

Former U.S. Coast Guard Loran Station, Cape Christian, Nunavut Supplemental Environmental Site Assessment, Material Audit and Geotechnical Evaluation (FINAL)

# Former U.S. Coast Guard Loran Station, Cape Christian, Nunavut

# Supplemental Environmental Site Assessment, Material Audit and Geotechnical Evaluation (FINAL)

Prepared for:

Indian and Northern Affairs Canada Contaminated Sites Program, Nunavut Region P.O. Box 2200 Iqaluit, NU X0A 0H0

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#### **EXECUTIVE SUMMARY**

The Department of Indian Affairs and Northern Development (DIAND), as the caretaker of federal lands in Canada's north is responsible for the care and management of contaminated sites that are no longer maintained by the original owner/operator. The former United States Coast Guard Long Range Navigation (LORAN) Station at Cape Christian, Nunavut is one of these sites. Cape Christian is located on the north shore of Baffin Island, Nunavut. The U.S. Coast Guard used this site as a LORAN station, during the Cold War era from 1954 to 1974. The site is located near the mouth of the Clyde River approximately 16 km northeast of the Hamlet of Clyde River, on the northeast coast of Baffin Island. The station coordinates are Latitude 70°31'N, and Longitude 68°17' W.

Earth Tech was retained by Indian and Northern Affairs Canada to conduct a supplemental environmental site assessment, a hazardous and non-hazardous materials audit, and geotechnical evaluation for the abandoned Cape Christian LORAN site.

The 2006 supplementary environmental site assessment included the following components:

- delineation and quantification of areas of environmental concern,
- identification and delineation of all contaminated overburden,
- elevation of community and Inuit involvement in the Cape Christian assessment and remediation program.

The supplementary environmental site assessment identified the following soil materials in exceedance of the current Indian and Northern Affairs Canada Abandoned Military Site Remediation Protocol, March 2005.

Location	Contaminant Exceeding INAC Criteria (Max Concentration ppm)	DCC I m <sup>3</sup>	DCC II m <sup>3</sup>	INAC PHC m <sup>3</sup>	Comments
Main Station Area ASTs (Figure 3.1)	PHCs (F2: 12100)			381	Additional sampling during remedial activities may reduce the predicted plume size.
Main Station Building North of West Wing (Figure 3.1)	Metals (Lead: 723)	7	3		Plume associated with ESG sample G6543.
Main Station Building East of East Wing (Figure 3.2)	<b>PHCs</b> (F2: 9370)			287	Plume associated with ET sample CC44 and ET-306.
Main Station Building East of East Wing (Figure 3.2)	PCBs (PCB: 1.7)	18			Plume associated with ESG sample G6516. Half of plume co-contaminated with hydrocarbons.
Main Station Building East of East Wing (Figure 3.2)	Metals (Cadmium: 6.9, Zinc: 1200)		2		Plume associated with ESG sample G6512 and delineated in previous Earth Tech Report, 2001. Plume co-contaminated with hydrocarbons.



Location	Contaminant Exceeding INAC Criteria (Max Concentration ppm)	DCC I m <sup>3</sup>	DCC II m³	INAC PHC m <sup>3</sup>	Comments
Main Station Building East of East Wing (Figure 3.2)	Metals (Lead: 290, Zinc: 4500)		1		Plume associated with ESG sample G6508 and delineated in previous Earth Tech Report, 2001. Plume co-contaminated with hydrocarbons.
Main Station Building East of East Wing (Figure 3.2)	Metals (Cadmium: 7.4, Zinc: 7350)		55		Plume associated with samples in floor sumps. Plume co-contaminated with hydrocarbons.
Main Station Building East of East Wing (Figure 3.2)	Metals (Lead: 210)	41			Plume associated with ESG Sample G6576.
Main Station Area Maintenance Garage (Figure 3.3)	Metals (Cadmium: 5.9)		126		Plume associated with ESG samples G6589 and G6579. Plume co-contaminated with hydrocarbons.
Main Station Area Maintenance Garage (Figure 3.3)	<b>PHCs</b> (F3: 41100)		160		Leaking barrels in area, plume associated to sample ET-350.
Main Station Area Disaster Hut (Figure 3.3)	Metals (Cadmium: 5.9)		1		Plume associated with ESG sample G6593 and delineated in previous Earth Tech Report, 2001.
Beach Area, Outfall (Figure 4.1)	Metals (Copper: 273)		207		Plume associated with Earth Tech 2001 samples CC43 and CC40. Area covered with ice.
Beach Area, Worked Area #1 (Figure 4.2)	PHCs (F2: 8450)			871	Plume associated with sample ET-323.
	Total Estimated Volumes	66	554	1539	

The materials assessment conducted at Cape Christian confirmed and quantified volumes of hazardous and non-hazardous materials at the site. The following table summarizes the type and amount of hazardous materials assessed on site.

Summary of Hazardous Materials	Volume of Hazardous Material m <sup>3</sup>
POL Fluids	7
Asbestos	21
Batteries (Lead acid)	1
PCB Painted Materials (>50 ppm)	12
Lead Painted Materials (>600 ppm)	113
Pressurized Gas Cylinders	27
Paint and Chemicals (liquid form)	2
Total	183



It should be noted that the majority of the painted surfaces within the main station building contain high levels of lead and PCBs in excess of applicable legislation, making the paint a hazardous material.

The following table outlines the amount of non hazardous materials assessed on site.

Total Non Hazardous Materials	In Situ Volume, m3	Crushed/Cut Volume, m3
Concrete	126	116
Steel/Iron	1652.5	982
Wood	986	976
Fiber Glass Insulation	19	12
Total	2783	2086

The objective of the Geotechnical Investigation was to complete the following:

- Identify potential borrow sources;
- Identify potential locations for engineered landfills and/or landfarms and
- Evaluate the condition of the site access roads, barging area and airstrip and potential camp areas;

The borrow sources identified on site are outlined in the following table.

Borrow Source	Location	Type of Material	Estimated Amount of Material Available m3
Borrow Source # 1	Freshwater Reservoir Embankment (Figure 3.0)	poorly graded sand	9000
Borrow Source # 2	Berms of Proposed Landfill # 2 (Figure 3.0)	poorly graded silty sand	1000
Borrow Source # 3	main Approach Road before River Crossing (Figure 5.0)	poorly graded sand	10000
Borrow Source # 4	Building, AST and Garage Gravel Pads	fairly well graded gravel	3300
Borrow Source # 5	End of Road Past Equipment Dump (Figure 5.0)	fairly well graded gravelly sand	1700
Borrow Source # 6	Near South Beach Barrel Cache (Figure 2.0)	poorly graded gravelly sand	5250
Borrow Source # 7	750 m Northeast of Main Station Building	fairly well graded gravelly sand	4000

The airstrip is not usable in its current state. Improvements to the drainage and the airstrip material are required prior to the airstrip being considered for use. If larger aircraft is required for the remediation activities the runway would need to be extended in length.

Generally speaking the roads at the Cape Christian site provide adequate access to the site via ATVs, however strategic road improvements are required to make site accessible to heavy equipment.

The following is the 2006 Earth Tech Supplementary Environmental Site Assessment, Material Audit and Geotechnical Evaluation based on the work carried out on site at Cape Christian from August 21 to August 31, 2006.



#### 1.0 INTRODUCTION

The Department of Indian Affairs and Northern Development (DIAND), as the caretaker of federal lands in Canada's north is responsible for the care and management of contaminated sites that are no longer maintained by the original owner/operator. These sites are often a result of mining, oil and gas activities, as well as government military activities, which took place before environmental impacts were a major concern. Through the Contaminated Sites Program (CSP), DIAND has made it a priority to assess, prioritize and mitigate/remediate the environmental impacts of contaminated Sites in Canada's North. The former United States Coast Guard Long Range Navigation (LORAN) Station at Cape Christian, Nunavut is one of these sites.

# 1.1 Background Information

Cape Christian is located on the north shore of Baffin Island, Nunavut. The U.S. Coast Guard used this site as a LORAN station, during the Cold War era from 1954 to 1974. The site is located near the mouth of the Clyde River approximately 16 km northeast of the Hamlet of Clyde River, on the northeast coast of Baffin Island. The station coordinates are Latitude 70°31'N, and Longitude 68°17' W. Current access to the former station is either by boat, ATV or rotary wing aircraft due to the unusable condition of the onsite airstrip. The location of Cape Christian relative to the coastline of Baffin Island is provided in **Figure 1.0** of **Appendix A**. **Figure 2.0** shows the overall site layout and major features and **Figure 3.0** shows the layout in the vicinity of the main station.

The previously identified environmental site issues at Cape Christian include contaminated soils, landfills, site buildings, hazardous materials, petroleum products, fuel storage tanks, and empty and full barrels.

The Cape Christian site is located on a coastal plain that extends landward for approximately 20 km. Portions of the site are located along the sandy beaches of the Arctic Ocean (Baffin Bay) and in the elevated areas immediately above the beach.

#### 1.2 Previous Site Investigations

The previous environmental work at the Cape Christian site includes the following reports:

- United States Coast Guard, Inventory and Evaluation, 1974 and 1979.
- Environmental Protection Services, PCB Identification, 1985.
- Envirochem Special Projects Inc, PCB Consolidation, 1989.
- Pollution Control Division Renewable Resources, Baffin, Collection of PCB's, 1989, 1990, 1991.
- AVATI-Norecol, Site Assessment and Soil Sampling, 1992.
- Environmental Protection Division (E.C.)-Renewable Resources (GNWT), Removal of PCB Containing Equipment, 1996.
- Royal Military College, Environmental Sciences Group (ESG), Environmental Assessment, March 1996.
- Royal Military College, ESG, Investigation of PCBs in Paint, March 1997.
- Earth Tech Canada, Environmental Site Delineation and Material Inventory, 2002.
- Public Works and Government Services Canada (PWGSC), Remedial Action Plan Former US Coast Guard LORAN Station, Cape Christian, Nunavut, 2002.



The scope of work for the 2006 investigation completed at the site was primarily based on the results and conclusions of the 1996 ESG investigation, the 2001 Earth Tech investigation as well as the 2002 Public Works and Government Services Canada (PWGSC) Remedial Action Plan.

# 1.3 Scope of Work and Objectives

Earth Tech was retained by the Indian and Northern Affairs Canada to conduct a supplemental environmental site assessment, a hazardous and non-hazardous materials audit, and geotechnical evaluation for the abandoned Cape Christian LORAN site. This report includes the results of these assessments. The intent of this program was to collect sufficient field data to allow for the development of a remedial plan and specification in the near future.

The objectives of this project are to:

- Confirm and quantify volumes of hazardous and non-hazardous materials at the site;
- Delineate contaminant plumes identified at the site;
- Identify potential locations for engineered landfills and/or landfarm;
- Evaluate the condition of the site access roads, barging area and airstrip;
- Identify potential borrow sources;
- Collect additional samples as required to complete the remediation specifications;
- Develop a Remedial Action Plan (RAP); and
- Increase Community involvement in the program.

The fieldwork for this project was completed between August 21 and August 31, 2006. The reporting was completed following the receipt of the analytical data. Will Wawrychuk, P. Eng. Matt McElwaine, P. Eng. from Earth Tech's Edmonton office as well as James McCutchon, P. Eng. From Earth Tech's Winnipeg office completed the field work and reporting for this project. Senior review was completed by Gordon Woollett, P. Eng. and Tyler Barkhouse, P. Eng. in the Earth Tech Edmonton Office.

The 2006 site investigation was multidisciplinary and included the following components:

- Geotechnical Assessment:
  - o assessment of available borrow materials;
  - o assessment of potential landfill/landfarm locations; and
  - o assessment of the airstrip and site roadways.
- Phase III ESA:
  - o delineation and quantification of areas of environmental concern;
  - o identification and delineation of all contaminated overburden; and
  - o elevation of community and Inuit involvement in the Cape Christian assessment and remediation program.
- Materials Audit determination of volumes of hazardous and non-hazardous materials.



- Detailed Site Survey completion of a site survey including topography, location of existing infrastructure, as well as sampling locations from the Phase III material and geotechnical assessments.
- Documentation of all information in a written report to be used for the development of a RAP.

It should be noted that the previous investigation work successfully completed the delineation of some of the areas of environmental concern. The previously delineated areas as well as the areas delineated during this 2006 assessment have been included in the summary of this report.

#### 2.0 WORK COMPLETED

#### 2.1 Scope

The following is an overview of the detailed scope of work.

- Task 1: Gap Analysis
  - o Review previous site studies and information
  - o Identify information gaps
  - o Plan field work to address information gaps
- Task 2: Coordination of Site Support
  - o Develop Health and Safety Plan (HASP)
  - o Acquire and organize local bear monitors and ATVs for duration of field work
  - o Transport personnel and field equipment to Clyde River
  - o Transport personnel and field equipment from Clyde River to Cape Christian (Daily by ATV)
- Task 3: Delineation of Contaminated Soil
  - Conduct additional soil sampling at Cape Christian site to delineate known contaminated areas, horizontally and vertically.
- Task 4: Sediment and Water Sampling
  - o Sample surface water and sediments at Cape Christian to see if they have been affected by site activities
- Task 5: Quantification of Non-Hazardous and Hazardous Materials (Waste Audit)
  - o Conduct additional assessment activities to confirm and quantify the type and volume of hazardous materials remaining on site
  - Conduct additional assessment activities to confirm and quantify the type and volume of non-hazardous materials remaining on site



- Task 6: Assessment of Borrow Sources
  - o Identify and confirm two (2) landfill and two (2) land farm sites
  - Conduct test pitting and geotechnical material sampling and analysis to identify qualitatively and quantitatively adequate borrow sources for the planned remediation activities
- Task 7: Site Access Evaluation
  - Evaluate current status of airstrip and assess required upgrades of airstrip for use during remedial activities
  - Evaluate current status of site roads and assess required upgrades for use during remedial activities
  - o Evaluate potential barge landing locations
- Task 8: Site Survey
  - o Survey all new sample locations
  - o Tie surveyed locations into existing site survey
  - o Update Cape Christian base plan
- Task 9: Photographic Record
  - o Maintain photographic record of all areas investigated and work completed
- Task 10: Reporting
  - o Document all site activities and investigation results in a written report

# 2.2 Field Program

Prior to the commencement of field activities, Earth Tech reviewed the background reports and prepared a detailed investigation plan which would address the data gaps in the previous reports. This plan was submitted and approved by INAC. Specific information regarding the scope of work completed at each area of concern is presented in Section 5.0. It should be noted that the Environmental Site Delineation and Materials Inventory completed by Earth Tech in 2002 was based on Canadian Council of Ministers of the Environment (CCME) Soil and Groundwater Quality Guidelines for residential/parkland use and the CCME Canada Wide Standards for Petroleum Hydrocarbons in Soil, 2001. Since that time, DIAND has adopted the Abandoned Military Site Remediation Protocol, March 2005, which uses the DCC I and DCC II criteria for metals and PCBs in soil and a modified version of the Tier 2 CCME Canada Wide Standards for Petroleum Hydrocarbons in soil. During the information gap analysis conducted by Earth Tech, previous sampling data was reviewed and compared to the current DIAND criteria prior to commencement of the field program.



# 2.3 Methodology

# 2.3.1 Soil, Water and Sediment Sampling

Soil sampling was completed by first reviewing the analytical data from the previous Earth Tech report and the ESG reports. The previous sample locations were identified by measuring from surveyed buildings and notable site features. The proposed sample locations were then reviewed to determine whether site influences such as topography, geology and soil staining would suggest moving the test pits and boreholes to a more suitable location. Once the test pit and borehole locations were finalized, an Earth Tech survey pin with a numbered tag was placed in the ground at the desired sample location.

The majority of the soil sampling conducted on site involved the delineation and identification of potential hydrocarbon contamination. The Beaver Pro QH ATV mounted excavator was used to excavate testpits and retrieve the soil samples. In areas free of boulders and bedrock the excavator was frequently able to get down to permafrost (0.4-0.6 m). Soil samples were taken from the bucket of the excavator by hand (new nitrel gloves were used for each sample) or using a trowel that was cleaned with water and a paper towel between each sampling event. The metals in soil samples were placed in sealable plastic bags and labelled accordingly. Samples collected for hydrocarbons were immediately placed in glass jars with Teflon-lined lids to prevent volatilization of any hydrocarbons present. Upon return to Clyde River each evening, sample filled coolers from the site were placed outside with ice packs for preservation.

Surface water samples were collected from various locations at the site and were submitted to the lab for analysis. The surface water samples were obtained from potentially impacted areas. Samples were obtained by submerging clean laboratory supplied plastic and/or glass bottles in the water source, and then packing the bottles into chilled coolers to limit sample degradation. Samples were analyzed for heavy metals, PCBs, PAHs and/or petroleum hydrocarbons.

Upon completion of the field sampling program the coolers were shipped to the Maxxam laboratory in Edmonton, Alberta. Maxxam is a CAEAL accredited laboratory. Prior to sealing the cooler for transport south, fresh ice packs replaced the original ice packs and a completed chain of custody/analytical request form was sealed in the coolers.

# 2.3.2 Asbestos Sampling

The Earth Tech team was equipped to sample asbestos with proper PPE and had a certified asbestos abatement person on site. Additional potential asbestos containing material samples were taken in both the main station building and hazardous materials building. These additional samples were used to confirm and expand in detail previous hazardous material inventories.

#### 2.3.3 Paint Sampling

Additional paint samples were collected throughout the main station building in order to expand on the previous PCB in paint assessments and confirm the presence of Lead in the paint on site. Lead and PCB levels in paint will be used to develop the RAP as it relates to the deconstruction of the Main Station building.



#### 2.3.4 Site Access Evaluation

Previously identified borrow sources were assessed and sampled using the excavator. Test pitting was conducted to quantify the amount of borrow material available at each identified site. Geotechnical soil samples were also collected from each of the borrow sources to identify the type of material contained in each identified borrow source. Additional borrow sources, barge landing areas and potential camp locations were also identified and assessed.

The excavator was also used to assess the soil material beneath the selected landfill and landfarm locations. Geotechnical samples were taken from each of the identified locations to classify the soil type and soil structure. Test pitting was also conducted at the airstrip location using the excavator. Soils were excavated and logged, giving insight to the airstrip structure. Samples were also taken to identify the soil material and to conduct soaked and unsoaked California Bearing Ratio (CBR) testing.

# 2.3.5 Site Survey

The supplemental site survey of the additional work completed at Cape Christian was conducted on August 29, 2006. The survey was conducted using a GPS Real Time Kinetic (RTK) survey unit complete with base station and rover unit. The Unit was provided to Earth Tech by Mountain View Systems of Edmonton. Four control points were set up and surveyed at opposing corners of the Cape Christian site along with benchmarks from the previous (Earth Tech 2001) Total Station Survey. The additional sample locations and newly identified site features (additional site debris, borrow sources and land farm locations) were surveyed and placed on the 2001 Cape Christian survey base map.

#### 3.0 REGULATORY CRITERIA

#### Soils

The criteria used for metals and petroleum hydrocarbons (PHCs) in soil are outlined in the INAC Abandoned Military Site Remediation Protocol, March 2005. The criteria for Tier 2 PHCs is based on an interpretation of the Canada Wide Standards for Petroleum hydrocarbons in soil and is discussed in **Appendix C** of the protocol. Based on this interpretation and after discussions with INAC and Public Works and Government Services Canada, the following criteria were used for hydrocarbon fractions.

Table 1: INAC Modified CCME CWS PHC Tier 1 and Tier 2 Criteria

EXPOSURE PATHWAYS	F1 (C6 -C10)	F2 (>C10-C16)	F3 (>C16-C34)	F4(>C34)
All other areas on site	15,000	8000	18,000	25,000
Within 10 m of fish bearing water body	230	150	NA	NA

Benzene, Toluene, Ethylbenzene and Xylene (BTEX) concentrations were compared to the latest version of the CCME Environmental Quality Guidelines for the Residential/Parkland land use. The results of the laboratory analyses for PCBs were compared to the criteria that was developed for the Department of National Defence to support their DEW Line clean up projects (DCC Tier I and Tier II criteria).



#### Water

Surface Water samples were compared to the latest version of the CCME Canadian Environmental Quality Guidelines Freshwater Aquatic Life Criteria

#### Sediment

Sediments samples were compared to the CCME Canadian Environmental Quality Guidelines Freshwater guidelines.

#### PCBs in Paint

Data for PCBs in paint were compared to the Canadian Environmental Protection Act that states that all substances containing more that 50 ppm PCBs need to be treated as hazardous wastes.

#### Lead in Paint

Data for lead in paint were compared to the Northwest Territories Guideline for the Management of Waste Lead and Lead paint. This guideline states that all substances containing more that 600 ppm lead need to be treated as hazardous wastes and need to be handled according to this guideline.

#### Asbestos

Materials containing asbestos greater than 1% by weight were considered asbestos containing materials in accordance with the Northwest Territories Guideline for the Management of Waste Asbestos, September 1998.

#### 4.0 FINDINGS AND DISCUSSION

# 4.1 Gap Analysis

Review of previous reports and the application of the updated criteria revealed areas requiring further delineation and investigation. The following table outlines the areas that required additional investigation.

**Table 2: Gap Analysis Additional Investigation** 

Location/Activity	Rationale	Samples
Main Station Building	The horizontal and vertical extent of	Soil
	the identified contamination plumes	28 sample locations
Confirmation of PHC, PCB, and	at the Main Station are not known.	21 x PHCs
metals contaminated plumes	Sampling will be conducted to	8 x metals
	delineate the identified plumes	3 x PCBs
Sample reservoir water	(depth of contamination as well) and	
	quantify the amount and type of	Surface Water
	contamination.	2 x PHCs
		2 x metals
	Reservoir water will be sampled to	
	confirm it is suitable for discharge	
	into ocean.	



Location/Activity	Rationale	Samples
Fuel Tanks Northwest of Main Station Building  Confirm or refute presence of PHC contamination	"Field Screening" data without lab analysis was used to deem samples "clean" or "dirty". Sampling will be conducted to identify and if possible quantify the amount of PHC contaminated soil with official lab results.	Soil 4 sample locations 4 x PHCs
Former Maintenance Garage Area  Confirm or refute presence of PHC contamination	Sampling will be conducted to identify and if possible quantify the amount of PHC contaminated soil with official lab results.	Soil 12 sample locations 12 x PHCs 7 x metals 2 x PAHs
Sewage Outfall  Close identified metals contamination plume	One metals contaminated plume previously identified was not fully delineated at the outfall area.	Soil 2 x metals
Beach AST and Air Terminal Building  Confirm or refute presence of PHC contamination and close previously identified metals contamination plume	Sampling will be conducted to identify and if possible quantify the amount of PHC contaminated soil with lab results. One metals contaminated plume was also not closed at the outfall area.	Soil 18 sample locations 18 x PHCs 2 x metals 1 x PAHs  Surface Water 2 x PHCs, 2 x PAHs, 1 x metals
South Beach Landfill Areas  Areas of buried debris have not been assessed for contamination beneath buried materials.	Samples will be taken to confirm or refute the presence of contamination beneath the buried material.	Soil 11 sample locations 12 x PHCs 4 x metals
Cape Christian Surface Water Assessment  Assess whether or not activities at Cape Christian have affected surface waters.	Samples will be taken to confirm or refute the presence of contamination related to activities at Cape Christian	Sediment 4 sample locations 4 x PHCs 4 x metals 1 x PAHs Surface Water 5 sample locations



# 4.1.1 Main Station Area - Building

#### **Gap Analysis and Work Plan**

Two identified metals plumes at the southeast end of the main station have already been delineated to the current INAC criteria as shown on **Figure 3.2** of **Appendix A**. The plumes are associated with ESG samples G6512 and G6508. These soils were delineated in the 2001 Earth Tech report. However, the previous investigation work had not fully delineated metal contamination on the north and south ends of the building or fully delineated PCB, hydrocarbon and metal contamination off the south east wing of the building.

Based on the information gap analysis the following work plan was developed for the Main Station Area Building. Additional surface staining was noted in this area as well as additional temporary surface water. For these reasons the number of samples differed slightly from the number of samples in the planned investigation.

# **Discussion of Results – East Wing**

ESG sample G6516, located just east of the main station east wing exceeded the INAC Criteria for Tier 1 PCBs (1.7 ppm vs. criteria of 1.0 ppm) in soils as shown in Photo 1 of **Appendix B**. In 2001 Earth Tech attempted to delineate around the exceedance with field samples CC-26, CC-27 and CC-28 shown in **Figure 3.2**. CC-26 was sent to the lab and the results were below current PCB criteria. Samples CC-27 and CC-28 were analysed using a PCB field screening analysis kit and were not sent to a laboratory for analysis. The 2006 investigation included the collection of samples ET-295, ET-296 and ET-297 in an effort to close the noted exceedance with laboratory data. As noted in **Table 1.3** of **Appendix C**, the PCB levels in all three of these samples were less than the Tier 1 level of 1 ppm. Permafrost was encountered in the area at approximately 0.8 m below ground surface. Based on all the sampling completed at this site, the Tier 1 PCB contaminated soil plume is estimated to be approximately 22 m<sup>2</sup> in size to a maximum depth of 0.8 m giving a volume of 18 m<sup>3</sup>. Approximately half of this volume is cocontaminated with hydrocarbons.

The previous investigation identified a number of contaminant issues around the southeast garage wing of the Main Complex. The 2001 Earth Tech samples collected below the garage bay sumps (CC-38 and CC-39) exceeded the INAC criteria for metals (cadmium, lead and zinc) with the lead levels recorded in CC-39 at 7,350 ppm. ESG sample G6576, located on the west side of the east wing also exceeded INAC Tier 2 criteria for cadmium. The previous reports had also not confirmed if the predicted contamination plume from G6576 connected with the exceedances of CC-38 and CC-39. The 2006 Earth Tech samples ET-303, 302, and 301, shown in **Photos 2** and **3** of **Appendix B**, were advanced to delineate the contamination and separate the plumes. Based on the sample data there are two separate metal contamination plumes as shown in **Figure 3.2**. Permafrost in the area was encountered at approximately 0.8 m below ground surface. The southeast plume related to G6576 is a Tier 1 lead exceedance estimated to be approximately 52 m² to an assumed depth of 0.8 m, giving a volume of 41 m³. The more northerly plume related to the exceedances of CC-38 and CC-39 covers an area of approximately 54 m² to an approximate depth of 1.0 m, giving a volume of 55 m³. All of this volume should be considered as Tier 2 soils due to the concentrations of cadmium. It should also be noted that this plume is also cocontaminated with hydrocarbons.



The 2001 Earth Tech sample CC-44 (approximate location shown in **Picture 4** of **Appendix B**) exceeded the INAC Criteria for PHC (F2 8,800 ppm, F3 8,20 ppm) in soil. Previous results and the presence of a large surface stain in this area dictated the placement of the delineation samples shown in **Figure 3.2**. Further exceedances to the current INAC PHC in soil criteria were noted in samples ET-306 (**Picture 4**) and ET-351 (**Picture 5**). Based on the sampling results and noted site staining the associated hydrocarbon contamination plume is estimated to be approximately 429 m² to an assumed depth of 0.8 m, giving a volume of 343 m³. It should be noted that approximately 56 m³ of this material is co-contaminated with either metals or PCBs. Approximately 287 m³ is contaminated with hydrocarbons only. Surface staining was apparent along the entire east wing however, there were no exceedances recorded in any of the samples collected north of ET-306.

# **Discussion of Results - West Wing**

ESG sample G6543, located just north of the main station west wing corner exceeded the INAC Tier 1 Criteria for metals in soils (lead 480 ppm). In 2001 Earth Tech attempted to delineate around the exceedance with field samples CC-23, CC-24 and CC-25 as shown in the inset drawing in the bottom left hand corner of **Figure 3.1**. All samples were sent to the lab; however, only CC-24 came back below the INAC criteria and the lead level in CC25 was recorded at 723 ppm, which exceeded the Tier 2 level.

The 2006 investigation included the collection of samples ET-314, ET-315 and ET-316 (**Picture 6**) in order to delineate the contamination both horizontally and vertically. As indicated in **Table 1.2**, the analytical for metals for all the samples collected at this location were less than both the Tier 1 and Tier 2 criteria. Based on the location of the sample points, the soils exceeding the Tier 1 criteria for metals covers an area of approximately 12 m<sup>2</sup> to a depth of 0.8 m corresponding to a volume of approximately 10 m<sup>3</sup>, approximately 3 m<sup>3</sup> of this volume is estimated to exceed the Tier 2 criteria.

#### 4.1.2 Main Station Area - ASTs

In 2001, the sampling effort at this site included the collection of four samples with two samples being sent in for hydrocarbon analysis and two samples being field screened with a Petroflag kit. The analysis indicated that there were no exceedances above criteria. Due to the volume of fuel (5 - 102,000 Litre Tanks) that would have been stored at this location and due to the potential use of the AST gravel pad as a borrow source, additional sampling was warranted.

The 2006 investigation included the advancement of three testpits (ET-308, ET-309 and ET-310) using the excavator and the advancement of one testpit with a hand auger (ET-311) Sample locations are shown in **Pictures 7** and **8** of **Appendix B**. A strong hydrocarbon odour was noted during the excavation of all testpits; however, ET-310 (F2 12,100 ppm) was the only exceedance noted in this area as noted in **Table 3.1** of **Appendix C**. Based on the sample results it is estimated that the PHC contamination plume is approximately 476 m<sup>2</sup> to a depth of 0.8 m giving a volume of 381 m<sup>3</sup> however, additional sampling during remedial activities may reduce the predicted plume size. **Figure 3.1** shows the approximate location of this plume.



# 4.1.3 Main Station Area - Maintenance Garage

Three metal plumes were previously identified around the former garage. One plume was associated with ESG Sample G6593 at the southeast end of the Disaster Hut as shown in **Figure 3.3**. A second plume was located at the north end of the garage and was associated with ESG sample G6579 (Cadmium 5.3 ppm). Both of these plumes were fully delineated in the 2001 investigation. The remaining plume was located south of the garage foundation and was associated with ESG sample G6589 (Cadmium 5.9 ppm).

ESG Sample G6589 exceeded the INAC Criteria for metals contaminated soil. The 2001 Earth Tech samples CC-14, CC-15 and CC-16 partially delineated the contaminated plume. Additional samples ET-320 and ET-317, as shown in **Photo 9** of **Appendix B**, were used to further delineate the metals (cadmium)contaminated area. Based on the sample data it is estimated that this contaminated plume is connected to the plume at ESG G6579. The approximate volume of soils contained within this plume is estimated at 126 m<sup>3</sup> assuming a maximum depth of 0.8 m. These soils should be considered as Tier 2 soils due to the concentration of cadmium.

It was noted upon arrival at the Cape Christian site that the previously identified barrels of lubricating oil at the former garage had been recently tipped over. Several of the barrels had been opened and the contents were leaking out creating a large stained area as shown in **Photo 9** of **Appendix C**. It was decided on site that further investigation of this area was required and additional samples were incorporated into the hydrocarbons assessment of the main station garage area. The results are listed in **Tables 2.1, 2.2 and 2.3** of **Appendix C**. Permafrost in the area was encountered at approximately 0.8 m below ground surface. Based on the results of the data, and a maximum depth of contamination of 0.8 m, there is approximately 160 m<sup>3</sup> of PHC contaminated soil at this location.

# 4.1.4 Beach Area Sewage Outfall

The area of the sewage outfall near the beach was previously investigated in 2001; however the extent of the metal contamination at this site was not fully delineated. The previous investigation confirmed that copper exceeded INAC Tier 2 criteria in CC43 (273 ppm) and CC40 (234 ppm) as indicated on **Figure 4.1**. Two clean soil samples were collected in a drainage pathway further downgradient of the site. The following work plan was developed based on the information gap analysis for the Sewage Outfall and to better define the volume of impacted soils at this location.

During the 2006 site visit and as noted in Photo 11, the outfall area was completely covered in ice and snow. Attempts made with the excavator to dig through the ice were not successful. Delineation samples ET-358 and ET-359 were taken just off the iced area to close the delineation of the plume. Metals results for the outfall samples are listed in **Table 4.3** of **Appendix C**. Based on the limited mobility of metal contamination in soils, it is predicted that the metals contamination is limited to the drainage channel leading away from the outfall area. Based on this assumption it is estimated that the metals contaminated plume is limited in size to approximately 259 m² and a depth of 0.8 meters, giving a volume of approximately 207 m³ of Tier 2 INAC metals contaminated soil. Additional sampling during remedial activities may reduce the predicted plume size.



#### 4.1.5 Beach Area

Located along the beach area are a number of locations with buried barrels. A large aboveground tank and pipeline is also located at the beach. Previous investigations in these areas have given evidence of possible hydrocarbon contamination in exceedance of the INAC criteria.

Samples were taken in 2006 at selected locations near the Beach above ground storage tank (AST) as shown in **Figure 4.2**. The analysis of these samples indicated that there were no exceedances above INAC criteria. To provide additional information that the residual concentrations were below criteria at this location, two additional soil samples were collected in 2006. The hydrocarbon data (**Table 4.1**) from ET-332 and ET-333 indicated that the BTEX and F1-F4 fractions were well below the governing remediation criteria.

The 2001 investigation identified hydrocarbon impacted soils in a stained area near the north end of the runway (sample location CC-13). The highest recorded concentration at this location was F3 at 13,000 ppm, slightly below the F3 criteria of 18,000. To confirm that there were no hydrocarbon concentrations exceeding criteria at this location, the 2006 investigation installed three additional testpits at this location (ET-345 – ET-347). As indicated on **Table 4.1**, there were no exceedances above INAC criteria at this location.

The previous investigation identified subsurface hydrocarbons at the base of an area where buried barrels are located (Worked Area #1). However, the data showed that that the concentrations were less than the INAC Tier 2 criteria for hydrocarbons. The 2001 data indicated that sample CC-01 contained an F2 concentration of 7100 ppm. In 2006, testpits ET-324 and ET-330 were installed around this barrel dump site. All soil hydrocarbons, metals and polycyclic aromatic hydrocarbons sample results are listed in **Tables 4.2, 4.2 and 4.3** respectively. The analytical data from this investigation program indicated that hydrocarbons were detected in all analyzed samples; however the only exceedance was F2 (8450) detected in ET-323 at a depth of 1.0 m (Pictures 13, 14 and 15). The depth of the contamination is beneath the buried barrels (depth of 0.55 m) and above the noted permafrost depth in the area, approximately 1.25 meters below ground surface.

Samples collected around the perimeter of the worked area indicated that the noted contamination is limited to the extent of the buried barrels. However, due to the results of the sample collected in ET-324, the contaminated soils may not be located under the entire barrel dump area. For estimation purposes it is recommended that the soils under the entire barrel dump be treated as being impacted. The estimated contaminated area is approximately 1584 m² corresponding to a PHC contaminated soil volume of 871 m³. Field observations indicated the barrels at this location (Worked Area #1) are still intact and contain various amounts of hydrocarbon contaminated water. A water sample from a barrel located at ET-323 was sampled and analyzed and found to contain toluene (15.1 ppb vs. a criterion of 2 ppb) levels above CCME FWAL criteria as noted in **Table 6.1** of **Appendix C**. The analysis of a metals sample in water confirmed that copper (82 ppb) exceeded the FWAL criteria of 2 ppb.

#### 4.1.6 South Beach Areas

Previous investigations of the Cape Christian south beach area identified a number of worked areas that contained various amounts of buried waste and crushed barrels. No previous assessment work had been completed in the area of these waste dump sites.



The south beach area is shown in **Figure 5.0** and includes Worked Areas 2 through 8. Worked Areas are areas noted as containing buried debris. The extents of the buried debris were confirmed via test pitting. The estimated extents of the Worked Areas have changed from the 2001 investigation based on the results of the 2006 test pitting. Representative samples were taken from each Worked Area and analyzed for hydrocarbon contamination and selected samples were also analyzed for metals. Results of the sample analyses are shown in **Tables 5.1 and 5.2**. **Figure 5.0** shows the sample locations at these dumpsites. As noted on the **Tables 5.1 and 5.2** no exceedances were for metals or hydrocarbons were encountered. The highest hydrocarbon concentrations were noted in sample ET-334; however the analyzed concentrations were all below the applicable remediation criteria. It should be noted that the waste debris encountered in Worked Areas 2-7 consisted of crushed barrels, empty/non crushed barrels, inert demolition debris, wood, steel, and rubber products. No fluids in the crushed barrels were noted during this investigation. **Photos 17 through 21** in **Appendix B** show some of the Worked Areas.

# 4.1.7 Sediment and Surface Water Sampling Program

Sediment and surface water sampling occurred at four locations throughout the Cape Christian Site. The locations were selected to get an accurate assessment of weather or not past activities and current contamination has affected surrounding surface waters and sediment.

The surface water sampling program consisted of the collection of 5 water samples from the following locations. All samples were selected in locations that were located downgradient of potential contaminant sources or in water receiving or catchment areas.

- Downgradient and northwest of the main station ASTs (ET-313)
- Downgradient and north east of the main garage (ET-322)
- Water in barrels in Worked Area #1 (ET-323)
- Water at Worked Area #6 (ET-340)
- Water Reservoir (WRES-01).

The sediment sampling program included the collection of sediments at the following locations.

- Downgradient and northwest of the main station ASTs (ET-312)
- Downgradient and north east of the main garage (ET-322)
- Water at Worked Area #6 (ET-340)
- Water Reservoir (ET-343).

The first location sampled was down gradient and to the northeast of the main station AST tanks. The locations of Earth Tech surface water sample ET-313 and sediment sample ET-312 are shown on **Figure 3.0 of Appendix A**. ET-312 and ET-313 are also shown in **Photo #22** of **Appendix B**. These samples were taken to assess the affect of the Main Station ASTs on the downstream water and sediment. Sample ET-313 was a water sample taken from the pond approximately 125 m northwest of the Main Station ASTs. **Table 6.1** outlines the results for all the hydrocarbon surface water samples collected at the site. Detectable levels of toluene and F2 hydrocarbons were noted in ET-313; however the concentrations were below the applicable remediation criteria. **Table 6.2** outlines the metals analysis for the surface water samples. There was one exceedance to the selected criteria for Copper (3 ppb vs. a criteria of 2 ppb).



ET-312 was a sediment sample collected in the drainage channel upstream from surface water sample ET-313 and approximately 60 m northwest of the Main station ASTs. **Table 7.1** of **Appendix C** presents the hydrocarbons analysis of the sediment and **Table 7.2** presents the metals analysis for sediment. There were no noted exceedances in this sediment sample.

One surface water and sediment sample (ET-322) was also collected from a marshy area located northeast of the garage. This marsh receives surface runoff from the garage area as shown in **Photo 10**. This sample was analyzed for hydrocarbons and metals. The water sample results for ET-322 are outlined in **Tables 6.1, 6.2 and 6.3** of **Appendix C**. The measured hydrocarbons and metals did not exceed the selected criteria. Earth Tech sample ET-322 was taken from the location indicated in **Photos 10 and 23** of **Appendix B**. As indicated in **Table 7.1**, there are hydrocarbons present in the sediment sample; however, there is currently no CCME sediment guidelines for hydrocarbons. Comparison of the hydrocarbon data to the INAC criteria for soils indicated that the hydrocarbon concentrations were all below the respective BTEX and F1-F4 criteria. The sediment data for metals is presented in **Table 7.2** and the only exceedance above the interim sediment quality guidelines was cadmium (1.1 ppm vs. a guideline of 0.6 ppm). It should be noted that the cadmium concentration was greater than the interim guideline however, it was less than the CCME established probable effect level.

The third location investigated for surface water and sediment impacts is the water reservoir which is located approximately 100 m southwest of the Main Station building. Sample location ET-343 had both the sediment and water (WRES-01) sampled for laboratory analysis. The specific location of ET-343 is shown in **Figure 3.0** and indicated in **Photo 24** of **Appendix B**. There were detectable levels of F2, F3 and F3 hydrocarbons in the sample from ET-343 as indicated in **Table 7.1**. Trace amounts of metals were also detected in the sediment sample (**Table 7.2**). The water sample results (**Tables 6.1 and 6.2**) were non-detect for all analyzed hydrocarbons and only trace metals were detected.

Sediment and surface water conditions were analyzed at Worked Area #6 indicated on **Figure 5.0**. Both the sediment and surface water were sampled at the Earth Tech Sample Location ET-340 as shown in **Photo 26** of **Appendix B**. Results of the sediment and water sampling at these two locations are listed in **Tables 6.1, 6.2, 7.1 and Table 7.2**. Detectable levels of F3 and F4 hydrocarbons were found in the sediment at ET-340, but at levels well below the INAC Criteria. Trace amounts of F2 hydrocarbons were found at ET-340 and elevated levels of Toluene, both did not exceed the applicable criteria. Metals were also found in the water at ET-340 with an exceedance of the selected criteria for Cadmium (0.17 ppb vs. a criteria of 0.017 ppb).

#### 4.1.8 Summary of QA/QC

To determine the precision of the reported laboratory analytical results, Duplicate sample results were evaluated using the EPA Relative Percent Difference Method where  $X_1$  is the original sample analysis value and  $X_2$  is the duplicate (QA/QC) sample analysis value.

Relative percent Difference (RPD) = 
$$\frac{(X_1 - X_2) \times 100}{(X_1 + X_2)/2}$$

Tables 11.1 – 11.3 presents a summary of the QA/QC calculations for the duplicate samples.

There were no cases where a 20% RPD was calculated for inorganic samples and only case where a RPD of 40% for organics was exceeded. The RPD exceedance was recorded for a F2 fraction and may be



attributed to non-homogeneous contaminant dispersion within the soil that was sampled twice for duplication.

#### 4.2 Hazardous and Non Hazardous Materials Audit Results

A detailed waste audit was conducted at the Cape Christian site to confirm and expand in detail previous waste audits. All information was used to prepare a detailed waste summary as outlined in the following sections.

#### 4.2.1 Hazardous Materials

The hazardous materials noted at the Cape Christian Site are outlined in the hazardous materials summary table, presented in **Appendix D**. The associated photos of the hazardous materials inventory are presented in **Appendix E**.

#### Asbestos

In addition to the previous asbestos surveys, asbestos material was discovered within the Hazmat Building as noted in **Table 8.3** of **Appendix C**. The grey fibrous mass located at the south end of the hazardous materials building (**Photo 43** of **Appendix E**) contains 30% amosite and is in a friable and exposed condition. The brown insulation on the inside of the hazardous materials building was confirmed not to contain asbestos. No additional asbestos was identified at the main station building.

#### **PCBs and Lead**

A detailed lead and PCB paint materials assessment was conducted at the Main Station Building. The results of the paint sampling are shown in **Table 8.1** of **Appendix C**. The lead in paint levels reanged from 392 ppm to 88,100 ppm. The PCB levels in the paint sampled varied from 1 ppm to 67 ppm. The paint sample locations are listed in **Table 8.2** and shown on **Figure 6.0** of **Appendix A**. It should be noted that the majority of the painted surfaces within the main station building contain lead and PCBs in excess of applicable legislation, making the paint hazardous. The overall condition of the paint at the main station building site is poor. One can note in the photos located in **Appendix E** that the paint is generally flaking and weathered throughout the building. The demolished southeast wing of the main station building is assumed to be disposed of on site. Any painted materials discovered during the site clean up must be compared with existing paint sampling data and disposed of accordingly. Discussion as to the estimated method of remediation for hazardous material has not been made due to the many possible methods of accomplishing this (i.e., stripping hazardous paint or leaving it on the substrate to be shipped off site or placed in hazardous materials landfill). It should be noted that the volume of material with a hazardous paint product is based on the assumption that the paint is left in place and the entire subsrate is removed and disposed of.

#### **General Hazardous Materials**

Additional general hazardous materials found at the Cape Christian site include various batteries and additional pressurized gas cylinders. Additional batteries were discovered in the equipment dump, outfall area and main station area (**Photos 38, 41 and 42** of **Appendix E**).

**Table 3: Hazardous Materials Summary** 



Summary of Hazardous Materials	Volume of Hazardous Material m <sup>3</sup>
POL Fluids	7
Asbestos	21
Batteries (Lead acid)	1
PCB Painted Materials (>50 ppm)	12
Lead Painted Materials (>600 ppm)	113
Pressurized Gas Cylinders	27
Paint and Chemicals (liquid form)	2
Total	183

#### 4.2.2 Non Hazardous Materials

The non hazardous materials audit included a thorough review of the existing 2002 Earth Tech non hazardous materials audit. The on site audit consisted of a thorough walk through of the Cape Christian Site and inspection of all noted debris and materials. All previously identified areas were confirmed and, in the buried debris areas, additional test pitting was conducted to add and expand in detail the materials assessment. Areas that were not previously inspected were visited, assessed and surveyed. A summary table of the non hazardous materials surveyed at the Cape Christian site is presented in Appendix F. Photos associated with the non hazardous materials are located in **Appendix G**. Materials on site were classified as steel, concrete or wood and their volumes and weight were estimated. It should be noted that there were some additions and corrections to the previous non hazardous materials assessment. As noted in Photos 99 and 100 of Appendix G, small grounding wires radiate from antennas and poles on site. Approximately 135 wires radiate from each pole/antenna and extend outwards approximately 100 meters. This was noted in 3 separate locations on site and a high level of effort would be required to gather and dispose of these grounding wires. Also, in previous reports the beach area above ground storage tank (AST) was incorrectly noted as being 616,000 litres in size. The beach are AST is the same size as each of the five (5) main station ASTs; approximately 102,000 litres in size. The following table summarizes the non hazardous waste at the Cape Christian site.

**Table 4: Summary of Non Hazardous Materials** 

<b>Total Non Hazardous Materials</b>	In Situ Volume, m3	Crushed/Cut Volume, m3
Concrete	126	116
Steel/Iron	1652.5	982
Wood	986	976
Fiber Glass Insulation	19	12
Total	2783	2086



The main station building is missing two center wings as noted in Figure 3.2. Based on discussions with residents in Clyde River and some of the bear monitors used for this project on site, the northwest wing was removed and transported to Clyde River for commercial use. It was discovered by the users that there was asbestos within the transported wing and the wing was disposed of. The location of the wing and materials associated with the wing is not known at this time. The southeast wing was noted as being demolished on site and materials from the wing were scavenged and picked through by locals visiting Cape Christian. For this reason the location and exact quantity of materials associated with the demolished southeast wing are not known. It should be noted that during any remediation activities, if materials similar to the materials identified in the existing wings are discovered on site, the materials should be handled accordingly. It should also be noted that the roof structure of the main station building is not consistent. The roof above the mess hall consists of large, heavy "I" beams as noted in Photo 67 of Appendix G. The roof above the remainder of the main station building is "C" channel with wooden center beams as noted in **Photo 68**. It should also be noted that a numbers of sections of the building have collapsed and are not safe as noted in Figure 7.0 of Appendix A. Various structural members have been scavenged from the building and have greatly compromised the structural integrity. Great care and attention should be paid by any contractor involved in the demolition/remediation of the main station building.

Non-hazardous material is reported in crushed, stacked or cut volumes and is assumed that simple demolition procedures will be used to obtain these volumes (e.g., crushing with excavator bucket or crushing in landfill with bull dozer).

#### 4.3 Geotechnical Evaluation

# 4.3.1 Site Access

Cape Christian is located approximately 16 km northeast of Clyde River. The Cape Christian site can currently be accessed on all terrain vehicles (ATVs) via a tundra trail starting near the existing Clyde River airport. The objective of the Earth Tech 2006 site access investigation is to identify and evaluate possible site access options for a remediation contractor and to investigate the existing airstrip and road conditions at the Cape Christian site.

#### **Airstrip**

The investigation and assessment of the Cape Christian airstrip took place on August 23 and 24, 2006. The north threshold of the airstrip is located approximately 275 m southeast of the main station area and is oriented generally in a north/south direction parallel to the ocean shoreline as shown in **Figure 2.0**. The airstrip landing surface was readily definable and measured 30 meters wide by approximately 800 meters long. It was noted that there are longitudinal drainage ditches located outside of the landing surface in the graded area along each side of the strip. These have been filled in over time with fine sand and silt and did not appear to be functional at the time of the site visit.

The surface of the airstrip was very soft and littered with scattered debris (would, steel, cables, etc.). No navigational aids were observed; however, there were a number of 45 gallon drums in the graded area that may at one time been used to define the landing surface to some degree.



Three staggered testholes were advanced on the landing surface spaced approximately 250 m apart and offset from centerline approximately 12 m. The runway surface was comprised of a loose, brown, medium, clean sand interspersed with 40 mm diameter rounded cobbles. The average depth of the testholes was 750 mm where the testholes were stopped at the permafrost layer. Water was encountered initially at a depth of approximately 300 mm. Test pit locations are shown on **Figure 5.0**, **Appendix A**.

Samples were taken at each location at a depth of 600 mm and grain size analysis (GSA) was completed on each sample. Samples taken from the test hole at the north end and the middle of the runway were analyzed by conducting soaked and unsoaked California Bearing Ratio (CBR) tests as well a maximum dry density tests. The results of the GSAs and CBRs are located in **Appendix I**. Generally speaking, the runway materials were uniform throughout the depth of the testholes. **Photos 1 through 12** of **Appendix H** show the general location of the airstrip and the condition of the surface.

With reference to Transport Canada's documents ERD No: 121 (formerly AK-68-32) *Guidelines Respecting Airport Pavement Condition Surveys* and ASG-19 (formerly AK-68-12) *Manual of Pavement Structural Design* the surface condition of the runway was determined.

Based on the grain size analysis test results, the material comprising the runway was classified as a fine to medium brown sand with traces of silt at an average depth of 75cm. The runway was in a saturated condition due to the infill of the longitudinal ditches with sand. From a material classification standpoint, this relates to an estimated Spring Reduced Lower-Quartile Point Subgrade Bearing Strength (SSRLQP) range between 60 and 100. Soaked and unsoaked CBR's were undertaken on the samples resulting in an average unsoaked value of 23 translating to a correlating SSRLQP value of 100.

With reference to **Figure 3.4.1** of ASG-19, using an SSQRLP of 60 and an average equivalent granular thickness of 75 cm, the runway has a Pavement Load Rating (PLR) of 7.

Using standard gear loadings and an overload ratio of 1.0 this relates to aircraft with Aircraft Load Rating (ALR) of 7 and under. Structurally the runway would be expected to handle aircraft such as the Beech 18, King Air or the HS-748. However; due to the saturated and soft condition of the runway surface and with tire pressures of 0.4 to 0.7 MPa, it is likely that aircraft tires would tend to sink into the runway surface somewhat in its current condition and is therefore not recommended for use in its current state.

In order to re-establish the serviceability of the runway the drainage ditches on either side of the runway should be dug out and a longitudinal drainage profile should be re-established in order to reduce the saturated condition of the runway.

The surface should then be re-graded to establish proper longitudinal and transverse profiles to ensure positive drainage. The material should then be re-compacted at an optimum moisture content between 12 and 15% to a maximum dry density of approximately 1800 kg/m<sup>3</sup>.



In order to establish a suitable landing surface capable of handling standard gear loadings and tire pressures, it is recommended that a surfacing gravel layer be overlaid on the runway at a minimum depth of 100mm. The surfacing gravel should be comprised of well-graded gravel having a minimum Spring Reduced Lower-Quartile Point Subgrade Bearing Strength of 290. This material should then be graded to ensure positive drainage (2% minimum transverse cross-slope) and compacted to 98% of the material's maximum dry density. This material is available at borrow sites #4, 5 and 7. It is expected that screening of the borrow material will be required to produce a surfacing gravel that will meet the engineering requirements.

As structural adequacy of the runway is only one component for the viable access of aircraft, consideration of the runway geometry must also be addressed. Based on our field survey the runway geometry measured 30 m wide by approximately 800 m in length. For aircraft such as the C130, DC3 or the DC4, it may not be feasible to land or take-off from such a short strip. In order to land aircraft of these sizes the minimum runway lengths are typically in the order of 1,100 m (3,500 feet). Smaller aircraft such as the Twin Otter or Dornier may be able to land on less depending on weather conditions and payload. Although it is estimated that the runway is overall structurally adequate to handle the larger aircraft, the runway may require lengthening by 300 m or so in order to accommodate the larger aircraft. Lengthening of the airstrip by 300 m would require approximately 25,000 to 30,000 m<sup>3</sup> of material.

# **Barge Landing Areas**

One test pit was advanced at two different proposed barge landing areas (BLAs). The first barge landing area was located approximately 250 m east of the main station as shown on **Figure 2.0** of **Appendix A**. The material was comprised of a saturated clean brown fine to medium sand with traces of gravel (sample number BLA-1). The material was uniform sand throughout the depth of the test pit which ended at the permafrost layer at approximately 76cm. **Photos 14 and 14** of **Appendix H** show BLA #1.

The second sample (BLA-2 as shown on **Figure 2.0**, **Appendix A**) was taken from what was understood to be the old barge landing site which was used for past site activities. This area was located approximately 100 m east of the existing summer camp at the shoreline approximately 2 km south of BLA-1. Similar to BLA #1, the material at this location consisted of uniform saturated clean sand to a depth of 75cm over the permafrost. Although no bearing tests were undertaken, it is likely that this area could readily hold the weight of tracked vehicles. It is recommended that a vehicle travel ramp be constructed at the selected beach landing site.

#### **Cape Christian Site Roads**

The status of the site roads at Cape Christian were evaluated and are summarized in the table below. Photos of the site roads are located in **Appendix H** and **Figure 8.0** in **Appendix A** shows the site roads.

**Table 5: Summary of Site Roads** 

Road	Photos in Appendix H	Width (m)	Condition	Comments
Disaster Hut Road	53-56	3	Poor	Drainage improvements needed on north side of road, very steep road.



Road	Photos in Appendix H	Width (m)	Condition	Comments
Reservoir Dam Embankment	43-46	3 - 6	Fair	Drainage culverts at south end need major repairs (1000 m³ of material), road narrows at this location creating very tight corner.
Main Access Road from the South	17-21	6	Fair	Sand/cobbles on surface River crossing Requires grading Low wet area past bulldozer.
Road up to Equipment Dump	22-26	4 - 6	Good	Some grading required.
Equipment Dump Road	27-30	4 - 6	Fair	Requires grading.
Old Road to Clyde River	31 - 32	4	Fair	Requires grading and large repair (100 m <sup>3</sup> ) at culvert washout (Photo 32).
Road North of Hazmat Building	33 - 42	6	Good	Sand/cobbles on surface Some water erosion.

Generally speaking the roads at Cape Christian provide adequate access to the site via ATVs, however strategic road improvements as well as increasing the structure are required to make site accessible to heavy equipment.

#### **Campsite Locations**

It is assumed that a remediation contractor will elect to camp on site at the Cape Christian LORAN station during the remediation activities as opposed to staying in the Town of Clyde River 16 km away. Two areas are recommended for the location of the remediation camp and are indicated in **Figure 2.0** of **Appendix A**. These locations were selected based on the lower water table in these areas and the accessibility of the sites via the existing site roads. Due to the amount of heavy equipment travel around the site, it is expected that the camp will on top of a constructed gravel pad.

