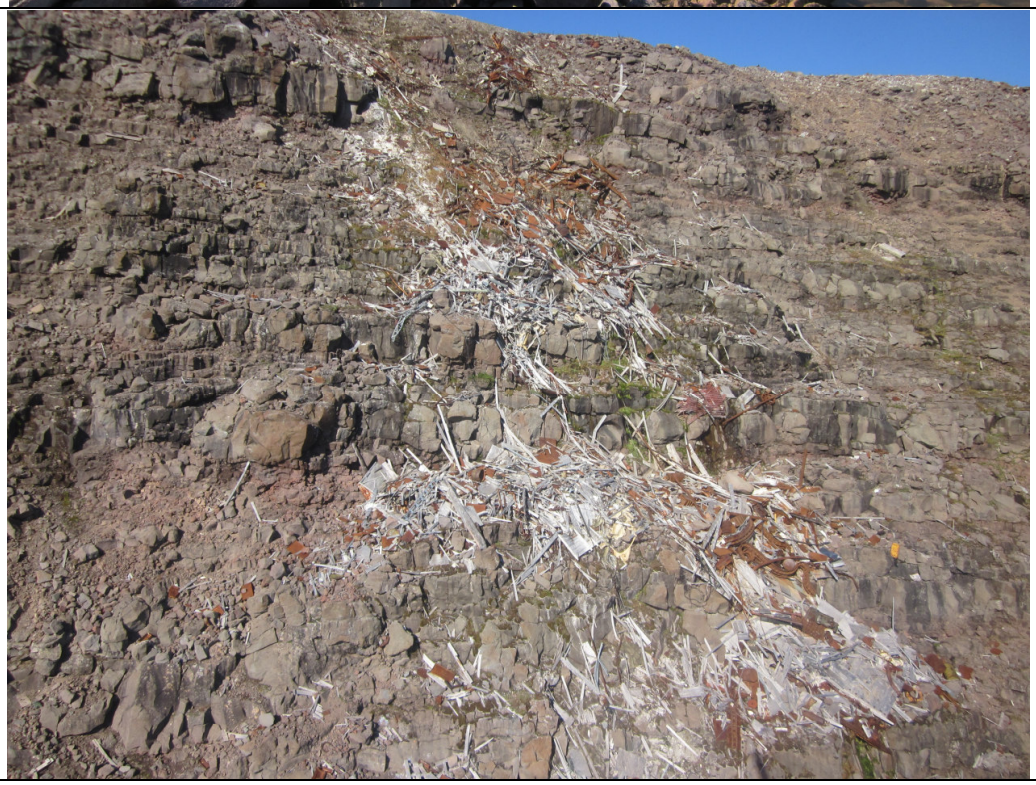
Photo No.	Date:
E174	21-Aug-10

Direction Photo Taken:

north

Description:

View of top section of Dump A from helicopter.



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
E175	21-Aug-10

Direction Photo Taken:

north

Description:

View of top section of Dump A from helicopter

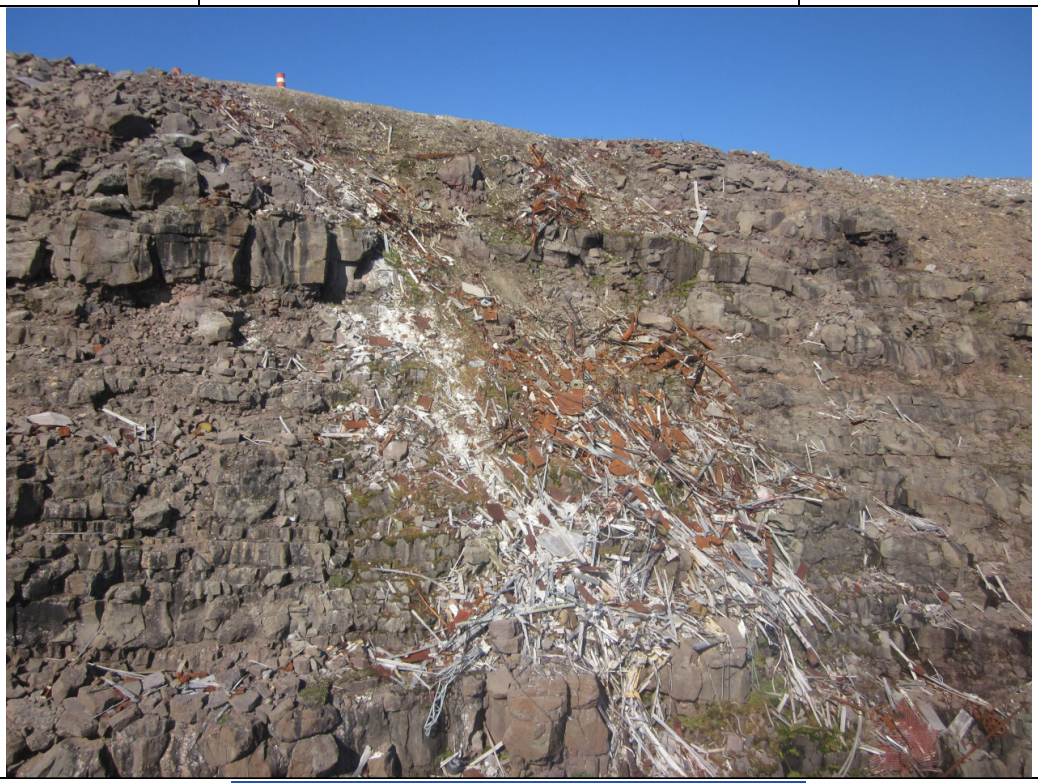


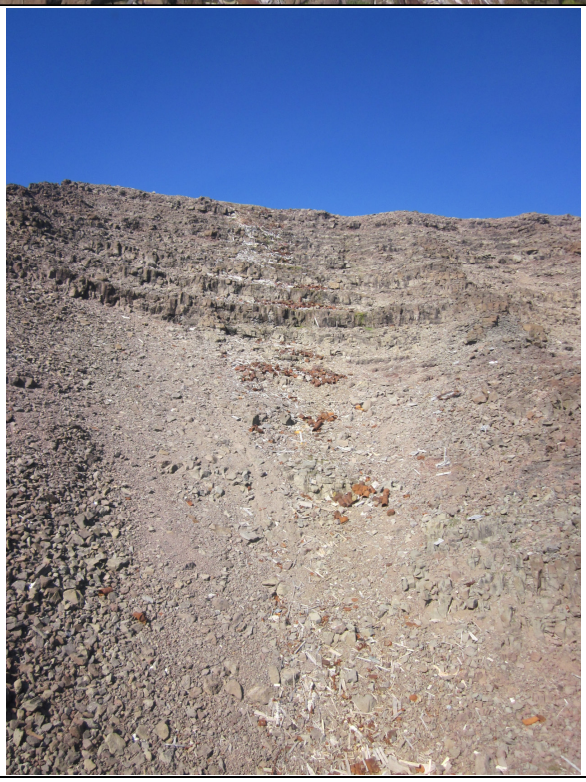
Photo No.	Date:
E180	21-Aug-10

Direction Photo Taken:

north

Description:

View of top section of Dump A from helicopter



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
E184	21-Aug-10

Direction Photo Taken:

N/A

Description:

View of top section of Dump A from helicopter



Photo No.	Date:
E185	21-Aug-10

Direction Photo Taken:

N/A

Description:

View of top section of Dump A from helicopter



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
E186	21-Aug-10

Direction Photo Taken:

N/A

Description:

View of top section of Dump A from helicopter



Photo No.	Date:
E187	21-Aug-10

Direction Photo Taken:

N/A

Description:

View of top section of Dump A from helicopter



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
E188	21-Aug-10

Direction Photo Taken:

N/A

Description:

View of top section of Dump A from helicopter



Photo No.	Date:
E189	21-Aug-10

Direction Photo Taken:

N/A

Description:

View of top section of Dump A from helicopter



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
E190	21-Aug-10

Direction Photo Taken:

N/A

Description:

View of top section of Dump A from helicopter

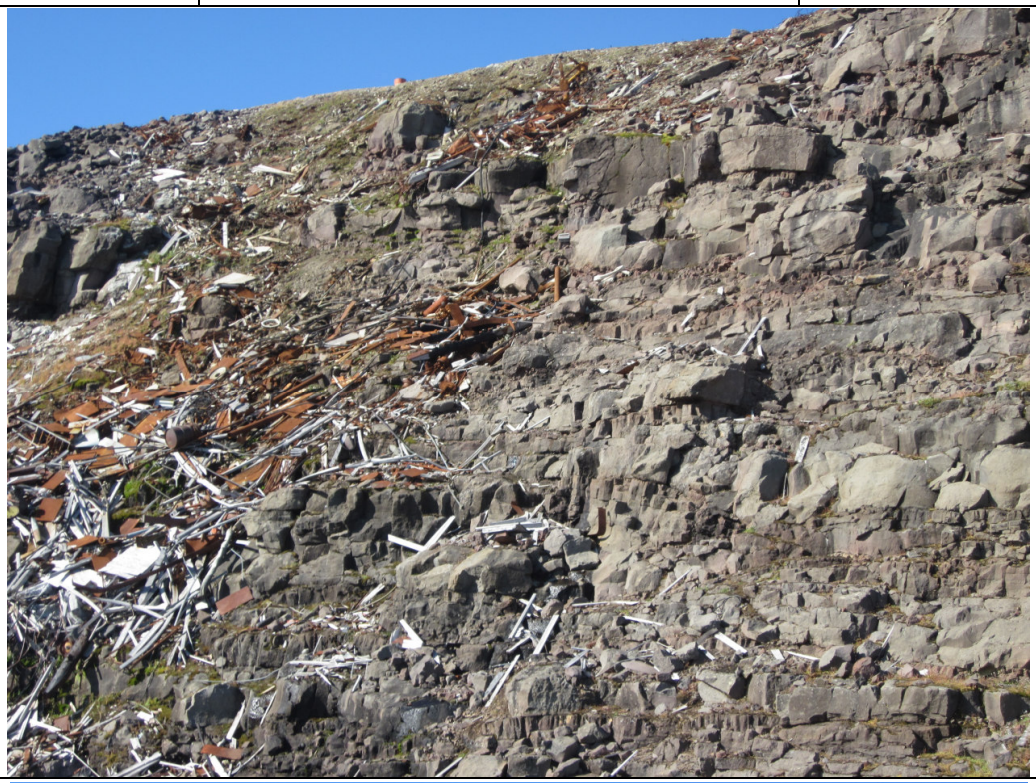


Photo No.	Date:
E191	21-Aug-10

Direction Photo Taken:

N/A

Description:

View of top section of Dump A from helicopter



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
E192	21-Aug-10

Direction Photo Taken:

N/A

Description:

View of top section of Dump A from helicopter



Photo No.	Date:
E198	21-Aug-10

Direction Photo Taken:

east

Description:

Surface debris area around Inuit Hut at the beach.



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
E207	21-Aug-10

Direction Photo Taken:

east

Description:

Surface debris east of road to Beach POL Tanks.



Photo No.	Date:
E209	21-Aug-10

Direction Photo Taken:

west

Description:

Surface debris around Beach POL Tanks.



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
E211	21-Aug-10

Direction Photo Taken:

north

Description:

Beach POL Tanks



Photo No.	Date:
E219	21-Aug-10

Direction Photo Taken:

south

Description:

POL tank pipeline at beach landing.



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
E220	21-Aug-10

Direction Photo Taken:

southwest

Description:

Water sample (W2) collected from ocean downgradient of Beach POL Tanks and barrel cache. No sediment sample was collected.



Photo No.	Date:
E223	21-Aug-10

Direction Photo Taken:

north

Description:

Water sample (W3) was collected downgradient of the barrel cache. No soil samples were collected.



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
E224	21-Aug-10

Direction Photo Taken:

south

Description:

Water sample (W4) collected from creek between two beach landings. No sediment sample was collected.



Photo No.	Date:
E229	21-Aug-10

Direction Photo Taken:

south

Description:

Upgradient of Dump B (debris on crest in background).



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
E233	21-Aug-10

Direction Photo Taken:

north

Description:

Dump B



Photo No.	Date:
E234	21-Aug-10

Direction Photo Taken:

N/A

Description:

Debris at Dump B



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
E235	21-Aug-10

Direction Photo Taken:

N/A

Description:

Debris at Dump B



Photo No.	Date:
E236	21-Aug-10

Direction Photo Taken:

N/A

Description:

Debris at Dump B



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
E237	21-Aug-10

Direction Photo Taken:

N/A

Description:

Debris at Dump B



Photo No.	Date:
E238	21-Aug-10

Direction Photo Taken:

north

Description:

Water sample (W5) collected from creek that runs east of Dump B. No sediment sample was collected.



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
E240	21-Aug-10

Direction Photo Taken:

southwest

Description:

Dump D



Photo No.	Date:
E241	21-Aug-10

Direction Photo Taken:

east

Description:

Buried debris Lobe 9 – South of Dump C



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
E242	21-Aug-10

Direction Photo Taken:

south

Description:

Dump C in foreground, Dump D in background.



Photo No.	Date:
E243	21-Aug-10

Direction Photo Taken:

south

Description:

Dump C in foreground, Dump D in background.



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
E247	21-Aug-10

Direction Photo Taken:

north

Description:

Dump C



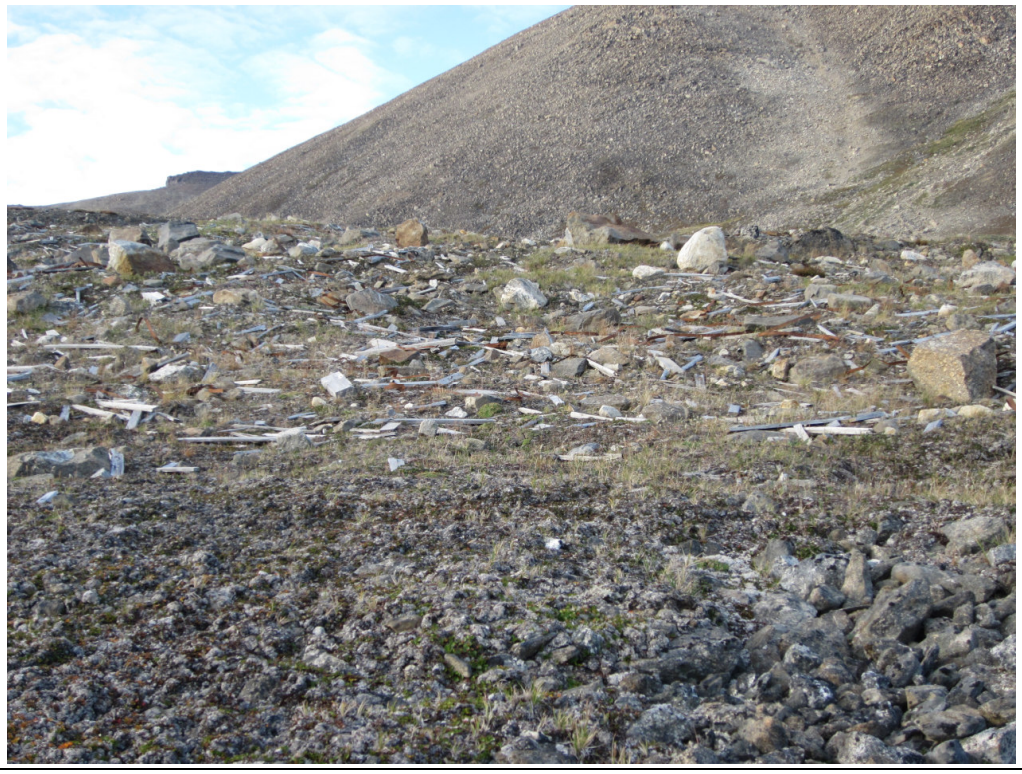
Photo No.	Date:
E248	21-Aug-10

Direction Photo Taken:

north

Description:

Dump C



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
E249	21-Aug-10

Direction Photo Taken:

northeast

Description:

Dump C



Photo No.	Date:
E251	21-Aug-10

Direction Photo Taken:

southeast

Description:

Dump D



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
E252	21-Aug-10

Direction Photo Taken:

south

Description:

Dump D



Photo No.	Date:
E253	22-Aug-10

Direction Photo Taken:

south

Description:

Buried debris Lobe 8 – West of Barrel Cache.



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
E255	22-Aug-10

Direction Photo Taken:

N/A

Description:

Paint sample P12 was collected from this gravel box.



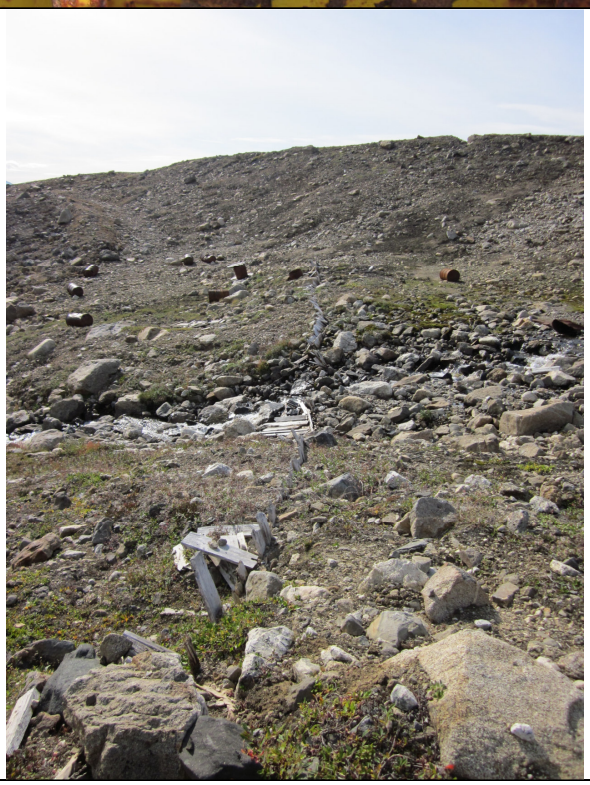
Photo No.	Date:
E261	22-Aug-10

Direction Photo Taken:

west

Description:

Weir in creek east of Dump B.



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
E265	22-Aug-10

Direction Photo Taken:

east

Description:

Dump D



Photo No.	Date:
E266	22-Aug-10

Direction Photo Taken:

southeast

Description:

Dump D



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
E267	22-Aug-10

Direction Photo Taken:

north

Description:

Dump D



Photo No.	Date:
E268	22-Aug-10

Direction Photo Taken:

southwest

Description:

Dump D (view from Old Construction Camp pad).



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
E269	22-Aug-10

Direction Photo Taken:

southwest

Description:

Dump D (view from Old Construction Camp pad).



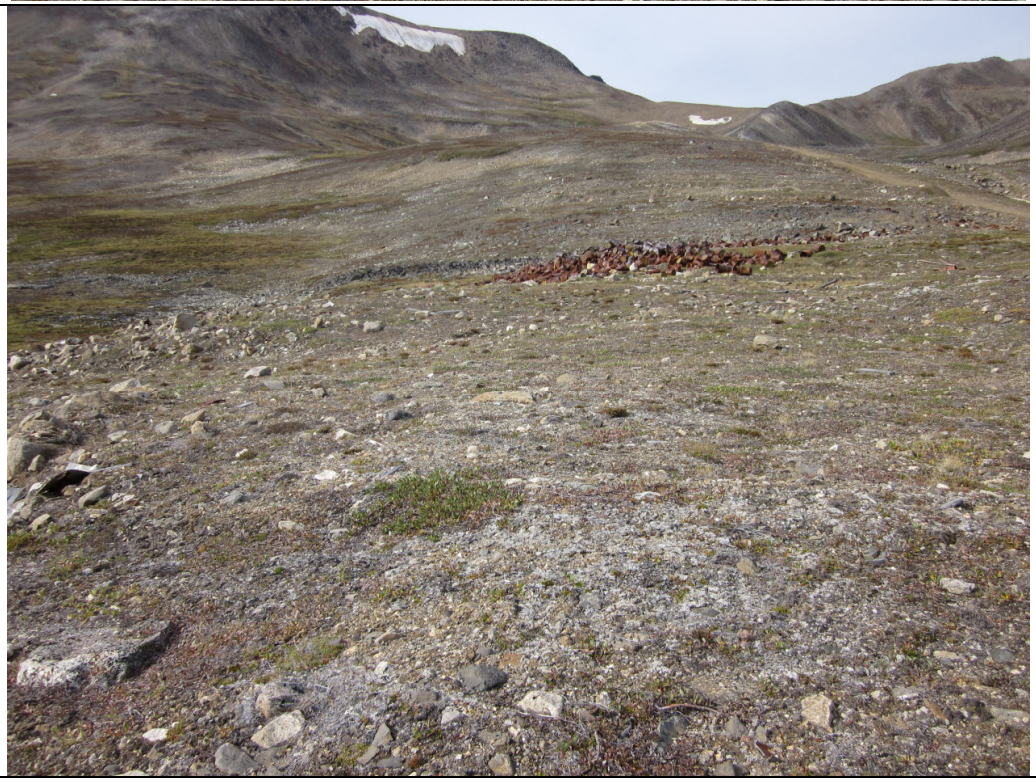
Photo No.	Date:
E270	22-Aug-10

Direction Photo Taken:

west

Description:

Dump D (view from Old Construction Camp pad).



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
E271	22-Aug-10

Direction Photo Taken:

northwest

Description:

Dump D (view from Old Construction Camp pad).

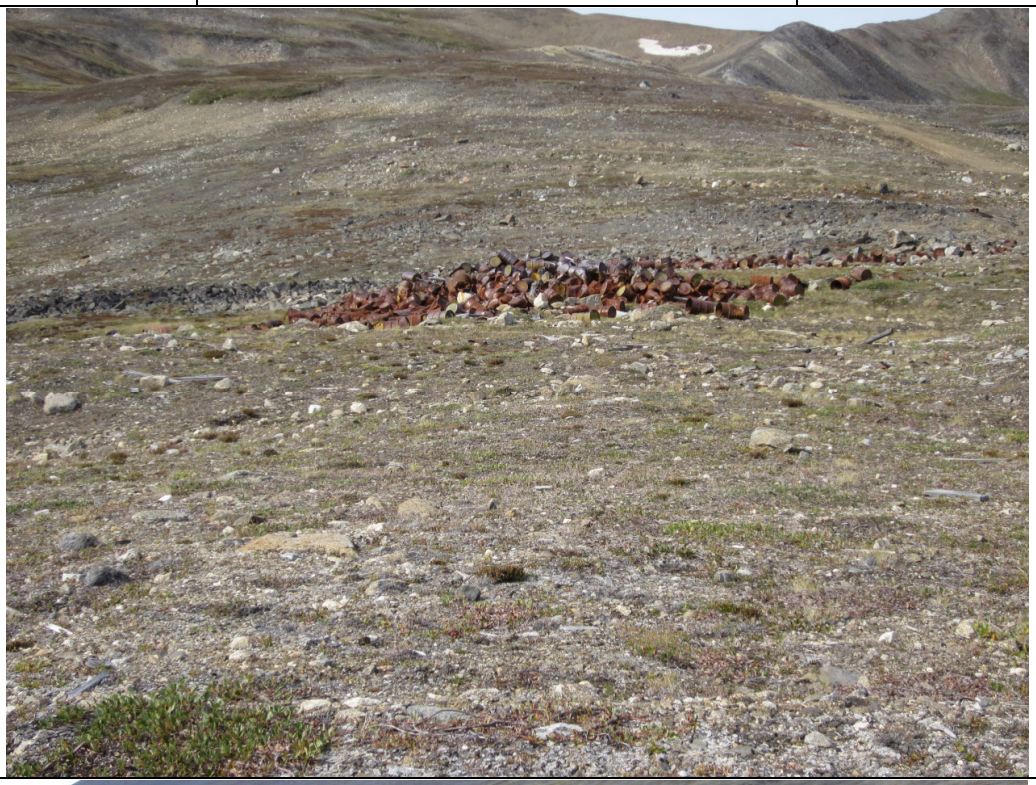


Photo No.	Date:
E272	22-Aug-10

Direction Photo Taken:

west

Description:

Dump D



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
E273	22-Aug-10

Direction Photo Taken:

west

Description:

Dump D



Photo No.	Date:
E274	22-Aug-10

Direction Photo Taken:

east

Description:

Dump D



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
Durban Island, FOX-E	Durban Island, NU	60158564

Photo No.	Date:
E275	22-Aug-10

Direction Photo Taken:

southeast

Description:

Dump D



PHOTOGRAPHIC LOG

Site Name: FOX-E	Site Location: Durban Island, Nunavut	Project No. 60158564

Photo No.	Date:
G138	17-Aug-10

Direction Photo Taken:

E

Description:

Borrow Area 1A

From W side, E towards main station

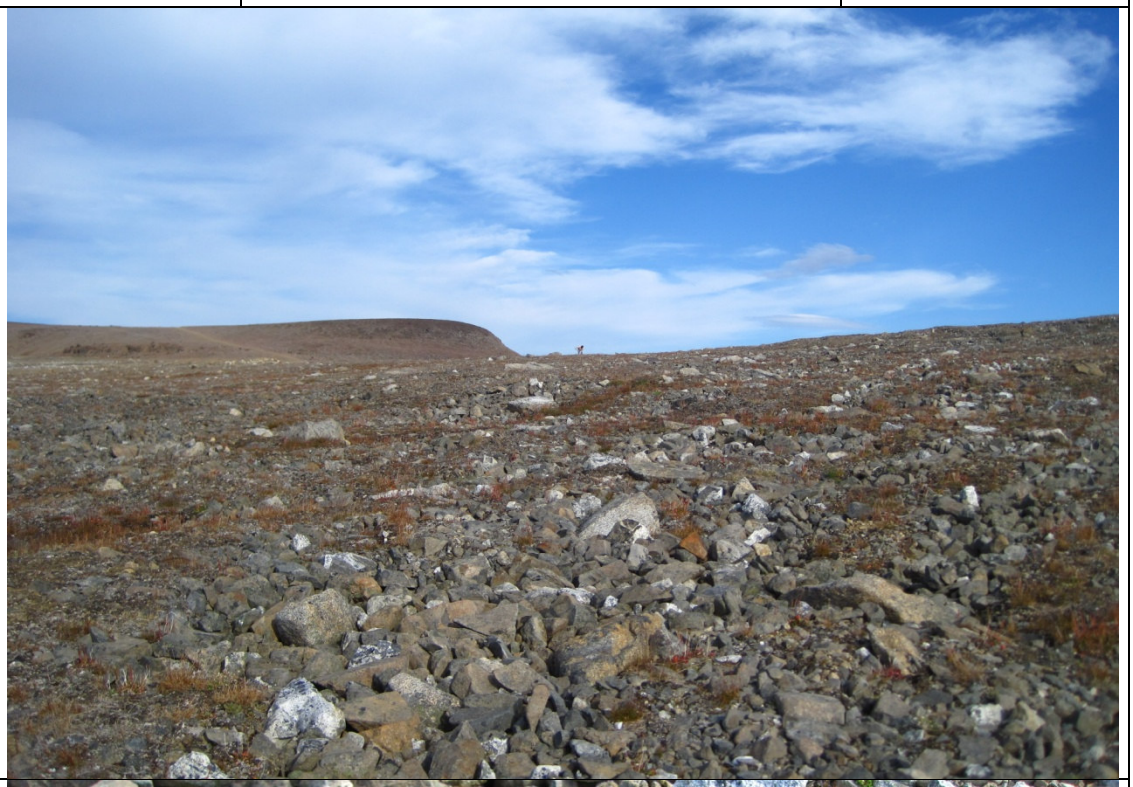


Photo No.	Date:
G140	17-Aug-10

Direction Photo Taken:

Description:

Borrow Area 1A

Oversize material



PHOTOGRAPHIC LOG

Site Name: FOX-E	Site Location: Durban Island, Nunavut	Project No. 60158564

Photo No.	Date:
G17	13-Aug-10

Direction Photo Taken:

Description:

Borrow Area 1A

TP-03 Area

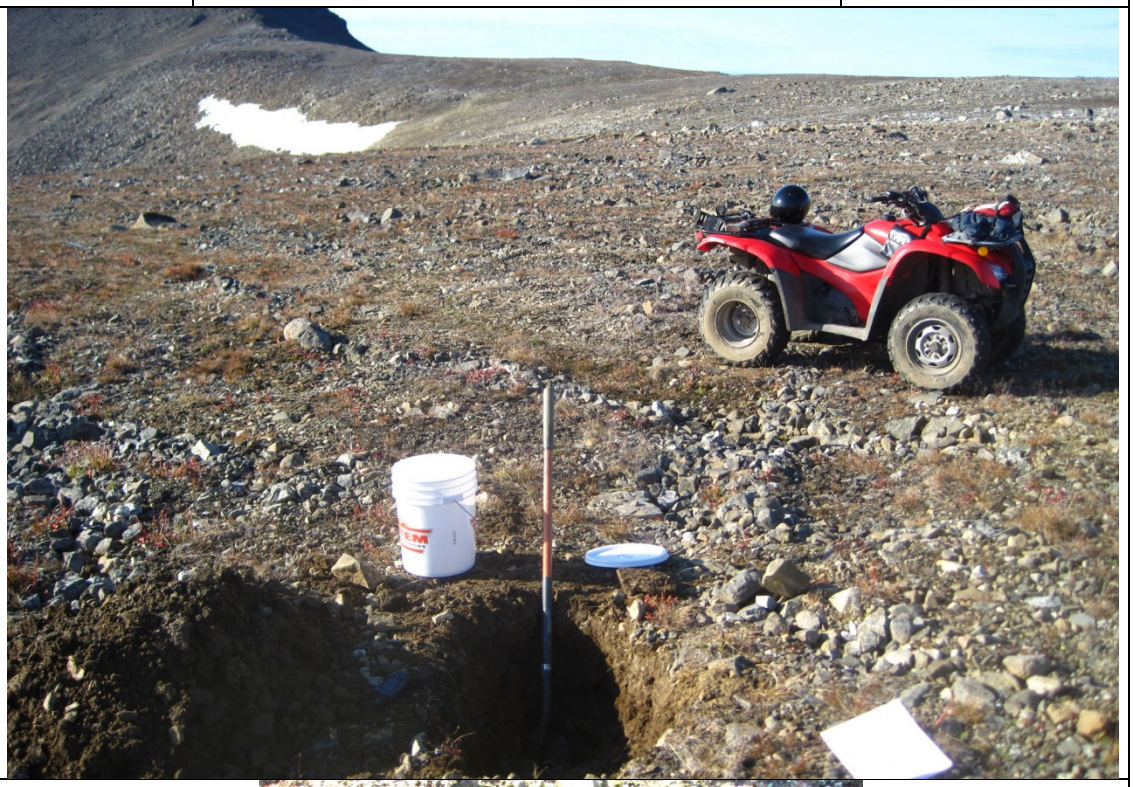


Photo No.	Date:
G19	13-Aug-10

Direction Photo Taken:

Description:

Borrow Area 1A

TP-03 Profile



PHOTOGRAPHIC LOG

Site Name: FOX-E	Site Location: Durban Island, Nunavut	Project No. 60158564

Photo No.	Date:
G151	17-Aug-10

Direction Photo Taken:

Description:

Borrow Area 1A

TP-17 Material



Photo No.	Date:
G152	17-Aug-10

Direction Photo Taken:

Description:

Borrow Area 1A

TP-17



PHOTOGRAPHIC LOG

Site Name: FOX-E	Site Location: Durban Island, Nunavut	Project No. 60158564

Photo No.	Date:
G8	13-Aug-10

Direction Photo Taken:

Description:

Borrow Area 1B

TP-02 Area

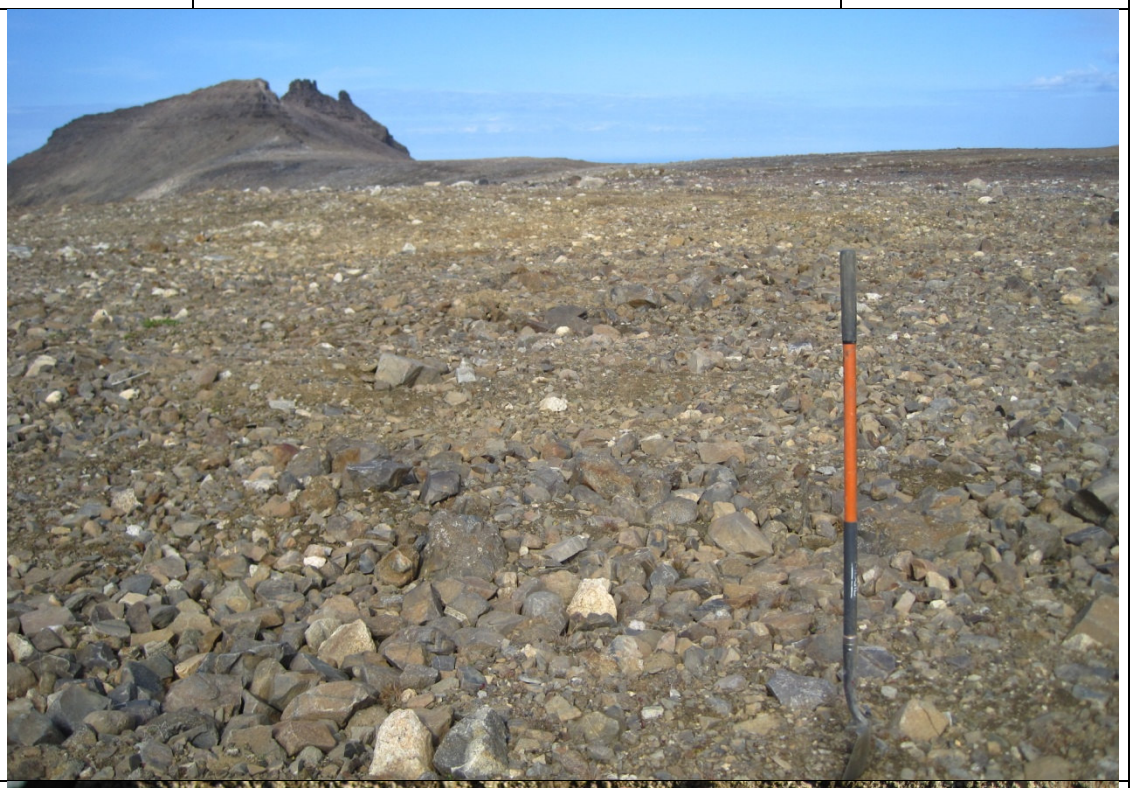


Photo No.	Date:
G13	13-Aug-10

Direction Photo Taken:

Description:

Borrow Area 1B

TP-02 Material



PHOTOGRAPHIC LOG

Site Name: FOX-E	Site Location: Durban Island, Nunavut	Project No. 60158564

Photo No.	Date:
G25	14-Aug-10

Direction Photo Taken:

Description:

Borrow Area 1B

TP-04 Profile



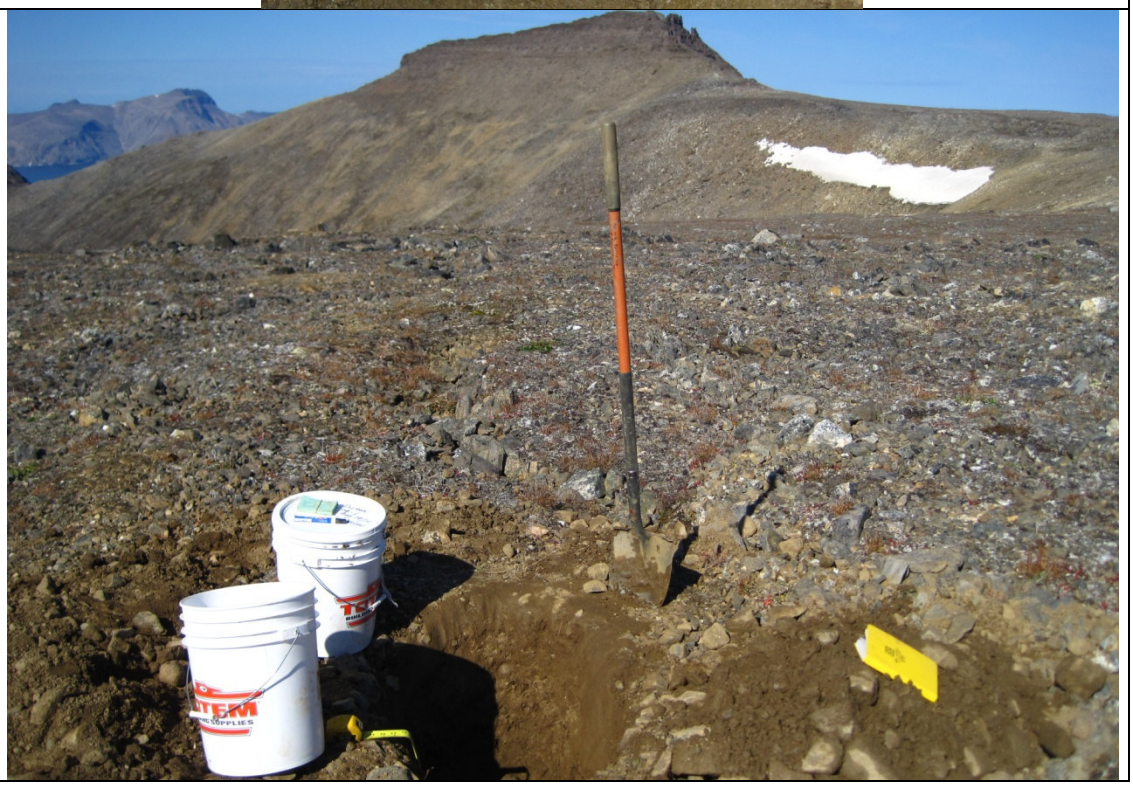
Photo No.	Date:
G27	14-Aug-10

Direction Photo Taken:

Description:

Borrow Area 1B

TP-04 Area



PHOTOGRAPHIC LOG

Site Name: FOX-E	Site Location: Durban Island, Nunavut	Project No. 60158564

Photo No.	Date:
G143	17-Aug-10

Direction Photo Taken:

NW

Description:

Borrow Area 1B

Drainage through boulder area, NW towards road



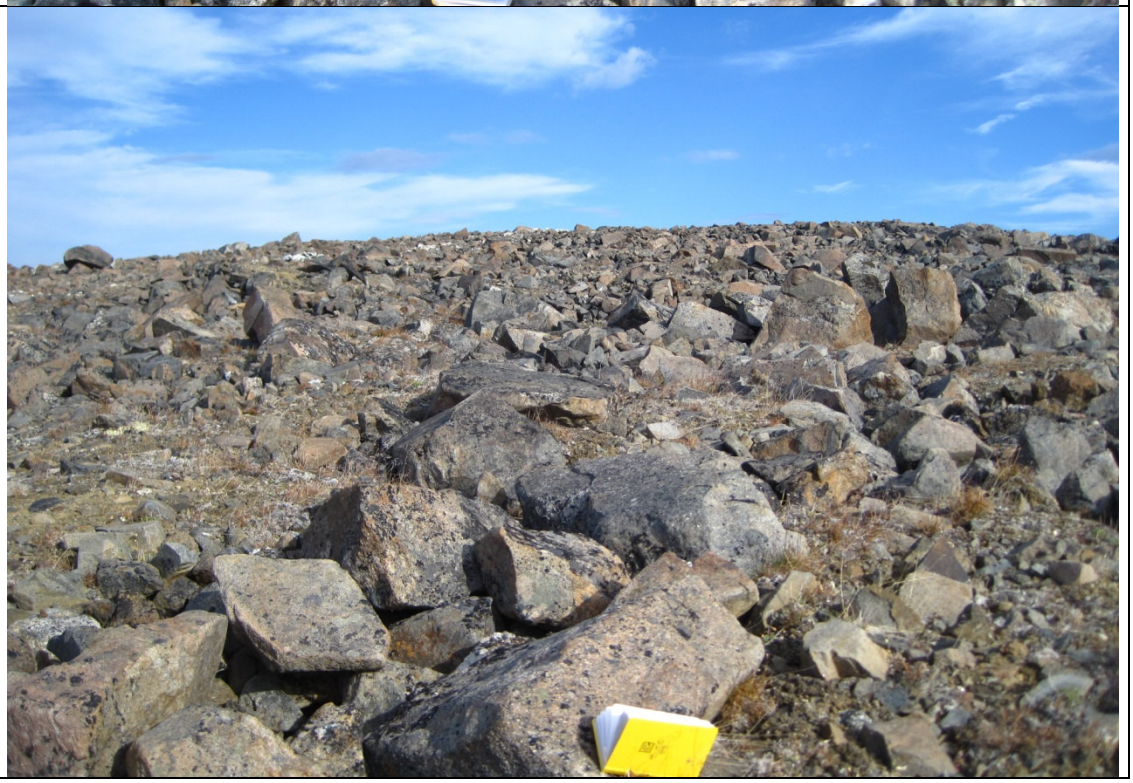
Photo No.	Date:
G142	17-Aug-10

Direction Photo Taken:

Description:

Borrow Area 1C

Ridge at S side



PHOTOGRAPHIC LOG

Site Name: FOX-E	Site Location: Durban Island, Nunavut	Project No. 60158564

Photo No.	Date:
G147	17-Aug-10

Direction Photo Taken:

S

Description:

Borrow Area 1D

NE corner, facing S into disturbed area

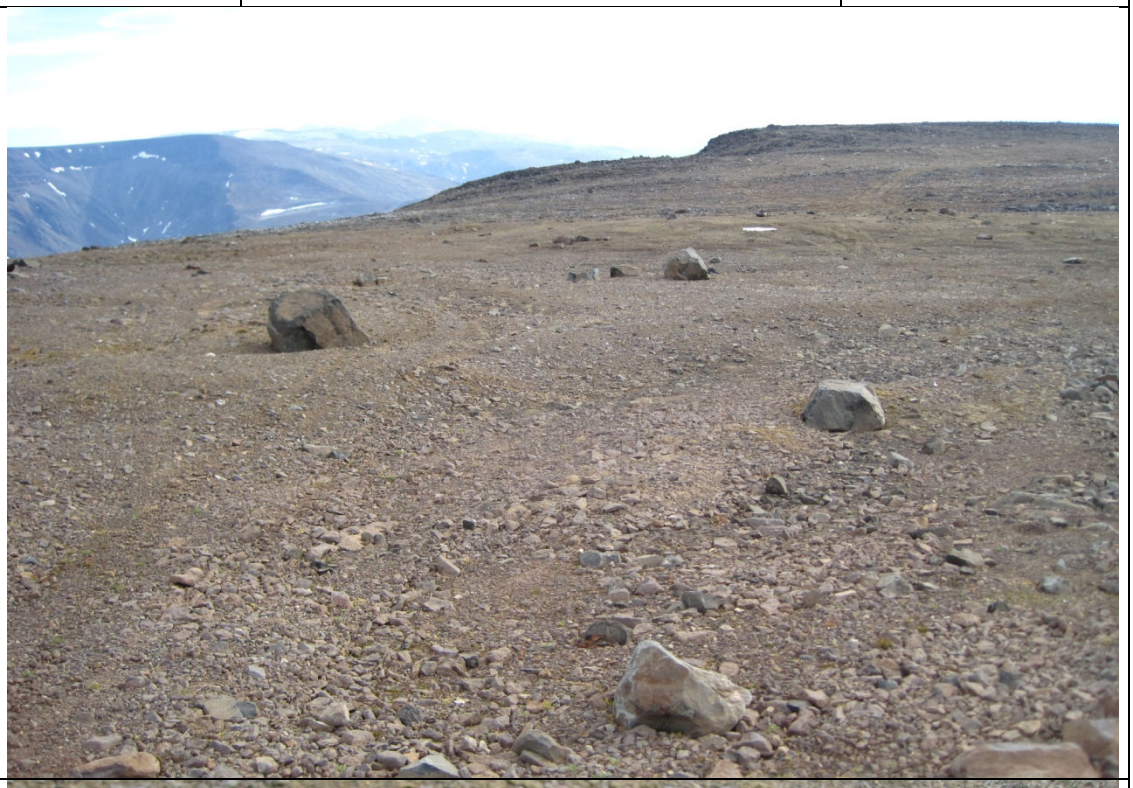


Photo No.	Date:
G6	August 13 2010

Direction Photo Taken:

Description:

Borrow Area 1D

TP-01 Material



PHOTOGRAPHIC LOG

Site Name: FOX-E	Site Location: Durban Island, Nunavut	Project No. 60158564

Photo No.	Date:
G48	15-Aug-10

Direction Photo Taken:

N

Description:

Borrow Area 2

Shallow surface water channels running N down incline towards ocean



Photo No.	Date:
G53	15-Aug-10

Direction Photo Taken:

W

Description:

Borrow Area 2

Eastern edge, facing W



PHOTOGRAPHIC LOG

Site Name: FOX-E	Site Location: Durban Island, Nunavut	Project No. 60158564

Photo No.	Date:
G58	15-Aug-10

Direction Photo Taken:

S

Description:

Borrow Area 2

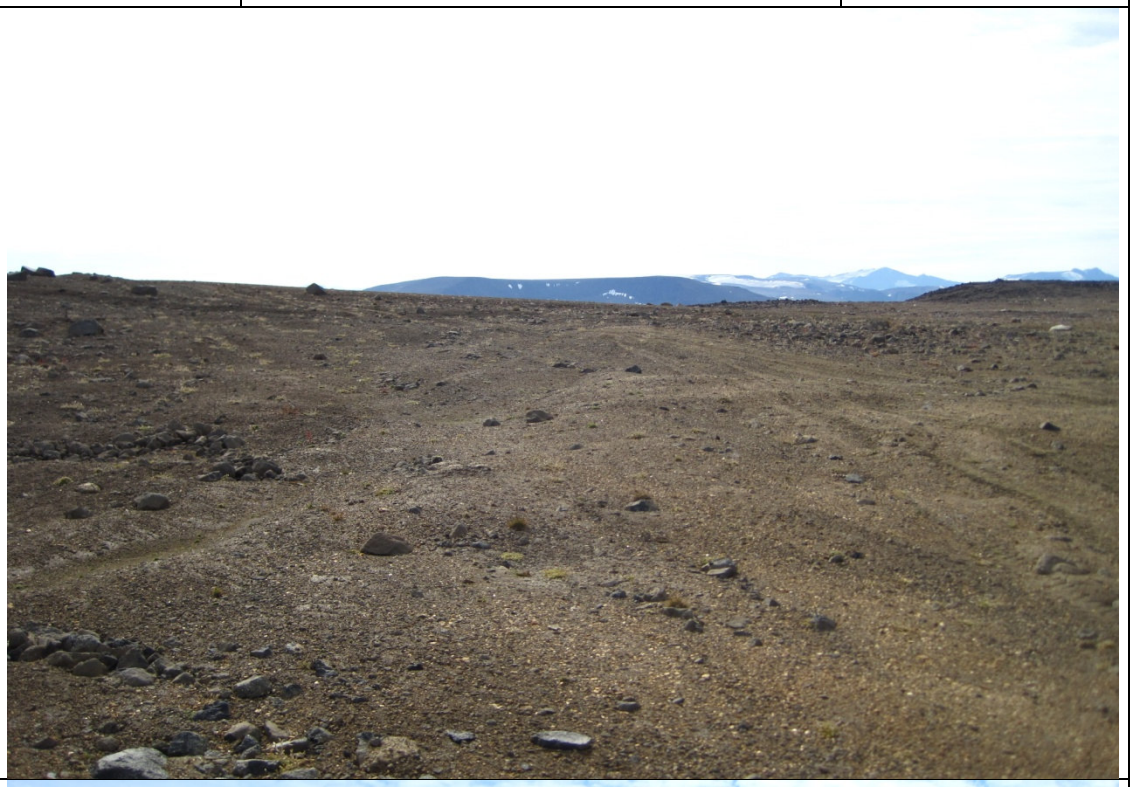


Photo No.	Date:
G59	15-Aug-10

Direction Photo Taken:

E

Description:

Borrow Area 2



PHOTOGRAPHIC LOG

Site Name: FOX-E	Site Location: Durban Island, Nunavut	Project No. 60158564

Photo No.	Date:
G30	14-Aug-10

Direction Photo Taken:

Description:

Borrow Area 2

TP-05 Area



Photo No.	Date:
G34	14-Aug-10

Direction Photo Taken:

Description:

Borrow Area 2

TP-05 Material



PHOTOGRAPHIC LOG

Site Name: FOX-E	Site Location: Durban Island, Nunavut	Project No. 60158564

Photo No.	Date:
G36	14-Aug-10

Direction Photo Taken:

Description:

Borrow Area 2

TP-06 Area



Photo No.	Date:
G38	14-Aug-10

Direction Photo Taken:

Description:

Borrow Area 2

TP-06 Profile



PHOTOGRAPHIC LOG

Site Name: FOX-E	Site Location: Durban Island, Nunavut	Project No. 60158564

Photo No.	Date:
G115	17-Aug-10

Direction Photo Taken:

Description:

Borrow Area 3

TP-13 Area

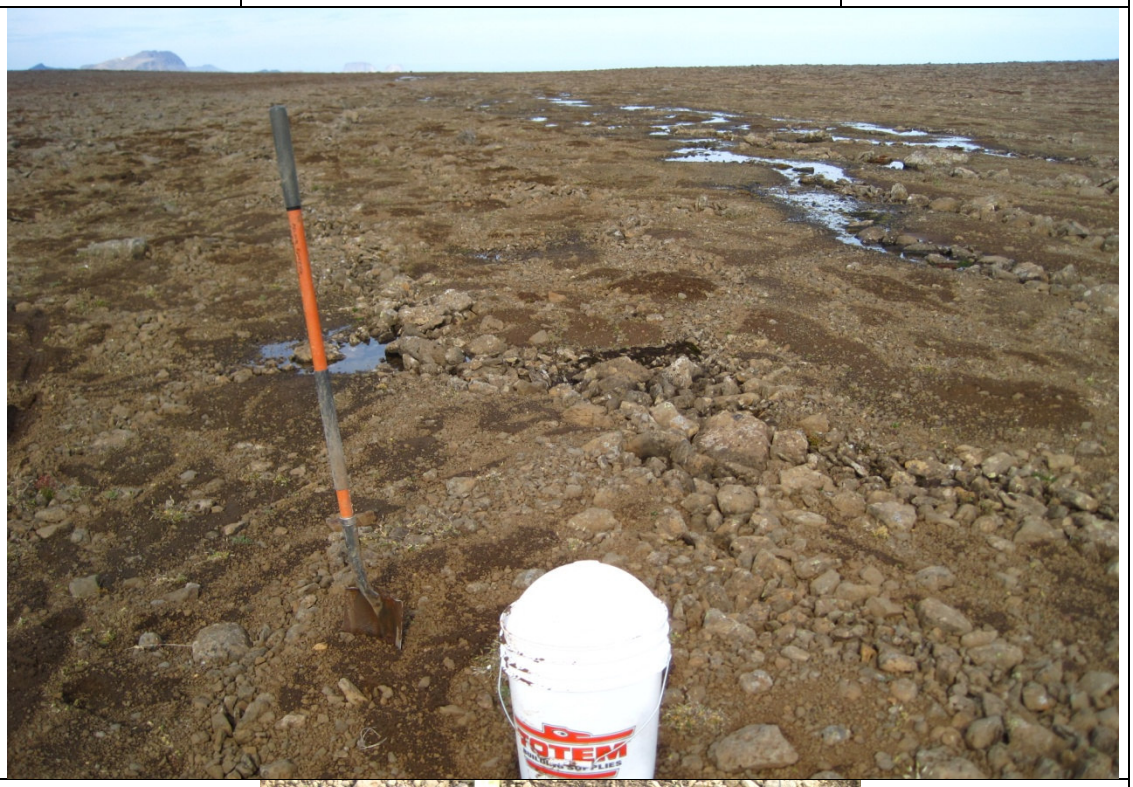


Photo No.	Date:
G117	17-Aug-10

Direction Photo Taken:

Description:

Borrow Area 3

TP-13 Profile



PHOTOGRAPHIC LOG

Site Name: FOX-E	Site Location: Durban Island, Nunavut	Project No. 60158564

Photo No.	Date:
G86	16-Aug-10

Direction Photo Taken:

Description:

Borrow Area 4

TP-09



Photo No.	Date:
G87	16-Aug-10

Direction Photo Taken:

Description:

Borrow Area 4

TP-09 Material



PHOTOGRAPHIC LOG

Site Name: FOX-E	Site Location: Durban Island, Nunavut	**Project No.** 60158564

Photo No. G198	Date: 21-Aug-10

Direction Photo Taken:

Description:

Borrow Area 5

Drainage on E side, facing upstream



Photo No. G199	Date: 21-Aug-10

Direction Photo Taken:

Description:

Borrow Area 5

Drainage on E side, facing downstream



PHOTOGRAPHIC LOG

Site Name: FOX-E	Site Location: Durban Island, Nunavut	Project No. 60158564

Photo No.	Date:
G189	21-Aug-10

Direction Photo Taken:

Description:

Borrow Area 5

TP-19 Area

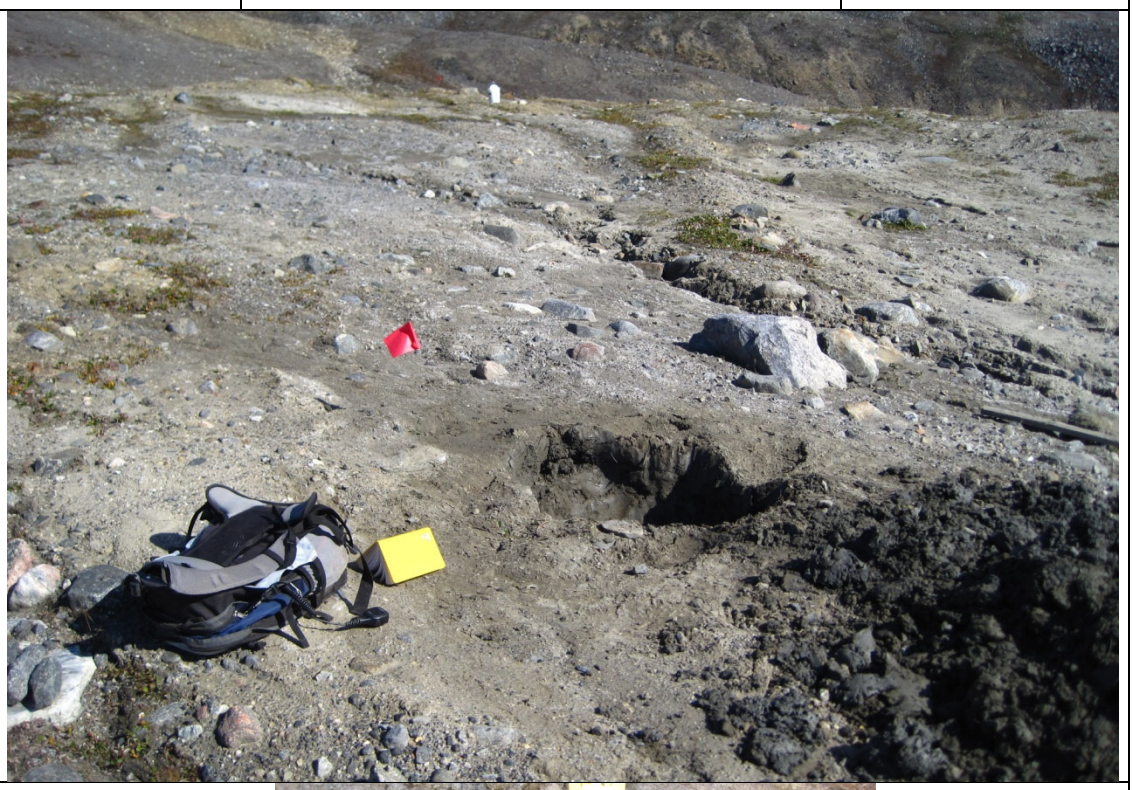


Photo No.	Date:
G194	21-Aug-10

Direction Photo Taken:

Description:

Borrow Area 5

TP-19 Profile



PHOTOGRAPHIC LOG

Site Name: FOX-E	Site Location: Durban Island, Nunavut	Project No. 60158564

Photo No.	Date:
G195	21-Aug-10

Direction Photo Taken:

Description:

Borrow Area 5

TP-20 Area

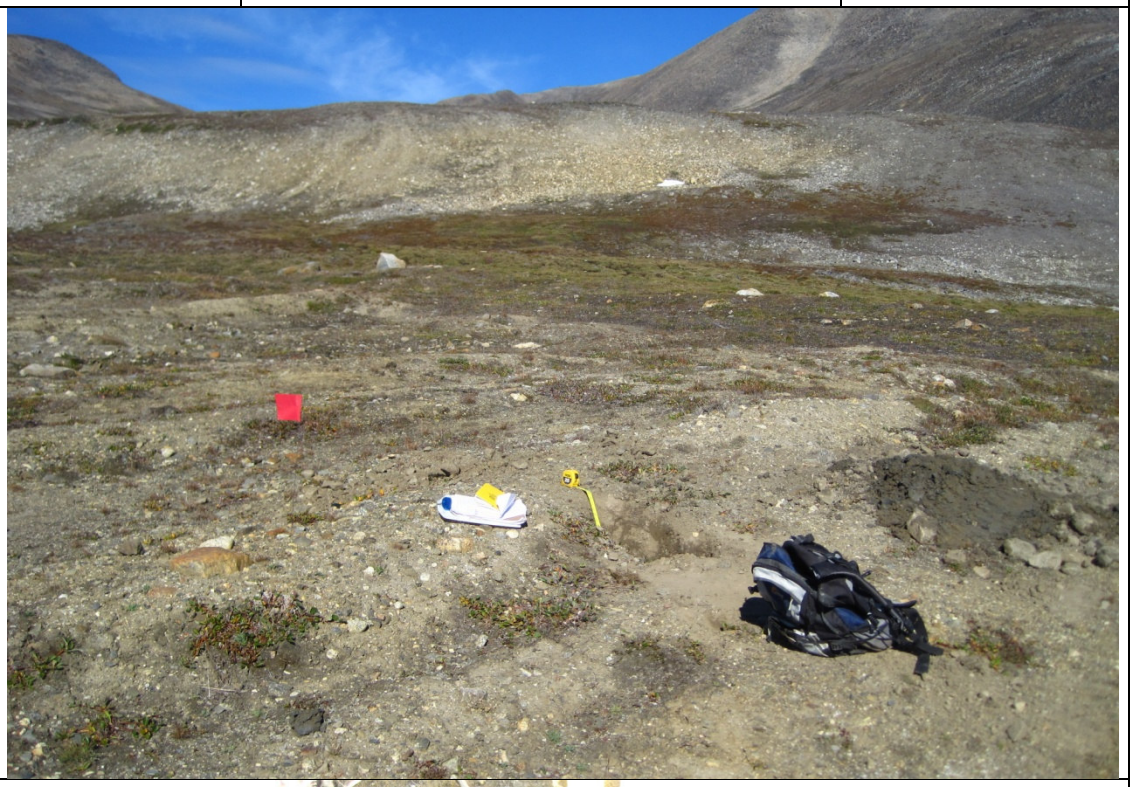


Photo No.	Date:
G197	21-Aug-10

Direction Photo Taken:

Description:

Borrow Area 5

TP-20 Profile



PHOTOGRAPHIC LOG

Site Name: FOX-E	Site Location: Durban Island, Nunavut	Project No. 60158564

Photo No.	Date:
G225	21-Aug-10

Direction Photo Taken:

S

Description:

Borrow Area 6

North end



Photo No.	Date:
G226	21-Aug-10

Direction Photo Taken:

N

Description:

Borrow Area 6

Drainage channels on W side flowing S towards ocean



PHOTOGRAPHIC LOG

Site Name: FOX-E	Site Location: Durban Island, Nunavut	Project No. 60158564

Photo No.	Date:
G217	21-Aug-10

Direction Photo Taken:

Description:

Borrow Area 6

TP-21 Profile



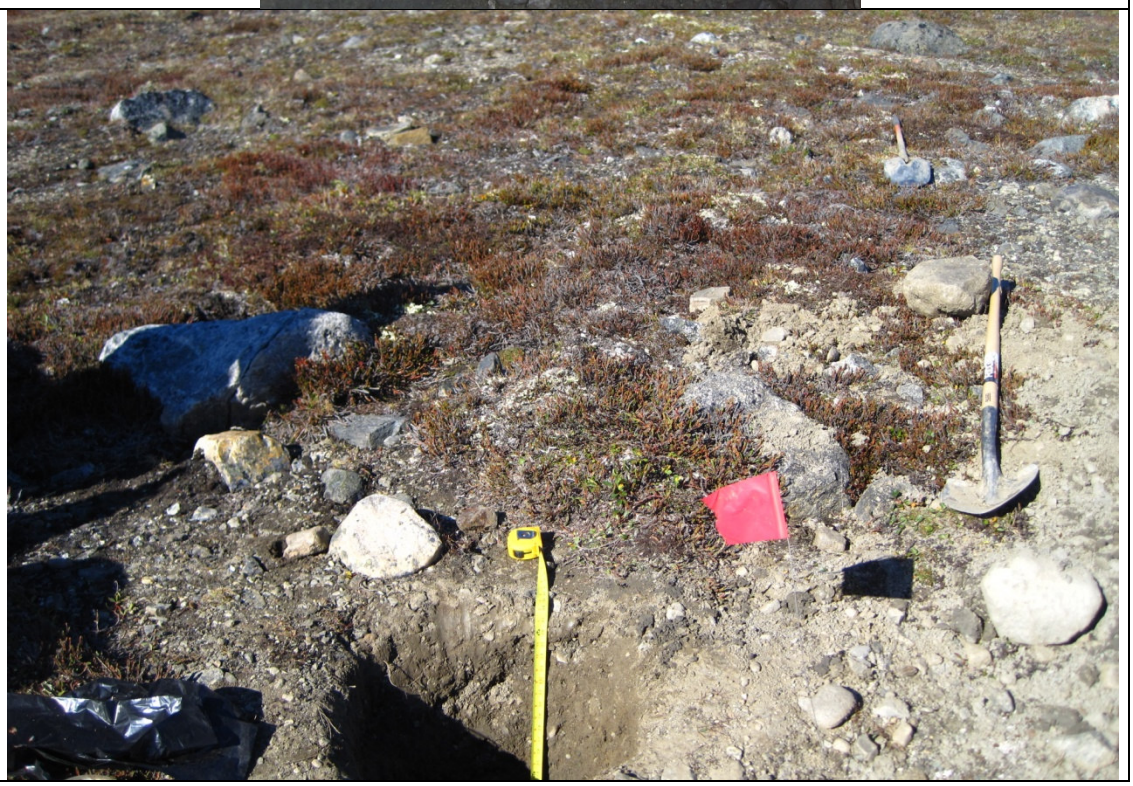
Photo No.	Date:
G218	21-Aug-10

Direction Photo Taken:

Description:

Borrow Area 6

TP-21 Area



PHOTOGRAPHIC LOG

Site Name: FOX-E	Site Location: Durban Island, Nunavut	Project No. 60158564

Photo No.	Date:
G221	21-Aug-10

Direction Photo Taken:

Description:

Borrow Area 6

TP-22 Area

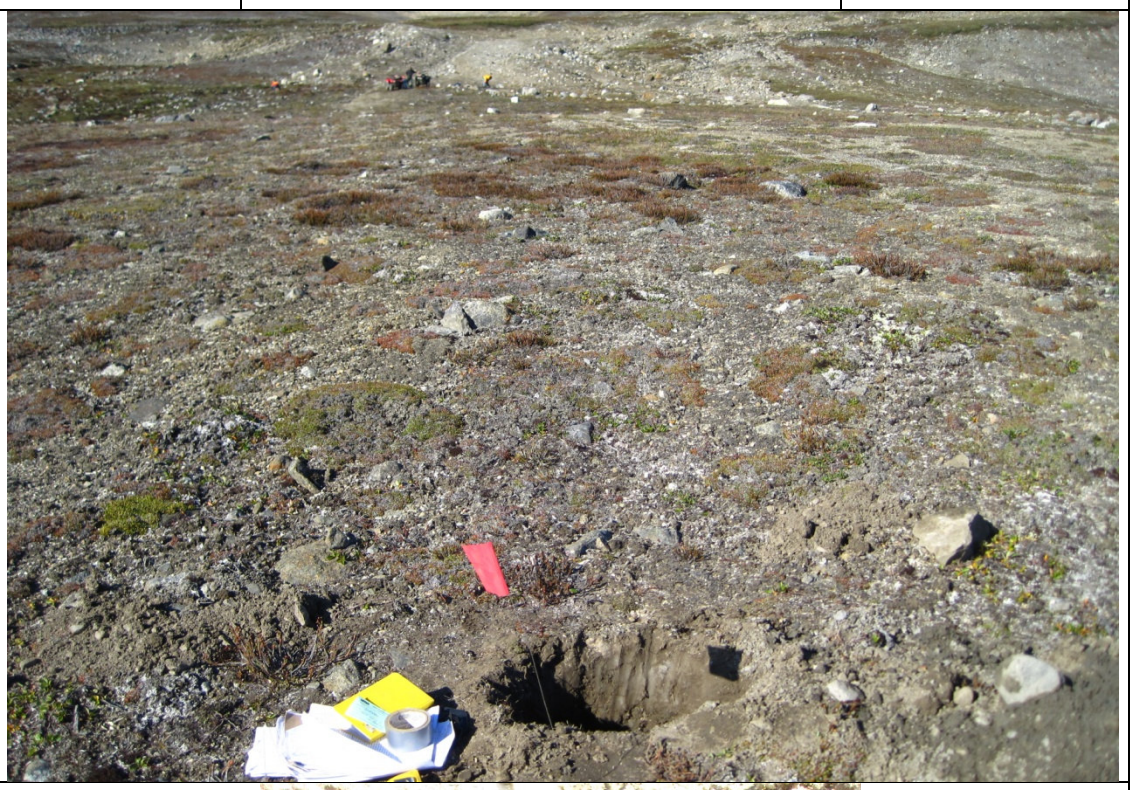


Photo No.	Date:
G224	21-Aug-10

Direction Photo Taken:

Description:

Borrow Area 6

TP-22 Profile



PHOTOGRAPHIC LOG

Site Name: FOX-E	Site Location: Durban Island, Nunavut	Project No. 60158564

Photo No.	Date:
G232	21-Aug-10

Direction Photo Taken:

Description:

Borrow Area 6

TP-23 Area



Photo No.	Date:
G233	21-Aug-10

Direction Photo Taken:

Description:

Borrow Area 6

TP-23 Material



PHOTOGRAPHIC LOG

Site Name: FOX-E	Site Location: Durban Island, Nunavut	Project No. 60158564

Photo No.	Date:
G258	21-Aug-10

Direction Photo Taken:

N

Description:

Borrow Area 7

SE extent and edge of access road

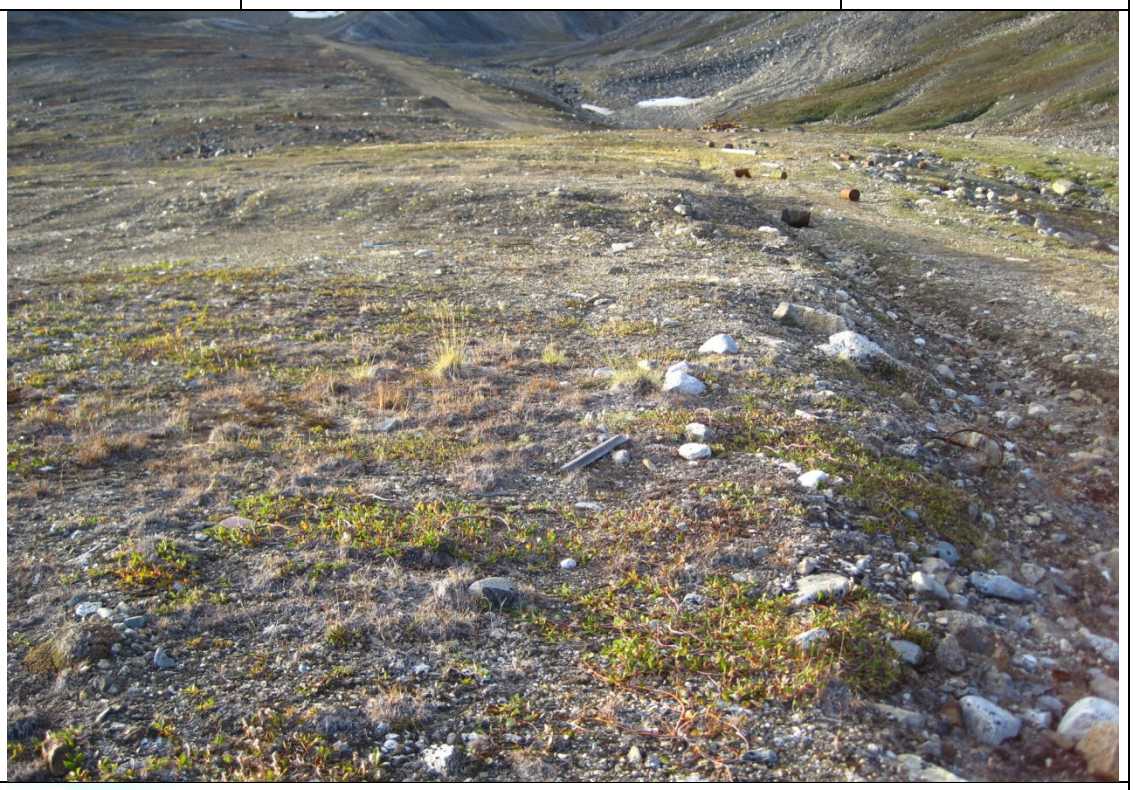


Photo No.	Date:
G261	21-Aug-10

Direction Photo Taken:

W

Description:

Borrow Area 7

NE extent and edge of access road



PHOTOGRAPHIC LOG

Site Name: FOX-E	Site Location: Durban Island, Nunavut	Project No. 60158564

Photo No.	Date:
G294	22-Aug-10

Direction Photo Taken:

Description:

Borrow Area 7

TP-24 Material



Photo No.	Date:
G296	22-Aug-10

Direction Photo Taken:

Description:

Borrow Area 7

TP-24 Profile



PHOTOGRAPHIC LOG

Site Name: FOX-E	Site Location: Durban Island, Nunavut	Project No. 60158564

Photo No.	Date:
G290	22-Aug-10

Direction Photo Taken:

Description:

Borrow Area 7

TP-25 Profile



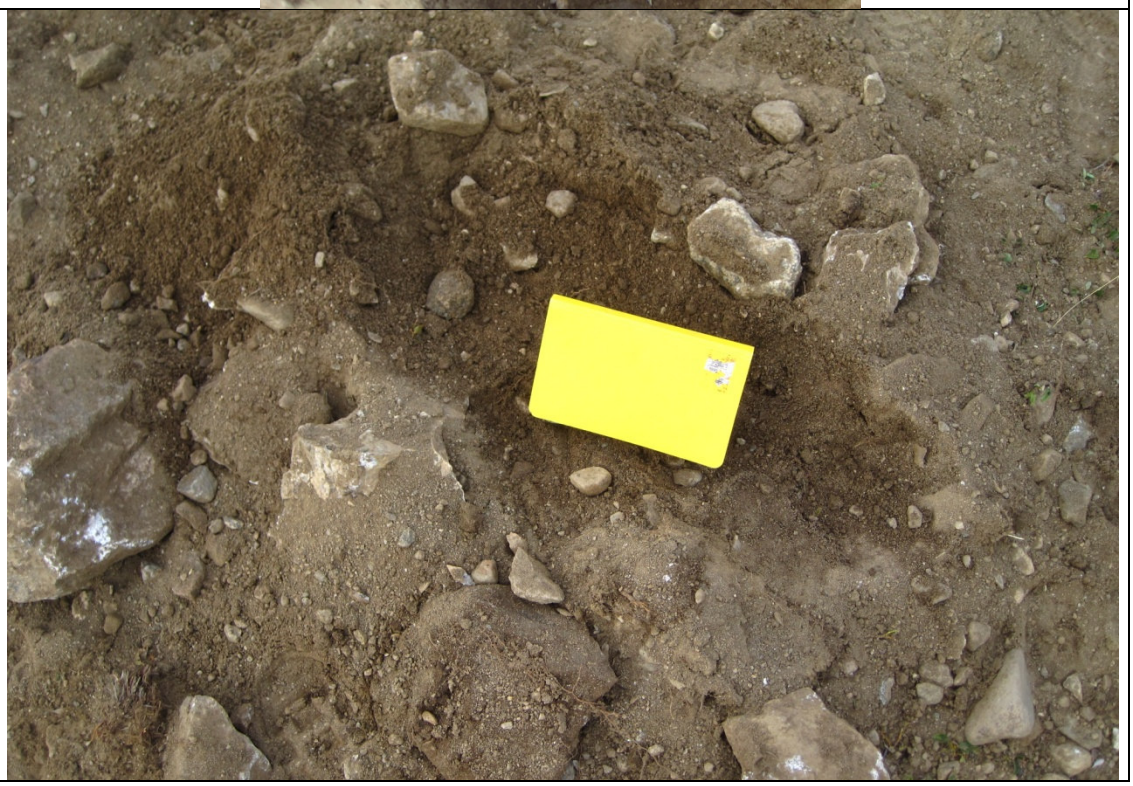
Photo No.	Date:
G292	22-Aug-10

Direction Photo Taken:

Description:

Borrow Area 7

TP-25 Material



PHOTOGRAPHIC LOG

Site Name: FOX-E	Site Location: Durban Island, Nunavut	Project No. 60158564

Photo No.	Date:
G272	22-Aug-10

Direction Photo Taken:

N

Description:

Borrow Area 8

W extent of gravelly ridge

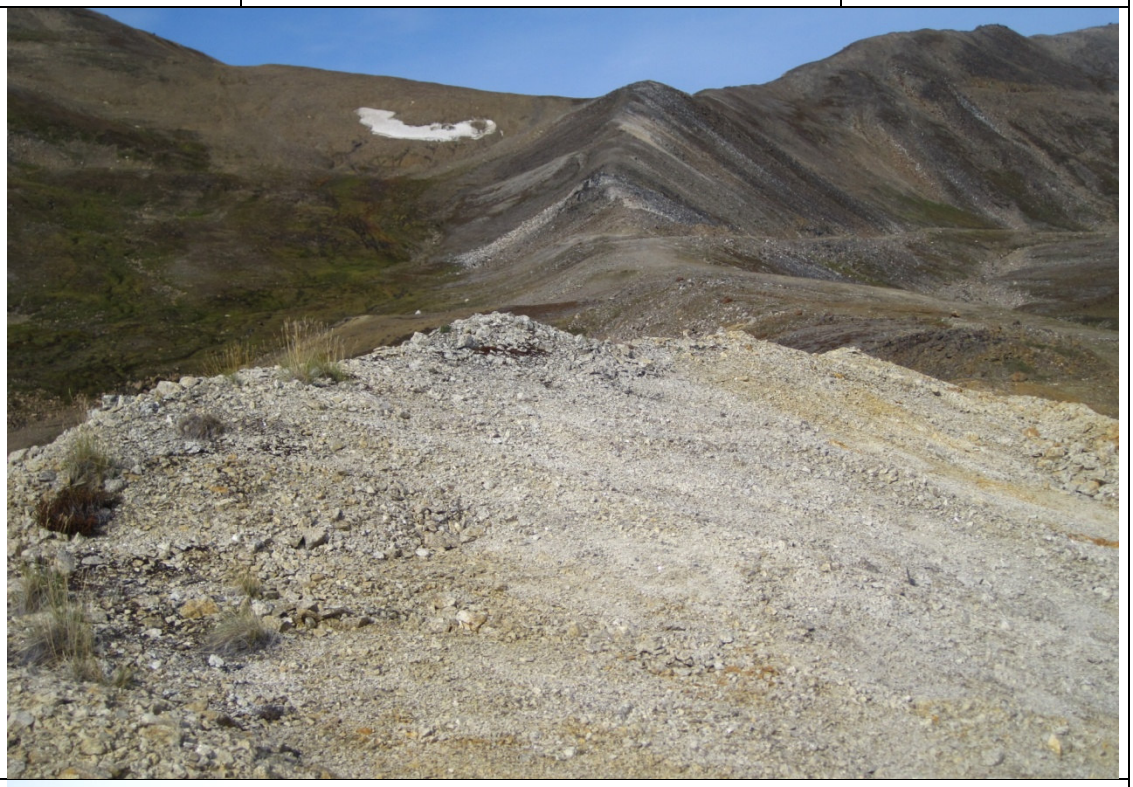


Photo No.	Date:
G275	22-Aug-10

Direction Photo Taken:

S

Description:

Borrow Area 8

N extent of gravelly ridge



PHOTOGRAPHIC LOG

Site Name: FOX-E	Site Location: Durban Island, Nunavut	Project No. 60158564

Photo No.	Date:
G277	22-Aug-10

Direction Photo Taken:

SW

Description:

Borrow Area 8

E extent of gravelly ridge along access road



Photo No.	Date:
G280	22-Aug-10

Direction Photo Taken:

NW

Description:

Borrow Area 8

S extent of gravelly ridge



PHOTOGRAPHIC LOG

Site Name: FOX-E	Site Location: Durban Island, Nunavut	Project No. 60158564

Photo No.	Date:
G268	22-Aug-10

Direction Photo Taken:

Description:

Borrow Area 8

TP-26 Profile



Photo No.	Date:
G270	22-Aug-10

Direction Photo Taken:

Description:

Borrow Area 8

TP-26



PHOTOGRAPHIC LOG

Site Name: FOX-E	Site Location: Durban Island, Nunavut	Project No. 60158564

Photo No.	Date:
G285	22-Aug-10

Direction Photo Taken:

Description:

Borrow Area 8

TP-27 Material



Photo No.	Date:
G286	22-Aug-10

Direction Photo Taken:

Description:

Borrow Area 8

TP-27



PHOTOGRAPHIC LOG

Site Name: FOX-E	Site Location: Durban Island, Nunavut	Project No. 60158564

Photo No.	Date:
G287	22-Aug-10

Direction Photo Taken:

Description:

Borrow Area 8

TP-28 Profile



Photo No.	Date:
G289	22-Aug-10

Direction Photo Taken:

Description:

Borrow Area 8

TP-28 Material



PHOTOGRAPHIC LOG

Site Name: FOX-E	Site Location: Durban Island, Nunavut	Project No. 60158564

Photo No.	Date:
G79	16-Aug-10

Direction Photo Taken:

Description:

Landfill 1

TP-08



Photo No.	Date:
G82	16-Aug-10

Direction Photo Taken:

Description:

Landfill 1

TP-08 Area



PHOTOGRAPHIC LOG

Site Name: FOX-E	Site Location: Durban Island, Nunavut	Project No. 60158564

Photo No.	Date:
G89	16-Aug-10

Direction Photo Taken:

Description:

Landfill 1

TP-10 Profile



Photo No.	Date:
G91	16-Aug-10

Direction Photo Taken:

Description:

Landfill 1

TP-10 Material



PHOTOGRAPHIC LOG

Site Name: FOX-E	Site Location: Durban Island, Nunavut	Project No. 60158564

Photo No.	Date:
G93	16-Aug-10

Direction Photo Taken:

Description:

Landfill 1

TP-11



Photo No.	Date:
G95	16-Aug-10

Direction Photo Taken:

Description:

Landfill 1

TP-11 Profile



PHOTOGRAPHIC LOG

Site Name: FOX-E	Site Location: Durban Island, Nunavut	Project No. 60158564

Photo No.	Date:
G112	17-Aug-10

Direction Photo Taken:

Description:

Landfill 1 and 2

TP-12 Profile



Photo No.	Date:
G114	17-Aug-10

Direction Photo Taken:

Description:

Landfill 1 and 2

TP-12 Surface Material



PHOTOGRAPHIC LOG

Site Name: FOX-E	Site Location: Durban Island, Nunavut	Project No. 60158564

Photo No.	Date:
G120	17-Aug-10

Direction Photo Taken:

Description:

Landfill 2

TP-14 Area



Photo No.	Date:
G124	17-Aug-10

Direction Photo Taken:

Description:

Landfill 2

TP-14 Material



PHOTOGRAPHIC LOG

Site Name: FOX-E	Site Location: Durban Island, Nunavut	Project No. 60158564

Photo No.	Date:
G127	17-Aug-10

Direction Photo Taken:

Description:

Landfill 3

TP-15 Area

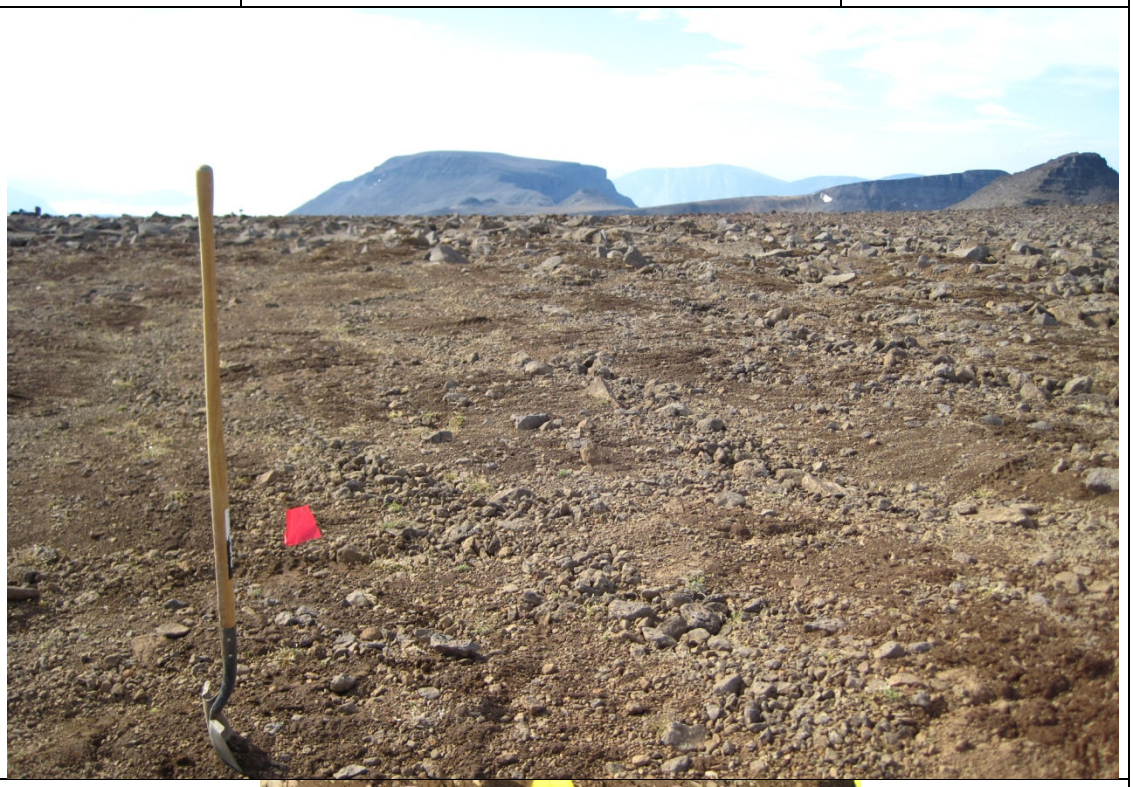


Photo No.	Date:
G131	17-Aug-10

Direction Photo Taken:

Description:

Landfill 3

TP-15 Profile



PHOTOGRAPHIC LOG

Site Name: FOX-E	Site Location: Durban Island, Nunavut	Project No. 60158564

Photo No.	Date:
G132	17-Aug-10

Direction Photo Taken:

Description:

Landfill 3

TP-16 Area

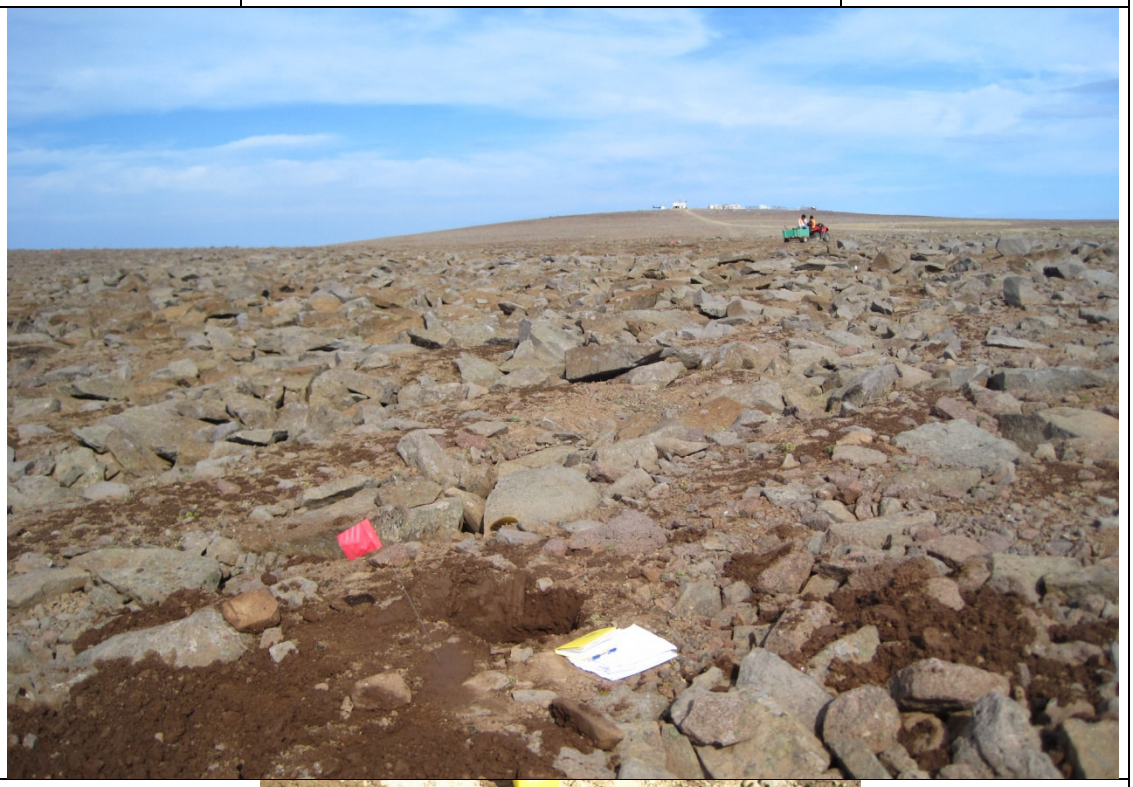


Photo No.	Date:
G133	17-Aug-10

Direction Photo Taken:

Description:

Landfill 3

TP-16 Profile



PHOTOGRAPHIC LOG

Site Name: FOX-E	Site Location: Durban Island, Nunavut	Project No. 60158564

Photo No.	Date:
G156	17-Aug-10

Direction Photo Taken:

Description:

Landfill 3

TP-18 Area

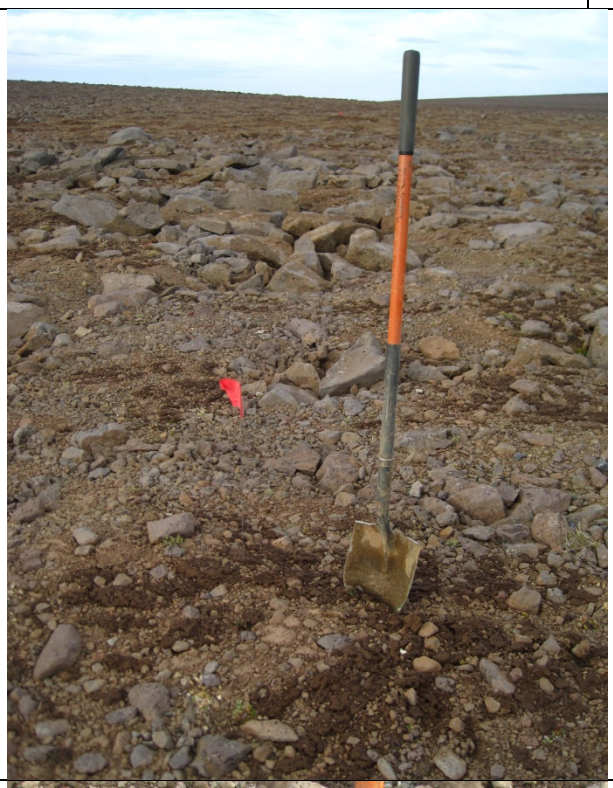


Photo No.	Date:
G158	17-Aug-10

Direction Photo Taken:

Description:

Landfill 3

TP-18 Profile



PHOTOGRAPHIC LOG

Site Name: FOX-E	Site Location: Durban Island, Nunavut	Project No. 60158564

Photo No.	Date:
G96	17-Aug-10

Direction Photo Taken:

Description:

Construction Camp 1

From W side towards main station



Photo No.	Date:
G97	17-Aug-10

Direction Photo Taken:

Description:

Construction Camp 1

From W side towards road



PHOTOGRAPHIC LOG

Site Name: FOX-E	Site Location: Durban Island, Nunavut	Project No. 60158564

Photo No.	Date:
G105	17-Aug-10

Direction Photo Taken:

Description:

Construction Camp 1

From NE corner N towards garage



Photo No.	Date:
G107	17-Aug-10

Direction Photo Taken:

Description:

Construction Camp 1

From N side facing west



PHOTOGRAPHIC LOG

Site Name: FOX-E	Site Location: Durban Island, Nunavut	Project No. 60158564

Photo No.	Date:
G257	17-Aug-10

Direction Photo Taken:

NE

Description:

Construction Camp 2 Laydown Area

SE extent and access road



Photo No.	Date:
G263	17-Aug-10

Direction Photo Taken:

SSE

Description:

Construction Camp 2 Laydown Area

W extent



PHOTOGRAPHIC LOG

Site Name: FOX-E	Site Location: Durban Island, Nunavut	Project No. 60158564

Photo No.	Date:
G161	21-Aug-10

Direction Photo Taken:

W

Description:

Beach Landing Area



Photo No.	Date:
G162	21-Aug-10

Direction Photo Taken:

E

Description:

Beach Landing Area



PHOTOGRAPHIC LOG

Site Name: FOX-E	Site Location: Durban Island, Nunavut	Project No. 60158564

Photo No.	Date:
G255	21-Aug-10

Direction Photo Taken:

S

Description:

Potential Construction Camp Area in Background



Photo No.	Date:
G259	21-Aug-10

Direction Photo Taken:

S

Description:

Potential Construction Camp Area



Appendix D

Laboratory Reports

Your Project #: 60158564
Site Location: SOIL/SEDIMENT DURBAN ISLAND SI
Your C.O.C. #: 20350419, 203504-1

Attention: Jenna Morrish
AECOM Canada Ltd
2540 Kensington Rd NW
Calgary, AB
CANADA T2N3S3

Report Date: 2010/09/09

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B0B9588
Received: 2010/08/30, 11:40

Sample Matrix: Soil
Samples Received: 53

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Petroleum Hydro. CCME F1 & BTEX in Soil	16	2010/09/01	2010/09/03	CAM SOP-00315	CCME CWS
Petroleum Hydro. CCME F1 & BTEX in Soil	20	2010/09/01	2010/09/04	CAM SOP-00315	CCME CWS
Petroleum Hydro. CCME F1 & BTEX in Soil	1	2010/09/01	2010/09/07	CAM SOP-00315	CCME CWS
Petroleum Hydro. CCME F1 & BTEX in Soil	1	2010/09/02	2010/09/03	CAM SOP-00315	CCME CWS
Petroleum Hydro. CCME F1 & BTEX in Soil	1	2010/09/02	2010/09/07	CAM SOP-00315	CCME CWS
Petroleum Hydrocarbons F2-F4 in Soil	39	2010/09/01	2010/09/02	CAM SOP-00316	CCME CWS
F4G (CCME Hydrocarbons Gravimetric)	1	2010/09/07	2010/09/08	CAM SOP-00316	CCME CWS
F4G (CCME Hydrocarbons Gravimetric)	4	2010/09/08	2010/09/09	CAM SOP-00316	CCME CWS
Acid Extr. Metals (aqua regia) by ICPMS	27	2010/09/08	2010/09/08	CAM SOP-00447	EPA 6020
Moisture	47	N/A	2010/09/02	CAM SOP-00445	McKeague 2nd ed 1978
Polychlorinated Biphenyl in Soil	2	2010/09/02	2010/09/05	CAM SOP-00309	SW846 8082
Polychlorinated Biphenyl in Soil	10	2010/09/02	2010/09/08	CAM SOP-00309	SW846 8082
Polychlorinated Biphenyl in Soil	7	2010/09/02	2010/09/09	CAM SOP-00309	SW846 8082

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

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

MARIJANE CRUZ, Project Manager
Email: Marijane.Cruz@maxxamanalytics.com
Phone# (905) 817-5756

==========

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.

