Environment

Public Works and Government Services Canada

CAM-C, Matheson Point, Nunavut
Phase III Environmental Site Assessment
Report - Final

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Project Number:

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Date:

February 21, 2014

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February 21, 2014

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Dear Jessie:

Project No: **60299674 (502)**

Regarding: **CAM-C, Matheson Point, NU Intermediate DEW Line Site**
Phase III Environmental Site Assessment - Final

AECOM Canada Ltd. is pleased to submit the final version of our report outlining the results of the Phase III Site Investigation conducted at the CAM-C, Matheson Point Intermediate DEW Line Site. We thank you for the opportunity to complete this work on behalf of Public Works and Government Services Canada. We trust that this report is consistent with your expectations,

Should you have any questions or require additional information, please do not hesitate to contact the undersigned at (780) 486-7057.

Sincerely,
AECOM Canada Ltd.



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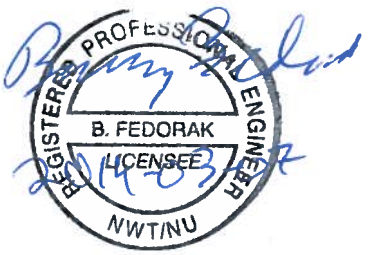
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Executive Summary

CAM-C Matheson Point is a former Distant Early Warning (DEW) Line site on the southeast coast of King William Island in Nunavut, with access to (and infrastructure pads on the beach of) the Rae Strait in the Gulf of Boothia. Site co-ordinates are: 68.819^{o}N and 95.289^{o}W. The closest community is Gjoa Haven, with an estimated population of 1,279, (Statistics Canada, 2011), which is situated approximately 30 kilometres (km) southwest of CAM-C.

The site has an airstrip, which is accessible by aircraft, and a barge landing for sea access in the summer. There is also a rough trail accessible by all-terrain vehicle (ATV) from Gjoa Haven; the existence and condition of any path connecting the community with CAM-C was unknown prior to the site investigation.

The site was constructed in the 1950s and consisted of two main areas: the Station Area and the Beach Area. It operated until 1963, and at an unspecified time following its abandonment, site buildings were dismantled or relocated from the site. The total disturbed area at CAM-C is estimated to be 22.1 square kilometres (km^2) (or 8.54 square miles as per DIAND, 1982).

In 2013, AECOM was contracted by Public Works and Government Services Canada (PWGSC) to complete a Phase III Environmental Site Assessment (ESA) to determine the outstanding environmental issues remaining at CAM-C (the site). Site work was completed between July 28 and Aug. 2, 2013.

The conclusions included in this report are based on the information and data collected during the Phase III ESA at the CAM-C, Matheson Point Intermediate DEW Line site. The following is a summary of the conclusions:

Contaminated Soil Areas

Approximate volumes of contaminated soil identified at CAM-C include:

Table E-1 Estimated Contaminated Soil Volumes

Location	Estimated Volume (m^3)	Notes
Type B Hydrocarbon		
Beach POL	186	
Station POL	375	
Module Train	10	
Estimated Total	571	
Tier I PCBs		
Warehouse Foundation (west side)	7.5	Some additional delineation of the Station Area Tier 1 PCB impacted locations may be required
Warehouse Foundation (east side)	20	
Garage Foundation	2.1	Plume co-impacted with Tier I metals
Debris Area #10	21.3	
POL Line	9.6	Two localized occurrences; one of 7.5 m^3 and one of 2.1 m^3, both to a depth of 0.3 m
Estimated Total	60.5	
Tier I Metals		
Garage Foundation	2.1	Plume co-impacted with Tier I PCBs
Estimated Total	2.1	
Tier II Metals		
Station Area Pad, Near the Module Train Imprint	7.5	
Estimated Total	7.5	

Demolition Quantities

No site structures remain, aside from two large concrete foundations, several small concrete foundations, and a fallen radar tower. The quantity of debris from the radar tower and the POL line has been included with the non-hazardous debris volume estimate, and the concrete foundations do not require removal. An estimated crushed volume of 209 cubic metres (m^3) of non-hazardous waste materials is expected from demolition activities.

Buried Debris Areas

Buried debris areas were identified through a geophysical survey of the site. The extents of the two existing landfills and three buried debris areas are provided below:

Table E-2 – Buried Debris Estimated Quantities

Name	Location	Surface Area Extent (m2)
Lobe C	Station Area	95
Lobe D	Station Area	145
Lobe E	Station Area	80
Station West Landfill	Southwest of Station Area	1,558
Airstrip Landfill	Southeast of Airstrip	672

Buried debris amounts are estimated to be 609 m^3 of non-hazardous waste and 29 m^3 of hazardous waste, if the landfills were to be excavated. These are rough estimates based on likelihood of occurrence for cost estimating purposes only. No environmental impacts in the soils were noted either upgradient or downgradient of the buried debris areas, in the locations tested at the landfills (no samples taken from lobes). All buried debris areas, excluding the Airstrip Landfill, were considered to be geotechnically stable, and as such the buried debris areas can be

covered with additional granular fill material and left in place. Because the Airstrip Landfill is located within a drainage channel and subject to erosion, it is recommended that it be excavated.

Surface Debris Areas

Surface debris was identified throughout the site, although it was concentrated around the Station Area and the Beach Area. In total, the amount of surface debris is estimated to be 197 m^3 of non-hazardous (crushed volume) and 4 m^3 of hazardous material (asbestos-amended building materials and batteries).

Hazardous and Non-Hazardous Materials

The estimated volume of hazardous debris at the CAM-C site is 33 m^3, and includes the surface battery debris and asbestos (4 m^3), as well as the estimated volume of material buried within each of the Station West and Airstrip Landfills. The volume of non-hazardous material includes all of the known surface debris, debris from the Station West and Airstrip Landfills, Lobes C and D, and the demolition materials. The estimated volume of non-hazardous debris at the CAM-C site is 1,015 m^3, of which 609 m^3 is contained within the existing landfills and buried debris areas.

Borrow Areas and Availability

Twenty borrow areas were assessed as part of this investigation; most of the potential borrow areas were in previously disturbed locations. While borrow material is widely available from previously disturbed sources, blending and screening from some sources may be required to achieve the amount of each type needed. Screening out large boulders will also be required if Type 1 material is needed. In total, it is estimated that a combined total of 188,300 m^3 of Type 2, 3, 6 Granular Fill materials are available for use on site.

Borrow material has low acid rock drainage potential.

Landfill/ Secure Soil Disposal Facility (SSDF) Locations

A location that meets the requirements for landfills, as per the Abandoned Military Site Remediation Protocol (AMSRP), has been identified near the former Station Area, as shown on Figure 2. An alternate location would be LF-2.

Landfarm Locations

Several potential locations are available for a landfarm at CAM-C. The most practical location would be at LF-3, southeast of the south end of the airstrip (in Borrow Area 11), as indicated on Figure 2.

Camp Laydown

A location for potential camp laydown was identified within the vicinity of Borrow Areas 6, 7, 8 and 9 (LF-2). An area of approximately 70,000 square metres (m^2) would be available at this location. The location of LF-1 would also be an option.

Site Access

The existing site airstrip can be used as it is, if the weight restrictions are respected. The site roads will likely need some minor upgrades in some locations, including additional culverts, to allow for heavy equipment traffic, but are otherwise in reasonable shape. The barge landing area at the beach can also be used with minor upgrades; however, some barrels may need to be relocated prior to unloading.

Archaeological

Based on the results of the Archaeological Impact Assessment (AIA) completed by Thomson Heritage Consultants for AECOM and PWGSC, it is recommended that PWGSC be allowed to proceed with the remediation of the CAM-C DEW Line site area with the provision that no impacts occur within 30 metres (m) of the six historic sites identified in the AIA.

Classification Forms

The National Classification System for Contaminated Sites (NCSCS) forms were completed for the site and with the current information, CAM-C is listed as a Class C site with 88% certainty; the raw NCSCS score was 75.6 (adjusted up 2.0 points for a spreadsheet glitch), which gives it Class 1 ranking, or High Priority for Action.

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1. Introduction

CAM-C Matheson Point is a former Distant Early Warning (DEW) Line site on the southeast coast of King William Island in Nunavut, with access to (and infrastructure pads on the beach of) the Rae Strait in the Gulf of Boothia. Site co-ordinates are: 68.819^{o}N and 95.289^{o}W. The closest community is Gjoa Haven with an estimated population of 1,279 (Statistics Canada, 2011), which is situated approximately 30 kilometres (km) southwest of CAM-C.

The site has an airstrip, which is accessible by aircraft, and a barge landing for sea access in the summer. There is also a rough trail accessible by all-terrain vehicle (ATV) from Gjoa Haven; the existence and condition of this trail and any other trails connecting the community with CAM-C were unknown prior to the site investigation.

The site was constructed in the 1950s and consisted of two main areas: the Station Area and the Beach Area. It operated until 1963, and at an unspecified time following its abandonment, site buildings were dismantled or relocated from the site. The total disturbed area at CAM-C is estimated to be 22.1 square kilometres (km^2) (or 8.54 square miles as per DIAND, 1982).

In 2013, AECOM was contracted by Public Works and Government Services Canada (PWGSC) to complete a Phase III Environmental Site Assessment (ESA) to determine the outstanding environmental issues remaining at CAM-C (the site).

1.1 Scope of Work

The objective of the site investigation at CAM-C was to collect all data necessary to develop a detailed Remedial Action Plan (RAP), in accordance with the Abandoned Military Site Remediation Protocol (AMSRP; source: Indian Affairs and Northern Development Canada (INAC), now Aboriginal Affairs and Northern Development Canada (AANDC), 2009), as well as the design and specifications in preparation for tendering and site clean-up. The tasks included in the scope of work for the Phase III ESA included the following:

- Identification, characterization and quantification of all hazardous and non-hazardous materials
- Identification and delineation of contaminated areas
- Evaluation of the water quality at the Freshwater Lake
- Completion of a detailed topographic and geophysical survey
- Documentation of flora and fauna, based on literature and professional experience
- Identification of potential locations for an engineered landfill(s) and/or landfarm
- Identification of borrow sources that may be used for the potential repair of site roads, airstrip, and barge landing areas as well as for the construction of a potential landfill(s) and/or landfarm
- Evaluation of the condition of site access roads, barge/beach landing areas, and airstrip
- Evaluation of the logistical challenges associated with mobilization, site remediation and demobilization activities
- Provision for an increase in local community and Inuit involvement in the program
- Obtain traditional knowledge regarding past and present land use of the site from the locals in Gjoa Haven
- Conduct an Archaeological Impact Assessment (AIA)

The site is represented on the Figures in Appendix A, which are referenced throughout the report. Data tables summarizing the environmental analytical results received from Maxxam Analytics are in Appendix B. Selected photographs of the site are in Appendix C.

Copies of the environmental and geotechnical laboratory reports are included in Appendix D. The results of the geophysical survey are presented in a report prepared by DMT Geosciences Ltd. in Appendix E. The test pit logs are presented in Appendix F. The archaeological report prepared by Thomson Heritage Consultants Inc. is included

in Appendix G; the Federal Contaminated Sites Action Plan scoring sheets are presented in Appendix H; and a DVD of the site video is included in Appendix I.

Once the scope had been set for the program, AECOM was approached by AANDC to add acid rock drainage (ARD) testing to the program. Two samples were taken and submitted for ARD testing.

2. Background

2.1 Site Description

The CAM-C site, which included a Station Area and Beach Area, was abandoned as part of the DEW Line system in 1963, and the responsibility of the site was taken over in 1965 by AANDC.

The Station Area was situated on a hill with an elevation of approximately 70 metres above sea level (mASL), and was approximately 2 km inland from the shores of Rae Strait (ESG, 1995).

The Station Area consisted of a building train, a garage, warehouse, POL storage area, barrel storage, and a communication tower. Site facilities were dismantled sometime after the site was abandoned in 1963. In 1985, some hazardous material, including two transformers, a choke, and light ballasts were removed from the site (Andzans and Associates, 1984). The only remnants of the Station Area DEW Line facilities are concrete foundations, scattered debris, and a fallen antenna. Along the hillside to the southwest of the site is a visible, partially buried debris area. An airstrip adjacent to the Station Area has been previously suitable for landing Twin Otter, Shorts Skyvan, and Dornier 228 aircraft.

The Beach Area was previously used for barge landings and off-loading of supplies. Approximately 400 barrels, plus other miscellaneous debris remain there. The Beach Area includes a barge landing area that is likely suitable to support sealift access to the site. (WESA, 2012)

2.2 Previous Investigations

The following reports were provided to AECOM for review:

- Aboriginal Affairs and Northern Development Canada (AANDC). 2012. *The Big Picture, Contaminated Sites in Nunavut*
- AECOM. 2009. *Indicative Cost Estimates for the Remediation of Eight Nunavut Contaminated Sites*
- Andzans and Associates. 1984. *DEW Line Data File*. Department of Indian and Northern Affairs (referenced in WESA report; not reviewed for this report)
- Environmental Sciences Group (ESG). 1995. *Environmental Study of Abandoned DEW Line Sites III: Six Intermediate Sites in the Canadian Arctic. Volumes I, II and III*
- Public Works and Government Services Canada (PWGSC). 2003. *Environmental Review of DIAND Contaminated Sites in the Territory of Nunavut*
- WESA. 2012. *Limited Environmental Investigation EK002, Matheson Point, CAM-C*. February 2012

These reports indicated that four previous site investigations had been completed, as outlined below.

In July 1985, a seven person crew of federal representatives inspected the site for hazardous material and removed equipment that was deemed hazardous, from the site. This material included two transformers, a choke, and six light ballasts. In addition, two soil samples were obtained; one from the building site and the other from a point south of the site (presumably downslope from the drainage path to Rae Strait). Neither sample contained polychlorinated biphenyls (PCB) exceeding the detection limit of 10 parts per million (ppm), and it is unknown if any other parameters were analyzed. (ESG, 1995)

Another site visit by federal government representatives occurred in 1988, where an inventory of facilities was obtained and documented photographically. (ESG, 1995)

In 1992, ESG completed a site investigation where 61 soil/sediment samples and several vegetation samples were obtained to further define the level of contamination at the site. One water sample and several background samples were also obtained for reference. Background concentrations of lead (16.5 ppm), arsenic (0.5 ppm), and zinc (5.4ppm) were the only constituents noted in detectable concentrations from the scan of PCB, metals, and petroleum hydrocarbon (PHC) parameters. With the exception of the Station Area, all samples obtained were within the criteria for PCBs, polyaromatic hydrocarbons (PAH), organochlorines, and inorganic elements. The Station Area had one soil sample from a surficial stain that had a lead concentration that exceeded DEW Line Clean-up Criteria (DCC) Tier I criteria, and there were two locations with PCB concentrations exceeding DCC Tier I criteria: 1.5 metres (m) east of the warehouse foundation and two from the drainage from the southeast side of the warehouse foundation. PCBs were noted in detectable concentrations at other locations in the Station Area, but were less than 500 parts per billion (ppb). Plant samples did not demonstrate evidence of metals or PCB accumulation at a level exceeding criteria, but did exceed background conditions. In total, an estimated 13 cubic metres (m^3) of PCB and/or lead impacted soil was identified as requiring disposal. (ESG, 1995)

WESA completed a follow up investigation in 2011, in which 16 soil samples (including one duplicate and one background sample) were obtained. None of the samples had exceedances in metals or PCBs, but PHC (Station Area and Beach Site) and tetrachloroethylene (Station Area) impacted soil was noted. (WESA, 2012)

2.3 Selected Criteria

It should be noted that previous investigations did not use the 2009 INAC protocol outlined in the AMSRP and did not consider the proximity to the ocean when outlining contaminated zones. Because the majority of the site infrastructure/previous issues were located greater than 30 m from the marine shoreline, several of the areas previously identified as PHC impacted did not apply once the 30 m exclusion was considered.

The evaluation criteria provided in the AMSRP were used for the 2013 site assessment.

2.4 Description of the Environment

A review of the historical aerial photography for the site was completed as part of the site investigation planning. The historical aerial photography available for the site was from 1964 at a scale of approximately 1:20,000, and can be found in Appendix A. The air photo review provided evidence of past land use, operational practices, and site development, all of which give insight into the potential environmental impacts. The air photos also allowed for the evaluation of terrain types and previous borrow sources.

2.4.1 Climate

The climate at CAM-C is characterized by long, cold winters and short, mild summers. Average monthly and annual weather data measured at the closest weather station (Gjoa Haven, Nunavut, 68° 64’ N, 95° 87’ W, elevation 46.9 m) was summarized in the following table. The table includes data from 1984 to 2007, Canadian Climate Normals, publicly available from Environment Canada.

Table 2-1: Meteorology, Precipitation, and Temperature Profiles for Gjoa Haven, Nunavut

Month	Daily Maximum (°C)	Daily Minimum (°C)	Extreme Maximum (°C)	Extreme Minimum (°C)	Rainfall (mm)	Snowfall (cm)
Jan	-30.4	-37.1	-17.7	-44.1	0	9.7
Feb	-30.5	-37.2	-17.8	-44.0	0	8.8
Mar	-25.2	-32.7	-12.0	-41.6	0	17.3
Apr	-16.0	-24.8	-4.4	-34.7	0	14.8
May	-5.8	-12.9	1.2	-24	2.4	14.9
Jun	4.4	-1.3	13.6	-8.3	10.7	3.9
Jul	12.1	3.8	20.0	0	20.7	0.4
Aug	9.0	2.7	17.1	-1.7	27.0	0.5
Sep	2.2	-2.0	8.7	-8.8	15.9	8.8
Oct	-6.7	-12.3	0.7	-23.3	0.9	28.3
Nov	-19.0	-25.8	-7.3	-34.8	0	13.3
Dec	-26.1	-32.8	-14.5	-40.0	0	10.6
Year	-11.0	-17.7	Totals		77.6	131.3

Source: Environment Canada Climate Normals between 1984 and 2007

2.4.2 Ecoregion

The CAM-C site is part of the Northern Arctic Ecozone, within the Victoria Island Lowlands. This Ecoregion ranges from northern Victoria Island through the southwestern portion of Prince of Wales Island, and includes the entirety of King William Island, as well as the western edge of the Boothia Peninsula. (Environment Canada, 1999b)

2.4.3 Geology

This region's landscape is shaped by glaciers, which left wide, flat plateaus and gently rolling plains; coastal land is rising over time as it decompresses after the glacial pressure. Permafrost is evident throughout the region, where freeze/thaw cycles shape the soil and drainage channels, as well as degrade the limestone and sandstone bedrock. Some parts of the region have steep coastal cliffs, but CAM-C is situated in a small cove, with a somewhat protected and gently sloped beach. Regional drainage would be towards Rae Strait for the east side of the site, but the portion west of the Station Area (high point) would be towards the Freshwater Lake.

King William Island is entirely aligned with a geological formation comprising Cambrian-Silurian carbonate and siliciclastic rocks (Geological Survey of Canada, Canada-Nunavut Geoscience Office, 2006). .

2.4.4 Land Use

Current land use is limited to hunting, fishing, and recreation. The site is a 2.5 hour ATV ride from Gjoa Haven, and has easy access by local people virtually year round.

2.4.5 Vegetation

Vegetation in the Victoria Island Lowlands ecoregion is sparse and stunted. Species present include: arctic poppy, purple saxifrage, mountain avens, moss campion, arctic bladder campion, arctic daisy, crustose lichens, arctic willow, white arctic heather, yellow oxytrope, cotton grass, mastodon flower, arctic lousewort, mountain sorrel, pygmy buttercup, river beauty, chickweed, and various sedges. (Environment Canada, 1999b)

Previous reports noted the presence of the following plant species:

- Arctic willow: *Salix arctica*
- Grasses: *Poa sp. (*including *Poa arctica* (arctic bluegrass), *Festuca sp. (*including *Festuca brachyphylla* (alpine fescue)), *Elymus sp.*
- Sedges: *Carex sp. (*including *Carex membranacea* (fragile sedge)
- Purple saxifrage: *Saxifraga oppositifolia*
- Mountain avens: *Dryas octopetala*
- Mountain sorrel: *Oxyria digyna*
- Lichens (various)
- Mosses (various)

No formal vegetation survey was completed, but a general species characterization was noted. Overall, the site had sparse vegetation cover, with re-establishment occurring at most previously disturbed locations. On-site species observations included: arctic willow*, arctic poppy*, mountain avens, moss campion*, mountain sorrel*, arctic bluegrass, horned dandelion (Taraxacum hyparcticum), arctic daisy (Chrysanthemum arcticum), two types of lichen (possibly reindeer lichen and white lichen)*, arctic lousewort (Pedicularis arctica), thrift (Armeria maritima), tufted saxifrage (Saxifrage cespitosa), three-toothed saxifrage (Saxifrage tricuspidata), and Burser's saxifrage (Saxifraga burseriana).

* Indicates dominant species.

2.4.6 Wildlife

Characteristic wildlife of the region includes: muskox, Peary caribou, long-tailed Jaeger, glaucous gull, short-tail weasel (ermine), horned lark, collared lemming, black-bellied plover, ruddy turnstone, red phalarope, oldsquaw, brant, king eider, red-throated loon, snow goose, arctic hare, arctic fox, snowy owl, and polar bear. (Environment Canada, 1999b)

Previously noted wildlife included: muskox, Arctic hare, lemmings, horned larks, ravens, snow buntings, and glaucous gulls (ESG, 1994).

No formal wildlife survey was completed, but incidental sightings were noted. Observations made by the wildlife monitors were noted, and evidence of the site use by local people for hunting was widespread. Wildlife sighted or evidence identified during the 2013 site investigation included: Arctic fox, muskox, Canada geese, swans, caribou, loon (and chick), long-tailed Jaeger, plover (presumed to be a black-bellied with at least one chick), Arctic tern, one burrowing rodent (lemming or vole possibly), spider, bee, and unidentified small, brown songbirds.

3. Investigation

3.1 Contaminated Soil Delineation

The investigation and delineation of contaminated soil at CAM-C was completed for the contaminants of concern identified under the AANDC AMSRP, which include: arsenic, cadmium, cobalt, copper, lead, nickel, zinc, and PCBs (INAC, 2010). PCB and metal soil contamination at DEW Line sites tends to be restricted to surface or shallow depth, as such, the sampling efforts were concentrated near surface for these parameters. Typical source areas for these contaminants are well documented from previous DEW Line site investigations and were the focus of the 1992 investigation by ESG.

Delineation of PHC impacts was completed using the INAC Arctic PHC Evaluation Process, which is a component of the AMSRP. The methodology is based on total petroleum hydrocarbon (TPH) criteria. TPH identity is categorized according to two types: Type A and Type B. Type A is comprised of heavier, less mobile hydrocarbons (such as lubricating oil) and includes the F3 and F4 hydrocarbon fractions. Type B is comprised of the lighter, more mobile fractions, such as those encountered in fuel oil (includes the F1, F2 and F3 hydrocarbon fractions).

The dominant hydrocarbon type is defined by the percentage of the sum of F3 and F4, relative to the sum of F1 to F4 (total TPH). For Type A contaminated soil, the sum of F3 plus F4 must be greater than 70% of the total TPH concentration and the F2 concentration must be less than the F4 concentration. Each PHC fraction range (F1, F2, F3, and F4) has a guideline value, but it is possible that although a location does not have an exceedance of any specific PHC fraction, the TPH at that location may exceed the TPH guideline. In this case, the soil will be considered either Type A or Type B and addressed accordingly. See Table 3-1 below.

Table 3-1: Remedial Objectives – Hydrocarbon Contaminated Soil Guidelines for INAC Abandoned Military Sites

Exposure Pathway	F1	F2	F3	F4	Type B Hydrocarbon Contamination	Type A Hydrocarbon Contamination
Protection of Freshwater Aquatic Life (a)	1,290	330	n/a	n/a	330	n/a
Direct Soil Eco-Contact	Not utilized					
Protection of Terrestrial Wildlife (b)					2,500	
Human Health						20,000
Management Limit (c)					5,000	

(a) Within 30 m of a water body
(b) For surface soils to 0.5 m depth
(c) Below 0.5 m depth, a value of 5,000 mg/kg may be applied, based on professional judgment

Source: Table 4.2 of the AMSRP (INAC, 2009).

A localized incidence of tetrachloroethylene exceeding Canadian Council of Minister of the Environment (CCME) guidelines was noted north of the Garage by WESA in 2011. Tetrachloroethylene is not part of the AMSRP and any impacts would likely be associated with other parameters, therefore, this specific parameter was not investigated as part of the Phase III ESA.

Contaminated soils that are regulated should be remediated and/or disposed of in compliance with the applicable regulations. Contaminated soils that are not regulated and are deemed non-hazardous should be remediated to meet the criteria for soil. Hydrocarbon impacted soils were evaluated using the strategy outlined in the relevant section of the AMSRP: Remedial Objectives – Hydrocarbon Contaminated Soil (INAC, 2010). Where multiple contaminants are present in the soils, the most conservative remedial option that addresses all contaminant types will be applied.

All soils with PCB concentrations of 50 ppm or higher are classified as 'PCB Waste' under the Canadian Environmental Protection Act (CEPA; source: Environment Canada, 1999a). The handling and disposal of PCB Waste is governed by the regulations, with a requirement for off-site disposal at a licensed facility. All soil with metal or PCB concentrations exceeding the DCC (but with PCB concentrations below CEPA) will be either disposed of off-site or disposed of on site in an engineered landfill.

3.1.1 Methodology

Previous investigations had identified Type B PHC impacts at several locations and one location with potential Type A PHC impacts. In suspected Type B PHC areas, soil samples were collected from the surface and from within testpits excavated until either bedrock or frozen ground refusal. AECOM was prepared to collect groundwater from these testpits for analysis, but none was encountered. All samples were field characterized for grain size, and two samples were submitted for confirmation by laboratory gradation. Testhole locations were selected to intercept contaminant migration pathways toward receptors (downslope, runoff pathways, etc.).

An RKI Eagle (Eagle) calibrated with hexane was used with the intent to qualitatively screen soil samples prior to submission for analysis. This instrument has known limitations for detecting PHC F3 and F4 fractions, and does not operate efficiently in cold temperatures. It has proven useful for the F1 and F2 fractions and has previously been successfully used during the field programs at other abandoned military sites. However, at CAM-C, the RKI Eagle was reporting low readings in all samples, even those with high suspicion of lighter fraction PHC impact. As a result, use of the instrument was discontinued after the second day, and the readings obtained are not included in the results.

In locations with known or suspected PCBs, metals and Type A PHC impact, samples were collected from surface and shallow depths, as impacts are typically limited to the surface and near surface environment. Delineation of potential impacts was completed according to a grid pattern, with consideration of optimal receptor interception.

Soil samples were collected in shallow testpits excavated by hand or in deeper testpits excavated using a small backhoe attachment mounted on an ATV (quadavator). A tag with a numerical identifier was placed where samples were obtained to allow the position to be surveyed, and to mark location of the samples during the eventual site clean-up. The identifier on each tag corresponds to a testpit number.

Samples were collected with a metal shovel or trowel that was cleaned between samples with a "soil wash" or wiped, as required. For metals and PCBs, samples were obtained just below any surface vegetation and surface cobbles or debris; they were generally collected at a depth of 0.05 metres below ground surface (mBGS), and again at approximately 0.3 mBGS. Soil for these samples was placed directly into laboratory supplied jars for PCB analysis and bags for metals analysis. The jars were completely filled (no headspace) and the samples kept cool until/during shipment to the laboratory, as specified. Field duplicates were collected for approximately 10% of samples, given a separate label and submitted blind to the laboratory. A review of quality assurance and quality control (QA/QC) for field and laboratory methodologies is provided in Section 3.14 and Table B6 in Appendix B.

Where the contaminant levels from the 1992/2011 investigations were close to the remedial criteria, a surficial soil sample was collected at these locations to confirm the contaminant levels. During the course of the 2013

investigation, additional areas where contamination was suspected or has been historically identified at similar DEW Line sites were also investigated.