# 4.3.2 Borrow Sources

**Appendix I** contains the sieve analysis data for each of the following borrow sources.

**Table 6: Summary of the Cape Christian Borrow Sources** 

Borrow Source	Location	Type of Material	Estimated Amount of Material Available m3
Borrow Source # 1	Freshwater Reservoir Embankment (Figure 3.0)	poorly graded sand	9000
Borrow Source # 2	Berms of Proposed Landfill # 2 (Figure 3.0)	poorly graded silty sand	1000
Borrow Source # 3	main Approach Road before River Crossing (Figure 5.0)	poorly graded sand	10000



Borrow Source	Location	Type of Material	Estimated Amount of Material Available m3
Borrow Source # 4	Building, AST and Garage Gravel Pads	fairly well graded gravel	3300
Borrow Source # 5	End of Road Past Equipment Dump (Figure 5.0)	fairly well graded gravelly sand	1700
Borrow Source # 6	Near South Beach Barrel Cache (Figure 2.0)	poorly graded gravelly sand	5250
Borrow Source # 7	750 m Northeast of Main Station Building	fairly well graded gravelly sand	4000

#### **Borrow Source #1**

Borrow Source # 1 is the reservoir embankment as shown in **Photos 1 and 2** of **Appendix H**. Based on the site survey the amount of borrow available at this site is estimated to be approximately 9,000 m<sup>3</sup>. The material at this location is poorly graded sand with a medium susceptibility to frost and can be used as general fill.

#### **Borrow Source #2**

Borrow Source #2 is the area recommended as a landfill in the 2001 Earth Tech report as shown in **Photos 3 and 4** of **Appendix H**. The location is indicated in **Figure 3.0** of **Appendix A**. Based on the survey information and the measured depth of material the estimated amount of material is approximately 1000 m<sup>3</sup>. The material is poorly graded silty sand with a medium susceptibility to frost. This material can be used as general fill.

# **Borrow Source #3**

Borrow source #3 is located approximately 600 meters south of the site airstrip along the Cape Christian Approach road as shown in **Figure 2.0** of **Appendix A**. Borrow source #3 is shown in **Photos 5 and 6** of Appendix H. Based on the site survey it is estimated that there is approximately 10,000 m<sup>3</sup> of material at this location. The material is poorly graded silty sand with a medium susceptibility to frost. This material can be used as general fill.

#### **Borrow Source #4**

Borrow source #4 includes the borrow material used to construct the pad for the main station building, the pad for the AST tanks west of the main station building and the pad for the garage north of the main station building. These areas are shown on **Figure 2.0** of **Appendix A**. **Photos 7, 8 and 9** show the test pitting at the garage, main station and AST tank pads respectively. Areas noted as contaminated cannot be used for fill reducing the useable volume of borrow at these locations. Based on the survey data and the assumed useable areas at each of these locations the amount of useable borrow at borrow source #4 is estimated to be approximately 3,300 m<sup>3</sup>. The material at these locations is fairly well graded gravel and can be used as a source for surfacing material.



#### **Borrow Source #5**

Borrow source #5 is the a portion of the road that is approximately 80 meters south of the equipment dump as shown in **Figure 5.0** of **Appendix A**. Borrow source #5 is shown in **Photos 10 and 11** of **Appendix X**. Based on the survey data and test pitting it is estimated that there is approximately 1,700 m<sup>3</sup>. The material at this location is fairly well graded gravelly sand and may be used for surfacing material

#### **Borrow Source #6**

Borrow source #6 is shown in **Photos 12 and 13** of **Appendix H** and is indicated in **Figure 2.0** of **Appendix A**. Based on measurements taken during the test pitting activities the estimated amount of material available at this location is calculated to be approximately 5,000 m<sup>3</sup>. The material at this location is poorly graded gravelly sand with a medium susceptibility to frost. This material can be used as general fill.

#### **Borrow Source #7**

Borrow source # 7 is located approximately 700 m north of the Cape Christian site along the shoreline as noted in **Figure 2.0** of **Appendix A**. The area of borrow source #7 is shown in **Photos 14, 15 and 16** of **Appendix H**. The area contains cobble, large rocks and boulders that can be used for rip rap or rock crushing as required. The estimated amount of rock, based on the survey data is approximately 4,000 m<sup>3</sup>. The smaller grained material at this location is fairly well graded gravelly sand and can be used as a surfacing material. The following table gives the approximate for each of the borrow sources.

**Table 7: Summary of Borrow Source Coordinates** 

<b>Borrow Source</b>	Northing	Easting	Latitude	Longitude	Elevation
Borrow Source #1	7824482.467	526121.565	70°31'27.1" N	68°17'52.8" W	11.983
Borrow Source #2	7824603.948	525633.749	70°31'31.2" N	68°18'39.9" W	19.621
Borrow Source #3	7823225.311	525915.883	70°30'46.6" N	68°18'14.1" W	4.83
Borrow Source #4	7824738.751	526170.096	70°31'35.4" N	68°17'47.8" W	22.252
Borrow Source #5	7824098.897	525945.226	70°31'14.8" N	68°18'10.3" W	11.84
Borrow Source #6	Unknown	Unknown	Unknown	Unknown	Unknown
Borrow Source #7	7825504.838	526123.233	70°32'0.1" N	68°17'51.5" W	8.071

#### 4.3.3 Landfill/Landfarm Locations

The three previously proposed landfill locations were revisited again in 2006. Test pits were conducted at each location and geotechnical samples were taken.

Proposed landfill location # 1 – Domestic Waste Site Gulley is shown in **Figure 3.0** of **Appendix A** and **Photos 17 and 18** of **Appendix J**. Berms have been developed on both sides to form this gulley, possibly for the purpose of waste disposal. The area is approximately 25 m in width, 150 m long, with berm heights of approximately 3 m. The capacity of the site assuming debris placed to a depth of 2 m over an area of 20 m by 100 m is 4,000 m<sup>3</sup>. Due to its distance from the main station this location was not recommended.



Proposed landfill location #2 – Diversion Channel is shown in **Figure 3.0** of **Appendix A** and **Photos 19** and 20 of **Appendix J**. This gulley was constructed to direct surface runoff to the raw water reservoir and is thus directly in this drainage channel. The gulley is narrower at the start and widens towards the reservoir. The berm heights are approximately 4 m. The soil conditions are very similar to Site 1 with virtually no gravel and coarse sand, and mainly fine grained silty material. This area is approximately 350 m from the Main Station Building and approximately 375 m from the Equipment Dump, the two largest areas of physical debris. The capacity of the site assuming debris placed to a depth of 2 m over an area of 15 m by 80 m is 2,400 m<sup>3</sup>. Because it is a drainage channel, this location was not recommended.

Landfill location #3 - The depth of the freshwater reservoir was measured to verify the amount of material that can be deposited at this location. Based on the depth measurements it is estimated that the proposed landfill has a volume of 10,000 m<sup>3</sup>. The condition of the soil at the bottom of the reservoir is not known; however, it is expected that once the landfill is completed the permafrost would be drawn well up into the land filled material. Proposed landfill # 3 is shown in **Photos 21 and 22** of **Appendix J and in Figure 3.0 of Appendix A**. This location is recommended due to its location, capacity and ease of construction.

Two land farm locations were investigated and are shown on **Figure 3.0**. Test pits were installed at these to identify the type of material at each location. Proposed land farm location #1 is east of the freshwater reservoir and is 50 m long and 35 m wide and is shown in **Figure 4.0** and in **Photos 23 and 24** of **Appendix J**. There are some drainage courses that run close to this area. This makes the proposed land farm area less suitable than the proposed land farm area #2. Proposed land farm location # 2 is east of the freshwater reservoir as shown in **Figure 3.0** of **Appendix A** and **Photos 25 and 26** of **Appendix J**. The area measures 25 m by 65 m. Due to the lack of fine grained materials (such as clay) on site an environmental liner would be required in the construction of a land farm on site.

# 5.0 FCSAP SITE CLASSIFICATION SUMMARY

The Federal Contaminated Sites Action Plan (FCSAP) is a program developed by the federal government to assess and mitigate the risk associated with federal contaminated sites within Canada. The FCSAAP is a standardized method that uses site characteristics, site location and contaminant information to prioritize and classify the potential for adverse impacts. All relevant site information is stored in a national database in an effort to ensure funding for contaminated site clean up is allocated to sites with respectively higher potentials for adverse effects and impacts. As requested in the Terms of Reference for this project, a FCSAAP Classification was determined based on the findings of the investigation. In summary the FCSAAP score determined by Earth Tech is 80.6. A copy of the FCSAAP score is included as **Appendix K**. The benefits to Canadians of FCSAP are the accelerated remediation and/or risk management of federal contaminated sites having the highest human health and ecological risks, and the corresponding reduction in federal financial liability.

#### 6.0 CONCLUSIONS

The following sections outline the conclusions that can be drawn for the work completed during 2006 by Earth Tech at the former U.S. Coast Guard Loran Station at Cape Christian, Nunavut.



# 6.1 Supplemental Environmental Site Assessment

Based on the previous assessments and the 2006 Supplemental Environmental Investigation, the following table outlines the soil material on site that exceeds the INAC Abandoned Military Site Protocol, March 2005.

Table 8: Summary of Contaminated Soils at Cape Christian

Location	Contaminant Exceeding INAC Criteria (Max Concentration ppm)	DCC I m <sup>3</sup>	DCC II m³	INAC PHC m <sup>3</sup>	Comments
Main Station Area ASTs (Figure 3.1)	<b>PHC</b> s (F2: 12100)			381	Additional sampling during remedial activities may reduce the predicted plume size.
Main Station Building North of West Wing (Figure 3.1)	Metals (Lead: 723)		10		
Main Station Building East of East Wing (Figure 3.2)	<b>PHCs</b> (F2: 9370)			287	
Main Station Building East of East Wing (Figure 3.2)	<b>PCBs</b> (PCB: 1.7)	18			Plume associated with ESG sample G6516
Main Station Building East of East Wing (Figure 3.2)	Metals (Cadmium: 6.9, Zinc: 1200)		2		Plume associated with ESG sample G6512 and delineated in previous Earth Tech Report, 2001
Main Station Building East of East Wing (Figure 3.2)	Metals (Lead: 290, Zinc: 4500)		1		Plume associated with ESG sample G6508 and delineated in previous Earth Tech Report, 2001
Main Station Building East of East Wing (Figure 3.2)	Metals (Cadmium: 7.4, Zinc: 7350)		55		Plume associated with samples in floor sumps
Main Station Building East of East Wing (Figure 3.2)	Metals (Lead: 210)	41			Plume associated with ESG Sample G6576
Main Station Area Maintenance Garage (Figure 3.3)	Metals (Cadmium: 5.9)		126		
Main Station Area Maintenance Garage (Figure 3.3)	<b>PHCs</b> (F3: 41100)		160		
Main Station Area Disaster Hut (Figure 3.3)	Metals (Cadmium: 5.9)		1		Plume associated with ESG sample G6593 and delineated in previous Earth Tech Report, 2001
Beach Area, Outfall (Figure 4.1)	Metals (Copper: 273)		207		Plume associated with Earth Tech 2001 samples CC43 and CC40
Beach Area, Worked Area #1 (Figure 4.2)	<b>PHCs</b> (F2: 8450)			871	
	<b>Total Estimated Volumes</b>	58	561	1539	



- Several minor exceedances of the applied CCME Water Quality Guidelines were measured in surface waters collected on site. The areas where exceedances were noted are a significant distance away from any possible fish habitats. It also must be noted that the volumes of surface water where the exceedances were noted are minimal and seasonal. It is not anticipated that contamination noted on site is adversely affecting water sources down gradient and off site.
- The water in the freshwater reservoir has been sampled and is deemed adequate for discharge into the ocean.
- The seven (7) lubricating oil barrels identified at the main station area garage in 2002 have since been topped over and have spilled onto the ground impacting the surrounding soils and a small area of surface water.

#### 6.2 Hazardous and Non Hazardous Materials Audit

Based on the Earth Tech 2006 Hazardous and Non hazardous Materials Audit the following conclusions can be made.

- The main station building has partially collapsed in some areas and poses a significant health and safety risk
- The majority of the painted surfaces within the main station building exceeds the selected criteria for PCB and Lead contamination. The paint is in poor condition and is flaking.
- In addition to the previous asbestos survey, friable asbestos (amosite 30%) was discovered in the hazardous materials building.
- In addition to the previous hazardous materials audit, additional batteries and compressed gas cylinder tanks were discovered at the site.
- Additional non hazardous materials were discovered and the previous non hazardous materials audit was expanded in detail.

The Cape Christian site is readily accessible to the residents of Clyde River. In the current partially demolished condition it poses a significant health and safety risk, as well as an environmental concern.

# **6.3** Geotechnical Investigation

Based on the Earth Tech 2006 Geotechnical Assessment the following conclusions can be made.

- The airstrip is not usable in its current state. Improvements to the drainage and the airstrip material are required prior to the airstrip being considered for use. If larger aircraft is required for the remediation activities the runway would need to be extended in length.
- Generally speaking the roads at Cape Christian provide adequate access to the site via ATVs, however strategic road improvements are required to make site accessible to heavy equipment.
- Adequate borrow material for possible remediation activities has been identified. No clay material was found on site.
- The freshwater reservoir will provide adequate volume for material to be land filled.



# 7.0 RECOMMENDATIONS

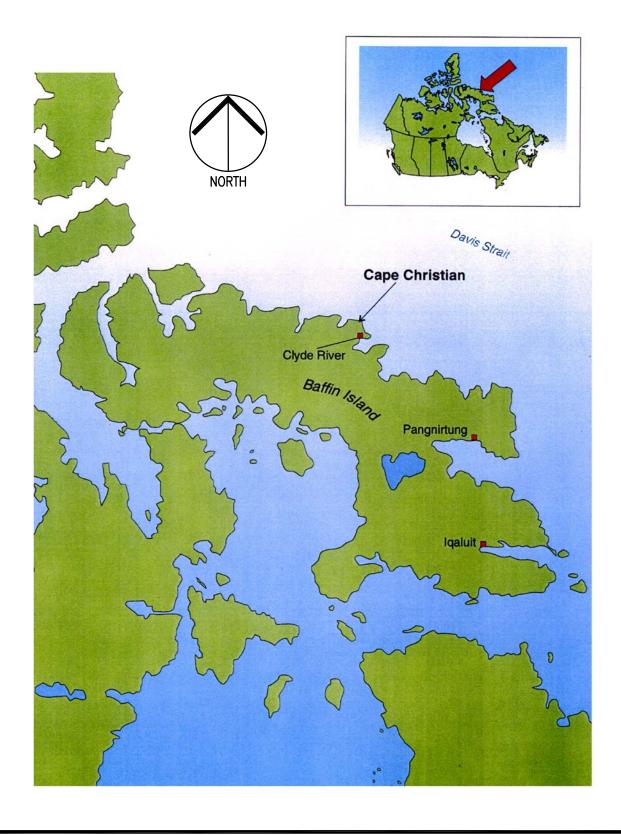
- Due to the current state of the partially collapsed Main Station building, special precautions and care should be taken by any contractor undertaking the remediation and deconstruction of the building.
- All soils noted as being in exceedance of the current INAC Criteria shall be addressed in accordance with the INAC Abandoned Military Site Remediation Protocol
- The barrels buried at Worked Area #1 shall be dug up and addressed in accordance with the DCLU DEW Line Barrel protocol, in order to access the hydrocarbon contaminated soils in that area.
- Proposed landfill area #3 (freshwater reservoir) is recommended for use as a landfill during the site remediation. The water shall be drained from the reservoir, prior to use as a landfill.
- The identified borrow material on site shall be used to improve site roads and the airstrip as required by a remediation contractor.
- Due to the lack of clay borrow material on site, it is recommended that the construction of a land farm cell include a synthetic geomembrane to prevent off site migration of hydrocarbons from the treated soils.

#### 8.0 REFERENCES

- Abandoned Military Site Remediation Protocol, Indian and Northern Affairs Canada, March 2005.
- Environmental Study of Abandoned DEW Line Sites, II. Six Intermediate Sites in the Eastern Arctic. Environmental Sciences Group, Royal Roads Military College, March 1994.
- Environmental Site Delineation and Material Inventory, Earth Tech Canada, 2002.
- ERD No: 121 (formerly AK-68-32), Guidelines Respecting Airport Pavement Condition Surveys and ASG-19 (formerly AK-68-12) Manual of Pavement Structural, Transport Canada.
- Remedial Action Plan Former US Coast Guard LORAN Station, Cape Christian, Nunavut, Public Works and Government Services Canada (PWGSC), March 2002.
- http://climate.weatheroffice.ec.gc.ca/climate normals, Clyde A.



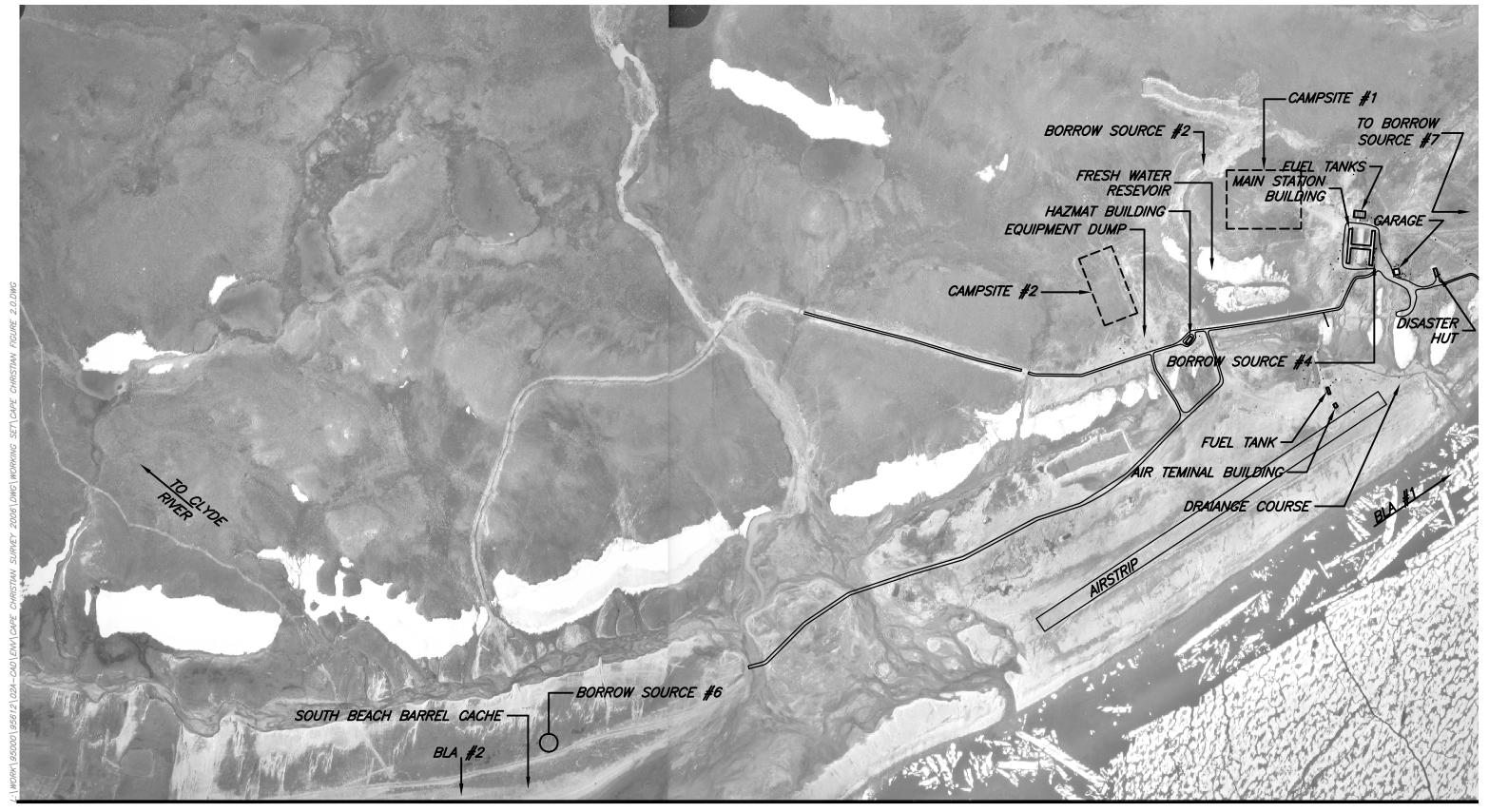


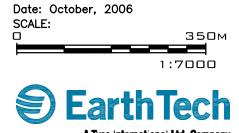


Date: October, 2006

# INDIAN AND NORTHERN AFFAIRS CANADA CAPE CHRISTIAN, BAFFIN ISLAND, NUNAVUT



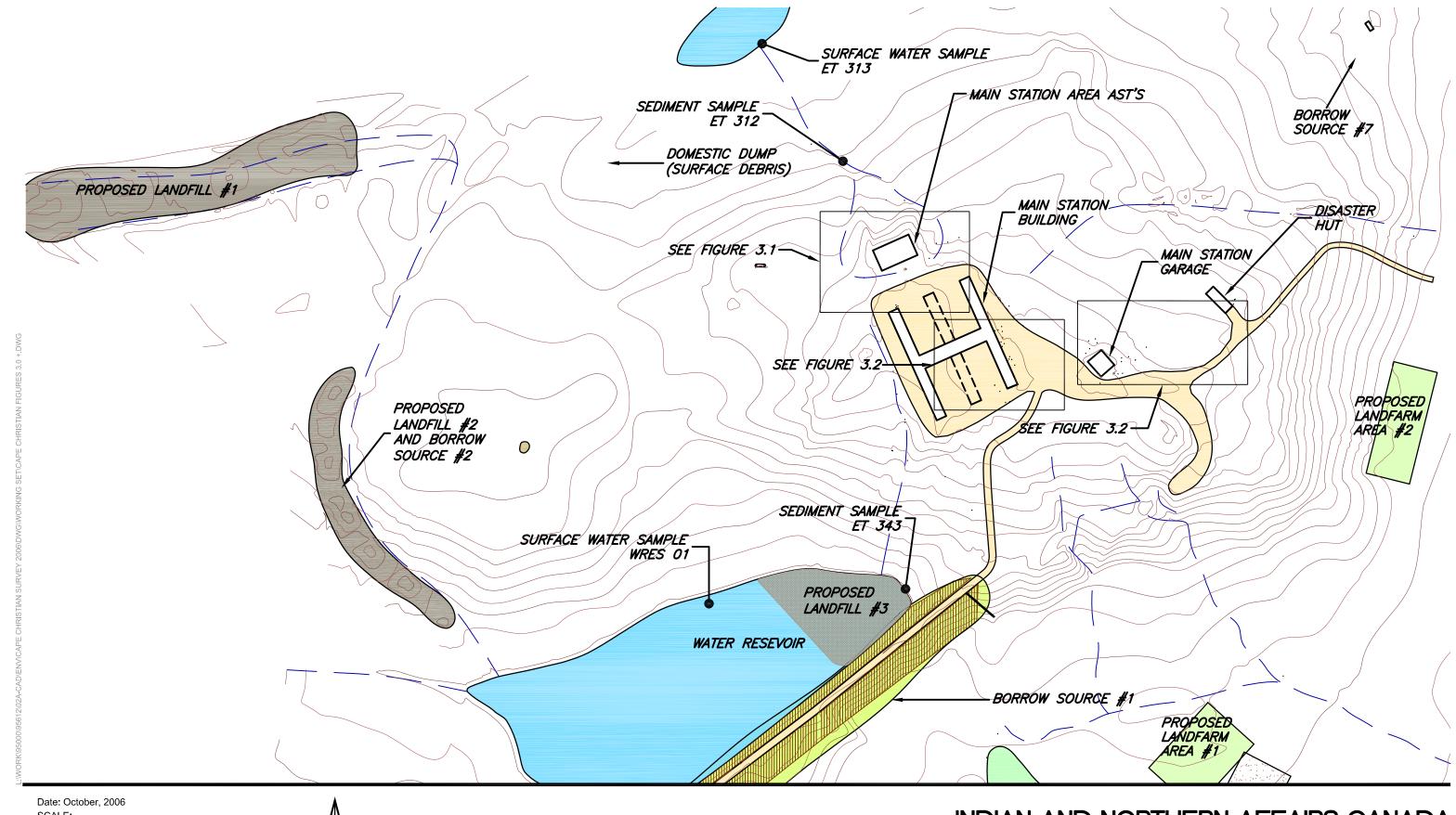


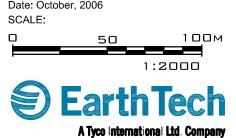




NOTE: BLA = BARGE LANDING AREA

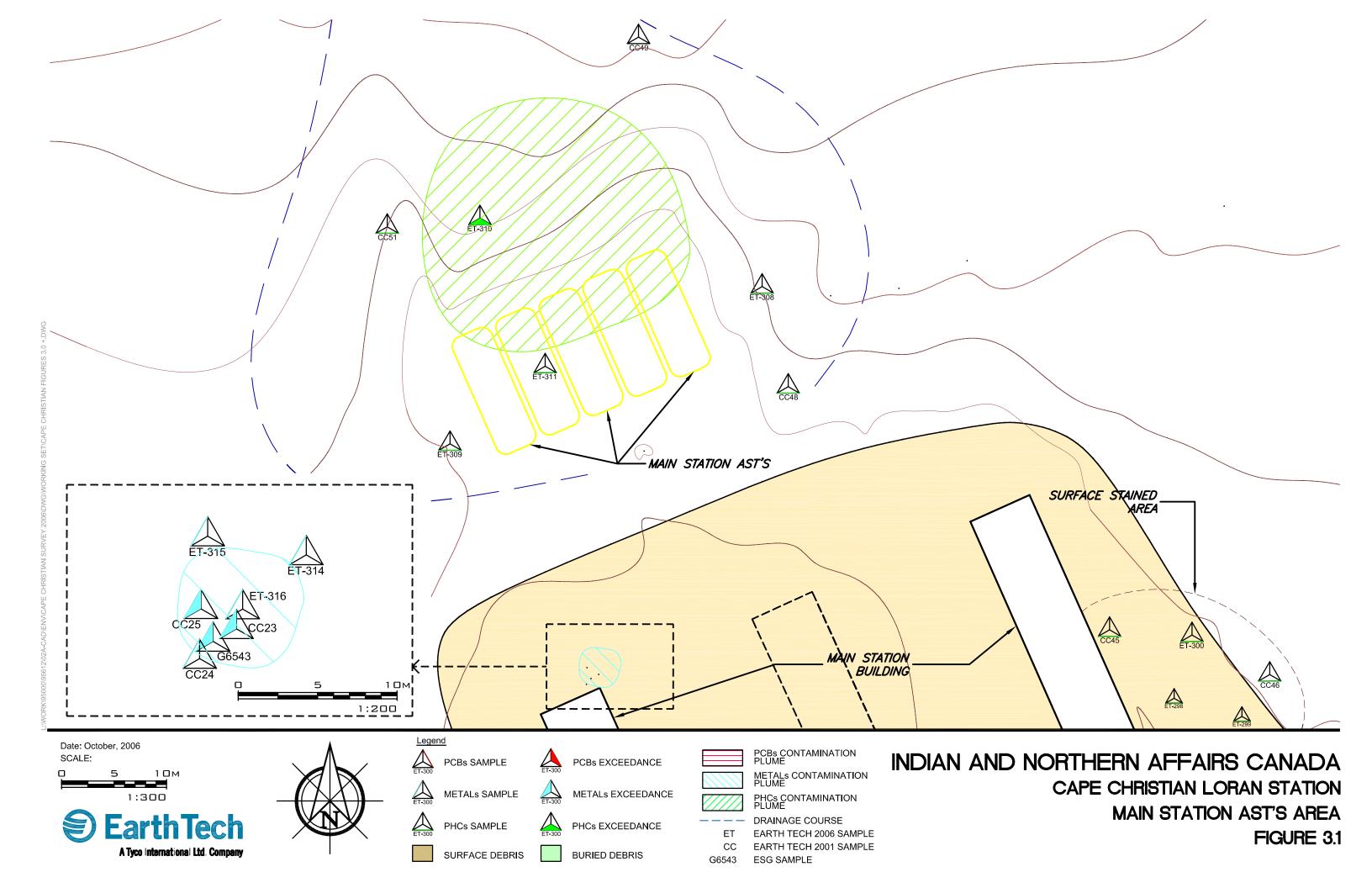
INDIAN AND NORTHERN AFFAIRS CANADA
CAPE CHRISTIAN LORAN STATION
OVERALL SITE PLAN
FIGURE 2.0

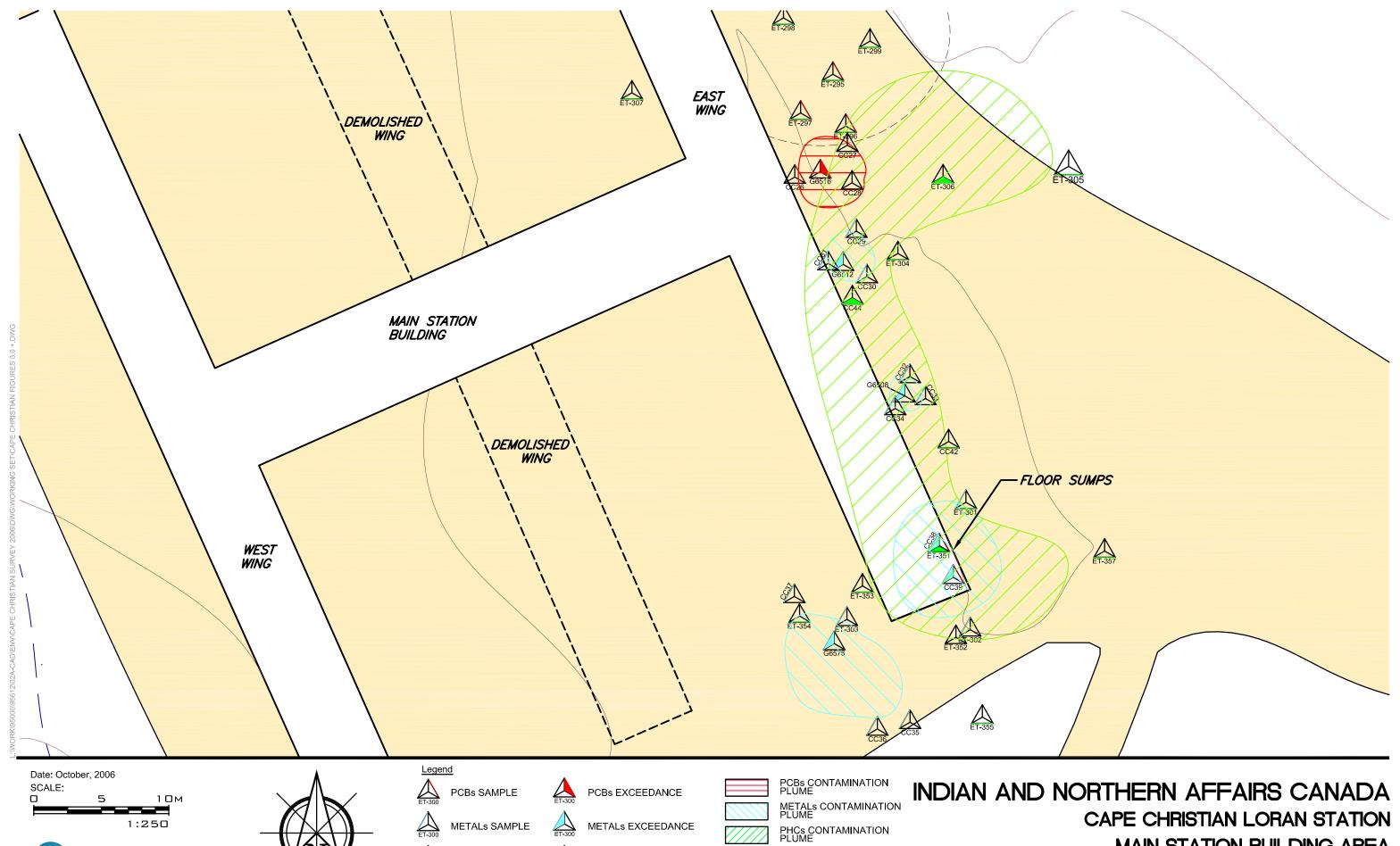






INDIAN AND NORTHERN AFFAIRS CANADA
CAPE CHRISTIAN LORAN STATION
MAIN STATION AREA
FIGURE 3.0











PHCs SAMPLE

SURFACE DEBRIS

PHCs EXCEEDANCE

**BURIED DEBRIS** 

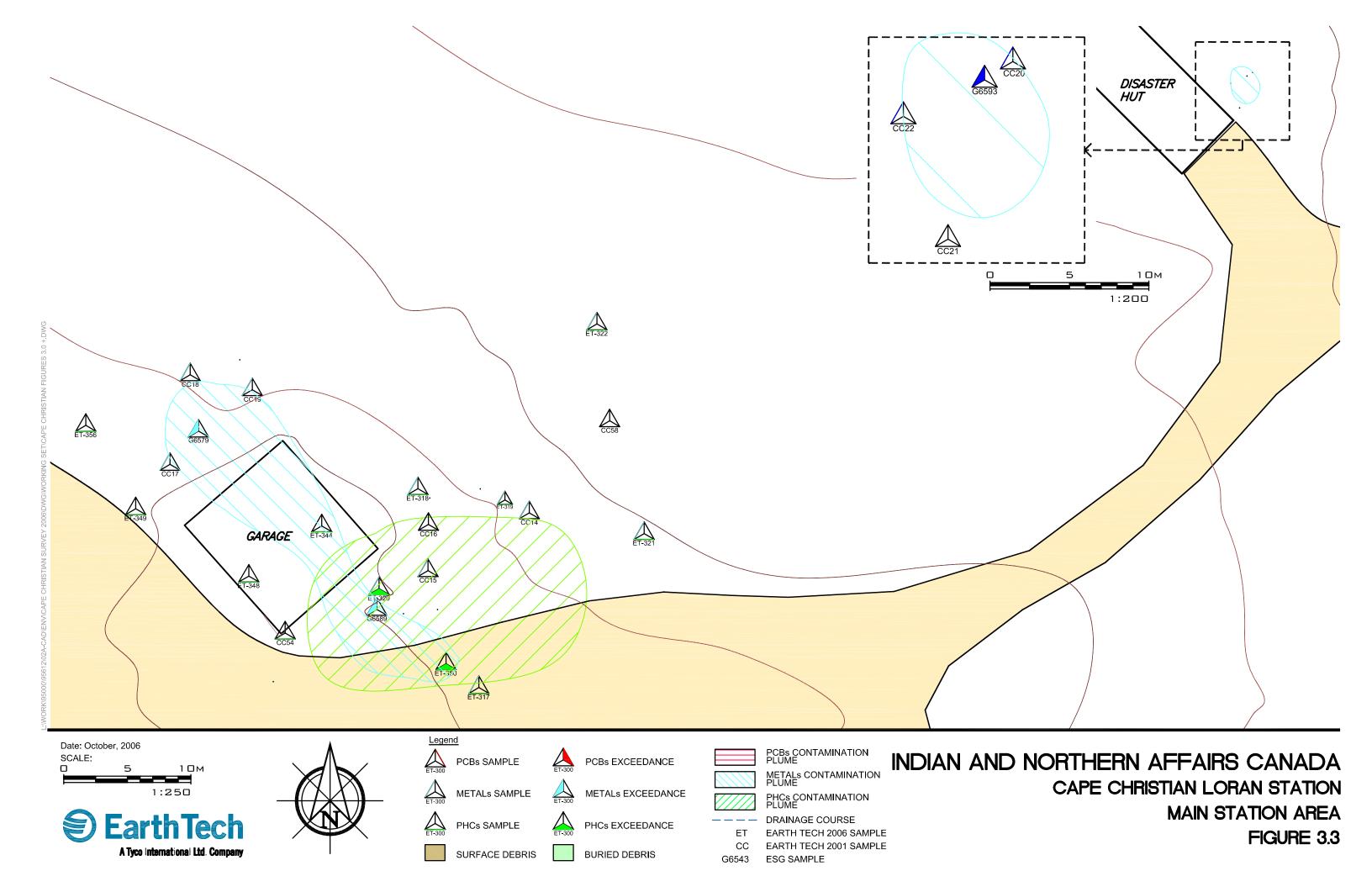


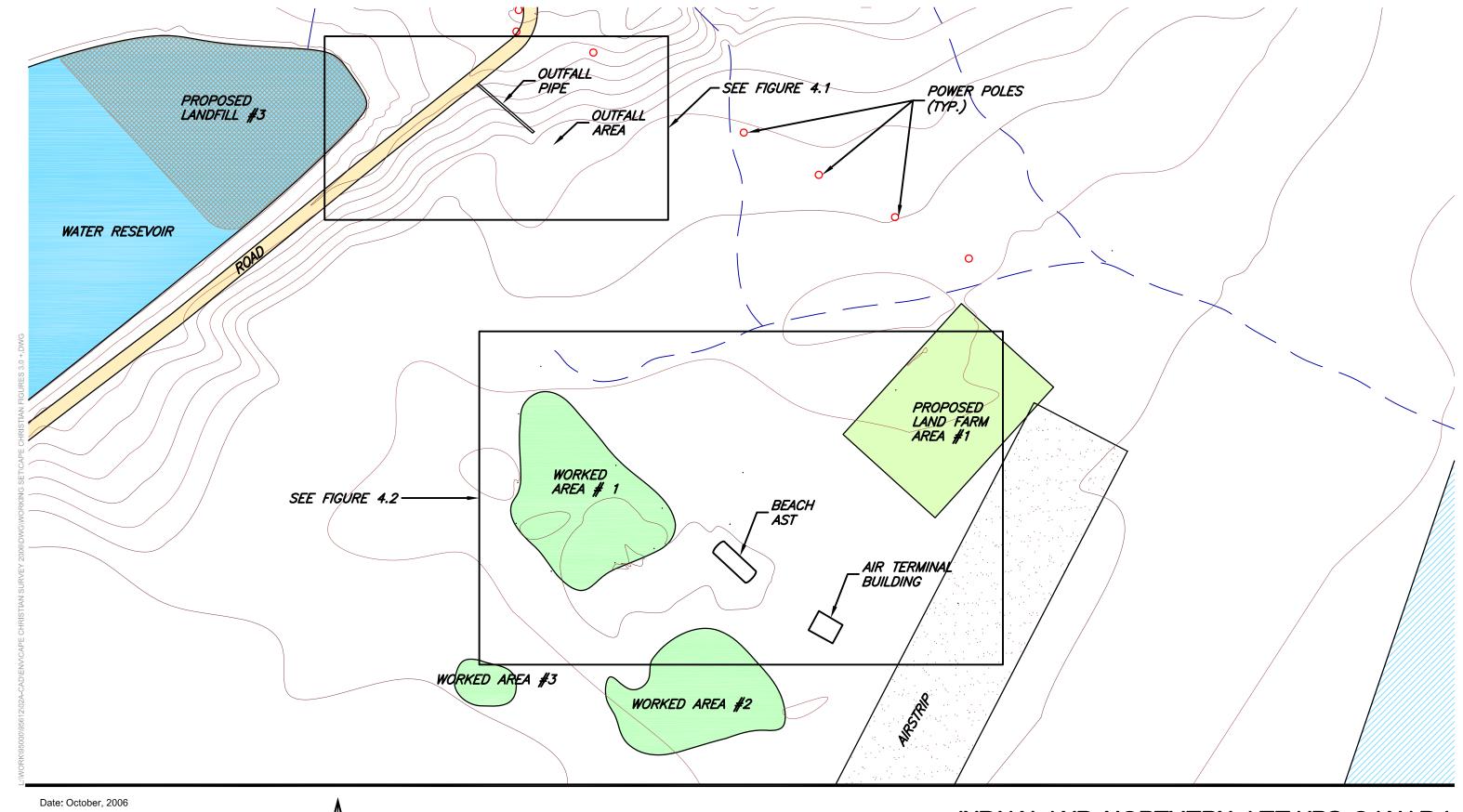
DRAINAGE COURSE EARTH TECH 2006 SAMPLE CC EARTH TECH 2001 SAMPLE