Total cover pages: 1

Maxxam Job #: B0B9588
Report Date: 2010/09/09

AECOM Canada Ltd
Client Project #: 60158564
Project name: SOIL/SEDIMENT DURBAN ISLAND SI

RESULTS OF ANALYSES OF SOIL

Maxxam ID		GZ7789	GZ7792	GZ7794	GZ7797	GZ7800	GZ7801	GZ7804		
Sampling Date		2010/08/13	2010/08/13	2010/08/13	2010/08/13	2010/08/13	2010/08/13	2010/08/13		
COC Number		203504-1	203504-1	203504-1	203504-1	203504-1	203504-1	203504-1		
	Units	**10-0159**	**10-0162**	**10-0164**	**10-0167**	**10-0170**	**10-0171**	**10-0174**	**RDL**	**QC Batch**
Inorganics										
Moisture	%	8	9	10	4	9	9	5	1	2254821

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		GZ7805	GZ7810	GZ7811		GZ7812		GZ7820		
Sampling Date		2010/08/13	2010/08/13	2010/08/13		2010/08/13		2010/08/13		
COC Number		203504-1	203504-1	203504-1		203504-1		203504-1		
	Units	**10-0175**	**10-0180**	**10-0181**	**QC Batch**	**10-0182**	**QC Batch**	**10-0190**	**RDL**	**QC Batch**
Inorganics										
Moisture	%	4	14	5	2254821	9	2254997	9	1	2254291

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		GZ7821		GZ7822	GZ7826	GZ7827	GZ7828	GZ7829		
Sampling Date		2010/08/13		2010/08/13	2010/08/13	2010/08/13	2010/08/13	2010/08/13		
COC Number		203504-1		203504-1	203504-1	203504-1	203504-1	203504-1		
	Units	**10-0191**	**QC Batch**	**10-0192**	**10-0196**	**10-0197**	**10-0198**	**10-0199**	**RDL**	**QC Batch**
Inorganics										
Moisture	%	9	2254291	8	11	16	10	10	1	2254878

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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AECOM Canada Ltd
Client Project #: 60158564
Project name: SOIL/SEDIMENT DURBAN ISLAND SI

RESULTS OF ANALYSES OF SOIL

Maxxam ID		GZ7830	GZ7831	GZ7835		GZ7839		GZ7840		
Sampling Date		2010/08/13	2010/08/13	2010/08/13		2010/08/13		2010/08/13		
COC Number		203504-1	203504-1	203504-1		203504-1		203504-1		
	Units	**10-0200**	**10-0201**	**10-0205**	**QC Batch**	**10-0209**	**QC Batch**	**10-0210**	**RDL**	**QC Batch**
Inorganics										
Moisture	%	7	7	7	2254878	8	2254997	10	1	2254291

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		GZ7841		GZ7842		GZ7844		GZ7845		
Sampling Date		2010/08/13		2010/08/13		2010/08/13		2010/08/13		
COC Number		203504-1		203504-1		203504-1		203504-1		
	Units	**10-0211**	**QC Batch**	**10-0212**	**QC Batch**	**10-0214**	**QC Batch**	**10-0215**	**RDL**	**QC Batch**
Inorganics										
Moisture	%	10	2254291	10	2254878	8	2254997	8	1	2254878

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		GZ7846		GZ7852	GZ7853		GZ7856	GZ7857		
Sampling Date		2010/08/13		2010/08/14	2010/08/14		2010/08/14	2010/08/14		
COC Number		203504-1		203504-1	203504-1		203504-1	203504-1		
	Units	**10-0216**	**QC Batch**	**10-0222**	**10-0223**	**QC Batch**	**10-0226**	**10-0227**	**RDL**	**QC Batch**
Inorganics										
Moisture	%	11	2254878	7	7	2254291	9	7	1	2254997

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Project name: SOIL/SEDIMENT DURBAN ISLAND SI

RESULTS OF ANALYSES OF SOIL

Maxxam ID		GZ7865	GZ7866	GZ7867		GZ7868		GZ7886		
Sampling Date		2010/08/14	2010/08/14	2010/08/14		2010/08/14		2010/08/14		
COC Number		203504-1	203504-1	203504-1		203504-1		203504-1		
	Units	**10-0235**	**10-0236**	**10-0237**	**QC Batch**	**10-0238**	**QC Batch**	**10-0256**	**RDL**	**QC Batch**
Inorganics										
Moisture	%	8	4	8	2254997	7	2254878	11	1	2254997

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		GZ7887		GZ7890	GZ7891		GZ7894	GZ7895		
Sampling Date		2010/08/14		2010/08/14	2010/08/14		2010/08/14	2010/08/14		
COC Number		203504-1		203504-1	203504-1		203504-1	203504-1		
	Units	**10-0257**	**QC Batch**	**10-0260**	**10-0261**	**QC Batch**	**10-0264**	**10-0265**	**RDL**	**QC Batch**
Inorganics										
Moisture	%	9	2254878	8	9	2254291	6	8	1	2254878

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		GZ7896	GZ7897	GZ7900	GZ7901	GZ7902		
Sampling Date		2010/08/14	2010/08/14	2010/08/14	2010/08/14	2010/08/14		
COC Number		203504-1	203504-1	203504-1	203504-1	203504-1		
	Units	**10-0266**	**10-0267**	**10-0270**	**10-0271**	**10-0272**	**RDL**	**QC Batch**
Inorganics								
Moisture	%	3	6	7	8	6	1	2254878

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Project name: SOIL/SEDIMENT DURBAN ISLAND SI

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		GZ7789	GZ7794	GZ7800	GZ7801		GZ7820		
Sampling Date		2010/08/13	2010/08/13	2010/08/13	2010/08/13		2010/08/13		
COC Number		203504-1	203504-1	203504-1	203504-1		203504-1		
	Units	**10-0159**	**10-0164**	**10-0170**	**10-0171**	**QC Batch**	**10-0190**	**RDL**	**QC Batch**
Metals									
Acid Extractable Arsenic (As)	ug/g	5	5	3	3	2258221	<1	1	2258304
Acid Extractable Cadmium (Cd)	ug/g	0.1	<0.1	<0.1	<0.1	2258221	0.6	0.1	2258304
Acid Extractable Chromium (Cr)	ug/g	75	62	58	57	2258221	79	1	2258304
Acid Extractable Cobalt (Co)	ug/g	19	17	15	16	2258221	33	0.1	2258304
Acid Extractable Copper (Cu)	ug/g	38	27	31	30	2258221	75	0.5	2258304
Acid Extractable Lead (Pb)	ug/g	31	97	65	46	2258221	7	1	2258304
Acid Extractable Nickel (Ni)	ug/g	84	82	80	78	2258221	240	0.5	2258304
Acid Extractable Zinc (Zn)	ug/g	90	75	71	70	2258221	87	5	2258304

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		GZ7821		GZ7822	GZ7823		GZ7827		
Sampling Date		2010/08/13		2010/08/13	2010/08/13		2010/08/13		
COC Number		203504-1		203504-1	203504-1		203504-1		
	Units	**10-0191**	**QC Batch**	**10-0192**	**10-0193**	**QC Batch**	**10-0197**	**RDL**	**QC Batch**
Metals									
Acid Extractable Arsenic (As)	ug/g	<1	2258304	1	2	2258221	3	1	2258304
Acid Extractable Cadmium (Cd)	ug/g	0.5	2258304	2.1	0.3	2258221	0.2	0.1	2258304
Acid Extractable Chromium (Cr)	ug/g	77	2258304	79	73	2258221	75	1	2258304
Acid Extractable Cobalt (Co)	ug/g	35	2258304	31	28	2258221	20	0.1	2258304
Acid Extractable Copper (Cu)	ug/g	71	2258304	60	61	2258221	37	0.5	2258304
Acid Extractable Lead (Pb)	ug/g	5	2258304	12	16	2258221	18	1	2258304
Acid Extractable Nickel (Ni)	ug/g	260	2258304	230	210	2258221	85	0.5	2258304
Acid Extractable Zinc (Zn)	ug/g	74	2258304	190	88	2258221	130	5	2258304

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		GZ7828	GZ7839	GZ7840	GZ7841	GZ7852	GZ7853		
Sampling Date		2010/08/13	2010/08/13	2010/08/13	2010/08/13	2010/08/14	2010/08/14		
COC Number		203504-1	203504-1	203504-1	203504-1	203504-1	203504-1		
	Units	**10-0198**	**10-0209**	**10-0210**	**10-0211**	**10-0222**	**10-0223**	**RDL**	**QC Batch**
Metals									
Acid Extractable Arsenic (As)	ug/g	3	2	4	4	4	4	1	2258304
Acid Extractable Cadmium (Cd)	ug/g	0.2	1.3	0.4	0.4	0.9	0.9	0.1	2258304
Acid Extractable Chromium (Cr)	ug/g	64	69	89	91	60	63	1	2258304
Acid Extractable Cobalt (Co)	ug/g	20	20	23	23	16	16	0.1	2258304
Acid Extractable Copper (Cu)	ug/g	33	40	47	46	37	30	0.5	2258304
Acid Extractable Lead (Pb)	ug/g	16	26	15	15	16	11	1	2258304
Acid Extractable Nickel (Ni)	ug/g	60	120	130	130	110	92	0.5	2258304
Acid Extractable Zinc (Zn)	ug/g	130	330	140	130	100	77	5	2258304

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		GZ7862	GZ7865		GZ7867	GZ7868		
Sampling Date		2010/08/14	2010/08/14		2010/08/14	2010/08/14		
COC Number		203504-1	203504-1		203504-1	203504-1		
	Units	**10-0232**	**10-0235**	**QC Batch**	**10-0237**	**10-0238**	**RDL**	**QC Batch**
Metals								
Acid Extractable Arsenic (As)	ug/g	3	4	2258221	3	6	1	2258304
Acid Extractable Cadmium (Cd)	ug/g	13	3.8	2258221	3.0	0.9	0.1	2258304
Acid Extractable Chromium (Cr)	ug/g	83	95	2258221	95	89	1	2258304
Acid Extractable Cobalt (Co)	ug/g	24	28	2258221	29	28	0.1	2258304
Acid Extractable Copper (Cu)	ug/g	50	130	2258221	73	51	0.5	2258304
Acid Extractable Lead (Pb)	ug/g	61	170	2258221	230	78	1	2258304
Acid Extractable Nickel (Ni)	ug/g	160	180	2258221	250	260	0.5	2258304
Acid Extractable Zinc (Zn)	ug/g	150	210	2258221	300	130	5	2258304

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		GZ7869	GZ7878		GZ7879		GZ7884		
Sampling Date		2010/08/14	2010/08/14		2010/08/14		2010/08/14		
COC Number		203504-1	203504-1		203504-1		203504-1		
	Units	**10-0239**	**10-0248**	**RDL**	**10-0249**	**QC Batch**	**10-0254**	**RDL**	**QC Batch**
Metals									
Acid Extractable Arsenic (As)	ug/g	3	7	1	1	2258221	<1	1	2258644
Acid Extractable Cadmium (Cd)	ug/g	0.3	0.4	0.1	<0.1	2258221	0.8	0.1	2258644
Acid Extractable Chromium (Cr)	ug/g	99	110	1	130	2258221	120	1	2258644
Acid Extractable Cobalt (Co)	ug/g	29	24	0.1	57	2258221	60	0.1	2258644
Acid Extractable Copper (Cu)	ug/g	68	49	0.5	47	2258221	45	0.5	2258644
Acid Extractable Lead (Pb)	ug/g	30	14	1	7	2258221	13	1	2258644
Acid Extractable Nickel (Ni)	ug/g	280	130	0.5	790	2258221	820	5	2258644
Acid Extractable Zinc (Zn)	ug/g	140	120	5	65	2258221	110	5	2258644

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		GZ7886	GZ7887		GZ7890	GZ7891		
Sampling Date		2010/08/14	2010/08/14		2010/08/14	2010/08/14		
COC Number		203504-1	203504-1		203504-1	203504-1		
	Units	**10-0256**	**10-0257**	**RDL**	**10-0260**	**10-0261**	**RDL**	**QC Batch**
Metals								
Acid Extractable Arsenic (As)	ug/g	60	23	1	4	4	1	2258304
Acid Extractable Cadmium (Cd)	ug/g	0.4	0.3	0.1	0.2	0.1	0.1	2258304
Acid Extractable Chromium (Cr)	ug/g	120	110	1	120	120	1	2258304
Acid Extractable Cobalt (Co)	ug/g	40	26	0.1	40	42	0.1	2258304
Acid Extractable Copper (Cu)	ug/g	160	91	0.5	55	54	0.5	2258304
Acid Extractable Lead (Pb)	ug/g	79	37	1	11	13	1	2258304
Acid Extractable Nickel (Ni)	ug/g	75	69	0.5	450	460	5	2258304
Acid Extractable Zinc (Zn)	ug/g	450	220	5	90	90	5	2258304

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Project name: SOIL/SEDIMENT DURBAN ISLAND SI

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		GZ7789	GZ7792	GZ7794	GZ7797	GZ7800		
Sampling Date		2010/08/13	2010/08/13	2010/08/13	2010/08/13	2010/08/13		
COC Number		203504-1	203504-1	203504-1	203504-1	203504-1		
	Units	**10-0159**	**10-0162**	**10-0164**	**10-0167**	**10-0170**	**RDL**	**QC Batch**
BTEX & F1 Hydrocarbons								
Benzene	ug/g	<0.005	<0.005	<0.005	<0.005	<0.005	0.005	2254363
Toluene	ug/g	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	2254363
Ethylbenzene	ug/g	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	2254363
o-Xylene	ug/g	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	2254363
p+m-Xylene	ug/g	<0.04	<0.04	<0.04	<0.04	<0.04	0.04	2254363
Total Xylenes	ug/g	<0.04	<0.04	<0.04	<0.04	<0.04	0.04	2254363
F1 (C6-C10)	ug/g	<10	<10	39	<10	180	10	2254363
F1 (C6-C10) - BTEX	ug/g	<10	<10	39	<10	180	10	2254363
F2-F4 Hydrocarbons								
F2 (C10-C16 Hydrocarbons)	ug/g	92	290	4200	240	5600	10	2253587
F3 (C16-C34 Hydrocarbons)	ug/g	130	580	510	520	590	10	2253587
F4 (C34-C50 Hydrocarbons)	ug/g	<10	27	44	100	95	10	2253587
Reached Baseline at C50	ug/g	Yes	Yes	Yes	Yes	Yes	N/A	2253587
Surrogate Recovery (%)								
1,4-Difluorobenzene	%	92	93	82	91	81	N/A	2254363
4-Bromofluorobenzene	%	99	102	116	101	120	N/A	2254363
D10-Ethylbenzene	%	99	97	105	98	107	N/A	2254363
D4-1,2-Dichloroethane	%	99	101	88	98	87	N/A	2254363
o-Terphenyl	%	103	112	114	109	104	N/A	2253587

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

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PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		GZ7801	GZ7804	GZ7805	GZ7810	GZ7811		
Sampling Date		2010/08/13	2010/08/13	2010/08/13	2010/08/13	2010/08/13		
COC Number		203504-1	203504-1	203504-1	203504-1	203504-1		
	Units	**10-0171**	**10-0174**	**10-0175**	**10-0180**	**10-0181**	**RDL**	**QC Batch**
BTEX & F1 Hydrocarbons								
Benzene	ug/g	<0.005	<0.005	<0.005	<0.005	<0.005	0.005	2254363
Toluene	ug/g	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	2254363
Ethylbenzene	ug/g	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	2254363
o-Xylene	ug/g	0.02	<0.02	<0.02	<0.02	<0.02	0.02	2254363
p+m-Xylene	ug/g	0.05	<0.04	<0.04	<0.04	<0.04	0.04	2254363
Total Xylenes	ug/g	0.07	<0.04	<0.04	<0.04	<0.04	0.04	2254363
F1 (C6-C10)	ug/g	210	<10	<10	<10	<10	10	2254363
F1 (C6-C10) - BTEX	ug/g	210	<10	<10	<10	<10	10	2254363
F2-F4 Hydrocarbons								
F4G-sg (Grav. Heavy Hydrocarbons)	ug/g	N/A	N/A	N/A	N/A	950	100	2259341
F2 (C10-C16 Hydrocarbons)	ug/g	6000	85	20	<10	<10	10	2253587
F3 (C16-C34 Hydrocarbons)	ug/g	550	290	99	27	1000	10	2253587
F4 (C34-C50 Hydrocarbons)	ug/g	86	<10	<10	<10	590	10	2253587
Reached Baseline at C50	ug/g	Yes	Yes	Yes	Yes	No	N/A	2253587
Surrogate Recovery (%)								
1,4-Difluorobenzene	%	80	93	93	93	93	N/A	2254363
4-Bromofluorobenzene	%	122	100	99	100	99	N/A	2254363
D10-Ethylbenzene	%	105	96	100	98	100	N/A	2254363
D4-1,2-Dichloroethane	%	86	99	101	102	101	N/A	2254363
o-Terphenyl	%	104	104	99	97	100	N/A	2253587

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

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PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		GZ7812		GZ7822	GZ7826	GZ7827		
Sampling Date		2010/08/13		2010/08/13	2010/08/13	2010/08/13		
COC Number		203504-1		203504-1	203504-1	203504-1		
	Units	**10-0182**	**QC Batch**	**10-0192**	**10-0196**	**10-0197**	**RDL**	**QC Batch**
BTEX & F1 Hydrocarbons								
Benzene	ug/g	<0.005	2254363	<0.005	<0.005	<0.005	0.005	2254439
Toluene	ug/g	<0.02	2254363	<0.02	<0.02	<0.02	0.02	2254439
Ethylbenzene	ug/g	<0.01	2254363	<0.01	<0.01	<0.01	0.01	2254439
o-Xylene	ug/g	<0.02	2254363	<0.02	<0.02	<0.02	0.02	2254439
p+m-Xylene	ug/g	<0.04	2254363	<0.04	<0.04	<0.04	0.04	2254439
Total Xylenes	ug/g	<0.04	2254363	<0.04	<0.04	<0.04	0.04	2254439
F1 (C6-C10)	ug/g	<10	2254363	<10	<10	<10	10	2254439
F1 (C6-C10) - BTEX	ug/g	<10	2254363	<10	<10	<10	10	2254439
F2-F4 Hydrocarbons								
F4G-sg (Grav. Heavy Hydrocarbons)	ug/g	1900	2259341	N/A	N/A	N/A	100	N/A
F2 (C10-C16 Hydrocarbons)	ug/g	11	2253587	83	46	56	10	2253582
F3 (C16-C34 Hydrocarbons)	ug/g	1900	2253587	220	150	330	10	2253582
F4 (C34-C50 Hydrocarbons)	ug/g	1000	2253587	41	25	120	10	2253582
Reached Baseline at C50	ug/g	No	2253587	Yes	Yes	Yes	N/A	2253582
Surrogate Recovery (%)								
1,4-Difluorobenzene	%	92	2254363	94	94	94	N/A	2254439
4-Bromofluorobenzene	%	100	2254363	99	100	99	N/A	2254439
D10-Ethylbenzene	%	104	2254363	98	101	99	N/A	2254439
D4-1,2-Dichloroethane	%	101	2254363	101	102	102	N/A	2254439
o-Terphenyl	%	104	2253587	86	88	85	N/A	2253582

N/A = Not Applicable
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Report Date: 2010/09/09

AECOM Canada Ltd
Client Project #: 60158564
Project name: SOIL/SEDIMENT DURBAN ISLAND SI

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		GZ7828	GZ7829	GZ7830	GZ7831	GZ7835		
Sampling Date		2010/08/13	2010/08/13	2010/08/13	2010/08/13	2010/08/13		
COC Number		203504-1	203504-1	203504-1	203504-1	203504-1		
	Units	**10-0198**	**10-0199**	**10-0200**	**10-0201**	**10-0205**	**RDL**	**QC Batch**
BTEX & F1 Hydrocarbons								
Benzene	ug/g	<0.005	<0.005	<0.005	<0.005	<0.005	0.005	2254439
Toluene	ug/g	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	2254439
Ethylbenzene	ug/g	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	2254439
o-Xylene	ug/g	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	2254439
p+m-Xylene	ug/g	<0.04	<0.04	<0.04	<0.04	<0.04	0.04	2254439
Total Xylenes	ug/g	<0.04	<0.04	<0.04	<0.04	<0.04	0.04	2254439
F1 (C6-C10)	ug/g	<10	91	17	10	<10	10	2254439
F1 (C6-C10) - BTEX	ug/g	<10	91	17	10	<10	10	2254439
F2-F4 Hydrocarbons								
F2 (C10-C16 Hydrocarbons)	ug/g	12	8200	8000	6700	710	10	2253582
F3 (C16-C34 Hydrocarbons)	ug/g	30	1400	1600	1500	140	10	2253582
F4 (C34-C50 Hydrocarbons)	ug/g	<10	23	30	37	<10	10	2253582
Reached Baseline at C50	ug/g	Yes	Yes	Yes	Yes	Yes	N/A	2253582
Surrogate Recovery (%)								
1,4-Difluorobenzene	%	94	85	86	86	90	N/A	2254439
4-Bromofluorobenzene	%	100	115	113	114	104	N/A	2254439
D10-Ethylbenzene	%	101	105	102	105	101	N/A	2254439
D4-1,2-Dichloroethane	%	104	93	94	94	98	N/A	2254439
o-Terphenyl	%	96	105	99	102	86	N/A	2253582

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PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		GZ7839		GZ7842		GZ7844		
Sampling Date		2010/08/13		2010/08/13		2010/08/13		
COC Number		203504-1		203504-1		203504-1		
	Units	**10-0209**	**QC Batch**	**10-0212**	**QC Batch**	**10-0214**	**RDL**	**QC Batch**
BTEX & F1 Hydrocarbons								
Benzene	ug/g	<0.005	2254363	<0.005	2254439	<0.005	0.005	2254363
Toluene	ug/g	<0.02	2254363	<0.02	2254439	<0.02	0.02	2254363
Ethylbenzene	ug/g	<0.01	2254363	<0.01	2254439	<0.01	0.01	2254363
o-Xylene	ug/g	0.13	2254363	<0.02	2254439	<0.02	0.02	2254363
p+m-Xylene	ug/g	0.08	2254363	<0.04	2254439	<0.04	0.04	2254363
Total Xylenes	ug/g	0.21	2254363	<0.04	2254439	<0.04	0.04	2254363
F1 (C6-C10)	ug/g	<10	2254363	280	2254439	78	10	2254363
F1 (C6-C10) - BTEX	ug/g	<10	2254363	280	2254439	78	10	2254363
F2-F4 Hydrocarbons								
F2 (C10-C16 Hydrocarbons)	ug/g	<10	2253587	4000	2253582	1500	10	2253587
F3 (C16-C34 Hydrocarbons)	ug/g	77	2253587	430	2253582	110	10	2253587
F4 (C34-C50 Hydrocarbons)	ug/g	13	2253587	<10	2253582	<10	10	2253587
Reached Baseline at C50	ug/g	Yes	2253587	Yes	2253582	Yes	N/A	2253587
Surrogate Recovery (%)								
1,4-Difluorobenzene	%	93	2254363	84	2254439	86	N/A	2254363
4-Bromofluorobenzene	%	100	2254363	118	2254439	110	N/A	2254363
D10-Ethylbenzene	%	100	2254363	115	2254439	110	N/A	2254363
D4-1,2-Dichloroethane	%	102	2254363	90	2254439	93	N/A	2254363
o-Terphenyl	%	96	2253587	91	2253582	101	N/A	2253587

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PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		GZ7845	GZ7846		GZ7856	GZ7857		
Sampling Date		2010/08/13	2010/08/13		2010/08/14	2010/08/14		
COC Number		203504-1	203504-1		203504-1	203504-1		
	Units	**10-0215**	**10-0216**	**QC Batch**	**10-0226**	**10-0227**	**RDL**	**QC Batch**
BTEX & F1 Hydrocarbons								
Benzene	ug/g	<0.005	<0.005	2254439	<0.005	<0.005	0.005	2254363
Toluene	ug/g	<0.02	<0.02	2254439	<0.02	<0.02	0.02	2254363
Ethylbenzene	ug/g	<0.01	<0.01	2254439	<0.01	<0.01	0.01	2254363
o-Xylene	ug/g	<0.02	<0.02	2254439	<0.02	<0.02	0.02	2254363
p+m-Xylene	ug/g	<0.04	<0.04	2254439	<0.04	<0.04	0.04	2254363
Total Xylenes	ug/g	<0.04	<0.04	2254439	<0.04	<0.04	0.04	2254363
F1 (C6-C10)	ug/g	<10	<10	2254439	130	260	10	2254363
F1 (C6-C10) - BTEX	ug/g	<10	<10	2254439	130	260	10	2254363
F2-F4 Hydrocarbons								
F2 (C10-C16 Hydrocarbons)	ug/g	52	220	2253582	8400	5800	10	2253587
F3 (C16-C34 Hydrocarbons)	ug/g	310	130	2253582	840	540	10	2253587
F4 (C34-C50 Hydrocarbons)	ug/g	86	26	2253582	10	17	10	2253587
Reached Baseline at C50	ug/g	Yes	Yes	2253582	Yes	Yes	N/A	2253587
Surrogate Recovery (%)								
1,4-Difluorobenzene	%	93	93	2254439	82	83	N/A	2254363
4-Bromofluorobenzene	%	100	101	2254439	119	119	N/A	2254363
D10-Ethylbenzene	%	97	101	2254439	105	106	N/A	2254363
D4-1,2-Dichloroethane	%	104	102	2254439	89	89	N/A	2254363
o-Terphenyl	%	84	82	2253582	113	106	N/A	2253587

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PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		GZ7865	GZ7866	GZ7867		GZ7868		
Sampling Date		2010/08/14	2010/08/14	2010/08/14		2010/08/14		
COC Number		203504-1	203504-1	203504-1		203504-1		
	Units	**10-0235**	**10-0236**	**10-0237**	**QC Batch**	**10-0238**	**RDL**	**QC Batch**
BTEX & F1 Hydrocarbons								
Benzene	ug/g	<0.005	<0.005	<0.005	2254363	<0.005	0.005	2254439
Toluene	ug/g	<0.02	<0.02	<0.02	2254363	<0.02	0.02	2254439
Ethylbenzene	ug/g	<0.01	<0.01	<0.01	2254363	<0.01	0.01	2254439
o-Xylene	ug/g	<0.02	<0.02	<0.02	2254363	<0.02	0.02	2254439
p+m-Xylene	ug/g	<0.04	<0.04	<0.04	2254363	<0.04	0.04	2254439
Total Xylenes	ug/g	<0.04	<0.04	<0.04	2254363	<0.04	0.04	2254439
F1 (C6-C10)	ug/g	<10	<10	10	2254363	22	10	2254439
F1 (C6-C10) - BTEX	ug/g	<10	<10	10	2254363	22	10	2254439
F2-F4 Hydrocarbons								
F4G-sg (Grav. Heavy Hydrocarbons)	ug/g	N/A	N/A	23000	2259341	N/A	100	N/A
F2 (C10-C16 Hydrocarbons)	ug/g	1200	2600	940	2253587	1800	10	2253582
F3 (C16-C34 Hydrocarbons)	ug/g	7800	3600	20000	2253587	13000	10	2253582
F4 (C34-C50 Hydrocarbons)	ug/g	1500	320	6700	2253587	4100	10	2253582
Reached Baseline at C50	ug/g	Yes	Yes	No	2253587	Yes	N/A	2253582
Surrogate Recovery (%)								
1,4-Difluorobenzene	%	92	90	92	2254363	91	N/A	2254439
4-Bromofluorobenzene	%	102	105	101	2254363	101	N/A	2254439
D10-Ethylbenzene	%	105	106	101	2254363	95	N/A	2254439
D4-1,2-Dichloroethane	%	100	96	100	2254363	99	N/A	2254439
o-Terphenyl	%	114	127	116	2253587	103	N/A	2253582

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PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		GZ7886		GZ7887	GZ7894	GZ7895		
Sampling Date		2010/08/14		2010/08/14	2010/08/14	2010/08/14		
COC Number		203504-1		203504-1	203504-1	203504-1		
	Units	**10-0256**	**QC Batch**	**10-0257**	**10-0264**	**10-0265**	**RDL**	**QC Batch**
BTEX & F1 Hydrocarbons								
Benzene	ug/g	<0.005	2254363	<0.005	<0.005	<0.005	0.005	2254439
Toluene	ug/g	<0.02	2254363	<0.02	<0.02	<0.02	0.02	2254439
Ethylbenzene	ug/g	<0.01	2254363	<0.01	<0.01	<0.01	0.01	2254439
o-Xylene	ug/g	<0.02	2254363	<0.02	<0.02	<0.02	0.02	2254439
p+m-Xylene	ug/g	<0.04	2254363	<0.04	<0.04	<0.04	0.04	2254439
Total Xylenes	ug/g	<0.04	2254363	<0.04	<0.04	<0.04	0.04	2254439
F1 (C6-C10)	ug/g	<10	2254363	<10	<10	<10	10	2254439
F1 (C6-C10) - BTEX	ug/g	<10	2254363	<10	<10	<10	10	2254439
F2-F4 Hydrocarbons								
F4G-sg (Grav. Heavy Hydrocarbons)	ug/g	670	2259341	N/A	N/A	N/A	100	N/A
F2 (C10-C16 Hydrocarbons)	ug/g	22	2253587	21	59	38	10	2253582
F3 (C16-C34 Hydrocarbons)	ug/g	76	2253587	38	11000	1800	10	2253582
F4 (C34-C50 Hydrocarbons)	ug/g	170	2253587	<10	940	180	10	2253582
Reached Baseline at C50	ug/g	No	2253587	Yes	Yes	Yes	N/A	2253582
Surrogate Recovery (%)								
1,4-Difluorobenzene	%	94	2254363	94	95	94	N/A	2254439
4-Bromofluorobenzene	%	100	2254363	100	100	99	N/A	2254439
D10-Ethylbenzene	%	100	2254363	101	101	98	N/A	2254439
D4-1,2-Dichloroethane	%	100	2254363	103	104	102	N/A	2254439
o-Terphenyl	%	98	2253587	87	90	79	N/A	2253582

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PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		GZ7896	GZ7897	GZ7900	GZ7901	GZ7902		
Sampling Date		2010/08/14	2010/08/14	2010/08/14	2010/08/14	2010/08/14		
COC Number		203504-1	203504-1	203504-1	203504-1	203504-1		
	Units	**10-0266**	**10-0267**	**10-0270**	**10-0271**	**10-0272**	**RDL**	**QC Batch**
BTEX & F1 Hydrocarbons								
Benzene	ug/g	<0.005	<0.005	<0.005	<0.005	<0.005	0.005	2254439
Toluene	ug/g	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	2254439
Ethylbenzene	ug/g	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	2254439
o-Xylene	ug/g	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	2254439
p+m-Xylene	ug/g	<0.04	<0.04	<0.04	<0.04	<0.04	0.04	2254439
Total Xylenes	ug/g	<0.04	<0.04	<0.04	<0.04	<0.04	0.04	2254439
F1 (C6-C10)	ug/g	<10	<10	<10	<10	<10	10	2254439
F1 (C6-C10) - BTEX	ug/g	<10	<10	<10	<10	<10	10	2254439
F2-F4 Hydrocarbons								
F4G-sg (Grav. Heavy Hydrocarbons)	ug/g	N/A	N/A	N/A	N/A	1200	100	2257994
F2 (C10-C16 Hydrocarbons)	ug/g	32	32	78	82	29	10	2253582
F3 (C16-C34 Hydrocarbons)	ug/g	18000	6700	520	520	1000	10	2253582
F4 (C34-C50 Hydrocarbons)	ug/g	1000	380	170	170	400	10	2253582
Reached Baseline at C50	ug/g	Yes	Yes	Yes	Yes	No	N/A	2253582
Surrogate Recovery (%)								
1,4-Difluorobenzene	%	94	94	94	93	94	N/A	2254439
4-Bromofluorobenzene	%	99	100	101	100	100	N/A	2254439
D10-Ethylbenzene	%	99	100	100	97	101	N/A	2254439
D4-1,2-Dichloroethane	%	104	103	103	102	103	N/A	2254439
o-Terphenyl	%	85	74	76	74	69	N/A	2253582

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POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		GZ7820	GZ7821	GZ7827	GZ7828		GZ7839		
Sampling Date		2010/08/13	2010/08/13	2010/08/13	2010/08/13		2010/08/13		
COC Number		203504-1	203504-1	203504-1	203504-1		203504-1		
	Units	**10-0190**	**10-0191**	**10-0197**	**10-0198**	**RDL**	**10-0209**	**RDL**	**QC Batch**
PCBs									
Aroclor 1016	ug/g	<0.01	<0.01	<0.01	<0.01	0.01	<0.1	0.1	2255811
Aroclor 1221	ug/g	<0.01	<0.01	<0.01	<0.01	0.01	<0.1	0.1	2255811
Aroclor 1232	ug/g	<0.01	<0.01	<0.01	<0.01	0.01	<0.1	0.1	2255811
Aroclor 1242	ug/g	<0.01	<0.01	<0.01	<0.01	0.01	<0.1	0.1	2255811
Aroclor 1248	ug/g	<0.01	<0.01	<0.01	<0.01	0.01	<0.1	0.1	2255811
Aroclor 1254	ug/g	0.11	0.06	0.09	0.03	0.01	1.2	0.1	2255811
Aroclor 1260	ug/g	0.01	0.01	0.04	0.01	0.01	0.3	0.1	2255811
Aroclor 1262	ug/g	<0.01	<0.01	<0.01	<0.01	0.01	<0.1	0.1	2255811
Aroclor 1268	ug/g	<0.01	<0.01	<0.01	<0.01	0.01	<0.1	0.1	2255811
Total PCB	ug/g	0.13	0.07	0.13	0.04	0.01	1.4	0.1	2255811
Surrogate Recovery (%)									
2,4,5,6-Tetrachloro-m-xylene	%	80	67	84	79	N/A	76	N/A	2255811
Decachlorobiphenyl	%	102	94	109	139 (1)	N/A	103	N/A	2255811

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(1) Surrogate recovery was above the upper control limit due to matrix interference. This may represent a high bias in some results.

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POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		GZ7840		GZ7841		GZ7852	GZ7853		GZ7867		
Sampling Date		2010/08/13		2010/08/13		2010/08/14	2010/08/14		2010/08/14		
COC Number		203504-1		203504-1		203504-1	203504-1		203504-1		
	Units	**10-0210**	**RDL**	**10-0211**	**RDL**	**10-0222**	**10-0223**	**RDL**	**10-0237**	**RDL**	**QC Batch**
PCBs											
Aroclor 1016	ug/g	<0.01	0.01	<0.1	0.1	<0.01	<0.01	0.01	<0.1	0.1	2255811
Aroclor 1221	ug/g	<0.01	0.01	<0.1	0.1	<0.01	<0.01	0.01	<0.1	0.1	2255811
Aroclor 1232	ug/g	<0.01	0.01	<0.1	0.1	<0.01	<0.01	0.01	<0.1	0.1	2255811
Aroclor 1242	ug/g	<0.01	0.01	<0.1	0.1	<0.01	<0.01	0.01	<0.1	0.1	2255811
Aroclor 1248	ug/g	<0.01	0.01	<0.1	0.1	<0.01	<0.01	0.01	<0.1	0.1	2255811
Aroclor 1254	ug/g	0.35	0.01	0.2	0.1	0.34	0.03	0.01	3.3	0.1	2255811
Aroclor 1260	ug/g	0.28	0.01	0.1	0.1	0.02	0.01	0.01	<0.1	0.1	2255811
Aroclor 1262	ug/g	<0.01	0.01	<0.1	0.1	<0.01	<0.01	0.01	<0.1	0.1	2255811
Aroclor 1268	ug/g	<0.01	0.01	<0.1	0.1	<0.01	<0.01	0.01	<0.1	0.1	2255811
Total PCB	ug/g	0.62	0.01	0.4	0.1	0.36	0.04	0.01	3.3	0.1	2255811
Surrogate Recovery (%)											
2,4,5,6-Tetrachloro-m-xylene	%	92	N/A	78	N/A	90	72	N/A	87	N/A	2255811
Decachlorobiphenyl	%	136 (1)	N/A	183 (1)	N/A	118	105	N/A	104	N/A	2255811

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(1) Surrogate recovery was above the upper control limit due to matrix interference. This may represent a high bias in some results.

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Maxxam Job #: B0B9588
Report Date: 2010/09/09

AECOM Canada Ltd
Client Project #: 60158564
Project name: SOIL/SEDIMENT DURBAN ISLAND SI

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		GZ7868		GZ7886	GZ7887	GZ7890	GZ7891		
Sampling Date		2010/08/14		2010/08/14	2010/08/14	2010/08/14	2010/08/14		
COC Number		203504-1		203504-1	203504-1	203504-1	203504-1		
	Units	**10-0238**	**RDL**	**10-0256**	**10-0257**	**10-0260**	**10-0261**	**RDL**	**QC Batch**
PCBs									
Aroclor 1016	ug/g	<0.1	0.1	<0.01	<0.01	<0.01	<0.01	0.01	2255811
Aroclor 1221	ug/g	<0.1	0.1	<0.01	<0.01	<0.01	<0.01	0.01	2255811
Aroclor 1232	ug/g	<0.1	0.1	<0.01	<0.01	<0.01	<0.01	0.01	2255811
Aroclor 1242	ug/g	<0.1	0.1	<0.01	<0.01	<0.01	<0.01	0.01	2255811
Aroclor 1248	ug/g	<0.1	0.1	<0.01	<0.01	<0.01	<0.01	0.01	2255811
Aroclor 1254	ug/g	1.5	0.1	0.15	0.05	0.11	0.11	0.01	2255811
Aroclor 1260	ug/g	<0.1	0.1	<0.01	<0.01	<0.01	<0.01	0.01	2255811
Aroclor 1262	ug/g	<0.1	0.1	<0.01	<0.01	<0.01	<0.01	0.01	2255811
Aroclor 1268	ug/g	<0.1	0.1	<0.01	<0.01	<0.01	<0.01	0.01	2255811
Total PCB	ug/g	1.5	0.1	0.15	0.05	0.11	0.11	0.01	2255811
Surrogate Recovery (%)									
2,4,5,6-Tetrachloro-m-xylene	%	81	N/A	95	116	73	78	N/A	2255811
Decachlorobiphenyl	%	107	N/A	121	131 (1)	100	101	N/A	2255811

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Surrogate recovery was above the upper control limit due to matrix interference. This may represent a high bias in some results.

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Report Date: 2010/09/09

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Project name: SOIL/SEDIMENT DURBAN ISLAND SI

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		GZ7894	GZ7895	GZ7896	GZ7897		
Sampling Date		2010/08/14	2010/08/14	2010/08/14	2010/08/14		
COC Number		203504-1	203504-1	203504-1	203504-1		
	Units	**10-0264**	**10-0265**	**10-0266**	**10-0267**	**RDL**	**QC Batch**
PCBs							
Aroclor 1016	ug/g	<0.01	<0.01	<0.01	<0.01	0.01	2255811
Aroclor 1221	ug/g	<0.01	<0.01	<0.01	<0.01	0.01	2255811
Aroclor 1232	ug/g	<0.01	<0.01	<0.01	<0.01	0.01	2255811
Aroclor 1242	ug/g	<0.01	<0.01	<0.01	<0.01	0.01	2255811
Aroclor 1248	ug/g	<0.01	<0.01	<0.01	<0.01	0.01	2255811
Aroclor 1254	ug/g	<0.01	<0.01	<0.01	<0.01	0.01	2255811
Aroclor 1260	ug/g	<0.01	<0.01	<0.01	<0.01	0.01	2255811
Aroclor 1262	ug/g	<0.01	<0.01	<0.01	<0.01	0.01	2255811
Aroclor 1268	ug/g	<0.01	<0.01	<0.01	<0.01	0.01	2255811
Total PCB	ug/g	<0.01	<0.01	<0.01	<0.01	0.01	2255811
Surrogate Recovery (%)							
2,4,5,6-Tetrachloro-m-xylene	%	89	90	73	89	N/A	2255811
Decachlorobiphenyl	%	115	101	108	99	N/A	2255811

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

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GENERAL COMMENTS

F1/BTEX and F2-F4 Analysis.
Analysis was performed past sample holding time. This may increase the variability associated with these results.
PCB Analysis: Due to high concentrations of the target analytes, some samples required dilution. Detection limits were adjusted accordingly.

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Test Group: Analysis was performed past the sample holding time. This may increase the variability associated with these results.

Polychlorinated Biphenyl in Soil: Test Group: Analysis was performed past the sample holding time. This may increase the variability associated with these results.

Results relate only to the items tested.

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AECOM Canada Ltd
Attention: Jenna Morrish
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Quality Assurance Report

Maxxam Job Number: MB0B9588

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2253582	RGA	Matrix Spike						
		[GZ7822-02]	o-Terphenyl	2010/09/02		90	%	30 - 130
			F2 (C10-C16 Hydrocarbons)	2010/09/02		74	%	60 - 130
			F3 (C16-C34 Hydrocarbons)	2010/09/02		74	%	60 - 130
			F4 (C34-C50 Hydrocarbons)	2010/09/02		74	%	60 - 130
		Spiked Blank	o-Terphenyl	2010/09/02		82	%	30 - 130
			F2 (C10-C16 Hydrocarbons)	2010/09/02		72	%	60 - 130
			F3 (C16-C34 Hydrocarbons)	2010/09/02		72	%	60 - 130
			F4 (C34-C50 Hydrocarbons)	2010/09/02		72	%	60 - 130
		Method Blank	o-Terphenyl	2010/09/02		88	%	30 - 130
			F2 (C10-C16 Hydrocarbons)	2010/09/02	<10		ug/g	
			F3 (C16-C34 Hydrocarbons)	2010/09/02	<10		ug/g	
			F4 (C34-C50 Hydrocarbons)	2010/09/02	<10		ug/g	
		RPD [GZ7822-02]	F2 (C10-C16 Hydrocarbons)	2010/09/02	28.7		%	50
			F3 (C16-C34 Hydrocarbons)	2010/09/02	22.8		%	50
			F4 (C34-C50 Hydrocarbons)	2010/09/02	NC		%	50
2253587	RGA	Matrix Spike						
		[GZ7789-02]	o-Terphenyl	2010/09/02		106	%	30 - 130
			F2 (C10-C16 Hydrocarbons)	2010/09/02		102	%	60 - 130
			F3 (C16-C34 Hydrocarbons)	2010/09/02		102	%	60 - 130
			F4 (C34-C50 Hydrocarbons)	2010/09/02		102	%	60 - 130
		Spiked Blank	o-Terphenyl	2010/09/02		102	%	30 - 130
			F2 (C10-C16 Hydrocarbons)	2010/09/02		93	%	60 - 130
			F3 (C16-C34 Hydrocarbons)	2010/09/02		93	%	60 - 130
			F4 (C34-C50 Hydrocarbons)	2010/09/02		93	%	60 - 130
		Method Blank	o-Terphenyl	2010/09/02		104	%	30 - 130
			F2 (C10-C16 Hydrocarbons)	2010/09/02	<10		ug/g	
			F3 (C16-C34 Hydrocarbons)	2010/09/02	<10		ug/g	
			F4 (C34-C50 Hydrocarbons)	2010/09/02	<10		ug/g	
		RPD [GZ7789-02]	F2 (C10-C16 Hydrocarbons)	2010/09/02	21.6		%	50
			F3 (C16-C34 Hydrocarbons)	2010/09/02	18.9		%	50
			F4 (C34-C50 Hydrocarbons)	2010/09/02	NC		%	50
2254291	COP	RPD	Moisture	2010/09/02	9.3		%	20
2254363	LRA	Matrix Spike						
		[GZ7789-02]	1,4-Difluorobenzene	2010/09/03		94	%	60 - 140
			4-Bromofluorobenzene	2010/09/03		99	%	60 - 140
			D10-Ethylbenzene	2010/09/03		102	%	30 - 130
			D4-1,2-Dichloroethane	2010/09/03		99	%	60 - 140
			Benzene	2010/09/03		87	%	60 - 140
			Toluene	2010/09/03		99	%	60 - 140
			Ethylbenzene	2010/09/03		103	%	60 - 140
			o-Xylene	2010/09/03		106	%	60 - 140
			p+m-Xylene	2010/09/03		97	%	60 - 140
			F1 (C6-C10)	2010/09/03		90	%	60 - 140
		Spiked Blank	1,4-Difluorobenzene	2010/09/03		93	%	60 - 140
			4-Bromofluorobenzene	2010/09/03		99	%	60 - 140
			D10-Ethylbenzene	2010/09/03		96	%	30 - 130
			D4-1,2-Dichloroethane	2010/09/03		101	%	60 - 140
			Benzene	2010/09/03		81	%	60 - 140
			Toluene	2010/09/03		92	%	60 - 140
			Ethylbenzene	2010/09/03		96	%	60 - 140
			o-Xylene	2010/09/03		100	%	60 - 140
			p+m-Xylene	2010/09/03		91	%	60 - 140
			F1 (C6-C10)	2010/09/03		78	%	60 - 140
		Method Blank	1,4-Difluorobenzene	2010/09/03		92	%	60 - 140

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Quality Assurance Report (Continued)

Maxxam Job Number: MB0B9588

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2254363 LRA	Method Blank	4-Bromofluorobenzene	2010/09/03		99	%	60 - 140
		D10-Ethylbenzene	2010/09/03		95	%	30 - 130
		D4-1,2-Dichloroethane	2010/09/03		100	%	60 - 140
		Benzene	2010/09/03	<0.005		ug/g	
		Toluene	2010/09/03	<0.02		ug/g	
		Ethylbenzene	2010/09/03	<0.01		ug/g	
		o-Xylene	2010/09/03	<0.02		ug/g	
		p+m-Xylene	2010/09/03	<0.04		ug/g	
		Total Xylenes	2010/09/03	<0.04		ug/g	
		F1 (C6-C10)	2010/09/03	<10		ug/g	
		F1 (C6-C10) - BTEX	2010/09/03	<10		ug/g	
	RPD [GZ7789-02]	Benzene	2010/09/03	NC		%	50
		Toluene	2010/09/03	NC		%	50
		Ethylbenzene	2010/09/03	NC		%	50
		o-Xylene	2010/09/03	NC		%	50
		p+m-Xylene	2010/09/03	NC		%	50
		Total Xylenes	2010/09/03	NC		%	50
		F1 (C6-C10)	2010/09/03	NC		%	50
		F1 (C6-C10) - BTEX	2010/09/03	NC		%	50
2254439 LRA	Matrix Spike						
	[GZ7822-02]	1,4-Difluorobenzene	2010/09/04		93	%	60 - 140
		4-Bromofluorobenzene	2010/09/04		100	%	60 - 140
		D10-Ethylbenzene	2010/09/04		101	%	30 - 130
		D4-1,2-Dichloroethane	2010/09/04		102	%	60 - 140
		Benzene	2010/09/04		93	%	60 - 140
		Toluene	2010/09/04		96	%	60 - 140
		Ethylbenzene	2010/09/04		100	%	60 - 140
		o-Xylene	2010/09/04		105	%	60 - 140
		p+m-Xylene	2010/09/04		94	%	60 - 140
		F1 (C6-C10)	2010/09/04		80	%	60 - 140
	Spiked Blank	1,4-Difluorobenzene	2010/09/04		94	%	60 - 140
		4-Bromofluorobenzene	2010/09/04		100	%	60 - 140
		D10-Ethylbenzene	2010/09/04		97	%	30 - 130
		D4-1,2-Dichloroethane	2010/09/04		103	%	60 - 140
		Benzene	2010/09/04		91	%	60 - 140
		Toluene	2010/09/04		94	%	60 - 140
		Ethylbenzene	2010/09/04		97	%	60 - 140
		o-Xylene	2010/09/04		101	%	60 - 140
		p+m-Xylene	2010/09/04		91	%	60 - 140
		F1 (C6-C10)	2010/09/04		87	%	60 - 140
	Method Blank	1,4-Difluorobenzene	2010/09/04		94	%	60 - 140
		4-Bromofluorobenzene	2010/09/04		100	%	60 - 140
		D10-Ethylbenzene	2010/09/04		93	%	30 - 130
		D4-1,2-Dichloroethane	2010/09/04		105	%	60 - 140
		Benzene	2010/09/04	<0.005		ug/g	
		Toluene	2010/09/04	<0.02		ug/g	
		Ethylbenzene	2010/09/04	<0.01		ug/g	
		o-Xylene	2010/09/04	<0.02		ug/g	
		p+m-Xylene	2010/09/04	<0.04		ug/g	
		Total Xylenes	2010/09/04	<0.04		ug/g	
		F1 (C6-C10)	2010/09/04	<10		ug/g	
		F1 (C6-C10) - BTEX	2010/09/04	<10		ug/g	
	RPD [GZ7822-02]	Benzene	2010/09/04	NC		%	50
		Toluene	2010/09/04	NC		%	50
		Ethylbenzene	2010/09/04	NC		%	50

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Quality Assurance Report (Continued)

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QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2254439	LRA	RPD [GZ7822-02]	o-Xylene	2010/09/04	NC		%	50
			p+m-Xylene	2010/09/04	NC		%	50
			Total Xylenes	2010/09/04	NC		%	50
			F1 (C6-C10)	2010/09/04	NC		%	50
			F1 (C6-C10) - BTEX	2010/09/04	NC		%	50
2254821	LKA	RPD	Moisture	2010/09/02	2.3		%	20
2254878	LKA	RPD [GZ7902-02]	Moisture	2010/09/02	1.8		%	20
2254997	LKA	RPD	Moisture	2010/09/02	8.8		%	20
2255811	LGA	Matrix Spike						
		[GZ7896-01]	2,4,5,6-Tetrachloro-m-xylene	2010/09/07		82	%	40 - 130
			Decachlorobiphenyl	2010/09/07		92	%	40 - 130
			Aroclor 1260	2010/09/07		85	%	30 - 130
			Total PCB	2010/09/07		85	%	30 - 130
		Spiked Blank	2,4,5,6-Tetrachloro-m-xylene	2010/09/08		97	%	40 - 130
			Decachlorobiphenyl	2010/09/08		104	%	40 - 130
			Aroclor 1260	2010/09/08		104	%	30 - 130
			Total PCB	2010/09/08		104	%	30 - 130
		Method Blank	2,4,5,6-Tetrachloro-m-xylene	2010/09/08		91	%	40 - 130
			Decachlorobiphenyl	2010/09/08		103	%	40 - 130
			Aroclor 1016	2010/09/08	<0.01		ug/g	
			Aroclor 1221	2010/09/08	<0.01		ug/g	
			Aroclor 1232	2010/09/08	<0.01		ug/g	
			Aroclor 1242	2010/09/08	<0.01		ug/g	
			Aroclor 1248	2010/09/08	<0.01		ug/g	
			Aroclor 1254	2010/09/08	<0.01		ug/g	
			Aroclor 1260	2010/09/08	<0.01		ug/g	
			Aroclor 1262	2010/09/08	<0.01		ug/g	
			Aroclor 1268	2010/09/08	<0.01		ug/g	
			Total PCB	2010/09/08	<0.01		ug/g	
		RPD [GZ7896-01]	Aroclor 1016	2010/09/05	NC		%	50
			Aroclor 1221	2010/09/05	NC		%	50
			Aroclor 1232	2010/09/05	NC		%	50
			Aroclor 1242	2010/09/05	NC		%	50
			Aroclor 1248	2010/09/05	NC		%	50
			Aroclor 1254	2010/09/05	NC		%	50
			Aroclor 1260	2010/09/05	NC		%	50
			Aroclor 1262	2010/09/05	NC		%	50
			Aroclor 1268	2010/09/05	NC		%	50
			Total PCB	2010/09/05	NC		%	50
2257994	RUS	Matrix Spike	F4G-sg (Grav. Heavy Hydrocarbons)	2010/09/08		85	%	65 - 135
		Spiked Blank	F4G-sg (Grav. Heavy Hydrocarbons)	2010/09/08		97	%	65 - 135
		Method Blank	F4G-sg (Grav. Heavy Hydrocarbons)	2010/09/08	<100		ug/g	
		RPD	F4G-sg (Grav. Heavy Hydrocarbons)	2010/09/08	0		%	50
2258221	VIV	Matrix Spike	Acid Extractable Arsenic (As)	2010/09/08		95	%	75 - 125
			Acid Extractable Cadmium (Cd)	2010/09/08		97	%	75 - 125
			Acid Extractable Chromium (Cr)	2010/09/08		96	%	75 - 125
			Acid Extractable Cobalt (Co)	2010/09/08		93	%	75 - 125
			Acid Extractable Copper (Cu)	2010/09/08		90	%	75 - 125
			Acid Extractable Lead (Pb)	2010/09/08		NC	%	75 - 125
			Acid Extractable Nickel (Ni)	2010/09/08		93	%	75 - 125
			Acid Extractable Zinc (Zn)	2010/09/08		NC	%	75 - 125
		QC Standard	Acid Extractable Arsenic (As)	2010/09/08		95	%	75 - 125
			Acid Extractable Cadmium (Cd)	2010/09/08		96	%	75 - 125
			Acid Extractable Chromium (Cr)	2010/09/08		94	%	75 - 125
			Acid Extractable Cobalt (Co)	2010/09/08		95	%	75 - 125

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Quality Assurance Report (Continued)

Maxxam Job Number: MB0B9588

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2258221	VIV	QC Standard	Acid Extractable Copper (Cu)	2010/09/08		92	%	75 - 125
			Acid Extractable Lead (Pb)	2010/09/08		92	%	75 - 125
			Acid Extractable Nickel (Ni)	2010/09/08		97	%	75 - 125
			Acid Extractable Zinc (Zn)	2010/09/08		98	%	75 - 125
		Method Blank	Acid Extractable Arsenic (As)	2010/09/08	<1		ug/g	
			Acid Extractable Cadmium (Cd)	2010/09/08	<0.1		ug/g	
			Acid Extractable Chromium (Cr)	2010/09/08	<1		ug/g	
			Acid Extractable Cobalt (Co)	2010/09/08	<0.1		ug/g	
			Acid Extractable Copper (Cu)	2010/09/08	0.7, RDL=0.5		ug/g	
			Acid Extractable Lead (Pb)	2010/09/08	<1		ug/g	
			Acid Extractable Nickel (Ni)	2010/09/08	<0.5		ug/g	
			Acid Extractable Zinc (Zn)	2010/09/08	<5		ug/g	
		RPD	Acid Extractable Cadmium (Cd)	2010/09/08	NC		%	35
			Acid Extractable Chromium (Cr)	2010/09/08	1.7		%	35
			Acid Extractable Cobalt (Co)	2010/09/08	3.8		%	35
			Acid Extractable Copper (Cu)	2010/09/08	5.0		%	35
			Acid Extractable Lead (Pb)	2010/09/08	9.5		%	35
			Acid Extractable Nickel (Ni)	2010/09/08	5.9		%	35
			Acid Extractable Zinc (Zn)	2010/09/08	0.04		%	35
2258304	VIV	Matrix Spike [GZ7827-01]	Acid Extractable Arsenic (As)	2010/09/08		101	%	75 - 125
			Acid Extractable Cadmium (Cd)	2010/09/08		103	%	75 - 125
			Acid Extractable Chromium (Cr)	2010/09/08		NC	%	75 - 125
			Acid Extractable Cobalt (Co)	2010/09/08		97	%	75 - 125
			Acid Extractable Copper (Cu)	2010/09/08		NC	%	75 - 125
			Acid Extractable Lead (Pb)	2010/09/08		101	%	75 - 125
			Acid Extractable Nickel (Ni)	2010/09/08		NC	%	75 - 125
			Acid Extractable Zinc (Zn)	2010/09/08		NC	%	75 - 125
		QC Standard	Acid Extractable Arsenic (As)	2010/09/08		98	%	75 - 125
			Acid Extractable Cadmium (Cd)	2010/09/08		98	%	75 - 125
			Acid Extractable Chromium (Cr)	2010/09/08		98	%	75 - 125
			Acid Extractable Cobalt (Co)	2010/09/08		98	%	75 - 125
			Acid Extractable Copper (Cu)	2010/09/08		97	%	75 - 125
			Acid Extractable Lead (Pb)	2010/09/08		98	%	75 - 125
			Acid Extractable Nickel (Ni)	2010/09/08		100	%	75 - 125
			Acid Extractable Zinc (Zn)	2010/09/08		101	%	75 - 125
		Method Blank	Acid Extractable Arsenic (As)	2010/09/08	<1		ug/g	
			Acid Extractable Cadmium (Cd)	2010/09/08	<0.1		ug/g	
			Acid Extractable Chromium (Cr)	2010/09/08	<1		ug/g	
			Acid Extractable Cobalt (Co)	2010/09/08	<0.1		ug/g	
			Acid Extractable Copper (Cu)	2010/09/08	<0.5		ug/g	
			Acid Extractable Lead (Pb)	2010/09/08	<1		ug/g	
			Acid Extractable Nickel (Ni)	2010/09/08	<0.5		ug/g	
			Acid Extractable Zinc (Zn)	2010/09/08	<5		ug/g	
		RPD [GZ7827-01]	Acid Extractable Arsenic (As)	2010/09/08	NC		%	35
			Acid Extractable Cadmium (Cd)	2010/09/08	NC		%	35
			Acid Extractable Chromium (Cr)	2010/09/08	9.4		%	35
			Acid Extractable Cobalt (Co)	2010/09/08	4.9		%	35
			Acid Extractable Copper (Cu)	2010/09/08	14.8		%	35
			Acid Extractable Lead (Pb)	2010/09/08	16.0		%	35
			Acid Extractable Nickel (Ni)	2010/09/08	3.8		%	35
			Acid Extractable Zinc (Zn)	2010/09/08	11.3		%	35
2258644	VIV	Matrix Spike	Acid Extractable Arsenic (As)	2010/09/08		97	%	75 - 125
			Acid Extractable Cadmium (Cd)	2010/09/08		101	%	75 - 125
			Acid Extractable Chromium (Cr)	2010/09/08		99	%	75 - 125

AECOM Canada Ltd
Attention: Jenna Morrish
Client Project #: 60158564
P.O. #:
Site Location: SOIL/SEDIMENT DURBAN ISLAND SI

Quality Assurance Report (Continued)

Maxxam Job Number: MB0B9588

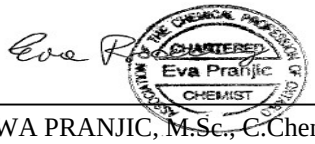
QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2258644 VIV	Matrix Spike	Acid Extractable Cobalt (Co)	2010/09/08		96	%	75 - 125
		Acid Extractable Copper (Cu)	2010/09/08		96	%	75 - 125
		Acid Extractable Lead (Pb)	2010/09/08		95	%	75 - 125
		Acid Extractable Nickel (Ni)	2010/09/08		95	%	75 - 125
		Acid Extractable Zinc (Zn)	2010/09/08		99	%	75 - 125
	QC Standard	Acid Extractable Arsenic (As)	2010/09/08		97	%	75 - 125
		Acid Extractable Cadmium (Cd)	2010/09/08		97	%	75 - 125
		Acid Extractable Chromium (Cr)	2010/09/08		97	%	75 - 125
		Acid Extractable Cobalt (Co)	2010/09/08		97	%	75 - 125
		Acid Extractable Copper (Cu)	2010/09/08		96	%	75 - 125
		Acid Extractable Lead (Pb)	2010/09/08		96	%	75 - 125
		Acid Extractable Nickel (Ni)	2010/09/08		97	%	75 - 125
		Acid Extractable Zinc (Zn)	2010/09/08		100	%	75 - 125
	Method Blank	Acid Extractable Arsenic (As)	2010/09/08	<1		ug/g	
		Acid Extractable Cadmium (Cd)	2010/09/08	<0.1		ug/g	
		Acid Extractable Chromium (Cr)	2010/09/08	<1		ug/g	
		Acid Extractable Cobalt (Co)	2010/09/08	<0.1		ug/g	
		Acid Extractable Copper (Cu)	2010/09/08	<0.5		ug/g	
		Acid Extractable Lead (Pb)	2010/09/08	<1		ug/g	
		Acid Extractable Nickel (Ni)	2010/09/08	<0.5		ug/g	
		Acid Extractable Zinc (Zn)	2010/09/08	<5		ug/g	
	RPD	Acid Extractable Arsenic (As)	2010/09/08	NC		%	35
		Acid Extractable Cadmium (Cd)	2010/09/08	NC		%	35
		Acid Extractable Chromium (Cr)	2010/09/08	4.5		%	35
		Acid Extractable Cobalt (Co)	2010/09/08	0.7		%	35
		Acid Extractable Copper (Cu)	2010/09/08	1.0		%	35
		Acid Extractable Lead (Pb)	2010/09/08	11.4		%	35
		Acid Extractable Nickel (Ni)	2010/09/08	2.3		%	35
		Acid Extractable Zinc (Zn)	2010/09/08	NC		%	35
2259341 RUS	Matrix Spike	F4G-sg (Grav. Heavy Hydrocarbons)	2010/09/09		93	%	65 - 135
	Spiked Blank	F4G-sg (Grav. Heavy Hydrocarbons)	2010/09/09		93	%	65 - 135
	Method Blank	F4G-sg (Grav. Heavy Hydrocarbons)	2010/09/09	<100		ug/g	
	RPD	F4G-sg (Grav. Heavy Hydrocarbons)	2010/09/09	11.7		%	50

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.
QC Standard: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.
NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was not sufficiently significant to permit a reliable recovery calculation.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.

Validation Signature Page

Maxxam Job #: B0B9588

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



EWA PRANJIC, M.Sc., C.Chem, Scientific Specialist

CHARLES ANCKER, B.Sc., M.Sc., C.Chem, Senior Analyst

MEDHAT RISKALLAH, Manager, Hydrocarbon Department

CRISTINA CARRIERE, Scientific Services

==========

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

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

Your Project #: 60158564
Site#: 60158564
Site Location: SOIL/SEDIMENT DURBAN ISLAND SI
Your C.O.C. #: 20350431, 203504-3

Attention: Jenna Morrish
AECOM Canada Ltd
2540 Kensington Rd NW
Calgary, AB
CANADA T2N3S3

Report Date: 2010/09/01

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B0B5128
Received: 2010/08/24, 09:16

Sample Matrix: Soil
Samples Received: 38

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Petroleum Hydro. CCME F1 & BTEX in Soil	1	2010/08/25	2010/08/26	CAM SOP-00315	CCME CWS
Petroleum Hydro. CCME F1 & BTEX in Soil (1)	4	2010/08/25	2010/08/25	CAM SOP-00315	CCME CWS
Petroleum Hydro. CCME F1 & BTEX in Soil (1)	24	2010/08/25	2010/08/26	CAM SOP-00315	CCME CWS
Petroleum Hydrocarbons F2-F4 in Soil	1	2010/08/25	2010/08/26	CAM SOP-00316	CCME CWS
Petroleum Hydrocarbons F2-F4 in Soil (1)	5	2010/08/25	2010/08/26	CAM SOP-00316	CCME CWS
Petroleum Hydrocarbons F2-F4 in Soil (1)	23	2010/08/25	2010/08/27	CAM SOP-00316	CCME CWS
Acid Extr. Metals (aqua regia) by ICPMS	32	2010/08/30	2010/08/31	CAM SOP-00447	EPA 6020
MOISTURE (1)	28	N/A	2010/08/25	CAM SOP-00445	MOE HANDBOOK(1983)
Moisture	10	N/A	2010/08/26	CAM SOP-00445	McKeague 2nd ed 1978
Polychlorinated Biphenyl in Soil	9	2010/08/25	2010/08/26	CAM SOP-00309	SW846 8082
Polychlorinated Biphenyl in Soil	15	2010/08/25	2010/08/27	CAM SOP-00309	SW846 8082
Polychlorinated Biphenyl in Soil	4	2010/08/25	2010/08/28	CAM SOP-00309	SW846 8082
Polychlorinated Biphenyl in Soil	2	2010/08/25	2010/08/30	CAM SOP-00309	SW846 8082
Polychlorinated Biphenyl in Soil	2	2010/08/26	2010/08/27	CAM SOP-00309	SW846 8082
Volatile Organic Compounds in Soil	1	2010/08/25	2010/08/27	CAM SOP-00226	EPA 8260 modified
Volatile Organic Compounds in Soil (1)	13	2010/08/25	2010/08/24	CAM SOP-00226	EPA 8260 modified
Volatile Organic Compounds in Soil (1)	15	2010/08/25	2010/08/25	CAM SOP-00226	EPA 8260 modified

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

(1) This test was performed by Maxxam Ottawa

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

MARIJANE CRUZ, Project Manager
Email: Marijane.Cruz@maxxamanalytics.com
Phone# (905) 817-5756

Your Project #: 60158564
Site#: 60158564
Site Location: SOIL/SEDIMENT DURBAN ISLAND SI
Your C.O.C. #: 20350431, 203504-3

Attention: Jenna Morrish
AECOM Canada Ltd
2540 Kensington Rd NW
Calgary, AB
CANADA T2N3S3

Report Date: 2010/09/01

CERTIFICATE OF ANALYSIS

==========

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 Mississauga Env: 6740 Campobello Road L5N 2L8 Telephone(905) 817-5700 FAX(905) 817-5777

Maxxam Job #: B0B5128
Report Date: 2010/09/01

AECOM Canada Ltd
Client Project #: 60158564
Project name: SOIL/SEDIMENT DURBAN ISLAND SI
Sampler Initials: JL

RESULTS OF ANALYSES OF SOIL

Maxxam ID		GX5374	GX5375	GX5376	GX5377	GX5378	GX5379	GX5380		
Sampling Date		2010/08/16	2010/08/16	2010/08/16	2010/08/16	2010/08/16	2010/08/16	2010/08/16		
COC Number		203504-3	203504-3	203504-3	203504-3	203504-3	203504-3	203504-3		
	Units	**10-0276**	**10-0277**	**10-0278**	**10-0279**	**10-0280**	**10-0281**	**10-0282**	**RDL**	**QC Batch**
Inorganics										
Moisture	%	9.7	8.5	4.3	8.1	6.1	6.7	7.1	0.2	2245383

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		GX5433	GX5436	GX5439			GX5440	GX5441	GX5463		
Sampling Date		2010/08/16	2010/08/16	2010/08/16			2010/08/16	2010/08/16	2010/08/16		
COC Number		203504-3	203504-3	203504-3			203504-3	203504-3	203504-3		
	Units	**10-0296**	**10-0299**	**10-0302**	**RDL**	**QC Batch**	**10-0303**	**10-0304**	**10-0307**	**RDL**	**QC Batch**
Inorganics											
Moisture	%	7	7	8	1	2246986	6.6	4.4	9.9	0.2	2245379

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		GX5464			GX5465		GX5466	GX5467	GX5468		
Sampling Date		2010/08/16			2010/08/16		2010/08/16	2010/08/16	2010/08/16		
COC Number		203504-3			203504-3		203504-3	203504-3	203504-3		
	Units	**10-0308**	**RDL**	**QC Batch**	**10-0309**	**QC Batch**	**10-0310**	**10-0311**	**10-0312**	**RDL**	**QC Batch**
Inorganics											
Moisture	%	8	1	2246986	10	2245379	7.3	7.6	3.8	0.2	2245383

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: B0B5128
Report Date: 2010/09/01

AECOM Canada Ltd
Client Project #: 60158564
Project name: SOIL/SEDIMENT DURBAN ISLAND SI
Sampler Initials: JL

RESULTS OF ANALYSES OF SOIL

Maxxam ID		GX5469			GX5470	GX5471	GX5507	GX5508		
Sampling Date		2010/08/16			2010/08/16	2010/08/16	2010/08/16	2010/08/16		
COC Number		203504-3			203504-3	203504-3	203504-3	203504-3		
	Units	**10-0313**	**RDL**	**QC Batch**	**10-0327**	**10-0328**	**10-0330**	**10-0331**	**RDL**	**QC Batch**
Inorganics										
Moisture	%	12	0.2	2245383	15	12	5	5	1	2246986

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		GX5510	GX5513	GX5514	GX5562	GX5563	GX5564	GX5580		
Sampling Date		2010/08/16	2010/08/16	2010/08/16	2010/08/16	2010/08/16	2010/08/16	2010/08/16		
COC Number		203504-3	203504-3	203504-3	203504-3	203504-3	203504-3	203504-3		
	Units	**10-0333**	**10-0336**	**10-0337**	**10-0346**	**10-0347**	**10-0348**	**10-0349**	**RDL**	**QC Batch**
Inorganics										
Moisture	%	9.7	15	11	12	8.2	6.4	6.2	0.2	2245379

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		GX5581	GX5582	GX5585	GX5586	GX5588	GX5589		
Sampling Date		2010/08/16	2010/08/16	2010/08/16	2010/08/16	2010/08/16	2010/08/16		
COC Number		203504-3	203504-3	203504-3	203504-3	203504-3	203504-3		
	Units	**10-0350**	**10-0351**	**10-0354**	**10-0355**	**10-0287**	**10-0288**	**RDL**	**QC Batch**
Inorganics									
Moisture	%	2.9	2.0	17	10	11	8.7	0.2	2245379

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: B0B5128
Report Date: 2010/09/01

AECOM Canada Ltd
Client Project #: 60158564
Project name: SOIL/SEDIMENT DURBAN ISLAND SI
Sampler Initials: JL

RESULTS OF ANALYSES OF SOIL

Maxxam ID		GX5594	GX5595		
Sampling Date		2010/08/16	2010/08/16		
COC Number		203504-3	203504-3		
	Units	**10-0293**	**10-0294**	**RDL**	**QC Batch**
Inorganics					
Moisture	%	6	6	1	2246986

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: B0B5128
Report Date: 2010/09/01

AECOM Canada Ltd
Client Project #: 60158564
Project name: SOIL/SEDIMENT DURBAN ISLAND SI
Sampler Initials: JL

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		GX5374		GX5375			GX5376		GX5377		
Sampling Date		2010/08/16		2010/08/16			2010/08/16		2010/08/16		
COC Number		203504-3		203504-3			203504-3		203504-3		
	Units	**10-0276**	**RDL**	**10-0277**	**RDL**	**QC Batch**	**10-0278**	**RDL**	**10-0279**	**RDL**	**QC Batch**
Metals											
Acid Extractable Arsenic (As)	ug/g	2	1	<1	1	2250426	2	1	<1	1	2250432
Acid Extractable Cadmium (Cd)	ug/g	0.3	0.1	<0.1	0.1	2250426	0.2	0.1	<0.1	0.1	2250432
Acid Extractable Chromium (Cr)	ug/g	79	1	130	1	2250426	81	1	130	1	2250432
Acid Extractable Cobalt (Co)	ug/g	26	0.1	64	0.1	2250426	23	0.1	59	0.1	2250432
Acid Extractable Copper (Cu)	ug/g	34	0.5	42	0.5	2250426	35	0.5	45	0.5	2250432
Acid Extractable Lead (Pb)	ug/g	22	1	4	1	2250426	41	1	4	1	2250432
Acid Extractable Nickel (Ni)	ug/g	100	0.5	920	5	2250426	63	0.5	790	5	2250432
Acid Extractable Zinc (Zn)	ug/g	210	5	68	5	2250426	190	5	63	5	2250432

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		GX5378		GX5379		GX5380		
Sampling Date		2010/08/16		2010/08/16		2010/08/16		
COC Number		203504-3		203504-3		203504-3		
	Units	**10-0280**	**QC Batch**	**10-0281**	**RDL**	**10-0282**	**RDL**	**QC Batch**
Metals								
Acid Extractable Arsenic (As)	ug/g	2	2250426	2	1	<1	1	2250432
Acid Extractable Cadmium (Cd)	ug/g	0.2	2250426	0.2	0.1	<0.1	0.1	2250432
Acid Extractable Chromium (Cr)	ug/g	84	2250426	81	1	130	1	2250432
Acid Extractable Cobalt (Co)	ug/g	29	2250426	25	0.1	59	0.1	2250432
Acid Extractable Copper (Cu)	ug/g	35	2250426	34	0.5	47	0.5	2250432
Acid Extractable Lead (Pb)	ug/g	26	2250426	19	1	4	1	2250432
Acid Extractable Nickel (Ni)	ug/g	140	2250426	130	0.5	800	5	2250432
Acid Extractable Zinc (Zn)	ug/g	170	2250426	160	5	59	5	2250432

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: B0B5128
Report Date: 2010/09/01

AECOM Canada Ltd
Client Project #: 60158564
Project name: SOIL/SEDIMENT DURBAN ISLAND SI
Sampler Initials: JL

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		GX5433	GX5436		GX5439			GX5440		
Sampling Date		2010/08/16	2010/08/16		2010/08/16			2010/08/16		
COC Number		203504-3	203504-3		203504-3			203504-3		
	Units	**10-0296**	**10-0299**	**QC Batch**	**10-0302**	**RDL**	**QC Batch**	**10-0303**	**RDL**	**QC Batch**
Metals										
Acid Extractable Arsenic (As)	ug/g	2	2	2250426	2	1	2250432	1	1	2250426
Acid Extractable Cadmium (Cd)	ug/g	1.3	0.3	2250426	0.4	0.1	2250432	0.2	0.1	2250426
Acid Extractable Chromium (Cr)	ug/g	72	66	2250426	93	1	2250432	140	1	2250426
Acid Extractable Cobalt (Co)	ug/g	22	19	2250426	34	0.1	2250432	57	0.1	2250426
Acid Extractable Copper (Cu)	ug/g	39	32	2250426	37	0.5	2250432	49	0.5	2250426
Acid Extractable Lead (Pb)	ug/g	25	18	2250426	13	1	2250432	9	1	2250426
Acid Extractable Nickel (Ni)	ug/g	150	94	2250426	370	0.5	2250432	720	5	2250426
Acid Extractable Zinc (Zn)	ug/g	130	110	2250426	91	5	2250432	67	5	2250426

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		GX5441		GX5463		GX5464	GX5465		
Sampling Date		2010/08/16		2010/08/16		2010/08/16	2010/08/16		
COC Number		203504-3		203504-3		203504-3	203504-3		
	Units	**10-0304**	**QC Batch**	**10-0307**	**QC Batch**	**10-0308**	**10-0309**	**RDL**	**QC Batch**
Metals									
Acid Extractable Arsenic (As)	ug/g	1	2250432	<1	2250426	<1	<1	1	2250432
Acid Extractable Cadmium (Cd)	ug/g	0.1	2250432	<0.1	2250426	<0.1	<0.1	0.1	2250432
Acid Extractable Chromium (Cr)	ug/g	120	2250432	160	2250426	160	140	1	2250432
Acid Extractable Cobalt (Co)	ug/g	47	2250432	71	2250426	67	61	0.1	2250432
Acid Extractable Copper (Cu)	ug/g	53	2250432	43	2250426	51	43	0.5	2250432
Acid Extractable Lead (Pb)	ug/g	8	2250432	1	2250426	1	2	1	2250432
Acid Extractable Nickel (Ni)	ug/g	570	2250432	960	2250426	920	850	5	2250432
Acid Extractable Zinc (Zn)	ug/g	63	2250432	51	2250426	52	48	5	2250432

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: B0B5128
Report Date: 2010/09/01

AECOM Canada Ltd
Client Project #: 60158564
Project name: SOIL/SEDIMENT DURBAN ISLAND SI
Sampler Initials: JL

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		GX5466	GX5467	GX5468	GX5469		GX5470		
Sampling Date		2010/08/16	2010/08/16	2010/08/16	2010/08/16		2010/08/16		
COC Number		203504-3	203504-3	203504-3	203504-3		203504-3		
	Units	**10-0310**	**10-0311**	**10-0312**	**10-0313**	**RDL**	**10-0327**	**RDL**	**QC Batch**
Metals									
Acid Extractable Arsenic (As)	ug/g	<1	<1	<1	<1	1	3	1	2250432
Acid Extractable Cadmium (Cd)	ug/g	0.1	0.1	<0.1	<0.1	0.1	0.5	0.1	2250432
Acid Extractable Chromium (Cr)	ug/g	160	150	180	180	1	62	1	2250432
Acid Extractable Cobalt (Co)	ug/g	65	63	69	67	0.1	13	0.1	2250432
Acid Extractable Copper (Cu)	ug/g	43	44	52	49	0.5	22	0.5	2250432
Acid Extractable Lead (Pb)	ug/g	3	3	1	1	1	7	1	2250432
Acid Extractable Nickel (Ni)	ug/g	930	910	940	930	5	60	0.5	2250432
Acid Extractable Zinc (Zn)	ug/g	64	58	49	47	5	61	5	2250432

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		GX5471	GX5507		GX5508		GX5510		
Sampling Date		2010/08/16	2010/08/16		2010/08/16		2010/08/16		
COC Number		203504-3	203504-3		203504-3		203504-3		
	Units	**10-0328**	**10-0330**	**QC Batch**	**10-0331**	**QC Batch**	**10-0333**	**RDL**	**QC Batch**
Metals									
Acid Extractable Arsenic (As)	ug/g	4	2	2250432	2	2250426	3	1	2250432
Acid Extractable Cadmium (Cd)	ug/g	<0.1	<0.1	2250432	<0.1	2250426	<0.1	0.1	2250432
Acid Extractable Chromium (Cr)	ug/g	71	48	2250432	47	2250426	62	1	2250432
Acid Extractable Cobalt (Co)	ug/g	14	11	2250432	11	2250426	14	0.1	2250432
Acid Extractable Copper (Cu)	ug/g	26	17	2250432	16	2250426	22	0.5	2250432
Acid Extractable Lead (Pb)	ug/g	7	6	2250432	6	2250426	7	1	2250432
Acid Extractable Nickel (Ni)	ug/g	64	55	2250432	56	2250426	63	0.5	2250432
Acid Extractable Zinc (Zn)	ug/g	66	51	2250432	45	2250426	56	5	2250432

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: B0B5128
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AECOM Canada Ltd
Client Project #: 60158564
Project name: SOIL/SEDIMENT DURBAN ISLAND SI
Sampler Initials: JL

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		GX5513		GX5514	GX5562		GX5563		
Sampling Date		2010/08/16		2010/08/16	2010/08/16		2010/08/16		
COC Number		203504-3		203504-3	203504-3		203504-3		
	Units	**10-0336**	**QC Batch**	**10-0337**	**10-0346**	**QC Batch**	**10-0347**	**RDL**	**QC Batch**
Metals									
Acid Extractable Arsenic (As)	ug/g	3	2250432	3	2	2250426	3	1	2250432
Acid Extractable Cadmium (Cd)	ug/g	<0.1	2250432	<0.1	<0.1	2250426	<0.1	0.1	2250432
Acid Extractable Chromium (Cr)	ug/g	72	2250432	78	56	2250426	56	1	2250432
Acid Extractable Cobalt (Co)	ug/g	15	2250432	15	12	2250426	13	0.1	2250432
Acid Extractable Copper (Cu)	ug/g	26	2250432	27	24	2250426	23	0.5	2250432
Acid Extractable Lead (Pb)	ug/g	7	2250432	8	28	2250426	23	1	2250432
Acid Extractable Nickel (Ni)	ug/g	66	2250432	61	57	2250426	76	0.5	2250432
Acid Extractable Zinc (Zn)	ug/g	66	2250432	68	67	2250426	54	5	2250432

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		GX5588		GX5589		GX5594		GX5595		
Sampling Date		2010/08/16		2010/08/16		2010/08/16		2010/08/16		
COC Number		203504-3		203504-3		203504-3		203504-3		
	Units	**10-0287**	**QC Batch**	**10-0288**	**RDL**	**10-0293**	**QC Batch**	**10-0294**	**RDL**	**QC Batch**
Metals										
Acid Extractable Arsenic (As)	ug/g	<1	2250426	<1	1	3	2250432	3	1	2250426
Acid Extractable Cadmium (Cd)	ug/g	<0.1	2250426	<0.1	0.1	0.7	2250432	0.4	0.1	2250426
Acid Extractable Chromium (Cr)	ug/g	140	2250426	120	1	77	2250432	88	1	2250426
Acid Extractable Cobalt (Co)	ug/g	71	2250426	61	0.1	26	2250432	26	0.1	2250426
Acid Extractable Copper (Cu)	ug/g	54	2250426	48	0.5	47	2250432	45	0.5	2250426
Acid Extractable Lead (Pb)	ug/g	3	2250426	2	1	21	2250432	30	1	2250426
Acid Extractable Nickel (Ni)	ug/g	710	2250426	830	5	180	2250432	190	0.5	2250426
Acid Extractable Zinc (Zn)	ug/g	54	2250426	48	5	120	2250432	150	5	2250426

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: B0B5128
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AECOM Canada Ltd
Client Project #: 60158564
Project name: SOIL/SEDIMENT DURBAN ISLAND SI
Sampler Initials: JL

VOLATILE ORGANICS BY GC/MS (SOIL)

Maxxam ID		GX5374	GX5375	GX5376	GX5377	GX5378	GX5379		
Sampling Date		2010/08/16	2010/08/16	2010/08/16	2010/08/16	2010/08/16	2010/08/16		
COC Number		203504-3	203504-3	203504-3	203504-3	203504-3	203504-3		
	Units	**10-0276**	**10-0277**	**10-0278**	**10-0279**	**10-0280**	**10-0281**	**RDL**	**QC Batch**
Volatile Organics									
Benzene	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	2245245
Ethylbenzene	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	2245245
Toluene	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	2245245
p+m-Xylene	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	2245245
o-Xylene	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	2245245
Xylene (Total)	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	2245245
Surrogate Recovery (%)									
4-Bromofluorobenzene	%	107	112	109	116	113	111	N/A	2245245
D4-1,2-Dichloroethane	%	93	91	91	106	104	104	N/A	2245245
D8-Toluene	%	103	104	102	98	100	100	N/A	2245245

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

Maxxam Job #: B0B5128
Report Date: 2010/09/01

AECOM Canada Ltd
Client Project #: 60158564
Project name: SOIL/SEDIMENT DURBAN ISLAND SI
Sampler Initials: JL

VOLATILE ORGANICS BY GC/MS (SOIL)

Maxxam ID		GX5380		GX5440	GX5441	GX5463		
Sampling Date		2010/08/16		2010/08/16	2010/08/16	2010/08/16		
COC Number		203504-3		203504-3	203504-3	203504-3		
	Units	**10-0282**	**QC Batch**	**10-0303**	**10-0304**	**10-0307**	**RDL**	**QC Batch**
Volatile Organics								
Benzene	ug/g	<0.002	2245245	<0.002	<0.002	<0.002	0.002	2245265
Ethylbenzene	ug/g	<0.002	2245245	<0.002	<0.002	<0.002	0.002	2245265
Toluene	ug/g	<0.002	2245245	<0.002	<0.002	<0.002	0.002	2245265
p+m-Xylene	ug/g	<0.002	2245245	<0.002	<0.002	<0.002	0.002	2245265
o-Xylene	ug/g	<0.002	2245245	<0.002	<0.002	<0.002	0.002	2245265
Xylene (Total)	ug/g	<0.002	2245245	<0.002	<0.002	<0.002	0.002	2245265
Surrogate Recovery (%)								
4-Bromofluorobenzene	%	112	2245245	102	106	106	N/A	2245265
D4-1,2-Dichloroethane	%	108	2245245	97	94	98	N/A	2245265
D8-Toluene	%	102	2245245	108	105	104	N/A	2245265

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

Maxxam Job #: B0B5128
Report Date: 2010/09/01

AECOM Canada Ltd
Client Project #: 60158564
Project name: SOIL/SEDIMENT DURBAN ISLAND SI
Sampler Initials: JL

VOLATILE ORGANICS BY GC/MS (SOIL)

Maxxam ID		GX5464		GX5465		GX5466	GX5467		
Sampling Date		2010/08/16		2010/08/16		2010/08/16	2010/08/16		
COC Number		203504-3		203504-3		203504-3	203504-3		
	Units	**10-0308**	**QC Batch**	**10-0309**	**QC Batch**	**10-0310**	**10-0311**	**RDL**	**QC Batch**
Volatile Organics									
Benzene	ug/g	<0.002	2245410	<0.002	2245265	<0.002	<0.002	0.002	2245245
Ethylbenzene	ug/g	<0.002	2245410	<0.002	2245265	<0.002	<0.002	0.002	2245245
Toluene	ug/g	<0.002	2245410	<0.002	2245265	<0.002	<0.002	0.002	2245245
p+m-Xylene	ug/g	N/A	N/A	<0.002	2245265	<0.002	<0.002	0.002	2245245
o-Xylene	ug/g	N/A	N/A	<0.002	2245265	<0.002	<0.002	0.002	2245245
p+m-Xylene	ug/g	<0.002	2245410	N/A	N/A	N/A	N/A	0.002	N/A
Xylene (Total)	ug/g	N/A	N/A	<0.002	2245265	<0.002	<0.002	0.002	2245245
o-Xylene	ug/g	<0.002	2245410	N/A	N/A	N/A	N/A	0.002	N/A
Xylene (Total)	ug/g	<0.002	2245410	N/A	N/A	N/A	N/A	0.002	N/A
Surrogate Recovery (%)									
4-Bromofluorobenzene	%	96	2245410	N/A	N/A	N/A	N/A	N/A	N/A
D4-1,2-Dichloroethane	%	103	2245410	N/A	N/A	N/A	N/A	N/A	N/A
D8-Toluene	%	97	2245410	N/A	N/A	N/A	N/A	N/A	N/A
4-Bromofluorobenzene	%	N/A	N/A	105	2245265	98	101	N/A	2245245
D4-1,2-Dichloroethane	%	N/A	N/A	95	2245265	98	97	N/A	2245245
D8-Toluene	%	N/A	N/A	104	2245265	104	114	N/A	2245245

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

Maxxam Job #: B0B5128
Report Date: 2010/09/01

AECOM Canada Ltd
Client Project #: 60158564
Project name: SOIL/SEDIMENT DURBAN ISLAND SI
Sampler Initials: JL

VOLATILE ORGANICS BY GC/MS (SOIL)

Maxxam ID		GX5468	GX5469		GX5510	GX5513	GX5514		
Sampling Date		2010/08/16	2010/08/16		2010/08/16	2010/08/16	2010/08/16		
COC Number		203504-3	203504-3		203504-3	203504-3	203504-3		
	Units	**10-0312**	**10-0313**	**QC Batch**	**10-0333**	**10-0336**	**10-0337**	**RDL**	**QC Batch**
Volatile Organics									
Benzene	ug/g	<0.002	<0.002	2245245	<0.002	<0.002	<0.002	0.002	2245265
Ethylbenzene	ug/g	<0.002	<0.002	2245245	<0.002	<0.002	<0.002	0.002	2245265
Toluene	ug/g	<0.002	<0.002	2245245	<0.002	<0.002	<0.002	0.002	2245265
p+m-Xylene	ug/g	<0.002	<0.002	2245245	<0.002	<0.002	<0.002	0.002	2245265
o-Xylene	ug/g	<0.002	<0.002	2245245	<0.002	<0.002	<0.002	0.002	2245265
Xylene (Total)	ug/g	<0.002	<0.002	2245245	<0.002	<0.002	<0.002	0.002	2245265
Surrogate Recovery (%)									
4-Bromofluorobenzene	%	118	98	2245245	104	99	97	N/A	2245265
D4-1,2-Dichloroethane	%	85	98	2245245	97	94	96	N/A	2245265
D8-Toluene	%	107	104	2245245	108	110	112	N/A	2245265

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

Maxxam Job #: B0B5128
Report Date: 2010/09/01

AECOM Canada Ltd
Client Project #: 60158564
Project name: SOIL/SEDIMENT DURBAN ISLAND SI
Sampler Initials: JL

VOLATILE ORGANICS BY GC/MS (SOIL)

Maxxam ID		GX5562	GX5563	GX5564	GX5580	GX5581	GX5582		
Sampling Date		2010/08/16	2010/08/16	2010/08/16	2010/08/16	2010/08/16	2010/08/16		
COC Number		203504-3	203504-3	203504-3	203504-3	203504-3	203504-3		
	Units	**10-0346**	**10-0347**	**10-0348**	**10-0349**	**10-0350**	**10-0351**	**RDL**	**QC Batch**
Volatile Organics									
Benzene	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	2245265
Ethylbenzene	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	2245265
Toluene	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	2245265
p+m-Xylene	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	2245265
o-Xylene	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	2245265
Xylene (Total)	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	2245265
Surrogate Recovery (%)									
4-Bromofluorobenzene	%	101	56 (1)	101	90	113	107	N/A	2245265
D4-1,2-Dichloroethane	%	97	88	86	102	87	96	N/A	2245265
D8-Toluene	%	112	66	108	110	102	106	N/A	2245265

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

Maxxam Job #: B0B5128
Report Date: 2010/09/01

AECOM Canada Ltd
Client Project #: 60158564
Project name: SOIL/SEDIMENT DURBAN ISLAND SI
Sampler Initials: JL

VOLATILE ORGANICS BY GC/MS (SOIL)

Maxxam ID		GX5585	GX5586	GX5588	GX5589		
Sampling Date		2010/08/16	2010/08/16	2010/08/16	2010/08/16		
COC Number		203504-3	203504-3	203504-3	203504-3		
	Units	**10-0354**	**10-0355**	**10-0287**	**10-0288**	**RDL**	**QC Batch**
Volatile Organics							
Benzene	ug/g	<0.002	<0.002	<0.002	<0.002	0.002	2245265
Ethylbenzene	ug/g	<0.002	<0.002	<0.002	<0.002	0.002	2245265
Toluene	ug/g	<0.002	0.002	<0.002	<0.002	0.002	2245265
p+m-Xylene	ug/g	<0.002	<0.002	<0.002	<0.002	0.002	2245265
o-Xylene	ug/g	<0.002	<0.002	<0.002	<0.002	0.002	2245265
Xylene (Total)	ug/g	<0.002	<0.002	<0.002	<0.002	0.002	2245265
Surrogate Recovery (%)							
4-Bromofluorobenzene	%	95	93	103	107	N/A	2245265
D4-1,2-Dichloroethane	%	97	99	95	96	N/A	2245265
D8-Toluene	%	112	114	107	104	N/A	2245265

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

Maxxam Job #: B0B5128
Report Date: 2010/09/01

AECOM Canada Ltd
Client Project #: 60158564
Project name: SOIL/SEDIMENT DURBAN ISLAND SI
Sampler Initials: JL

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		GX5374	GX5375	GX5376	GX5377	GX5378	GX5379		
Sampling Date		2010/08/16	2010/08/16	2010/08/16	2010/08/16	2010/08/16	2010/08/16		
COC Number		203504-3	203504-3	203504-3	203504-3	203504-3	203504-3		
	Units	**10-0276**	**10-0277**	**10-0278**	**10-0279**	**10-0280**	**10-0281**	**RDL**	**QC Batch**
BTEX & F1 Hydrocarbons									
F1 (C6-C10)	ug/g	<10	<10	<10	<10	<10	<10	10	2244318
F1 (C6-C10) - BTEX	ug/g	<10	<10	<10	<10	<10	<10	10	2244318
F2-F4 Hydrocarbons									
F2 (C10-C16 Hydrocarbons)	ug/g	<10	<10	13	230	<10	<10	10	2245279
F3 (C16-C34 Hydrocarbons)	ug/g	<10	<10	100	79	<10	<10	10	2245279
F4 (C34-C50 Hydrocarbons)	ug/g	<10	<10	<10	<10	<10	<10	10	2245279
Reached Baseline at C50	ug/g	Yes	Yes	Yes	Yes	Yes	Yes	N/A	2245279
Surrogate Recovery (%)									
1,4-Difluorobenzene	%	100	100	101	100	99	100	N/A	2244318
4-Bromofluorobenzene	%	98	93	98	103	97	96	N/A	2244318
D10-Ethylbenzene	%	101	94	100	98	101	100	N/A	2244318
D4-1,2-Dichloroethane	%	103	105	105	105	102	105	N/A	2244318
o-Terphenyl	%	114	113	102	106	118	115	N/A	2245279

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

Maxxam Job #: B0B5128
Report Date: 2010/09/01

AECOM Canada Ltd
Client Project #: 60158564
Project name: SOIL/SEDIMENT DURBAN ISLAND SI
Sampler Initials: JL

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		GX5380		GX5440	GX5441	GX5463		
Sampling Date		2010/08/16		2010/08/16	2010/08/16	2010/08/16		
COC Number		203504-3		203504-3	203504-3	203504-3		
	Units	**10-0282**	**QC Batch**	**10-0303**	**10-0304**	**10-0307**	**RDL**	**QC Batch**
BTEX & F1 Hydrocarbons								
F1 (C6-C10)	ug/g	<10	2244318	<10	<10	<10	10	2245291
F1 (C6-C10) - BTEX	ug/g	<10	2244318	<10	<10	<10	10	2245291
F2-F4 Hydrocarbons								
F2 (C10-C16 Hydrocarbons)	ug/g	<10	2245279	<10	<10	<10	10	2245050
F3 (C16-C34 Hydrocarbons)	ug/g	99	2245279	66	27	<10	10	2245050
F4 (C34-C50 Hydrocarbons)	ug/g	<10	2245279	<10	<10	<10	10	2245050
Reached Baseline at C50	ug/g	Yes	2245279	Yes	Yes	Yes	N/A	2245050
Surrogate Recovery (%)								
1,4-Difluorobenzene	%	102	2244318	100	100	100	N/A	2245291
4-Bromofluorobenzene	%	99	2244318	97	97	100	N/A	2245291
D10-Ethylbenzene	%	100	2244318	104	96	98	N/A	2245291
D4-1,2-Dichloroethane	%	105	2244318	106	105	107	N/A	2245291
o-Terphenyl	%	119	2245279	99	106	96	N/A	2245050

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

Maxxam Job #: B0B5128
Report Date: 2010/09/01

AECOM Canada Ltd
Client Project #: 60158564
Project name: SOIL/SEDIMENT DURBAN ISLAND SI
Sampler Initials: JL

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		GX5464		GX5465		GX5466		GX5467		
Sampling Date		2010/08/16		2010/08/16		2010/08/16		2010/08/16		
COC Number		203504-3		203504-3		203504-3		203504-3		
	Units	**10-0308**	**QC Batch**	**10-0309**	**QC Batch**	**10-0310**	**QC Batch**	**10-0311**	**RDL**	**QC Batch**
BTEX & F1 Hydrocarbons										
F1 (C6-C10)	ug/g	<10	2246236	<10	2245291	<10	2244318	<10	10	2245291
F1 (C6-C10) - BTEX	ug/g	<10	2246236	<10	2245291	<10	2244318	<10	10	2245291
F2-F4 Hydrocarbons										
F2 (C10-C16 Hydrocarbons)	ug/g	<10	2246178	16	2245050	1700	2245050	2000	10	2245050
F3 (C16-C34 Hydrocarbons)	ug/g	<10	2246178	130	2245050	4000	2245050	4300	10	2245050
F4 (C34-C50 Hydrocarbons)	ug/g	<10	2246178	11	2245050	490	2245050	580	10	2245050
Reached Baseline at C50	ug/g	Yes	2246178	Yes	2245050	Yes	2245050	Yes	N/A	2245050
Surrogate Recovery (%)										
1,4-Difluorobenzene	%	99	2246236	N/A	N/A	N/A	N/A	N/A	N/A	N/A
4-Bromofluorobenzene	%	101	2246236	N/A	N/A	N/A	N/A	N/A	N/A	N/A
D10-Ethylbenzene	%	103	2246236	N/A	N/A	N/A	N/A	N/A	N/A	N/A
D4-1,2-Dichloroethane	%	101	2246236	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1,4-Difluorobenzene	%	N/A	N/A	101	2245291	101	2244318	101	N/A	2245291
4-Bromofluorobenzene	%	N/A	N/A	94	2245291	103	2244318	99	N/A	2245291
D10-Ethylbenzene	%	N/A	N/A	77	2245291	102	2244318	102	N/A	2245291
D4-1,2-Dichloroethane	%	N/A	N/A	107	2245291	107	2244318	105	N/A	2245291
o-Terphenyl	%	91	2246178	99	2245050	115	2245050	124	N/A	2245050

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

Maxxam Job #: B0B5128
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AECOM Canada Ltd
Client Project #: 60158564
Project name: SOIL/SEDIMENT DURBAN ISLAND SI
Sampler Initials: JL

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		GX5468		GX5469		GX5510	GX5513		
Sampling Date		2010/08/16		2010/08/16		2010/08/16	2010/08/16		
COC Number		203504-3		203504-3		203504-3	203504-3		
	Units	**10-0312**	**QC Batch**	**10-0313**	**QC Batch**	**10-0333**	**10-0336**	**RDL**	**QC Batch**
BTEX & F1 Hydrocarbons									
F1 (C6-C10)	ug/g	<10	2245291	12	2244318	<10	<10	10	2245291
F1 (C6-C10) - BTEX	ug/g	<10	2245291	12	2244318	<10	<10	10	2245291
F2-F4 Hydrocarbons									
F2 (C10-C16 Hydrocarbons)	ug/g	<10	2245050	950	2245279	<10	<10	10	2245050
F3 (C16-C34 Hydrocarbons)	ug/g	<10	2245050	56	2245279	<10	<10	10	2245050
F4 (C34-C50 Hydrocarbons)	ug/g	<10	2245050	<10	2245279	<10	<10	10	2245050
Reached Baseline at C50	ug/g	Yes	2245050	Yes	2245279	Yes	Yes	N/A	2245050
Surrogate Recovery (%)									
1,4-Difluorobenzene	%	98	2245291	97	2244318	98	99	N/A	2245291
4-Bromofluorobenzene	%	95	2245291	100	2244318	97	98	N/A	2245291
D10-Ethylbenzene	%	94	2245291	98	2244318	94	97	N/A	2245291
D4-1,2-Dichloroethane	%	100	2245291	100	2244318	100	104	N/A	2245291
o-Terphenyl	%	106	2245050	113	2245279	105	107	N/A	2245050

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

Maxxam Job #: B0B5128
Report Date: 2010/09/01

AECOM Canada Ltd
Client Project #: 60158564
Project name: SOIL/SEDIMENT DURBAN ISLAND SI
Sampler Initials: JL

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		GX5514	GX5562	GX5563	GX5564	GX5580	GX5581		
Sampling Date		2010/08/16	2010/08/16	2010/08/16	2010/08/16	2010/08/16	2010/08/16		
COC Number		203504-3	203504-3	203504-3	203504-3	203504-3	203504-3		
	Units	**10-0337**	**10-0346**	**10-0347**	**10-0348**	**10-0349**	**10-0350**	**RDL**	**QC Batch**
BTEX & F1 Hydrocarbons									
F1 (C6-C10)	ug/g	<10	<10	130	<10	<10	<10	10	2245291
F1 (C6-C10) - BTEX	ug/g	<10	<10	130	<10	<10	<10	10	2245291
F2-F4 Hydrocarbons									
F2 (C10-C16 Hydrocarbons)	ug/g	<10	1100	5200	<10	2300	<10	10	2245050
F3 (C16-C34 Hydrocarbons)	ug/g	<10	360	420	<10	350	<10	10	2245050
F4 (C34-C50 Hydrocarbons)	ug/g	<10	<10	<10	<10	<10	<10	10	2245050
Reached Baseline at C50	ug/g	Yes	Yes	Yes	Yes	Yes	Yes	N/A	2245050
Surrogate Recovery (%)									
1,4-Difluorobenzene	%	100	100	98	97	97	97	N/A	2245291
4-Bromofluorobenzene	%	101	104	96	99	105	97	N/A	2245291
D10-Ethylbenzene	%	98	97	102	102	101	101	N/A	2245291
D4-1,2-Dichloroethane	%	107	105	98	101	100	101	N/A	2245291
o-Terphenyl	%	97	103	119	85	95	102	N/A	2245050

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

Maxxam Job #: B0B5128
Report Date: 2010/09/01

AECOM Canada Ltd
Client Project #: 60158564
Project name: SOIL/SEDIMENT DURBAN ISLAND SI
Sampler Initials: JL

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		GX5582	GX5585	GX5586	GX5588	GX5589		
Sampling Date		2010/08/16	2010/08/16	2010/08/16	2010/08/16	2010/08/16		
COC Number		203504-3	203504-3	203504-3	203504-3	203504-3		
	Units	**10-0351**	**10-0354**	**10-0355**	**10-0287**	**10-0288**	**RDL**	**QC Batch**
BTEX & F1 Hydrocarbons								
F1 (C6-C10)	ug/g	<10	<10	<10	<10	<10	10	2245291
F1 (C6-C10) - BTEX	ug/g	<10	<10	<10	<10	<10	10	2245291
F2-F4 Hydrocarbons								
F2 (C10-C16 Hydrocarbons)	ug/g	<10	<10	<10	<10	<10	10	2245050
F3 (C16-C34 Hydrocarbons)	ug/g	<10	<10	<10	40	<10	10	2245050
F4 (C34-C50 Hydrocarbons)	ug/g	<10	<10	<10	<10	<10	10	2245050
Reached Baseline at C50	ug/g	Yes	Yes	Yes	Yes	Yes	N/A	2245050
Surrogate Recovery (%)								
1,4-Difluorobenzene	%	99	98	99	99	101	N/A	2245291
4-Bromofluorobenzene	%	98	98	98	93	103	N/A	2245291
D10-Ethylbenzene	%	102	91	101	98	97	N/A	2245291
D4-1,2-Dichloroethane	%	101	102	102	102	106	N/A	2245291
o-Terphenyl	%	99	98	88	90	96	N/A	2245050

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

Maxxam Job #: B0B5128
Report Date: 2010/09/01

AECOM Canada Ltd
Client Project #: 60158564
Project name: SOIL/SEDIMENT DURBAN ISLAND SI
Sampler Initials: JL

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		GX5374		GX5375		GX5376		GX5377		
Sampling Date		2010/08/16		2010/08/16		2010/08/16		2010/08/16		
COC Number		203504-3		203504-3		203504-3		203504-3		
	Units	**10-0276**	**QC Batch**	**10-0277**	**QC Batch**	**10-0278**	**QC Batch**	**10-0279**	**RDL**	**QC Batch**
PCBs										
Aroclor 1016	ug/g	<0.01	2246065	<0.01	2246024	<0.01	2246065	<0.01	0.01	2246024
Aroclor 1221	ug/g	<0.01	2246065	<0.01	2246024	<0.01	2246065	<0.01	0.01	2246024
Aroclor 1232	ug/g	<0.01	2246065	<0.01	2246024	<0.01	2246065	<0.01	0.01	2246024
Aroclor 1242	ug/g	<0.01	2246065	<0.01	2246024	<0.01	2246065	<0.01	0.01	2246024
Aroclor 1248	ug/g	<0.01	2246065	<0.01	2246024	<0.01	2246065	<0.01	0.01	2246024
Aroclor 1254	ug/g	<0.01	2246065	<0.01	2246024	<0.01	2246065	<0.01	0.01	2246024
Aroclor 1260	ug/g	<0.01	2246065	<0.01	2246024	<0.01	2246065	<0.01	0.01	2246024
Aroclor 1262	ug/g	<0.01	2246065	<0.01	2246024	<0.01	2246065	<0.01	0.01	2246024
Aroclor 1268	ug/g	<0.01	2246065	<0.01	2246024	<0.01	2246065	<0.01	0.01	2246024
Total PCB	ug/g	<0.01	2246065	<0.01	2246024	<0.01	2246065	<0.01	0.01	2246024
Surrogate Recovery (%)										
2,4,5,6-Tetrachloro-m-xylene	%	61	2246065	64	2246024	57	2246065	68	N/A	2246024
Decachlorobiphenyl	%	107	2246065	105	2246024	98	2246065	96	N/A	2246024

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

Maxxam Job #: B0B5128
Report Date: 2010/09/01

AECOM Canada Ltd
Client Project #: 60158564
Project name: SOIL/SEDIMENT DURBAN ISLAND SI
Sampler Initials: JL

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		GX5378	GX5379	GX5380	GX5433	GX5436	GX5439		
Sampling Date		2010/08/16	2010/08/16	2010/08/16	2010/08/16	2010/08/16	2010/08/16		
COC Number		203504-3	203504-3	203504-3	203504-3	203504-3	203504-3		
	Units	**10-0280**	**10-0281**	**10-0282**	**10-0296**	**10-0299**	**10-0302**	**RDL**	**QC Batch**
PCBs									
Aroclor 1016	ug/g	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	2246065
Aroclor 1221	ug/g	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	2246065
Aroclor 1232	ug/g	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	2246065
Aroclor 1242	ug/g	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	2246065
Aroclor 1248	ug/g	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	2246065
Aroclor 1254	ug/g	<0.01	<0.01	<0.01	0.60	0.16	0.31	0.01	2246065
Aroclor 1260	ug/g	<0.01	<0.01	<0.01	0.03	<0.01	0.02	0.01	2246065
Aroclor 1262	ug/g	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	2246065
Aroclor 1268	ug/g	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	2246065
Total PCB	ug/g	<0.01	<0.01	<0.01	0.63	0.16	0.33	0.01	2246065
Surrogate Recovery (%)									
2,4,5,6-Tetrachloro-m-xylene	%	79	73	65	96	80	92	N/A	2246065
Decachlorobiphenyl	%	111	109	103	113	112	107	N/A	2246065

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

Maxxam Job #: B0B5128
Report Date: 2010/09/01

AECOM Canada Ltd
Client Project #: 60158564
Project name: SOIL/SEDIMENT DURBAN ISLAND SI
Sampler Initials: JL

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		GX5440	GX5441		GX5463		GX5464		
Sampling Date		2010/08/16	2010/08/16		2010/08/16		2010/08/16		
COC Number		203504-3	203504-3		203504-3		203504-3		
	Units	**10-0303**	**10-0304**	**QC Batch**	**10-0307**	**QC Batch**	**10-0308**	**RDL**	**QC Batch**
PCBs									
Aroclor 1016	ug/g	<0.01	<0.01	2246065	<0.01	2246024	<0.01	0.01	2247375
Aroclor 1221	ug/g	<0.01	<0.01	2246065	<0.01	2246024	<0.01	0.01	2247375
Aroclor 1232	ug/g	<0.01	<0.01	2246065	<0.01	2246024	<0.01	0.01	2247375
Aroclor 1242	ug/g	<0.01	<0.01	2246065	<0.01	2246024	<0.01	0.01	2247375
Aroclor 1248	ug/g	<0.01	<0.01	2246065	<0.01	2246024	<0.01	0.01	2247375
Aroclor 1254	ug/g	0.08	0.02	2246065	<0.01	2246024	<0.01	0.01	2247375
Aroclor 1260	ug/g	0.02	<0.01	2246065	<0.01	2246024	<0.01	0.01	2247375
Aroclor 1262	ug/g	<0.01	<0.01	2246065	<0.01	2246024	<0.01	0.01	2247375
Aroclor 1268	ug/g	<0.01	<0.01	2246065	<0.01	2246024	<0.01	0.01	2247375
Total PCB	ug/g	0.10	0.02	2246065	<0.01	2246024	<0.01	0.01	2247375
Surrogate Recovery (%)									
2,4,5,6-Tetrachloro-m-xylene	%	79	80	2246065	76	2246024	67	N/A	2247375
Decachlorobiphenyl	%	103	112	2246065	107	2246024	84	N/A	2247375

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

Maxxam Job #: B0B5128
Report Date: 2010/09/01

AECOM Canada Ltd
Client Project #: 60158564
Project name: SOIL/SEDIMENT DURBAN ISLAND SI
Sampler Initials: JL

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		GX5465			GX5466	GX5467			GX5468		
Sampling Date		2010/08/16			2010/08/16	2010/08/16			2010/08/16		
COC Number		203504-3			203504-3	203504-3			203504-3		
	Units	**10-0309**	**RDL**	**QC Batch**	**10-0310**	**10-0311**	**RDL**	**QC Batch**	**10-0312**	**RDL**	**QC Batch**
PCBs											
Aroclor 1016	ug/g	<0.01	0.01	2246024	<0.05	<0.05	0.05	2246065	<0.01	0.01	2246024
Aroclor 1221	ug/g	<0.01	0.01	2246024	<0.05	<0.05	0.05	2246065	<0.01	0.01	2246024
Aroclor 1232	ug/g	<0.01	0.01	2246024	<0.05	<0.05	0.05	2246065	<0.01	0.01	2246024
Aroclor 1242	ug/g	<0.01	0.01	2246024	<0.05	<0.05	0.05	2246065	<0.01	0.01	2246024
Aroclor 1248	ug/g	<0.01	0.01	2246024	<0.05	<0.05	0.05	2246065	<0.01	0.01	2246024
Aroclor 1254	ug/g	<0.01	0.01	2246024	<0.05	<0.05	0.05	2246065	<0.01	0.01	2246024
Aroclor 1260	ug/g	<0.01	0.01	2246024	<0.05	<0.05	0.05	2246065	<0.01	0.01	2246024
Aroclor 1262	ug/g	<0.01	0.01	2246024	<0.05	<0.05	0.05	2246065	<0.01	0.01	2246024
Aroclor 1268	ug/g	<0.01	0.01	2246024	<0.05	<0.05	0.05	2246065	<0.01	0.01	2246024
Total PCB	ug/g	<0.01	0.01	2246024	<0.05	<0.05	0.05	2246065	<0.01	0.01	2246024
Surrogate Recovery (%)											
2,4,5,6-Tetrachloro-m-xylene	%	67	N/A	2246024	75	80	N/A	2246065	71	N/A	2246024
Decachlorobiphenyl	%	98	N/A	2246024	104	107	N/A	2246065	96	N/A	2246024

N/A = Not Applicable
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QC Batch = Quality Control Batch

Maxxam Job #: B0B5128
Report Date: 2010/09/01

AECOM Canada Ltd
Client Project #: 60158564
Project name: SOIL/SEDIMENT DURBAN ISLAND SI
Sampler Initials: JL

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		GX5469	GX5470		GX5471	GX5507		
Sampling Date		2010/08/16	2010/08/16		2010/08/16	2010/08/16		
COC Number		203504-3	203504-3		203504-3	203504-3		
	Units	**10-0313**	**10-0327**	**QC Batch**	**10-0328**	**10-0330**	**RDL**	**QC Batch**
PCBs								
Aroclor 1016	ug/g	<0.01	<0.01	2246024	<0.01	<0.01	0.01	2246065
Aroclor 1221	ug/g	<0.01	<0.01	2246024	<0.01	<0.01	0.01	2246065
Aroclor 1232	ug/g	<0.01	<0.01	2246024	<0.01	<0.01	0.01	2246065
Aroclor 1242	ug/g	<0.01	<0.01	2246024	<0.01	<0.01	0.01	2246065
Aroclor 1248	ug/g	<0.01	<0.01	2246024	<0.01	<0.01	0.01	2246065
Aroclor 1254	ug/g	<0.01	<0.01	2246024	<0.01	0.01	0.01	2246065
Aroclor 1260	ug/g	<0.01	<0.01	2246024	<0.01	0.02	0.01	2246065
Aroclor 1262	ug/g	<0.01	<0.01	2246024	<0.01	<0.01	0.01	2246065
Aroclor 1268	ug/g	<0.01	<0.01	2246024	<0.01	<0.01	0.01	2246065
Total PCB	ug/g	<0.01	<0.01	2246024	<0.01	0.03	0.01	2246065
Surrogate Recovery (%)								
2,4,5,6-Tetrachloro-m-xylene	%	69	77	2246024	71	85	N/A	2246065
Decachlorobiphenyl	%	99	101	2246024	110	117	N/A	2246065

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

Maxxam Job #: B0B5128
Report Date: 2010/09/01

AECOM Canada Ltd
Client Project #: 60158564
Project name: SOIL/SEDIMENT DURBAN ISLAND SI
Sampler Initials: JL

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		GX5508		GX5510	GX5513	GX5514	GX5562		
Sampling Date		2010/08/16		2010/08/16	2010/08/16	2010/08/16	2010/08/16		
COC Number		203504-3		203504-3	203504-3	203504-3	203504-3		
	Units	**10-0331**	**QC Batch**	**10-0333**	**10-0336**	**10-0337**	**10-0346**	**RDL**	**QC Batch**
PCBs									
Aroclor 1016	ug/g	<0.01	2246024	<0.01	<0.01	<0.01	<0.01	0.01	2246065
Aroclor 1221	ug/g	<0.01	2246024	<0.01	<0.01	<0.01	<0.01	0.01	2246065
Aroclor 1232	ug/g	<0.01	2246024	<0.01	<0.01	<0.01	<0.01	0.01	2246065
Aroclor 1242	ug/g	<0.01	2246024	<0.01	<0.01	<0.01	<0.01	0.01	2246065
Aroclor 1248	ug/g	<0.01	2246024	<0.01	<0.01	<0.01	<0.01	0.01	2246065
Aroclor 1254	ug/g	0.02	2246024	<0.01	<0.01	<0.01	<0.01	0.01	2246065
Aroclor 1260	ug/g	0.02	2246024	<0.01	<0.01	<0.01	<0.01	0.01	2246065
Aroclor 1262	ug/g	<0.01	2246024	<0.01	<0.01	<0.01	<0.01	0.01	2246065
Aroclor 1268	ug/g	<0.01	2246024	<0.01	<0.01	<0.01	<0.01	0.01	2246065
Total PCB	ug/g	0.04	2246024	<0.01	<0.01	<0.01	<0.01	0.01	2246065
Surrogate Recovery (%)									
2,4,5,6-Tetrachloro-m-xylene	%	70	2246024	88	66	69	79	N/A	2246065
Decachlorobiphenyl	%	95	2246024	115	104	110	101	N/A	2246065

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

Maxxam Job #: B0B5128
Report Date: 2010/09/01

AECOM Canada Ltd
Client Project #: 60158564
Project name: SOIL/SEDIMENT DURBAN ISLAND SI
Sampler Initials: JL

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		GX5563	GX5588		GX5589	GX5594		
Sampling Date		2010/08/16	2010/08/16		2010/08/16	2010/08/16		
COC Number		203504-3	203504-3		203504-3	203504-3		
	Units	**10-0347**	**10-0287**	**QC Batch**	**10-0288**	**10-0293**	**RDL**	**QC Batch**
PCBs								
Aroclor 1016	ug/g	<0.01	<0.01	2246024	<0.01	<0.01	0.01	2246065
Aroclor 1221	ug/g	<0.01	<0.01	2246024	<0.01	<0.01	0.01	2246065
Aroclor 1232	ug/g	<0.01	<0.01	2246024	<0.01	<0.01	0.01	2246065
Aroclor 1242	ug/g	<0.01	<0.01	2246024	<0.01	<0.01	0.01	2246065
Aroclor 1248	ug/g	<0.01	<0.01	2246024	<0.01	<0.01	0.01	2246065
Aroclor 1254	ug/g	<0.01	<0.01	2246024	<0.01	0.21	0.01	2246065
Aroclor 1260	ug/g	<0.01	<0.01	2246024	<0.01	0.03	0.01	2246065
Aroclor 1262	ug/g	<0.01	<0.01	2246024	<0.01	<0.01	0.01	2246065
Aroclor 1268	ug/g	<0.01	<0.01	2246024	<0.01	<0.01	0.01	2246065
Total PCB	ug/g	<0.01	<0.01	2246024	<0.01	0.25	0.01	2246065
Surrogate Recovery (%)								
2,4,5,6-Tetrachloro-m-xylene	%	76	57	2246024	68	92	N/A	2246065
Decachlorobiphenyl	%	99	90	2246024	106	120	N/A	2246065

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

Maxxam Job #: B0B5128
Report Date: 2010/09/01

AECOM Canada Ltd
Client Project #: 60158564
Project name: SOIL/SEDIMENT DURBAN ISLAND SI
Sampler Initials: JL

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		GX5595		
Sampling Date		2010/08/16		
COC Number		203504-3		
	Units	**10-0294**	**RDL**	**QC Batch**
PCBs				
Aroclor 1016	ug/g	<0.01	0.01	2247375
Aroclor 1221	ug/g	<0.01	0.01	2247375
Aroclor 1232	ug/g	<0.01	0.01	2247375
Aroclor 1242	ug/g	<0.01	0.01	2247375
Aroclor 1248	ug/g	<0.01	0.01	2247375
Aroclor 1254	ug/g	0.49	0.01	2247375
Aroclor 1260	ug/g	0.05	0.01	2247375
Aroclor 1262	ug/g	<0.01	0.01	2247375
Aroclor 1268	ug/g	<0.01	0.01	2247375
Total PCB	ug/g	0.54	0.01	2247375
Surrogate Recovery (%)				
2,4,5,6-Tetrachloro-m-xylene	%	94	N/A	2247375
Decachlorobiphenyl	%	95	N/A	2247375

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

Maxxam Job #: B0B5128
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GENERAL COMMENTS

Sample GX5464-01: F1-BTEX Analysis:
Analysis was performed past sample holding time. This may increase the variability associated with these results.