The manner in which the investigation of PHC impacts was completed depended on whether the expected impacts were Type A (F3-F4 fraction), such as at lubricating oil stains, or fuel oil impacts Type B (F1, F2 and F3 fractions). Type A PHC impacts can often be defined by the limits of visual staining. No surficial staining was noted in this investigation, but surficial and shallow depth soil samples were collected in the vicinity of previously identified stains to identify maximum contaminant concentrations and the depth to which impacts persisted.

Type B (fuel) impacts were investigated with the collection of surface and depth samples. Initial sample locations were targeted to source areas such as POL pads. If impacts were identified in the source areas, then additional testpits were completed surrounding the source, targeted to intercept expected migration pathways. Several testpits were completed to the permafrost layer within drainage pathways to ascertain whether PHC impact was following the permafrost. Testpits were logged to identify soil types and saturation levels to assist in interpretation of data and the identification of contaminant migration pathways. Observations of odour were noted (no staining was identified). Bulk soil samples were collected to determine grain size distribution in the primary hydrocarbon-impacted areas.

Soil sampling around lobes of buried debris areas, including existing landfills, was carried out by targeting locations both upgradient and downgradient of each lobe. Downgradient sample locations were typically ranged between 2 and 10 m from the edge of the lobe. Generally, samples were collected near surface and 0.3 to 0.5 m depth to check for metals, PCBs and PHCs; deeper samples were obtained to achieve vertical delineation if PHC impacts were noted at shallower depths.

3.1.2 Result Summary

A summary of the contaminated soil identified at the CAM-C site is provided in Table 3-2 below, with a discussion of each area assessed provided in the following sections. Detailed data tables are provided in Appendix B and the testhole locations are outlined on Figures 1-9 in Appendix A.

The material encountered in the testholes on site was all coarse-grained (sand, gravel, cobbles, and boulders); this was confirmed by the laboratory gradation. Permafrost was encountered between 1.04 to 1.43 mBGS.
A summary of the sample results, by location, is outlined in the following table.

Table 3-2: Summary of Contaminated Soil Areas at CAM-C

Location	Figure	Contaminants	Tier I			Tier II			Type B			Delineation Comments
			Area	Depth	Volume	Area	Depth	Volume	Area	Depth	Volume	
			m^2	m	m^3	m^2	m	m^3	m^2	m	m^3	
Beach POL	9	Type B PHCs							155	1.2	186	Delineated laterally, not vertically. Assumed depth of 1.2 m.
Garage	7	Tier I PCBs	7	0.3	2.1							No delineation. Assumed depth of 0.3 m.
		Tier I Metals (Pb)	7	0.3	2.1							Partial lateral delineation. No depth delineation, assumed depth of 0.3 m.
Warehouse	7	Tier I PCBs (west side)	25	0.3	7.5							Partial lateral delineation. No depth delineation, assumed depth of 0.3 m.
		Tier I PCBs (east side)	25	0.8	20							No delineation. Assumed depth of 0.8 m.
Module Train	7	Type B PHCs				25	0.3	7.5				No delineation. Assumed depth of 0.3 m.
		Tier II Metals (Cu)							20	0.5	10	Partial lateral delineation. Depth delineation.
Station Area POL	8	Type B PHCs							375	1	375	Not delineated. Assumed depth of 1.0 m.
South of Station Pad	7	Tier I PCBs	25	0.3	7.5							No delineation. Assumed depth of 0.3 m.
		Tier I PCBs	7	0.3	2.1							Partial lateral delineation. No depth delineation, assumed depth of 0.3 m.
Debris Area #10	10	Tier I PCBs	71	0.3	21.3							No delineation. Assumed depth of 0.3 m.
Total Volumes (m^3)			63			7.5			571			

3.1.3 Airstrip Area

The airstrip is located approximately 300 m east of the Station Area. Four environmental samples were collected in the airstrip area in 1994. Three were on or adjacent to the airstrip and one was in a drainage path away from the airstrip. No contamination was identified.

In 2013, the airstrip area was reviewed on site and there were no indications of surficial hydrocarbon impacts. Therefore, no samples were specifically collected in this area.

A landfill (Airstrip Landfill) was noted southeast of the airstrip. Samples were obtained around the perimeter of the landfill and submitted for PHC, PCB, and metals analyses; all results were within guidelines (most below detection limits). Results are summarized in Appendix B and laboratory data is included in Appendix C.

3.1.4 Station Area

The Station Area is greater than 30 m from the ocean, so the freshwater aquatic life pathway criteria were excluded. The Station Area includes two concrete foundations, the fallen radar tower and its affiliated concrete anchor pads, the imprint and residual waste from the Module Train, a gravel pad to the southeast, a former Inuit House (between the Station Area and Freshwater Lake), and several debris areas. There was a significant amount of debris scattered over the Station Area pad so delineation was completed around debris areas. No painted debris was noted but paint chips were evident over the ground surface throughout the Station Area, which may have potentially elevated previous PCB analyses. Testpit locations are provided on Figures 3, 4, and 10, and plumes are outlined on Figures 7 and 8. Results are summarized in Appendix B and laboratory data is included in Appendix C.

3.1.4.1 Station POL Area

Analyses were completed for metals and PCBs in surficial samples, with the main focus to delineate PHCs. The areas previously identified were evaluated and hydrocarbon odours were noted in several of the soil profiles (TP13-05, TP13-09, TP13-14, TP13-15, and TP13-17); however, these were within guidelines.

For PHCs, the total Type B PHC criterion of 5,000 milligrams per kilogram (mg/kg) for soils deeper than 0.5 mBGS was exceeded at TH13-10 and TH13-13. Most testpits were completed to the depth of the permafrost, but the elevated pad area had a deeper depth to permafrost, with most testholes completed to at least 1.4 mBGS (permafrost encountered). Odours were most notable approximately 0.2 m above the permafrost (1.2 mBGS). Off the pad, odours were noted around 0.6 to 0.75 mBGS. Detectable concentrations of PHC and odours were noted as far north as TP13-09 and TP13-11, as far south as TP13-16, as far east as TP13-08, and as far west as the eastern side of TP13-19; however, the concentrations did not exceed the AMSRP Management Limit guidelines. Delineation of the actual plume is between TP13-10 and TP13-05 to the east and localized to TP13-13 to the west (within the bermed area), as shown on Figure 7 in Appendix A.

ESG had identified two locations (G3104 and G3105) of PCB impact in the vicinity of the Garage Foundation, which it was later determined were actually located along the Station POL line (their figure and sample descriptions in the ESG report did not match). AECOM submitted surficial samples from TP13-01, TP13-02, and TP13-03, which are near the presumed locations of these two ESG samples, but none of these had detectable PCB concentration. It is assumed that these are localized issues.

3.1.4.2 Sewage Outfall

Sewage outfall results from sample locations SO-1 through SO-5 were all below the DCC Tier I and II criteria for metals and PCB guidelines. This is consistent with previous findings.

3.1.4.3 Station West Landfill

All samples submitted from the vicinity of the Station West Landfill were below the DCC Tier I and II criteria for metals and PCBs. Delineation of the debris boundary was achieved at this location with the assistance of geophysical survey.

WESA had obtained a background sample and submitted it for PHCs, PCBs, VOCs, and metals in 2011. The results of the background sample (CAM-C SS-008) were consistent with the landfill samples, therefore indicating no concerns regarding contaminant migration.

3.1.4.4 Warehouse Foundation

Samples were obtained from the vicinity of the two former bay door locations at the warehouse on the east and west sides.

PCB impacts were previously noted in the 1992 ESG study at the northeast corner of the Warehouse Foundation; however, the AECOM samples around this location (see TP13-23, TP13-40, and TP13-41) were all below criteria. The issue is likely localized to the ESG sample location (G3109).

Samples were also obtained from the vicinity of the sample from the WESA field program (CAM-C SS-006) in the northeast corner of the Warehouse Foundation and submitted for PHC analysis. WESA had previously determined PHC impact at 0.15 mBGS under the Canada-Wide Standards for Petroleum Hydrocarbons in Soil (CWS) criteria at this location (more conservative than the AMSRP guidelines). No staining evident at the time of assessment, and sample results indicated PHC concentrations within the AMSRP guidelines.

PCB impact was noted by ESG (G3109) a few metres south of TP13-41; the PCB tests for TP13-23, TP13-40, and TP13-41 were all within guidelines. The PCB impact from the plume did not extend to TP13-42, and is likely limited to the east side of the Warehouse Foundation.

On the west side of the Warehouse Foundation, AECOM obtained samples from TP13-22, and the sample from 0.5 mBGS had an exceedance of the DCC Tier I PCB guidelines. ESG's sample G3106, a few metres to the west of TP13-22 was within guidelines for PCBs, so again, the PCB impact is most likely limited to the sides of the foundation.

3.1.4.5 Garage

Samples were obtained from the vicinity of the two former entrances to the garage building on the east and west sides.

Results were below the AMSRP criteria for all samples except for TP13-49 at the Garage Foundation, where the surficial sample (0.05 m) exceeded the DCC Tier I criteria for PCBs. No PHC odours or soil staining were noted at this location. This testpit is likely close to the northern extent of the lead exceedance noted by ESG (G3102). AECOM's 2013 metals results for this location were below the DCC criteria.

PHC impacts were also noted on the east side of the Garage by WESA at the sample location CAM-C SS-007, but concentrations were considered impacted under the CWS criteria, not under the AMSRP criteria. To confirm this, a sample was obtained from the vicinity of the previous sample location, and this sample (TP13-49) did not indicate PHC or lead impact under the AMSRP (or the CWS). There were no PCB impacts noted in the WESA sample. It is suspected that the staining previously observed was the extent of the driveway into the garage on the east side, and this will be the conservative extent of the lead (Tier I) plume. The Tier I PCB impact is also likely localized and limited to the extent of the ESG G3102 sample location to the north. The PCB plume overlaps the lead impacted

location, but although this results in a situation of co-contamination, both are Tier I and will be addressed the same way.

3.1.4.6 Module Train

At the Module Train, PHC impacted soil was noted generally to depths of 0.35 m. PHC odours were noted in the soil on the south side of the Module Train and down to the POL pad berm, but results for samples were below the AMSRP criteria. At TP13-53, the soil concentrations exceeded criteria for Type B TPH. ESG completed sampling at the north side of the Module Train footprint in 1992 (G1117), and no impacts were identified. This was confirmed by AECOM in 2013 (TP13-59, TP13-64).

A copper concentration above the DCC Tier II criteria was identified at TP13-58, which was downslope of the module train. This testpit was part of the PHC confirmatory program and metals issues were not expected (no surface debris noted), so this location is not fully delineated, but is anticipated to be a small, localized occurrence.

3.1.4.7 Building Train

One sample was obtained from beside the water tank, which is the only structure remaining from the Building Train. The sample was submitted for PCBs and metals, which were below the AMSRP criteria. No evidence of PHC staining or impact at any depth was observed.

3.1.4.8 Tower Structure

Three samples were obtained in the area of the tower structure; one from the foundation, one from the soil beneath a white-painted section, and one from beneath an orange-painted section. The paint was noted to have flaked off the structure in places, and was sitting on the soil. Samples were submitted for PCB and metals analysis and all were below AMSRP criteria. No evidence of PHC impact was expected or observed at this location.

3.1.4.9 Pad Near Station Area

A gravel pad littered with weathered food tins was noted on the access road just past the Station Area (east), on the road to the Beach Area. One sample was obtained from each side of the pad and submitted for metals and PCB analyses. All samples were below criteria. No previous sampling had been completed here.

3.1.4.10 Debris Area 10

The remains of a structure were noted on the south side of the road to the Freshwater Lake. Asbestos-amended insulation was noted at this location, as were a couple of small burn pits and domestic debris (food cans, cigarette packages, etc.).

Samples were obtained from the centre of the debris area, and the surficial sample exceeded the Tier I guideline for PCBs (but the sample at 0.3 mBGS was clean). This testpit was completed in the vicinity of the ESG testpits from 1992 (G3122 and G3123), which had been submitted for PCB analysis (and were below criteria), so it is likely that this is a localized issue. The sample location was selected because it appeared to have been used as a burn location (dark soil, no vegetation, charred wood – but not recent). The metals results were below criteria.

3.1.5 Beach Area

The Beach Area comprised of a Beach POL pad and two barrel caches to the north and another small debris area/empty barrel cache to the south (Debris Area #9). Testpit locations are provided on Figure 6, and the plume is outlined on Figure 9. Results are summarized in Appendix B and laboratory data is included in Appendix C.

3.1.5.1 Barrel Caches

Three soil samples were obtained from the vicinity of the East Barrel Cache and the West Barrel Cache, with all results below the AMSRP PHC criteria. One sample (East Barrel Cache #3) was obtained upgradient between the West Barrel Cache and the East Barrel Cache, and results were also below criteria. WESA had obtained a sample from a depth of 0.3 mBGS in the East Barrel Cache (CAM-C SS-015), which exceeded the guidelines used in their investigation; however, the value is not exceeding the criteria of the AMSRP. Elevated values were not identified in any other result within this barrel cache, so it is likely that this location was the result of a small, localized stain. Regardless, none of the 2013 or historical samples indicated PHC concentrations exceeding the AMSRP guidelines.

3.1.5.2 Beach POL

Previous samples (WESA) at the Beach POL area had identified PHC impacts in the central portion of the pad, in the immediate location of the tank foundations. In 2013, samples were obtained from the beach pad, beside the pad, and on either side of the pipeline down to the ocean. Several cobbles and boulders were encountered in the lower soil profile, which made it difficult for the quadavator to complete the holes to permafrost.

Samples from the pad indicated PHC impact to at least 0.9 m (assumed to continue to permafrost) at the middle of the pad (TP13-24 at 0.7mBGS, TP13-25 at 0.4 and 0.9 mBGS, TP13-26 at 0.4 mBGS). Samples collected from locations TP13-31 at 0.4 and 0.8 mBGS and TP13-32 at 0.7 and 1.25 mBGS have PHC F2 concentrations within the criteria. Delineation is conservatively estimated to be close to the end of the pad (north of TP13-31 and TP13-32), not as far north as WESA sample CAM-C SS-010, and extends to a depth of 1.0 mBGS. Samples from either side of the pad and the side slopes were all below the PHC criteria. The testholes closest to the ocean (TP13-34 to TP13-37) had PHC results below detection limits.

Analyses were completed for metals (surficial samples only) and PHCs.

3.2 Assessment of Existing Buried Debris Areas (Dumps)

The assessment of dumps at CAM-C was completed with the goal of classifying the buried debris areas according to the three categories specified under the AMSRP, which are:

Class A: Waste disposal area (WDA or buried debris) is located in an unstable, high erosion location. Remediation will involve relocation of buried debris to an engineered landfill. A WDA located at an elevation of less than two m above mean sea level will be removed.

Class B: The WDA is in a suitable, stable location, but there is evidence of contaminant migration. Remedial solutions include the installation of an engineered containment system, or relocation, whichever is deemed more cost effective.

Class C: The WDA is in a suitable, stable location, and there is no evidence of contaminant migration. In such cases, the debris may be left in place, with the placement of additional granular cover to ensure erosion protection and proper drainage.

3.2.1 Methodology

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

Upon arrival on site, each of the potential buried debris locations was ground-truthed to confirm that geophysical surveys were required, and if so, the geophysical survey boundaries were laid out on the ground with pin flags. The geophysical survey was completed using a GSM-19 Overhauser Effect Gradiometer with integrated GPS. The total field and vertical magnetic gradient survey data were collected at 0.5 second intervals as the operator walked over areas suspected of containing buried metallic debris. The magnetic survey data was used to identify the size and configuration of the buried debris. The magnetic anomaly perimeters were also laid out in the field with pin-flags and the lobes identified at an existing dump area, i.e., Station Landfill, prior to the commencement of the intrusive investigations. Each anomaly perimeter was modified as required to omit areas where metallic surface debris was situated within the surveyed area. The locations of the pin flags were surveyed during the detailed site survey (GPS).

To investigate a buried debris location as a potential contaminant source, soil samples were collected up and downgradient of the anomalies. Downgradient concentrations of naturally occurring inorganic elements (inorganics), were compared with upgradient concentrations, as well as average concentrations for all buried debris assessment samples at the site to identify potential contaminant migration away from the lobes.

Where a downgradient concentration was three times the concentration of the average, it was flagged as potential evidence of contaminant migration and further investigated in terms of its location, whether there was continued evidence of contaminant migration further downgradient, and whether there were multiple elevated contaminants. If any anthropogenic contaminants were detected in downgradient samples, this was considered evidence of contaminant migration, unless there was an upgradient source (whose inputs would be captured by the upgradient sample).

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

All debris area locations are identified on Figure 2 of Appendix A. Testpit locations are identified on Figures 4, 5, and 6. A descriptive summary of each existing landfill and buried debris area is provided in Table 3-2 below. The analytical results are summarized in Table 3 in Appendix B and laboratory certificates of analysis are included in Appendix D.

Prior to the geophysical survey, Lobes A, B, and E were assumed to meet the definition of buried debris areas under the AMSRP. However, following the geophysical survey and visual assessment, these lobes were reclassified as surface debris locations. All information regarding Lobes A, B and E is located in the surface debris section.

Preliminary sampling identified relatively little/no contaminated soil at the CAM-C WDAs; results for contaminants of concern were at or near detection limits for samples obtained upgradient and down-gradient. These observations suggest that a lower level of contaminated soil should be expected from within landfill contents. For the larger dump sites (Station West and Airstrip Landfills), the standard component breakdowns have been assumed as the following:

- Tier I soil: 10%
- Tier II soil: 10 %
- Non-hazardous debris: 20%
- Hazardous debris: 1%
- Clean fill: 59%

The volume of non-hazardous debris has been assumed to be the average breakdown from DND sites because of the inability to compare the geophysical survey results directly, but it is estimated to be a conservative measure. The percentages of Tier II and Tier I soils, and hazardous debris has been decreased, with a corresponding increase in the volume of clean fill. As noted above, these standard percentages have been further modified, where warranted, by WDA-specific information.

The three buried debris lobes are relatively small compared to the size of expected buried debris areas, with no surface debris, so are considered to contain small, likely local debris (not significant dump sites – possibly small barrel cache or piece of equipment/metal debris. In these cases, the potential for hazardous debris has been assumed to be zero, and other potential components have been pro-rated in the following manner:

- Tier I soil: 5%
- Tier II soil: 5 %
- Non-hazardous debris: 10%
- Hazardous debris: 0%
- Clean fill: 80%

Table 3-3: Buried Debris Areas and Existing Landfills

	Station West Landfill (formerly called West Landfill)	Airstrip Landfill	Lobe C	Lobe D	Lobe E
Reference Drawing	4	5	3	3	3
Photo Reference	img 0710/0711/P8010077-84	P7310056; 062; 065	DSCN0070/0073	DSCN0065	DSCN0062
Estimated Landfill Extent (m^2)	1,558	670	95	145	80
Estimated Depth (m)	1.2	1.5	1	1	1
Estimated Volume (m^3)	1,870	1,008	95	145	80
Estimated Volume of Hazardous Material (m^3)	19	10	0	0	0
Estimated Volume of Non-Hazardous Material (m^3)	374	202	10	15	8
Estimated Volume of Tier II Contaminated Soils (m^3)	187	101	5	7	4
Estimated Volume of Tier I Contaminated Soils (m^3)	187	101	5	7	4
Samples Collected	SLF-1-10	Airstrip LF-1-7	No visual indication of impact.	No visual indication of impact.	No visual indication of impact.
Presence of Contaminants	There may be surface contaminants associated with the battery debris. There was no evidence of contaminant migration from the landfill.	There was no evidence of surface contamination and no evidence of contaminant migration from the landfill.	There was no evidence of surface contamination and no samples were collected.	There was no evidence of surface contamination and no samples were collected.	There was no evidence of surface contamination and no samples were collected.
Presence of Exposed Debris	Exposed debris includes: batteries, barrels, tin cans, wood, pipe, strapping, garage mesh, cable, machine parts, and wire.	There were exposed barrels and other metal debris.	None.	None.	There was a piece of metal sticking out of the ground.
Topography	There is a very slight grade on the north side of the landfill (2 to 3%), with the south face being steeper, approximately 15%.	The landfill is located in a ravine at the south end of the airstrip along the road to the beach. It is a drainage channel that was filled in. Water runs through the landfill and there was ice in the area at the time of the assessment.	The area is flat.	The area is flat.	The area is flat.

	Station West Landfill (formerly called West Landfill)	Airstrip Landfill	Lobe C	Lobe D	Lobe E
Cover Material	Sand and gravel with approximately 75% cover.	Sand and some gravel with approximately 90% cover.	Cover consists of sand and some gravel.	Cover consists of sand and some gravel.	Cover consists of sand and some gravel.
Vegetative Cover	There is no vegetation on the surface of the landfill, only at the toe.	There is minimal vegetation in the area, approximately 5%.	There is minimal vegetation in the area, approximately 5%.	There is minimal vegetation in the area, approximately 5%.	There is minimal vegetation in the area, approximately 5%.
Evidence of Erosion	There is no evidence of water erosion, although there is potential for some wind erosion.	Yes - it is a filled in drainage channel and some of the debris has washed out.	There is minimal evidence of erosion.	There is minimal evidence of erosion.	There is minimal evidence of erosion.
Annual Precipitation	200 mm	200 mm	200 mm	200 mm	200 mm
Distance to Downgradient Waterbodies	There is a small, seasonal drainage channel approximately 75 m to the south.	A drainage channel runs through the landfill.	It is > 200 m to any water bodies.	It is > 200 m to any water bodies.	It is > 200 m to any water bodies.
Distance to Freshwater/Marine Habitat	The marine environment is ~2 km to the south.	It is > 2km to the marine environment.	It is >2 km to the marine environment.	It is >2 km to the marine environment.	It is >2 km to the marine environment.
Terrestrial Habitat	There is minimal usage. Evidence of caribou and muskox, but none seen during site visit.	There is minimal usage. Evidence of caribou and muskox, but none seen during site visit.	There is minimal usage. Evidence of caribou and muskox, but none seen during site visit.	There is minimal usage. Evidence of caribou and muskox, but none seen during site visit.	There is minimal usage. Evidence of caribou and muskox, but none seen during site visit.
Land Use	The site is only 30 km from Gjoa Haven. Although there is minimal hunting in the area, based on discussions with the bear monitors/Arctic Rangers, the site is frequently visited.	The site is only 30 km from Gjoa Haven. Although there is minimal hunting in the area, based on discussions with the bear monitors/Arctic Rangers, the site is frequently visited.	The site is only 30 km from Gjoa Haven. Although there is minimal hunting in the area, based on discussions with the bear monitors/Arctic Rangers, the site is frequently visited.	The site is only 30 km from Gjoa Haven. Although there is minimal hunting in the area, based on discussions with the bear monitors/Arctic Rangers, the site is frequently visited.	The site is only 30 km from Gjoa Haven. Although there is minimal hunting in the area, based on discussions with the bear monitors/Arctic Rangers, the site is frequently visited.
Comments	Several batteries were identified on the surface of this landfill.		Debris consists of buried cable spools.	Debris consists of cable spools and barrels.	There was a piece of metal on the surface
WDA Classification	Class C	Class A due to the presence of a drainage channel	Class C	Class C	Class C

3.2.2 Geophysical Survey Results

There were seven buried debris areas identified on site in the 2013 field investigation at CAM-C. Each of these is described below:

Station West Landfill (Figure 4)
The Station West Landfill was identified in previous reports and called the West Landfill and is referred to in the geophysical survey report as the South Landfill. Regardless, during the work program in 2013, the geophysical survey identified the boundaries of the buried metallic debris and environmental samples were collected around the toe of the landfill, and one from upgradient, to determine whether there was any contaminant migration as a result of the buried materials.

Airstrip Landfill (Figure 5)
The Airstrip Landfill (referred to as the Ravine Landfill in the geophysics report) was not identified in any of the previous site assessments. The Airstrip Landfill consisted of a drainage channel that had been filled in with debris near the south end of the airstrip. There was one large buried metallic debris area surveyed by geophysical survey, and environmental samples were obtained from the drainage path downgradient of the toe of the landfill, and two from upgradient, to determine whether there was any contaminant migration as a result of the buried materials.

Lobe A through Lobe E (Figure 3)
Several other smaller, isolated buried debris areas were identified, generally within the Station Area. The five lobes of buried debris were identified on-site as Lobes A through E. Lobe A was located on the west slope of the Station Pad, to the west of the fallen radar tower (SW1 was collected in this location). Lobe B is located to the north of the former garage pad and is likely a culvert of some sort and is very small. Lobes C and D are located northeast of the north end of the fallen tower. Shallow testpitting identified several buried barrels and buried cable spools. Lobe E is a small area of buried debris to the west of the access road to the Freshwater Lake. It should be noted that Lobes A through E, as identified on-site and surveyed during the 2013 assessment, are not labelled as such in the geophysical report. AECOM will be referring to Lobes A through E as they were identified and surveyed during the 2013 assessment.

Other Anomalies
There were eight very small additional anomalies identified in the geophysical report at the Station Pad Area (labeled A though H), that were not noted while the assessment team was at CAM-C. Lobe A coincides with Debris Area #3 at waypoint 50 on Figure 2. The other locations are very small and are likely associated with surface debris, or very small amount of buried debris. Pits 1 and 2 were located south of the Station West Landfill and were associated with significant surface debris within Debris Area #2 (Figure 2).

3.2.3 Analytical Results

No environmental issues (staining, rust, erosion, anomalous plant growth/stress) were noted at the locations of the Station West and Airstrip landfills. a) may be contained in the landfills, as small amounts of ACM were noted in the surface debris areas. Batteries were also encountered on the surface. No PHC impact was noted around the buried debris areas; however, this does not preclude the possibility that equipment containing PHCs may be buried within the landfills.

3.2.3.1 Station West Landfill

All samples submitted were below the DCC Tier I and II criteria for metals and PCBs. Delineation of the debris boundary was achieved at this location with the assistance of geophysical survey.

WESA had obtained a background sample from the CAM-C area and submitted it for PHCs, PCBs, volatile organic compounds (VOCs), and metals in 2011. The results of the background sample (CAM-C SS-008) were generally consistent with the landfill samples. The concentrations of PCBs and metal parameters in all of the downgradient samples collected from the toe of the Station West Landfill were less than three times the background values, indicating no concerns with respect to potential contaminant migration.

3.2.3.2 Airstrip Landfill

All soil samples submitted were below the DCC Tier I and II criteria for metals, and PCBs. Delineation of the debris boundary was achieved at this location with the assistance of geophysical survey.

The results of the WESA background sample (CAM-C SS-008) were generally consistent with the upgradient samples collected from the Airstrip Landfill. The concentrations of PCBs and metal parameters in all of the downgradient samples collected from the drainage path at the toe of the Airstrip Landfill were less than three times the background values, indicating no concerns with respect to potential contaminant migration.

3.3 Assessment of Surface Debris and Barrels

3.3.1 Surface Debris Assessment

In the 1992 and 2011 assessments, scattered debris observed onsite consisted mainly of building materials (mainly in the Station Area), the fallen radar tower, as well as two significant barrel caches at the beach.

A surface debris inventory was completed by collecting hand-held GPS waypoints where debris was visible or where debris fields appeared to terminate. At CAM-C, there are a number of small debris areas and two large scattered debris areas, one which encompasses the station pad and surrounding area and the other is at the Beach Area. A total volume and description of debris types was recorded for each debris area. Photos were taken for all major areas of surface debris and hazardous debris was identified, where visible at the surface. Where debris was identified sporadically within a large area, an individual description will be provided on the drawings as a reference to aid in locating these locations during site clean-up.

Table 3-4 presents an inventory of surface debris by location. It should be noted that the surface debris covered extensive areas, in particular in the vicinity of the Station Area. While there is always the potential to miss debris during the investigation, it is felt that the majority of the areas containing debris have been identified. The extent of debris in some locations, however, prevented a detailed inventory from being completed. In many areas, extensive hand picking of small debris will be required during site clean-up.