ESG SAMPLE

MAIN STATION BUILDING AREA

FIGURE 3.2

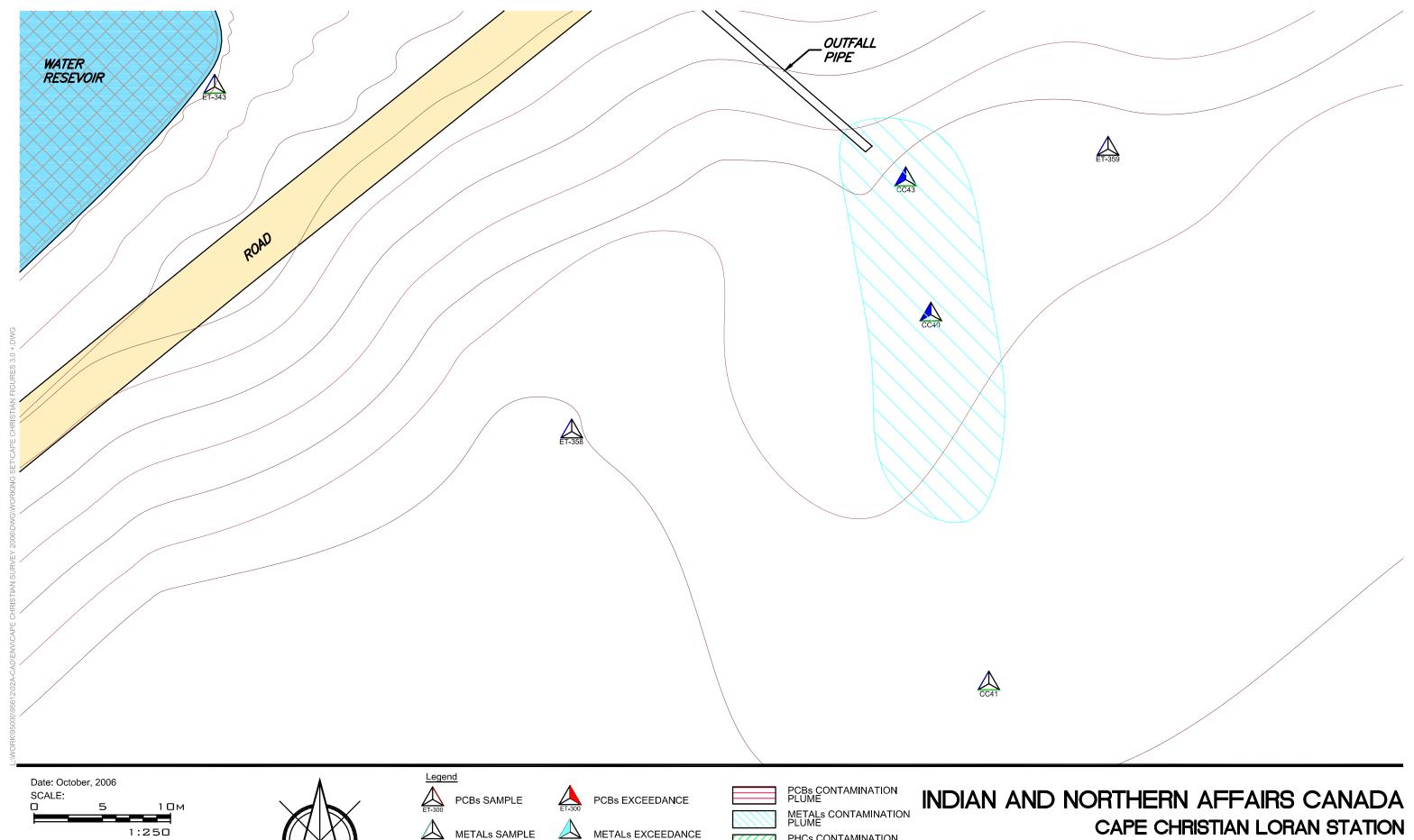








INDIAN AND NORTHERN AFFAIRS CANADA
CAPE CHRISTIAN LORAN STATION
BEACH AREA
FIGURE 4.0











METALs EXCEEDANCE



PHCs SAMPLE

SURFACE DEBRIS

PHCs EXCEEDANCE

BURIED DEBRIS

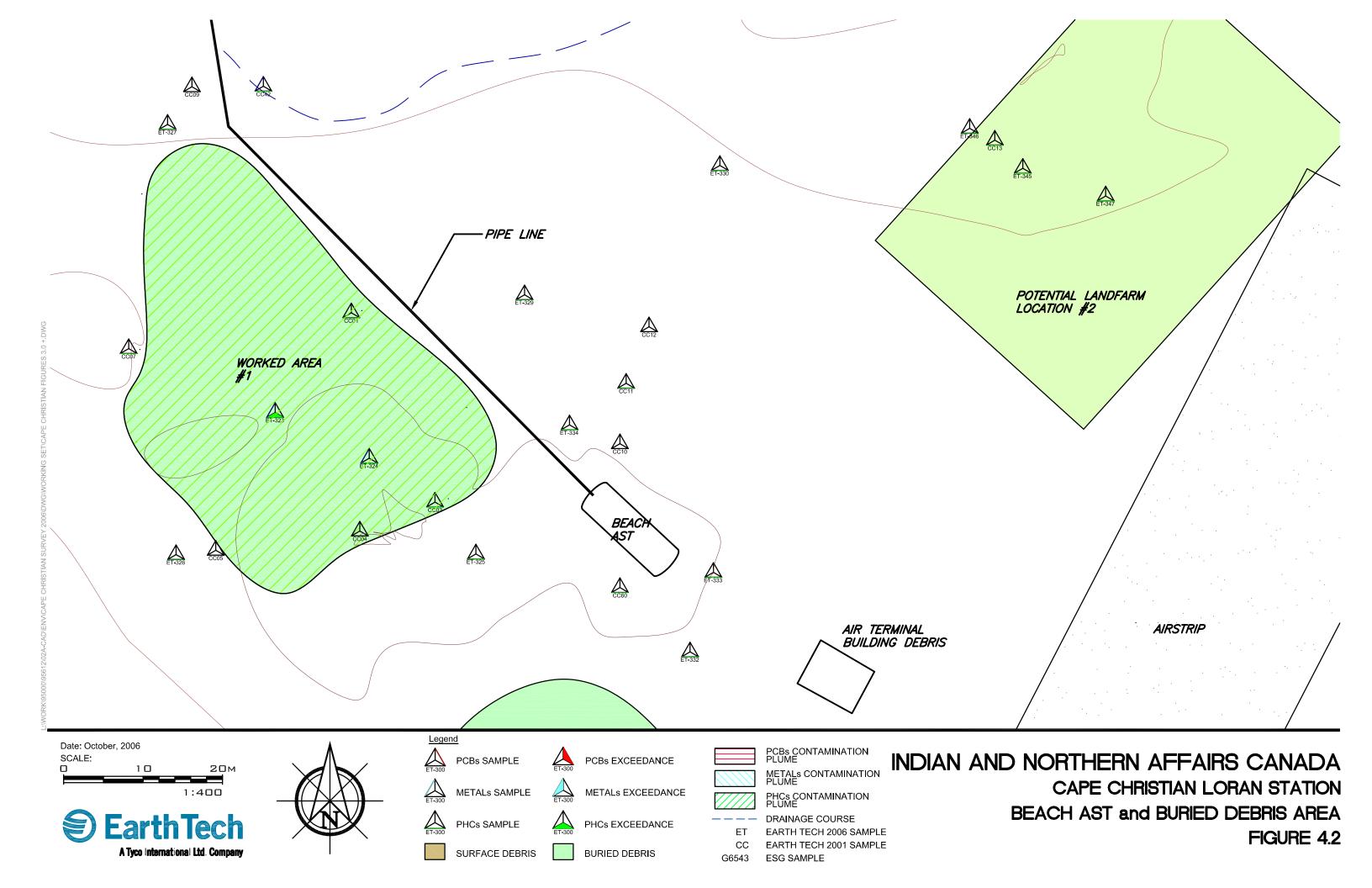


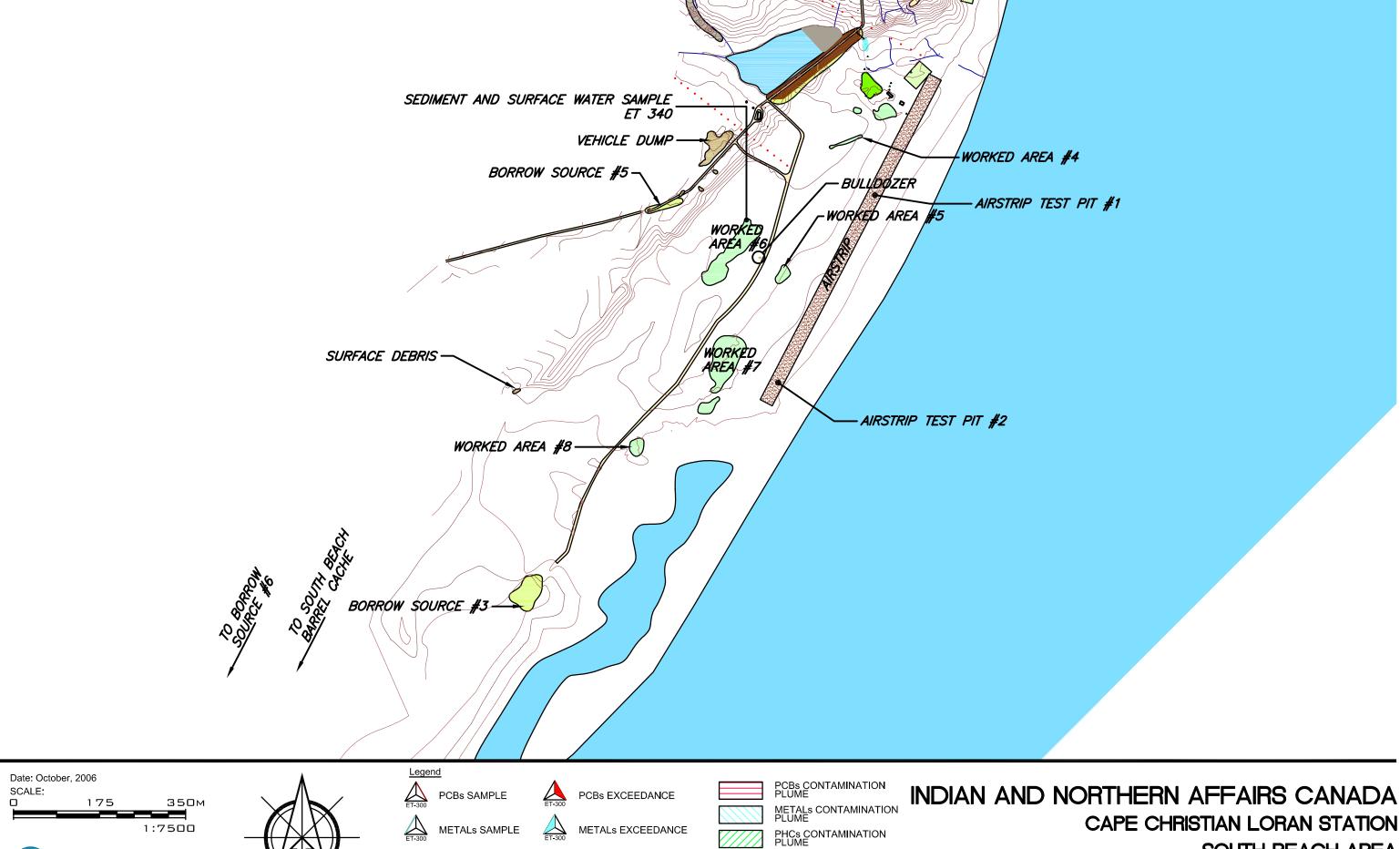


PHCs CONTAMINATION PLUME

DRAINAGE COURSE EARTH TECH 2006 SAMPLE CC EARTH TECH 2001 SAMPLE G6543 ESG SAMPLE

CAPE CHRISTIAN LORAN STATION **OUTFALL AREA** FIGURE 4.1









PHCs SAMPLE

SURFACE DEBRIS

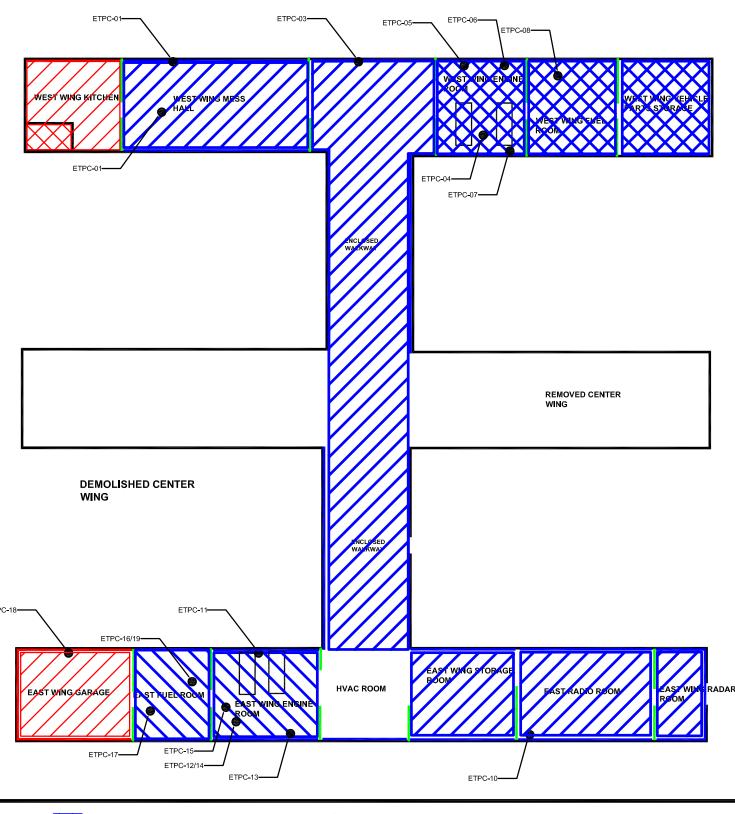
PHCs EXCEEDANCE

BURIED DEBRIS

DRAINAGE COURSE EARTH TECH 2006 SAMPLE

EARTH TECH 2001 SAMPLE G6543 ESG SAMPLE

SOUTH BEACH AREA FIGURE 5.0



Date: OCTOBER, 2006 SCALE: Not to Scale



Lead paint on ceiling

Lead paint on floor

PCB paint on ceiling

PCB paint on floor

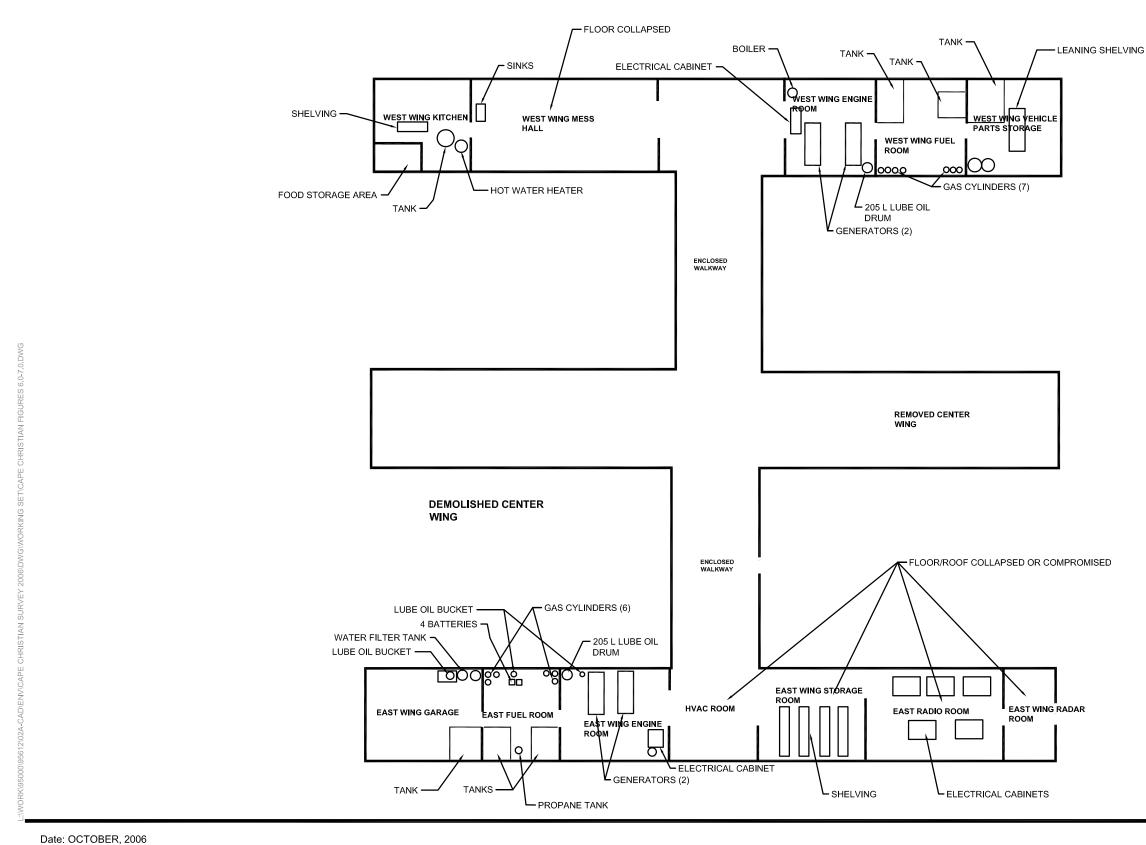
Lead paint on wall

PCB paint on wall

Asbestos

Note: asbestos piping throughout building

INDIAN AND NORTHERN AFFAIRS CANADA
CAPE CHRISTIAN LORAN STATION
MAIN STATION BUILDING PAINT ASSESSMENT
FIGURE 6.0



SCALE: Not to Scale

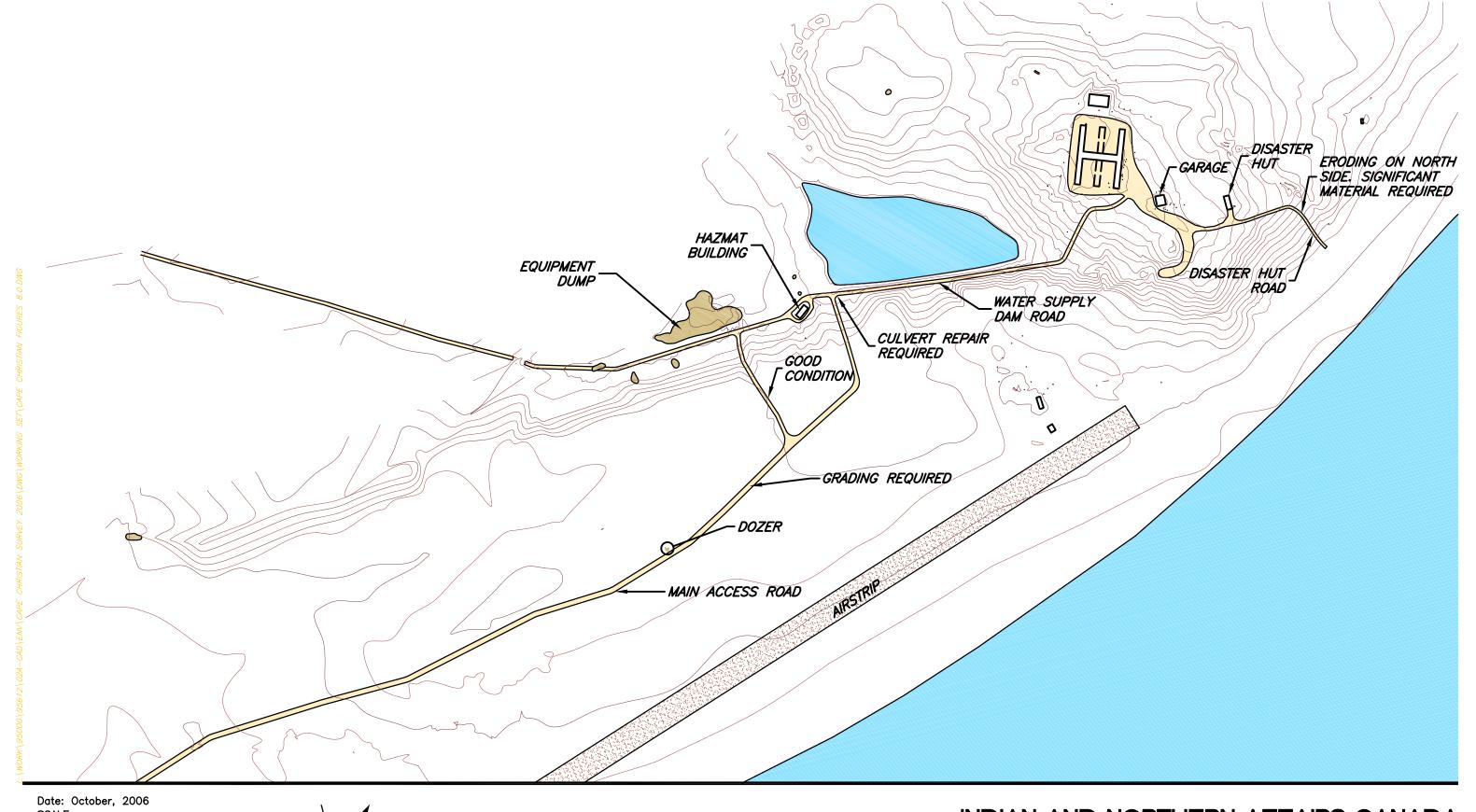


INDIAN AND NORTHERN AFFAIRS CANADA

CAPE CHRISTIAN LORAN STATION

MAIN STATION BUILDING CONTENTS

FIGURE 7.0







INDIAN AND NORTHERN AFFAIRS CANADA
CAPE CHRISTIAN LORAN STATION
OVERALL ROAD CONDITIONS
FIGURE 8.0

# APPENDIX B ENVIRONMENTAL PHOTOS



Photo 1: Main Building East Wing Looking South



Photo 3: Main Building East Wing Looking North



Photo 2: Main Building East Wing Looking Southwest



Photo 4: Main Building East Wing Looking West



Photo 5: Inside Main Building Garage Looking East



Photo 7: Main Station ASTs Looking Northeast

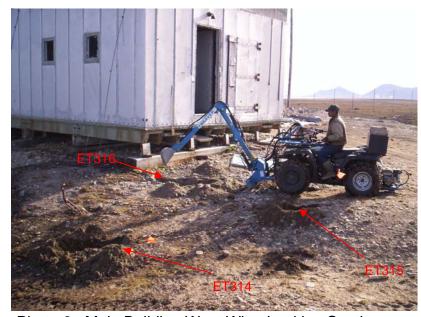


Photo 6: Main Building West Wing Looking South



Photo 8: Main Station ASTs Looking South



Photo 9: Barrels Spilled at East Side of Garage Looking West



Photo 11: Outfall Area Looking Northwest



Photo 10: Barrels Spilled at Garage Looking North



Photo 12: Worked Area (WA) #1 Looking East



Photo 13: Beach AST/Buried Barrels (WA #1) Looking South



Photo 15: WA #1 Looking Northwest



Photo 14: ET323 Excavated Barrel



Photo 16: Test Pitting (WA #1)



Photo 17: WA # 4 Looking North



Photo 19: WA #5 Buried Debris



Photo 18: WA #5 Looking Northwest



Photo 20: WA #6 Looking Northeast



Photo 21: South Beach Barrel Site Looking East



Photo 23: Surface Water and Sediment Sample Below Garage

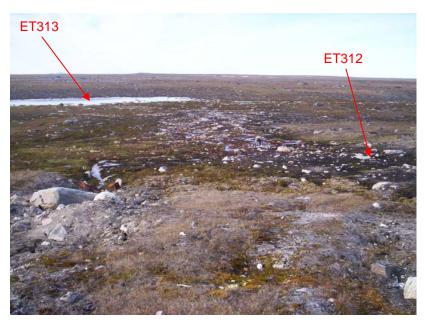


Photo 22: Surface Water and Sediment Sampling ASTs



Photo 24: Water Reservoir Sediment and Water Sample



Photo 25: WA #6 Looking North Sediment/Water Sample Location



Table 1.1 Hydrocarbons in Soil

Parameter Units	INAC Criteria	ET295	ET296	ET297	ET297	ET298	ET298	ET299	ET300	ET300	ET301	ET304	ET305	ET306	ET307	ET351	ET352	ET353	ET354	ET355	ET357
Depth (m)	15000	surface	surface	surface	0.75	surface	0.8	surface	surface	0.8	0.6	0.3	0.2	0.2	0.5	0.7	0.3	0.5	0.3	0.2	0.4
F1 (C06-C10) - BTEX mg/kg	15000	11	23	107	177	40	194	52	ND	74	74	68	ND	198	ND	78	ND	11	70	42	ND
F2 (C10-C16 Hydrocarbons) mg/kg	8000	5680	5410	6010	4930	7440	1800	6690	1880	2000	1340	5850	143	9370	462	8570	48	1260	513	91	12
F3 (C16-C34 Hydrocarbons) mg/kg	18000	4220	5450	3200	1260	5200	657	2000	1980	510	441	2520	902	1930	46	10100	194	576	672	237	41
F4 (C34-C50 Hydrocarbons) mg/kg	25000	1150	1470	701	452	387	126	241	236	46	70	847	349	412	ND	3190	95	115	157	92	40
Benzene mg/kg	0.0068	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene mg/kg	0.08	ND	ND	ND	0.047	ND	0.057	ND	ND	ND	ND	ND	ND	ND	ND	0.035	ND	ND	ND	ND	ND
Ethylbenzene mg/kg	0.018	ND	ND	ND	0.06	0.023	0.12	ND	ND	ND	ND	ND	ND	ND	ND	0.031	ND	ND	ND	ND	ND
Xylenes (Total) mg/kg	2.4	ND	ND	0.28	3.8	0.1	3.7	ND	ND	0.26	0.14	ND	ND	0.2	ND	0.21	ND	ND	ND	ND	ND

- Notes:

  1) BTEX criteria based on CCME Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health for Residential/Parkland Land Use for Fine Grained Soil
- 2) F1-F4 criteria based on INAC Abandoned Military Site Remediation Protocol, March 2005
- 3) Benzene criteria is based on a 10-6 incremental risk
- 4) Exceedance indicated with shading
- 5) ND = Not detected

Table 1.2 Metals in Soil

Metals in Soil										
Parameter	Units	DCC-I	DCC-II	ET301	ET302	ET303	ET312	ET314	ET315	ET316
Depth (m	)			0.6	0.8	0.3	surface	0.3	0.3	0.8
Mercury (Hg)	mg/kg		2	ND	ND	ND	ND	ND	ND	ND
Total Arsenic (As)	mg/kg		30	ND	ND	ND	ND	ND	ND	ND
Total Cadmium (Cd)	mg/kg		5	0.5	0.4	0.3	ND	ND	ND	ND
Total Chromium (Cr)	mg/kg		250	52	10	26	10	8	10	10
Total Cobalt (Co)	mg/kg		50	5.6	1.8	3.5	5.1	2.5	2	1.9
Total Copper (Cu)	mg/kg		100	ND	2	ND	6	4	ND	5
Total Lead (Pb)	mg/kg	200	500	10	ND	ND	ND	30	ND	122
Total Nickel (Ni)	mg/kg		100	5	ND	ND	5	ND	ND	ND
Total Zinc (Zn)	mg/kg		500	14	10	17	20	22	10	10

- Notes:

  1) Metals criteria based on INAC Abandoned Military Site Remediation Protocol, March 2005
- 2) ND = Not detected

Table 1.3 PCBs in Soil

Parameter	Units	DCC-I	DCC-II	ET295	ET296	ET297
Depth (m	)			surface	surface	0.75
Aroclor 1016	mg/kg	1	5	ND	ND	ND
Aroclor 1221	mg/kg	1	5	ND	ND	ND
Aroclor 1232	mg/kg	1	5	ND	ND	ND
Aroclor 1242	mg/kg	1	5	ND	ND	ND
Aroclor 1248	mg/kg	1	5	ND	0.45	ND
Aroclor 1254	mg/kg	1	5	0.09	ND	0.01
Aroclor 1260	mg/kg	1	5	0.03	0.03	0.02
Aroclor 1262	mg/kg	1	5	ND	ND	ND
Aroclor 1268	mg/kg	1	5	ND	ND	ND
Total Aroclors	mg/kg	1	5	0.12	0.48	0.03

- PCBs criteria based on INAC Abandoned Military Site
   Exceedance indicated with shading
- 3) ND = Not detected

#### **US Coast Guard Loran Station Cape Christian, Nunavut** Summary of Analytical Data-Main Station Garage

Table 2.1 Hydrocarbons in Soil

Parameter	Units	INAC Criteria	ET317	ET318	ET319M	ET320	ET320	ET321	ET344	ET348	ET349	ET350	ET356
Depth (m)		15000	ND	0.3	0.4	surface	0.8	0.5	0.3	0.2	0.2	surface	surface
F1 (C06-C10) - BTEX	mg/kg	15000	ND	244	ND	ND	147	ND	ND	ND	ND	ND	ND
F2 (C10-C16 Hydrocarbons)	mg/kg	8000	ND	5290	113	108	3830	16	1270	11	2510	253	493
F3 (C16-C34 Hydrocarbons)	mg/kg	18000	166	589	296	23700	9510	118	239	45	7010	41100	817
F4 (C34-C50 Hydrocarbons)	mg/kg	25000	33	40	131	22000	3220	41	16	24	1410	22600	241
Benzene	mg/kg	0.0068	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	mg/kg	0.08	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.1	ND
Ethylbenzene	mg/kg	0.018	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.043	ND
Xylenes (Total)	mg/kg	2.4	ND	2.5	ND	0.11	5.4	ND	ND	ND	ND	0.24	ND

#### Notes:

- 1) BTEX criteria based on CCME Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health for Residential/Parkland Land Use for Fine Grained Soil
- 2) F1-F4 criteria based on INAC Abandoned Military Site Remediation Protocol, March 2005
- 3) Benzene criteria is based on a 10-6 incremental risk
- 4) Exceedance indicated with shading
- 5) ND = Not detected

Table 2.2 Metals in Soil

IVIELAIS III SUII									
Parameter	Units	DCC-I	DCC-II	ET317	ET318	ET319	ET320	ET320	ET321
Depth (	(m)			0.5	0.3	0.4	surface	0.8	0.5
Mercury (Hg)	mg/kg		2	ND	ND	ND	ND	ND	ND
Total Arsenic (As)	mg/kg		30	ND	ND	ND	ND	ND	ND
Total Cadmium (Cd)	mg/kg		5	ND	ND	ND	0.3	ND	ND
Total Chromium (Cr)	mg/kg		250	12	10	5	3	4	4
Total Cobalt (Co)	mg/kg		50	1.7	2.2	1.5	2.1	2.4	1.9
Total Copper (Cu)	mg/kg		100	2	ND	ND	ND	ND	ND
Total Lead (Pb)	mg/kg	200	500	13	ND	ND	ND	ND	ND
Total Nickel (Ni)	mg/kg		100	ND	ND	ND	ND	ND	ND
Total Zinc (Zn)	mg/kg		500	12	10	5	171	15	11

#### Notes:

- Metals criteria based on INAC Abandoned Military Site
   ND = Not detected

Table 2.3 PAHs in Soil

Polycyclic Aromatics	Units	CCME 2002	ET320	ET320
Depth (m)			surface	0.8
Naphthalene	mg/kg	0.6	ND	0.44
2-Methylnaphthalene	mg/kg	-	0.37	2.7
Acenaphthylene	mg/kg	-	ND	ND
Acenaphthene	mg/kg	-	ND	0.25
Fluorene	mg/kg	-	0.28	0.21
Phenanthrene	mg/kg	5	0.62	ND
Anthracene	mg/kg	-	0.12	ND
Fluoranthene	mg/kg	-	ND	0.08
Pyrene	mg/kg	10	0.2	0.12
Benzo(a)anthracene	mg/kg	1	ND	ND
Chrysene	mg/kg	-	ND	ND
Benzo(b&j)fluoranthene	mg/kg	1	ND	ND
Benzo(k)fluoranthene	mg/kg	1	ND	ND
Benzo(a)pyrene	mg/kg	0.7	ND	ND
Indeno(1,2,3-cd)pyrene	mg/kg	1	ND	ND
Dibenz(a,h)anthracene	mg/kg	1	ND	ND
Benzo(g,h,i)perylene	mg/kg	-	ND	ND

- PAHs criteria based on Canadian Soil Quality Guidelines for the
   Exceedance indicated with shading
- 3) ND = Not detected

# US Coast Guard Loran Station Cape Christian, Nunavut Summary of Analytical Data-Main Station ASTs

Table 3.1 Main Station ASTs

Parameter	Units	INAC Criteria	ET308	ET309	ET310	ET311
Depth (m)			0.5	1	0.8	0.5
F1 (C06-C10) - BTEX	mg/kg	15000	36	14	1020	ND
F2 (C10-C16 Hydrocarbons)	mg/kg	8000	3330	1030	12100	13
F3 (C16-C34 Hydrocarbons)	mg/kg	18000	133	187	211	53
F4 (C34-C50 Hydrocarbons)	mg/kg	25000	37	30	23	22
Benzene	mg/kg	0.0068	ND	ND	ND	ND
Toluene	mg/kg	0.08	ND	ND	0.78	ND
Ethylbenzene	mg/kg	0.018	ND	ND	3.5	ND
Xylenes (Total)	mg/kg	2.4	ND	ND	29	ND

#### Notes:

- 1) BTEX criteria based on CCME Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health for Residential/Parkland Land Use for Fine Grained Soil
- 2) F1-F4 criteria based on INAC Abandoned Military Site Remediation Protocol, March 2005
- 3) Benzene criteria is based on a 10-6 incremental risk
- 4) Exceedance indicated with shading
- 5) ND = Not detected

## US Coast Guard Loran Station Cape Christian, Nunavut Summary of Analytical Data-Beach Area

Table 4.1 Hydrocarbons in Soil

Parameter	Units	INAC Criteria	ET323	ET323	ET324	ET324	ET325	ET326	ET327	ET327	ET328	ET329	ET329	ET330	ET332	ET333	ET345	ET345
Depth	(m)		0.5	1	0.5	1	0.5	0.3	0.5	1	0.3	0.3	0.75	0.3	0.75	1	surface	0.7
F1 (C06-C10) - BTEX	mg/kg	15000	ND	21	ND	11	ND	ND	140	213	ND	ND						
F2 (C10-C16 Hydrocarbo	ns) mg/kg	8000	4230	8450	3200	334	1510	28	44	63	24	1160	239	ND	2310	3480	42	13
F3 (C16-C34 Hydrocarbo	ns) mg/kg	18000	4350	5090	1910	211	131	64	130	170	143	94	15	15	199	176	10200	56
F4 (C34-C50 Hydrocarbo	ns) mg/kg	25000	314	231	33	17	16	26	39	56	56	40	ND	32	ND	23	1240	58
Benzene	mg/kg	0.0068	ND	ND														
Toluene	mg/kg	0.08	ND	ND														
Ethylbenzene	mg/kg	0.018	ND	0.097	ND	ND												
Xylenes (Total)	mg/kg	2.4	ND	2	ND	ND												

#### Notes:

- 1) BTEX criteria based on CCME Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health for Residential/Parkland Land Use for Fine Grained Soil
- 2) F1-F4 criteria based on INAC Abandoned Military Site Remediation Protocol, March 2005
- 3) Benzene criteria is based on a 10-6 incremental risk
- 4) Exceedance indicated with shading
- 5) ND = Not detected

Table 4.3 PAHs in Soil

Polycyclic Aromatics	Units	<b>CCME 2002</b>	ET323
Depth (m	1)		0.5
Naphthalene	mg/kg	0.6	0.31
2-Methylnaphthalene	mg/kg	-	0.47
Acenaphthylene	mg/kg	=	ND
Acenaphthene	mg/kg	=	ND
Fluorene	mg/kg	=	1
Phenanthrene	mg/kg	5	ND
Anthracene	mg/kg	-	ND
Fluoranthene	mg/kg	=	0.05
Pyrene	mg/kg	10	0.19
Benzo(a)anthracene	mg/kg	1	ND
Chrysene	mg/kg	=	ND
Benzo(b&j)fluoranthene	mg/kg	1	ND
Benzo(k)fluoranthene	mg/kg	1	ND
Benzo(a)pyrene	mg/kg	0.7	ND
Indeno(1,2,3-cd)pyrene	mg/kg	1	ND
Dibenz(a,h)anthracene	mg/kg	1	ND
Benzo(g,h,i)perylene	mg/kg	-	ND

Table 4.2 Beach Area Metals in Soil

Parameter	ET323	ET324	ET358	ET359
Depth (m)	0.5	0.5		
Mercury (Hg)	ND	ND	ND	ND
Total Arsenic (As)	ND	ND	ND	ND
Total Cadmium (Cd)	ND	ND	ND	ND
Total Chromium (Cr)	12	6	7	10
Total Cobalt (Co)	1.9	1.3	1.6	1.8
Total Copper (Cu)	3	ND	ND	ND
Total Lead (Pb)	42	ND	ND	ND
Total Nickel (Ni)	5	ND	ND	ND
Total Zinc (Zn)	18	7	9	6

#### Note

- 1) Metals criteria based on INAC Abandoned Military Site Remediation Protocol, March 2005
- 2) Exceedance indicated with shading
- 3) ND = Not detected

#### Notes

- 1) PAHs criteria based on Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health, Residential Parkland, 2002
- 2) ND = Not detected

### US Coast Guard Loran Station Cape Christian, Nunavut Summary of Analytical Data- South Beach Area

Table 5.1 South Beach Area Hydrocarbons in Soil

												SOUTH BEACH	SOUTH BEACH	
Parameter	Units	INAC Criteria	ET337	ET338	ET339	ET341	ET342	ET331	ET334	ET335	ET336	AREA 1	AREA 2	ET331
Depth (m)	)		0.5	0.7	0.3	0.7	0.75	0.5	0.75	0.75	0.5	1	ND	ND
F1 (C06-C10) - BTEX	mg/kg	15000	ND	ND	ND	ND	ND	ND	65	ND	ND	ND	ND	ND
F2 (C10-C16 Hydrocarbons)	mg/kg	8000	13	18	ND	10	ND	101	4050	72	103	ND	19	61
F3 (C16-C34 Hydrocarbons)	mg/kg	18000	24	147	ND	14	ND	36	269	58	493	12	16	81
F4 (C34-C50 Hydrocarbons)	mg/kg	25000	18	109	14	18	ND	ND	19	13	138	13	ND	ND
Benzene	mg/kg	0.0068	0.011	ND	ND	ND								
Toluene	mg/kg	0.08	0.022	ND	ND	ND								
Ethylbenzene	mg/kg	0.018	ND	ND	ND									
Xylenes (Total)	mg/kg	2.4	ND	ND	ND									

#### Notes:

- 1) BTEX criteria based on CCME Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health for Residential/Parkland Land Use for Fine Grained Soil
- 2) F1-F4 criteria based on INAC Abandoned Military Site Remediation Protocol, March 2005
- 3) Benzene criteria is based on a 10-6 incremental risk
- 4) Exceedance indicated with shading
- 5) ND = Not detected

Table 5.2 South Beach Area Metals in Soil

Parameter	Units	DCC-I	DCC-II	ET337	ET338	ET339	ET342
Depth (m)				0.5	0.7	0.3	0.75
Mercury (Hg)	mg/kg		2	ND	ND	ND	ND
Total Arsenic (As)	mg/kg		30	ND	ND	ND	ND
Total Cadmium (Cd)	mg/kg		5	ND	ND	ND	ND
Total Chromium (Cr)	mg/kg		250	13	7	10	4
Total Cobalt (Co)	mg/kg		50	2	1	1.2	1.1
Total Copper (Cu)	mg/kg		100	ND	ND	ND	2
Total Lead (Pb)	mg/kg	200	500	ND	ND	ND	ND
Total Nickel (Ni)	mg/kg		100	4	ND	ND	ND
Total Zinc (Zn)	mg/kg		500	8	4	4	11

#### Notes

- 1) Metals criteria based on INAC Abandoned Military Site Remediation Protocol, March 2005
- 2) Exceedance indicated with shading
- 3) ND = Not detected

#### US Coast Guard Loran Station Cape Christian, Nunavut Summary of Analytical Data-Groundwater Samples

Table 6.1 Hydrocarbons in Surface Water

Hydrocarbons	Units	CWQG	RMGPSTS	ET313	ET322	ET340	ET323	WRES-01	QAQC-#5
									Duplicate of WRES-01
F1 (C06-C10)	ug/L	-	9	ND	ND	ND	1050	ND	ND
F2 (C10-C16 Hydrocarbons)	mg/L	-	11	0.9	0.3	0.4	28.4	ND	ND
Volatiles									
Benzene	ug/L	370		ND	ND	ND	ND	ND	ND
Toluene	ug/L	2		0.8	1.1	0.7	15.1	ND	ND
Ethylbenzene	ug/L	90		ND	ND	ND	18.7	ND	ND
Xylenes (Total)	ug/L	-		ND	6	ND	349	ND	ND

- 1) ND = Not detected
- 2) CWQG = Canadian Water Quality Guidelines for the Protection of Aquatic Life, 2002
- 3) RMGPSTS = Alberta Risk Management Guidelines for Petroleum Storage Tank Sites, October 2001
- 4) Exceedance indicated with shading

Table 6.2 Metals in Surface Water

Elements	Units	CWQG	ET313	ET322	ET340	ET323	WRES-01
Silver (Ag)	ug/L	0.1	ND	ND	ND	ND	ND
Aluminum (Al)	ug/L	100	63	45	ND	ND	13
Arsenic (As)	ug/L	5	ND	ND	ND	ND	ND
Cadmium (Cd)	ug/L	0.017	ND	ND	0.17	ND	ND
Copper (Cu)	ug/L	2	3	ND	ND	82	ND
Lead (Pb)	ug/L	2	ND	ND	ND	ND	ND
Selenium (Se)	ug/L	1	ND	ND	ND	ND	ND
Thallium (TI)	ug/L	0.8	ND	ND	ND	ND	ND
Mercury (Hg)	ug/L	0.1	ND	ND	ND	ND	ND
Chromium (Cr)	ug/L	8.9	ND	ND	ND	ND	ND
Iron (Fe)	ug/L	300	0.079	5.86	1.5	6.5	0.095
Molybdenum (Mo)	ug/L	73	ND	ND	ND	ND	ND
Nickel (Ni)	ug/L	25	ND	ND	ND	0.112	ND
Zinc (Zn)	ug/L	30	0.008	0.012	0.011	0.12	ND

- 1) ND = Not detected
- 2) CWQG = Canadian Water Quality Guidelines for the Protection of Aquatic Life, 2002
- 4) Exceedance indicated with shading

Table 6.3 PCBs in Surface Water

Polychlorinated Biphenyls	Units	ET323
Aroclor 1016	mg/L	ND
Aroclor 1221	mg/L	ND
Aroclor 1232	mg/L	ND
Aroclor 1242	mg/L	ND
Aroclor 1248	mg/L	ND
Aroclor 1254	mg/L	ND
Aroclor 1260	mg/L	ND
Aroclor 1262	mg/L	ND
Aroclor 1268	mg/L	ND
Total Aroclors	mg/L	ND

1) ND = Not detected

Table 7.1 Hydrocarbons in Sediment

Parameter	Units	Criteria	ET312	ET322	ET340	ET343
Depth (m)			surface	surface	surface	surface
F2 (C10-C16 Hydrocarbons)	mg/kg		1590	197	16	18
F3 (C16-C34 Hydrocarbons)	mg/kg		542	1600	74	61
F4 (C34-C50 Hydrocarbons)	mg/kg		46	474	105	40
Benzene	mg/kg		ND	ND	ND	ND
Toluene	mg/kg		0.032	ND	ND	ND
Ethylbenzene	mg/kg		0.14	ND	ND	ND
Xylenes (Total)	mg/kg	_	1.1	ND	ND	ND

#### Notes:

- 1) BTEX criteria based on CCME Canadian Sediment Quality Guidelines for Freshwater Locations
- 2) ND = Not detected

Table 7.2 Metals in Sediment

Parameter	Units	CCME Sedin	nent Criteria	ET312	ET322	ET343
		ISQG	PEL	1		
Depth (m)				surface	surface	surface
Mercury (Hg)	mg/kg	0.17	0.486	ND	ND	ND
Total Arsenic (As)	mg/kg	5.9	17	ND	ND	ND
Total Cadmium (Cd)	mg/kg	0.6	3.5	ND	1.1	ND
Total Chromium (Cr)	mg/kg	37.3	90	10	7	3
Total Cobalt (Co)	mg/kg	-	-	5.1	2.5	1.3
Total Copper (Cu)	mg/kg	35.7	97	6	3	ND
Total Lead (Pb)	mg/kg	35	91.3	ND	ND	ND
Total Nickel (Ni)	mg/kg	-	-	5	ND	ND
Total Zinc (Zn)	mg/kg	123	315	20	62	9

### Notes:

- 1) Criteria based on CCME Sediment Quality Guidelines for
- 2) ND = Not detected
- 3) Bold values exceed interim guideline; however are less that Probable Effect Level

Table 8.1 Lead and PCBs in Paint

Polychlorinated Biphenyls	Units	INAC	ETPC-01	ETPC-02	ETPC-03	ETPC-04	ETPC-05	ETPC-06	ETPC-07	ETPC-08	ETPC-10	ETPC-11	ETPC-12	ETPC-13	ETPC-14	ETPC-15	ETPC-16	ETPC-17	ETPC-18	ETPC-19
Aroclor 1016	mg/kg		-	-	-	ND	•	-	-	ND	-	ND	-	-	ND	ND	ND	ND	ND	ND
Aroclor 1221	mg/kg		-	-	-	ND	1	-	-	ND	-	ND	-	-	ND	ND	ND	ND	ND	ND
Aroclor 1232	mg/kg		-	-	-	ND	1	-	-	ND	-	ND	-	-	ND	ND	ND	ND	ND	ND
Aroclor 1242	mg/kg		-	-	-	0.4	1	-	-	ND	-	ND	-	-	0.5	0.66	ND	ND	ND	ND
Aroclor 1248	mg/kg		-	-	-	ND	1	-	-	1.88	-	4.3	-	-	ND	ND	9.21	3.94	10.7	8.52
Aroclor 1254	mg/kg		-	-	-	ND	-	-	-	ND	-	ND	-	-	8.65	0.47	34.7	27.5	54.3	34.6
Aroclor 1260	mg/kg		-	-	-	3.32	ı	-	-	0.38	-	2.7	-	-	4.97	0.06	1.76	2.36	2.61	1.9
Aroclor 1262	mg/kg		-	-	-	ND	ı	-	-	ND	-	ND	-	-	ND	ND	ND	ND	ND	ND
Aroclor 1268	mg/kg		-	-	-	ND	ı	-	-	ND	-	ND	-	-	ND	ND	ND	ND	ND	ND
Total Aroclors	mg/kg	50	-	-	-	3.72	1	-	-	2.26	-	7	-	-	14.1	1.19	45.7	33.8	67.6	45
Total Lead (Pb)	mg/kg	600	6700	88100	4580	4950	33200	36800	680	392	6710	2330	48800	25600	19800	3280	2360	3630	3220	1210

#### Notes:

- PCB in Paint Criteria of 50 ppm is from Canadian Environmental Protection Act Criteria for PCB
   Lead in Paint Criteria of 600 ppm taken from the Northwest Territories Guideline for the Management of
- 3) Exceedance indicated with shading
- 4) ND = Not detected

Table 8.2
Paint Sample Location

Paint Samp	Paint Sample Locations							
ETPC-01	White paint Covering Walls of West Wing Mess Hall							
ETPC-02	White paint Covering Ceiling of West Wing Mess Hall							
	Tiel Green Paint covering walls and ceiling of West Wing Fourier							
ETPC-04	Red paint on floor of West Wing Engine Room							
ETPC-05	Green Generator Paint in West Wing Engine Room							
ETPC-06	Blue Generator Paint in West Wing Engine Room							
	Grey paint on walls and ceiling of West Wing Engine Room							
ETPC-08	Green Fuel Tank Paint in West Wing Fuel Room							
ETPC-10	Tiel Green Paint in Radio Room							
ETPC-11	Grey paint on walls and ceiling of East Wing Engine Room							
ETPC-12	Green Generator Paint in East Wing Engine Room							
	Red Generator Paint in East Wing Engine Room							
	Green Base Generator Paint in East Wing Engine Room							
	Red paint on floor of East Wing Engine Room							
	White Tank Paint in East Wing Fuel Room							
	Green Tank Paint in East Wing Fuel Room							
	Grey Interior Paint in East Wing Garage							
ETPC-19	White Tank Paint in East Wing Fuel Room							

Table 8.3 Asbestos Containing Materials

713003103 00			-
Parameter	Asbestos	Asbestos	Location
Units	%	Type	
ETASB-01	ND	ND	Main Station BuildingGrey Floor Tile
ETASB-02	5	CHRYSOTILE	Main Station Building Asbestos Insulation on Pipes Throughout Main Station
ETASB-03	ND	ND	Main Station Building Vinyl Flooring in covered walkway
ETASB-04	ND	ND	Main Station Building Acoustic Tile in Radar Room (Non Asbestos)
ETASB-05	30	AMOSITE	Grey Fibrous Mass at the East End of the Hazardous Materials Building
ETASB-06	ND	ND	Brown Fibre Glass Wall Insulation in Hazardou Materials Building

Notes:

1) ND = Not detected

### Table 11.1 QA/QC

Soils - Hydrocarbons

Parameter	QAQC#1	ET335	RPD	QAQC#2	ET336	RPD	QAQC#3	ET341	RPD
F1 (C06-C10)	ND	ND	-	ND	ND		ND	ND	-
F2 (C10-C16 Hydrocarbons)	60	72	4.5	1310	103	42.7	ND	10	-
F3 (C16-C34 Hydrocarbons)	41	58	8.6	1890	493	29.3	ND	14	-
F4 (C34-C50 Hydrocarbons)	ND	13	-	417	138	25.1	ND	18	-
Volatiles									
Benzene	ND	ND	-	ND	ND	-	ND	ND	-
Toluene	ND	ND	-	ND	ND	-	ND	ND	-
Ethylbenzene	ND	ND	-	ND	ND	-	ND	ND	-
Xylenes (Total)	ND	ND	-	ND	ND	-	ND	ND	-
m & p-Xylene	ND	ND	-	ND	ND	-	ND	ND	-
o-Xylene	ND	ND	-	ND	ND	-	ND	ND	-

Table 11.2 QA/AC

Soils - Metals

Parameter	QAQC#4	ET342	RPD
Mercury (Hg)	ND	ND	•
Total Arsenic (As)	ND	ND	-
Total Cadmium (Cd)	ND	ND	-
Total Chromium (Cr)	7	4	13.6
Total Cobalt (Co)	1.7	1.1	10.7
Total Copper (Cu)	2	2	0.0
Total Lead (Pb)	ND	ND	-
Total Nickel (Ni)	ND	ND	-
Total Zinc (Zn)	12	11	2.2

Table 11.3 QA/AC

Surface Water - Hydrocarbons

Hydrocarbons	WRES-01	QAQC-#5	RPD
F1 (C06-C10)	ND	ND	-
F2 (C10-C16 Hydrocarbons)	ND	ND	-
Volatiles			
Benzene	ND	ND	-
Toluene	ND	ND	-
Ethylbenzene	ND	ND	-
Xylenes (Total)	ND	ND	-

Surface Water - Metals

Elements	WRES-01	QAQC-#5	RPD
Dissolved Silver (Ag)	ND	ND	-
Dissolved Aluminum (AI)	13	32	21.1
Dissolved Arsenic (As)	ND	ND	-
Dissolved Cadmium (Cd)	ND	ND	-
Dissolved Copper (Cu)	ND	ND	-
Dissolved Lead (Pb)	ND	ND	-
Dissolved Selenium (Se)	ND	1	-
Dissolved Thallium (TI)	ND	ND	-
Dissolved Mercury (Hg)	ND	ND	-
Dissolved Chromium (Cr)	ND	ND	-
Dissolved Iron (Fe)	0.095	0.09	1.4
Dissolved Molybdenum (Mo)	ND	ND	-
Dissolved Nickel (Ni)	ND	ND	-
Dissolved Zinc (Zn)	ND	ND	-

# APPENDIX D HAZARDOUS MATERIALS TABLE

Location	Items	Material of Concern	Quantity	Comments/Location	Surface Area m2	Material Volume m <sup>3</sup>
Main Station Building	Asebestos wall board	Asbestos Transite Board		Asbestos board is 7mm and 10 mm thick. Asbestos Board is between each interior room for fire protection. Shown in Photo 6	960	10
	Asbestos Pipe Insulation	Asbestos		Asbestos pipe insulation, pipe joints and pipe elbows run throughout the main station building, shown in photos 2, 3 and 4.	N/A	10
	Lubrication Oil in Generators	POL	202 L	Lubricating oil remaining in 4 generators within the main station building	N/A	3
	Pails of used Lubricating Oil	POL	3	20 L Pails of used Lubricating oil located in generator rooms	N/A	0.3
	Barrels of Lubricating Oil	POL	2	205 L barrels of Lubricating Oil	N/A	0.5
	Carbon dioxide cyl. (fire suppression)	Pressurized Cylinders	13	Within Generator rooms (Picture 34)	N/A	4
	Batteries	Lead and Battery Acid	4	Lead batteries in east generator room (Photo 33)	N/A	0.5
	Lead Painted Interior Materials	Lead paint in main station building		Lead painted surfaces in main station building	3079	93
	PCB Painted Interior Materials	PCB paint in main station building		PCB painted surfaces in main station building	394	12
	Lead Painted Tanks	Lead painted tanks in fuel rooms	3	Lead painted tanks in main station building fuel rooms	80	8
	Lead Painted Generators	Lead painted generators	4	Lead painted generators in generator rooms	20	10
Main Station Area	Barrels of Lubricating Oil	POL	7	Spilled Barrels of Lubricating Oil Southeast of Garage (Photo 37)	N/A	3
	Polyurethane coating	Paint/Chemicals	22.5 L	Southeast Courtyard of Main Station Building	N/A	0.5
	Paint Cans	Paint/Chemicals	4.5 L	Approximately 30 cans of paint spilled and broken in the Southeast courtyard of the main station building	N/A	1.5
	Battery	Lead and Battery Acid		1 Battery on the slope of the sewage outfall		0.13
	Oxygen cylinders (green)	Pressurized Cylinders	38	Green oxygen cylinders in area surrounding main station building (Photo 36)	N/A	7
	Acetylene cylinders (yellow)	Pressurized Cylinders	26	Cylinders in area surrounding main station building	N/A	9
	Miscellaneous cylinders	Pressurized Cylinders	20	Cylinders in area surrounding main station building	N/A	6
	Propane Cylinders	Pressurized Cylinders (Propane)	2	20 lb tanks east of the east wing	N/A	0.5
Equipment Dump	Lead sheathed electrical wire	Lead		1 - 12 mm spool and 1 - 6 mm spool		1.5
	Batteries	Lead and Battery Acid	2	Lead acid batteries in derilict snow plow, Photo 34	N/A	0.25
Hazardous Materials Building	Grey Fibrous Mass at South end of Hazardous Materials Building (Photo 33)	Asbestos (30% Amosite)		Exposed and Friable, Photo 33	N/A	1
	(=======)				T 4 1	101.60

G 8			
Summary of			
Hazardous	Volume of Hazardous Material m3		
Materials			
POL Fluid	6.8		
Asbestos	21		
Batteries	0.88		
PCB Painted	12		
Materials	12		
Lead Painted	112.5		
Materials	112.3		
Pressurized	26.5		
Cylinders	26.5		
Paint and	2		
Chemicals	2		
Total	181.68		

## Assumptions:

Lead and PCB Paint shall be removed by removing material that is painted (substrate) to a maximum thickness of 1" (3 cm)

Total

181.68

# APPENDIX E HAZARDOUS MATERIALS PICTURES



Photo 1: Tank Insulation in East Wing Engine Room (No Asbestos) Photo 2: White Pipe Insulation (20-40% Asbestos)



Photo 3: Grey Pipe Joint Insulation (40-60% Asbestos)





Photo 4: White Pipe Elbow Insulation (40% Asbestos)



Photo 5: Grey Floor Tile Kitchen/Mess Hall (No Asbestos)



Photo 7: Kitchen Cabinets (PCB Paint)



Photo 6: 7 and 10mm wall tile (20-50% Asbestos)



Photo 8: Kitchen Ceiling Paint (PCB Paint)



Photo 9: Red Paint in Kitchen (PCB Paint)



Photo 11: West Wing Mess Hall White Paint (Lead Paint)



Photo 10: Storage Pantry Floor (PCB Paint)



Photo 12: Mess Hall White Ceiling Paint (Lead Paint)



Photo 13: Red Paint in Kitchen (PCB Paint)



Photo 15: Generator in West Wing Engine Room (Lead Paint)



Photo 14: West Wing Engine Room Floor (Lead Paint)



Photo 16: Generator in West Wing Engine Room (Lead Paint)



Photo 17: Grey Paint on Walls of West Wing Engine Room (Lead Paint)



Photo 18: Fuel Tank in West Wing Fuel Room



Photo 19: Fuel Tank in West Wing Fuel Room (Lead Paint)



Photo 20: Fuel Tank in West Wing Vehicle Parts Storage (Lead Paint)



Photo 21: Acoustic Tiles in Radar Room (Non Asbestos)



Photo 23: Green Paint in Radio Room (Lead Paint)



Photo 22: Red Paint in Radio Room (PCB Paint)



Photo 24: Sheet Floor in Covered Walkway (No Asbestos)



Photo 25: Grey Paint in East Wing Engine Room (Lead Paint)



Photo 27: Generator in West Wing Engine Room (Lead Paint)



Photo 26: Generator in West Wing Engine Room (Lead Paint)



Photo 28: Green Paint on Base of Generator (Lead Paint)



Photo 29: Floor Paint in East Wing Fuel Room (Lead Paint)



Photo 31: Tank in East Wing Fuel Room (Lead Paint)



Photo 30: Tank in East Wing Fuel Room (Lead Paint)



Photo 32: Grey paint of East Wing Garage Interior (PCB Paint)



Photo 33: Batteries/Lube Oil Containers-East Wing Engine Room



Photo 35: Full Lube Oil Barrel Near Generators

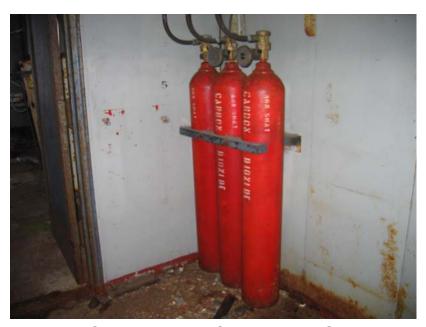


Photo 34: Compressed gas Cylinders Main Station Building



Photo 36: Compressed Gas Cylinders on site



Photo 37: Spilled Lube Oil near Main Station Garage



Photo 39: 2<sup>nd</sup> Battery in Snow Plow at Equipment Dump



Photo 38: Battery in Snow Plow at Equipment Dump



Photo 40: Lead Cable in Equipment Dump



Photo 41:Discarded Battery on Slope near Outfall



Photo 43: Insulation at East End of Hazmat building (30% Asbestos)



Photo 42: Battery At Garage Building Snowblade



Photo 44: Hazmat building Insulation (Non Asbestos)

## APPENDIX F NON HAZARDOUS MATERIALS TABLE

## Table X? - Cape Christian Non-Hazardous Materials Inventory (from North to South)

Serial	Location	Items	Material	Description	In Situ Volume, m3	Crushed/Cut Volume, m3
1	Poles, Cables and Debris	Barrels on beach, debris at hut	Steel	barrels x 10, conduit	3	1
	North of the Main Site	Remote site hut (1.5 km north)	Wood	building debris	2	2
		Large Pole Line	Wood	poles x 18	90	90
		Small Pole line Steel cable, wire	Wood Steel	poles x 19 cable, guy wires, grounding	10	10
2	Antenna Platform	Metal cabinets	Steel	cabinets x 2	4	2
-	Anteima I metor m	Platform and poles	Wood	poles x 4	33	33
		Cables, wire	Steel	cable, guy wires, grounding	12	12
3	Disaster Hut and Area	Building frame	Steel	I beams, columns, roof	10	10
		Building foundation	Wood	foundation sills	8	8
		C Channels	Concrete	channel x 2	2	2
		Scrap debris	Steel	Tank, shelving, piping, engine	6	6
4	Garage Building and Area	Building foundation	Wood	foundation sills	12	12
		Building frame, hoist	Steel	vehicle hoist frame	11	11
		Vehicles	Steel	scraper, truck	15	12
		Scrap metal and debris	Steel	blades, piping	14	14
5	Fuel Tanks at Main Building	Fuel tanks and piping	Steel/Iron	ASTs x 5, piping	520	150
		Wooden cribbing	Wood	foundation sills	25	25
	D 1 4 614 1 D 111	Concrete cradles	Concrete	4 per tank x 5 tanks	30	20
6	Perimeter of Main Building	Poles around Main Building	Wood	poles x 7	38	38
		Antenna base near NE Wing	Concrete Steel/Iron	foundation block (stay?)	3	3
		Conduit to NE Wing Remains of North Centre Wing	Steel/Iron Wood	mainly underground (stay?) foundation sills, columns	2 4	4
		Debris pile west of building	Steel/Iron	corrugated steel, cable	2	2
		Debris pile west of building	Wood	framing, wall sections	3	3
		Remains of South Centre Wing	Wood	foundation sills, columns	12	12
		South Centre Wing Debris	Steel/Iron	tanks, cladding, piping, etc.	120	100
		South Centre Wing Debris	Wood	framing, wall sections	35	30
		Small fuel tanks	Steel/Iron	RCMP AST, heating oil tank	2	1
7	Main Building Structure	East Side Foundation	Concrete	C channels, floor slabs	46	46
	G The state of the	East Side Foundation	Wood	sills, columns, supports	32	32
		Connecting Walkway Foundation	Wood	sills, columns, supports	6	6
		West Side Foundation	Concrete	C channels, floor slab	37	37
		West Side Foundation	Wood	sills, columns, supports	36	36
		Main Building Roof Structure	Steel/Iron	I beams, C channels	10	10
		Main Building Roof Structure	Wood	beams, centre beam	20	20
		Main Building Envelope	Wood Steel/Iron	wall panels, roof materials wall panels, roof materials	410 103	410 103
		Main Building Envelope	Steel/Holl	wan paners, roof materials	103	103
8	Main Building Contents	Southeast Wing	Steel/Iron	boilers x 3, generators x 2	110	65
Ū	(see sketch for material location, hazmat in separate inventory)	Northeast Wing	Steel/Iron	elect. cabinets, shelving	60	40
		Centre Connecting Walkway	Steel/Iron	ducting, conduit, piping	10	6
		Northwest Wing	Steel/Iron	boilers x 3, generators x 2	110	70
		Southwest Wing	Steel/Iron	kitchen debris, sinks, shelves	20	15
9	<b>Domestic Dump Site</b>	Barrels, tins, stove	Steel/Iron	barrels x 40, tins x 1000s	40	20
10	Fallen Antenna Site	Antenna base	Concrete	foundation concrete block	2	2
		Poles near antenna	Wood	poles x 2	12	12
		Antenna, cables, guy wires	Steel/Iron	antenna, cables to building	18	18
		Grounding wires	Steel/Iron	100 m long x 140 wires	1	1
11	Campsite Debris	On ridge west of reservoir	Steel/Iron	misc. tins, bones, barrel	1.5	1
						0
12	Sewer Outfall, Fuel Line	Water line, pump station	Steel/Iron	0.09 and 0.06 m diam, 300 m	4	4
	Water Line	Sewer line	Steel/Iron	0.12 m diam, 250 m	3	3
		Fuel line	Steel/Iron	0.12 m diam, 500 m	6	6
		Trestle and supports	Wood	sewer outfall, ATB water	4	4
10	Doods Essal (Fam.)	Utilidor	Fibreglass	0.3 m x 0.3 m insulated tray	15	10
13	Beach Fuel Tank and Air	Beach AST and piping	Steel/Iron	102,000 L tank and piping	104	30
	Terminal Building	Metal debris	Steel/Iron	roller, ATB roof sheeting	6	6
		Wood structures, debris Concrete cradles	Wood Concrete	cribs, ATB walls/frame cradles x 4	30 6	30 6
		Concrete crautes	Concrete	Crautes X 4	0	0
14	Hazmat Building	Barrels in area	Steel/Iron	barrels x 28 east of building	6	2
	(**Building to stay as an	Scrap metal and debris	Steel/Iron	in building and pile to west	9	9
	an emergency shelter)	Wood debris	Wood	shelving, spools, cabinets	6	6
		Building insulation	Fibreglass	matt insulation	4	2
15	Power Pole Line	Large poles	Wood	poles x 19	134	134
		Cables to building	Steel/Iron	guy wires, cables	10	10
16	<b>Equipment Dump</b>	Vehicles and equipment	Steel/Iron	dozers, snowplow, truck	110	90
		Dozer blades, parts, etc.	Steel/Iron	blades, push bars, engines	45	40
		Spools of cable	Steel/Iron	spools: large x 7, small x 9	25	25
		Steel C channels	Steel/Iron	strapped on wood pallets	15	15
		Spare elect. cabinets, parts	Steel/Iron	packaged in wood crates	20	15
		Misc. scrap metal, piping	Steel/Iron	barrels, stacks of piping	40	35
		Wooden spools, crates, etc.	Wood	spools, packaging, pallets	25	20
			Steel/Iron			

Total Non Hazardous Materials	In Situ Volume, m3	Crushed/Cut Volume, m3
Concrete	126	116
Steel/Iron	1652.5	982
Wood	986	976
Fiber Glass	19	12
Total	2783.5	2086