Sample GX5466-01: PCB Analysis:Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.

Sample GX5467-01: PCB Analysis:Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.

Sample GX5563-01: VOC Analysis:
The recovery of one of the surroagte compounds was slightly below the lower control limit. This may be due to sample matrix effect.

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Polychlorinated Biphenyl in Soil: The recovery in the matrix spike was not calculated (NC). Because of the high concentration of this analyte in the parent sample, the relative difference between the spiked and unspiked concentrations is not sufficiently significant to permit a reliable recovery calculation.

Results relate only to the items tested.

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Maxxam Job Number: MB0B5128

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2244318	STE	Matrix Spike						
		[GX5374-01]	1,4-Difluorobenzene	2010/08/25		98	%	60 - 140
			4-Bromofluorobenzene	2010/08/25		103	%	60 - 140
			D10-Ethylbenzene	2010/08/25		95	%	30 - 130
			D4-1,2-Dichloroethane	2010/08/25		121	%	60 - 140
			F1 (C6-C10)	2010/08/25		105	%	60 - 140
		Spiked Blank	1,4-Difluorobenzene	2010/08/25		102	%	60 - 140
			4-Bromofluorobenzene	2010/08/25		102	%	60 - 140
			D10-Ethylbenzene	2010/08/25		106	%	30 - 130
			D4-1,2-Dichloroethane	2010/08/25		107	%	60 - 140
			F1 (C6-C10)	2010/08/25		94	%	60 - 140
		Method Blank	1,4-Difluorobenzene	2010/08/25		103	%	60 - 140
			4-Bromofluorobenzene	2010/08/25		98	%	60 - 140
			D10-Ethylbenzene	2010/08/25		103	%	30 - 130
			D4-1,2-Dichloroethane	2010/08/25		106	%	60 - 140
			F1 (C6-C10)	2010/08/25	<10		ug/g	
			F1 (C6-C10) - BTEX	2010/08/25	<10		ug/g	
		RPD [GX5469-01]	F1 (C6-C10)	2010/08/26	NC		%	50
			F1 (C6-C10) - BTEX	2010/08/26	NC		%	50
2245050	PRB	Matrix Spike						
		[GX5513-01]	o-Terphenyl	2010/08/26		96	%	30 - 130
			F2 (C10-C16 Hydrocarbons)	2010/08/26		120	%	60 - 130
			F3 (C16-C34 Hydrocarbons)	2010/08/26		120	%	60 - 130
			F4 (C34-C50 Hydrocarbons)	2010/08/26		120	%	60 - 130
		Spiked Blank	o-Terphenyl	2010/08/26		100	%	30 - 130
			F2 (C10-C16 Hydrocarbons)	2010/08/26		108	%	60 - 130
			F3 (C16-C34 Hydrocarbons)	2010/08/26		108	%	60 - 130
			F4 (C34-C50 Hydrocarbons)	2010/08/26		108	%	60 - 130
		Method Blank	o-Terphenyl	2010/08/26		102	%	30 - 130
			F2 (C10-C16 Hydrocarbons)	2010/08/26	<10		ug/g	
			F3 (C16-C34 Hydrocarbons)	2010/08/26	<10		ug/g	
			F4 (C34-C50 Hydrocarbons)	2010/08/26	<10		ug/g	
		RPD [GX5510-01]	F2 (C10-C16 Hydrocarbons)	2010/08/27	NC		%	50
			F3 (C16-C34 Hydrocarbons)	2010/08/27	NC		%	50
			F4 (C34-C50 Hydrocarbons)	2010/08/27	NC		%	50
2245245	S_N	Matrix Spike						
		[GX5374-01]	4-Bromofluorobenzene	2010/08/25		107	%	60 - 140
			D4-1,2-Dichloroethane	2010/08/25		93	%	60 - 140
			D8-Toluene	2010/08/25		104	%	60 - 140
			Benzene	2010/08/25		110	%	39 - 137
			Ethylbenzene	2010/08/25		105	%	46 - 150
			Toluene	2010/08/25		111	%	30 - 158
			p+m-Xylene	2010/08/25		116	%	29 - 161
			o-Xylene	2010/08/25		104	%	45 - 150
		Spiked Blank	4-Bromofluorobenzene	2010/08/25		109	%	60 - 140
			D4-1,2-Dichloroethane	2010/08/25		96	%	60 - 140
			D8-Toluene	2010/08/25		101	%	60 - 140
			Benzene	2010/08/25		103	%	60 - 140
			Ethylbenzene	2010/08/25		93	%	60 - 140
			Toluene	2010/08/25		102	%	60 - 140
			p+m-Xylene	2010/08/25		103	%	60 - 140
			o-Xylene	2010/08/25		93	%	60 - 140
		Method Blank	4-Bromofluorobenzene	2010/08/25		109	%	60 - 140
			D4-1,2-Dichloroethane	2010/08/25		98	%	60 - 140
			D8-Toluene	2010/08/25		101	%	60 - 140

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QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2245245	S_N	Method Blank	Benzene	2010/08/25	<0.002		ug/g	
			Ethylbenzene	2010/08/25	<0.002		ug/g	
			Toluene	2010/08/25	<0.002		ug/g	
			p+m-Xylene	2010/08/25	<0.002		ug/g	
			o-Xylene	2010/08/25	<0.002		ug/g	
			Xylene (Total)	2010/08/25	<0.002		ug/g	
		RPD [GX5469-01]	Benzene	2010/08/25	NC		%	50
			Ethylbenzene	2010/08/25	NC		%	50
			Toluene	2010/08/25	NC		%	50
			p+m-Xylene	2010/08/25	NC		%	50
			o-Xylene	2010/08/25	NC		%	50
			Xylene (Total)	2010/08/25	NC		%	50
2245265	S_N	Matrix Spike						
		[GX5513-01]	4-Bromofluorobenzene	2010/08/24		100	%	60 - 140
			D4-1,2-Dichloroethane	2010/08/24		93	%	60 - 140
			D8-Toluene	2010/08/24		111	%	60 - 140
			Benzene	2010/08/24		112	%	39 - 137
			Ethylbenzene	2010/08/24		107	%	46 - 150
			Toluene	2010/08/24		127	%	30 - 158
			p+m-Xylene	2010/08/24		117	%	29 - 161
			o-Xylene	2010/08/24		101	%	45 - 150
		Spiked Blank	4-Bromofluorobenzene	2010/08/24		115	%	60 - 140
			D4-1,2-Dichloroethane	2010/08/24		94	%	60 - 140
			D8-Toluene	2010/08/24		106	%	60 - 140
			Benzene	2010/08/24		117	%	60 - 140
			Ethylbenzene	2010/08/24		108	%	60 - 140
			Toluene	2010/08/24		118	%	60 - 140
			p+m-Xylene	2010/08/24		121	%	60 - 140
			o-Xylene	2010/08/24		106	%	60 - 140
		Method Blank	4-Bromofluorobenzene	2010/08/24		110	%	60 - 140
			D4-1,2-Dichloroethane	2010/08/24		95	%	60 - 140
			D8-Toluene	2010/08/24		102	%	60 - 140
			Benzene	2010/08/24	<0.002		ug/g	
			Ethylbenzene	2010/08/24	<0.002		ug/g	
			Toluene	2010/08/24	<0.002		ug/g	
			p+m-Xylene	2010/08/24	<0.002		ug/g	
			o-Xylene	2010/08/24	<0.002		ug/g	
			Xylene (Total)	2010/08/24	<0.002		ug/g	
		RPD [GX5510-01]	Benzene	2010/08/24	NC		%	50
			Ethylbenzene	2010/08/24	NC		%	50
			Toluene	2010/08/24	NC		%	50
			p+m-Xylene	2010/08/24	NC		%	50
			o-Xylene	2010/08/24	NC		%	50
			Xylene (Total)	2010/08/24	NC		%	50
2245279	PRB	Matrix Spike						
		[GX5374-01]	o-Terphenyl	2010/08/26		108	%	30 - 130
			F2 (C10-C16 Hydrocarbons)	2010/08/26		92	%	60 - 130
			F3 (C16-C34 Hydrocarbons)	2010/08/26		92	%	60 - 130
			F4 (C34-C50 Hydrocarbons)	2010/08/26		92	%	60 - 130
		Spiked Blank	o-Terphenyl	2010/08/26		108	%	30 - 130
			F2 (C10-C16 Hydrocarbons)	2010/08/26		88	%	60 - 130
			F3 (C16-C34 Hydrocarbons)	2010/08/26		88	%	60 - 130
			F4 (C34-C50 Hydrocarbons)	2010/08/26		88	%	60 - 130
		Method Blank	o-Terphenyl	2010/08/26		106	%	30 - 130
			F2 (C10-C16 Hydrocarbons)	2010/08/26	<10		ug/g	

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QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2245279	PRB	Method Blank	F3 (C16-C34 Hydrocarbons)	2010/08/26	<10		ug/g	
			F4 (C34-C50 Hydrocarbons)	2010/08/26	<10		ug/g	
		RPD [GX5469-01]	F2 (C10-C16 Hydrocarbons)	2010/08/26	14.3		%	50
			F3 (C16-C34 Hydrocarbons)	2010/08/26	NC		%	50
			F4 (C34-C50 Hydrocarbons)	2010/08/26	NC		%	50
2245291	STE	Matrix Spike [GX5513-01]	1,4-Difluorobenzene	2010/08/26		100	%	60 - 140
			4-Bromofluorobenzene	2010/08/26		103	%	60 - 140
			D10-Ethylbenzene	2010/08/26		97	%	30 - 130
			D4-1,2-Dichloroethane	2010/08/26		106	%	60 - 140
			F1 (C6-C10)	2010/08/26		100	%	60 - 140
		Spiked Blank	1,4-Difluorobenzene	2010/08/26		100	%	60 - 140
			4-Bromofluorobenzene	2010/08/26		102	%	60 - 140
			D10-Ethylbenzene	2010/08/26		99	%	30 - 130
			D4-1,2-Dichloroethane	2010/08/26		106	%	60 - 140
			F1 (C6-C10)	2010/08/26		102	%	60 - 140
		Method Blank	1,4-Difluorobenzene	2010/08/26		100	%	60 - 140
			4-Bromofluorobenzene	2010/08/26		97	%	60 - 140
			D10-Ethylbenzene	2010/08/26		100	%	30 - 130
			D4-1,2-Dichloroethane	2010/08/26		105	%	60 - 140
			F1 (C6-C10)	2010/08/26	<10		ug/g	
			F1 (C6-C10) - BTEX	2010/08/26	<10		ug/g	
		RPD [GX5510-01]	F1 (C6-C10)	2010/08/26	NC		%	50
			F1 (C6-C10) - BTEX	2010/08/26	NC		%	50
2245379	PRB	RPD [GX5510-01]	Moisture	2010/08/25	13.5		%	50
2245383	PRB	RPD [GX5469-01]	Moisture	2010/08/25	1.7		%	50
2245410	JNG	Matrix Spike	4-Bromofluorobenzene	2010/08/30		96	%	60 - 140
			D4-1,2-Dichloroethane	2010/08/30		96	%	60 - 140
			D8-Toluene	2010/08/30		107	%	60 - 140
			Benzene	2010/08/30		64	%	39 - 137
			Ethylbenzene	2010/08/30		65	%	46 - 150
			Toluene	2010/08/30		39	%	30 - 158
			p+m-Xylene	2010/08/30		45	%	29 - 161
			o-Xylene	2010/08/30		66	%	45 - 150
		Spiked Blank	4-Bromofluorobenzene	2010/08/27		98	%	60 - 140
			D4-1,2-Dichloroethane	2010/08/27		98	%	60 - 140
			D8-Toluene	2010/08/27		100	%	60 - 140
			Benzene	2010/08/27		104	%	60 - 140
			Ethylbenzene	2010/08/27		103	%	60 - 140
			Toluene	2010/08/27		100	%	60 - 140
			p+m-Xylene	2010/08/27		105	%	60 - 140
			o-Xylene	2010/08/27		106	%	60 - 140
		Method Blank	4-Bromofluorobenzene	2010/08/26		99	%	60 - 140
			D4-1,2-Dichloroethane	2010/08/26		97	%	60 - 140
			D8-Toluene	2010/08/26		97	%	60 - 140
			Benzene	2010/08/26	<0.002		ug/g	
			Ethylbenzene	2010/08/26	<0.002		ug/g	
			Toluene	2010/08/26	<0.002		ug/g	
			p+m-Xylene	2010/08/26	<0.002		ug/g	
			o-Xylene	2010/08/26	<0.002		ug/g	
			Xylene (Total)	2010/08/26	<0.002		ug/g	
		RPD	Benzene	2010/08/27	NC		%	50
			Ethylbenzene	2010/08/27	NC		%	50
			Toluene	2010/08/27	10		%	50
			p+m-Xylene	2010/08/27	8.4		%	50

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QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2245410	JNG	RPD	o-Xylene	2010/08/27	NC		%	50
			Xylene (Total)	2010/08/27	8.6		%	50
2246024	JZ	Matrix Spike	2,4,5,6-Tetrachloro-m-xylene	2010/08/27		86	%	40 - 130
			Decachlorobiphenyl	2010/08/27		96	%	40 - 130
			Aroclor 1260	2010/08/27		NC	%	30 - 130
			Total PCB	2010/08/27		NC	%	30 - 130
		Spiked Blank	2,4,5,6-Tetrachloro-m-xylene	2010/08/27		90	%	40 - 130
			Decachlorobiphenyl	2010/08/27		100	%	40 - 130
			Aroclor 1260	2010/08/27		109	%	30 - 130
			Total PCB	2010/08/27		109	%	30 - 130
		Method Blank	2,4,5,6-Tetrachloro-m-xylene	2010/08/27		95	%	40 - 130
			Decachlorobiphenyl	2010/08/27		104	%	40 - 130
			Aroclor 1016	2010/08/27	<0.01		ug/g	
			Aroclor 1221	2010/08/27	<0.01		ug/g	
			Aroclor 1232	2010/08/27	<0.01		ug/g	
			Aroclor 1242	2010/08/27	<0.01		ug/g	
			Aroclor 1248	2010/08/27	<0.01		ug/g	
			Aroclor 1254	2010/08/27	<0.01		ug/g	
			Aroclor 1260	2010/08/27	<0.01		ug/g	
			Aroclor 1262	2010/08/27	<0.01		ug/g	
			Aroclor 1268	2010/08/27	<0.01		ug/g	
			Total PCB	2010/08/27	<0.01		ug/g	
		RPD	Aroclor 1016	2010/08/27	NC		%	50
			Aroclor 1221	2010/08/27	NC		%	50
			Aroclor 1232	2010/08/27	NC		%	50
			Aroclor 1242	2010/08/27	NC		%	50
			Aroclor 1248	2010/08/27	NC		%	50
			Aroclor 1254	2010/08/27	9.7		%	50
			Aroclor 1260	2010/08/27	3.2		%	50
			Aroclor 1262	2010/08/27	NC		%	50
			Aroclor 1268	2010/08/27	NC		%	50
			Total PCB	2010/08/27	4.1		%	50
2246065	LPG	Matrix Spike [GX5376-02]	2,4,5,6-Tetrachloro-m-xylene	2010/08/26		67	%	40 - 130
			Decachlorobiphenyl	2010/08/26		103	%	40 - 130
			Aroclor 1260	2010/08/26		109	%	30 - 130
			Total PCB	2010/08/26		109	%	30 - 130
		Spiked Blank	2,4,5,6-Tetrachloro-m-xylene	2010/08/26		101	%	40 - 130
			Decachlorobiphenyl	2010/08/26		115	%	40 - 130
			Aroclor 1260	2010/08/26		106	%	30 - 130
			Total PCB	2010/08/26		106	%	30 - 130
		Method Blank	2,4,5,6-Tetrachloro-m-xylene	2010/08/26		94	%	40 - 130
			Decachlorobiphenyl	2010/08/26		105	%	40 - 130
			Aroclor 1016	2010/08/26	<0.01		ug/g	
			Aroclor 1221	2010/08/26	<0.01		ug/g	
			Aroclor 1232	2010/08/26	<0.01		ug/g	
			Aroclor 1242	2010/08/26	<0.01		ug/g	
			Aroclor 1248	2010/08/26	<0.01		ug/g	
			Aroclor 1254	2010/08/26	<0.01		ug/g	
			Aroclor 1260	2010/08/26	<0.01		ug/g	
			Aroclor 1262	2010/08/26	<0.01		ug/g	
			Aroclor 1268	2010/08/26	<0.01		ug/g	
			Total PCB	2010/08/26	<0.01		ug/g	
		RPD [GX5376-02]	Aroclor 1016	2010/08/26	NC		%	50
			Aroclor 1221	2010/08/26	NC		%	50

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QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2246065	LPG	RPD [GX5376-02]	Aroclor 1232	2010/08/26	NC		%	50
			Aroclor 1242	2010/08/26	NC		%	50
			Aroclor 1248	2010/08/26	NC		%	50
			Aroclor 1254	2010/08/26	NC		%	50
			Aroclor 1260	2010/08/26	NC		%	50
			Aroclor 1262	2010/08/26	NC		%	50
			Aroclor 1268	2010/08/26	NC		%	50
			Total PCB	2010/08/26	NC		%	50
2246178	RGA	Matrix Spike						
		[GX5464-01]	o-Terphenyl	2010/08/26		110	%	30 - 130
			F2 (C10-C16 Hydrocarbons)	2010/08/26		104	%	60 - 130
			F3 (C16-C34 Hydrocarbons)	2010/08/26		104	%	60 - 130
			F4 (C34-C50 Hydrocarbons)	2010/08/26		104	%	60 - 130
		Spiked Blank	o-Terphenyl	2010/08/26		99	%	30 - 130
			F2 (C10-C16 Hydrocarbons)	2010/08/26		87	%	60 - 130
			F3 (C16-C34 Hydrocarbons)	2010/08/26		87	%	60 - 130
			F4 (C34-C50 Hydrocarbons)	2010/08/26		87	%	60 - 130
		Method Blank	o-Terphenyl	2010/08/26		99	%	30 - 130
			F2 (C10-C16 Hydrocarbons)	2010/08/26	<10		ug/g	
			F3 (C16-C34 Hydrocarbons)	2010/08/26	<10		ug/g	
			F4 (C34-C50 Hydrocarbons)	2010/08/26	<10		ug/g	
		RPD [GX5464-01]	F2 (C10-C16 Hydrocarbons)	2010/08/26	NC		%	50
			F3 (C16-C34 Hydrocarbons)	2010/08/26	NC		%	50
			F4 (C34-C50 Hydrocarbons)	2010/08/26	NC		%	50
2246236	JXI	Matrix Spike						
		[GX5464-01]	1,4-Difluorobenzene	2010/08/26		95	%	60 - 140
			4-Bromofluorobenzene	2010/08/26		103	%	60 - 140
			D10-Ethylbenzene	2010/08/26		98	%	30 - 130
			D4-1,2-Dichloroethane	2010/08/26		101	%	60 - 140
			F1 (C6-C10)	2010/08/26		95	%	60 - 140
		Spiked Blank	1,4-Difluorobenzene	2010/08/26		95	%	60 - 140
			4-Bromofluorobenzene	2010/08/26		106	%	60 - 140
			D10-Ethylbenzene	2010/08/26		105	%	30 - 130
			D4-1,2-Dichloroethane	2010/08/26		103	%	60 - 140
			F1 (C6-C10)	2010/08/26		100	%	60 - 140
		Method Blank	1,4-Difluorobenzene	2010/08/26		102	%	60 - 140
			4-Bromofluorobenzene	2010/08/26		103	%	60 - 140
			D10-Ethylbenzene	2010/08/26		101	%	30 - 130
			D4-1,2-Dichloroethane	2010/08/26		96	%	60 - 140
			F1 (C6-C10)	2010/08/26	<10		ug/g	
			F1 (C6-C10) - BTEX	2010/08/26	<10		ug/g	
		RPD [GX5464-01]	F1 (C6-C10)	2010/08/26	NC		%	50
			F1 (C6-C10) - BTEX	2010/08/26	NC		%	50
2246986	LKA	RPD [GX5507-02]	Moisture	2010/08/26	NC		%	20
2247375	LPG	Matrix Spike	2,4,5,6-Tetrachloro-m-xylene	2010/08/27		74	%	40 - 130
			Decachlorobiphenyl	2010/08/27		83	%	40 - 130
			Aroclor 1260	2010/08/27		77	%	30 - 130
			Total PCB	2010/08/27		77	%	30 - 130
		Spiked Blank	2,4,5,6-Tetrachloro-m-xylene	2010/08/27		93	%	40 - 130
			Decachlorobiphenyl	2010/08/27		84	%	40 - 130
			Aroclor 1260	2010/08/27		97	%	30 - 130
			Total PCB	2010/08/27		97	%	30 - 130
		Method Blank	2,4,5,6-Tetrachloro-m-xylene	2010/08/27		91	%	40 - 130
			Decachlorobiphenyl	2010/08/27		89	%	40 - 130
			Aroclor 1016	2010/08/27	<0.01		ug/g	

AECOM Canada Ltd
Attention: Jenna Morrish
Client Project #: 60158564
P.O. #:
Site Location: SOIL/SEDIMENT DURBAN ISLAND SI

Quality Assurance Report (Continued)

Maxxam Job Number: MB0B5128

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2247375	LPG	Method Blank	Aroclor 1221	2010/08/27	<0.01		ug/g	
			Aroclor 1232	2010/08/27	<0.01		ug/g	
			Aroclor 1242	2010/08/27	<0.01		ug/g	
			Aroclor 1248	2010/08/27	<0.01		ug/g	
			Aroclor 1254	2010/08/27	<0.01		ug/g	
			Aroclor 1260	2010/08/27	<0.01		ug/g	
			Aroclor 1262	2010/08/27	<0.01		ug/g	
			Aroclor 1268	2010/08/27	<0.01		ug/g	
			Total PCB	2010/08/27	<0.01		ug/g	
		RPD	Aroclor 1016	2010/08/27	NC		%	50
			Aroclor 1221	2010/08/27	NC		%	50
			Aroclor 1232	2010/08/27	NC		%	50
			Aroclor 1242	2010/08/27	NC		%	50
			Aroclor 1248	2010/08/27	NC		%	50
			Aroclor 1254	2010/08/27	5.5		%	50
			Aroclor 1260	2010/08/27	18.0		%	50
			Aroclor 1262	2010/08/27	NC		%	50
			Aroclor 1268	2010/08/27	NC		%	50
			Total PCB	2010/08/27	16.3		%	50
2250426	VIV	Matrix Spike	Acid Extractable Arsenic (As)	2010/08/31		93	%	75 - 125
			Acid Extractable Cadmium (Cd)	2010/08/31		89	%	75 - 125
			Acid Extractable Chromium (Cr)	2010/08/31		95	%	75 - 125
			Acid Extractable Cobalt (Co)	2010/08/31		94	%	75 - 125
			Acid Extractable Copper (Cu)	2010/08/31		NC	%	75 - 125
			Acid Extractable Lead (Pb)	2010/08/31		NC	%	75 - 125
			Acid Extractable Nickel (Ni)	2010/08/31		96	%	75 - 125
			Acid Extractable Zinc (Zn)	2010/08/31		NC	%	75 - 125
		QC Standard	Acid Extractable Arsenic (As)	2010/08/31		106	%	75 - 125
			Acid Extractable Cadmium (Cd)	2010/08/31		103	%	75 - 125
			Acid Extractable Chromium (Cr)	2010/08/31		109	%	75 - 125
			Acid Extractable Cobalt (Co)	2010/08/31		107	%	75 - 125
			Acid Extractable Copper (Cu)	2010/08/31		104	%	75 - 125
			Acid Extractable Lead (Pb)	2010/08/31		99	%	75 - 125
			Acid Extractable Nickel (Ni)	2010/08/31		105	%	75 - 125
			Acid Extractable Zinc (Zn)	2010/08/31		107	%	75 - 125
		Method Blank	Acid Extractable Arsenic (As)	2010/08/31	<1		ug/g	
			Acid Extractable Cadmium (Cd)	2010/08/31	<0.1		ug/g	
			Acid Extractable Chromium (Cr)	2010/08/31	<1		ug/g	
			Acid Extractable Cobalt (Co)	2010/08/31	<0.1		ug/g	
			Acid Extractable Copper (Cu)	2010/08/31	<0.5		ug/g	
			Acid Extractable Lead (Pb)	2010/08/31	<1		ug/g	
			Acid Extractable Nickel (Ni)	2010/08/31	<0.5		ug/g	
			Acid Extractable Zinc (Zn)	2010/08/31	<5		ug/g	
		RPD	Acid Extractable Arsenic (As)	2010/08/31	NC		%	35
			Acid Extractable Cadmium (Cd)	2010/08/31	NC		%	35
			Acid Extractable Chromium (Cr)	2010/08/31	15.3		%	35
			Acid Extractable Cobalt (Co)	2010/08/31	15.4		%	35
			Acid Extractable Copper (Cu)	2010/08/31	26.5		%	35
			Acid Extractable Lead (Pb)	2010/08/31	11.4		%	35
			Acid Extractable Nickel (Ni)	2010/08/31	20.3		%	35
			Acid Extractable Zinc (Zn)	2010/08/31	17.4		%	35
2250432	VIV	Matrix Spike [GX5471-03]	Acid Extractable Arsenic (As)	2010/08/31		94	%	75 - 125
			Acid Extractable Cadmium (Cd)	2010/08/31		94	%	75 - 125
			Acid Extractable Chromium (Cr)	2010/08/31		NC	%	75 - 125

AECOM Canada Ltd
Attention: Jenna Morrish
Client Project #: 60158564
P.O. #:
Site Location: SOIL/SEDIMENT DURBAN ISLAND SI

Quality Assurance Report (Continued)

Maxxam Job Number: MB0B5128

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2250432	VIV	Matrix Spike [GX5471-03]	Acid Extractable Cobalt (Co)	2010/08/31		96	%	75 - 125
			Acid Extractable Copper (Cu)	2010/08/31		NC	%	75 - 125
			Acid Extractable Lead (Pb)	2010/08/31		97	%	75 - 125
			Acid Extractable Nickel (Ni)	2010/08/31		NC	%	75 - 125
			Acid Extractable Zinc (Zn)	2010/08/31		NC	%	75 - 125
		QC Standard	Acid Extractable Arsenic (As)	2010/08/31		99	%	75 - 125
			Acid Extractable Cadmium (Cd)	2010/08/31		98	%	75 - 125
			Acid Extractable Chromium (Cr)	2010/08/31		101	%	75 - 125
			Acid Extractable Cobalt (Co)	2010/08/31		99	%	75 - 125
			Acid Extractable Copper (Cu)	2010/08/31		100	%	75 - 125
			Acid Extractable Lead (Pb)	2010/08/31		99	%	75 - 125
			Acid Extractable Nickel (Ni)	2010/08/31		100	%	75 - 125
			Acid Extractable Zinc (Zn)	2010/08/31		102	%	75 - 125
		Method Blank	Acid Extractable Arsenic (As)	2010/08/31	<1		ug/g	
			Acid Extractable Cadmium (Cd)	2010/08/31	<0.1		ug/g	
			Acid Extractable Chromium (Cr)	2010/08/31	<1		ug/g	
			Acid Extractable Cobalt (Co)	2010/08/31	<0.1		ug/g	
			Acid Extractable Copper (Cu)	2010/08/31	<0.5		ug/g	
			Acid Extractable Lead (Pb)	2010/08/31	<1		ug/g	
			Acid Extractable Nickel (Ni)	2010/08/31	<0.5		ug/g	
			Acid Extractable Zinc (Zn)	2010/08/31	<5		ug/g	
		RPD [GX5471-03]	Acid Extractable Arsenic (As)	2010/08/31	NC		%	35
			Acid Extractable Cadmium (Cd)	2010/08/31	NC		%	35
			Acid Extractable Chromium (Cr)	2010/08/31	4.5		%	35
			Acid Extractable Cobalt (Co)	2010/08/31	4.5		%	35
			Acid Extractable Copper (Cu)	2010/08/31	3.4		%	35
			Acid Extractable Lead (Pb)	2010/08/31	2.5		%	35
			Acid Extractable Nickel (Ni)	2010/08/31	1.6		%	35
			Acid Extractable Zinc (Zn)	2010/08/31	4.1		%	35

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 blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.
NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was not sufficiently significant to permit a reliable recovery calculation.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.

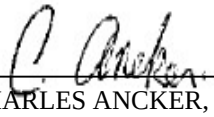
Validation Signature Page

Maxxam Job #: B0B5128

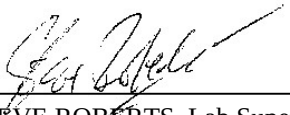
The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



PAUL RUBINATO, Analyst, Maxxam Analytics



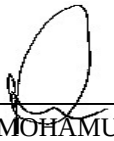
CHARLES ANCKER, B.Sc., M.Sc., C.Chem, Senior Analyst



STEVE ROBERTS, Lab Supervisor, Ottawa



JEEVARAJ JEEVARATRNAM, Senior Analyst



ABDI MOHAMUD, Senior Analyst

Validation Signature Page

Maxxam Job #: B0B5128

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

CRISTINA CARRIERE, Scientific Services

==========

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Your Project #: 60158564
Site Location: SOIL/SEDIMENT DURBAN ISLAND SI
Your C.O.C. #: 20350438, 203504-3

Attention: Jenna Morrish
AECOM Canada Ltd
2540 Kensington Rd NW
Calgary, AB
CANADA T2N3S3

Report Date: 2010/09/07

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B0B8761
Received: 2010/08/30, 11:20

Sample Matrix: Soil
Samples Received: 20

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Petroleum Hydro. CCME F1 & BTEX in Soil (1)	4	2010/09/01	2010/09/01	CAM SOP-00315	CCME CWS
Petroleum Hydro. CCME F1 & BTEX in Soil (1)	12	2010/09/01	2010/09/02	CAM SOP-00315	CCME CWS
Petroleum Hydrocarbons F2-F4 in Soil	1	2010/08/31	2010/09/01	CAM SOP-00316	CCME CWS
Petroleum Hydrocarbons F2-F4 in Soil (1)	16	2010/08/31	2010/09/02	CAM SOP-00316	CCME CWS
Acid Extr. Metals (aqua regia) by ICPMS	19	2010/09/03	2010/09/03	CAM SOP-00447	EPA 6020
Acid Extr. Metals (aqua regia) by ICPMS	1	2010/09/03	2010/09/07	CAM SOP-00447	EPA 6020
MOISTURE (1)	16	N/A	2010/09/01	CAM SOP-00445	MOE HANDBOOK(1983)
Moisture	1	N/A	2010/09/01	CAM SOP-00445	McKeague 2nd ed 1978
Polychlorinated Biphenyl in Soil	18	2010/09/01	2010/09/02	CAM SOP-00309	SW846 8082
Polychlorinated Biphenyl in Soil	1	2010/09/01	2010/09/07	CAM SOP-00309	SW846 8082
Volatile Organic Compounds in Soil (1)	16	2010/09/01	2010/09/03	CAM SOP-00226	EPA 8260 modified

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

(1) This test was performed by Maxxam Ottawa

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

MARIJANE CRUZ, Project Manager
Email: Marijane.Cruz@maxxamanalytics.com
Phone# (905) 817-5756

==========

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Total cover pages: 1

Maxxam Job #: B0B8761
Report Date: 2010/09/07

AECOM Canada Ltd
Client Project #: 60158564
Project name: SOIL/SEDIMENT DURBAN ISLAND SI

RESULTS OF ANALYSES OF SOIL

Maxxam ID		GZ3245	GZ3246	GZ3249			GZ3250		
Sampling Date		2010/08/21	2010/08/21	2010/08/22			2010/08/22		
COC Number		203504-3	203504-3	203504-3			203504-3		
	Units	**10-0314**	**10-0315**	**10-0318**	**RDL**	**QC Batch**	**10-0319**	**RDL**	**QC Batch**
Inorganics									
Moisture	%	5.1	7.1	11	0.2	2251478	9	1	2253364

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		GZ3251	GZ3252	GZ3253	GZ3254	GZ3258	GZ3259	GZ3261		
Sampling Date		2010/08/22	2010/08/22	2010/08/22	2010/08/22	2010/08/22	2010/08/22	2010/08/22		
COC Number		203504-3	203504-3	203504-3	203504-3	203504-3	203504-3	203504-3		
	Units	**10-0320**	**10-0321**	**10-0322**	**10-0323**	**10-0324**	**10-0325**	**10-0356**	**RDL**	**QC Batch**
Inorganics										
Moisture	%	11	12	12	15	12	12	13	0.2	2251478

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		GZ3262	GZ3263	GZ3264	GZ3265	GZ3266	GZ3267		
Sampling Date		2010/08/22	2010/08/22	2010/08/22	2010/08/22	2010/08/22	2010/08/22		
COC Number		203504-3	203504-3	203504-3	203504-3	203504-3	203504-3		
	Units	**10-0357**	**10-0358**	**10-0359**	**10-0360**	**10-0361**	**10-0362**	**RDL**	**QC Batch**
Inorganics									
Moisture	%	13	8.7	17	14	1.3	12	0.2	2251478

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: B0B8761
Report Date: 2010/09/07

AECOM Canada Ltd
Client Project #: 60158564
Project name: SOIL/SEDIMENT DURBAN ISLAND SI

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		GZ3245	GZ3246	GZ3247	GZ3248		GZ3249		
Sampling Date		2010/08/21	2010/08/21	2010/08/21	2010/08/21		2010/08/22		
COC Number		203504-3	203504-3	203504-3	203504-3		203504-3		
	Units	**10-0314**	**10-0315**	**10-0316**	**10-0317**	**QC Batch**	**10-0318**	**RDL**	**QC Batch**
Metals									
Acid Extractable Arsenic (As)	ug/g	2	1	<1	<1	2255184	<1	1	2255191
Acid Extractable Cadmium (Cd)	ug/g	0.6	0.3	0.1	<0.1	2255184	<0.1	0.1	2255191
Acid Extractable Chromium (Cr)	ug/g	120	130	140	140	2255184	160	1	2255191
Acid Extractable Cobalt (Co)	ug/g	42	50	56	57	2255184	64	0.1	2255191
Acid Extractable Copper (Cu)	ug/g	59	61	57	59	2255184	56	0.5	2255191
Acid Extractable Lead (Pb)	ug/g	65	39	41	9	2255184	2	1	2255191
Acid Extractable Nickel (Ni)	ug/g	520	640	800	800	2255184	850	5	2255191
Acid Extractable Zinc (Zn)	ug/g	150	110	57	62	2255184	51	5	2255191

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		GZ3250		GZ3251		GZ3252	GZ3253		
Sampling Date		2010/08/22		2010/08/22		2010/08/22	2010/08/22		
COC Number		203504-3		203504-3		203504-3	203504-3		
	Units	**10-0319**	**QC Batch**	**10-0320**	**QC Batch**	**10-0321**	**10-0322**	**RDL**	**QC Batch**
Metals									
Acid Extractable Arsenic (As)	ug/g	<1	2255056	<1	2255184	<1	<1	1	2255191
Acid Extractable Cadmium (Cd)	ug/g	<0.1	2255056	<0.1	2255184	<0.1	<0.1	0.1	2255191
Acid Extractable Chromium (Cr)	ug/g	170	2255056	150	2255184	140	140	1	2255191
Acid Extractable Cobalt (Co)	ug/g	67	2255056	60	2255184	59	58	0.1	2255191
Acid Extractable Copper (Cu)	ug/g	50	2255056	54	2255184	56	47	0.5	2255191
Acid Extractable Lead (Pb)	ug/g	1	2255056	2	2255184	2	3	1	2255191
Acid Extractable Nickel (Ni)	ug/g	940	2255056	880	2255184	770	800	5	2255191
Acid Extractable Zinc (Zn)	ug/g	49	2255056	50	2255184	48	52	5	2255191

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: B0B8761
Report Date: 2010/09/07

AECOM Canada Ltd
Client Project #: 60158564
Project name: SOIL/SEDIMENT DURBAN ISLAND SI

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		GZ3254	GZ3258	GZ3259		GZ3260		
Sampling Date		2010/08/22	2010/08/22	2010/08/22		2010/08/22		
COC Number		203504-3	203504-3	203504-3		203504-3		
	Units	**10-0323**	**10-0324**	**10-0325**	**QC Batch**	**10-0326**	**RDL**	**QC Batch**
Metals								
Acid Extractable Arsenic (As)	ug/g	<1	<1	<1	2255184	<1	1	2255353
Acid Extractable Cadmium (Cd)	ug/g	<0.1	<0.1	<0.1	2255184	<0.1	0.1	2255353
Acid Extractable Chromium (Cr)	ug/g	73	73	73	2255184	69	1	2255353
Acid Extractable Cobalt (Co)	ug/g	42	43	43	2255184	42	0.1	2255353
Acid Extractable Copper (Cu)	ug/g	70	88	77	2255184	66	0.5	2255353
Acid Extractable Lead (Pb)	ug/g	1	1	2	2255184	1	1	2255353
Acid Extractable Nickel (Ni)	ug/g	290	290	280	2255184	280	0.5	2255353
Acid Extractable Zinc (Zn)	ug/g	46	51	50	2255184	44	5	2255353

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		GZ3261	GZ3262		GZ3263		GZ3264		
Sampling Date		2010/08/22	2010/08/22		2010/08/22		2010/08/22		
COC Number		203504-3	203504-3		203504-3		203504-3		
	Units	**10-0356**	**10-0357**	**QC Batch**	**10-0358**	**QC Batch**	**10-0359**	**RDL**	**QC Batch**
Metals									
Acid Extractable Arsenic (As)	ug/g	<1	<1	2255184	6	2255191	4	1	2255184
Acid Extractable Cadmium (Cd)	ug/g	<0.1	<0.1	2255184	0.2	2255191	<0.1	0.1	2255184
Acid Extractable Chromium (Cr)	ug/g	77	66	2255184	110	2255191	96	1	2255184
Acid Extractable Cobalt (Co)	ug/g	46	39	2255184	25	2255191	22	0.1	2255184
Acid Extractable Copper (Cu)	ug/g	100	82	2255184	54	2255191	46	0.5	2255184
Acid Extractable Lead (Pb)	ug/g	1	1	2255184	15	2255191	6	1	2255184
Acid Extractable Nickel (Ni)	ug/g	280	230	2255184	160	2255191	150	0.5	2255184
Acid Extractable Zinc (Zn)	ug/g	54	49	2255184	110	2255191	79	5	2255184

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: B0B8761
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AECOM Canada Ltd
Client Project #: 60158564
Project name: SOIL/SEDIMENT DURBAN ISLAND SI

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		GZ3265	GZ3266	GZ3267		
Sampling Date		2010/08/22	2010/08/22	2010/08/22		
COC Number		203504-3	203504-3	203504-3		
	Units	**10-0360**	**10-0361**	**10-0362**	**RDL**	**QC Batch**
Metals						
Acid Extractable Arsenic (As)	ug/g	6	6	5	1	2255184
Acid Extractable Cadmium (Cd)	ug/g	0.6	0.7	0.2	0.1	2255184
Acid Extractable Chromium (Cr)	ug/g	120	150	130	1	2255184
Acid Extractable Cobalt (Co)	ug/g	23	26	23	0.1	2255184
Acid Extractable Copper (Cu)	ug/g	64	72	63	0.5	2255184
Acid Extractable Lead (Pb)	ug/g	14	14	11	1	2255184
Acid Extractable Nickel (Ni)	ug/g	110	120	110	0.5	2255184
Acid Extractable Zinc (Zn)	ug/g	280	370	170	5	2255184

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: B0B8761
Report Date: 2010/09/07

AECOM Canada Ltd
Client Project #: 60158564
Project name: SOIL/SEDIMENT DURBAN ISLAND SI

VOLATILE ORGANICS BY GC/MS (SOIL)

Maxxam ID		GZ3245	GZ3246	GZ3249	GZ3251	GZ3252	GZ3253		
Sampling Date		2010/08/21	2010/08/21	2010/08/22	2010/08/22	2010/08/22	2010/08/22		
COC Number		203504-3	203504-3	203504-3	203504-3	203504-3	203504-3		
	Units	**10-0314**	**10-0315**	**10-0318**	**10-0320**	**10-0321**	**10-0322**	**RDL**	**QC Batch**
Volatile Organics									
Benzene	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	2251464
Ethylbenzene	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	2251464
Toluene	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	2251464
p+m-Xylene	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	2251464
o-Xylene	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	2251464
Xylene (Total)	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	2251464
Surrogate Recovery (%)									
4-Bromofluorobenzene	%	101	105	116	112	119	119	N/A	2251464
D4-1,2-Dichloroethane	%	104	108	104	107	100	101	N/A	2251464
D8-Toluene	%	113	114	102	91	98	101	N/A	2251464

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

Maxxam ID		GZ3254	GZ3258	GZ3259	GZ3261	GZ3262	GZ3263		
Sampling Date		2010/08/22	2010/08/22	2010/08/22	2010/08/22	2010/08/22	2010/08/22		
COC Number		203504-3	203504-3	203504-3	203504-3	203504-3	203504-3		
	Units	**10-0323**	**10-0324**	**10-0325**	**10-0356**	**10-0357**	**10-0358**	**RDL**	**QC Batch**
Volatile Organics									
Benzene	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	2251464
Ethylbenzene	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	2251464
Toluene	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	2251464
p+m-Xylene	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	2251464
o-Xylene	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	2251464
Xylene (Total)	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	2251464
Surrogate Recovery (%)									
4-Bromofluorobenzene	%	110	107	115	104	114	102	N/A	2251464
D4-1,2-Dichloroethane	%	95	95	89	98	97	97	N/A	2251464
D8-Toluene	%	101	101	101	95	103	110	N/A	2251464

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

Maxxam Job #: B0B8761
Report Date: 2010/09/07

AECOM Canada Ltd
Client Project #: 60158564
Project name: SOIL/SEDIMENT DURBAN ISLAND SI

VOLATILE ORGANICS BY GC/MS (SOIL)

Maxxam ID		GZ3264	GZ3265	GZ3266	GZ3267		
Sampling Date		2010/08/22	2010/08/22	2010/08/22	2010/08/22		
COC Number		203504-3	203504-3	203504-3	203504-3		
	Units	**10-0359**	**10-0360**	**10-0361**	**10-0362**	**RDL**	**QC Batch**
Volatile Organics							
Benzene	ug/g	<0.002	<0.002	<0.002	<0.002	0.002	2251464
Ethylbenzene	ug/g	<0.002	<0.002	<0.002	<0.002	0.002	2251464
Toluene	ug/g	<0.002	<0.002	<0.002	<0.002	0.002	2251464
p+m-Xylene	ug/g	<0.002	<0.002	<0.002	<0.002	0.002	2251464
o-Xylene	ug/g	<0.002	<0.002	<0.002	<0.002	0.002	2251464
Xylene (Total)	ug/g	<0.002	<0.002	<0.002	<0.002	0.002	2251464
Surrogate Recovery (%)							
4-Bromofluorobenzene	%	98	110	106	107	N/A	2251464
D4-1,2-Dichloroethane	%	94	95	100	95	N/A	2251464
D8-Toluene	%	110	104	105	104	N/A	2251464

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

Maxxam Job #: B0B8761
Report Date: 2010/09/07

AECOM Canada Ltd
Client Project #: 60158564
Project name: SOIL/SEDIMENT DURBAN ISLAND SI

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		GZ3245	GZ3246	GZ3249		GZ3250		
Sampling Date		2010/08/21	2010/08/21	2010/08/22		2010/08/22		
COC Number		203504-3	203504-3	203504-3		203504-3		
	Units	**10-0314**	**10-0315**	**10-0318**	**QC Batch**	**10-0319**	**RDL**	**QC Batch**
BTEX & F1 Hydrocarbons								
F1 (C6-C10)	ug/g	<10	<10	<10	2253089	N/A	10	2253089
F1 (C6-C10) - BTEX	ug/g	<10	<10	<10	2253089	N/A	10	2253089
F2-F4 Hydrocarbons								
F2 (C10-C16 Hydrocarbons)	ug/g	<10	18	<10	2254059	<10	10	2252122
F3 (C16-C34 Hydrocarbons)	ug/g	1400	2500	<10	2254059	<10	10	2252122
F4 (C34-C50 Hydrocarbons)	ug/g	380	690	<10	2254059	<10	10	2252122
Reached Baseline at C50	ug/g	Yes	Yes	Yes	2254059	Yes	N/A	2252122
Surrogate Recovery (%)								
1,4-Difluorobenzene	%	94	92	91	2253089	N/A	N/A	N/A
4-Bromofluorobenzene	%	99	98	100	2253089	N/A	N/A	N/A
D10-Ethylbenzene	%	108	104	104	2253089	N/A	N/A	N/A
D4-1,2-Dichloroethane	%	98	97	94	2253089	N/A	N/A	N/A
o-Terphenyl	%	98	94	69	2254059	93	N/A	2252122

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

Maxxam Job #: B0B8761
Report Date: 2010/09/07

AECOM Canada Ltd
Client Project #: 60158564
Project name: SOIL/SEDIMENT DURBAN ISLAND SI

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		GZ3251	GZ3252	GZ3253	GZ3254	GZ3258	GZ3259		
Sampling Date		2010/08/22	2010/08/22	2010/08/22	2010/08/22	2010/08/22	2010/08/22		
COC Number		203504-3	203504-3	203504-3	203504-3	203504-3	203504-3		
	Units	**10-0320**	**10-0321**	**10-0322**	**10-0323**	**10-0324**	**10-0325**	**RDL**	**QC Batch**
BTEX & F1 Hydrocarbons									
F1 (C6-C10)	ug/g	<10	<10	<10	<10	<10	<10	10	2253089
F1 (C6-C10) - BTEX	ug/g	<10	<10	<10	<10	<10	<10	10	2253089
F2-F4 Hydrocarbons									
F2 (C10-C16 Hydrocarbons)	ug/g	<10	<10	<10	<10	<10	<10	10	2249780
F3 (C16-C34 Hydrocarbons)	ug/g	<10	<10	<10	<10	<10	<10	10	2249780
F4 (C34-C50 Hydrocarbons)	ug/g	<10	<10	<10	<10	<10	<10	10	2249780
Reached Baseline at C50	ug/g	Yes	Yes	Yes	Yes	Yes	Yes	N/A	2249780
Surrogate Recovery (%)									
1,4-Difluorobenzene	%	92	92	92	93	93	93	N/A	2253089
4-Bromofluorobenzene	%	100	97	101	102	102	102	N/A	2253089
D10-Ethylbenzene	%	99	100	97	103	101	101	N/A	2253089
D4-1,2-Dichloroethane	%	95	97	98	98	99	99	N/A	2253089
o-Terphenyl	%	87	90	87	90	90	91	N/A	2249780

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

Maxxam Job #: B0B8761
Report Date: 2010/09/07

AECOM Canada Ltd
Client Project #: 60158564
Project name: SOIL/SEDIMENT DURBAN ISLAND SI

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		GZ3261	GZ3262	GZ3263	GZ3264		GZ3265		
Sampling Date		2010/08/22	2010/08/22	2010/08/22	2010/08/22		2010/08/22		
COC Number		203504-3	203504-3	203504-3	203504-3		203504-3		
	Units	**10-0356**	**10-0357**	**10-0358**	**10-0359**	**QC Batch**	**10-0360**	**RDL**	**QC Batch**
BTEX & F1 Hydrocarbons									
F1 (C6-C10)	ug/g	<10	<10	<10	<10	2253089	<10	10	2253089
F1 (C6-C10) - BTEX	ug/g	<10	<10	<10	<10	2253089	<10	10	2253089
F2-F4 Hydrocarbons									
F2 (C10-C16 Hydrocarbons)	ug/g	<10	<10	<10	<10	2249780	<10	10	2254059
F3 (C16-C34 Hydrocarbons)	ug/g	<10	<10	75	<10	2249780	<10	10	2254059
F4 (C34-C50 Hydrocarbons)	ug/g	<10	<10	22	<10	2249780	<10	10	2254059
Reached Baseline at C50	ug/g	Yes	Yes	Yes	Yes	2249780	Yes	N/A	2254059
Surrogate Recovery (%)									
1,4-Difluorobenzene	%	92	93	93	92	2253089	92	N/A	2253089
4-Bromofluorobenzene	%	99	102	101	103	2253089	100	N/A	2253089
D10-Ethylbenzene	%	110	101	105	100	2253089	104	N/A	2253089
D4-1,2-Dichloroethane	%	101	101	100	100	2253089	99	N/A	2253089
o-Terphenyl	%	89	90	92	87	2249780	92	N/A	2254059

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

Maxxam Job #: B0B8761
Report Date: 2010/09/07

AECOM Canada Ltd
Client Project #: 60158564
Project name: SOIL/SEDIMENT DURBAN ISLAND SI

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		GZ3266		GZ3267		
Sampling Date		2010/08/22		2010/08/22		
COC Number		203504-3		203504-3		
	Units	**10-0361**	**QC Batch**	**10-0362**	**RDL**	**QC Batch**
BTEX & F1 Hydrocarbons						
F1 (C6-C10)	ug/g	<10	2253089	<10	10	2254539
F1 (C6-C10) - BTEX	ug/g	<10	2253089	<10	10	2254539
F2-F4 Hydrocarbons						
F2 (C10-C16 Hydrocarbons)	ug/g	<10	2254059	<10	10	2254059
F3 (C16-C34 Hydrocarbons)	ug/g	22	2254059	<10	10	2254059
F4 (C34-C50 Hydrocarbons)	ug/g	<10	2254059	<10	10	2254059
Reached Baseline at C50	ug/g	Yes	2254059	Yes	N/A	2254059
Surrogate Recovery (%)						
1,4-Difluorobenzene	%	93	2253089	92	N/A	2254539
4-Bromofluorobenzene	%	102	2253089	103	N/A	2254539
D10-Ethylbenzene	%	103	2253089	104	N/A	2254539
D4-1,2-Dichloroethane	%	101	2253089	99	N/A	2254539
o-Terphenyl	%	96	2254059	85	N/A	2254059

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

Maxxam Job #: B0B8761
Report Date: 2010/09/07

AECOM Canada Ltd
Client Project #: 60158564
Project name: SOIL/SEDIMENT DURBAN ISLAND SI

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		GZ3245		GZ3246	GZ3247	GZ3248	GZ3249		
Sampling Date		2010/08/21		2010/08/21	2010/08/21	2010/08/21	2010/08/22		
COC Number		203504-3		203504-3	203504-3	203504-3	203504-3		
	Units	**10-0314**	**RDL**	**10-0315**	**10-0316**	**10-0317**	**10-0318**	**RDL**	**QC Batch**
PCBs									
Aroclor 1016	ug/g	<0.05	0.05	<0.01	<0.01	<0.01	<0.01	0.01	2252977
Aroclor 1221	ug/g	<0.05	0.05	<0.01	<0.01	<0.01	<0.01	0.01	2252977
Aroclor 1232	ug/g	<0.05	0.05	<0.01	<0.01	<0.01	<0.01	0.01	2252977
Aroclor 1242	ug/g	<0.05	0.05	<0.01	<0.01	<0.01	<0.01	0.01	2252977
Aroclor 1248	ug/g	<0.05	0.05	<0.01	<0.01	<0.01	<0.01	0.01	2252977
Aroclor 1254	ug/g	0.65	0.05	0.40	<0.01	<0.01	<0.01	0.01	2252977
Aroclor 1260	ug/g	0.07	0.05	0.03	<0.01	<0.01	<0.01	0.01	2252977
Aroclor 1262	ug/g	<0.05	0.05	<0.01	<0.01	<0.01	<0.01	0.01	2252977
Aroclor 1268	ug/g	<0.05	0.05	<0.01	<0.01	<0.01	<0.01	0.01	2252977
Total PCB	ug/g	0.72	0.05	0.43	<0.01	<0.01	<0.01	0.01	2252977
Surrogate Recovery (%)									
2,4,5,6-Tetrachloro-m-xylene	%	77	N/A	87	80	87	72	N/A	2252977
Decachlorobiphenyl	%	90	N/A	97	103	116	100	N/A	2252977

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

Maxxam Job #: B0B8761
Report Date: 2010/09/07

AECOM Canada Ltd
Client Project #: 60158564
Project name: SOIL/SEDIMENT DURBAN ISLAND SI

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		GZ3250	GZ3251	GZ3252	GZ3253	GZ3254	GZ3258		
Sampling Date		2010/08/22	2010/08/22	2010/08/22	2010/08/22	2010/08/22	2010/08/22		
COC Number		203504-3	203504-3	203504-3	203504-3	203504-3	203504-3		
	Units	**10-0319**	**10-0320**	**10-0321**	**10-0322**	**10-0323**	**10-0324**	**RDL**	**QC Batch**
PCBs									
Aroclor 1016	ug/g	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	2252977
Aroclor 1221	ug/g	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	2252977
Aroclor 1232	ug/g	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	2252977
Aroclor 1242	ug/g	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	2252977
Aroclor 1248	ug/g	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	2252977
Aroclor 1254	ug/g	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	2252977
Aroclor 1260	ug/g	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	2252977
Aroclor 1262	ug/g	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	2252977
Aroclor 1268	ug/g	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	2252977
Total PCB	ug/g	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	2252977
Surrogate Recovery (%)									
2,4,5,6-Tetrachloro-m-xylene	%	79	91	69	60	68	82	N/A	2252977
Decachlorobiphenyl	%	106	142 (1)	126	120	120	123	N/A	2252977

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Surrogate recovery was above the upper control limit. This may represent a high bias in some results.

Maxxam Job #: B0B8761
Report Date: 2010/09/07

AECOM Canada Ltd
Client Project #: 60158564
Project name: SOIL/SEDIMENT DURBAN ISLAND SI

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		GZ3259	GZ3261	GZ3262	GZ3263	GZ3264	GZ3265		
Sampling Date		2010/08/22	2010/08/22	2010/08/22	2010/08/22	2010/08/22	2010/08/22		
COC Number		203504-3	203504-3	203504-3	203504-3	203504-3	203504-3		
	Units	**10-0325**	**10-0356**	**10-0357**	**10-0358**	**10-0359**	**10-0360**	**RDL**	**QC Batch**
PCBs									
Aroclor 1016	ug/g	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	2252977
Aroclor 1221	ug/g	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	2252977
Aroclor 1232	ug/g	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	2252977
Aroclor 1242	ug/g	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	2252977
Aroclor 1248	ug/g	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	2252977
Aroclor 1254	ug/g	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	2252977
Aroclor 1260	ug/g	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	2252977
Aroclor 1262	ug/g	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	2252977
Aroclor 1268	ug/g	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	2252977
Total PCB	ug/g	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	2252977
Surrogate Recovery (%)									
2,4,5,6-Tetrachloro-m-xylene	%	72	62	67	88	87	75	N/A	2252977
Decachlorobiphenyl	%	119	105	116	114	122	108	N/A	2252977

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

Maxxam Job #: B0B8761
Report Date: 2010/09/07

AECOM Canada Ltd
Client Project #: 60158564
Project name: SOIL/SEDIMENT DURBAN ISLAND SI

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		GZ3266	GZ3267		
Sampling Date		2010/08/22	2010/08/22		
COC Number		203504-3	203504-3		
	Units	**10-0361**	**10-0362**	**RDL**	**QC Batch**
PCBs					
Aroclor 1016	ug/g	<0.01	<0.01	0.01	2252977
Aroclor 1221	ug/g	<0.01	<0.01	0.01	2252977
Aroclor 1232	ug/g	<0.01	<0.01	0.01	2252977
Aroclor 1242	ug/g	<0.01	<0.01	0.01	2252977
Aroclor 1248	ug/g	<0.01	<0.01	0.01	2252977
Aroclor 1254	ug/g	<0.01	<0.01	0.01	2252977
Aroclor 1260	ug/g	<0.01	<0.01	0.01	2252977
Aroclor 1262	ug/g	<0.01	<0.01	0.01	2252977
Aroclor 1268	ug/g	<0.01	<0.01	0.01	2252977
Total PCB	ug/g	<0.01	<0.01	0.01	2252977
Surrogate Recovery (%)					
2,4,5,6-Tetrachloro-m-xylene	%	89	79	N/A	2252977
Decachlorobiphenyl	%	116	108	N/A	2252977

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

Maxxam Job #: B0B8761
Report Date: 2010/09/07

AECOM Canada Ltd
Client Project #: 60158564
Project name: SOIL/SEDIMENT DURBAN ISLAND SI

GENERAL COMMENTS

BTEX/F1 were analyzed past holdtime with client's consent.

Sample GZ3245-01: PCB Analysis: Due to high concentrations of the target analytes, sample required dilution. Detection limits were adjusted accordingly.

Results relate only to the items tested.

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Quality Assurance Report

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QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2249780	PRB	Matrix Spike	o-Terphenyl	2010/09/01		102	%	30 - 130
			F2 (C10-C16 Hydrocarbons)	2010/09/01		110	%	60 - 130
			F3 (C16-C34 Hydrocarbons)	2010/09/01		110	%	60 - 130
			F4 (C34-C50 Hydrocarbons)	2010/09/01		110	%	60 - 130
		Spiked Blank	o-Terphenyl	2010/09/01		89	%	30 - 130
			F2 (C10-C16 Hydrocarbons)	2010/09/01		98	%	60 - 130
			F3 (C16-C34 Hydrocarbons)	2010/09/01		98	%	60 - 130
			F4 (C34-C50 Hydrocarbons)	2010/09/01		98	%	60 - 130
		Method Blank	o-Terphenyl	2010/09/01		87	%	30 - 130
			F2 (C10-C16 Hydrocarbons)	2010/09/01	<10		ug/g	
			F3 (C16-C34 Hydrocarbons)	2010/09/01	<10		ug/g	
			F4 (C34-C50 Hydrocarbons)	2010/09/01	<10		ug/g	
		RPD	F2 (C10-C16 Hydrocarbons)	2010/09/01	NC		%	50
			F3 (C16-C34 Hydrocarbons)	2010/09/01	18.2		%	50
			F4 (C34-C50 Hydrocarbons)	2010/09/01	33.2		%	50
2251464	S_N	Spiked Blank	4-Bromofluorobenzene	2010/09/03		110	%	60 - 140
			D4-1,2-Dichloroethane	2010/09/03		95	%	60 - 140
			D8-Toluene	2010/09/03		98	%	60 - 140
			Benzene	2010/09/03		102	%	60 - 140
		RPD	Benzene	2010/09/01	5.3		%	50
		Spiked Blank	Ethylbenzene	2010/09/03		86	%	60 - 140
		RPD	Ethylbenzene	2010/09/01	21.0		%	50
		Spiked Blank	Toluene	2010/09/03		91	%	60 - 140
		RPD	Toluene	2010/09/01	19.2		%	50
		Spiked Blank	p+m-Xylene	2010/09/03		90	%	60 - 140
		RPD	p+m-Xylene	2010/09/01	28.3		%	50
		Spiked Blank	o-Xylene	2010/09/03		87	%	60 - 140
		RPD	o-Xylene	2010/09/01	22.5		%	50
		Method Blank	4-Bromofluorobenzene	2010/09/03		122	%	60 - 140
			D4-1,2-Dichloroethane	2010/09/03		98	%	60 - 140
			D8-Toluene	2010/09/03		102	%	60 - 140
			Benzene	2010/09/03	<0.002		ug/g	
			Ethylbenzene	2010/09/03	<0.002		ug/g	
			Toluene	2010/09/03	<0.002		ug/g	
			p+m-Xylene	2010/09/03	<0.002		ug/g	
			o-Xylene	2010/09/03	<0.002		ug/g	
			Xylene (Total)	2010/09/03	<0.002		ug/g	
		RPD [GZ3245-01]	Benzene	2010/09/03	NC		%	50
			Ethylbenzene	2010/09/03	NC		%	50
			Toluene	2010/09/03	NC		%	50
			p+m-Xylene	2010/09/03	NC		%	50
			o-Xylene	2010/09/03	NC		%	50
			Xylene (Total)	2010/09/03	NC		%	50
2251478	S_N	RPD [GZ3245-01]	Moisture	2010/09/01	0		%	50
2252122	ZZ	Matrix Spike	o-Terphenyl	2010/09/01		102	%	30 - 130
			F2 (C10-C16 Hydrocarbons)	2010/09/01		91	%	60 - 130
			F3 (C16-C34 Hydrocarbons)	2010/09/01		91	%	60 - 130
			F4 (C34-C50 Hydrocarbons)	2010/09/01		91	%	60 - 130
		Spiked Blank	o-Terphenyl	2010/09/01		95	%	30 - 130
			F2 (C10-C16 Hydrocarbons)	2010/09/01		84	%	60 - 130
			F3 (C16-C34 Hydrocarbons)	2010/09/01		84	%	60 - 130
			F4 (C34-C50 Hydrocarbons)	2010/09/01		84	%	60 - 130
		Method Blank	o-Terphenyl	2010/09/01		98	%	30 - 130
			F2 (C10-C16 Hydrocarbons)	2010/09/01	<10		ug/g	
			F3 (C16-C34 Hydrocarbons)	2010/09/01	<10		ug/g	

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QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2252122	ZZ	Method Blank	F4 (C34-C50 Hydrocarbons)	2010/09/01	<10		ug/g	
		RPD	F2 (C10-C16 Hydrocarbons)	2010/09/01	NC		%	50
			F3 (C16-C34 Hydrocarbons)	2010/09/01	NC		%	50
2252977	LPG	Matrix Spike						
		[GZ3264-03]	2,4,5,6-Tetrachloro-m-xylene	2010/09/02		96	%	40 - 130
			Decachlorobiphenyl	2010/09/02		115	%	40 - 130
			Aroclor 1260	2010/09/02		107	%	30 - 130
			Total PCB	2010/09/02		107	%	30 - 130
		Spiked Blank	2,4,5,6-Tetrachloro-m-xylene	2010/09/02		93	%	40 - 130
			Decachlorobiphenyl	2010/09/02		109	%	40 - 130
			Aroclor 1260	2010/09/02		101	%	30 - 130
			Total PCB	2010/09/02		101	%	30 - 130
		Method Blank	2,4,5,6-Tetrachloro-m-xylene	2010/09/02		100	%	40 - 130
			Decachlorobiphenyl	2010/09/02		112	%	40 - 130
			Aroclor 1016	2010/09/02	<0.01		ug/g	
			Aroclor 1221	2010/09/02	<0.01		ug/g	
			Aroclor 1232	2010/09/02	<0.01		ug/g	
			Aroclor 1242	2010/09/02	<0.01		ug/g	
			Aroclor 1248	2010/09/02	<0.01		ug/g	
			Aroclor 1254	2010/09/02	<0.01		ug/g	
			Aroclor 1260	2010/09/02	<0.01		ug/g	
			Aroclor 1262	2010/09/02	<0.01		ug/g	
			Aroclor 1268	2010/09/02	<0.01		ug/g	
			Total PCB	2010/09/02	<0.01		ug/g	
		RPD [GZ3264-03]	Aroclor 1016	2010/09/02	NC		%	50
			Aroclor 1221	2010/09/02	NC		%	50
			Aroclor 1232	2010/09/02	NC		%	50
			Aroclor 1242	2010/09/02	NC		%	50
			Aroclor 1248	2010/09/02	NC		%	50
			Aroclor 1254	2010/09/02	NC		%	50
			Aroclor 1260	2010/09/02	NC		%	50
			Aroclor 1262	2010/09/02	NC		%	50
			Aroclor 1268	2010/09/02	NC		%	50
			Total PCB	2010/09/02	NC		%	50
2253089	STE	Matrix Spike	1,4-Difluorobenzene	2010/09/01		94	%	60 - 140
			4-Bromofluorobenzene	2010/09/01		106	%	60 - 140
			D10-Ethylbenzene	2010/09/01		105	%	30 - 130
			D4-1,2-Dichloroethane	2010/09/01		101	%	60 - 140
			F1 (C6-C10)	2010/09/01		100	%	60 - 140
		Spiked Blank	1,4-Difluorobenzene	2010/09/01		92	%	60 - 140
			4-Bromofluorobenzene	2010/09/01		104	%	60 - 140
			D10-Ethylbenzene	2010/09/01		109	%	30 - 130
			D4-1,2-Dichloroethane	2010/09/01		96	%	60 - 140
			F1 (C6-C10)	2010/09/01		94	%	60 - 140
		Method Blank	1,4-Difluorobenzene	2010/09/01		97	%	60 - 140
			4-Bromofluorobenzene	2010/09/01		99	%	60 - 140
			D10-Ethylbenzene	2010/09/01		104	%	30 - 130
			D4-1,2-Dichloroethane	2010/09/01		102	%	60 - 140
			F1 (C6-C10)	2010/09/01	<10		ug/g	
			F1 (C6-C10) - BTEX	2010/09/01	<10		ug/g	
		RPD	F1 (C6-C10)	2010/09/01	NC		%	50
			F1 (C6-C10) - BTEX	2010/09/01	NC		%	50
2253364	LKA	RPD	Moisture	2010/09/01	5.8		%	20
2254059	PRB	Matrix Spike						
		[GZ3246-01]	o-Terphenyl	2010/09/02		95	%	30 - 130

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QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2254059	PRB	Matrix Spike						
		[GZ3246-01]	F2 (C10-C16 Hydrocarbons)	2010/09/02		100	%	60 - 130
			F3 (C16-C34 Hydrocarbons)	2010/09/02		100	%	60 - 130
			F4 (C34-C50 Hydrocarbons)	2010/09/02		100	%	60 - 130
		Spiked Blank	o-Terphenyl	2010/09/02		95	%	30 - 130
			F2 (C10-C16 Hydrocarbons)	2010/09/02		98	%	60 - 130
			F3 (C16-C34 Hydrocarbons)	2010/09/02		98	%	60 - 130
			F4 (C34-C50 Hydrocarbons)	2010/09/02		98	%	60 - 130
		Method Blank	o-Terphenyl	2010/09/02		96	%	30 - 130
			F2 (C10-C16 Hydrocarbons)	2010/09/02	<10		ug/g	
			F3 (C16-C34 Hydrocarbons)	2010/09/02	<10		ug/g	
			F4 (C34-C50 Hydrocarbons)	2010/09/02	<10		ug/g	
		RPD [GZ3245-01]	F2 (C10-C16 Hydrocarbons)	2010/09/02	NC		%	50
			F3 (C16-C34 Hydrocarbons)	2010/09/02	26.5		%	50
			F4 (C34-C50 Hydrocarbons)	2010/09/02	23.7		%	50
2254539	STE	Spiked Blank	1,4-Difluorobenzene	2010/09/02		92	%	60 - 140
			4-Bromofluorobenzene	2010/09/02		106	%	60 - 140
			D10-Ethylbenzene	2010/09/02		109	%	30 - 130
			D4-1,2-Dichloroethane	2010/09/02		98	%	60 - 140
			F1 (C6-C10)	2010/09/02		97	%	60 - 140
		RPD	F1 (C6-C10)	2010/09/02	0.7		%	50
		Method Blank	1,4-Difluorobenzene	2010/09/02		92	%	60 - 140
			4-Bromofluorobenzene	2010/09/02		103	%	60 - 140
			D10-Ethylbenzene	2010/09/02		103	%	30 - 130
			D4-1,2-Dichloroethane	2010/09/02		98	%	60 - 140
			F1 (C6-C10)	2010/09/02	<10		ug/g	
			F1 (C6-C10) - BTEX	2010/09/02	<10		ug/g	
2255056	VIV	Matrix Spike	Acid Extractable Arsenic (As)	2010/09/03		102	%	75 - 125
			Acid Extractable Cadmium (Cd)	2010/09/03		106	%	75 - 125
			Acid Extractable Chromium (Cr)	2010/09/03		102	%	75 - 125
			Acid Extractable Cobalt (Co)	2010/09/03		100	%	75 - 125
			Acid Extractable Copper (Cu)	2010/09/03		91	%	75 - 125
			Acid Extractable Lead (Pb)	2010/09/03		NC	%	75 - 125
			Acid Extractable Nickel (Ni)	2010/09/03		102	%	75 - 125
			Acid Extractable Zinc (Zn)	2010/09/03		NC	%	75 - 125
		QC Standard	Acid Extractable Arsenic (As)	2010/09/03		97	%	75 - 125
			Acid Extractable Cadmium (Cd)	2010/09/03		99	%	75 - 125
			Acid Extractable Chromium (Cr)	2010/09/03		95	%	75 - 125
			Acid Extractable Cobalt (Co)	2010/09/03		95	%	75 - 125
			Acid Extractable Copper (Cu)	2010/09/03		97	%	75 - 125
			Acid Extractable Lead (Pb)	2010/09/03		99	%	75 - 125
			Acid Extractable Nickel (Ni)	2010/09/03		96	%	75 - 125
			Acid Extractable Zinc (Zn)	2010/09/03		99	%	75 - 125
		Method Blank	Acid Extractable Arsenic (As)	2010/09/03	<1		ug/g	
			Acid Extractable Cadmium (Cd)	2010/09/03	<0.1		ug/g	
			Acid Extractable Chromium (Cr)	2010/09/03	<1		ug/g	
			Acid Extractable Cobalt (Co)	2010/09/03	<0.1		ug/g	
			Acid Extractable Copper (Cu)	2010/09/03	<0.5		ug/g	
			Acid Extractable Lead (Pb)	2010/09/03	<1		ug/g	
			Acid Extractable Nickel (Ni)	2010/09/03	<0.5		ug/g	
			Acid Extractable Zinc (Zn)	2010/09/03	<5		ug/g	
		RPD	Acid Extractable Arsenic (As)	2010/09/03	NC		%	35
			Acid Extractable Cadmium (Cd)	2010/09/03	NC		%	35
			Acid Extractable Chromium (Cr)	2010/09/03	4.9		%	35
			Acid Extractable Cobalt (Co)	2010/09/03	3.4		%	35

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QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2255056	VIV	RPD	Acid Extractable Copper (Cu)	2010/09/03	5.0		%	35
			Acid Extractable Lead (Pb)	2010/09/03	4.3		%	35
			Acid Extractable Nickel (Ni)	2010/09/03	0.1		%	35
			Acid Extractable Zinc (Zn)	2010/09/03	1.6		%	35
2255184	VIV	Matrix Spike	Acid Extractable Arsenic (As)	2010/09/03		96	%	75 - 125
			Acid Extractable Cadmium (Cd)	2010/09/03		103	%	75 - 125
			Acid Extractable Chromium (Cr)	2010/09/03		101	%	75 - 125
			Acid Extractable Cobalt (Co)	2010/09/03		95	%	75 - 125
			Acid Extractable Copper (Cu)	2010/09/03		93	%	75 - 125
			Acid Extractable Lead (Pb)	2010/09/03		94	%	75 - 125
			Acid Extractable Nickel (Ni)	2010/09/03		111	%	75 - 125
			Acid Extractable Zinc (Zn)	2010/09/03		96	%	75 - 125
		QC Standard	Acid Extractable Arsenic (As)	2010/09/03		101	%	75 - 125
			Acid Extractable Cadmium (Cd)	2010/09/03		106	%	75 - 125
			Acid Extractable Chromium (Cr)	2010/09/03		103	%	75 - 125
			Acid Extractable Cobalt (Co)	2010/09/03		103	%	75 - 125
			Acid Extractable Copper (Cu)	2010/09/03		103	%	75 - 125
			Acid Extractable Lead (Pb)	2010/09/03		100	%	75 - 125
			Acid Extractable Nickel (Ni)	2010/09/03		101	%	75 - 125
			Acid Extractable Zinc (Zn)	2010/09/03		106	%	75 - 125
		Method Blank	Acid Extractable Arsenic (As)	2010/09/03	<1		ug/g	
			Acid Extractable Cadmium (Cd)	2010/09/03	<0.1		ug/g	
			Acid Extractable Chromium (Cr)	2010/09/03	<1		ug/g	
			Acid Extractable Cobalt (Co)	2010/09/03	<0.1		ug/g	
			Acid Extractable Copper (Cu)	2010/09/03	<0.5		ug/g	
			Acid Extractable Lead (Pb)	2010/09/03	<1		ug/g	
			Acid Extractable Nickel (Ni)	2010/09/03	<0.5		ug/g	
			Acid Extractable Zinc (Zn)	2010/09/03	<5		ug/g	
		RPD	Acid Extractable Cobalt (Co)	2010/09/03	2.9		%	35
			Acid Extractable Nickel (Ni)	2010/09/03	14.2		%	35
2255191	VIV	Matrix Spike [GZ3249-03]	Acid Extractable Arsenic (As)	2010/09/03		96	%	75 - 125
			Acid Extractable Cadmium (Cd)	2010/09/03		104	%	75 - 125
			Acid Extractable Chromium (Cr)	2010/09/03		NC	%	75 - 125
			Acid Extractable Cobalt (Co)	2010/09/03		NC	%	75 - 125
			Acid Extractable Copper (Cu)	2010/09/03		NC	%	75 - 125
			Acid Extractable Lead (Pb)	2010/09/03		97	%	75 - 125
			Acid Extractable Nickel (Ni)	2010/09/03		NC	%	75 - 125
			Acid Extractable Zinc (Zn)	2010/09/03		NC	%	75 - 125
		QC Standard	Acid Extractable Arsenic (As)	2010/09/03		99	%	75 - 125
			Acid Extractable Cadmium (Cd)	2010/09/03		104	%	75 - 125
			Acid Extractable Chromium (Cr)	2010/09/03		102	%	75 - 125
			Acid Extractable Cobalt (Co)	2010/09/03		102	%	75 - 125
			Acid Extractable Copper (Cu)	2010/09/03		98	%	75 - 125
			Acid Extractable Lead (Pb)	2010/09/03		99	%	75 - 125
			Acid Extractable Nickel (Ni)	2010/09/03		100	%	75 - 125
			Acid Extractable Zinc (Zn)	2010/09/03		101	%	75 - 125
		Method Blank	Acid Extractable Arsenic (As)	2010/09/03	<1		ug/g	
			Acid Extractable Cadmium (Cd)	2010/09/03	<0.1		ug/g	
			Acid Extractable Chromium (Cr)	2010/09/03	<1		ug/g	
			Acid Extractable Cobalt (Co)	2010/09/03	<0.1		ug/g	
			Acid Extractable Copper (Cu)	2010/09/03	<0.5		ug/g	
			Acid Extractable Lead (Pb)	2010/09/03	<1		ug/g	
			Acid Extractable Nickel (Ni)	2010/09/03	<0.5		ug/g	
			Acid Extractable Zinc (Zn)	2010/09/03	<5		ug/g	

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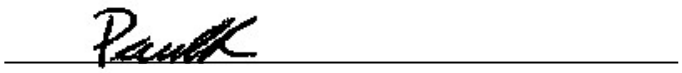
QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2255191	VIV	RPD [GZ3249-03]	Acid Extractable Arsenic (As)	2010/09/03	NC		%	35
			Acid Extractable Cadmium (Cd)	2010/09/03	NC		%	35
			Acid Extractable Chromium (Cr)	2010/09/03	0.7		%	35
			Acid Extractable Cobalt (Co)	2010/09/03	1.9		%	35
			Acid Extractable Copper (Cu)	2010/09/03	7.4		%	35
			Acid Extractable Lead (Pb)	2010/09/03	NC		%	35
			Acid Extractable Nickel (Ni)	2010/09/03	3.1		%	35
			Acid Extractable Zinc (Zn)	2010/09/03	1.8		%	35
2255353	VIV	Matrix Spike	Acid Extractable Arsenic (As)	2010/09/03		97	%	75 - 125
			Acid Extractable Cadmium (Cd)	2010/09/03		104	%	75 - 125
			Acid Extractable Chromium (Cr)	2010/09/03		97	%	75 - 125
			Acid Extractable Cobalt (Co)	2010/09/03		93	%	75 - 125
			Acid Extractable Copper (Cu)	2010/09/03		86	%	75 - 125
			Acid Extractable Lead (Pb)	2010/09/03		93	%	75 - 125
			Acid Extractable Nickel (Ni)	2010/09/03		91	%	75 - 125
			Acid Extractable Zinc (Zn)	2010/09/03		NC	%	75 - 125
		QC Standard	Acid Extractable Arsenic (As)	2010/09/03		96	%	75 - 125
			Acid Extractable Cadmium (Cd)	2010/09/03		101	%	75 - 125
			Acid Extractable Chromium (Cr)	2010/09/03		99	%	75 - 125
			Acid Extractable Cobalt (Co)	2010/09/03		97	%	75 - 125
			Acid Extractable Copper (Cu)	2010/09/03		100	%	75 - 125
			Acid Extractable Lead (Pb)	2010/09/03		97	%	75 - 125
			Acid Extractable Nickel (Ni)	2010/09/03		99	%	75 - 125
			Acid Extractable Zinc (Zn)	2010/09/03		100	%	75 - 125
		Method Blank	Acid Extractable Arsenic (As)	2010/09/03	<1		ug/g	
			Acid Extractable Cadmium (Cd)	2010/09/03	<0.1		ug/g	
			Acid Extractable Chromium (Cr)	2010/09/03	<1		ug/g	
			Acid Extractable Cobalt (Co)	2010/09/03	<0.1		ug/g	
			Acid Extractable Copper (Cu)	2010/09/03	<0.5		ug/g	
			Acid Extractable Lead (Pb)	2010/09/03	<1		ug/g	
			Acid Extractable Nickel (Ni)	2010/09/03	<0.5		ug/g	
			Acid Extractable Zinc (Zn)	2010/09/03	<5		ug/g	
		RPD	Acid Extractable Arsenic (As)	2010/09/03	NC		%	35
			Acid Extractable Cadmium (Cd)	2010/09/03	NC		%	35
			Acid Extractable Chromium (Cr)	2010/09/03	0.3		%	35
			Acid Extractable Cobalt (Co)	2010/09/03	3.1		%	35
			Acid Extractable Copper (Cu)	2010/09/03	9.9		%	35
			Acid Extractable Lead (Pb)	2010/09/03	1.9		%	35
			Acid Extractable Nickel (Ni)	2010/09/03	1.0		%	35
			Acid Extractable Zinc (Zn)	2010/09/03	0.4		%	35

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 blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.
NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was not sufficiently significant to permit a reliable recovery calculation.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.

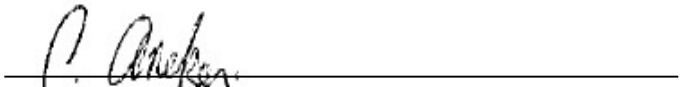
Validation Signature Page

Maxxam Job #: B0B8761

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



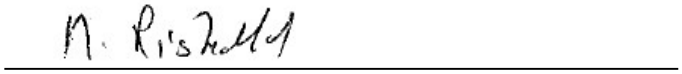
PAUL RUBINATO, Analyst, Maxxam Analytics



CHARLES ANCKER, B.Sc., M.Sc., C.Chem, Senior Analyst



STEVE ROBERTS, Lab Supervisor, Ottawa



MEDHAT RISKALLAH, Manager, Hydrocarbon Department



CRISTINA CARRIERE, Scientific Services

==========

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

Your Project #: 60158564
Site: SOIL/SEDIMENT DURBAN ISLAND

Attention: Jenna Morrish
AECOM Canada Ltd
2540 Kensington Rd NW
Calgary, AB
CANADA T2N3S3

Report Date: 2010/10/01

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B0D3443
Received: 2010/09/23, 19:52

Sample Matrix: Soil
Samples Received: 16

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Petroleum Hydro. CCME F1 & BTEX in Soil	6	2010/09/27	2010/09/29	CAM SOP-00315	CCME CWS
Petroleum Hydro. CCME F1 & BTEX in Soil	1	2010/09/27	2010/09/30	CAM SOP-00315	CCME CWS
Petroleum Hydrocarbons F2-F4 in Soil	7	2010/09/27	2010/09/29	CAM SOP-00316	CCME CWS
Total Metals Analysis by ICP	4	2010/09/30	2010/09/30	CAM SOP-00408	EPA 6010
Acid Extr. Metals (aqua regia) by ICPMS	3	2010/09/29	2010/09/29	CAM SOP-00447	EPA 6020
Moisture	11	N/A	2010/09/28	CAM SOP-00445	McKeague 2nd ed 1978
Polychlorinated Biphenyl in Soil	4	2010/09/28	2010/09/29	CAM SOP-00309	SW846 8082
Sieve, 75um (1)	1	N/A	2010/09/29	CAM SOP-00467	
Volatile Organic Compounds in Soil	2	2010/09/27	2010/09/29	CAM SOP-00226	EPA 8260 modified
Volatile Organic Compounds in Soil	5	2010/09/27	2010/09/30	CAM SOP-00226	EPA 8260 modified

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

(1) The Sieve test has been validated in accordance with ISO Guide 17025 requirements. SCC accreditation pending.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

MARIJANE CRUZ, Project Manager
Email: Marijane.Cruz@maxxamanalytics.com
Phone# (905) 817-5756

==========

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Total cover pages: 1

Maxxam Job #: B0D3443
Report Date: 2010/10/01

AECOM Canada Ltd
Client Project #: 60158564
Project name: SOIL/SEDIMENT DURBAN ISLAND

RESULTS OF ANALYSES OF SOIL

Maxxam ID		HG5257	HG5258	HG5259		HG5260		
Sampling Date		2010/08/13	2010/08/13	2010/08/13		2010/08/13		
	Units	**10-0165**	**10-0189**	**10-0193**	**QC Batch**	**10-0202**	**RDL**	**QC Batch**
Inorganics								
Moisture	%	6	N/A	8	2279863	9	1	2279902
Miscellaneous Parameters								
Grain Size	%	N/A	COARSE	N/A	2282663	N/A	N/A	N/A
Sieve - #200 (<0.075mm)	%	N/A	33	N/A	2282663	N/A	N/A	N/A
Sieve - #200 (>0.075mm)	%	N/A	67	N/A	2282663	N/A	N/A	N/A

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

Maxxam ID		HG5261		HG5262	HG5263	HG5264	HG5265		
Sampling Date		2010/08/13		2010/08/13	2010/08/13	2010/08/13	2010/08/13		
	Units	**10-0208**	**QC Batch**	**10-0213**	**10-0225**	**10-0228**	**10-0229**	**RDL**	**QC Batch**
Inorganics									
Moisture	%	9	2280476	8	7	8	7	1	2279902

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		HG5266	HG5267		HG5269		
Sampling Date		2010/08/13	2010/08/13		2010/08/13		
	Units	**10-0230**	**10-0231**	**QC Batch**	**10-0236**	**RDL**	**QC Batch**
Inorganics							
Moisture	%	8	7	2280381	4	1	2280476

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: B0D3443
Report Date: 2010/10/01

AECOM Canada Ltd
Client Project #: 60158564
Project name: SOIL/SEDIMENT DURBAN ISLAND

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		HG5266	HG5267	HG5268	HG5269	HG5270	HG5271		
Sampling Date		2010/08/13	2010/08/13	2010/08/13	2010/08/13	2010/08/13	2010/08/13		
	Units	**10-0230**	**10-0231**	**10-0233**	**10-0236**	**10-0255**	**10-0258**	**RDL**	**QC Batch**
Metals									
Acid Extractable Cadmium (Cd)	ug/g	3.3	2.8	1.5	N/A	N/A	N/A	0.5	2283132
Acid Extractable Lead (Pb)	ug/g	53	56	N/A	82	N/A	N/A	5	2283132
Acid Extractable Arsenic (As)	ug/g	N/A	N/A	N/A	N/A	2	1	1	2281744
Acid Extractable Copper (Cu)	ug/g	N/A	N/A	N/A	N/A	51	55	0.5	2281744

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

Maxxam ID		HG5272		
Sampling Date		2010/08/13		
	Units	**10-0259**	**RDL**	**QC Batch**
Metals				
Acid Extractable Arsenic (As)	ug/g	2	1	2281744
Acid Extractable Copper (Cu)	ug/g	51	0.5	2281744

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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

Maxxam Job #: B0D3443
Report Date: 2010/10/01

AECOM Canada Ltd
Client Project #: 60158564
Project name: SOIL/SEDIMENT DURBAN ISLAND

VOLATILE ORGANICS BY GC/MS (SOIL)

Maxxam ID		HG5257		HG5259		HG5260		HG5262	HG5263		
Sampling Date		2010/08/13		2010/08/13		2010/08/13		2010/08/13	2010/08/13		
	Units	**10-0165**	**RDL**	**10-0193**	**RDL**	**10-0202**	**RDL**	**10-0213**	**10-0225**	**RDL**	**QC Batch**
Volatile Organics											
Benzene	ug/g	<0.1	0.1	<0.002	0.002	<0.1	0.1	<0.002	<0.002	0.002	2279589
Ethylbenzene	ug/g	<0.1	0.1	<0.002	0.002	<0.1	0.1	<0.002	<0.002	0.002	2279589
Toluene	ug/g	<0.1	0.1	<0.002	0.002	<0.1	0.1	<0.002	<0.002	0.002	2279589
p+m-Xylene	ug/g	<0.1	0.1	<0.002	0.002	<0.1	0.1	<0.002	<0.002	0.002	2279589
o-Xylene	ug/g	<0.1	0.1	<0.002	0.002	<0.1	0.1	<0.002	<0.002	0.002	2279589
Xylene (Total)	ug/g	<0.1	0.1	<0.002	0.002	<0.1	0.1	<0.002	<0.002	0.002	2279589
Surrogate Recovery (%)											
4-Bromofluorobenzene	%	99	N/A	90	N/A	100	N/A	87	86	N/A	2279589
D4-1,2-Dichloroethane	%	101	N/A	97	N/A	101	N/A	117	120	N/A	2279589
D8-Toluene	%	103	N/A	100	N/A	100	N/A	107	110	N/A	2279589

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

Maxxam ID		HG5264		HG5265		
Sampling Date		2010/08/13		2010/08/13		
	Units	**10-0228**	**QC Batch**	**10-0229**	**RDL**	**QC Batch**
Volatile Organics						
Benzene	ug/g	<0.002	2279589	<0.002	0.002	2279600
Ethylbenzene	ug/g	<0.002	2279589	<0.002	0.002	2279600
Toluene	ug/g	<0.002	2279589	<0.002	0.002	2279600
p+m-Xylene	ug/g	<0.002	2279589	<0.002	0.002	2279600
o-Xylene	ug/g	<0.002	2279589	<0.002	0.002	2279600
Xylene (Total)	ug/g	<0.002	2279589	<0.002	0.002	2279600
Surrogate Recovery (%)						
4-Bromofluorobenzene	%	87	2279589	87	N/A	2279600
D4-1,2-Dichloroethane	%	119	2279589	91	N/A	2279600
D8-Toluene	%	104	2279589	102	N/A	2279600

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

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Maxxam Job #: B0D3443
Report Date: 2010/10/01

AECOM Canada Ltd
Client Project #: 60158564
Project name: SOIL/SEDIMENT DURBAN ISLAND

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		HG5257	HG5259	HG5260	HG5262	HG5263	HG5264		
Sampling Date		2010/08/13	2010/08/13	2010/08/13	2010/08/13	2010/08/13	2010/08/13		
	Units	**10-0165**	**10-0193**	**10-0202**	**10-0213**	**10-0225**	**10-0228**	**RDL**	**QC Batch**
BTEX & F1 Hydrocarbons									
F1 (C6-C10)	ug/g	<10	<10	<10	<10	<10	<10	10	2279696
F1 (C6-C10) - BTEX	ug/g	<10	<10	<10	<10	<10	<10	10	2279696
F2-F4 Hydrocarbons									
F2 (C10-C16 Hydrocarbons)	ug/g	2300	14	1900	<10	<10	<10	10	2279700
F3 (C16-C34 Hydrocarbons)	ug/g	640	170	1900	18	12	24	10	2279700
F4 (C34-C50 Hydrocarbons)	ug/g	110	35	420	<10	<10	<10	10	2279700
Reached Baseline at C50	ug/g	Yes	Yes	Yes	Yes	Yes	Yes	N/A	2279700
Surrogate Recovery (%)									
1,4-Difluorobenzene	%	93	102	96	104	102	101	N/A	2279696
4-Bromofluorobenzene	%	109	103	104	102	101	102	N/A	2279696
D10-Ethylbenzene	%	114	95	87	112	115	112	N/A	2279696
D4-1,2-Dichloroethane	%	84	92	99	93	95	93	N/A	2279696
o-Terphenyl	%	93	87	102	95	81	86	N/A	2279700

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

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Maxxam Job #: B0D3443
Report Date: 2010/10/01

AECOM Canada Ltd
Client Project #: 60158564
Project name: SOIL/SEDIMENT DURBAN ISLAND

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		HG5265		
Sampling Date		2010/08/13		
	Units	**10-0229**	**RDL**	**QC Batch**
BTEX & F1 Hydrocarbons				
F1 (C6-C10)	ug/g	<10	10	2279696
F1 (C6-C10) - BTEX	ug/g	<10	10	2279696
F2-F4 Hydrocarbons				
F2 (C10-C16 Hydrocarbons)	ug/g	<10	10	2279700
F3 (C16-C34 Hydrocarbons)	ug/g	43	10	2279700
F4 (C34-C50 Hydrocarbons)	ug/g	<10	10	2279700
Reached Baseline at C50	ug/g	Yes	N/A	2279700
Surrogate Recovery (%)				
1,4-Difluorobenzene	%	103	N/A	2279696
4-Bromofluorobenzene	%	98	N/A	2279696
D10-Ethylbenzene	%	116	N/A	2279696
D4-1,2-Dichloroethane	%	91	N/A	2279696
o-Terphenyl	%	85	N/A	2279700

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

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Maxxam Job #: B0D3443
Report Date: 2010/10/01

AECOM Canada Ltd
Client Project #: 60158564
Project name: SOIL/SEDIMENT DURBAN ISLAND

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		HG5261		HG5266	HG5267		HG5269		
Sampling Date		2010/08/13		2010/08/13	2010/08/13		2010/08/13		
	Units	**10-0208**	**RDL**	**10-0230**	**10-0231**	**RDL**	**10-0236**	**RDL**	**QC Batch**
PCBs									
Aroclor 1016	ug/g	<0.01	0.01	<0.1	<0.1	0.1	<0.01	0.01	2280951
Aroclor 1221	ug/g	<0.01	0.01	<0.1	<0.1	0.1	<0.01	0.01	2280951
Aroclor 1232	ug/g	<0.01	0.01	<0.1	<0.1	0.1	<0.01	0.01	2280951
Aroclor 1242	ug/g	<0.01	0.01	<0.1	<0.1	0.1	<0.01	0.01	2280951
Aroclor 1248	ug/g	<0.01	0.01	<0.1	<0.1	0.1	<0.01	0.01	2280951
Aroclor 1254	ug/g	0.10	0.01	0.9	0.7	0.1	0.46	0.01	2280951
Aroclor 1260	ug/g	0.05	0.01	<0.1	<0.1	0.1	<0.01	0.01	2280951
Aroclor 1262	ug/g	<0.01	0.01	<0.1	<0.1	0.1	<0.01	0.01	2280951
Aroclor 1268	ug/g	<0.01	0.01	<0.1	<0.1	0.1	<0.01	0.01	2280951
Total PCB	ug/g	0.15	0.01	0.9	0.7	0.1	0.46	0.01	2280951
Surrogate Recovery (%)									
2,4,5,6-Tetrachloro-m-xylene	%	76	N/A	76	76	N/A	88	N/A	2280951
Decachlorobiphenyl	%	85	N/A	90	90	N/A	92	N/A	2280951

N/A = Not Applicable
RDL = Reportable Detection Limit
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Maxxam Job #: B0D3443
Report Date: 2010/10/01

AECOM Canada Ltd
Client Project #: 60158564
Project name: SOIL/SEDIMENT DURBAN ISLAND

GENERAL COMMENTS

PCB Analysis: Due to high concentrations of the target analytes, sample required dilution. Detection limits were adjusted accordingly.
F2-F4 Analysis: Analysis was performed past sample holding time. This may increase the variability associated with these results.

VOC Analysis: Due to a level of petroleum hydrocarbon compounds beyond the appropriate range, some of the samples could not be analysed by the low level direct purge method. These samples were preextracted in methanol and the extracts analysed by high level purge & trap (US EPA Method 5035) gas chromatography/mass spectrometry using US EPA Method 8260C (modified). The DLs were adjusted accordingly.