Four asbestos samples were collected from the debris areas adjacent to the building foundations and asbestos content was confirmed in all of them.

Table 3-4: Summary of Surface Debris at CAM-C

Location	Photos	Description	Location	Estimated Areal Extent (m^2)	Estimated Crushed Volume (m^3)	Hazardous Uncrushed Volume Component (m^3)	Comments
Station Area Pad	084, 085, 104, 105 107	Weathered pipe wrap, heating oil burner, heat registers, water tank, 2 building train water tanks, 2 500 US gallon diesel tank, I-beams (3), piping, wood, cable, communication cable, metal mesh, weathered formerly painted plywood, metal framing, boiler, metal sheeting, tile, wood	Station Pad - this includes the former building train, garage, warehouse and station POL area - includes old building components	31,372	20	1.5	Weathered asbestos
Barrel markers for each end of airstrip	None available	Five barrels each off the north and south end of the airstrip	Each end of airstrip	400 (200 m^2 at each end)	2	n/a	
Debris Area #1	IMG 0701,IMG 0702, IMG 0705	9 empty barrels, cans, 1 gallon cans (20-30), wood, culvert, garage metal mesh, wire	South/Southeast of Station	100	5	n/a	
Debris Area #2	P8010087/8010089/8010093/8010097, IMG 0709/ 0710/ 0715/0720/ 0722, DSCN0082	10 empty barrels, at least 1 battery, 1 gallon cans, machine parts, wood	South of the Station West Landfill	10,000	10	1	Battery debris
Debris Area #3	IMG 0727	Very scattered, wood, barrel strapping, cable, barrels, metal grating	West of Station Pad at the base of pad near seasonal pond	5,625	3	n/a	Likely this was what was considered the West Landfill
Debris Area #4	IMG 0707	Single piece of pipe	South of Station Area	1	<1	n/a	
Debris Area #5	IMG 0708	Tire	South of Station Area, west of Debris Area #4	0.25	<1	n/a	
Debris Area #6 (Lobe A)	IMG 0713, SAM 1142/1143	Barrel; Shallow buried debris (0.25 mBGS) picked up during geophysical survey (metallic content).	Southwest of Station Area, northeast of Debris Area #4	46.3	2	n/a	Surface debris and shallow buried debris (Lobe A)
Debris Area #7	IMG 0723	Cat tracks	Station Area, west of Debris Area #6	25	2	n/a	
Debris Area #8	IMG 0724	3 sets of cat tracks	West of Station Area	25	3	n/a	
Debris Area #9	IMG 0730	POL valve	North of Station Area	1	1	n/a	
Debris Area #10	SAM 1137/1138	Appears to include parts of the old building train. Very weathered painted plywood, metal cans, 'train' heating fan, metal staircase from tower, metal vents, red compressed CO_2 cylinder, very weather pipe wrap	West of Station Pad south of road towards Freshwater Lake	900	3	<0.5	Asbestos-amended tiles and insulation
Debris Area #11	SAM 1138 (background)	Piece of metal	North of Station Area beside road to Freshwater Lake	1	<1	n/a	
Debris Area #12	SAM 1136	Metal, wood, wire (miscellaneous debris)	Very scattered debris along road to Freshwater Lake	400	1	n/a	
Debris Area #13	SAM 1131/1132	7 empty barrels, wood and floating structure	At Freshwater Lake, west side of road	5,625	2	n/a	
Debris Area #14	SAM 1142	Metal strapping, some wood along slope	West of Station and Radar Tower	400	1.5	n/a	
Debris Area #15	None available	Wood strapping and 2 small barrels	West of Station and Radar Tower (north of Debris Area #14)	100	1	n/a	
Debris Area #16	SAM 1143	Partly buried wood and metal on slope	West of Station and Radar Tower (north of Debris Area #15)	100	1	n/a	
Debris Area #17	SAM 1144	Snow fencing (wood and wire)	Northwest of the Station Area	75	1.5	n/a	
Debris Area #18	SAM 1140/1141	Barrel in drainage path	Northwest of the Station Area	1	<0.5	n/a	

Debris Area #19	IMG 0805	Small barrel cache - 17 barrels and 4 wood pallets	South side of the Beach POL pad -	100	6	n/a	
Debris Area #20	P7310052/53/54	former storage area - 4 barrels, 2 pallets, sink, stove, furnace, machine parts, hot water tank	Lower portion of East Barrel Cache	400	7	n/a	
Debris Area #21	P7310055	Metal garbage bin	Upper portion of East Barrel Cache	4	2	n/a	
Station West Landfill Surface Debris	DSCN0082, IMG 0709, IMG 0710	Metals scraps, cans, barrels, wire,	Surface of Station West Landfill	20	20	1	
Airstrip Landfill Surface Debris	P7310053, P7310062	Several barrels and metal strapping, and partially buried metal debris.	Surface and within drainage channel through Airstrip Landfill			n/a	Included in buried debris volume
East Barrel Cache	P7310050	Empty barrel cache - approx. 300 barrels	East Barrel Cache adjacent to Beach	10,000	60	n/a	
West Barrel Cache	P7310048	Empty barrel cache - approx. 200 barrels	West Barrel Cache adjacent to Beach	5,625	40	n/a	
		Totals		72,885	197	4	

3.3.2 Barrel Assessment

Approximately 700 barrels were identified at CAM-C and checked to determine whether they contained any evidence of product during the 2013 assessment. Approximately 500 of the barrels were concentrated within the barrel caches at the beach; additional barrels are located along the POL Line, (which were used as markers); and within the extents of the debris areas. All of the barrels identified at CAM-C were either empty or contained rusty water. No barrel samples were collected for analysis

3.4 Demolition Assessment

There are no buildings that remain standing at the CAM-C site. Only the concrete foundations of the Garage and Warehouse buildings remain. Facilities that were inventoried at the CAM-C site in 2013 include: the radar tower, the foundations, culverts, and the POL line. The areas and volumes of the demolition materials are outlined on Table 3-5 below.

Table 3-5: Demolition Requirements at CAM-C

Area	Photos	Description	Location	Estimated Crushed Volume (m3)	Hazardous Uncrushed Volume Component (m3)	Comments
Radar Tower	IMG 0739; IMG 0745-47, 090-094	Tower and 2" support cables.	Station Pad	165 (1,650 m^3 uncrushed)	n/a	No paint samples were collected as samples from previous sites were below criteria
POL Pipeline and Barrel Markers	P7290037, SAM_1096, DSCN0018, P7310070, P7310071	Wood cribbing and barrels markers to support POL line from Station to the Beach. Approx. 1,260 m of pipe.	Station to Beach POL Line	40	n/a	Metal pipe in long segments
Road (and Lobe B) Culverts	DSCN0018, DSCN0050	Airstrip: 600 mm barrel culvert, 28 m in length Road Sec. 2: 600 mm barrel culvert, 6 m long Road Sec. 3: 600 mm CSP culvert, 6 m long Road Sec. 4: 600 mm barrel culvert, 6 m long; Lobe B - Shallowly buried culvert	Station Area road system	4	n/a	
			Totals	209 m^3	0 m^3	

An estimated 209 m^3 of non-hazardous waste is expected to be generated by demolition activities.

3.4.2 Methodology

The demolition investigation conducted an inventory of any remaining site facilities that would require dismantling for disposal. The intent of the investigation was to note the construction and any anticipated special disposal requirements; samples would be collected for applicable analysis to confirm disposal requirements. The following lists the components of the completed demolition assessment:

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

3.4.3 Demolition Assessment Results

The tower and remaining sections of the POL line, sewage outfall line, and communication cables will need to be removed. Two water tanks from the former building train were also noted at the station area.

Six culverts were noted on the site; two were makeshift barrel culverts (road to the beach), two were 650 mm diameter, and two were 600 mm diameter. Culverts were in relatively good condition at the time of the site visit, but road upgrades may be required in some locations, so culverts may need to be re-evaluated.

No paint samples were collected as there were no painted materials evident within the debris, aside from the tower, for which the paint at similar sites has been tested numerous times and found to be below criteria. Additionally, no concrete samples were collected, as there was no evidence of staining.

3.5 Hazardous and Non-Hazardous Waste Assessment Summary

The majority of the debris and remaining facilities at the CAM-C site is considered to be non-hazardous debris. The only hazardous debris that was confirmed on-site included the battery debris and the ACM identified at the station debris area. Four representative samples of the types of materials on the site were submitted for characterization. The percentage of chrysotile asbestos detected was in the range of 0.5 to 99%; the highest were the pipe wrap and tank wrap (90 to 99% chrysotile), and the lowest was the floor tile (0.5 to 10% chrysotile; 75 to 95% filler). The remaining sample was the painted wall board, at 50 to 70% chrysotile and 30 to 50% filler. All samples were obtained from the Station Area, but were representative of other potential ACM materials identified at other debris areas of the site.

The estimated volume of hazardous debris at the CAM-C site is **33 m^3**, which includes **4 m^3**of surface battery debris and asbestos, as well as the estimated volume of **29 m^3** hazardous material from the Station West and Airstrip Landfills. The volume of non-hazardous material includes all of the known surface debris, debris from the Station West and Airstrip Landfills, Lobes C, D, and E, and the demolition materials. The estimated volume of non-hazardous debris at the CAM-C site is **1,015 m^3**, of which **406 m^3** is from surface debris areas and **609 m^3** is contained within the existing landfills.

3.6 Surface Water Assessment

Only one inland water body was noted in the immediate vicinity of the site; this freshwater lake (Freshwater Lake) was identified approximately 1.3 km from the airstrip and 1.5 km northwest of the Station Area. The field team was also prepared to obtain groundwater samples from testpits to be analyzed for BTEX and PHC F1-F2, but none was encountered.

In 1992, one sediment sample and one water sample were collected near the turn-around point of the access road, and all analyzed parameters (PCBs, metals) were within guidelines.

3.6.1 Methodology

One sample was obtained from the Freshwater Lake at the time of the 2013 site visit. The sample was obtained from the shoreline, collected directly into laboratory-supplied bottles, and was submitted for analysis of metals, PHC, and PCBs. The sample was labeled: Freshwater Lake.

3.6.2 Results

3.6.2.1 Freshwater Lake

PCBs and nitrates were non-detect in the water sample collected from the lake. Of the dissolved metal parameters, aluminum, iron, manganese, selenium, and silver exceeded the Guidelines for Canadian Drinking Water Quality (May 2008) for Canadian drinking water and aquatic life pathways (manganese was just the drinking water pathway). Nitrates and PCBs were non-detect, while the TDS was 240 milligrams per litre (mg/L) and pH was 7.86, which are within guidelines. Based on the results of the analysis, the water quality of the Freshwater Lake does not appear to have been negatively impacted by former site activities. Despite this, the water quality in the Freshwater Lake does not meet the Canadian Drinking Water Quality Guidelines. Additional samples should be collected prior to the start of the construction season to determine whether there are any variations to the water quality at the Freshwater Lake, and whether treatment may be required if it is to be used for drinking water purposes during site clean-up.

Based on a review of aerial photos and satellite images provided by Google Earth, there are very few significant freshwater lakes in the vicinity of the CAM-C site that could be considered for an alternate drinking water source. As a result, the contractor may be required to provide drinking water treatment for the existing Freshwater Lake or consider transportation of water from an off-site source.

3.7 Granular Borrow Source Assessment

Granular fill is required for construction of new landfills and landfarms, remediation/re-grading of existing dumps and debris areas, as well as for general backfill for excavation areas. To minimize environmental impacts associated with clean-up construction; existing disturbed areas should be utilized before exploiting undeveloped areas where possible.

3.7.1 Methodology

Air photographs of the site were reviewed prior to the field investigation. The air photos were assessed to identify potential borrow areas and potential landfill and landfarm locations. Three sets of air photos were assessed, with the following scales:

- 1:70,000 Year: 1982
- 1:60,000 Year: 1958
- 1:5,000 Year: 1964

The locations identified as potential borrow areas and landfill and landfarm sites were assessed during the investigation. Locations of the potential borrow areas and proposed landfill/landfarm locations are shown on Figure 2.

The site investigation consisted of excavating shallow testpits using hand tools (pickaxe and shovel) and/or a small backhoe attachment on an ATV (quadavator) to obtain representative samples at each potential borrow location. Testpit locations are shown on Figure 2. Soil samples were collected from each testpit for laboratory index testing. The testpit depths varied from approximately 0.5 m to 1.5 m, and were typically terminated on frozen ground, boulder, or due to seepage and sloughing. The testpits were backfilled with excavated soils after completion.

Photographs were taken of each excavated testpit and other features of note. Selected site photographs are provided in Appendix C.

Laboratory testing was conducted on selected soil samples to determine their moisture and gradation characteristics. The laboratory testing generally included determination of moisture contents, particle size distribution (sieve and hydrometer analysis). The laboratory test results are presented in Appendix D and are also shown on testpit logs in Appendix F.

3.7.2 Granular Material Types and Specifications

Various granular fill material types are required for construction of landfills and landfarms, remediation of existing landfills, backfill of excavated areas, and repair of roads and airstrip. Specifications of six granular materials (Type 1 to 6 Granular Fills) required for different applications were developed by EBA Engineering Consultants Ltd. as part of the original DEW Line Clean Up Program for Department of National Defence and Defence Construction Canada. The granular fill types were also adopted by AANDC for their abandoned military sites. The granular fill types can be used for the current project and are described below.

3.7.2.1 Type 1 Granular Fill

Type 1 Granular Fill typically consists of coarse gravel or cobble size material used for erosion protection on finished slopes or within drainage courses. The gradation requirements of Type 1 Granular Fill may vary significantly depending on the material availability and specific application. Type 1 Granular Fill can be obtained from screening of oversize material from other granular materials on site. If Type 1 granular material is in limited quantity, finished slopes may be flattened by using Type 2 or 2A granular material without armouring. The grain size distribution shown in Table 3-6 is recommended:

Table 3-6: Grain Size Distribution Limits – Type 1 Granular Fill

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

Boulders and cobbles were noted throughout the site and at many locations, it is possible to screen or selectively mine boulders and cobbles to produce Type 1 material.

3.7.2.2 Type 2 Granular Fill

Type 2 Granular Fill is well graded sand and gravel used for construction of berms and cover. Type 2 Granular Fill should have a grain size distribution within the limits presented on Table 3-7.

Table 3-7: Grain Size Distribution Limits - Type 2 Granular Fill

Particle Size (mm)	% Passing
150	100
50	60-100
5	25-60
0.425	8-37
0.08	2-25

Source material for Type 2 Granular Fill is available from Borrow Areas 1, 2, 3, 4, 5, 8, 9, 11, 12, 13, 14, 15, 17, 19, and 20.

3.7.2.3 Type 2A Granular Fill

Type 2A Granular Fill would be suitable for armouring landfills if sufficient quantities of Type 1 material are not available. Typically, the Type 2A would be placed about 0.5 m thick with the requirement to use this material dependent upon the finished slopes. Based on the material available on site, the grain size distribution shown in Table 3-8 is recommended for Type 2A granular fill:

Table 3-8: Grain Size Distribution Limits - Type 2A Granular Fill

Particle Size (mm)	% Passing
150	100
50	40-100
25	20-65
5	0-25
0.425	0-15
0.08	0-8

3.7.2.4 Type 3 Granular Fill

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

3.7.2.5 Type 4 Granular Fill

Type 4 Granular Fill is a non-saline, well graded sand and silt with some gravel used for construction of containment berms and backfill of key trench excavations for a Tier II Soil Disposal Facility. If used as backfill for the key trench excavations, the water content of Type 4 Granular Fill must be adjusted to achieve a minimum degree of saturation of 90%. Type 4 Granular Fill may be wet and soft at the time of production from the borrow source and it may be necessary to air-dry it, if used for construction of berms, so that it can be placed and compacted to achieve density specification. The material should have a maximum salinity of 5 parts per thousand (5 ppt) and have a grain size distribution within the limits presented on Table 3-9.

Table 3-9: Grain Size Distribution Limits - Type 4 Granular Fill

Particle Size (mm)	% Passing
150	100
50	80-100
25	55-95
12.5	55-90
5	45-90
2	35-85
0.425	25-75
0.08	20-60

Source material for Type 4 Granular Fill was encountered in Borrow Area 16.

3.7.2.6 Type 5 Granular Fill

Type 5 Granular Fill is used as liner embedment material and should consist of rounded particles with a maximum size of 25 mm. This type of fill material should be free from angular particles, stones larger than 25 mm in diameter, waste or other deleterious materials. Type 5 Granular material should have a particle size distribution with the limits presented on Table 3-10.

Table 3-10: Grain Size Distribution Limits - Type 5 Granular Fill

Particle Size (mm)	% Passing
25	100
5	80-100
1	60-95
0.425	30-90
0.15	0-70
0.08	0-10

Source material for Type 5 Granular Fill was encountered in Borrow Areas 7, 10 and 18.

3.7.2.7 Type 6 Granular Fill

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

3.7.3 Borrow Area Locations

A total of 20 borrow areas were identified and investigated during the site investigation. One testpit was excavated in each borrow area to characterize the subsurface materials and to determine groundwater and permafrost conditions. The borrow areas generally contained oversized material (boulders) that will have to be removed, however these oversized materials may be suitable as Type 1 material for erosion protection of landfill surfaces. The locations of the borrow areas and testpits are shown on Figure 2. Each of the borrow areas is described in the following sections.

3.7.3.1 Borrow Area 1 (BA-1)

Borrow Area 1 is located south of the Station Area on a disturbed area as shown on Figure 2. The area is south and downslope of Borrow Area 2. One testpit (TP-12) was excavated in this borrow area and the subsurface soils consisted primarily of coarse gravelly sand with occasional cobbles. The testpit was terminated at 1.1 mBGS, where permafrost was encountered. Photos G-1 and G-2 (Appendix C) show the borrow area and testpit profile.

A sieve analysis was conducted on a sample from TP-12. The sample had 29% gravel, 71% sand, and no fines, indicating that the borrow area contains material generally suitable as Type 2 Granular Fill. Selective mining or some minor blending with fine gravel, coarse sand and fines may be required to bring material within Type 2 gradation limits. The particle size results are presented on Figure 3-1, included in Appendix D. The moisture content of the soil sample was 1.1%.

The identified area is approximately 12,600 square metres (m^2) in size. Assuming an average thickness of 0.75 m of material, the volume of the material that can be obtained from this area is approximately 9,500 m^3.

3.7.3.2 Borrow Area 2 (BA-2)

Borrow Area 2 is located south of the Station Area on a disturbed area as shown on Figure 2. The area is north and upslope of Borrow Area 1. The area is easily accessible from the Station Area. One testpit (TP-24) was excavated in this borrow area and the subsurface soils consisted primarily of coarse sand with some gravel and occasional cobbles. The testpit was terminated at 1.2 mBGS where permafrost was encountered. Photos G-3 and G-4 (Appendix C) show the borrow area and testpit profile.

A sieve analysis was conducted on a sample from TP-24. The sample had 57% gravel, 41% sand, and 2% fines indicating that the borrow area contains material generally suitable as Type 2 Granular Fill. The particle size results are presented on Figure 3-2, included in Appendix D. The moisture content of the soil sample was 1.0%.

The identified area is approximately 4,700 m^2 in size. Assuming an average thickness of 1 m of material, the volume of the material that can be obtained from this area is approximately 4,700 m^3.

3.7.3.3 Borrow Area 3 (BA-3)

Borrow Area 3 is located south of the Station Area on a disturbed area as shown on Figure 2. The area is easily accessible from the Station Area. One testpit (TP-7) was excavated in this borrow area and the subsurface soils consisted primarily of coarse sand with some gravel and occasional cobbles. The testpit was terminated at 1.3 mBGS where permafrost was encountered. Photos G-5 and G-6 (Appendix C) show the borrow area and testpit profile.

A sieve analysis was conducted on a sample from TP-7. The sample had 36% gravel, 63% sand, and 1% fines indicating that the borrow area contains material generally suitable as Type 2 Granular Fill. Selective mining or some minor blending with fine gravel, coarse sand and fines may be required to bring material within Type 2 gradation limits. The particle size results are presented on Figure 3-3, included in Appendix D. The moisture content of the soil sample was 1.1%.

The identified area is approximately 17,600 m^2 in size. Assuming an average thickness of 0.75 m of material, the volume of the material that can be obtained from this area is approximately 13,200 m^3.

3.7.3.4 Borrow Area 4 (BA-4)

Borrow Area 4 is located south of the Station Area at the end of the airstrip on a disturbed area as shown on Figure 2. The area is easily accessible from the Station Area. One testpit (TP-13) was excavated in this borrow area and the subsurface soils consisted primarily of well graded coarse sand and gravel. The testpit was terminated at 0.75 mBGS due to refusal in gravel. Photo G-7 and G-8 (Appendix C) show the borrow area and testpit profile.

A sieve analysis was conducted on a sample from TP-13; the sample had 55% gravel, 43% sand, and 2% fines, indicating that the borrow area contains material generally suitable as Type 2 Granular Fill. Selective mining or some minor blending with fine sand may be required to bring material within Type 2 gradation limits. The particle size results are presented on Figure 3-4, included in Appendix D. The moisture content of the soil sample was 1.7%.

The identified area is approximately 2,400 m^2 in size. Assuming an average thickness of 0.75 m of material, the volume of the material that can be obtained from this area is approximately 1,800 m^3.

3.7.3.5 Borrow Area 5 (BA-5)

Borrow Area 5 is located east of the Station Area, adjacent to the airstrip as shown on Figure 2. The area is easily accessible from the Station Area. One testpit (TP-17) was excavated in this borrow area and the subsurface soils consisted primarily of coarse sand and gravel with some cobbles. The testpit was terminated at 1.1 mBGS where permafrost was encountered. Photo G-9 (Appendix C) shows the testpit profile.

A sieve analysis was conducted on a sample from TP-17. The sample had 45% gravel, 52% sand, and 3% fines, indicating that the borrow area contains material generally suitable as Type 2 Granular Fill. Selective mining or some minor blending with fine sand may be required to bring material within Type 2 gradation limits. The particle size results are presented on Figure 3-5, included in Appendix D. The moisture content of the soil sample was 1.0%. Proctor results indicated that the optimum dry density of 2,065 kilograms per cubic metre (kg/m^3) is achieved with an optimum moisture content of 6.8%.

The identified area is approximately 6,100 m^2 in size. Assuming an average thickness of 1 m of material, the volume of the material that can be obtained from this area is approximately 6,100 m^3.

3.7.3.6 Borrow Area 6 (BA-6)

Borrow Area 6 is located east of the Station Area, adjacent to the airstrip as shown on Figure 2. The area is easily accessible from the Station Area. One testpit (TP-18) was excavated in this borrow area and the subsurface soils consisted primarily of coarse sand. The testpit was terminated at 1.2 mBGS where permafrost was encountered. Photos G-10 and G-11 (Appendix C) show the borrow area and testpit profile.

A sieve analysis was conducted on a sample from TP-18. The sample had 6% gravel, 93% sand, and 1% fines indicating that the borrow area contains material generally suitable as Type 5 Granular Fill. The particle size results are presented on Figure 3-6, included in Appendix D. The moisture content of the soil sample was 1.3%.

The identified area is approximately 4,000 m^2 in size. Assuming an average thickness of 1 m of material, the volume of the material that can be obtained from this area is approximately 4,000 m^3.

3.7.3.7 Borrow Area 7 (BA-7)

Borrow Area 7 is located northeast of the Station Area and is adjacent to the road as shown on Figure 2. The area is easily accessible from the Station Area. One testpit (TP-19) was excavated in this borrow area and the subsurface soils consisted primarily of coarse sand with boulders encountered. The testpit was terminated at 1.0 mBGS due to refusal on boulders. Photo G-12 (Appendix C) shows the testpit profile.

A sieve analysis was conducted on a sample from TP-19. The sample had 33% gravel, 67% sand, and no fines. The borrow area contains material that may be suitable as Type 5 Granular Fill if the oversized particles are removed. Selective mining or minor blending may be required to bring material within Type 5 gradation limits. The particle size results are presented on Figure 3-7, included in Appendix D. The moisture content of the soil sample was 1.1%.

The identified area is approximately 8,400 m^2 in size. Assuming an average thickness of 0.75 m of material, the volume of the material that can be obtained from this area is approximately 6,300 m^3.

3.7.3.8 Borrow Area 8 (BA-8)

Borrow Area 8 is located northeast of the Station Area and is adjacent to the road, as shown on Figure 2. The area is easily accessible from the Station Area. One testpit (TP-20) was excavated in this borrow area and the subsurface soils consisted primarily of gravel underlain by coarse sand. The testpit was terminated at 1.3 mBGS where permafrost was encountered. Photos G-13 and G-14 (Appendix C) show the borrow area and testpit profile.

A sieve analysis was conducted on a sample from TP-20. The sample had 57% gravel, 43% sand, and no fines, indicating that the borrow area contains material generally suitable as Type 2 Granular Fill. Selective mining or minor blending with fine sand may be required to bring material within Type 2 gradation limits. The particle size results are presented on Figure 3-8, included in Appendix D. The moisture content of the soil sample was 1.6%.

The identified area is approximately 4,900 m^2 in size. Assuming an average thickness of 0.75 m of material, the volume of the material that can be obtained from this area is approximately 3,700 m^3.

3.7.3.9 Borrow Area 9 (BA-9)

Borrow Area 9 is located northeast of the Station Area and is adjacent to the airstrip as shown on Figure 2. The area is easily accessible from the Station Area. One testpit (TP-3) was excavated in this borrow area and the subsurface soils consisted primarily of coarse sand, with gravel content and size increasing with depth. The testpit

was terminated at 1.15 mBGS where permafrost was encountered. Photo G-15 (Appendix C) shows the borrow area.

A sieve analysis was conducted on a sample from TP-3. The sample had 33% gravel, 67% sand, and no fines, indicating that the borrow area contains material generally suitable as Type 2 Granular Fill. Selective mining or some minor blending with fine gravel, coarse sand and fines may be required to bring material within Type 2 gradation limits. The particle size results are presented on Figure 3-9, included in Appendix D. The moisture content of the soil sample was 1.2%.

The identified area is approximately 16,400 m^2 in size. Assuming an average thickness of 0.75 m of material, the volume of the material that can be obtained from this area is approximately 12,300 m^3.

3.7.3.10 Borrow Area 10 (BA-10)

Borrow Area 10 is located east of the airstrip as shown on Figure 2. The area is easily accessible from the airstrip. One testpit (TP-16) was excavated in this borrow area and the subsurface stratigraphy in the borrow area consisted of coarse sand with some gravel. Boulders were encountered at approximately 0.8 mBGS. The testpit was terminated at 1.3 mBGS where permafrost was encountered.

A sieve analysis was conducted on a sample from TP-16. The sample had 22% gravel, 76% sand, and 2% fines. The borrow area contains material which may be suitable as Type 5 Granular Fill, if oversized particles are removed. Some blending with fine to medium sand may be required to bring material within Type 5 gradation limits. The particle size results are presented on Figure 3-10, included in Appendix D. The moisture content of the soil sample was 0.8%.

The identified area is approximately 15,700 m^2 in size. Assuming an average thickness of 0.75 m of material, the volume of the material that can be obtained from this area is approximately 11,800 m^3.

3.7.3.11 Borrow Area 11 (BA-11)

Borrow Area 11 is located east of the airstrip as shown on Figure 2. The area is easily accessible from the airstrip. One testpit (TP-15) was excavated in this borrow area and the subsurface soils consisted primarily of coarse sand. Boulders were encountered at approximately 0.8 mBGS. The testpit was terminated at 1.5 mBGS due to excessive sloughing of the sand.