## APPENDIX G NON HAZARDOUS MATERIALS INVENTORY PHOTOS



Photo 1: South Beach Area South Beach Barrel Site



Photo 3: Buried Barrels at Worked Area # 7



Photo 2: Worked Area #8 looking North



Photo 4: Buried Debris Worked Area #6



Photo 5: Buried Debris at Worked Area #5

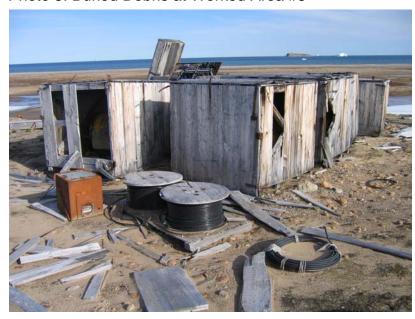


Photo 7: Crated Components at Equipment Dump



Photo 6: Steel C Sections at Equipment Dump



Photo 8: Southern End of Equipment Dump



Photo 9:Piping at Equipment Dump



Photo 11: Equipment Dump Cable Spools



Photo 10: Equipment Dump Derelict Dozers



Photo 12: Wood Scrap Near Hazmat Building



Photo 13:Hazmat Building Interior from North End



Photo 15: Remnants of Air Terminal Building



Photo 14: Borrow Source #7 looking East



Photo 16: Barrel Burial Near Beach AST



Photo 17: Beach Area Above Ground Storage Tank



Photo 19: Fuel Pipeline and Support



Photo 18: Pipeline from AST to Main Station Site



Photo 20: Sewer Outfall Line



Photo 21: Culvert Near Sewer Outfall



Photo 23: Supports for Water Line to ATB



Photo 22: Water Lines Running to Reservoir Pumphouse



Photo 24: Branching of Utilidor at Road Corner



Photo 25: Main Station Building looking Southwest



Photo 27: Northeast Corner of Building



Photo 26: Main Building East Wing



Photo 28: Northeast Wing



Photo 29: Centre Connecting Walkway



Photo 31: Northwest Wing



Photo 30: Northwest Wing



Photo 32: Debris on South Side of Building

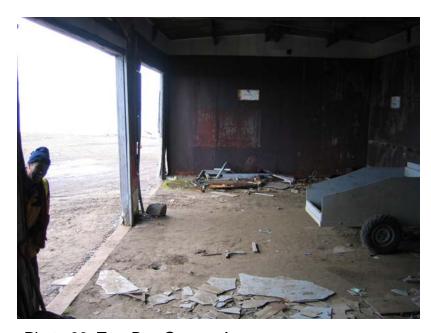


Photo 33: Two Bay Garage Area



Photo 35: Water Filter Tanks



Photo 34: Boiler in Southeast Wing



Photo 36: Batteries and Lube Oil Containers



Photo 37: CO2 Fire Suppression Tanks



Photo 39: Tank, Southeast Wing



Photo 38: CO2 Tanks, Southeast Wing



Photo 40: Tank, Southeast Wing



Photo 41:Discarded Propane Tank



Photo 43: Generator, Southeast Wing



Photo 42: Full Lube Oil Barrel Near Generators



Photo 44: Generator, Southeast Wing



Photo 45: Hot Water Heater in SE Generator Room



Photo 47: Panel and Cables, SE Wing



Photo 46: Electrical Panel for SE Generators



Photo 48: Connecting Walkway Looking West



Photo 49: Piping in the Connecting Walkway



Photo 51: AC Unit Collapsed with Floor



Photo 50: AC Room Ducting, East Side



Photo 52: Radio Room Debris, East Side



Photo 53: Radio Room Cabinets

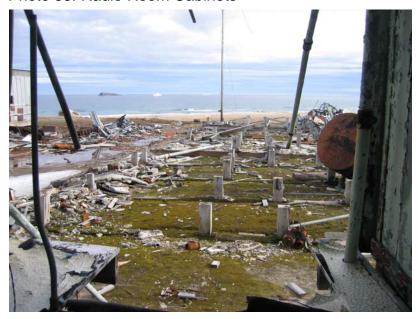


Photo 55: View from Connecting Walkway South



Photo 54: Radar Room, NE End of Building



Photo 56: Looking East Down the Walkway



Photo 57: Looking West Down the Walkway



Photo 59: View Through Mess Hall to Kitchen



Photo 58: Mess Hall Debris, West Side



Photo 60: View of Mess Hall from South



Photo 61: Kitchen Area Sinks



Photo 63: Kitchen Area



Photo 62: Kitchen Area, Southwest Wing



Photo 64: Kitchen Area Tanks, Hot Water and Grease Vat



Photo 65: Food Storage Area, Southwest Wing



Photo 67: Roof Construction with Steel Channels



Photo 66: Food Storage Area, Southwest Wing



Photo 68: Garage Roof Structure



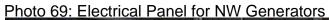




Photo 71: Generator, Northwest wing



Photo 70: Tank in NW Generator Room



Photo 72: Generator, Northwest Wing



Photo 73: Barrel of Lube Oil

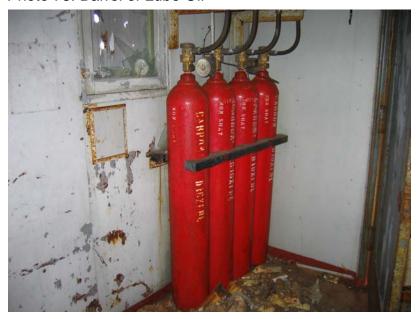


Photo 75: CO2 Tanks, Northwest Wing



Photo 74: Tank, Northwest Wing



Photo 76: CO2 Tanks, Northwest Wing



Photo 77: Tank, Northwest Wing



Photo 79: Water Filter Tanks, Northwest Wing



Photo 78: Tank, Northwest Wing



Photo 80: Debris and Shelving, Northwest Wing End



Photo 81: Debris Pile West of Main Building



Photo 83: Paint tins in Southeast Debris



Photo 82: ASTs North of Main Station Building



Photo 84: Domestic Dump Site



Photo 85: Cables from Antenna to Main Building



Photo 87: Campsite Debris



Photo 86: Fallen Antenna Site



Photo 88: Cylinder Pile Near Garage



Photo 89: Garage Building Foundation



Photo 91: Dozer Blade Near Garage



Photo 90: Towed Scraper and Truck Near Garage



Photo 92: Snowplow Blade Near Garage



Photo 93: Disaster Hut Area Debris



Photo 95: Antenna Platform Site



Photo 94: Disaster Hut



Photo 96: Remnants of the Antenna Platform



Photo 97: Pole Line to the North of Main Station



Photo 99: Guy Cables from Removed Pole

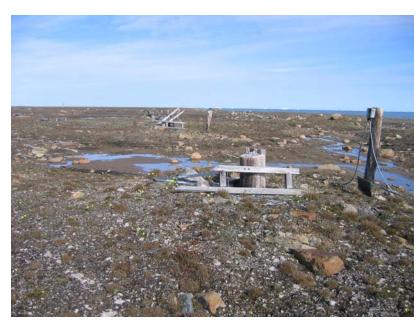


Photo 98: Cut Portion of Pole Line



Photo 100: Small Wires Radiating from Pole

## APPENDIX H SITE ACCESS PHOTOS



Photo 1:Airstrip Drainage Ditching on West Side Looking South



Photo 3: Area of East Side Airstrip Drainage



Photo 2: Looking East Across Airstrip from West Ditch



Photo 4: Looking South Along Airstrip



Photo 5: View North from SW Corner of Airstrip



Photo 7: Cape Christian from SE Corner of Airstrip



Photo 6: View North of East Side Airstrip Ditching



Photo 8: Small Drainage North of Airstrip



Photo 9: Airstrip Sample AS 01



Photo 11: Airstrip Sample AS 02



Photo 10: Airstrip Sample AS 02



Photo 12: Airstrip Sample AS 03



Photo 13: Barge Landing Area #1 Looking West



Photo 15: Barge Landing Area #2 Looking Southwest



Photo 14: Barge Landing Area #1 Looking Northwest



Photo 16: Barge Landing Area #2 Looking Northeast



Photo 17: River Crossing on Main Approach Road



Photo 19: Approach Road Heading North



Photo 18: Main Approach River Crossing



Photo 20: Approach Road Heading to Dozer



Photo 21: Road Junction, Left to Equip. Dump



Photo 23: Culvert in Road to Equipment Dump



Photo 22: Road up to Equipment Dump



Photo 24: Road Embankment to Equipment Dump



Photo 25: Road to Equipment Dump



Photo 27: Road Curve Towards Hazmat



Photo 26: Road to Equipment Dump from West



Photo 28: Road Past Equipment Dump



Photo 29: Road Past Equipment Dump Looking North



Photo 31: Old Road to Clyde River



Photo 30: Road South from Equipment Dump



Photo 32: Washed Out Culvert at Old Road



Photo 33: Road up to Hazmat Building



Photo 35: Road up to Hazmat Building



Photo 34: Road up to Hazmat Building



Photo 36: Road up to Hazmat Building



Photo 37: Hazmat Building Road Heading South



Photo 39: Track Branching Towards Beach AST



Photo 38: Road up to Hazmat Building



Photo 40: Road South From Hazmat Towards Dozer



Photo 41: Road South from Hazmat Towards Dozer



Photo 43: Track Branching Towards Beach AST



Photo 42: View North from Dozer



Photo 44: Embankment Culvert Failure at South End of Reservoir Road



Photo 45: Inlet End of Reservoir Culvert



Photo 47: Culvert Near Main Station Building



Photo 46: Reservoir Road from North Looking South



Photo 48: Failed Sections at Culvert Outlet Near Main Station Building



Photo 49: Road up to Main Station Building



Photo 51: State of Road Near Main Station Building



Photo 50: Road up to Main Station Building



Photo 52: Start of Road Past Disaster Hut



Photo 53: Road Past the Disaster Hut



Photo 55: Disaster Hut Road to Beach



Photo 54: Disaster Hut Road



Photo 56: Erosion at North Side of Road

# APPENDIX I (S) GEOTECHNICAL DATA

			AG	GREGATE /	NALYSIS RI	EPORT			:		
Project: Ca	pe Christia	n, 95612			Sample	Number: L	-3-04				
Address: Bo	affin Island					Sample Location: Landfill Area No.3 (Base Sample)					
					_			,			
Project Num	ber: 0104-	-4101544			_					·	
Date Sample	ed:/_/	By:_			Time:			Temp:	1		
Client: Eart	th Tech Car	nada Inc.			Date Tested: 25/09/06 By: RSP						
172	03-103 Av	enue			Natural	Moisture Co	ntent: 12.0	%	:		
Edm	nonton, Albe	erta T5S 1J4			Crushed	Faces:		Faces	; 1		
Ph:	(780) 453-	-0821 Fax: (78	30) 488–21	21	_						
Attention:	Matthew Mcl	Elwaine			_				:		
Soil Descript	ion: Sand,	some silt, trac	e gravel (2	0mm max	.) – Brown	1					
									:		
Remarks:									·		
<u></u>									:		
		8 83 53	9	0.315		SIEVE SIZES (	mm)	κύ			
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2.5	93.5	30	/_								
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0.315	55.2	20							:		
0.16	24.8	10									
80.0	16.0										
					Reviewe	d Du	,	3012			

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#### AGGREGATE ANALYSIS REPORT Project: Cape Christian, 95612 Sample Number: LF3-02 Sample Location: Landfill Site #3 (Reservoir base) Address: Baffin Island Project Number: 0104-4101544 Date Sampled: / / By: Time: Temp: Date Tested: 25/09/06 By: MN Client: Earth Tech Canada Inc. Natural Moisture Content: 17.5 % 17203-103 Avenue Crushed Faces:\_\_\_\_\_ Faces:\_\_\_\_ Edmonton, Alberta T5S 1J4 Ph: (780) 453-0821 Fax: (780) 488-2121 Attention: Matthew McElwaine Soil Description: Sand, silty, trace gravel (14mm max) - Brown Remarks: SIEVE SIZES (mm) % Passing Sieve 90 80 70 PERCENT PASSING 60 14 100.0 50 10 99.7 98.9 40 2.5 98.1 30 1.25 96.6 0.63 94.1 20 0.315 78.9 10 57.5 0.16 80.0 33.7 0 Reviewed By:

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AGGREGATE AN	NALYSIS REPORT
:	
Project: Cape Christian, 95612	Sample Number: LF3-03
Address: Baffin Island	Sample Location: Landfill Site #3 (Reservoir base)
Project Number: 0104-4101544	
Date Sampled: / / By:	Time:Temp:
Client:_ Earth Tech Canada Inc.	Date Tested: 25/09/06 By: MN
17203-103 Avenue	Natural Moisture Content: 17.1 %
Edmonton, Alberta T5S 1J4	Crushed Faces: Faces:
Ph: (780) 453-0821 Fax: (780) 488-2121	
Attention: Matthew McElwaine	
Soil Description: Sand, silty, trace gravel (14mm, max) - B	rown
Remarks:	
	ALT IT ALTTE ( )
6 8 63	SIEVE SIZES (mm)
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a0	
80	
70	
2 60	
14 100.0 \$8	
10 99.7 Li 50	
2.5 97.5	
1.25 95.2 0.63 91.8	
0.315 72.8	·
0.16 46.8 10	
0.08 25.3	
	-~
	Reviewed By:

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#### AGGREGATE ANALYSIS REPORT Sample Number:\_LF2-01-02 Project: Cape Christian, 95612 Sample Location: Borrow Site No.2 Address: Baffin Island (Landfill Area No.2) Project Number: 0104-4101544 Date Sampled: / / Time: Date Tested: 21/09/06 Client: Earth Tech Canada Inc. By: RSP Natural Moisture Content: 12.3 % 17203-103 Avenue Crushed Faces: Faces: Edmonton, Alberta T5S 1J4 Ph: (780) 453-0821 Fax: (780) 488-2121 Attention: Matthew McElwaine Soil Description: Sand, silty, some gravel (40mm max.) - Brown Remarks: Combined samples (LF 01 and LF 02). SIEVE SIZES (mm) 10 12.£ 16 20 25 8 Sieve % Passina 100.0 95.3 70 -2092.2 PERCENT PASSING 60 16 90.9 12.5 90.4 50 10 89.6 87.1 40 2.5 85.2 30 1.25 82.3 0.63 78.0 20 0.315 65.3 10 0.16 45,9 0.08 24.9 0 Reviewed By:

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#### AGGREGATE ANALYSIS REPORT Project: Cape Christian, 95612 Sample Number: BLA-1 Address: Baffin Island Sample Location: Barge Landing Area 1 Project Number: 0104-4101544 Date Sampled: / / \_\_\_\_\_\_ By:\_\_\_\_\_ Time: \_\_\_\_\_ Temp: Date Tested: 22/09/06 By: RSP Client: Earth Tech Canada Inc. Natural Moisture Content: 13.2 % 17203-103 Avenue Crushed Faces:\_\_\_\_\_\_ Faces:\_\_\_\_ Edmonton, Alberta T5S 1J4 Ph: (780) 453-0821 Fax: (780) 488-2121 Attention: Matthew McElwaine Soil Description: Sand (fine to medium), trace gravel (20mm max.), silt - Pale brown Remarks: SIEVĖ SIZES (mm) % Passing Sieve 90 80 70 100.0 PERCENT PASSING 60 99.2 16 12.5 98.5 98.1 97.2 40 2.5 96.9 1.25 96.5 0.63 94.2 20 0.315 42.4 10 0.16 1.9 0.08 0.4 0 Reviewed By:\_

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AGGREGATE AN	ALYSIS REPORT					
Project: Cape Christian, 95612  Address: Baffin Island	Sample Number: BLA-2 Sample Location: Barge Landing Area No.2					
Project Number: 0104-4101544  Date Sampled: / / By:  Client: Earth Tech Canada Inc.  17203-103 Avenue  Edmonton, Alberta T5S 1J4  Ph: (780) 453-0821 Fax: (780) 488-2121  Attention: Matthew McElwaine  Soil Description: Sand, trace silt - Pale brown	Time:	By: RSP				
Remarks:	0.63 1.25 2.5 2.5 2.5 (www.)					
Sieve % Fussing   100   90   80   90   80   90   90   90						

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		AGGREGATE A	NALYSIS REPORT		
Project: Cape Christian, Address: Baffin Island	95612		Sample Number: <u>B5</u> -Sample Location: <u>Bo</u>		
	By: da Inc. nue ta T5S 1J4 0821 Fax: (780) 4 waine	88–2121	Date Tested: 19/09 Natural Moisture Cont Crushed Faces:	/06 By: RSP ent: 6.8 %	
Remarks:	0.063		SIEVE SIZES (m	2 0 0 0	
Sieve % Passing  25 100.0 20 98.1 16 95.3 12.5 93.9 10 91.9 5 89.3 2.5 87.5 1.25 84.6 0.63 79.2 0.315 57.6 0.16 27.6 0.08 16.2	100 PERCENT PASSING 70 80 80 80 80 90 90 90 90 90 90 90 90 90 90 90 90 90	· · · · · · · · · · · · · · · · · · ·	0.60		
			Reviewed By:	JOD	

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AGGREGATE AN	IALYSIS REPORT
Project: Cape Christian, 95612  Address: Baffin Island	Sample Number: B5-02 Sample Location: Borrow Site No.5
Project Number: 0104-4101544  Date Sampled: / / By:	Time: Temp:  Date Tested: 19/09/06 By: RSP  Natural Moisture Content: 8.4 %  Crushed Faces: Faces:
Soil Description: Sand, some silt, trace gravel (20mm max.)	- Brown
Remarks:	2:5. 2:5. 2.5. 2.5. 2.5. 2.5. 2.5. 2.5.
100 90 80 80 70 80 70 80 80 70 80 80 80 80 80 80 80 80 80 80 80 80 80	

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				AGGREGATE	ANALYSIS RE	:PORT			:	
t										
Project: Ca	pe Christiar	n, 95612			_ Sample	Number: <u>B3</u>	-01			***************************************
Address: Bo	affin Island		· · · · · ·		Sample	Location: <u>B</u> c	orrow Site N	0.3		
					_					
Project Num	hber: 0104-	-4101544							:	
<u>=</u>			 Зу:		Time:			Temp:		
	03-103 Av						tent: 1.4			
	•	•								
					_ crushed	races;		_ races:		
		-0821 Fax:	(700) 400	-2121						
	Matthew McE		· \	1/40	_	411	D 1 1			
Soil Descript	tion: Sana (	tine to med	ium), somi	e gravel (401	mm max.), 1	:race silt —	Pale brown		:	
Remarks:										
										<u> </u>
										***
		Ω.	m	2		SIEVE SIZES (m	nm)	10		
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		90								
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25	95.1	70								
20	91,3	70			/					
16	88.1	£ 60 ····		/						
12.5	86.4	PERCENT PASSING								
10	83.6	CENT		/						
5	81.1	£ 40 ····								
2.5	80.4	30		/						
1.25	79.6	00								
0.63	77.6 44.0	20		/						
0.313	8.0	10	/	/						
0.08	0.6									
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					Reviewed	d By:	٠	NK		

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Project   Cape Christian, 95612   Sample Number: B3-02	AGGREGATE AN	ALYSIS REPORT
Date Sampled:   /	Additional Raffin Island	
Sieve % Passing 100 90 90 90 90 90 90 90 90 90 90 90 90 9	Date Sampled: / / By:  Client: Earth Tech Canada Inc.  17203-103 Avenue  Edmonton, Alberta T5S 1J4  Ph: (780) 453-0821 Fax: (780) 488-2121  Attention: Matthew McElwaine	Date Tested: 19/09/06 By: RSP  Natural Moisture Content: 3.4 %  Crushed Faces: Faces:
100   90   80   80   70   20   96.4   16   95.6   12.5   94.9   10   94.4   50   91.7   2.5   90.4   1.25   88.5   0.63   85.7   20   0.315   48.8   0.16   12.0   0.08   0.3		SIEVE SIZES (mm)
	25 100.0 20 96.4 16 95.6 12.5 94.9 10 94.4 5 91.7 2.5 90.4 1.25 88.5 0.63 85.7 0.315 48.8 0.16 12.0 0.08 0.3	

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#### AGGREGATE ANALYSIS REPORT Project: Cape Christian, 95612 Sample Number: B6-01 Sample Location:\_Borrow Site No.6 (South Beach) Address: Baffin Island Project Number: 0104-4101544 Date Sampled: / / \_\_\_\_\_\_ By:\_\_\_\_\_ Time: \_\_\_\_\_ Temp:\_\_ Date Tested: 15/09/06 By: RSP Client: Earth Tech Canada Inc. Natural Moisture Content: 13.0 % 17203-103 Avenue Crushed Faces:\_\_\_\_\_ Faces:\_\_\_\_ Edmonton, Alberta T5S 1J4 Ph: (780) 453-0821 Fax: (780) 488-2121 Attention: Matthew McElwaine Soil Description: Sand (fine to medium), gravelly (25mm max.), trace silt — Pale brown Remarks: SIEVE SIZES (mm) % Passing Sieve 90 80 25 100.0 70 -2096.1 PERCENT PASSING 60 16 91.3 90.5 12.5 50 10 8.88 88.2 40 2.5 87.5 30 1.25 85.3 78.2 0.63 20 0.315 35.1 10 3.2 0.16 0.08 0.2 0 Reviewed By:

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				AGG	REGATE AI	NALYSIS REPORT					
	ape Christia affin Island					Sample Number	: B6-02 n: Borrow Site No	o.6 (Sout	h Beac	:h)	
Project Num	nber; 0104	-4101544									
Date Sample	ed: <u>//</u>		Ву:			Time:		Temp:	•		
	th Tech Ca						5/09/06				
	203-103 Av					7 7 04					
	nonton, Alb										
	(780) 453					orasnoa raccs.		_ 1 4003	:	,	
			(, (,,,,,,	TOO 212	_ !						
	Matthew Mo		ا مائی یہ ک	augus allus /	ΈΛ	nu ) tomas allt	Dala haans				
Soil Describ	tion: <u>Juliu</u>	(inte to in	eulum/,	gruvelly (	OUIIII III	ax.), trace silt -	I die browii			-	
		<b>M</b>	2 -		رى 		ZES (mm)				
Sieve	% Passing	ع 100 ر	0.08	0.16	0.315	0.63	2.5	10 12.5 16	25	50	
										/	
50	100.0	90								J	
40	84.8	80									
25	81.6	70									
20	81.6	/0									
16	77.2	SING 60				/					
12.5	76.0	PERCENT PASSING			/						
10	74.5	CENT									
5	72.0	뚪 40			/						
2.5	71.0	30			/						
1.25	69.1										
0.63	64.2 28.0	20		/	/						
0.313	2.9	10		/_							
0.08	0.3		_	/							
L		, 0		· · · · · · · · · · · · · · · · · · ·		Reviewed By:	<u> </u>	JOR.	<u> </u>		

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				AGGI	REGATE A	NALYSIS REP	O.RT				
5											
Project: Ca	pe Christiar	n, 95612				Sample Number: LF1-02-AREA1					
Address: Bo	affin Island					Sample Location: West of Domestic Dump					
Project Num	ber: 0104-	4101544		,							
Date Sample	ed: <u>//</u>		Ву:			Time:			_ Temp	:	
Client: Earl	th Tech Can	ada Inc.				Date Tested: 18/09/06 By: MAB					
172	03-103 Av	enue				Natural Moisture Content: 9.5 %					
Edn	ionton, Albe	rta T5S 1	J4							S:	
_Ph:	(780) 453-	-0821 Fax	x: (780)	488-212	:1						
Attention:N	Matthew McE	Iwaine									
Soil Descript	tion: Sand,	silty, trac	e gravel	(20mm r	max.) — (	Grey					
Remarks:											
										-	
							,		***		
		ļ.	? ~	m	2		.VE SIZES (mi	n)	10		
Sieve	% Passing	100°	0.08	0.16	0.315	0.63	2.5	ري د	10 12.5	16 20	8
		90			/						
		80									
		70			/						
- 20	100.0	ده دا									
16	98.8	PERCENT PASSING A B C C C C C C C C C C C C C C C C C C		/							
12.5	98.4 97.6	± 50		/							
5	96.0	35 40 40									
2.5	95.2										
1.25	93.7	30									
0.63	90.3	20					<u>.</u>				
0.315	78.1	10									,,,,,
0.16	57.7 31.8	10									
<u> </u>	7 7 7	0	<u> </u>			: : : : : : : : : : : : : : : : : : :	i	<u></u>	<u>:</u>	: :	
									_	-02	
						Reviewed				1 / 1/2	

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				AGG	REGATE A	NALYSIS F	EPORT			:		
;		٥٥٥٥					1	1 01 00544				
Project: Caj												
Address:_Ba	iffin Island					Sample Location: Land farm Area# 1						
										<del>:</del>		
Project Numl	ber: <u>0104</u> -	-410154	4				_			: : :		
Date Sample	d: <u>//</u>		By:			Time:			_ Temp:	:		
Client: Eart												
	03-103 Av							ontent: 10.9				
		***										
				))· 488–212		OI USITO			_ 1 4003	•		
			ux. (700	7) 400 21.								
Attention: M			1 (40		) _21L (	<b></b>						
Soil Descripti	ion: <u>Sana,</u>	trace gr	avel (40	mm max.	), siit – t	orey .						
  Sieve	% Passing	40	0.08	0.16	0.315	0.63	1.25 SIEVE SIZES 2.5 2.5	(mm)	10.5	20 25	90 40	
		10	U									
		9	0			/						
10	400.0	. 8	0		/	/						
40 25	100.0											
20	98.8 97.0	7	0									
16	96.6	SIINC 6	o		/							
12.5	95.4	PERCENT PASSING			/							
10	94.9	ENT F	V		/							
5	92.8	DERC 4	0	/	·							
2.5	92.2	_										
1.25	91.6	3	<sup>0</sup>	1								
0.63	90.2	2	0	/_								
0.315	62.3	_										
0.16	14.3	1	ر ا <sup>ا</sup>									
0.08	1.0	] (										
						Raviaw	od Bu		50	P		

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···········				AGGRI	EGATE AN	IALYSIS RI	EPORT						
Project: Co	ipe Christia	n, 95612				Sample Number: L1-02-AREA1							
-	affin Island					Sample Location; Land farm sample from Area# 1							
						'							
Project Num	nber:_ 0104-	-4101544									:		
Date Sample	ed: <u>//</u>		Ву:			Time:				Tem	o:		
		nada Inc.				Date Te	sted: 15	/09/06		Ву:_	MN		
17203-103 Avenue						Natural	Moisture	Content:_	9.5 %	,			
Edn	nonton, Albe	erta T5S 1J	4										
Ph:	(780) 453	-0821 Fax:	: (780) 4	88-2121									
Attention:^	Matthew Mc	Elwaine									:		
Soil Descrip	tion: Sand,	trace grave	el (40 m	m max.),	silt — G	rey							
											:		
Remarks:											<u> </u>		
Spalet even													
							OID /F 017F	·······					
		963	0.08	9	0.315		SIEVE SIZE			τύ			
Sieve	% Passing	100 F		0,16	0	0.63	7,-	C;7	<u>ο</u>	12	16 20 25	40	
		90				/							
					/								
40	100.0	80											
25	99.0	70			/								
20 16	98.2 97.6	£ 60 ···			/								
12,5	97.5	PERCENT PASSING		/	/								
10	97.4	₩ 50					; }						
5	97.0	15) 40		/_					<u></u>			<u>i</u>	
2,5	96.7												
1.25	96.5	30		1/			<u></u>						
0.63	95.7	20 -		/			: : :						
0.315	62.8			<i>J</i>									
0.16	12.3	10		/			 !	······					
0.08	0.9	0 L			<u> </u>		<u> </u>	<u>!</u>	<u> </u>			<u></u>	
						Reviewe	d By:				JOR	•	

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AGGREGATE AN	VALYSIS REPORT	
Project: Cape Christian, 95612  Address: Baffin Island	Sample Number: L2-01-AREA2 Sample Location: Sample from	
Project Number: 0104-4101544  Date Sampled: / By:	Natural Moisture Content: 14.2	By: MN
Attention: Matthew McElwaine  Soil Description: Sand, trace silt — Grey		:
Remarks:	SIEVE SIZES (mm)	
Sieve % Passing 90 90 50 50 50 50 50 50 50 50 50 50 50 50 50	0.63	08

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#### AGGREGATE ANALYSIS REPORT Project: Cape Christian, 95612 Sample Number: L2-02-AREA2 Sample Location:\_Sample from Landfarm Area# 2 Address: Baffin Island Project Number: 0104-4101544 \_\_\_\_\_ Temp:\_\_\_ Date Sampled: / / By: Date Tested: 15/09/06 By: MN Client: Earth Tech Canada Inc. Natural Moisture Content: 12.4 % 17203-103 Avenue Edmonton, Alberta T5S 1J4 Crushed Faces: Faces: Ph: (780) 453-0821 Fax: (780) 488-2121 Attention: Matthew McElwaine Soil Description: Sand, trace silt — Grey Remarks: SIEVE SIZES (mm) 100.063 Sieve % Passing PERCENT PASSING 60 50 100.0 40 2.5 100.0 30 1.25 99.8 0.63 99.0 20 0.315 64.8 10 0.16 19.8 0.08 0.7 Reviewed By:

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AGGREGATE	E ANALYSIS REPORT	
Project: Cape Christian, 95612  Address: Baffin Island	Sample Number: TP—AS—1 Sample Location: Runway North	
Project Number: 0104-4101544  Date Sampled: / / By:  Client: Earth Tech Canada Inc.  17203-103 Avenue  Edmonton, Alberta T5S 1J4  Ph: (780) 453-0821 Fax: (780) 488-2121  Attention: Matthew McElwaine	Date Tested: 14/09/06 By: RSP  Natural Moisture Content: 16.9 %  Crushed Faces: Faces:	
Soil Description: Sand (fine to medium), trace silt — Pal		
Remarks:		
γ γ.	SIEVĖ SIZES (mm)	
Sieve % Passing 100 - 10	2.5 2.5 5.5	
90		
80		
70		
5 99.9 BEGENT PASSING 50 50 50 50 50 50 50 50 50 50 50 50 50		
ENT BY SO THE STATE OF THE STAT		
5 99.9		
1.25 99.7 30		
0.63     98.7       0.315     49.9		
0.16 3.9 10		
0.08 0.3		
	Reviewed By:	

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AGGREGATE A	NALYSIS REPORT	
Project: Cape Christian, 95612  Address: Baffin Island	Sample Number: TP-AS-2 Sample Location: Runway (Middle)	
Project Number: 0104-4101544		
Date Sampled: / / By:		
Client: Earth Tech Canada Inc.	Date Tested: 14/09/06 By: RSP	
17203-103 Avenue	Natural Moisture Content: 14.3 %	
Edmonton, Alberta T5S 1J4	Crushed Faces:Faces:	
Ph: (780) 453-0821 Fax: (780) 488-2121		
Attention: Matthew McElwaine		
Soil Description: Sand (fine to medium), trace silt — Pale t	prown	
Remarks:		
2 2	SIEVE SIZES (mm)	
Sieve % Passing 100 100 100 100 100 100 100 100 100 10	2.5	
90		
80	/	
70		
9 80		
5 99.7 BE 40		
H 50		
2.5 99.6 30		
1.25 99.6 0.63 97.8		
0.315 28.5		
0.16 1.8 10		
0.08 0.4 0		
	Reviewed By:	

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AGGREGATE AN	VALYSIS REPORT	
Project: Cape Christian, 95612	Sample Number: TP-AS-3 Sample Location: Runway (South)	
Address:_Baffin Island		
	:	
Project Number: 0104-4101544	:	
Date Sampled: / / By:	Time:Temp:	
Client: Earth Tech Canada Inc.	Date Tested: 14/09/06 By: RSP	
17203-103 Avenue	Natural Moisture Content: 16.5 %	
Edmonton, Alberta T5S 1J4	Crushed Faces: Faces:	
Ph: (780) 453-0821 Fax: (780) 488-2121		
Attention: Matthew McElwaine		
Soil Description: Sand (fine to medium), trace silt - Pale br	rown	
Remarks:		
6 8 63	SIEVE SIZES (mm)	
Sieve % Passing 100 1 10	5.5 2.5 2.5 80	
90		
a0 /		
80		
70		
2 60		
ASS /		
HE 50		
2.5 99.9		
1.25 99.8 0.63 98.9		
0.315 55.4		
0.16 4.8 10		
0.08 0.2		
	Reviewed By:	

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#### AGGREGATE ANALYSIS REPORT Project: Cape Christian, 95612 Sample Number: B4-01 Sample Location: Borrow Site No.4 (Garage) Address: Baffin Island Project Number: 0104-4101544 Date Sampled: / / \_\_\_\_\_\_ By:\_\_\_\_\_ Time: Temp: Client: Earth Tech Canada Inc. Date Tested: 15/09/06 By: RSP Natural Moisture Content: 3.6 % 17203-103 Avenue Crushed Faces: Faces: Edmonton, Alberta T5S 1J4 Ph: (780) 453-0821 Fax: (780) 488-2121 Attention: Matthew McElwaine Soil Description: Sand (fine to medium) and gravel (25mm max.), trace silt — Yellowish brown Remarks: SIEVE SIZES (mm) 10 12.5 16 20 25 8 % Passing Sieve 40 100.0 25 88.4 70 85.1 20 PERCENT PASSING 60 80.6 16 12.5 76.9 71.6 10 5 61.1 2.5 56.3 1.25 50.9 0.63 45.1 0.315 26.1 10 0.16 9.2 80.0 3.9 Reviewed By:\_

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	AGGRE	GATE ANALYSIS REPORT		
Project: Cape Christian, 95812  Address: Baffin Island			Sample Number: B4-02 Sample Location: Borrow Site No.4 (Foundation AST)	
Client: Earth Tech Can 17203-103 Ave Edmonton, Albe	By:ada Inc. enue erta T5S 1J4 -0821 Fax: (780) 488-2121	Date Tested: 15/09/06  Natural Moisture Content: 6.	Temp:	
		Omm max.), some silt — Brown		
Remarks:Sieve % Passing	0.063	0.563 1.25 2.5 2.5 2.5 2.5 3.0 5.5 5.5 5.5 5.5 5.5 5.5 5.5 5.5 5.5 5	10 12.5 16 20 25 25 40	
40 100.0 25 95.6 20 94.0 16 88.5 12.5 84.8 10 83.1 5 78.1 2.5 75.1 1.25 70.7 0.63 66.9 0.315 54.2 0.16 36.1 0.08 15.3	90			

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			AGG	regate ai	NALYSIS REPORT			:	
1								:	
Project: Cape Christian, 95812				Sample Number:	B4-03				
Address: B	Address: Baffin Island			Sample Location	: Borrow Site	No.4 (Mair	n Building	)	
Project Num	nber: 0104	-4101544							
	Date Sampled: / / By:				Time:		Temp:	:	
	Difent: Earth Tech Canada Inc.				Date Tested: 15				
17007 107 Augus				Natural Moisture	3 300		*		
Edmonton, Alberta T5S 1J4				Crushed Faces:					
	Ph: (780) 453-0821 Fax: (780) 488-2121				organica races.		1 4068,		
			0) 400-212	- 1					
	Matthew Mc		<u> </u>		oo maay ) 4	ـعاماما			
Soil Descrip	tion: Suria	(Time to medium	i, some gre	TAGE (HOLL	m max.), trace si		11		
		ro .		ري د	SIEVE SIZ	ES (mm)		:	
Sieve	% Passing	100.08	0.16	0.315	0.63	2.5	10 12.5	22 22 22	04
		90							
40	100.0	80			<i>[</i>				
25	88.9	70		/	<b>'</b>				
20	88.9			/					
16	88.9	PERCENT PASSING							
12.5	88.9	M 50 L		/					
10	88.5	RCEN		/					
5 2.5	88.2 88.0	世 40	······································						
1.25	87.3	30		/					
0.63	83.8	20	/	'					
0.315	36.3								
0.16	5.2	10							
0.08	0.6								
					Reviewed Bv:		50		

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#### AGGREGATE ANALYSIS REPORT Project: Cape Christian, 95612 Sample Number: LF03-01AREA3 Sample Location: Sample from embankment (Borrow Address:\_ Baffin Island Site # 1) Project Number: 0104-4101544 Date Sampled: / / By: Temp: \_\_\_ By:\_\_MN Client: Earth Tech Canada Inc. Date Tested: 19/09/06 Natural Moisture Content: 5.9 % 17203-103 Avenue Edmonton, Alberta T5S 1J4 Crushed Faces: Faces: Ph: (780) 453-0821 Fax: (780) 488-2121 Attention: Matthew McElwaine Soil Description: Sand, trace gravel (40 mm max.), silt - Brown Remarks: SIEVE SIZES (mm) 10 12.5 16 20 25 \$ 8 % Passing Sieve 40 100.0 25 98.6 70 20 98.6 PERCENT PASSING 60 16 96.6 12.5 95.2 94.9 10 5 93.8 93.3 2.5 1.25 92,4 0.63 90.1 0.315 58.0 10 8.2 0.16 0.08 0.1 Reviewed By:

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AGGREGATE A	NALYSIS REPORT	
Project: Cape Christian, 95612	Sample Number: <u>LF1-01-AREA1</u> Sample Location: West of Domes	tic Dump
Address: Baffin Island	Sample Location; West of Dollies	de bamp
Project Number: 0104-4101544		:
Date Sampled: / / By:	Time:	Temp:
Client: Earth Tech Canada Inc.		
17203-103 Avenue	477 00	
Edmonton, Alberta T5S 1J4	Crushed Faces:	Faces:
Ph: (780) 453-0821 Fax: (780) 488-2121		1
Attention: Matthew McElwaine		
Soil Description: Sand, clayey, trace silt — Grey		
	· · · · · · · · · · · · · · · · · · ·	<u> </u>
Remarks: Land Fill sample from Area # 1		
		:
	SIEVE SIZES (mm)	
Sieve % Passing 100 :	5 25	8
100 100	0 - 7 0	
90		
80		
		:
70		
<u>\$</u> 60		
5 100.0 BE 40 50		
5 100.0 E 40		:
2.5 99.3		
1.25 98.2		
0.63 96.6 20		
0.315 91.1 0.16 79.2 10		
0.08 50.8		: 
0		
	Reviewed By:	TOR

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		AGGREGATE AI	VALYSIS REPORT				
Project: Cape Christian, 95612			Sample Number: B7-01-02				
Address: Baffin Island			Sample Location:[	Borrow Site No.	.7		
						***************************************	
Project Number: 0104-4	101544		_				
Date Sampled: //			Time:		Temp:		
Client: Earth Tech Cana							
17203-103 Aver	Natural Moisture Co						
Edmonton, Albert	nue ta T5S 1J4		Crushed Faces:				
	0821 Fax: (780) 488				:		
Attention: Matthew McEl							
Soil Description: Sand, s		max.), trace sil	t — Yellowish brown				
Zon Zodonphon.	3 (						
Remarks: Combined sar	mples (B7 01 and B	7 02).					
Nemarks.				u ,			
<u></u>							
					:		
			SIEVE SIZES				
Sieve % Passing	100 [	0.31	0.63	50	10 12.5 16 20 25	04 08	
	100						
	90						
40 100.0	80						
25 96.6	70						
20 92.4	70						
16 90.6	SSING 60		/				
12.5 88.4	7 PAS	/_					
10 87.2	GEN						
5 82.4 2.5 79.9	臣 40	/					
1.25 74.5	30						
0.63 65.1	20						
0.315 40.2		/					
0.16 14.6	10						
0.08 4.2	0		<u> </u>	<u> </u>			
						,	
			Reviewed Rv.		DIK		

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#### **MOISTURE - DENSITY RELATIONSHIP**

ASTM D698, D1557, or D2049

Project: Cape Christian, 95612

Sample Number: AS 1

Project No.: 0104-4101544

Date Tested: 06/10/03

Client: Earth Tech Canada Inc.

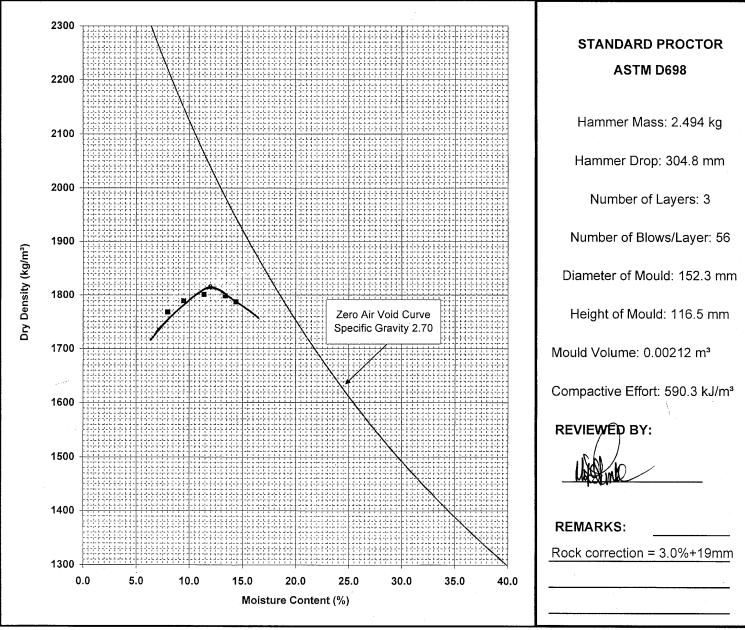
Moisture Content (as received): 14.0%

Soil Description: SAND, tr. 40mm gravel, silt - light brown

Maximum Dry Density: 1815 kg/m<sup>3</sup>

Sample Location: Runway North

**Optimum Moisture Content: 12.0%** 



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Soil Description: SAND, tr. 30mm gravel, silt - light brown

#### **MOISTURE - DENSITY RELATIONSHIP**

ASTM D698, D1557, or D2049

Project: Cape Christian, 95612

Sample Number: AS 2

Project No.: 0104-4101544

Date Tested: 06/10/03

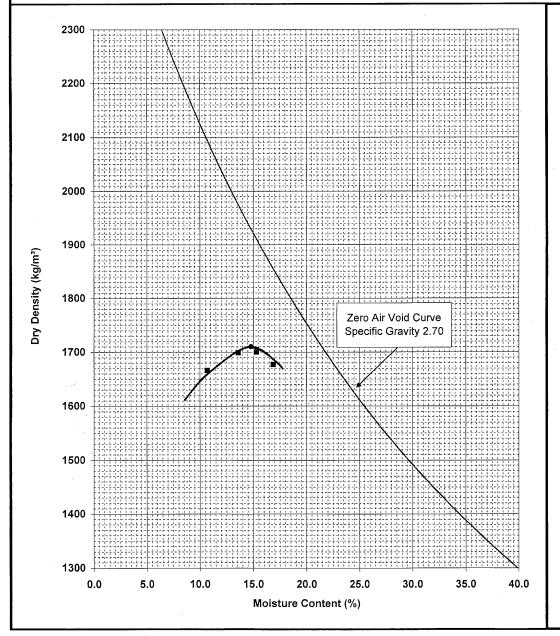
Client: Earth Tech Canada Inc.

Moisture Content (as received): 29.5%

Maximum Dry Density: 1710 kg/m<sup>3</sup>

Sample Location: Middle of runway

Optimum Moisture Content: 14.8%



# STANDARD PROCTOR ASTM D698

Hammer Mass: 2.494 kg

Hammer Drop: 304.8 mm

Number of Layers: 3

Number of Blows/Layer: 56

Diameter of Mould: 152.3 mm

Height of Mould: 116.5 mm

Mould Volume: 0.00212 m3

Compactive Effort: 590.3 kJ/m³

REVIEWED BY:

Missimic

**REMARKS:** 

Rock correction = 0.7%+19mm

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Data presented herein is for the sole use of the stipulated client. EBA is not responsible, nor can be held liable, for use made of this report by any other party, with or without the knowledge of EBA.



#### **CBR Test**

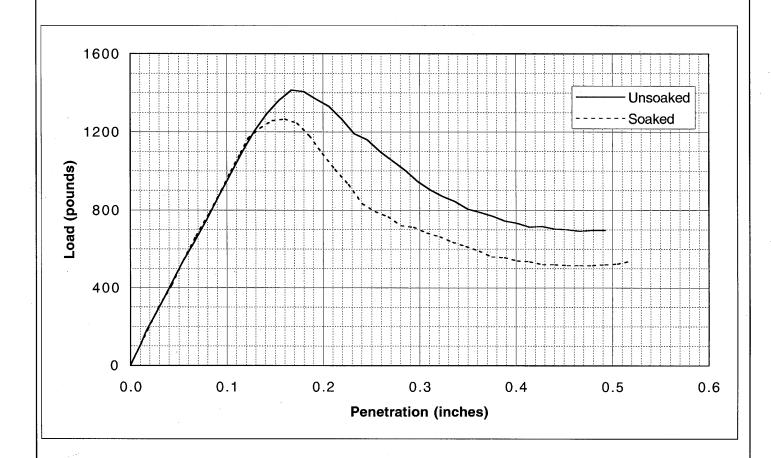
Project Number: 4101544 Date (Unsoaked): 06-10-05

Date (Soaked): 06-10-07

Sample Designation: AS#1

Compacted to 100% of standard proctor

at optimum moisture



	CBR Values (%)					
	Unsoaked	Soaked				
0.1"=	31.5	31.8				
0.2"=	29.8	24.1				



#### **CBR Test**

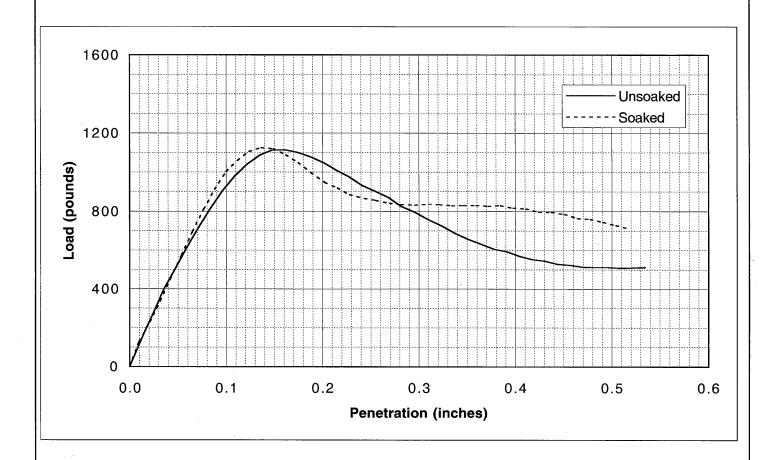
Project Number: 4101544 Date (Unsoaked): 06-10-05

Date (Soaked): 06-10-05

Sample Designation: AS#2

Compacted to 100% of standard proctor

at optimum moisture



	CBR Values (%)					
	Unsoaked	Soaked				
0.1"=	30.8	32.8				
0.2"=	23.2	21.4				



# APPENDIX J © GEOTECHNICAL PHOTOS



Photo 1:Borrow Source #1 Reservoir Embankment



Photo 3: Borrow Source #2



Photo 2: Test Pit at Borrow Source #1



Photo 4: Test Pit at Borrow Source #2



Photo 5: Borrow Source #3



Photo 7: Borrow Source #4 Garage Pad



Photo 6: View North of East Side Airstrip Ditching



Photo 8: Borrow Source #4 AST Foundation Pad



Photo 9: Borrow Source #4 Main Station Building Pad



Photo 11: Borrow Source #5 Test Pit



Photo 10: Borrow Source #5 Looking Northeast



Photo 12: Borrow Source #6 looking South



Photo 13: Borrow Source #6 looking West



Photo 15: Rock area at Borrow Source #7



Photo 14: Borrow Source #7 looking East



Photo 16: Test Pit at Borrow Source #7



Photo 17: Landfill # 1 Looking East



Photo 19: Landfill #2 Looking South



Photo 18: Landfill #1 Looking Northeast



Photo 20: Landfill #2 Looking Southeast



Photo 21: Landfill #3 Looking Southwest



Photo 23: Land Farm #1 Looking South



Photo 22: Landfill #3 Looking Southeast



Photo 24: Land farm #1 Looking East



Photo 25: Land Farm #2 Looking Southwest



Photo 26: Land Farm #2 Looking Northeast



#### **FCSAAP Contaminated Site Classification**

Site: Cape Christian Loran Station

Date: 19-Oct-06

Category	Evaluation Factor	Score	Rationale
1. Contaminant Characteristics	A. Degree of Hazard	11	Three contaminants on site: PCBs: High Metals: Cadmium - High, Lead - High PHC: F2 - Medium , F3 - Low (Overall degree of hazard based on PCBs and Metals) Low concentration < 2 x INAC Criteria
	B. Contaminant Quantity	10	Soil DCC I: 66 m3, DCC II: 554 m3 INAC PHC: 1539 m3 Total = 2159 m3 and drums of liquid
	C. Physical State	7	Moderately mobile contaminants based on lubricating oil at Main Station Garage area, remaining metals and PHC contamination sorbed onto soils
	Special Considerations	3	Waste oil and lubricating oil present in barrels on site
	Total Scoring for		
	CONTAMINANT CHARACTERISTICS  Section A Section B Section C Special Considerations	31	Maximum Score = 33
Exposure Pathways: Groundwater*	A1. Known contamination and operable groundwater pathway within and / or beyond the property boundary		
	OR		
	A2. Potential for Groundwater Contamination		
	2a. Engineered Subsurface Containment	4	No engineered containment noted on site
	2b. Thickness of Confining Layer Over Aquifer of Concern or Groundwater Exposure Pathway	1.5	Confining layer unknown
	2c. Hydraulic Conductivity of Confining Layer	1.5	Confining layer unknown, majority of material on site is sand
	2d. Annual Precipitation	0.2	Precipitation: 233 mm based on Env Canada Website
	2e. Hydraulic Conductivity of Aquifer of Concern	3	Mainly sand on site, aquifers unknown
	A3. Special Considerations		No Special Considerations
	Groundwater Scoring Section 1 or 2 Section 3	10.2	Maximum score = 11
Exposure Pathways:	B1. Surface Water - Aquatic Environment Observed or		
Surface Water*	measured contamination, above background conditions of		
	surface water / effluent near the site which is considered an		
	operable exposure pathway		
	OR		
	B2. Potential for Surface Water Contamination		
	2a. Surface Containment	5	No containment noted on site
	2b. Distance to Perennial Surface Water	2	PHC Contamination at beach is 200 m from ocean
	2c. Topography	1.2	Contaminants are generally in a flat area, both above and below ground
	2d. Run-off Potential	0.2	233 mm precipitation on highly permiable surface material (sand)
	2e. Flood Potential	0	Cape Christian is not in flood plain
	B3. Special Considerations		No Special Considerations
	Surface Water Scoring Section 1 or 2 Section 3	<b>8.4</b> 8.4 0	Maximum score = 11
Exposure Pathways: Direct	C1. Known Contamination of Media by direct contact		
Contact*	OR		
	C2. Potential for Direct Human and/or Animal Contact		
	Vapour Emissions (gases, subsurface and surface generated vapours, contaminated dust)	0	No vapour emmissions
	2b. Accessibility of Site (Ability to Contact Materials)	4	Limited barriers to prevent site access; contamiantion not covered
	2c. Hazardous Soil Gas Migration and Explosive Potential From the Site	0	Non volatile, non mobile
	C3. Special Considerations	4	Additional points added for exposed friable asbestos in the hazardous materials building
	Direct Contact Scoring  Section 1 or 2  Section 3	<b>8</b> 4 4	Maximum score = 11
	Total Site Score for EXPOSURE PATHWAYS  A. Groundwater B. Surface Water C. Direct Contact	26.6	Maximum score =33
Receptors: Human and Animal Uses*	A1. Known adverse impact on humans or animals (domestic or documented traditional food source) as a result of the contaminated site		

I	OR		-				
	A2. Potential for Impact on Humans or Animals						
	A2a. Drinking Water Supply						
	A2a i. Known Impact on Drinking Water Supply						
	OR						
	<u> </u>						
	A2a ii. Potential for Impact on Drinking Water Supply						
	Proximity to Drinking Water Supply						
	Availability of Alternative Drinking Water Supply						
	A2b. Water Resources (recreational, commercial,						
	livestock, irrigation or other food chain uses)						
	A2b i. Water Resources are known to be adversely						
	affected as a result of site contamination						
	OR						
	A2b ii. Potential for Impact on Water Resources						
	a. Proximity of Water Resources to Site						
	b. Use of Water Resources						
	A2c. Direct Human Exposure						
	A2c i. Known Contamination of Land Used by Humans						
	OR						
	OK .						
	A2c ii. Potential Human Exposure Through Land Use	5	Hunting and recreational use by humans				
	A3. Special Considerations	2	area used extensively for hunting and buildings on site used by humans				
	Receptors - Human and Animal Use Scoring	7	Maximum Score = 18				
Receptors: Environment*	B1. Known Impacts on the Environment as a Result of the Contaminated Sites						
	OR						
	B2. Potential for Impact on Environmental Receptors						
	B2a. Potential for Impact on Environmental Receptors	10	Caribou and polar bears seen on site				
	B2b. Distance to an important or susceptible groundwater	6	PHC contamination at beach is 200 m from ocean				
	or surface water resource B3. Special Considerations						
	23. Special considerations						
	Environmental Receptor Scoring	16	Maximum score = 16				
	Total site Score for RECEPTORS  A. Human and Animal Use B. Environmental Receptors	23	Maximum score = 34				
Total Score (Maximum = 100)		80.6					





Your Project #: CAPE CHRISTIAN

Your C.O.C. #: 150913, 150912, 150911, 150915, 150916, 1509

**Attention: MATTHEW MCELWAINE** 

EARTH TECH (CANADA) INC. 17203 - 103 AVENUE EDMONTON, AB Canada T5S 1J4

Report Date: 2006/09/13

#### **CERTIFICATE OF ANALYSIS**

MAXXAM JOB #: A640575 Received: 2006/09/01, 9:30

Sample Matrix: PAINT # Samples Received: 18

		Date	Date		
Analyses	Quantity	Extracted	Analyzed	Laboratory Method	Analytical Method
ICP - Acid Extractable - Soil @	18	2006/09/06	2006/09/06	EENVSOP-00034 v1	EPA SW846 6010C
Polychlorinated Biphenyls (12)	9	N/A	2006/09/11	CAL SOP-00149	GC/ECD-EXTRACTION

Sample Matrix: Soil # Samples Received: 80

		Date	Date		
Analyses	Quantity	Extracted	Analyzed	Laboratory Method	Analytical Method
BTEX by HS GC/MS (MeOH extract)	72	2006/09/06	2006/09/06	EENVSOP-00005 V.2	EPA 8260B/5021A
F1-BTEX Soil Cal	71	2006/09/05	2006/09/05		
F1-BTEX Soil Cal	1	2006/09/06	2006/09/06		
CCME Hydrocarbons (F1; MeOH; HSGC)	52	2006/09/06	2006/09/06	EENVSOP-00002 v6	CCME CWS for PHC
CCME Hydrocarbons (F1; MeOH; HSGC)	20	2006/09/06	2006/09/07	EENVSOP-00002 v6	CCME CWS for PHC
CCME Hydrocarbons (F2-F4 in soil)	20	2006/09/05	2006/09/07	EENVSOP-00007 v4	CWS PHCS Tier 1
CCME Hydrocarbons (F2-F4 in soil)	32	2006/09/06	2006/09/06	EENVSOP-00007 v4	CWS PHCS Tier 1
CCME Hydrocarbons (F2-F4 in soil)	20	2006/09/06	2006/09/07	EENVSOP-00007 v4	CWS PHCS Tier 1
CCME Hydrocarbons (F4G in soil)	11	2006/09/07	2006/09/07	EENVSOP-00121 v1	CWS PHCS Tier 1
CCME Hydrocarbons (F4G in soil)	2	2006/09/08	2006/09/08	EENVSOP-00121 v1	CWS PHCS Tier 1
Mercury in Soil by CVAA	15	N/A	2006/09/06	EENVSOP-00032 V.1	EPA SW846 7471B
Mercury in Soil by CVAA	9	N/A	2006/09/07	EENVSOP-00032 V.1	EPA SW846 7471B
Elements by ICPMS (total) - Partial	24	N/A	2006/09/07	EENVSOP-00123 v2	EPA SW 846 6020 A
ICP - Acid Extractable - Soil @	24	2006/09/06	2006/09/06	EENVSOP-00034 v1	EPA SW846 6010C
Moisture	71	N/A	2006/09/06	EENVWI-00023 v2	Carter SSMA 51.2
Moisture	1	N/A	2006/09/07	EENVWI-00023 v2	Carter SSMA 51.2
PAH in Soil by GC/MS (Extended)	3	2006/09/04	2006/09/06	EENVSOP-00010 v3	EPA 3510C/8270D
Polychlorinated Biphenyls (12)	3	N/A	2006/09/11	CAL SOP-00149	GC/ECD-EXTRACTION

Sample Matrix: Solid # Samples Received: 6

		Date	Date		
Analyses	Quantity	Extracted	Analyzed	Laboratory Method	Analytical Method
Asbestos Identification (2)	6	N/A	2006/09/08	ASB	Visual ID

../2



Your Project #: CAPE CHRISTIAN

Your C.O.C. #: 150913, 150912, 150911, 150915, 150916, 1509

**Attention: MATTHEW MCELWAINE** 

EARTH TECH (CANADA) INC. 17203 - 103 AVENUE EDMONTON, AB Canada T5S 1J4

Report Date: 2006/09/13

#### **CERTIFICATE OF ANALYSIS**

-2-

Sample Matrix: Water # Samples Received: 6

		Date	Date		
Analyses	Quantity	Extracted	Analyzed	Laboratory Method	Analytical Method
BTEX in Water by HS GC/MS	6	2006/09/06	2006/09/06	EENVSOP-00004 V.2	EPA SW 846 8260 B
F1-BTEX Water Calc	5	2006/09/05	2006/09/05		
F1-BTEX Water Calc	1	2006/09/06	2006/09/06		
CCME Hydrocarbons (F1; HSGC/MS)	6	2006/09/06	2006/09/06	EENVSOP-00002 v6	CCME CWS for PHC
CCME Hydrocarbons in Water (F2; C10-C16)	6	2006/09/06	2006/09/08	EENVSOP-00009 v5	EPA 8015D SW846
Mercury (Dissolved)	6	2006/09/06	2006/09/07	EENVSOP-00031 V.1	EPA 245.1
Elements by ICP-AES (dissolved)	6	2006/09/06	2006/09/06	EENVSOP-00034 v1	EPA SW846 6010C
ICPMS - Fresh Aquatic Life - Dissolved	6	N/A	2006/09/07	EENVSOP-00123 v2	EPA SW 846 6020 A
Polychlorinated Biphenyls (12)	1	N/A	2006/09/11	CAL SOP-00149	GC/ECD-EXTRACTION

- (1) This test was performed by Maxxam Calgary
- (2)
- (3) This test was performed by Ext. Sublet from Edmonton

#### **Encryption Key**

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

CANDACE OLSON,

Email: candace.olson@maxxamanalytics.com

Phone# (780) 465-1212

\_\_\_\_\_

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. SCC and CAEAL have approved this reporting process and electronic report format.