VOC Analysis: The samples were analyzed after the 14 day holding time specified by the method had expired.

Sample HG5265-01: VOC Analysis: The sample was analyzed after the 14 day holding time specified by the method had expired.

Results relate only to the items tested.

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AECOM Canada Ltd
Attention: Jenna Morrish
Client Project #: 60158564
P.O. #:
Project name: SOIL/SEDIMENT DURBAN ISLAND

Quality Assurance Report

Maxxam Job Number: MB0D3443

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2279589	FS	Matrix Spike	4-Bromofluorobenzene	2010/09/28		99	%	60 - 140
			D4-1,2-Dichloroethane	2010/09/28		105	%	60 - 140
			D8-Toluene	2010/09/28		103	%	60 - 140
			Benzene	2010/09/28		81	%	39 - 137
			Ethylbenzene	2010/09/28		79	%	46 - 150
			Toluene	2010/09/28		76	%	30 - 158
			p+m-Xylene	2010/09/28		68	%	29 - 161
			o-Xylene	2010/09/28		85	%	45 - 150
		Spiked Blank	4-Bromofluorobenzene	2010/09/28		96	%	60 - 140
			D4-1,2-Dichloroethane	2010/09/28		89	%	60 - 140
			D8-Toluene	2010/09/28		99	%	60 - 140
			Benzene	2010/09/28		99	%	60 - 140
			Ethylbenzene	2010/09/28		105	%	60 - 140
			Toluene	2010/09/28		96	%	60 - 140
			p+m-Xylene	2010/09/28		108	%	60 - 140
			o-Xylene	2010/09/28		96	%	60 - 140
		Method Blank	4-Bromofluorobenzene	2010/09/28		99	%	60 - 140
			D4-1,2-Dichloroethane	2010/09/28		109	%	60 - 140
			D8-Toluene	2010/09/28		103	%	60 - 140
			Benzene	2010/09/28	<0.002		ug/g	
			Ethylbenzene	2010/09/28	<0.002		ug/g	
			Toluene	2010/09/28	<0.002		ug/g	
			p+m-Xylene	2010/09/28	<0.002		ug/g	
			o-Xylene	2010/09/28	<0.002		ug/g	
			Xylene (Total)	2010/09/28	<0.002		ug/g	
		RPD	Benzene	2010/09/28	NC (1)		%	50
			Ethylbenzene	2010/09/28	59.9 (1)		%	50
			Toluene	2010/09/28	64.1 (1)		%	50
			p+m-Xylene	2010/09/28	52.3 (1)		%	50
			o-Xylene	2010/09/28	NC (1)		%	50
			Xylene (Total)	2010/09/28	52.3 (2)		%	50
2279600	JZO	Matrix Spike	4-Bromofluorobenzene	2010/09/28		100	%	60 - 140
			D4-1,2-Dichloroethane	2010/09/28		90	%	60 - 140
			D8-Toluene	2010/09/28		98	%	60 - 140
			Benzene	2010/09/28		95	%	39 - 137
			Ethylbenzene	2010/09/28		102	%	46 - 150
			Toluene	2010/09/28		98	%	30 - 158
			p+m-Xylene	2010/09/28		105	%	29 - 161
			o-Xylene	2010/09/28		100	%	45 - 150
		Spiked Blank	4-Bromofluorobenzene	2010/09/28		106	%	60 - 140
			D4-1,2-Dichloroethane	2010/09/28		89	%	60 - 140
			D8-Toluene	2010/09/28		96	%	60 - 140
			Benzene	2010/09/28		96	%	60 - 140
			Ethylbenzene	2010/09/28		103	%	60 - 140
			Toluene	2010/09/28		96	%	60 - 140
			p+m-Xylene	2010/09/28		105	%	60 - 140
			o-Xylene	2010/09/28		100	%	60 - 140
		Method Blank	4-Bromofluorobenzene	2010/09/28		104	%	60 - 140
			D4-1,2-Dichloroethane	2010/09/28		86	%	60 - 140
			D8-Toluene	2010/09/28		96	%	60 - 140
			Benzene	2010/09/28	<0.002		ug/g	
			Ethylbenzene	2010/09/28	<0.002		ug/g	
			Toluene	2010/09/28	<0.03		ug/g	
			p+m-Xylene	2010/09/28	<0.002		ug/g	
			o-Xylene	2010/09/28	<0.002		ug/g	

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AECOM Canada Ltd
Attention: Jenna Morrish
Client Project #: 60158564
P.O. #:
Project name: SOIL/SEDIMENT DURBAN ISLAND

Quality Assurance Report (Continued)

Maxxam Job Number: MB0D3443

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2279600	JZO	Method Blank	Xylene (Total)	2010/09/28	<0.002		ug/g	
		RPD	Benzene	2010/09/28	NC		%	50
			Ethylbenzene	2010/09/28	NC		%	50
			Toluene	2010/09/28	NC		%	50
			p+m-Xylene	2010/09/28	NC		%	50
			o-Xylene	2010/09/28	NC		%	50
			Xylene (Total)	2010/09/28	NC		%	50
2279696	ABD	Matrix Spike						
		[HG5257-01]	1,4-Difluorobenzene	2010/09/29		92	%	60 - 140
			4-Bromofluorobenzene	2010/09/29		115	%	60 - 140
			D10-Ethylbenzene	2010/09/29		119	%	30 - 130
			D4-1,2-Dichloroethane	2010/09/29		84	%	60 - 140
			F1 (C6-C10)	2010/09/29		102	%	60 - 140
		Spiked Blank	1,4-Difluorobenzene	2010/09/29		103	%	60 - 140
			4-Bromofluorobenzene	2010/09/29		101	%	60 - 140
			D10-Ethylbenzene	2010/09/29		112	%	30 - 130
			D4-1,2-Dichloroethane	2010/09/29		96	%	60 - 140
			F1 (C6-C10)	2010/09/29		95	%	60 - 140
		Method Blank	1,4-Difluorobenzene	2010/09/29		103	%	60 - 140
			4-Bromofluorobenzene	2010/09/29		98	%	60 - 140
			D10-Ethylbenzene	2010/09/29		115	%	30 - 130
			D4-1,2-Dichloroethane	2010/09/29		95	%	60 - 140
			F1 (C6-C10)	2010/09/29	<10		ug/g	
			F1 (C6-C10) - BTEX	2010/09/29	<10		ug/g	
		RPD [HG5257-01]	F1 (C6-C10)	2010/09/29	NC		%	50
			F1 (C6-C10) - BTEX	2010/09/29	NC		%	50
2279700	ZZ	Matrix Spike						
		[HG5257-01]	o-Terphenyl	2010/09/29		92	%	30 - 130
			F2 (C10-C16 Hydrocarbons)	2010/09/29		78	%	60 - 130
			F3 (C16-C34 Hydrocarbons)	2010/09/29		78	%	60 - 130
			F4 (C34-C50 Hydrocarbons)	2010/09/29		78	%	60 - 130
		Spiked Blank	o-Terphenyl	2010/09/29		84	%	30 - 130
			F2 (C10-C16 Hydrocarbons)	2010/09/29		71	%	60 - 130
			F3 (C16-C34 Hydrocarbons)	2010/09/29		71	%	60 - 130
			F4 (C34-C50 Hydrocarbons)	2010/09/29		71	%	60 - 130
		Method Blank	o-Terphenyl	2010/09/29		90	%	30 - 130
			F2 (C10-C16 Hydrocarbons)	2010/09/29	<10		ug/g	
			F3 (C16-C34 Hydrocarbons)	2010/09/29	<10		ug/g	
			F4 (C34-C50 Hydrocarbons)	2010/09/29	<10		ug/g	
		RPD [HG5257-01]	F2 (C10-C16 Hydrocarbons)	2010/09/29	4.8		%	50
			F3 (C16-C34 Hydrocarbons)	2010/09/29	1.0		%	50
			F4 (C34-C50 Hydrocarbons)	2010/09/29	2.5		%	50
2279863	MYG	RPD	Moisture	2010/09/28	3.2		%	20
2279902	MYG	RPD	Moisture	2010/09/28	4.9		%	20
2280381	LKA	RPD	Moisture	2010/09/28	0		%	20
2280476	LKA	RPD	Moisture	2010/09/28	9.4		%	20
2280951	LPG	Matrix Spike						
		[HG5269-01]	2,4,5,6-Tetrachloro-m-xylene	2010/09/29		94	%	40 - 130
			Decachlorobiphenyl	2010/09/29		105	%	40 - 130
			Aroclor 1260	2010/09/29		115	%	30 - 130
			Total PCB	2010/09/29		115	%	30 - 130
		Spiked Blank	2,4,5,6-Tetrachloro-m-xylene	2010/09/29		92	%	40 - 130
			Decachlorobiphenyl	2010/09/29		94	%	40 - 130
			Aroclor 1260	2010/09/29		98	%	30 - 130
			Total PCB	2010/09/29		98	%	30 - 130

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AECOM Canada Ltd
Attention: Jenna Morrish
Client Project #: 60158564
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Project name: SOIL/SEDIMENT DURBAN ISLAND

Quality Assurance Report (Continued)

Maxxam Job Number: MB0D3443

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2280951	LPG	Method Blank	2,4,5,6-Tetrachloro-m-xylene	2010/09/29		95	%	40 - 130
			Decachlorobiphenyl	2010/09/29		98	%	40 - 130
			Aroclor 1016	2010/09/29	<0.01		ug/g	
			Aroclor 1221	2010/09/29	<0.01		ug/g	
			Aroclor 1232	2010/09/29	<0.01		ug/g	
			Aroclor 1242	2010/09/29	<0.01		ug/g	
			Aroclor 1248	2010/09/29	<0.01		ug/g	
			Aroclor 1254	2010/09/29	<0.01		ug/g	
			Aroclor 1260	2010/09/29	<0.01		ug/g	
			Aroclor 1262	2010/09/29	<0.01		ug/g	
			Aroclor 1268	2010/09/29	<0.01		ug/g	
			Total PCB	2010/09/29	<0.01		ug/g	
		RPD [HG5269-01]	Aroclor 1016	2010/09/29	NC		%	50
			Aroclor 1221	2010/09/29	NC		%	50
			Aroclor 1232	2010/09/29	NC		%	50
			Aroclor 1242	2010/09/29	NC		%	50
			Aroclor 1248	2010/09/29	NC		%	50
			Aroclor 1254	2010/09/29	14.0		%	50
			Aroclor 1260	2010/09/29	NC		%	50
			Aroclor 1262	2010/09/29	NC		%	50
			Aroclor 1268	2010/09/29	NC		%	50
			Total PCB	2010/09/29	14.0		%	50
2281744	VIV	Matrix Spike	Acid Extractable Arsenic (As)	2010/09/29		102	%	75 - 125
			Acid Extractable Copper (Cu)	2010/09/29		NC	%	75 - 125
		QC Standard	Acid Extractable Arsenic (As)	2010/09/29		100	%	75 - 125
			Acid Extractable Copper (Cu)	2010/09/29		102	%	75 - 125
		Method Blank	Acid Extractable Arsenic (As)	2010/09/29	<1		ug/g	
			Acid Extractable Copper (Cu)	2010/09/29	<0.5		ug/g	
		RPD	Acid Extractable Arsenic (As)	2010/09/29	NC		%	35
			Acid Extractable Copper (Cu)	2010/09/29	0.3		%	35
2282663	DEE	QC Standard	Sieve - #200 (<0.075mm)	2010/09/29		66	%	N/A
			Sieve - #200 (>0.075mm)	2010/09/29		34	%	N/A
		RPD	Sieve - #200 (<0.075mm)	2010/09/29	0.5		%	20
			Sieve - #200 (>0.075mm)	2010/09/29	0.3		%	20
2283132	APT	Matrix Spike [HG5269-01]	Acid Extractable Cadmium (Cd)	2010/09/30		100	%	75 - 125
			Acid Extractable Lead (Pb)	2010/09/30		77	%	75 - 125
		QC Standard	Acid Extractable Cadmium (Cd)	2010/09/30		105	%	75 - 125
			Acid Extractable Lead (Pb)	2010/09/30		106	%	75 - 125
		Method Blank	Acid Extractable Cadmium (Cd)	2010/09/30	<0.5		ug/g	
			Acid Extractable Lead (Pb)	2010/09/30	<5		ug/g	
		RPD [HG5269-01]	Acid Extractable Lead (Pb)	2010/09/30	12.9		%	35

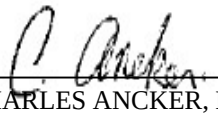
Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.
QC Standard: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.
NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was not sufficiently significant to permit a reliable recovery calculation.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.
(1) Duplicate results exceeded RPD acceptance criteria. This may be due to sample heterogeneity.
(2) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

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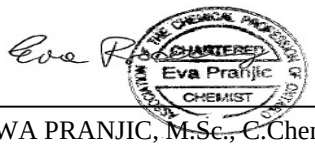
Validation Signature Page

Maxxam Job #: B0D3443

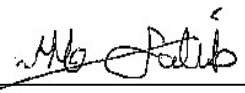
The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



CHARLES ANCKER, B.Sc., M.Sc., C.Chem, Senior Analyst



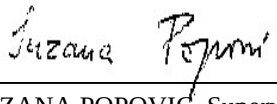
EWA PRANJIC, M.Sc., C.Chem, Scientific Specialist



MAMDOUH SALIB, Analyst, Hydrocarbons



ALINA SEGAL, Manager Main Lab - Organics



SUZANA POPOVIC, Supervisor, Hydrocarbons

==========

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 #: 60158564
Site: SOIL/SEDIMENT DURBAN ISLAND

Attention: Jenna Morrish
AECOM Canada Ltd
2540 Kensington Rd NW
Calgary, AB
CANADA T2N3S3

Report Date: 2010/10/05

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B0D3446
Received: 2010/09/23, 20:05

Sample Matrix: Soil
Samples Received: 6

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Petroleum Hydro. CCME F1 & BTEX in Soil	4	2010/09/25	2010/09/28	CAM SOP-00315	CCME CWS
Petroleum Hydrocarbons F2-F4 in Soil	4	2010/09/28	2010/09/28	CAM SOP-00316	CCME CWS
Moisture	4	N/A	2010/09/27	CAM SOP-00445	McKeague 2nd ed 1978
Sieve, 75um (1)	2	N/A	2010/09/29	CAM SOP-00467	
Volatile Organic Compounds in Soil	4	2010/09/25	2010/09/30	CAM SOP-00226	EPA 8260 modified

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

(1) The Sieve test has been validated in accordance with ISO Guide 17025 requirements. SCC accreditation pending.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

MARIJANE CRUZ, Project Manager
Email: Marijane.Cruz@maxxamanalytics.com
Phone# (905) 817-5756

==========

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.

Total cover pages: 1

Maxxam Job #: B0D3446
Report Date: 2010/10/05

AECOM Canada Ltd
Client Project #: 60158564
Project name: SOIL/SEDIMENT DURBAN ISLAND

RESULTS OF ANALYSES OF SOIL

Maxxam ID		HG5286	HG5287	HG5288	HG5289		HG5290		
Sampling Date		2010/09/16	2010/09/16	2010/09/16	2010/09/16		2010/09/16		
	Units	**10-0293**	**10-0327**	**10-0345**	**10-0348**	**QC Batch**	**10-0354**	**RDL**	**QC Batch**
Inorganics									
Moisture	%	N/A	N/A	5	6	2278599	15	1	2278844
Miscellaneous Parameters									
Grain Size	%	COARSE	COARSE	N/A	N/A	2282663	N/A	N/A	N/A
Sieve - #200 (<0.075mm)	%	30	46	N/A	N/A	2282663	N/A	N/A	N/A
Sieve - #200 (>0.075mm)	%	70	54	N/A	N/A	2282663	N/A	N/A	N/A

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

Maxxam ID		HG5291		
Sampling Date		2010/09/16		
	Units	**10-0355**	**RDL**	**QC Batch**
Inorganics				
Moisture	%	10	1	2278844

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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AECOM Canada Ltd
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VOLATILE ORGANICS BY GC/MS (SOIL)

Maxxam ID		HG5288	HG5289	HG5290	HG5291		
Sampling Date		2010/09/16	2010/09/16	2010/09/16	2010/09/16		
	Units	**10-0345**	**10-0348**	**10-0354**	**10-0355**	**RDL**	**QC Batch**
Volatile Organics							
Benzene	ug/g	<0.002	<0.002	<0.002	<0.002	0.002	2279975
Ethylbenzene	ug/g	<0.002	<0.002	<0.002	<0.002	0.002	2279975
Toluene	ug/g	<0.002	<0.002	<0.002	0.003	0.002	2279975
p+m-Xylene	ug/g	<0.002	<0.002	<0.002	<0.002	0.002	2279975
o-Xylene	ug/g	<0.002	<0.002	<0.002	<0.002	0.002	2279975
Xylene (Total)	ug/g	<0.002	<0.002	<0.002	<0.002	0.002	2279975
Surrogate Recovery (%)							
4-Bromofluorobenzene	%	84	88	73	72	N/A	2279975
D4-1,2-Dichloroethane	%	121	118	123	124	N/A	2279975
D8-Toluene	%	111	107	113	117	N/A	2279975

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

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PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		HG5288	HG5289	HG5290	HG5291		
Sampling Date		2010/09/16	2010/09/16	2010/09/16	2010/09/16		
	Units	**10-0345**	**10-0348**	**10-0354**	**10-0355**	**RDL**	**QC Batch**
BTEX & F1 Hydrocarbons							
F1 (C6-C10)	ug/g	<10	<10	<10	<10	10	2280762
F1 (C6-C10) - BTEX	ug/g	<10	<10	<10	<10	10	2280762
F2-F4 Hydrocarbons							
F2 (C10-C16 Hydrocarbons)	ug/g	<10	<10	<10	<10	10	2279719
F3 (C16-C34 Hydrocarbons)	ug/g	<10	<10	<10	<10	10	2279719
F4 (C34-C50 Hydrocarbons)	ug/g	<10	<10	<10	<10	10	2279719
Reached Baseline at C50	ug/g	Yes	Yes	Yes	Yes	N/A	2279719
Surrogate Recovery (%)							
1,4-Difluorobenzene	%	106	107	104	103	N/A	2280762
4-Bromofluorobenzene	%	99	99	97	96	N/A	2280762
D10-Ethylbenzene	%	119	120	119	118	N/A	2280762
D4-1,2-Dichloroethane	%	107	107	106	104	N/A	2280762
o-Terphenyl	%	97	97	99	98	N/A	2279719

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

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Maxxam Job #: B0D3446
Report Date: 2010/10/05

AECOM Canada Ltd
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GENERAL COMMENTS

Results relate only to the items tested.

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Quality Assurance Report

Maxxam Job Number: MB0D3446

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2278599	MYG	RPD	Moisture	2010/09/27	NC		%	20
2278844	DEE	RPD [HG5290-01]	Moisture	2010/09/27	0.7		%	20
2279719	JKA	Matrix Spike	o-Terphenyl	2010/09/29		103	%	30 - 130
			F2 (C10-C16 Hydrocarbons)	2010/09/29		98	%	60 - 130
			F3 (C16-C34 Hydrocarbons)	2010/09/29		98	%	60 - 130
			F4 (C34-C50 Hydrocarbons)	2010/09/29		98	%	60 - 130
		Spiked Blank	o-Terphenyl	2010/09/29		100	%	30 - 130
			F2 (C10-C16 Hydrocarbons)	2010/09/29		84	%	60 - 130
			F3 (C16-C34 Hydrocarbons)	2010/09/29		84	%	60 - 130
			F4 (C34-C50 Hydrocarbons)	2010/09/29		84	%	60 - 130
		Method Blank	o-Terphenyl	2010/09/28		100	%	30 - 130
			F2 (C10-C16 Hydrocarbons)	2010/09/28	<10		ug/g	
			F3 (C16-C34 Hydrocarbons)	2010/09/28	<10		ug/g	
			F4 (C34-C50 Hydrocarbons)	2010/09/28	<10		ug/g	
		RPD	F2 (C10-C16 Hydrocarbons)	2010/09/28	NC		%	50
			F3 (C16-C34 Hydrocarbons)	2010/09/28	NC		%	50
			F4 (C34-C50 Hydrocarbons)	2010/09/28	NC		%	50
2279975	FS	Matrix Spike	4-Bromofluorobenzene	2010/10/01		97	%	60 - 140
			D4-1,2-Dichloroethane	2010/10/01		118	%	60 - 140
			D8-Toluene	2010/10/01		107	%	60 - 140
			Benzene	2010/10/01		97	%	39 - 137
			Ethylbenzene	2010/10/01		79	%	46 - 150
			Toluene	2010/10/01		81	%	30 - 158
			p+m-Xylene	2010/10/01		85	%	29 - 161
			o-Xylene	2010/10/01		92	%	45 - 150
		Spiked Blank	4-Bromofluorobenzene	2010/09/30		107	%	60 - 140
			D4-1,2-Dichloroethane	2010/09/30		118	%	60 - 140
			D8-Toluene	2010/09/30		102	%	60 - 140
			Benzene	2010/09/30		102	%	60 - 140
			Ethylbenzene	2010/09/30		99	%	60 - 140
			Toluene	2010/09/30		97	%	60 - 140
			p+m-Xylene	2010/09/30		98	%	60 - 140
			o-Xylene	2010/09/30		98	%	60 - 140
		Method Blank	4-Bromofluorobenzene	2010/09/30		101	%	60 - 140
			D4-1,2-Dichloroethane	2010/09/30		97	%	60 - 140
			D8-Toluene	2010/09/30		97	%	60 - 140
			Benzene	2010/09/30	<0.002		ug/g	
			Ethylbenzene	2010/09/30	<0.002		ug/g	
			Toluene	2010/09/30	<0.002		ug/g	
			p+m-Xylene	2010/09/30	<0.002		ug/g	
			o-Xylene	2010/09/30	<0.002		ug/g	
			Xylene (Total)	2010/09/30	<0.002		ug/g	
		RPD	Benzene	2010/10/02	NC		%	50
			Ethylbenzene	2010/10/02	NC		%	50
			Toluene	2010/10/02	NC		%	50
			p+m-Xylene	2010/10/02	NC		%	50
			o-Xylene	2010/10/02	NC		%	50
			Xylene (Total)	2010/10/02	NC		%	50
2280762	GRU	Matrix Spike	1,4-Difluorobenzene	2010/09/28		104	%	60 - 140
			4-Bromofluorobenzene	2010/09/28		98	%	60 - 140
			D10-Ethylbenzene	2010/09/28		127	%	30 - 130
			D4-1,2-Dichloroethane	2010/09/28		106	%	60 - 140
			F1 (C6-C10)	2010/09/28		102	%	60 - 140
		Spiked Blank	1,4-Difluorobenzene	2010/09/28		105	%	60 - 140
			4-Bromofluorobenzene	2010/09/28		99	%	60 - 140

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

AECOM Canada Ltd
Attention: Jenna Morrish
Client Project #: 60158564
P.O. #:
Project name: SOIL/SEDIMENT DURBAN ISLAND

Quality Assurance Report (Continued)

Maxxam Job Number: MB0D3446

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2280762	GRU	Spiked Blank	D10-Ethylbenzene	2010/09/28		124	%	30 - 130
			D4-1,2-Dichloroethane	2010/09/28		105	%	60 - 140
			F1 (C6-C10)	2010/09/28		94	%	60 - 140
		Method Blank	1,4-Difluorobenzene	2010/09/28		103	%	60 - 140
			4-Bromofluorobenzene	2010/09/28		97	%	60 - 140
			D10-Ethylbenzene	2010/09/28		117	%	30 - 130
			D4-1,2-Dichloroethane	2010/09/28		104	%	60 - 140
			F1 (C6-C10)	2010/09/28	<10		ug/g	
			F1 (C6-C10) - BTEX	2010/09/28	<10		ug/g	
		RPD	F1 (C6-C10)	2010/09/28	NC		%	50
			F1 (C6-C10) - BTEX	2010/09/28	NC		%	50
2282663	DEE	QC Standard	Sieve - #200 (<0.075mm)	2010/09/29		66	%	N/A
			Sieve - #200 (>0.075mm)	2010/09/29		34	%	N/A
		RPD	Sieve - #200 (<0.075mm)	2010/09/29	0.5		%	20
			Sieve - #200 (>0.075mm)	2010/09/29	0.3		%	20

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.
QC Standard: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
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 (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.

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

Validation Signature Page

Maxxam Job #: B0D3446

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

CRISTINA CARRIERE, Scientific Services

MEDHAT RISKALLAH, Manager, Hydrocarbon Department

SUZANA POPOVIC, Supervisor, Hydrocarbons

==========

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Your Project #: 60158564
Site#: 60158564
Site: BARRELS DURBAN ISLAND
Your C.O.C. #: 20350605, 203506-0

Attention: Jenna Morrish
AECOM Canada Ltd
2540 Kensington Rd NW
Calgary, AB
CANADA T2N3S3

Report Date: 2010/09/16
This report supersedes all previous reports with the same Maxxam job number

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B0B9493
Received: 2010/08/30, 11:20

Sample Matrix: LIQUID
Samples Received: 6

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Total Metals Analysis by Axial ICP	1	2010/09/02	2010/09/06	CAM SOP-00408	EPA 6010C
Total Metals Analysis by Axial ICP	5	2010/09/02	2010/09/07	CAM SOP-00408	EPA 6010C
Polychlorinated Biphenyl in Liquids (1)	6	2010/09/02	2010/09/03	CAM SOP-00307	EPA 8081 modified

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

(1) Sample(s) analyzed using methodologies that have not been subjected to Maxxam's standard validation process for the submitted matrix and is not an Accredited method. Analysis performed with client consent, however results should be viewed with discretion

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

MARIJANE CRUZ, Project Manager
Email: Marijane.Cruz@maxxamanalytics.com
Phone# (905) 817-5756

==========

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Total cover pages: 1

Maxxam Job #: B0B9493
Report Date: 2010/09/16

AECOM Canada Ltd
Client Project #: 60158564
Project name: BARRELS DURBAN ISLAND

ELEMENTS BY ATOMIC SPECTROSCOPY (LIQUID)

Maxxam ID		GZ7436	GZ7437	GZ7438	GZ7439		GZ7440		GZ7441		
Sampling Date		2010/08/22	2010/08/22	2010/08/22	2010/08/22		2010/08/22		2010/08/22		
COC Number		203506-0	203506-0	203506-0	203506-0		203506-0		203506-0		
	Units	**B1**	**B2**	**B3**	**B4**	**RDL**	**B5**	**RDL**	**B6**	**RDL**	**QC Batch**
Metals											
Total Cadmium (Cd)	mg/L	<0.02	<0.02	<0.02	<0.02	0.02	<2	2	<0.02	0.02	2253956
Total Chromium (Cr)	mg/L	3.7	3.6	2.1	0.11	0.05	<5	5	<0.05	0.05	2253956
Total Lead (Pb)	mg/L	110	0.2	0.8	<0.1	0.1	<10	10	0.2	0.1	2253956

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: B0B9493
Report Date: 2010/09/16

AECOM Canada Ltd
Client Project #: 60158564
Project name: BARRELS DURBAN ISLAND

POLYCHLORINATED BIPHENYLS BY GC-ECD (LIQUID)

Maxxam ID		GZ7436	GZ7437	GZ7438		GZ7439		
Sampling Date		2010/08/22	2010/08/22	2010/08/22		2010/08/22		
COC Number		203506-0	203506-0	203506-0		203506-0		
	Units	**B1**	**B2**	**B3**	**RDL**	**B4**	**RDL**	**QC Batch**
PCBs								
Aroclor 1016	ug/L	<2	<2	<2	2	<1	1	2254080
Aroclor 1221	ug/L	<2	<2	<2	2	<1	1	2254080
Aroclor 1232	ug/L	<2	<2	<2	2	<1	1	2254080
Aroclor 1242	ug/L	<2	<2	<2	2	<1	1	2254080
Aroclor 1248	ug/L	<2	<2	<2	2	<1	1	2254080
Aroclor 1254	ug/L	<2	<2	<2	2	<1	1	2254080
Aroclor 1260	ug/L	<2	<2	<2	2	<1	1	2254080
Aroclor 1262	ug/L	<2	<2	<2	2	<1	1	2254080
Aroclor 1268	ug/L	<2	<2	<2	2	<1	1	2254080
Total PCB	ug/L	<2	<2	<2	2	<1	1	2254080
Surrogate Recovery (%)								
2,4,5,6-Tetrachloro-m-xylene	%	54	47	51	N/A	55	N/A	2254080
Decachlorobiphenyl	%	63	54	62	N/A	69	N/A	2254080

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

Maxxam Job #: B0B9493
Report Date: 2010/09/16

AECOM Canada Ltd
Client Project #: 60158564
Project name: BARRELS DURBAN ISLAND

POLYCHLORINATED BIPHENYLS BY GC-ECD (LIQUID)

Maxxam ID		GZ7440		GZ7441		
Sampling Date		2010/08/22		2010/08/22		
COC Number		203506-0		203506-0		
	Units	**B5**	**RDL**	**B6**	**RDL**	**QC Batch**
PCBs						
Aroclor 1016	ug/L	<300	300	<5000	5000	2253743
Aroclor 1221	ug/L	<300	300	<5000	5000	2253743
Aroclor 1232	ug/L	<300	300	<5000	5000	2253743
Aroclor 1242	ug/L	<300	300	<5000	5000	2253743
Aroclor 1248	ug/L	<300	300	<5000	5000	2253743
Aroclor 1254	ug/L	<300	300	<5000	5000	2253743
Aroclor 1260	ug/L	<300	300	<5000	5000	2253743
Aroclor 1262	ug/L	<300	300	<5000	5000	2253743
Aroclor 1268	ug/L	<300	300	<5000	5000	2253743
Total PCB	ug/L	<300	300	<5000	5000	2253743
Surrogate Recovery (%)						
2,4,5,6-Tetrachloro-m-xylene	%	101	N/A	76	N/A	2253743
Decachlorobiphenyl	%	97	N/A	88	N/A	2253743

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

Maxxam Job #: B0B9493
Report Date: 2010/09/16

AECOM Canada Ltd
Client Project #: 60158564
Project name: BARRELS DURBAN ISLAND

GENERAL COMMENTS

Report reissued with Alcohol and Glycol results attached.

PCB Analysis: Due to limited amount of sample available for analysis, a smaller than usual portion of the sample was used. Detection limits were adjusted accordingly. Due to the sample matrix, some samples required dilution. Detection limit was adjusted accordingly.

Sample GZ7436-01: Metals: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample GZ7437-01: Metals: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample GZ7438-01: Metals: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample GZ7439-01: Metals: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample GZ7440-01: Metals: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample GZ7441-01: Metals: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Results relate only to the items tested.

AECOM Canada Ltd
Attention: Jenna Morrish
Client Project #: 60158564
P.O. #:
Project name: BARRELS DURBAN ISLAND

Quality Assurance Report

Maxxam Job Number: MB0B9493

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2253743	JZ	Matrix Spike	2,4,5,6-Tetrachloro-m-xylene	2010/09/03		75	%	30 - 150
			Decachlorobiphenyl	2010/09/03		106	%	29 - 139
			Aroclor 1260	2010/09/03		104	%	30 - 130
			Total PCB	2010/09/03		104	%	30 - 130
		Spiked Blank	2,4,5,6-Tetrachloro-m-xylene	2010/09/03		73	%	30 - 150
			Decachlorobiphenyl	2010/09/03		75	%	29 - 139
			Aroclor 1260	2010/09/03		79	%	30 - 130
		RPD	Aroclor 1260	2010/09/03	1.3		%	40
		Spiked Blank	Total PCB	2010/09/03		79	%	30 - 130
		RPD	Total PCB	2010/09/03	1.3		%	40
		Method Blank	2,4,5,6-Tetrachloro-m-xylene	2010/09/03		75	%	30 - 150
			Decachlorobiphenyl	2010/09/03		73	%	29 - 139
			Aroclor 1016	2010/09/03	<0.05		ug/L	
			Aroclor 1221	2010/09/03	<0.05		ug/L	
			Aroclor 1232	2010/09/03	<0.05		ug/L	
			Aroclor 1242	2010/09/03	<0.05		ug/L	
			Aroclor 1248	2010/09/03	<0.05		ug/L	
			Aroclor 1254	2010/09/03	<0.05		ug/L	
			Aroclor 1260	2010/09/03	<0.05		ug/L	
			Aroclor 1262	2010/09/03	<0.05		ug/L	
			Aroclor 1268	2010/09/03	<0.05		ug/L	
			Total PCB	2010/09/03	<0.05		ug/L	
2253956	SUK	Matrix Spike	Total Cadmium (Cd)	2010/09/03		102	%	75 - 125
			Total Chromium (Cr)	2010/09/03		99	%	75 - 125
			Total Lead (Pb)	2010/09/03		101	%	75 - 125
		Spiked Blank	Total Cadmium (Cd)	2010/09/03		102	%	85 - 115
			Total Chromium (Cr)	2010/09/03		99	%	85 - 115
			Total Lead (Pb)	2010/09/03		100	%	85 - 115
		Method Blank	Total Cadmium (Cd)	2010/09/03	<0.002		mg/L	
			Total Chromium (Cr)	2010/09/03	<0.005		mg/L	
			Total Lead (Pb)	2010/09/03	0.01, RDL=0.01		mg/L	
2254080	JZ	Spiked Blank	2,4,5,6-Tetrachloro-m-xylene	2010/09/03		52	%	30 - 150
			Decachlorobiphenyl	2010/09/03		52	%	29 - 139
			Aroclor 1260	2010/09/03		60	%	30 - 130
		RPD	Aroclor 1260	2010/09/03	23.5		%	40
		Spiked Blank	Total PCB	2010/09/03		60	%	30 - 130
		RPD	Total PCB	2010/09/03	23.5		%	40
		Method Blank	2,4,5,6-Tetrachloro-m-xylene	2010/09/03		67	%	30 - 150
			Decachlorobiphenyl	2010/09/03		70	%	29 - 139
			Aroclor 1016	2010/09/03	<0.05		ug/L	
			Aroclor 1221	2010/09/03	<0.05		ug/L	
			Aroclor 1232	2010/09/03	<0.05		ug/L	
			Aroclor 1242	2010/09/03	<0.05		ug/L	
			Aroclor 1248	2010/09/03	<0.05		ug/L	
			Aroclor 1254	2010/09/03	<0.05		ug/L	
			Aroclor 1260	2010/09/03	<0.05		ug/L	
			Aroclor 1262	2010/09/03	<0.05		ug/L	
			Aroclor 1268	2010/09/03	<0.05		ug/L	
			Total PCB	2010/09/03	<0.05		ug/L	

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
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.

Validation Signature Page

Maxxam Job #: B0B9493

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



BRAD NEWMAN, Scientific Specialist



CHARLES ANCKER, B.Sc., M.Sc., C.Chem, Senior Analyst

==========

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Petro Laboratories Inc.

1295 Matheson Blvd. East, Mississauga, Ontario, L4W 1R1 Tel: (905) 361-2388 Fax: (905) 361-2411
E-mail: petrolab@gmail.com

Laboratory Report

Maxxam Analytics Inc.
4000-19 St. NE.
Calgary, AB
T2E 6P8

Lab no.: 10920 - 1 to 6
Date report: Sept 3, 2010
Sample in : Sept 2, 2010
Job No.: B0B9493

Attention: Lisa McManes / Marijane Cruz

Re: Liquid samples taken on Sept 2, 2010 for testing.

TEST - 1. Chlorine Content, in mg/l or ppm by ASTM D808, bomb method

Lab No. 10920 -	Sample ID	Results in PPM
-1	GZ7436-01R/B1	5
-2	GZ7437-01R/B2	8
-3	GZ7438-01R/B3	8
-4	GZ7439-01R/B4	5
-5	GZ7440-01R/B5	28
-6	GZ7441-01R/B6	29

Method detection limit - 1 mg/l
Control sample - CONOCO Conostain chlorine standard
Expected Conc., mg/l - 5, Found Conc. - 4, Recovery - 94 %
Expected Conc. - mg/l - 95, Found Conc. - 94 Recovery - 95%

* Only one sample 10-155 is a water base liquid, other are oily samples

Test by: A.C. (Chemist)

Approved by: James Szeto

Member of ASTM
JS:LN

James Szeto, B.Sc.
Chief Chemist

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Petro Laboratories Inc.

1295 Matheson Blvd. East, Mississauga, Ontario, L4W 1R1 Tel: (905) 361-2388 Fax: (905) 361-2411
E-mail: petrolab@gmail.com

Laboratory Report

Maxxam Analytics Inc.
4000-19 St. NE.
Calgary, AB
T2E 6P8

Lab no.: 10920 - 1 to 6 (Part B)
Date report: Sept 16, 2010
Sample in : Sept 2, 2010
Project No.: B0B9493

Attention: Lisa McManes

Re: Liquid samples taken on Sept 2, 2010 for testing.

TEST - 2. Alcohol and Glycol content in % wt. by GC/FID method. ASTM D4815 Modified

Parameter	Lab No.	10920 - 1	10920 - 2	10920 - 3	10920 - 4	10920 - 5	10920 - 6
	Sample ID:	GZ7436-01R/B1	GZ7437-01R/B2	GZ7438-01R/B3	GZ7439-01R/B4	GZ7440-01R/B5	GZ7441-01R/B6
Alcohol Content							
Methanol		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Ethanol		<0.1	<0.1	<0.1	<0.1	0.3	<0.1
1-Propanol		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
n-Propanol		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
1-Butanol		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
n-Butanol		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Glycol Content							
Ethylene Glycol		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Propylene Glycol		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Triethylene Glycol		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

Control sample - Standard Alcohol and Glycol
Expected Conc., in % wt. - 0.1 Found Conc. - 0.1 Recovery - 99%
Method detection limit - 0.1%

Test by: Z.H. (Chemist)

Approved by: James Szeto

Member of ASTM
JS:LN

James Szeto, B.Sc.
Chief Chemist

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Your Project #: 60158564
Site Location: PAINT/ASBESTOS/CONCRETE DURBAN ISLAND SI
Your C.O.C. #: 20350603, 203506-0

Attention: Jenna Morrish
AECOM Canada Ltd
2540 Kensington Rd NW
Calgary, AB
CANADA T2N3S3

Report Date: 2010/09/09

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B0B9546
Received: 2010/08/30, 11:30

Sample Matrix: Paint
Samples Received: 12

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Total Metals in TCLP Leachate by ICPMS	1	2010/09/03	2010/09/07	CAM SOP-00447	EPA 6020
Lead In Paint	11	2010/09/08	2010/09/08	CAM SOP-00408	EPA 6010
Polychlorinated Biphenyl in Solids (1)	1	2010/09/02	2010/09/04	CAM SOP-00307	EPA 8082
Polychlorinated Biphenyl in Solids (1)	1	2010/09/02	2010/09/07	CAM SOP-00307	EPA 8082
Polychlorinated Biphenyl in Solids (1)	1	2010/09/02	2010/09/09	CAM SOP-00307	EPA 8082
Polychlorinated Biphenyl in Solids (1)	1	2010/09/03	2010/09/07	CAM SOP-00307	EPA 8082
Polychlorinated Biphenyl in Solids (1)	8	2010/09/03	2010/09/09	CAM SOP-00307	EPA 8082
TCLP - % Solids	1	2010/09/02	2010/09/03	CAM SOP-00401	EPA 1311 modified
TCLP - EXTRACTION FLUID	1	N/A	2010/09/03	CAM SOP-00401	EPA 1311 modified
TCLP-INITIAL AND FINAL PH	1	N/A	2010/09/03	CAM SOP-00401	EPA 1311 modified

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

(1) Sample(s) analyzed using methodologies that have not been subjected to Maxxam's standard validation process for the submitted matrix and is not an Accredited method. Analysis performed with client consent, however results should be viewed with discretion

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

MARIJANE CRUZ, Project Manager
Email: Marijane.Cruz@maxxamanalytics.com
Phone# (905) 817-5756

==========

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Total cover pages: 1

Maxxam Job #: B0B9546
Report Date: 2010/09/09

AECOM Canada Ltd
Client Project #: 60158564
Project name: PAINT/ASBESTOS/CONCRETE DURBAN ISLAND SI

RESULTS OF ANALYSES OF PAINT

Maxxam ID		GZ7636		
Sampling Date		2010/08/14		
COC Number		203506-0		
	Units	**P1**	**RDL**	**QC Batch**
Inorganics				
Final pH	pH	4.99	N/A	2255340
Initial pH	pH	4.87	N/A	2255340
TCLP - % Solids	%	100	0.2	2255332
TCLP Extraction Fluid	N/A	FLUID1	N/A	2255338

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

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

Maxxam Job #: B0B9546
Report Date: 2010/09/09

AECOM Canada Ltd
Client Project #: 60158564
Project name: PAINT/ASBESTOS/CONCRETE DURBAN ISLAND SI

ELEMENTS BY ATOMIC SPECTROSCOPY (PAINT)

Maxxam ID		GZ7636	GZ7637	GZ7638	GZ7639	GZ7640	GZ7641		
Sampling Date		2010/08/14	2010/08/14	2010/08/14	2010/08/14	2010/08/14	2010/08/14		
COC Number		203506-0	203506-0	203506-0	203506-0	203506-0	203506-0		
	Units	**P1**	**P2**	**P3**	**P4**	**P5**	**P6**	**RDL**	**QC Batch**
Metals									
Lead (Pb)	%	17	2.4	0.03	0.32	0.43	0.38	0.01	2258222
Leachable Lead (Pb)	mg/L	68.0	N/A	N/A	N/A	N/A	N/A	0.1	2255958

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

Maxxam ID		GZ7642	GZ7646	GZ7647	GZ7648	GZ7649		
Sampling Date		2010/08/14	2010/08/14	2010/08/14	2010/08/14	2010/08/14		
COC Number		203506-0	203506-0	203506-0	203506-0	203506-0		
	Units	**P7**	**P8**	**P9**	**P10**	**P11**	**RDL**	**QC Batch**
Metals								
Lead (Pb)	%	0.33	0.16	0.40	12	5.3	0.01	2258222

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B0B9546
Report Date: 2010/09/09

AECOM Canada Ltd
Client Project #: 60158564
Project name: PAINT/ASBESTOS/CONCRETE DURBAN ISLAND SI

POLYCHLORINATED BIPHENYLS BY GC-ECD (PAINT)

Maxxam ID		GZ7636		GZ7637		GZ7638		GZ7639		
Sampling Date		2010/08/14		2010/08/14		2010/08/14		2010/08/14		
COC Number		203506-0		203506-0		203506-0		203506-0		
	Units	**P1**	**RDL**	**P2**	**RDL**	**P3**	**RDL**	**P4**	**RDL**	**QC Batch**
PCBs										
Aroclor 1262	ug/g	<0.1	0.1	<100	100	<10000	10000	<1000	1000	2255778
Aroclor 1016	ug/g	<0.1	0.1	<100	100	<10000	10000	<1000	1000	2255778
Aroclor 1221	ug/g	<0.1	0.1	<100	100	<10000	10000	<1000	1000	2255778
Aroclor 1232	ug/g	<0.1	0.1	<100	100	<10000	10000	<1000	1000	2255778
Aroclor 1242	ug/g	<0.2	0.2	<100	100	<10000	10000	<1000	1000	2255778
Aroclor 1248	ug/g	<0.2	0.2	<100	100	<10000	10000	<1000	1000	2255778
Aroclor 1254	ug/g	0.8	0.1	511	100	60800	10000	9120	1000	2255778
Aroclor 1260	ug/g	<0.1	0.1	<100	100	<10000	10000	<1000	1000	2255778
Aroclor 1268	ug/g	<0.1	0.1	<100	100	<10000	10000	<1000	1000	2255778
Total PCB	ug/g	0.8	0.2	511	100	60800	10000	9120	1000	2255778
Surrogate Recovery (%)										
2,4,5,6-Tetrachloro-m-xylene	%	87	N/A	93	N/A	NC (1)	N/A	67	N/A	2255778
Decachlorobiphenyl	%	104	N/A	115	N/A	NC (1)	N/A	NC (1)	N/A	2255778

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Surrogate recovery was not calculated (NC) due to matrix interferences.

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Maxxam Job #: B0B9546
Report Date: 2010/09/09

AECOM Canada Ltd
Client Project #: 60158564
Project name: PAINT/ASBESTOS/CONCRETE DURBAN ISLAND SI

POLYCHLORINATED BIPHENYLS BY GC-ECD (PAINT)

Maxxam ID		GZ7640	GZ7641		GZ7642		GZ7643		GZ7646		
Sampling Date		2010/08/14	2010/08/14		2010/08/14		2010/08/14		2010/08/14		
COC Number		203506-0	203506-0		203506-0		203506-0		203506-0		
	Units	**P5**	**P6**	**RDL**	**P7**	**RDL**	**C1**	**RDL**	**P8**	**RDL**	**QC Batch**
PCBs											
Aroclor 1262	ug/g	<1000	<1000	1000	<100	100	<10	10	<100	100	2255778
Aroclor 1016	ug/g	<1000	<1000	1000	<100	100	<10	10	<100	100	2255778
Aroclor 1221	ug/g	<1000	<1000	1000	<100	100	<10	10	<100	100	2255778
Aroclor 1232	ug/g	<1000	<1000	1000	<100	100	<10	10	<100	100	2255778
Aroclor 1242	ug/g	<1000	<1000	1000	<100	100	<10	10	<100	100	2255778
Aroclor 1248	ug/g	<1000	<1000	1000	137	100	<10	10	<100	100	2255778
Aroclor 1254	ug/g	6390	7190	1000	<100	100	331	10	4080	100	2255778
Aroclor 1260	ug/g	<1000	<1000	1000	866	100	<10	10	<100	100	2255778
Aroclor 1268	ug/g	<1000	<1000	1000	<100	100	<10	10	<100	100	2255778
Total PCB	ug/g	6390	7190	1000	1000	100	331	10	4080	100	2255778
Surrogate Recovery (%)											
2,4,5,6-Tetrachloro-m-xylene	%	119	122	N/A	NC (1)	N/A	81	N/A	97	N/A	2255778
Decachlorobiphenyl	%	NC (1)	NC (1)	N/A	NC (1)	N/A	NC (1)	N/A	NC (1)	N/A	2255778

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Surrogate recovery was not calculated (NC) due to matrix interferences.

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Maxxam Job #: B0B9546
Report Date: 2010/09/09

AECOM Canada Ltd
Client Project #: 60158564
Project name: PAINT/ASBESTOS/CONCRETE DURBAN ISLAND SI

POLYCHLORINATED BIPHENYLS BY GC-ECD (PAINT)

Maxxam ID		GZ7647		GZ7648	GZ7649		
Sampling Date		2010/08/14		2010/08/14	2010/08/14		
COC Number		203506-0		203506-0	203506-0		
	Units	**P9**	**RDL**	**P10**	**P11**	**RDL**	**QC Batch**
PCBs							
Aroclor 1262	ug/g	<1	1	<0.1	<0.1	0.1	2255778
Aroclor 1016	ug/g	<1	1	<0.1	<0.1	0.1	2255778
Aroclor 1221	ug/g	<1	1	<0.1	<0.1	0.1	2255778
Aroclor 1232	ug/g	<1	1	<0.1	<0.1	0.1	2255778
Aroclor 1242	ug/g	<1	1	<0.1	<0.1	0.1	2255778
Aroclor 1248	ug/g	<1	1	<0.1	<0.1	0.1	2255778
Aroclor 1254	ug/g	33	1	0.9	1.1	0.1	2255778
Aroclor 1260	ug/g	<1	1	<0.1	0.2	0.1	2255778
Aroclor 1268	ug/g	<1	1	<0.1	<0.1	0.1	2255778
Total PCB	ug/g	33	1	0.9	1.3	0.1	2255778
Surrogate Recovery (%)							
2,4,5,6-Tetrachloro-m-xylene	%	93	N/A	87	102	N/A	2255778
Decachlorobiphenyl	%	139 (1)	N/A	123	175 (2)	N/A	2255778

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Surrogate recovery was above the upper control limit due to matrix interference. This may represent a high bias in the result.
(2) Surrogate recovery was above the upper control limit due to matrix interference. This may represent a high bias in the result.

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Maxxam Job #: B0B9546
Report Date: 2010/09/09

AECOM Canada Ltd
Client Project #: 60158564
Project name: PAINT/ASBESTOS/CONCRETE DURBAN ISLAND SI

GENERAL COMMENTS

PCB Analysis: Sample reported based on wet weight. Due to high concentrations of the target analytes, sample required dilution. Detection limits were adjusted accordingly.

Results relate only to the items tested.

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AECOM Canada Ltd
Attention: Jenna Morrish
Client Project #: 60158564
P.O. #:
Site Location: PAINT/ASBESTOS/CONCRETE DURBAN ISLAND SI

Quality Assurance Report

Maxxam Job Number: MB0B9546

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2255778	JZ	Matrix Spike						
		[GZ7649-01]	2,4,5,6-Tetrachloro-m-xylene	2010/09/04		98	%	40 - 130
			Decachlorobiphenyl	2010/09/04		124	%	40 - 130
			Aroclor 1260	2010/09/04		124	%	30 - 130
			Total PCB	2010/09/04		124	%	30 - 130
		Spiked Blank	2,4,5,6-Tetrachloro-m-xylene	2010/09/04		90	%	40 - 130
			Decachlorobiphenyl	2010/09/04		119	%	40 - 130
			Aroclor 1260	2010/09/04		109	%	30 - 130
		RPD	Aroclor 1260	2010/09/04	8.2		%	50
		Spiked Blank	Total PCB	2010/09/04		109	%	30 - 130
		RPD	Total PCB	2010/09/04	8.2		%	50
		Method Blank	2,4,5,6-Tetrachloro-m-xylene	2010/09/04		97	%	40 - 130
			Decachlorobiphenyl	2010/09/04		128	%	40 - 130
			Aroclor 1262	2010/09/04	<0.01		ug/g	
			Aroclor 1016	2010/09/04	<0.01		ug/g	
			Aroclor 1221	2010/09/04	<0.01		ug/g	
			Aroclor 1232	2010/09/04	<0.01		ug/g	
			Aroclor 1242	2010/09/04	<0.01		ug/g	
			Aroclor 1248	2010/09/04	<0.01		ug/g	
			Aroclor 1254	2010/09/04	<0.01		ug/g	
			Aroclor 1260	2010/09/04	<0.01		ug/g	
			Aroclor 1268	2010/09/04	<0.01		ug/g	
			Total PCB	2010/09/04	<0.01		ug/g	
2255958	JBW	Matrix Spike	Leachable Lead (Pb)	2010/09/07		96	%	75 - 125
		Leachate Blank	Leachable Lead (Pb)	2010/09/07	<0.1		mg/L	
		Spiked Blank	Leachable Lead (Pb)	2010/09/07		97	%	85 - 115
		RPD	Leachable Lead (Pb)	2010/09/07	NC		%	25
2258222	JOH	Matrix Spike	Lead (Pb)	2010/09/08		97	%	75 - 125
		QC Standard	Lead (Pb)	2010/09/08		106	%	75 - 125
		Method Blank	Lead (Pb)	2010/09/08	<0.01		%	
		RPD	Lead (Pb)	2010/09/08	5.9		%	35

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.
Leachate Blank: A blank matrix containing all reagents used in the leaching procedure. Used to determine any process contamination.
QC Standard: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
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 (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.

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Validation Signature Page

Maxxam Job #: B0B9546

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

CHARLES ANCKER, B.Sc., M.Sc., C.Chem, Senior Analyst

EWA PRANJIC, M.Sc., C.Chem, Scientific Specialist

==========

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EMSL Canada Inc.
10 Falconer Drive, Unit #3, Mississauga, ON L5N 3L8
Phone: 289-997-4602 Fax: (289) 997-4607 Email: torontolab@emsl.com

Attn: **Marijane Cruz**
Maxxam Analytics, Inc.
6740 Campobello Road
Mississauga, ON L5N 2L8

Fax: Phone: (905) 817-5700

Project: **B0B9546**

Customer ID: 55PAS80A
Customer PO:
Received: 09/02/10 3:49 PM
EMSL Canada Or 551002011

EMSL Canada Pr
Analysis Date: 9/3/2010

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: **GZ7644-01R/A1** *Lab Sample ID:* *551002011-0003*
Sample Description:

Test	Analyzed Date	Color	Non Asbestos Fibrous	Non Asbestos Non-Fibrous	Asbestos	Comment
PLM	9/3/2010	Yellow	90%	10%	**None Detected**	

Client Sample ID: **GZ7645-01R/A2** *Lab Sample ID:* *551002011-0004*
Sample Description:

Test	Analyzed Date	Color	Non Asbestos Fibrous	Non Asbestos Non-Fibrous	Asbestos	Comment
PLM	9/3/2010	Gray	0%	60%	**40% Chrysotile**	

PLM:

Analyst(s)
Merriam Haffar

Kevin Pang
or other approved signatory

None Detected = <0.5%. 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. 10 Falconer Drive, Unit #3, Mississauga ON NVLAP Lab Code 200877-0

Initial Report From 09/07/2010 09:05:51

Your Project #: 60158564
Site: PAINT DURBAN ISLAND SI
Your C.O.C. #: 20350606, 203506-0

Attention: Jenna Morrish
AECOM Canada Ltd
2540 Kensington Rd NW
Calgary, AB
CANADA T2N3S3

Report Date: 2010/09/03

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B0B9522
Received: 2010/08/30, 11:20

Sample Matrix: Paint
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Lead In Paint	1	2010/09/03	2010/09/03	CAM SOP-00408	EPA 6010
Polychlorinated Biphenyl in Solids (1)	1	2010/09/02	2010/09/03	CAM SOP-00307	EPA 8082

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

(1) Sample(s) analyzed using methodologies that have not been subjected to Maxxam's standard validation process for the submitted matrix and is not an Accredited method. Analysis performed with client consent, however results should be viewed with discretion

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

MARIJANE CRUZ, Project Manager
Email: Marijane.Cruz@maxxamanalytics.com
Phone# (905) 817-5756

==========

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Total cover pages: 1

Maxxam Job #: B0B9522
Report Date: 2010/09/03

AECOM Canada Ltd
Client Project #: 60158564
Project name: PAINT DURBAN ISLAND SI

ELEMENTS BY ATOMIC SPECTROSCOPY (PAINT)

Maxxam ID		GZ7517		
Sampling Date		2010/08/22		
COC Number		203506-0		
	Units	**P12**	**RDL**	**QC Batch**
Metals				
Lead (Pb)	%	1.9	0.01	2255125

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B0B9522
Report Date: 2010/09/03

AECOM Canada Ltd
Client Project #: 60158564
Project name: PAINT DURBAN ISLAND SI

POLYCHLORINATED BIPHENYLS BY GC-ECD (PAINT)

Maxxam ID		GZ7517		
Sampling Date		2010/08/22		
COC Number		203506-0		
	Units	**P12**	**RDL**	**QC Batch**
PCBs				
Aroclor 1262	ug/g	<0.1	0.1	2254696
Aroclor 1016	ug/g	<0.1	0.1	2254696
Aroclor 1221	ug/g	<0.1	0.1	2254696
Aroclor 1232	ug/g	<0.1	0.1	2254696
Aroclor 1242	ug/g	<0.1	0.1	2254696
Aroclor 1248	ug/g	<0.1	0.1	2254696
Aroclor 1254	ug/g	0.1	0.1	2254696
Aroclor 1260	ug/g	0.1	0.1	2254696
Aroclor 1268	ug/g	<0.1	0.1	2254696
Total PCB	ug/g	0.2	0.1	2254696
Surrogate Recovery (%)				
2,4,5,6-Tetrachloro-m-xylene	%	68	N/A	2254696
Decachlorobiphenyl	%	82	N/A	2254696

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

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

Maxxam Job #: B0B9522
Report Date: 2010/09/03

AECOM Canada Ltd
Client Project #: 60158564
Project name: PAINT DURBAN ISLAND SI

GENERAL COMMENTS

Sample GZ7517-01: PCB Analysis:sample reported based on wet weight.

Results relate only to the items tested.

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AECOM Canada Ltd
Attention: Jenna Morrish
Client Project #: 60158564
P.O. #:
Project name: PAINT DURBAN ISLAND SI

Quality Assurance Report

Maxxam Job Number: MB0B9522

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2254696	LPG	Matrix Spike						
		[GZ7517-01]	2,4,5,6-Tetrachloro-m-xylene	2010/09/03		68	%	40 - 130
			Decachlorobiphenyl	2010/09/03		87	%	40 - 130
			Aroclor 1260	2010/09/03		79	%	30 - 130
			Total PCB	2010/09/03		79	%	30 - 130
		Spiked Blank	2,4,5,6-Tetrachloro-m-xylene	2010/09/03		82	%	40 - 130
			Decachlorobiphenyl	2010/09/03		92	%	40 - 130
			Aroclor 1260	2010/09/03		85	%	30 - 130
		RPD	Aroclor 1260	2010/09/03	4.3		%	50
		Spiked Blank	Total PCB	2010/09/03		85	%	30 - 130
		RPD	Total PCB	2010/09/03	4.3		%	50
		Method Blank	2,4,5,6-Tetrachloro-m-xylene	2010/09/03		79	%	40 - 130
			Decachlorobiphenyl	2010/09/03		84	%	40 - 130
			Aroclor 1262	2010/09/03	<0.01		ug/g	
			Aroclor 1016	2010/09/03	<0.01		ug/g	
			Aroclor 1221	2010/09/03	<0.01		ug/g	
			Aroclor 1232	2010/09/03	<0.01		ug/g	
			Aroclor 1242	2010/09/03	<0.01		ug/g	
			Aroclor 1248	2010/09/03	<0.01		ug/g	
			Aroclor 1254	2010/09/03	<0.01		ug/g	
			Aroclor 1260	2010/09/03	<0.01		ug/g	
			Aroclor 1268	2010/09/03	<0.01		ug/g	
			Total PCB	2010/09/03	<0.01		ug/g	
2255125	JOH	Matrix Spike	Lead (Pb)	2010/09/03		91	%	75 - 125
		QC Standard	Lead (Pb)	2010/09/03		101	%	75 - 125
		Method Blank	Lead (Pb)	2010/09/03	<0.01		%	
		RPD	Lead (Pb)	2010/09/03	2.1		%	35

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 blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
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.

Validation Signature Page

Maxxam Job #: B0B9522

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

CHARLES ANCKER, B.Sc., M.Sc., C.Chem, Senior Analyst

EWA PRANJIC, M.Sc., C.Chem, Scientific Specialist

==========

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Your Project #: 60158564
Site Location: SURFACE WATER DURBAN ISLAND SI
Your C.O.C. #: 20350502, 203505-0

Attention: Jenna Morrish
AECOM Canada Ltd
2540 Kensington Rd NW
Calgary, AB
CANADA T2N3S3

Report Date: 2010/09/03

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B0B8665
Received: 2010/08/30, 11:20

Sample Matrix: Water
Samples Received: 6

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Alkalinity	5	N/A	2010/09/01	CAM SOP-00448	SM 2320B
Alkalinity	1	N/A	2010/09/02	CAM SOP-00448	SM 2320B
Carbonate, Bicarbonate and Hydroxide	5	N/A	2010/09/01		
Carbonate, Bicarbonate and Hydroxide	1	N/A	2010/09/03		
Chloride by Automated Colourimetry	6	N/A	2010/09/01	CAM SOP-00463	SM 4500 Cl E
Conductivity	5	N/A	2010/09/01	CAM SOP-00448	SM 2510
Conductivity	1	N/A	2010/09/02	CAM SOP-00448	SM 2510
Petroleum Hydro. CCME F1 & BTEX in Water (1)	6	N/A	2010/09/01	CAM SOP-00315	CCME CWS
Petroleum Hydrocarbons F2-F4 in Water (1)	3	2010/08/31	2010/09/01	CAM SOP-00316	CCME Hydrocarbons
Petroleum Hydrocarbons F2-F4 in Water (1)	3	2010/08/31	2010/09/02	CAM SOP-00316	CCME Hydrocarbons
Hardness (calculated as CaCO3)	6	N/A	2010/09/01	CAM SOP 00102	SM 2340 B
Lab Filtered Metals Analysis by ICP	6	2010/09/01	2010/09/01	CAM SOP-00408	EPA 6010
Ion Balance (% Difference)	5	N/A	2010/09/01		
Ion Balance (% Difference)	1	N/A	2010/09/03		
Anion and Cation Sum	5	N/A	2010/09/01		
Anion and Cation Sum	1	N/A	2010/09/03		
Nitrate (NO3) and Nitrite (NO2) in Water (2)	6	N/A	2010/09/01	CAM SOP-00440	SM 4500 NO3I/NO2B
Polychlorinated Biphenyl in Water	6	2010/08/31	2010/09/01	CAM SOP-00309	SW846 8082
pH	5	N/A	2010/09/01	CAM SOP-00448	SM 4500H
pH	1	N/A	2010/09/02	CAM SOP-00448	SM 4500H
Orthophosphate	6	N/A	2010/09/01	CAM SOP-00461	SM 4500 P-F
Sat. pH and Langelier Index (@ 20C)	5	N/A	2010/09/01		
Sat. pH and Langelier Index (@ 20C)	1	N/A	2010/09/03		
Sat. pH and Langelier Index (@ 4C)	5	N/A	2010/09/01		
Sat. pH and Langelier Index (@ 4C)	1	N/A	2010/09/03		
Sulphate by Automated Colourimetry	6	N/A	2010/09/01	CAM SOP-00464	EPA 375.4
Total Dissolved Solids (TDS calc)	5	N/A	2010/09/01		
Total Dissolved Solids (TDS calc)	1	N/A	2010/09/03		

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

(1) This test was performed by Maxxam Ottawa
(2) Values for calculated parameters may not appear to add up due to rounding of raw data and significant figures.

../2

Your Project #: 60158564
Site Location: SURFACE WATER DURBAN ISLAND SI
Your C.O.C. #: 20350502, 203505-0

Attention: Jenna Morrish
AECOM Canada Ltd
2540 Kensington Rd NW
Calgary, AB
CANADA T2N3S3

Report Date: 2010/09/03

CERTIFICATE OF ANALYSIS

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

MARIJANE CRUZ, Project Manager
Email: Marijane.Cruz@maxxamanalytics.com
Phone# (905) 817-5756

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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.

Total cover pages: 2

Maxxam Job #: B0B8665
Report Date: 2010/09/03

AECOM Canada Ltd
Client Project #: 60158564
Project name: SURFACE WATER DURBAN ISLAND SI

RESULTS OF ANALYSES OF WATER

Maxxam ID		GZ2840			GZ2841		
Sampling Date		2010/08/21 08:25			2010/08/21 14:05		
COC Number		203505-0			203505-0		
	Units	**W1**	**RDL**	**QC Batch**	**W2**	**RDL**	**QC Batch**
Calculated Parameters							
Anion Sum	me/L	1.28	N/A	2251022	450	N/A	2251022
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	52	1	2251018	92	1	2251018
Calculated TDS	mg/L	69	1	2251026	26200	1	2251026
Carb. Alkalinity (calc. as CaCO3)	mg/L	<1	1	2251018	<1	1	2251018
Cation Sum	me/L	1.22	N/A	2251022	461	N/A	2251022
Hardness (CaCO3)	mg/L	51	1	2251020	4800	1	2251020
Hydrox. Alkalinity (calc. as CaCO3)	mg/L	<1	1	2251018	<1	1	2251018
Ion Balance (% Difference)	%	NC	N/A	2251021	1.26	N/A	2251021
Langelier Index (@ 20C)	N/A	-0.768	N/A	2251024	0.432	N/A	2251024
Langelier Index (@ 4C)	N/A	-1.02	N/A	2251025	0.194	N/A	2251025
Saturation pH (@ 20C)	N/A	8.66	N/A	2251024	7.39	N/A	2251024
Saturation pH (@ 4C)	N/A	8.91	N/A	2251025	7.63	N/A	2251025
Inorganics							
Conductivity	umho/cm	129	1	2252456	42700	1	2252456
Orthophosphate (P)	mg/L	0.01	0.01	2252216	0.02	0.01	2252370
pH	pH	7.9	N/A	2252436	7.8	N/A	2252436
Dissolved Sulphate (SO4)	mg/L	2	1	2252217	1900	5	2252365
Alkalinity (Total as CaCO3)	mg/L	52	1	2252400	92	1	2252400
Dissolved Chloride (Cl)	mg/L	7	1	2252215	14000	100	2252360
Nitrite (N)	mg/L	<0.01	0.01	2252356	<0.01	0.01	2253175
Nitrate (N)	mg/L	<0.1	0.1	2252356	<0.1	0.1	2253175
Nitrate + Nitrite	mg/L	<0.1	0.1	2252356	<0.1	0.1	2253175

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

Maxxam Job #: B0B8665
Report Date: 2010/09/03

AECOM Canada Ltd
Client Project #: 60158564
Project name: SURFACE WATER DURBAN ISLAND SI

RESULTS OF ANALYSES OF WATER

Maxxam ID		GZ2842		GZ2843		GZ2844		
Sampling Date		2010/08/21 14:20		2010/08/21 14:45		2010/08/21 16:55		
COC Number		203505-0		203505-0		203505-0		
	Units	**W3**	**QC Batch**	**W4**	**QC Batch**	**W5**	**RDL**	**QC Batch**
Calculated Parameters								
Anion Sum	me/L	1.79	2251022	0.465	2251022	0.482	N/A	2251022
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	13	2251018	7	2251018	6	1	2251018
Calculated TDS	mg/L	109	2251026	32	2251026	32	1	2251026
Carb. Alkalinity (calc. as CaCO3)	mg/L	<1	2251018	<1	2251018	<1	1	2251018
Cation Sum	me/L	1.90	2251022	0.452	2251022	0.458	N/A	2251022
Hardness (CaCO3)	mg/L	52	2251020	14	2251020	13	1	2251020
Hydrox. Alkalinity (calc. as CaCO3)	mg/L	<1	2251018	<1	2251018	<1	1	2251018
Ion Balance (% Difference)	%	NC	2251021	NC	2251021	NC	N/A	2251021
Langelier Index (@ 20C)	N/A	-2.24	2251024	-2.69	2251024	-3.02	N/A	2251024
Langelier Index (@ 4C)	N/A	-2.50	2251025	-2.95	2251025	-3.27	N/A	2251025
Saturation pH (@ 20C)	N/A	9.31	2251024	10.0	2251024	10.1	N/A	2251024
Saturation pH (@ 4C)	N/A	9.56	2251025	10.3	2251025	10.3	N/A	2251025
Inorganics								
Conductivity	umho/cm	220	2254054	63	2252456	57	1	2252456
Orthophosphate (P)	mg/L	<0.01	2252370	<0.01	2252370	<0.01	0.01	2252216
pH	pH	7.1	2254051	7.3	2252436	7.1	N/A	2252436
Dissolved Sulphate (SO4)	mg/L	22	2252365	9	2252365	8	1	2252217
Alkalinity (Total as CaCO3)	mg/L	13	2254039	7	2252400	6	1	2252400
Dissolved Chloride (Cl)	mg/L	37	2252360	5	2252360	7	1	2252215
Nitrite (N)	mg/L	<0.01	2253175	<0.01	2252356	<0.01	0.01	2252356
Nitrate (N)	mg/L	<0.1	2253175	<0.1	2252356	<0.1	0.1	2252356
Nitrate + Nitrite	mg/L	<0.1	2253175	<0.1	2252356	<0.1	0.1	2252356

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

Maxxam Job #: B0B8665
Report Date: 2010/09/03

AECOM Canada Ltd
Client Project #: 60158564
Project name: SURFACE WATER DURBAN ISLAND SI

RESULTS OF ANALYSES OF WATER

Maxxam ID		GZ2845		
Sampling Date		2010/08/22 11:25		
COC Number		203505-0		
	Units	**FB**	**RDL**	**QC Batch**
Calculated Parameters				
Anion Sum	me/L	0.000	N/A	2251022
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	<1	1	2251018
Calculated TDS	mg/L	<1	1	2251026
Carb. Alkalinity (calc. as CaCO3)	mg/L	<1	1	2251018
Cation Sum	me/L	0.00100	N/A	2251022
Hardness (CaCO3)	mg/L	<1	1	2251020
Hydrox. Alkalinity (calc. as CaCO3)	mg/L	<1	1	2251018
Ion Balance (% Difference)	%	NC	N/A	2251021
Langelier Index (@ 20C)	N/A	NC	N/A	2251024
Langelier Index (@ 4C)	N/A	NC	N/A	2251025
Saturation pH (@ 20C)	N/A	NC	N/A	2251024
Saturation pH (@ 4C)	N/A	NC	N/A	2251025
Inorganics				
Conductivity	umho/cm	<1	1	2252456
Orthophosphate (P)	mg/L	<0.01	0.01	2252216
pH	pH	5.9	N/A	2252436
Dissolved Sulphate (SO4)	mg/L	<1	1	2252217
Alkalinity (Total as CaCO3)	mg/L	<1	1	2252400
Dissolved Chloride (Cl)	mg/L	<1	1	2252215
Nitrite (N)	mg/L	<0.01	0.01	2252356
Nitrate (N)	mg/L	<0.1	0.1	2252356
Nitrate + Nitrite	mg/L	<0.1	0.1	2252356

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

Maxxam Job #: B0B8665
Report Date: 2010/09/03

AECOM Canada Ltd
Client Project #: 60158564
Project name: SURFACE WATER DURBAN ISLAND SI

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		GZ2840		GZ2841		GZ2842	GZ2843		
Sampling Date		2010/08/21 08:25		2010/08/21 14:05		2010/08/21 14:20	2010/08/21 14:45		
COC Number		203505-0		203505-0		203505-0	203505-0		
	Units	**W1**	**RDL**	**W2**	**RDL**	**W3**	**W4**	**RDL**	**QC Batch**
Metals									
Dissolved Aluminum (Al)	mg/L	<0.1	0.1	1	1	<0.1	<0.1	0.1	2252368
Dissolved Antimony (Sb)	mg/L	<0.2	0.2	<2	2	<0.2	<0.2	0.2	2252368
Dissolved Arsenic (As)	mg/L	<0.2	0.2	<2	2	<0.2	<0.2	0.2	2252368
Dissolved Barium (Ba)	mg/L	<0.02	0.02	<0.2	0.2	0.03	<0.02	0.02	2252368
Dissolved Beryllium (Be)	mg/L	<0.005	0.005	<0.05	0.05	<0.005	<0.005	0.005	2252368
Dissolved Bismuth (Bi)	mg/L	<0.2	0.2	<2	2	<0.2	<0.2	0.2	2252368
Dissolved Boron (B)	mg/L	<0.02	0.02	3.6	0.2	<0.02	<0.02	0.02	2252368
Dissolved Cadmium (Cd)	mg/L	<0.005	0.005	<0.05	0.05	<0.005	<0.005	0.005	2252368
Dissolved Calcium (Ca)	mg/L	8.80	0.05	319	0.5	8.17	2.72	0.05	2252368
Dissolved Chromium (Cr)	mg/L	<0.01	0.01	<0.1	0.1	<0.01	<0.01	0.01	2252368
Dissolved Cobalt (Co)	mg/L	<0.02	0.02	<0.2	0.2	<0.02	<0.02	0.02	2252368
Dissolved Copper (Cu)	mg/L	<0.02	0.02	<0.2	0.2	<0.02	<0.02	0.02	2252368
Dissolved Iron (Fe)	mg/L	0.05	0.02	<0.2	0.2	0.02	<0.02	0.02	2252368
Dissolved Lead (Pb)	mg/L	<0.05	0.05	<0.5	0.5	<0.05	<0.05	0.05	2252368
Dissolved Magnesium (Mg)	mg/L	7.06	0.05	978	0.5	7.58	1.66	0.05	2252368
Dissolved Manganese (Mn)	mg/L	<0.01	0.01	<0.1	0.1	<0.01	<0.01	0.01	2252368
Dissolved Molybdenum (Mo)	mg/L	<0.02	0.02	<0.2	0.2	<0.02	<0.02	0.02	2252368
Dissolved Nickel (Ni)	mg/L	<0.05	0.05	<0.5	0.5	<0.05	<0.05	0.05	2252368
Dissolved Phosphorus (P)	mg/L	<0.1	0.1	<1	1	<0.1	<0.1	0.1	2252368
Dissolved Potassium (K)	mg/L	<1	1	308	10	3	<1	1	2252368
Dissolved Selenium (Se)	mg/L	<0.2	0.2	<2	2	<0.2	<0.2	0.2	2252368
Dissolved Silicon (Si)	mg/L	3.8	0.2	<2	2	2.1	2.6	0.2	2252368
Dissolved Silver (Ag)	mg/L	<0.01	0.01	<0.1	0.1	<0.01	<0.01	0.01	2252368
Dissolved Sodium (Na)	mg/L	4.6	0.5	8200	5	18.1	4.1	0.5	2252368
Dissolved Strontium (Sr)	mg/L	<0.01	0.01	5.9	0.1	0.04	<0.01	0.01	2252368
Dissolved Sulphur (S)	mg/L	0.7	0.5	724	5	7.5	3.1	0.5	2252368
Dissolved Tin (Sn)	mg/L	<0.2	0.2	<2	2	<0.2	<0.2	0.2	2252368
Dissolved Titanium (Ti)	mg/L	<0.01	0.01	<0.1	0.1	<0.01	<0.01	0.01	2252368
Dissolved Vanadium (V)	mg/L	<0.01	0.01	<0.1	0.1	<0.01	<0.01	0.01	2252368
Dissolved Zinc (Zn)	mg/L	<0.01	0.01	<0.1	0.1	<0.01	<0.01	0.01	2252368

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: B0B8665
Report Date: 2010/09/03

AECOM Canada Ltd
Client Project #: 60158564
Project name: SURFACE WATER DURBAN ISLAND SI

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		GZ2844	GZ2845		
Sampling Date		2010/08/21 16:55	2010/08/22 11:25		
COC Number		203505-0	203505-0		
	Units	**W5**	**FB**	**RDL**	**QC Batch**
Metals					
Dissolved Aluminum (Al)	mg/L	<0.1	<0.1	0.1	2252368
Dissolved Antimony (Sb)	mg/L	<0.2	<0.2	0.2	2252368
Dissolved Arsenic (As)	mg/L	<0.2	<0.2	0.2	2252368
Dissolved Barium (Ba)	mg/L	<0.02	<0.02	0.02	2252368
Dissolved Beryllium (Be)	mg/L	<0.005	<0.005	0.005	2252368
Dissolved Bismuth (Bi)	mg/L	<0.2	<0.2	0.2	2252368
Dissolved Boron (B)	mg/L	<0.02	<0.02	0.02	2252368
Dissolved Cadmium (Cd)	mg/L	<0.005	<0.005	0.005	2252368
Dissolved Calcium (Ca)	mg/L	2.89	<0.05	0.05	2252368
Dissolved Chromium (Cr)	mg/L	<0.01	<0.01	0.01	2252368
Dissolved Cobalt (Co)	mg/L	<0.02	<0.02	0.02	2252368
Dissolved Copper (Cu)	mg/L	<0.02	<0.02	0.02	2252368
Dissolved Iron (Fe)	mg/L	<0.02	<0.02	0.02	2252368
Dissolved Lead (Pb)	mg/L	<0.05	<0.05	0.05	2252368
Dissolved Magnesium (Mg)	mg/L	1.40	<0.05	0.05	2252368
Dissolved Manganese (Mn)	mg/L	<0.01	<0.01	0.01	2252368
Dissolved Molybdenum (Mo)	mg/L	<0.02	<0.02	0.02	2252368
Dissolved Nickel (Ni)	mg/L	<0.05	<0.05	0.05	2252368
Dissolved Phosphorus (P)	mg/L	<0.1	<0.1	0.1	2252368
Dissolved Potassium (K)	mg/L	1	<1	1	2252368
Dissolved Selenium (Se)	mg/L	<0.2	<0.2	0.2	2252368
Dissolved Silicon (Si)	mg/L	1.9	<0.2	0.2	2252368
Dissolved Silver (Ag)	mg/L	<0.01	<0.01	0.01	2252368
Dissolved Sodium (Na)	mg/L	4.0	<0.5	0.5	2252368
Dissolved Strontium (Sr)	mg/L	<0.01	<0.01	0.01	2252368
Dissolved Sulphur (S)	mg/L	2.7	<0.5	0.5	2252368
Dissolved Tin (Sn)	mg/L	<0.2	<0.2	0.2	2252368
Dissolved Titanium (Ti)	mg/L	<0.01	<0.01	0.01	2252368
Dissolved Vanadium (V)	mg/L	<0.01	<0.01	0.01	2252368
Dissolved Zinc (Zn)	mg/L	<0.01	<0.01	0.01	2252368

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: B0B8665
Report Date: 2010/09/03

AECOM Canada Ltd
Client Project #: 60158564
Project name: SURFACE WATER DURBAN ISLAND SI

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		GZ2840	GZ2841	GZ2842	GZ2843		
Sampling Date		2010/08/21 08:25	2010/08/21 14:05	2010/08/21 14:20	2010/08/21 14:45		
COC Number		203505-0	203505-0	203505-0	203505-0		
	Units	**W1**	**W2**	**W3**	**W4**	**RDL**	**QC Batch**
BTEX & F1 Hydrocarbons							
Benzene	ug/L	<0.2	<0.2	<0.2	<0.2	0.2	2251926
Toluene	ug/L	<0.2	<0.2	<0.2	<0.2	0.2	2251926
Ethylbenzene	ug/L	<0.2	<0.2	<0.2	<0.2	0.2	2251926
o-Xylene	ug/L	<0.2	<0.2	<0.2	<0.2	0.2	2251926
p+m-Xylene	ug/L	<0.4	<0.4	<0.4	<0.4	0.4	2251926
Total Xylenes	ug/L	<0.4	<0.4	<0.4	<0.4	0.4	2251926
F1 (C6-C10)	ug/L	<100	<100	<100	<100	100	2251926
F1 (C6-C10) - BTEX	ug/L	<100	<100	<100	<100	100	2251926
F2-F4 Hydrocarbons							
F2 (C10-C16 Hydrocarbons)	ug/L	<100	<100	<100	<100	100	2251726
F3 (C16-C34 Hydrocarbons)	ug/L	<100	<100	<100	<100	100	2251726
F4 (C34-C50 Hydrocarbons)	ug/L	<100	<100	<100	<100	100	2251726
Reached Baseline at C50	ug/L	Yes	Yes	Yes	Yes	N/A	2251726
Surrogate Recovery (%)							
1,4-Difluorobenzene	%	94	90	95	94	N/A	2251926
4-Bromofluorobenzene	%	102	103	104	102	N/A	2251926
D10-Ethylbenzene	%	113	104	113	122	N/A	2251926
D4-1,2-Dichloroethane	%	101	107	105	106	N/A	2251926
o-Terphenyl	%	103	112	111	109	N/A	2251726

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

Maxxam Job #: B0B8665
Report Date: 2010/09/03

AECOM Canada Ltd
Client Project #: 60158564
Project name: SURFACE WATER DURBAN ISLAND SI

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		GZ2844	GZ2845		
Sampling Date		2010/08/21 16:55	2010/08/22 11:25		
COC Number		203505-0	203505-0		
	Units	**W5**	**FB**	**RDL**	**QC Batch**
BTEX & F1 Hydrocarbons					
Benzene	ug/L	<0.2	<0.2	0.2	2251926
Toluene	ug/L	<0.2	<0.2	0.2	2251926
Ethylbenzene	ug/L	<0.2	<0.2	0.2	2251926
o-Xylene	ug/L	<0.2	<0.2	0.2	2251926
p+m-Xylene	ug/L	<0.4	<0.4	0.4	2251926
Total Xylenes	ug/L	<0.4	<0.4	0.4	2251926
F1 (C6-C10)	ug/L	<100	<100	100	2251926
F1 (C6-C10) - BTEX	ug/L	<100	<100	100	2251926
F2-F4 Hydrocarbons					
F2 (C10-C16 Hydrocarbons)	ug/L	<100	<100	100	2251726
F3 (C16-C34 Hydrocarbons)	ug/L	<100	<100	100	2251726
F4 (C34-C50 Hydrocarbons)	ug/L	<100	<100	100	2251726
Reached Baseline at C50	ug/L	Yes	Yes	N/A	2251726
Surrogate Recovery (%)					
1,4-Difluorobenzene	%	94	94	N/A	2251926
4-Bromofluorobenzene	%	104	97	N/A	2251926
D10-Ethylbenzene	%	117	107	N/A	2251926
D4-1,2-Dichloroethane	%	106	103	N/A	2251926
o-Terphenyl	%	104	99	N/A	2251726

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

Maxxam Job #: B0B8665
Report Date: 2010/09/03

AECOM Canada Ltd
Client Project #: 60158564
Project name: SURFACE WATER DURBAN ISLAND SI

POLYCHLORINATED BIPHENYLS BY GC-ECD (WATER)

Maxxam ID		GZ2840	GZ2841	GZ2842	GZ2843		
Sampling Date		2010/08/21 08:25	2010/08/21 14:05	2010/08/21 14:20	2010/08/21 14:45		
COC Number		203505-0	203505-0	203505-0	203505-0		
	Units	**W1**	**W2**	**W3**	**W4**	**RDL**	**QC Batch**
PCBs							
Aroclor 1016	ug/L	<0.05	<0.05	<0.05	<0.05	0.05	2251357
Aroclor 1221	ug/L	<0.05	<0.05	<0.05	<0.05	0.05	2251357
Aroclor 1232	ug/L	<0.05	<0.05	<0.05	<0.05	0.05	2251357
Aroclor 1242	ug/L	<0.05	<0.05	<0.05	<0.05	0.05	2251357
Aroclor 1248	ug/L	<0.05	<0.05	<0.05	<0.05	0.05	2251357
Aroclor 1254	ug/L	<0.05	<0.05	<0.05	<0.05	0.05	2251357
Aroclor 1260	ug/L	<0.05	<0.05	<0.05	<0.05	0.05	2251357
Aroclor 1262	ug/L	<0.05	<0.05	<0.05	<0.05	0.05	2251357
Aroclor 1268	ug/L	<0.05	<0.05	<0.05	<0.05	0.05	2251357
Total PCB	ug/L	<0.05	<0.05	<0.05	<0.05	0.05	2251357
Surrogate Recovery (%)							
2,4,5,6-Tetrachloro-m-xylene	%	56	53	52	64	N/A	2251357
Decachlorobiphenyl	%	70	67	64	83	N/A	2251357

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

Maxxam Job #: B0B8665
Report Date: 2010/09/03

AECOM Canada Ltd
Client Project #: 60158564
Project name: SURFACE WATER DURBAN ISLAND SI

POLYCHLORINATED BIPHENYLS BY GC-ECD (WATER)

Maxxam ID		GZ2844	GZ2845		
Sampling Date		2010/08/21 16:55	2010/08/22 11:25		
COC Number		203505-0	203505-0		
	Units	**W5**	**FB**	**RDL**	**QC Batch**
PCBs					
Aroclor 1016	ug/L	<0.05	<0.05	0.05	2251357
Aroclor 1221	ug/L	<0.05	<0.05	0.05	2251357
Aroclor 1232	ug/L	<0.05	<0.05	0.05	2251357
Aroclor 1242	ug/L	<0.05	<0.05	0.05	2251357
Aroclor 1248	ug/L	<0.05	<0.05	0.05	2251357
Aroclor 1254	ug/L	<0.05	<0.05	0.05	2251357
Aroclor 1260	ug/L	<0.05	<0.05	0.05	2251357
Aroclor 1262	ug/L	<0.05	<0.05	0.05	2251357
Aroclor 1268	ug/L	<0.05	<0.05	0.05	2251357
Total PCB	ug/L	<0.05	<0.05	0.05	2251357
Surrogate Recovery (%)					
2,4,5,6-Tetrachloro-m-xylene	%	69	65	N/A	2251357
Decachlorobiphenyl	%	86	70	N/A	2251357

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

Maxxam Job #: B0B8665
Report Date: 2010/09/03

AECOM Canada Ltd
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GENERAL COMMENTS

Results relate only to the items tested.

AECOM Canada Ltd
Attention: Jenna Morrish
Client Project #: 60158564
P.O. #:
Site Location: SURFACE WATER DURBAN ISLAND SI

Quality Assurance Report

Maxxam Job Number: TB0B8665

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2251357	JZ	Matrix Spike [GZ2840-04]	2,4,5,6-Tetrachloro-m-xylene	2010/09/01		68	%	40 - 130
			Decachlorobiphenyl	2010/09/01		76	%	40 - 130
			Aroclor 1260	2010/09/01		88	%	30 - 130
			Total PCB	2010/09/01		88	%	30 - 130
		Spiked Blank	2,4,5,6-Tetrachloro-m-xylene	2010/09/01		76	%	40 - 130
			Decachlorobiphenyl	2010/09/01		77	%	40 - 130
			Aroclor 1260	2010/09/01		88	%	30 - 130
			Total PCB	2010/09/01		88	%	30 - 130
		Method Blank	2,4,5,6-Tetrachloro-m-xylene	2010/09/01		74	%	40 - 130
			Decachlorobiphenyl	2010/09/01		75	%	40 - 130
			Aroclor 1016	2010/09/01	<0.05		ug/L	
			Aroclor 1221	2010/09/01	<0.05		ug/L	
			Aroclor 1232	2010/09/01	<0.05		ug/L	
			Aroclor 1242	2010/09/01	<0.05		ug/L	
			Aroclor 1248	2010/09/01	<0.05		ug/L	
			Aroclor 1254	2010/09/01	<0.05		ug/L	
			Aroclor 1260	2010/09/01	<0.05		ug/L	
			Aroclor 1262	2010/09/01	<0.05		ug/L	
			Aroclor 1268	2010/09/01	<0.05		ug/L	
			Total PCB	2010/09/01	<0.05		ug/L	
		RPD [GZ2841-04]	Aroclor 1016	2010/09/01	NC		%	40
			Aroclor 1221	2010/09/01	NC		%	40
			Aroclor 1232	2010/09/01	NC		%	40
			Aroclor 1242	2010/09/01	NC		%	40
			Aroclor 1248	2010/09/01	NC		%	40
			Aroclor 1254	2010/09/01	NC		%	40
			Aroclor 1260	2010/09/01	NC		%	40
			Aroclor 1262	2010/09/01	NC		%	40
			Aroclor 1268	2010/09/01	NC		%	40
			Total PCB	2010/09/01	NC		%	40
2251726	PRB	Matrix Spike	o-Terphenyl	2010/09/01		108	%	30 - 130
			F2 (C10-C16 Hydrocarbons)	2010/09/01		95	%	60 - 130
			F3 (C16-C34 Hydrocarbons)	2010/09/01		95	%	60 - 130
			F4 (C34-C50 Hydrocarbons)	2010/09/01		95	%	60 - 130
		Spiked Blank	o-Terphenyl	2010/09/01		108	%	30 - 130
			F2 (C10-C16 Hydrocarbons)	2010/09/01		92	%	60 - 130
			F3 (C16-C34 Hydrocarbons)	2010/09/01		92	%	60 - 130
			F4 (C34-C50 Hydrocarbons)	2010/09/01		92	%	60 - 130
		Method Blank	o-Terphenyl	2010/09/01		114	%	30 - 130
			F2 (C10-C16 Hydrocarbons)	2010/09/01	<100		ug/L	
			F3 (C16-C34 Hydrocarbons)	2010/09/01	<100		ug/L	
			F4 (C34-C50 Hydrocarbons)	2010/09/01	<100		ug/L	
		RPD	F2 (C10-C16 Hydrocarbons)	2010/09/01	NC		%	50
			F3 (C16-C34 Hydrocarbons)	2010/09/01	NC		%	50
			F4 (C34-C50 Hydrocarbons)	2010/09/01	NC		%	50
2251926	STE	Matrix Spike	1,4-Difluorobenzene	2010/08/31		93	%	70 - 130
			4-Bromofluorobenzene	2010/08/31		106	%	70 - 130
			D10-Ethylbenzene	2010/08/31		117	%	70 - 130
			D4-1,2-Dichloroethane	2010/08/31		102	%	70 - 130
			Benzene	2010/08/31		81	%	70 - 130
			Toluene	2010/08/31		84	%	70 - 130
			Ethylbenzene	2010/08/31		91	%	70 - 130
			o-Xylene	2010/08/31		100	%	70 - 130
			p+m-Xylene	2010/08/31		87	%	70 - 130

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Quality Assurance Report (Continued)

Maxxam Job Number: TB0B8665

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2251926	STE	Matrix Spike	F1 (C6-C10)	2010/08/31		98	%	70 - 130
		Spiked Blank	1,4-Difluorobenzene	2010/08/31		93	%	70 - 130
			4-Bromofluorobenzene	2010/08/31		105	%	70 - 130
			D10-Ethylbenzene	2010/08/31		109	%	70 - 130
			D4-1,2-Dichloroethane	2010/08/31		98	%	70 - 130
			Benzene	2010/08/31		82	%	70 - 130
			Toluene	2010/08/31		87	%	70 - 130
			Ethylbenzene	2010/08/31		97	%	70 - 130
			o-Xylene	2010/08/31		106	%	70 - 130
			p+m-Xylene	2010/08/31		90	%	70 - 130
			F1 (C6-C10)	2010/08/31		118	%	70 - 130
		Method Blank	1,4-Difluorobenzene	2010/08/31		94	%	70 - 130
			4-Bromofluorobenzene	2010/08/31		102	%	70 - 130
			D10-Ethylbenzene	2010/08/31		111	%	70 - 130
			D4-1,2-Dichloroethane	2010/08/31		98	%	70 - 130
			Benzene	2010/08/31	<0.2		ug/L	
			Toluene	2010/08/31	<0.2		ug/L	
			Ethylbenzene	2010/08/31	<0.2		ug/L	
			o-Xylene	2010/08/31	<0.2		ug/L	
			p+m-Xylene	2010/08/31	<0.4		ug/L	
			Total Xylenes	2010/08/31	<0.4		ug/L	
			F1 (C6-C10)	2010/08/31	<100		ug/L	
			F1 (C6-C10) - BTEX	2010/08/31	<100		ug/L	
		RPD	F1 (C6-C10)	2010/08/31	NC		%	40
			F1 (C6-C10) - BTEX	2010/08/31	NC		%	40
2252215	DRM	Matrix Spike	Dissolved Chloride (Cl)	2010/09/01		NC	%	75 - 125
		Spiked Blank	Dissolved Chloride (Cl)	2010/09/01		105	%	80 - 120
		Method Blank	Dissolved Chloride (Cl)	2010/09/01	<1		mg/L	
		RPD	Dissolved Chloride (Cl)	2010/09/01	0.5		%	20
2252216	DRM	Matrix Spike	Orthophosphate (P)	2010/09/01		114	%	75 - 125
		Spiked Blank	Orthophosphate (P)	2010/09/01		101	%	80 - 120
		Method Blank	Orthophosphate (P)	2010/09/01	<0.01		mg/L	
		RPD	Orthophosphate (P)	2010/09/01	NC		%	25
2252217	DRM	Matrix Spike	Dissolved Sulphate (SO4)	2010/09/01		NC	%	75 - 125
		Spiked Blank	Dissolved Sulphate (SO4)	2010/09/01		96	%	80 - 120
		Method Blank	Dissolved Sulphate (SO4)	2010/09/01	<1		mg/L	
		RPD	Dissolved Sulphate (SO4)	2010/09/01	0.1		%	25
2252356	C_N	Matrix Spike	Nitrite (N)	2010/09/01		111	%	80 - 120
			Nitrate (N)	2010/09/01		108	%	80 - 120
		Spiked Blank	Nitrite (N)	2010/09/01		108	%	85 - 115
			Nitrate (N)	2010/09/01		106	%	85 - 115
		Method Blank	Nitrite (N)	2010/09/01	<0.01		mg/L	
			Nitrate (N)	2010/09/01	<0.1		mg/L	
			Nitrate + Nitrite	2010/09/01	<0.1		mg/L	
		RPD	Nitrate (N)	2010/09/01	NC		%	25
2252360	DRM	Matrix Spike	Dissolved Chloride (Cl)	2010/09/01		109	%	75 - 125
		Spiked Blank	Dissolved Chloride (Cl)	2010/09/01		104	%	80 - 120
		Method Blank	Dissolved Chloride (Cl)	2010/09/01	<1		mg/L	
		RPD	Dissolved Chloride (Cl)	2010/09/01	NC		%	20
2252365	DRM	Matrix Spike	Dissolved Sulphate (SO4)	2010/09/01		NC	%	75 - 125
		Spiked Blank	Dissolved Sulphate (SO4)	2010/09/01		98	%	80 - 120
		Method Blank	Dissolved Sulphate (SO4)	2010/09/01	<1		mg/L	
		RPD	Dissolved Sulphate (SO4)	2010/09/01	0.4		%	25
2252368	JOH	Matrix Spike [GZ2840-05]	Dissolved Aluminum (Al)	2010/09/01		111	%	80 - 120

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Quality Assurance Report (Continued)

Maxxam Job Number: TB0B8665

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2252368	JOH	Matrix Spike [GZ2840-05]	Dissolved Antimony (Sb)	2010/09/01		104	%	80 - 120
			Dissolved Arsenic (As)	2010/09/01		105	%	80 - 120
			Dissolved Barium (Ba)	2010/09/01		105	%	80 - 120
			Dissolved Beryllium (Be)	2010/09/01		105	%	80 - 120
			Dissolved Bismuth (Bi)	2010/09/01		104	%	80 - 120
			Dissolved Boron (B)	2010/09/01		107	%	80 - 120
			Dissolved Cadmium (Cd)	2010/09/01		106	%	80 - 120
			Dissolved Calcium (Ca)	2010/09/01		103	%	80 - 120
			Dissolved Chromium (Cr)	2010/09/01		107	%	80 - 120
			Dissolved Cobalt (Co)	2010/09/01		106	%	80 - 120
			Dissolved Copper (Cu)	2010/09/01		106	%	80 - 120
			Dissolved Iron (Fe)	2010/09/01		103	%	80 - 120
			Dissolved Lead (Pb)	2010/09/01		106	%	80 - 120
			Dissolved Magnesium (Mg)	2010/09/01		101	%	80 - 120
			Dissolved Manganese (Mn)	2010/09/01		104	%	80 - 120
			Dissolved Molybdenum (Mo)	2010/09/01		106	%	80 - 120
			Dissolved Nickel (Ni)	2010/09/01		105	%	80 - 120
			Dissolved Phosphorus (P)	2010/09/01		102	%	80 - 120
			Dissolved Potassium (K)	2010/09/01		107	%	80 - 120
			Dissolved Selenium (Se)	2010/09/01		108	%	80 - 120
			Dissolved Silicon (Si)	2010/09/01		107	%	80 - 120
			Dissolved Silver (Ag)	2010/09/01		100	%	80 - 120
			Dissolved Sodium (Na)	2010/09/01		107	%	80 - 120
			Dissolved Strontium (Sr)	2010/09/01		106	%	80 - 120
			Dissolved Sulphur (S)	2010/09/01		105	%	80 - 120
			Dissolved Tin (Sn)	2010/09/01		101	%	80 - 120
			Dissolved Titanium (Ti)	2010/09/01		102	%	80 - 120
			Dissolved Vanadium (V)	2010/09/01		105	%	80 - 120
			Dissolved Zinc (Zn)	2010/09/01		104	%	80 - 120
		Spiked Blank	Dissolved Aluminum (Al)	2010/09/01		103	%	90 - 110
			Dissolved Antimony (Sb)	2010/09/01		96	%	90 - 110
			Dissolved Arsenic (As)	2010/09/01		98	%	90 - 110
			Dissolved Barium (Ba)	2010/09/01		101	%	90 - 110
			Dissolved Beryllium (Be)	2010/09/01		100	%	90 - 110
			Dissolved Bismuth (Bi)	2010/09/01		98	%	90 - 110
			Dissolved Boron (B)	2010/09/01		100	%	90 - 110
			Dissolved Cadmium (Cd)	2010/09/01		99	%	90 - 110
			Dissolved Calcium (Ca)	2010/09/01		99	%	90 - 110
			Dissolved Chromium (Cr)	2010/09/01		101	%	90 - 110
			Dissolved Cobalt (Co)	2010/09/01		99	%	90 - 110
			Dissolved Copper (Cu)	2010/09/01		100	%	90 - 110
			Dissolved Iron (Fe)	2010/09/01		100	%	90 - 110
			Dissolved Lead (Pb)	2010/09/01		100	%	90 - 110
			Dissolved Magnesium (Mg)	2010/09/01		97	%	90 - 110
			Dissolved Manganese (Mn)	2010/09/01		99	%	90 - 110
			Dissolved Molybdenum (Mo)	2010/09/01		98	%	90 - 110
			Dissolved Nickel (Ni)	2010/09/01		100	%	90 - 110
			Dissolved Phosphorus (P)	2010/09/01		93	%	90 - 110
			Dissolved Potassium (K)	2010/09/01		97	%	90 - 110
			Dissolved Selenium (Se)	2010/09/01		101	%	90 - 110
			Dissolved Silicon (Si)	2010/09/01		101	%	90 - 110
			Dissolved Silver (Ag)	2010/09/01		100	%	90 - 110
			Dissolved Sodium (Na)	2010/09/01		101	%	90 - 110
			Dissolved Strontium (Sr)	2010/09/01		101	%	90 - 110

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Quality Assurance Report (Continued)

Maxxam Job Number: TB0B8665

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2252368	JOH	Spiked Blank	Dissolved Sulphur (S)	2010/09/01		100	%	90 - 110
			Dissolved Tin (Sn)	2010/09/01		95	%	90 - 110
			Dissolved Titanium (Ti)	2010/09/01		97	%	90 - 110
			Dissolved Vanadium (V)	2010/09/01		100	%	90 - 110
			Dissolved Zinc (Zn)	2010/09/01		98	%	90 - 110
		Method Blank	Dissolved Aluminum (Al)	2010/09/01	<0.1		mg/L	
			Dissolved Antimony (Sb)	2010/09/01	<0.2		mg/L	
			Dissolved Arsenic (As)	2010/09/01	<0.2		mg/L	
			Dissolved Barium (Ba)	2010/09/01	<0.02		mg/L	
			Dissolved Beryllium (Be)	2010/09/01	<0.005		mg/L	
			Dissolved Bismuth (Bi)	2010/09/01	<0.2		mg/L	
			Dissolved Boron (B)	2010/09/01	<0.02		mg/L	
			Dissolved Cadmium (Cd)	2010/09/01	<0.005		mg/L	
			Dissolved Calcium (Ca)	2010/09/01	<0.05		mg/L	
			Dissolved Chromium (Cr)	2010/09/01	<0.01		mg/L	
			Dissolved Cobalt (Co)	2010/09/01	<0.02		mg/L	
			Dissolved Copper (Cu)	2010/09/01	<0.02		mg/L	
			Dissolved Iron (Fe)	2010/09/01	<0.02		mg/L	
			Dissolved Lead (Pb)	2010/09/01	<0.05		mg/L	
			Dissolved Magnesium (Mg)	2010/09/01	<0.05		mg/L	
			Dissolved Manganese (Mn)	2010/09/01	<0.01		mg/L	
			Dissolved Molybdenum (Mo)	2010/09/01	<0.02		mg/L	
			Dissolved Nickel (Ni)	2010/09/01	<0.05		mg/L	
			Dissolved Phosphorus (P)	2010/09/01	<0.1		mg/L	
			Dissolved Potassium (K)	2010/09/01	<1		mg/L	
			Dissolved Selenium (Se)	2010/09/01	<0.2		mg/L	
			Dissolved Silicon (Si)	2010/09/01	<0.2		mg/L	
			Dissolved Silver (Ag)	2010/09/01	<0.01		mg/L	
			Dissolved Sodium (Na)	2010/09/01	<0.5		mg/L	
			Dissolved Strontium (Sr)	2010/09/01	<0.01		mg/L	
			Dissolved Sulphur (S)	2010/09/01	<0.5		mg/L	
			Dissolved Tin (Sn)	2010/09/01	<0.2		mg/L	
			Dissolved Titanium (Ti)	2010/09/01	<0.01		mg/L	
			Dissolved Vanadium (V)	2010/09/01	<0.01		mg/L	
			Dissolved Zinc (Zn)	2010/09/01	<0.01		mg/L	
		RPD [GZ2840-05]	Dissolved Aluminum (Al)	2010/09/01	NC		%	25
			Dissolved Antimony (Sb)	2010/09/01	NC		%	25
			Dissolved Arsenic (As)	2010/09/01	NC		%	25
			Dissolved Barium (Ba)	2010/09/01	NC		%	25
			Dissolved Beryllium (Be)	2010/09/01	NC		%	25
			Dissolved Bismuth (Bi)	2010/09/01	NC		%	25
			Dissolved Boron (B)	2010/09/01	NC		%	25
			Dissolved Cadmium (Cd)	2010/09/01	NC		%	25
			Dissolved Calcium (Ca)	2010/09/01	0.5		%	25
			Dissolved Chromium (Cr)	2010/09/01	NC		%	25
			Dissolved Cobalt (Co)	2010/09/01	NC		%	25
			Dissolved Copper (Cu)	2010/09/01	NC		%	25
			Dissolved Iron (Fe)	2010/09/01	NC		%	25
			Dissolved Lead (Pb)	2010/09/01	NC		%	25
			Dissolved Magnesium (Mg)	2010/09/01	0.3		%	25
			Dissolved Manganese (Mn)	2010/09/01	NC		%	25
			Dissolved Molybdenum (Mo)	2010/09/01	NC		%	25
			Dissolved Nickel (Ni)	2010/09/01	NC		%	25
			Dissolved Phosphorus (P)	2010/09/01	NC		%	25
			Dissolved Potassium (K)	2010/09/01	NC		%	25

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Quality Assurance Report (Continued)

Maxxam Job Number: TB0B8665

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2252368	JOH	RPD [GZ2840-05]	Dissolved Selenium (Se)	2010/09/01	NC		%	25
			Dissolved Silicon (Si)	2010/09/01	1.1		%	25
			Dissolved Silver (Ag)	2010/09/01	NC		%	25
			Dissolved Sodium (Na)	2010/09/01	0.5		%	25
			Dissolved Strontium (Sr)	2010/09/01	NC		%	25
			Dissolved Sulphur (S)	2010/09/01	NC		%	25
			Dissolved Tin (Sn)	2010/09/01	NC		%	25
			Dissolved Titanium (Ti)	2010/09/01	NC		%	25
			Dissolved Vanadium (V)	2010/09/01	NC		%	25
			Dissolved Zinc (Zn)	2010/09/01	NC		%	25
2252370	DRM	Matrix Spike	Orthophosphate (P)	2010/09/01		107	%	75 - 125
		Spiked Blank	Orthophosphate (P)	2010/09/01		102	%	80 - 120
		Method Blank	Orthophosphate (P)	2010/09/01	<0.01		mg/L	
		RPD	Orthophosphate (P)	2010/09/01	NC		%	25
2252400	YPA	QC Standard	Alkalinity (Total as CaCO3)	2010/09/01		98	%	85 - 115
		Method Blank	Alkalinity (Total as CaCO3)	2010/09/01	<1		mg/L	
		RPD	Alkalinity (Total as CaCO3)	2010/09/01	0.2		%	25
2252456	YPA	QC Standard	Conductivity	2010/09/01		102	%	85 - 115
		Method Blank	Conductivity	2010/09/01	<1		umho/cm	
		RPD	Conductivity	2010/09/01	0.4		%	25
2253175	C_N	Matrix Spike	Nitrite (N)	2010/09/01		NC	%	80 - 120
			Nitrate (N)	2010/09/01		NC	%	80 - 120
		Spiked Blank	Nitrite (N)	2010/09/01		104	%	85 - 115
			Nitrate (N)	2010/09/01		105	%	85 - 115
		Method Blank	Nitrite (N)	2010/09/01	<0.01		mg/L	
			Nitrate (N)	2010/09/01	<0.1		mg/L	
			Nitrate + Nitrite	2010/09/01	<0.1		mg/L	
		RPD	Nitrite (N)	2010/09/01	0.3		%	25
			Nitrate (N)	2010/09/01	1.7		%	25
			Nitrate + Nitrite	2010/09/01	1.6		%	25
2254039	YPA	QC Standard	Alkalinity (Total as CaCO3)	2010/09/02		99	%	85 - 115
		Method Blank	Alkalinity (Total as CaCO3)	2010/09/02	<1		mg/L	
		RPD	Alkalinity (Total as CaCO3)	2010/09/02	0.7		%	25
2254054	YPA	QC Standard	Conductivity	2010/09/02		101	%	85 - 115
		Method Blank	Conductivity	2010/09/02	<1		umho/cm	
		RPD	Conductivity	2010/09/02	0.3		%	25

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 blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.
NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was not sufficiently significant to permit a reliable recovery calculation.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.