A sieve analysis was conducted on a sample from TP-15. The sample had 34% gravel, 66% sand, and no fines, indicating that the borrow area contains material generally suitable as Type 2 Granular Fill. Selective mining or minor blending with fine gravel, coarse sand and fines may be required to bring material within Type 2 gradation limits. The particle size results are presented on Figure 3-11, included in Appendix D. The moisture content of the soil sample was 1.1%.

The identified area is approximately 34,000 m^2 in size. Assuming an average thickness of 0.75 m of material, the volume of the material that can be obtained from this area is approximately 25,500 m^3.

3.7.3.12 Borrow Area 12 (BA-12)

Borrow Area 12 is located at the south end of the airstrip as shown on Figure 2. The area is easily accessible from the road. One testpit (TP-14) was excavated in this borrow area and the subsurface soils consisted primarily of coarse sand underlain by sand and gravel. The testpit was terminated at 1.1 mBGS where permafrost was encountered. Photo G-16 (Appendix C) shows the testpit profile.

A sieve analysis was conducted on a sample from TP-14. The sample had 57% gravel, 43% sand, and no fines, indicating that the borrow area contains material generally suitable as Type 2 Granular Fill. Some removal of oversize material and minor blending with fines may be required to bring material within Type 2 gradation limits. The particle size results are presented on Figure 3-12, included in Appendix D. The moisture content of the soil sample was 1.0%.

The identified area is approximately 3,900 m^2 in size. Assuming an average thickness of 0.75 m of material, the volume of the material that can be obtained from this area is approximately 2,900 m^3.

3.7.3.13 Borrow Area 13 (BA-13)

Borrow Area 13 is located northwest of the Station Area, adjacent to the road leading to the Freshwater Lake, as shown on Figure 2. The area is easily accessible from the road. One testpit (TP-23) was excavated in this borrow area and the subsurface soils consisted primarily of sand and gravel underlain by coarse sand. The testpit was terminated at 1.3 mBGS where permafrost was encountered. Photos G-17 and G-18 (Appendix C) show the borrow area and testpit profile.

A sieve analysis was conducted on a sample from TP-23. The sample had 43% gravel, 56% sand, and 1% fines, indicating that the borrow area contains material generally suitable as Type 2 Granular Fill. Some removal of oversize material and minor blending with fines may be required to bring material within Type 2 gradation limits. The particle size results are presented on Figure 3-13, included in Appendix D. The moisture content of the soil sample was 1.4%.

The identified area is approximately 1,900 m^2 in size. Assuming an average thickness of 1 m of material, the volume of the material that can be obtained from this area is approximately 1,900 m^3.

3.7.3.14 Borrow Area 14 (BA-14)

Borrow Area 14 is located northwest of the Station Area, adjacent to the road leading to the Freshwater Lake, as shown on Figure 2. The area is easily accessible from the road. One testpit (TP-22) was excavated in this borrow area and the subsurface soils consisted primarily of sand and gravel. The testpit was terminated at 1.1 mBGS where permafrost was encountered. Photos G-19 and G-20 (Appendix C) show the borrow area and testpit profile.

A sieve analysis was conducted on a sample from TP-22. The sample had 47% gravel, 51% sand, and 2% fines, indicating that the borrow area contains material generally suitable as Type 2 Granular Fill. Selective mining or some minor blending with fines may be required to bring material within Type 2 gradation limits. The particle size results are presented on Figure 3-14, included in Appendix D. The moisture content of the soil sample was 1.3%.

The identified area is approximately 2,100 m^2 in size. Assuming an average thickness of 0.75 m of material, the volume of the material that can be obtained from this area is approximately 1,600 m^3.

3.7.3.15 Borrow Area 15 (BA-15)

Borrow Area 15 is located north of the Station Area, east of the airstrip as shown on Figure 2. The area is easily accessible from the airstrip. One testpit (TP-2) was excavated in this borrow area and the subsurface soils consisted primarily of coarse sand. The testpit was terminated at 1.1 mBGS where permafrost was encountered. Photos G-21 and G-22 (Appendix C) show the borrow area and testpit profile.

A sieve analysis was conducted on a sample from TP-2. The sample had 57% gravel, 41% sand, and 2% fines, indicating that the borrow area contains material generally suitable as Type 2 Granular Fill. Selective mining or

minor blending with fines may be required to bring material within Type 2 gradation limits. The particle size results are presented on Figure 3-15, included in Appendix D. The moisture content of the soil sample was 1.8%.

The identified area is approximately 53,000 m^2 in size. Assuming an average thickness of 0.75 m of material, the volume of the material that can be obtained from this area is approximately 39,800 m^3.

3.7.3.16 Borrow Area 16 (BA-16)

Borrow Area 16 is located north of the Station Area, east of the airstrip as shown on Figure 2. The area is easily accessible from the airstrip. One testpit (TP-21) was excavated in this borrow area and the subsurface soils consisted primarily of sand and gravel underlain by silt. The testpit was terminated at 0.5 mBGS where permafrost was encountered in the stiff silt. Photos G-23, G-24 and G-25 (Appendix C) show the borrow area and testpit profile.

A sieve analysis was conducted on a sample from TP-21. The sample had 37% gravel, 50% sand, and 13% fines, indicating that the borrow area contains material generally suitable as Type 4 Granular Fill or blend material for Type 2 Granular Fill. The particle size results are presented on Figure 3-16, included in Appendix D. The moisture content of the soil sample was 2.2%. Proctor results indicated that the optimum dry density of 2,182 kg/m^3 is achieved with an optimum moisture content of 6.5%.

The identified area is approximately 4,800 m^2 in size. Assuming an average thickness of 0.5 m of material, the volume of the material that can be obtained from this area is approximately 2,400 m^3.

3.7.3.17 Borrow Area 17 (BA-17)

Borrow Area 17 is located southeast of the Station Area, near the shoreline of the ocean as shown on Figure 2. The area is easily accessible from the road leading to the ocean. One testpit (TP-10) was excavated in this borrow area and the subsurface soils consisted primarily of sand and gravel with occasional boulders. The testpit was terminated at 0.8 mBGS due to refusal on boulders. Photo G-26 (Appendix C) shows the testpit profile.

A sieve analysis was conducted on a sample from TP-10. The sample had 60% gravel, 40% sand, and no fines, indicating that the borrow area contains material generally suitable as Type 2 Granular Fill. Selective mining or minor blending with fines may be required to bring material within Type 2 gradation limits. The particle size results are presented on Figure 3-17, included in Appendix D. The moisture content of the soil sample was 1.1%.

The identified area is approximately 14,700 m^2 in size. Assuming an average thickness of 0.75 m of material, the volume of the material that can be obtained from this area is approximately 11,000 m^3.

3.7.3.18 Borrow Area 18 (BA-18)

Borrow Area 18 is located southeast of the airstrip, below BA-12 as shown on Figure 2. The area is easily accessible from the road leading to the ocean. One testpit (TP-6) was excavated in this borrow area and the subsurface soils consisted primarily of sand. The testpit was terminated at 0.6 mBGS due to flowing water. Photo G-27 (Appendix C) shows the testpit profile.

A sieve analysis was conducted on a sample from TP-6. The sample had 7% gravel, 89% sand, and 4% fines, indicating that the borrow area contains material generally suitable as Type 5 Granular Fill if oversized particles are removed. The particle size results are presented on Figure 3-18, included in Appendix D. The moisture content of the soil sample was 3.8%. Proctor results indicated that the optimum dry density of 1,865 kg/m^3 is achieved with an optimum moisture content of 11.5%.

The identified area is approximately 18,000 m^2 in size. Assuming an average thickness of 0.5 m of material, the volume of the material that can be obtained from this area is approximately 9,000 m^3.

3.7.3.19 Borrow Area 19 (BA-19)

Borrow Area 19 is located southeast of the Station Area, near the shoreline of the ocean as shown on Figure 2. The area is easily accessible not easily accessible. One testpit (TP-9) was excavated in this borrow area and the subsurface soils consisted primarily of sand with trace to some gravel. The testpit was terminated at 1.05 mBGS where permafrost was encountered. Photo G-28 (Appendix C) shows the testpit profile.

A sieve analysis was conducted on a sample from TP-9. The sample had 38% gravel, 62% sand, and no fines, indicating that the borrow area contains material generally suitable as Type 2 Granular Fill. Some minor blending with fine gravel coarse sand and fines may be required to bring material within Type 2 gradation limits. The particle size results are presented on Figure 3-19, included in Appendix D. The moisture content of the soil sample was 1.4%.

The identified area is approximately 10,000 m^2 in size. Assuming an average thickness of 0.75 m of material, the volume of the material that can be obtained from this area is approximately 7,500 m^3.

3.7.3.20 Borrow Area 20 (BA-20)

Borrow Area 20 is located southeast of the Station Area, near the shoreline of the ocean as shown on Figure 2. The area is easily accessible not easily accessible. One testpit (TP-11) was excavated in this borrow area and the subsurface soils consisted primarily of gravel and sand with occasional boulders. The testpit was terminated at 0.9 mBGS due to refusal on boulders. Photo G-29 (Appendix C) shows the testpit profile.

A sieve analysis was conducted on a sample from TP-11. The sample had 62% gravel, 37% sand, and 1% fines, indicating that the borrow area contains material generally suitable as Type 2 Granular Fill. Some minor blending with fines may be required to bring material within Type 2 gradation limits. The particle size results are presented on Figure 3-20, included in Appendix D. The moisture content of the soil sample was 1.4%.

The identified area is approximately 4,400 m^2 in size. Assuming an average thickness of 0.75 m of material, the volume of the material that can be obtained from this area is approximately 3,300 m^3.

3.7.4 Summary of Borrow Materials

The soil types encountered in the borrow areas generally comprise source material for all of the granular materials identified. A summary of granular material estimated to be available from the potential borrow areas is presented in Table 3-11.

Table 3-11: Summary of Borrow Sources

Borrow Area	Available Granular Fill Types	Area (m^2)	Depth (m)	Volume (m^3)	Comments
BA-1	Types 2, 3 or 6	12,600	0.75	9,500	Disturbed
BA-2	Types 2, 3 or 6	4,700	1	4,700	Disturbed
BA-3	Types 2, 3 or 6	17,600	0.75	13,200	Disturbed
BA-4	Types 2, 3 or 6	2,400	0.75	1,800	Disturbed
BA-5	Types 2, 3 or 6	6,100	1	6,100	Excessive sloughing of sand
BA-6	Types 3 and 6	4,000	1	4,000	
BA-7	Type 5	8,400	0.75	6,300	Excessive sloughing of sand
BA-8	Types 2, 3 or 6	4,900	0.75	3,700	
BA-9	Types 2, 3 or 6	16,400	0.75	12,300	
BA-10	Type 5	15,700	0.75	11,800	
BA-11	Types 2, 3 or 6	34,000	0.75	35,500	Excessive sloughing of sand, Disturbed
BA-12	Types 2, 3 or 6	3,900	0.75	2,900	
BA-13	Types 2, 3 or 6	1,900	1	1,900	Undisturbed
BA-14	Types 2, 3 or 6	2,100	0.75	1,600	Undisturbed
BA-15	Types 2, 3 or 6	53,000	0.75	39,800	Disturbed
BA-16	Type 4	4,800	0.5	2,400	
BA-17	Types 2, 3 or 6	14,700	0.75	11,000	Disturbed
BA-18	Type 5	18,000	0.5	9,000	Sloughing and water ingress
BA-19	Types 2, 3 or 6	10,000	0.75	7,500	Disturbed
BA-20	Types 2, 3 or 6	4,400	0.75	3,300	Refusal due to boulders, Disturbed

3.8 Acid Rock Drainage (ARD) Potential

ARD potential is generally considered the likelihood of a material to release sulphide materials in the presence of oxygen and water. The surface or ground water exposed to these sulphide ions subsequently becomes acidified, which can result in environmental degradation through affecting the accepted pH range for plants and aquatic life or by mobilizing metals, which can adversely affect the environment through a variety of pathways (human, wildlife, plant, microorganism, and aquatic life).

The weathering of sulphide minerals from bedrock or soil is a naturally occurring process, but when previously undisturbed (unweathered) rock is brought to the surface by construction disturbances (building a roadway, collecting/placing borrow material, etc.), the ARD potential is increased beyond naturally occurring conditions.

Seasonal melts at CAM-C will result in the site being temporarily inundated with surface water and groundwater. Additionally, the permafrost fluctuations can release groundwater at different depths, which theoretically creates the conditions for increased ARD potential. However, the geology of the weathered material is the other consideration in this equation; if the material does not contain any/much sulphide mineral content, the potential for ARD will be low. The form of sulphide minerals most likely to be released (based on overall geological formation chemistry) also plays a role in whether acid-creating ions will be released or the sulphide minerals will weather in a more stable, less reactive (and less acid-generating) form.

The geology of King William Island is primarily carbonate and silica-based, so there is low probability of sulphide mineral presence. Despite this low probability, as part of the due diligence for the upcoming water use licence application, two samples were obtained from the site and submitted to determine the ARD potential. Material was quite homogenous across the site, so samples were submitted from TP15 (BA-11) at the Station Area and TP11 (BA-20) at the Beach Area to determine the acid base accounting for each area. These samples were submitted to Maxxam Analytics in Burnaby, B.C., to a laboratory department that specializes in supporting geological analyses.

Samples were assessed using several methods: paste pH, fizz test, total sulphur analysis, and modified neutralization potential assessment. A sulphur speciation assessment was also selected to determine the forms of sulphur most likely to be created (acidic, insoluble, etc.) under weathering conditions over time.

These analyses take several weeks to complete and results were not available at the time of this report. Regardless of the results, some standard practises for site remediation are recommended, to minimize impact to the ecology, as well as reducing the ARD potential. Minimizing the amount of fresh (unweathered) rock faces exposed during remediation will also reduce the likelihood of increasing ARD potential. Previously disturbed locations on the site will be used for borrow material, staging areas, and/or disposal facilities, wherever possible, to minimize impact to the vegetation, reduce the likelihood of erosion, while also reducing the ARD potential. Due to the large amount of granular material available across the site, no rock crushing or quarrying are anticipated for site use, and this is another way of minimizing the exposure of fresh rock faces to weathering.

Results of the ARD tests are enclosed in Appendix B.

3.9 Proposed Landfill/Landfarm Location Assessment

It is possible that the clean-up plan for the CAM-C site could incorporate a non-hazardous waste landfill (NHWLF) for the disposal of demolition material and debris. Depending on the final contaminated soil volumes, a secure soil disposal facility **(**SSDF) for Tier II contaminated soil and/or a landfarm for the treatment of hydrocarbon impacted soils are also facilities for consideration. None of these facilities (SSDF and landfarm) would be permitted to accept hazardous soil or demolition material (other than asbestos).

3.9.1 Methodology

For investigation purposes in 2013, it was assumed that each of the facilities noted above would be required for site clean-up. During site investigation planning, potential locations could not be identified due to the scale of available air photos; therefore landfill locations were identified and investigated during the field program. Features characterized included: grade, surface hydrology, vegetation cover, and subsurface soil, permafrost, and groundwater conditions. The potential landfill areas were assessed on a conceptual basis for the purpose of selecting the preferred location, once the final remedial volumes have been defined. While the volume of contaminated soil will dictate the requirement for, and the final size of, the SSDF and landfarm, it is the requirement for the NHWLF in the final design that will most greatly influence the location for each facility. For example, based on soil conditions, there may be a preferred location for an SSDF that would preclude the construction of a NHWLF at that particular location.

Information requirements investigated during the 2013 field program considered the following issues:

Size of the Area - The selected area should be of sufficient size based on disposal facilities constructed on similar sites. In this regard, it is anticipated that an SSDF, Landfarm and NHWLF would each require a footprint in the order of **1,000 m^2**

Foundation Conditions - The selected area should have suitable soil, groundwater and permafrost conditions for the facility under consideration. For example, it is important to reach either saturated ground or ice rich permafrost in an area where a perimeter cut-off trench is required, e.g., SSDF.

Drainage - The selected area should be in a location with limited surface water run-off or where surface run-off can be redirected away from the facility.

Topography – The site should have relatively flat topography. In some cases, a uniformly but gently sloping ground surface may be preferable to achieve adequate drainage on final covers without raising gradient berms.

Setback Distances – The selected area should have an appropriate setback distance from water bodies.

Previous Contamination - The selected location should minimize the possibility of previously contaminated soil or sub-surface migration of contaminants below the facility where it may be detected in post-construction monitoring.

Proximity to Work Areas - The selected area should be in close proximity to work areas (landfill excavation, demolition, contaminated soil excavation, etc.).

Site Access – The selected site should have good access for construction equipment.

Disturbed Areas - Preference should generally be given to previously disturbed areas to minimize the impact on the natural environment.

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

3.9.2 Non-Hazardous Waste Landfill (NHWLF)

It is possible that a NHWLF may be required to accept waste that primarily includes non-combustible material from the demolition of existing structures, surface debris and any debris sorted out from landfill excavations. The majority of the waste would be metal, concrete and empty (cleaned) crushed barrels. Asbestos debris from around the building foundations is considered to be non-hazardous if properly packaged, and therefore can be disposed of in the NHWLF. Unpainted wood can be incinerated on site (with acquisition of appropriate burn permit).

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

The landfill cover and berms can be constructed using the Type 2 Granular Fill available on site. The recommended gradation for Type 2 Granular Fill is provided in Section 3.9.2. All granular fill should be placed in horizontal lifts not exceeding 250 mm and compacted to a minimum of 95 percent of Standard Proctor Maximum Dry Density (SPMDD, ASTM D698). The landfill footprint should be graded and any organic material removed prior to fill placement. The extent of grading should be kept to a minimum to avoid disturbance to the permafrost. Landfill cells below grade are not recommended. Any boulders or oversize material should be pushed aside and wasted or saved for final armouring.

The berms should be constructed with exterior side slopes of 3H:1V and interior slopes of 1.5H:1V, with a minimum final top width of 2 m. Staging berm construction to achieve the design height may be desirable until waste volumes

have been better established towards the end of the clean-up operation. Doing so may allow the overall height of the landfill to be reduced by incorporating the top of the berm into the final cover. Unless the environmental assessment of the debris material would suggest that the environmental impact from leachate is unacceptable, the landfill cover does not need to be designed for freeze-back, and minimum cover thickness of 1.0 m is acceptable. Depending on the final berm height, it should not be necessary to armour the Type 2 granular fill with Type 1 material.

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

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

Settlement of the landfill surface can lead to ponding and increased infiltration. To minimize this potential, large debris should be reduced in size such that the maximum lift of debris across the landfill cell is 0.5 m. Each lift of debris should be compacted with tracked equipment to reduce void space/size. Free draining intermediate fill (Type 6 Granular Fill) should be placed to a uniform thickness of 0.15 m thick across each lift of debris and worked into the underlying debris using track mounted equipment. The intermediate fill lift should be inspected to confirm that large void spaces have been filled. The intermediate fill should be non-frost susceptible to reduce the potential for seasonal frost jacking of debris. The final thickness of the debris and intermediate fill layers should not exceed 3 m.

3.9.3 Secure Soil Disposal Facility (SSDF)

Soils contaminated with PCBs and heavy metals are known to be present on the site. Unless these soils are removed from the site, an SSDF consisting of a lined containment system is recommended. Depending on the final contaminated soil volumes, co-disposal of the Tier II contaminated soil with hydrocarbon impacted soil may be considered. The design objective for this facility would be to encapsulate the contaminated soil with a geomembrane and sufficient granular cover to allow it to freeze-back over time. Additional containment would be provided by a frozen core of saturated soil keyed into permafrost or saturated ground. The design will result in little to no infiltration of moisture into the landfilled soil and as such, leachate generation is not expected in either the short term (before freeze-back) or in the long term. In this regard, leachate and gas control measures are not required.

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

The SSDF berms should be constructed with Type 2 granular fill incorporating a core of Type 4 granular fill. Both granular material types are available on site. The core material should have a minimum degree of saturation of 90% and be compacted to a minimum of 95 percent of SPMDD. All granular fill should be placed in horizontal lifts not

exceeding 250 mm and compacted to a minimum of 95% of SPMDD (ASTM D698). The berms should be constructed with exterior side slopes of 3H:1V and interior slopes of 1.5H:1V, with a minimum final top width of 2 m. If the final berm is limited in height, Type 1 granular fill for armouring the finished slopes may not be required.

The SSDF footprint should be graded and any organic material removed prior to fill placement. The extent of grading should be kept to a minimum to avoid disturbance to the permafrost. Landfill cells below grade are not recommended. Any boulders or oversize material should be pushed aside and wasted or saved for future incorporation as armouring. The Type 4 granular fill needs to be keyed into either saturated ground or ice rich permafrost. In this regard, preferred locations may be in lower lying areas where a shallower depth to the groundwater table or frozen soil is expected.

The geomembrane should be protected using a non-woven geotextile and a sand layer (Type 5 Granular Fill in Section 3.9.2). The bedding sand may be obtained by screening Type 2 Fill or screening of sand encountered in Borrow Areas 7, 10, and 18 to meet the grading requirements, in particular the maximum particle size. The landfill cover should be constructed using Type 2 granular fill available on site. It is anticipated that the final cover above the contaminated soil will be in the order of 4.0 m thick to maintain the active layer within the cover material. The final cover thickness should be confirmed using thermal modelling during detailed design.

3.9.4 Landfarm

Hydrocarbon impacted soils have been found on site. Depending on the volume of impacted soil, a landfarm may be a suitable remedial option for soil treatment. The estimated volume of Type B PHC contaminated soil that could be treated on-site is 465 m^3.

Design Considerations
The landfarm would consist of a containment cell with perimeter berms in the order of 1 to 1.5 m high. The total thickness of treatment soil is generally limited to about 0.4 m. The landfarm footprint should be uniformly graded (reshaped) towards the down-gradient side and any organic material removed prior to fill placement. The extent of grading should be kept to a minimum to avoid disturbance to the permafrost. It is not anticipated that any fill material will be required to achieve the cell floor grades. Any boulders or oversize material should be pushed aside.

The berms should be constructed using granular Type 2 granular fill with exterior side slopes of 3H:1V and interior slopes of 2H:1V, with a minimum final top width of 2 m. A hydrocarbon resistant liner is recommended around the perimeter of the cell. The liner should be incorporated into the granular berms and keyed into permafrost. Once land-farming is complete the granular berms should be collapsed and the liner removed for disposal in the NHWLF. It is only necessary to exhume the portion of the liner within the berms, i.e., the portion above existing grade. All granular fill should be placed in horizontal lifts not exceeding 250 mm and compacted to a minimum of 95% of SPMDD (ASTM D698). The final landfarm surface should be graded at 2 to 4% towards the outside edge(s) and uniformly compacted with the random action of tracked equipment.

As the landfarm would be a temporary facility in operation for only one construction season, the provision of monitoring wells and groundwater sampling and testing is considered to be excessive. In addition, there is no requirement for long term monitoring of the landfarm treatment area in the AMSRP. Environmental baseline soil sampling and confirmatory post-operation soil sampling is recommended for the landfarm. In addition, there is no requirement for long term monitoring of the landfarm treatment area in the AMSRP.

3.9.5 Recommended On-Site Disposal/Treatment Locations

Two potential locations have been identified for the NHWLF and SSDF and three for the landfarm. These locations are outlined below.

Landfill and SSDF Location: LF-1
LF-1, as shown on Figure 2, can be used as the landfill location and the SSDF location, or alternately the landfarm location. The site is located on an undisturbed area north of the Station Site (Photos G-31 and G-31). The area is adjacent to several borrow areas and a road and is easily accessible. The area has a slight slope away from the ocean to the Freshwater Lake, which is at least 2 km away. The general subsurface conditions encountered across the site are expected to exist within this area, and generally consisted of sand and gravel. Permafrost was encountered between 1.15 mBGS and 1.3 mBGS in adjacent borrow area testpits. A seepage zone is common in permafrost areas above the permafrost, and should be expected in this area during construction.

Grain size analyses conducted on samples from adjacent borrow areas contained 33% to 57% gravel, 43% to 67% sand and 0% fines. Coarse sand was described in the profile at TP13-55, within the potential location.

The investigated area for LF-1 is approximately 16,200 m^2, therefore, a landfarm or both a landfarm and a NHWLF could be constructed at this site. Considering the size of the area and its proximity to roads and borrow areas, LF-1 is suitable from a geotechnical perspective for construction of a NHWLF; landfarm; or both.

Landfill, Landfarm and SSDF Alternate Location: LF-2
LF-2, as identified on Figure 2, would be an acceptable alternate location for the landfill, landfarm and/or SSDF. The area is flat, was previously disturbed, and has minimal debris. It is in close proximity to the main construction areas and would provide easy access to the Airstrip. The site is located on a partially disturbed area west of the Airstrip, encompassing Borrow Areas 6, 7, 8 and 9, with an investigated area of approximately 70,000 m^2.

The general subsurface conditions generally consisted of sand and gravel. Permafrost was encountered between 1.1 mBGS and 1.3 mBGS; a seepage zone is common in permafrost areas above the permafrost, and should be expected in this area during construction. Grain size analyses conducted on samples within the area contained 6% to 57% gravel, 43% to 93% sand and 0% to 1% fines.

The location identified as LF-2 would also be suitable for a landfarm or camp laydown.

Landfarm Location: LF-3
The preferred location for the landfarm is at LF-3, as shown on Figure 2. It is relatively flat and in a central location to the main PHC impacted soil areas. It is situated several kilometres from both water bodies at the site. The approximate size of this area is: 5,000 m^2 which is expected to allow for ample space for a landfarm facility at CAM-C.

LF-1 or 2 would also be suitable locations for the landfarm, depending on the chosen location of the camp laydown (camp must be at least 100 m from landfarm).

3.10 Assessment of Site Access

3.10.1 Airstrip Evaluation

General
The airstrip at CAM-C is approximately 900 m long and 28 m wide and is constructed from granular material sourced on site. The airstrip was in good condition during the site investigation and only minor grading may be required during remediation. Sparse vegetation was observed along the airstrip; however it does not appear to hinder the aircraft landing and takeoff operations. During the investigation steady rain did not occur, therefore, no ponding was observed. It appears the airstrip would drain reasonably well during rainfall, however.

The aircraft used during the 2013 site investigation was the Shorts Skyvan, operated by Summit Air. The Summit Air pilots considered the airstrip to be in very good condition and there were no issues with take-off or landing on the strip. A Dornier 228 also used the airstrip for take-off and landing, operated by Summit Air, for a subsequent visit to the site after the investigation.

Site Investigation
Testpits were not excavated on the airstrip during the investigation, as it was being actively used and there was no equipment available to adequately backfill and compact the pit. One testpit (TP-17) was excavated to the west of the airstrip approximately 30 m, and one testpit (TP-16) was excavated to the east of the airstrip approximately 45 m to investigate subsurface soil and permafrost conditions. The locations of the testpits are shown on Figure 2. Permafrost was encountered in TP-16 at a depth of 1.3 mBGS and TP-17 was terminated at 1.1 mBGS due to excessive sloughing. The subsurface conditions encountered in the testpits consisted of sand and gravel, with trace to some cobbles and trace fines. Sieve analyses were conducted on both testpits, and the samples had 22 to 45% gravel, 52 to 76% sand and 2 to 3% fines.

Overall Airstrip Load Capacity
Table 3-10, obtained from Transport Canada (2004), provides an indication of the type of aircraft within each Aircraft Load Rating (ALR) classification, operating weights, Aircraft Classification No. (ACN) and design tire pressure.

Table 3-12: Typical Aircraft for ALR Classification

Aircraft	ALR Max/Min	Operating Weight (kN) Max/Min	ACN Max/Min	Design Tire Pressure (MPa)
Otter DHC3	1.0/1.0	36/20	N/A	0.20
Twin Otter DHC6	1.0/1.0	56/35	2/2	0.26
Short Skyvan	1.0/1.0	67/35	3/3	0.28
DC-3	4.1/2.3	147/80	7/4	0.31
Dornier 228	3.4/2.3	63/32	6/5	0.90
Buffalo (DHC5)	4.3/4.2	187/115	8/4	0.41
DC-4	6.3/4.2	335/200	15/8	0.53
DC-9	7.8/6.5	404/300	23/16	0.93
Hercules C-130	9.1/6.0	778/360	34/14	0.67

The use of the existing airstrip at CAM-C is subject to any repair or regrading that may be required. The successful (and conventional) use of aircraft with wide tires such as the Dornier and Skyvan used for the site investigation suggests that wide tires may be necessary because of the quality of granular material.