For Service Group specific validation please refer to the Validation Signature Page



Site Reference: Sampler Initials:

#### **CCME METALS (INCL. HG)**

Maxxam ID		C63182	C63189	C63190	C63201		
Sampling Date		2006/08/25	2006/08/25	2006/08/25	2006/08/25		
COC Number		150913	150912	150912	150912		
	Units	ET301@0.6M	ET302@0.8M	ET303@0.3M	ET312@0M	RDL	QC Batch

Elements							
Mercury (Hg)	mg/kg	ND	ND	ND	ND	0.05	1260763
Total Aluminum (Al)	mg/kg	904	1410	1020	5650	10	1260636
Total Antimony (Sb)	mg/kg	ND	ND	2	ND	2	1260636
Total Arsenic (As)	mg/kg	ND	ND	ND	ND	1	1261498
Total Barium (Ba)	mg/kg	3.1	6.4	3.3	29.5	0.2	1260636
Total Beryllium (Be)	mg/kg	ND	0.1	ND	0.2	0.1	1260636
Total Bismuth (Bi)	mg/kg	ND	ND	ND	ND	10	1260636
Total Cadmium (Cd)	mg/kg	0.5	0.4	0.3	ND	0.2	1260636
Total Calcium (Ca)	mg/kg	1540	1410	1540	2320	20	1260636
Total Chromium (Cr)	mg/kg	52	10	26	10	1	1260636
Total Cobalt (Co)	mg/kg	5.6	1.8	3.5	5.1	0.4	1260636
Total Copper (Cu)	mg/kg	ND	2	ND	6	2	1260636
Total Iron (Fe)	mg/kg	85200	12900	42400	12200	10	1260636
Total Lead (Pb)	mg/kg	10	ND	ND	ND	10	1260636
Total Lithium (Li)	mg/kg	1.4	2.3	1.5	7.8	0.4	1260636
Total Magnesium (Mg)	mg/kg	434	727	447	3300	10	1260636
Total Manganese (Mn)	mg/kg	88.5	34.3	52.6	122	0.4	1260636
Total Molybdenum (Mo)	mg/kg	ND	ND	ND	ND	0.5	1261498
Total Nickel (Ni)	mg/kg	5	ND	ND	5	4	1260636
Total Phosphorus (P)	mg/kg	545	488	462	586	4	1260636
Total Potassium (K)	mg/kg	219	450	185	2360	20	1260636
Total Selenium (Se)	mg/kg	ND	ND	ND	ND	0.5	1261498
Total Silver (Ag)	mg/kg	ND	ND	ND	ND	1	1260636
Total Sodium (Na)	mg/kg	77	89	91	341	10	1260636
Total Strontium (Sr)	mg/kg	2.3	2.4	2.5	6.6	0.4	1260636
Total Sulphur (S)	mg/kg	48	90	72	78	40	1260636
Total Thallium (TI)	mg/kg	ND	ND	ND	ND	1	1261498
Total Tin (Sn)	mg/kg	ND	ND	ND	ND	2	1260636
Total Titanium (Ti)	mg/kg	437	279	348	ND	0.8	1260636
Total Uranium (U)	mg/kg	0.5	0.3	0.5	0.6	0.2	1261498
Total Vanadium (V)	mg/kg	160	28	79	23	2	1260636
Total Zinc (Zn)	mg/kg	14	10	17	20	2	1260636



Site Reference: Sampler Initials:

#### **CCME METALS (INCL. HG)**

Maxxam ID		C63182	C63189	C63190	C63201		
Sampling Date		2006/08/25	2006/08/25	2006/08/25	2006/08/25		
COC Number		150913	150912	150912	150912		
	Units	ET301@0.6M	ET302@0.8M	ET303@0.3M	ET312@0M	RDL	QC Batch

Total Zirconium (Zr) mg/kg	4	ND	1	ND	1	1260636
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ND = Not detected



Site Reference: Sampler Initials:

#### **CCME METALS (INCL. HG)**

Maxxam ID		C63329	C63332	C63333	C63334		
Sampling Date		2006/08/25	2006/08/25	2006/08/25	2006/08/25		
COC Number		150911	150911	150911	150911		
	Units	ET314@0.3M	ET315@0.3M	ET316@0.8M	ET317@0.5M	RDL	QC Batch

Elements							
Mercury (Hg)	mg/kg	ND	ND	ND	ND	0.05	1260763
Total Aluminum (AI)	mg/kg	1950	1490	1590	1450	10	1260636
Total Antimony (Sb)	mg/kg	ND	ND	3	ND	2	1260636
Total Arsenic (As)	mg/kg	ND	ND	ND	ND	1	1261498
Total Barium (Ba)	mg/kg	11.4	7.5	9.8	8.6	0.2	1260636
Total Beryllium (Be)	mg/kg	ND	ND	ND	ND	0.1	1260636
Total Bismuth (Bi)	mg/kg	ND	ND	ND	ND	10	1260636
Total Cadmium (Cd)	mg/kg	ND	ND	ND	ND	0.2	1260636
Total Calcium (Ca)	mg/kg	1410	1300	1690	1110	20	1260636
Total Chromium (Cr)	mg/kg	8	10	10	12	1	1260636
Total Cobalt (Co)	mg/kg	2.5	2.0	1.9	1.7	0.4	1260636
Total Copper (Cu)	mg/kg	4	ND	5	2	2	1260636
Total Iron (Fe)	mg/kg	10400	14800	14000	15100	10	1260636
Total Lead (Pb)	mg/kg	30	ND	122	13	10	1260636
Total Lithium (Li)	mg/kg	3.1	2.5	2.6	2.2	0.4	1260636
Total Magnesium (Mg)	mg/kg	1110	858	879	804	10	1260636
Total Manganese (Mn)	mg/kg	46.9	43.5	40.4	40.3	0.4	1260636
Total Molybdenum (Mo)	mg/kg	ND	ND	ND	ND	0.5	1261498
Total Nickel (Ni)	mg/kg	ND	ND	ND	ND	4	1260636
Total Phosphorus (P)	mg/kg	426	420	713	400	4	1260636
Total Potassium (K)	mg/kg	733	524	555	491	20	1260636
Total Selenium (Se)	mg/kg	ND	ND	ND	ND	0.5	1261498
Total Silver (Ag)	mg/kg	ND	ND	ND	ND	1	1260636
Total Sodium (Na)	mg/kg	107	85	78	95	10	1260636
Total Strontium (Sr)	mg/kg	2.9	2.4	2.6	2.4	0.4	1260636
Total Sulphur (S)	mg/kg	47	ND	ND	50	40	1260636
Total Thallium (TI)	mg/kg	ND	ND	ND	ND	1	1261498
Total Tin (Sn)	mg/kg	ND	ND	ND	ND	2	1260636
Total Titanium (Ti)	mg/kg	293	291	318	247	0.8	1260636
Total Uranium (U)	mg/kg	0.4	0.4	0.5	0.4	0.2	1261498
Total Vanadium (V)	mg/kg	22	30	28	30	2	1260636
Total Zinc (Zn)	mg/kg	22	10	10	12	2	1260636



Site Reference: Sampler Initials:

#### **CCME METALS (INCL. HG)**

Maxxam ID		C63329	C63332	C63333	C63334		
Sampling Date		2006/08/25	2006/08/25	2006/08/25	2006/08/25		
COC Number		150911	150911	150911	150911		
	Units	ET314@0.3M	ET315@0.3M	ET316@0.8M	ET317@0.5M	RDL	QC Batch

ND = Not detected



Site Reference: Sampler Initials:

#### **CCME METALS (INCL. HG)**

	Units	ET318@0.3M	ET319@0.4M	ET320@0M	ET320@0.8M	RDL	QC Batch
COC Number		150911	150911	150911	150911		
Sampling Date		2006/08/25	2006/08/25	2006/08/25	2006/08/25		
Maxxam ID		C63338	C63339	C63340	C63341		

	Ullits	L 1310@0.5W	L1313@0.4M	L 1 3 2 0 @ OIVI	L 1320 @ 0.0W	INDL	QC Batch
Elements							
Mercury (Hg)	mg/kg	ND	ND	ND	ND	0.05	1260763
Total Aluminum (Al)	mg/kg	1700	1600	2370	2600	10	1260636
Total Antimony (Sb)	mg/kg	ND	ND	ND	ND	2	1260636
Total Arsenic (As)	mg/kg	ND	ND	ND	ND	1	1261498
Total Barium (Ba)	mg/kg	7.4	8.4	558	15.5	0.2	1260636
Total Beryllium (Be)	mg/kg	ND	ND	ND	ND	0.1	1260636
Total Bismuth (Bi)	mg/kg	ND	ND	ND	ND	10	1260636
Total Cadmium (Cd)	mg/kg	ND	ND	0.3	ND	0.2	1260636
Total Calcium (Ca)	mg/kg	763	378	795	974	20	1260636
Total Chromium (Cr)	mg/kg	10	5	3	4	1	1260636
Total Cobalt (Co)	mg/kg	2.2	1.5	2.1	2.4	0.4	1260636
Total Copper (Cu)	mg/kg	ND	ND	ND	ND	2	1260636
Total Iron (Fe)	mg/kg	12900	4680	4820	6620	10	1260636
Total Lead (Pb)	mg/kg	ND	ND	ND	ND	10	1260636
Total Lithium (Li)	mg/kg	1.9	1.5	5.1	5.6	0.4	1260636
Total Magnesium (Mg)	mg/kg	970	797	1620	1830	10	1260636
Total Manganese (Mn)	mg/kg	37.8	25.8	53.2	63.5	0.4	1260636
Total Molybdenum (Mo)	mg/kg	ND	ND	ND	ND	0.5	1261498
Total Nickel (Ni)	mg/kg	ND	ND	ND	ND	4	1260636
Total Phosphorus (P)	mg/kg	303	145	311	299	4	1260636
Total Potassium (K)	mg/kg	441	517	1250	1570	20	1260636
Total Selenium (Se)	mg/kg	ND	ND	ND	ND	0.5	1261498
Total Silver (Ag)	mg/kg	ND	ND	ND	ND	1	1260636
Total Sodium (Na)	mg/kg	66	63	50	54	10	1260636
Total Strontium (Sr)	mg/kg	2.3	1.9	2.6	2.0	0.4	1260636
Total Sulphur (S)	mg/kg	140	118	176	ND	40	1260636
Total Thallium (TI)	mg/kg	ND	ND	ND	ND	1	1261498
Total Tin (Sn)	mg/kg	ND	ND	ND	ND	2	1260636
Total Titanium (Ti)	mg/kg	342	286	409	439	0.8	1260636
Total Uranium (U)	mg/kg	0.4	0.3	0.4	0.5	0.2	1261498
Total Vanadium (V)	mg/kg	28	10	9	13	2	1260636
Total Zinc (Zn)	mg/kg	10	5	171	15	2	1260636



Site Reference: Sampler Initials:

#### **CCME METALS (INCL. HG)**

Maxxam ID		C63338	C63339	C63340	C63341		
Sampling Date		2006/08/25	2006/08/25	2006/08/25	2006/08/25		
COC Number		150911	150911	150911	150911		
	Units	ET318@0.3M	ET319@0.4M	ET320@0M	ET320@0.8M	RDL	QC Batch

ND = Not detected



Site Reference: Sampler Initials:

#### **CCME METALS (INCL. HG)**

Maxxam ID		C63342	C63345	C63352		
Sampling Date		2006/08/25	2006/08/25	2006/08/26		
COC Number		150911	150911	150915		
	Units	ET321@0.5M	ET322@SURFACE	ET337@0.5M	RDL	QC Batch

					•	
Elements						
Mercury (Hg)	mg/kg	ND	ND	ND	0.05	1260763
Total Aluminum (Al)	mg/kg	2370	1650	757	10	1260636
Total Antimony (Sb)	mg/kg	ND	ND	ND	2	1260636
Total Arsenic (As)	mg/kg	ND	ND	ND	1	1261498
Total Barium (Ba)	mg/kg	13.3	36.4	3.0	0.2	1260636
Total Beryllium (Be)	mg/kg	ND	ND	ND	0.1	1260636
Total Bismuth (Bi)	mg/kg	ND	ND	ND	10	1260636
Total Cadmium (Cd)	mg/kg	ND	1.1	ND	0.2	1260636
Total Calcium (Ca)	mg/kg	1100	995	1020	20	1260636
Total Chromium (Cr)	mg/kg	4	7	13	1	1260636
Total Cobalt (Co)	mg/kg	1.9	2.5	2.0	0.4	1260636
Total Copper (Cu)	mg/kg	ND	3	ND	2	1260636
Total Iron (Fe)	mg/kg	5910	19800	27600	10	1260636
Total Lead (Pb)	mg/kg	ND	ND	ND	10	1260636
Total Lithium (Li)	mg/kg	5.1	2.0	1.2	0.4	1260636
Total Magnesium (Mg)	mg/kg	1590	830	368	10	1260636
Total Manganese (Mn)	mg/kg	51.1	74.3	49.8	0.4	1260636
Total Molybdenum (Mo)	mg/kg	ND	ND	0.6	0.5	1261498
Total Nickel (Ni)	mg/kg	ND	ND	4	4	1260636
Total Phosphorus (P)	mg/kg	370	371	355	4	1260636
Total Potassium (K)	mg/kg	1270	513	122	20	1260636
Total Selenium (Se)	mg/kg	ND	ND	ND	0.5	1261498
Total Silver (Ag)	mg/kg	ND	ND	ND	1	1260636
Total Sodium (Na)	mg/kg	60	109	54	10	1260636
Total Strontium (Sr)	mg/kg	2.2	4.2	1.8	0.4	1260636
Total Sulphur (S)	mg/kg	ND	322	ND	40	1260636
Total Thallium (TI)	mg/kg	ND	ND	ND	1	1261498
Total Tin (Sn)	mg/kg	ND	ND	ND	2	1260636
Total Titanium (Ti)	mg/kg	345	266	185	0.8	1260636
Total Uranium (U)	mg/kg	0.5	0.5	0.2	0.2	1261498
Total Vanadium (V)	mg/kg	12	22	39	2	1260636
Total Zinc (Zn)	mg/kg	11	62	8	2	1260636



Site Reference: Sampler Initials:

#### **CCME METALS (INCL. HG)**

Maxxam ID		C63342	C63345	C63352		
Sampling Date		2006/08/25	2006/08/25	2006/08/26		
COC Number		150911	150911	150915		
	Units	ET321@0.5M	ET322@SURFACE	ET337@0.5M	RDL	QC Batch

Total Zirconium (Zr)	mg/kg	ND	ND	ND	1	1260636

ND = Not detected



Site Reference: Sampler Initials:

#### **CCME METALS (INCL. HG)**

	Units	ET338@0.7M	ET339@0.3M	ET342@0.75M	QAQC#4	RDL	QC Batch
COC Number		150915	150915	150915	150916		
Sampling Date		2006/08/26	2006/08/26	2006/08/26	2006/08/26		
Maxxam ID		C63353	C63354	C63431	C63446		

Elements							
Mercury (Hg)	mg/kg	ND	ND	ND	ND	0.05	1261070
Total Aluminum (Al)	mg/kg	519	448	1190	1370	10	1260997
Total Antimony (Sb)	mg/kg	ND	ND	ND	ND	2	1260997
Total Arsenic (As)	mg/kg	ND	ND	ND	ND	1	1261500
Total Barium (Ba)	mg/kg	2.0	1.4	4.4	5.8	0.2	1260997
Total Beryllium (Be)	mg/kg	ND	ND	ND	ND	0.1	1260997
Total Bismuth (Bi)	mg/kg	ND	ND	ND	ND	10	1260997
Total Cadmium (Cd)	mg/kg	ND	ND	ND	ND	0.2	1260997
Total Calcium (Ca)	mg/kg	725	680	555	887	20	1260997
Total Chromium (Cr)	mg/kg	7	10	4	7	1	1260997
Total Cobalt (Co)	mg/kg	1.0	1.2	1.1	1.7	0.4	1260997
Total Copper (Cu)	mg/kg	ND	ND	2	2	2	1260997
Total Iron (Fe)	mg/kg	9570	13300	5380	9510	10	1260997
Total Lead (Pb)	mg/kg	ND	ND	ND	ND	10	1260997
Total Lithium (Li)	mg/kg	0.9	0.9	2.6	2.8	0.4	1260997
Total Magnesium (Mg)	mg/kg	236	232	759	885	10	1260997
Total Manganese (Mn)	mg/kg	16.6	19.1	26.3	34.6	0.4	1260997
Total Molybdenum (Mo)	mg/kg	ND	ND	ND	0.7	0.5	1261500
Total Nickel (Ni)	mg/kg	ND	ND	ND	ND	4	1260997
Total Phosphorus (P)	mg/kg	245	215	157	268	4	1260997
Total Potassium (K)	mg/kg	65	79	493	583	20	1260997
Total Selenium (Se)	mg/kg	ND	ND	ND	ND	0.5	1261500
Total Silver (Ag)	mg/kg	ND	ND	ND	ND	1	1260997
Total Sodium (Na)	mg/kg	36	31	53	68	10	1260997
Total Strontium (Sr)	mg/kg	1.3	1.5	1.7	2.2	0.4	1260997
Total Sulphur (S)	mg/kg	ND	ND	ND	ND	40	1260997
Total Thallium (TI)	mg/kg	ND	ND	ND	ND	1	1261500
Total Tin (Sn)	mg/kg	ND	ND	2	ND	2	1260997
Total Titanium (Ti)	mg/kg	106	114	163	239	0.8	1260997
Total Uranium (U)	mg/kg	0.2	0.2	0.5	0.7	0.2	1261500
Total Vanadium (V)	mg/kg	21	30	13	21	2	1260997
Total Zinc (Zn)	mg/kg	4	4	11	12	2	1260997



Site Reference: Sampler Initials:

#### **CCME METALS (INCL. HG)**

Maxxam ID		C63353	C63354	C63431	C63446		
Sampling Date		2006/08/26	2006/08/26	2006/08/26	2006/08/26		
COC Number		150915	150915	150915	150916		
	Units	ET338@0.7M	ET339@0.3M	ET342@0.75M	QAQC#4	RDL	QC Batch

Total Zirconium (Zr) mg/kg ND	ND	ND	ND	1	1260997
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ND = Not detected



Site Reference: Sampler Initials:

#### **CCME METALS (INCL. HG)**

Maxxam ID		C63457		C63508	C63778	C63799		
Sampling Date		2006/08/26		2006/08/26	2006/08/27	2006/08/25		
COC Number		150914		150914	150917	150918		
	Units	ET323@0.5M	QC Batch	ET324@0.5M	ET343@0M	ET358@0M	RDL	QC Batch

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Elements								
Mercury (Hg)	mg/kg	ND	1261070	ND	ND	ND	0.05	1261885
Total Aluminum (Al)	mg/kg	1200	1260997	982	1600	1420	10	1260754
Total Antimony (Sb)	mg/kg	ND	1260997	ND	ND	ND	2	1260754
Total Arsenic (As)	mg/kg	ND	1261500	ND	ND	ND	1	1261501
Total Barium (Ba)	mg/kg	5.9	1260997	3.4	8.2	6.9	0.2	1260754
Total Beryllium (Be)	mg/kg	ND	1260997	ND	0.1	ND	0.1	1260754
Total Bismuth (Bi)	mg/kg	ND	1260997	ND	ND	ND	10	1260754
Total Cadmium (Cd)	mg/kg	ND	1260997	ND	ND	ND	0.2	1260754
Total Calcium (Ca)	mg/kg	682	1260997	668	1300	2020	20	1260754
Total Chromium (Cr)	mg/kg	12	1260997	6	3	7	1	1260754
Total Cobalt (Co)	mg/kg	1.9	1260997	1.3	1.3	1.6	0.4	1260754
Total Copper (Cu)	mg/kg	3	1260997	ND	ND	ND	2	1260754
Total Iron (Fe)	mg/kg	19700	1260997	10100	4160	10300	10	1260754
Total Lead (Pb)	mg/kg	42	1260997	ND	ND	ND	10	1260754
Total Lithium (Li)	mg/kg	1.3	1260997	1.4	2.5	2.3	0.4	1260754
Total Magnesium (Mg)	mg/kg	453	1260997	411	866	785	10	1260754
Total Manganese (Mn)	mg/kg	52.0	1260997	19.8	29.9	36.6	0.4	1260754
Total Molybdenum (Mo)	mg/kg	ND	1261500	ND	ND	ND	0.5	1261501
Total Nickel (Ni)	mg/kg	5	1260997	ND	ND	ND	4	1260754
Total Phosphorus (P)	mg/kg	230	1260997	219	466	777	4	1260754
Total Potassium (K)	mg/kg	208	1260997	152	559	472	20	1260754
Total Selenium (Se)	mg/kg	ND	1261500	ND	ND	ND	0.5	1261501
Total Silver (Ag)	mg/kg	ND	1260997	ND	ND	ND	1	1260754
Total Sodium (Na)	mg/kg	51	1260997	65	82	102	10	1260754
Total Strontium (Sr)	mg/kg	1.8	1260997	2.2	2.4	3.1	0.4	1260754
Total Sulphur (S)	mg/kg	123	1260997	96	46	ND	40	1260754
Total Thallium (TI)	mg/kg	ND	1261500	ND	ND	ND	1	1261501
Total Tin (Sn)	mg/kg	ND	1260997	ND	ND	ND	2	1260754
Total Titanium (Ti)	mg/kg	206	1260997	181	248	275	0.8	1260754
Total Uranium (U)	mg/kg	0.3	1261500	0.3	0.3	0.4	0.2	1261501
Total Vanadium (V)	mg/kg	30	1260997	18	9	22	2	1260754
Total Zinc (Zn)	mg/kg	18	1260997	7	9	9	2	1260754
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Site Reference: Sampler Initials:

#### **CCME METALS (INCL. HG)**

Maxxam ID		C63457		C63508	C63778	C63799		
Sampling Date		2006/08/26		2006/08/26	2006/08/27	2006/08/25		
COC Number		150914		150914	150917	150918		
	Units	ET323@0.5M	QC Batch	ET324@0.5M	ET343@0M	ET358@0M	RDL	QC Batch

Total Zirconium (Zr) mg/kg ND	1260997 ND	ND ND	1 1260754
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ND = Not detected

Site Reference: Sampler Initials:

#### **CCME METALS (INCL. HG)**

	Units	ET359@0M	RDL	QC Batch
COC Number		150918		
Sampling Date		2006/08/25		
Maxxam ID		C63801		

Elements				
Mercury (Hg)	mg/kg	ND	0.05	1261885
Total Aluminum (Al)	mg/kg	1340	10	1260754
Total Antimony (Sb)	mg/kg	ND	2	1260754
Total Arsenic (As)	mg/kg	ND	1	1261501
Total Barium (Ba)	mg/kg	5.1	0.2	1260754
Total Beryllium (Be)	mg/kg	ND	0.1	1260754
Total Bismuth (Bi)	mg/kg	ND	10	1260754
Total Cadmium (Cd)	mg/kg	ND	0.2	1260754
Total Calcium (Ca)	mg/kg	1220	20	1260754
Total Chromium (Cr)	mg/kg	10	1	1260754
Total Cobalt (Co)	mg/kg	1.8	0.4	1260754
Total Copper (Cu)	mg/kg	ND	2	1260754
Total Iron (Fe)	mg/kg	15200	10	1260754
Total Lead (Pb)	mg/kg	ND	10	1260754
Total Lithium (Li)	mg/kg	1.6	0.4	1260754
Total Magnesium (Mg)	mg/kg	562	10	1260754
Total Manganese (Mn)	mg/kg	32.9	0.4	1260754
Total Molybdenum (Mo)	mg/kg	ND	0.5	1261501
Total Nickel (Ni)	mg/kg	ND	4	1260754
Total Phosphorus (P)	mg/kg	450	4	1260754
Total Potassium (K)	mg/kg	257	20	1260754
Total Selenium (Se)	mg/kg	ND	0.5	1261501
Total Silver (Ag)	mg/kg	ND	1	1260754
Total Sodium (Na)	mg/kg	91	10	1260754
Total Strontium (Sr)	mg/kg	2.4	0.4	1260754
Total Sulphur (S)	mg/kg	66	40	1260754
Total Thallium (TI)	mg/kg	ND	1	1261501
Total Tin (Sn)	mg/kg	ND	2	1260754
Total Titanium (Ti)	mg/kg	336	0.8	1260754
Total Uranium (U)	mg/kg	0.3	0.2	1261501
Total Vanadium (V)	mg/kg	32	2	1260754
Total Zinc (Zn)	mg/kg	6	2	1260754



Site Reference: Sampler Initials:

#### **CCME METALS (INCL. HG)**

COC Number	Units	150918 ET359@0M	BUI	QC Batch
Sampling Date		2006/08/25		
Maxxam ID		C63801		

Total Zirconium (Zr)	mg/kg	ND	1	1260754	
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ND = Not detected

Site Reference: Sampler Initials:

# **CCME METALS (WATER)**

Maxxam ID		C63308	C63345	C63373	C63493		
Sampling Date		2006/08/25	2006/08/25	2006/08/26	2006/08/26		
COC Number	Units	150912	150911 ET322@SURFACE	150915	150914	BDI	QC Batch
	Units	ET313 SURFACE WATER	E1322@SURFACE	ET340@0M	ET323	RDL	QC Batch
Elements							
Dissolved Silver (Ag)	ug/L	ND	ND	ND	ND	0.1	1261496
Dissolved Aluminum (AI)	ug/L	63	45	ND	ND	5	1261496
Dissolved Arsenic (As)	ug/L	ND	ND	ND	ND	5	1261496
Dissolved Cadmium (Cd)	ug/L	ND	ND	0.17	ND	0.01	1261496
Dissolved Copper (Cu)	ug/L	3	ND	ND	82	2	1261496
Dissolved Lead (Pb)	ug/L	ND	ND	ND	ND	1	1261496
Dissolved Antimony (Sb)	ug/L	ND	ND	ND	ND	1	1261496
Dissolved Selenium (Se)	ug/L	ND	ND	ND	ND	1	1261496
Dissolved Thallium (TI)	ug/L	ND	ND	ND	ND	0.8	1261496
Dissolved Uranium (U)	ug/L	ND	ND	ND	ND	1	1261496
Low Level Elements							
Dissolved Mercury (Hg)	ug/L	ND	ND	ND	ND	0.05	1260770
Dissolved Metals by ICP							
Dissolved Barium (Ba)	mg/L	0.008	0.022	0.003	0.005	0.003	1259961
Dissolved Beryllium (Be)	mg/L	ND	ND	ND	ND	0.001	1259961
Dissolved Bismuth (Bi)	mg/L	ND	ND	ND	ND	0.2	1259961
Dissolved Boron (B)	mg/L	ND	0.09	ND	ND	0.05	1259961
Dissolved Calcium (Ca)	mg/L	8.17	4.32	3.88	0.48	0.05	1259961
Dissolved Chromium (Cr)	mg/L	ND	ND	ND	ND	0.007	1259961
Dissolved Cobalt (Co)	mg/L	ND	ND	ND	ND	0.005	1259961
Dissolved Iron (Fe)	mg/L	0.079	5.86	1.50	6.50	0.006	1259961
Dissolved Lithium (Li)	mg/L	ND	ND	ND	ND	0.02	1259961
Dissolved Magnesium (Mg)	mg/L	10.9	3.78	3.21	0.25	0.05	1259961
Dissolved Manganese (Mn)	mg/L	0.002	0.039	0.025	2.10	0.001	1259961
Dissolved Molybdenum (Mo)	mg/L	ND	ND	ND	ND	0.006	1259961
Dissolved Nickel (Ni)	mg/L	ND	ND	ND	0.112	0.008	1259961
Dissolved Phosphorus (P)	mg/L	ND	0.1	ND	ND	0.1	1259961
Dissolved Potassium (K)	mg/L	2.1	1.4	1.9	2.1	0.2	1259961
Dissolved Silicon (Si)	mg/L	0.93	3.15	1.09	ND	0.05	1259961
Dissolved Sodium (Na)	mg/L	58.1	19.0	20.1	19.2	0.05	1259961
Dissolved Strontium (Sr)	mg/L	0.06	0.03	0.03	ND	0.01	1259961

ND = Not detected

RDL = Reportable Detection Limit

Site Reference: Sampler Initials:

# **CCME METALS (WATER)**

Maxxam ID		C63308	C63345	C63373	C63493		
Sampling Date		2006/08/25	2006/08/25	2006/08/26	2006/08/26		
COC Number		150912	150911	150915	150914		
	Units	ET313 SURFACE WATER	ET322@SURFACE	ET340@0M	ET323	RDL	QC Batch
Dissolved Sulphur (S)	mg/L	4.6	1.0	4.1	0.6	0.2	1259961
Dissolved Tin (Sn)	mg/L	ND	ND	ND	ND	0.04	1259961
Dissolved Titanium (Ti)	mg/L	ND	ND	ND	ND	0.006	1259961
Dissolved Vanadium (V)	mg/L	ND	ND	ND	ND	0.05	1259961
Dissolved Zinc (Zn)	mg/L	0.008	0.012	0.011	0.120	0.005	1259961
Dissolved Zirconium (Zr)	mg/L	ND	ND	ND	ND	0.005	1259961

ND = Not detected

RDL = Reportable Detection Limit

Site Reference: Sampler Initials:

# **CCME METALS (WATER)**

	Units	WRES-01	QAQC-#5	RDL	QC Batch
COC Number		150918	150918		
Sampling Date		2006/08/25	2006/08/25		
Maxxam ID		C63804	C63806		

	Units	WRE5-01	QAQC-#5	KDL	QC Batch
Elements					
Dissolved Silver (Ag)	ug/L	ND	ND	0.1	1261496
Dissolved Aluminum (Al)	+	13	32	5	1261496
. ,	ug/L	ND	ND	5	1261496
Dissolved Arsenic (As)	ug/L			+	
Dissolved Cadmium (Cd)	ug/L	ND	ND	0.01	1261496
Dissolved Copper (Cu)	ug/L	ND	ND	2	1261496
Dissolved Lead (Pb)	ug/L	ND	ND	1	1261496
Dissolved Antimony (Sb)	ug/L	ND	ND	1	1261496
Dissolved Selenium (Se)	ug/L	ND	1	1	1261496
Dissolved Thallium (TI)	ug/L	ND	ND	0.8	1261496
Dissolved Uranium (U)	ug/L	ND	ND	1	1261496
Low Level Elements					
Dissolved Mercury (Hg)	ug/L	ND	ND	0.05	1260770
Dissolved Metals by ICP					
Dissolved Barium (Ba)	mg/L	ND	ND	0.003	1259961
Dissolved Beryllium (Be)	mg/L	ND	ND	0.001	1259961
Dissolved Bismuth (Bi)	mg/L	ND	ND	0.2	1259961
Dissolved Boron (B)	mg/L	ND	ND	0.05	1259961
Dissolved Calcium (Ca)	mg/L	1.33	1.49	0.05	1259961
Dissolved Chromium (Cr)	mg/L	ND	ND	0.007	1259961
Dissolved Cobalt (Co)	mg/L	ND	ND	0.005	1259961
Dissolved Iron (Fe)	mg/L	0.095	0.090	0.006	1259961
Dissolved Lithium (Li)	mg/L	ND	ND	0.02	1259961
Dissolved Magnesium (Mg)	mg/L	1.53	1.58	0.05	1259961
Dissolved Manganese (Mn)	mg/L	0.006	0.006	0.001	1259961
Dissolved Molybdenum (Mo)	mg/L	ND	ND	0.006	1259961
Dissolved Nickel (Ni)	mg/L	ND	ND	0.008	1259961
Dissolved Phosphorus (P)	mg/L	ND	ND	0.1	1259961
Dissolved Potassium (K)	mg/L	0.5	0.5	0.2	1259961
Dissolved Silicon (Si)	mg/L	ND	ND	0.05	1259961
Dissolved Sodium (Na)	mg/L	9.34	9.46	0.05	1259961
Dissolved Strontium (Sr)	mg/L	ND	ND	0.01	1259961
Dissolved Sulphur (S)	mg/L	0.4	0.3	0.2	1259961
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ND = Not detected RDL = Reportable Detection Limit



Site Reference: Sampler Initials:

# **CCME METALS (WATER)**

Maxxam ID		C63804	C63806		
Sampling Date		2006/08/25	2006/08/25		
COC Number		150918	150918		
	Units	WRES-01	QAQC-#5	RDL	QC Batch
Dissolved Tin (Sn)	mg/L	ND	ND	0.04	1259961
Dissolved Titanium (Ti)	mg/L	ND	ND	0.006	1259961
Dissolved Vanadium (V)	mg/L	ND	ND	0.05	1259961
Dissolved Zinc (Zn)	mg/L	ND	ND	0.005	1259961
Dissolved Zirconium (Zr)	mg/L	ND	ND	0.005	1259961
ND = Not detected RDL = Reportable Detection	n Limit				

Site Reference: Sampler Initials:

### **CCMEHC MECHANCIAL EXTRACTION (SOIL)**

Maxxam ID		C63167	C63169	C63171	C63173		
Sampling Date		2006/08/25	2006/08/25	2006/08/25	2006/08/25		
COC Number		150913	150913	150913	150913		
	Units	ET295@0M	ET296@0M	ET297@0M	ET297@0.75M	RDL	QC Batch
Physical Properties							
Moisture	%	12.1	11.4	10.7	13.9	0.3	1260012
Ext. Pet. Hydrocarbon							
F1 (C06-C10)	mg/kg	11	23	107	181	10	1260008
F1 (C06-C10) - BTEX	mg/kg	11	23	107	177	10	1259389
F2 (C10-C16 Hydrocarbons)	mg/kg	5680	5410	6010	4930	10	1260074
F3 (C16-C34 Hydrocarbons)	mg/kg	4220	5450	3200	1260	10	1260074
F4 (C34-C50 Hydrocarbons)	mg/kg	1150	1470	701	452	10	1260074
Reached Baseline at C50	mg/kg	No	No	No	No	1	1260074
Volatiles							
Benzene	mg/kg	ND	ND	ND	ND	0.0050	1260005
Toluene	mg/kg	ND	ND	ND	0.047	0.020	1260005
Ethylbenzene	mg/kg	ND	ND	ND	0.060	0.010	1260005
Xylenes (Total)	mg/kg	ND	ND	0.28	3.8	0.020	1260005
m & p-Xylene	mg/kg	ND	ND	0.075	1.8	0.020	1260005
o-Xylene	mg/kg	ND	ND	0.21	2.0	0.020	1260005
Surrogate Recovery (%)							
4-BROMOFLUOROBENZENE (sur.)	%	92	84	83	87	N/A	1260008
O-TERPHENYL (sur.)	%	78	80	82	82	N/A	1260074
4-BROMOFLUOROBENZENE (sur.)	%	91	98	123	134	N/A	1260005
D10-ETHYLBENZENE (sur.)	%	107	112	117	123	N/A	1260005
D4-1,2-DICHLOROETHANE (sur.)	%	68	69	67	67	N/A	1260005
D8-TOLUENE (sur.)	%	95	98	96	97	N/A	1260005
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Site Reference: Sampler Initials:

# **CCMEHC MECHANCIAL EXTRACTION (SOIL)**

Maxxam ID		C63174	C63175	C63176	C63178		
Sampling Date		2006/08/25	2006/08/25	2006/08/25	2006/08/25		
COC Number		150913	150913	150913	150913		
	Units	ET298@0M	ET298@0.8M	ET299@0M	ET300@0M	RDL	QC Batch
L	I	Ι	1				Ī
Physical Properties							
Moisture	%	11.1	17.8	9.8	9.0	0.3	1260012
Ext. Pet. Hydrocarbon							
F1 (C06-C10)	mg/kg	41	198	52	ND	10	1260008
F1 (C06-C10) - BTEX	mg/kg	40	194	52	ND	10	1259389
F2 (C10-C16 Hydrocarbons)	mg/kg	7440	1800	6690	1880	10	1260074
F3 (C16-C34 Hydrocarbons)	mg/kg	5200	657	2000	1980	10	1260074
F4 (C34-C50 Hydrocarbons)	mg/kg	387	126	241	236	10	1260074
Reached Baseline at C50	mg/kg	No	Yes	Yes	Yes	1	1260074
Volatiles							
Benzene	mg/kg	ND	ND	ND	ND	0.0050	1260005
Toluene	mg/kg	ND	0.057	ND	ND	0.020	1260005
Ethylbenzene	mg/kg	0.023	0.12	ND	ND	0.010	1260005
Xylenes (Total)	mg/kg	0.10	3.7	ND	ND	0.020	1260005
m & p-Xylene	mg/kg	ND	2.0	ND	ND	0.020	1260005
o-Xylene	mg/kg	0.10	1.7	ND	ND	0.020	1260005
Surrogate Recovery (%)							
4-BROMOFLUOROBENZENE (sur.)	%	73	85	97	85	N/A	1260008
O-TERPHENYL (sur.)	%	90	79	83	81	N/A	1260074
4-BROMOFLUOROBENZENE (sur.)	%	135	129	95	90	N/A	1260005
D10-ETHYLBENZENE (sur.)	%	123	127	110	105	N/A	1260005
D4-1,2-DICHLOROETHANE (sur.)	%	68	69	69	70	N/A	1260005
D8-TOLUENE (sur.)	%	96	96	97	98	N/A	1260005

Site Reference: Sampler Initials:

### **CCMEHC MECHANCIAL EXTRACTION (SOIL)**

Maxxam ID		C63181	C63182	C63193	C63194		
Sampling Date		2006/08/25	2006/08/25	2006/08/25	2006/08/25		
COC Number		150913	150913	150912	150912		
	Units	ET300@0.8M	ET301@0.6M	ET304@0.3M	ET305@0.2M	RDL	QC Batch
Physical Properties							
Physical Properties Moisture	%	11.8	2.7	10.2	13.2	0.3	1260012

Moisture	%	11.8	2.7	10.2	13.2	0.3	1260012
Ext. Pet. Hydrocarbon							
F1 (C06-C10)	mg/kg	74	75	68	ND	10	1260008
F1 (C06-C10) - BTEX	mg/kg	74	74	68	ND	10	1259389
F2 (C10-C16 Hydrocarbons)	mg/kg	2000	1340	5850	143	10	1260074
F3 (C16-C34 Hydrocarbons)	mg/kg	510	441	2520	902	10	1260074
F4 (C34-C50 Hydrocarbons)	mg/kg	46	70	847	349	10	1260074
Reached Baseline at C50	mg/kg	Yes	Yes	No	Yes	1	1260074
Volatiles							
Benzene	mg/kg	ND	ND	ND	ND	0.0050	1260005
Toluene	mg/kg	ND	ND	ND	ND	0.020	1260005
Ethylbenzene	mg/kg	ND	ND	ND	ND	0.010	1260005
Xylenes (Total)	mg/kg	0.26	0.14	ND	ND	0.020	1260005
m & p-Xylene	mg/kg	ND	ND	ND	ND	0.020	1260005
o-Xylene	mg/kg	0.26	0.14	ND	ND	0.020	1260005
Surrogate Recovery (%)							
4-BROMOFLUOROBENZENE (sur.)	%	87	86	88	83	N/A	1260008
O-TERPHENYL (sur.)	%	80	77	80	84	N/A	1260074
4-BROMOFLUOROBENZENE (sur.)	%	119	100	103	101	N/A	1260005
D10-ETHYLBENZENE (sur.)	%	124	125	118	111	N/A	1260005
D4-1,2-DICHLOROETHANE (sur.)	%	67	68	68	68	N/A	1260005
D8-TOLUENE (sur.)	%	97	97	98	96	N/A	1260005

Site Reference: Sampler Initials:

### **CCMEHC MECHANCIAL EXTRACTION (SOIL)**

Maxxam ID		C63195		C63196		
Sampling Date		2006/08/25		2006/08/25		
COC Number		150912		150912		
	Units	ET306@0.2M	QC Batch	ET307@0.5M	RDL	QC Batch

						1
Physical Properties						
Moisture	%	12.2	1260012	13.8	0.3	1261614
Ext. Pet. Hydrocarbon						
F1 (C06-C10)	mg/kg	198	1260008	ND	10	1260008
F1 (C06-C10) - BTEX	mg/kg	198	1259389	ND	10	1259389
F2 (C10-C16 Hydrocarbons)	mg/kg	9370	1260074	462	10	1260074
F3 (C16-C34 Hydrocarbons)	mg/kg	1930	1260074	46	10	1260074
F4 (C34-C50 Hydrocarbons)	mg/kg	412	1260074	ND	10	1260074
Reached Baseline at C50	mg/kg	No	1260074	Yes	1	1260074
Volatiles						
Benzene	mg/kg	ND	1260005	ND	0.0050	1260005
Toluene	mg/kg	ND	1260005	ND	0.020	1260005
Ethylbenzene	mg/kg	ND	1260005	ND	0.010	1260005
Xylenes (Total)	mg/kg	0.20	1260005	ND	0.020	1260005
m & p-Xylene	mg/kg	ND	1260005	ND	0.020	1260005
o-Xylene	mg/kg	0.20	1260005	ND	0.020	1260005
Surrogate Recovery (%)						
4-BROMOFLUOROBENZENE (sur.)	%	90	1260008	102	N/A	1260008
O-TERPHENYL (sur.)	%	78	1260074	75	N/A	1260074
4-BROMOFLUOROBENZENE (sur.)	%	108	1260005	93	N/A	1260005
D10-ETHYLBENZENE (sur.)	%	119	1260005	108	N/A	1260005
D4-1,2-DICHLOROETHANE (sur.)	%	68	1260005	67	N/A	1260005
D8-TOLUENE (sur.)	%	95	1260005	99	N/A	1260005

ND = Not detected

Site Reference: Sampler Initials:

### **CCMEHC MECHANCIAL EXTRACTION (SOIL)**

Maxxam ID		C63197	C63198		
Sampling Date		2006/08/25	2006/08/25		
COC Number		150912	150912		
	Units	ET308@0.5M	ET309@1.0M	RDL	QC Batch

Physical Properties					
Moisture	%	18.8	12.2	0.3	1260012
Ext. Pet. Hydrocarbon					
F1 (C06-C10)	mg/kg	36	14	10	1260008
F1 (C06-C10) - BTEX	mg/kg	36	14	10	1259389
F2 (C10-C16 Hydrocarbons)	mg/kg	3330	1030	10	1260202
F3 (C16-C34 Hydrocarbons)	mg/kg	133	187	10	1260202
F4 (C34-C50 Hydrocarbons)	mg/kg	37	30	10	1260202
Reached Baseline at C50	mg/kg	Yes	Yes	1	1260202
Volatiles					
Benzene	mg/kg	ND	ND	0.0050	1260005
Toluene	mg/kg	ND	ND	0.020	1260005
Ethylbenzene	mg/kg	ND	ND	0.010	1260005
Xylenes (Total)	mg/kg	ND	ND	0.020	1260005
m & p-Xylene	mg/kg	ND	ND	0.020	1260005
o-Xylene	mg/kg	ND	ND	0.020	1260005
Surrogate Recovery (%)					
4-BROMOFLUOROBENZENE (sur.)	%	72	104	N/A	1260008
O-TERPHENYL (sur.)	%	78	79	N/A	1260202
4-BROMOFLUOROBENZENE (sur.)	%	108	101	N/A	1260005
D10-ETHYLBENZENE (sur.)	%	125	122	N/A	1260005
D4-1,2-DICHLOROETHANE (sur.)	%	68	67	N/A	1260005
D8-TOLUENE (sur.)	%	97	97	N/A	1260005

Site Reference: Sampler Initials:

### **CCMEHC MECHANCIAL EXTRACTION (SOIL)**

Maxxam ID		C63199		C63200		
Sampling Date		2006/08/25		2006/08/25		
COC Number		150912		150912		
	Units	ET310@0.8M	RDL	ET311@0.5M	RDL	QC Batch
Physical Properties						
Moisture	%	8.6	0.3	2.8	0.3	1260476

Physical Properties						
Moisture	%	8.6	0.3	2.8	0.3	1260476
Ext. Pet. Hydrocarbon						
F1 (C06-C10)	mg/kg	1050	10	ND	10	1260475
F1 (C06-C10) - BTEX	mg/kg	1020	10	ND	10	1259389
F2 (C10-C16 Hydrocarbons)	mg/kg	12100	10	13	10	1260202
F3 (C16-C34 Hydrocarbons)	mg/kg	211	10	53	10	1260202
F4 (C34-C50 Hydrocarbons)	mg/kg	23	10	22	10	1260202
Reached Baseline at C50	mg/kg	Yes	1	Yes	1	1260202
Volatiles						
Benzene	mg/kg	ND	0.050	ND	0.0050	1260473
Toluene	mg/kg	0.78	0.20	ND	0.020	1260473
Ethylbenzene	mg/kg	3.5	0.10	ND	0.010	1260473
Xylenes (Total)	mg/kg	29	0.20	ND	0.020	1260473
m & p-Xylene	mg/kg	19	0.20	ND	0.020	1260473
o-Xylene	mg/kg	10	0.20	ND	0.020	1260473
Surrogate Recovery (%)						
4-BROMOFLUOROBENZENE (sur.)	%	96	N/A	89	N/A	1260475
O-TERPHENYL (sur.)	%	81	N/A	83	N/A	1260202
4-BROMOFLUOROBENZENE (sur.)	%	109	N/A	92	N/A	1260473
D10-ETHYLBENZENE (sur.)	%	121	N/A	108	N/A	1260473
D4-1,2-DICHLOROETHANE (sur.)	%	69	N/A	69	N/A	1260473
D8-TOLUENE (sur.)	%	98	N/A	98	N/A	1260473

Site Reference: Sampler Initials:

### **CCMEHC MECHANCIAL EXTRACTION (SOIL)**

Maxxam ID		C63201		C63334	C63338		
Sampling Date		2006/08/25		2006/08/25	2006/08/25		
COC Number		150912		150911	150911		
	Units	ET312@0M	QC Batch	ET317@0.5M	ET318@0.3M	RDL	QC Batch

Physical Properties						1	
Moisture	%	18.5	1260016	8.0	12.1	0.3	1260016
Ext. Pet. Hydrocarbon							
F1 (C06-C10)	mg/kg	26	1260015	ND	247	10	1260015
F1 (C06-C10) - BTEX	mg/kg	25	1259389	ND	244	10	1259389
F2 (C10-C16 Hydrocarbons)	mg/kg	1590	1260202	ND	5290	10	1259610
F3 (C16-C34 Hydrocarbons)	mg/kg	542	1260202	166	589	10	1259610
F4 (C34-C50 Hydrocarbons)	mg/kg	46	1260202	33	40	10	1259610
Reached Baseline at C50	mg/kg	Yes	1260202	Yes	Yes	1	1259610
Volatiles							
Benzene	mg/kg	ND	1260006	ND	ND	0.0050	1260006
Toluene	mg/kg	0.032	1260006	ND	ND	0.020	1260006
Ethylbenzene	mg/kg	0.14	1260006	ND	ND	0.010	1260006
Xylenes (Total)	mg/kg	1.1	1260006	ND	2.5	0.020	1260006
m & p-Xylene	mg/kg	0.50	1260006	ND	ND	0.020	1260006
o-Xylene	mg/kg	0.57	1260006	ND	2.5	0.020	1260006
Surrogate Recovery (%)							
4-BROMOFLUOROBENZENE (sur.)	%	85	1260015	81	81	N/A	1260015
O-TERPHENYL (sur.)	%	82	1260202	84	82	N/A	1259610
4-BROMOFLUOROBENZENE (sur.)	%	102	1260006	102	127	N/A	1260006
D10-ETHYLBENZENE (sur.)	%	121	1260006	115	130	N/A	1260006
D4-1,2-DICHLOROETHANE (sur.)	%	99	1260006	96	97	N/A	1260006
D8-TOLUENE (sur.)	%	101	1260006	102	103	N/A	1260006

Site Reference: Sampler Initials:

### **CCMEHC MECHANCIAL EXTRACTION (SOIL)**

Maxxam ID		C63339	C63340		C63341		
Sampling Date		2006/08/25	2006/08/25		2006/08/25		
COC Number		150911	150911		150911		
	Units	ET319@0.4M	ET320@0M	RDL	ET320@0.8M	RDL	QC Batch
Physical Properties							
Moisture	%	15.7	2.6	0.3	5.0	0.3	1260016
Ext. Pet. Hydrocarbon							
F1 (C06-C10)	mg/kg	ND	ND	10	152	10	1260015
F1 (C06-C10) - BTEX	mg/kg	ND	ND	10	147	10	1259389
F2 (C10-C16 Hydrocarbons)	mg/kg	113	108	10	3830	10	1259610
F3 (C16-C34 Hydrocarbons)	mg/kg	296	23700	10	9510	10	1259610
F4 (C34-C50 Hydrocarbons)	mg/kg	131	22000	10	3220	10	1259610
Reached Baseline at C50	mg/kg	Yes	No	1	No	1	1259610
Volatiles							
Benzene	mg/kg	ND	ND	0.0050	ND	0.0050	1260006
Toluene	mg/kg	ND	ND	0.020	ND	0.020	1260006
Ethylbenzene	mg/kg	ND	ND	0.010	ND	0.010	1260006
Xylenes (Total)	mg/kg	ND	0.11	0.020	5.4	0.020	1260006
m & p-Xylene	mg/kg	ND	0.048	0.020	0.76	0.020	1260006
o-Xylene	mg/kg	ND	0.063	0.020	4.6	0.20	1260006
Surrogate Recovery (%)							
4-BROMOFLUOROBENZENE (sur.)	%	87	76	N/A	79	N/A	1260015
O-TERPHENYL (sur.)	%	86	97	N/A	77	N/A	1259610
4-BROMOFLUOROBENZENE (sur.)	%	100	101	N/A	108	N/A	1260006
D10-ETHYLBENZENE (sur.)	%	115	110	N/A	123	N/A	1260006
D4-1,2-DICHLOROETHANE (sur.)	%	95	97	N/A	96	N/A	1260006
		1			1	1	1

D8-TOLUENE (sur.)

ND = Not detected N/A = Not Applicable RDL = Reportable Detection Limit

%

104

102

N/A

104

N/A

1260006

Site Reference: Sampler Initials:

### **CCMEHC MECHANCIAL EXTRACTION (SOIL)**

Maxxam ID		C63342	C63345	C63352		
Sampling Date		2006/08/25	2006/08/25	2006/08/26		
COC Number		150911	150911	150915		
	Units	ET321@0.5M	ET322@SURFACE	ET337@0.5M	RDL	QC Batch

Physical Properties						
Moisture	%	4.0	27.0	14.4	0.3	1260016
Ext. Pet. Hydrocarbon						
F1 (C06-C10)	mg/kg	ND	ND	ND	10	1260015
F1 (C06-C10) - BTEX	mg/kg	ND	ND	ND	10	1259389
F2 (C10-C16 Hydrocarbons)	mg/kg	16	197	13	10	1259610
F3 (C16-C34 Hydrocarbons)	mg/kg	118	1600	24	10	1259610
F4 (C34-C50 Hydrocarbons)	mg/kg	41	474	18	10	1259610
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	1	1259610
Volatiles						
Benzene	mg/kg	ND	ND	0.011	0.0050	1260006
Toluene	mg/kg	ND	ND	0.022	0.020	1260006
Ethylbenzene	mg/kg	ND	ND	ND	0.010	1260006
Xylenes (Total)	mg/kg	ND	ND	ND	0.020	1260006
m & p-Xylene	mg/kg	ND	ND	ND	0.020	1260006
o-Xylene	mg/kg	ND	ND	ND	0.020	1260006
Surrogate Recovery (%)						
4-BROMOFLUOROBENZENE (sur.)	%	78	78	80	N/A	1260015
O-TERPHENYL (sur.)	%	68	72	75	N/A	1259610
4-BROMOFLUOROBENZENE (sur.)	%	96	100	99	N/A	1260006
D10-ETHYLBENZENE (sur.)	%	114	114	114	N/A	1260006
D4-1,2-DICHLOROETHANE (sur.)	%	96	95	96	N/A	1260006
D8-TOLUENE (sur.)	%	102	101	102	N/A	1260006

Site Reference: Sampler Initials:

### **CCMEHC MECHANCIAL EXTRACTION (SOIL)**

	Units	ET338@0.7M	ET339@0.3M	ET340@0M	RDL	QC Batch
COC Number		150915	150915	150915		
Sampling Date		2006/08/26	2006/08/26	2006/08/26		
Maxxam ID		C63353	C63354	C63359		

L			ī		T	1
Physical Properties					ļ	
Moisture	%	11.5	18.8	21.2	0.3	1260016
Ext. Pet. Hydrocarbon						
F1 (C06-C10)	mg/kg	ND	ND	ND	10	1260015
F1 (C06-C10) - BTEX	mg/kg	ND	ND	ND	10	1259389
F2 (C10-C16 Hydrocarbons)	mg/kg	18	ND	16	10	1259610
F3 (C16-C34 Hydrocarbons)	mg/kg	147	ND	74	10	1259610
F4 (C34-C50 Hydrocarbons)	mg/kg	109	14	105	10	1259610
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	1	1259610
Volatiles						
Benzene	mg/kg	ND	ND	ND	0.0050	1260006
Toluene	mg/kg	ND	ND	ND	0.020	1260006
Ethylbenzene	mg/kg	ND	ND	ND	0.010	1260006
Xylenes (Total)	mg/kg	ND	ND	ND	0.020	1260006
m & p-Xylene	mg/kg	ND	ND	ND	0.020	1260006
o-Xylene	mg/kg	ND	ND	ND	0.020	1260006
Surrogate Recovery (%)						
4-BROMOFLUOROBENZENE (sur.)	%	64	79	75	N/A	1260015
O-TERPHENYL (sur.)	%	75	72	81	N/A	1259610
4-BROMOFLUOROBENZENE (sur.)	%	100	98	98	N/A	1260006
D10-ETHYLBENZENE (sur.)	%	113	112	109	N/A	1260006
D4-1,2-DICHLOROETHANE (sur.)	%	96	96	95	N/A	1260006
D8-TOLUENE (sur.)	%	102	102	102	N/A	1260006

1260006

1260006

N/A

N/A

99

101

Site Reference: Sampler Initials:

### **CCMEHC MECHANCIAL EXTRACTION (SOIL)**

Maxxam ID		C63430	C63431	C63433	C63437		
Sampling Date		2006/08/26	2006/08/26	2006/08/26	2006/08/26		
COC Number		150915	150915	150916	150916		
	Units	ET341@0.7M	ET342@0.75M	ET329@0.75M	ET330@0.3M	RDL	QC Batch
	1	1	1	ı	ı	1	
Physical Properties							
Moisture	%	3.9	9.0	17.3	7.4	0.3	1260016
Ext. Pet. Hydrocarbon							
F1 (C06-C10)	mg/kg	ND	ND	ND	ND	10	1260015
F1 (C06-C10) - BTEX	mg/kg	ND	ND	ND	ND	10	1259390
F2 (C10-C16 Hydrocarbons)	mg/kg	10	ND	239	ND	10	1259610
F3 (C16-C34 Hydrocarbons)	mg/kg	14	ND	15	15	10	1259610
F4 (C34-C50 Hydrocarbons)	mg/kg	18	ND	ND	32	10	1259610
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	Yes	1	1259610
Volatiles							
Benzene	mg/kg	ND	ND	ND	ND	0.0050	1260006
Toluene	mg/kg	ND	ND	ND	ND	0.020	1260006
Ethylbenzene	mg/kg	ND	ND	ND	ND	0.010	1260006
Xylenes (Total)	mg/kg	ND	ND	ND	ND	0.020	1260006
m & p-Xylene	mg/kg	ND	ND	ND	ND	0.020	1260006
o-Xylene	mg/kg	ND	ND	ND	ND	0.020	1260006
Surrogate Recovery (%)							
4-BROMOFLUOROBENZENE (sur.)	%	74	81	67	79	N/A	1260015
O-TERPHENYL (sur.)	%	73	87	85	84	N/A	1259610
4-BROMOFLUOROBENZENE (sur.)	%	99	99	98	99	N/A	1260006
D10-ETHYLBENZENE (sur.)	%	110	107	109	111	N/A	1260006

98

102

101

101

ND = Not detected

D8-TOLUENE (sur.)