Validation Signature Page

Maxxam Job #: B0B8665

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

CHARLES ANCKER, B.Sc., M.Sc., C.Chem, Senior Analyst

EWA PRANJIC, M.Sc., C.Chem, Scientific Specialist

PAUL RUBINATO, Analyst, Maxxam Analytics

STEVE ROBERTS, Lab Supervisor, Ottawa

==========

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.

Your Project #: 60158564
Site: SURFACE WATER DURBAN ISLAND
Your C.O.C. #: N/A

Attention: Jenna Morrish
AECOM Canada Ltd
2540 Kensington Rd NW
Calgary, AB
CANADA T2N3S3

Report Date: 2010/10/13

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B0E2466
Received: 2010/10/08, 12:04

Sample Matrix: Water
Samples Received: 6

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Metals Analysis by ICPMS (as received) (1)	6	2010/10/08	2010/10/12	CAM SOP-00447	EPA 6020

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

(1) Metals analysis was performed on the sample 'as received'.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

MARIJANE CRUZ, Project Manager
Email: MCruz@maxxam.ca
Phone# (905) 817-5756

==========

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.

Total cover pages: 1

Maxxam Job #: B0E2466
Report Date: 2010/10/13

AECOM Canada Ltd
Client Project #: 60158564
Project name: SURFACE WATER DURBAN ISLAND

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		HL2346		HL2347		HL2348	HL2349		
Sampling Date		2010/08/21 08:25		2010/08/21 14:05		2010/08/21 14:20	2010/08/21 14:45		
COC Number		N/A		N/A		N/A	N/A		
	Units	**W1**	**RDL**	**W2**	**RDL**	**W3**	**W4**	**RDL**	**QC Batch**
Metals									
. Aluminum (Al)	ug/L	10	5	<100	100	380	9	5	2292824
. Antimony (Sb)	ug/L	<0.5	0.5	<10	10	<0.5	<0.5	0.5	2292824
. Arsenic (As)	ug/L	<1	1	<20	20	<1	<1	1	2292824
. Barium (Ba)	ug/L	<5	5	<100	100	23	<5	5	2292824
. Beryllium (Be)	ug/L	<0.5	0.5	<10	10	<0.5	<0.5	0.5	2292824
. Bismuth (Bi)	ug/L	<1	1	<20	20	<1	<1	1	2292824
. Boron (B)	ug/L	<10	10	3500	200	19	<10	10	2292824
. Cadmium (Cd)	ug/L	<0.1	0.1	<2	2	<0.1	<0.1	0.1	2292824
. Calcium (Ca)	ug/L	9400	200	340000	4000	8600	2800	200	2292824
. Chromium (Cr)	ug/L	<5	5	<100	100	<5	<5	5	2292824
. Cobalt (Co)	ug/L	<0.5	0.5	<10	10	<0.5	<0.5	0.5	2292824
. Copper (Cu)	ug/L	<1	1	<20	20	<1	<1	1	2292824
. Iron (Fe)	ug/L	<100	100	<2000	2000	300	<100	100	2292824
. Lead (Pb)	ug/L	<0.5	0.5	<10	10	<0.5	<0.5	0.5	2292824
. Lithium (Li)	ug/L	<5	5	140	100	<5	<5	5	2292824
. Magnesium (Mg)	ug/L	7800	50	1100000	1000	8400	1800	50	2292824
. Manganese (Mn)	ug/L	<2	2	<40	40	<2	<2	2	2292824
. Molybdenum (Mo)	ug/L	<1	1	<20	20	<1	<1	1	2292824
. Nickel (Ni)	ug/L	<1	1	<20	20	1	1	1	2292824
. Phosphorus (P)	ug/L	<100	100	<2000	2000	<100	<100	100	2292824
. Potassium (K)	ug/L	250	200	330000	4000	3300	930	200	2292824
. Selenium (Se)	ug/L	<2	2	<40	40	<2	<2	2	2292824
. Silicon (Si)	ug/L	3900	50	<1000	1000	2800	2500	50	2292824
. Silver (Ag)	ug/L	<0.1	0.1	<2	2	<0.1	<0.1	0.1	2292824
. Sodium (Na)	ug/L	4900	100	8800000	2000	17000	4200	100	2292824
. Strontium (Sr)	ug/L	8	1	6000	20	38	10	1	2292824
. Tellurium (Te)	ug/L	<1	1	<20	20	<1	<1	1	2292824
. Thallium (Tl)	ug/L	<0.05	0.05	<1	1	<0.05	<0.05	0.05	2292824
. Thorium (Th)	ug/L	<1	1	<20	20	<1	<1	1	2292824
. Tin (Sn)	ug/L	<1	1	<20	20	<1	<1	1	2292824
. Titanium (Ti)	ug/L	<5	5	<100	100	17	<5	5	2292824

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

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Maxxam Job #: B0E2466
Report Date: 2010/10/13

AECOM Canada Ltd
Client Project #: 60158564
Project name: SURFACE WATER DURBAN ISLAND

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		HL2346		HL2347		HL2348	HL2349		
Sampling Date		2010/08/21 08:25		2010/08/21 14:05		2010/08/21 14:20	2010/08/21 14:45		
COC Number		N/A		N/A		N/A	N/A		
	Units	**W1**	**RDL**	**W2**	**RDL**	**W3**	**W4**	**RDL**	**QC Batch**
. Tungsten (W)	ug/L	<1	1	<20	20	<1	<1	1	2292824
. Uranium (U)	ug/L	<0.1	0.1	2	2	<0.1	<0.1	0.1	2292824
. Vanadium (V)	ug/L	<1	1	27	20	<1	<1	1	2292824
. Zinc (Zn)	ug/L	<5	5	<100	100	<5	<5	5	2292824
. Zirconium (Zr)	ug/L	<1	1	<20	20	<1	<1	1	2292824

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

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Maxxam Job #: B0E2466
Report Date: 2010/10/13

AECOM Canada Ltd
Client Project #: 60158564
Project name: SURFACE WATER DURBAN ISLAND

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		HL2350	HL2351		
Sampling Date		2010/08/21 16:55	2010/08/22 11:25		
COC Number		N/A	N/A		
	Units	**W5**	**FB**	**RDL**	**QC Batch**
Metals					
. Aluminum (Al)	ug/L	<5	<5	5	2292824
. Antimony (Sb)	ug/L	<0.5	<0.5	0.5	2292824
. Arsenic (As)	ug/L	<1	<1	1	2292824
. Barium (Ba)	ug/L	19	<5	5	2292824
. Beryllium (Be)	ug/L	<0.5	<0.5	0.5	2292824
. Bismuth (Bi)	ug/L	<1	<1	1	2292824
. Boron (B)	ug/L	<10	<10	10	2292824
. Cadmium (Cd)	ug/L	<0.1	<0.1	0.1	2292824
. Calcium (Ca)	ug/L	3000	<200	200	2292824
. Chromium (Cr)	ug/L	<5	<5	5	2292824
. Cobalt (Co)	ug/L	<0.5	<0.5	0.5	2292824
. Copper (Cu)	ug/L	<1	<1	1	2292824
. Iron (Fe)	ug/L	<100	<100	100	2292824
. Lead (Pb)	ug/L	<0.5	<0.5	0.5	2292824
. Lithium (Li)	ug/L	<5	<5	5	2292824
. Magnesium (Mg)	ug/L	1500	<50	50	2292824
. Manganese (Mn)	ug/L	<2	<2	2	2292824
. Molybdenum (Mo)	ug/L	<1	<1	1	2292824
. Nickel (Ni)	ug/L	<1	<1	1	2292824
. Phosphorus (P)	ug/L	<100	<100	100	2292824
. Potassium (K)	ug/L	1300	<200	200	2292824
. Selenium (Se)	ug/L	<2	<2	2	2292824
. Silicon (Si)	ug/L	2000	<50	50	2292824
. Silver (Ag)	ug/L	<0.1	<0.1	0.1	2292824
. Sodium (Na)	ug/L	4100	<100	100	2292824
. Strontium (Sr)	ug/L	10	<1	1	2292824
. Tellurium (Te)	ug/L	<1	<1	1	2292824
. Thallium (Tl)	ug/L	<0.05	<0.05	0.05	2292824
. Thorium (Th)	ug/L	<1	<1	1	2292824
. Tin (Sn)	ug/L	<1	<1	1	2292824
. Titanium (Ti)	ug/L	<5	<5	5	2292824

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

Maxxam Job #: B0E2466
Report Date: 2010/10/13

AECOM Canada Ltd
Client Project #: 60158564
Project name: SURFACE WATER DURBAN ISLAND

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		HL2350	HL2351		
Sampling Date		2010/08/21 16:55	2010/08/22 11:25		
COC Number		N/A	N/A		
	Units	**W5**	**FB**	**RDL**	**QC Batch**
. Tungsten (W)	ug/L	<1	<1	1	2292824
. Uranium (U)	ug/L	<0.1	<0.1	0.1	2292824
. Vanadium (V)	ug/L	<1	<1	1	2292824
. Zinc (Zn)	ug/L	<5	<5	5	2292824
. Zirconium (Zr)	ug/L	<1	<1	1	2292824

N/A = Not Applicable
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QC Batch = Quality Control Batch

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Maxxam Job #: B0E2466
Report Date: 2010/10/13

AECOM Canada Ltd
Client Project #: 60158564
Project name: SURFACE WATER DURBAN ISLAND

GENERAL COMMENTS

Sample HL2347-01: Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.

Results relate only to the items tested.

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AECOM Canada Ltd
Attention: Jenna Morrish
Client Project #: 60158564
P.O. #:
Project name: SURFACE WATER DURBAN ISLAND

Quality Assurance Report

Maxxam Job Number: MB0E2466

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2292824 HRE	Matrix Spike	. Aluminum (Al)	2010/10/12		99	%	80 - 120
		. Antimony (Sb)	2010/10/12		101	%	80 - 120
		. Arsenic (As)	2010/10/12		104	%	80 - 120
		. Barium (Ba)	2010/10/12		97	%	80 - 120
		. Beryllium (Be)	2010/10/12		95	%	80 - 120
		. Bismuth (Bi)	2010/10/12		95	%	80 - 120
		. Boron (B)	2010/10/12		92	%	80 - 120
		. Cadmium (Cd)	2010/10/12		100	%	80 - 120
		. Calcium (Ca)	2010/10/12		106	%	80 - 120
		. Chromium (Cr)	2010/10/12		99	%	80 - 120
		. Cobalt (Co)	2010/10/12		97	%	80 - 120
		. Copper (Cu)	2010/10/12		99	%	80 - 120
		. Iron (Fe)	2010/10/12		101	%	80 - 120
		. Lead (Pb)	2010/10/12		96	%	80 - 120
		. Lithium (Li)	2010/10/12		99	%	80 - 120
		. Magnesium (Mg)	2010/10/12		104	%	80 - 120
		. Manganese (Mn)	2010/10/12		102	%	80 - 120
		. Molybdenum (Mo)	2010/10/12		102	%	80 - 120
		. Nickel (Ni)	2010/10/12		98	%	80 - 120
		. Phosphorus (P)	2010/10/12		100	%	80 - 120
		. Potassium (K)	2010/10/12		105	%	80 - 120
		. Selenium (Se)	2010/10/12		102	%	80 - 120
		. Silicon (Si)	2010/10/12		104	%	80 - 120
		. Silver (Ag)	2010/10/12		93	%	80 - 120
		. Sodium (Na)	2010/10/12		104	%	80 - 120
		. Strontium (Sr)	2010/10/12		100	%	80 - 120
		. Tellurium (Te)	2010/10/12		100	%	80 - 120
		. Thallium (Tl)	2010/10/12		95	%	80 - 120
		. Thorium (Th)	2010/10/12		98	%	80 - 120
		. Tin (Sn)	2010/10/12		100	%	80 - 120
		. Titanium (Ti)	2010/10/12		105	%	80 - 120
		. Tungsten (W)	2010/10/12		98	%	80 - 120
		. Uranium (U)	2010/10/12		99	%	80 - 120
		. Vanadium (V)	2010/10/12		99	%	80 - 120
		. Zinc (Zn)	2010/10/12		102	%	80 - 120
		. Zirconium (Zr)	2010/10/12		100	%	80 - 120
	Spiked Blank	. Aluminum (Al)	2010/10/12		98	%	90 - 110
		. Antimony (Sb)	2010/10/12		99	%	90 - 110
		. Arsenic (As)	2010/10/12		100	%	90 - 110
		. Barium (Ba)	2010/10/12		98	%	90 - 110
		. Beryllium (Be)	2010/10/12		96	%	90 - 110
		. Bismuth (Bi)	2010/10/12		96	%	90 - 110
		. Boron (B)	2010/10/12		94	%	90 - 110
		. Cadmium (Cd)	2010/10/12		98	%	90 - 110
		. Calcium (Ca)	2010/10/12		103	%	90 - 110
		. Chromium (Cr)	2010/10/12		98	%	90 - 110
		. Cobalt (Co)	2010/10/12		97	%	90 - 110
		. Copper (Cu)	2010/10/12		97	%	90 - 110
		. Iron (Fe)	2010/10/12		101	%	90 - 110
		. Lead (Pb)	2010/10/12		96	%	90 - 110
		. Lithium (Li)	2010/10/12		98	%	90 - 110
		. Magnesium (Mg)	2010/10/12		103	%	90 - 110
		. Manganese (Mn)	2010/10/12		99	%	90 - 110
		. Molybdenum (Mo)	2010/10/12		100	%	90 - 110
		. Nickel (Ni)	2010/10/12		97	%	90 - 110

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AECOM Canada Ltd
Attention: Jenna Morrish
Client Project #: 60158564
P.O. #:
Project name: SURFACE WATER DURBAN ISLAND

Quality Assurance Report (Continued)

Maxxam Job Number: MB0E2466

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2292824 HRE	Spiked Blank	. Phosphorus (P)	2010/10/12		98	%	90 - 110
		. Potassium (K)	2010/10/12		103	%	90 - 110
		. Selenium (Se)	2010/10/12		99	%	90 - 110
		. Silicon (Si)	2010/10/12		104	%	90 - 110
		. Silver (Ag)	2010/10/12		96	%	90 - 110
		. Sodium (Na)	2010/10/12		102	%	90 - 110
		. Strontium (Sr)	2010/10/12		98	%	90 - 110
		. Tellurium (Te)	2010/10/12		96	%	90 - 110
		. Thallium (Tl)	2010/10/12		97	%	90 - 110
		. Thorium (Th)	2010/10/12		97	%	90 - 110
		. Tin (Sn)	2010/10/12		98	%	90 - 110
		. Titanium (Ti)	2010/10/12		102	%	90 - 110
		. Tungsten (W)	2010/10/12		99	%	90 - 110
		. Uranium (U)	2010/10/12		98	%	90 - 110
		. Vanadium (V)	2010/10/12		98	%	90 - 110
		. Zinc (Zn)	2010/10/12		98	%	90 - 110
		. Zirconium (Zr)	2010/10/12		100	%	90 - 110
	Method Blank	. Aluminum (Al)	2010/10/12	<5		ug/L	
		. Antimony (Sb)	2010/10/12	<0.5		ug/L	
		. Arsenic (As)	2010/10/12	<1		ug/L	
		. Barium (Ba)	2010/10/12	<5		ug/L	
		. Beryllium (Be)	2010/10/12	<0.5		ug/L	
		. Bismuth (Bi)	2010/10/12	<1		ug/L	
		. Boron (B)	2010/10/12	<10		ug/L	
		. Cadmium (Cd)	2010/10/12	<0.1		ug/L	
		. Calcium (Ca)	2010/10/12	<200		ug/L	
		. Chromium (Cr)	2010/10/12	<5		ug/L	
		. Cobalt (Co)	2010/10/12	<0.5		ug/L	
		. Copper (Cu)	2010/10/12	<1		ug/L	
		. Iron (Fe)	2010/10/12	<100		ug/L	
		. Lead (Pb)	2010/10/12	<0.5		ug/L	
		. Lithium (Li)	2010/10/12	<5		ug/L	
		. Magnesium (Mg)	2010/10/12	<50		ug/L	
		. Manganese (Mn)	2010/10/12	<2		ug/L	
		. Molybdenum (Mo)	2010/10/12	<1		ug/L	
		. Nickel (Ni)	2010/10/12	<1		ug/L	
		. Phosphorus (P)	2010/10/12	<100		ug/L	
		. Potassium (K)	2010/10/12	<200		ug/L	
		. Selenium (Se)	2010/10/12	<2		ug/L	
		. Silicon (Si)	2010/10/12	<50		ug/L	
		. Silver (Ag)	2010/10/12	<0.1		ug/L	
		. Sodium (Na)	2010/10/12	<100		ug/L	
		. Strontium (Sr)	2010/10/12	<1		ug/L	
		. Tellurium (Te)	2010/10/12	<1		ug/L	
		. Thallium (Tl)	2010/10/12	<0.05		ug/L	
		. Thorium (Th)	2010/10/12	<1		ug/L	
		. Tin (Sn)	2010/10/12	<1		ug/L	
		. Titanium (Ti)	2010/10/12	<5		ug/L	
		. Tungsten (W)	2010/10/12	<1		ug/L	
		. Uranium (U)	2010/10/12	<0.1		ug/L	
		. Vanadium (V)	2010/10/12	<1		ug/L	
		. Zinc (Zn)	2010/10/12	<5		ug/L	
		. Zirconium (Zr)	2010/10/12	<1		ug/L	
	RPD	. Aluminum (Al)	2010/10/12	NC		%	25
		. Antimony (Sb)	2010/10/12	NC		%	25

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AECOM Canada Ltd
Attention: Jenna Morrish
Client Project #: 60158564
P.O. #:
Project name: SURFACE WATER DURBAN ISLAND

Quality Assurance Report (Continued)

Maxxam Job Number: MB0E2466

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2292824	HRE	RPD	. Arsenic (As)	2010/10/12	NC		%	25
			. Barium (Ba)	2010/10/12	NC		%	25
			. Beryllium (Be)	2010/10/12	NC		%	25
			. Bismuth (Bi)	2010/10/12	NC		%	25
			. Boron (B)	2010/10/12	NC		%	25
			. Cadmium (Cd)	2010/10/12	NC		%	25
			. Calcium (Ca)	2010/10/12	NC		%	25
			. Chromium (Cr)	2010/10/12	NC		%	25
			. Cobalt (Co)	2010/10/12	NC		%	25
			. Copper (Cu)	2010/10/12	NC		%	25
			. Iron (Fe)	2010/10/12	NC		%	25
			. Lead (Pb)	2010/10/12	NC		%	25
			. Lithium (Li)	2010/10/12	NC		%	25
			. Magnesium (Mg)	2010/10/12	6.6		%	25
			. Manganese (Mn)	2010/10/12	NC		%	25
			. Molybdenum (Mo)	2010/10/12	NC		%	25
			. Nickel (Ni)	2010/10/12	NC		%	25
			. Phosphorus (P)	2010/10/12	NC		%	25
			. Potassium (K)	2010/10/12	NC		%	25
			. Selenium (Se)	2010/10/12	NC		%	25
			. Silicon (Si)	2010/10/12	1.3		%	25
			. Silver (Ag)	2010/10/12	NC		%	25
			. Sodium (Na)	2010/10/12	0.06		%	25
			. Strontium (Sr)	2010/10/12	NC		%	25
			. Tellurium (Te)	2010/10/12	NC		%	25
			. Thallium (Tl)	2010/10/12	NC		%	25
			. Thorium (Th)	2010/10/12	NC		%	25
			. Tin (Sn)	2010/10/12	NC		%	25
			. Titanium (Ti)	2010/10/12	NC		%	25
			. Tungsten (W)	2010/10/12	NC		%	25
			. Uranium (U)	2010/10/12	NC		%	25
			. Vanadium (V)	2010/10/12	NC		%	25
			. Zinc (Zn)	2010/10/12	NC		%	25
			. Zirconium (Zr)	2010/10/12	NC		%	25

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.

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Validation Signature Page

Maxxam Job #: B0E2466

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



BRAD NEWMAN, Scientific Specialist

==========

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

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Memorandum

To	Nick Oke	Page 1
CC	Barry Fedorak, Nelson Ferreira (nferreira@trekgeotechnical.ca)	
Subject	FOX-E Durban Island Site Investigation	
From	Stephen Petsche	
Date	September 20, 2010	60158564

Attached are testing results for the above noted project. The testing included twenty-four (24) Moisture Content tests and Grain Size Distribution (mechanical and Hydrometer method) tests on samples submitted to the lab. The additional Standard Proctor tests requested will be submitted upon completion.

If you have any questions, please call.

Sincerely,

Stephen Petsche, C.E.T.
Coordinator, Lab and Technical Services

Attach.

MOISTURE CONTENT

JOB No.: 60158564
CLIENT: PWGSC
PROJECT: FOX-E Durban Island Site Investigation

DATE: September 17, 2010

HOLE NO.	TP1	TP2	TP2	TP2	TP2	TP3
SAMPLE NO.	B1	B1	G2	G3	G4	B1
DEPTH (in)	4.0 - 24.0	3.0 - 54.0	2.0 - 12.0	12.0 - 42.0	42.0 - 54.0	2.0 - 27.0
MOISTURE CONTENT %	7.5	8.8	13.8	13.9	5.7	12.8

HOLE NO.	TP4	TP5	TP6	TP7	TP8	TP9
SAMPLE NO.	B1	B1	B1	B1	B1	B1
DEPTH (in)	2.0 - 43.0	1.0 - 34.0	0.0 - 50.0	0.0 - 34.0	0.0 - 37.0	0.0 - 40.0
MOISTURE CONTENT %	12.9	7.8	18.8	13.8	10.2	17.8

HOLE NO.	TP13	TP17	TP19	TP20	TP21	TP22
SAMPLE NO.	B1	B1	B1	B1	B1	B1
DEPTH (in)	0.0 - 24.0	0.0 - 35.0	0.0 - 47.0	0.0 - 46.0	0.0 - 38.0	0.0 - 43.0
MOISTURE CONTENT %	17.1	10.8	20.2	15.0	9.5	12.0

HOLE NO.	TP23	TP24	TP25	TP26	TP27	TP28
SAMPLE NO.	B1	B1	B1	B1	B1	B1
DEPTH (in)	0.0 - 43.0	0.0 - 40.0	0.0 - 40.0	0.0 - 27.0	0.0 - 50.0	0.0 - 36.0
MOISTURE CONTENT %	10.7	8.6	14.5	0.7	7.1	5.6

NOTES:

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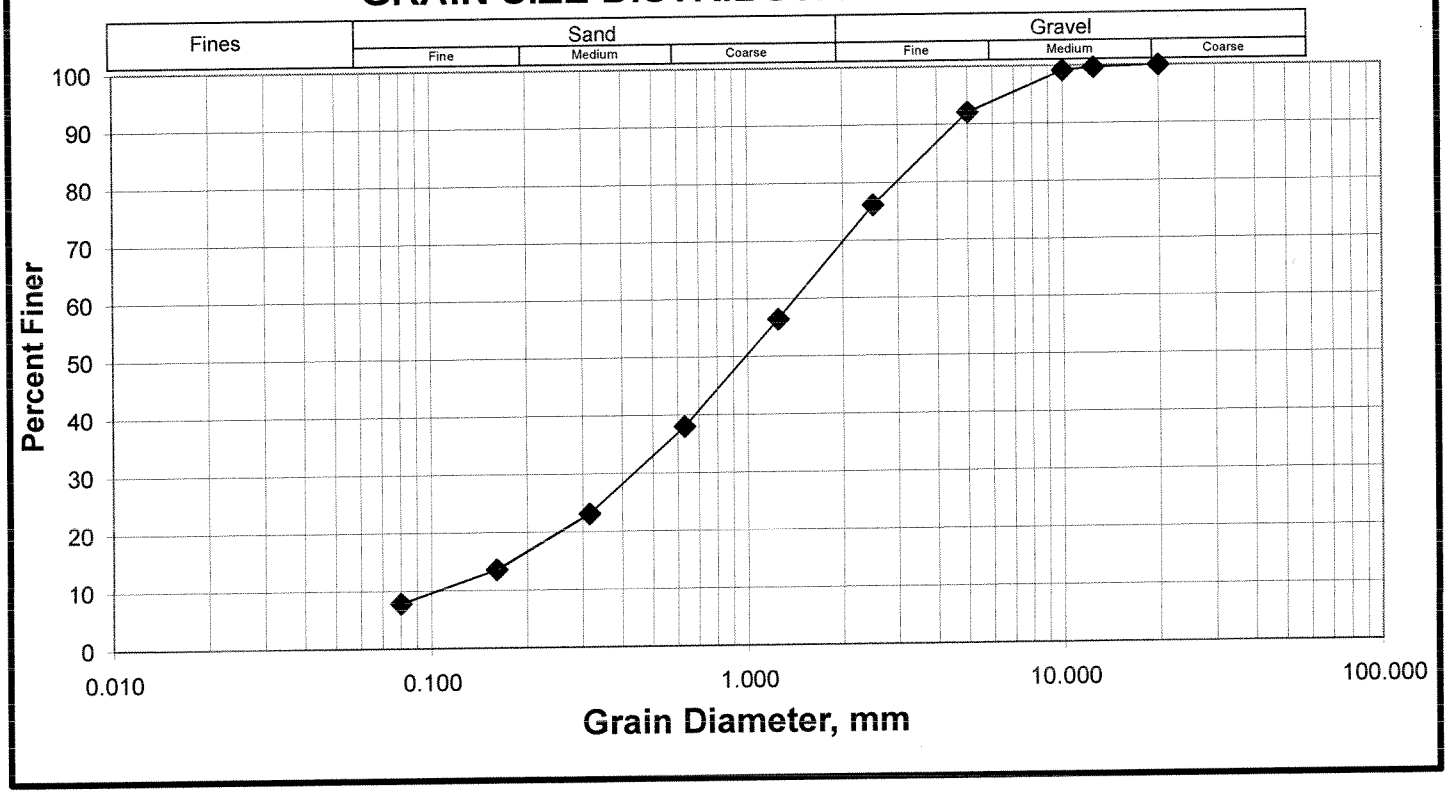
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Client: PWGSC
Project: FOX-E Durban Island Site Investigation
Job No: 60158564
Date : 10-Sep-10

Sample No.: S10-109
Sample Location: TP1 B1
Depth: 4.0 - 24.0"
Sample Description: Granular Material

CDN. Sieve (mm.)	Sieve No.	Total Percent Passing	Specification (min - max)
100.0	-		
75.0	-		
62.5			
50.0	-		
40.0	-		
25.0	-		
20.0	-	100.0	
12.5	-	99.7	
10.0	-	99.2	
5.00	-	92.0	
2.50	-	76.1	
1.25	-	56.4	
0.630	-	38.0	
0.315	-	23.1	
0.160	-	13.5	
0.080	-	7.8	

GRAIN SIZE DISTRIBUTION CURVE



GRAIN SIZE DISTRIBUTION

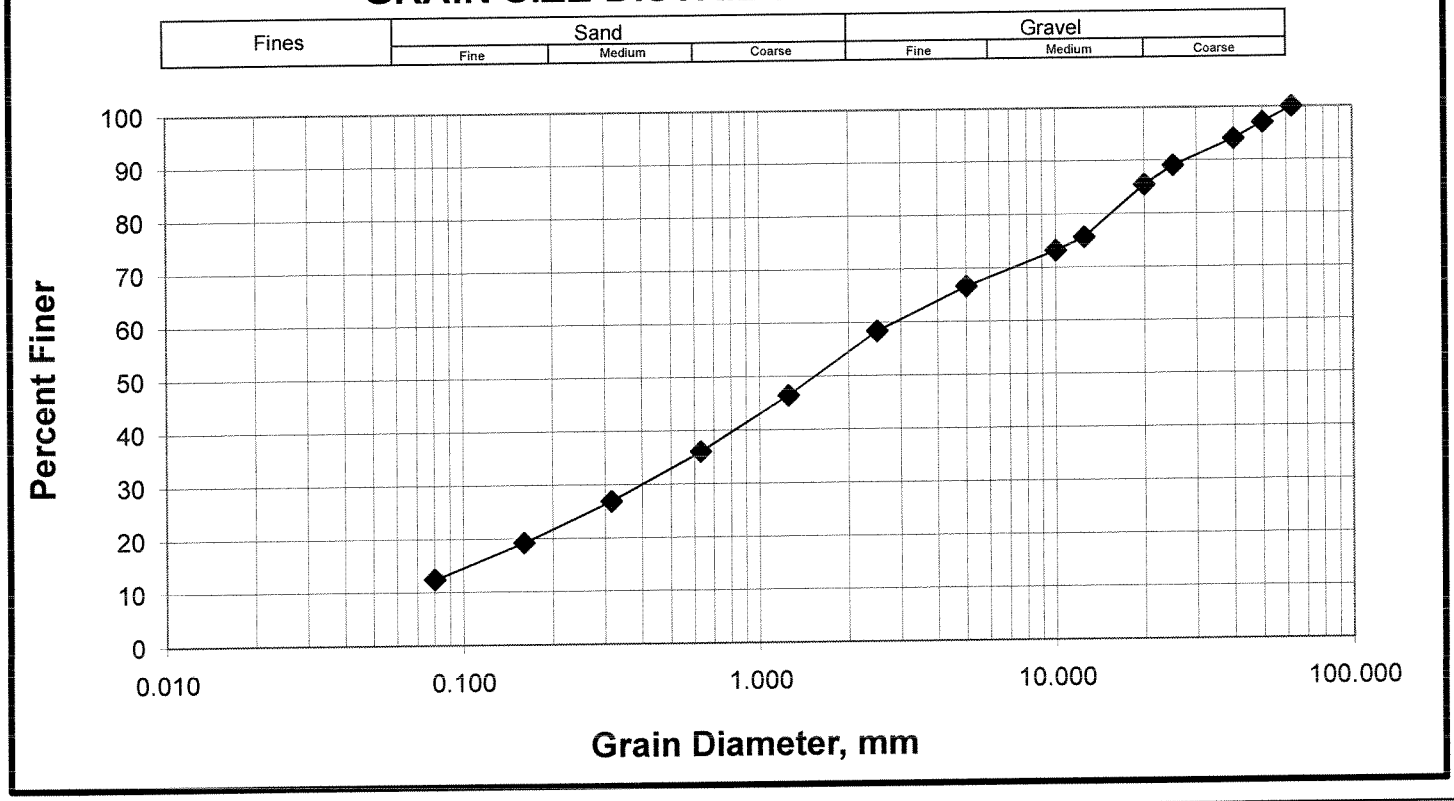
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Client: PWGSC
Project: FOX-E Durban Island Site Investigation
Job No: 60158564
Date : 15-Sep-10

Sample No.: S10-110A
Sample Location: TP2 B1
Depth: 3.0 - 54.0"
Sample Description: Granular Material

CDN. Sieve (mm.)	Sieve No.	Total Percent Passing	Specification (min - max)
100.0	-		
75.0	-		
62.5	-	100.0	
50.0	-	97.0	
40.0	-	94.0	
25.0	-	89.0	
20.0	-	85.5	
12.5	-	75.6	
10.0	-	73.2	
5.0	-	66.6	
2.5	-	58.3	
1.25	-	46.4	
0.630	-	36.0	
0.315	-	26.8	
0.160	-	19.2	
0.080	-	12.4	

GRAIN SIZE DISTRIBUTION CURVE



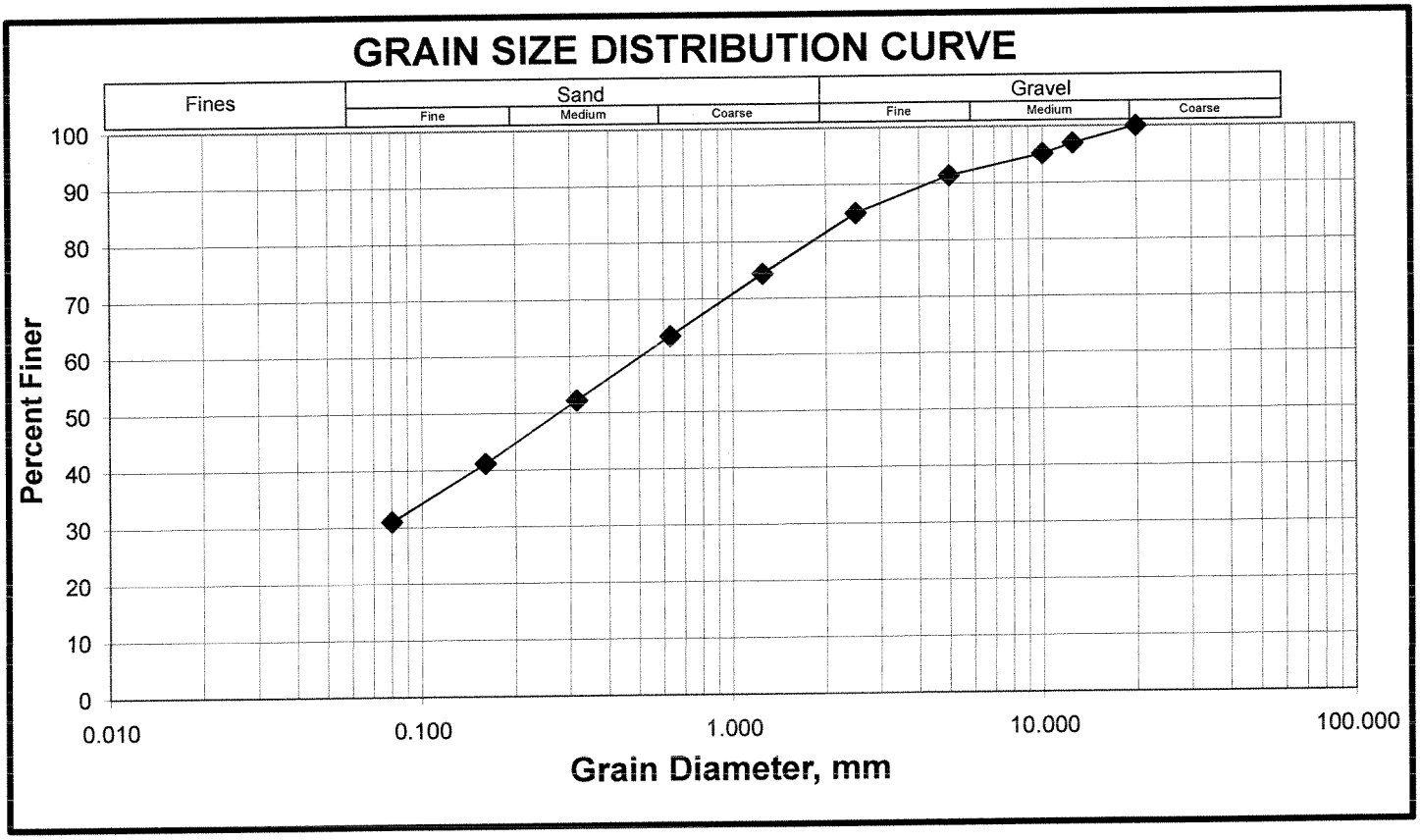
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Client: PWGSC
Project: FOX-E Durban Island Site Investigation
Job No: 60158564
Date : 15-Sep-10

Sample No.: S10-110B
Sample Location: TP2 G2
Depth: 2.0 - 12.0"
Sample Description: Granular Material

CDN. Sieve (mm.)	Sieve No.	Total Percent Passing	Specification (min - max)
100.0	-		
75.0	-		
62.5	-		
50.0	-		
40.0	-		
25.0	-		
20.0	-	100.0	
12.5	-	97.0	
10.0	-	95.1	
5.00	-	91.4	
2.50	-	84.9	
1.25	-	74.4	
0.630	-	63.4	
0.315	-	52.2	
0.160	-	41.2	
0.080	-	31.0	

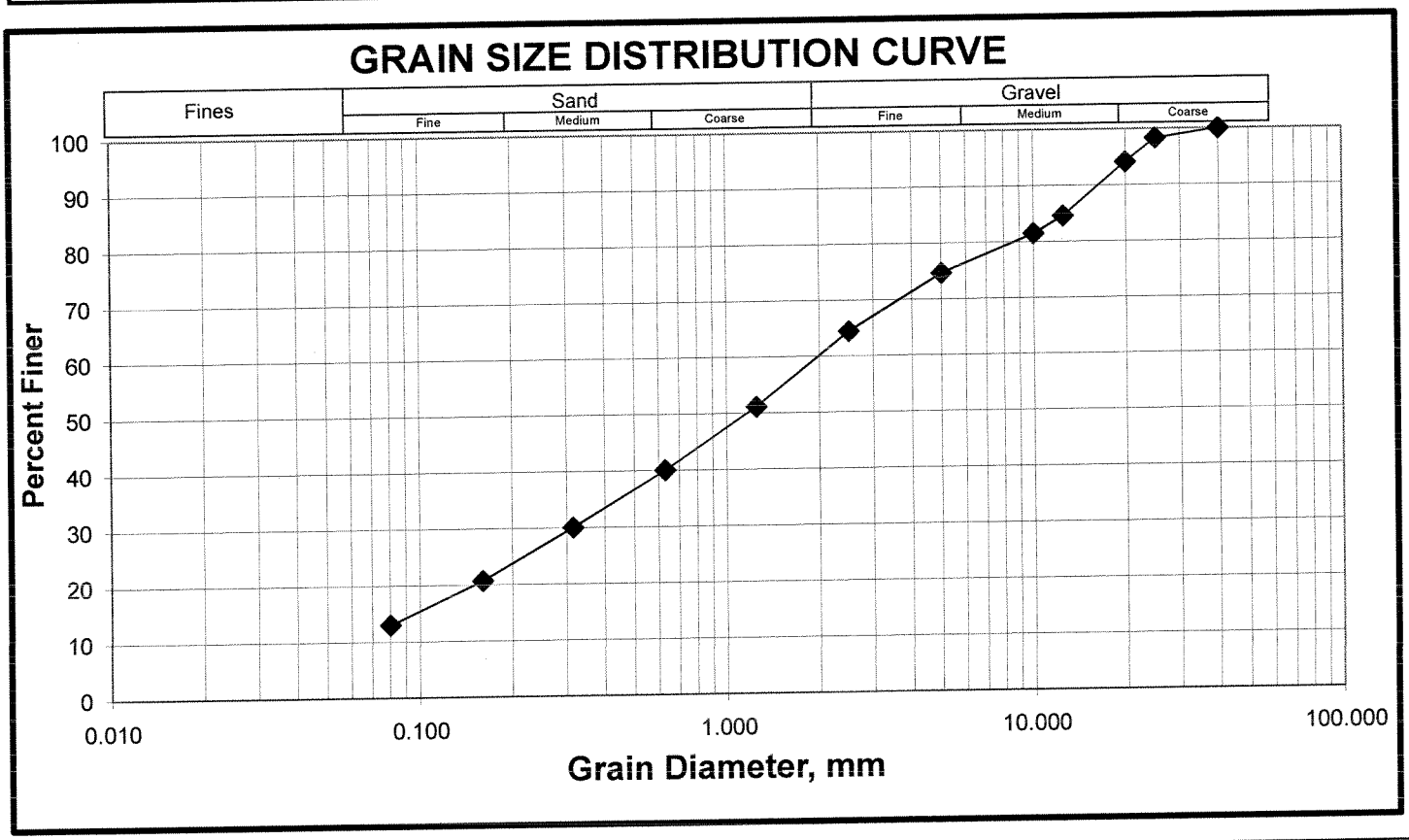


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Client:	PWGSC	Sample No.:	S10-110C
Project:	FOX-E Durban Island Site Investigation	Sample Location:	TP2 G3
Job No:	60158564	Depth:	12.0 - 42.0"
Date :	15-Sep-10	Sample Description:	Granular Material

CDN. Sieve (mm.)	Sieve No.	Total Percent Passing	Specification (min - max)
100.0	-		
75.0	-		
62.5	-		
50.0	-		
40.0	-	100.0	
25.0	-	98.3	
20.0	-	94.1	
12.5	-	84.6	
10.0	-	81.5	
5.00	-	74.6	
2.50	-	64.4	
1.25	-	51.1	
0.630	-	40.0	
0.315	-	30.0	
0.160	-	20.7	
0.080	-	13.0	

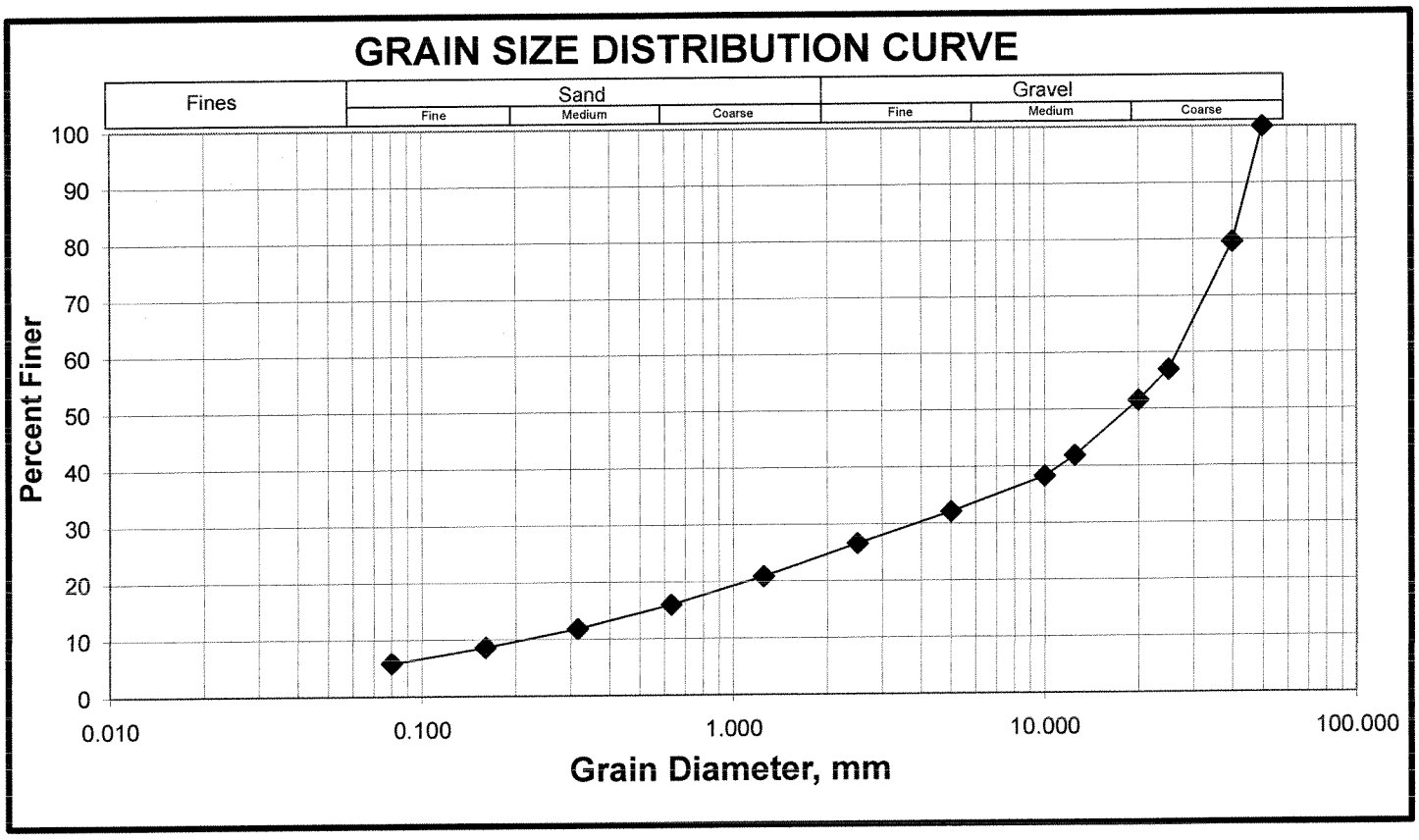


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Client:	PWGSC	Sample No.:	S10-110D
Project:	FOX-E Durban Island Site Investigation	Sample Location:	TP2 G4
Job No:	60158564	Depth:	42.0 - 54.0"
Date :	15-Sep-10	Sample Description:	Granular Material

CDN. Sieve (mm.)	Sieve No.	Total Percent Passing	Specification (min - max)
100.0	-		
75.0	-		
62.5	-		
50.0	-	100.0	
40.0	-	79.6	
25.0	-	57.0	
20.0	-	51.5	
12.5	-	41.9	
10.0	-	38.2	
5.00	-	32.1	
2.50	-	26.6	
1.25	-	20.8	
0.630	-	16.0	
0.315	-	11.8	
0.160	-	8.6	
0.080	-	5.8	



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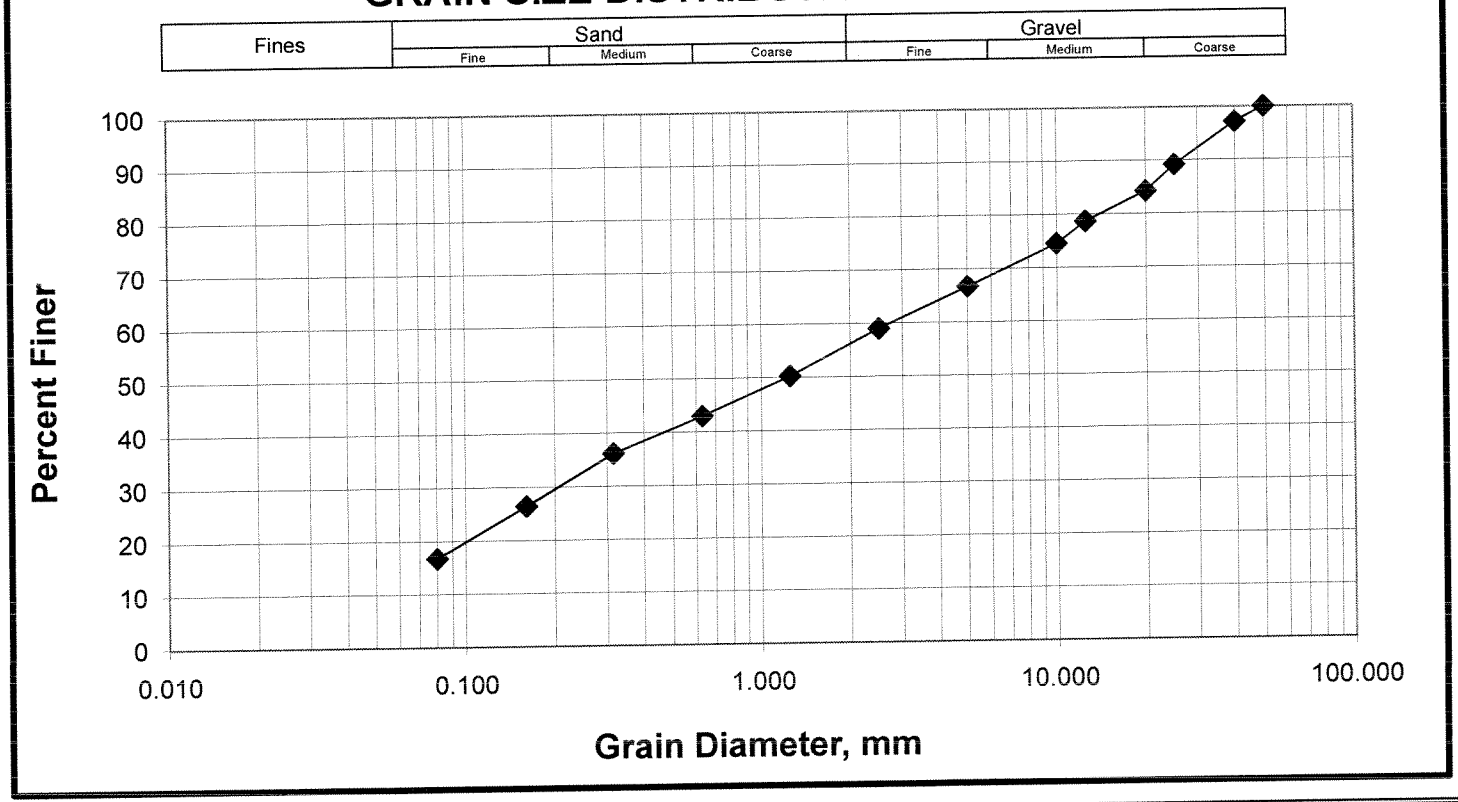
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Client: PWGSC
Project: FOX-E Durban Island Site Investigation
Job No: 60158564
Date : 10-Sep-10

Sample No.: S10-111
Sample Location: TP3 B1
Depth: 2.0 - 27.0"
Sample Description: Granular Material

CDN. Sieve (mm.)	Sieve No.	Total Percent Passing	Specification (min - max)
100.0	-		
75.0	-		
62.5	-		
50.0	-	100.0	
40.0	-	97.1	
25.0	-	89.2	
20.0	-	84.2	
12.5	-	78.7	
10.0	-	74.5	
5.0	-	66.7	
2.5	-	59.0	
1.25	-	50.2	
0.630	-	42.9	
0.315	-	36.1	
0.160	-	26.4	
0.080	-	16.7	

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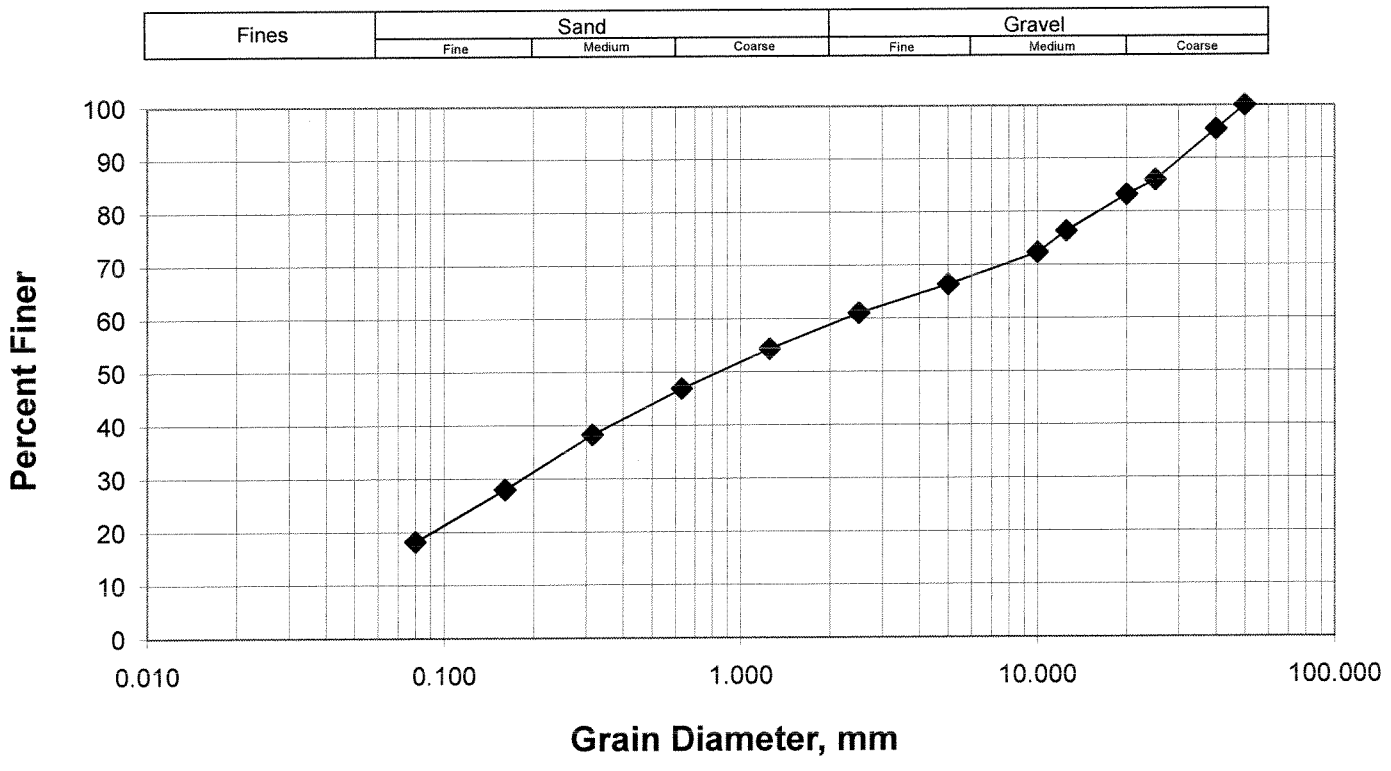
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Client:	PWGSC	Sample No.:	S10-112
Project:	FOX-E Durban Island Site Investigation	Sample Location:	TP4 B1
Job No:	60158564	Depth:	2.0 - 43.0"
Date :	10-Sep-10	Sample Description:	Granular Material

CDN. Sieve (mm.)	Sieve No.	Total Percent Passing	Specification (min - max)
100.0	-		
75.0	-		
62.5	-		
50.0	-	100.0	
40.0	-	95.5	
25.0	-	85.9	
20.0	-	83.2	
12.5	-	76.3	
10.0	-	72.3	
5.0	-	66.4	
2.5	-	61.0	
1.25	-	54.3	
0.630	-	46.8	
0.315	-	38.2	
0.160	-	27.9	
0.080	-	18.2	

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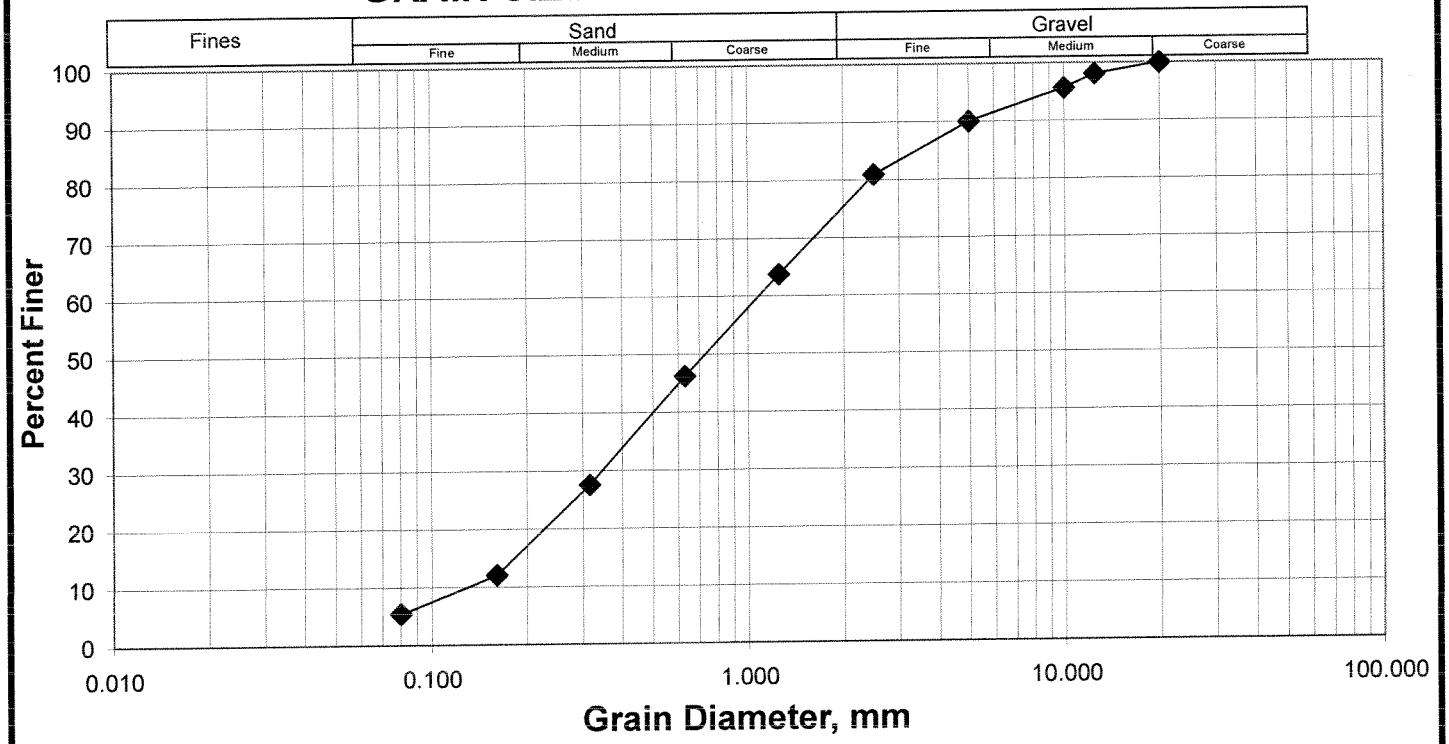
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Client:	PWGSC	Sample No.:	S10-113
Project:	FOX-E Durban Island Site Investigation	Sample Location:	TP5 B1
Job No:	60158564	Depth:	1.0 - 34.0"
Date :	10-Sep-10	Sample Description:	Granular Material

CDN. Sieve (mm.)	Sieve No.	Total Percent Passing	Specification (min - max)
100.0	-		
75.0	-		
62.5	-		
50.0	-		
40.0	-		
25.0	-		
20.0	-	100.0	
12.5	-	98.1	
10.0	-	95.7	
5.00	-	90.0	
2.50	-	80.9	
1.25	-	63.7	
0.630	-	46.2	
0.315	-	27.5	
0.160	-	12.0	
0.080	-	5.4	

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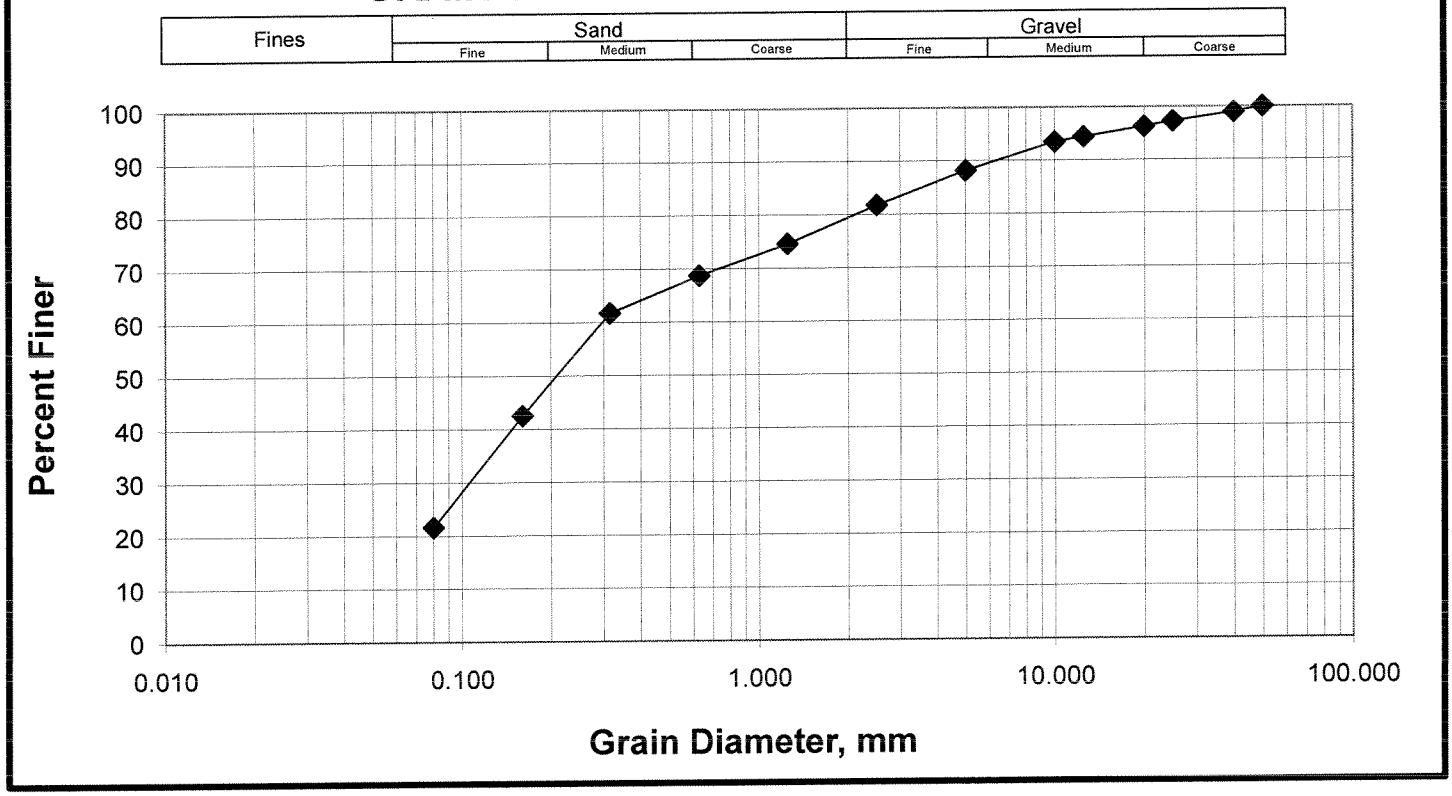
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Client:	PWGSC	Sample No.:	S10-114
Project:	FOX-E Durban Island Site Investigation	Sample Location:	TP6 B1
Job No:	60158564	Depth:	0.0 - 50.0"
Date :	14-Sep-10	Sample Description:	Granular Material

CDN. Sieve (mm.)	Sieve No.	Total Percent Passing	Specification (min - max)
100.0	-		
75.0	-		
62.5	-		
50.0	-	100.0	
40.0	-	98.9	
25.0	-	97.2	
20.0	-	96.3	
12.5	-	94.4	
10.0	-	93.4	
5.0	-	88.1	
2.5	-	81.7	
1.25	-	74.6	
0.630	-	68.7	
0.315	-	61.7	
0.160	-	42.5	
0.080	-	21.5	

GRAIN SIZE DISTRIBUTION CURVE



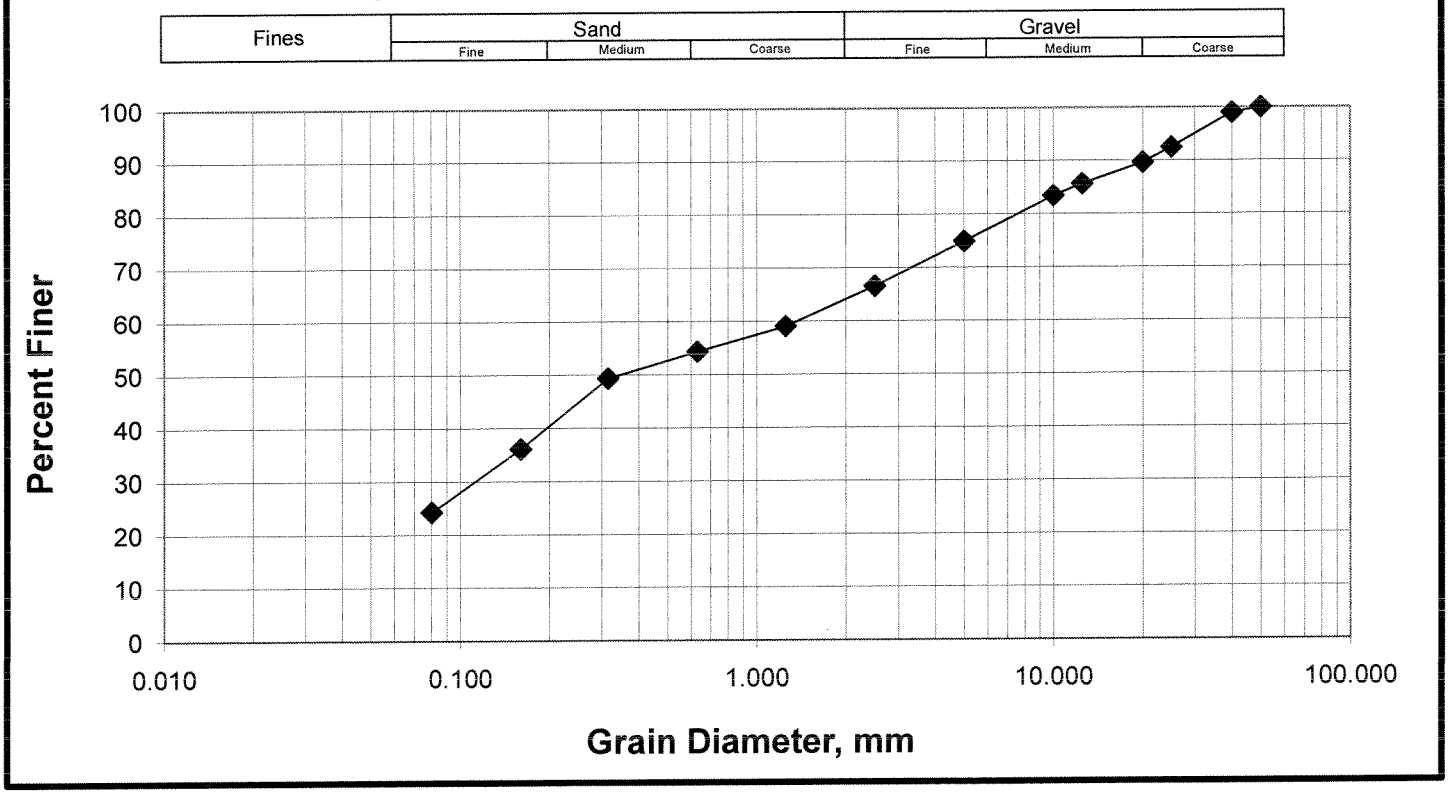
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Client:	PWGSC	Sample No.:	S10-115
Project:	FOX-E Durban Island Site Investigation	Sample Location:	TP7 B1
Job No:	60158564	Depth:	0.0 - 34.0"
Date :	14-Sep-10	Sample Description:	Granular Material

CDN. Sieve (mm.)	Sieve No.	Total Percent Passing	Specification (min - max)
100.0	-		
75.0	-		
62.5	-		
50.0	-	100.0	
40.0	-	99.0	
25.0	-	92.5	
20.0	-	89.6	
12.5	-	85.6	
10.0	-	83.4	
5.0	-	74.9	
2.5	-	66.5	
1.25	-	59.0	
0.630	-	54.3	
0.315	-	49.3	
0.160	-	36.1	
0.080	-	24.2	

GRAIN SIZE DISTRIBUTION CURVE



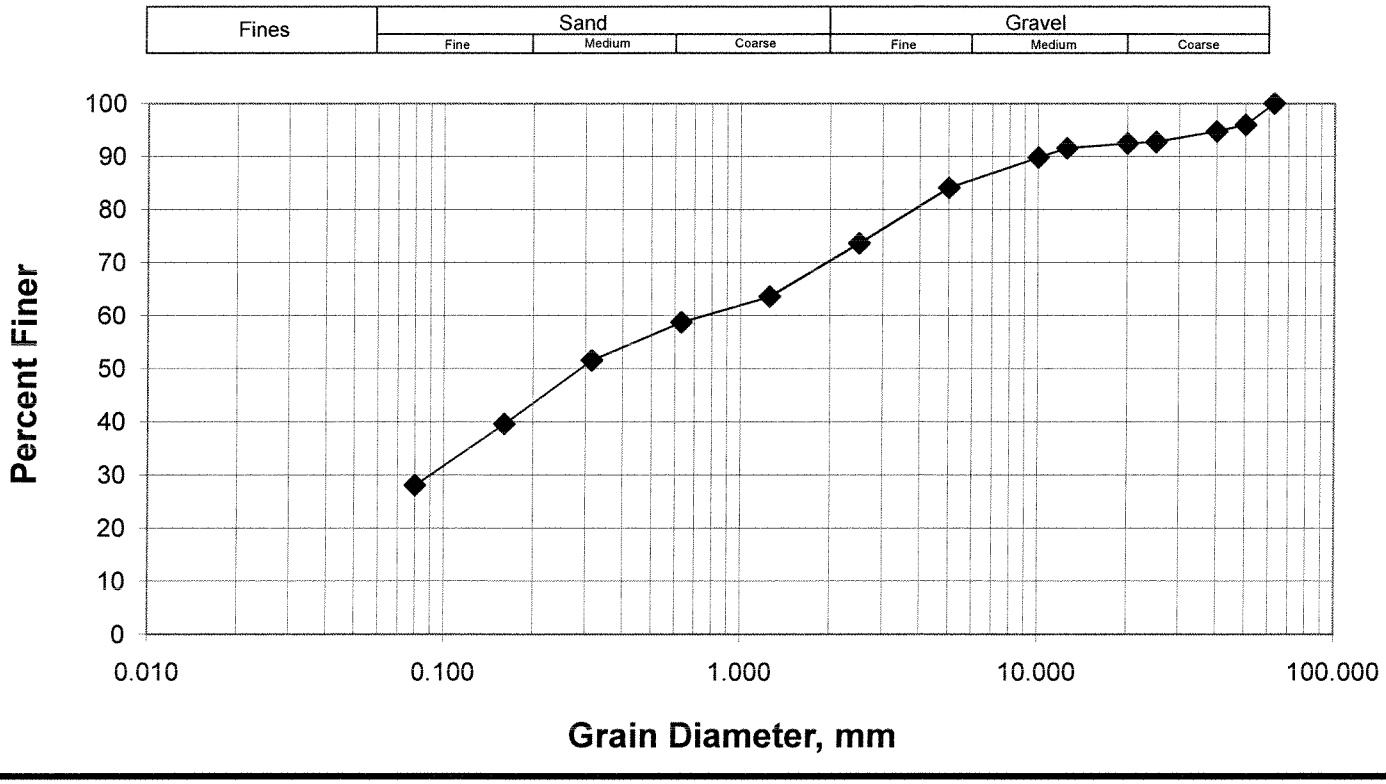
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Client:	PWGSC	Sample No.:	S10-116
Project:	FOX-E Durban Island Site Investigation	Sample Location:	TP8 B1
Job No:	60158564	Depth:	0.0 - 37.0"
Date :	15-Sep-10	Sample Description:	Granular Material

CDN. Sieve (mm.)	Sieve No.	Total Percent Passing	Specification (min - max)
100.0	-		
75.0	-		
62.5	-	100.0	
50.0	-	96.0	
40.0	-	94.7	
25.0	-	92.7	
20.0	-	92.5	
12.5	-	91.5	
10.0	-	89.8	
5.0	-	84.1	
2.5	-	73.6	
1.25	-	63.5	
0.630	-	58.7	
0.315	-	51.5	
0.160	-	39.5	
0.080	-	28.0	

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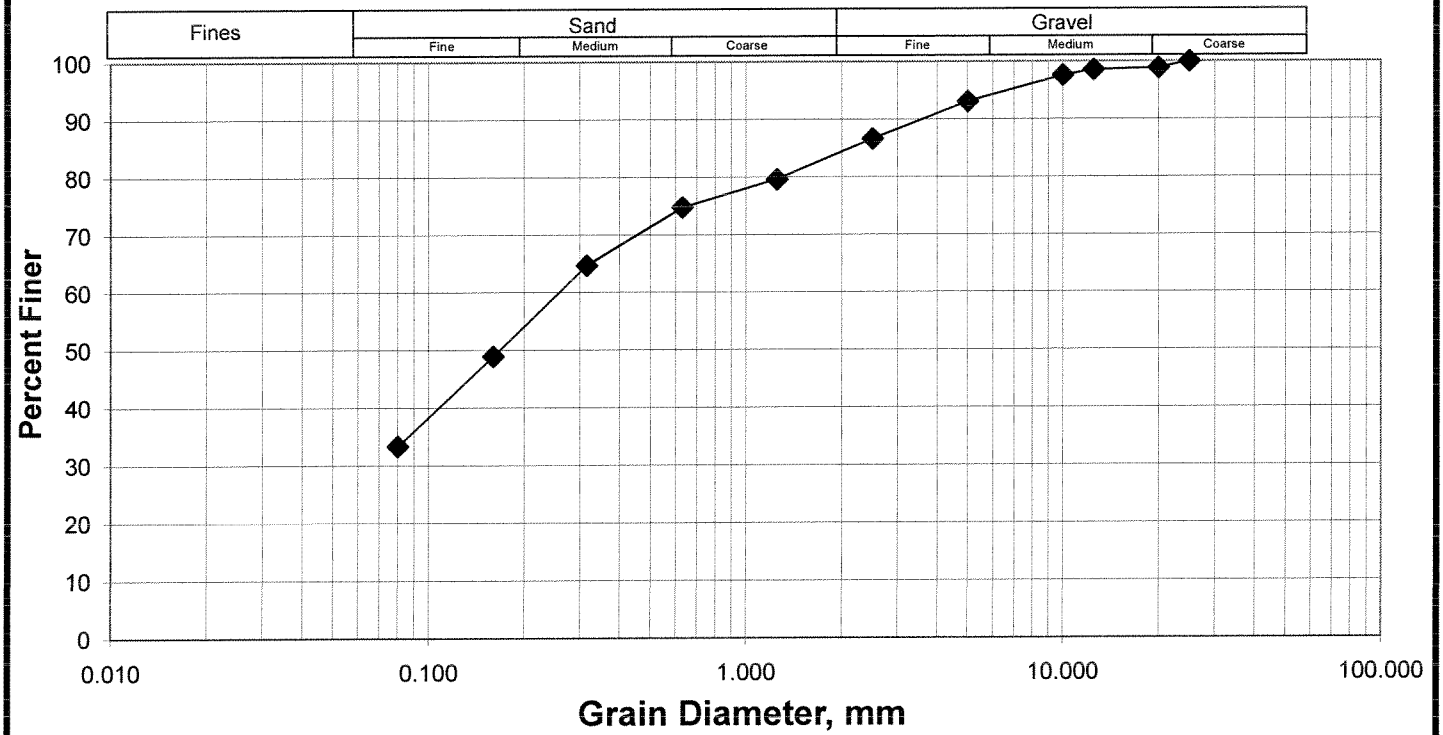
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Client:	PWGSC	Sample No.:	S10-117
Project:	FOX-E Durban Island Site Investigation	Sample Location:	TP9 B1
Job No:	60158564	Depth:	0.0 - 40.0"
Date :	10-Sep-10	Sample Description:	Granular Material

CDN. Sieve (mm.)	Sieve No.	Total Percent Passing	Specification (min - max)
100.0	-		
75.0	-		
62.5	-		
50.0	-		
40.0	-		
25.0	-	100.0	
20.0	-	98.9	
12.5	-	98.6	
10.0	-	97.6	
5.00	-	93.1	
2.50	-	86.6	
1.25	-	79.6	
0.630	-	74.7	
0.315	-	64.7	
0.160	-	48.9	
0.080	-	33.3	

GRAIN SIZE DISTRIBUTION CURVE



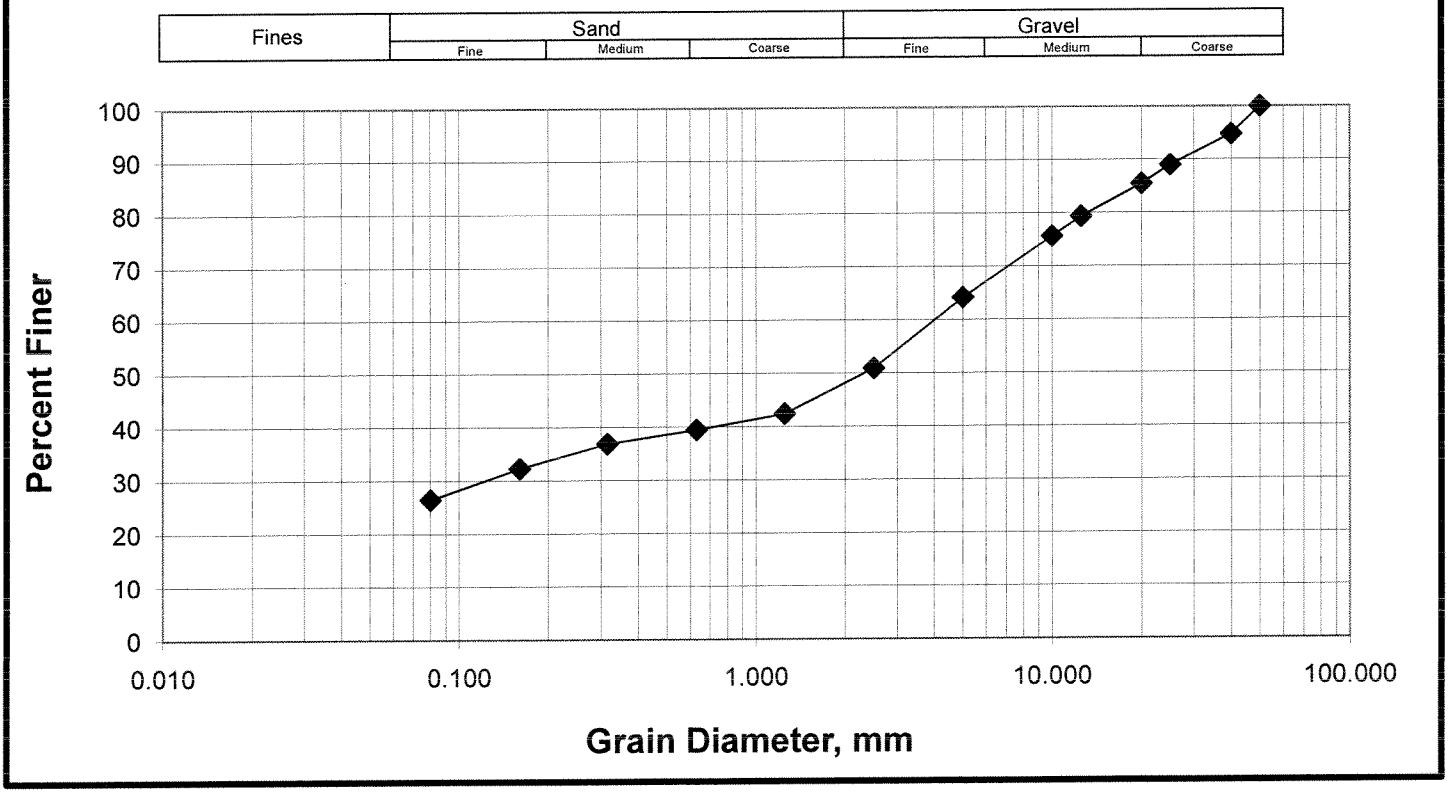
GRAIN SIZE DISTRIBUTION

MATERIALS LABORATORY
AECOM
99 Commerce Dr., Winnipeg, MB R3P 0Y7 Canada
tel (204) 477-5381 **fax** (204) 284-2040

Client:	PWGSC	Sample No.:	S10-118
Project:	FOX-E Durban Island Site Investigation	Sample Location:	TP13 B1
Job No:	60158564	Depth:	0.0 - 24"
Date :	13-Sep-10	Sample Description:	Granular Material

CDN. Sieve (mm.)	Sieve No.	Total Percent Passing	Specification (min - max)
100.0	-		
75.0	-		
62.5	-		
50.0	-	100.0	
40.0	-	94.7	
25.0	-	89.0	
20.0	-	85.5	
12.5	-	79.3	
10.0	-	75.6	
5.0	-	64.1	
2.5	-	50.8	
1.25	-	42.4	
0.630	-	39.4	
0.315	-	36.8	
0.160	-	32.2	
0.080	-	26.4	

GRAIN SIZE DISTRIBUTION CURVE



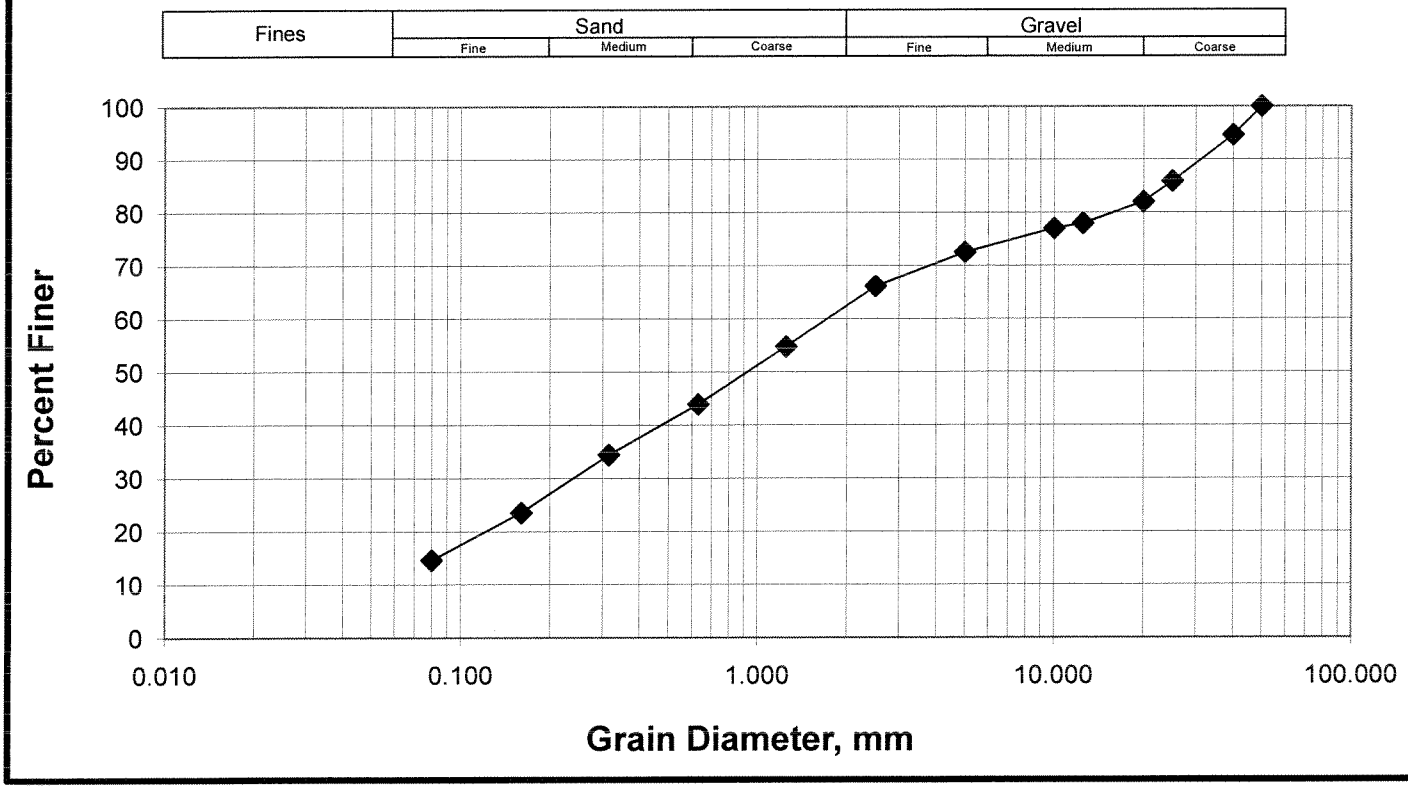
GRAIN SIZE DISTRIBUTION

MATERIALS LABORATORY
AECOM
AECOM
99 Commerce Dr., Winnipeg, MB R3P 0Y7 Canada
tel (204) 477-5381 **fax** (204) 284-2040

Client:	PWGSC	Sample No.:	S10-119
Project:	FOX-E Durban Island Site Investigation	Sample Location:	TP17 B1
Job No:	60158564	Depth:	0.0 - 35.0"
Date :	14-Sep-10	Sample Description:	Granular Material

CDN. Sieve (mm.)	Sieve No.	Total Percent Passing	Specification (min - max)
100.0	-		
75.0	-		
62.5	-		
50.0	-	100.0	
40.0	-	94.6	
25.0	-	85.9	
20.0	-	82.0	
12.5	-	77.9	
10.0	-	77.0	
5.0	-	72.5	
2.5	-	66.1	
1.25	-	54.8	
0.630	-	43.9	
0.315	-	34.4	
0.160	-	23.5	
0.080	-	14.6	

GRAIN SIZE DISTRIBUTION CURVE



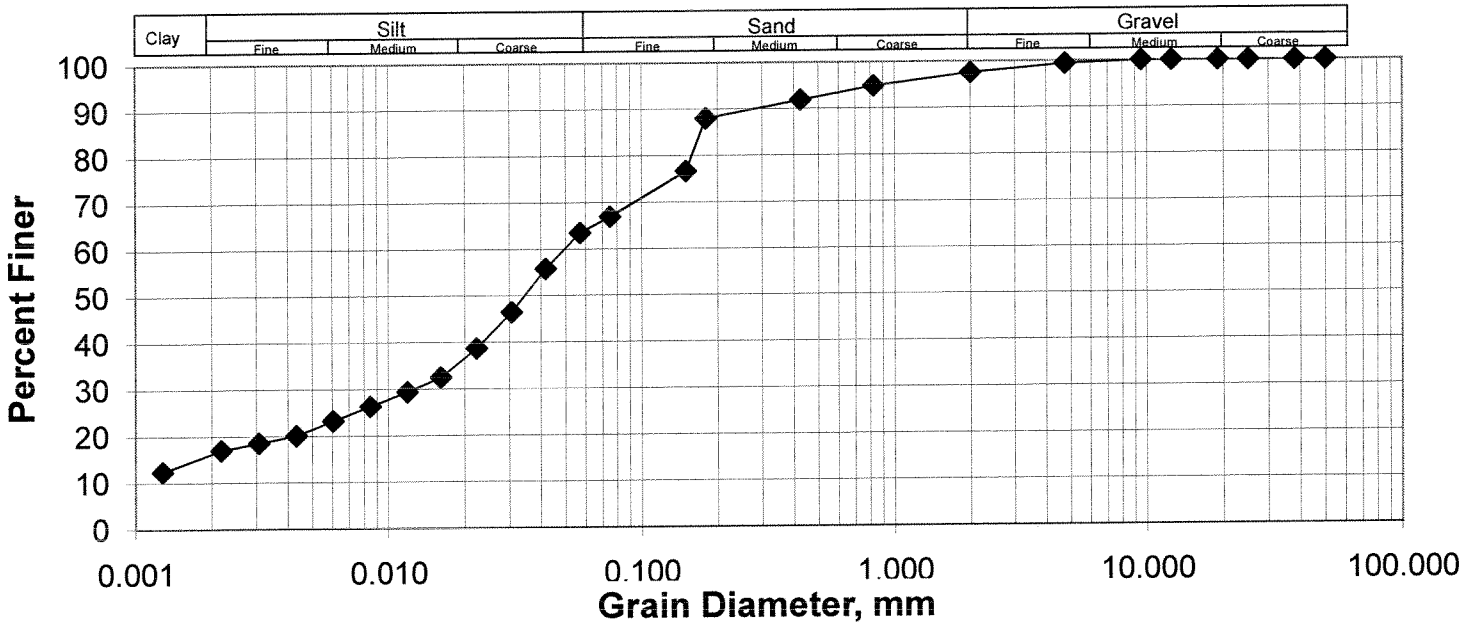
GRAIN SIZE DISTRIBUTION

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MATERIALS LABORATORY
AECOM
99 Commerce Dr., Winnipeg, MB R3P 0Y7 Canada
tel (204) 477-5381 **fax** (204) 284-2040

Job No.:	60158564	Sample No.	S10-120
Client:	PWGSC	Hole No.	TP19 B1
Project :	FOX-E Durban Island Site Investigation	Depth:	0.0 - 47.0"
Date Tested:	17-Sep-10	Date Sampled:	
Tested By:		Sampled By:	

GRAVEL SIZES		SAND SIZES		FINES	
Grain Size (mm.)	Total Percent Passing	Grain Size (mm.)	Total Percent Passing	Grain Size (mm.)	Total Percent Passing
50.0	100.0	2.00	97.5	0.0750	66.9
38.0	100.0	0.83	94.8	0.0571	63.4
25.0	100.0	0.43	91.9	0.0417	55.7
19.0	100.0	0.18	88.0	0.0306	46.4
12.5	100.0	0.15	76.7	0.0222	38.7
9.5	100.0	0.075	66.9	0.0161	32.5
4.75	99.4			0.0119	29.4
2.00	97.5			0.0085	26.3
				0.0060	23.2
				0.0043	20.1
				0.0031	18.5
				0.0022	17.0
				0.0013	12.3

GRAIN SIZE DISTRIBUTION CURVE



Gravel	**2.5%**	**Silt**	**48.0%**
Sand	**33.5%**	**Clay**	**16.0%**

** Note: Soil Classification based on Grain Size from Canadian Foundation Engineering Manual, 3rd edition (1992).

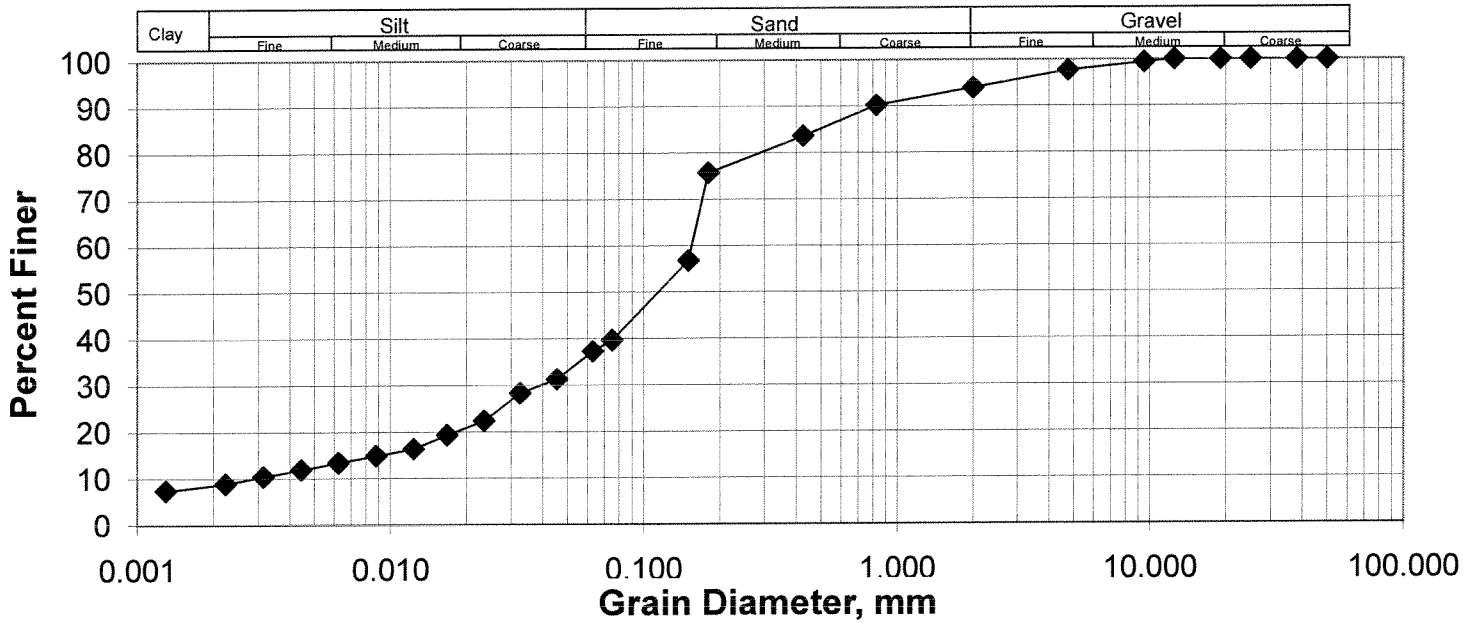
GRAIN SIZE DISTRIBUTION

MATERIALS LABORATORY
AECOM
99 Commerce Dr., Winnipeg, MB R3P 0Y7 Canada
tel (204) 477-5381 **fax** (204) 284-2040

Job No.:	60158564	Sample No.	S10-121
Client:	PWGSC	Hole No.	TP20 B1
Project :	FOX-E Durban Island Site Investigation	Depth:	0.0 - 46.0"
Date Tested:	17-Sep-10	Date Sampled:	
Tested By:		Sampled By:	

GRAVEL SIZES		SAND SIZES		FINES	
Grain Size (mm.)	Total Percent Passing	Grain Size (mm.)	Total Percent Passing	Grain Size (mm.)	Total Percent Passing
50.0	100.0	2.00	93.9	0.0750	39.6
38.0	100.0	0.83	90.2	0.0629	37.2
25.0	100.0	0.43	83.6	0.0454	31.3
19.0	100.0	0.18	75.7	0.0325	28.3
12.5	100.0	0.15	56.7	0.0234	22.3
9.5	99.4	0.075	39.6	0.0167	19.3
4.75	97.7			0.0123	16.3
2.00	93.9			0.0088	14.9
				0.0062	13.4
				0.0044	11.9
				0.0031	10.4
				0.0022	8.9
				0.0013	7.4

GRAIN SIZE DISTRIBUTION CURVE



Gravel	**6.1%**	**Silt**	**27.7%**
Sand	**57.7%**	**Clay**	**8.5%**

** Note: Soil Classification based on Grain Size from Canadian Foundation Engineering Manual, 3rd edition (1992).

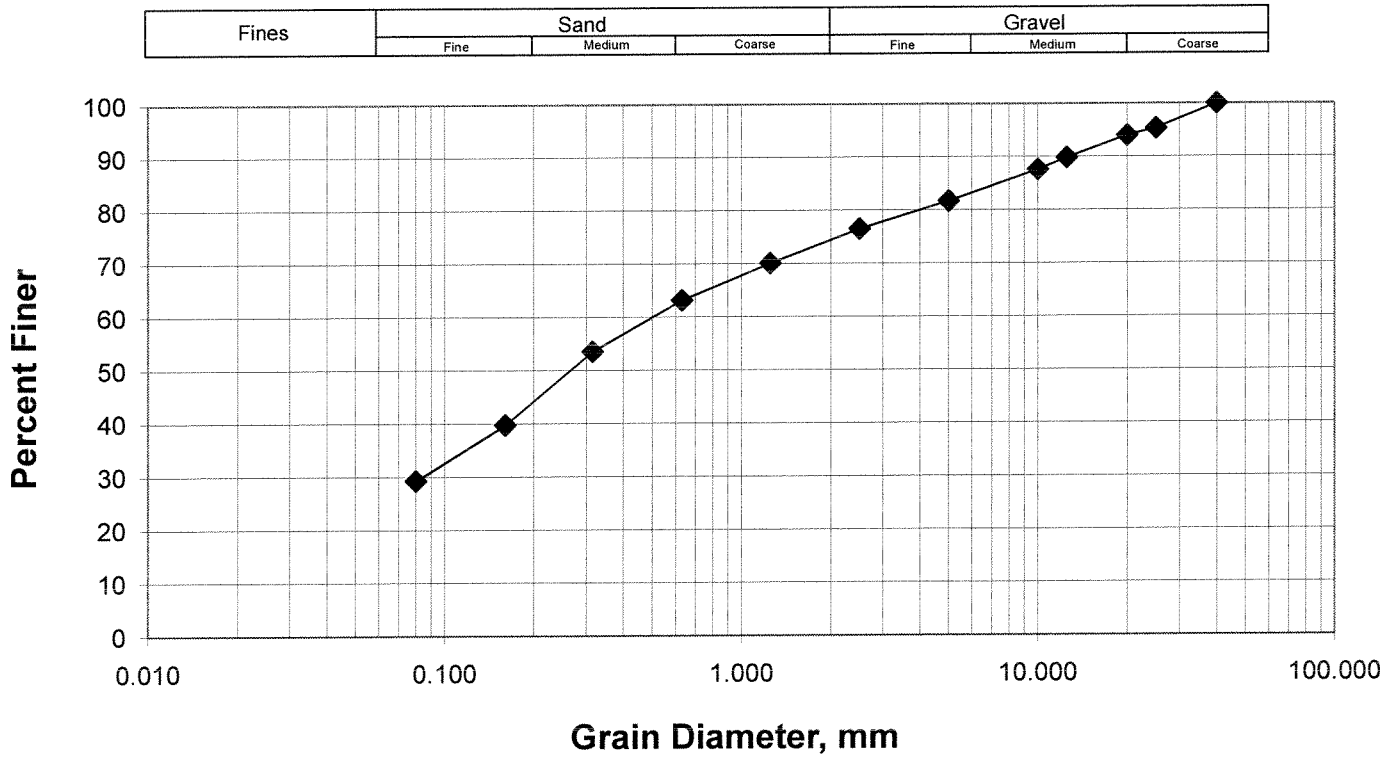
GRAIN SIZE DISTRIBUTION

MATERIALS LABORATORY
AECOM
99 Commerce Dr., Winnipeg, MB R3P 0Y7 Canada
tel (204) 477-5381 **fax** (204) 284-2040