3.10.2 Roads

There are a number of gravel roads on the site connecting the Station Area with the Airstrip, Beach POL, and Freshwater Lake. A visual inspection was conducted to evaluate the general condition of gravel roads and to assess the maintenance required to make it passable by construction equipment, haul trucks and other passenger vehicles during the remediation activities. Photographs were taken of the roads during the site investigation. Selected photographs are included Appendix C.

Most of the roads are elevated and are constructed with locally available granular material. The gravel roads at the CAM-C site are generally in good condition but may require regular grading during remediation. Small patches of vegetation are typical along some roads but are of no concern with respect to trafficability. There are three major road sections at CAM-C: Station Area to Freshwater Lake (1); Station Area Roads (2); and Airstrip to Beach

POL (3). There are other bladed areas that could be considered roads, but they do not lead to any facilities or structures. The major road sections are described below.

Road Section 1

Road Section 1 connects the Station Area to the Freshwater Lake (see Figure 2). This road section is approximately 5 to 6 m wide and 1.7 km long. At one point, near waypoint 54 (on Figure 2), there are two culverts side by side (650 mm diameter). The road section is generally in good condition for heavy equipment, although regular grading will be required during remediation activities. The only exception is at the lower reaches of the road near the Water Supply Lake, where there are several erosion areas that will need to be filled and regraded.

Pull-out sections do not exist on this section; however, given that there is very little work in this area, a pull-out section is not likely required.

Road Section 2

Road Section 2 includes the roads in and around the Station Area, as well as the road that connects the Airstrip with the Station Area. This road section is approximately 5 to 6 m wide and 467 m long. The road is built from granular material and is generally in good condition for heavy equipment. A culvert of 600 mm diameter (located near airstrip) exists on this road section, as shown on Figure 2.

Road Section 3

Road Section 3 connects the south end of the airstrip with the Beach POL. This road section is approximately 5 to 6 m wide and 2 km long. The road is partly elevated and partly at grade. Small patches of vegetation are typical along this road section but are of no concern with respect to trafficability. Two culverts of 550 mm diameter (one near airstrip and one further along the road towards the Beach) are makeshift barrel culverts, locations shown on Figure 2. At the location of the northern culvert, the road was partially washed out. The road is generally in good condition for heavy equipment but regular grading will be required during remediation. Pull-out sections may be required along the road to allow two-way traffic.

3.10.3 Beach Landing Evaluation

The preferred barge landing area is immediately west of the East Barrel Cache, as shown on Figure 6, where barges likely would have historically accessed the site. The existing barge landing area may be upgraded for use; however, the current piles of barrels may be in the way. The area is in good condition with some upgrading required, including the development of a short access road tying into the existing access road.

3.10.4 Contractor Camp and Laydown Area

The preferred location for the Camp/Laydown Area is at LF-2, previously described in Section 6.9.5, and indicated on Figure 2 of Appendix A. A limiting factor in the location of the camp will be the selected location of the landfarm; the two must be at least 100 m apart.

3.11 Land Use

3.11.1 Current Land Use

The CAM-C site is only 30 km away from Gjoa Haven and is visited regularly by community members for recreational purposes only. According to the Wildlife Monitors, most hunting and fishing occurs on the north side of King William Island.

3.11.2 Traditional Land Use

On-site discussions were completed with the Wildlife Monitors to discuss any historical information available regarding the site. Based on these discussions, there was very little information available regarding the former site use and any other traditional uses of the site.

3.12 Archaeological Report Summary

There were no previously identified archaeological sites within the project area, so a general assessment of all known project activity areas such as debris areas, borrow areas, storage areas, the Station Area and the Beach Area were targeted during the 2013 assessment. The *Interim Report on Archaeological Inventory and Assessment at CAM-C, Matheson Point, King William Island, Kitikmeot, NU*, was completed by Thomson Heritage Consultants Inc. in July, 2013. Pertinent excerpts of the archaeological report are included to summarize the findings; the full report is appended to this report in Appendix G.

At the beach area, several recent Inuit camp sites and one older site were observed on a high ridge. The terrain consists largely of old beach ridges, some parallel to the present beach, others curving around former now relict bays. None of these contained any sites older than the Inuit period, *i.e.* from the Thule, Dorset or Pre-Dorset periods. All of the site features can likely be avoided and preserved, even though most date only to the last few decades. As sites in Nunavut are generally required to be at least 50 years old to qualify as archaeological sites, many of the incidences of traditional use at CAM-C were not recorded as archaeological sites (instead are 'recent historic sites'), as they are too recent to meet that classification.

Eighteen sites (eight archaeological and 10 recent historic) were found in the vicinity of the CAM-C during the pedestrian surveys in 2013. The sites range in time from the early Palaeoeskimo period, approximately 4,000 years ago, through the historic period to the very recent Inuit era, with some features being only a year or two old. The preliminary conclusion from the Thomson 2013 report is that the potential for additional archaeological and historic sites is moderate. Depending on future clean up and remediation activities, potential risks to heritage resources considered are low to moderate.

Should additional areas be identified for investigation or clean up, additional archaeological site inventory and assessment is recommended.

Observed incidences of recent historic sites:

- CAM-C 1 (Low Significance): On the main road from the airstrip/Station Area to the Beach Area; five tent rings, some with tea bags. An elder and site guide, Paul Ikuallak, told the archaeologist that it was a Ranger camp occupied last October (2012). The tent ring was disturbed during the site investigation and dismantled by the wildlife monitors, as it was in the way of a quad trail.
- CAM-C 2(Low Significance): About 100 m west of the south end of the Station-Beach access road, one tent ring was found on a sandy terrace behind the beach. It contained recent materials such as wooden stakes and a rusted tin can.
- CAM-C 3 (Low Significance): North of the beach (northeast of the south end of the access road), a rectangular tent ring with recent tin cans was noted on a rectangular gravel storage pad. Pad most likely used for the storage of POL containers.
- CAM-C 4 (Medium Significance): On a terrace below the fuel tank storage pad east of the lower end of the beach access road and extending northeastward about 200 m seven tent rings were found, most containing recent materials.

- CAM-C 5 (Medium Significance): Along the first terrace above the beach (extending for more than 200 m at about 10 mASL): the terrace is littered with modern debris. Nine tent rings were recorded; others may be present.
- CAM-C 6 (Low Significance): Adjacent to the Station-Beach road on the POL line from the Beach to the Station Area: small goose hunting camp on a terrace at about 30 mASL, consisting of two tent rings - one with a buckshot cartridge inside. Surrounded by abundant goose droppings.
- CAM-C 7 (Low Significance): Near a small debris area: a circular tent ring on largely undisturbed tundra. The contents (battery and wooden tent stakes) and location (in the shelter of the Station Area pad) suggest a fairly recent occupation.
- CAM-C 8 (Low Significance): One tent ring with a wooden tent stake noted 55 m north of the Freshwater Lake, northwest of the Station, on the access road: post-dates the station era.
- CAM-C 9 (High Significance): A T-shaped wooden sign, adjacent to the outline of a large rectangular tent, as interpreted from the rock and gravel used to hold down the bottom of the tent walls. Additional features associated included: a ring of larger rocks used to anchor guy ropes, a paved entrance to the tent area, and a raised, walled bed of soil that may have been used as a garden for local flora. An additional 11 smaller tent rings were also recorded in the vicinity, on the east side of the runway, southeast of the larger tent ring.
- CAM-C 10 (Low Significance): Flat, vegetated plain at 18 mASL on the east side of the beach access road: recent alignment of rocks, most likely a disturbed tent ring, and a hearth containing some broken glass.

Observed incidences of archaeological sites:

1. NeJv-1 (High Significance): THC2013-2:1, found on top of a high ridge between the elevations of about 17 to 21 mASL, above the beach northeast of the end of the beach road. Six boulder features were recorded: two recent-looking inuksuit apparently used to mark suitable crossing points for an access road between the Beach Area and a series of beach ridges used as aggregate sources to the north. The top of the ridge is littered with animal bone: caribou, muskox and seal, and some bird bone, much of it covered with lichen or partially overgrown by vegetation and soil. A few rusted tin cans and other recent debris were also found.

   Faunal materials and the elevated nature of the ridge suggest that it was also used as a hunting lookout place for observation of seals and land mammals. Due to the nature of the ridge – covered in places by boulders – additional features may be present.

2. NeJv-2 (Low Significance): An early historic period hearth or foxtrap anchor consisting of flat limestone slabs on a high, undisturbed beach ridge (approximately 30 mASL), 50 m north of the Freshwater Lake road. A cut wood stake is present under one of the limestone slabs; heavy vegetation cover including arctic heather over some of the component slabs indicates an old site.

3. NeJv-3 (High Significance): A circular tent ring located on a beach ridge 28 mASL about 500 m west of the north end of the beach access road. The structural rocks are well buried in the sand and vegetation, and no historic materials are associated. A probable hearth is located inside and a gap in the rock alignment may be a possible entrance.

4. NeJv-4 (High Significance): A Palaeoeskimo site comprising two separate loci. The site is located on the front edge of a long high beach that curves inland around a large relict marine bay, about 250 m west of NeJv-3, at an elevation of 28 mASL. Locus 1 is a rectangular tent ring with a scatter of patinated and black chert inside the structure, which has a central mid-passage aligned north-south. Locus 2, about 30 m southwest of Locus 1 on the same beach ridge, was found by Jessie Hoyt, and consists of a scatter of patinated chert and one piece of grey chert, with no discernible structure associated. One tool fragment was located: the midsection of a

patinated chert biface missing both its distal tip and proximal end. A slight indication was noted of side-notching, suggesting use as an endblade.

Quads being driven across or along these flat beach ridges could easily displace structural elements and crush the fragile stone tools and flakes, animal bone and wood fragments which could help with dating and interpretation of seasonality and function. It is recommended that all beach ridges between about 5 to 40 mASL, which may contain Palaeoeskimo sites, be avoided by vehicular traffic.

5. NeJv-5 (Medium Significance): Palaeo-Eskimo tent ring site with a scatter of patinated and black chert on the front edge of a long high beach that curves inland around a large relict marine bay at about 12 mASL. No structures were identified; several locations were noted where flat limestone slabs occurred but could not be interpreted as elements within a dwelling structure. This site may date back to the Pre-Dorset period, which begins about 4,500 years ago.

6. NEJv-6 (Low Significance): Large boulder meat cache on a terrace below the Palaeo-Eskimo beach ridges, probably dating to the Thule period. Located approximately 15 mASL and 1.4 km from the shore of Rae Strait, and likely used to store surplus seal meat for winter use.

7. NeJv-7 (Low Significance): Located on a lower beach terrace 9-11 mASL approximately 800 m from the shore and consists of three recent tent rings and an older meat cache, possibly dating to the Thule period given its degree of lichen cover and surrounding vegetation and the distance of the beach ridge from the present shoreline.

8. NeJv-8 (High Significance): Palaeo-Eskimo tent ring and associated patinated chert found on a beach terrace approximately 1 km east side of the beach access road, just east of the secondary, northernmost access road. The tent ring consisted of now badly eroding flat limestone slabs in a rectangular shape, with an apparent midpassage. Several fragments of patinated chert and a large piece of green chert were present inside the structure and old sea mammal bone was scattered inside and outside the structure. The terrace curves around what was likely an old marine bay several thousand years ago, when this beach ridge would have been at or near sea level.

Summary

A total of 18 sites were found during the three days at CAM-C: 10 recent sites most likely all post-dating the closure of CAM-C in 1963, and thus not considered to be archaeological sites, and eight sites with at least one feature dating to prior to the construction of CAM-C in the 1950s (more than 50 years old), so these are considered archaeological sites. The sites range in time from the early Palaeoeskimo period, approximately 4,000 years ago, through the historic period to the very recent Inuit era, with some features being only a year or two old.

At least two of the sites appear to have been disturbed by previous site activities, with the extent of site disturbance around the Station and Beach Areas, most likely destroying any additional sites. While many of the sites are low significance, avoidance/preservation is recommended for all locations, where possible.

Recommendations for heritage resource preservation include:

- Vehicles should avoid any site features and should remain on designated paths/work areas
- Co-ordinates for all site features should be plotted on revised site plans for guidance of project management and site workers
- New crew members should receive a briefing on archaeological site conservation on arrival in camp (Thomson Heritage Consultants recommend training by an archaeologist)

- Any further sites or site features should be reported to the departmental representative on-site, along with a brief description of contents and precise location so that it can be determined whether this is a new find and appropriate measures taken for preservation
- Continued interaction with residents of Gjoa Haven familiar with resources and resource use in the study area to help interpret site seasonality and function

The preliminary conclusion is that the potential for additional archaeological and historic sites is moderate. Depending on future clean up and remediation activities, potential risks to heritage resources are considered low to moderate. No further investigations appear to be necessary at CAM-C, provided that the known areas identified are avoided. Should additional archaeological sites or features be encountered during the remainder of the project, consideration should be given to having a follow-up archaeological assessment so that any cultural resources can be professionally verified and recorded, mitigation requirements assessed, and the sites added to the list and map of archaeological resources in the area.

Based on the results of the AIA completed by Thomson Heritage Consultants for AECOM and PWGSC, it is recommended that PWGSC be allowed to proceed with the remediation of the CAM-C DEW Line site area with the condition that no impacts occur within 30 m of six historic sites identified in the AIA.

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

3.13.1 QA/QC Procedures and Evaluation

In order to confirm that the sampling and analytical data collected for CAM-C was interpretable, defensible and comparable, a Quality Assurance and Quality Control (QA/QC) program was implemented for the project. QA/QC measures were taken in both the collection and analysis of the environmental sampling program. The following sections outline the QA/QC program completed during the investigation.

3.13.2 Summary of AECOM QA/QC Program & Results

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

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

Quality Assurance (QA) measures established for the investigation included collection of duplicate field samples at a rate of approximately 10%. A blind duplicate sample consists of a second aliquot of an individual sample that is submitted to the analytical laboratory under a separate label such that the analytical laboratory has no prior knowledge that it is a duplicate. Duplicate samples from numerous locations were submitted to the laboratory for analysis.

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

$$RPD = 100 \times ((2 \times (x1 - x2))/(x1 + x2))$$

Where x1 is the primary result and x2 is the blind duplicate result.

Table B6 in Appendix B compares sample analysis between the original samples and their duplicates. Acceptable RPD values vary on the analytical parameters, the sample matrix and the concentrations of analytes in the sample. Acceptable RPD values vary based on the analytical parameters, the sample matrix, and the concentrations of analytes in the samples. For metals in soils acceptable RPD values are 35% and for organics in soils (PHCs and PCBs), the acceptable RPD values are 50%. Only when concentrations are at least 10 times the method detection limit (MDL) are RPD calculations considered valid.

3.13.2.1 Field Duplicate Samples

During this program, 173 soil samples were collected, and 10 duplicates were completed to provide an indication of the overall sampling and analytical precision. The blind field duplicates were analyzed for various parameters based on their location and expected contaminant(s) present. RPDs were calculated for all parameters analysed in each sample. For the majority of the parameter results, the RPD values were below 35% for metals and 50% for PHCs and PCBs. The results of these calculations are summarized in Table B8 in Appendix B.

Duplicates were obtained from locations around the site (goal was every tenth sample) and from a variety of soil depths. Only one water sample was collected, so no duplicate was obtained.

Six duplicates were completed for metals parameters, and three of these failed to meet the accepted RPD range for chromium, one of these also failed the RPD range for vanadium, and an additional sample had a failed RPD for nickel. This is likely due to the sample material being coarse-grained; it is more difficult to achieve sample homogeneity with coarse-grained samples. Chromium and vanadium are not parameters tracked under the AMSRP.

The RPDs for PCBs were all within the accepted RPD ranges (two samples analyzed).

Some issues were noted with the PHC duplicates; five samples for PHCs were submitted and two of these did not meet the acceptable RPD range.

One of the jars had results below the detection limit, and one had results exceeding the guideline for Protection of Aquatic Life (for F2). For the jar with the exceedances, most of the remaining PHC constituents were below detectable limits or low values. The sample was obtained from the Beach POL site on the southern edge of the plume, and the most conservative values (the exceedances) were considered for the delineation. The sample at the depth below also indicated F2 issues, so the location would have been flagged for inclusion in the plume regardless.

The second PHC sample with an RPD exceedance was also for F2 and also within the Beach POL at 0.7 m. The soil type in this area was gravel and sands, and the 0.7 mBGS depth was marked as a transition zone where the sand became coarser and the water table was noted; the coarse nature of this material and the diversity of soil profile at this depth provide a possible explanation as to why it may have been difficult to obtain a homogeneous sample.

3.13.2.2 Laboratory QA/QC

Maxxam Analytics (Maxxam) was the analytical laboratory for the 2013 analytical program. Maxxam ran calibration check samples, matrix spike samples, surrogate spike analysis, laboratory duplicates, and standard reference material analysis to determine analytical accuracy. The QA report for the investigation was within acceptable limits for all parameters. The QA program completed by Maxxam included duplicated, Method Blank, Method Blank Spikes and Matrix Spikes.

Laboratory duplicates are two aliquots taken from the same sample container, and processed through the entire analytical procedure separately. Measured results are used to compare the analytical precision of the entire

analytical process including the sample preparation, digestion/extraction, and instrument measurement. Matrix spike duplicates are used to determine method precision. These samples involve taking two aliquots from a client sample and preparing two matrix spikes from the two aliquots.

Matrix Spikes and Method Blank Spikes measure both the accuracy of the analytical method and the effect a particular sample matrix has on the accuracy of measurement. A Matrix Spike is prepared by adding a known amount of the target analyte(s) to a volumetric aliquot of the client sample. The recovery of the Matrix Spike is then calculated. The percentage recovery of the matrix spike will indicate the accuracy of the analytical method. It will also provide a measure of the suitability of the method used for the samples undergoing analysis. The Method Blank Spike is there to act as a check on the equipment and the analyst technique used to prepare the Matrix Spike.

One Matrix Spike was recovered outside the limit (acceptable range: 75-125%) for vanadium (128%) for the analyzed batch including TP13-21. Maxxam flagged this as an exceedance, but still found the result valid; all other results were within acceptable limits. The laboratory also ran laboratory duplicate samples to ascertain analytical precision and again, all results were within acceptable limits. Method Blank Samples were run to ensure that there was no carry-over from analysis to analysis, and that analytes were not introduced due to the reagents or methods used. The blank analyses were observed to be less than the MDL.

4. Conclusions

The conclusions included in this report are based on the information and data collected during the Phase III ESA at the CAM-C, Matheson Point Intermediate DEW Line site. The following is a summary of the conclusions:

Contaminated Soil Areas

Approximate volumes of contaminated soil identified at CAM-C include:

Type B Hydrocarbon (571 m^3):

- 186 m^3 of Type B hydrocarbon impacted soil was identified at the Beach POL
- 374 m^3 of Type B impacted soil was identified at the Station POL
- 20 m^3 of Type B impacted soil was identified in the imprint of the Module Train

Tier I PCBs (60.5 m^3):

- 20 m^3 of Tier I contaminated soil was identified on the west side of the Warehouse Foundation to an estimated depth of 0.8 m
- 7.5 m^3 of Tier I contaminated soil was identified on the east side of the Warehouse Foundation to an estimated depth of 0.3 m
- 2.1 m^3 of Tier I contaminated soil was identified around the Garage Foundation; co-impacted with Tier I metals to an estimated depth of 0.3 m
- 21.3 m^3 of Tier I contaminated soil was identified at Debris Area #10 to an estimated depth of 0.3 m
- Two localized occurrences along the POL line; one of 7.5 m^3 and one of 2.1 m^3, both to a depth of 0.3 m

Tier I Metals (2.1 m^3)

- 2.1 m^3 of Tier I contaminated soil was identified around the Garage Foundation; co-impacted with Tier I metals to an estimated depth of 0.3 m

Tier II Metals (10 m^3):

- 10 m^3 of Tier II impacted soil (0.5 m depth) down the slope from the Station Area pad, near the Module Train imprint

The volume of contaminated soil identified on site is 642 m^3. None of the soil is considered to have light end impact; F2 is the highest fraction potentially considered for landfarming, and PCBs and metals will not attenuate in a landfarm, so the material can either be placed in a landfill or shipped off-site. Some additional delineation of the Station Area Tier I PCB impacted locations may be required during construction; as such, the estimated volumes presented in this report are considered conservative.

A contingency for additional contaminated soil is included in the buried debris areas section. Additional material from the Station West and Airstrip Landfill is potentially impacted with Tier I and Tier II issues. The amount of material estimated to be contained in these buried debris areas is:

Tier I and Tier I Contingencies:

- 187 m^3 Tier I and 187 m^3 Tier II from Station West Landfill excavation
- 101 m^3 Tier I and 101 m^3 Tier II from Airstrip Landfill excavation
- 5 m^3 Tier I and 5 m^3 Tier II from the Lobe C excavation
- 7 m^3 Tier I and 7 m^3 Tier II from the Lobe D excavation
- 4 m^3 Tier I and 4 m^3 Tier II from the Lobe E excavation

Totals are: 304 m^3 Tier I and 304 m^3 Tier II contaminated soil potentially contained within buried debris areas.

Demolition Quantities

No site structures remain, aside from two large concrete foundations, several small concrete foundations, and a fallen radar tower. The quantity of debris from the radar tower and the POL line has been included with the non-hazardous debris volume estimate, and the concrete foundations do not require removal. An estimated crushed volume of 209 m^3 of non-hazardous waste materials is expected from demolition activities.

Buried Debris Areas

Buried debris areas were identified through a geophysical survey of the site. The extents of the two existing landfills and five buried debris areas are provided below:

Table 4-1 – Buried Debris Estimated Quantities

Name	Location	Surface Area Extent (m2)
Lobe C	Station Area	95.0
Lobe D	Station Area	145
Lobe E	Station Area	80
Station West Landfill	Southwest of Station Area	1,560
Airstrip Landfill	Southeast of Airstrip	670

Buried debris amounts are estimated to be 609 m^3 of non-hazardous waste and 29 m^3 of hazardous waste. These are rough estimates based on likelihood of occurrence for cost estimating purposes only.

Surface Debris Areas

Surface debris was identified throughout the site, although it was concentrated around the Station Area and the Beach Area. In total, the amount of surface debris is estimated to be 197 m^3 of non-hazardous (crushed volume) and 4 m^3 of hazardous material (asbestos-amended building materials and batteries).

Hazardous and Non-Hazardous Materials

The estimated volume of hazardous debris at the CAM-C site is 33 m^3, and includes the surface battery debris and asbestos (4 m^3), as well as the estimated volume of material buried within each of the Station West and Airstrip Landfills. The volume of non-hazardous material includes all of the known surface debris, debris from the Station West and Airstrip Landfills, Lobes C, D and E, and the demolition materials. The estimated volume of non-hazardous debris at the CAM-C site is 1,015 m^3, of which 609 m^3 is contained within the existing landfills and buried debris areas.

Borrow Areas and Availability

Twenty borrow areas were assessed as part of this investigation; most of the potential borrow areas were in previously disturbed locations. While borrow material is widely available from previously disturbed sources, blending and screening from some sources may be required to achieve the amount of each type needed. Screening out large boulders will also be required if Type 1 material is needed. In total, it is estimated that a combined total of 188,300 m^3 of Type 2, 3, 4, 5 and 6 Granular Fill materials are available for use on site.

Borrow material has low acid rock drainage potential.

Landfill/SSDF Locations

A location that meets the requirements for landfills, as per the AMSRP, has been identified near the former Station Area, as shown on Figure 2. An alternate location would be LF-2.

Landfarm Locations

Several potential locations are available for a landfarm at CAM-C. The most practical location would be at LF-3, southeast of the south end of the airstrip (in Borrow Area 11), as indicated on Figure 2.

Camp Laydown

A location for potential camp laydown was identified within the vicinity of Borrow Areas 6, 7, 8 and 9 (LF-2). An area of approximately 70,000 m^2 would be available at this location. The location of LF-1 would also be an option.

Site Access

The existing site airstrip is generally usable for light aircraft, subject to the pilot discretion. The site roads will likely need some minor upgrades in some locations, including additional culverts, to allow for heavy equipment traffic, but otherwise the site roads are generally considered to be in fair to good condition for site construction access. The barge landing area at the beach can also be used with minor upgrades; however, some barrels may need to be relocated prior to unloading.

Archaeological

Based on the results of the AIA completed by Thomson Heritage Consultants for AECOM and PWGSC, it is recommended that PWGSC be allowed to proceed with the remediation of the CAM-C DEW Line site area with the provision that no impacts occur within 30 m of six historic sites identified in the AIA.

Classification Forms

The National Classification System for Contaminated Sites (NCSCS) forms were completed for the site and with the current information, CAM-C is listed as a Class C site with 88% certainty; the raw NCSCS score was 75.6, which gives it Class 1 ranking, or High Priority for Action.

5. References

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Appendix A

Figures

LOCATION OF MATHESON POINT
WITHIN NUNAVUT TERRITORY

SCALE: N.T.S.