N/A = Not Applicable RDL = Reportable Detection Limit

D4-1,2-DICHLOROETHANE (sur.)

%

%

97

102

Site Reference: Sampler Initials:

### **CCMEHC MECHANCIAL EXTRACTION (SOIL)**

Maxxam ID		C63438	C63439	C63440	C63441		
Sampling Date		2006/08/26	2006/08/26	2006/08/26	2006/08/26		
COC Number		150916	150916	150916	150916		
	Units	ET331@0.5M	QAQC#1	QAQC#2	QAQC#3	RDL	QC Batch
Physical Properties							
Moisture	%	13.5	9.1	4.9	4.1	0.3	1260016
Ext. Pet. Hydrocarbon							
F1 (C06-C10)	mg/kg	ND	ND	ND	ND	10	1260015
F1 (C06-C10) - BTEX	mg/kg	ND	ND	ND	ND	10	1259390
F2 (C10-C16 Hydrocarbons)	mg/kg	101	60	1310	ND	10	1259610
F3 (C16-C34 Hydrocarbons)	mg/kg	36	41	1890	ND	10	1259610
F4 (C34-C50 Hydrocarbons)	mg/kg	ND	ND	417	ND	10	1259610
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	Yes	1	1259610
Volatiles							
Benzene	mg/kg	ND	ND	ND	ND	0.0050	1260006
Toluene	mg/kg	ND	ND	ND	ND	0.020	1260006
Ethylbenzene	mg/kg	ND	ND	ND	ND	0.010	1260006
Xylenes (Total)	mg/kg	ND	ND	ND	ND	0.020	1260006
m & p-Xylene	mg/kg	ND	ND	ND	ND	0.020	1260006
o-Xylene	mg/kg	ND	ND	ND	ND	0.020	1260006
Surrogate Recovery (%)							
4-BROMOFLUOROBENZENE (sur.)	%	72	70	76	77	N/A	1260015
O-TERPHENYL (sur.)	%	85	79	78	81	N/A	1259610
4-BROMOFLUOROBENZENE (sur.)	%	98	99	102	100	N/A	1260006
D10-ETHYLBENZENE (sur.)	%	110	112	111	105	N/A	1260006
D4-1,2-DICHLOROETHANE (sur.)	%	98	98	98	96	N/A	1260006
D8-TOLUENE (sur.)	%	102	101	101	93	N/A	1260006

Site Reference: Sampler Initials:

### **CCMEHC MECHANCIAL EXTRACTION (SOIL)**

Maxxam ID		C63447		C63448	C63449		
Sampling Date		2006/08/26		2006/08/26	2006/08/26		
COC Number		150916		150916	150916		
	Units	ET332@0.75M	QC Batch	ET333@1.0M	ET334@0.75M	RDL	QC Batch

					1		
Physical Properties							
Moisture	%	10.8	1260476	4.9	16.7	0.3	1260476
Ext. Pet. Hydrocarbon							
F1 (C06-C10)	mg/kg	140	1260475	215	65	10	1260475
F1 (C06-C10) - BTEX	mg/kg	140	1259390	213	65	10	1259390
F2 (C10-C16 Hydrocarbons)	mg/kg	2310	1259610	3480	4050	10	1260202
F3 (C16-C34 Hydrocarbons)	mg/kg	199	1259610	176	269	10	1260202
F4 (C34-C50 Hydrocarbons)	mg/kg	ND	1259610	23	19	10	1260202
Reached Baseline at C50	mg/kg	Yes	1259610	Yes	Yes	1	1260202
Volatiles							
Benzene	mg/kg	ND	1260473	ND	ND	0.0050	1260473
Toluene	mg/kg	ND	1260473	ND	ND	0.020	1260473
Ethylbenzene	mg/kg	ND	1260473	0.097	ND	0.010	1260473
Xylenes (Total)	mg/kg	ND	1260473	2.0	ND	0.020	1260473
m & p-Xylene	mg/kg	ND	1260473	1.1	ND	0.020	1260473
o-Xylene	mg/kg	ND	1260473	0.87	ND	0.020	1260473
Surrogate Recovery (%)							
4-BROMOFLUOROBENZENE (sur.)	%	98	1260475	80	91	N/A	1260475
O-TERPHENYL (sur.)	%	81	1259610	83	83	N/A	1260202
4-BROMOFLUOROBENZENE (sur.)	%	105	1260473	126	100	N/A	1260473
D10-ETHYLBENZENE (sur.)	%	112	1260473	113	126	N/A	1260473
D4-1,2-DICHLOROETHANE (sur.)	%	70	1260473	68	68	N/A	1260473
D8-TOLUENE (sur.)	%	97	1260473	97	98	N/A	1260473

Site Reference: Sampler Initials:

### **CCMEHC MECHANCIAL EXTRACTION (SOIL)**

Maxxam ID		C63450	C63451	C63457	C63507		
Sampling Date		2006/08/26	2006/08/26	2006/08/26	2006/08/26		
COC Number		150916	150916	150914	150914		
	Linita	ET335@0.75M	ET336@0.5M	ET222@0.5M	ET222@4 0M	DDI	QC Batch
	Ullits	E1333@0.73W	E1330@0.3W	E 1323 @ 0.3W	E1323@1.0W	NDL	QC Balcii
	Units	E1333@0.75W	E1330@0.3W	E1323@0.3W	E 1323 @ 1.UWI	NDL	QC Batch
Physical Properties	Units	E1333@0.73M	E1330@0.5M	E1323@0.3M	E1323@1.0W	KDL	QC Batch

Physical Properties							
Moisture	%	8.4	4.9	9.9	12.1	0.3	1260476
Ext. Pet. Hydrocarbon							
F1 (C06-C10)	mg/kg	ND	ND	ND	21	10	1260475
F1 (C06-C10) - BTEX	mg/kg	ND	ND	ND	21	10	1259390
F2 (C10-C16 Hydrocarbons)	mg/kg	72	103	4230	8450	10	1260202
F3 (C16-C34 Hydrocarbons)	mg/kg	58	493	4350	5090	10	1260202
F4 (C34-C50 Hydrocarbons)	mg/kg	13	138	314	231	10	1260202
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	Yes	1	1260202
Volatiles							
Benzene	mg/kg	ND	ND	ND	ND	0.0050	1260473
Toluene	mg/kg	ND	ND	ND	ND	0.020	1260473
Ethylbenzene	mg/kg	ND	ND	ND	ND	0.010	1260473
Xylenes (Total)	mg/kg	ND	ND	ND	ND	0.020	1260473
m & p-Xylene	mg/kg	ND	ND	ND	ND	0.020	1260473
o-Xylene	mg/kg	ND	ND	ND	ND	0.020	1260473
Surrogate Recovery (%)							
4-BROMOFLUOROBENZENE (sur.)	%	67	89	72	80	N/A	1260475
O-TERPHENYL (sur.)	%	80	77	95	113	N/A	1260202
4-BROMOFLUOROBENZENE (sur.)	%	92	96	95	100	N/A	1260473
D10-ETHYLBENZENE (sur.)	%	107	108	108	103	N/A	1260473
D4-1,2-DICHLOROETHANE (sur.)	%	68	69	68	70	N/A	1260473
D8-TOLUENE (sur.)	%	99	97	97	97	N/A	1260473

Site Reference: Sampler Initials:

### **CCMEHC MECHANCIAL EXTRACTION (SOIL)**

Maxxam ID		C63508	C63509	C63510	C63511		
Sampling Date		2006/08/26	2006/08/26	2006/08/26	2006/08/26		
COC Number		150914	150914	150914	150914		
	Units	ET324@0.5M	ET324@1.0M	ET325@0.5M	ET326@0.3M	RDL	QC Batch

		T	T	1		1	1
Physical Properties							
Moisture	%	10.2	18.8	1.9	17.3	0.3	1260476
Ext. Pet. Hydrocarbon							
F1 (C06-C10)	mg/kg	ND	ND	ND	ND	10	1260475
F1 (C06-C10) - BTEX	mg/kg	ND	ND	ND	ND	10	1259390
F2 (C10-C16 Hydrocarbons)	mg/kg	3200	334	1510	28	10	1260202
F3 (C16-C34 Hydrocarbons)	mg/kg	1910	211	131	64	10	1260202
F4 (C34-C50 Hydrocarbons)	mg/kg	33	17	16	26	10	1260202
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	Yes	1	1260202
Volatiles							
Benzene	mg/kg	ND	ND	ND	ND	0.0050	1260473
Toluene	mg/kg	ND	ND	ND	ND	0.020	1260473
Ethylbenzene	mg/kg	ND	ND	ND	ND	0.010	1260473
Xylenes (Total)	mg/kg	ND	ND	ND	ND	0.020	1260473
m & p-Xylene	mg/kg	ND	ND	ND	ND	0.020	1260473
o-Xylene	mg/kg	ND	ND	ND	ND	0.020	1260473
Surrogate Recovery (%)							
4-BROMOFLUOROBENZENE (sur.)	%	90	78	87	77	N/A	1260475
O-TERPHENYL (sur.)	%	117	80	85	75	N/A	1260202
4-BROMOFLUOROBENZENE (sur.)	%	90	90	101	96	N/A	1260473
D10-ETHYLBENZENE (sur.)	%	107	108	106	110	N/A	1260473
D4-1,2-DICHLOROETHANE (sur.)	%	69	69	70	68	N/A	1260473
D8-TOLUENE (sur.)	%	98	98	97	99	N/A	1260473

Site Reference: Sampler Initials:

### **CCMEHC MECHANCIAL EXTRACTION (SOIL)**

	Units	ET327@0.5M	ET327@1.0M	ET328@0.3M	ET329@0.3M	RDL	QC Batch
COC Number		150914	150914	150914	150914		
Sampling Date		2006/08/26	2006/08/26	2006/08/26	2006/08/26		
Maxxam ID		C63512	C63773	C63774	C63775		

Physical Properties							
Moisture	%	14.4	15.2	16.5	17.9	0.3	1260476
Ext. Pet. Hydrocarbon							
F1 (C06-C10)	mg/kg	ND	ND	ND	11	10	1260475
F1 (C06-C10) - BTEX	mg/kg	ND	ND	ND	11	10	1259390
F2 (C10-C16 Hydrocarbons)	mg/kg	44	63	24	1160	10	1260202
F3 (C16-C34 Hydrocarbons)	mg/kg	130	170	143	94	10	1260202
F4 (C34-C50 Hydrocarbons)	mg/kg	39	56	56	40	10	1260202
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	Yes	1	1260202
Volatiles							
Benzene	mg/kg	ND	ND	ND	ND	0.0050	1260473
Toluene	mg/kg	ND	ND	ND	ND	0.020	1260473
Ethylbenzene	mg/kg	ND	ND	ND	ND	0.010	1260473
Xylenes (Total)	mg/kg	ND	ND	ND	ND	0.020	1260473
m & p-Xylene	mg/kg	ND	ND	ND	ND	0.020	1260473
o-Xylene	mg/kg	ND	ND	ND	ND	0.020	1260473
Surrogate Recovery (%)							
4-BROMOFLUOROBENZENE (sur.)	%	90	83	94	82	N/A	1260475
O-TERPHENYL (sur.)	%	80	77	81	84	N/A	1260202
4-BROMOFLUOROBENZENE (sur.)	%	99	97	95	91	N/A	1260473
D10-ETHYLBENZENE (sur.)	%	108	108	106	115	N/A	1260473
D4-1,2-DICHLOROETHANE (sur.)	%	68	69	73	69	N/A	1260473
D8-TOLUENE (sur.)	%	98	97	98	97	N/A	1260473

Site Reference: Sampler Initials:

### **CCMEHC MECHANCIAL EXTRACTION (SOIL)**

Maxxam ID		C63778		C63779	C63780		
Sampling Date		2006/08/27		2006/08/27	2006/08/27		
COC Number		150917		150917	150917		
	Units	ET343@0M	QC Batch	ET344@0.3M	ET345@0M	RDL	QC Batch
Physical Properties							
Moisture	%	16.2	1260476	4.7	2.6	0.3	1260476
Ext. Pet. Hydrocarbon							

Moisture	%	16.2	1260476	4.7	2.6	0.3	1260476
Ext. Pet. Hydrocarbon							
F1 (C06-C10)	mg/kg	ND	1260475	ND	ND	10	1260475
F1 (C06-C10) - BTEX	mg/kg	ND	1259390	ND	ND	10	1259390
F2 (C10-C16 Hydrocarbons)	mg/kg	18	1260202	1270	42	10	1260667
F3 (C16-C34 Hydrocarbons)	mg/kg	61	1260202	239	10200	10	1260667
F4 (C34-C50 Hydrocarbons)	mg/kg	40	1260202	16	1240	10	1260667
Reached Baseline at C50	mg/kg	Yes	1260202	Yes	No	1	1260667
Volatiles							
Benzene	mg/kg	ND	1260473	ND	ND	0.0050	1260473
Toluene	mg/kg	ND	1260473	ND	ND	0.020	1260473
Ethylbenzene	mg/kg	ND	1260473	ND	ND	0.010	1260473
Xylenes (Total)	mg/kg	ND	1260473	ND	ND	0.020	1260473
m & p-Xylene	mg/kg	ND	1260473	ND	ND	0.020	1260473
o-Xylene	mg/kg	ND	1260473	ND	ND	0.020	1260473
Surrogate Recovery (%)							
4-BROMOFLUOROBENZENE (sur.)	%	104	1260475	80	74	N/A	1260475
O-TERPHENYL (sur.)	%	81	1260202	79	76	N/A	1260667
4-BROMOFLUOROBENZENE (sur.)	%	122	1260473	92	92	N/A	1260473
D10-ETHYLBENZENE (sur.)	%	108	1260473	108	104	N/A	1260473
D4-1,2-DICHLOROETHANE (sur.)	%	67	1260473	69	69	N/A	1260473
D8-TOLUENE (sur.)	%	99	1260473	97	97	N/A	1260473

1260477

1260477

1260477

1260477

N/A

N/A

N/A

N/A

99

108

99

102

99

106

111

98

Site Reference: Sampler Initials:

### **CCMEHC MECHANCIAL EXTRACTION (SOIL)**

Maxxam ID		C63781	C63782	C63783	C63784		
Sampling Date		2006/08/27	2006/08/27	2006/08/27	2006/08/27		
COC Number		150917	150917	150917	150917		
	Units	ET345@0.7M	ET346@0.2M	ET347@0.2M	ET348@0.2M	RDL	QC Batch
	1	1	ı	I	ı		
Physical Properties							
Moisture	%	13.0	3.8	7.0	4.1	0.3	1260481
Ext. Pet. Hydrocarbon							
F1 (C06-C10)	mg/kg	ND	ND	ND	ND	10	1260478
F1 (C06-C10) - BTEX	mg/kg	ND	ND	ND	ND	10	1259390
F2 (C10-C16 Hydrocarbons)	mg/kg	13	12	11	11	10	1260667
F3 (C16-C34 Hydrocarbons)	mg/kg	56	88	42	45	10	1260667
F4 (C34-C50 Hydrocarbons)	mg/kg	58	37	35	24	10	1260667
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	Yes	1	1260667
Volatiles							
Benzene	mg/kg	ND	ND	ND	ND	0.0050	1260477
Toluene	mg/kg	ND	ND	ND	ND	0.020	1260477
Ethylbenzene	mg/kg	ND	ND	ND	ND	0.010	1260477
Xylenes (Total)	mg/kg	ND	ND	ND	ND	0.020	1260477
m & p-Xylene	mg/kg	ND	ND	ND	ND	0.020	1260477
o-Xylene	mg/kg	ND	ND	ND	ND	0.020	1260477
Surrogate Recovery (%)							
4-BROMOFLUOROBENZENE (sur.)	%	83	78	84	85	N/A	1260478
O-TERPHENYL (sur.)	%	81	82	83	79	N/A	1260667

98

110

102

101

ND = Not detected

D8-TOLUENE (sur.)

N/A = Not Applicable RDL = Reportable Detection Limit

4-BROMOFLUOROBENZENE (sur.)

D4-1,2-DICHLOROETHANE (sur.)

D10-ETHYLBENZENE (sur.)

%

%

%

98

111

100

102

Site Reference: Sampler Initials:

### **CCMEHC MECHANCIAL EXTRACTION (SOIL)**

Maxxam ID		C63785	C63786	C63787	C63788		
Sampling Date		2006/08/27	2006/08/27	2006/08/27	2006/08/27		
COC Number		150917	150917	150917	150917		
	Units	ET349@0.2M	ET350@0M	ET351@0.7M	ET352@0.3M	RDL	QC Batch
Physical Properties							
Moisture	%	11.8	7.3	9.4	14.2	0.3	1260481
Ext. Pet. Hydrocarbon							
F1 (C06-C10)	mg/kg	ND	ND	78	ND	10	1260478
F1 (C06-C10) - BTEX	mg/kg	ND	ND	78	ND	10	1259391
F2 (C10-C16 Hydrocarbons)	mg/kg	2510	253	8570	48	10	1260667
F3 (C16-C34 Hydrocarbons)	mg/kg	7010	41100	10100	194	10	1260667
F4 (C34-C50 Hydrocarbons)	mg/kg	1410	22600	3190	95	10	1260667
Reached Baseline at C50	mg/kg	No	No	No	Yes	1	1260667
Volatiles							
Benzene	mg/kg	ND	ND	ND	ND	0.0050	1260477
Toluene	mg/kg	ND	3.1	0.035	ND	0.020	1260477
Ethylbenzene	mg/kg	ND	0.043	0.031	ND	0.010	1260477
Xylenes (Total)	mg/kg	ND	0.24	0.21	ND	0.020	1260477
m & p-Xylene	mg/kg	ND	0.17	0.15	ND	0.020	1260477
o-Xylene	mg/kg	ND	0.075	0.062	ND	0.020	1260477
Surrogate Recovery (%)							
4-BROMOFLUOROBENZENE (sur.)	%	84	82	85	90	N/A	1260478
O-TERPHENYL (sur.)	%	88	79	83	82	N/A	1260667
4-BROMOFLUOROBENZENE (sur.)	%	101	101	117	99	N/A	1260477
D10-ETHYLBENZENE (sur.)	%	108	107	120	114	N/A	1260477
D4-1,2-DICHLOROETHANE (sur.)	%	103	98	100	97	N/A	1260477
D8-TOLUENE (sur.)	%	101	101	101	98	N/A	1260477

82

101

116

95

103

84

97

120

97

102

N/A

N/A

N/A

N/A

N/A

1260667

1260477

1260477

1260477

1260477

Site Reference: Sampler Initials:

### **CCMEHC MECHANCIAL EXTRACTION (SOIL)**

	C63789	C63791	C63793	C63794		
					<u> </u>	
Units	ET353@0.5M	ET354@0.3M	ET355@0.2M	ET356@0M	RDL	QC Batch
%	13.5	13.6	13.2	16.4	0.3	1260481
mg/kg	11	70	42	ND	10	1260478
mg/kg	11	70	42	ND	10	1259391
mg/kg	1260	513	91	493	10	1260667
mg/kg	576	672	237	817	10	1260667
mg/kg	115	157	92	241	10	1260667
mg/kg	Yes	Yes	Yes	Yes	1	1260667
mg/kg	ND	ND	ND	ND	0.0050	1260477
mg/kg	ND	ND	ND	ND	0.020	1260477
mg/kg	ND	ND	ND	ND	0.010	1260477
mg/kg	ND	ND	ND	ND	0.020	1260477
mg/kg	ND	ND	ND	ND	0.020	1260477
mg/kg	ND	ND	ND	ND	0.020	1260477
%	94	78	75	88	N/A	1260478
	mg/kg	2006/08/27 150917 Units ET353@0.5M  % 13.5  mg/kg 11 mg/kg 1260 mg/kg 576 mg/kg 115 mg/kg ND	2006/08/27         2006/08/25           150917         150918           ET353@0.5M         ET354@0.3M           %         13.5         13.6           mg/kg         11         70           mg/kg         1260         513           mg/kg         115         157           mg/kg         Yes         Yes           mg/kg         ND         ND           mg/kg         ND         ND	2006/08/27         2006/08/25         2006/08/25         2006/08/25           150917         150918         150918           Units         ET353@0.5M         ET354@0.3M         ET355@0.2M           %         13.5         13.6         13.2           mg/kg         11         70         42           mg/kg         1260         513         91           mg/kg         576         672         237           mg/kg         115         157         92           mg/kg         Yes         Yes         Yes           mg/kg         ND         ND         ND           mg/kg         ND	2006/08/27         2006/08/25         2006/08	2006/08/27   2006/08/25   2006/08/25   150917   150918

80

120

126

96

101

ND = Not detected N/A = Not Applicable

D8-TOLUENE (sur.)

O-TERPHENYL (sur.)

RDL = Reportable Detection Limit

4-BROMOFLUOROBENZENE (sur.)

D4-1,2-DICHLOROETHANE (sur.)

D10-ETHYLBENZENE (sur.)

%

%

%

%

84

101

115

98

101

Site Reference: Sampler Initials:

### **CCMEHC MECHANCIAL EXTRACTION (SOIL)**

	C63795	C63814	C63815		
	2006/08/25	2006/08/25	2006/08/25		
	150918	150918	150918		
Units	ET357@0.4M	SOUTH	SOUTH	RDL	QC Batch
İ		BEACH	BEACH		
ĺ		AREA 1	AREA 2		
	Units	2006/08/25 150918	2006/08/25 2006/08/25 150918 150918 Units ET357@0.4M SOUTH BEACH	2006/08/25         2006/08/25         2006/08/25           150918         150918         150918           Units         ET357@0.4M         SOUTH BEACH         SOUTH BEACH	2006/08/25         2006/08/25         2006/08/25           150918         150918         150918           Units         ET357@0.4M         SOUTH BEACH         RDL BEACH

Physical Properties						
Moisture	%	8.1	5.4	15.9	0.3	1260481
Ext. Pet. Hydrocarbon						
F1 (C06-C10)	mg/kg	ND	ND	ND	10	1260478
F1 (C06-C10) - BTEX	mg/kg	ND	ND	ND	10	1259391
F2 (C10-C16 Hydrocarbons)	mg/kg	12	ND	19	10	1260667
F3 (C16-C34 Hydrocarbons)	mg/kg	41	12	16	10	1260667
F4 (C34-C50 Hydrocarbons)	mg/kg	40	13	ND	10	1260667
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	1	1260667
Volatiles						
Benzene	mg/kg	ND	ND	ND	0.0050	1260477
Toluene	mg/kg	ND	ND	ND	0.020	1260477
Ethylbenzene	mg/kg	ND	ND	ND	0.010	1260477
Xylenes (Total)	mg/kg	ND	ND	ND	0.020	1260477
m & p-Xylene	mg/kg	ND	ND	ND	0.020	1260477
o-Xylene	mg/kg	ND	ND	ND	0.020	1260477
Surrogate Recovery (%)						
4-BROMOFLUOROBENZENE (sur.)	%	95	85	80	N/A	1260478
O-TERPHENYL (sur.)	%	80	82	82	N/A	1260667
4-BROMOFLUOROBENZENE (sur.)	%	98	99	100	N/A	1260477
D10-ETHYLBENZENE (sur.)	%	114	112	112	N/A	1260477
D4-1,2-DICHLOROETHANE (sur.)	%	97	97	97	N/A	1260477
D8-TOLUENE (sur.)	%	102	102	102	N/A	1260477

Site Reference: Sampler Initials:

### **CCMEHC MECHANCIAL EXTRACTION (SOIL)**

	Units	ET331@0.75M	RDL	QC Batch
COC Number		150913		
Sampling Date				
Maxxam ID		C64637		

			1	
Physical Properties				
Moisture	%	14.2	0.3	1260481
Ext. Pet. Hydrocarbon				
F1 (C06-C10)	mg/kg	ND	10	1260478
F1 (C06-C10) - BTEX	mg/kg	ND	10	1260269
F2 (C10-C16 Hydrocarbons)	mg/kg	61	10	1260667
F3 (C16-C34 Hydrocarbons)	mg/kg	81	10	1260667
F4 (C34-C50 Hydrocarbons)	mg/kg	ND	10	1260667
Reached Baseline at C50	mg/kg	Yes	1	1260667
Volatiles				
Benzene	mg/kg	ND	0.0050	1260477
Toluene	mg/kg	ND	0.020	1260477
Ethylbenzene	mg/kg	ND	0.010	1260477
Xylenes (Total)	mg/kg	ND	0.020	1260477
m & p-Xylene	mg/kg	ND	0.020	1260477
o-Xylene	mg/kg	ND	0.020	1260477
Surrogate Recovery (%)				
4-BROMOFLUOROBENZENE (sur.)	%	77	N/A	1260478
O-TERPHENYL (sur.)	%	80	N/A	1260667
4-BROMOFLUOROBENZENE (sur.)	%	101	N/A	1260477
D10-ETHYLBENZENE (sur.)	%	119	N/A	1260477
D4-1,2-DICHLOROETHANE (sur.)	%	97	N/A	1260477
D8-TOLUENE (sur.)	%	102	N/A	1260477

N/A

N/A

N/A

102

103

100

1260747

1260747

1260747

Site Reference: Sampler Initials:

### **CCME PHC WATER PACKAGE (WATER)**

Maxxam ID		C63308	C63345	C63373		
Sampling Date		2006/08/25	2006/08/25	2006/08/26		
COC Number		150912	150911	150915		
	Units	ET313 SURFACE	ET322@SURFACE	ET340@0M	RDL	QC Batch
		WATER				
Hydrocarbons						
F1 (C06-C10) - BTEX	ug/L	ND	ND	ND	100	1259392
F1 (C06-C10)	ug/L	ND	ND	ND	100	1260158
F2 (C10-C16 Hydrocarbons)	mg/L	0.9	0.3	0.4	0.1	1260465
Volatiles						
Benzene	ug/L	ND	ND	ND	0.5	1260747
Toluene	ug/L	0.8	1.1	0.7	0.5	1260747
Ethylbenzene	ug/L	ND	ND	ND	0.5	1260747
o-Xylene	ug/L	ND	4.1	ND	0.5	1260747
m & p-Xylene	ug/L	ND	1	ND	1	1260747
Xylenes (Total)	ug/L	ND	6	ND	1	1260747
Surrogate Recovery (%)						
4-BROMOFLUOROBENZENE (sur.)	%	115	72	103	N/A	1260158
O-TERPHENYL (sur.)	%	115	99	95	N/A	1260465

ND = Not detected N/A = Not Applicable

D8-TOLUENE (sur.)

RDL = Reportable Detection Limit

4-BROMOFLUOROBENZENE (sur.)

D4-1,2-DICHLOROETHANE (sur.)

%

%

%

100

98

103

98

105

103

Site Reference: Sampler Initials:

### **CCME PHC WATER PACKAGE (WATER)**

Maxxam ID		C63493		C63804		
Sampling Date		2006/08/26		2006/08/25		
COC Number		150914		150918		
	Units	ET323	QC Batch	WRES-01	RDL	QC Batch
	jo i i i c	2.020	QO Buton	***************************************		AC Date

Hydrocarbons						
F1 (C06-C10) - BTEX	ug/L	671	1259392	ND	100	1259392
F1 (C06-C10)	ug/L	1050	1260158	ND	100	1260158
F2 (C10-C16 Hydrocarbons)	mg/L	28.4	1260465	ND	0.1	1260465
Volatiles						
Benzene	ug/L	ND	1260747	ND	0.5	1260749
Toluene	ug/L	15.1	1260747	ND	0.5	1260749
Ethylbenzene	ug/L	18.7	1260747	ND	0.5	1260749
o-Xylene	ug/L	102	1260747	ND	0.5	1260749
m & p-Xylene	ug/L	248	1260747	ND	1	1260749
Xylenes (Total)	ug/L	349	1260747	ND	1	1260749
Surrogate Recovery (%)						
4-BROMOFLUOROBENZENE (sur.)	%	116	1260158	107	N/A	1260158
O-TERPHENYL (sur.)	%	101	1260465	96	N/A	1260465
4-BROMOFLUOROBENZENE (sur.)	%	100	1260747	103	N/A	1260749
D4-1,2-DICHLOROETHANE (sur.)	%	102	1260747	106	N/A	1260749
D8-TOLUENE (sur.)	%	103	1260747	102	N/A	1260749

Site Reference: Sampler Initials:

# **CCME PHC WATER PACKAGE (WATER)**

COC Number	Units	150918 QAQC-#5	 QC Batch
Sampling Date		2006/08/25	
Maxxam ID		C63806	

Hydrocarbons				
F1 (C06-C10) - BTEX	ug/L	ND	100	1260271
F1 (C06-C10)	ug/L	ND	100	1260158
F2 (C10-C16 Hydrocarbons)	mg/L	ND	0.1	1260465
Volatiles				
Benzene	ug/L	ND	0.5	1260749
Toluene	ug/L	ND	0.5	1260749
Ethylbenzene	ug/L	ND	0.5	1260749
o-Xylene	ug/L	ND	0.5	1260749
m & p-Xylene	ug/L	ND	1	1260749
Xylenes (Total)	ug/L	ND	1	1260749
Surrogate Recovery (%)				
4-BROMOFLUOROBENZENE (sur.)	%	126	N/A	1260158
O-TERPHENYL (sur.)	%	98	N/A	1260465
4-BROMOFLUOROBENZENE (sur.)	%	101	N/A	1260749
D4-1,2-DICHLOROETHANE (sur.)	%	110	N/A	1260749
D8-TOLUENE (sur.)	%	99	N/A	1260749

ND = Not detected



Site Reference: Sampler Initials:

# **PAHS SOIL CCME (SOIL)**

Maxxam ID		C63340	C63341	C63457		
Sampling Date		2006/08/25	2006/08/25	2006/08/26		
COC Number		150911	150911	150914		
	Units	ET320@0M	ET320@0.8M	ET323@0.5M	RDL	QC Batch

Polycyclic Aromatics						
Naphthalene	mg/kg	ND	0.44	0.31	0.05	1258469
2-Methylnaphthalene	mg/kg	0.37	2.7	0.47	0.05	1258469
Acenaphthylene	mg/kg	ND	ND	ND	0.05	1258469
Acenaphthene	mg/kg	ND	0.25	ND	0.05	1258469
Fluorene	mg/kg	0.28	0.21	1.0	0.05	1258469
Phenanthrene	mg/kg	0.62	ND	ND	0.05	1258469
Anthracene	mg/kg	0.12	ND	ND	0.05	1258469
Fluoranthene	mg/kg	ND	0.08	0.05	0.05	1258469
Pyrene	mg/kg	0.20	0.12	0.19	0.05	1258469
Benzo(a)anthracene	mg/kg	ND	ND	ND	0.05	1258469
Chrysene	mg/kg	ND	ND	ND	0.05	1258469
Benzo(b&j)fluoranthene	mg/kg	ND	ND	ND	0.05	1258469
Benzo(k)fluoranthene	mg/kg	ND	ND	ND	0.05	1258469
Benzo(a)pyrene	mg/kg	ND	ND	ND	0.05	1258469
Indeno(1,2,3-cd)pyrene	mg/kg	ND	ND	ND	0.05	1258469
Dibenz(a,h)anthracene	mg/kg	ND	ND	ND	0.05	1258469
Benzo(g,h,i)perylene	mg/kg	ND	ND	ND	0.05	1258469
Surrogate Recovery (%)						
D10-ANTHRACENE (sur.)	%	102	123	87	N/A	1258469
D12-BENZO(A)PYRENE (sur.)	%	76	101	87	N/A	1258469
D8-ACENAPHTHYLENE (sur.)	%	184 (1)	103	83	N/A	1258469
TERPHENYL-D14 (sur.)	%	101	115	94	N/A	1258469

ND = Not detected

N/A = Not Applicable
RDL = Reportable Detection Limit

(1) Please note that the recovery of some compounds are outside control limits however the overall quality control for this analysis meets our acceptability criteria.

Site Reference: Sampler Initials:

### POLYCHLORINATED BIPHENYLS BY GC-ECD (PAINT)

Maxxam ID		C63825		C63829		
Sampling Date		2006/08/24		2006/08/24		
COC Number		150920		150920		
	Units	ETPC-04	RDL	ETPC-08	RDL	QC Batch

Polychlorinated Biphenyls						
Aroclor 1016	mg/kg	ND	0.04	ND	0.08	1264851
Aroclor 1221	mg/kg	ND	0.04	ND	0.08	1264851
Aroclor 1232	mg/kg	ND	0.04	ND	0.08	1264851
Aroclor 1242	mg/kg	0.40	0.04	ND	0.08	1264851
Aroclor 1248	mg/kg	ND	0.04	1.88	0.08	1264851
Aroclor 1254	mg/kg	ND	0.04	ND	0.08	1264851
Aroclor 1260	mg/kg	3.32	0.04	0.38	0.08	1264851
Aroclor 1262	mg/kg	ND	0.04	ND	0.08	1264851
Aroclor 1268	mg/kg	ND	0.04	ND	0.08	1264851
Total Aroclors	mg/kg	3.72	0.04	2.26	0.08	1264851
Surrogate Recovery (%)						
NONACHLOROBIPHENYL (sur.)	%	97	N/A	104	N/A	1264851

ND = Not detected

Site Reference: Sampler Initials:

### POLYCHLORINATED BIPHENYLS BY GC-ECD (PAINT)

Maxxam ID		C63831		C63843		
Sampling Date		2006/08/24		2006/08/24		
COC Number		150920		150921		
	Units	ETPC-11	RDL	ETPC-14	RDL	QC Batch

Polychlorinated Biphenyls						
Aroclor 1016	mg/kg	ND	0.6	ND	0.09	1264851
Aroclor 1221	mg/kg	ND	0.6	ND	0.09	1264851
Aroclor 1232	mg/kg	ND	0.6	ND	0.09	1264851
Aroclor 1242	mg/kg	ND	0.6	0.50	0.09	1264851
Aroclor 1248	mg/kg	4.3	0.6	ND	0.09	1264851
Aroclor 1254	mg/kg	ND	0.6	8.65	0.09	1264851
Aroclor 1260	mg/kg	2.7	0.6	4.97	0.09	1264851
Aroclor 1262	mg/kg	ND	0.6	ND	0.09	1264851
Aroclor 1268	mg/kg	ND	0.6	ND	0.09	1264851
Total Aroclors	mg/kg	7.0	0.6	14.1	0.09	1264851
Surrogate Recovery (%)						
NONACHLOROBIPHENYL (sur.)	%	97	N/A	104	N/A	1264851

ND = Not detected

Site Reference: Sampler Initials:

### POLYCHLORINATED BIPHENYLS BY GC-ECD (PAINT)

COC Number	Units	150921 ETPC-15	RDL	150921 ETPC-16	RDL	QC Batch
Sampling Date		2006/08/24		2006/08/24		
Maxxam ID		C63849		C63850		

Polychlorinated Biphenyls						
Aroclor 1016	mg/kg	ND	0.05	ND	0.04	1264851
Aroclor 1221	mg/kg	ND	0.05	ND	0.04	1264851
Aroclor 1232	mg/kg	ND	0.05	ND	0.04	1264851
Aroclor 1242	mg/kg	0.66	0.05	ND	0.04	1264851
Aroclor 1248	mg/kg	ND	0.05	9.21	0.04	1264851
Aroclor 1254	mg/kg	0.47	0.05	34.7	0.04	1264851
Aroclor 1260	mg/kg	0.06	0.05	1.76	0.04	1264851
Aroclor 1262	mg/kg	ND	0.05	ND	0.04	1264851
Aroclor 1268	mg/kg	ND	0.05	ND	0.04	1264851
Total Aroclors	mg/kg	1.19	0.05	45.7	0.04	1264851
Surrogate Recovery (%)						
NONACHLOROBIPHENYL (sur.)	%	104	N/A	104	N/A	1264851

ND = Not detected

Site Reference: Sampler Initials:

### POLYCHLORINATED BIPHENYLS BY GC-ECD (PAINT)

Maxxam ID Sampling Date		C63851 2006/08/24		C63852 2006/08/24		
COC Number		150921		150921		
	Units	ETPC-17	RDL	ETPC-18	RDL	QC Batch

mg/kg	ND	0.05	ND	0.06	1264851
mg/kg	ND	0.05	ND	0.06	1264851
mg/kg	ND	0.05	ND	0.06	1264851
mg/kg	ND	0.05	ND	0.06	1264851
mg/kg	3.94	0.05	10.7	0.06	1264851
mg/kg	27.5	0.05	54.3	0.06	1264851
mg/kg	2.36	0.05	2.61	0.06	1264851
mg/kg	ND	0.05	ND	0.06	1264851
mg/kg	ND	0.05	ND	0.06	1264851
mg/kg	33.8	0.05	67.6	0.06	1264851
%	86	N/A	102	N/A	1264851
	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	mg/kg ND mg/kg ND mg/kg ND mg/kg 3.94 mg/kg 27.5 mg/kg 2.36 mg/kg ND mg/kg ND mg/kg ND mg/kg ND mg/kg ND	mg/kg ND 0.05 mg/kg ND 0.05 mg/kg ND 0.05 mg/kg ND 0.05 mg/kg 3.94 0.05 mg/kg 27.5 0.05 mg/kg 2.36 0.05 mg/kg ND 0.05 mg/kg ND 0.05 mg/kg ND 0.05 mg/kg ND 0.05	mg/kg         ND         0.05         ND           mg/kg         ND         0.05         ND           mg/kg         ND         0.05         ND           mg/kg         3.94         0.05         10.7           mg/kg         27.5         0.05         54.3           mg/kg         2.36         0.05         2.61           mg/kg         ND         0.05         ND           mg/kg         ND         0.05         ND           mg/kg         33.8         0.05         67.6	mg/kg         ND         0.05         ND         0.06           mg/kg         ND         0.05         ND         0.06           mg/kg         ND         0.05         ND         0.06           mg/kg         3.94         0.05         10.7         0.06           mg/kg         27.5         0.05         54.3         0.06           mg/kg         2.36         0.05         2.61         0.06           mg/kg         ND         0.05         ND         0.06           mg/kg         ND         0.05         ND         0.06           mg/kg         33.8         0.05         67.6         0.06

ND = Not detected

Site Reference: Sampler Initials:

### POLYCHLORINATED BIPHENYLS BY GC-ECD (PAINT)

COC Number	150921	ļ	
Sampling Date	2006/08/24		

mg/kg	ND	0.02	1264851
mg/kg	ND	0.02	1264851
mg/kg	ND	0.02	1264851
mg/kg	ND	0.02	1264851
mg/kg	8.52	0.02	1264851
mg/kg	34.6	0.02	1264851
mg/kg	1.90	0.02	1264851
mg/kg	ND	0.02	1264851
mg/kg	ND	0.02	1264851
mg/kg	45.0	0.02	1264851
%	83	N/A	1264851
	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	mg/kg ND mg/kg ND mg/kg ND mg/kg ND mg/kg 8.52 mg/kg 34.6 mg/kg 1.90 mg/kg ND mg/kg ND mg/kg ND mg/kg ND	mg/kg ND 0.02 mg/kg ND 0.02 mg/kg ND 0.02 mg/kg ND 0.02 mg/kg 8.52 0.02 mg/kg 34.6 0.02 mg/kg 1.90 0.02 mg/kg ND 0.02

ND = Not detected

Site Reference: Sampler Initials:

# **ELEMENTS BY ATOMIC SPECTROSCOPY (PAINT)**

Maxxam ID		C63822	C63823	C63824	C63825	C63826		
Sampling Date		2006/08/24	2006/08/24	2006/08/24	2006/08/24	2006/08/24		
COC Number		150920	150920	150920	150920	150920		
	Units	ETPC-01	ETPC-02	ETPC-03	ETPC-04	ETPC-05	RDL	QC Batch
Elements								
Total Lead (Pb)	mg/kg	6700	88100	4580	4950	33200	10	1260866
RDL = Reportab	le Detec	tion Limit					•	

	C63827	C63828	C63829	C63830	C63831		
	2006/08/24	2006/08/24	2006/08/24	2006/08/24	2006/08/24		
	150920	150920	150920	150920	150920		
Units	ETPC-06	ETPC-07	ETPC-08	ETPC-10	ETPC-11	RDL	QC Batch
mg/kg	36800	680	392	6710	2330	10	1260866
1 0 0						1.0	1.20000
le Detec	tion Limit						
	mg/kg	2006/08/24 150920 Units ETPC-06	2006/08/24   2006/08/24   150920   150920	2006/08/24   2006/08/24   2006/08/24   150920   150920   150920   Units   ETPC-06   ETPC-07   ETPC-08   ETPC-08	2006/08/24   2006/08/24   2006/08/24   2006/08/24   150920   150	2006/08/24   200	2006/08/24   200

Maxxam ID		C63832	C63842	C63843	C63849	C63850		
Sampling Date		2006/08/24	2006/08/24	2006/08/24	2006/08/24	2006/08/24		
COC Number		150920	150921	150921	150921	150921		
	Units	ETPC-12	ETPC-13	ETPC-14	ETPC-15	ETPC-16	RDL	QC Batch
Elements								
Total Lead (Pb)	mg/kg	48800	25600	19800	3280	2360	10	1260866
RDL = Reportab	le Detec	tion Limit						

Maxxam ID		U63851	L03852	L C63853						
Sampling Date		2006/08/24	2006/08/24	2006/08/24						
COC Number		150921	150921	150921						
	Units	ETPC-17	ETPC-18	ETPC-19	℟DL	QC Batch				
Elements										
Total Lead (Pb)	mg/kg	3630	3220	1210	10	1260866				
RDL = Reportable Detection Limit										



Site Reference: Sampler Initials:

# PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		C63167	C63169	C63171		
Sampling Date		2006/08/25	2006/08/25	2006/08/25		
COC Number		150913	150913	150913		
	Units	ET295@0M	ET296@0M	ET297@0M	RDL	QC Batch
OIL & GREASE						
F4SG (Heavy Hydrocarbons-SilicaGel)	mg/kg	6800	10000	4900	200	1262488
RDL = Reportable Detection Limit					•	

	C63173	C63174	C63193		
	2006/08/25	2006/08/25	2006/08/25		
	150913	150913	150912		
Units	ET297@0.75M	ET298@0M	ET304@0.3M	RDL	QC Batch
mg/kg	2100	7000	4800	200	1262488
		2006/08/25 150913 Units ET297@0.75M	2006/08/25 2006/08/25 150913 150913 Units ET297@0.75M ET298@0M	2006/08/25 2006/08/25 2006/08/25 150913 150913 150912 Units ET297@0.75M ET298@0M ET304@0.3M	2006/08/25   2006/08/25   2006/08/25   150913   150912     Units   ET297@0.75M   ET298@0M   ET304@0.3M RDL

RDL = Reportable Detection Limit

Maxxam ID		C63195		C63340	C63341			
Sampling Date		2006/08/25		2006/08/25	2006/08/25			
COC Number		150912		150911	150911			
	Units	ET306@0.2M	QC Batch	ET320@0M	ET320@0.8M	RDL	QC Batch	
OIL & GREASE								
F4SG (Heavy Hydrocarbons-SilicaGel)	mg/kg	3800	1262488	66000	16000	200	1264169	
RDL = Reportable Detection Limit								

Maxxam ID		C63780	C63785	C63786	C63787		
Sampling Date		2006/08/27	2006/08/27	2006/08/27	2006/08/27		
COC Number		150917	150917	150917	150917		
	Units	ET345@0M	ET349@0.2M	ET350@0M	ET351@0.7M	RDL	QC Batch
OIL & GREASE							
F4SG (Heavy Hydrocarbons-SilicaGel)	mg/kg	13000	8100	52000	18000	200	1262488
p (,,,,,,	1 0 0		1				

Site Reference: Sampler Initials:

# POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		C63167	C63169	C63173		
Sampling Date		2006/08/25	2006/08/25	2006/08/25		
COC Number		150913	150913	150913		
	Units	ET295@0M	ET296@0M	ET297@0.75M	RDL	QC Batch

Polychlorinated Biphenyls						
Aroclor 1016	mg/kg	ND	ND	ND	0.01	1264851
Aroclor 1221	mg/kg	ND	ND	ND	0.01	1264851
Aroclor 1232	mg/kg	ND	ND	ND	0.01	1264851
Aroclor 1242	mg/kg	ND	ND	ND	0.01	1264851
Aroclor 1248	mg/kg	ND	0.45	ND	0.01	1264851
Aroclor 1254	mg/kg	0.09	ND	0.01	0.01	1264851
Aroclor 1260	mg/kg	0.03	0.03	0.02	0.01	1264851
Aroclor 1262	mg/kg	ND	ND	ND	0.01	1264851
Aroclor 1268	mg/kg	ND	ND	ND	0.01	1264851
Total Aroclors	mg/kg	0.12	0.48	0.03	0.01	1264851
Surrogate Recovery (%)						
NONACHLOROBIPHENYL (sur.)	%	93	102	103	N/A	1264851
						-

ND = Not detected

N/A = Not Applicable
RDL = Reportable Detection Limit

Site Reference: Sampler Initials:

#### **RESULTS OF CHEMICAL ANALYSES OF SOLID**

Maxxam ID		C63888	C63889	C63890	C63891	C63892		
Sampling Date		2006/08/24	2006/08/24	2006/08/24	2006/08/24	2006/08/24		
COC Number		150921	150921	150921	150921	150921		
	Units	ETASB-01	ETASB-02	ETASB-03	ETASB-04	ETASB-05	RDL	QC Batch

Asbestos	%	ND	5%	ND	ND	30%	N/A	1263837
Asbestos Type	%	ND	CHRYSOTILE	ND	ND	AMOSITE	N/A	1263837

ND = Not detected

RDL = Reportable Detection Limit

COC Number	Units	150921 ETASB-06	BDI	QC Batch
Sampling Date		2006/08/24		
Maxxam ID		C63893		

-				
Asbestos	%	ND	N/A	1263837
Asbestos Type	%	ND	N/A	1263837

ND = Not detected RDL = Reportable Detection Limit

Site Reference: Sampler Initials:

# POLYCHLORINATED BIPHENYLS BY GC-ECD (WATER)

	Units	ET323	RDL	QC Batch
COC Number		150914		
Sampling Date		2006/08/26		
Maxxam ID		C63493		

Polychlorinated Biphenyls				
Aroclor 1016	mg/L	ND	0.00040	1265346
Aroclor 1221	mg/L	ND	0.00040	1265346
Aroclor 1232	mg/L	ND	0.00040	1265346
Aroclor 1242	mg/L	ND	0.00040	1265346
Aroclor 1248	mg/L	ND	0.00040	1265346
Aroclor 1254	mg/L	ND	0.00040	1265346
Aroclor 1260	mg/L	ND	0.00040	1265346
Aroclor 1262	mg/L	ND	0.00040	1265346
Aroclor 1268	mg/L	ND	0.00040	1265346
Total Aroclors	mg/L	ND	0.00040	1265346
Surrogate Recovery (%)				
NONACHLOROBIPHENYL (sur.)	%	91	N/A	1265346

ND = Not detected

N/A = Not Applicable RDL = Reportable Detection Limit

Site Reference: Sampler Initials:

#### **CCMEHC MECHANCIAL EXTRACTION (SOIL) Comments**

Sample C63338-01 CCME Hydrocarbons (F2-F4 in soil): MATRIX SPIKE OUTSIDE ACCEPTANCE SPECIFICATIONS DUE TO MATRIX INTERFERENCE; DATA CONFIRMED VIA REANALYSIS

Sample C63199-01 BTEX by HS GC/MS (MeOH extract): BTEX MDL RAISED DUE TO SAMPLE DILUTION

#### POLYCHLORINATED BIPHENYLS BY GC-ECD (PAINT) Comments

Sample	C63825-02 Polychlorinated Biphenyls: Detection limits raised due to insufficient sample volume.
Sample	C63829-02 Polychlorinated Biphenyls: Detection limits raised due to insufficient sample volume.
Sample	C63831-02 Polychlorinated Biphenyls: Detection limits raised due to insufficient sample volume.
Sample	C63843-02 Polychlorinated Biphenyls: Detection limits raised due to insufficient sample volume.
Sample	C63849-02 Polychlorinated Biphenyls: Detection limits raised due to insufficient sample volume.
Sample	C63850-02 Polychlorinated Biphenyls: Detection limits raised due to insufficient sample volume.
Sample	C63851-02 Polychlorinated Biphenyls: Detection limits raised due to insufficient sample volume.
Sample	C63852-02 Polychlorinated Biphenyls: Detection limits raised due to insufficient sample volume.
Sample	C63853-02 Polychlorinated Biphenyls: Detection limits raised due to insufficient sample volume.

#### POLYCHLORINATED BIPHENYLS BY GC-ECD (WATER) Comments

Sample C63493-03 Polychlorinated Biphenyls: Detection limits raised due to insufficient sample volume. PCB Chromatogram shows some unidentified compounds, but no Aroclors are present

Results relate only to the items tested.