Client:	PWGSC	Sample No.:	S10-122
Project:	FOX-E Durban Island Site Investigation	Sample Location:	TP21 B1
Job No:	60158564	Depth:	0.0 - 38.0"
Date :	15-Sep-10	Sample Description:	Granular Material

CDN. Sieve (mm.)	Sieve No.	Total Percent Passing	Specification (min - max)
100.0	-		
75.0	-		
62.5	-		
50.0	-		
40.0	-	100.0	
25.0	-	95.3	
20.0	-	93.9	
12.5	-	89.8	
10.0	-	87.6	
5.0	-	81.7	
2.5	-	76.5	
1.25	-	70.1	
0.630	-	63.1	
0.315	-	53.5	
0.160	-	39.7	
0.080	-	29.2	

GRAIN SIZE DISTRIBUTION CURVE



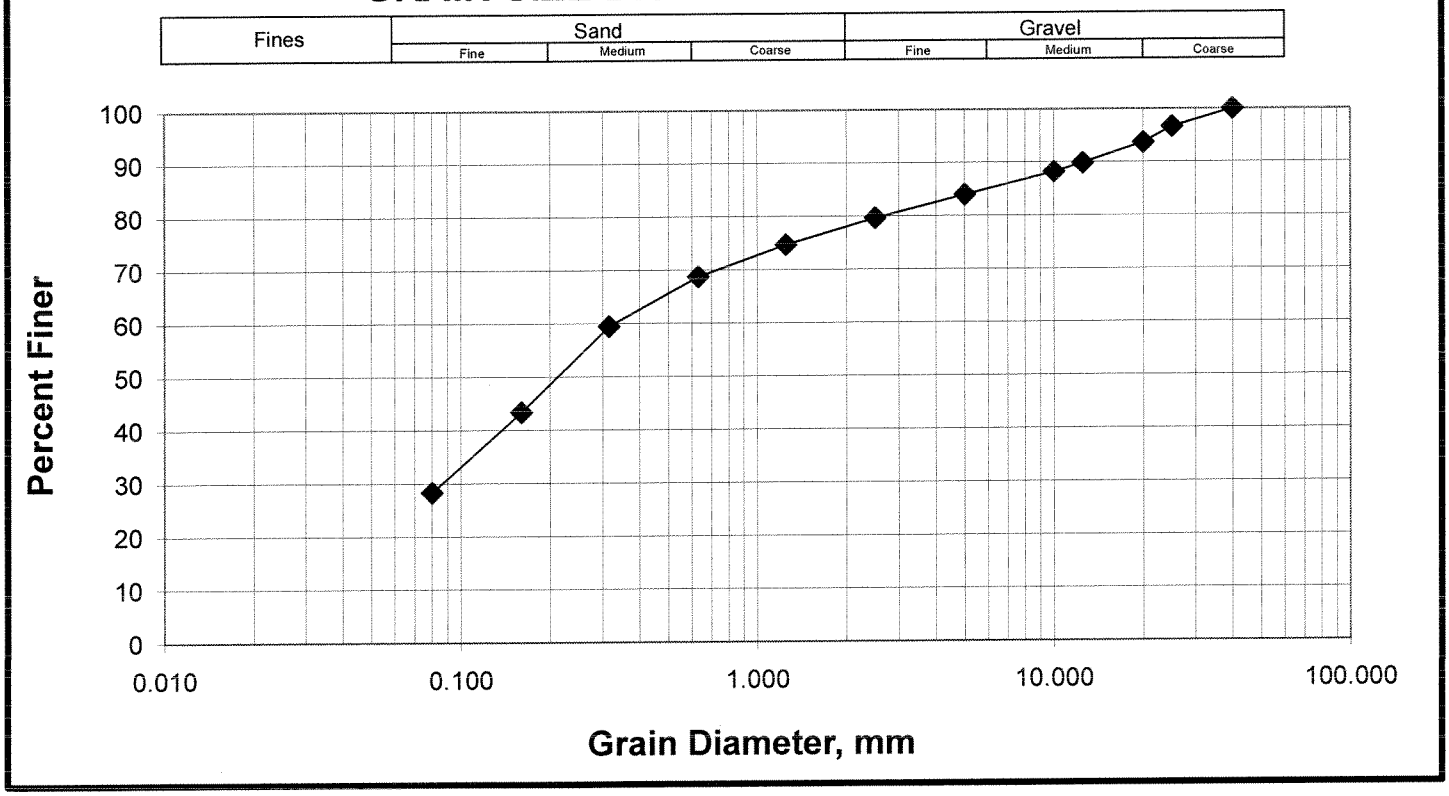
GRAIN SIZE DISTRIBUTION

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AECOM
99 Commerce Dr., Winnipeg, MB R3P 0Y7 Canada
tel (204) 477-5381 **fax** (204) 284-2040

Client:	PWGSC	Sample No.:	S10-123
Project:	FOX-E Durban Island Site Investigation	Sample Location:	TP22 B1
Job No:	60158564	Depth:	0.0 - 43.0"
Date :	10-Sep-10	Sample Description:	Granular Material

CDN. Sieve (mm.)	Sieve No.	Total Percent Passing	Specification (min - max)
100.0	-		
75.0	-		
62.5	-		
50.0	-		
40.0	-	100.0	
25.0	-	96.6	
20.0	-	93.6	
12.5	-	89.8	
10.0	-	88.2	
5.0	-	84.0	
2.5	-	79.6	
1.25	-	74.6	
0.630	-	68.7	
0.315	-	59.4	
0.160	-	43.3	
0.080	-	28.2	

GRAIN SIZE DISTRIBUTION CURVE



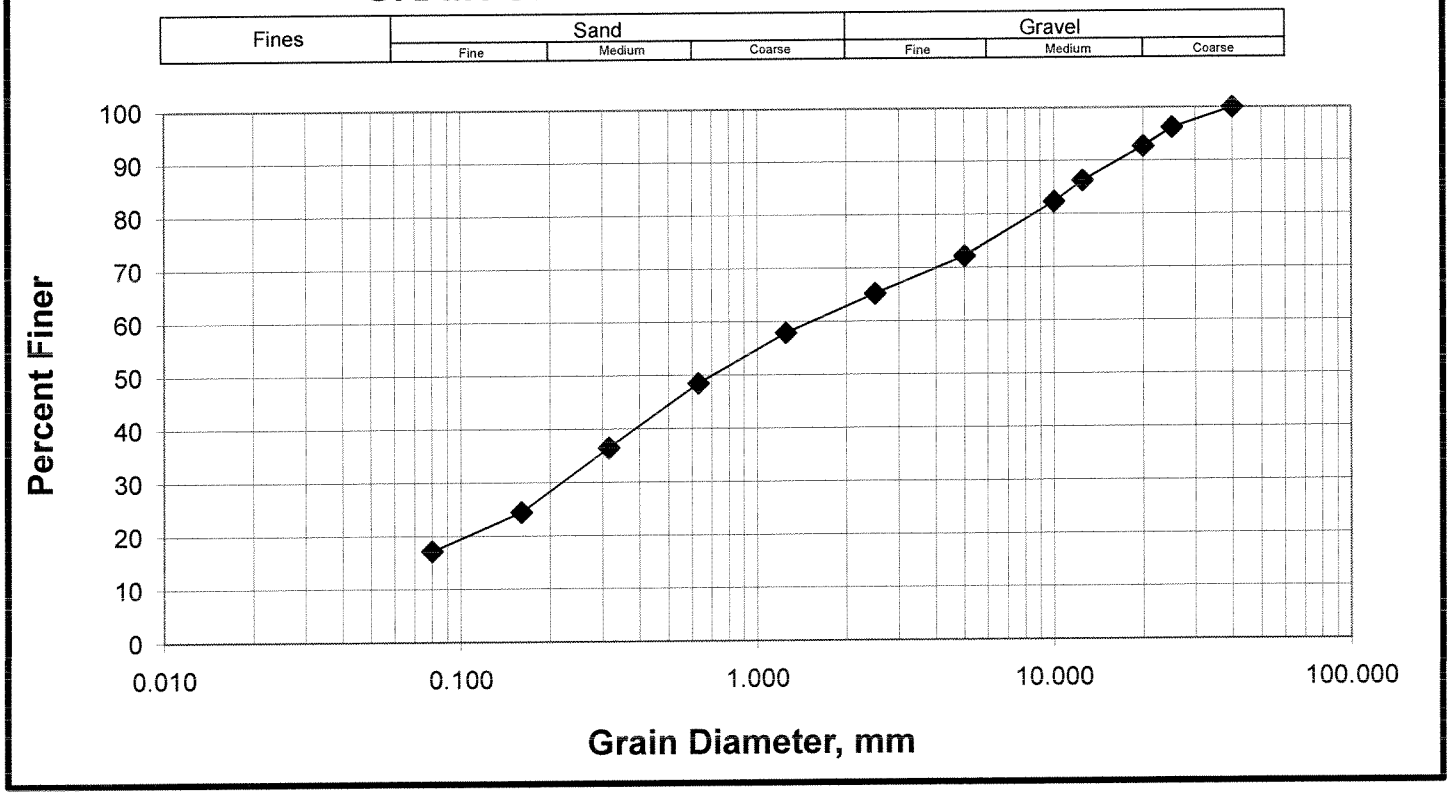
GRAIN SIZE DISTRIBUTION

MATERIALS LABORATORY
AECOM
99 Commerce Dr., Winnipeg, MB R3P 0Y7 Canada
tel (204) 477-5381 **fax** (204) 284-2040

Client:	PWGSC	Sample No.:	S10-124
Project:	FOX-E Durban Island Site Investigation	Sample Location:	TP23 B1
Job No:	60158564	Depth:	0.0 - 43.0"
Date :	10-Sep-10	Sample Description:	Granular Material

CDN. Sieve (mm.)	Sieve No.	Total Percent Passing	Specification (min - max)
100.0	-		
75.0	-		
62.5	-		
50.0	-		
40.0	-	100.0	
25.0	-	96.2	
20.0	-	92.7	
12.5	-	86.2	
10.0	-	82.3	
5.0	-	72.2	
2.5	-	65.2	
1.25	-	57.8	
0.630	-	48.4	
0.315	-	36.4	
0.160	-	24.4	
0.080	-	17.1	

GRAIN SIZE DISTRIBUTION CURVE



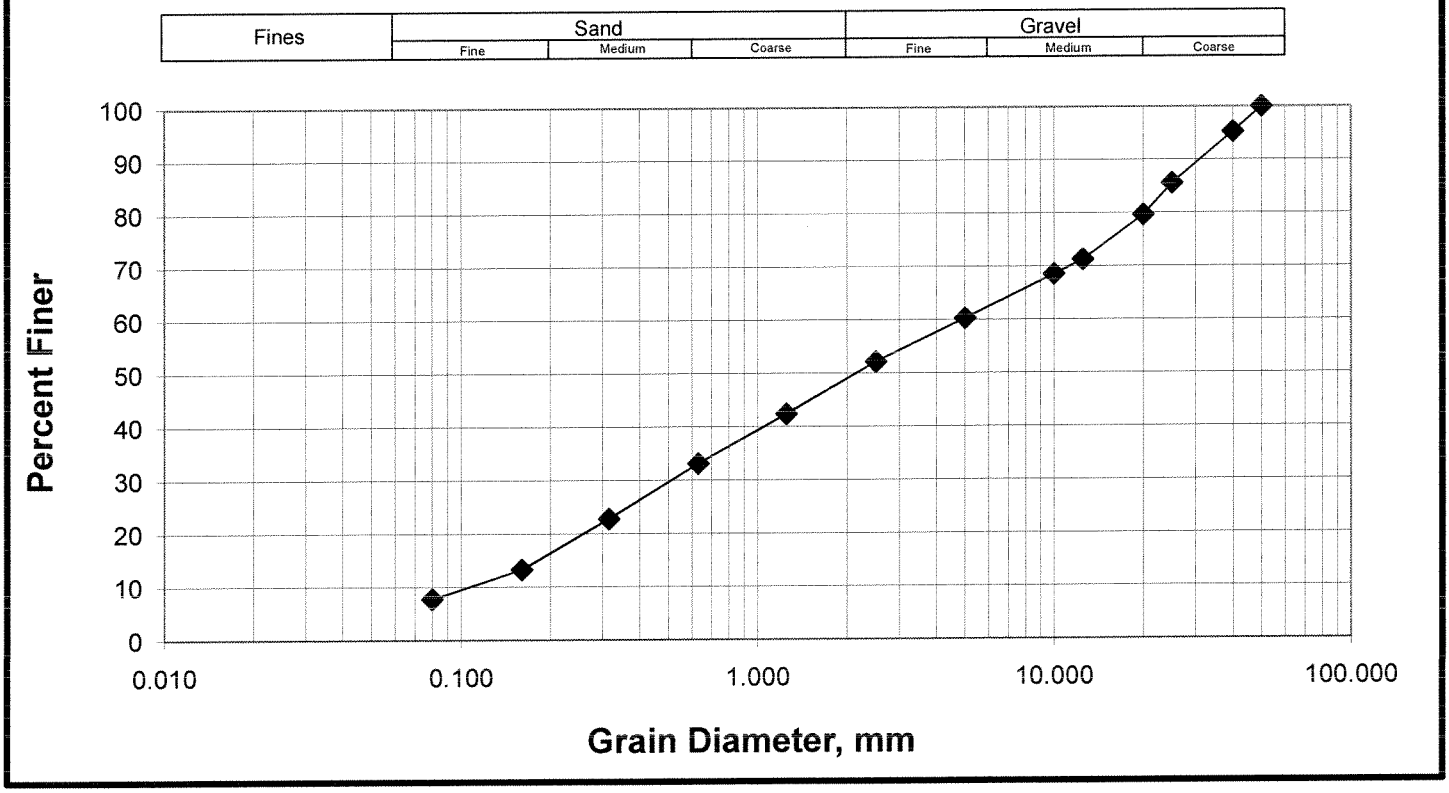
GRAIN SIZE DISTRIBUTION

MATERIALS LABORATORY
AECOM
99 Commerce Dr., Winnipeg, MB R3P 0Y7 Canada
tel (204) 477-5381 **fax** (204) 284-2040

Client:	PWGSC	Sample No.:	S10-125
Project:	FOX-E Durban Island Site Investigation	Sample Location:	TP24 B1
Job No:	60158564	Depth:	0.0 - 40.0"
Date :	10-Sep-10	Sample Description:	Granular Material

CDN. Sieve (mm.)	Sieve No.	Total Percent Passing	Specification (min - max)
100.0	-		
75.0	-		
62.5	-		
50.0	-	100.0	
40.0	-	95.2	
25.0	-	85.6	
20.0	-	79.6	
12.5	-	71.2	
10.0	-	68.5	
5.0	-	60.2	
2.5	-	52.1	
1.25	-	42.4	
0.630	-	33.1	
0.315	-	22.8	
0.160	-	13.3	
0.080	-	7.7	

GRAIN SIZE DISTRIBUTION CURVE



GRAIN SIZE DISTRIBUTION

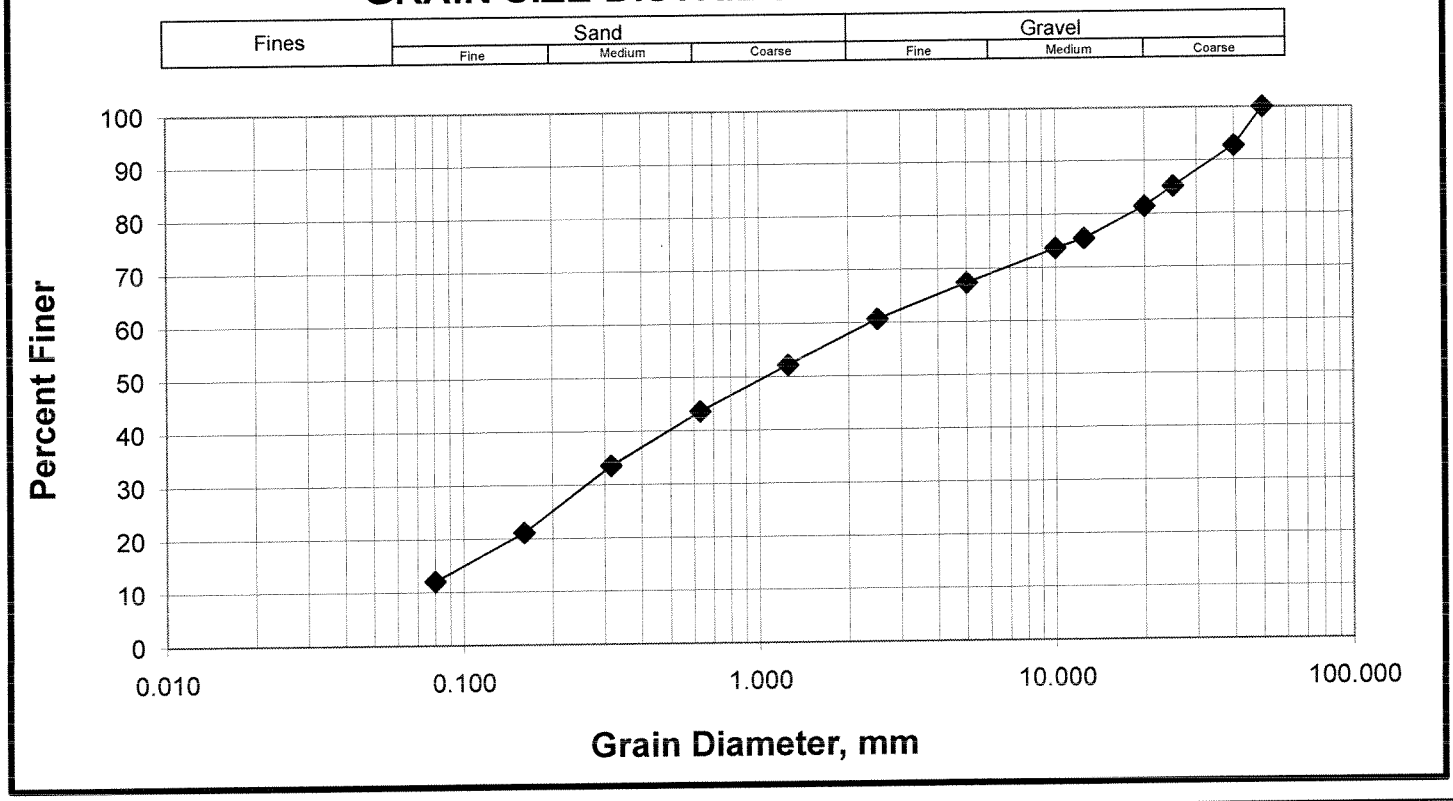
MATERIALS LABORATORY
AECOM
99 Commerce Dr., Winnipeg, MB R3P 0Y7 Canada
tel (204) 477-5381 **fax** (204) 284-2040

Client: PWGSC
Project: FOX-E Durban Island Site Investigation
Job No: 60158564
Date : 13-Sep-10

Sample No.: S10-126
Sample Location: TP25 B1
Depth: 0.0 - 40.0"
Sample Description: Granular Material

CDN. Sieve (mm.)	Sieve No.	Total Percent Passing	Specification (min - max)
100.0	-		
75.0	-		
62.5	-		
50.0	-	100.0	
40.0	-	92.7	
25.0	-	85.2	
20.0	-	81.4	
12.5	-	75.4	
10.0	-	73.7	
5.0	-	67.3	
2.5	-	60.7	
1.25	-	52.2	
0.630	-	43.6	
0.315	-	33.5	
0.160	-	21.1	
0.080	-	12.1	

GRAIN SIZE DISTRIBUTION CURVE



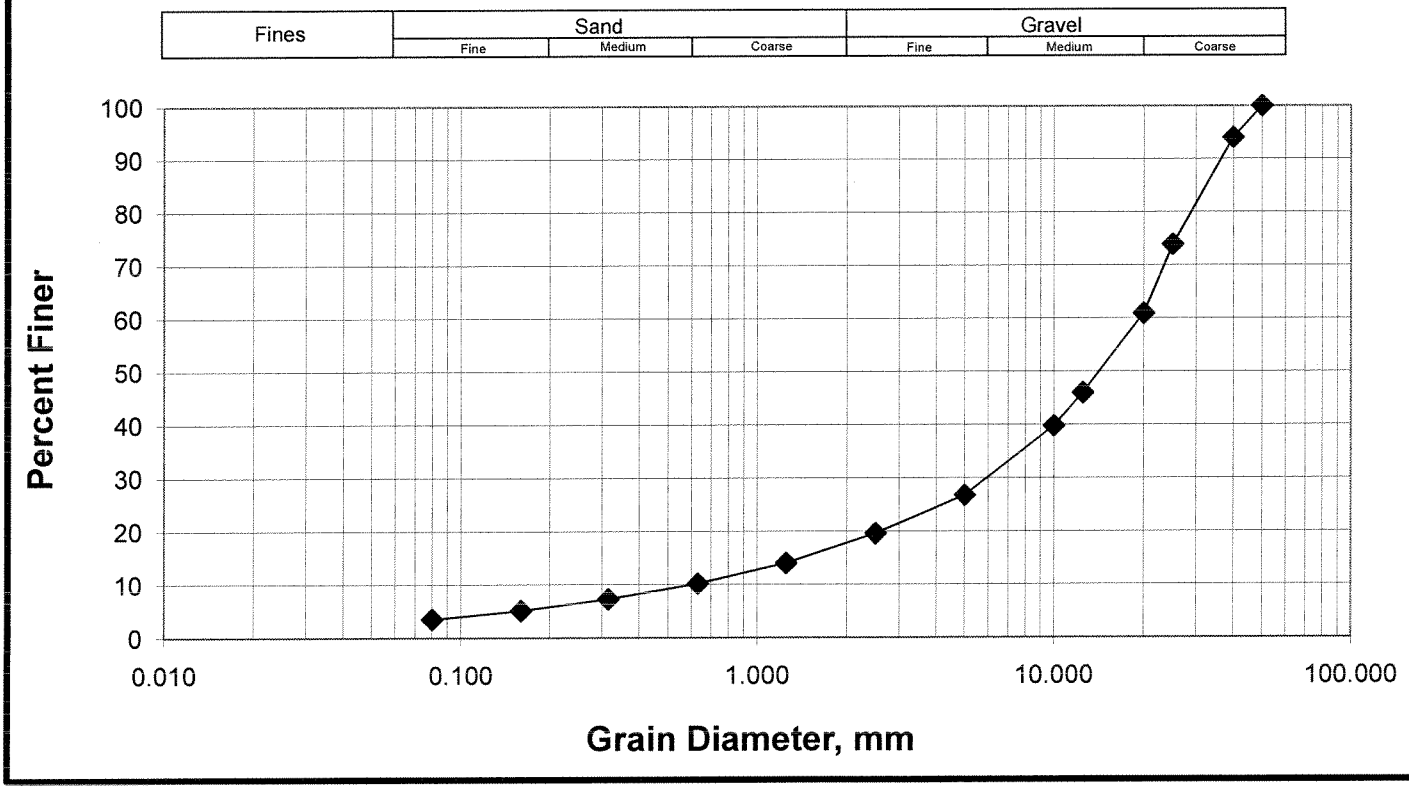
GRAIN SIZE DISTRIBUTION

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Client:	PWGSC	Sample No.:	S10-127
Project:	FOX-E Durban Island Site Investigation	Sample Location:	TP26 B1
Job No:	60158564	Depth:	0.0 - 27.0"
Date :	16-Sep-10	Sample Description:	Granular Material

CDN. Sieve (mm.)	Sieve No.	Total Percent Passing	Specification (min - max)
100.0	-		
75.0	-		
62.5	-		
50.0	-	100.0	
40.0	-	94.0	
25.0	-	73.9	
20.0	-	60.9	
12.5	-	46.0	
10.0	-	39.7	
5.0	-	26.7	
2.5	-	19.6	
1.25	-	14.0	
0.630	-	10.2	
0.315	-	7.3	
0.160	-	5.1	
0.080	-	3.5	

GRAIN SIZE DISTRIBUTION CURVE



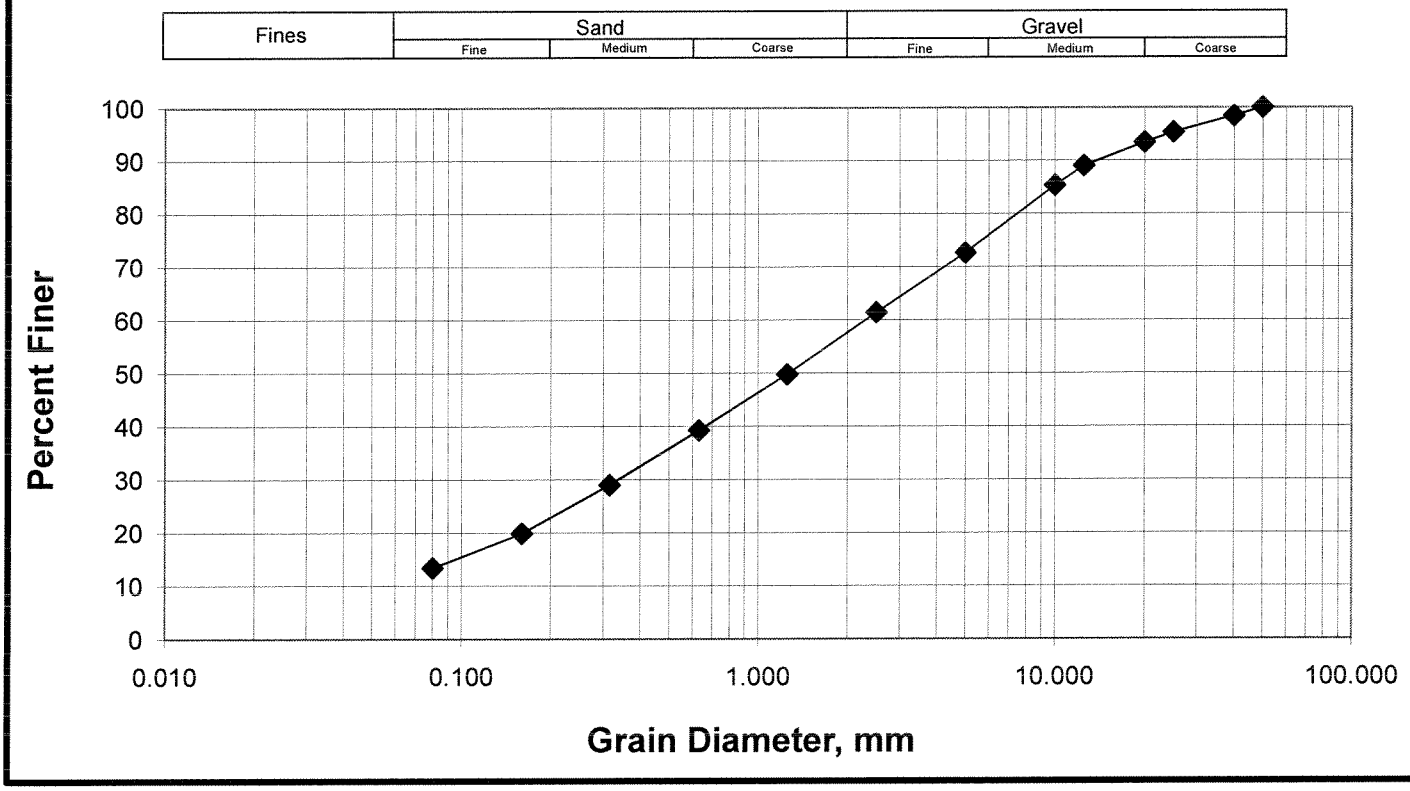
GRAIN SIZE DISTRIBUTION

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Client:	PWGSC	Sample No.:	S10-128
Project:	FOX-E Durban Island Site Investigation	Sample Location:	TP27 B1
Job No:	60158564	Depth:	0.0 - 50.0"
Date :	10-Sep-10	Sample Description:	Granular Material

CDN. Sieve (mm.)	Sieve No.	Total Percent Passing	Specification (min - max)
100.0	-		
75.0	-		
62.5	-		
50.0	-	100.0	
40.0	-	98.4	
25.0	-	95.3	
20.0	-	93.4	
12.5	-	89.0	
10.0	-	85.3	
5.0	-	72.7	
2.5	-	61.4	
1.25	-	49.7	
0.630	-	39.2	
0.315	-	29.0	
0.160	-	19.9	
0.080	-	13.4	

GRAIN SIZE DISTRIBUTION CURVE



GRAIN SIZE DISTRIBUTION

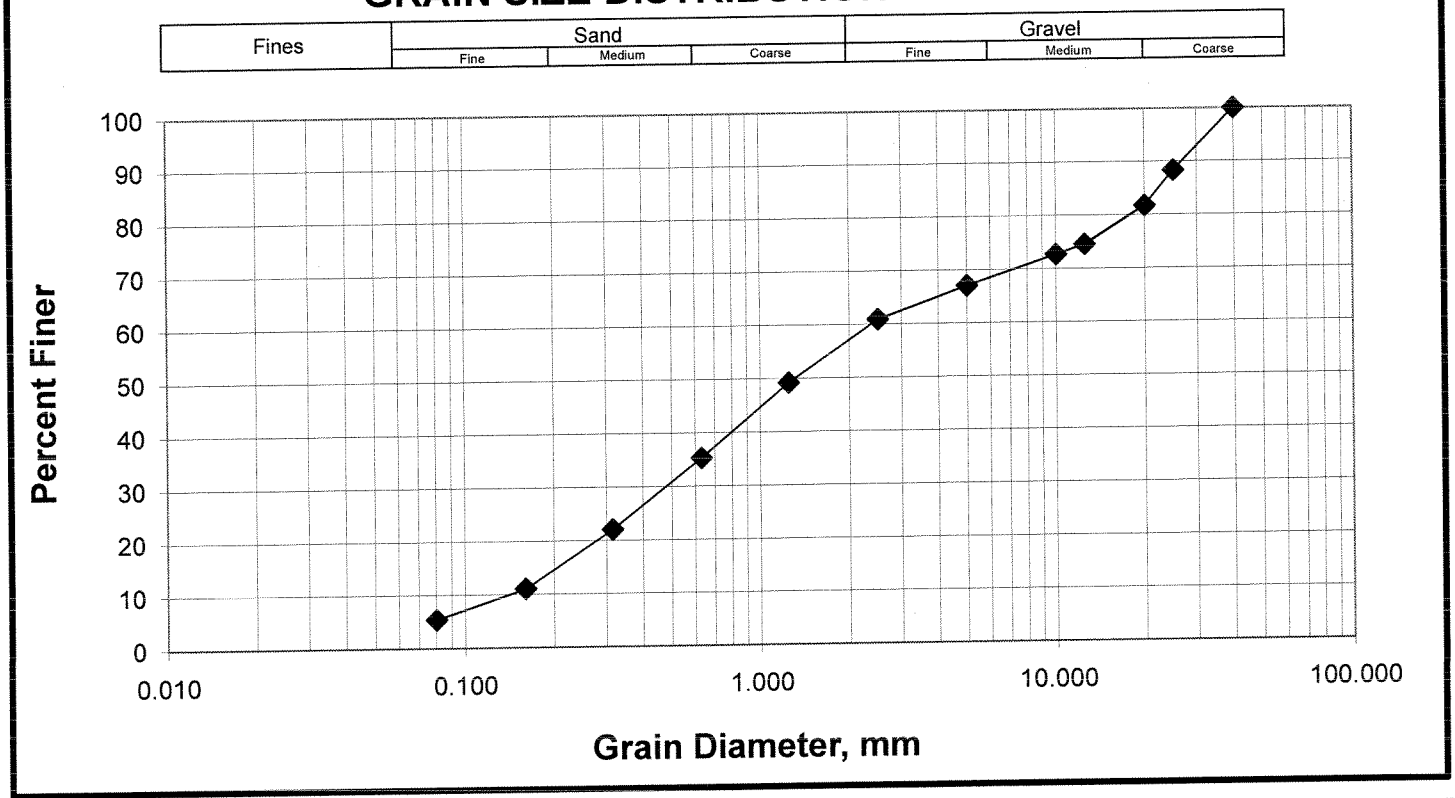
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Client: PWGSC
Project: FOX-E Durban Island Site Investigation
Job No: 60158564
Date : 15-Sep-10

Sample No.: S10-129
Sample Location: TP28 B1
Depth: 0.0 - 36.0"
Sample Description: Granular Material

CDN. Sieve (mm.)	Sieve No.	Total Percent Passing	Specification (min - max)
100.0	-		
75.0	-		
62.5	-		
50.0	-		
40.0	-	100.0	
25.0	-	88.3	
20.0	-	81.7	
12.5	-	74.5	
10.0	-	72.7	
5.0	-	67.0	
2.5	-	60.9	
1.25	-	49.1	
0.630	-	35.2	
0.315	-	22.0	
0.160	-	11.0	
0.080	-	5.3	

GRAIN SIZE DISTRIBUTION CURVE



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Memorandum

To	Nick Oke	Page	1
CC	Barry Fedorak, Nelson Ferreira (nferreira@trekgeotechnical.ca)		
Subject	FOX-E Durban Island Site Investigation		
From	Stephen Petsche		
Date	September 22, 2010	60158564	

Attached are testing results for the above noted project. The testing included five (5) Standard Proctors on samples submitted to the lab.

If you have any questions, please call.

Sincerely,

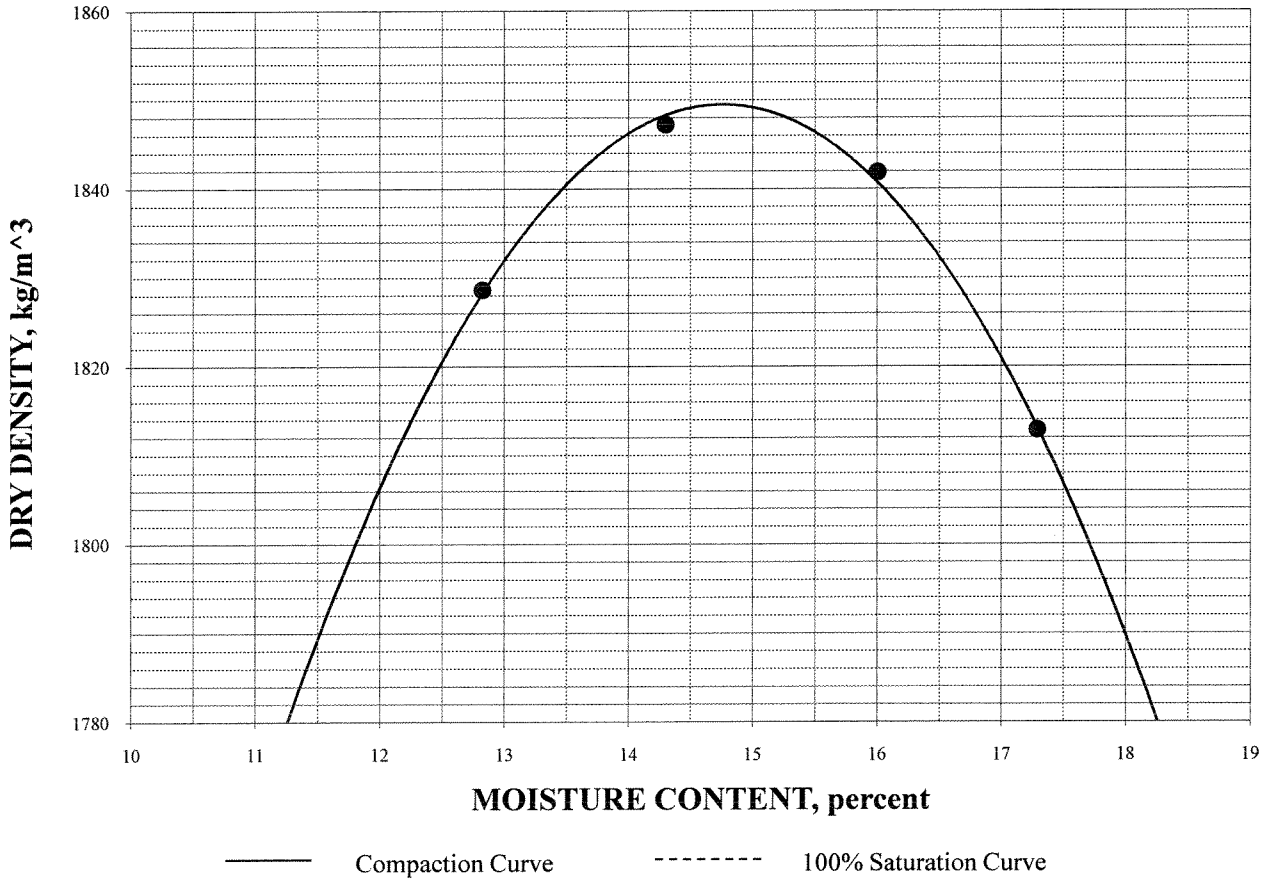
Stephen Petsche, C.E.T.
Coordinator, Lab and Technical Services

Attach.

Proctor Compaction **ASTM D 698-00**	AECOM	MATERIALS LABORATORY AECOM 99 Commerce Drive, Winnipeg, Manitoba, R3P 0Y7 **tel** (204) 477-5381 **fax** (204) 284-2040

Client:	PWGSC	**Job No:**	60158564
Project:	FOX-E Durban Island Site Invest.	**Sample:**	Granular Material
Lab No.	S10-109	**Source:**	TP1 B1
Date Tested:	September 17, 2010	**Depth:**	4.0 - 24.0"

TRIAL NUMBER	1	2	3	4	
Wet Unit Weight (kg/cu.m.)	2063	2111	2137	2126	
Dry Unit Weight (kg/cu.m.)	1829	1847	1842	1813	
Moisture Content (%)	12.8	14.3	16.0	17.3	



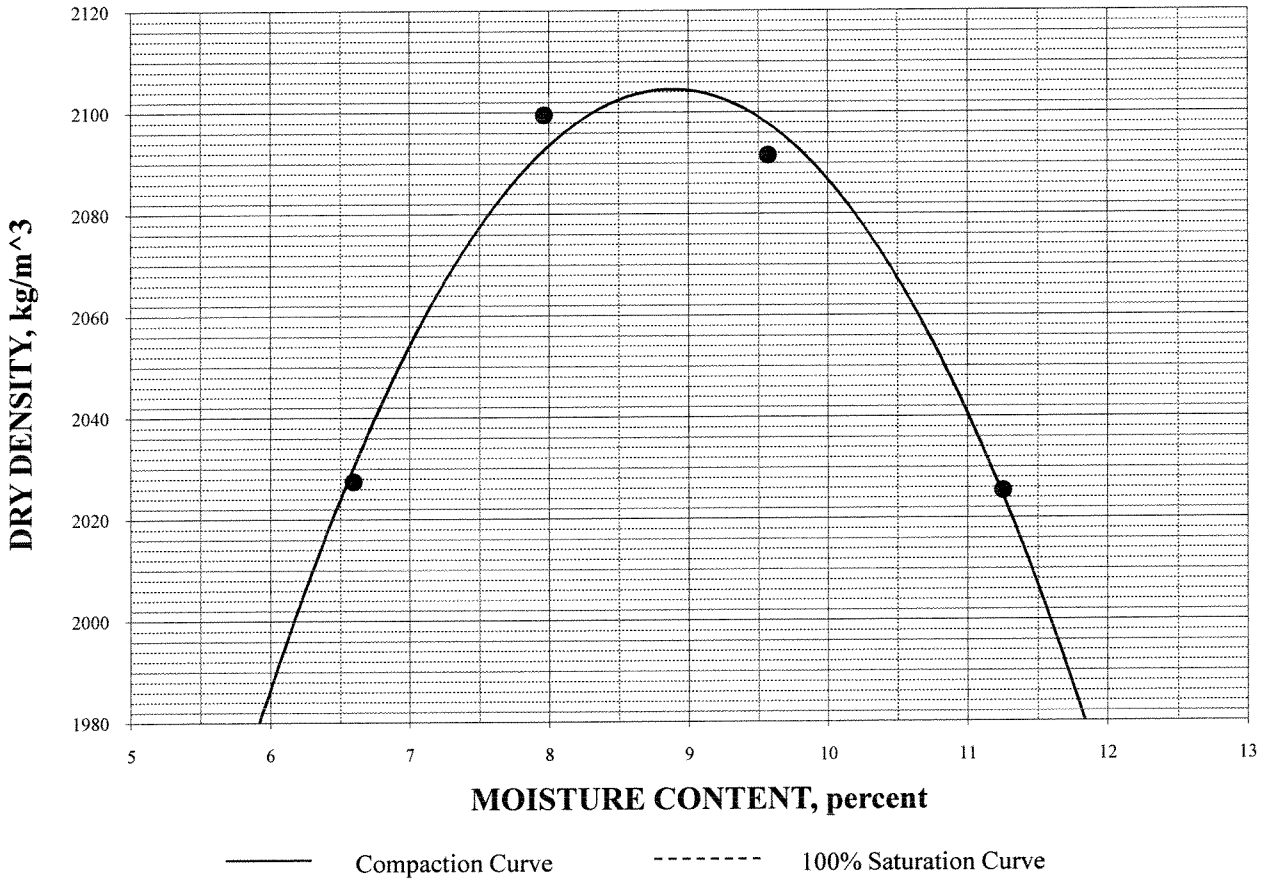
Description / Remarks:

OVERSIZE PARTICLE CORRECTION (ASTM D 4718)	
CORRECTED MAX:	1,895 Kg/m^3
CORRECTED OPTIMUM:	13.9 %
MAXIMUM DRY DENSITY:	1,849 Kg/m^3
OPTIMUM MOISTURE:	14.8 %
PROCTOR NO:	**P1503**

Proctor Compaction ASTM D 698-00	AECOM	MATERIALS LABORATORY AECOM 99 Commerce Drive, Winnipeg, Manitoba, R3P 0Y7 **tel** (204) 477-5381 **fax** (204) 284-2040

Client:	PWGSC	**Job No:**	60158564
Project:	FOX-E Durban Island Site Invest.	**Sample:**	Granular Material
Lab No.	S10-111	**Source:**	TP3 B1
Date Tested:	September 21, 2010	**Depth:**	2.0 - 27.0"

TRIAL NUMBER	1	2	3	4	
Wet Unit Weight (kg/cu.m.)	2161	2267	2292	2253	
Dry Unit Weight (kg/cu.m.)	2027	2099	2091	2025	
Moisture Content (%)	6.6	8.0	9.6	11.3	



Description / Remarks:

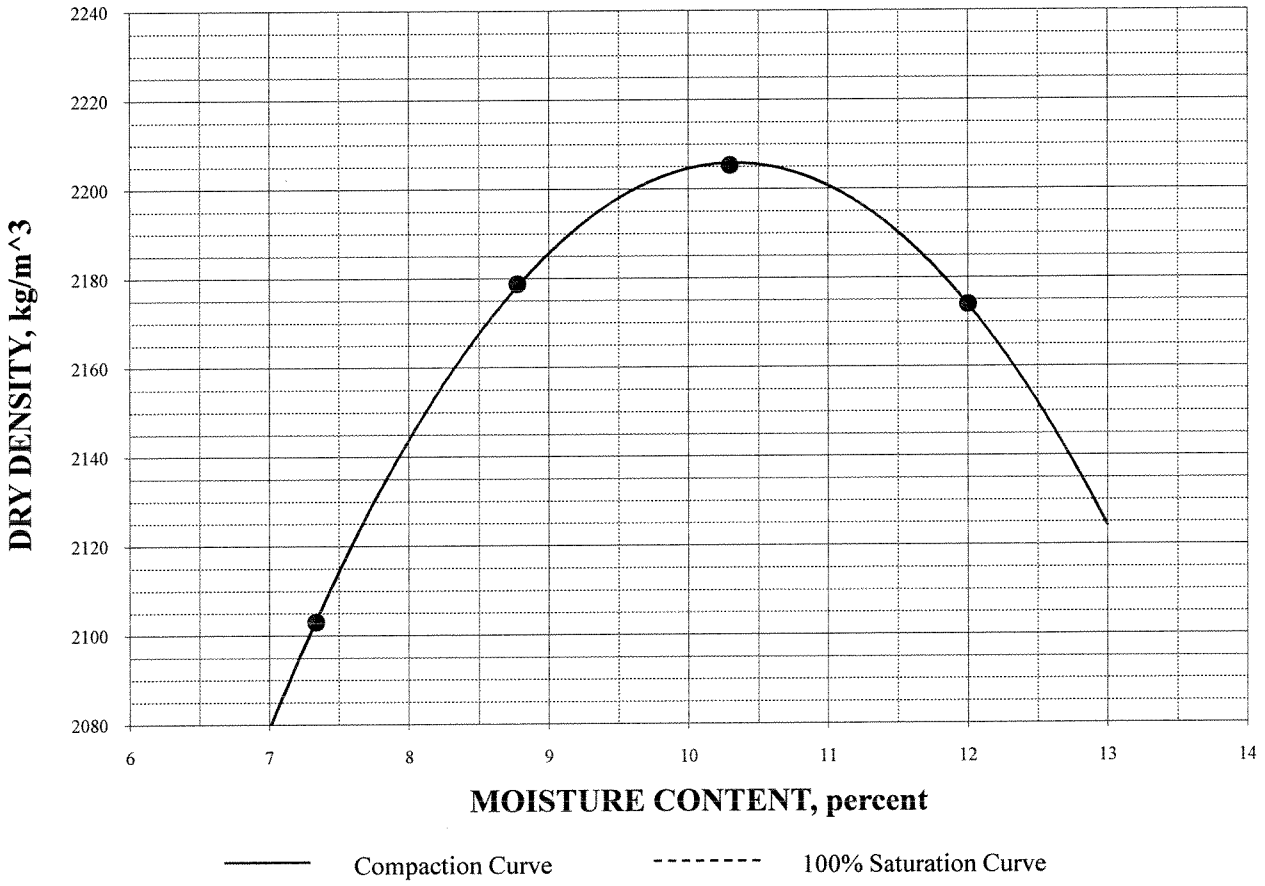
OVERSIZE PARTICLE CORRECTION (ASTM D 4718)	
CORRECTED MAX:	2,221 Kg/m^3
CORRECTED OPTIMUM:	7.4 %
MAXIMUM DRY DENSITY:	2,104 Kg/m^3
OPTIMUM MOISTURE:	8.9 %
PROCTOR NO:	**P1504**

Proctor Compaction
ASTM D 698-00

MATERIALS LABORATORY
AECOM
99 Commerce Drive, Winnipeg, Manitoba, R3P 0Y7
tel (204) 477-5381 **fax** (204) 284-2040

Client:	PWGSC	**Job No:**	60158564
Project:	FOX-E Durban Island Site Invest.	**Sample:**	Granular Material
Lab No.:	S10-118	**Source:**	TP13 B1
Date Tested:	September 17, 2010	**Depth:**	0.0 - 24.0"

TRIAL NUMBER	1	2	3	4	
Wet Unit Weight (kg/cu.m.)	2257	2370	2432	2435	
Dry Unit Weight (kg/cu.m.)	2103	2179	2205	2174	
Moisture Content (%)	7.3	8.8	10.3	12.0	



Description / Remarks:

OVERSIZE PARTICLE CORRECTION (ASTM D 4718)

CORRECTED MAX:	2,266 Kg/m^3
CORRECTED OPTIMUM:	9.2 %
MAXIMUM DRY DENSITY:	2,206 Kg/m^3
OPTIMUM MOISTURE:	10.3 %

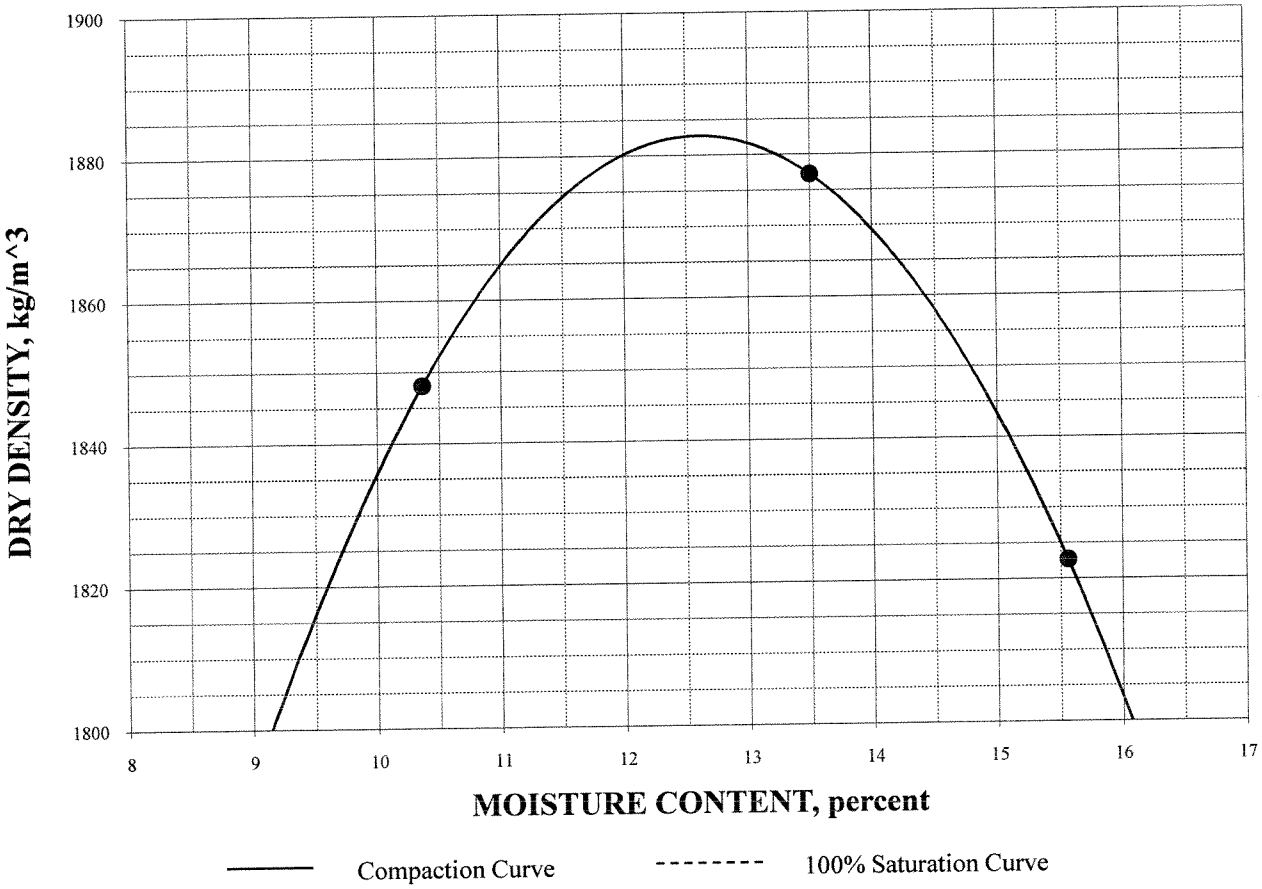
PROCTOR NO: **P1505**

Proctor Compaction
ASTM D 698-00

MATERIALS LABORATORY
AECOM
99 Commerce Drive, Winnipeg, Manitoba, R3P 0Y7
tel (204) 477-5381 **fax** (204) 284-2040

Client:	PWGSC	**Job No:**	60158564
Project:	FOX-E Durban Island Site Invest.	**Sample:**	Granular Material
Lab No.:	S10-126	**Source:**	TP25 B1
Date Tested:	September 21, 2010	**Depth:**	0.0 - 40.0"

TRIAL NUMBER	1	2	3		
Wet Unit Weight (kg/cu.m.)	2040	2131	2106		
Dry Unit Weight (kg/cu.m.)	1848	1877	1823		
Moisture Content (%)	10.4	13.5	15.6		



Description / Remarks:

OVERSIZE PARTICLE CORRECTION (ASTM D 4718)

CORRECTED MAX:	2,044 Kg/m^3
CORRECTED OPTIMUM:	10.1 %
MAXIMUM DRY DENSITY:	1,883 Kg/m^3
OPTIMUM MOISTURE:	12.6 %

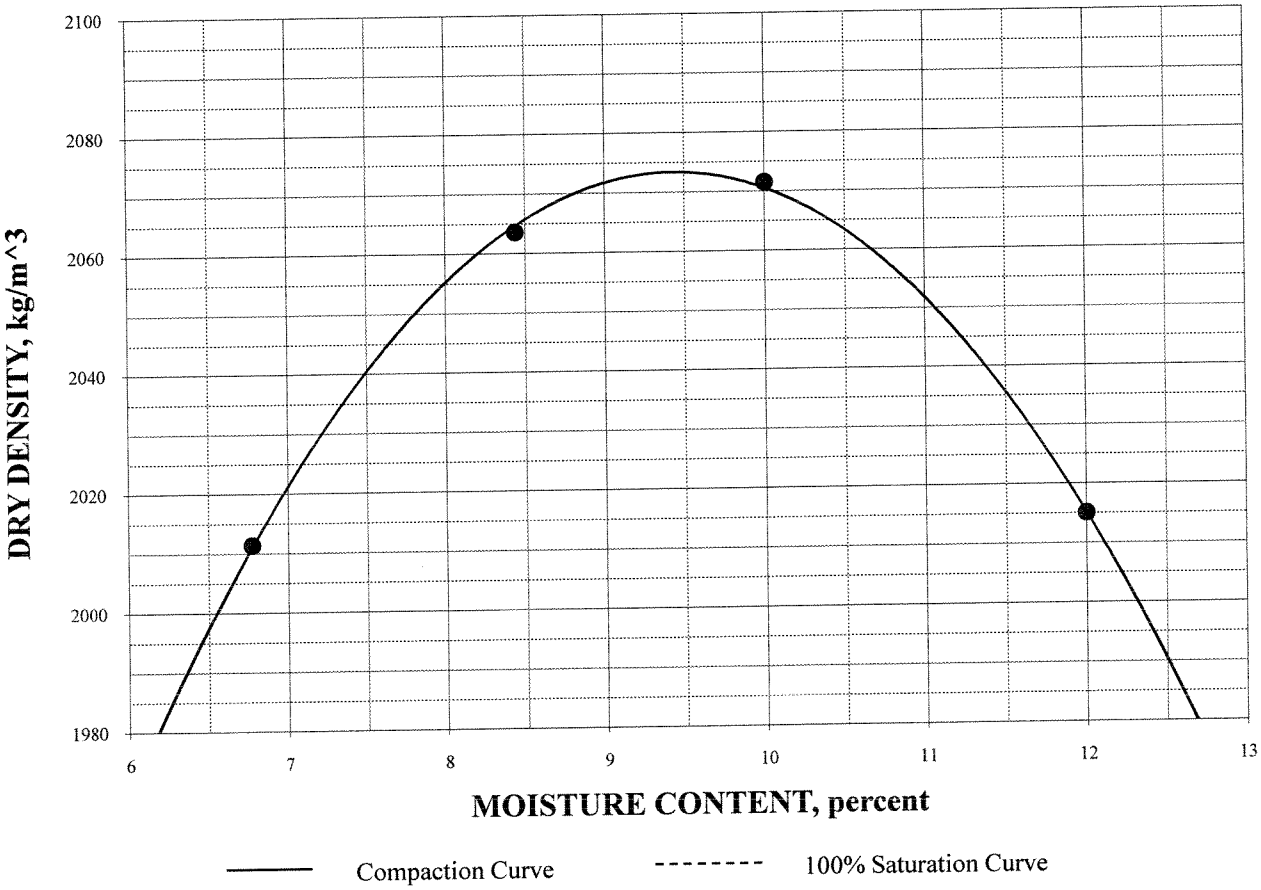
PROCTOR NO: **P1506**

Proctor Compaction
ASTM D 698-00

MATERIALS LABORATORY
AECOM
99 Commerce Drive, Winnipeg, Manitoba, R3P 0Y7
tel (204) 477-5381 **fax** (204) 284-2040

Client:	PWGSC	**Job No:**	60158564
Project:	FOX-E Durban Island Site Invest.	**Sample:**	Granular Material
Lab No.:	S10-128	**Source:**	TP27 B1
Date Tested:	September 21, 2010	**Depth:**	0.0 - 50.0"

TRIAL NUMBER	1	2	3	4	
Wet Unit Weight (kg/cu.m.)	2148	2238	2279	2257	
Dry Unit Weight (kg/cu.m.)	2011	2064	2071	2015	
Moisture Content (%)	6.8	8.4	10.0	12.0	



Description / Remarks:

OVERSIZE PARTICLE CORRECTION (ASTM D 4718)

CORRECTED MAX:	2,105 Kg/m^3
CORRECTED OPTIMUM:	9.0 %
MAXIMUM DRY DENSITY:	2,073 Kg/m^3
OPTIMUM MOISTURE:	9.4 %

PROCTOR NO: **P1507**

AECOM Canada Ltd. (Winnipeg)
ATTN: Stephen Petsche
99 Commerce Drive
Winnipeg MB R3P 0Y7
Phone: 204-928-9205

Date Received: 04-OCT-10
Report Date: 13-OCT-10 10:50 (MT)
Version: FINAL

Certificate of Analysis

Lab Work Order #: L939076
Project P.O. #: NOT SUBMITTED
Job Reference: 60158564.204
Legal Site Desc: PWGSC FOX-E DURBAN ISLAND
C of C Numbers:

Paul Nicolas
Account Manager

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

ALS LABORATORY GROUP ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L939076-1 TP-5 B1							
Sampled By: CLIENT							
Matrix: SOIL							
Detailed Salinity							
Chloride (Cl) (Saturated Paste)							
Chloride (Cl)	8.2		3.0	mg/L	09-OCT-10	09-OCT-10	R1498223
SAR, Cations and SO4 in saturated soil							
Calcium (Ca)	6.3		2.0	mg/L	09-OCT-10	09-OCT-10	R1498825
Potassium (K)	2.0		1.0	mg/L	09-OCT-10	09-OCT-10	R1498825
Magnesium (Mg)	4.5		2.0	mg/L	09-OCT-10	09-OCT-10	R1498825
Sodium (Na)	7.2		4.0	mg/L	09-OCT-10	09-OCT-10	R1498825
SAR	0.54		0.10	SAR	09-OCT-10	09-OCT-10	R1498825
Sulfur (as SO4)	12.0		5.0	mg/L	09-OCT-10	09-OCT-10	R1498825
Saturated Paste pH and EC							
% Saturation	32.2		1.0	%	08-OCT-10	08-OCT-10	R1497547
pH in Saturated Paste	7.55		0.10	pH	08-OCT-10	08-OCT-10	R1497547
Conductivity Sat. Paste	0.10		0.10	dS m-1	08-OCT-10	08-OCT-10	R1497547
L939076-2 TP-6 B1							
Sampled By: CLIENT							
Matrix: SOIL							
Detailed Salinity							
Chloride (Cl) (Saturated Paste)							
Chloride (Cl)	9.8		3.0	mg/L	09-OCT-10	09-OCT-10	R1498223
SAR, Cations and SO4 in saturated soil							
Calcium (Ca)	5.4		2.0	mg/L	09-OCT-10	09-OCT-10	R1498825
Potassium (K)	3.0		1.0	mg/L	09-OCT-10	09-OCT-10	R1498825
Magnesium (Mg)	3.5		2.0	mg/L	09-OCT-10	09-OCT-10	R1498825
Sodium (Na)	8.3		4.0	mg/L	09-OCT-10	09-OCT-10	R1498825
SAR	0.69		0.10	SAR	09-OCT-10	09-OCT-10	R1498825
Sulfur (as SO4)	12.4		5.0	mg/L	09-OCT-10	09-OCT-10	R1498825
Saturated Paste pH and EC							
% Saturation	37.7		1.0	%	08-OCT-10	08-OCT-10	R1497547
pH in Saturated Paste	7.13		0.10	pH	08-OCT-10	08-OCT-10	R1497547
Conductivity Sat. Paste	0.10		0.10	dS m-1	08-OCT-10	08-OCT-10	R1497547
L939076-3 TP-13 B1							
Sampled By: CLIENT							
Matrix: SOIL							
Detailed Salinity							
Chloride (Cl) (Saturated Paste)							
Chloride (Cl)	16.8		3.0	mg/L	09-OCT-10	09-OCT-10	R1498223
SAR, Cations and SO4 in saturated soil							
Calcium (Ca)	21.2		2.0	mg/L	09-OCT-10	09-OCT-10	R1498825
Potassium (K)	4.0		1.0	mg/L	09-OCT-10	09-OCT-10	R1498825
Magnesium (Mg)	9.1		2.0	mg/L	09-OCT-10	09-OCT-10	R1498825
Sodium (Na)	21.6		4.0	mg/L	09-OCT-10	09-OCT-10	R1498825
SAR	0.99		0.10	SAR	09-OCT-10	09-OCT-10	R1498825
Sulfur (as SO4)	56.3		5.0	mg/L	09-OCT-10	09-OCT-10	R1498825
Saturated Paste pH and EC							
% Saturation	29.0		1.0	%	08-OCT-10	08-OCT-10	R1497547
pH in Saturated Paste	7.60		0.10	pH	08-OCT-10	08-OCT-10	R1497547
Conductivity Sat. Paste	0.27		0.10	dS m-1	08-OCT-10	08-OCT-10	R1497547

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS LABORATORY GROUP ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L939076-4 TP-19 B1							
Sampled By: CLIENT							
Matrix: SOIL							
Detailed Salinity							
Chloride (Cl) (Saturated Paste)							
Chloride (Cl)	271		3.0	mg/L	09-OCT-10	09-OCT-10	R1498223
SAR, Cations and SO4 in saturated soil							
Calcium (Ca)	21.0		2.0	mg/L	09-OCT-10	09-OCT-10	R1498825
Potassium (K)	11.1		1.0	mg/L	09-OCT-10	09-OCT-10	R1498825
Magnesium (Mg)	20.4		2.0	mg/L	09-OCT-10	09-OCT-10	R1498825
Sodium (Na)	260		4.0	mg/L	09-OCT-10	09-OCT-10	R1498825
SAR	9.67		0.10	SAR	09-OCT-10	09-OCT-10	R1498825
Sulfur (as SO4)	199		5.0	mg/L	09-OCT-10	09-OCT-10	R1498825
Saturated Paste pH and EC							
% Saturation	38.2		1.0	%	08-OCT-10	08-OCT-10	R1497547
pH in Saturated Paste	8.39		0.10	pH	08-OCT-10	08-OCT-10	R1497547
Conductivity Sat. Paste	1.53		0.10	dS m-1	08-OCT-10	08-OCT-10	R1497547
L939076-5 TP-20 B1							
Sampled By: CLIENT							
Matrix: SOIL							
Detailed Salinity							
Chloride (Cl) (Saturated Paste)							
Chloride (Cl)	282		3.0	mg/L	09-OCT-10	09-OCT-10	R1498223
SAR, Cations and SO4 in saturated soil							
Calcium (Ca)	11.8		2.0	mg/L	09-OCT-10	09-OCT-10	R1498825
Potassium (K)	10.0		1.0	mg/L	09-OCT-10	09-OCT-10	R1498825
Magnesium (Mg)	14.5		2.0	mg/L	09-OCT-10	09-OCT-10	R1498825
Sodium (Na)	288		4.0	mg/L	09-OCT-10	09-OCT-10	R1498825
SAR	13.3		0.10	SAR	09-OCT-10	09-OCT-10	R1498825
Sulfur (as SO4)	212		5.0	mg/L	09-OCT-10	09-OCT-10	R1498825
Saturated Paste pH and EC							
% Saturation	30.1		1.0	%	08-OCT-10	08-OCT-10	R1497547
pH in Saturated Paste	8.44		0.10	pH	08-OCT-10	08-OCT-10	R1497547
Conductivity Sat. Paste	1.57		0.10	dS m-1	08-OCT-10	08-OCT-10	R1497547
L939076-6 TP-21 B1							
Sampled By: CLIENT							
Matrix: SOIL							
Detailed Salinity							
Chloride (Cl) (Saturated Paste)							
Chloride (Cl)	32.6		3.0	mg/L	09-OCT-10	09-OCT-10	R1498223
SAR, Cations and SO4 in saturated soil							
Calcium (Ca)	16.6		2.0	mg/L	09-OCT-10	09-OCT-10	R1498825
Potassium (K)	4.7		1.0	mg/L	09-OCT-10	09-OCT-10	R1498825
Magnesium (Mg)	11.1		2.0	mg/L	09-OCT-10	09-OCT-10	R1498825
Sodium (Na)	24.3		4.0	mg/L	09-OCT-10	09-OCT-10	R1498825
SAR	1.13		0.10	SAR	09-OCT-10	09-OCT-10	R1498825
Sulfur (as SO4)	37.2		5.0	mg/L	09-OCT-10	09-OCT-10	R1498825
Saturated Paste pH and EC							
% Saturation	23.7		1.0	%	08-OCT-10	08-OCT-10	R1497547
pH in Saturated Paste	7.70		0.10	pH	08-OCT-10	08-OCT-10	R1497547
Conductivity Sat. Paste	0.30		0.10	dS m-1	08-OCT-10	08-OCT-10	R1497547

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS LABORATORY GROUP ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L939076-7 TP-22 B1							
Sampled By: CLIENT							
Matrix: SOIL							
Detailed Salinity							
Chloride (Cl) (Saturated Paste)							
Chloride (Cl)	63.9		3.0	mg/L	09-OCT-10	09-OCT-10	R1498223
SAR, Cations and SO4 in saturated soil							
Calcium (Ca)	25.9		2.0	mg/L	09-OCT-10	09-OCT-10	R1498825
Potassium (K)	7.4		1.0	mg/L	09-OCT-10	09-OCT-10	R1498825
Magnesium (Mg)	20.9		2.0	mg/L	09-OCT-10	09-OCT-10	R1498825
Sodium (Na)	52.2		4.0	mg/L	09-OCT-10	09-OCT-10	R1498825
SAR	1.85		0.10	SAR	09-OCT-10	09-OCT-10	R1498825
Sulfur (as SO4)	126		5.0	mg/L	09-OCT-10	09-OCT-10	R1498825
Saturated Paste pH and EC							
% Saturation	27.4		1.0	%	08-OCT-10	08-OCT-10	R1497547
pH in Saturated Paste	7.85		0.10	pH	08-OCT-10	08-OCT-10	R1497547
Conductivity Sat. Paste	0.66		0.10	dS m-1	08-OCT-10	08-OCT-10	R1497547
L939076-8 TP-23 B1							
Sampled By: CLIENT							
Matrix: SOIL							
Detailed Salinity							
Chloride (Cl) (Saturated Paste)							
Chloride (Cl)	13.9		3.0	mg/L	09-OCT-10	09-OCT-10	R1498223
SAR, Cations and SO4 in saturated soil							
Calcium (Ca)	18.8		2.0	mg/L	09-OCT-10	09-OCT-10	R1498825
Potassium (K)	6.1		1.0	mg/L	09-OCT-10	09-OCT-10	R1498825
Magnesium (Mg)	11.8		2.0	mg/L	09-OCT-10	09-OCT-10	R1498825
Sodium (Na)	10.9		4.0	mg/L	09-OCT-10	09-OCT-10	R1498825
SAR	0.49		0.10	SAR	09-OCT-10	09-OCT-10	R1498825
Sulfur (as SO4)	38.7		5.0	mg/L	09-OCT-10	09-OCT-10	R1498825
Saturated Paste pH and EC							
% Saturation	27.4		1.0	%	08-OCT-10	08-OCT-10	R1497547
pH in Saturated Paste	7.71		0.10	pH	08-OCT-10	08-OCT-10	R1497547
Conductivity Sat. Paste	0.25		0.10	dS m-1	08-OCT-10	08-OCT-10	R1497547

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Internal Reference Material	Calcium (Ca)	DLA	L939076-1, -2, -3, -4, -5, -6, -7, -8
Internal Reference Material	Magnesium (Mg)	DLA	L939076-1, -2, -3, -4, -5, -6, -7, -8
Internal Reference Material	Potassium (K)	DLA	L939076-1, -2, -3, -4, -5, -6, -7, -8
Internal Reference Material	Sodium (Na)	DLA	L939076-1, -2, -3, -4, -5, -6, -7, -8
Internal Reference Material	Sulfur (as SO4)	DLA	L939076-1, -2, -3, -4, -5, -6, -7, -8
Duplicate	Chloride (Cl)	RRA	L939076-1, -2, -3, -4, -5, -6, -7, -8

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
CL-SAR-SK	Soil	Chloride (Cl) (Saturated Paste)	APHA 4500 Cl E-Colorimetry

Deionized water is added to the soil until the soil is saturated, but not over saturated (ie. no free standing water). The paste is allowed to stand overnight or a minimum of four hours.
Chloride in the extract is determined colorimetrically at 660 nm by complexation with mercury (II) thiocynate. In the colorimetric method, chloride (Cl-) displaces thiocyanate which, in the presence of ferric iron, forms a highly colored ferric thiocyanate complex.

Reference
Greenberg, Arnold E., Cleseri, Lenore S., Eaton, Andrew D., Standard Methods For The Examination of Water and Wastewater, 18th Edition, 1992, Method 4500Cl-E.

SALINITY-INTCHECK-SK	Soil		CSSS 18.4-Calculation
SAR-CALC-SO4-SK	Soil	SAR, Cations and SO4 in saturated soil	APHA 3120B

Deionized water is added to the soil until the soil is saturated, but not over saturated (ie. no free standing water). The paste is allowed to stand overnight or a minimum of four hours.
After equilibration, an extract is obtained by vacuum filtration. Individual cations in the extract are determined by ICP-OES. Reported results for sulfate may be slightly elevated on highly organic samples.

Reference:
Carter, Martin R., Soil Sampling and Methods of Analysis, Can Soc. Soil Sci. p.162-164.

SAT/PH/EC-SK	Soil	Saturated Paste pH and EC	CSSS(1978)3.14, 3.21

Deionized water is added to the soil until the soil is saturated, but not over saturated (ie. no free standing water). The paste is allowed to stand overnight or a minimum of four hours.
pH of the soil paste is then measured using a pH meter.
After equilibration, an extract is obtained by vacuum filtration. Conductivity of the extract is measured by a conductivity meter.

Conductivity Reference:
Carter, Martin R., Soil Sampling and Methods of Analysis, Can Soc. Soil Sci. method 18.3.1

pH Reference:
References: McKeague, J.A. 1978. pH of a Saturated Soil Paste method 3.14 In: Soil Sampling and Methods of Analysis. Can. Soc. Soil Sci. p. 68

Conductivity Reference:
Carter, Martin R., Soil Sampling and Methods of Analysis, Can Soc. Soil Sci. method 18.3.1

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

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

Laboratory Definition Code	Laboratory Location
SK	ALS LABORATORY GROUP - SASKATOON, SASKATCHEWAN, CANADA

Chain of Custody Numbers:

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**

GLOSSARY OF REPORT TERMS

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

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

Quality Control Report

Workorder: L939076 Report Date: 13-OCT-10

Client: AECOM Canada Ltd. (Winnipeg)
99 Commerce Drive
Winnipeg MB R3P 0Y7
Contact: Stephen Petsche

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CL-SAR-SK	**Soil**							
Batch R1498223								
WG1179794-1 DUP		**L939076-7**						
Chloride (Cl)		63.9	52.7		mg/L	19	30	09-OCT-10
WG1179794-3 IRM		**SAL814**						
Chloride (Cl)			153		mg/L		103-223	09-OCT-10
WG1179794-2 MB								
Chloride (Cl)			<3.0		mg/L		20	09-OCT-10
SAR-CALC-SO4-SK	**Soil**							
Batch R1498825								
WG1179794-1 DUP		**L939076-7**						
Calcium (Ca)		25.9	20.5		mg/L	23	30	09-OCT-10
Potassium (K)		7.4	6.0		mg/L	20	30	09-OCT-10
Magnesium (Mg)		20.9	16.6		mg/L	23	30	09-OCT-10
Sodium (Na)		52.2	43.0		mg/L	19	30	09-OCT-10
Sulfur (as SO4)		126	99.1		mg/L	24	30	09-OCT-10
WG1179794-3 IRM		**SAL814**						
Calcium (Ca)			411		mg/L		296-554	09-OCT-10
Potassium (K)			62.0		mg/L		41-77	09-OCT-10
Magnesium (Mg)			130		mg/L		89-167	09-OCT-10
Sodium (Na)			624		mg/L		462-858	09-OCT-10
WG1179794-2 MB								
Calcium (Ca)			<2.0		mg/L		5	09-OCT-10
Potassium (K)			<1.0		mg/L		50	09-OCT-10
Magnesium (Mg)			<2.0		mg/L		2	09-OCT-10
Sodium (Na)			<4.0		mg/L		20	09-OCT-10
Sulfur (as SO4)			<5.0		mg/L		6	09-OCT-10
SAT/PH/EC-SK	**Soil**							
Batch R1497547								
WG1179794-1 DUP		**L939076-7**						
% Saturation		27.4	27.4	J	%	0.0	5	08-OCT-10
pH in Saturated Paste		7.85	7.77	J	pH	0.08	0.3	08-OCT-10
Conductivity Sat. Paste		0.66	0.46		dS m-1	37	40	08-OCT-10
WG1179794-3 IRM		**SAL814**						
% Saturation			44.0		%		37-47	08-OCT-10
pH in Saturated Paste			7.83		pH		7.4-8	08-OCT-10
Conductivity Sat. Paste			4.82		dS m-1		4.22-5.91	08-OCT-10
WG1179794-2 MB								

Quality Control Report

Client: AECOM Canada Ltd. (Winnipeg)
99 Commerce Drive
Winnipeg MB R3P 0Y7
Contact: Stephen Petsche

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SAT/PH/EC-SK	**Soil**							
Batch R1497547								
WG1179794-2 MB								
% Saturation			26.3		%		100	08-OCT-10
pH in Saturated Paste			7.00		pH			08-OCT-10
Conductivity Sat. Paste			<0.10		dS m-1			08-OCT-10

Quality Control Report

Legend:

Limit	99% Confidence Interval (Laboratory Control Limits)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.

Hold Time Exceedances:

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

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

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

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

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CHAIN OF CUSTODY / ANALYTICAL REQUEST FORM

CANADA TOLL FREE 1-800-668-9878

www.alsenviro.com

COC # A052552

L939076

Page 1 of 1

REPORT TO:	REPORT FORMAT / DISTRIBUTION	SERVICE REQUESTED
COMPANY: AECOM	STANDARD ✓ OTHER ____	X REGULAR SERVICE (DEFAULT)
CONTACT: STEPHEN PETSCHE	PDF ✓ EXCEL ____ CUSTOM ____ FAX ____	RUSH SERVICE (2-3 DAYS)
ADDRESS: 99 COMMERCE DR. WPG, MB	EMAIL 1: stephen.petsche@aecom.com.	PRIORITY SERVICE (1 DAY or ASAP)
	EMAIL 2: nick.oke@aecom.com	EMERGENCY SERVICE (<1 DAY / WEEKEND) - CONTACT ALS
PHONE: 477-5381 FAX: 284-2040	barry.fedorak@aecom.com, nferreira@trekgeotechnical.ca	ANALYSIS REQUEST
INVOICE TO: SAME AS REPORT ? (YES) / NO	INDICATE BOTTLES: FILTERED / PRESERVED (F/P) → → →	
COMPANY:	CLIENT / PROJECT INFORMATION:	
CONTACT:	JOB #: 60158564.204	
ADDRESS:	PO /AFE:	
	Legal Site Description:	
PHONE: FAX:	QUOTE #:	
Lab Work Order # (lab use only):	SAMPLER (Initials):	

Sample #	SAMPLE IDENTIFICATION (This description will appear on the report)	DATE	TIME	SAMPLE TYPE	DETAILED SALINITY	HAZARDOUS ?	HIGHLY CONTAMINATED ?	NUMBER OF CONTAINERS
	PWQSC							
	FOX-E DURBAN ISLAND.							
1	TP-5 B1			SOIL	X			1
2	TP-6 B1				X			1
3	TP-13 B1				X			1
4	TP-19 B1				X			1
5	TP-20 B1				X			1
6	TP-21 B1				X			1
7	TP-22 B1				X			1
8	TP-23 B1				X			1

GUIDELINES / REGULATIONS	SPECIAL INSTRUCTIONS / HAZARDOUS DETAILS

Failure to complete all portions of this form may delay analysis. Please fill in this form *LEGIBLY*.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the reverse page of the white report copy.

RELINQUISHED BY:	DATE & TIME:	RECEIVED BY:	DATE & TIME:	SAMPLE CONDITION (lab use only)	
		MBC	04-oct-10 11:30	TEMPERATURE	SAMPLES RECEIVED IN GOOD CONDITION ? YES / NO (If no provide details)
RELINQUISHED BY:	DATE & TIME:	RECEIVED BY:	DATE & TIME:	20	
		MBC	04-oct-10 11:30		

Lab No.				Testing Required														
Hole No.	Sample No.	Depth	Sampling Method	Moisture	Special	Unconfined	Waxed Sample	Atterberg	Proctor: Standard	Gradation	Hydrometer	Consolidation Rebound	Consolidation w/o Rebound	[redacted]			Soil Description
TP1	B	1	B	x					x	x							
TP2	B	1	B	x						x							
	G	2	G	x						x							
	G	3	G	x						x							
	G	4	G	x						x							
TP3	B	1	B	x						x							
TP4	B	1	B	x						x							
[redacted]			B	x						x							
[redacted]			B	x						x							
TP7	B	1	B	x						x							
TP8	B	1	B	x						x							
TP9	B	1	B	x						x							
[redacted]			B	x					x	x							
TP17	B	1	B	x						x							
[redacted]			B	x						x							
[redacted]			B	x						x							
[redacted]			B	x						x							
[redacted]			B	x						x							
[redacted]			B	x						x							
TP24	B	1	B	x						x							
TP25	B	1	B	x						x							
TP26	B	1	B	x						x							
TP27	B	1	B	x					x	x							
TP28	B	1	B	x					x	x							
				24					4	24				8			

Sampling Method
S - Split Spoon
T - Shelby Tube
C - Core Barrel
G - Auger

Field Tech: Sarah Yound

Date Sampled:

Requested By:

Date Received:

Requisition Date: Sep 09/2010

Completion Date:

Client: PWGSC

Project: Fox-E Durban Island Site Investigation

AECOM

99 Commerce Drive, Winnipeg, MB R3P 0Y7 Canada
T (204) 477-5381 F (204) 284-2040 W www.aecom.com

Job Number: 60158564

Task Number:

Location:

N. Ferreira

Appendix E

Geophysics Report







Geophysical Investigation at FOX-E Nunavut

Prepared for
AECOM
Edmonton, Alberta

Submitted by
Associated Geosciences Ltd.
Calgary, Alberta

Associated Geosciences

Associated Geosciences Ltd.
Suite 415, 708 – 11th Avenue S.W.
Calgary, Alberta, Canada T2R 0E4

TEL: 1.403.264.9496
FAX: 1.403.263.7641
www.associatedgeosciences.ca

File: 2010-CGAA.069 Revised

December 2, 2010

AECOM
17007 107th Avenue
Edmonton, Alberta
T5S 1G3

Attention: Nick Oke

Dear Nick;

Associated Geosciences Ltd. (AGL) is pleased to submit the following revised report entitled:

Geophysical Investigation at FOX-E
Nunavut

We would like to express our thanks to AECOM for the opportunity to provide our services in relation to this project.

If you have any questions, or require any additional information, please do not hesitate to contact our office.

Yours sincerely,

ASSOCIATED GEOSCIENCES LTD. PERMIT No. P9454

PROFESSIONAL GEOPHYSICIST ALBERTA
JAMES D. HENDERSON

Jim Henderson, Ph.D., P.Geoph., FEC(H)
Vice President, Geophysical Services

Jeff Unich
Junior Geophysicist

1.0 INTRODUCTION

This report presents the results of a geophysical investigation conducted at the former DEW line station FOX-E on Durban Island Nunavut, Canada, between August 12th and 23rd, 2010. This survey formed one component of environmental assessments being done on the site during the same time. The objective of the survey was to delineate the extents of buried landfills at the site.

All work was done in accordance with Associated Geosciences Ltd. (AGL) proposal AMP476.

1.1 Site Description

FOX-E is located approximately 90 km south-east of Qikiqtarjuaq, on Durban Island, Nunavut. The remains of the DEW line station extend over the majority of the island, primarily focused on the upper plateau of the island and the western beach area. The upper plateau is volcanic rock that is high in cadmium and other natural metallic elements, resulting in a higher than normal magnetic background reading.

There were several areas identified as potential landfills and were primary areas for geophysical investigation. These included the beach area, several landfills north and south of the station area, a landfill and a barrel area to the west of the station, and the construction site. Other areas for investigation were determined on-site.

2.0 OVERHAUSER MAGNETIC GRADIOMETER METHOD

Total field magnetic intensity is a scalar measurement of the Earth's magnetic field. Anomalies within this field are due to two types of magnetism: induced and remnant. Induced magnetism results in the enhancement of the ambient field causing it to act as a magnet. Resulting magnetism is directly proportional to the intensity of the ambient field, and the ability of the material to enhance the local field (magnetic susceptibility). Remnant magnetism is a permanent magnetism of the material that depends on the metallurgical properties, and the thermal, mechanical and magnetic history of the material. It is independent of the field in which it is measured.

In an Overhauser effect magnetometer, the hydrogen-rich fluid in the magnetometer sensor is mixed with an electron-bearing fluid and is subjected to a strong radio-frequency current that polarizes the protons. Protons are then deflected into their plane of precession by a short duration pulse. After a brief pause to allow transient currents to subside, the slowly decaying proton precession signal remains. The precession frequency is measured and transformed to magnetic field units, i.e. nanoTesla (nT). For each measurement, the time, position and magnetic field values are digitally stored. The Overhauser effect results in a greater polarization of the proton-rich fluid, translating to stronger signals with less power consumption than proton precession instruments.

Vertical gradiometer data are the result of the differential total field response of two vertically displaced magnetometer sensors. As such, diurnal drift corrections are generally not required. The sensor separation distance for the present survey was 0.50 m.

In regions where anomalies are separated laterally (i.e. the magnetic response from the buried objects do not overlap) vertical gradient data are generally more sensitive to the boundaries of buried magnetic objects, offer greater information regarding object orientation, and emphasize shallow-occurring objects in comparison to total field data. These differences are somewhat less evident at landfill sites where an assortment of buried metal generally exists. Magnetic gradiometers tend to enhance signal from near-surface sources by reducing that portion of the signal from deeper, likely geologically-sourced, material.

Variations in the Earth's total magnetic field were measured using the GSM-19 Overhauser Effect Gradiometer with integrated GPS. The internal GPS receiver utilized Canadian Differential GPS (CDGPS) corrections to provide sub-meter accuracy.

The total field and vertical magnetic gradient survey data were collected at 1 second intervals as the operator walked over areas suspected of containing buried metallic debris. These areas were either deemed suspicious ahead of time, or deemed suspicious by their appearance or by the presence of debris sticking out of the ground. Within these areas, only disturbed ground was surveyed, and ground with no grading, piling, or vegetation disturbance was assumed to be free of landfills. In areas where magnetic anomalies were identified, the operator surveyed their extents and subsequently flagged their boundaries so that soil sampling could be done.

Part of the output data from the GSM-19 gradiometer is a two-digit QC measure based on the repeatability of each point measured and the length of time each point took to measure. A QC measure of 99 is the highest quality value in this case, and for these data sets, over 95% of the points collected had a QC measure of 99.

The GPS data collected with the magnetic data were also of high quality; there were very few spikes in the locations, which are normally due to moving into areas with less satellite coverage. As a result, very few of the positions had to be re-referenced or removed during processing.

3.0 INTERPRETATION AND DISCUSSION

3.1 FOX-E on Durban, Island

For this survey there were two different areas each with their own background gradient. The upper plateau comprised generally of volcanic rock, which is high in naturally occurring metallic materials, so the threshold criterion for determining the boundary of potential landfills was chosen to be approximately +/- 100 nT. At the beach area the surface material was similar to that of Padloping Island, which didn't possess the same natural metallic materials. At the beach area the threshold criterion for determining the boundary of potential landfills was chosen to be approximately +/- 25 nT. In many cases, the survey areas had surface debris, which affected the apparent lobes in the data. Care was taken to note the location of most of the scattered debris, so that the landfill lobes could more easily be identified. The boundaries of all identified lobes were pinned out and surveyed by AECOM personnel as they were surveyed with the gradiometer.

The main areas covered were the north station, south station, old borrow area, dump A, run off area, construction site, beach landing 1, and beach landing 2. Within these areas, only disturbed ground was surveyed, and ground with no grading, piling, or vegetation disturbance was assumed to be free of landfills. A few other areas were visually identified as potential landfills and were surveyed with the gradiometer.

3.1.1 North Station

The results from the survey at the North Station are displayed in Figure B1. There were four (4) lobes identified at this area, Lobe 1, 2, 3 and 4. The terrain of the area appeared to have been pushed up, as indicated by raised metal debris and rock berms. There was a large amount of surface debris in the area, which may have had an impact on the instrument readings. Lobes 1 through 4 were identified across the survey area, and were up gradient to the suspected end point of bulldozer movement. The combination of the four larger lobes and the number of smaller anomalies suggests the possibility of this area being a landfill site.

3.1.2 South Station

The results from the survey at the South Station are displayed in Figure B2. There were three (3) lobes identified at this area, Lobe 5, 6, and 7. The terrain of the area is much the same as the North Station. Visual evidence suggests the area was bulldozed. Lobe 5 was located on top of a gravel pile that was of noticeably different sediment. Lobe 6 was locate down gradient to Lobe 5 and was located in the tracks of what was suspected to be that of a bulldozer. Lobe 7 was located south of the former Inuit huts and on noticeably different sediment than the surrounding volcanic rock. Surrounding the South Station was a collapsed tower that contained large amounts of metal, which potentially could have affected the instruments' readings. Multiple smaller anomalous bodies in addition to the three lobes identified suggest a possible dump site.

3.1.3 Old Borrow Area

The results from the survey at the Old Borrow Area are displayed in Figure B3. At this location no lobes were identified for sampling. The area was comprised of volcanic rock and sparse amounts of metallic debris. The patterns of the anomalies present, is very similar to the North and South Stations discussed above, which gives the idea of this area possibly being a landfill site.

3.1.4 Berm South Side Road

The results from the survey on the Berm on the South Side of the Road are displayed in Figure B4. This area was added to the survey as the berm was higher than other locations making it a suspicious area for buried debris. Upon investigation of the berm, there was a partially exposed metal wire creating a response in the data. The smaller magnetic anomalies were discovered on the berm. These anomalies were possibly due to small metallic debris beneath the surface of the berm. No sampling was performed by AECOM personnel.

3.1.5 Run-Off Area

The results from the survey at the Run-Off Area are displayed in Figure B5. The Run-off area comprised of glacial creeks and sandy sediment from a past excavation. On the northern side of the survey area large mounds were present and thought to be created by bulldozers. The survey of the area resulted in small magnetic responses, which were not sampled by AECOM personnel. All of the responses can likely be attributed to surface debris.

3.1.6 Barrel Cache North Side of Road

The results from the survey at the Barrel Cache on the North Side of the Road are displayed in Figure B6. The barrel cache was situated on the uphill side of a ridge that sloped into the run-off area described above. There was one (1) lobe identified in this area, labeled Lobe 8. The lobe was located in between five (5) barrels separated from the primary barrel cluster to the east of the survey area. The multiple anomalies in this area have similar features to the north and south station, which leads to the possibility of this being a landfill location.

3.1.7 Dump A

The results from the survey at Dump A are displayed in Figure B7 and Figure B8. Two surveys were performed at this site due to the difficult terrain, which included a cliff to the east of the upper section and a steep gradient to the west of the lower station. Dump A was the location of a very large amount of debris pushed over the edge of a cliff. Figure B7 displays the results from on top of the cliff. Figure B8 displays the results from the slope directly below the cliff. There was a large amount of surface debris at both locations. As a result, no lobes could be identified as the surface debris was likely to cause large interference with the magnetometer.

3.1.8 North Push Site

The results from the survey at the North Push Site are displayed in Figure B9. A large amount of surface debris was located at this site preventing the survey from going in a typical grid pattern. A perimeter survey path allowed for the best coverage of the survey area. The closeness to surface debris most likely affected the magnetometer. No lobes were identified for sampling.

3.1.9 Construction Site

The results from the survey at the Construction Site are displayed in Figure B10. The construction site was located north of the beach and was the first site at FOX-E that contained no volcanic rock. One (1) lobe was identified at this location and was labeled Lobe 9. Lobe 9 was identified on terracing on the northern portion of this site, and was flagged and sampled by AECOM personnel. Large partially buried metallic debris was identified in the vicinity of Lobe 9, which may have caused the response seen in Figure B10. A few smaller anomalies were discovered at this location, thier magnetic response was lower than that of Lobe 9, and therefore were not identified. Other anomalies displayed on Figure B10 were identified where metallic debris was close to the survey path and are most likely the result of surface objects. No other lobes were identified at this site.

3.1.10 Beach Landing 1

The results from the survey at Beach Landing 1 are displayed in Figure B11. Only a portion of the first beach landing site was deemed to have the potential to contain buried debris. The area surveyed contained a lot of surface debris. There were two anomalous responses in this area, that may contain buried metallic debris, but because of the close proximity of the survey path to the surface debris the magnetometer may have been affected possibly creating a magnetic response therefore no lobes were interpreted.

3.1.11 Beach Landing 2

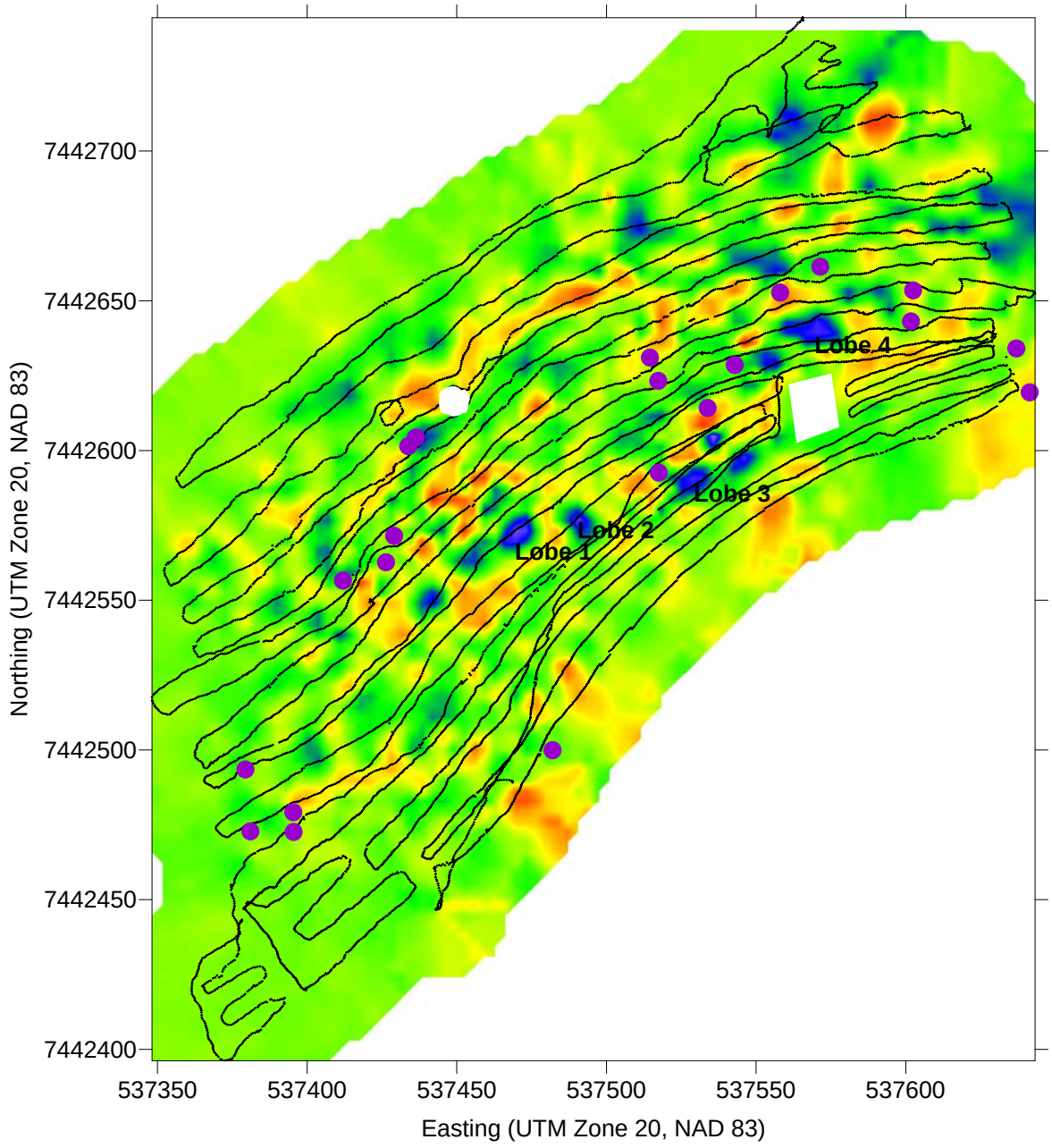
The results from the survey at Beach Landing 2 are displayed in Figure B12 and Figure B13. The second beach landing was divided into two sites as an additional section was added to the survey late in the project. Figure B12 represents a section of the gravel road that allows access to Beach Landing 2. Figure B13 represents the beach landing itself. There was a small amount of surface debris located on the beach landing, which may have affected the results of the magnetometer. No lobes were identified at either of these locations.

3.1.12 Gravel Pit

The results from the survey at the Gravel Pit are displayed in Figure B14. The gravel pit was located north of the construction site on the highest terrace. The area was surveyed after visual inspection showed evidence of vehicle movement, which led to suspicions of buried debris. No lobes were identified at this site.

4.0 CONCLUSION

The magnetic gradient survey conducted at FOX-E on Durban Island, Nunavut, successfully delineated several landfills. Throughout the site at FOX-E, 9 landfill lobes were detected and their boundaries were delineated in the field, which allowed AECOM personnel to survey their boundaries, and sample the soil surrounding them.