PLAN

IMAGE SOURCE: BING MAPS AERIAL
DATUM: NAD83 (CSRS)
PROJECTION: UTM ZONE 15

0 3750 7500 m

1:150000

Issue Status: FINAL

SITE LOCATION

CAM-C, MATHESON POINT INTERMEDIATE DEW LINE SITE
PHASE III ENVIRONMENTAL SITE ASSESSMENT
PUBLIC WORKS AND GOVERNMENT SERVICES CANADA
Project No.: 60299674 Date: 2014-02-19

AECOM
Figure: 1

Project Management Initials: ____ Designer: ____ Checked: ____ Approved: ____ ANSI B 279.4mm x 431.8mm

Last saved by: KNOTTJ (2014-02-19) Last Plotted: 2014-02-19
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Project Management Initials: ____ Designer: ____ Checked: ____ Approved: ____ ANSI B 279.4mm x 431.8mm

Issue Status: FINAL

AECOM

Figure: 2

SITE KEY PLAN

FRESHWATER LAKE

ACCESS ROAD

AIRSTRIP

ACCESS ROAD

RAE STRAIT

406 000 E

407 000 E

408 000 E

409 000 E

410 000 E

7 637 000 N

7 636 000 N

7 635 000 N

FIGURE 8
(DEBRIS AREA 10)

FIGURE 4
(STATION AREA)

FIGURE 6
(AIRSTRIP LANDFILL)

FIGURE 5
(STATION POL/STATION
WEST LANDFILL)

FIGURE 7
(BEACH POL)

IMAGE SOURCE: GOOGLE EARTH PRO(2006)
DATUM: NAD83 (CSRS)
PROJECTION: UTM ZONE 15

LEGEND

FIGURE LOCATION

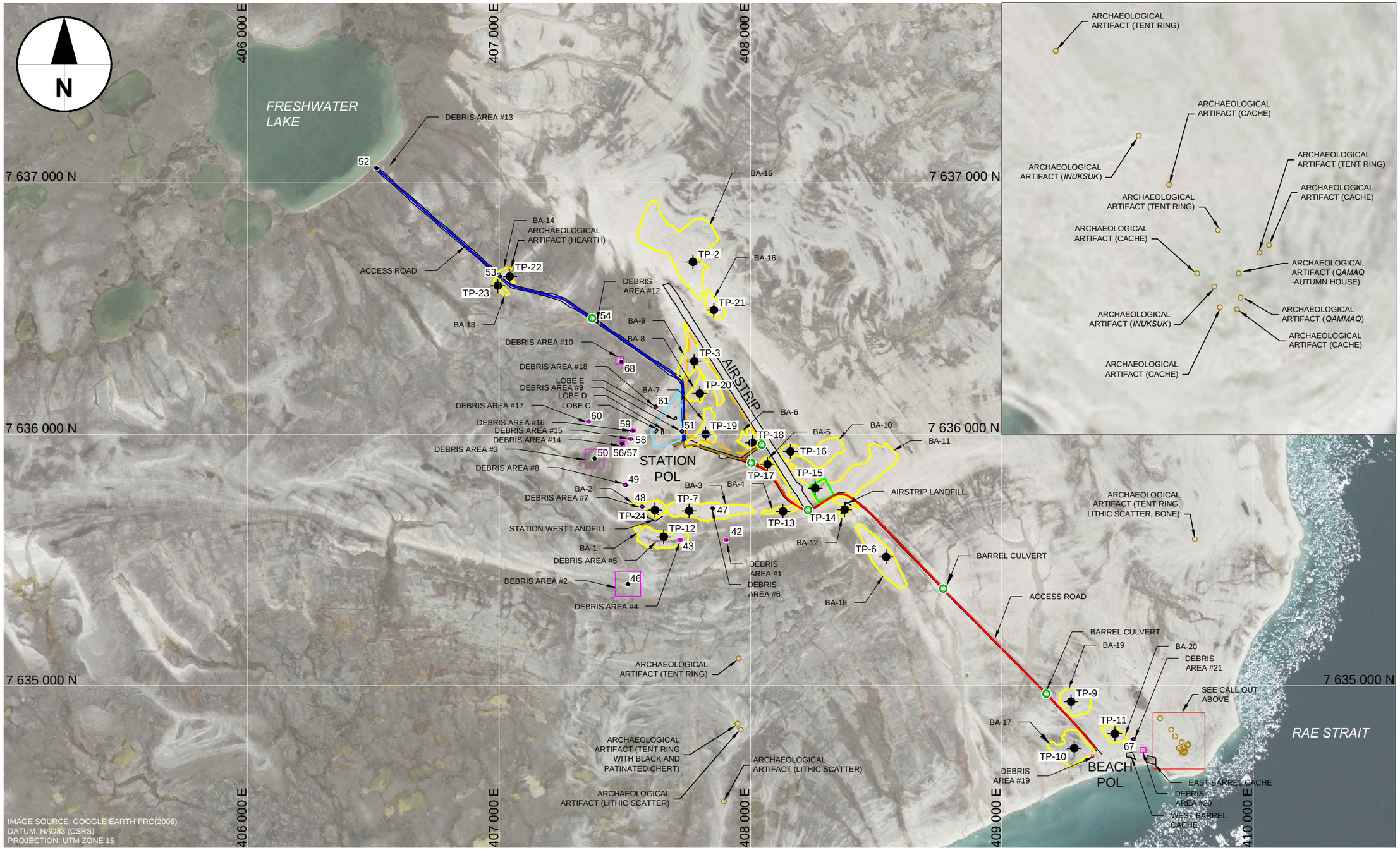
0 375 750 m

1:15000

CAM-C, MATHESON POINT INTERMEDIATE DEW LINE SITE
PHASE III ENIVIRONMENTAL SITE ASSESSMENT
PUBLIC WORKS AND GOVERNMENT SERVICES CANADA
Project No.: 60299674 Date: 2014-02-19

Last saved by: KNOTTJ(2014-02-19) Last Plotted: 2014-02-19
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Project Management Initials: ____ Designer: ____ Checked: ____ Approved: ____ ANSI B 279.4mm x 431.8mm



LEGEND

- GEOTECHNICAL TEST PIT LOCATION
- WAYPOINT
- CULVERT
- ARCHAEOLOGICAL SITE
- BORROW AREA
- DEBRIS AREA
- PROPOSED LANDFILL LOCATION (LF-1)
- PROPOSED CAMP LOCATION (LF-2)
- PROPOSED LANDFARM LOCATION (LF-3)
- ROAD SECTION 1
- ROAD SECTION 2
- ROAD SECTION 3

0 375 750 m

1:15000

Last saved by: KNOTTJ(2014-02-19) Last Plotted: 2014-02-19
Filename: P:\60299674\000-CADD\02-SHEETS\HFIG-01\R1\60299674-FIG-01-0000-H-0003.DWG

Issue Status: FINAL

AECOM

Figure: 3

OVERALL SITE PLAN

CAM-C, MATHESON POINT INTERMEDIATE DEW LINE SITE
PHASE III ENIVIRONMENTAL SITE ASSESSMENT
PUBLIC WORKS AND GOVERNMENT SERVICES CANADA
Project No.: 60299674 Date: 2014-02-19

Project Management Initials: ____ Designer: ____ Checked: ____ Approved: ____ ANSI B 279.4mm x 431.8mm

Last saved by: KNOTTJ (2014-02-19) Last Plotted: 2014-02-19
Filename: P:\60299674\000-CADD\02_SHEETS\HFIG-01\R1\60299674-FIG-01-0000-H-0004.DWG

N

407 600 E

407 700 E

LOBE E

PROPOSED LANDFILL LOCATION

LOBE C

LOBE D

ACCESS ROAD

PROPOSED CAMP LOCATION

DEBRIS AREA #16

SW1

ESG: G3121

TP13-55

7 636 000 N

DEBRIS AREA #9

ESG: L3108

TOWER

FOUNDATION

LOBE B

DEBRIS AREA #15

STATION PAD DEBRIS AREA

TP13-62

TP13-52

ESG: G3108

TP13-48

TP13-51

FOUNDATION

ACCESS ROAD

TP13-50

WESA: C-SS-005

ESG: G3101

TP13-47

GARAGE FOUNDATION

FOUNDATION

ESG: G3107

TP13-40

TP13-23

WESA: CAM-C-SS-006

TP13-41

TP13-46

TP13-49

ESG: G3102

ESG: G3109

WESA: CAM-C SS-007

ESG: G3106

TP13-22

TP13-44

TP13-45

TP13-43

FIG.9

FOUNDATION

TP13-66

TP13-67

TP13-60

TP13-21

TP13-42

ESG: G3120

ESG: G3119

ESG: G3103

7 635 900 N

TP13-61

ESG: G3118

ESG: G3104

TP13-01

TP13-64

TP13-63

ESG: G3117

TP13-59

TP13-20

POL LINE

TP13-58

WAREHOUSE FOUNDATION

TP13-53

TP13-54

TP13-02

FOUNDATION

TP13-56

ESG: G3114

ESG: G3105

TP13-03

TP13-04

TP13-57

ESG: G3115

ESG: G3110

SEWAGE OUTFALL LINE

ESG: G3116

407 800 E

DATUM: NAD83 (CSRS)
PROJECTION: UTM ZONE 15

N

FIGURE 4

KEY MAP
N.T.S

LEGEND

- CLEAN TEST PIT
- PCB IMPACTED
- PHC IMPACTED
- METALS IMPACT
- GEOTECHNICAL TEST PIT LOCATION
- WAYPOINT
- VALVE

0 25 50 m
1:1000

Issue Status: FINAL

AECOM

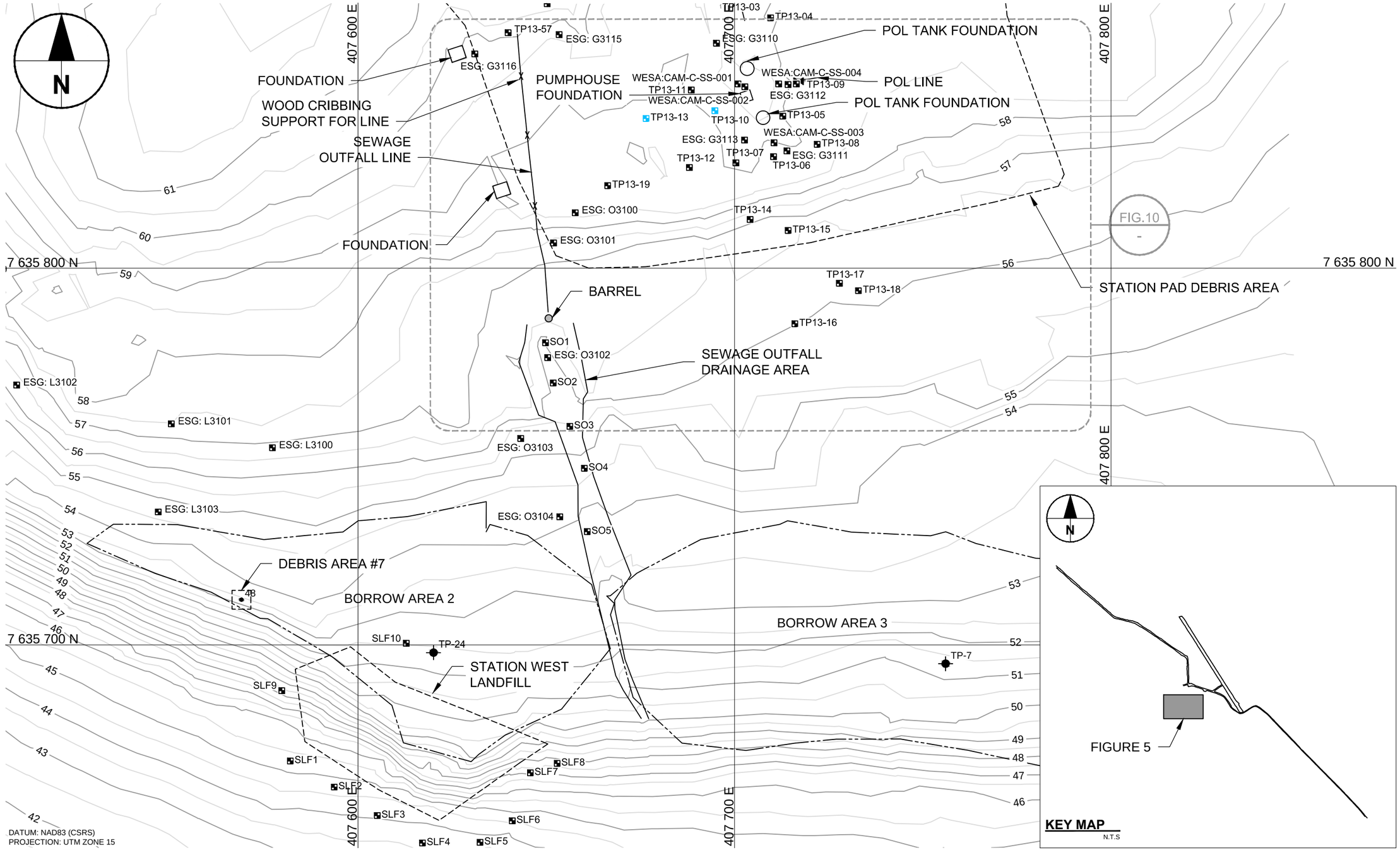
Figure: 4

STATION POL

CAM-C, MATHESON POINT INTERMEDIATE DEW LINE SITE
PHASE III ENVIRONMENTAL SITE ASSESSMENT
PUBLIC WORKS AND GOVERNMENT SERVICES CANADA
Project No.: 60299674 Date: 2014-02-19

ANSI B 279.4mm x 431.8mm
Approved: ____
Checked: ____
Designer: ____
Project Management Initials: ____

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DATUM: NAD83 (CSRS)
PROJECTION: UTM ZONE 15

LEGEND

- CLEAN TEST PIT
- PHC IMPACTED
- GEOTECHNICAL TEST PIT LOCATION
- WAYPOINT
- VALVE

0 25 50 m
1:1000

Issue Status: FINAL

AECOM

Figure: 5

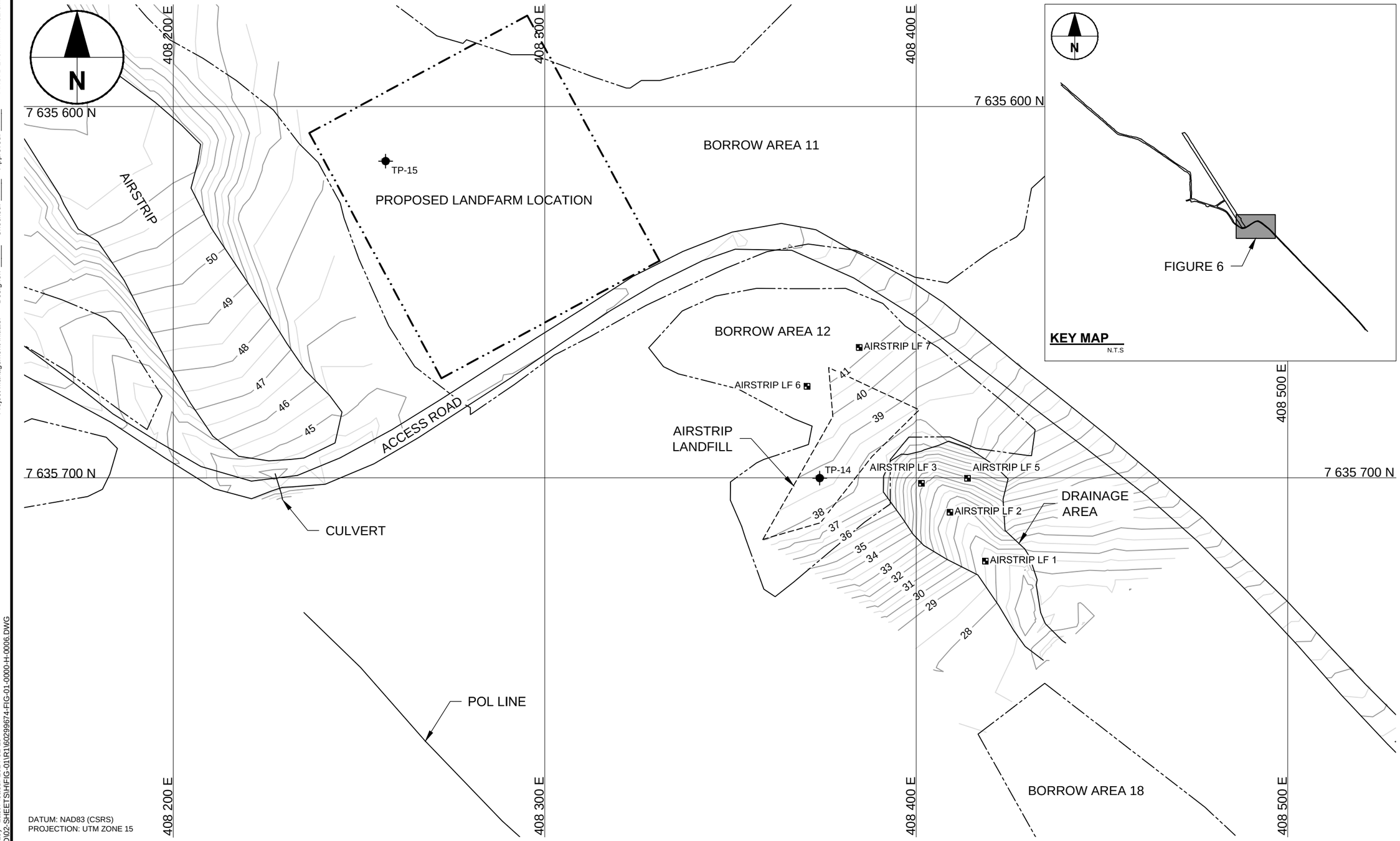
STATION WEST LANDFILL AND SEWAGE OUTFALL

CAM-C, MATHESON POINT INTERMEDIATE DEW LINE SITE
PHASE III ENVIRONMENTAL SITE ASSESSMENT
PUBLIC WORKS AND GOVERNMENT SERVICES CANADA
Project No.: 60299674 Date: 2014-02-19

ANSI B 279.4mm x 431.8mm

Project Management Initials: ____ Designer: ____ Checked: ____ Approved: ____

Last saved by: KNOTTJ (2014-02-19) Last Plotted: 2014-02-19
Filename: P:\60299674\000-CADD\02-SHEETS\HFIG-01\R1\60299674-FIG-01-0000-H-0006.DWG



DATUM: NAD83 (CSRS)
PROJECTION: UTM ZONE 15

LEGEND

- CLEAN TEST PIT
- GEOTECHNICAL TEST PIT LOCATION

0 25 50 m
1:1000

Issue Status: FINAL

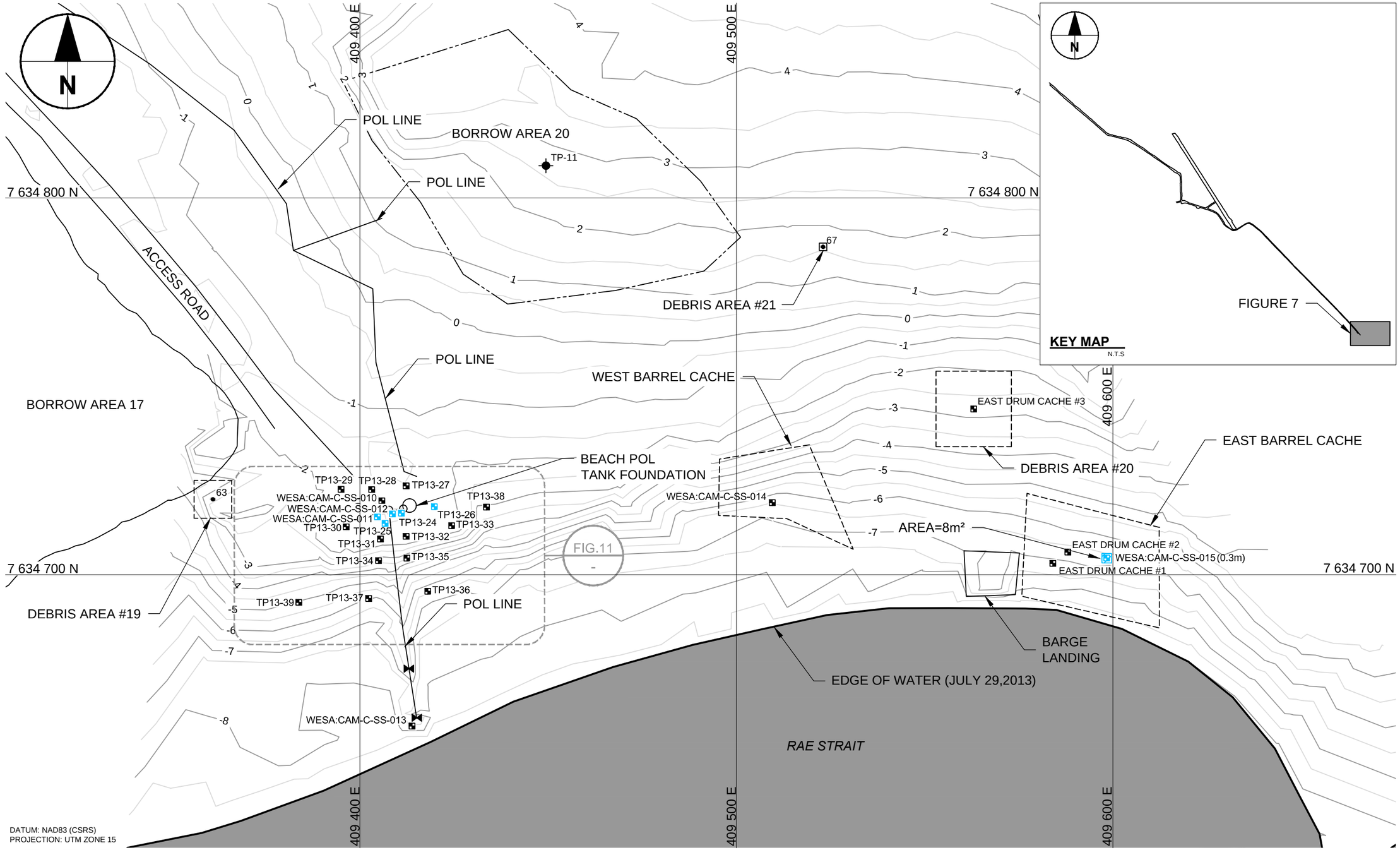
AECOM

Figure: 6

AIRSTRIP LANDFILL

CAM-C, MATHESON POINT INTERMEDIATE DEW LINE SITE
PHASE III ENVIRONMENTAL SITE ASSESSMENT
PUBLIC WORKS AND GOVERNMENT SERVICES CANADA
Project No.: 60299674 Date: 2014-02-19

Project Management Initials: ____ Designer: ____ Checked: ____ Approved: ____ ANSI B 279.4mm x 431.8mm



LEGEND

- CLEAN TEST PIT
- PHC IMPACTED
- GEOTECHNICAL TEST PIT LOCATION
- WAYPOINT
- VALVE
- TYPE B HYDROCARBON PLUME

0 25 50 m

1:1000

Issue Status: FINAL

AECOM

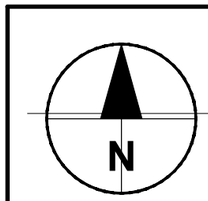
Figure: 7

BEACH POL

CAM-C, MATHESON POINT INTERMEDIATE DEW LINE SITE
PHASE III ENVIRONMENTAL SITE ASSESSMENT
PUBLIC WORKS AND GOVERNMENT SERVICES CANADA
Project No.: 60299674 Date: 2014-02-19

Last saved by: KNOTTJ (2014-02-19) Last Plotted: 2014-02-19
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Project Management Initials: ____ Designer: ____ Checked: ____ Approved: ____ ANSI B 279.4mm x 431.8mm



7 636 350 N

7 636 300 N

7 636 250 N

407 450 E

407 500 E

407 550 E

ESG: G3122

ESG: G3123

DEBRIS AREA 10

AREA=71m²

DEBRIS AREA #10 (0.05m)

TP13-65 (0.15m)

68

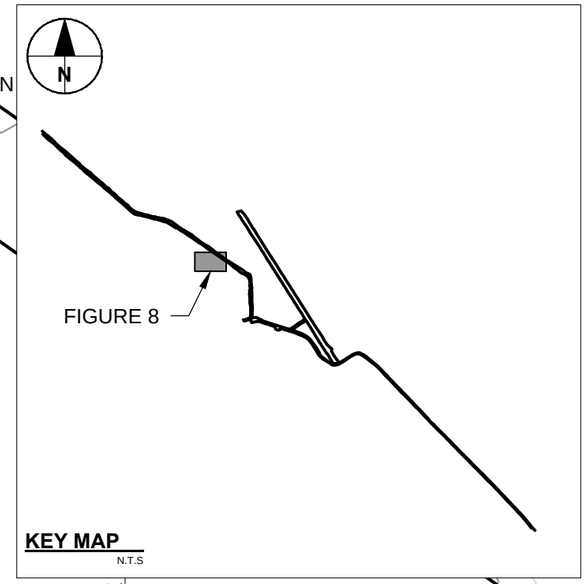
37

ACCESS ROAD

38

41

42



DATUM: NAD83 (CSRS)
PROJECTION: UTM ZONE 15

LEGEND

- CLEAN TEST PIT LOCATION
- PCB IMPACTED
- WAYPOINT
- TIER I PCB IMPACT

0 12.5 25 m

1:500

Issue Status: FINAL

AECOM

Figure: 8

DEBRIS AREA 10

CAM-C, MATHESON POINT INTERMEDIATE DEW LINE SITE
PHASE III ENIVIRONMENTAL SITE ASSESSMENT
PUBLIC WORKS AND GOVERNMENT SERVICES CANADA
Project No.: 60299674 Date: 2014-02-19

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Project Management Initials: ____ Designer: ____ Checked: ____ Approved: ____ ANSI B 279.4mm x 431.8mm

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Filename: P:\60299674\000-CADD\02-SHEETS\HIFIG-01\R1\60299674-FIG-01-0000-H-0009.DWG

N

7 635 950 N

7 635 900 N

407 600 E

407 650 E

407 700 E

407 750 E

STATION PAD DEBRIS AREA

FOUNDATION

TOWER

PROPOSED LANDFILL LOCATION

LOBE B

ACCESS ROAD

ACCESS ROAD

BORROW AREA 7

TP13-62

ESG: G3108

TP13-48

TP13-52

TP13-51

ESG: G3107

FOUNDATION

TP13-50

WESA: C-SS-005

ESG: G3101

TP13-47

AREA=1m²

TP13-40

TP13-23

WESA: CAM-C-SS-006 (0.3m)

TP13-41

AREA=25m²

ESG: G3106

ESG: G3109 (0.15m)

TP13-22 (0.8m)

AREA=25m²

TP13-42

AREA=7m²

TP13-49 (0.3m)

ESG: G3102 (SURFACE)

WESA: CAM-C SS-007 (0.3m)

AREA=7m²

TP13-46

TP13-44

TP13-45

TP13-43

TP13-60

TP13-21

WAREHOUSE FOUNDATION

GARAGE FOUNDATION

ESG: G3103

ESG: G3120

TP13-61

ESG: G3119

ESG: G3104 (0.15m)

TP13-01

AREA=25m²

POL LINE

MODULE TRAIN IMPRINT

ESG: G3118

TP13-64

TP13-63

TP13-20

STATION PAD DEBRIS AREA

ESG: G3117

TP13-59

TP13-58 (0.3m)

AREA=20m²

TP13-53 (0.45m)

TP13-54

TP13-02

AREA=7m²

AREA=25m²

TP13-56

ESG: G3105 (0.15m)

TP13-03

ESG: G3114

SEWAGE OUTFALL LINE

TP13-04

FOUNDATION

TP13-57

ESG: G3115

ESG: G3110

ESG: G3116

DATUM: NAD83 (CSRS)
PROJECTION: UTM ZONE 15

61 60 59

LEGEND

- CLEAN TEST PIT
- PCB IMPACTED
- PHC IMPACTED
- METALS IMPACT
- VALVE
- TIER I PCB EXCEEDANCES
- TYPE B HYDROCARBON PLUMES
- TIER II METALS EXCEEDANCE (COPPER)
- TIER I METALS EXCEEDANCE (LEAD)

0 12.5 25 m

1:500

Issue Status: FINAL

AECOM

Figure: 9

STATION PAD DEBRIS AREA CONTAMINATED SOIL AREA

CAM-C, MATHESON POINT INTERMEDIATE DEW LINE SITE
PHASE III ENVIRONMENTAL SITE ASSESSMENT
PUBLIC WORKS AND GOVERNMENT SERVICES CANADA
Project No.: 60299674 Date: 2014-02-19

ANSI B 279.4mm x 431.8mm
Approved:
Checked:
Designer:
Project Management Initials:

N

7 635 850 N

7 635 800 N

407 650 E

407 700 E

407 750 E

TP13-57

ESG: G3115

ESG: G3116

ESG: G3110

TP13-04

60

59

58

57

56

55

54

WOOD CRIBBING SUPPORT FOR LINE

FOUNDATION

SEWAGE OUTFALL LINE

AREA=375m²

POL TANK FOUNDATION

PUMPHOUSE FOUNDATION

POL LINE

WESA:CAM-C-SS-001

WESA:CAM-C-SS-002

WESA:CAM-C-SS-004

TP13-11

TP13-09

ESG: G3112

TP13-13 (0.7m)

TP13-10 (0.6-1.24m)