P.O. #:

Site Reference:

#### Quality Assurance Report Maxxam Job Number: EA640575

QA/QC			Date			
Batch			Analyzed			
Num Init	QC Type	Parameter	yyyy/mm/dd	Value Recover		QC Limits
1258469 AK3	MATRIX SPIKE	D10-ANTHRACENE (sur.)	2006/09/06	10		30 - 130
		D12-BENZO(A)PYRENE (sur.)	2006/09/06	9		30 - 130
		D8-ACENAPHTHYLENE (sur.)	2006/09/06	10		30 - 130
		TERPHENYL-D14 (sur.)	2006/09/06	9		30 - 130
		Naphthalene	2006/09/06	12		30 - 130
		2-Methylnaphthalene	2006/09/06	11	3 %	30 - 130
		Acenaphthylene	2006/09/06	11	7 %	30 - 130
		Acenaphthene	2006/09/06	11	9 %	30 - 130
		Fluorene	2006/09/06	11	4 %	30 - 130
		Phenanthrene	2006/09/06	11	9 %	30 - 130
		Anthracene	2006/09/06	11	8 %	30 - 130
		Fluoranthene	2006/09/06	11	8 %	30 - 130
		Pyrene	2006/09/06	11	6 %	30 - 130
		Benzo(a)anthracene	2006/09/06	11	5 %	30 - 130
		Chrysene	2006/09/06	11	9 %	30 - 130
		Benzo(b&j)fluoranthene	2006/09/06	11	6 %	30 - 130
		Benzo(k)fluoranthene	2006/09/06	11		30 - 130
		Benzo(a)pyrene	2006/09/06	11	1 %	30 - 130
		Indeno(1,2,3-cd)pyrene	2006/09/06	10		30 - 130
		Dibenz(a,h)anthracene	2006/09/06	12		30 - 130
		Benzo(g,h,i)perylene	2006/09/06	10		30 - 130
	SPIKE	D10-ANTHRACENE (sur.)	2006/09/06	8		30 - 130
		D12-BENZO(A)PYRENE (sur.)	2006/09/06	8		30 - 130
		D8-ACENAPHTHYLENE (sur.)	2006/09/06	9		30 - 130
		TERPHENYL-D14 (sur.)	2006/09/06	8		30 - 130
		Naphthalene	2006/09/06	11		30 - 130
		2-Methylnaphthalene	2006/09/06	10		30 - 130
		Acenaphthylene	2006/09/06	11		30 - 130
		Acenaphthene	2006/09/06	11		30 - 130
		Fluorene	2006/09/06	10		30 - 130
		Phenanthrene	2006/09/06	11		30 - 130
		Anthracene	2006/09/06	10		30 - 130
		Fluoranthene	2006/09/06	11		30 - 130
			2006/09/06	10		30 - 130
		Pyrene				
		Benzo(a)anthracene	2006/09/06	10		30 - 130
		Chrysene	2006/09/06	11		30 - 130
		Benzo(b&j)fluoranthene	2006/09/06	10		30 - 130
		Benzo(k)fluoranthene	2006/09/06	11		30 - 130
		Benzo(a)pyrene	2006/09/06	10		30 - 130
		Indeno(1,2,3-cd)pyrene	2006/09/06	10		30 - 130
		Dibenz(a,h)anthracene	2006/09/06	12		30 - 130
		Benzo(g,h,i)perylene	2006/09/06	9		30 - 130
	BLANK	D10-ANTHRACENE (sur.)	2006/09/06	10		30 - 130
		D12-BENZO(A)PYRENE (sur.)	2006/09/06	8		30 - 130
		D8-ACENAPHTHYLENE (sur.)	2006/09/06	8		30 - 130
		TERPHENYL-D14 (sur.)	2006/09/06	8	5 %	30 - 130
		Naphthalene	2006/09/06	ND, RDL=0.05	mg/kg	
		2-Methylnaphthalene	2006/09/06	ND, RDL=0.05	mg/kg	
		Acenaphthylene	2006/09/06	ND, RDL=0.05	mg/kg	
		Acenaphthene	2006/09/06	ND, RDL=0.05	mg/kg	
		Fluorene	2006/09/06	ND, RDL=0.05	mg/kg	
		Phenanthrene	2006/09/06	ND, RDL=0.05	mg/kg	
		Anthracene	2006/09/06	ND, RDL=0.05	mg/kg	
		Fluoranthene	2006/09/06	ND, RDL=0.05	mg/kg	
		Pyrene	2006/09/06	ND, RDL=0.05	mg/kg	
		Benzo(a)anthracene	2006/09/06	ND, RDL=0.05	mg/kg	

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QA/QC			Date			
Batch			Analyzed			
Num Init	QC Type	Parameter	yyyy/mm/dd	Value Recovery	Units	QC Limits
1258469 AK3	BLANK	Chrysene	2006/09/06	ND, RDL=0.05	mg/kg	
		Benzo(b&j)fluoranthene	2006/09/06	ND, RDL=0.05	mg/kg	
		Benzo(k)fluoranthene	2006/09/06	ND, RDL=0.05	mg/kg	
		Benzo(a)pyrene	2006/09/06	ND, RDL=0.05	mg/kg	
		Indeno(1,2,3-cd)pyrene	2006/09/06	ND, RDL=0.05	mg/kg	
		Dibenz(a,h)anthracene	2006/09/06	ND, RDL=0.05	mg/kg	
		Benzo(g,h,i)perylene	2006/09/06	ND, RDL=0.05	mg/kg	
	RPD	Naphthalene	2006/09/06	NC	%	50
		2-Methylnaphthalene	2006/09/06	NC	%	50
		Acenaphthylene	2006/09/06	NC	%	50
		Acenaphthene	2006/09/06	NC	%	50
		Fluorene	2006/09/06	NC	%	50
		Phenanthrene	2006/09/06	NC	%	50
		Anthracene	2006/09/06	NC	%	50
		Fluoranthene	2006/09/06	NC	%	50
		Pyrene	2006/09/06	NC	%	50
		Benzo(a)anthracene	2006/09/06	NC	%	50
		Chrysene	2006/09/06	NC	%	50
		Benzo(b&j)fluoranthene	2006/09/06	NC	%	50
		Benzo(k)fluoranthene	2006/09/06	NC	%	50
		Benzo(a)pyrene	2006/09/06	NC	%	50
		Indeno(1,2,3-cd)pyrene	2006/09/06	NC	%	50
		Dibenz(a,h)anthracene	2006/09/06	NC	%	50
		Benzo(g,h,i)perylene	2006/09/06	NC	%	50
1259610 KB4	MATRIX SPIKE					
	[C63338-01]	O-TERPHENYL (sur.)	2006/09/07	77	%	30 - 130
		F2 (C10-C16 Hydrocarbons)	2006/09/07	39 (1)	%	50 - 130
		F3 (C16-C34 Hydrocarbons)	2006/09/07	83	%	50 - 130
		F4 (C34-C50 Hydrocarbons)	2006/09/07	118	%	50 - 130
	SPIKE	O-TERPHENYL (sur.)	2006/09/07	84	%	30 - 130
		F2 (C10-C16 Hydrocarbons)	2006/09/07	99	%	80 - 120
		F3 (C16-C34 Hydrocarbons)	2006/09/07	83	%	80 - 120
		F4 (C34-C50 Hydrocarbons)	2006/09/07	97	%	80 - 120
	BLANK	O-TERPHENYL (sur.)	2006/09/07	89	%	30 - 130
		F2 (C10-C16 Hydrocarbons)	2006/09/07	ND, RDL=10	mg/kg	
		F3 (C16-C34 Hydrocarbons)	2006/09/07	ND, RDL=10	mg/kg	
		F4 (C34-C50 Hydrocarbons)	2006/09/07	ND, RDL=10	mg/kg	
		Reached Baseline at C50	2006/09/07	YES, RDL=1	mg/kg	
	RPD [C63334-01]	F2 (C10-C16 Hydrocarbons)	2006/09/07	NC	%	50
		F3 (C16-C34 Hydrocarbons)	2006/09/07	0.8	%	50
		F4 (C34-C50 Hydrocarbons)	2006/09/07	NC	%	50
		Reached Baseline at C50	2006/09/07	NC	%	50
1259961 MC3	Calibration Check	Dissolved Barium (Ba)	2006/09/06	95	%	90 - 110
		Dissolved Beryllium (Be)	2006/09/06	100	%	90 - 110
		Dissolved Bismuth (Bi)	2006/09/06	97	%	90 - 110
		Dissolved Boron (B)	2006/09/06	99	%	90 - 110
		Dissolved Calcium (Ca)	2006/09/06	100	%	90 - 110
		Dissolved Chromium (Cr)	2006/09/06	98	%	90 - 110
		Dissolved Cobalt (Co)	2006/09/06	98	%	90 - 110
		Dissolved Iron (Fe)	2006/09/06	96	%	90 - 110
		Dissolved Lithium (Li)	2006/09/06	92	%	90 - 110
		Dissolved Magnesium (Mg)	2006/09/06	101	%	90 - 110
		Dissolved Manganese (Mn)	2006/09/06	100	%	90 - 110
		Dissolved Molybdenum (Mo)	2006/09/06	97	%	90 - 110
		Dissolved Nickel (Ni)	2006/09/06	101	%	90 - 110
		Dissolved Phosphorus (P)	2006/09/06	97	%	90 - 110
		( /				

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QA/QC			Date			
Batch			Analyzed			
Num Init	QC Type	Parameter	yyyy/mm/dd	Value Recovery	Units	QC Limits
1259961 MC3	Calibration Check	Dissolved Potassium (K)	2006/09/06	95	%	90 - 110
		Dissolved Silicon (Si)	2006/09/06	104	%	90 - 110
		Dissolved Sodium (Na)	2006/09/06	97	%	90 - 110
		Dissolved Strontium (Sr)	2006/09/06	95	%	90 - 110
		Dissolved Tin (Sn)	2006/09/06	100	%	90 - 110
		Dissolved Titanium (Ti)	2006/09/06	96	%	90 - 110
		Dissolved Vanadium (V)	2006/09/06	98	%	90 - 110
		Dissolved Zinc (Zn)	2006/09/06	101	%	90 - 110
		Dissolved Zirconium (Zr)	2006/09/06	99	%	90 - 110
	MATRIX SPIKE	Dissolved Barium (Ba)	2006/09/06	109	%	80 - 120
		Dissolved Beryllium (Be)	2006/09/06	94	%	80 - 120
		Dissolved Boron (B)	2006/09/06	99	%	80 - 120
		Dissolved Chromium (Cr)	2006/09/06	97	%	80 - 120
		Dissolved Cobalt (Co)	2006/09/06	100	%	80 - 120
		Dissolved Lithium (Li)	2006/09/06	102	%	80 - 120
		Dissolved Manganese (Mn)	2006/09/06	109	%	80 - 120
		Dissolved Molybdenum (Mo)	2006/09/06	99	%	80 - 120
		Dissolved Nickel (Ni)	2006/09/06	111	%	80 - 120
		Dissolved Silicon (Si)	2006/09/06	117	%	80 - 120
		Dissolved Strontium (Sr)	2006/09/06	106	%	80 - 120
		Dissolved Tin (Sn)	2006/09/06	99	%	80 - 120
		Dissolved Titanium (Ti)	2006/09/06	98	%	80 - 120
		Dissolved Vanadium (V)	2006/09/06	95	%	80 - 120
		Dissolved Zinc (Zn)	2006/09/06	100	%	80 - 120
	BLANK	Dissolved Barium (Ba)	2006/09/06	ND, RDL=0.003	mg/L	
		Dissolved Beryllium (Be)	2006/09/06	ND, RDL=0.001	mg/L	
		Dissolved Bismuth (Bi)	2006/09/06	ND, RDL=0.2	mg/L	
		Dissolved Boron (B)	2006/09/06	ND, RDL=0.05	mg/L	
		Dissolved Calcium (Ca)	2006/09/06	ND, RDL=0.05	mg/L	
		Dissolved Chromium (Cr)	2006/09/06	ND, RDL=0.007	mg/L	
		Dissolved Cobalt (Co)	2006/09/06	ND, RDL=0.005	mg/L	
		Dissolved Iron (Fe)	2006/09/06	ND, RDL=0.006	mg/L	
		Dissolved Lithium (Li)	2006/09/06	ND, RDL=0.02	mg/L	
		Dissolved Magnesium (Mg)	2006/09/06	ND, RDL=0.05	mg/L	
		Dissolved Manganese (Mn)	2006/09/06	ND, RDL=0.001	mg/L	
		Dissolved Molybdenum (Mo)	2006/09/06	ND, RDL=0.006	mg/L	
		Dissolved Nickel (Ni)	2006/09/06	ND, RDL=0.008	mg/L	
		Dissolved Phosphorus (P)	2006/09/06	ND, RDL=0.000	mg/L	
		Dissolved Potassium (K)	2006/09/06	ND, RDL=0.1	mg/L	
		Dissolved Folassidin (N) Dissolved Silicon (Si)	2006/09/06	ND, RDL=0.2 ND, RDL=0.05	mg/L	
		Dissolved Solicon (SI)	2006/09/06	ND, RDL=0.05	mg/L	
		Dissolved Social (Na) Dissolved Strontium (Sr)	2006/09/06	ND, RDL=0.03	mg/L	
		Dissolved Sulphur (S)	2006/09/06	ND, RDL=0.01 ND, RDL=0.2	mg/L	
		Dissolved Sulphur (S) Dissolved Tin (Sn)	2006/09/06	ND, RDL=0.2 ND, RDL=0.04	mg/L	
		Dissolved Titr (SII) Dissolved Titanium (Ti)	2006/09/06	ND, RDL=0.04 ND, RDL=0.006	mg/L	
		Dissolved Trianium (T) Dissolved Vanadium (V)	2006/09/06	ND, RDL=0.006 ND, RDL=0.05	mg/L	
		Dissolved Variadium (v) Dissolved Zinc (Zn)	2006/09/06	ND, RDL=0.05 ND, RDL=0.005	mg/L	
		Dissolved Zinc (Zn) Dissolved Zirconium (Zr)	2006/09/06	ND, RDL=0.005 ND, RDL=0.005	mg/L	
1260005 41/1/4	MATRIY COIKE	4-BROMOFLUOROBENZENE (sur.)		ND, RDL=0.005	mg/∟ %	60 - 140
1200003 17114	MATRIX SPIKE	D10-ETHYLBENZENE (sur.)	2006/09/06 2006/09/06		%	
		` ,		112		60 - 130
		D4-1,2-DICHLOROETHANE (sur.)	2006/09/06	70 98	%	60 - 140
		D8-TOLUENE (sur.)	2006/09/06		%	60 - 140
		Benzene	2006/09/06	-45 (1)		60 - 140
		Toluene	2006/09/06	69	%	60 - 140
		Ethylbenzene m & p-Xylene	2006/09/06 2006/09/06	132 65	% %	60 - 140 60 - 140

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QA/QC Batch			Date Analyzed			
Num Init	QC Type	Parameter	yyyy/mm/dd	Value Recovery	Units	QC Lim
260005 HW4	MATRIX SPIKE	o-Xylene	2006/09/06	-15 (1)		60 - 1
	SPIKE	4-BROMOFLUOROBENZENE (sur.)	2006/09/06	104	%	60 - 1
	OI IIIL	D10-ETHYLBENZENE (sur.)	2006/09/06	106	%	60 - 1
		D4-1,2-DICHLOROETHANE (sur.)	2006/09/06	68	%	60 - 1
		D8-TOLUENE (sur.)	2006/09/06	97	%	60 - 1
		Benzene	2006/09/06	93	%	60 - 1
		Toluene	2006/09/06	93	%	60 - 1
		Ethylbenzene	2006/09/06	96	%	60 - 1
			2006/09/06	94	%	60 - 1
		m & p-Xylene	2006/09/06	90	%	60 - 1
	BLANK	o-Xylene 4-BROMOFLUOROBENZENE (sur.)	2006/09/06	123	%	60 - 1
	DLAINN	` ,				
		D10-ETHYLBENZENE (sur.)	2006/09/06	107	%	60 - 1
		D4-1,2-DICHLOROETHANE (sur.)	2006/09/06	68	%	60 - 1
		D8-TOLUENE (sur.)	2006/09/06	98	%	60 - 1
		Benzene	2006/09/06	ND, RDL=0.0050	mg/kg	
		Toluene	2006/09/06	ND, RDL=0.020	mg/kg	
		Ethylbenzene	2006/09/06	ND, RDL=0.010	mg/kg	
		Xylenes (Total)	2006/09/06	ND, RDL=0.020	mg/kg	
		m & p-Xylene	2006/09/06	ND, RDL=0.020	mg/kg	
		o-Xylene	2006/09/06	ND, RDL=0.020	mg/kg	
	RPD	Benzene	2006/09/06	17.3	%	
		Toluene	2006/09/06	NC	%	
		Ethylbenzene	2006/09/06	28.5	%	
		Xylenes (Total)	2006/09/06	30.6	%	
		m & p-Xylene	2006/09/06	30.6	%	
		o-Xylene	2006/09/06	NC	%	
260006 CD1	MATRIX SPIKE	•				
	[C63334-01]	4-BROMOFLUOROBENZENE (sur.)	2006/09/06	100	%	60 -
		D10-ETHYLBENZENE (sur.)	2006/09/06	113	%	60 -
		D4-1,2-DICHLOROETHANE (sur.)	2006/09/06	99	%	60 -
		D8-TOLUENE (sur.)	2006/09/06	101	%	60 -
		Benzene	2006/09/06	100	%	60 -
		Toluene	2006/09/06	100	%	60 -
		Ethylbenzene	2006/09/06	103	%	60 -
		m & p-Xylene	2006/09/06	102	%	60 -
		o-Xylene	2006/09/06	102	%	60 -
	SPIKE	4-BROMOFLUOROBENZENE (sur.)	2006/09/06	99	%	60 -
	SFIRE	` ,	2006/09/06	108	%	60 -
		D10-ETHYLBENZENE (sur.) D4-1,2-DICHLOROETHANE (sur.)		97	%	
		,	2006/09/06			60 -
		D8-TOLUENE (sur.)	2006/09/06	103	%	60 -
		Benzene	2006/09/06	100	%	60 -
		Toluene	2006/09/06	102	%	60 -
		Ethylbenzene	2006/09/06	101	%	60 -
		m & p-Xylene	2006/09/06	100	%	60 -
		o-Xylene	2006/09/06	97	%	60 -
	BLANK	4-BROMOFLUOROBENZENE (sur.)	2006/09/06	99	%	60 -
		D10-ETHYLBENZENE (sur.)	2006/09/06	110	%	60 -
		D4-1,2-DICHLOROETHANE (sur.)	2006/09/06	98	%	60 -
		D8-TOLUENE (sur.)	2006/09/06	102	%	60 -
		Benzene	2006/09/06	ND, RDL=0.0050	mg/kg	
		Toluene	2006/09/06	ND, RDL=0.020	mg/kg	
		Ethylbenzene	2006/09/06	ND, RDL=0.010	mg/kg	
		Xylenes (Total)	2006/09/06	ND, RDL=0.020	mg/kg	
		m & p-Xylene	2006/09/06	ND, RDL=0.020	mg/kg	
		o-Xylene	2006/09/06	ND, RDL=0.020	mg/kg	

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Maxxam Job Number: EA640575

QA/QC			Date			
Batch			Analyzed			
Num Init	QC Type	Parameter	yyyy/mm/dd	Value Recovery	Units	QC Limits
1260006 CD1	RPD [C63201-01]	Toluene	2006/09/06	NC	%	50
		Ethylbenzene	2006/09/06	32.3	%	50
		Xylenes (Total)	2006/09/06	29.1	%	50
		m & p-Xylene	2006/09/06	28.3	%	50
		o-Xylene	2006/09/06	29.9	%	50
1260008 MA	MATRIX SPIKE	4-BROMOFLUOROBENZENE (sur.)	2006/09/06	84	%	60 - 130
		F1 (C06-C10)	2006/09/06	86		60 - 130
	SPIKE	4-BROMOFLUOROBENZENE (sur.)	2006/09/06	88		60 - 130
		F1 (C06-C10)	2006/09/06	92		80 - 120
	BLANK	4-BROMOFLUOROBENZENE (sur.)	2006/09/06	92		60 - 130
		F1 (C06-C10)	2006/09/06	ND, RDL=10	mg/kg	00 .00
	RPD	F1 (C06-C10)	2006/09/06	21.9	%	50
1260012 CN1	BLANK	Moisture	2006/09/06	ND, RDL=0.3	%	00
1200012 0111	RPD	Moisture	2006/09/06	4.7	%	20
1260015 RI2	MATRIX SPIKE	Wolstare	2000/03/00	7.1	70	20
1200013 1(12	[C63334-01]	4-BROMOFLUOROBENZENE (sur.)	2006/09/06	78	%	60 - 130
	[003334-01]	F1 (C06-C10)	2006/09/06	87		60 - 130
	SPIKE	,		82		
	SPINE	4-BROMOFLUOROBENZENE (sur.)	2006/09/06			60 - 130
	DLANIZ	F1 (C06-C10)	2006/09/06	86		80 - 120
	BLANK	4-BROMOFLUOROBENZENE (sur.)	2006/09/06	ND DDI 40		60 - 130
	DDD [000004 04]	F1 (C06-C10)	2006/09/06	ND, RDL=10	mg/kg	50
1000010101	RPD [C63201-01]	F1 (C06-C10)	2006/09/06	NC	%	50
1260016 MD1	BLANK	Moisture	2006/09/06	ND, RDL=0.3	%	
	RPD [C63201-01]	Moisture	2006/09/06	4.2	%	20
1260074 KB4	MATRIX SPIKE	O-TERPHENYL (sur.)	2006/09/06	78		30 - 130
		F2 (C10-C16 Hydrocarbons)	2006/09/06	9.		50 - 130
		F3 (C16-C34 Hydrocarbons)	2006/09/06	74		50 - 130
		F4 (C34-C50 Hydrocarbons)	2006/09/06	72		50 - 130
	SPIKE	O-TERPHENYL (sur.)	2006/09/06	80		30 - 130
		F2 (C10-C16 Hydrocarbons)	2006/09/06	95	%	80 - 120
		F3 (C16-C34 Hydrocarbons)	2006/09/06	8		80 - 120
		F4 (C34-C50 Hydrocarbons)	2006/09/06	80	%	80 - 120
	BLANK	O-TERPHENYL (sur.)	2006/09/06	87	%	30 - 130
		F2 (C10-C16 Hydrocarbons)	2006/09/06	ND, RDL=10	mg/kg	
		F3 (C16-C34 Hydrocarbons)	2006/09/06	ND, RDL=10	mg/kg	
		F4 (C34-C50 Hydrocarbons)	2006/09/06	ND, RDL=10	mg/kg	
		Reached Baseline at C50	2006/09/06	YES, RDL=1	mg/kg	
	RPD	F2 (C10-C16 Hydrocarbons)	2006/09/06	NC	%	50
		F3 (C16-C34 Hydrocarbons)	2006/09/06	NC	%	50
		F4 (C34-C50 Hydrocarbons)	2006/09/06	NC	%	50
		Reached Baseline at C50	2006/09/06	NC	%	50
1260158 KO	MATRIX SPIKE	4-BROMOFLUOROBENZENE (sur.)	2006/09/06	70		70 - 130
		F1 (C06-C10)	2006/09/06	89		70 - 130
	SPIKE	4-BROMOFLUOROBENZENE (sur.)	2006/09/06	126		70 - 130
	OI IIIL	F1 (C06-C10)	2006/09/06	98		80 - 120
	BLANK	4-BROMOFLUOROBENZENE (sur.)	2006/09/06	115		70 - 130
	DEMINIC	F1 (C06-C10)	2006/09/06	ND, RDL=100	ug/L	70 100
	RPD	F1 (C06-C10)	2006/09/06	NC	wg/L %	40
1260202 AN1	MATRIX SPIKE	11 (000 010)	2000/03/00	110	70	40
IZUUZUZ MINI	[C63198-01]	O-TERPHENYL (sur.)	2006/00/07	100	%	30 - 130
	[003130-01]	` ,	2006/09/07	106		
		F2 (C10-C16 Hydrocarbons)	2006/09/07	97		50 - 130
		F3 (C16-C34 Hydrocarbons)	2006/09/07	114		50 - 130
	ODUVE	F4 (C34-C50 Hydrocarbons)	2006/09/07	129		50 - 130
	SPIKE	O-TERPHENYL (sur.)	2006/09/07	86		30 - 130
		F2 (C10-C16 Hydrocarbons)	2006/09/07	98	%	80 - 120
		F3 (C16-C34 Hydrocarbons)	2006/09/07	100	%	80 - 120

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1260202 AN1	QC Type SPIKE BLANK RPD [C63197-01]	Parameter F4 (C34-C50 Hydrocarbons) O-TERPHENYL (sur.) F2 (C10-C16 Hydrocarbons) F3 (C16-C34 Hydrocarbons) F4 (C34-C50 Hydrocarbons)	Analyzed yyyy/mm/dd 2006/09/07 2006/09/07 2006/09/07	8	5 %	QC Limits 80 - 120
1260202 AN1	SPIKE BLANK	F4 (C34-C50 Hydrocarbons) O-TERPHENYL (sur.) F2 (C10-C16 Hydrocarbons) F3 (C16-C34 Hydrocarbons) F4 (C34-C50 Hydrocarbons)	2006/09/07 2006/09/07 2006/09/07	9	5 %	80 - 120
	BLANK	O-TERPHENYL (sur.) F2 (C10-C16 Hydrocarbons) F3 (C16-C34 Hydrocarbons) F4 (C34-C50 Hydrocarbons)	2006/09/07 2006/09/07	8		
		F2 (C10-C16 Hydrocarbons) F3 (C16-C34 Hydrocarbons) F4 (C34-C50 Hydrocarbons)	2006/09/07			
	RPD [C63197-01]	F3 (C16-C34 Hydrocarbons) F4 (C34-C50 Hydrocarbons)				30 - 130
	RPD [C63197-01]	F4 (C34-C50 Hydrocarbons)		ND, RDL=10	mg/kg	
	RPD [C63197-01]	,	2006/09/07	ND, RDL=10	mg/kg	
	RPD [C63197-01]	Decembed Deceling at OFA	2006/09/07	ND, RDL=10	mg/kg	
	RPD [C63197-01]	Reached Baseline at C50	2006/09/07	YES, RDL=1	mg/kg	
		F2 (C10-C16 Hydrocarbons)	2006/09/07	19.4	%	50
		F3 (C16-C34 Hydrocarbons)	2006/09/07	11.2	%	50
		F4 (C34-C50 Hydrocarbons)	2006/09/07	NC	%	50
		Reached Baseline at C50	2006/09/07	NC	%	50
1260465 JM5	MATRIX SPIKE	O-TERPHENYL (sur.)	2006/09/08	9	8 %	70 - 130
		F2 (C10-C16 Hydrocarbons)	2006/09/08	9	6 %	70 - 130
	SPIKE	O-TERPHENYL (sur.)	2006/09/08	g	8 %	70 - 130
		F2 (C10-C16 Hydrocarbons)	2006/09/08	9	1 %	80 - 120
	BLANK	O-TERPHENYL (sur.)	2006/09/08	9	7 %	70 - 130
		F2 (C10-C16 Hydrocarbons)	2006/09/08	ND, RDL=0.1	mg/L	
	RPD	F2 (C10-C16 Hydrocarbons)	2006/09/08	NC	%	40
1260473 HW4	MATRIX SPIKE	•				
	[C63200-01]	4-BROMOFLUOROBENZENE (sur.)	2006/09/06	13	5 %	60 - 140
	•	D10-ETHYLBENZENE (sur.)	2006/09/06	10	9 %	60 - 130
		D4-1,2-DICHLOROETHANÉ (sur.)	2006/09/06	6	8 %	60 - 140
		D8-TOLUENE (sur.)	2006/09/06		7 %	60 - 140
		Benzene	2006/09/06	9	4 %	60 - 140
		Toluene	2006/09/06		2 %	60 - 140
		Ethylbenzene	2006/09/06		6 %	60 - 140
		m & p-Xylene	2006/09/06		9 %	60 - 140
		o-Xylene	2006/09/06		9 %	60 - 140
	SPIKE	4-BROMOFLUOROBENZENE (sur.)	2006/09/06		2 %	60 - 140
	OI IIIL	D10-ETHYLBENZENE (sur.)	2006/09/06	10		60 - 130
		D4-1,2-DICHLOROETHANE (sur.)	2006/09/06		9 %	60 - 140
		D8-TOLUENE (sur.)	2006/09/06		7 %	60 - 140
		Benzene	2006/09/06		, ,, 5 %	60 - 140
		Toluene	2006/09/06		4 %	60 - 140
		Ethylbenzene	2006/09/06		8 %	60 - 140
		•	2006/09/06		4 %	60 - 140
		m & p-Xylene				
	DI ANIZ	o-Xylene	2006/09/06		0 % 2 %	60 - 140
	BLANK	4-BROMOFLUOROBENZENE (sur.)	2006/09/06	12		60 - 140
		D10-ETHYLBENZENE (sur.)	2006/09/06	10		60 - 130
		D4-1,2-DICHLOROETHANE (sur.)	2006/09/06		9 %	60 - 140
		D8-TOLUENE (sur.)	2006/09/06		7 %	60 - 140
		Benzene	2006/09/06	ND, RDL=0.0050	0 0	
		Toluene	2006/09/06	ND, RDL=0.020	mg/kg	
		Ethylbenzene	2006/09/06	ND, RDL=0.010	mg/kg	
		Xylenes (Total)	2006/09/06	ND, RDL=0.020	mg/kg	
		m & p-Xylene	2006/09/06	ND, RDL=0.020	mg/kg	
		o-Xylene	2006/09/06	ND, RDL=0.020	mg/kg	
	RPD [C63199-01]	Benzene	2006/09/06	NC	%	50
		Toluene	2006/09/06	NC	%	50
		Ethylbenzene	2006/09/06	8.4	%	50
		Xylenes (Total)	2006/09/06	9.8	%	50
		m & p-Xylene	2006/09/06	9.9	%	50
		o-Xylene	2006/09/06	9.6	%	50
1260475 MA	MATRIX SPIKE					
	[C63200-01]	4-BROMOFLUOROBENZENE (sur.)	2006/09/07	10	0 %	60 - 130
	- •	F1 (C06-C10)	2006/09/07		5 %	60 - 130
	SPIKE	4-BROMOFLUOROBENZENE (sur.)	2006/09/07		9 %	60 - 130

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QA/QC			Date			
Batch			Analyzed			
Num Init	QC Type	Parameter	yyyy/mm/dd	Value Recovery	Units	QC Limits
1260475 MA	SPIKE	F1 (C06-C10)	2006/09/07	100	%	80 - 120
	BLANK	4-BROMOFLUOROBENZENE (sur.)	2006/09/07	96	%	60 - 130
		F1 (C06-C10)	2006/09/07	ND, RDL=10	mg/kg	
	RPD [C63199-01]	F1 (C06-C10)	2006/09/07	9.7	%	50
1260476 MD1	BLANK	Moisture	2006/09/06	ND, RDL=0.3	%	
	RPD [C63199-01]	Moisture	2006/09/06	16.0	%	20
1260477 CD1	MATRIX SPIKE					
.200 02 .	[C63782-01]	4-BROMOFLUOROBENZENE (sur.)	2006/09/06	99	%	60 - 140
	[000.02 0.]	D10-ETHYLBENZENE (sur.)	2006/09/06	109	%	60 - 130
		D4-1,2-DICHLOROETHANE (sur.)	2006/09/06	99	%	60 - 140
		D8-TOLUENE (sur.)	2006/09/06	102	%	60 - 140
		Benzene	2006/09/06	98	%	60 - 140
		Toluene			% %	60 - 140
			2006/09/06	99		
		Ethylbenzene	2006/09/06	98	%	60 - 140
		m & p-Xylene	2006/09/06	95	%	60 - 140
	00005	o-Xylene	2006/09/06	94	%	60 - 140
	SPIKE	4-BROMOFLUOROBENZENE (sur.)	2006/09/06	99	%	60 - 140
		D10-ETHYLBENZENE (sur.)	2006/09/06	110	%	60 - 130
		D4-1,2-DICHLOROETHANE (sur.)	2006/09/06	98	%	60 - 140
		D8-TOLUENE (sur.)	2006/09/06	102	%	60 - 140
		Benzene	2006/09/06	97	%	60 - 140
		Toluene	2006/09/06	99	%	60 - 140
		Ethylbenzene	2006/09/06	99	%	60 - 140
		m & p-Xylene	2006/09/06	96	%	60 - 140
		o-Xylene	2006/09/06	95	%	60 - 140
	BLANK	4-BROMOFLUOROBENZENE (sur.)	2006/09/06	98	%	60 - 140
		D10-ETHYLBENZENE (sur.)	2006/09/06	110	%	60 - 130
		D4-1,2-DICHLOROETHANE (sur.)	2006/09/06	98	%	60 - 140
		D8-TOLUENE (sur.)	2006/09/06	102	%	60 - 140
		Benzene	2006/09/06	ND, RDL=0.0050	mg/kg	00 140
		Toluene	2006/09/06	ND, RDL=0.0000	mg/kg	
		Ethylbenzene	2006/09/06	ND, RDL=0.020	mg/kg	
		Xylenes (Total)	2006/09/06	ND, RDL=0.010	0 0	
		, ,		· ·	mg/kg	
		m & p-Xylene	2006/09/06	ND, RDL=0.020	mg/kg	
	DDD (000704 041	o-Xylene	2006/09/06	ND, RDL=0.020	mg/kg	
	RPD [C63781-01]	Benzene	2006/09/06	NC	%	50
		Toluene	2006/09/06	NC	%	50
		Ethylbenzene	2006/09/06	NC	%	50
		Xylenes (Total)	2006/09/06	NC	%	50
		m & p-Xylene	2006/09/06	NC	%	50
		o-Xylene	2006/09/06	NC	%	50
1260478 RI2	MATRIX SPIKE					
	[C63782-01]	4-BROMOFLUOROBENZENE (sur.)	2006/09/06	79	%	60 - 130
		F1 (C06-C10)	2006/09/06	87	%	60 - 130
	SPIKE	4-BROMOFLUOROBENZENE (sur.)	2006/09/06	74	%	60 - 130
		F1 (C06-C10)	2006/09/06	89	%	80 - 120
	BLANK	4-BROMOFLUOROBENZENE (sur.)	2006/09/06	91	%	60 - 130
		F1 (C06-C10)	2006/09/06	ND, RDL=10	mg/kg	
	RPD [C63781-01]	F1 (C06-C10)	2006/09/06	NC	%	50
1260481 CN1	BLANK	Moisture	2006/09/06	ND, RDL=0.3	%	
<del>-</del>	RPD [C63781-01]	Moisture	2006/09/06	3.1	%	20
1260636 MC3	Calibration Check	Total Aluminum (AI)	2006/09/06	106	%	80 - 120
00000 10100	Cambrada On Onook	Total Antimony (Sb)	2006/09/06	99	%	80 - 120
		Total Barium (Ba)	2006/09/06	97	% %	80 - 120
		Total Beryllium (Be)	2006/09/06	97 97	% %	80 - 120
		Total Bismuth (Bi)	2006/09/06	98	% %	80 - 120 80 - 120

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QA/QC Ratch			Date Applyzod			
Batch	QC Type	Doromotor	Analyzed	Value Recovery	Lloito	QC Limi
Num Init 260636 MC3	Calibration Check	Parameter Total Cadmium (Cd)	yyyy/mm/dd 2006/09/06	Value Recovery 98	Units %	80 - 12
1200030 10103	Calibration Check	Total Calcium (Ca)	2006/09/06	100	%	80 - 12
		Total Chromium (Cr)	2006/09/06	97	% %	80 - 12
		Total Cobalt (Co)	2006/09/06	96	% %	80 - 12
		Total Copper (Cu)	2006/09/06	99	%	80 - 12
		Total Iron (Fe)	2006/09/06	92	%	80 - 12
		Total Lead (Pb)	2006/09/06	96	%	80 - 12
		Total Lithium (Li)	2006/09/06	102	%	80 - 1
		Total Magnesium (Mg)	2006/09/06	101	%	80 - 1
		Total Manganese (Mn)	2006/09/06	99	%	80 - 1
		Total Nickel (Ni)	2006/09/06	98	%	80 - 1
		Total Phosphorus (P)	2006/09/06	97	%	80 - 1
		Total Potassium (K)	2006/09/06	100	%	80 - 1
		Total Silver (Ag)	2006/09/06	98	%	80 - 1
		Total Sodium (Na)	2006/09/06	103	%	80 - 1
		Total Strontium (Sr)	2006/09/06	96	%	80 - 1
		Total Tin (Sn)	2006/09/06	100	%	80 - 1
		Total Titanium (Ti)	2006/09/06	98	%	80 - 1
		Total Vanadium (V)	2006/09/06	97	%	80 - 1
		Total Zinc (Zn)	2006/09/06	96	%	80 - 1
		Total Zirconium (Zr)	2006/09/06	95	%	80 - 1
	MATRIX SPIKE	,				
	[C63182-01]	Total Antimony (Sb)	2006/09/06	101	%	75 - 1
		Total Barium (Ba)	2006/09/06	102	%	75 - 1
		Total Beryllium (Be)	2006/09/06	105	%	75 - 1
		Total Cadmium (Cd)	2006/09/06	98	%	75 - 1
		Total Chromium (Cr)	2006/09/06	92	%	75 - 1
		Total Cobalt (Co)	2006/09/06	92	%	75 - 1
		Total Copper (Cu)	2006/09/06	102	%	75 - 1
		Total Lead (Pb)	2006/09/06	95	%	75 - 1
		Total Lithium (Li)	2006/09/06	105	%	75 - 1
		Total Manganese (Mn)	2006/09/06	97	%	75 - 1
		Total Nickel (Ni)	2006/09/06	96	%	75 - 1
		Total Sodium (Na)	2006/09/06	104	%	75 - 1
		Total Strontium (Sr)	2006/09/06	98	%	75 - 1
		Total Titanium (Ti)	2006/09/06	93	%	75 - 1
		Total Vanadium (V)	2006/09/06	99	%	75 - 1
		Total Zinc (Zn)	2006/09/06	90	%	75 - 1
	SPIKE	Total Antimony (Sb)	2006/09/06	98	%	1
		Total Barium (Ba)	2006/09/06	98	%	1
		Total Beryllium (Be)	2006/09/06	104	%	1
		Total Cadmium (Cd)	2006/09/06	97	%	N
		Total Chromium (Cr)	2006/09/06	95	%	1
		Total Cobalt (Co)	2006/09/06	96	%	1
		Total Copper (Cu)	2006/09/06	101	%	1
		Total Lead (Pb)	2006/09/06	97	%	1
		Total Lithium (Li)	2006/09/06	101	%	1
		Total Manganese (Mn)	2006/09/06	98	%	1
		Total Nickel (Ni)	2006/09/06	98	%	1
		Total Sodium (Na)	2006/09/06	102	%	1
		Total Strontium (Sr)	2006/09/06	96	%	1
		Total Titanium (Ti)	2006/09/06	95	%	1
		Total Vanadium (V)	2006/09/06	94	%	١
		Total Zinc (Zn)	2006/09/06	95	%	N
	BLANK	Total Aluminum (Al)	2006/09/06	ND, RDL=10	mg/kg	
		Total Antimony (Sb)	2006/09/06	ND, RDL=2	mg/kg	

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QA/QC			Date			
Batch			Analyzed			
Num Init	QC Type	Parameter	yyyy/mm/dd	Value Recovery	Units	QC Limits
1260636 MC3	BLANK	Total Barium (Ba)	2006/09/06	ND, RDL=0.2	mg/kg	
		Total Beryllium (Be)	2006/09/06	ND, RDL=0.1	mg/kg	
		Total Bismuth (Bi)	2006/09/06	ND, RDL=10	mg/kg	
		Total Cadmium (Cd)	2006/09/06	ND, RDL=0.2	mg/kg	
		Total Calcium (Ca)	2006/09/06	ND, RDL=20	mg/kg	
		Total Chromium (Cr)	2006/09/06	ND, RDL=1	mg/kg	
		Total Cobalt (Co)	2006/09/06	ND. RDL=0.4	mg/kg	
		Total Copper (Cu)	2006/09/06	ND, RDL=2	mg/kg	
		Total Iron (Fe)	2006/09/06	ND, RDL=10	mg/kg	
		Total Lead (Pb)	2006/09/06	ND, RDL=10	mg/kg	
		Total Lithium (Li)	2006/09/06	ND, RDL=0.4	mg/kg	
		Total Magnesium (Mg)	2006/09/06	ND, RDL=10	mg/kg	
		Total Manganese (Mn)	2006/09/06	ND, RDL=10	mg/kg	
		Total Nickel (Ni)	2006/09/06	ND, RDL=4		
					mg/kg	
		Total Phosphorus (P)	2006/09/06	ND, RDL=4	mg/kg	
		Total Potassium (K)	2006/09/06	ND, RDL=20	mg/kg	
		Total Silver (Ag)	2006/09/06	ND, RDL=1	mg/kg	
		Total Sodium (Na)	2006/09/06	ND, RDL=10	mg/kg	
		Total Strontium (Sr)	2006/09/06	ND, RDL=0.4	mg/kg	
		Total Sulphur (S)	2006/09/06	ND, RDL=40	mg/kg	
		Total Tin (Sn)	2006/09/06	ND, RDL=2	mg/kg	
		Total Titanium (Ti)	2006/09/06	ND, RDL=0.8	mg/kg	
		Total Vanadium (V)	2006/09/06	ND, RDL=2	mg/kg	
		Total Zinc (Zn)	2006/09/06	ND, RDL=2	mg/kg	
		Total Zirconium (Zr)	2006/09/06	ND, RDL=1	mg/kg	
	RPD [C63182-01]	Total Aluminum (Al)	2006/09/06	0.2	%	35
		Total Antimony (Sb)	2006/09/06	NC	%	35
		Total Barium (Ba)	2006/09/06	1.7	%	35
		Total Beryllium (Be)	2006/09/06	NC	%	35
		Total Bismuth (Bi)	2006/09/06	NC	%	35
		Total Cadmium (Cd)	2006/09/06	NC	%	35
		Total Calcium (Ca)	2006/09/06	0.6	%	35
		` ,				35
		Total Chromium (Cr)	2006/09/06	0.4	%	
		Total Cobalt (Co)	2006/09/06	3.0	%	35
		Total Copper (Cu)	2006/09/06	NC	%	35
		Total Iron (Fe)	2006/09/06	0.09	%	35
		Total Lead (Pb)	2006/09/06	NC	%	35
		Total Lithium (Li)	2006/09/06	NC	%	35
		Total Magnesium (Mg)	2006/09/06	0.6	%	35
		Total Manganese (Mn)	2006/09/06	0.2	%	35
		Total Nickel (Ni)	2006/09/06	NC	%	35
		Total Phosphorus (P)	2006/09/06	8.0	%	35
		Total Potassium (K)	2006/09/06	0.2	%	35
		Total Silver (Ag)	2006/09/06	NC	%	35
		Total Sodium (Na)	2006/09/06	0.5	%	35
		Total Strontium (Sr)	2006/09/06	0.8	%	35
		Total Sulphur (S)	2006/09/06	NC	%	35
		Total Tin (Sn)	2006/09/06	NC	%	35
		Total Titanium (Ti)	2006/09/06	0.05	%	35
		Total Vanadium (V)	2006/09/06	0.03	%	35
		` ,				
		Total Ziroppium (Zr)	2006/09/06	2.2 NC	%	35
4000007 KD 4	MATRIX ORIVE	Total Zirconium (Zr)	2006/09/06	NC	%	35
1260667 KB4	MATRIX SPIKE	O TERRITORIA	2002/22/22	<del></del> -	0/	00 400
	[C63780-01]	O-TERPHENYL (sur.)	2006/09/06	76	%	30 - 130
		F2 (C10-C16 Hydrocarbons)	2006/09/06	89	%	50 - 130
		F3 (C16-C34 Hydrocarbons)	2006/09/06	123	%	50 - 130

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QA/QC			Date			
Batch			Analyzed			
Num Init	QC Type	Parameter	yyyy/mm/dd	Value Recovery	Units	QC Limits
1260667 KB4	MATRIX SPIKE					
	[C63780-01]	F4 (C34-C50 Hydrocarbons)	2006/09/06	95	%	50 - 130
	SPIKE	O-TERPHENYL (sur.)	2006/09/06	82	%	30 - 130
		F2 (C10-C16 Hydrocarbons)	2006/09/06	94	%	80 - 120
		F3 (C16-C34 Hydrocarbons)	2006/09/06	83	%	80 - 120
		F4 (C34-C50 Hydrocarbons)	2006/09/06	93	%	80 - 120
	BLANK	O-TERPHENYL (sur.)	2006/09/06	84	%	30 - 130
		F2 (C10-C16 Hydrocarbons)	2006/09/06	ND, RDL=10	mg/kg	
		F3 (C16-C34 Hydrocarbons)	2006/09/06	10, RDL=10	mg/kg	
		F4 (C34-C50 Hydrocarbons)	2006/09/06	13, RDL=10	mg/kg	
		Reached Baseline at C50	2006/09/06	YES, RDL=1	mg/kg	
	RPD [C63779-01]	F2 (C10-C16 Hydrocarbons)	2006/09/06	0.1	%	50
		F3 (C16-C34 Hydrocarbons)	2006/09/06	10.1	%	50
		F4 (C34-C50 Hydrocarbons)	2006/09/06	NC	%	50
		Reached Baseline at C50	2006/09/06	NC	%	50
1260747 HG	MATRIX SPIKE					
	[C63345-03]	4-BROMOFLUOROBENZENE (sur.)	2006/09/06	104	%	70 - 130
	[2000.000]	D4-1,2-DICHLOROETHANE (sur.)	2006/09/06	102	%	70 - 130
		D8-TOLUENE (sur.)	2006/09/06	101	%	70 - 130
		Benzene	2006/09/06	87	%	70 - 130
		Toluene	2006/09/06	95	%	70 - 130
		Ethylbenzene	2006/09/06	87	%	70 - 130
		o-Xylene	2006/09/06	95	%	70 - 130
		m & p-Xylene	2006/09/06	92	%	70 - 130
	SPIKE	4-BROMOFLUOROBENZENE (sur.)	2006/09/06	102	%	70 - 130
	SFIRE	D4-1,2-DICHLOROETHANE (sur.)	2006/09/06	102	%	70 - 130
		D8-TOLUENE (sur.)	2006/09/06	100	% %	70 - 130
		Benzene	2006/09/06	84	%	70 - 130
		Toluene	2006/09/06	89	% %	70 - 130
				85	% %	70 - 130 70 - 130
		Ethylbenzene	2006/09/06	86	% %	
		o-Xylene	2006/09/06	88		70 - 130 70 - 130
	DL ANIZ	m & p-Xylene	2006/09/06		%	
	BLANK	4-BROMOFLUOROBENZENE (sur.)	2006/09/06	101	%	70 - 130
		D4-1,2-DICHLOROETHANE (sur.)	2006/09/06	101	%	70 - 130
		D8-TOLUENE (sur.)	2006/09/06	103	%	70 - 130
		Benzene	2006/09/06	ND, RDL=0.5	ug/L	
		Toluene	2006/09/06	ND, RDL=0.5	ug/L	
		Ethylbenzene	2006/09/06	ND, RDL=0.5	ug/L	
		o-Xylene	2006/09/06	ND, RDL=0.5	ug/L	
		m & p-Xylene	2006/09/06	ND, RDL=1	ug/L	
	DDD (000000 00)	Xylenes (Total)	2006/09/06	ND, RDL=1	ug/L	40
	RPD [C63308-02]	Benzene	2006/09/06	NC	%	40
		Toluene	2006/09/06	NC	%	40
		Ethylbenzene	2006/09/06	NC	%	40
		o-Xylene	2006/09/06	NC	%	40
		m & p-Xylene	2006/09/06	NC	%	40
		Xylenes (Total)	2006/09/06	NC	%	40
1260749 HG	MATRIX SPIKE				_	_
	[C63806-02]	4-BROMOFLUOROBENZENE (sur.)	2006/09/06	103	%	70 - 130
		D4-1,2-DICHLOROETHANE (sur.)	2006/09/06	110	%	70 - 130
		D8-TOLUENE (sur.)	2006/09/06	102	%	70 - 130
		Benzene	2006/09/06	87	%	70 - 130
		Toluene	2006/09/06	98	%	70 - 130
		Ethylbenzene	2006/09/06	92	%	70 - 130
		o-Xylene	2006/09/06	93	%	70 - 130
		m & p-Xylene	2006/09/06	93	%	70 - 130

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# **Quality Assurance Report (Continued)**

Maxxam Job Number: EA640575

QA/QC			Date			
Batch			Analyzed			
Num Init	QC Type	Parameter	yyyy/mm/dd	Value Recovery	Units	QC Limits
1260749 HG	SPIKE	4-BROMOFLUOROBENZENE (sur.)	2006/09/06	104	%	70 - 130
		D4-1,2-DICHLOROETHANE (sur.)	2006/09/06	103	%	70 - 130
		D8-TOLUENE (sur.)	2006/09/06	101	%	70 - 130
		Benzene	2006/09/06	86	%	70 - 130
		Toluene	2006/09/06	94	%	70 - 130
		Ethylbenzene	2006/09/06	88	%	70 - 130
		o-Xylene	2006/09/06	87	%	70 - 130
		m & p-Xylene	2006/09/06	89	%	70 - 130
	BLANK	4-BROMOFLUOROBENZENE (sur.)	2006/09/06	101	%	70 - 130
		D4-1,2-DICHLOROETHANE (sur.)	2006/09/06	108	%	70 - 130
		D8-TOLUENE (sur.)	2006/09/06	101	%	70 - 130
		Benzene	2006/09/06	ND, RDL=0.5	ug/L	
		Toluene	2006/09/06	ND, RDL=0.5	ug/L	
		Ethylbenzene	2006/09/06	ND, RDL=0.5	ug/L	
		o-Xylene	2006/09/06	ND, RDL=0.5	ug/L	
		m & p-Xylene	2006/09/06	ND, RDL=1	ug/L	
		Xylenes (Total)	2006/09/06	ND, RDL=1	ug/L	
	RPD [C63804-02]	Benzene	2006/09/06	NC	%	40
		Toluene	2006/09/06	NC	%	40
		Ethylbenzene	2006/09/06	NC	%	40
		o-Xylene	2006/09/06	NC	%	40
		m & p-Xylene	2006/09/06	NC	%	40
		Xylenes (Total)	2006/09/06	NC	%	40
1260754 MC3	Calibration Check	Total Aluminum (Al)	2006/09/06	105	%	80 - 120
		Total Antimony (Sb)	2006/09/06	97	%	80 - 120
		Total Barium (Ba)	2006/09/06	97	%	80 - 120
		Total Beryllium (Be)	2006/09/06	96	%	80 - 120
		Total Bismuth (Bi)	2006/09/06	97	%	80 - 120
		Total Cadmium (Cd)	2006/09/06	94	%	80 - 120
		Total Calcium (Ca)	2006/09/06	97	%	80 - 120
		Total Chromium (Cr)	2006/09/06	94	%	80 - 120
		Total Cobalt (Co)	2006/09/06	93	%	80 - 120
		Total Copper (Cu)	2006/09/06	99	%	80 - 120
		Total Iron (Fe)	2006/09/06	91	%	80 - 120
		Total Lead (Pb)	2006/09/06	93	%	80 - 120
		Total Lithium (Li)	2006/09/06	103	%	80 - 120
		Total Magnesium (Mg)	2006/09/06	101	%	80 - 120
		Total Magnese (Mn)	2006/09/06	97	%	80 - 120
		Total Nickel (Ni)	2006/09/06	96	%	80 - 120
		Total Phosphorus (P)	2006/09/06	98	%	80 - 120
		Total Potassium (K)	2006/09/06	99	% %	80 - 120
		Total Silver (Ag)	2006/09/06	95	%	80 - 120
		Total Solver (Ag) Total Sodium (Na)	2006/09/06	109	% %	80 - 120
		Total Strontium (Sr)	2006/09/06	97	%	80 - 120 80 - 120
		` ,				
		Total Tin (Sn)	2006/09/06	99	%	80 - 120 80 - 120
		Total Vanadium (V)	2006/09/06	98	%	80 - 120
		Total Vanadium (V)	2006/09/06 2006/09/06	95	%	80 - 120
		Total Zinc (Zn)		92	%	80 - 120
	MATRIX CRIVE	Total Zirconium (Zr)	2006/09/06	95	%	80 - 120
	MATRIX SPIKE	Total Antimony (Ch)	0000/00/00	400	0/	75 405
	[C63508-01]	Total Antimony (Sb)	2006/09/06	100	%	75 - 125
		Total Barium (Ba)	2006/09/06	105	%	75 - 125
		Total Beryllium (Be)	2006/09/06	107	%	75 - 125
		Total Cadmium (Cd)	2006/09/06	98	%	75 - 125
		Total Chromium (Cr) Total Cobalt (Co)	2006/09/06 2006/09/06	95 95	% %	75 - 125
						75 - 125

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# **Quality Assurance Report (Continued)**