1000
900
800
700
600
500
400
300
200
100
0
-100
-200
-300
-400
-500
-600
-700
-800
-900
-1000

Magnetic Gradient (nT/m)

Legend

Metallic Objects

Gps Data Collection Track

Survey Restrictions

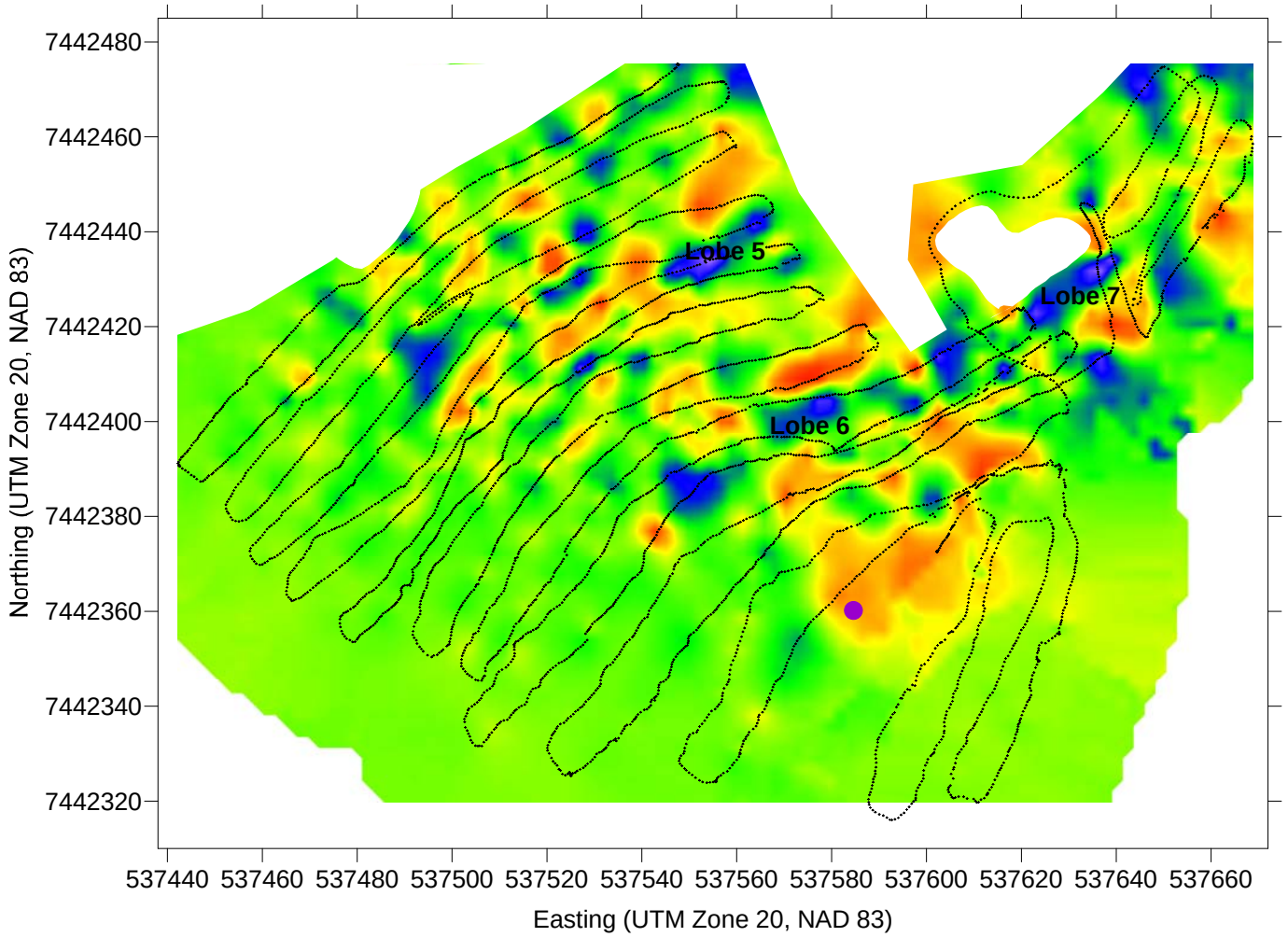
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Magnetic Gradient Survey
FOX-E, Nunavut

Magnetic Gradient Contour Map
North Station

Figure B1
Project: 2010CGAA.069
Date: August 2010

Associated Geosciences



800
700
600
500
400
300
200
100
0
-100
-200
-300
-400
-500
-600
-700
-800

Magnetic Gradient (nT/m)

Legend

Metallic Objects

Gps Data Collection Track

Survey Restrictions

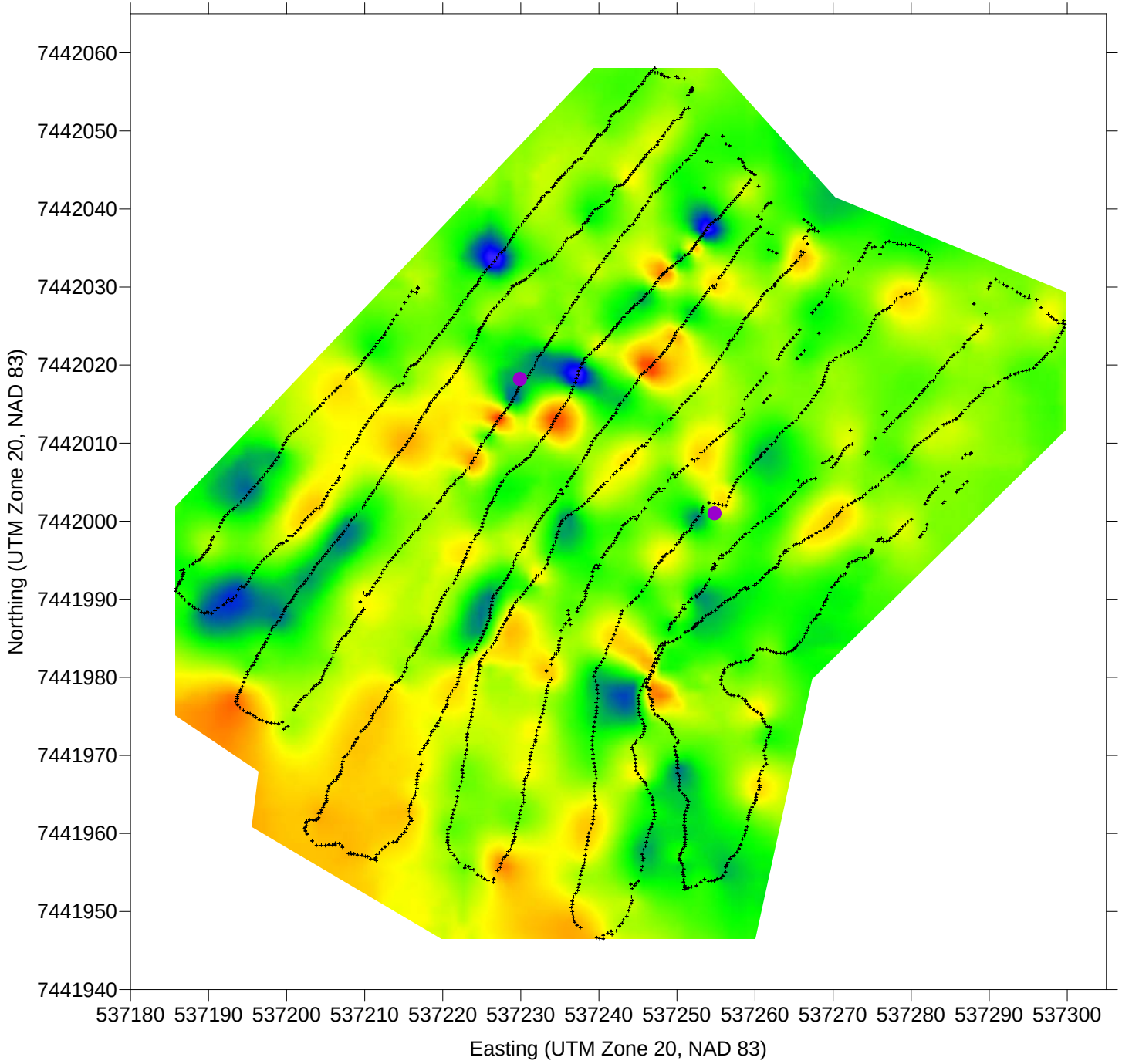
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Magnetic Gradient Survey
FOX-E, Nunavut

Magnetic Gradient Contour Map
South Station

Figure B2
Project: 2010CGAA.069
Date: August 2010

Associated Geosciences



500
450
400
350
300
250
200
150
100
50
0
-50
-100
-150
-200
-250
-300
-350
-400
-450
-500

Magnetic Gradient
(nT/m)

Legend

Metallic Objects

Gps Data Collection Track

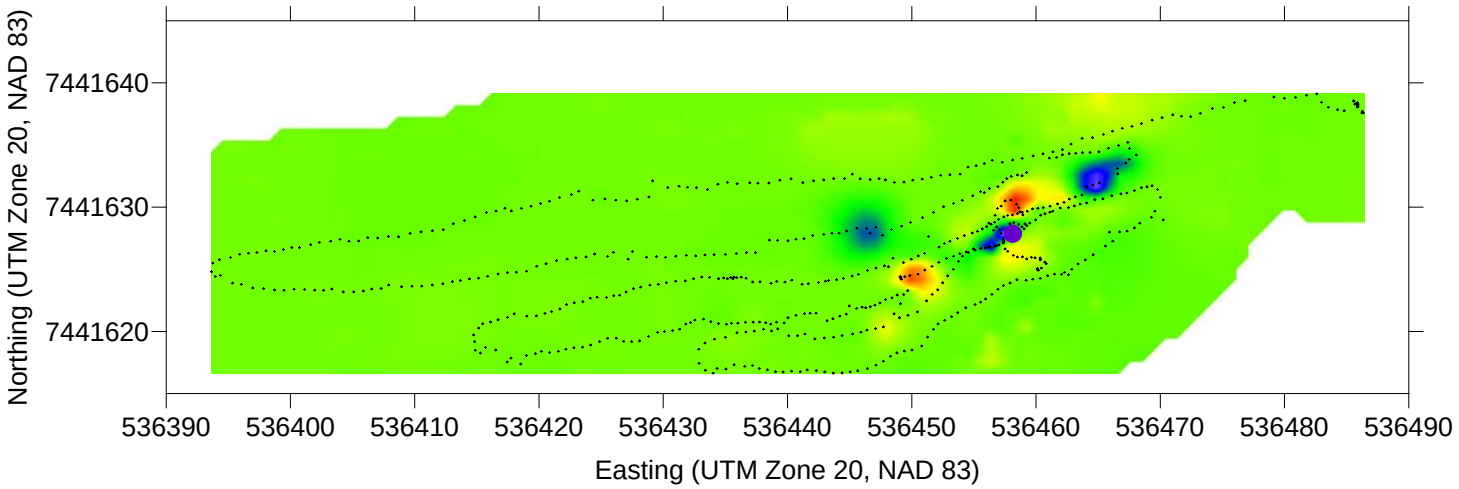
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Magnetic Gradient Survey
FOX-E, Nunavut

Magnetic Gradient Contour Map
Old Borrow Site

Figure B3
Project: 2010CGAA.069
Date: August 2010

Associated Geosciences



500
450
400
350
300
250
200
150
100
50
0
-50
-100
-150
-200
-250
-300
-350
-400
-450
-500

Magnetic Gradient (nT/m)

Legend

Metallic Objects

Gps Data Collection Track

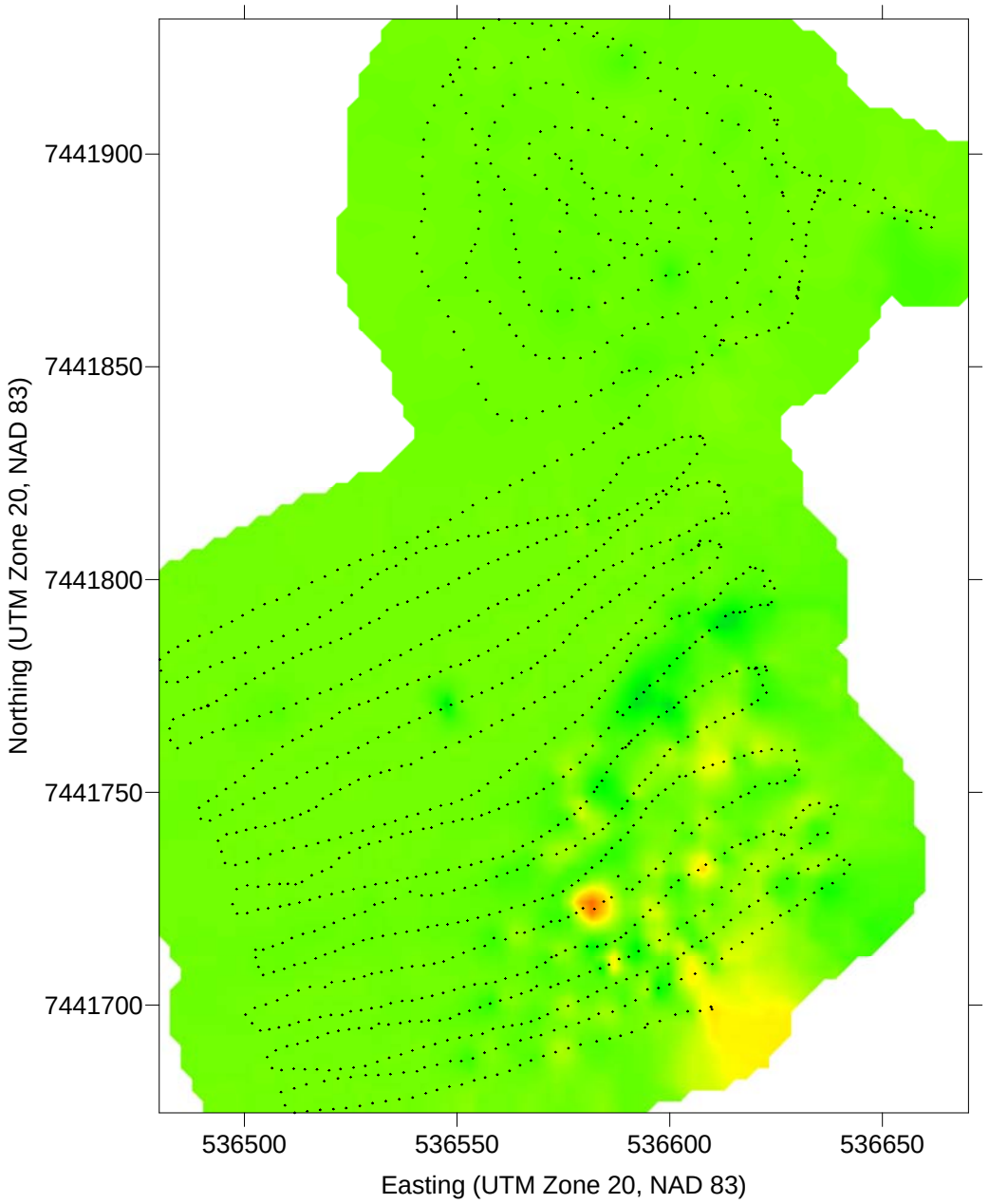
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Magnetic Gradient Survey
FOX-E, Nunavut

Magnetic Gradient Contour Map
Berm South Side Road

Figure B4
Project: 2010CGAA.069
Date: August 2010

Associated Geosciences



500
450
400
350
300
250
200
150
100
50
0
-50
-100
-150
-200
-250
-300
-350
-400
-450
-500

Magnetic Gradient
(nT/m)

Legend

Metallic Objects

Gps Data Collection Track

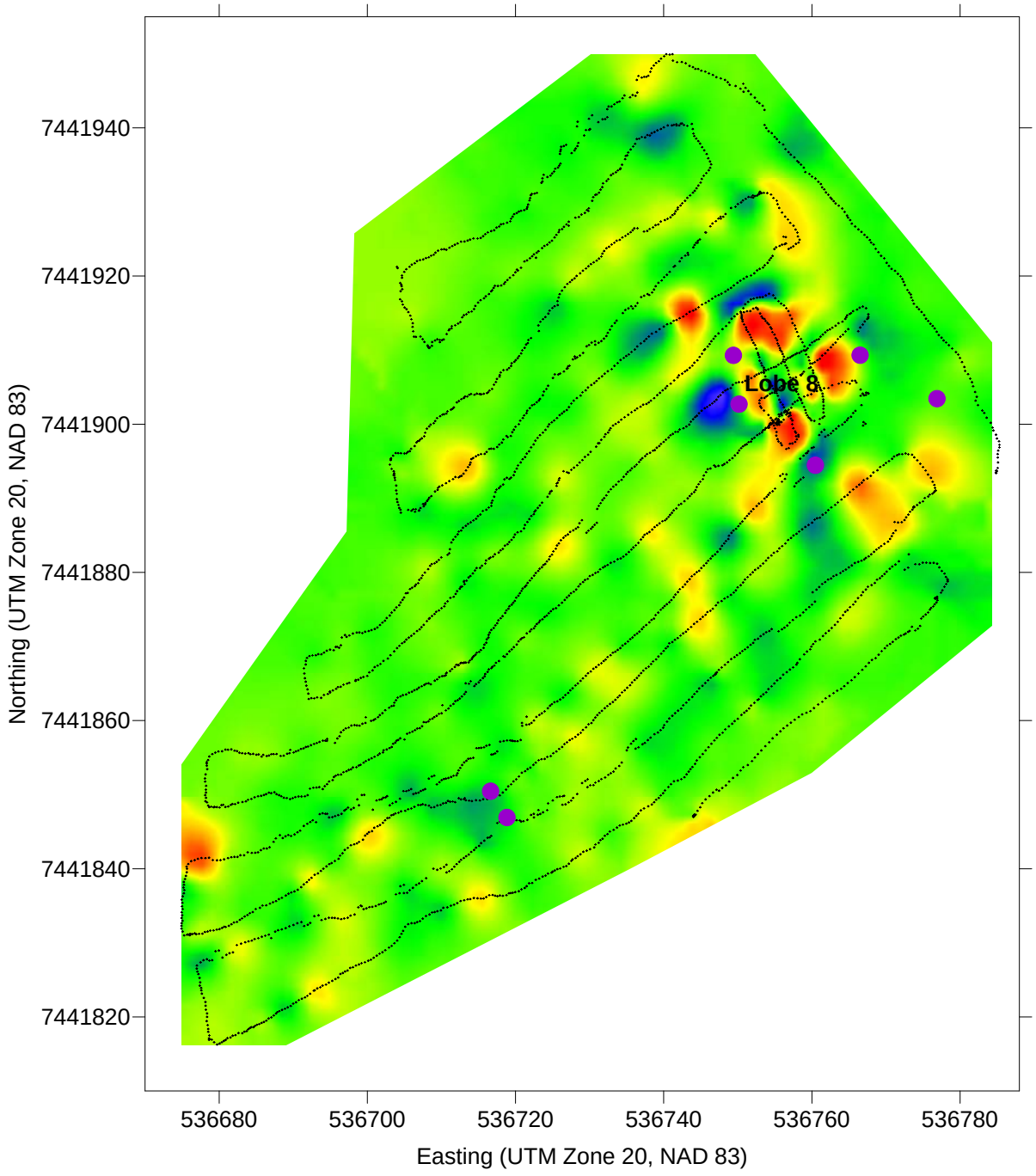
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Magnetic Gradient Survey
FOX-E, Nunavut

Magnetic Gradient Contour Map
Run-Off Area

Figure B5
Project: 2010CGAA.069
Date: August 2010

Associated Geosciences



700
650
600
550
500
450
400
350
300
250
200
150
100
50
0
-50
-100
-150
-200
-250
-300
-350
-400
-450
-500
-550
-600
-650
-700

Magnetic Gradient
(nT/m)

Legend

Metallic Objects

Gps Data Collection Track

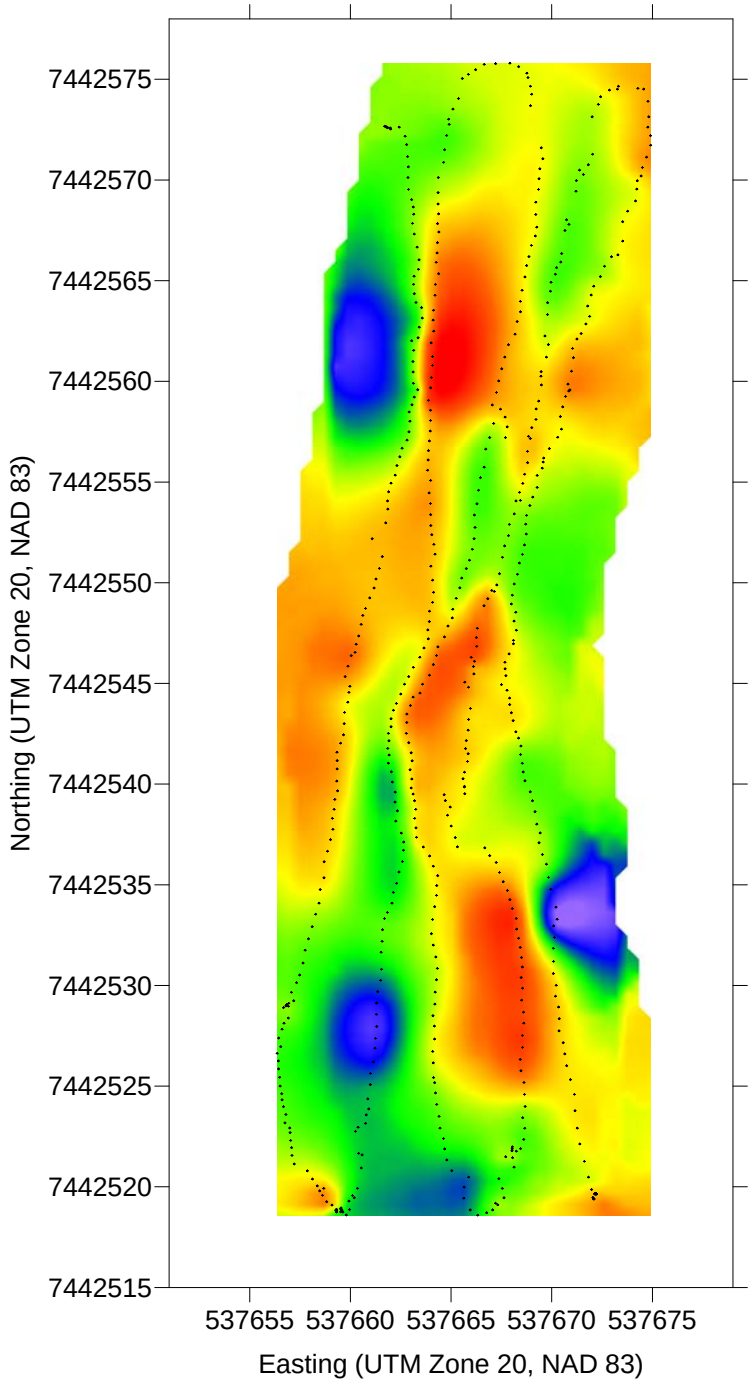
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Magnetic Gradient Survey
FOX-E, Nunavut

Magnetic Gradient Contour Map
Barrel Cash North Side of Road

Figure B6
Project: 2010CGAA.069
Date: August 2010

Associated Geosciences



500
450
400
350
300
250
200
150
100
50
0
-50
-100
-150
-200
-250
-300
-350
-400
-450
-500

Magnetic Gradient
(nT/m)

Legend

Metallic Objects

Gps Data Collection Track

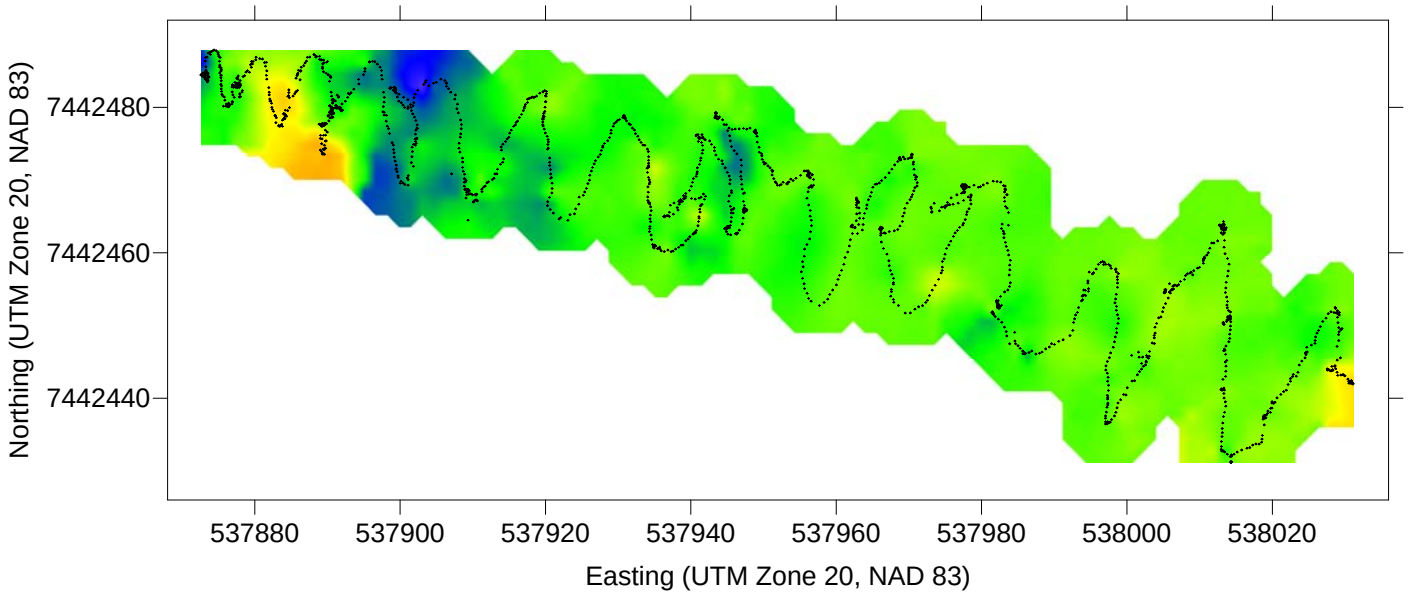
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Magnetic Gradient Survey
FOX-E, Nunavut

Magnetic Gradient Contour Map
Dump A

Figure B7
Project: 2010CGAA.069
Date: August 2010

Associated Geosciences



500
450
400
350
300
250
200
150
100
50
0
-50
-100
-150
-200
-250
-300
-350
-400
-450
-500

Magnetic Gradient
(nT/m)

Legend

Metallic Objects

Gps Data Collection Track

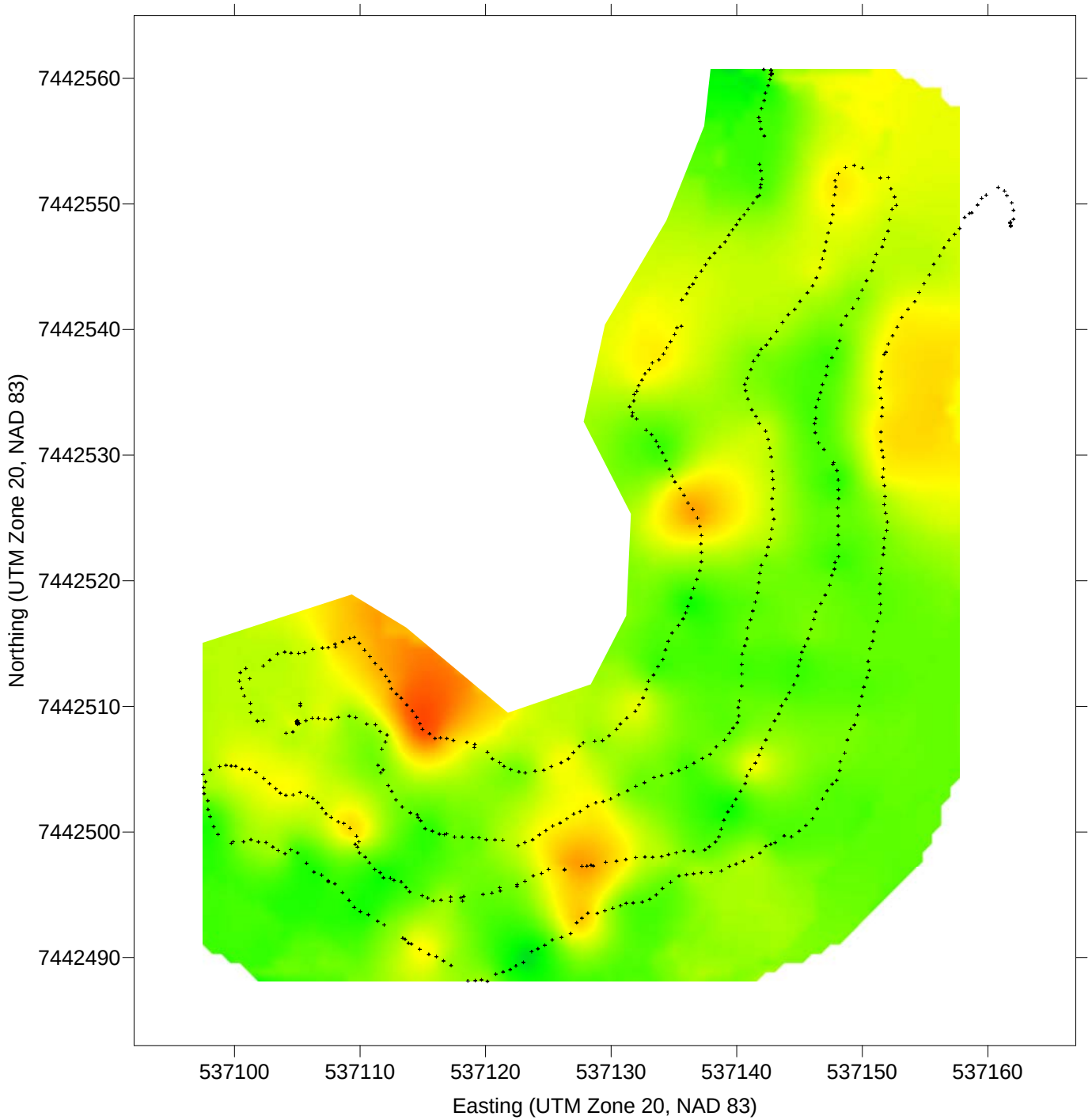
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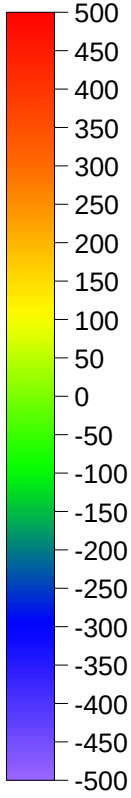
Magnetic Gradient Survey
Fox-E, Nunavut

Magnetic Gradient Contour Map
Dump A

Figure B8
Project: 2010CGAA.069
Date: August 2010

Associated Geosciences





Magnetic Gradient
(nT/m)

Legend

Metallic Objects

Gps Data Collection Track

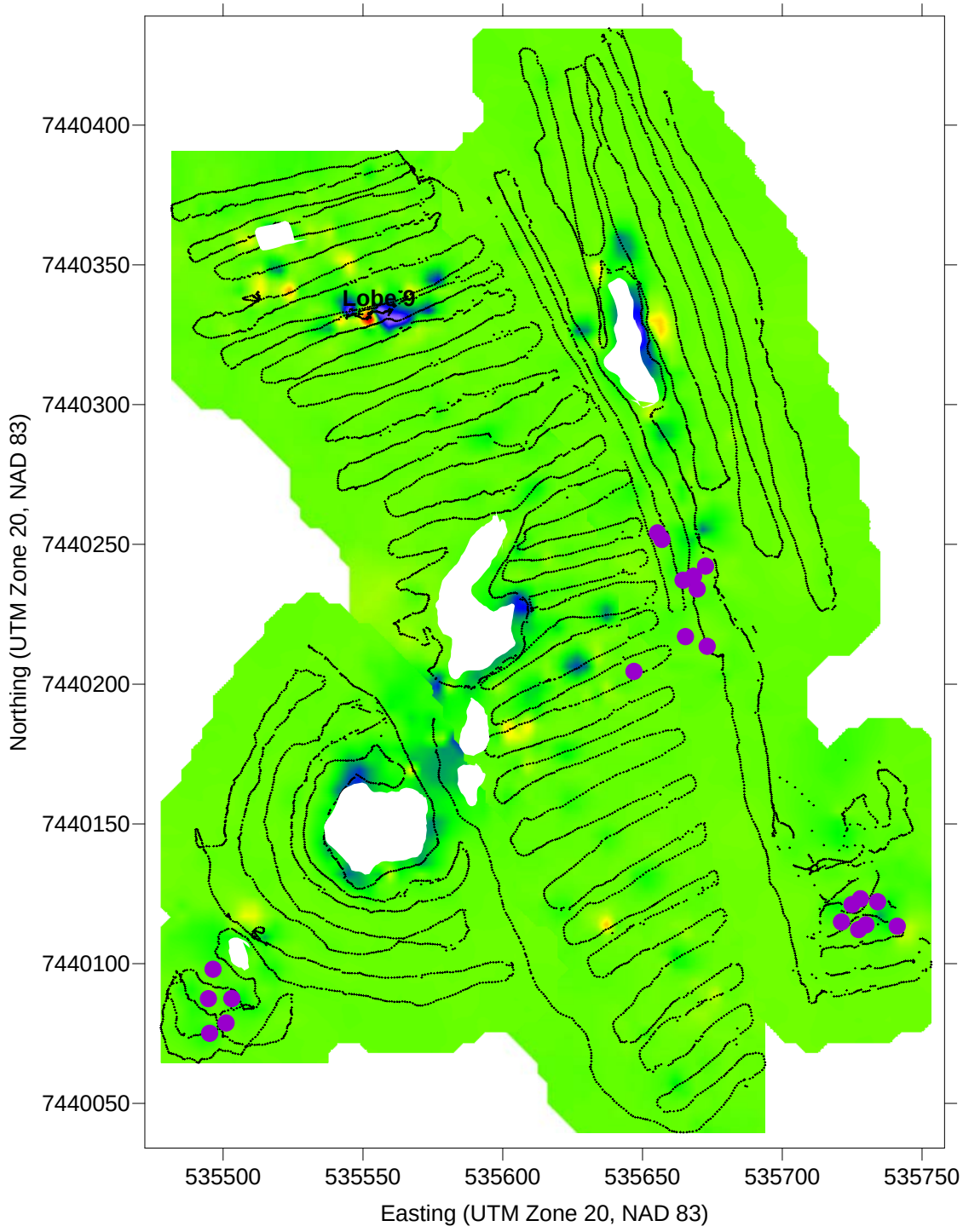
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Magnetic Gradient Survey
FOX-E, Nunavut

Magnetic Gradient Contour Map
North Push Site

Figure B9
Project: 2010CGAA.069
Date: August 2010

Associated Geosciences



400
350
300
250
200
150
100
50
0
-50
-100
-150
-200
-250
-300
-350
-400

Magnetic Gradient
(nT/m)

Legend

Metallic Objects

Gps Data Collection Track

Metallic Debris Piles

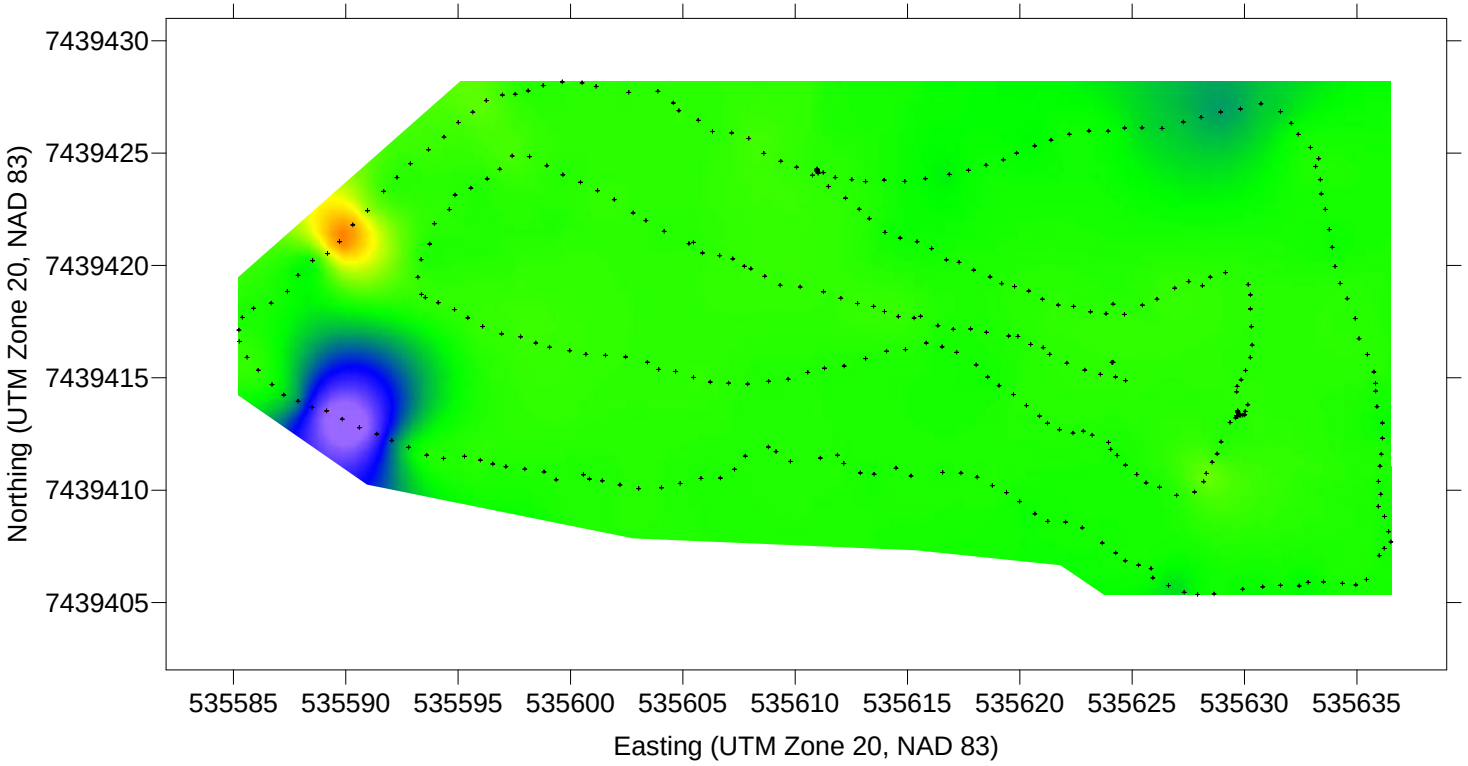
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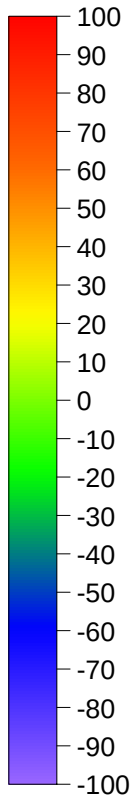
Magnetic Gradient Survey
FOX-E, Nunavut

Magnetic Gradient Contour Map
Construction Site

Figure B10
Project: 2010CGAA.069
Date: August 2010

Associated Geosciences





Magnetic Gradient (nT/m)

Legend

Metallic Objects

Gps Data Collection Track

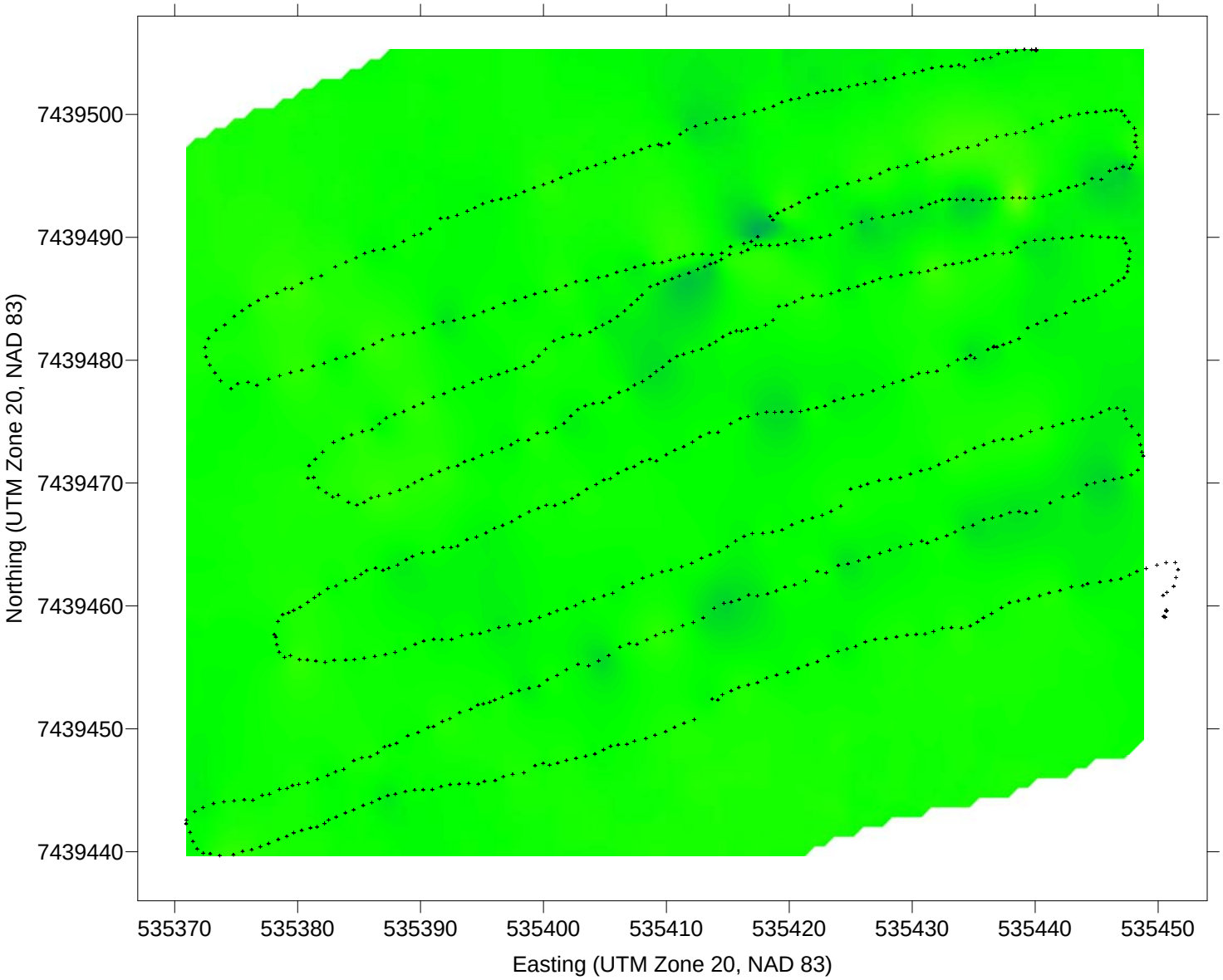
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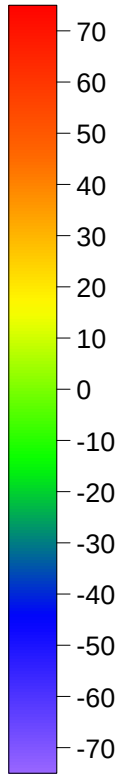
Magnetic Gradient Survey
FOX-E, Nunavut

Magnetic Gradient Contour Map
Beach Landing 1

Figure B11
Project: 2010CGAA.069
Date: August 2010

Associated Geosciences





Magnetic Gradient
(nT/m)

Legend

Metallic Objects

Gps Data Collection Track

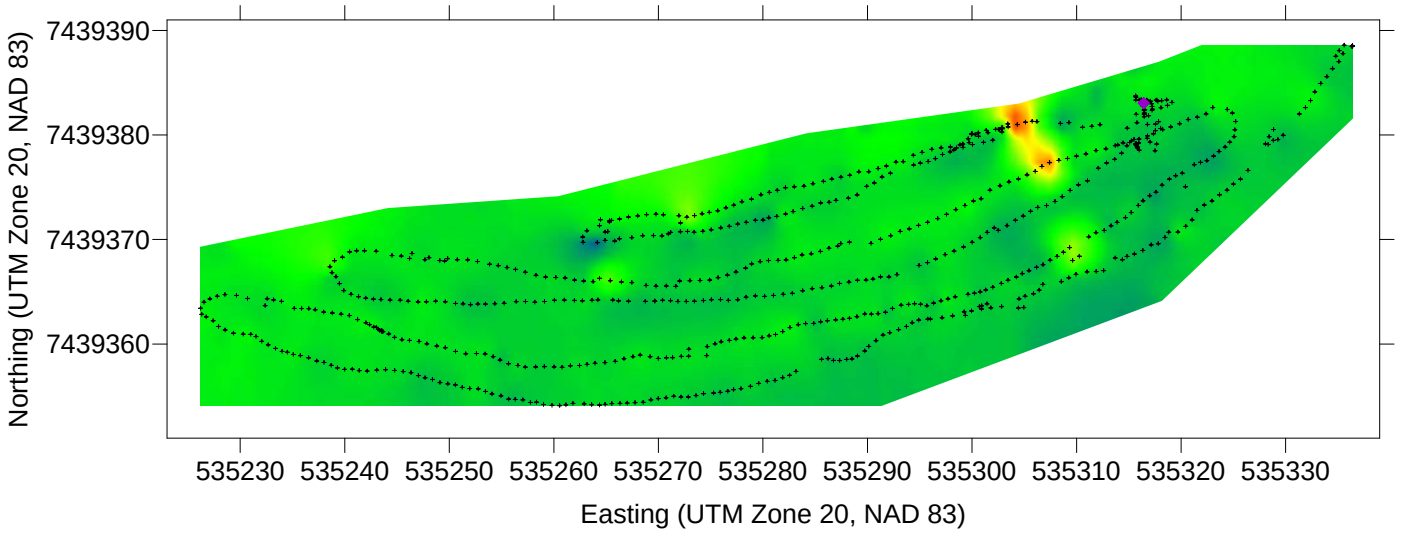
Scale 1:78

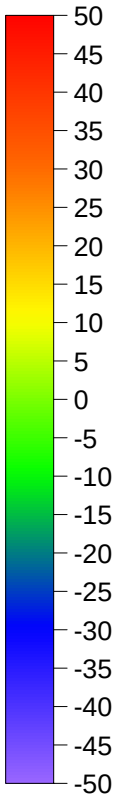
Magnetic Gradient Survey
FOX-E, Nunavut

Magnetic Gradient Contour Map
Beach Landing 2

Figure B12
Project: 2010CGAA.069
Date: August 2010

Associated Geosciences





Magnetic Gradient
(nT/m)

Legend

Metallic Objects

Gps Data Collection Track

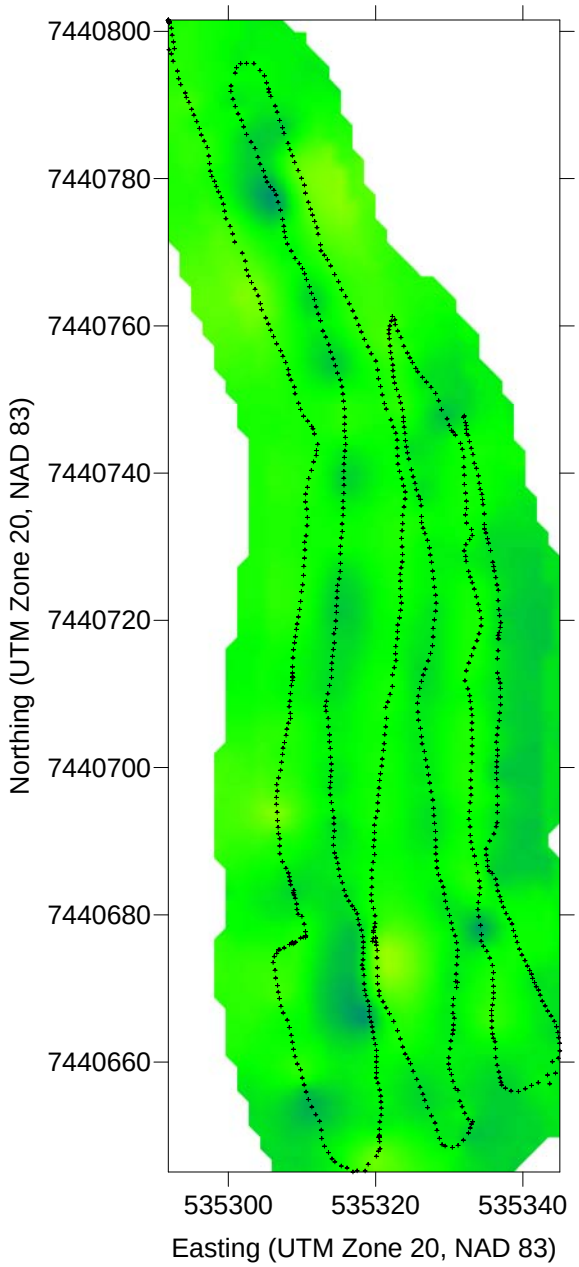
Scale 1:723

Magnetic Gradient Survey
FOX-E, Nunavut

Magnetic Gradient Contour Map
Beach Landing 2

Figure B13
Project: 2010CGAA.069
Date: August 2010

Associated Geosciences





Magnetic Gradient
(nT/m)

Legend

Metallic Objects

Gps Data Collection Track

Scale 1:1028

Magnetic Gradient Survey
FOX-E, Nunavut

Magnetic Gradient Contour Map
Gravel Pit

Figure B14
Project: 2010CGAA.069
Date: August 2010

Associated Geosciences

Appendix F

Geotechnical Test Pit Logs

PROJECT: FOX-E Durban Island Site Investigation	CLIENT: PWGSC	TESTHOLE NO: **TP-01**
LOCATION: BA-1D N 7,441,509.7 E 536,624.8		PROJECT NO.: 60158564
CONTRACTOR:	METHOD: Hand Excavated (Shovel)	ELEVATION (m): 587.96

SAMPLE TYPE: ■ GRAB ▥ SHELBY TUBE ☒ SPLIT SPOON ▤ BULK ⧄ NO RECOVERY ◧ CORE

DEPTH (m)	USC	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	PLASTIC / M.C. / LIQUID (10 20 30 40)	COMMENTS	ELEVATION (m)
0	GP		GRAVEL and SAND - some cobbles, trace organics, poorly graded, damp, gravel to cobble fraction ~ 75 % rounded, ~ 20 % subrounded, ~ 5 % subangular, porous volcanics					
	SM		SAND - some silt, some gravel, fine to coarse grained, medium to dark brown, moist				Bulk Sample Gradation with Oversize Estimate: Silt/Clay ~ 7.4-7.6 % Sand ~ 64.9-66.9 % Gravel ~ 22.7-23.4 % 100-150mm ~ 1-2.5 % > 150mm ~ 1-2.5 %	
	SW		SAND - gravelly, trace silt, trace cobbles, platy (mica-rich) and subrounded (silica-rich), fine to coarse grained, well graded, medium to dark brown, moist, gravel to cobble fraction ~ 75 % subangular to ~ 25 % subrounded		1			
			END OF TESTPIT (0.61 m) - due to refusal at bedrock					
1								587
2								586

Note

Lab Results for Bulk Sample:
gravel = 23.9 %, sand = 68.3 %, silt/clay = 7.8 %
SPMDD = 1,849 kg/m ^{3}, OMC = 14.8 %

AECOM	LOGGED BY: SY	COMPLETION DEPTH: 0.61 m
	REVIEWED BY: NF	COMPLETION DATE: 8/13/10
	PROJECT ENGINEER: Nick Oke	Page 1 of 1

LOG OF TESTHOLE 60158564_DURBAN_GEOTECH_TESTPIT LOGS.GPJ UMA.GDT 10/21/10

PROJECT: FOX-E Durban Island Site Investigation	CLIENT: PWGSC	TESTHOLE NO: **TP-02**
LOCATION: BA-1B N 7,441,368.1 E 536,519.6		PROJECT NO.: 60158564
CONTRACTOR:	METHOD: Hand Excavated (Shovel)	ELEVATION (m): 584.115

SAMPLE TYPE: GRAB | SHELBY TUBE | SPLIT SPOON | BULK | NO RECOVERY | CORE

DEPTH (m)	USC	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	PLASTIC / M.C. / LIQUID (10 20 30 40)	COMMENTS	ELEVATION (m)
0	GP		GRAVEL and SAND - some cobbles, trace organics, poorly graded, damp, gravel to cobble fraction ~ 50 % subangular to ~ 50 % subrounded					
			SAND - silty, some gravel, trace cobbles, fine to coarse grained, medium brown, moist, gravel to cobble fraction ~ 75 % subangular to ~ 25 % subrounded				Bulk Sample Gradation with Oversize Estimate:	584
	SM		Lab Results for Grab Sample 2 (0.1 m to 0.3 m): gravel = 15.1 %, sand = 53.9 %, silt/clay = 31.0 %				Silt/Clay ~ 11.2 % Sand ~ 41.3 % Gravel ~ 37.5 % 100-150mm ~ 6 % > 150mm ~ 4 %	
			SAND and GRAVEL - some cobbles, some silt, sand mica and quartz-rich, fine to coarse grained, well graded, medium brown with trace oxidation, moist, gravel to cobble fraction ~ 75 % subangular to ~ 25 % subrounded					
	SW		Lab Results for Grab Sample 3 (0.3 m to 1.1 m): gravel = 35.6 %, sand = 51.4 %, silt/clay = 13.0 %		1			
1								
			GRAVEL - sandy, trace silt, poorly graded, with some fractured, weathered bedrock, mica-rich platy cementation, bedrock easily fractured with shovel					583
	GP		Lab Results for Grab Sample 4 (1.1 m to 1.3 m): gravel = 73.4 %, sand = 20.8 %, silt/clay = 5.8 %					
			END OF TESTPIT (1.37 m) - due to refusal at bedrock					
			Note					
			Lab Results for Bulk Sample: gravel = 41.7 %, sand = 45.9 %, silt/clay = 12.4 %					
2								

AECOM

LOGGED BY: SY	COMPLETION DEPTH: 1.37 m
REVIEWED BY: NF	COMPLETION DATE: 8/13/10
PROJECT ENGINEER: Nick Oke	Page 1 of 1

LOG OF TESTHOLE 60158564_DURBAN_GEOTECH_TESTPIT LOGS.GPJ UMA.GDT 10/21/10

PROJECT: FOX-E Durban Island Site Investigation	CLIENT: PWGSC	TESTHOLE NO: **TP-03**
LOCATION: BA-1A N 7,441,387.0 E 536,368.9		PROJECT NO.: 60158564
CONTRACTOR:	METHOD: Hand Excavated (Shovel)	ELEVATION (m): 579.549

SAMPLE TYPE ■ GRAB ▥ SHELBY TUBE ☒ SPLIT SPOON ▤ BULK ⧄ NO RECOVERY ◧ CORE

DEPTH (m)	USC	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	PLASTIC / M.C. / LIQUID (10 20 30 40)	COMMENTS	ELEVATION (m)
0	GP		GRAVEL and COBBLES - some sand, trace organics, poorly graded, damp, ~ 50 % subangular to ~ 50 % subrounded					
	SM		SAND and SILT - cobbly, some gravel, fine to coarse grained sand, medium brown, wet, gravel to cobble fraction ~ 80 % subangular to ~ 20 % subrounded				Bulk Sample Gradation with Oversize Estimate: Silt/Clay ~ 14.4 % Sand ~ 36.4 % Gravel ~ 35.3 % 100-150mm ~ 10 % > 150mm ~ 4 %	
	SW		SAND and GRAVEL - some silt, some cobbles, fine to coarse grained, well graded, medium brown, wet, gravel to cobble fraction ~ 75 % subangular to ~ 25 % subrounded - saturated, seepage		1			579
			END OF TESTPIT (0.69 m) - due to seepage and sloughing					
1			Note Lab Results for Bulk Sample: gravel = 41.0 %, sand = 42.3 %, silt/clay = 16.7 % SPMDD = 2,104 kg/m ^{3}, OMC = 8.9 %					578
2								

	LOGGED BY: SY	COMPLETION DEPTH: 0.69 m
AECOM	REVIEWED BY: NF	COMPLETION DATE: 8/13/10
	PROJECT ENGINEER: Nick Oke	Page 1 of 1

LOG OF TESTHOLE 60158564_DURBAN_GEOTECH_TESTPIT LOGS.GPJ UMA.GDT 10/21/10

PROJECT: FOX-E Durban Island Site Investigation	CLIENT: PWGSC	TESTHOLE NO: **TP-04**
LOCATION: BA-1B N 7,441,234.5 E 536,233.7		PROJECT NO.: 60158564
CONTRACTOR:	METHOD: Hand Excavated (Shovel)	ELEVATION (m): 591.085

SAMPLE TYPE: GRAB | SHELBY TUBE | SPLIT SPOON | BULK | NO RECOVERY | CORE

DEPTH (m)	USC	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	PLASTIC / M.C. / LIQUID (10 20 30 40)	COMMENTS	ELEVATION (m)
0	GW		GRAVEL and COBBLES - some organics, well graded, damp, ~ 75 % subangular to ~ 25 % subrounded					591
	SM		SAND - cobbly, some gravel, some silt, fine to coarse grained, medium brown, moist, gravel to cobble fraction ~ 40 % subangular to ~ 60 % subrounded				Bulk Sample Gradation with Oversize Estimate: Silt/Clay ~ 14.9 % Sand ~ 35.1 % Gravel ~ 32.0 % 100-150mm ~ 10 % > 150mm ~ 8 %	
			SAND and GRAVEL - some silt, some cobbles, fine to coarse grained, well graded, medium brown, wet, gravel to cobble fraction ~ 50 % subangular to ~ 50 % subrounded		1			
	SW		- saturated, seepage					
1			END OF TESTPIT (1.10 m) - due to seepage and sloughing					590
			Note Lab Results for Bulk Sample: gravel = 39.0 %, sand = 42.8 %, silt/clay = 18.2 %					
2								

AECOM

LOGGED BY: SY	COMPLETION DEPTH: 1.10 m
REVIEWED BY: NF	COMPLETION DATE: 8/14/10
PROJECT ENGINEER: Nick Oke	Page 1 of 1

LOG OF TESTHOLE 60158564_DURBAN_GEOTECH_TESTPIT LOGS.GPJ UMA.GDT 10/21/10

PROJECT: FOX-E Durban Island Site Investigation	CLIENT: PWGSC	TESTHOLE NO: **TP-05**
LOCATION: BA-2 N 7,441,669.5 E 536,486.8		PROJECT NO.: 60158564
CONTRACTOR:	METHOD: Hand Excavated (Shovel)	ELEVATION (m): 576.425

SAMPLE TYPE ■ GRAB ▥ SHELBY TUBE ☒ SPLIT SPOON ▤ BULK ⧄ NO RECOVERY ◧ CORE

DEPTH (m)	USC	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	PLASTIC / M.C. / LIQUID (10 20 30 40)	COMMENTS	ELEVATION (m)
0	PEAT		PEAT - sandy, damp					
			SAND - some gravel, trace fines, biotite-rich, platy, fine to medium grained, well graded, brown to black with some oxidation, damp, gravel fraction ~ 20 % angular, ~ 55 % subangular to ~ 25 % subrounded				Oversize Gradation Estimate: 0-100mm ~ 100 % 100-150mm ~ 0 % > 150mm ~ 0 %	
	SW				1	●		576
			- moist					
			END OF TESTPIT (0.85 m) - due to refusal on frozen ground					
1								
			Note Lab Results for Bulk Sample: gravel = 19.1 %, sand = 75.5 %, silt/clay = 5.4 %					575
2								

AECOM

LOGGED BY: SY	COMPLETION DEPTH: 0.85 m
REVIEWED BY: NF	COMPLETION DATE: 8/14/10
PROJECT ENGINEER: Nick Oke	Page 1 of 1

LOG OF TESTHOLE 60158564_DURBAN_GEOTECH_TESTPIT LOGS.GPJ UMA.GDT 10/21/10

PROJECT: FOX-E Durban Island Site Investigation	CLIENT: PWGSC	TESTHOLE NO: **TP-06**
LOCATION: BA-2 N 7,441,623.6 E 536,347.8		PROJECT NO.: 60158564
CONTRACTOR:	METHOD: Hand Excavated (Shovel)	ELEVATION (m): 572.339

SAMPLE TYPE ■ GRAB ▥ SHELBY TUBE ☒ SPLIT SPOON ▤ BULK ⊘ NO RECOVERY ◧ CORE

DEPTH (m)	USC	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	PLASTIC M.C. LIQUID (10 20 30 40)	COMMENTS	ELEVATION (m)
0	GW		GRAVEL and COBBLES - some organics, well graded, damp, ~ 5 % subrounded, ~ 20 % angular, ~ 75 % subangular					
			SAND - silty, some gravel, some cobbles, fine to coarse grained, medium brown, moist, gravel to cobble fraction ~ 80 % subangular, ~ 15 % subrounded to ~ 5 % angular				Bulk Sample Gradation with Oversize Estimate: Silt/Clay ~ 17.2 % Sand ~ 48.2 % Gravel ~ 14.6 % 100-150mm ~ 15 % > 150mm ~ 5 %	
	SM		- gravel to cobble fraction ~ 80 % subangular, ~ 15 % subrounded to ~ 5 % angular					572
			SAND - some cobbles, some gravel, trace silt, fine to medium grained, well graded, dark greyish brown, wet		1			
	SW							
1			- saturated, seepage					
			END OF TESTPIT (1.28 m) - due to refusal on frozen ground					571
			Note Lab Results for Bulk Sample: gravel = 18.3 %, sand = 60.2 %, silt/clay = 21.5 %					
2								

AECOM

LOGGED BY: SY	COMPLETION DEPTH: 1.28 m
REVIEWED BY: NF	COMPLETION DATE: 8/14/10
PROJECT ENGINEER: Nick Oke	Page 1 of 1

LOG OF TESTHOLE 60158564_DURBAN_GEOTECH_TESTPIT LOGS.GPJ UMA.GDT 10/21/10

PROJECT: FOX-E Durban Island Site Investigation	CLIENT: PWGSC	TESTHOLE NO: **TP-07**
LOCATION: N 7,441,833.4 E 536,499.7		PROJECT NO.: 60158564
CONTRACTOR:	METHOD: Hand Excavated (Shovel)	ELEVATION (m): 566.572

SAMPLE TYPE: GRAB | SHELBY TUBE | SPLIT SPOON | BULK | NO RECOVERY | CORE

DEPTH (m)	USC	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	PLASTIC / M.C. / LIQUID (10 20 30 40)	COMMENTS	ELEVATION (m)
0	GW		GRAVEL and COBBLES - trace organics, well graded, moist, ~ 50 % subrounded to 50 % subangular					
			SAND - gravelly, silty, trace cobbles, fine to coarse grained, medium brown, wet				Bulk Sample Gradation with Oversize Estimate: Silt/Clay ~ 23.0 % Sand ~ 40.2 % Gravel ~ 31.8 % 100-150mm ~ 2 % > 150mm ~ 3 %	
	SM				1			
			- saturated, seepage					566
			END OF TESTPIT (0.85 m) - due to seepage and sloughing					
1			Note Lab Results for Bulk Sample: gravel = 33.5 %, sand = 42.3 %, silt/clay = 24.2 %					565
2								

AECOM

LOGGED BY: SY	COMPLETION DEPTH: 0.85 m
REVIEWED BY: NF	COMPLETION DATE: 8/15/10
PROJECT ENGINEER: Nick Oke	Page 1 of 1

LOG OF TESTHOLE 60158564_DURBAN_GEOTECH_TESTPIT LOGS.GPJ UMA.GDT 10/21/10

PROJECT: FOX-E Durban Island Site Investigation	CLIENT: PWGSC	TESTHOLE NO: **TP-08**
LOCATION: LF-1 N 7,442,217.2 E 537,196.6		PROJECT NO.: 60158564
CONTRACTOR:	METHOD: Hand Excavated (Shovel)	ELEVATION (m): 634.584

SAMPLE TYPE ■ GRAB ▥ SHELBY TUBE ☒ SPLIT SPOON ▤ BULK ⧄ NO RECOVERY ◧ CORE

DEPTH (m)	USC	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	PLASTIC / M.C. / LIQUID (10 20 30 40)	COMMENTS	ELEVATION (m)
0	SM		SAND - silty, gravelly, some cobbles, some boulders, sand fine to coarse grained, medium brown, damp to moist, gravel to boulder fraction subrounded to subangular, porous volcanics, light grey		1		Bulk Sample Gradation with Oversize Estimate: Silt/Clay ~ 9.8 % Sand ~ 16.0 % Gravel ~ 9.2 % 100-150mm ~ 15 % > 150mm ~ 50 % Maximum boulder size in testpit vicinity is ~ 0.5 m	634
			- wet					
			- saturated, seepage					
1			END OF TESTPIT (0.94 m) - due to seepage					633
			Note Lab Results for Bulk Sample: gravel = 26.4 %, sand = 45.6 %, silt/clay = 28.0 %					
2								

LOG OF TESTHOLE 60158564_DURBAN_GEOTECH_TESTPIT LOGS.GPJ UMA.GDT 10/21/10

AECOM

LOGGED BY: SY	COMPLETION DEPTH: 0.94 m
REVIEWED BY: NF	COMPLETION DATE: 8/16/10
PROJECT ENGINEER: Nick Oke	Page 1 of 1

PROJECT: FOX-E Durban Island Site Investigation	CLIENT: PWGSC	TESTHOLE NO: **TP-09**
LOCATION: BA-4 N 7,442,304.5 E 537,120.4		PROJECT NO.: 60158564
CONTRACTOR:	METHOD: Hand Excavated (Shovel)	ELEVATION (m): 627.374

SAMPLE TYPE ■ GRAB ▥ SHELBY TUBE ☒ SPLIT SPOON ▤ BULK ⧄ NO RECOVERY ◧ CORE

DEPTH (m)	USC	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	PLASTIC / M.C. / LIQUID (10 20 30 40)	COMMENTS	ELEVATION (m)
0	SM		SAND - silty, some gravel, some boulders, some cobbles, fine to coarse grained, medium brown, damp to moist, gravel to boulder fraction subangular, porous volcanics, light grey to light brown				Bulk Sample Gradation with Oversize Estimate: Silt/Clay ~ 15.0 % Sand ~ 24.0 % Gravel ~ 6.0 % 100-150mm ~ 15 % > 150mm ~ 40 % Maximum boulder size in testpit vicinity is ~ 0.9 m	627
					1	●		
	SP		SAND - some boulders, some cobbles, some silt, trace gravel, subangular, light grey to light brown, wet - saturated, seepage					
1			END OF TESTPIT (1.01 m) - due to seepage and sloughing <u>Note</u> Lab Results for Bulk Sample: gravel = 13.4 %, sand = 53.3 %, silt/clay = 33.3 %					626
2								

AECOM

LOGGED BY: SY	COMPLETION DEPTH: 1.01 m
REVIEWED BY: NF	COMPLETION DATE: 8/16/10
PROJECT ENGINEER: Nick Oke	Page 1 of 1

LOG OF TESTHOLE 60158564_DURBAN_GEOTECH_TESTPIT LOGS.GPJ UMA.GDT 10/21/10

PROJECT: FOX-E Durban Island Site Investigation	CLIENT: PWGSC	TESTHOLE NO: **TP-10**
LOCATION: LF-1 N 7,442,363.0 E 537,210.2		PROJECT NO.: 60158564
CONTRACTOR:	METHOD: Hand Excavated (Shovel)	ELEVATION (m): 635.785

SAMPLE TYPE ■ GRAB ▥ SHELBY TUBE ☒ SPLIT SPOON ▤ BULK ⊘ NO RECOVERY ◧ CORE

DEPTH (m)	USC	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	COMMENTS	ELEVATION (m)
0	SM		SAND - cobbly, some boulders, some silt, trace gravel, sand fine to coarse grained, medium brown, damp to moist, gravel to boulder fraction subangular, porous volcanics, light grey to light brown			Oversize Gradation Estimate: 0-100mm ~ 40 % 100-150mm ~ 20 % > 150mm ~ 40 %	
			- wet				
			- saturated, seepage				635
			END OF TESTPIT (0.84 m) - due to seepage and sloughing				
1							634
2							

LOG OF TESTHOLE 60158564_DURBAN_GEOTECH_TESTPIT LOGS.GPJ UMA.GDT 10/21/10

AECOM

LOGGED BY: SY	COMPLETION DEPTH: 0.84 m
REVIEWED BY: NF	COMPLETION DATE: 8/16/10
PROJECT ENGINEER: Nick Oke	Page 1 of 1

PROJECT: FOX-E Durban Island Site Investigation	CLIENT: PWGSC	TESTHOLE NO: **TP-11**
LOCATION: LF-1 N 7,442,268.1 E 537,273.9		PROJECT NO.: 60158564
CONTRACTOR:	METHOD: Hand Excavated (Shovel)	ELEVATION (m): 640.832

SAMPLE TYPE ■ GRAB ▥ SHELBY TUBE ☒ SPLIT SPOON ▤ BULK ⊘ NO RECOVERY ◧ CORE

DEPTH (m)	USC	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	COMMENTS	ELEVATION (m)
0	SM		SAND - silty, some cobbles, some gravel, fine to medium grained, medium brown, moist, gravel to cobble fraction ~ 50 % subangular to ~ 50 % subrounded, porous volcanics			Oversize Gradation Estimate: 0-100mm ~ 65 % 100-150mm ~ 30 % > 150mm ~ 5 %	
			- cobbly, some silt, trace boulders, wet, gravel to cobble fraction ~ 25 % subangular to ~ 75 % subrounded				
			- saturated, seepage				640
			END OF TESTPIT (0.88 m) - due to seepage and sloughing				
1							
							639
2							

AECOM

LOGGED BY: SY	COMPLETION DEPTH: 0.88 m
REVIEWED BY: NF	COMPLETION DATE: 8/16/10
PROJECT ENGINEER: Nick Oke	Page 1 of 1

LOG OF TESTHOLE 60158564_DURBAN_GEOTECH_TESTPIT LOGS.GPJ UMA.GDT 10/21/10

PROJECT: FOX-E Durban Island Site Investigation	CLIENT: PWGSC	TESTHOLE NO: **TP-12**
LOCATION: LF-1, LF-2 N 7,442,188.8 E 537,282.8		PROJECT NO.: 60158564
CONTRACTOR:	METHOD: Hand Excavated (Shovel)	ELEVATION (m): 635.305

SAMPLE TYPE ■ GRAB ▥ SHELBY TUBE ☒ SPLIT SPOON ☰ BULK ⊘ NO RECOVERY ◧ CORE

DEPTH (m)	USC	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	COMMENTS	ELEVATION (m)
0			SAND - bouldery, silty, some cobbles, trace gravel, sand fine to coarse grained, medium brown, moist, gravel to boulder fraction ~ 25 % subangular to ~75 % subrounded, porous volcanics			Oversize Gradation Estimate: 0-100mm ~ 50 % 100-150mm ~ 15 % > 150mm ~ 35 %	
							635
	SM		- wet				
			- saturated, seepage			Standing water at 0.7 m 12 hours after completion of testpit	
			END OF TESTPIT (0.82 m) - due to seepage and sloughing				
1							
							634
2							

AECOM

LOGGED BY: SY	COMPLETION DEPTH: 0.82 m
REVIEWED BY: NF	COMPLETION DATE: 8/17/10
PROJECT ENGINEER: Nick Oke	Page 1 of 1

LOG OF TESTHOLE 60158564_DURBAN_GEOTECH_TESTPIT LOGS.GPJ UMA.GDT 10/21/10

PROJECT: FOX-E Durban Island Site Investigation	CLIENT: PWGSC	TESTHOLE NO: **TP-13**
LOCATION: BA-3 N 7,442,079.4 E 537,084.0		PROJECT NO.: 60158564
CONTRACTOR:	METHOD: Hand Excavated (Shovel)	ELEVATION (m): 630.979

SAMPLE TYPE ■ GRAB ▥ SHELBY TUBE ☒ SPLIT SPOON ▤ BULK ⧄ NO RECOVERY ◧ CORE

DEPTH (m)	USC	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	PLASTIC / M.C. / LIQUID (10 20 30 40)	COMMENTS	ELEVATION (m)
0	GM		GRAVEL - silty, sandy, trace cobbles, medium brown, wet, gravel to cobble fraction ~ 30 % subangular to ~70 % subrounded - saturated - seepage		1		Bulk Sample Gradation with Oversize Estimate: Silt/Clay ~ 23.8 % Sand ~ 22.0 % Gravel ~ 44.3 % 100-150mm ~ 8 % > 150mm ~ 2 % Boulders in testpit area not reflected in testpit log Maximum boulder size in testpit vicinity is ~ 0.4 m	
			END OF TESTPIT (0.61 m) - due to seepage and sloughing <u>Note</u> Lab Results for Bulk Sample: gravel = 49.2 %, sand = 24.4 %, silt/clay = 26.4 % SPMDD = 2,206 kg/m ^{3}, OMC = 10.3 %					
1								630
2								629

AECOM

LOGGED BY: SY	COMPLETION DEPTH: 0.61 m
REVIEWED BY: NF	COMPLETION DATE: 8/17/10
PROJECT ENGINEER: Nick Oke	Page 1 of 1

LOG OF TESTHOLE 60158564_DURBAN_GEOTECH_TESTPIT LOGS.GPJ UMA.GDT 10/21/10

PROJECT: FOX-E Durban Island Site Investigation	CLIENT: PWGSC	TESTHOLE NO: **TP-14**
LOCATION: LF-2 N 7,442,267.3 E 537,401.7		PROJECT NO.: 60158564
CONTRACTOR:	METHOD: Hand Excavated (Shovel)	ELEVATION (m): 642.033

SAMPLE TYPE ■ GRAB ▥ SHELBY TUBE ☒ SPLIT SPOON ▤ BULK ⊘ NO RECOVERY ◧ CORE

DEPTH (m)	USC	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	COMMENTS	ELEVATION (m)
0	GP		GRAVEL - some cobbles, some sand, trace silt, poorly graded, light grey, dry, gravel to cobble fraction ~ 65 % rounded, ~ 20 % subrounded to ~ 15 % subangular, porous volcanics - damp			Oversize Gradation Estimate: 0-100mm ~ 70 % 100-150mm ~ 25 % > 150mm ~ 5 %	642
	SW		SAND and COBBLES - gravelly, some boulders, trace silt, diesel odour (testpit located west of former barrel cache), sand fine to coarse grained, well graded, medium brown, gravel to boulder fraction ~ 50 % rounded, ~ 30 % subrounded to ~ 20 % subangular, porous volcanics, light grey - saturated, seepage				
1			END OF TESTPIT (0.91 m) - due to seepage				641
2							

AECOM	LOGGED BY: SY	COMPLETION DEPTH: 0.91 m
	REVIEWED BY: NF	COMPLETION DATE: 8/17/10
	PROJECT ENGINEER: Nick Oke	Page 1 of 1

LOG OF TESTHOLE 60158564_DURBAN_GEOTECH_TESTPIT LOGS.GPJ UMA.GDT 10/21/10

PROJECT: FOX-E Durban Island Site Investigation	CLIENT: PWGSC	TESTHOLE NO: **TP-15**
LOCATION: LF-3 N 7,441,880.5 E 536,857.8		PROJECT NO.: 60158564
CONTRACTOR:	METHOD: Hand Excavated (Shovel)	ELEVATION (m): 619.683

SAMPLE TYPE ■ GRAB ▥ SHELBY TUBE ☒ SPLIT SPOON ▤ BULK ⊘ NO RECOVERY ◧ CORE

DEPTH (m)	USC	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	COMMENTS	ELEVATION (m)
0			GRAVEL and SILT - trace cobbles, trace gravel, trace sand, medium brown, wet, gravel to cobble fraction rounded to subangular			Oversize Gradation Estimate: 0-100mm ~ 95 % 100-150mm ~ 3 % > 150mm ~ 2 %	
	GM		- saturated, seepage				619
			END OF TESTPIT (0.79 m) - due to seepage				
1							
							618
2							

AECOM

LOGGED BY: SY	COMPLETION DEPTH: 0.79 m
REVIEWED BY: NF	COMPLETION DATE: 8/17/10
PROJECT ENGINEER: Nick Oke	Page 1 of 1

LOG OF TESTHOLE 60158564_DURBAN_GEOTECH_TESTPIT LOGS.GPJ UMA.GDT 10/21/10

PROJECT: FOX-E Durban Island Site Investigation	CLIENT: PWGSC	TESTHOLE NO: **TP-16**
LOCATION: LF-3 N 7,441,844.5 E 536,806.1		PROJECT NO.: 60158564
CONTRACTOR:	METHOD: Hand Excavated (Shovel)	ELEVATION (m): 626.653

SAMPLE TYPE ■ GRAB ▥ SHELBY TUBE ☒ SPLIT SPOON ▤ BULK ⊘ NO RECOVERY ◧ CORE

DEPTH (m)	USC	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	COMMENTS	ELEVATION (m)
0			COBBLES and SILT - some gravel, trace sand, medium brown, moist, gravel to cobble fraction subrounded to subangular, porous volcanics			Oversize Gradation Estimate: 0-100mm ~ 60 % 100-150mm ~ 20 % > 150mm ~ 20 %	
			- silt and boulders, gravelly, some cobbles, diesel odour				
	GM		- wet				
			- saturated, seepage				626
			END OF TESTPIT (0.82 m) - due to seepage				
1							
							625
2							

AECOM

LOGGED BY: SY	COMPLETION DEPTH: 0.82 m
REVIEWED BY: NF	COMPLETION DATE: 8/17/10
PROJECT ENGINEER: Nick Oke	Page 1 of 1

LOG OF TESTHOLE 60158564_DURBAN_GEOTECH_TESTPIT LOGS.GPJ UMA.GDT 10/21/10

PROJECT: FOX-E Durban Island Site Investigation	CLIENT: PWGSC	TESTHOLE NO: **TP-17**
LOCATION: BA-1A N 7,441,395.5 E 536,244.9		PROJECT NO.: 60158564
CONTRACTOR:	METHOD: Hand Excavated (Shovel)	ELEVATION (m): 572.82

SAMPLE TYPE ■ GRAB ▥ SHELBY TUBE ☒ SPLIT SPOON ▤ BULK ⧄ NO RECOVERY ◧ CORE

DEPTH (m)	USC	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	PLASTIC / M.C. / LIQUID (10 20 30 40)	COMMENTS	ELEVATION (m)
0	SM		SAND - gravelly, some silt, some cobbles, trace to some organics at surface (rootlets), fine to coarse grained, medium brown, moist, gravel to cobble fraction ~ 50 % subrounded to ~ 50 % subangular, igneous volcanics				Bulk Sample Gradation with Oversize Estimate:	
			- silty, some gravel, wet				Silt/Clay ~ 10.2 % Sand ~ 36.1 % Gravel ~ 23.7 % 100-150mm ~ 20 % > 150mm ~ 10 %	
			- saturated, seepage		1	●		
								572
1			END OF TESTPIT (0.88 m) - due to seepage					
			Note Lab Results for Bulk Sample: gravel = 33.9 %, sand = 51.5 %, silt/clay = 14.6 %					
								571
2								

AECOM

LOGGED BY: SY	COMPLETION DEPTH: 0.88 m
REVIEWED BY: NF	COMPLETION DATE: 8/17/10
PROJECT ENGINEER: Nick Oke	Page 1 of 1

LOG OF TESTHOLE 60158564_DURBAN_GEOTECH_TESTPIT LOGS.GPJ UMA.GDT 10/21/10

PROJECT: FOX-E Durban Island Site Investigation	CLIENT: PWGSC	TESTHOLE NO: **TP-18**
LOCATION: LF-3 N 7,441,845.3 E 536,840.9		PROJECT NO.: 60158564
CONTRACTOR:	METHOD: Hand Excavated (Shovel)	ELEVATION (m): 628.095

SAMPLE TYPE ■ GRAB ▥ SHELBY TUBE ☒ SPLIT SPOON ▤ BULK ⊘ NO RECOVERY ◧ CORE

DEPTH (m)	USC	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	COMMENTS	ELEVATION (m)
0	GM		GRAVEL and SILT - some cobbles, trace sand, medium brown, dry, gravel to cobble fraction ~ 50 % subrounded, ~ 25 % rounded to ~ 25 % subangular			Oversize Gradation Estimate: 0-100mm ~ 75 % 100-150mm ~ 20 % > 150mm ~ 5 %	628
	ML		SILT - some gravel, some cobbles, trace boulders, medium brown, moist, gravel to boulder fraction ~ 50 % subrounded, ~ 25 % rounded to ~ 25 % subangular				
			- wet				
			- saturated, seepage				
1			END OF TESTPIT (0.73 m) - due to seepage				627
2							

LOG OF TESTHOLE 60158564_DURBAN_GEOTECH_TESTPIT LOGS.GPJ UMA.GDT 10/21/10

AECOM

LOGGED BY: SY	COMPLETION DEPTH: 0.73 m
REVIEWED BY: NF	COMPLETION DATE: 8/17/10
PROJECT ENGINEER: Nick Oke	Page 1 of 1

PROJECT: FOX-E Durban Island Site Investigation	CLIENT: PWGSC	TESTHOLE NO: **TP-19**
LOCATION: BA-5 N 7,439,490.1 E 535,678.0		PROJECT NO.: 60158564
CONTRACTOR:	METHOD: Hand Excavated (Shovel)	ELEVATION (m): 21.275

SAMPLE TYPE ■ GRAB ▥ SHELBY TUBE ☒ SPLIT SPOON ▤ BULK ⧄ NO RECOVERY ◧ CORE

DEPTH (m)	USC	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	PLASTIC M.C. LIQUID (10 20 30 40)	COMMENTS	ELEVATION (m)
0			SILT - sandy, clayey, trace gravel, fine to medium grained sand, low plastic, dark brownish grey, moist				Oversize Gradation Estimate: 0-100mm ~ 100 % 100-150mm ~ 0 % > 150mm ~ 0 % Boulders in testpit area not reflected in testpit log Maximum boulder size in testpit vicinity is ~ 2.0 m	21
			- wet					
	ML-CL				1			
			- clay and silt, low to medium plastic, dark grey, wet					
1			- saturated, seepage					
			END OF TESTPIT (1.19 m) - due to seepage					20
			Note Lab Results for Bulk Sample: gravel = 2.5 %, sand = 30.6 %, silt = 49.9 %, clay = 17.0 %					
2								

AECOM

LOGGED BY: SY	COMPLETION DEPTH: 1.19 m
REVIEWED BY: NF	COMPLETION DATE: 8/21/10
PROJECT ENGINEER: Nick Oke	Page 1 of 1

LOG OF TESTHOLE 60158564_DURBAN_GEOTECH_TESTPIT LOGS.GPJ UMA.GDT 10/21/10

PROJECT: FOX-E Durban Island Site Investigation	CLIENT: PWGSC	TESTHOLE NO: **TP-20**
LOCATION: BA-5 N 7,439,516.6 E 535,701.1		PROJECT NO.: 60158564
CONTRACTOR:	METHOD: Hand Excavated (Shovel)	ELEVATION (m): 21.515

SAMPLE TYPE: GRAB | SHELBY TUBE | SPLIT SPOON | BULK | NO RECOVERY | CORE

DEPTH (m)	USC	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	PLASTIC / M.C. / LIQUID (10 20 30 40)	COMMENTS	ELEVATION (m)
0			SAND - silty, trace clay, trace gravel, trace cobbles, trace organics at surface (rootlets), fine to medium grained, medium brown, moist				Bulk Sample Gradation with Oversize Estimate: Clay ~ 8.7 % Silt ~ 30.1 % Sand ~ 53.2 % Gravel ~ 6.0 % 100-150mm ~ 2 % > 150mm ~ 0 %	
	SM		- wet, no cobbles, no organics		1			21
1			- dark greyish brown, saturated, seepage					
			END OF TESTPIT (1.16 m) - due to seepage					20
2								

Note

Lab Results for Bulk Sample:
gravel = 6.1 %, sand = 54.3 %, silt = 30.7 %, clay = 8.9 %

AECOM

LOGGED BY: SY	COMPLETION DEPTH: 1.16 m
REVIEWED BY: NF	COMPLETION DATE: 8/21/10
PROJECT ENGINEER: Nick Oke	Page 1 of 1

LOG OF TESTHOLE 60158564_DURBAN_GEOTECH_TESTPIT LOGS.GPJ UMA.GDT 10/21/10

PROJECT: FOX-E Durban Island Site Investigation	CLIENT: PWGSC	TESTHOLE NO: **TP-21**
LOCATION: BA-6 N 7,439,422.9 E 535,391.8		PROJECT NO.: 60158564
CONTRACTOR:	METHOD: Hand Excavated (Shovel)	ELEVATION (m): 20.794

SAMPLE TYPE ■ GRAB ▥ SHELBY TUBE ☒ SPLIT SPOON ▤ BULK ⧄ NO RECOVERY ◧ CORE

DEPTH (m)	USC	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	PLASTIC M.C. LIQUID (10 20 30 40)	COMMENTS	ELEVATION (m)
0	SM		SAND - silty, gravelly, some cobbles, trace to some organics at surface, fine to coarse grained, dark greyish brown, moist		1		Bulk Sample Gradation with Oversize Estimate: Silt/Clay ~ 26.3 % Sand ~ 42.6 % Gravel ~ 21.2 % 100-150mm ~ 5 % > 150mm ~ 5 %	20
			- some gravel, trace cobbles					
1			END OF TESTPIT (0.98 m) - due to refusal at boulder layer					19
			<u>Note</u> Lab Results for Bulk Sample: gravel = 23.5 %, sand = 47.3 %, silt/clay = 29.2 %					
2								

AECOM

LOGGED BY: SY	COMPLETION DEPTH: 0.98 m
REVIEWED BY: NF	COMPLETION DATE: 8/21/10
PROJECT ENGINEER: Nick Oke	Page 1 of 1

LOG OF TESTHOLE 60158564_DURBAN_GEOTECH_TESTPIT LOGS.GPJ UMA.GDT 10/21/10

PROJECT: FOX-E Durban Island Site Investigation	CLIENT: PWGSC	TESTHOLE NO: **TP-22**
LOCATION: BA-6 N 7,439,509.3 E 535,366.7		PROJECT NO.: 60158564
CONTRACTOR:	METHOD: Hand Excavated (Shovel)	ELEVATION (m): 33.05

SAMPLE TYPE: GRAB | SHELBY TUBE | SPLIT SPOON | BULK | NO RECOVERY | CORE

DEPTH (m)	USC	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	PLASTIC / M.C. / LIQUID (10 20 30 40)	COMMENTS	ELEVATION (m)
0	SM		SAND - silty, gravelly, trace cobbles, trace organics at surface (rootlets), fine to coarse grained, dark greyish brown, moist, gravel to cobble fraction ~ 50 % subangular, ~ 50 % subrounded		1		Bulk Sample Gradation with Oversize Estimate: Silt/Clay ~ 26.8 % Sand ~ 48.8 % Gravel ~ 19.4 % 100-150mm ~ 4 % > 150mm ~ 1 %	33
			- no organics					
			- wet					
1			- saturated, seepage					32
			END OF TESTPIT (1.10 m) - due to seepage					
			Note Lab Results for Bulk Sample: gravel = 20.4 %, sand = 51.4 %, silt/clay = 28.2 %					
2								

AECOM

LOGGED BY: SY	COMPLETION DEPTH: 1.10 m
REVIEWED BY: NF	COMPLETION DATE: 8/21/10
PROJECT ENGINEER: Nick Oke	Page 1 of 1

LOG OF TESTHOLE 60158564_DURBAN_GEOTECH_TESTPIT LOGS.GPJ UMA.GDT 10/21/10

PROJECT: FOX-E Durban Island Site Investigation	CLIENT: PWGSC	TESTHOLE NO: **TP-23**
LOCATION: BA-6 N 7,439,598.4 E 535,355.3		PROJECT NO.: 60158564
CONTRACTOR:	METHOD: Hand Excavated (Shovel)	ELEVATION (m): 33.531

SAMPLE TYPE: GRAB; SHELBY TUBE; SPLIT SPOON; BULK; NO RECOVERY; CORE

DEPTH (m)	USC	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	PLASTIC / M.C. / LIQUID (10 20 30 40)	COMMENTS	ELEVATION (m)
0	SM		SAND - gravelly, some silt, trace cobbles, trace organics at surface (rootlets), fine to coarse grained, dark greyish brown, wet, gravel to cobble fraction ~ 40 % subangular to ~ 60 % subrounded - no organics				Bulk Sample Gradation with Oversize Estimate: Silt/Clay ~ 16.6 % Sand ~ 46.7 % Gravel ~ 33.8 % 100-150mm ~ 2 % > 150mm ~ 1 %	
	SW		SAND - some gravel, trace silt, trace cobbles, fine to coarse grained, well graded, dark greyish brown, wet, gravel to cobble fraction ~ 40 % subangular to ~ 60 % subrounded		1			33
1			- saturated, seepage					
			END OF TESTPIT (1.10 m) - due to seepage <u>Note</u> Lab Results for Bulk Sample: gravel = 34.8 %, sand = 48.1 %, silt/clay = 17.1 %					32
2								

AECOM	LOGGED BY: SY	COMPLETION DEPTH: 1.10 m
	REVIEWED BY: NF	COMPLETION DATE: 8/21/10
	PROJECT ENGINEER: Nick Oke	Page 1 of 1

LOG OF TESTHOLE 60158564_DURBAN_GEOTECH_TESTPIT LOGS.GPJ UMA.GDT 10/21/10

PROJECT: FOX-E Durban Island Site Investigation	CLIENT: PWGSC	TESTHOLE NO: **TP-24**
LOCATION: BA-7 N 7,440,029.7 E 535,655.3		PROJECT NO.: 60158564
CONTRACTOR:	METHOD: Hand Excavated (Shovel)	ELEVATION (m): 110.435

SAMPLE TYPE: GRAB | SHELBY TUBE | SPLIT SPOON | BULK | NO RECOVERY | CORE

DEPTH (m)	USC	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	PLASTIC / M.C. / LIQUID (10 20 30 40)	COMMENTS	ELEVATION (m)
0			GRAVEL and SAND - cobbly, trace silt, trace boulders, trace organics at surface (rootlets), poorly graded, sand fine to coarse grained, medium brown, dry, gravel to boulder fraction ~ 50 % subangular to ~ 50 % subrounded - damp				Bulk Sample Gradation with Oversize Estimate: Silt/Clay ~ 4.5 % Sand ~ 25.8 % Gravel ~ 27.8 % 100-150mm ~ 40 % > 150mm ~ 2 %	
	GP		- no organics		1			110
1			END OF TESTPIT (1.01 m) - due to refusal at boulder layer					109
2								

Note

Lab Results for Bulk Sample:
gravel = 47.9 %, sand = 44.4 %, silt/clay = 7.7 %

AECOM

LOGGED BY: SY	COMPLETION DEPTH: 1.01 m
REVIEWED BY: NF	COMPLETION DATE: 8/22/10
PROJECT ENGINEER: Nick Oke	Page 1 of 1

LOG OF TESTHOLE 60158564_DURBAN_GEOTECH_TESTPIT LOGS.GPJ UMA.GDT 10/21/10

PROJECT: FOX-E Durban Island Site Investigation	CLIENT: PWGSC	TESTHOLE NO: **TP-25**
LOCATION: BA-7 N 7,440,150.4 E 535,639.6		PROJECT NO.: 60158564
CONTRACTOR:	METHOD: Hand Excavated (Shovel)	ELEVATION (m): 121.971

SAMPLE TYPE ■ GRAB ▥ SHELBY TUBE ☒ SPLIT SPOON ▤ BULK ⧄ NO RECOVERY ◧ CORE

DEPTH (m)	USC	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	PLASTIC / M.C. / LIQUID (10 20 30 40)	COMMENTS	ELEVATION (m)
0			SAND - some cobbles, some gravel, trace organics (rootlets), fine to coarse grained, well graded, medium brown, dry, gravel to cobble fraction subangular to angular				Bulk Sample Gradation with Oversize Estimate:	
							Silt/Clay ~ 7.9 %	
							Sand ~ 31.6 %	
							Gravel ~ 25.5 %	
							100-150mm ~ 15 %	
							> 150mm ~ 20 %	
			- sand and gravel, bouldery, cobbly, damp					
	SW				1	●		
1			END OF TESTPIT (1.01 m) - due to refusal at boulder layer					121
			Note					
			Lab Results for Bulk Sample: gravel = 39.3 %, sand = 48.6 %, silt/clay = 12.1 % SPMDD = 1,883 kg/m ^{3}, OMC = 12.6 %					
2								120

AECOM

LOGGED BY: SY	COMPLETION DEPTH: 1.01 m
REVIEWED BY: NF	COMPLETION DATE: 8/22/10
PROJECT ENGINEER: Nick Oke	Page 1 of 1

LOG OF TESTHOLE 60158564_DURBAN_GEOTECH_TESTPIT LOGS.GPJ UMA.GDT 10/21/10

PROJECT: FOX-E Durban Island Site Investigation	CLIENT: PWGSC	TESTHOLE NO: **TP-26**
LOCATION: BA-8 N 7,440,590.5 E 535,307.4		PROJECT NO.: 60158564
CONTRACTOR:	METHOD: Hand Excavated (Shovel)	ELEVATION (m): 204.642

SAMPLE TYPE: GRAB | SHELBY TUBE | SPLIT SPOON | BULK | NO RECOVERY | CORE

DEPTH (m)	USC	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	PLASTIC / M.C. / LIQUID (10 20 30 40)	COMMENTS	ELEVATION (m)
0	GP		GRAVEL - some cobbles, some fine to coarse grained sand, trace silt, poorly graded, dry, gravel to cobble fraction ~ 30 % subangular to ~ 70 % angular - damp - highly fractured, weathered bedrock, angular, easily fractured with shovel		1		Bulk Sample Gradation with Oversize Estimate: Silt/Clay ~ 3.0 % Sand ~ 13.7 % Gravel ~ 68.3 % 100-150mm ~ 13 % > 150mm ~ 2 %	204
			END OF TESTPIT (0.69 m) - due to refusal at bedrock					
1			Note Lab Results for Bulk Sample: gravel = 80.4 %, sand = 16.1 %, silt/clay = 3.5 %					203
2								

AECOM

LOGGED BY: SY	COMPLETION DEPTH: 0.69 m
REVIEWED BY: NF	COMPLETION DATE: 8/22/10
PROJECT ENGINEER: Nick Oke	Page 1 of 1

LOG OF TESTHOLE 60158564_DURBAN_GEOTECH_TESTPIT LOGS.GPJ UMA.GDT 10/21/10

PROJECT: FOX-E Durban Island Site Investigation	CLIENT: PWGSC	TESTHOLE NO: **TP-27**
LOCATION: BA-8 N 7,440,648.1 E 535,302.8		PROJECT NO.: 60158564
CONTRACTOR:	METHOD: Hand Excavated (Shovel)	ELEVATION (m): 207.046

SAMPLE TYPE ■ GRAB ▥ SHELBY TUBE ☒ SPLIT SPOON ▤ BULK ⧄ NO RECOVERY ◧ CORE

DEPTH (m)	USC	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	PLASTIC / M.C. / LIQUID (10 20 30 40)	COMMENTS	ELEVATION (m)
0			SAND and GRAVEL - some silt, trace cobbles, poorly graded, sand fine to coarse grained, dry to damp, gravel to cobble fraction ~ 50 % subangular to ~ 50 % angular				Bulk Sample Gradation with Oversize Estimate:	207
			- sandy gravel, ~ 60 % subangular to ~ 40 % angular				Silt/Clay ~ 11.4 % Sand ~ 40.8 % Gravel ~ 32.8 % 100-150mm ~ 11 % > 150mm ~ 4 %	
	GM				1	●		
1			- highly fractured, weathered bedrock, angular, easily fractured with shovel					206
			END OF TESTPIT (1.28 m) - due to refusal at bedrock					
2								

Note

Lab Results for Bulk Sample:
gravel = 38.6 %, sand = 48.0 %, silt/clay = 13.4 %
SPMDD = 2,073 kg/m ^{3}, OMC = 9.4 %

AECOM	LOGGED BY: SY	COMPLETION DEPTH: 1.28 m
	REVIEWED BY: NF	COMPLETION DATE: 8/22/10
	PROJECT ENGINEER: Nick Oke	Page 1 of 1

LOG OF TESTHOLE 60158564_DURBAN_GEOTECH_TESTPIT LOGS.GPJ UMA.GDT 10/21/10

PROJECT: FOX-E Durban Island Site Investigation	CLIENT: PWGSC	TESTHOLE NO: **TP-28**
LOCATION: BA-8 N 7,440,571.0 E 535,316.0		PROJECT NO.: 60158564
CONTRACTOR:	METHOD: Hand Excavated (Shovel)	ELEVATION (m): 199.595

SAMPLE TYPE ■ GRAB ▥ SHELBY TUBE ☒ SPLIT SPOON ▤ BULK ⧄ NO RECOVERY ◧ CORE

DEPTH (m)	USC	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	PLASTIC M.C. LIQUID (10 20 30 40)	COMMENTS	ELEVATION (m)
0	SW		SAND and GRAVEL - cobbly, trace silt, poorly graded, sand fine to coarse grained, medium brown, dry to damp, gravel to cobble fraction ~ 60 % subangular to ~40 % angular		1		Bulk Sample Gradation with Oversize Estimate: Silt/Clay ~ 4.0 % Sand ~ 41.7 % Gravel ~ 29.3 % 100-150mm ~ 15 % > 150mm ~ 10 %	199
			- some boulders or fractured, weathered bedrock					
1			END OF TESTPIT (0.91 m) - due to refusal at boulder or bedrock					198
			<u>Note</u> Lab Results for Bulk Sample: gravel = 39.1 %, sand = 55.6 %, silt/clay = 5.3 %					
2								

AECOM

LOGGED BY: SY	COMPLETION DEPTH: 0.91 m
REVIEWED BY: NF	COMPLETION DATE: 8/22/10
PROJECT ENGINEER: Nick Oke	Page 1 of 1

LOG OF TESTHOLE 60158564_DURBAN_GEOTECH_TESTPIT LOGS.GPJ UMA.GDT 10/21/10

Appendix G

Archaeological Impact Assessment Report

FINAL REPORT

ARCHAEOLOGICAL IMPACT ASSESSMENT (AIA) OF THE FOX-E INTERMEDIATE DEW LINE SITE, DURBAN ISLAND, NUNAVUT

Submitted to:

The Department of Culture, Language, Elders and Youth (CLEY), Nunavut
Nunavut Permit No. 2010-017A

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November 2010 **10-1333-0023**

102, 2535 - 3rd Avenue S.E., Calgary, Alberta, Canada T2A 7W5
Tel: +1 (403) 299 5600 Fax: +1 (403) 299 5606 www.golder.com
Golder Associates: Operations in Africa, Asia, Australasia, Europe, North America and South America

CREDITS

Project Director	Grant Clarke, M.A.
Project Manager	Brent Murphy, M.A.
Permit Holder	Brent Murphy, M.A.
Report Author	Brent Murphy, M.A.
Field Investigators	Brent Murphy, M.A. Losie Audiakiak (Qikiqtarjuaq) Johnny Kooneeliusie (Qikiqtarjuaq)
Site File Searches	Brent Murphy, M.A.
Senior Review	David Blower, Ph.D.
Client Contacts	Nick Oke P.Chem. Senior Environmental Scientist Assessment and Approvals Lead AECOM 17007 – 107 Avenue Edmonton, AB. T5S 1G3 Ph. (780) 486 Fax (780) 486-7070 Nick.oke@aecom.com

EXECUTIVE SUMMARY

During August of 2010, Golder Associates Ltd. conducted an Archaeological Impact Assessment (AIA) of the FOX-E Intermediate DEW Line Site in on Durban Island, Nunavut on behalf of AECOM working for Public Works and Government Services Canada (PWGSC) and Indian and Northern Affairs Canada (INAC). This AIA was carried out in conjunction with the Phase III Environmental Site Assessment, Hazardous and Non-Hazardous Materials Audit, Geotechnical Evaluation and Remedial Action Plan. All required fieldwork was completed under an Archaeological Permit (2010-017A) issued by the Department of Culture, Language, Elders and Youth (CLEY), Nunavut to Brent Murphy of Golder.

The Intermediate DEW Line Site is located on Durban Island, approximately 95 km southeast of Qikiqtarjuaq, Nunavut. Low-level aerial reconnaissance of the site area was conducted in order to assess the locations of all structures and debris requiring further investigation and to identify areas of archaeological potential. Lack of vegetation and sedimentation enabled surface examination of the facility areas to adequately assess for the presence of cultural materials. As requested, areas which will not be impacted during remediation were not examined. During the study the previously recorded FOX-E DEW Line site, MgBs 2, was revisited and one new site, MgBs 4, was identified and documented as per the *Nunavut Archaeological and Palaeontological Sites Regulations* (2003).

PWGSC has fulfilled the requirements to identify the potential for impact to heritage resources during the proposed remediation/reclamation of the FOX-E DEW Line site on Durban Island. The AIA included the participation of Losie Audiakiak and Johnny Kooneeliusie from the local community of Qikiqtarjuaq, who acted as bear monitors and participated in the identification and recordation of the heritage resource sites.

The AIA included revisiting the previously recorded DEW Line site, MgBs 2, and the identification of one new heritage resource site, MgBs 4. The FOX-E Dew Line Site, MgBs 2, is considered to be of limited significance given the amount of information that is currently known about the site. MgBs 4 is a stone feature site that is considered to be

of moderate significance and it is recommended that this site be avoided during remediation activities.

It is recommended that PWGSC and INAC have met their obligations to assess the potential for impact to heritage resources during the proposed Remedial Action Plan. It is also recommended that the newly identified site MgBs 4 be avoided during reclamation activities.

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1. INTRODUCTION

During August of 2010, Golder Associates Ltd. (Golder) conducted an Archaeological Impact Assessment (AIA) of the FOX-E Intermediate DEW Line Site, Durban Island in conjunction with the Phase III Environmental Site Assessment, Hazardous and Non-Hazardous Materials Audit, Geotechnical Evaluation, Remedial Action Plan on behalf of AECOM and Public Works and Government Services Canada (PWGSC). All required fieldwork was completed under an Archaeological Permit (2010-017A) issued by the Department of Culture, Language, Elders and Youth (CLEY), Nunavut to Brent Murphy of Golder.

Low-level aerial reconnaissance of the site area was initially flown in order to assess the locations of all structures and debris requiring further investigation and to identify areas of archaeological potential. The AIA was intended to identify any artifacts or heritage resource areas that might be impacted by a remediation program and, as such, only those areas of previous and potential disturbance were assessed. The intent of this program was not to conduct a full AIA of the entire Durban Island. However, during traverses of the former DEW Line station some lands outside of proposed impacts were surveyed (Figure 1).

The amount of previous disturbance associated with the DEW Line site and lack of vegetation facilitated assessment of the facility areas and increased visual assessment for the presence and/or absence of cultural materials. As requested, areas that will not be impacted during remediation were not fully examined. One previously recorded site, the FOX-E DEW Line site (MgBs 2) was revisited and one previously unrecorded heritage resource site (MgBs 4) were identified by the author during the program, which were documented as per the *Nunavut Archaeological and Palaeontological Sites Regulations* (2003).



2 0 2
SCALE KILOMETRES

LEGEND

PROJECT AREA

REFERENCE

TOPOGRAPHIC MAP 16M & N 3rd EDITION OBTAINED FROM Canmatrix.© 1994 HER MAJESTY THE QUEEN IN RIGHT OF CANADA. DEPARTMENT OF NATURAL RESOURCES : TRANSVERSE MERCATOR DATUM : NAD83 COORDINATE SYSTEM : UTM ZONE 20W.

FOX-E DEW LINE SITE DURBAN ISLAND

TITLE

FOX-E PROJECT LOCATION

Golder Associates
Calgary, Alberta

PROJECT	10.1333.0023.8420		FILE No.	10133300238470A001
DESIGN	BM	12/10/10	SCALE AS SHOWN	REV. 0
CADD	KJM	19/10/10		
CHECK	BM	19/10/10		
REVIEW	DB	19/10/10		

FIGURE: 1

2. LOCATION, POTENTIAL IMPACTS, AND OBJECTIVES

2.1 Location

The FOX-E Intermediate DEW Line site is located on Durban Island 95 km southwest of Qikiqtarjuaq, Nunavut. Durban Island is located off the northeast coast of Baffin Island on the Hudson Strait. The site area is made up of a beach area at sea level with the former DEW Line site being located on a flat plateau 650 m above sea level (Plates 1 and 2). The FOX-E site was constructed between 1957 and 1959 and included a module train, warehouse, garage, bulk fuel storage tanks, Inuit house, Quonset huts, water storage, helicopter landing pads and antenna. In addition to the main site two beach landing areas, bulk fuel storage tanks, construction camp, borrow source and an access road were constructed. The site was deactivated in 1963 and has remained this way since.



Plate 1 Aerial photo of the Beach area of the FOX-E DEW Line site, the POL tanks are in the centre of the photo.



Plate 2 View east of FOX-E DEW Line Site showing the module train, warehouse, garage, bulk fuel storage tanks and antenna.

2.2 Potential Impacts

The potential impacts to heritage resources around the FOX-E site on Durban Island are dependent upon the proximity of those resources to the remediation activities that will be conducted to remove the remnants of the former DEW Line site. Heritage resource sites are non-renewable resources that may be located at or near ground level or may be deeply buried. Prehistoric or precontact archaeological sites are those sites which contain features, artifacts or ecofacts reflecting the use of a given land base by people prior to European influences and technologies. Features are non-portable articles that indicate a human modification of the local environment such as hearths, pits, tent rings, stone cairns and Inuksuk. Artifacts are portable items that have been modified by people at some time in the past. These include such items as projectile points, stone flaking debris, and cut and modified bone. Ecofacts are naturally occurring items such as preserved plant remains or pollen that can aid in the interpretation of archaeological sites. Historic

archaeological sites include the features, artifacts and ecofacts relating to the past few hundred years of human occupation. These sites are typically identified by the presence of buildings or structural remains, but may include any site that has evidence of historic use of the landscape.

Alteration of the landscape can result in the damage or complete destruction of all or portions of historic resource sites. These alterations often involve the displacement of artifacts resulting in the loss of valuable contextual information or may involve the destruction of the artifacts and features themselves resulting in complete information loss. These losses are permanent and irreversible. Primary, secondary and tertiary impacts are possible with any new development. Remediation can be considered a new development in this context if it impacts previously undisturbed areas during operation.

Primary impacts include those disturbances resulting immediately from a project. The primary impact zone is the area within the remediation footprint including access roads, temporary work zones, borrow pits and dumps. Individual sites are likely to be affected to varying degrees if they are located within the development area. Artifact context is fundamental to interpretation of archaeological sites. By disturbing the context in which artifacts and features are recovered, interpretations of heritage resources sites and, ultimately, past lifeways are affected negatively.