TP13-05

POL TANK FOUNDATION

ESG: G3113

WESA:CAM-C-SS-003

TP13-08

ESG: G3111

TP13-07

TP13-06

TP13-12

TP13-19

STATION PAD DEBRIS AREA

ESG: O3100

TP13-14

TP13-15

FOUNDATION

ESG: O3101

BARREL

SEWAGE OUTFALL DRAINAGE AREA

SO1

ESG: O3102

SO2

SO3

TP13-17

TP13-18

TP13-16

DATUM: NAD83 (CSRS)
PROJECTION: UTM ZONE 15

LEGEND

- CLEAN TEST PIT
- PHC IMPACTED
- TYPE B HYDROCARBON PLUME

0 12.5 25 m

1:500

Issue Status: FINAL

AECOM

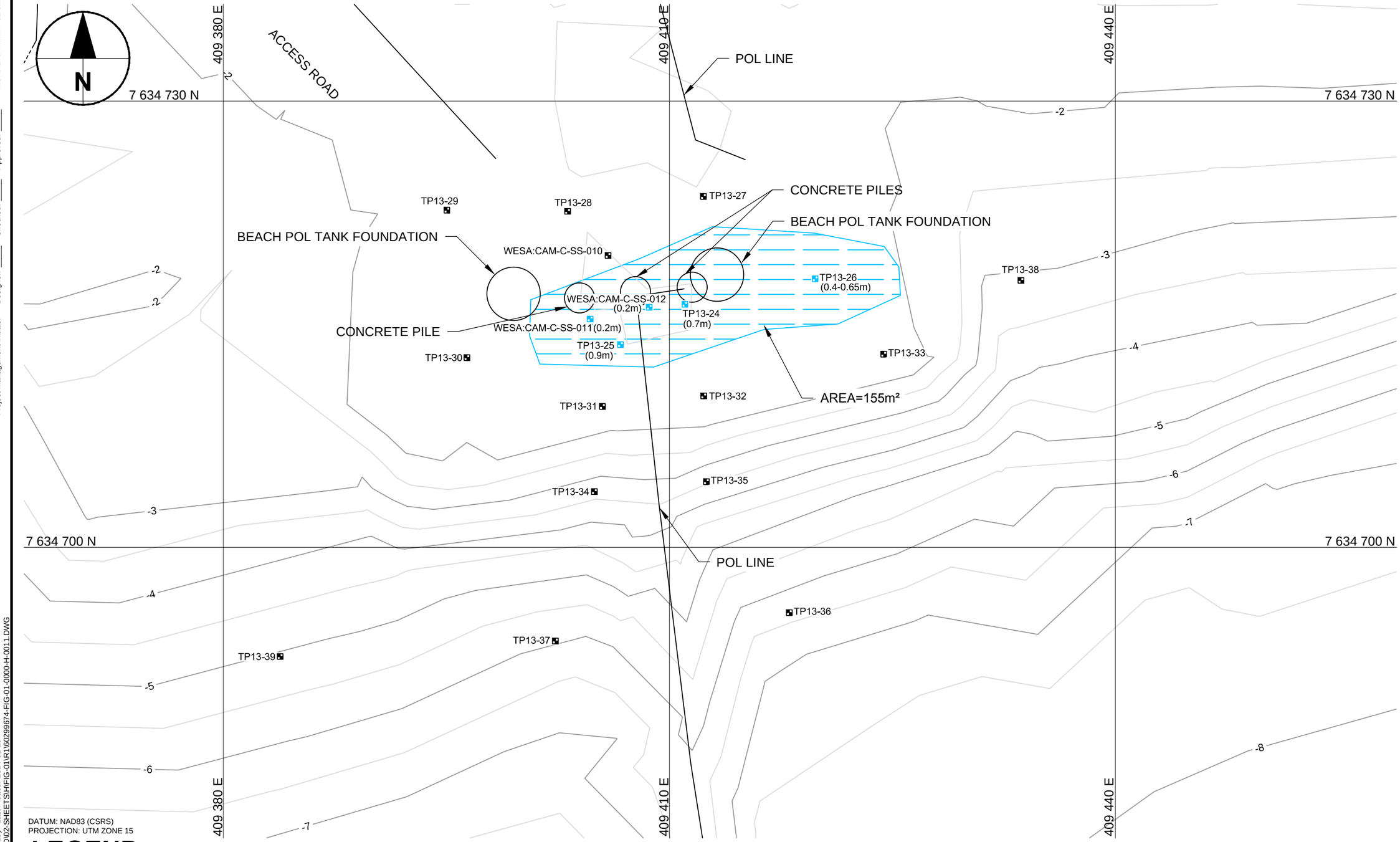
Figure: 10

STATION AREA POL
CONTAMINATED SOIL AREA

CAM-C, MATHESON POINT INTERMEDIATE DEW LINE SITE
PHASE III ENIVIRONMENTAL SITE ASSESSMENT
PUBLIC WORKS AND GOVERNMENT SERVICES CANADA
Project No.: 60299674 Date: 2014-02-19

Last saved by: KNOTTJ (2014-02-19) Last Plotted: 2014-02-19
Filename: P:\60299674\000-CADD\02-SHEETS\HF\FIG-01\R1\60299674-FIG-01-0000-H-0010.DWG

ANSI B 279.4mm x 431.8mm
Approved: ____
Checked: ____
Designer: ____
Project Management Initials: ____



DATUM: NAD83 (CSRS)
PROJECTION: UTM ZONE 15

LEGEND

- CLEAN TEST PIT
- PHC IMPACTED
- TYPE B HYDROCARBON PLUME

0 6.25 12.5 m
1:250

Issue Status: FINAL

AECOM

Figure: 11

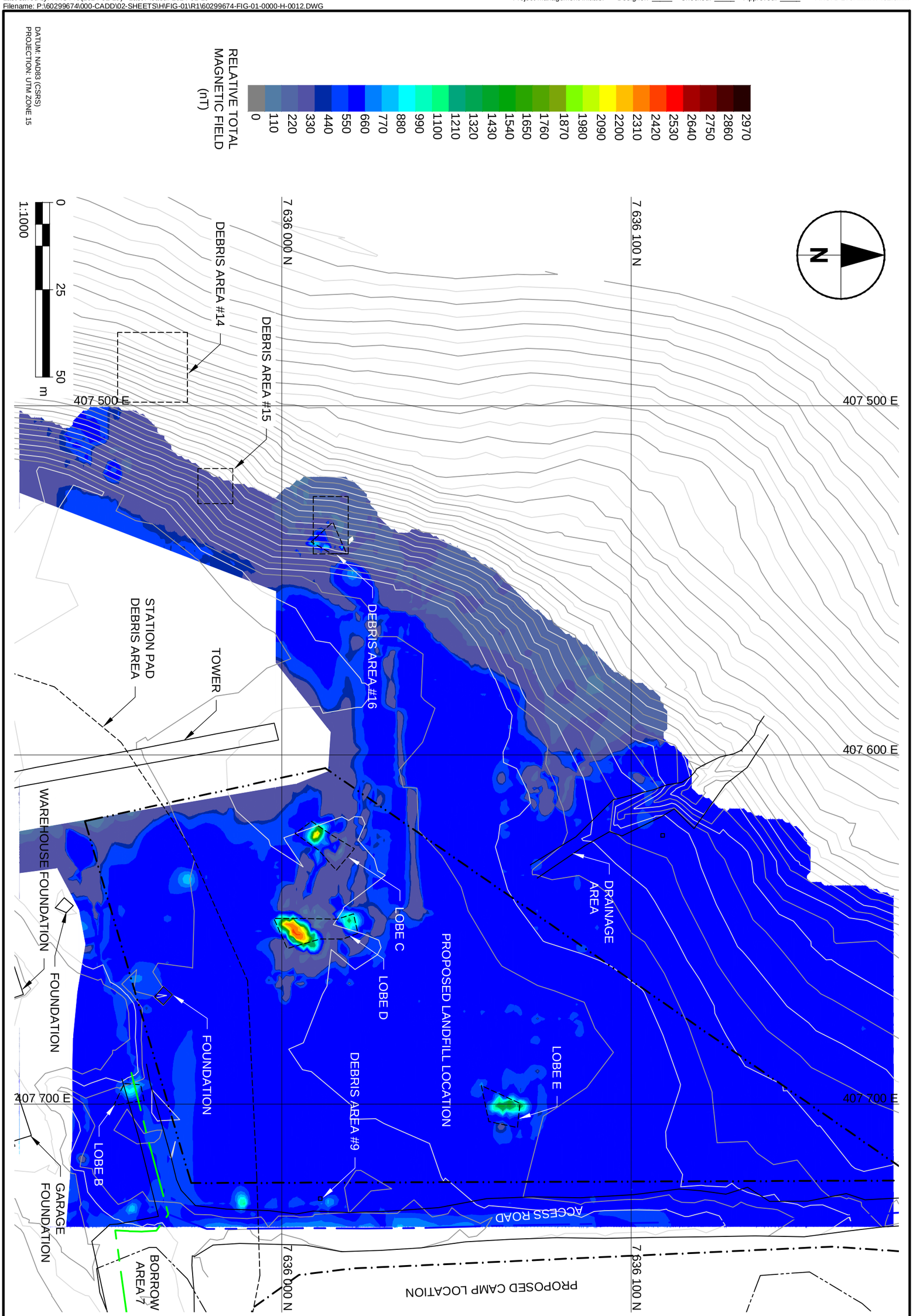
BEACH SITE
CONTAMINATED SOIL AREA

CAM-C, MATHESON POINT INTERMEDIATE DEW LINE SITE
PHASE III ENVIRONMENTAL SITE ASSESSMENT
PUBLIC WORKS AND GOVERNMENT SERVICES CANADA
Project No.: 60299674 Date: 2014-02-19

Last saved by: KNOTTJ (2014-02-19) Last Plotted: 2014-02-19
Filename: P:\60299674\000-CADD\02-SHEETS\HFIG-01\R1\60299674-FIG-01-0000-H-0011.DWG

Last saved by: KNOTTJ(2014-02-19) Last Plotted: 2014-02-19
Filename: P:\60299674\000-CADD\02-SHEETS\H\FIG-01\R1\60299674-FIG-01-0000-H-0012.DWG

Project Management Initials: Designer: _____ Checked: _____ Approved: _____ ANSI B 279.4mm x 431.8mm



Issue Status: FINAL

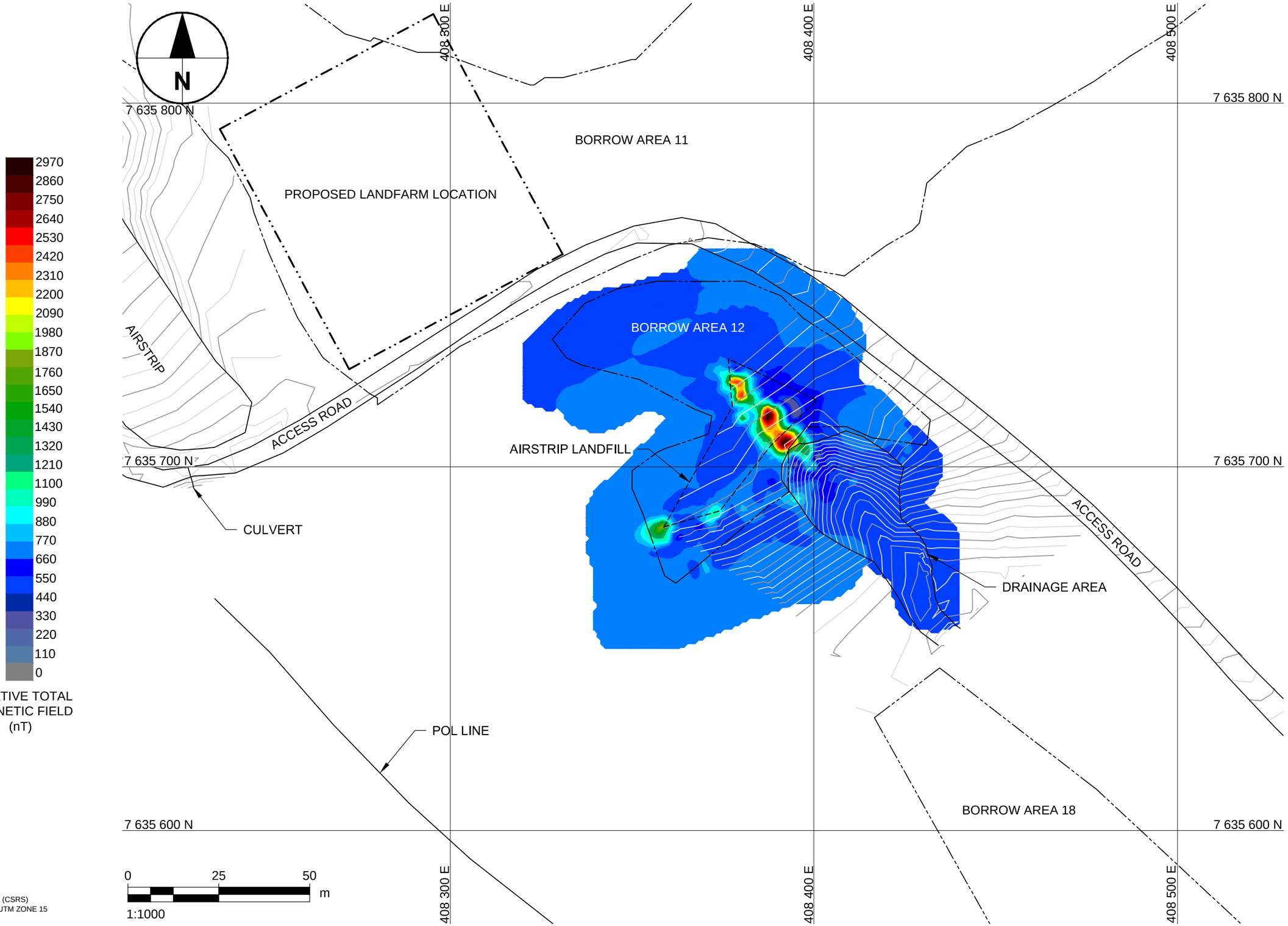
CAM-C, MATHESON POINT INTERMEDIATE DEW LINE SITE
PHASE III ENIVIRONMENTAL SITE ASSESSMENT
PUBLIC WORKS AND GOVERNMENT SERVICES CANADA
Project No.: 60299674 Date: 2014-02-19

GEOPHYSICAL ANALYSIS
STATION SITE

AECOM

Figure: 12

Project Management Initials: Designer: Checked: Approved: ANSI B 279.4mm x 431.8mm



Last saved by: KNOTTJ (2014-02-19) Last Plotted: 2014-02-19
Filename: P:\60299674\4000-CADD\02-SHEETS\HFIG-01\R1\60299674-FIG-01-0000-H-0013.DWG

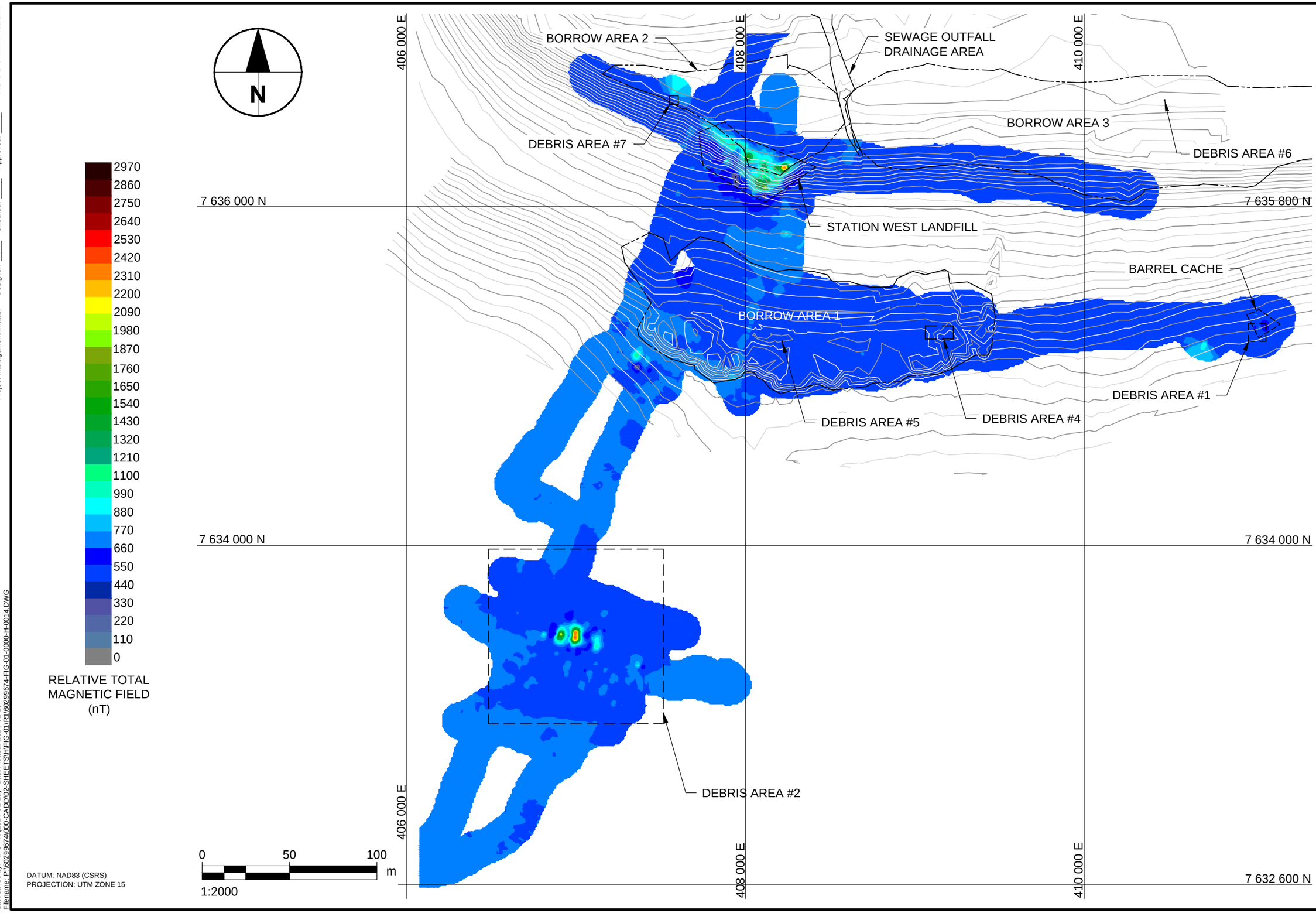
Issue Status: FINAL

AECOM

Figure: 13

GEOPHYSICAL ANALYSIS
AIRSTRIP LANDFILL

CAM-C, MATHESON POINT INTERMEDIATE DEW LINE SITE
PHASE III ENVIRONMENTAL SITE ASSESSMENT
PUBLIC WORKS AND GOVERNMENT SERVICES CANADA
Project No.: 60299674 Date: 2014-02-19



Issue Status: FINAL

AECOM

Figure: 14

GEOPHYSICAL ANALYSIS
STATION WEST LANDFILL

CAM-C, MATHESON POINT INTERMEDIATE DEW LINE SITE
PHASE III ENVIRONMENTAL SITE ASSESSMENT
PUBLIC WORKS AND GOVERNMENT SERVICES CANADA
Project No.: 60299674 Date: 2014-02-19

Project Management Initials: Designer: Checked: Approved: ANSI B 279.4mm x 431.8mm

Last saved by: KNOTTJ (2014-02-19) Last Plotted: 2014-02-19
Filename: P:\60299674\000-CADD\02-SHEETS\H\FIG-01\R1\60299674-FIG-01-0000-H-0014.DWG

Appendix B

Data Tables

CAM-C 2013 Analytical Results with Relevant Guidelines

Table 1: Beach Analytical

Sample #	Area	Depth (m)	Date	Cr ppm	Moisture	Sieve - Pan	Sieve - #200 (>0.075mm)	Grain Size	Sb (mg/kg)	As (mg/kg)	Ba (mg/kg)	Be (mg/kg)	Cd (mg/kg)	Cr (mg/kg)	Co (mg/kg)	Cu (mg/kg)	Pb (mg/kg)	Hg (mg/kg)	Mo (mg/kg)	Ni (mg/kg)	Se (mg/kg)	Ag (mg/kg)	Tl (mg/kg)	Sn (mg/kg)	U (mg/kg)	V (mg/kg)	Zn (mg/kg)
CEPA																											
Tier II				**250**						**30**			**5**	**250**	**50**	**100**	**500**	**2**		**100**							**500**
Tier I																	**200**										
PHCs/TPH - Protection of Freshwater Aquatic Life (within 30 m of water body)																											
PHCs/TPH - Protection of Terrestrial Wildlife																											
PHCs/TPH - Human Health																											
PHCs/TPH - Management Limit																											
East Drum Cache #1	East Drum Cache	0.4	1-Aug-13						<1.0	<1.0	<10	<0.40	<0.10	2.0	<1.0	<5.0	1.8	<0.050	<0.40	<1.0	<0.50	<1.0	<0.30	<1.0	<1.0	4.1	<10
East Drum Cache #2	East Drum Cache	0.15	1-Aug-13																								
East Drum Cache #3	East Drum Cache	0.1	1-Aug-13																								
TP13-24	Beach POL	0.05	31-Jul-13	<10																		<1.0	<0.30	<1.0	<1.0	6.4	<10
TP13-24	Beach POL	0.15	31-Jul-13																								
TP13-24	Beach POL	0.7	31-Jul-13	<10																		<1.0	<0.30	<1.0	<1.0	9.2	<10
TP13-25	Beach POL Tanks and Pumphouse	0.05	31-Jul-13						<1.0	<1.0	<10	<0.40	0.23	3.1	1.1	<5.0	56	<0.050	<0.40	2.1	<0.50	<1.0	<0.30	<1.0	<1.0	6.6	<10
TP13-25	Beach POL Tanks and Pumphouse	0.2	31-Jul-13																								
TP13-25	Beach POL Tanks and Pumphouse	0.4	31-Jul-13																								
TP13-25	Beach POL Tanks and Pumphouse	0.9	31-Jul-13																								
TP13-26	Beach POL Tanks and Pumphouse	0.05	31-Jul-13						<1.0	<1.0	<10	<0.40	<0.10	4.3	<1.0	<5.0	6.0	<0.050	<0.40	1.8	<0.50	<1.0	<0.30	<1.0	<1.0	8.6	<10
TP13-26	Beach POL Tanks and Pumphouse	0.4	31-Jul-13																								
TP13-26	Beach POL Tanks and Pumphouse	0.65	31-Jul-13																								
TP13-26	Beach POL Tanks and Pumphouse	1.1	31-Jul-13																								
TP13-27	Beach POL Tanks and Pumphouse	0.05	31-Jul-13						<1.0	<1.0	<10	<0.40	<0.10	4.3	<1.0	<5.0	27	<0.050	<0.40	2.0	<0.50	<1.0	<0.30	<1.0	<1.0	8.3	<10
TP13-27	Beach POL Tanks and Pumphouse	0.4	31-Jul-13																								
TP13-27	Beach POL Tanks and Pumphouse	0.9	31-Jul-13																								
TP13-28	Beach POL Tanks and Pumphouse	0.05	31-Jul-13						<1.0	<1.0	<10	<0.40	<0.10	2.9	<1.0	<5.0	16	<0.050	<0.40	1.3	<0.50	<1.0	<0.30	<1.0	<1.0	5.7	<10
TP13-28	Beach POL Tanks and Pumphouse	0.5	31-Jul-13																								
TP13-28	Beach POL Tanks and Pumphouse	1.0	31-Jul-13																								
TP13-29	Beach POL Tanks and Pumphouse	0.05	31-Jul-13						<1.0	<1.0	<10	<0.40	<0.10	2.3	<1.0	<5.0	3.7	<0.050	<0.40	1.2	<0.50	<1.0	<0.30	<1.0	<1.0	4.8	<10
TP13-29	Beach POL Tanks and Pumphouse	0.7	31-Jul-13																								
TP13-30 [1]	Beach POL Tanks and Pumphouse	0.05	31-Jul-13						<1.0	<1.0	<10	<0.40	<0.10	2.4	<1.0	<5.0	4.5	<0.050	<0.40	2.2	<0.50	<1.0	<0.30	<1.0	<1.0	5.0	<10
TP13-30 [1]	Beach POL Tanks and Pumphouse	0.05	31-Jul-13						<1.0	<1.0	<10	<0.40	<0.10	4.0	1.1	<5.0	3.2	<0.050	<0.40	2.4	<0.50	<1.0	<0.30	<1.0	<1.0	7.7	<10
TP13-30	Beach POL Tanks and Pumphouse	0.7	31-Jul-13																								
TP13-30A	Beach POL Tanks and Pumphouse	0.7	31-Jul-13																								
TP13-31	Beach POL Tanks and Pumphouse	0.05	31-Jul-13						<1.0	<1.0	<10	<0.40	<0.10	4.0	<1.0	<5.0	65	<0.050	<0.40	1.7	<0.50	<1.0	<0.30	<1.0	<1.0	6.9	<10
TP13-31	Beach POL Tanks and Pumphouse	0.4	31-Jul-13																								
TP13-31	Beach POL Tanks and Pumphouse	0.8	31-Jul-13																								
TP13-31	Beach POL Tanks and Pumphouse	1.04	31-Jul-13																								
TP13-32	Beach POL Tanks and Pumphouse	0.05	31-Jul-13						<1.0	<1.0	<10	<0.40	<0.10	3.2	<1.0	<5.0	4.4	<0.050	<0.40	1.3	<0.50	<1.0	<0.30	<1.0	<1.0	5.9	11
TP13-32	Beach POL Tanks and Pumphouse	0.4	31-Jul-13																								
TP13-32[1]	Beach POL Tanks and Pumphouse	0.7	31-Jul-13																								
TP13-32[1]	Beach POL Tanks and Pumphouse	0.7	31-Jul-13																								
TP13-32	Beach POL Tanks and Pumphouse	1.25	31-Jul-13																								
TP13-33	Beach POL Tanks and Pumphouse	0.05	31-Jul-13						<1.0	<1.0	<10	<0.40	<0.10	2.5	<1.0	<5.0	8.4	<0.050	<0.40	1.5	<0.50	<1.0	<0.30	<1.0	<1.0	5.4	<10
TP13-33	Beach POL Tanks and Pumphouse	0.6	31-Jul-13																								
TP13-33D	Beach POL Tanks and Pumphouse	0.6	31-Jul-13																								
TP13-33	Beach POL Tanks and Pumphouse	1.15	31-Jul-13																								
TP13-34	Beach POL Tanks and Pumphouse	0.05	31-Jul-13						<1.0	<1.0	<10	<0.40	<0.10	2.2	<1.0	<5.0	5.5	<0.050	<0.40	1.5	<0.50	<1.0	<0.30	<1.0	<1.0	3.9	<10
TP13-34	Beach POL Tanks and Pumphouse	0.6	31-Jul-13																								
TP13-35	Beach POL Tanks and Pumphouse	0.5	31-Jul-13																								
TP13-36	Beach POL Tanks and Pumphouse	0.6	31-Jul-13																								
TP13-37	Beach POL Tanks and Pumphouse	0.55	31-Jul-13																								
TP13-38	Beach POL Tanks and Pumphouse	0.5	31-Jul-13																								
TP13-39	Beach POL Tanks and Pumphouse	0.05	31-Jul-13						<1.0	1.1	<10	<0.40	0.12	3.9	1.5	<5.0	5.6	<0.050	<0.40	3.6	<0.50	<1.0	<0.30	<1.0	<1.0	7.1	<10
TP13-39	Beach POL Tanks and Pumphouse	0.45	31-Jul-13																								
Beach POL	Beach POL	0.6	1-Aug-13		3.3	12	88	COARSE																			
Beach POL	Beach POL	<1.0	1-Aug-13		3.7	13	87	COARSE																			