Maxxam Job Number: EA640575

Batch   Num Init   QC Type   Parameter   Parameter	Units  % % % % % % % % % % % % % % % % % %	75 - 125 75 - 125 N/A N/A N/A N/A N/A
1260754 MC3	% % % % % % % % % % % % % % % % %	75 - 125 75 - 125 N/A N/A N/A N/A N/A
[C63508-01] Total Copper (Cu) 2006/09/06 98	% % % % % % % % % % % % % % %	75 - 125 75 - 125 N/A N/A N/A N/A N/A
Total Lead (Pb) 2006/09/06 98 Total Lithium (Li) 2006/09/06 107 Total Manganese (Mn) 2006/09/06 101 Total Nickel (Ni) 2006/09/06 100 Total Sodium (Na) 2006/09/06 103 Total Strontium (Sr) 2006/09/06 101 Total Titanium (Ti) 2006/09/06 96 Total Vanadium (V) 2006/09/06 92 Total Zinc (Zn) 2006/09/06 94 SPIKE Total Antimony (Sb) 2006/09/06 89 Total Barium (Ba) 2006/09/06 89 Total Beryllium (Be) 2006/09/06 89 Total Cadmium (Cd) 2006/09/06 87 Total Chromium (Cr) 2006/09/06 86 Total Cobalt (Co) 2006/09/06 85 Total Copper (Cu) 2006/09/06 85 Total Lithium (Li) 2006/09/06 88 Total Lithium (Li) 2006/09/06 88 Total Manganese (Mn) 2006/09/06 88 Total Sodium (Na) 2006/09/06 88 Total Sodium (Na) 2006/09/06 88	% % % % % % % % % % % % % % %	75 - 125 75 - 125 N/A N/A N/A N/A N/A
Total Lithium (Li) 2006/09/06 107 Total Manganese (Mn) 2006/09/06 101 Total Nickel (Ni) 2006/09/06 100 Total Sodium (Na) 2006/09/06 103 Total Strontium (Sr) 2006/09/06 101 Total Titanium (Ti) 2006/09/06 96 Total Vanadium (V) 2006/09/06 92 Total Zinc (Zn) 2006/09/06 94 SPIKE Total Antimony (Sb) 2006/09/06 89 Total Barium (Ba) 2006/09/06 89 Total Beryllium (Be) 2006/09/06 89 Total Cadmium (Cd) 2006/09/06 87 Total Chromium (Cr) 2006/09/06 86 Total Cobalt (Co) 2006/09/06 85 Total Copper (Cu) 2006/09/06 92 Total Lead (Pb) 2006/09/06 88 Total Lithium (Li) 2006/09/06 88 Total Manganese (Mn) 2006/09/06 88 Total Nickel (Ni) 2006/09/06 88 Total Sodium (Na) 2006/09/06 88 Total Sodium (Na) 2006/09/06 88	% % % % % % % % % % % % % % %	75 - 125 75 - 125 N/A N/A N/A N/A N/A
Total Manganese (Mn) 2006/09/06 101 Total Nickel (Ni) 2006/09/06 100 Total Sodium (Na) 2006/09/06 103 Total Strontium (Sr) 2006/09/06 101 Total Titanium (Ti) 2006/09/06 96 Total Vanadium (V) 2006/09/06 92 Total Zinc (Zn) 2006/09/06 94 SPIKE Total Antimony (Sb) 2006/09/06 89 Total Barium (Ba) 2006/09/06 89 Total Beryllium (Be) 2006/09/06 89 Total Cadmium (Cd) 2006/09/06 87 Total Chromium (Cr) 2006/09/06 86 Total Cobalt (Co) 2006/09/06 85 Total Copper (Cu) 2006/09/06 88 Total Lithium (Li) 2006/09/06 88 Total Manganese (Mn) 2006/09/06 89 Total Nickel (Ni) 2006/09/06 88 Total Sodium (Na) 2006/09/06 88	% % % % % % % % % % % % % % %	75 - 125 75 - 125 75 - 125 75 - 125 75 - 125 75 - 125 75 - 125 N/A N/A N/A N/A N/A
Total Nickel (Ni) 2006/09/06 100 Total Sodium (Na) 2006/09/06 103 Total Strontium (Sr) 2006/09/06 101 Total Titanium (Ti) 2006/09/06 96 Total Vanadium (V) 2006/09/06 92 Total Zinc (Zn) 2006/09/06 94 SPIKE Total Antimony (Sb) 2006/09/06 89 Total Berium (Ba) 2006/09/06 89 Total Beryllium (Be) 2006/09/06 89 Total Cadmium (Cd) 2006/09/06 87 Total Chromium (Cr) 2006/09/06 86 Total Cobalt (Co) 2006/09/06 85 Total Copper (Cu) 2006/09/06 88 Total Lead (Pb) 2006/09/06 88 Total Lithium (Li) 2006/09/06 93 Total Manganese (Mn) 2006/09/06 89 Total Nickel (Ni) 2006/09/06 88 Total Sodium (Na) 2006/09/06 88	% % % % % % % % % % % % % % %	75 - 125 75 - 125 75 - 125 75 - 125 75 - 125 75 - 125 75 - 125 N/A N/A N/A N/A N/A
Total Sodium (Na) 2006/09/06 103 Total Strontium (Sr) 2006/09/06 101 Total Titanium (Ti) 2006/09/06 96 Total Vanadium (V) 2006/09/06 92 Total Zinc (Zn) 2006/09/06 89 SPIKE Total Antimony (Sb) 2006/09/06 89 Total Barium (Ba) 2006/09/06 89 Total Beryllium (Be) 2006/09/06 94 Total Cadmium (Cd) 2006/09/06 87 Total Chromium (Cr) 2006/09/06 86 Total Cobalt (Co) 2006/09/06 85 Total Copper (Cu) 2006/09/06 92 Total Lead (Pb) 2006/09/06 88 Total Lithium (Li) 2006/09/06 88 Total Manganese (Mn) 2006/09/06 89 Total Nickel (Ni) 2006/09/06 88 Total Sodium (Na) 2006/09/06 88	% % % % % % % % % % % % % %	75 - 125 75 - 125 75 - 125 75 - 125 75 - 125 75 - 125 N/A N/A N/A N/A N/A
Total Strontium (Sr) 2006/09/06 101 Total Titanium (Ti) 2006/09/06 96 Total Vanadium (V) 2006/09/06 92 Total Zinc (Zn) 2006/09/06 94  SPIKE Total Antimony (Sb) 2006/09/06 89 Total Barium (Ba) 2006/09/06 89 Total Beryllium (Be) 2006/09/06 87 Total Cadmium (Cd) 2006/09/06 87 Total Chromium (Cr) 2006/09/06 86 Total Cobalt (Co) 2006/09/06 85 Total Copper (Cu) 2006/09/06 92 Total Lead (Pb) 2006/09/06 93 Total Lithium (Li) 2006/09/06 93 Total Manganese (Mn) 2006/09/06 89 Total Nickel (Ni) 2006/09/06 88 Total Sodium (Na) 2006/09/06 88	% % % % % % % % % % % % %	75 - 125 75 - 125 75 - 125 75 - 125 75 - 125 N/A N/A N/A N/A N/A
Total Titanium (Ti) 2006/09/06 96 Total Vanadium (V) 2006/09/06 92 Total Zinc (Zn) 2006/09/06 94  SPIKE Total Antimony (Sb) 2006/09/06 89 Total Barium (Ba) 2006/09/06 94 Total Beryllium (Be) 2006/09/06 94 Total Cadmium (Cd) 2006/09/06 87 Total Chromium (Cr) 2006/09/06 86 Total Cobalt (Co) 2006/09/06 85 Total Copper (Cu) 2006/09/06 92 Total Lead (Pb) 2006/09/06 93 Total Manganese (Mn) 2006/09/06 89 Total Nickel (Ni) 2006/09/06 88 Total Sodium (Na) 2006/09/06 88	% % % % % % % % % % % %	75 - 125 75 - 125 75 - 125 N/A N/A N/A N/A N/A N/A
Total Vanadium (V) 2006/09/06 92 Total Zinc (Zn) 2006/09/06 94  SPIKE Total Antimony (Sb) 2006/09/06 89 Total Barium (Ba) 2006/09/06 94 Total Beryllium (Be) 2006/09/06 94 Total Cadmium (Cd) 2006/09/06 87 Total Chromium (Cr) 2006/09/06 86 Total Cobalt (Co) 2006/09/06 85 Total Copper (Cu) 2006/09/06 92 Total Lead (Pb) 2006/09/06 88 Total Lithium (Li) 2006/09/06 93 Total Manganese (Mn) 2006/09/06 89 Total Nickel (Ni) 2006/09/06 88 Total Sodium (Na) 2006/09/06 88	% % % % % % % % % % %	75 - 125 75 - 125 N/A N/A N/A N/A N/A N/A
Total Zinc (Zn) 2006/09/06 94  SPIKE Total Antimony (Sb) 2006/09/06 89  Total Barium (Ba) 2006/09/06 94  Total Beryllium (Be) 2006/09/06 94  Total Cadmium (Cd) 2006/09/06 87  Total Chromium (Cr) 2006/09/06 86  Total Cobalt (Co) 2006/09/06 85  Total Copper (Cu) 2006/09/06 92  Total Lead (Pb) 2006/09/06 88  Total Lithium (Li) 2006/09/06 93  Total Manganese (Mn) 2006/09/06 89  Total Nickel (Ni) 2006/09/06 88  Total Sodium (Na) 2006/09/06 106	% % % % % % % % % % %	75 - 125 N/A N/A N/A N/A N/A N/A
SPIKE       Total Antimony (Sb)       2006/09/06       89         Total Barium (Ba)       2006/09/06       89         Total Beryllium (Be)       2006/09/06       94         Total Cadmium (Cd)       2006/09/06       87         Total Chromium (Cr)       2006/09/06       86         Total Cobalt (Co)       2006/09/06       85         Total Copper (Cu)       2006/09/06       92         Total Lead (Pb)       2006/09/06       88         Total Lithium (Li)       2006/09/06       93         Total Manganese (Mn)       2006/09/06       89         Total Nickel (Ni)       2006/09/06       88         Total Sodium (Na)       2006/09/06       106	% % % % % % %	N/A N/A N/A N/A N/A N/A
SPIKE       Total Antimony (Sb)       2006/09/06       89         Total Barium (Ba)       2006/09/06       89         Total Beryllium (Be)       2006/09/06       94         Total Cadmium (Cd)       2006/09/06       87         Total Chromium (Cr)       2006/09/06       86         Total Cobalt (Co)       2006/09/06       85         Total Copper (Cu)       2006/09/06       92         Total Lead (Pb)       2006/09/06       88         Total Lithium (Li)       2006/09/06       93         Total Manganese (Mn)       2006/09/06       89         Total Nickel (Ni)       2006/09/06       88         Total Sodium (Na)       2006/09/06       106	% % % % % %	N/A N/A N/A N/A N/A
Total Beryllium (Be)       2006/09/06       94         Total Cadmium (Cd)       2006/09/06       87         Total Chromium (Cr)       2006/09/06       86         Total Cobalt (Co)       2006/09/06       85         Total Copper (Cu)       2006/09/06       92         Total Lead (Pb)       2006/09/06       88         Total Lithium (Li)       2006/09/06       93         Total Manganese (Mn)       2006/09/06       89         Total Nickel (Ni)       2006/09/06       88         Total Sodium (Na)       2006/09/06       106	% % % % % %	N/A N/A N/A N/A N/A
Total Beryllium (Be)       2006/09/06       94         Total Cadmium (Cd)       2006/09/06       87         Total Chromium (Cr)       2006/09/06       86         Total Cobalt (Co)       2006/09/06       85         Total Copper (Cu)       2006/09/06       92         Total Lead (Pb)       2006/09/06       88         Total Lithium (Li)       2006/09/06       93         Total Manganese (Mn)       2006/09/06       89         Total Nickel (Ni)       2006/09/06       88         Total Sodium (Na)       2006/09/06       106	% % % % % %	N/A N/A N/A N/A
Total Cadmium (Cd)       2006/09/06       87         Total Chromium (Cr)       2006/09/06       86         Total Cobalt (Co)       2006/09/06       85         Total Copper (Cu)       2006/09/06       92         Total Lead (Pb)       2006/09/06       88         Total Lithium (Li)       2006/09/06       93         Total Manganese (Mn)       2006/09/06       89         Total Nickel (Ni)       2006/09/06       88         Total Sodium (Na)       2006/09/06       106	% % % % %	N/A N/A N/A N/A
Total Chromium (Cr)       2006/09/06       86         Total Cobalt (Co)       2006/09/06       85         Total Copper (Cu)       2006/09/06       92         Total Lead (Pb)       2006/09/06       88         Total Lithium (Li)       2006/09/06       93         Total Manganese (Mn)       2006/09/06       89         Total Nickel (Ni)       2006/09/06       88         Total Sodium (Na)       2006/09/06       106	% % % %	N/A N/A N/A
Total Cobalt (Co)       2006/09/06       85         Total Copper (Cu)       2006/09/06       92         Total Lead (Pb)       2006/09/06       88         Total Lithium (Li)       2006/09/06       93         Total Manganese (Mn)       2006/09/06       89         Total Nickel (Ni)       2006/09/06       88         Total Sodium (Na)       2006/09/06       106	% % %	N/A N/A
Total Copper (Cu)       2006/09/06       92         Total Lead (Pb)       2006/09/06       88         Total Lithium (Li)       2006/09/06       93         Total Manganese (Mn)       2006/09/06       89         Total Nickel (Ni)       2006/09/06       88         Total Sodium (Na)       2006/09/06       106	% % %	N/A
Total Lead (Pb)       2006/09/06       88         Total Lithium (Li)       2006/09/06       93         Total Manganese (Mn)       2006/09/06       89         Total Nickel (Ni)       2006/09/06       88         Total Sodium (Na)       2006/09/06       106	% %	
Total Lithium (Li)       2006/09/06       93         Total Manganese (Mn)       2006/09/06       89         Total Nickel (Ni)       2006/09/06       88         Total Sodium (Na)       2006/09/06       106	%	1 4//
Total Manganese (Mn)       2006/09/06       89         Total Nickel (Ni)       2006/09/06       88         Total Sodium (Na)       2006/09/06       106		N/A
Total Nickel (Ni) 2006/09/06 88 Total Sodium (Na) 2006/09/06 106		N/A
Total Sodium (Na) 2006/09/06 106	%	N/A
	%	N/A
10(a) 3(101)(u) 1 (31) 2000/09/00 07	%	N/A
Total Titanium (Ti) 2006/09/06 86	% %	N/A
` '	%	
Total Vanadium (V) 2006/09/06 85  Total Zinc (Zn) 2006/09/06 86	%	N/A
		N/A
	mg/kg	
• · · · · · · · · · · · · · · · · · · ·	mg/kg	
	mg/kg	
	mg/kg	
Total Phosphorus (P) 2006/09/06 ND, RDL=4	mg/kg	
	mg/kg	
Total Silver (Ag) 2006/09/06 ND, RDL=1	mg/kg	
Total Sodium (Na) 2006/09/06 ND, RDL=10	mg/kg	
Total Strontium (Sr) 2006/09/06 ND, RDL=0.4	mg/kg	
Total Sulphur (S) 2006/09/06 ND, RDL=40	mg/kg	
	mg/kg	
·	mg/kg	
	mg/kg	
	mg/kg	
, ,	mg/kg	
RPD [C63508-01] Total Aluminum (Al) 2006/09/06 19.2	%	35
Total Antimony (Sb) 2006/09/06 NC	%	35
Total Antilinotis (OD) 2000/09/00 INC	70	3.

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# **Quality Assurance Report (Continued)**

Maxxam Job Number: EA640575

QA/QC			Date				
Batch			Analyzed				
Num Init	QC Type	Parameter	yyyy/mm/dd	Value	Recovery	Units	QC Limits
1260754 MC3	RPD [C63508-01]	Total Barium (Ba)	2006/09/06	15.6		%	35
		Total Beryllium (Be)	2006/09/06	NC		%	35
		Total Bismuth (Bi)	2006/09/06	NC		%	35
		Total Cadmium (Cd)	2006/09/06	NC		%	35
		Total Calcium (Ca)	2006/09/06	7.0		%	35
		Total Chromium (Cr)	2006/09/06	5.3		%	35
		Total Cobalt (Co)	2006/09/06	NC		%	35
		Total Copper (Cu)	2006/09/06	NC		%	35
		Total Iron (Fe)	2006/09/06	13.4		%	35
		Total Lead (Pb)	2006/09/06	NC		%	35
		Total Lithium (Li)	2006/09/06	NC		%	35
		Total Magnesium (Mg)	2006/09/06	21.5		%	35
		Total Manganese (Mn)	2006/09/06	12.3		%	35
		Total Nickel (Ni)	2006/09/06	NC		%	35
		Total Phosphorus (P)	2006/09/06	26.6		%	35
		Total Potassium (K)	2006/09/06	11.7		%	35
		Total Silver (Ag)	2006/09/06	NC		%	35
		Total Sodium (Na)	2006/09/06	16.5		%	35
		Total Strontium (Sr)	2006/09/06	0.3		%	35
		Total Sulphur (S)	2006/09/06	NC		%	35
		Total Tin (Sn)	2006/09/06	NC		%	35
		Total Titanium (Ti)	2006/09/06	30.3		%	35
		Total Vanadium (V)	2006/09/06	5.0		%	35
		Total Zinc (Zn)	2006/09/06	NC		%	35
		Total Zirconium (Zr)	2006/09/06	NC		%	35
1260763 YY1	Calibration Check	Mercury (Hg)	2006/09/06		107	%	85 - 115
	QC STANDARD	Mercury (Hg)	2006/09/06		91	%	N/A
	BLANK	Mercury (Hg)	2006/09/06	ND. R	RDL=0.05	mg/kg	
	RPD [C63182-01]	Mercury (Hg)	2006/09/06	NC		%	35
1260770 YY1	Calibration Check	Dissolved Mercury (Hg)	2006/09/07		102	%	85 - 115
	MATRIX SPIKE	Dissolved Mercury (Hg)	2006/09/07		102	%	85 - 115
	BLANK	Dissolved Mercury (Hg)	2006/09/07	ND. R	RDL=0.05	ug/L	
	RPD	Dissolved Mercury (Hg)	2006/09/07	NC	0.00	%	25
1260866 MC3	Calibration Check	Total Lead (Pb)	2006/09/06		96	%	80 - 120
	MATRIX SPIKE						
	[C63822-01]	Total Lead (Pb)	2006/09/06		100	%	75 - 125
	SPIKE	Total Lead (Pb)	2006/09/06		100	%	N/A
	BLANK	Total Lead (Pb)	2006/09/06	ND, R	RDL=10	mg/kg	
	RPD [C63822-01]	Total Lead (Pb)	2006/09/06	17.2		%	35
1260997 MC3	Calibration Check	Total Aluminum (AI)	2006/09/06		104	%	80 - 120
		Total Antimony (Sb)	2006/09/06		98	%	80 - 120
		Total Barium (Ba)	2006/09/06		96	%	80 - 120
		Total Beryllium (Be)	2006/09/06		97	%	80 - 120
		Total Bismuth (Bi)	2006/09/06		97	%	80 - 120
		Total Cadmium (Cd)	2006/09/06		98	%	80 - 120
		Total Calcium (Ca)	2006/09/06		99	%	80 - 120
		Total Chromium (Cr)	2006/09/06		98	%	80 - 120
		Total Cobalt (Co)	2006/09/06		97	%	80 - 120
		Total Copper (Cu)	2006/09/06		97	%	80 - 120
		Total Iron (Fe)	2006/09/06		95	%	80 - 120
		Total Lead (Pb)	2006/09/06		97	%	80 - 120
		Total Lithium (Li)	2006/09/06		99	%	80 - 120
		Total Magnesium (Mg)	2006/09/06		100	%	80 - 120
		Total Manganese (Mn)	2006/09/06		99	%	80 - 120
		Total Nickel (Ni)	2006/09/06		99	%	80 - 120
		Total Phosphorus (P)	2006/09/06		96	%	80 - 120
		1 ( /				*	

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P.O. #:

Site Reference:

# Quality Assurance Report (Continued)

Maxxam Job Number: EA640575

Total Strontium (Śr) 2006/09/06 Total Tin (Śn) 2006/09/06 Total Titanium (Ti) 2006/09/06 Total Vanadium (V) 2006/09/06 Total Zinc (Zn) 2006/09/06  MATRIX SPIKE [C63353-01] Total Antimony (Sb) 2006/09/06 Total Barium (Ba) 2006/09/06 Total Cadmium (Cd) 2006/09/06 Total Chromium (Cr) 2006/09/06 Total Cobalt (Co) 2006/09/06 Total Copper (Cu) 2006/09/06 Total Lead (Pb) 2006/09/06 Total Lithium (Li) 2006/09/06 Total Nickel (Ni) 2006/09/06	97 % 99 % 01 % 96 % 99 % 98 % 97 % 98 % 95 % 01 % 04 % 08 % 99 %	80 - 120 80 - 120
Num Init   QC Type   Parameter   yyyy/mm/dd   Value   Recovol	97 % 99 % 01 % 96 % 99 % 98 % 97 % 98 % 95 % 01 % 04 % 08 % 03 % 99 %	80 - 120 80 - 120
Total Silver (Ag) 2006/09/06 Total Sodium (Na) 2006/09/06 Total Strontium (Sr) 2006/09/06 Total Tin (Sn) 2006/09/06 Total Titanium (Ti) 2006/09/06 Total Titanium (V) 2006/09/06 Total Zinc (Zn) 2006/09/06 Total Zinconium (Zr) 2006/09/06  MATRIX SPIKE [C63353-01] Total Antimony (Sb) 2006/09/06 Total Barium (Ba) 2006/09/06 Total Beryllium (Be) 2006/09/06 Total Cadmium (Cd) 2006/09/06 Total Chromium (Cr) 2006/09/06 Total Copper (Cu) 2006/09/06 Total Lithium (Li) 2006/09/06 Total Nickel (Ni) 2006/09/06 Total Sodium (Na) 2006/09/06 Total Sodium (Na) 2006/09/06 Total Sodium (Sr) 2006/09/06	99 % 01 % 96 % 99 % 98 % 97 % 98 % 95 % 01 % 04 % 08 % 03 % 99 %	80 - 120 80 - 120
Total Sodium (Na) 2006/09/06 Total Strontium (Sr) 2006/09/06 Total Tin (Sn) 2006/09/06 Total Titanium (Ti) 2006/09/06 Total Vanadium (V) 2006/09/06 Total Zinc (Zn) 2006/09/06 Total Zirconium (Zr) 2006/09/06  MATRIX SPIKE [C63353-01] Total Antimony (Sb) 2006/09/06 Total Barium (Ba) 2006/09/06 Total Beryllium (Be) 2006/09/06 Total Cadmium (Cd) 2006/09/06 Total Chromium (Cr) 2006/09/06 Total Cobalt (Co) 2006/09/06 Total Copper (Cu) 2006/09/06 Total Lead (Pb) 2006/09/06 Total Manganese (Mn) 2006/09/06 Total Manganese (Mn) 2006/09/06 Total Sodium (Na) 2006/09/06 Total Strontium (Sr) 2006/09/06	01 % 96 % 99 % 98 % 97 % 98 % 95 % 01 % 04 % 08 % 03 % 99 %	80 - 120 80 - 120 80 - 120 80 - 120 80 - 120 80 - 120 80 - 120
Total Strontium (Sr) 2006/09/06 Total Tin (Sn) 2006/09/06 Total Titanium (Ti) 2006/09/06 Total Vanadium (V) 2006/09/06 Total Zinc (Zn) 2006/09/06 Total Zirconium (Zr) 2006/09/06  MATRIX SPIKE [C63353-01] Total Antimony (Sb) 2006/09/06 Total Beryllium (Ba) 2006/09/06 Total Beryllium (Cd) 2006/09/06 Total Cadmium (Cd) 2006/09/06 Total Cobalt (Co) 2006/09/06 Total Copper (Cu) 2006/09/06 Total Lead (Pb) 2006/09/06 Total Lithium (Li) 2006/09/06 Total Manganese (Mn) 2006/09/06 Total Manganese (Mn) 2006/09/06 Total Strontium (Sr) 2006/09/06 Total Strontium (Sr) 2006/09/06	96 % 99 % 98 % 97 % 98 % 95 % 01 % 04 % 08 % 03 % 99 %	80 - 120 80 - 120 80 - 120 80 - 120 80 - 120 80 - 120
Total Strontium (Sr) 2006/09/06 Total Tin (Sn) 2006/09/06 Total Titanium (Ti) 2006/09/06 Total Vanadium (V) 2006/09/06 Total Zinc (Zn) 2006/09/06 Total Zirconium (Zr) 2006/09/06  MATRIX SPIKE [C63353-01] Total Antimony (Sb) 2006/09/06 Total Beryllium (Ba) 2006/09/06 Total Beryllium (Cd) 2006/09/06 Total Cadmium (Cd) 2006/09/06 Total Cobalt (Co) 2006/09/06 Total Copper (Cu) 2006/09/06 Total Lead (Pb) 2006/09/06 Total Lithium (Li) 2006/09/06 Total Manganese (Mn) 2006/09/06 Total Manganese (Mn) 2006/09/06 Total Strontium (Sr) 2006/09/06 Total Strontium (Sr) 2006/09/06	99 % 98 % 97 % 98 % 95 % 01 % 04 % 08 % 03 % 99 %	80 - 120 80 - 120 80 - 120 80 - 120 80 - 120
Total Titanium (Ti) 2006/09/06 Total Vanadium (V) 2006/09/06 Total Zinc (Zn) 2006/09/06 Total Zirconium (Zr) 2006/09/06  MATRIX SPIKE [C63353-01] Total Antimony (Sb) 2006/09/06 Total Barium (Ba) 2006/09/06 Total Beryllium (Be) 2006/09/06 Total Cadmium (Cd) 2006/09/06 Total Chromium (Cr) 2006/09/06 Total Cobalt (Co) 2006/09/06 Total Copper (Cu) 2006/09/06 Total Lithium (Li) 2006/09/06 Total Manganese (Mn) 2006/09/06 Total Nickel (Ni) 2006/09/06 Total Sodium (Na) 2006/09/06	99 % 98 % 97 % 98 % 95 % 01 % 04 % 08 % 03 % 99 %	80 - 120 80 - 120 80 - 120 80 - 120
Total Vanadium (V) 2006/09/06 Total Zinc (Zn) 2006/09/06 Total Zirconium (Zr) 2006/09/06  MATRIX SPIKE [C63353-01] Total Antimony (Sb) 2006/09/06 Total Barium (Ba) 2006/09/06 Total Beryllium (Be) 2006/09/06 Total Cadmium (Cd) 2006/09/06 Total Chromium (Cr) 2006/09/06 Total Cobalt (Co) 2006/09/06 Total Copper (Cu) 2006/09/06 Total Lead (Pb) 2006/09/06 Total Lithium (Li) 2006/09/06 Total Manganese (Mn) 2006/09/06 Total Nickel (Ni) 2006/09/06 Total Sodium (Na) 2006/09/06 Total Strontium (Sr) 2006/09/06	97 % 98 % 95 % 01 % 04 % 08 % 03 % 99 %	80 - 120 80 - 120 80 - 120
Total Vanadium (V) 2006/09/06 Total Zinc (Zn) 2006/09/06 Total Zirconium (Zr) 2006/09/06  MATRIX SPIKE [C63353-01] Total Antimony (Sb) 2006/09/06 Total Barium (Ba) 2006/09/06 Total Beryllium (Be) 2006/09/06 Total Cadmium (Cd) 2006/09/06 Total Chromium (Cr) 2006/09/06 Total Cobalt (Co) 2006/09/06 Total Copper (Cu) 2006/09/06 Total Lead (Pb) 2006/09/06 Total Lithium (Li) 2006/09/06 Total Manganese (Mn) 2006/09/06 Total Nickel (Ni) 2006/09/06 Total Sodium (Na) 2006/09/06 Total Strontium (Sr) 2006/09/06	97 % 98 % 95 % 01 % 04 % 08 % 03 % 99 %	80 - 120 80 - 120
Total Zinc (Zn) Total Zirconium (Zr)  MATRIX SPIKE [C63353-01] Total Antimony (Sb) Total Barium (Ba) Total Beryllium (Be) Total Cadmium (Cd) Total Chromium (Cr) Total Cobalt (Co) Total Copper (Cu) Total Lead (Pb) Total Lithium (Li) Total Manganese (Mn) Total Nickel (Ni) Total Sodium (Na) Total Strontium (Sr) Total Strontium (Sr) Total Strontium (Sr) Total Condo(09/06 Total Strontium (Sr) Total Titanium (Ti) Total Titanium (Ti)	95 % 01 % 04 % 08 % 03 % 99 %	80 - 120
MATRIX SPIKE [C63353-01] Total Antimony (Sb) 2006/09/06 Total Barium (Ba) 2006/09/06 Total Beryllium (Be) 2006/09/06 Total Cadmium (Cd) 2006/09/06 Total Chromium (Cr) 2006/09/06 Total Cobalt (Co) 2006/09/06 Total Copper (Cu) 2006/09/06 Total Lead (Pb) 2006/09/06 Total Lithium (Li) 2006/09/06 Total Manganese (Mn) 2006/09/06 Total Nickel (Ni) 2006/09/06 Total Sodium (Na) 2006/09/06 Total Strontium (Sr) 2006/09/06	01 % 04 % 08 % 03 % 99 %	
[C63353-01] Total Antimony (Sb) 2006/09/06 Total Barium (Ba) 2006/09/06 Total Beryllium (Be) 2006/09/06 Total Cadmium (Cd) 2006/09/06 Total Chromium (Cr) 2006/09/06 Total Cobalt (Co) 2006/09/06 Total Copper (Cu) 2006/09/06 Total Lead (Pb) 2006/09/06 Total Lithium (Li) 2006/09/06 Total Manganese (Mn) 2006/09/06 Total Sodium (Na) 2006/09/06 Total Strontium (Sr) 2006/09/06	04 % 08 % 03 % 99 %	75 405
Total Barium (Ba) 2006/09/06 Total Beryllium (Be) 2006/09/06 Total Cadmium (Cd) 2006/09/06 Total Chromium (Cr) 2006/09/06 Total Cobalt (Co) 2006/09/06 Total Copper (Cu) 2006/09/06 Total Lead (Pb) 2006/09/06 Total Lithium (Li) 2006/09/06 Total Manganese (Mn) 2006/09/06 Total Nickel (Ni) 2006/09/06 Total Sodium (Na) 2006/09/06 Total Strontium (Sr) 2006/09/06	04 % 08 % 03 % 99 %	75 405
Total Barium (Ba) 2006/09/06 Total Beryllium (Be) 2006/09/06 Total Cadmium (Cd) 2006/09/06 Total Chromium (Cr) 2006/09/06 Total Cobalt (Co) 2006/09/06 Total Copper (Cu) 2006/09/06 Total Lead (Pb) 2006/09/06 Total Lithium (Li) 2006/09/06 Total Manganese (Mn) 2006/09/06 Total Nickel (Ni) 2006/09/06 Total Sodium (Na) 2006/09/06 Total Strontium (Sr) 2006/09/06	08 % 03 % 99 %	75 - 125
Total Cadmium (Cd) 2006/09/06 Total Chromium (Cr) 2006/09/06 Total Cobalt (Co) 2006/09/06 Total Copper (Cu) 2006/09/06 Total Lead (Pb) 2006/09/06 Total Lithium (Li) 2006/09/06 Total Manganese (Mn) 2006/09/06 Total Nickel (Ni) 2006/09/06 Total Sodium (Na) 2006/09/06 Total Strontium (Sr) 2006/09/06	03 % 99 %	75 - 125
Total Chromium (Cr) 2006/09/06 Total Cobalt (Co) 2006/09/06 Total Copper (Cu) 2006/09/06 Total Lead (Pb) 2006/09/06 Total Lithium (Li) 2006/09/06 Total Manganese (Mn) 2006/09/06 Total Nickel (Ni) 2006/09/06 Total Sodium (Na) 2006/09/06 Total Strontium (Sr) 2006/09/06	99 %	75 - 125
Total Chromium (Cr) 2006/09/06 Total Cobalt (Co) 2006/09/06 Total Copper (Cu) 2006/09/06 Total Lead (Pb) 2006/09/06 Total Lithium (Li) 2006/09/06 Total Manganese (Mn) 2006/09/06 Total Nickel (Ni) 2006/09/06 Total Sodium (Na) 2006/09/06 Total Strontium (Sr) 2006/09/06		75 - 125
Total Copper (Cu) 2006/09/06 1 Total Lead (Pb) 2006/09/06 1 Total Lithium (Li) 2006/09/06 1 Total Manganese (Mn) 2006/09/06 1 Total Nickel (Ni) 2006/09/06 1 Total Sodium (Na) 2006/09/06 1 Total Strontium (Sr) 2006/09/06 1 Total Titanium (Ti) 2006/09/06 1		75 - 125
Total Copper (Cu) 2006/09/06 1 Total Lead (Pb) 2006/09/06 1 Total Lithium (Li) 2006/09/06 1 Total Manganese (Mn) 2006/09/06 1 Total Nickel (Ni) 2006/09/06 1 Total Sodium (Na) 2006/09/06 1 Total Strontium (Sr) 2006/09/06 1 Total Titanium (Ti) 2006/09/06 1	00 %	75 - 125
Total Lead (Pb) 2006/09/06 1 Total Lithium (Li) 2006/09/06 1 Total Manganese (Mn) 2006/09/06 1 Total Nickel (Ni) 2006/09/06 1 Total Sodium (Na) 2006/09/06 1 Total Strontium (Sr) 2006/09/06 1 Total Titanium (Ti) 2006/09/06	02 %	75 - 125
Total Lithium (Ĺi) 2006/09/06 1 Total Manganese (Mn) 2006/09/06 1 Total Nickel (Ni) 2006/09/06 1 Total Sodium (Na) 2006/09/06 1 Total Strontium (Sr) 2006/09/06 1 Total Titanium (Ti) 2006/09/06 1	02 %	75 - 125
Total Manganese (Mn) 2006/09/06 1 Total Nickel (Ni) 2006/09/06 1 Total Sodium (Na) 2006/09/06 1 Total Strontium (Sr) 2006/09/06 1 Total Titanium (Ti) 2006/09/06 1	04 %	75 - 125
Total Nickel (Ni) 2006/09/06 1 Total Sodium (Na) 2006/09/06 1 Total Strontium (Sr) 2006/09/06 1 Total Titanium (Ti) 2006/09/06 1	07 %	75 - 125
Total Sodium (Na)       2006/09/06       1         Total Strontium (Sr)       2006/09/06       1         Total Titanium (Ti)       2006/09/06       1	02 %	75 - 125
Total Strontium (Sr) 2006/09/06 1 Total Titanium (Ti) 2006/09/06 1	03 %	75 - 125
Total Titanium (Ti) 2006/09/06	01 %	75 - 125
( )	10 %	75 - 125
20070700	97 %	75 - 125
Total Zinc (Zn) 2006/09/06 1	01 %	75 - 125
SPIKE Total Antimony (Sb) 2006/09/06	98 %	N/A
Total Barium (Ba) 2006/09/06	96 %	N/A
` '	03 %	N/A
Total Cadmium (Cd) 2006/09/06	98 %	N/A
Total Chromium (Cr) 2006/09/06	96 %	N/A
Total Cobalt (Co) 2006/09/06	96 %	N/A
Total Copper (Cu) 2006/09/06	97 %	N/A
Total Lead (Pb) 2006/09/06	98 %	N/A
Total Lithium (Li) 2006/09/06	96 %	N/A
Total Manganese (Mn) 2006/09/06	97 %	N/A
Total Nickel (Ni) 2006/09/06	98 %	N/A
Total Sodium (Na) 2006/09/06	98 %	N/A
Total Strontium (Sr) 2006/09/06	94 %	N/A
Total Titanium (Ti) 2006/09/06	94 %	N/A
Total Manadium (V) 2006/09/06	95 %	N/A
Total Zinc (Zn) 2006/09/06	99 %	N/A
BLANK Total Aluminum (Al) 2006/09/06 ND, RDL=10	mg/kg	IN/A
Total Antimony (Sb) 2006/09/06 ND, RDL=10	mg/kg	
Total Barium (Ba) 2006/09/06 ND, RDL=0.2	mg/kg	
Total Beryllium (Be) 2006/09/06 ND, RDL=0.2	mg/kg	
Total Bismuth (Bi) 2006/09/06 ND, RDL=10	mg/kg	
Total Cadmium (Cd) 2006/09/06 ND, RDL=10	mg/kg	
Total Calcium (Ca) 2006/09/06 ND, RDL=0.2	mg/kg	
Total Chromium (Cr) 2006/09/06 ND, RDL=1	mg/kg	
Total Chalt (Co) 2006/09/06 ND, RDL=1	mg/kg	
Total Copper (Cu) 2006/09/06 ND, RDL=0.4	mg/kg	
Total Iron (Fe) 2006/09/06 ND, RDL=10	mg/kg	
Total Holf (Fe) 2006/09/06 ND, RDL=10	mg/kg	
Total Lead (Pb) 2006/09/06 ND, RDL=10  Total Lithium (Li) 2006/09/06 ND, RDL=0.4	mg/kg	
Total Magnesium (Mg) 2006/09/06 ND, RDL=10	mg/kg	
Total Magnesian (Mg) 2000/09/00 ND, NDE=10		

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P.O. #:

Site Reference:

# Quality Assurance Report (Continued)

Maxxam Job Number: EA640575

QA/QC			Date			
Batch			Analyzed			
Num Init	QC Type	Parameter	yyyy/mm/dd	Value Recovery	Units	QC Limits
1260997 MC3	BLANK	Total Manganese (Mn)	2006/09/06	ND, RDL=0.4	mg/kg	
		Total Nickel (Ni)	2006/09/06	ND, RDL=4	mg/kg	
		Total Phosphorus (P)	2006/09/06	ND, RDL=4	mg/kg	
		Total Potassium (K)	2006/09/06	ND, RDL=20	mg/kg	
		Total Silver (Ag)	2006/09/06	ND, RDL=1	mg/kg	
		Total Sodium (Na)	2006/09/06	ND, RDL=10	mg/kg	
		Total Strontium (Sr)	2006/09/06	ND, RDL=0.4	mg/kg	
		Total Sulphur (S)	2006/09/06	ND, RDL=40	mg/kg	
		Total Tin (Sn)	2006/09/06	ND, RDL=2	mg/kg	
		Total Titanium (Ti)	2006/09/06	ND, RDL=0.8	mg/kg	
		Total Vanadium (V)	2006/09/06	ND, RDL=2	mg/kg	
		Total Zinc (Zn)	2006/09/06	ND, RDL=2	mg/kg	
		Total Zirconium (Zr)	2006/09/06	ND, RDL=1	mg/kg	
	RPD [C63353-01]	Total Aluminum (Al)	2006/09/06	14.0	%	35
	111 2 [000000 01]	Total Antimony (Sb)	2006/09/06	NC	%	35
		Total Barium (Ba)	2006/09/06	9.6	%	35
		Total Beryllium (Be)	2006/09/06	NC	%	35
		Total Bismuth (Bi)	2006/09/06	NC	%	35
		Total Cadmium (Cd)	2006/09/06	NC	% %	35
		Total Calcium (Ca)	2006/09/06	20.8	%	35
		Total Calcium (Ca) Total Chromium (Cr)			%	
		Total Cobalt (Co)	2006/09/06 2006/09/06	9.9	%	35 35
		,		NC NC		
		Total Copper (Cu)	2006/09/06	NC	%	35
		Total Iron (Fe)	2006/09/06	11.0	%	35
		Total Lead (Pb)	2006/09/06	NC	%	35
		Total Lithium (Li)	2006/09/06	NC	%	35
		Total Magnesium (Mg)	2006/09/06	16.1	%	35
		Total Manganese (Mn)	2006/09/06	8.4	%	35
		Total Nickel (Ni)	2006/09/06	NC	%	35
		Total Phosphorus (P)	2006/09/06	16.3	%	35
		Total Potassium (K)	2006/09/06	NC	%	35
		Total Silver (Ag)	2006/09/06	NC	%	35
		Total Sodium (Na)	2006/09/06	NC	%	35
		Total Strontium (Sr)	2006/09/06	NC	%	35
		Total Sulphur (S)	2006/09/06	NC	%	35
		Total Tin (Sn)	2006/09/06	NC	%	35
		Total Titanium (Ti)	2006/09/06	17.4	%	35
		Total Vanadium (V)	2006/09/06	6.0	%	35
		Total Zinc (Zn)	2006/09/06	NC	%	35
		Total Zirconium (Zr)	2006/09/06	NC	%	35
261070 YY1	Calibration Check	Mercury (Hg)	2006/09/07	104	%	85 - 115
1201070 111	QC STANDARD	Mercury (Hg)	2006/09/07	95	%	N/A
	BLANK	,	2006/09/07	ND, RDL=0.05		IN/A
		Mercury (Hg)	2006/09/07	NC	mg/kg %	35
1061406 AC4	RPD [C63353-01]	Mercury (Hg)				
1261496 AC4	Calibration Check	Dissolved Silver (Ag)	2006/09/07	101	%	85 - 115
		Dissolved Aluminum (AI)	2006/09/07	106	%	85 - 115
		Dissolved Arsenic (As)	2006/09/07	101	%	85 - 115
		Dissolved Cadmium (Cd)	2006/09/07	96	%	85 - 115
		Dissolved Copper (Cu)	2006/09/07	99	%	85 - 115
		Dissolved Lead (Pb)	2006/09/07	98	%	85 - 115
		Dissolved Antimony (Sb)	2006/09/07	92	%	85 - 115
		Dissolved Selenium (Se)	2006/09/07	102	%	85 - 115
		Dissolved Thallium (TI)	2006/09/07	96	%	85 - 115
		Dissolved Uranium (U)	2006/09/07	100	%	85 - 115
	MATRIX SPIKE	Dissolved Arsenic (As)	2006/09/07	97	%	80 - 120
		Dissolved Cadmium (Cd)	2006/09/07	96	%	80 - 120

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P.O. #:

Site Reference:

# Quality Assurance Report (Continued)

Maxxam Job Number: EA640575

QA/QC			Date				
Batch		_	Analyzed				
Num Init	QC Type	Parameter	yyyy/mm/dd	Value Rec	overy	Units	QC Limits
1261496 AC4	MATRIX SPIKE	Dissolved Lead (Pb)	2006/09/07		95	%	80 - 120
		Dissolved Selenium (Se)	2006/09/07		105	%	80 - 120
		Dissolved Thallium (TI)	2006/09/07		95	%	80 - 120
	BLANK	Dissolved Silver (Ag)	2006/09/07	ND, RDL=0.	1	ug/L	
		Dissolved Aluminum (AI)	2006/09/07	ND, RDL=5		ug/L	
		Dissolved Arsenic (As)	2006/09/07	ND, RDL=5		ug/L	
		Dissolved Cadmium (Cd)	2006/09/07	ND, RDL=0.0	01	ug/L	
		Dissolved Copper (Cu)	2006/09/07	ND, RDL=2		ug/L	
		Dissolved Lead (Pb)	2006/09/07	ND, RDL=1		ug/L	
		Dissolved Antimony (Sb)	2006/09/07	ND, RDL=1		ug/L	
		Dissolved Selenium (Se)	2006/09/07	ND, RDL=1		ug/L	
		Dissolved Thallium (TI)	2006/09/07	ND, RDL=0.8	8	ug/L	
		Dissolved Uranium (U)	2006/09/07	ND, RDL=1		ug/L	
	RPD	Dissolved Silver (Ag)	2006/09/07	NC		%	25
		Dissolved Aluminum (AI)	2006/09/07	NC		%	25
		Dissolved Arsenic (As)	2006/09/07	NC		%	25
		Dissolved Cadmium (Cd)	2006/09/07	NC		%	25
		Dissolved Copper (Cu)	2006/09/07	NC		%	25
		Dissolved Lead (Pb)	2006/09/07	NC		%	25
		Dissolved Lead (1 b) Dissolved Antimony (Sb)	2006/09/07	NC NC		%	25
		Dissolved Aritimoriy (Sb)  Dissolved Selenium (Se)		NC NC		% %	25 25
		Dissolved Selenium (Se) Dissolved Thallium (TI)	2006/09/07 2006/09/07	NC NC		% %	25 25
		` ,		NC NC			25 25
4004400 404	Calibratian Obsala	Dissolved Uranium (U)	2006/09/07	INC	400	%	
1261498 AC4	Calibration Check	Total Arsenic (As)	2006/09/07		100	%	80 - 120
		Total Molybdenum (Mo)	2006/09/07		99	%	80 - 120
		Total Selenium (Se)	2006/09/07		103	%	80 - 120
		Total Thallium (TI)	2006/09/07		99	%	80 - 120
		Total Uranium (U)	2006/09/07		98	%	80 - 120
	MATRIX SPIKE						
	[C63182-01]	Total Arsenic (As)	2006/09/07		94	%	80 - 120
		Total Selenium (Se)	2006/09/07		96	%	80 - 120
		Total Thallium (TI)	2006/09/07		98	%	80 - 120
	BLANK	Total Arsenic (As)	2006/09/07	ND, RDL=1		mg/kg	
		Total Molybdenum (Mo)	2006/09/07	ND, RDL=0.	5	mg/kg	
		Total Selenium (Se)	2006/09/07	ND, RDL=0.	5	mg/kg	
		Total Thallium (TI)	2006/09/07	ND, RDL=1		mg/kg	
		Total Uranium (U)	2006/09/07	ND, RDL=0.2	2	mg/kg	
	RPD [C63182-01]	Total Arsenic (As)	2006/09/07	NC		%	35
	•	Total Molybdenum (Mo)	2006/09/07	NC		%	35
		Total Selenium (Se)	2006/09/07	NC		%	35
		Total Thallium (TI)	2006/09/07	NC		%	35
		Total Uranium (U)	2006/09/07	NC		%	35
1261500 AC4	Calibration Check	Total Arsenic (As)	2006/09/07	110	100	%	80 - 120
1201300 704	Calibration Check	Total Molybdenum (Mo)	2006/09/07		99	%	80 - 120
		Total Selenium (Se)	2006/09/07		103	%	80 - 120
		Total Thallium (TI)	2006/09/07		99	%	80 - 120
		` ,					
	MATDIY ODIVE	Total Uranium (U)	2006/09/07		98	%	80 - 120
	MATRIX SPIKE	Total Aragnia (Ag)	2000/00/07		00	0/	00 400
	[C63353-01]	Total Arsenic (As)	2006/09/07		96 05	%	80 - 120
		Total Selenium (Se)	2006/09/07		95	%	80 - 120
	B	Total Thallium (TI)	2006/09/07		102	%	80 - 120
	BLANK	Total Arsenic (As)	2006/09/07	ND, RDL=1		mg/kg	
		Total Molybdenum (Mo)	2006/09/07	ND, RDL=0.		mg/kg	
		Total Selenium (Se)	2006/09/07	ND, RDL=0.	5	mg/kg	
		Total Thallium (TI)	2006/09/07	ND, RDL=1		mg/kg	
			2006/09/07		2		

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Site Reference:

# Quality Assurance Report (Continued)

Maxxam Job Number: EA640575

QA/QC			Date			
Batch			Analyzed			
Num Init	QC Type	Parameter	yyyy/mm/dd	Value Recovery	Units	QC Limits
1261500 AC4	RPD [C63353-01]	Total Arsenic (As)	2006/09/07	NC	%	35
		Total Molybdenum (Mo)	2006/09/07	NC	%	35
		Total Selenium (Se)	2006/09/07	NC	%	35
		Total Thallium (TI)	2006/09/07	NC	%	35
		Total Uranium (U)	2006/09/07	NC	%	35
1261501 AC4	Calibration Check	Total Arsenic (As)	2006/09/07	100	%	80 - 120
12010017101	Cambration Chock	Total Molybdenum (Mo)	2006/09/07	99	%	80 - 120
		Total Selenium (Se)	2006/09/07	103	%	80 - 120
		Total Thallium (TI)	2006/09/07	99	%	80 - 120
		Total Uranium (U)	2006/09/07	98	%	80 - 120
	MATRIX SPIKE	rotal Gramam (G)	2000/00/01	36	70	00 120
	[C63508-01]	Total Arsenic (As)	2006/09/07	95	%	80 - 120
	[000000-01]	Total Selenium (Se)	2006/09/07	97	%	80 - 120
		Total Thallium (TI)	2006/09/07	104	%	80 - 120
	BLANK	Total Arsenic (As)	2006/09/07	ND, RDL=1		00 - 120
	DLAINN	` '		ND, RDL=1 ND, RDL=0.5	mg/kg	
		Total Molybdenum (Mo)	2006/09/07	•	mg/kg	
		Total Selenium (Se)	2006/09/07	ND, RDL=0.5	mg/kg	
		Total Hanging (LI)	2006/09/07	ND, RDL=1	mg/kg	
	DDD (000500 04)	Total Uranium (U)	2006/09/07	ND, RDL=0.2	mg/kg	0.5
	RPD [C63508-01]	Total Arsenic (As)	2006/09/07	NC	%	35
		Total Molybdenum (Mo)	2006/09/07	NC	%	35
		Total Selenium (Se)	2006/09/07	NC	%	35
		Total Thallium (TI)	2006/09/07	NC	%	35
		Total Uranium (U)	2006/09/07	NC	%	35
1261614 MD1	BLANK	Moisture	2006/09/07	ND, RDL=0.3	%	
	RPD	Moisture	2006/09/07	1.5	%	20
1261885 YY1	Calibration Check	Mercury (Hg)	2006/09/07	104	%	85 - 115
	QC STANDARD	Mercury (Hg)	2006/09/07	99	%	N/A
	BLANK	Mercury (Hg)	2006/09/07	ND, RDL=0.05	mg/kg	
	RPD [C63508-01]	Mercury (Hg)	2006/09/07	NC	%	35
1262488 JR1	SPIKE	F4SG (Heavy Hydrocarbons-SilicaGel)	2006/09/07	92	%	70 - 130
	BLANK	F4SG (Heavy Hydrocarbons-SilicaGel)	2006/09/07	200, RDL=200	mg/kg	
	RPD [C63780-01]	F4SG (Heavy Hydrocarbons-SilicaGel)	2006/09/07	0	%	50
1264169 JR1	SPIKE	F4SG (Heavy Hydrocarbons-SilicaGel)	2006/09/08	92	%	70 - 130
	BLANK	F4SG (Heavy Hydrocarbons-SilicaGel)	2006/09/08	ND, RDL=200	mg/kg	
	RPD [C63340-01]	F4SG (Heavy Hydrocarbons-SilicaGel)	2006/09/08	35.2	%	50
1264851 RTA	Calibration Check	NONACHLOROBIPHENYL (sur.)	2006/09/11	94	%	53 - 127
		Aroclor 1254	2006/09/11	121	%	80 - 132
		Aroclor 1260	2006/09/11	85	%	60 - 117
	SPIKE	NONACHLOROBIPHENYL (sur.)	2006/09/11	84	%	53 - 127
		Aroclor 1260	2006/09/11	74	%	64 - 128
	BLANK	NONACHLOROBIPHENYL (sur.)	2006/09/11	88	%	53 - 127
		Aroclor 1016	2006/09/11	ND, RDL=0.01	mg/kg	
		Aroclor 1221	2006/09/11	ND, RDL=0.01	mg/kg	
		Aroclor 1232	2006/09/11	ND, RDL=0.01	mg/kg	
		Aroclor 1232 Aroclor 1242	2006/09/11	ND, RDL=0.01	mg/kg	
		Aroclor 1242 Aroclor 1248	2006/09/11	ND, RDL=0.01	mg/kg	
		Aroclor 1246 Aroclor 1254	2006/09/11	ND, RDL=0.01	mg/kg	
		Aroclor 1254 Aroclor 1260	2006/09/11	ND, RDL=0.01	mg/kg	
		Aroclor 1260 Aroclor 1262	2006/09/11	ND, RDL=0.01 ND, RDL=0.01		
				•	mg/kg	
		Aroclor 1268	2006/09/11	ND, RDL=0.01	mg/kg	
	DDD (000407.00)	Total Aroclors	2006/09/11	ND, RDL=0.01	mg/kg	B1/A
	RPD [C63167-02]	Aroclor 1016	2006/09/11	NC	%	N/A
		Aroclor 1221	2006/09/11	NC	%	N/A
		Aroclor 1232	2006/09/11	NC	%	N/A
		Aroclor 1242	2006/09/11	NC	%	N/A

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#### **Quality Assurance Report (Continued)**

Maxxam Job Number: EA640575

QA/QC			Date				
Batch			Analyzed				
Num Init	QC Type	Parameter	yyyy/mm/dd	Value	Recovery	Units	QC Limits
1264851 RTA	RPD [C63167-02]	Aroclor 1248	2006/09/11	NC		%	N/A
		Aroclor 1254	2006/09/11	0.7		%	N/A
		Aroclor 1260	2006/09/11	NC		%	N/A
		Aroclor 1262	2006/09/11	NC		%	N/A
		Aroclor 1268	2006/09/11	NC		%	N/A
		Total Aroclors	2006/09/11	8.0		%	N/A
1265346 RTA	Calibration Check	NONACHLOROBIPHENYL (sur.)	2006/09/11		94	%	47 - 121
		Aroclor 1254	2006/09/11		121	%	80 - 132
		Aroclor 1260	2006/09/11		85	%	60 - 117
	SPIKE	NONACHLOROBIPHENYL (sur.)	2006/09/11		88	%	47 - 121
		Aroclor 1260	2006/09/11		72	%	64 - 128
	BLANK	NONACHLOROBIPHENYL (sur.)	2006/09/11		87	%	47 - 121
		Aroclor 1016	2006/09/11	ND, R	DL=0.00010	mg/L	
		Aroclor 1221	2006/09/11	ND, R	DL=0.00010	mg/L	
		Aroclor 1232	2006/09/11	ND, R	DL=0.00010	mg/L	
		Aroclor 1242	2006/09/11	ND, R	DL=0.00010	mg/L	
		Aroclor 1248	2006/09/11	ND, R	DL=0.00010	mg/L	
		Aroclor 1254	2006/09/11	ND, R	DL=0.00010	mg/L	
		Aroclor 1260	2006/09/11	ND, R	DL=0.00010	mg/L	
		Aroclor 1262	2006/09/11	ND, R	DL=0.00010	mg/L	
		Aroclor 1268	2006/09/11	ND, R	DL=0.00010	mg/L	
		Total Aroclors	2006/09/11	ND, R	DL=0.00010	mg/L	

ND = Not detected

N/A = Not Applicable NC = Non-calculable

RPD = Relative Percent Difference

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<sup>1)</sup> Please note that the recovery of some compounds are outside control limits however the overall quality control for this analysis meets our acceptability criteria.



# Validation Signature Page

#### Maxxam Job #: A640575

The analytical data and all QC contained in this report were rev	iewed and validated by the following individual(s).
HEATHER GROVES,	_
SANDRA BREEM,	_
ORLA JORGENSEN,	-
KRISTOPHER BEAUDET,	-
JEREMY WAKARUK, BSc., Senior Project Manager	_

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. SCC and CAEAL have approved this reporting process and electronic report format.



The production and use of this Report is conditional upon the following agreement by the Client and Others who may use or rely upon it.

#### 1. MANDATE OF EARTH TECH

This Report has been prepared pursuant to the instructions of the Client, and is subject to the constraints imposed by those instructions. Earth Tech & Partners Ltd. ("Earth Tech") and the Client are aware of these instructions and constraints. Others, who wish to rely upon this Report in any manner, should inquire of the Client for the terms of Earth Tech's mandate in preparing this Report.

#### 2. BASIS OF REPORT

#### 2.1 Representations to Earth Tech by Client

This Report has been prepared for the specific site, development, design objective, and purpose described to Earth Tech by the Client and is specifically based on all of the aforesaid.

Inaccuracies or alterations, of any of the matters upon which this Report is based, will affect the reliability and applicability of this Report.

#### 2.2 Representations to Earth Tech by Other Persons

Earth Tech may have relied upon the representations or opinions of persons other than the Client in the course of preparing this Report. Earth Tech may not have checked the accuracy of such representations or opinions except where directed to do so by the Client. The accuracy of these representations and opinions will affect the accuracy of this Report.

#### 2.3 Time Sensitivity of Report

The findings expressed in this Report by Earth Tech were valid, in accordance with generally accepted engineering practice and procedures, at the time that they were made. The Client and Others are advised that the conditions upon which such findings were based, and the findings themselves may be subject to change as a result of the passage of time.

#### 3. USE OF REPORT BY THE CLIENT

The Client recognizes that projects involving pollutants and hazardous waste, as defined below, create extraordinary risks. In consideration of the said extraordinary risks and in consideration of Earth Tech providing the services to the Client in connection with the project on which pollutants and hazardous wastes are involved, the Client agrees that Earth Tech's liability to the Client, including liability resulting from claims by Third Parties upon the Client, with respect to any matter in any way arising out of Earth Tech's involvement with pollutants and hazardous wastes associated shall be limited to or otherwise protected as provided in paragraphs (a) and (b) below.

(a) Earth Tech's liability to the Client in connection with pollutants and hazardous waste is absolutely limited, both in contract and in tort for any and all claims arising out of or in connection with the project to a total maximum aggregate amount not to exceed the cost of reperformance of the services at the sole cost of Earth Tech for that portion of the services proven to be in error.

It is further agreed that such limitation shall be exclusive of the liability of Earth Tech to the Client which may otherwise be provided for in this Agreement for claims unrelated to pollutants and hazardous wastes.

In further consideration of Earth Tech providing the services to the Client in connection with the project in which pollutants and hazardous wastes are involved, the Client agrees that in connection with incidents and claims initiated by Third Parties involving pollutants and hazardous wastes, the Client shall indemnify, defend and hold harmless Earth Tech of and from any and all suits, actions, legal and administrative or arbitration proceedings, claims, demands, damages, penalties, fines, losses, costs and expenses of whatsoever kind or character, arising or alleged to arise out of the services of Earth Tech or any claim against Earth Tech arising or alleged to arise from the acts, omissions or work of others. Such indemnification shall apply to the fullest extent permitted by law,

regardless of fault or breach of contract by Earth Tech and shall include the fees and charges of lawyers in defending or advising Earth Tech as to such claims under the Agreement.

Without limiting the generality of the foregoing, such indemnity extends to claims which arise out of the actual or threatened dispersal, discharge, escape, release or saturation (whether sudden or gradual) of any pollutant to hazardous waste in or into the atmosphere, or on, on to, upon, in or into the surface or subsurface, soils, water or water courses, persons, objects or any other tangible matter.

- (b) Nothing herein shall relieve Earth Tech from their obligations to provide the services required by this Agreement and generally as required by standard engineering practice current as of the date of the performance of the services.
- (c) For all purposes of this statement of limitations, "pollutants and hazardous wastes" shall mean any solid, liquid, gaseous or thermal irritant or contaminant, including without limitation smoke, vapour, soot, fumes, acids, alkalis, chemicals and wastes, including without limitation, pollutants, hazardous or special waste as defined in any federal, provincial or municipal laws.

#### 4. SUBCONSULTANTS AND SUBCONTRACTORS

As a result of its mandate, Earth Tech may hire companies or individuals with special expertise or services not available within Earth Tech. These services are for the Client's benefit. The Client agrees to pay for the services of subconsultants and subcontractors. The Client also agrees to indemnify Earth Tech for any damage in any way resulting from the error, omission or negligent act of such subconsultants or subcontractors, including, without limiting the generality of the foregoing, the laboratory testing by subconsultants.

#### 5. JOB SITE SAFETY

Earth Tech is only responsible for the activities of its employees on the job site and is not responsible for the supervision of any other persons whatsoever. The presence of Earth Tech personnel on the site shall not be construed in any way to relieve the Client or any other persons on site from their responsibilities for job site safety.

#### 6. HAZARDOUS CONDITIONS AND EMERGENCY PROCEDURE

The Client undertakes to inform Earth Tech of all hazardous conditions, or possible hazardous conditions which are known to it. The Client recognizes that the activities of Earth Tech may uncover previously unknown hazardous materials or conditions and that such a discovery may result in the necessity to undertake emergency procedures to protect Earth Tech employees as well as other persons and the environment. These procedures may involve additional costs outside of any budgets previously agreed to. The Client agrees to pay Earth Tech for any expenses incurred as a result of such discoveries and to compensate Earth Tech through payment of additional fees and expenses for time spent by Earth Tech to deal with the consequences of such discoveries.

#### 7. NOTIFICATION OF AUTHORITIES

The Client acknowledges that in certain instances the discovery of hazardous substances or conditions and materials may require that government bodies, and other persons, be informed and the client agrees that notification to such bodies or persons as required may be done by Earth Tech in its reasonably exercised discretion.

#### 8. <u>USE OF REPORT BY OTHERS</u>

Others wishing to rely upon this Report in any manner may do so only upon condition that such use, and the consequences of such use, are entirely at their own risk and that they understand fully the terms of the Mandate and Basis of this Report.

It is further agreed by such Others that Earth Tech will not be liable to them in any manner including any liability in contract or in tort for any damages whatsoever arising from such use.