Secondary impacts can occur when the support services or additional access required by development adversely affects heritage resources outside the primary target areas. The remediation project should have no secondary effect on heritage resources.

Tertiary impacts are the results of project induced changes in demography and land use patterns. Increased rates of intentional and unintentional impacts can be expected as a result of increased visitation to an area if the project were large enough to affect regional population bases. Tertiary impacts are anticipated to be very low for this project, especially because changes to the site through remediation will probably only negatively affect the visitation rates.

The study detailed in this report is intended to identify areas of possible impact and to determine whether the current proposed project will disturb those heritage resources located in proximity to the development.

2.3 Project Objectives

The objective of the 2010 study at the FOX-E Intermediate DEW Line site located on Durban Island is to ensure that heritage resources are not inadvertently impacted by the proposed clean-up and remediation project. The purpose of this AIA is to:

- conduct a pre-impact assessment of the proposed remediation areas;
- identify any archaeological sites within those areas (if present);
- make recommendations to CLEY, AECOM and PWGSC to mitigate or avoid those sites;
- make recommendations on surveillance and monitoring;
- provide a cost estimate on implementing the recommendations during the construction phase; and
- prepare a draft Final Report to be reviewed by AECOM and PWGSC, followed by a Final Report for distribution as required and submission to CLEY.

3. PHYSICAL AND CULTURAL SETTING

3.1 Environmental Context

An understanding of past environmental conditions and the environmental factors that shape human approaches to subsistence and settlement patterns enable archaeologists to not only locate sites, but also to provide more accurate interpretations of individual sites. The physical aspects of the environs (topography, drainage, climate and soils) as well as resource availability (flora, fauna, lithic materials and water) are prime criteria for the identification of site location and function. Assessments of the universal cultural activities of site location, travel within and through the area, and resource exploitation are key components of any archaeological site analysis.

The anthropological theory of environmental determinism suggests that, to a great extent, environmental factors condition human behavioural and cultural adaptations, or patterns of behaviour. The environment has likely influenced many of the activities that contribute to the character of the regional prehistoric record. All available environmental variables must be considered as indicators of prehistoric use of the landscape.

The regional environment influences where specific activities and occupation are located in a pattern of seasonal movements according to the availability of resources: a seasonal round. The variables of archaeological site distribution can be identified and combined into useful criteria for suggesting the potential of an environment to hold heritage resources that includes a wide variety of landforms frequently associated with coastlines and lake shores, river banks, eskers and kames, and bedrock knolls in Arctic environs. Distribution patterns partially reflect environmental opportunities presented to human groups as well as cultural preferences demonstrated by site location. Topography influences much human activity including travel, communication, resource catchments, dwelling locations and eventually constrains human activity areas to defined localities. Based on existing heritage resources, the environment is a key factor in human settlement patterns.

3.2 Regional Environment

Prior to contact with Europeans, the environment in which the people of North America lived strongly influenced their culture and economy. The people who inhabited the North took advantage of the seasons and all the resources that were available.

Baffin Island is part of the Canadian Shield, an old erosion surface of Precambrian rocks. Specifically, the northeast coast is mountainous and framed by numerous fjords, inlets, cliffs, eroded sandstone valleys and intricate alpine glaciers flowing to the sea (Collignon 2005). Hundreds of small islands surround the coast. The vegetation is diverse by sparse and dwarfed with sedges, saxifrage, dryas, Arctic willows, cottongrass, broad-leafed willows, herbs and Arctic poppies being the most common plants of the 350 species recorded on the island. Caribou, wolf, Arctic fox, lemming, Arctic hare, and polar bears are the most common land mammals on the island while sea mammals include walrus and several species of seals and whales are found in coastal waters.

The FOX-E site area is characterized by a beach landing areas that is at sea level with the actual DEW Line Site being located on a high volcanic plateau up to 650 m above sea level surrounded by steep cliffs. The beach landing is connected to the station by a road that was cut into a steep valley with several switch backs. During the study wildlife that was observed near the station area included a polar bear with two cubs, numerous seals and whales. Although the volcanic plateau area is sparsely vegetated wet areas near the beach landing are heavily vegetated with sedges, willows and many flowering plants, grasses and rushes.

3.3 Heritage Resources

Archaeology is the study of human history through the material remains of culture, now known as heritage resources. The ultimate goal in archaeology is to describe the cultures and events responsible for the creation and deposition of the remains at a given archaeological site. As such, archaeologists use material remains to determine the nature

and age of cultural occupations at a site. Artifacts, ecofacts and features deposited into the natural environment, along with their inter-relationships, are the integral parts that make up an archaeological site. The *Nunavut Archaeological and Palaeontological Sites Regulations* (2003) define heritage resources as: "but not limited to, archaeological and historical sites, burial grounds, palaeontological sites, historical buildings and cairns."

Predating the arrival of Europeans, precontact archaeological sites are comprised of artifacts, features and residues of native origin typically characterized by modified bone and stone, and stone structures. Historic sites are those structures, features, and objects of European influence that date back to contact with the Europeans but can also represent more recent activity of more than 50 years. Depending on the context, sites less than 50 years old may be considered to represent traditional land use and are identified to document continued use and occupation of an area to the present time. A key component of the historic period record are the sites, artifacts and affiliated resources relating to post-contact Aboriginal people's use of the landscape. These include both archaeological sites and objects such as standing and collapsed cabins, campsites, graves, and traditional sites and resources, such as special places, hunting and plant collecting areas, traplines and their associated remains, oral traditions and various documents. These latter resources are usually identified through consultation procedures such as Traditional Use Studies (TUS) or community consultations.

Additionally, heritage resources include, as well as the sites where events took place in the past, all of the objects that they contain and any of the contextual information that may be associated with them and will aid in their interpretation, including natural specimens and documents or verbal accounts.

Heritage resources are non-renewable and are susceptible to alteration, damage, and destruction by construction and development activities. The value of heritage resources cannot be measured in terms of individual artifacts or biological specimens, rather the value of these resources lies in the integrated information which is derived from the relationship of the individual artifacts and fossil specimens, associated features, spatial

relationships (distribution), and contextual situations. Interpretation of heritage resource materials, and the ability to interpret the significance of particular sites in a landscape, is based on an understanding of the nature of the relationship between individual archaeological and palaeontological materials as well as the sediments and strata within which they are contained. As such, removal or mixing of cultural or fossil bearing sediments results in the permanent loss of information basic to the understanding of these resources. As a result, heritage resources are increasingly susceptible to destruction and depletion through disturbance.

Similarly, tundra areas north of the tree line are characterized by extremely slow rates of soil development and sediment accumulation. Accordingly, at repeatedly occupied sites, there is little chance of distinguishing occupations relating to different periods within the 5,000-year record of human occupation in the region without recovering a diagnostic indicator. Some areas of high sediment deposition rates are present within the study area, but these are not the typical scenario.

The lack of temporally diagnostic artifacts, the absence of materials suitable for radiocarbon dating, and the natural mixing of shallow archaeological deposits serve to limit the definition of the recognized prehistory for the region. In contrast, extant documents, records, and oral testimony provide a firmer basis for understanding the historic period of the region.

3.3.1 Cultural Chronology

Many of the archaeological materials in the project area represent human activity after the ice sheet receded from Baffin Island about 5,000 years ago. Soon afterward the island was colonized by Paleo-Eskimos with Southwestern Baffin Island, Melville Peninsula, Southhampton Island and the north of Quebec being considered to be part of the core area of Pre-Dorset and Dorset Culture Development.

3.3.1.1 Arctic Small Tool Tradition (4200 B.P. to 2800 B.P.)

There is presently little evidence to link Palaeo-Arctic tradition occupations to the Arctic Small Tool tradition (ASTt) occupations that succeed them. The ASTt represents a widespread cultural manifestation that covers all of the Canadian Arctic as well as parts of Alaska and Greenland. The ASTt is typically thought to date between approximately 4,200 and 2,800 B.P. (McGhee 1990). It includes the Denbigh Flint complex in northern Alaska, the Independence I culture of the Canadian High Arctic, the Inuvik Phase and the Pre-Dorset culture in Arctic Canada, and the Sarqaq culture in Greenland. It is thought that the ASTt relates to a separate migration of peoples from Siberia and does not appear to be related to the preceding Palaeo-Arctic tradition. As the name implies, the toolkit of the ASTt is comprised of lithic artifacts that are finely made and smaller than tools of similar function and age from elsewhere in North America. These include microblades and microcores, burins, gravers, small side and end scrapers, side and end blades, and bipointed (arrow) and triangular (harpoon) projectile points (Wright 1995). In Alaska it appears to have developed into the cultures of the Norton tradition while in Canada it developed into the Dorset culture.

3.3.1.2 Dorset Culture (2,500 B.P. to 1,000 B.P.)

The Dorset culture occupied the Canadian Arctic from 2,500 B.P. until at least 1,000 B.P. (McGhee 1990). Best known for miniature carvings, Dorset appears to have been a more successful adaptation to the conditions of the north than the preceding ASTt cultures from which it developed. This is demonstrated by the huge area occupied by Dorset groups and by evidence that they had perfected winter hunting on the sea ice. Cooler conditions in the northern hemisphere around 3,000 years ago resulted in expansion of the sea ice and a shift away from terrestrial hunting of caribou and hunting of sea mammals from boats in open water to a procurement of sea mammals from coastal edges and sea ice. This is evidenced in the archaeological record with a shift away from bow hunting to harpoon and spear hunting (McGhee 1990). Artifacts recovered from sites representing this period are more diverse and “reflect a richer and more secure way of life

than that of earlier Palaeo-Eskimos." including the establishment of permanent winter villages (McGhee 1990).

However, when the people of the Thule culture arrived in the Canadian Arctic approximately 1,000 years ago, the Dorset culture had largely or entirely disappeared for reasons that are not well understood (McGhee 2001; Wright 1999).

3.3.1.3 Thule (1,000 B.P. to 400 B.P.)

The Thule tradition dates from approximately 1,000 to 400 B.P. and is derived from the Norton tradition in northern Alaska. More specifically, Thule grows out of the Old Bering Sea and Punuk traditions, which have numerous similarities to Thule cultural assemblages. These assemblages suggest subsistence based on maritime resources such as seals and whales that were hunted from kayaks or umiaks as identified by harpoon floats. Thule represented a new kind of adaptation to the Arctic environment, based on the hunting of large sea mammals in open water through the use of drag floats attached to the harpoon line. Large skin boats and the use of dogs to pull large sleds were other Thule innovations. Winters were spent in sometimes large communities of semi-subterranean houses, subsisting on a stored surplus obtained most typically by hunting bowhead whales. The introduction of Thule into the Canadian Arctic is noted by a distinct change in a number of cultural markers from the Dorset culture. The earliest Thule occupations currently recognized are on islands in the Bering Strait and exhibit an almost complete reliance on maritime resources; however, later sites demonstrate that both maritime and terrestrial resources were utilized (McGhee 1990). Climatic changes following the thirteenth century likely caused the Thule to modify their way of life into that of the various historic Inuit groups.

3.3.2 Historic Inhabitants

Historic use of the project area is identified with the 'Baffin Eskimo'. This group inhabited the southern two-thirds of Baffin Island and some of the nearby islands off its

shores (Kemp 1984:464). The remaining northern region of the Island is inhabited by the Iglulik (Kemp 1984:464). The island region that is inhabited by the Baffin Eskimo is characterized by freshwater systems located in the central interior and mountainous areas in the northeast and southwest (Kemp 1984:464). The region was first inhabited by the Pre-Dorset approximately 4,200 years ago, supported by archaeological sites identified at Lake Harbour, Frobisher Bay, and Pond Inlet (Desrosiers 2005:193). Prior to this inhabitation, a large ice sheet had covered the island until its melting 5,000 years ago (Desrosiers 2005:193). Dorset groups are identified in the archaeological record following this, between 2,500 and 600 years ago. The regions of southwestern Baffin Island, Melville Peninsula, Southampton Island, and northern Quebec are considered the central regions of Pre-Dorset and Dorset cultural development (Desrosiers 2005:193). Thule groups entered the area during the final 200 years of the Dorset occupation of the area. These two archaeologically distinct cultures coexisted in the region, but the character of this relationship is unclear. Much of the information known of the historic Thule, or Baffin Eskimo, is based on the ethnographic recordings of Franz Boas from the late 1800's. At this time, Boas recognized seven distinct regional populations within the Baffin Eskimo area (Kemp 1984:464). These populations were "linked together by [bilateral] kinship and the mutual use of hunting and territory, to form larger territorial and social groupings...bands" (Kemp 1984:464). Importantly, by the time of Boas' ethnography the Baffin Eskimo possessed many European goods, which influenced and altered the traditional life-ways of the local groups.

European contact with the Baffin Eskimo populations began in the 16th Century with the Frobisher Expedition (Kemp 1984:467), whose task it was to find the North West Passage (Desrosiers 2005:193). However, previously Baffin Bay had been explored by the Norse (Heinrichs 2005:191). During the 10th Century these Norseman built settlements on Greenland and perhaps Newfoundland but little evidence remains of where and how far they had actually travelled as these same settlements collapsed during the 13th Century. Baffin Bay was next explored and recorded by John Davis in 1587. European interaction gradually increased with the rise of European whale hunting; whaling stations began operating throughout the eastern arctic in the 1880's (Kemp

1984:466). Such whaling activities around Davis Strait originated in the 1700's, but it was not until the 1850's that all the inhabitants of the Cumberland Sound and Davis Strait regions were in contact with whalers (Kemp 1984:466). The whaling industry was eventually eclipsed by fur trapping in 1910 (Kemp 1984:474). Also at this time Anglican missionaries entered the region (Kemp 1984:474).

The Baffin Eskimo have historically utilized a vast array of subsistence resources, including marine, terrestrial, avian, and freshwater game; however, the wolf was sought but not utilized for subsistence (Kemp 1984:467). A vast array of tools was used for hunting, such as plugs to stop the bleeding of seals that made it easier for their transport. Bird nets were also constructed and used to ensnarl various avian species (Kemp 1984:468). Hunting weapons included breathing-hole harpoons that had compound elements, and single-curve bows (Kemp 1984:69). Metal, along with driftwood, antler, bone, and stone, were used in the construction of these implements. In addition, Baffin Eskimo technology allowed for water transportation via kayaks and umiaks, or women's boats (Kemp 1984:469); the form of the kayaks was not consistent throughout the Baffin Eskimo area. Dog sleds were used as well. These sleds were the dominant method of transportation until the 1960's when snowmobiles were introduced (Kemp 1984:469). With these forms of transportation, the Baffin Eskimo interacted with neighbouring groups such as those from northern Quebec (Kemp 1984:465). However, this interaction did not occur regularly.

Different subsistence resources were procured based on the season. For instance, seals (particularly ringed seal) were hunted along the floe-edge during the spring months, and caribou herds were hunted during the fall in the interior and coastal regions (sometimes with the aid of drives) (Kemp 1984:467-468). As this instance suggests, Baffin Eskimo mobility was seasonal and influenced by the location of what game they were pursuing. As a rule, Baffin Eskimo groups resided primarily in the coastal regions. It was the caribou that pulled groups into the interior, whereby three particular lakes were favoured as hunting locals: Nettling, Amadjuak, and Sylvia Grinnel Lakes (Kemp 1984:468). During these interior hunts, if excess caribou meat was produced, then it would be cached

at these interior locations and retrieved at times of food stress during the winter months (Kemp 1984:468). In addition to there being differences in subsistence procurement based on seasonality, there were also differences in dwellings. Winter dwellings were commonly snow houses, although occasionally early and abandoned Thule houses were reused through the addition of roofs (Kemp 1984:470). In contrast to the winter, skin tents were utilized during the warmer months. These tents varied in form and size depending on how far they were to be transported and their use (Kemp 1984:470). A further seasonal distinction is found in Baffin Eskimo clothing; only caribou skin was used for winter clothing, and seal skin was used in addition to caribou for summer clothes (Kemp 1984:470).

3.3.3 Heritage Studies

Prior to the current study of the FOX-E Intermediate DEW Line site on Durban Island, only one heritage resources site was recorded in the Nunavut or Canadian Museum of Civilization database for this location. The site, MgBs 2 was recorded as the location of both a whaling station and the FOX-E DEW Line site. MgBs 2 is reported in more detail below. There have also been four sites recorded in the surrounding area that were not revisited during the present study.

MgBs 1 is located directly south of MgBs 2 on Cumberland Point, southwestern Baffin Island. MgBs 1 is described as a historic British campsite consisting of 4 qarmats, numerous tent rings, caches, and a marker. A boulder at this site had the following inscribed upon its surface: “67"1' N / 62"20" W / TR J.G. PHD / July 17, 1837”. The carving may have been used for future sailors to check their navigation instruments. The “TR J.G. PHD” is thought to relate to the crew of the Joseph Green (J.G.) out of Peterhead (PHD), Scotland, captained by J. Volum. An alternate explanation is that the inscription was made by the crew of the "Traveller" (TR), also a member of the Peterhead whaling fleet in that year.

Four islands, situated in close proximity to Durban Island hold four further previously archaeological sites. These islands are called: Qaqaluit Island, Paugnang Island, Block Island, and Padloping Island. The MhBt 1 was also known as the Cape Searle site, located on the north shore of Qaqaluit Island. The site was recorded by D. Clark in 1964 as a stone cairn with undetermined temporal and cultural associations. The second site, MgBt 2, was a prehistoric site located on a rocky ledge along the south shore of Paugnang Island. George Sabo in 1975 recorded this (and MgBt 1) site while conducting the Thule Archaeology Conservation Project. There were a total of three structures identified, two of which were looted. The other structure was eroding but did not evidence looting. These three structures were associated with the late Thule. The third site, MgBt 1, was located on the south shore of Block Island. The site was identified as 4 closely placed villages. The first was an Inuit village comprised of numerous wood platformed qarmats. The second, a Thule village, was also comprised of qarmats (n=2) but were made of stone and one had a stone cairn built within. The third village, associated with the Thule, had 3 stone houses. One of these structures had a recent cache placed within it and two burial cairns placed behind the structure's back walls. Nearby to this structure were 2 kayak rests, a number of tent rings, and additional caches. Approximately 105 M. to the north of these three villages was the forth and final grouping of structures. These structures (n=3) were associated with the Thule. Finally, MhBt 2 is a previously recorded site located on Padloping Island and was identified by D. Clark in 1964 as a cairn of undetermined age.

4. METHODOLOGY

4.1 Field Inventory and Assessment

All field work was conducted under a valid Class II Archaeological Permit issued by CLEY. The field program focused on assessment of all areas of high and moderate archaeological potential within the disturbed DEW Line site, and the proposed borrow source and landfill locations. The purpose of the field investigation was to identify archaeological materials, document location and content and provide data to be used in the development of recommendations for future remediation programs. Inventory and assessment techniques followed established practices and consisted of the following:

- visual examination of the identified areas to determine the presence of such surficial features such as standing or collapsed buildings, dumps, cache pits, cabin foundations, etc. and exposed precontact cultural materials such as stone tool making debris and tools;
- visual examination of the identified areas to determine the presence of items of historical military interest;
- excavation of shovel tests (ca. 40 x 40 cm) to varying depths to determine the potential for subsurface precontact cultural remains if deposition is present;
- visual examination of bedrock exposures (if any) or gravels for precontact quarrying activity;
- excavation of either additional shovel tests or 1 x 1 m units for the purpose of identifying the distribution, density, and nature of cultural remains associated with sites identified through inventory procedures;
- documentation of the location (GPS coordinates), nature, size, and complexity of each identified site; and
- documentation of individual site features to record content, context, potential identity, and to provide information required to develop a mitigation program.

These results, along with updates and recommendations will be included in written submissions to CLEY as required by the Permit to conduct the AIA, and discussed with the Chief Archaeologist of Nunavut.

4.2 Heritage Feature / Structure Evaluation

Evaluations of heritage features and standing structures were to be completed for features/structures that are observed during the investigations. These evaluations would consider perceived heritage resource value and community cultural value as well as the predicted impact from the proposed program. In general, disturbed sites with limited cultural remains would be assigned lower archaeological resource values than undisturbed sites, large sites with large amounts of cultural material, complex sites, and multicomponent sites. Undisturbed multicomponent sites would generally be assigned the highest heritage resource value.

Community input will play a role in the evaluation of site value, and the inclusion of members of the local community on the field crew aided in the in-field discussions regarding site significance.

4.3 Detailed Archaeological Site Investigations / Mitigation

If required, mitigation of significant heritage resources sites may include a number of different options. Prior to evaluation of these mitigative options, the perceived value of the identified archaeological sites will be discussed with the AECOM Project team to determine the feasibility of avoiding important sites. Only if site avoidance is not possible, will other mitigative measures such as collection and documentation, and controlled mapping/excavation be considered. In areas of no sediment deposition surface collection and mapping of artifacts and features may satisfy regulatory requirements for mitigation. Recommendations for excavation may include a controlled excavation mitigative plan and will specify the number of square metres and suggest locations for excavation units/blocks.

Overall mitigative options may be summarized by:

- collection and documentation undertaken at the time of the field assessment at all sites with low archaeological resource value;
- avoidance if feasible at all sites assigned high archaeological resource value;
- mitigative excavations which will be recommended at those sites assigned high archaeological resource value that could not be avoided by borrow source relocation; and
- a management plan for required mitigation relative to the proposed construction schedule will be discussed with the site project team.

4.4 Reporting

Analysis of collected artifacts includes cleaning, cataloguing, identification, inventory, and description of each individual piece for inclusion in the final report. GPS site information is provided for mapping relative to the former site structures at the site and to CLEY, but not included in the final versions of this report. Archaeological site maps, photographs, and artifact scans are prepared as digital files.

5. RESULTS

Upon completion of the field component and the artifact curation, a draft report was prepared. This final permit report on the archaeological studies will be forwarded to AECOM for review, and then submitted to CLEY for review. This report includes a project description, the environmental setting, the historical and archaeological context for the project area, field methodology, and the results of the field reconnaissance. The report includes descriptive data on the sites, artifacts, and features identified, as well as detailed information on the nature, content, and significance of the artifacts and features identified. Cultural material that was recovered was inventoried, described, and discussed within the report text to aid in evaluation of scientific and interpretive value. All identified sites have been documented on appropriate site inventory forms.

If required, a summary of the findings will be prepared for inclusion in a screening document.

The following workplan was followed:

- avoidance has been recommended where feasible at all sites assigned high archaeological resource value (this to include all constructed features: burials, tent rings, caches, hunting blinds, hearths);
- collection and documentation has been undertaken as a mitigative option of sites with low archaeological resource value and as a method of protecting the heritage resource from future undocumented impacts due to increased personnel activity in the vicinity; and
- acceptable methods of mitigation were discussed with CLEY and the Territorial Archaeologist, and may lead to a recommendation for detailed mapping, collection and/or test excavations at those sites assigned high archaeological resource value that cannot be avoided by reclamation project.

A management plan for required mitigation, monitoring or surveillance relative to the proposed remediation will be developed as part of the contracted services deliverable to PWGSC. This includes site mitigation, additional survey of any project re-locates required due to site avoidance, and verification of those heritage sites located outside the proposed development activity area that should remain outside re-located areas.

A search of the Canadian Museum of Civilization database identified only one previously recorded site on Durban Island. That site, MgBs 2, is a 19th century whaling station and the FOX-E DEW Line Site. Therefore the current study included the revisit of MgBs 2.

5.1 Community Consultation

Consultation regarding the FOX-E Intermediate DEW Line site Phase III Environmental Site Assessment, Hazardous and Non-Hazardous Materials Audit, Geotechnical Evaluation, Remedial Action Plan is ongoing.

5.2 Field Results

The AIA assessment included all of the areas of moderate to high archaeological potential that has been disturbed by the FOX-E DEW Line site as well as areas identified as having potential for future borrow sources or dumps. The disturbed areas that were surveyed included the Station Area (Plate 2), access road, beach landing area (Plate 1), barrel dumps, landfills (Plate 3 and 4) and all the existing roads and anywhere there was evidence of a bull dozer push or any other disturbance. Previously undisturbed areas that were examined included the periphery of all the impacted areas as well as several areas that were identified as potential borrow areas and landfills for remediation activities (Plates 5).

During the survey the previously recorded site MgBs 2 was revisited and one new site, MgBs 4 was identified and recorded. The sites include the FOX-E Intermediate DEW line station and reported whaling station and a stone tent ring site, MgBs 4, which are described in more detail below. In addition to the heritage sites, a land use site consisting

of the remains of 11 Inuit houses were observed. Although the structures have been removed from the beach, material culture left behind indicates that at least eleven Inuit houses were present on the beach approximately 500 m west of the Secondary beach landing area (Plate 6 and 7). Material culture observed includes domestic artifacts such as children's toys (Plate 8), flat glass, piece of clothing, ceramic and plastic plate fragments, bed frame, container glass, seal and bird bone as well as electrical wire, metal stove (Plate 9), metal strapping, remains of a mop, electrical switches and other unidentified artifacts related to the DEW Line site (Plate 10). There were additional house remains to the east that were not recorded as they were outside of the study area.



Plate 3 View southeast of Dump A, material was pushed off the side of the cliff.



Plate 4 View northeast of B with fuel barrels and construction equipment.



Plate 5 View east of road going down to the beach area and possible borrow source on top of the hill.



Plate 6 View south of house remains made up of dimensional lumber and plywood.



Plate 7 View north of house remains with bed frame, food cans and dimensional lumber.



Plate 8 Photo of home made toy cat or bulldozer that was among the house remains.



Plate 9 Photo of iron stove that was among the house remains.



Plate 10 Vehicle instrument panel that was found among house remains.

5.3 Revisited Heritage Resource Site

5.3.1 MgBs 2

MgBs 2 was originally recorded by Philips (1980) for the Historical Archaeological Survey Auyuittuq National Park and Vicinity as the location of a whaling station as well as the FOX-E DEW Line Site. Although the site was not visited, historic records indicated that there were three whaling companies that established at this site: the Robert Kinnes Co. (1910-14), The Arctic Gold Exploration Syndicate (1914-16) and the Sabellum Trading Company (1924-27) (CMC 2010). During the current study there were no signs of a whaling station within the project footprint. However, due to the amount of disturbance involved in the terra forming of the beach landing area, construction of the POL tank platform, construction camp and access road to the DEW Line site any remains of a whaling stations could have been easily destroyed and/or buried (Plate 1 and Plate 11).

The FOX-E DEW Line is made up of the beach landing area and station area on top of a high plateau that are connected by a road that was ploughed into the steep banks of a valley (Plate 12; Figure 2). The beach area consists of two beach landing areas, POL tanks, the remains of the construction camp (Plate 13), three dumps, a barrel cache (Plate 14), the wooden floor of a building and numerous smaller dump location, roads and gravel borrow areas.

The station consists of a garage, warehouse, Module train, antennae (Plate 15), bulk water storage, POL tanks, remains of what is believed to be the Inuit house (Plate 16), the remains of three Quonset huts (Plate 17), helicopter landing pad a main dump, barrel dump and several smaller dump areas. With the exception of the Inuit house, which has burned down and the Quonset huts all of the buildings are standing and in relatively good shape.



Plate 11 View south of Beach Landing Area showing POL tanks, barrel dumps and disturbance area.

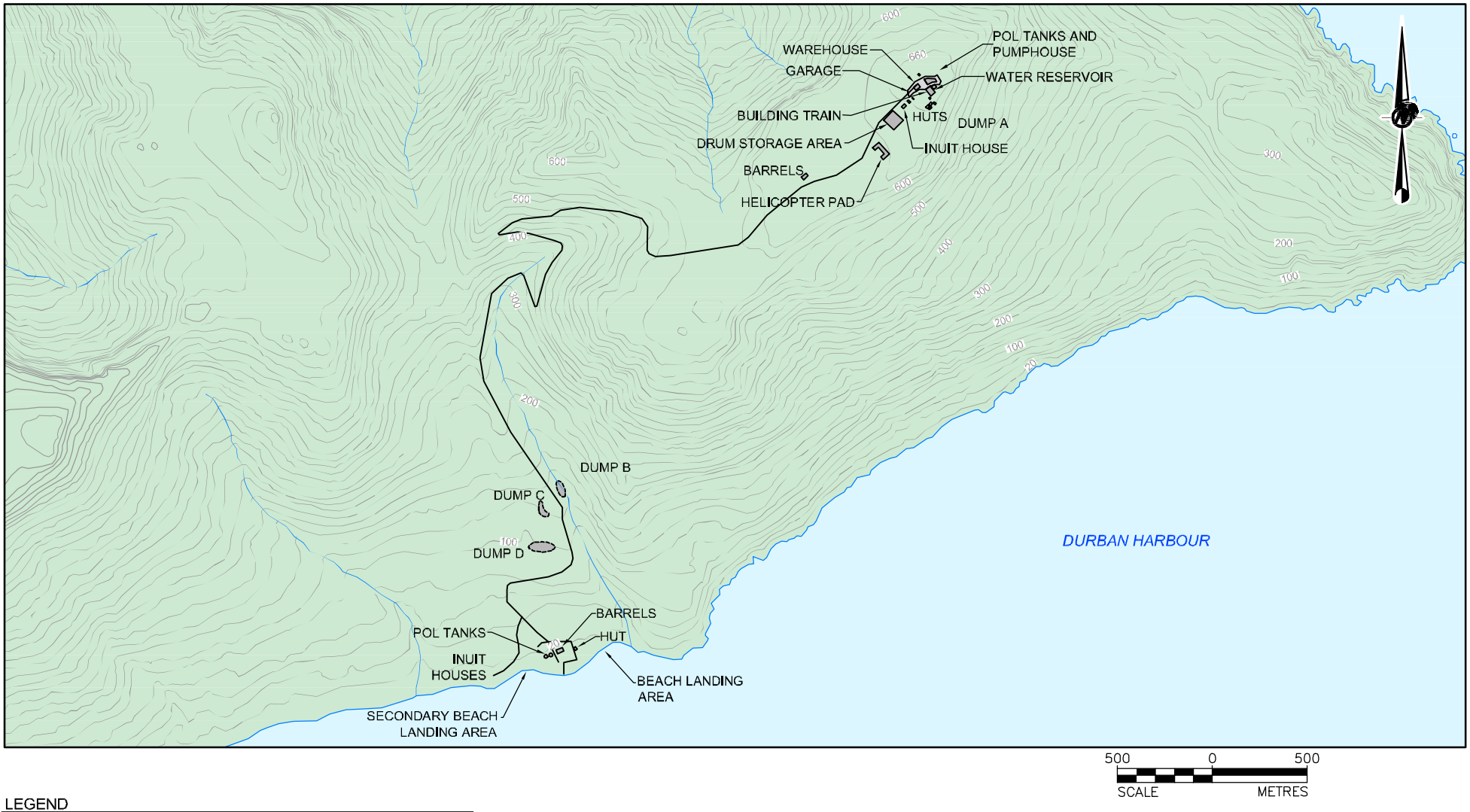


Plate 12 View south of road from the FOX-E site to the Beach Landing area.



Plate 13 View south construction camp area, the foundation of the camp can be seen in the right side of the photo.

L:\2010\1333\10-1333-0023\8470\Report A\Fig 2 10133300238470A002 Site Plan.dwg Nov 23, 2010 - 11:37am



500 0 500
SCALE METRES

LEGEND

- CONTOUR (METRES)
- ROAD
- WATERCOURSE
- WATERBODY

REFERENCE

ALBERTA NTDB DIGITAL DATA OBTAINED FROM GEOMATICS CANADA, AUGUST 2001. MAPSHEET 16M01 DATUM: NAD83 PROJECTION: UTM ZONE 20

PROJECT

FOX-E DEW LINE SITE DURBAN ISLAND

TITLE

SITE LOCATION MAP

Golder Associates
Calgary, Alberta

PROJECT 10.1333.0023.8470			FILE No. 10133300238470A003	
DESIGN	BM	15/10/10	SCALE AS SHOWN	REV. 0
CADD	KJM	19/10/10		
CHECK	BM	19/10/10		
REVIEW	DB	19/10/10		

FIGURE: 2

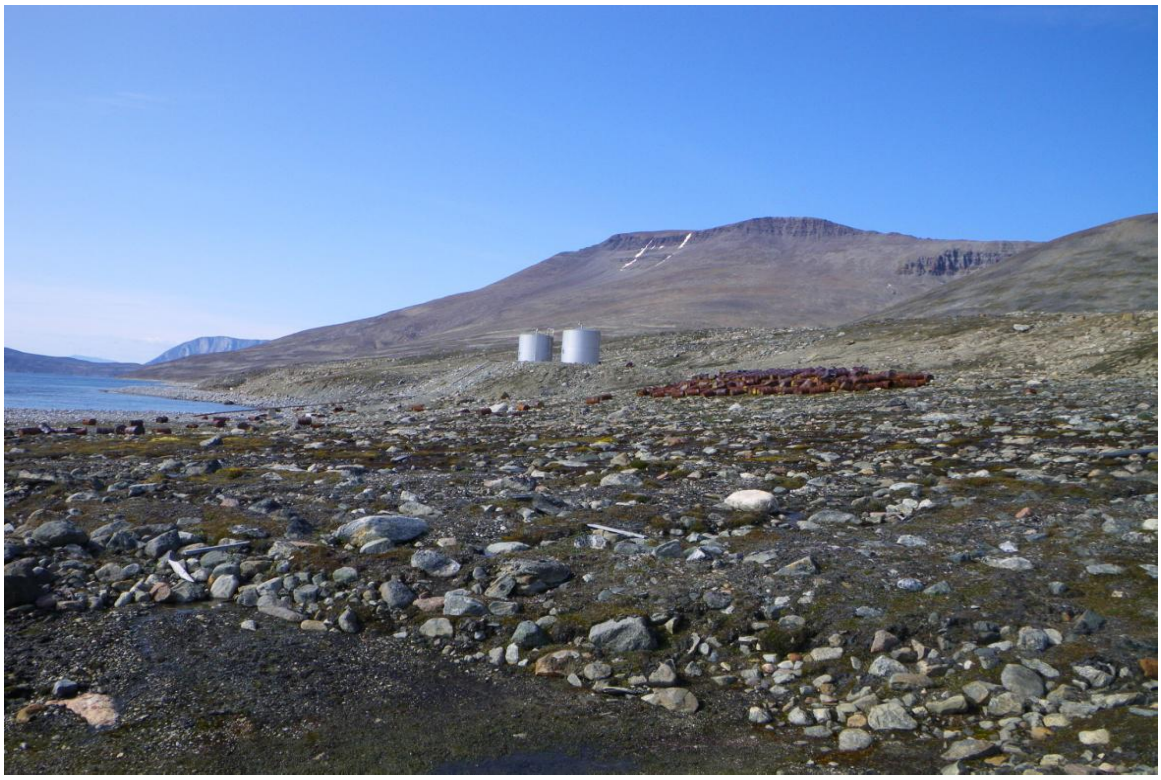


Plate 14 View west of barrel cache with POL tanks in the background.



Plate 15 View northeast of the base of the antennae, module train and POL tanks in the background.



Plate 16 View north east of Inuit House remains with garage and warehouse in the background.



Plate 17 View northeast of the remains of two of the three Quonset huts.

MgBs 2 was originally recorded as the location of both a 20th Century whaling station as well as the FOX-E Intermediate DEW Line. During the current study there were no signs of a whaling station within the project footprint. It is thought that either the station location is wrong or that the remains of the whaling station may have been disturbed by the construction of the FOX-E DEW Line Site. Johnny Kooneeliusie suggested that the location of the whaling station was across Hudson Strait from Durban Island on Baffin Island and that his grandfather had worked as a whaler at that location.

All the remains of the FOX-E Intermediate DEW Line Site will be removed during the planned remediation by PWGSC. No further work is recommended as the recording of the site is thought to be sufficient mitigation.

5.4 Newly Identified Heritage Resource Site

5.4.1 MgBs 4

MgBs 4 is a stone feature site that is made up of two stone circles on beach ridge overlooking the beach landing area and POL tanks associated with the FOX-E DEW Line site. Feature 1 is made up of more than 80 stones in a 5.5 m diameter that are partially buried (Plate 18). There also appears to be a stone centre feature dividing the stone feature in half. Feature 2 is made up of more than 27 stones in a 5 m diameter and is somewhat dispersed (Plate 19). The site is thought to predate the FOX-E DEW Line site due to the lack of cultural material found. A single hand wrought iron spike was recorded amongst the stones in Feature 1 (Plate 20). The origin of the features is unknown as it may represent European use if this area as a whaling station in the early 20th Century or may represent Inuit occupation that predated the FOX-E DEW Line site. MgBs 4 is thought to be of moderate to high significance and it is recommended that any impacts to the site be avoided. At this time there area no plans to disturb MgBs 2 during the remediation of the FOX-E DEW Line site.



Plate 18 View southwest Feature 1, MgBs 4 with POL tanks in the background.



Plate 19 View southwest Feature 2, MgBs 4 with POL tanks in the background.



Plate 20 Detail of hand wrought iron spike associated with Feature 2, MgBs 4.

6. SUMMARY AND RECOMMENDATIONS

The AIA of the FOX-E Intermediate DEW Line site conducted under Nunavut Permit 2010-017A produced the results discussed in Section 5 and outlined in Table 1. The disturbed nature of the site and lack of vegetation and sedimentation enabled a high visibility surface examination of the facility areas to adequately assess for the presence of cultural materials. As requested, areas which will not be impacted during remediation were not fully examined. During the study one previously recorded site, MgBs 2, was revisited and one new site, MgBs 4 was identified and recorded as per the *Guidelines for Applicants and Holders of Nunavut Territory Archaeology and Palaeontology Permits* (CLEY 2003).

Table 1 Heritage Site Recommendations

Site	Type	Significance	Recommendations
MgBs 2	DEW Line Site	Limited	No further work is recommended
MgBs 4	Stone Feature	Moderate	Avoidance is recommended

PWGSC has fulfilled the requirements to indentify the potential for impact to heritage resources during the proposed remediation/reclamation of the FOX-E DEW Line site on Durban Island. The AIA of the FOX-E Site included the participation of Losie Audiakiak and Johnny Kooneeliusie from the local community of Qikiqtarjuaq, who acted as bear monitors and participated in the identification and recording of the heritage resource sites.

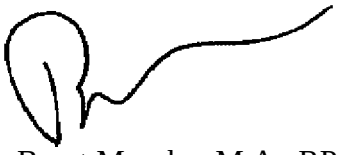
The AIA included revisiting the previously recorded DEW Line site, MgBs 2, and the identification of one new heritage resource site, MgBs 4. The FOX-E Dew Line Site, MgBs 2, is considered to be of limited significance given the amount of information that is currently known about the site. MgBs 4 is a stone feature site that is considered to be of moderate significance and it is recommended that this site be avoided during remediation activities.

7. CLOSURE

We trust the above meets your present requirements. If you have any questions or require additional details, please contact the undersigned.

GOLDER ASSOCIATES LTD.

Report prepared by:



Brent Murphy, M.A., RPA
Senior Archaeologist

Report reviewed by:



David Blower, Ph.D., RPA
Associate, Senior Archaeologist

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APPENDIX I

PHOTOGRAPH LOG

FOX-E AIA Photo Log

Number	Borden Number (if applicable)	Comment
10-017Aphoto1		View south of bottom of site - west of the POL tanks - from the air
10-017Aphoto2		View south of bottom of site with the POL tanks - from the air
10-017Aphoto3		View south of bottom of site with the POL tanks - from the air
10-017Aphoto4		View east from eastern edge of landform
10-017Aphoto5		View northeast of the North dump
10-017Aphoto6		Detail of the north dump
10-017Aphoto7		View northeast from north dump
10-017Aphoto8		View east from eastern edge of landform
10-017Aphoto9		View down from the top of the north dump
10-017Aphoto10		Detail of the north dump
10-017Aphoto11		View west from the northern edge of landform
10-017Aphoto12		View west from the northern edge of landform
10-017Aphoto13		View west of garage and warehouse
10-017Aphoto14		View north of POL tanks
10-017Aphoto15		View west of module train
10-017Aphoto16		View north of module train and POL tanks
10-017Aphoto17		View east of the base of the tower
10-017Aphoto18		View northeast of the fallen tower
10-017Aphoto19		View northeast of fallen tower and module train
10-017Aphoto20		View northwest of tower
10-017Aphoto21		View northwest of tower, garage and warehouse
10-017Aphoto22		View northwest of tower
10-017Aphoto23		Photo of billboard on the top of the tower
10-017Aphoto24		View northeast of Quonset hut
10-017Aphoto25		View east of Quonset
10-017Aphoto26		View north of Quonset
10-017Aphoto27		View west of Quonset with module train in the background
10-017Aphoto28		View north of Quonset
10-017Aphoto29		View east of Quonset
10-017Aphoto30		View north of module train, water storage and POL tanks
10-017Aphoto31		Detail of the base of the tower
10-017Aphoto32		View west from metal dump
10-017Aphoto33		View west from metal dump
10-017Aphoto34		view southwest of debris along edge of landform
10-017Aphoto35		Barrel and can dump on the west side of landform
10-017Aphoto36		View north along edge of landform
10-017Aphoto37		Sleigh with brunt metal cans of something
10-017Aphoto38		Detail of cans
10-017Aphoto39		View west from western edge of landform
10-017Aphoto40		View north of large cairn on the southwest edge of landform
10-017Aphoto41		View north of large cairn on the southwest edge of landform

PIN-E AIA Photo Log (continued)

Number	Borden Number (if applicable)	Comment
10-017Aphoto42		View north of FOX-E from cairn
10-017Aphoto43		View west of cairn
10-017Aphoto44		Barrel dump south of site along road
10-017Aphoto45		View northeast from site
10-017Aphoto46		View northeast from site
10-017Aphoto47		View northwest from site
10-017Aphoto48		View north of station
10-017Aphoto49		View south down the valley to the bottom site
10-017Aphoto50		View southeast of the road where it starts to descend
10-017Aphoto51		View north of landform that the station is on from potential borrow source
10-017Aphoto52		View west from potential borrow source
10-017Aphoto53		Inuit house at the station that has burned down
10-017Aphoto54		Inuit house at the station that has burned down
10-017Aphoto55		Inuit house at the station that has burned down
10-017Aphoto56		Inuit house at the station that has burned down
10-017Aphoto57		View north of tower
10-017Aphoto58		Photo of potential dump
10-017Aphoto59		View northeast of barrel storage area
10-017Aphoto60		View north of station from barrel storage area
10-017Aphoto61		Photo of dump south of helicopter landing pad
10-017Aphoto62		Snowshoe north of helicopter landing pad
10-017Aphoto63		Snowshoe north of helicopter landing pad
10-017Aphoto64		Inside the module train
10-017Aphoto65		Inside the module train
10-017Aphoto66		Inside the module train
10-017Aphoto67		Inside the module train
10-017Aphoto68		View southeast of the module train
10-017Aphoto69		Photo of the water storage tank for the base
10-017Aphoto70		View west across valley along road to the bottom of site
10-017Aphoto71		View southwest across valley along road
10-017Aphoto72		View southwest across valley along road
10-017Aphoto73		View southwest across valley along road
10-017Aphoto74		View south down valley from road
10-017Aphoto75		View south of drainage and MgBs-2 from the air
10-017Aphoto76	MgBs-2	View north of Feature 1, MgBs-2
10-017Aphoto77	MgBs-2	View north of Feature 1, MgBs-2
10-017Aphoto78	MgBs-2	View southeast of Feature 1, MgBs-2
10-017Aphoto79	MgBs-2	Detail of mop head
10-017Aphoto80	MgBs-2	Misc electrical panel
10-017Aphoto81	MgBs-2	View south of Feature 2, MgBs-2

PIN-E AIA Photo Log (continued)

Number	Borden Number (if applicable)	Comment
10-017Aphoto82	MgBs-2	View southwest of Feature 2, MgBs-2
10-017Aphoto83	MgBs-2	Children's sled
10-017Aphoto84	MgBs-2	Children's sled with scale
10-017Aphoto85	MgBs-2	Photo of sled
10-017Aphoto86	MgBs-2	View south of Feature 3, MgBs-2
10-017Aphoto87	MgBs-2	View north of Feature 3, MgBs-2
10-017Aphoto88	MgBs-2	View northeast of Feature 4, MgBs-2
10-017Aphoto89	MgBs-2	View northeast of Feature 4, MgBs-2
10-017Aphoto90	MgBs-2	View northeast of Feature 5, MgBs-2
10-017Aphoto91	MgBs-2	Detail of cut bone
10-017Aphoto92	MgBs-2	Detail of army heater
10-017Aphoto93	MgBs-2	Shipping crate from California
10-017Aphoto94	MgBs-2	Toy tractor
10-017Aphoto95	MgBs-2	Toy tractor
10-017Aphoto96	MgBs-2	Toy tractor
10-017Aphoto97	MgBs-2	Toy tractor
10-017Aphoto98	MgBs-2	View north of Feature 1, MgBs-2
10-017Aphoto99	MgBs-2	View east of Feature 1, MgBs-2
10-017Aphoto100	MgBs-2	View south of Feature 1, MgBs-2
10-017Aphoto101	MgBs-2	View south of Feature 2, MgBs-2
10-017Aphoto102	MgBs-2	View south of Feature 6, MgBs-2
10-017Aphoto103	MgBs-2	View west of Feature 6, MgBs-2
10-017Aphoto104	MgBs-2	View south of Feature 7, MgBs-2
10-017Aphoto105	MgBs-2	View northwest of Feature 7, MgBs-2
10-017Aphoto106	MgBs-2	View southeast of Feature 7, MgBs-2
10-017Aphoto107	MgBs-2	View north of Feature 8, MgBs-2
10-017Aphoto108	MgBs-2	View east of Feature 8, MgBs-2
10-017Aphoto109	MgBs-2	View south of Feature 8, MgBs-2
10-017Aphoto110	MgBs-2	Detail of wood debris
10-017Aphoto111	MgBs-2	View south of Feature 9, MgBs-2
10-017Aphoto112	MgBs-2	View north of Feature 9, MgBs-2
10-017Aphoto113	MgBs-2	View east of Feature 10, MgBs-2
10-017Aphoto114	MgBs-2	View east of Feature 10, MgBs-2
10-017Aphoto115	MgBs-2	View north of Feature 11, MgBs-2
10-017Aphoto116	MgBs-2	View southwest of Feature 11, MgBs-2
10-017Aphoto117	MgBs-2	View south of Feature 11, MgBs-2
10-017Aphoto118		Detail of radio
10-017Aphoto119		View north of the plowed road with switchbacks in the background
10-017Aphoto120		View north of the plowed road with switchbacks in the background
10-017Aphoto121		View north of the plowed road with switchbacks in the background
10-017Aphoto122		View east of POL tanks

PIN-E AIA Photo Log (continued)

Number	Borden Number (if applicable)	Comment
10-017Aphoto123		View east of POL tanks
10-017Aphoto124		View southeast of pipe from POL tanks
10-017Aphoto125		View west of POL tanks and barrels on the beach
10-017Aphoto126		View west of POL tanks and barrels on the beach
10-017Aphoto127		View north of hut on the beach
10-017Aphoto128		View west of hut on the beach
10-017Aphoto129		Survey monument marked by a cairn
10-017Aphoto130	MgBs-4	View northeast of stone ring, Feature 1, MgBs-4
10-017Aphoto131	MgBs-4	View east of Feature 1, MgBs-4
10-017Aphoto132	MgBs-4	View southwest of Feature 1, MgBs-4
10-017Aphoto133	MgBs-4	Detail of cloth that has blown in
10-017Aphoto134	MgBs-4	View southwest of Feature 2, MgBs-4
10-017Aphoto135	MgBs-4	View north of Feature 2, MgBs-4
10-017Aphoto136	MgBs-4	View east of Feature 2,MgBs-4
10-017Aphoto137	MgBs-4	View southeast of Feature 2, MgBs-4
10-017Aphoto138	MgBs-4	Detail of iron spike among ring rocks in Feature 2, MgBs-4
10-017Aphoto139	MgBs-4	Detail of iron spike among ring rocks in Feature 2, MgBs-4
10-017Aphoto140	MgBs-4	View east off Feature 2, MgBs-4 showing centre feature
10-017Aphoto141		View south of modern cairn - survey?
10-017Aphoto142		View southwest of modern cairn
10-017Aphoto143		View southeast of cat train sleigh
10-017Aphoto144		View north of road showing huge plowed area
10-017Aphoto145		View south of lower site area showing, disturbed areas, washed out barrel culvert and POL tanks
10-017Aphoto146		View south of lower site area showing, disturbed areas, washed out barrel culvert and POL tanks
10-017Aphoto147		View south of lower site area showing, disturbed areas, washed out barrel culvert and POL tanks
10-017Aphoto148		Photo of washed out culverts along road
10-017Aphoto149		View east of barrel dump
10-017Aphoto150		View southeast of another barrel dump
10-017Aphoto151		View south of road at a turn showing the amount of disturbance
10-017Aphoto152		View east of water reservoir
10-017Aphoto153		View northwest of water reservoir
10-017Aphoto154		Detail of water reservoir
10-017Aphoto155		View west of barrel dump
10-017Aphoto156		View north of barrel dump
10-017Aphoto157		View northeast of heavy equipment and barrels
10-017Aphoto158		View northeast of heavy equipment and barrels
10-017Aphoto159		View south of construction camp location
10-017Aphoto160		View northeast of construction camp
10-017Aphoto161		View southeast of camp and surrounding are showing debris

PIN-E AIA Photo Log (continued)

Number	Borden Number (if applicable)	Comment
10-017Aphoto162		View southeast of camp and surrounding are showing debris
10-017Aphoto163		View south of borrow area with bear monitor
10-017Aphoto164		View north of road from borrow area
10-017Aphoto165		View south of road and borrow area with bear monitor
10-017Aphoto166		View south of road and borrow area with bear monitor
10-017Aphoto167		View south of road and borrow area with bear monitor
10-017Aphoto168		View north of road with switch backs in the background
10-017Aphoto169		View north of road with switch backs in the background
10-017Aphoto170		View south of road
10-017Aphoto171		View south of road
10-017Aphoto172		View south of road

Appendix H

FCSAP Scoring Sheets

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

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

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

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

Subject Site:	**Durban Island, Nunavut (FOX-E Intermediate DEW Line Site)**	
Civic Address: *(or other description of location)*	Durban Island, NU (Former Intermediate DEW Line Site, FOX-E)	
Site Common Name : *(if applicable)*	FOX-E	
Site Owner or Custodian: *(Organization and Contact Person)*	Indian and Northern Affairs Canada (INAC)	
Legal description *or* metes and bounds:	The former Intermediate DEW Line site is located on Durban Island, Nunavut (67° 05' N, 62° 07' W).	
Approximate Site area:	49.43 ha (including Dump A, Beach Landing, Station Area and Old Construction Camp)	
PID(s) : *(or Parcel Identification Numbers [PIN] if untitled Crown land)*		
Centre of site: *(provide latitude/longitude or UTM coordinates)*	Latitude:	_____ degrees _____ min _____ secs
	Longitude:	_____ degrees _____ min _____ secs
	UTM Coordinate:	Northing _7441561_____ Easting _535988_____
Site Land Use:	Current:	Not used - abandoned Intermediate DEW Line Site.
	Proposed:	Remediation to eliminate exposure to physical and chemical hazards.
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:	FOX-E Durban Island was reserved by the Department of National Defence (DND) for use as an Intermediate DEW Line site in 1956, the station was constructed in 1957, operated until 1963, and in 1965 the land became the responsibility of Department of Indian Affairs and Northern Development (DIAND). There are two approximately 120 hectare Crown Land parcels on Durban Island, which encompass the abandoned facilities at the upper main station and the former construction camp and beach fuel storage tanks. The remains of the 6.6 km gravel road connecting the two parcels is located on Inuit Owned Land (IOL). A 'U' shaped helicopter pad remains at the upper site. There is no airstrip on Durban Island. Typical of all Intermediate DEW Line sites, FOX-E Durban Island consisted of a module train, warehouse, garage, Inuit house, two 75,700L Petroleum, Oil and Lubricant (POL) tanks, and a Doppler antenna. A large water reservoir tank and pump house were also part of the station infrastructure as there is no fresh water sources at the upper site, and there are no nearby freshwater lakes in vicinity of the site. Station personnel historically obtained freshwater from the runoff collector stream, which runs beside the construction camp and the beach, terminating at the ocean.	

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

Affected media and Contaminants of Potential Concern (COPC):	The affected media include soil, sediment, surface water, groundwater, paint, concrete and barrel (50 gallon drum) contents. The COPC for soil and sediment include arsenic, cadmium, chromium, cobalt, copper, lead, mercury, nickel, zinc, poychlorinated biphenyls (PCBs) and petroleum hydrocarbons (PHCs). The COPC for water are included in the Canadian Water Quality Guidelines for the Protection of Aquatic Life and the Guidelines for Canadian Drinking Water Quality in addition to PCBs and PHCs. The COPC for paint and concrete typically include PCBs and lead. Barrel contents are assessed according to the Barrel Protocol included in the Abandoned Military Site Remediation Protocol published by INAC (2009) and include COPC such as alcohol, glycol, PCBs, chlorine, cadmium, chromium and lead.

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

Site Letter Grade **C**

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

Scoring Completed By:	Jenna Morrish (AECOM Canada Ltd.)
Date Scoring Completed:	14-Dec-10

CCME National Classification System (2008, 2010 v 1.2)

(I) Contaminant Characteristics

Durban Island, Nunavut (FOX-E Intermediate DEW Line Site)

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		A Phase III ESA was conducted by AECOM at the site August 13 to August 22, 2010 (AECOM, 2010). Soil concentrations have been compared to the DEW Line Cleanup Criteria outlined in the Abandoned Military Site Remediation Protocol published by INAC (2009) and Site Specific Criteria developped by the Environmental Sciences Group (ESG 2010). Exceedances for arsenic, cadmium, copper, lead, PCBs, Type A PHC (F3 + F4) and Type B PHC (F1+F2+F3). All groundwater samples collected and analyzed were below the applicable guidelines. All surface samples collected and analyzed were below the applicable guidelines. Sediment samples were not collected due to the minimal fine material available. It is strongly suspected that any sediment does not have an exceedance.	The overall score is calculated by adding the individual scores from each residency media (having one or more exceedance of the most conservative media specific and land-use appropriate CCME guideline). Summary tables of the Canadian Environmental Quality Guidelines for soil, water (aquatic life, non-potable groundwater environments, and agricultural water uses) and sediment are available on the CCME website at http://www.ccme.ca/publications/cegg_rcqe.html?category_id=124. For potable groundwater environments, guidelines for Canadian Drinking Water Quality (for comparison with groundwater monitoring data) are available on the Health Canada website at http://www.hc-sc.gc.ca/ewh-semt/pubs/water-eau/doc_sup-appui/sum_guide-res_recom/index_e.html.	An increasing number of residency media containing chemical exceedances often equates to a greater potential risk due to an increase in the number of potential exposure pathways.
A. Soil	Yes			
Yes / No / Do Not Know				
B. Groundwater	No			
Yes / No / Do Not Know				
C. Surface water	No			
Yes / No / Do Not Know				
D. Sediment	No			
Yes / No / Do Not Know				
"Known" -score	2			
"Potential" - score	---			
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	According to the attached reference material, the following known contaminants (AECOM, 2010) on site have high hazard ranking: 1. Arsenic 2. Cadmium 3. Lead 4. PCB 5. F1 PHC (Type B PHC)	The relative degree of chemical hazard should be selected based on the most hazardous contaminant known or suspected to be present at the site. The degree of hazard has been defined by the Federal Contaminated Sites Action Plan (FCSAP) and a list of substances with their associated hazard (Low, Medium and High) has been provided as a separate sheet in this file. *See Attached Reference Material for Contaminant Hazard Rankings.*	Hazard as defined in the revised NCS pertains to the physical properties of a chemical which can cause harm. Properties can include toxic potency, propensity to biomagnify, persistence in the environment, etc. Although there is some overlap between hazard and contaminant exceedance factor below, it will not be possible to derive contaminant exceedance factors for many substances which have a designated chemical hazard designation, but don't have a CCME guideline. The purpose of this category is to avoid missing a measure of toxic potential.
High / Medium / Low / Do Not Know				
"Known" -score	8			
"Potential" - score	---			
3. Contaminant Exceedence Factor				
What is the ratio between the measured contaminant concentration and the applicable CCME guidelines (or other "standards")?	High (>100x)	PCB result for one paint sample (60800 mg/kg) exceeds the relevant criteria (50 mg/kg) by 1216x (AECOM, 2010). This is the highest exceedance.	Ranking of contaminant "exceedance" is determined by comparing contaminant concentrations with the *most conservative media-specific and land-use appropriate CCME* environmental quality guidelines. **Ranking should be based on contaminant with greatest exceedance of CCME guidelines.** Ranking of contaminant hazard as high, medium and low is as follows: High = One or more measured contaminant concentration is greater than 100 X appropriate CCME guidelines Medium = One or more measured contaminant concentration is 10 - 99.99 X appropriate CCME guidelines Low = One or more measured contaminant concentration is 1 - 9.99 X appropriate CCME guidelines Mobile NAPL = Contaminant is a non-aqueous phase liquid (i.e., due to its low solubility, it does not dissolve in water, but remains as a separate liquid) and is present at a sufficiently high saturation (i.e., greater than residual NAPL saturation) such that there is significant potential for mobility either downwards or laterally. Other standards may include local background concentration or published toxicity benchmarks. Results of toxicity testing with site samples can be used as an alternative. This approach is only relevant for contaminants that do not biomagnify in the food web, since toxicity tests would not indicate potential effects at higher trophic levels. High = lethality observed. Medium = no lethality, but sub lethal effects observed. Low = neither lethal nor sub lethal effects observed.	In the event that elevated levels of a material with no associated CCME guidelines are present, check provincial and USEPA environmental criteria. Hazard Quotients (sometimes referred to as a screening quotient in risk assessments) refer to the ratio of measured concentration to the concentration believed to be the threshold for toxicity. A similar calculation is used here to determine the contaminant exceedance factor (CEF). Concentrations greater than one times the applicable CCME guideline (i.e., CEF=>1) indicate that risks are possible. Mobile NAPL has the highest associated score (8) because of its highly concentrated nature and potential for increase in the size of the impacted zone.
Mobile NAPL / High (>100x) / Medium (10x to 100x) / Low (1x to 10x) / Do Not Know				
"Known" -score	6			
"Potential" - score	---			

CCME National Classification System (2008, 2010 v 1.2)

(I) Contaminant Characteristics

Durban Island, Nunavut (FOX-E Intermediate DEW Line Site)

Definition	Score	Rationale for Score (document any assumptions, reports, or site-specific information; provide references)	Method of Evaluation	Notes
4. Contaminant Quantity (known or strongly suspected)				
What is the known or strongly suspected quantity of all contaminants? >10 hectare (ha) or 5000 m^3 2 to 10 ha or 1000 to 5000 m^3 <2 ha or 1000 m^3 Do Not Know	<2 ha or 1000 m3	Total affected soil volume is estimated to be approximately 430 m3 (AECOM, 2010).	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	2			
"Potential" - score	---			
5. Modifying Factors				
Does the chemical fall in the class of persistent chemicals based on its behavior in the environment? Yes No Do Not Know	Yes	PCBs were identified on site (AECOM, 2010) and are included in the persistent chemicals listed in the attached reference section.	Persistent chemicals, e.g., PCBs, chlorinated pesticides etc. either do not degrade or take longer to degrade, and therefore may be available to cause effects for a longer period of time. Canadian Environmental Protection Act (CEPA) classifies a chemical as persistent when it has at least one of the following characteristics: (a) in air, (i) its half-life is equal to or greater than 2 days, or (ii) it is subject to atmospheric transport from its source to a remote area; (b) in water, its half-life is equal to or greater than 182 days; (c) in sediments, its half-life is equal to or greater than 365 days; or (d) in soil, its half-life is equal to or greater than 182 days. This list does not include metals or metalloids, which in their elemental form do not degrade. However metals and metalloids form chemical species in the environment, many of which are not readily bioavailable.	*Examples of Persistent Substances are provided in attached Reference Materials*
Are there contaminants present that could cause damage to utilities and infrastructure, either now or in the future, given their location? Yes No Do Not Know	No	The remaining infrastructure at the site that will most likely be demolished as part of the site remediation.		Some contaminants may react or absorb into underground utilities and infrastructure. For example, organic solvents may degrade some plastics, and salts could cause corrosion of metal.
How many different contaminant classes have representative CCME guideline exceedances? one two to four five or more Do Not Know	two to four	Metals, PCBs, light extractable PHCs, heavy extractable PHCs (AECOM, 2010).	For the purposes of the revised NCS ranking system, the following chemicals represent distinct chemical "classes": inorganic substances (including metals), volatile petroleum hydrocarbons, light extractable petroleum hydrocarbons, heavy extractable petroleum hydrocarbons, PAHs, phenolic substances, chlorinated hydrocarbons, halogenated methanes, phthalate esters, pesticides.	*Refer to the Reference Material sheet for a list of example substances that fall under the various chemical classes.*
"Known" - Score	4			
"Potential" - Score	---			

Contaminant Characteristic Total

Raw Total Scores- "Known"	22
Raw Total Scores- "Potential"	0
Raw Combined Total Scores	22
Total Score (Raw Combined / 40 * 33)	**18.2**

CCME National Classification System (2008, 2010 v 1.2)

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

Durban Island, Nunavut (FOX-E Intermediate DEW Line Site)

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	There were no exceedances noted in groundwater for non-potable environment (AECOM, 2010). Since limited groundwater sampling was conducted, the potential score will be used.	Review chemical data and evaluate groundwater quality. The evaluation method concentrates on 1) a potable or non-potable groundwater environment; 2) the groundwater flow system and its potential to be an exposure pathway to known or potential receptors An aquifer is defined as a geologic unit that yields groundwater in usable quantities and drinking water quality. The aquifer can currently be used as a potable water supply or could have the potential for use in the future. Non-potable groundwater environments are defined as areas that are serviced with a reliable alternative water supply (most commonly provided in urban areas). The evaluation of a non-potable environment will be based on a site specific basis. Physical evidence includes significant sheens, liquid phase contamination, or contaminant saturated soils. Seeps and springs are considered part of the groundwater pathway. In Arctic environments, the potability and evaluation of the seasonal active layer (above the permafrost) as a groundwater exposure pathway will be considered on a site-specific basis.	The 1992 NCS rationale evaluated the off-site migration as a regulatory issue. The exposure assessment and classification of hazards should be evaluated regardless of the property boundaries. Someone experienced must provide a thorough description of the sources researched to determine the presence/absence of a groundwater supply source in the vicinity of the contaminated site. This information must be documented in the NCS Site Classification Worksheet including contact names, phone numbers, e-mail correspondence and/or reference maps/reports and other resources such as internet links. Note that for potable groundwater that also daylights into a nearby surface water body, the more stringent guidelines for both drinking water and protection of aquatic life should be considered. **Selected References** Potable Environments Guidelines for Canadian Drinking Water Quality: www.hc-sc.gc.ca/ewh-semt/pubs/water-eau/doc_sup-appui/sum_guide-res_recom/index_e.html Non-Potable Environments Canadian Water Quality Guidelines for Protection of Aquatic Life. CCME. 1999 www.ccme.ca Compilation and Review of Canadian Remediation Guidelines, Standards and Regulations. Science Applications International Corporation (SAIC Canada), report to Environment Canada, January 4, 2002.
ii) Same as (i) except the information is not known but strongly suspected based on indirect observations.	9			
iii) Meets GCDWQ for **potable environments**; meets non-potable criteria or modified generic criteria (excludes ingestion of drinking water pathway) for **non-potable environments** **or** Absence of groundwater exposure pathway (i.e., there is no aquifer (see definition at right) at the site or there is an adequate isolating layer between the aquifer and the contamination, and within 5 km of the site there are no aquatic receiving environments and the groundwater does not daylight).	0			
	Go to Potential			
Score	---			
NOTE: If a score is assigned here for Known COPC Exceedances, then you can skip Part B (Potential for groundwater pathway) and go to Section 2 (Surface Water Pathway)				
B. Potential for groundwater pathway.				
a. Relative Mobility High Moderate Low Insignificant Do Not Know		Shallow test pits had relatively rapid groundwater seepage (AECOM, 2010).	Organics Koc (L/kg) / Metals with higher mobility at acidic conditions / Metals with higher mobility at alkaline conditions Koc < 500 (i.e., log Koc < 2.7) — pH < 5 — pH > 8.5 Koc = 500 to 5000 (i.e., log Koc = 2.7 to 3.7) — pH = 5 to 6 — pH = 7.5 to 8.5 Koc = 5,000 to 100,000 (i.e., log Koc = 3.7 to 5) — pH > 6 — pH < 7.5 Koc > 100,000 (i.e., log Koc > 5)	Reference: US EPA Soil Screening Guidance (Part 5 - Table 39) If a score of zero is assigned for relative mobility, it is still recommended that the following sections on potential for groundwater pathway be evaluated and scored. Although the Koc of an individual contaminant may suggest that it will be relatively immobile, it is possible that, with complex mixtures, there could be enhanced mobility due to co-solvent effects. Therefore, the Koc cannot be relied on solely as a measure of mobility. An evaluation of other factors such as containment, thickness of confining layer, hydraulic conductivities and precipitation infiltration rate are still useful in predicting potential for groundwater migration, even if a contaminant is expected to have insignificant mobility based on its chemistry alone.
	High			
Score	4			

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

Durban Island, Nunavut (FOX-E Intermediate DEW Line Site)

Definition	Score	Rationale for Score (document any assumptions, reports, or site-specific information; provide references)	Method Of Evaluation	Notes
b. Presence of engineered sub-surface containment? No containment Partial containment Full containment Do Not Know	No containment	There is no containment at site.	Review the existing engineered systems or natural attenuation processes for the site and determine if full or partial containment is achieved. Full containment is defined as an engineered system or natural attenuation processes, monitored as being effective, which provide for full capture and/or treatment of contaminants. All chemicals of concern must be contained for "Full Containment" scoring. Natural attenuation must have sufficient data, and reports cited with monitoring data to support steady state conditions and the attenuation processes. If there is no containment or insufficient natural attenuation process, this category is evaluated as high. If there is less than full containment or if uncertain, then evaluate as medium. In Arctic environments, permafrost will be evaluated, as appropriate, based on detailed evaluations, effectiveness and reliability to contain/control contaminant migration.	Someone experienced must provide a thorough description of the sources researched to determine the containment of the source at the contaminated site. This information must be documented in the NCS Site Classification Worksheet including contact names, phone numbers, e-mail correspondence and/or reference maps, geotechnical reports or natural attenuation studies and other resources such as internet links. **Selected Resources:** United States Environmental Protection Agency (USEPA) 1998. Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Groundwater. EPA/600/R-98/128. Environment Canada – Ontario Region – Natural Attenuation Technical Assistance Bulletins (TABS) Number 19 –21.
Score	3			
c. Thickness of confining layer over aquifer of concern or groundwater exposure pathway 3 m or less including no confining layer or discontinuous confining layer 3 to 10 m > 10 m Do Not Know	3 m or less	No confining layer of geologic material was observed (AECOM, 2010).	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 cm/s	Hydraulic conductivity was not measured but is assumed from the attached reference material sheet (silty sand (10^-5 to 10^-1) and gravel(10^-1 to 10^2)).	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	1			
B. Potential for groundwater pathway.				
e. Precipitation infiltration rate (Annual precipitation factor x surface soil relative permeability factor) High Moderate Low Very Low None Do Not Know	Low	Annual precipitation = 602.5 mm Precipitation factor = 0.6 (calculated as indicated in cell to the right) Permeability factor = 0.6 (assuming sand) Precipitation Infiltration Rate = 0.36 (calculated as indicated in cell to the right)	Precipitation Refer to Environment Canada precipitation records for relevant areas. Divide annual precipitation by 1000 and round to nearest tenth (e.g., 667 mm = 0.7 score). Permeability For surface soil relative permeability (i.e., infiltration) assume: gravel (1), sand (0.6), loam (0.3) and pavement or clay (0). Multiply the surface soil relative permeability factor with precipitation factor to obtain the score for precipitation infiltration rate.	
Score	0.4			
f. Hydraulic conductivity of aquifer >10^{-2} cm/s 10^{-2} to 10^{-4} cm/s <10^{-4} cm/s Do Not Know	>10-2 cm/s	Hydraulic conductivity was not measured but is assumed from the attached reference material sheet (silty sand (10^-5 to 10^-1) and gravel(10^-1 to 10^2)).	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	2			
Potential groundwater pathway total	11.4			
Allowed Potential score	11.4	Note: If a "known" score is provided, the "potential" score is disallowed.		
Groundwater pathway total	**11.4**			

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

Durban Island, Nunavut (FOX-E Intermediate DEW Line Site)

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	Surface water samples met relevant guidelines (AECOM, 2010). Since limited surface water is available on site, and was sampled, the potential scoring has been applied.	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 www.ccme.ca CCME. 1999. Canadian Water Quality Guidelines for the Protection of Agricultural Water Uses (Irrigation and Livestock Water) www.ccme.ca Health and Welfare Canada. 1992. Guidelines for Canadian Recreational Water Quality.
ii) Same as (i) except the information is not known but strongly suspected based on indirect observations.	8			
iii) Meets CWQG or absence of surface water exposure pathway (i.e., Distance to nearest surface water is > 5 km.)	0			
Score	Go to Potential ---			
NOTE: If a score is assigned here for Demonstrated Migration in Surface Water, then you can skip Part B (Potential for migration of COPCs in surface water) and go to Section 3 (Surface Soils)				
B. Potential for migration of COPCs in surface water				
a. Presence of containment No containment Partial containment Full containment Do Not Know		There is no containment at site.	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	No containment 5			
b. Distance to Surface Water 0 to <100 m 100 - 300 m >300 m Do Not Know		COPCs (Type B PHC) have been identified within approximately 50 m of the marine habitat (AECOM, 2010).	Review available mapping and survey data to determine distance to nearest surface water bodies.	
Score	100 - 300 m 2			
c. Topography Contaminants above ground level and slope is steep Contaminants at or below ground level and slope is steep Contaminants above ground level and slope is intermediate Contaminants at or below ground level and slope is intermediate Contaminants above ground level and slope is flat Contaminants at or below ground level and slope is flat Do Not Know		The slope for the entire site ranges from intermediate to steep. To be conservative, the steep slope option has been selected.	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	At/below and stee 1.5			

Definition	Score	Rationale for Score (document any assumptions, reports, or site-specific information; provide references)	Method Of Evaluation	Notes
d. Run-off potential High (rainfall run-off score > 0.6) Moderate (0.4 < rainfall run-off score <0.6) Low (0.2 < rainfall run-off score <0.4) Very Low (0 < rainfall run-off score < 0.2) None (rainfall run-off score = 0) Do Not Know	Very Low	Annual precipitation = 602.5 mm Precipitation factor = 0.6 (calculated as indicated in cell to right) Infiltration factor = 0.3 (assuming sand) Run-off potential = 0.18 (calculated as indicated in cell to right)	Rainfall Refer to Environment Canada precipitation records for relevant areas. Divide rainfall by 1000 and round to nearest tenth (e.g., 667 mm = 0.7 score). The former definition of "annual rainfall" did not include the precipitation as snow. This minor adjustment has been made. The second modification was the inclusion of permeability of surface materials as an evaluation factor. Permeability For infiltration assume: gravel (0), sand (0.3), loam (0.6) and pavement or clay (1). Multiply the infiltration factor with precipitation factor to obtain rainfall run off score.	Selected Sources: Environment Canada web page link: www.msc.ec.gc.ca Snow to rainfall conversion apply ratio of 15 (snow):1(water)
Score	0.2			
e. Flood potential 1 in 2 years 1 in 10 years 1 in 50 years Not in floodplain Do Not Know	Do Not Know		Review published data such as flood plain mapping or flood potential (e.g., spring or mountain run-off) and Conservation Authority records to evaluate flood potential of nearby water courses both up and down gradient. Rate zero if site not in flood plain.	
Score	0.5			
Potential surface water pathway total	9.2			
Allowed Potential score	9.2	Note: If a "known" score is provided, the "potential" score is disallowed.		
Surface water pathway total	**9.2**			
3. Surface Soils (potential for dust, dermal and ingestion exposure)				
A. Demonstrated concentrations of COPC in surface soils (top 1.5 m)				
COPCs measured in surface soils exceed the CCME soil quality guideline. Strongly suspected that soils exceed guidelines COPCs in surface soils does not exceed the CCME soil quality guideline or is not present (i.e., bedrock).	12 9 0	COPCs measured in surface soils exceed relevant site guidelines (DEW Line Cleanup Criteria) outlined in the INAC Abandoned Military Site Remediation Protocol (2009). Parameters that exceed include: arsenic, cadmium, copper, lead, PCBs, Type A PHC and Type B PHC (AECOM, 2010).	Collect all available information on quality of surface soils (i.e., top 1.5 metres) at the site. Evaluate available data against Canadian Soil Quality Guidelines. Select appropriate guidelines based on current (or proposed future) land use (i.e, agricultural, residential/parkland, commercial, or industrial), and soil texture if applicable (i.e., coarse or fine).	Selected References: CCME. 1999. Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health www.ccme.ca
Score	12			
NOTE: If a score is assigned here for Demonstrated Concentrations in Surface Soils, then you can skip Part B (Potential for a surface soils migration pathway) and go to Section 4 (Vapour)				
B. Potential for a surface soils (top 1.5 m) migration pathway				
a. Are the soils in question covered? Exposed Vegetated Landscaped Paved Do Not Know	Exposed	Soils are exposed with very limited moss cover in some areas.	Consult engineering or risk assessment reports for the site. Alternatively, review photographs or perform a site visit. Landscaped surface soils must include a minimum of 0.5 m of topsoil.	The possibility of contaminants in blowing snow have not been included in the revised NCS as it is difficult to assess what constitutes an unacceptable concentration and secondly, spills to snow or ice are most efficiently mitigated while freezing conditions remain.
Score	6			
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	>30% of year	The value of this selection should score a 2, not a zero. The potential surface soil pathway total is actually 8. The known score (12) disallows the potential score (8).	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).	
Score	0			

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

Durban Island, Nunavut (FOX-E Intermediate DEW Line Site)

Definition	Score	Rationale for Score (document any assumptions, reports, or site-specific information; provide references)	Method Of Evaluation	Notes
Potential surface soil pathway total	6	**Note: If a "known" score is provided, the "potential" score is disallowed.**		
Allowed Potential score	---			
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	VOCs were not measured in soil samples.	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 and volatile hydrocarbons have not been found in site soils or groundwater.	0			
	Go to Potential			
Score	---			
NOTE: If a score is assigned here for Demonstrated COPCs in Vapour, then you can skip Part B (Potential for COPCs in vapour) and go to Section 5 (Sediment)				
B. Potential for COPCs in vapour				
a. Relative Volatility based on Henry's Law Constant, H' (dimensionless) High (H' > 1.0E-1) Moderate (H' = 1.0E-1 to 1.0E-3) Low (H' < 1.0E-3) Not Volatile Do Not Know		Low volatility has been applied because there are minimal detectable BTEXs (H ranges from 5.19 to 7.66E-0.3) (AECOM, 2010). Most contaminants of concern (i.e. Metals and PCBs) have no volatility.	Reference: US EPA Soil Screening Guidance (Part 5 - Table 36) *Provided in Attached Reference Materials*	If the Henry's Law Constant for a substance indicates that it is not volatile, and a score of zero is assigned here for relative volatility, then the other three questions in this section on Potential for COPCs will be automatically assigned scores of zero and you can skip to section 5.
	Low			
Score	1			
b. What is the soil grain size? Fine Coarse Do Not Know		Bulk sampling completed for soil samples indicate coarse grained material on-site (AECOM, 2010).	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).	
	Coarse			
Score	4			
c. Is the depth to the source less than 10m? Yes No Do Not Know		Contaminants have been identified at surface and shallow depth (AECOM, 2010).	Review groundwater depths below grade for the site.	
	Yes			
Score	2			
d. Are there any preferential pathways? Yes No Do Not Know		There are no subsurface structures (i.e. Utilities).	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.
	No			
Score	0			
Potential vapour pathway total	7	Note: If a "known" score is provided, the "potential" score is disallowed.		
Allowed Potential score	7			
Vapour pathway total	**7**			

CCME National Classification System (2008, 2010 v 1.2)

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

Durban Island, Nunavut (FOX-E Intermediate DEW Line Site)

Definition	Score	Rationale for Score (document any assumptions, reports, or site-specific information; provide references)	Method Of Evaluation	Notes
5. Sediment Movement				
A. Demonstrated migration of sediments containing COPCs				
There is evidence to suggest that sediments originally deposited to the site (exceeding the CCME sediment quality guidelines) have migrated.	12	Sediment samples were not collected because of limited fine material. Most near-shore "sediment" was composed of coarse gravel (AECOM, 2010).	Review sediment assessment reports. Evidence of migration of contaminants in sediments must be reported by someone experienced in this area.	Usually not considered a significant concern in lakes/marine environments, but could be very important in rivers where transport downstream could be significant.
Strongly suspected (based on observations and/or modelling)	9			
Sediments have been contained and there is no indication that sediments will migrate in future. **or** Absence of sediment exposure pathway (i.e., within 5 km of the site there are no aquatic receiving environments, and therefore no sediments).	0			
	Go to Potential			
Score	---			
NOTE: If a score is assigned here for Demonstrated Migration of Sediments, then you can skip Part B (Potential for Sediment Migration) and go to Section 6 (Modifying Factors)				
B. Potential for sediment migration		Sediment samples were not collected because of limited fine material. Most near-shore "sediment" was composed of coarse gravel.		
a. Are the sediments having COPC exceedances capped with sediments having no exceedances ("clean sediments")?	Do Not Know		Review existing sediment assessments. If sediment coring has been completed, it may indicate that historically contaminated sediments have been covered over by newer "clean" sediments. This assessment will require that cores collected demonstrate a low concentration near the top and higher concentration with sediment depth.	
Yes No Do Not Know	2			
b. For lakes and marine habitats, are the contaminated sediments in shallow water and therefore likely to be affected by tidal action, wave action or propeller wash?	Do Not Know		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	2			
c. For rivers, are the contaminated sediments in an area prone to sediment scouring?	Do Not Know		Review existing sediment assessments. It is important that the assessment is made under worst case flows (high yearly flows). Under high yearly flows, areas which are commonly depositional	
Yes No Do Not Know	2			
Potential sediment pathway total	6			
Allowed Potential score	6	Note: If a "known" score is provided, the "potential" score is disallowed.		
Sediment pathway total	**6**			
6. Modifying Factors				
Are there subsurface utility conduits in the area affected by contamination?	No		Consult existing engineering reports. Subsurface utilities can act as conduits for contaminant migration.	
Yes No Do Not Know				
Known	0			
Potential	0			

Migration Potential Total		
Raw "known" total	12	
Raw "potential" total	33.6	
Raw combined total	45.6	Note: If "Known" and "Potential" scores are provided, the checklist defaults to known. Therefore, the total "Potential" Score may not reflect the sum of the individual "Potential" scores.
Total (max 33)	**23.5**	

CCME National Classification System (2008, 2010 v 1.2)

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

Durban Island, Nunavut (FOX-E Intermediate DEW Line Site)

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	While there are COPCs that exceed relevant criteria, the site is not regularly frequented by humans. Local people have a strong reliance on hunting and fishing for survival. The potential scoring is used.	*Where adverse effects on humans are documented, the site should be automatically designated as a Class 1 site (i.e., action required). There is no need to proceed through the NCS in this case. However, a scoring guideline (22) is provided in case a numerical score for the site is still desired (e.g., for comparison with other Class 1 sites). This category can be based on the outcomes of risk assessments and applies to studies which have reported Hazard Quotients >1 for noncarcinogenic chemicals and incremental cancer risks that exceed acceptable levels defined by the jurisdiction for carcinogenic chemicals (for most jurisdictions this is typically either $>10^{-5}$ or $>10^{-6}$). Known impacts can also be evaluated based on blood testing (e.g. blood lead >10 ug/dL) or other health based testing. This category can be based on the outcomes of risk assessments and applies to studies which have reported Hazard Quotients of less than 0.2 for non-carcinogenic chemicals 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}).	Known adverse impact includes domestic and traditional food sources. Adverse effects based on food chain transfer to humans and/or animals can be scored in this category. However, the weight of evidence must show a direct link of a contaminated food source/supply and subsequent ingestion/transfer to humans. Any associated adverse effects to the environment are scored separately later in this worksheet. Someone experienced must provide a thorough description of the sources researched to evaluate and determine the quantified exposure/impact (adverse effect) in the vicinity of the contaminated site. **Selected References:** Health Canada – Federal Contaminated Site Risk Assessment in Canada Parts 1 and 2 Guidance on Human Heath Screening Level Risk Assessments (www.hc-sc.gc.ca/ewh-semt/pubs/contamsite/index_e.html) United States Environmental Protection Agency, Integrated Risk Information System (IRIS) – http://toxnet.nml.nih.gov
Same as above, but "Strongly Suspected" based on observations or indirect evidence.	10			
No quantified or suspected exposures/impacts in humans.	0			
	Go to Potential			
Score	---			
NOTE: If a score is assigned here for Known Exposure, then you can skip Part B (Potential for Human Exposure) and go to Section 2 (Human Exposure Modifying Factors)				
B. Potential for human exposure				
a) Land use (provides an indication of potential human exposure scenarios) Agricultural Residential / Parkland Commercial Industrial Do Not Know		The site is accessible by boat in the summer. This site fits the CCME definition for Agricultural.	Review zoning and land use maps over the distances indicated. If the proposed future land use is more "sensitive" than the current land use, evaluate this factor assuming the proposed future use is in place. Agricultural land use is defined as uses of land where the activities are related to the productive capability of the land or facility (e.g., greenhouse) and are agricultural in nature, or activities related to the feeding and housing of animals as livestock. Residential/Parkland land uses are defined as uses of land on which dwelling on a permanent, temporary, or seasonal basis is the activity (residential), as well as uses on which the activities are recreational in nature and require the natural or human designed capability of the land to sustain that activity (parkland). Commercial/Industrial land uses are defined as land on which the activities are related to the buying, selling, or trading of merchandise or services (commercial), as well as land uses which are related to the production, manufacture, or storage of materials (industrial).	This is the main "receptor" factor used in site scoring. A higher score implies a greater exposure and/or exposure of more sensitive human receptors (e.g., children).
	Agricultural			
Score	3			
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			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	Site is remote but access is uncontrolled and the contaminants are not covered.		
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		The site is not typically frequented by people, but the contaminants are not covered and leave the potential for direct contact. Local people do rely heavily on hunting and fishing for survival.	If soils or potable groundwater are present exceeding their respective CCME guidelines, dermal contact is assumed. Exposure to surface water, non-potable groundwater or sediments exceeding their respective CCME guidelines will depend on the site. Select "Yes" if dermal exposure to surface water, non-potable groundwater or sediments is expected. For instance, dermal contact with sediments would not be expected in an active port. Only soils in the top 1.5 m are defined by CCME (2003) as surface soils. If contaminated soils are only located deeper than 1.5 m, direct contact with soils is not anticipated to be an operable contaminant exposure pathway.	Exposure via the skin is generally believed to be a minor exposure route. However for some organic contaminants, skin exposure can play a very important component of overall exposure. Dermal exposure can occur while swimming in contaminated waters, bathing with contaminated surface water/groundwater and digging in contaminated dirt, etc.
	Yes			
Score	3			
ii) inhalation (i.e., inhalation of dust, vapour) Vapour - Are there inhabitable buildings on the site within 30 m of soils or groundwater with volatile contamination as determined in Worksheet II (Migration Potential)? Yes No Do Not Know			If inhabitable buildings are on the site within 30 m of soils or groundwater exceeding their respective guidelines for volatile chemicals, there is a potential of risk to human health (Health Canada, 2004). Review site investigations for location of soil samples (having exceedances of volatile substances) relative to buildings. Refer to (II) Migration Potential worksheet, 4B.a), *Potential for COPCs in Vapour* for a definition of volatility.	Exposure via the lungs (inhalation) can be a very important exposure pathway. Inhalation can be via both particulates (dust) and gas (vapours). Vapours can be a problem where buildings have been built on former industrial sites or where volatile contaminants have migrated below buildings resulting in the potential for vapour intrusion. Assesses the potential for humans to be exposed to vapours originating from site soils. The closer the receptor is to a source of volatile chemicals in soil, the greater the potential of exposure. Also, coarser-grained soil will convey vapour much more efficiently in the soil than finer grained material such as clays and silts. General Notes; Someone experienced must provide a thorough description of the sources researched to determine the presence/absence of a vapour migration and/or dust generation in the vicinity of the contaminated site. This information must be documented in the NCS Site Classification Worksheet including contact names, phone numbers, e-mail correspondence and/or reference maps/reports and other resource such as internet links. Selected References; Canadian Council of Ministers of the Environment (CCME). 2006. Protocol for the Derivation of Environmental and Human Health Soil Quality Guidelines. PN 1332. www.ccme.ca Golder, 2004. Soil Vapour Intrusion Guidance for Health Canada Screening Level Risk Assessment (SLRA) Submitted to Health Canada, Burnaby, BC
	No			
Score	0			
Dust - If there is contaminated surface soil (e.g. top 1.5 m) , indicate whether the soil is fine or coarse textured. If it is known that surface soil is not contaminated, enter a score of zero. Fine Coarse Surface soil is not contaminated or absent (bedrock) Do Not Know Texture		Bulk sampling for soil samples indicate coarse grained material onsite.	Consult grain size data for the site. If soils (containing exceedances of the CCME soil quality guidelines) predominantly consist of fine material (having a median grain size of 75 microns; as defined by CCME (2006)) then these soils are more likely to generate dusts.	
	Coarse			
	1			
inhalation total	1			

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

Durban Island, Nunavut (FOX-E Intermediate DEW Line Site)

Definition	Score	Rationale for Score (document any assumptions, reports, or site-specific information; provide references)	Method Of Evaluation	Notes
B. Potential for human exposure				
iii) Ingestion (i.e., ingestion of food items, water and soils [for children]), including traditional foods.			Review available site data to determine if drinking water (groundwater, surface water, private, commercial or municipal supply) is known or suspected to be contaminated above Guidelines for Canadian Drinking Water Quality. If drinking water supply is known to be contaminated, some immediate action (e.g., provision of alternate drinking water supply) should be initiated to reduce or eliminate exposure. The evaluation of significant potential for exceedances of the water supply in the future may be based on the capture zones of the drinking water wells; contaminant travel times; computer modelling of flow and contaminant transport.	**Selected References:** Guidelines for Canadian Drinking Water Quality: www.hc-sc.gc.ca/hecs-sesc/water/publications/drinking_water_quality_guidelines/toc.htm Drinking water can be an extremely important exposure pathway to humans. If site groundwater or surface water is not used for drinking, then this pathway is considered to be inoperable. Consider both wild foods such as salmon, venison, caribou, as well as agricultural sources of food items if the contaminated site is on or adjacent to agricultural land uses.
Drinking Water: Choose a score based on the proximity to a drinking water supply, to indicate the potential for contamination (present or future). 0 to 100 m 100 to 300 m 300 m to 1 km 1 to 5 km No drinking water present Do Not Know	0 to 100 m			
Score	3	There is debris within 100 m of the freshwater streams on site.		
Is an alternative water supply readily available? Yes No Do Not Know	No			
Score	1			
Is human ingestion of contaminated soils possible? Yes No Do Not Know	Yes		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.	
Score	3			
Are food items consumed by people, such as plants, domestic animals or wildlife harvested from the contaminated land and its surroundings? Yes No Do Not Know	Yes	There is the potential for the site to be used for fishing and hunting purposes.	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.	
Score	1			
Ingestion total	8			
Human Health Total "Potential" Score	16	Note if a "Known" Human Health score is provided, the "Potential" score is disallowed.		
Allowed "Potential" Score	16			
2. Human Exposure Modifying Factors				
a) Strong reliance of local people on natural resources for survival (i.e., food, water, shelter, etc.) Yes No Do Not Know	Yes			
Known	6			
Potential	---			
Raw Human "known" total	6			
Raw Human "potential" total	16			
Raw Human Exposure Total Score	22	Typically, local people do not use the island for hunting or fishing although there is a strong reliance on hunting and fishing for survival.		
Human Health Total (max 22)	**22.0**			
3. Ecological				
A. Known exposure				
Documented adverse impact or high quantified exposure which has or will result in an adverse effect, injury or harm or impairment of the safety to terrestrial or aquatic organisms as a result of the contaminated site.	18		Some low levels of impact to ecological receptors are considered acceptable, particularly on commercial and industrial land uses. However, if ecological effects are deemed to be severe, the site may be categorized as class one (i.e., a priority for remediation or risk management), regardless of the numerical total NCS score. For the purpose of application of the NCS, effects that would be considered severe include observed effects on survival, growth or reproduction which could threaten the viability of a population of ecological receptors at the site. Other evidence that qualifies as severe adverse effects may be determined based on professional judgement and in consultation with the relevant jurisdiction. If ecological effects are determined to be severe and an automatic Class 1 is assigned, there is no need to proceed through the NCS. However, a scoring guideline (18) is provided in case a numerical score for the site is still desired (e.g., for comparison with other Class 1 sites).	CCME, 1999: Canadian Water Quality Guidelines for the Protection of Aquatic Life. www.ccme.ca CCME, 1999: Canadian Water Quality Guidelines for the Protection of Agricultural Water Uses. www.ccme.ca Sensitive receptors- review: Canadian Council on Ecological Areas; www.ccea.org. Ecological effects should be evaluated at a population or community level, as opposed to at the level of individuals. For example, population-level effects could include reduced reproduction, growth or survival in a species. Community-level effects could include reduced species diversity or relative abundances. Further discussion of ecological assessment endpoints is provided in *A Framework for Ecological Risk Assessment: General Guidance* (CCME 1996). Notes: Someone experienced must provide a thorough description of the sources researched to classify the environmental receptors in the vicinity of the contaminated site. This information must be documented in the NCS Site Classification Worksheet including contact names, phone numbers, e-mail correspondence and/or reference maps/reports and other resource such as internet links.
Same as above, but "Strongly Suspected" based on observations or indirect evidence.	12		This category can be based on the outcomes of risk assessments and applies to studies which have reported Hazard Quotients >1. Alternatively, known impacts can also be evaluated based on a weight of evidence assessment involving a combination of site observations, tissue testing, toxicity testing and quantitative community assessments. Scoring of adverse effects on individual rare or endangered species will be completed on a case-by-case basis with full scientific justification.	
No quantified or suspected exposures/impacts in terrestrial or aquatic organisms	0		This category can be based on the outcomes of risk assessments and applies to studies which have reported Hazard Quotients of less than 1 and no other observable or measurable sign of impacts. Alternatively, it can be based on a combination of other lines of evidence showing no adverse effects, such as site observations, tissue testing, toxicity testing and quantitative community assessments.	
	Go to Potential			
Score	---			
NOTE: If a score is assigned here for Known Exposure, then you can skip Part B (Potential for Ecological Exposure) and go to Section 4 (Ecological Exposure Modifying Factors)				

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

Durban Island, Nunavut (FOX-E Intermediate DEW Line Site)

Definition	Score	Rationale for Score (document any assumptions, reports, or site-specific information; provide references)	Method Of Evaluation	Notes
B. Potential for ecological exposure (for the contaminated portion of the site)				
a) Terrestrial		When considering the definitions of land use for ecological receptors, the site is considered to be Wild lands since it is habitat to polar bears (observed on-site) (AECOM, 2010).	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).	
i) Land use				
Agricultural (or Wild lands)				
Residential/Parkland				
Commercial				
Industrial				
Do Not Know				
	Agricultural (or Wild lands			
Score	3			
ii) Uptake potential		Impacted soils are located within the upper 1.5 m of the site.	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			
Yes				
No				
Do Not Know				
Score	1			
iii) Ingestion (i.e., wildlife or domestic animals ingesting contaminated food items, soils or water)		All surface water and marine habitats that were tested complied with applicable guidelines.		
Are terrestrial animals likely to be ingesting contaminated water at the site?			Refer to an Ecological Risk Assessment for the site. If there is contaminated surface water at the site, assume that terrestrial organisms will ingest it.	
Yes				
No				
Do Not Know	No			
Score	0			
Are terrestrial animals likely to be ingesting contaminated soils at the site?		Animals (polar bears, caribou, arctic fox, hare, etc.) are likely to ingest contaminated soils that contain lead, PCBs and cadmium which can bioaccumulate. The site is frequented by polar bears, identified as a species at risk.	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?			Bioaccumulation of contaminants within food items is considered possible if: 1) The Log(Kow) of the contaminant is greater than 4 (as per the chemical characteristics work sheet) and concentrations in soils exceed the most conservative CCME soil quality guideline for the intended land use, or 2) The contaminant in collected tissue samples exceeds the Canadian Tissue Residue Guidelines. 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.	
Yes				
No				
Do Not Know	Yes			
Score	1			
Distance to sensitive terrestrial ecological area				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				
	0 to 300 m			
Score	3			
Raw Terrestrial Total Potential	9	Note if a "Known" Ecological Effects score is provided, the "Potential" score is disallowed.		
Allowed Terrestrial Total Potential	9			
B. Potential for ecological exposure (for the contaminated portion of the site)				
b) Aquatic		The primary aquatic environment at the site (marine) is considered to be a sensitive aquatic environment. Whales, seals, walrus and fish are in the vicinity of the site.	"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				
	Sensitive			
Score	3			

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

Durban Island, Nunavut (FOX-E Intermediate DEW Line Site)

Definition	Score	Rationale for Score (document any assumptions, reports, or site-specific information; provide references)	Method Of Evaluation	Notes
ii) Uptake potential		Groundwater seepage was not observed. Sampling was not conducted at point of contact.	Groundwater concentrations of contaminants at the point of contact with an aquatic receiving environment can be estimated in three ways: 1) by comparing collected nearshore groundwater concentrations to the CCME water quality guidelines (this will be a conservative comparison, as contaminant concentrations in groundwater often decrease between nearshore wells and the point of discharge). 2) by conducting groundwater modeling to estimate the concentration of groundwater immediately before discharge. 3) by installing water samplers, "peepers", in the sediments in the area of daylighting groundwater.	
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			
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	Impacted soils have been identified within 30 m of the marine habitat.	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	Yes		Bioaccumulation of food items is possible if: 1) The Log(Kow) of the contaminant is greater than 4 (as per the chemical characteristics work sheet) and concentrations in sediments exceed the CCME ISQGs. 2) The contaminant in collected tissue samples exceeds the CCME tissue quality guidelines.	
Score	1			
Raw Aquatic Total Potential	7.5	Note if a "Known" Ecological Effects score is provided, the "Potential" score is disallowed.		
Allowed Aquatic Total Potential	7.5			
4. Ecological Exposure Modifying Factors				
a) Known occurrence of a species at risk. Is there a potential for a species at risk to be present at the site? Yes No Do Not Know	Yes	The site is a habitat for species of special concern (polar bears) under committee on the Status of Endangered Wildlife in Canada (COSEWIC).	Consult any ecological risk assessment reports. If information is not present, utilize on-line databases such as Eco Explorer. Regional, Provincial (Environment Ministries), or Federal staff (Fisheries and Oceans or Environment Canada) should be able to provide some guidance.	Species at risk include those that are extirpated, endangered, threatened, or of special concern. For a list of species at risk, consult Schedule 1 of the federal Species at Risk Act (http://www.sararegistry.gc.ca/species/schedules_e.cfm?id=1). Many provincial governments may also provide regionally applicable lists of species at risk. For example, in British Columbia, consult: BCMWLAP. 2005. Endangered Species and Ecosystems in British Columbia. Provincial red and blue lists. Ministry of Sustainable Resource Management and Water, Land and Air Protection. http://srmwww.gov.bc.ca/atrisk/red-blue.htm
Score	2 ---			
b) Potential impact of aesthetics (e.g., enrichment of a lake or tainting of food flavor). Is there evidence of aesthetic impact to receiving water bodies? Yes No Do Not Know	No 0 ---		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.
Is there evidence of olfactory impact (i.e., unpleasant smell)? Yes No Do Not Know	Yes 2 ---	In some areas, the soil has a hydrocarbon odor.	Examples of olfactory change can include the smell of a COPC or an increase in the rate of decay in an aquatic habitat.	
Is there evidence of increase in plant growth in the lake or water body? Yes No Do Not Know	No 0 ---		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.	
Is there evidence that fish or meat taken from or adjacent to the site smells or tastes different? Yes No Do Not Know	No 0 ---		Some contaminants can result in a distinctive change in the way food gathered from the site tastes or smells.	
Ecological Modifying Factors Total - Known	**4**			
Ecological Modifying Factors Total - Potential	**---**			
Raw Ecological Total - Known	4			
Raw Ecological Total - Potential	16.5			
Raw Ecological Total	20.5			
Ecological Total (Max 18)	**18.0**			

CCME National Classification System (2008, 2010 v 1.2)

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

Durban Island, Nunavut (FOX-E Intermediate DEW Line Site)

Definition	Score	Rationale for Score (document any assumptions, reports, or site-specific information; provide references)	Method Of Evaluation	Notes
5. Other Potential Contaminant Receptors				
a) Exposure of permafrost (leading to erosion and structural concerns)		No roads or structures are dependent on permafrost at the site.		Plants and lichens provide a natural insulating layer which will help prevent thawing of the permafrost during the summer. Plants and lichens may also absorb less solar radiation. Solar radiation is turned into heat which can also cause underlying permafrost to melt.
Are there improvements (roads, buildings) at the site dependant upon the permafrost for structural integrity?	No		Consult engineering reports, site plans or air photos of the site. When permafrost melts, the stability of the soil decreases, leading to erosion. Human structures, such as roads and/or buildings are often dependent on the stability that the permafrost provides.	
Yes				
No	0			
Do Not Know	---			
Is there a physical pathway which can transport soils released by damaged permafrost to a nearby aquatic environment?	Yes	The site is adjacent to the arctic Ocean and melting permafrost can lead to transport of contaminants to the aquatic environment.	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	2			
Do Not Know	---			
Other Potential Receptors Total - Known	**2**			
Other Potential Receptors Total - Potential	**0**			

Exposure Total	
Raw Human Health + Ecological Total - Known	12
Raw Human Health + Ecological Total - Potential	32.5
Raw Total	44.5
Exposure Total (max 34)	**32.9**

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

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

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

I. Contaminant Characteristics	Known	Potential
1. Residency Media	2	---
2. Chemical Hazard	8	---
3. Contaminant Exceedance Factor	6	---
4. Contaminant Quantity	2	---
5. Modifying Factors	4	---
Raw Total Score	22	0
Raw Total Score (Known + Potential)	22	
Adjusted Total Score (Raw Total / 40 *33)	**18.2**	(max 33)

II. Migration Potential	Known	Potential
1. Groundwater Movement	---	11.4
2. Surface Water Movement	---	9.2
3. Soil	12	---
4. Vapour	---	7
5. Sediment Movement	---	6
6. Modifying Factors	0	0
Raw Total Score	12	33.6
Raw Total Score (Known + Potential)	45.6	
Adjusted Total Score (Raw Total / 64 * 33)	**23.5**	(max 33)

III. Exposure	Known	Potential
1. Human Receptors		
A. Known Impact	---	
B Potential		
a. Land Use		3
b. Accessibility		1
c. Exposure Route		
i. Direct Contact		3
ii. Inhalation		1
iii. Ingestion		8
2. Human Receptors Modifying Factors	6	---
Raw Total Human Score	6	16
Raw Total Human Score (Known + Potential)	22	
Adjusted Total Human Score	22.0	(maximum 22)
3. Ecological Receptors		
A. Known Impact	---	
B. Potential		
a. Terrestrial		9
b. Aquatic		7.5
4. Ecological Receptors Modifying Factors	4	---
Raw Total Ecological Score	4	16.5
Raw Total Ecological Score (Known + Potential)	20.5	
Adjusted Total Ecological Score	18.0	(maximum 18)
5. Other Receptors	2	0
Total Other Receptors Score (Known + Potential)	2	
Total Exposure Score (Human + Ecological + Other)	**42.0**	
Adjusted Total Exposure Score (Total Exposure / 46 * 34)	**31.0**	(max 34)

Site Score

Durban Island, Nunavut (FOX-E Intermediate DEW Line Site)

Site Letter Grade	**C**
Certainty Percentage	**63%**
% Responses that are "Do Not Know"	**5%**
Total NCSCS Score for site	**72.7**
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")

* 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.