Detection Limits adjusted due to interference

[1] Unintentional Duplicate

CAM-C 2013 Analytical Results with Relevant Guidelines

Table 1: Beach Analytical

Sample #	Area	Depth (m)	Date	Aroclor 1016 (mg/kg or ppm)	Aroclor 1221 (mg/kg or ppm)	Aroclor 1232 (mg/kg or ppm)	Aroclor 1242 (mg/kg or ppm)	Aroclor 1248 (mg/kg or ppm)	Aroclor 1254 (mg/kg or ppm)	Aroclor 1260 (mg/kg or ppm)	Aroclor 1262 (mg/kg or ppm)	Aroclor 1268 (mg/kg or ppm)	PCB Total (mg/kg or ppm)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylene (mg/kg)	m & p-Xylene (mg/kg)	o-Xylene (mg/kg)	F1 (mg/kg)	F1 minus BTEX (mg/kg)	F2 (mg/kg)	F3 (mg/kg)	F4 (mg/kg)	Total TPH (mg/kg or ppm)			
CEPA													**50**												Dominant TPH Type	TYPE A ppm	TYPE B (0-0.5 m) ppm	TYPE B (>0.5 m) ppm
Tier II													**5**															
Tier I													**1**															
PHCs/TPH - Protection of Freshwater Aquatic Life (within 30 m of water body)																					**1290**	**330**					**330**	
PHCs/TPH - Protection of Terrestrial Wildlife																											**2,500**	
PHCs/TPH - Human Health																						**11,000**	**20,000**			**20,000**		
PHCs/TPH - Management Limit																												**5,000**
East Drum Cache #1	East Drum Cache	0.4	1-Aug-13											<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	<10	<50	<50	NO TYPE	<50	<50	
East Drum Cache #2	East Drum Cache	0.15	1-Aug-13											<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	43	83	<50	TYPE B	83	126	
East Drum Cache #3	East Drum Cache	0.1	1-Aug-13											<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	<10	80	<50	TYPE B	80	80	
TP13-24	Beach POL	0.05	31-Jul-13	<0.010	<0.010	<0.010	<0.010	<0.010	<0.020	<0.010	<0.010	<0.010	<0.020															
TP13-24	Beach POL	0.15	31-Jul-13											<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	29	29	**3,900**	<50	<50	TYPE B	<50	3,929	
TP13-24	Beach POL	0.7	31-Jul-13											<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	200	200	**8,700**	<50	<50	TYPE B	<50		8,900
TP13-25	Beach POL Tanks and Pumphouse	0.05	31-Jul-13	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10															
TP13-25	Beach POL Tanks and Pumphouse	0.2	31-Jul-13											<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	**780**	<50	<50	TYPE B	<50	780	
TP13-25	Beach POL Tanks and Pumphouse	0.4	31-Jul-13											<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	110	110	**4,800**	<50	<50	TYPE B	<50	4,910	
TP13-25	Beach POL Tanks and Pumphouse	0.9	31-Jul-13											<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	170	170	**8,100**	<50	<50	TYPE B	<50		8,270
TP13-26	Beach POL Tanks and Pumphouse	0.05	31-Jul-13	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010															
TP13-26	Beach POL Tanks and Pumphouse	0.4	31-Jul-13											<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	39	39	**3,000**	<50	<50	TYPE B	<50	3,039	
TP13-26	Beach POL Tanks and Pumphouse	0.65	31-Jul-13											<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	110	110	**3,400**	<50	<50	TYPE B	<50		3,510
TP13-26	Beach POL Tanks and Pumphouse	1.1	31-Jul-13											<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	**2,500**	<50	<50	TYPE B	<50		2,500
TP13-27	Beach POL Tanks and Pumphouse	0.05	31-Jul-13	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050															
TP13-27	Beach POL Tanks and Pumphouse	0.4	31-Jul-13											<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	250	460	100	TYPE B	560	**710**	
TP13-27	Beach POL Tanks and Pumphouse	0.9	31-Jul-13											<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	<10	160	<50	TYPE B	160		160
TP13-28	Beach POL Tanks and Pumphouse	0.05	31-Jul-13	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010															
TP13-28	Beach POL Tanks and Pumphouse	0.5	31-Jul-13											<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	<10	<50	<50	NO TYPE	<50	<50	
TP13-28	Beach POL Tanks and Pumphouse	1.0	31-Jul-13											<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	<10	<50	<50	NO TYPE	<50		<50
TP13-29	Beach POL Tanks and Pumphouse	0.05	31-Jul-13	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010															
TP13-29	Beach POL Tanks and Pumphouse	0.7	31-Jul-13											<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	<10	<50	<50	NO TYPE	<50		<50
TP13-30 [1]	Beach POL Tanks and Pumphouse	0.05	31-Jul-13																									
TP13-30 [1]	Beach POL Tanks and Pumphouse	0.05	31-Jul-13	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010															
TP13-30	Beach POL Tanks and Pumphouse	0.7	31-Jul-13											<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	<10	<50	<50	NO TYPE	<50		<50
TP13-30A	Beach POL Tanks and Pumphouse	0.7	31-Jul-13											<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	230	<50	<50	TYPE B	<50		230
TP13-31	Beach POL Tanks and Pumphouse	0.05	31-Jul-13	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010															
TP13-31	Beach POL Tanks and Pumphouse	0.4	31-Jul-13											<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	**480**	<50	<50	TYPE B	<50	**480**	
TP13-31	Beach POL Tanks and Pumphouse	0.8	31-Jul-13											<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	**590**	110	<50	TYPE B	110		700
TP13-31	Beach POL Tanks and Pumphouse	1.04	31-Jul-13											<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	<10	<50	<50	NO TYPE	<50		<50
TP13-32	Beach POL Tanks and Pumphouse	0.05	31-Jul-13	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010															
TP13-32	Beach POL Tanks and Pumphouse	0.4	31-Jul-13											<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	<10	<50	<50	NO TYPE	<50	<50	
TP13-32 [1]	Beach POL Tanks and Pumphouse	0.7	31-Jul-13											<0.0050	<0.020	<0.010	0.050	<0.040	0.050	53	53	**3,300**	<50	<50	TYPE B	<50		3,353
TP13-32 [1]	Beach POL Tanks and Pumphouse	0.7	31-Jul-13											<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	<10	<50	<50				
TP13-32	Beach POL Tanks and Pumphouse	1.25	31-Jul-13											<0.0050	<0.020	<0.010	0.047	<0.040	0.047	110	110	**2,600**	78	<50	TYPE B	78		2,788
TP13-33	Beach POL Tanks and Pumphouse	0.05	31-Jul-13	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010															
TP13-33	Beach POL Tanks and Pumphouse	0.6	31-Jul-13											<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	<10	<50	<50	NO TYPE	<50		<50
TP13-33D	Beach POL Tanks and Pumphouse	0.6	31-Jul-13											<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	<10	<50	<50	NO TYPE	<50		<50
TP13-33	Beach POL Tanks and Pumphouse	1.15	31-Jul-13											<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	<10	<50	<50	NO TYPE	<50		<50
TP13-34	Beach POL Tanks and Pumphouse	0.05	31-Jul-13																									
TP13-34	Beach POL Tanks and Pumphouse	0.6	31-Jul-13											<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	<10	<50	<50	NO TYPE	<50		<50
TP13-35	Beach POL Tanks and Pumphouse	0.5	31-Jul-13											<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	<10	<50	<50	NO TYPE			
TP13-36	Beach POL Tanks and Pumphouse	0.6	31-Jul-13											<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	<10	<50	<50	NO TYPE	<50		<50
TP13-37	Beach POL Tanks and Pumphouse	0.55	31-Jul-13											<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	730	<50	<50	NO TYPE			
TP13-38	Beach POL Tanks and Pumphouse	0.5	31-Jul-13											<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	<10	<50	<50	NO TYPE			
TP13-39	Beach POL Tanks and Pumphouse	0.05	31-Jul-13																									
TP13-39	Beach POL Tanks and Pumphouse	0.45	31-Jul-13											<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	<10	<50	<50	NO TYPE	<50	<50	
Beach POL	Beach POL	0.6	1-Aug-13																									
Beach POL	Beach POL	<1.0	1-Aug-13																									

Detection Limits adjusted due to interference

[1] Unintentional Duplicate

CAM-C 2013 Analytical Results with Relevant Guidelines

Table 2: Station Analytical

Sample #	Area	Depth (m)	Date	Sb (mg/kg)	As (mg/kg)	Ba (mg/kg)	Be (mg/kg)	Cd (mg/kg)	Cr (mg/kg)	Co (mg/kg)	Cu (mg/kg)	Pb (mg/kg)	Hg (mg/kg)	Mo (mg/kg)	Ni (mg/kg)	Se (mg/kg)	Ag (mg/kg)	Tl (mg/kg)	Sn (mg/kg)	U (mg/kg)	V (mg/kg)	Zn (mg/kg)	Aroclor 1016 (mg/kg or ppm)	Aroclor 1221 (mg/kg or ppm)	Aroclor 1232 (mg/kg or ppm)	Aroclor 1242 (mg/kg or ppm)	Aroclor 1248 (mg/kg or ppm)	Aroclor 1254 (mg/kg or ppm)	Aroclor 1260 (mg/kg or ppm)	Aroclor 1262 (mg/kg or ppm)	Aroclor 1268 (mg/kg or ppm)
CEPA																															
Tier II					**30**			**5**	**250**	**50**	**100**	**500**	**2**		**100**							**500**										
Tier I												**200**																			
PHCs/TPH - Protection of Freshwater Aquatic Life (within 30 m of water body)																															
PHCs/TPH - Protection of Terrestrial Wildlife																															
PHCs/TPH - Human Health																															
PHCs/TPH - Management Limit																															
SO-1	Sewage Outfall	0.34	30-Jul-13	<1.0	1.2	<10	<0.40	<0.10	2.6	1.4	<5.0	2.9	<0.050	<0.40	3.6	<0.50	<1.0	<0.30	<1.0	<1.0	6.3	<10	<0.010	<0.010	<0.010	<0.010	<0.010	0.023	<0.010	<0.010	<0.010
SO-2	Sewage Outfall	0.41	30-Jul-13	<1.0	1.4	<10	<0.40	<0.10	3.2	1.6	<5.0	3.0	<0.050	<0.40	2.9	<0.50	<1.0	<0.30	<1.0	<1.0	6.8	<10	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
SO-3	Sewage Outfall	0.38	30-Jul-13	<1.0	1.2	<10	<0.40	<0.10	2.3	<1.0	6.3	2.5	0.17	<0.40	1.8	<0.50	<1.0	<0.30	<1.0	<1.0	4.2	18	<0.010	<0.010	<0.010	<0.010	<0.010	0.024	<0.010	<0.010	<0.010
SO-4	Sewage Outfall	0.31	30-Jul-13	<1.0	<1.0	<10	<0.40	<0.10	1.5	<1.0	<5.0	2.2	0.055	<0.40	1.3	<0.50	<1.0	<0.30	<1.0	<1.0	3.0	<10	<0.010	<0.010	<0.010	<0.010	<0.010	0.088	<0.010	<0.010	<0.010
SO-5	Sewage Outfall	0.35	30-Jul-13	<1.0	<1.0	<10	<0.40	<0.10	1.8	<1.0	<5.0	2.5	<0.050	<0.40	1.7	<0.50	<1.0	<0.30	<1.0	<1.0	3.9	<10	<0.010	<0.010	<0.010	<0.010	<0.010	0.015	<0.010	<0.010	<0.010
SW-1	Station West - Lobe A	0.25	30-Jul-13	<1.0	1.4	<10	<0.40	<0.10	1.8	1.4	<5.0	2.7	0.14	<0.40	2.4	<0.50	<1.0	<0.30	<1.0	<1.0	5.2	<1.0	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Debris Area 10*	Debris Area #10	0.05	1-Aug-13	2.5	<1.0	<10	<0.40	0.13	2.1	<1.0	<5.0	4.3	<0.050	<0.40	<1.0	<0.50	<1.0	<0.30	<1.0	<1.0	4.9	27	<0.10	<0.10	<0.10	<0.10	<0.10	3.3	0.26	<0.10	<0.10
Debris @ West Station	Debris @ West Station	-	1-Aug-13																				<0.1	<0.1	<0.1	<0.1	<0.1	0.4	<0.1	<0.1	<0.1
TP13-01	Main Station - POL Tanks and Pumphouse	1.2	29-Jul-13																				<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
TP13-02	Main Station - POL Tanks and Pumphouse	0.5	29-Jul-13																				<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
TP13-03	Main Station - POL Tanks and Pumphouse	0.7	29-Jul-13																				<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
TP13-04	Main Station - POL Tanks and Pumphouse	0.7	29-Jul-13																												
TP13-05	Main Station - POL Tanks and Pumphouse	0.05	29-Jul-13	<1.0	<1.0	<10	<0.40	<0.10	1.5	1.2	<5.0	4.0	0.078	<0.40	2.1	<0.50	<1.0	<0.30	<1.0	<1.0	4.2	<10									
TP13-05	Main Station - POL Tanks and Pumphouse	1.05	29-Jul-13																												
TP13-05	Main Station - POL Tanks and Pumphouse	1.25	29-Jul-13																												
TP13-05	Main Station - POL Tanks and Pumphouse	1.43	29-Jul-13																												
TP13-06	Main Station - POL Tanks and Pumphouse	0.05	29-Jul-13	<1.0	<1.0	<10	<0.40	<0.10	1.8	1.2	<5.0	5.8	0.074	<0.40	2.0	<0.50	<1.0	<0.30	<1.0	<1.0	4.4	11									
TP13-06	Main Station - POL Tanks and Pumphouse	0.43	29-Jul-13																												
TP13-06	Main Station - POL Tanks and Pumphouse	0.92	29-Jul-13																												
TP13-07	Main Station - POL Tanks and Pumphouse	0.75	29-Jul-13																												
TP13-07	Main Station - POL Tanks and Pumphouse	1.25	29-Jul-13																												
TP13-08	Main Station - POL Tanks and Pumphouse	0.85	29-Jul-13																												
TP13-09	Main Station - POL Tanks and Pumphouse	0.05	29-Jul-13	<1.0	<1.0	<10	<0.40	<0.10	1.5	<1.0	<5.0	56	0.069	<0.40	1.5	<0.50	<1.0	<0.30	<1.0	<1.0	2.3	10									
TP13-09	Main Station - POL Tanks and Pumphouse	0.4	29-Jul-13																												
TP13-09	Main Station - POL Tanks and Pumphouse	0.81	29-Jul-13																												
TP13-10	Main Station - POL Tanks and Pumphouse	0.05	30-Jul-13	<1.0	<1.0	<10	<0.40	<0.10	<1.0	<1.0	<5.0	11	0.067	<0.40	1.7	<0.50	<1.0	<0.30	<1.0	<1.0	2.9	<10									
TP13-10	Main Station - POL Tanks and Pumphouse	0.6	29-Jul-13																												
TP13-10	Main Station - POL Tanks and Pumphouse	1.24	29-Jul-13																												
TP13-10A	Main Station - POL Tanks and Pumphouse	1.24	29-Jul-13																												
TP13-11	Main Station - POL Tanks and Pumphouse	0.05	30-Jul-13	<1.0	<1.0	<10	<0.40	<0.10	<1.0	<1.0	<5.0	24	0.062	<0.40	1.4	<0.50	<1.0	<0.30	<1.0	<1.0	1.8	<10									
TP13-11	Main Station - POL Tanks and Pumphouse	0.4	29-Jul-13																												
TP13-11	Main Station - POL Tanks and Pumphouse	0.64	29-Jul-13																												
TP13-12	Main Station - POL Tanks and Pumphouse	0.05	30-Jul-13	<1.0	<1.0	<10	<0.40	<0.10	2.4	1.0	<5.0	5.2	<0.050	<0.40	2.1	<0.50	<1.0	<0.30	<1.0	<1.0	4.6	<10									
TP13-12	Main Station - POL Tanks and Pumphouse	0.7	29-Jul-13																												
TP13-13	Main Station - POL Tanks and Pumphouse	0.7	29-Jul-13																												
TP13-14	Main Station - POL Tanks and Pumphouse	0.65	30-Jul-13																												
TP13-14	Main Station - POL Tanks and Pumphouse	1.2	30-Jul-13																												
TP13-15	Main Station - POL Tanks and Pumphouse	0.05	30-Jul-13	<1.0	1.1	<10	<0.40	<0.10	1.8	<1.0	<5.0	6.0	<0.050	<0.40	1.7	<0.50	<1.0	<0.30	<1.0	<1.0	3.7	11									
TP13-15	Main Station - POL Tanks and Pumphouse	0.55	30-Jul-13																												
TP13-15	Main Station - POL Tanks and Pumphouse	1.01	30-Jul-13																												
TP13-16	Main Station - POL Tanks and Pumphouse	1.0	30-Jul-13																												
TP13-17	Main Station - POL Tanks and Pumphouse	0.55	30-Jul-13																												
TP13-18	Main Station - POL Tanks and Pumphouse	0.5	30-Jul-13																												
TP13-18	Main Station - POL Tanks and Pumphouse	1.0	30-Jul-13																												
TP13-19	Main Station - POL Tanks and Pumphouse	0.64	30-Jul-13																												
TP13-19	Main Station - POL Tanks and Pumphouse	1.0	30-Jul-13																												
TP13-20	Station Area	0.05	30-Jul-13	<1.0	1.0	22	<0.40	0.12	12	1.5	<5.0	4.2	0.091	<0.40	3.6	<0.50	<1.0	<0.30	<1.0	<1.0	4.0	64	<0.010	<0.010	<0.010	<0.010	<0.010	0.049	0.023	<0.010	<0.010
TP13-20B	Station Area	0.05	30-Jul-13	<1.0	<1.0	16	<0.40	<0.10	8.4	1.1	<5.0	3.6	<0.050	<0.40	2.5	<0.50	<1.0	<0.30	<1.0	<1.0	3.7	45									
TP13-20	Station Area	0.5	30-Jul-13	<1.0	1.1	<10	<0.40	<0.10	30	1.5	<5.0	3.7	0.13	0.46	15	<0.50	<1.0	<0.30	<1.0	<1.0	6.1	<10									
TP13-21	Building Train	0.05	30-Jul-13	<1.0	1.1	<10	<0.40	<0.10	3.4	<1.0	<5.0	11	0.051	<0.40	1.3	<0.50	<1.0	<0.30	<1.0	<1.0	4.9	24									
TP13-21	Building Train	0.5	30-Jul-13	<1.0	1.5	<10	<0.40	<0.10	3.2	1.2	<5.0	3.5	0.097	<0.40	2.1	<0.50	<1.0	<0.30	<1.0	<1.0	5.6	<10	<0.010	<0.010	<0.010	<0.010	<0.010	0.050	0.020	<0.010	<0.010
TP13-22	Warehouse Foundation	0.05	30-Jul-13	4.9	1.8	<10	<0.40	0.33	2.0	1.1	<5.0	16	0.082	<0.40	2.2	<0.50	<1.0	<0.30	<1.0	<1.0	4.4	12									
TP13-22	Warehouse Foundation	0.5	30-Jul-13																				<0.10	<0.10	<0.10	<0.10	<0.10	4.3	0.28	<0.10	<0.10
TP13-23	Warehouse Foundation	0.05	2-Aug-13	2.1	<1.0	<10	<0.40	0.46	4.9	1.3	<5.0	11	<0.050	<0.40	2.8	<0.50	<1.0	<0.30	<1.0	<1.0	8.1	17	<0.010	<0.010	<0.010	<0.010	<0.010	0.62	0.057	<0.010	<0.010
TP13-23*	Warehouse Foundation	0.5	1-Aug-13	1.2	<1.0	<10	<0.40	<0.10	3.0	1.2	6.6	3.8	<0.050	<0.40	3.4	<0.50	<1.0	<0.30	<1.0	<1.0	6.9	<10	<0.010	<0.010	<0.010	<0.010	<0.010	0.011	<0.010	<0.010	<0.010
TP13-23*	Warehouse Foundation	0.75	1-Aug-13																				<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
TP13-40	Garage	0.05	1-Aug-13	5.0	1.0	<10	<0.40	1.1	3.8	1.1	14	13	<0.050	<0.40	2.9	<0.50	<1.0	<0.30	<1.0	<1.0	7.0	24	<0.010	<0.010	<0.010	<0.010	<0.010	0.45	0.026	<0.010	<0.010
TP13-40E	Garage	0.05	1-Aug-13	5.0	<1.0	<10	<0.40	1.3	8.2	1.3	8.1	14	<0.050	<0.40	3.6	<0.50	<1.0	<0.30	<1.0	<1.0	6.4	18									
TP13-40	Garage	0.5	1-Aug-13	<1.0	1.4	<10	<0.40	0.10	3.8	1.4	<5.0	3.5	<0.050	<0.40	3.6	<0.50	<1.0	<0.30	<1.0	<1.0	8.0	<10									
TP13-41	Garage	0.05	1-Aug-13	1.0	<1.0	<10	<0.40	0.39	2.5	<1.0	<5.0	13	<0.050	<0.40	2.2	<0.50	<1.0	<0.30	<1.0	<1.0	6.0	15	<0.010	<0.010	<0.010	<0.010	<0.010	0.57	0.075	<0.010	<0.010

CAM-C 2013 Analytical Results with Relevant Guidelines

Table 2: Station Analytical

Sample #	Area	Depth (m)	Date	Sb (mg/kg)	As (mg/kg)	Ba (mg/kg)	Be (mg/kg)	Cd (mg/kg)	Cr (mg/kg)	Co (mg/kg)	Cu (mg/kg)	Pb (mg/kg)	Hg (mg/kg)	Mo (mg/kg)	Ni (mg/kg)	Se (mg/kg)	Ag (mg/kg)	Tl (mg/kg)	Sn (mg/kg)	U (mg/kg)	V (mg/kg)	Zn (mg/kg)	Aroclor 1016 (mg/kg or ppm)	Aroclor 1221 (mg/kg or ppm)	Aroclor 1232 (mg/kg or ppm)	Aroclor 1242 (mg/kg or ppm)	Aroclor 1248 (mg/kg or ppm)	Aroclor 1254 (mg/kg or ppm)	Aroclor 1260 (mg/kg or ppm)	Aroclor 1262 (mg/kg or ppm)	Aroclor 1268 (mg/kg or ppm)
CEPA																															
Tier II					**30**			**5**	**250**	**50**	**100**	**500**	**2**		**100**							**500**										
Tier I												**200**																			
PHCs/TPH - Protection of Freshwater Aquatic Life (within 30 m of water body)																															
PHCs/TPH - Protection of Terrestrial Wildlife																															
PHCs/TPH - Human Health																															
PHCs/TPH - Management Limit																															
TP13-41	Garage	0.5	1-Aug-13	<1.0	1.1	<10	<0.40	<0.10	3.7	1.4	<5.0	3.5	<0.050	<0.40	3.3	<0.50	<1.0	<0.30	<1.0	<1.0	7.8	<10	<0.010	<0.010	<0.010	<0.010	<0.010	0.065	<0.010	<0.010	<0.010
TP13-42	Garage	0.05	1-Aug-13	<1.0	1.3	<10	<0.40	0.27	3.9	1.5	<5.0	12	<0.050	<0.40	3.4	<0.50	<1.0	<0.30	<1.0	<1.0	8.1	14	<0.010	<0.010	<0.010	<0.010	<0.010	0.076	0.015	<0.010	<0.010
TP13-42	Garage	0.5	1-Aug-13	<1.0	1.2	<10	<0.40	<0.10	3.4	1.5	7.2	3.6	<0.050	<0.40	3.8	<0.50	<1.0	<0.30	<1.0	<1.0	8.6	<10									
TP13-43	Garage	0.05	1-Aug-13	13	1.3	15	<0.40	0.84	9.7	1.6	37	65	<0.050	0.54	5.1	<0.50	<1.0	<0.30	<1.0	<1.0	6.7	43	<0.050	<0.050	<0.050	<0.050	<0.050	0.77	<0.050	<0.050	<0.050
TP13-43	Garage	0.5	1-Aug-13	<1.0	1.3	<10	<0.40	<0.10	3.3	1.1	<5.0	3.9	<0.050	<0.40	1.7	<0.50	<1.0	<0.30	<1.0	<1.0	7.1	<10	<0.010	<0.010	<0.010	<0.010	<0.010	0.055	<0.010	<0.010	<0.010
TP13-44	Garage	0.05	1-Aug-13	9.3	2.7	16	<0.40	0.89	17	2.9	20	67	<0.050	0.84	6.5	<0.50	<1.0	<0.30	2.0	<1.0	6.9	70	<0.020	<0.020	<0.020	<0.020	<0.020	0.93	0.024	<0.020	<0.020
TP13-44	Garage	0.45	1-Aug-13	<1.0	1.1	<10	<0.40	<0.10	3.1	1.2	<5.0	5.8	<0.050	<0.40	3.1	<0.50	<1.0	<0.30	<1.0	<1.0	5.6	<10									
TP13-45	Garage	0.05	1-Aug-13	1.4	<1.0	10	<0.40	0.27	11	1.5	6.8	48	<0.050	<0.40	3.5	<0.50	<1.0	<0.30	<1.0	<1.0	7.4	24									
TP13-45	Garage	0.5	1-Aug-13	<1.0	1.1	<10	<0.40	<0.10	3.1	1.2	<5.0	3.3	<0.050	<0.40	2.6	<0.50	<1.0	<0.30	<1.0	<1.0	7.1	<10									
TP13-46	Garage	0.45	1-Aug-13	<1.0	<1.0	<10	<0.40	<0.10	2.8	1.2	<5.0	3.9	<0.050	<0.40	2.5	<0.50	<1.0	<0.30	<1.0	<1.0	7.4	<10									
TP13-47	Garage	0.25	1-Aug-13	<1.0	<1.0	<10	<0.40	0.13	1.6	<1.0	<5.0	2.5	<0.050	<0.40	1.8	<0.50	<1.0	<0.30	<1.0	<1.0	4.8	<10									
TP13-47	Garage	0.8	1-Aug-13	<1.0	1.2	<10	<0.40	<0.10	3.3	1.7	<5.0	2.9	<0.050	<0.40	3.5	<0.50	<1.0	<0.30	<1.0	<1.0	7.8	<10									
TP13-48	Garage	0.35	1-Aug-13	<1.0	<1.0	<10	<0.40	<0.10	3.8	1.2	<5.0	3.0	<0.050	<0.40	2.6	<0.50	<1.0	<0.30	<1.0	<1.0	7.2	<10									
TP13-48	Garage	0.8	1-Aug-13	<1.0	1.3	<10	<0.40	<0.10	5.2	1.8	<5.0	4.4	<0.050	<0.40	4.0	<0.50	<1.0	<0.30	<1.0	<1.0	10	<10									
TP13-49	Garage	0.05	1-Aug-13	54	1.1	12	<0.40	0.84	8.7	1.7	9.3	46	<0.050	<0.40	5.7	<0.50	<1.0	<0.30	<1.0	<1.0	7.5	89	<0.050	<0.050	<0.050	<0.050	<0.050	1.2	0.10	<0.050	<0.050
TP13-49	Garage	0.45	1-Aug-13	<1.0	<1.0	<10	<0.40	<0.10	2.6	<1.0	<5.0	2.4	<0.050	<0.40	2.2	<0.50	<1.0	<0.30	<1.0	<1.0	4.6	<10									
TP13-50	Garage	0.3	1-Aug-13	<1.0	<1.0	<10	<0.40	<0.10	2.9	<1.0	<5.0	2.4	<0.050	<0.40	1.7	<0.50	<1.0	<0.30	<1.0	<1.0	6.0	<10									
TP13-50	Garage	0.7	1-Aug-13	<1.0	<1.0	<10	<0.40	<0.10	4.5	2.0	<5.0	3.2	<0.050	<0.40	4.1	<0.50	<1.0	<0.30	<1.0	<1.0	9.0	<10									
TP13-50A	Garage	0.7	1-Aug-13	<1.0	1.2	<10	<0.40	<0.10	3.7	1.7	<5.0	3.2	<0.050	<0.40	3.9	<0.50	<1.0	<0.30	<1.0	<1.0	8.0	<10									
TP13-51	Garage	0.7	1-Aug-13																				<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
TP13-52	Garage	0.65	1-Aug-13																				<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
TP13-53	Module Train	0.05	1-Aug-13	<1.0	<1.0	<10	<0.40	0.22	5.7	1.3	8.1	14	<0.050	<0.40	3.0	<0.50	<1.0	<0.30	<1.0	<1.0	6.5	77									
TP13-53	Module Train	0.35	1-Aug-13																												
TP13-54	Module Train	0.45	1-Aug-13																												
TP13-54	Module Train	0.57	1-Aug-13																												
TP13-55	Module Train	0.45	1-Aug-13	<1.0	1.1	<10	<0.40	<0.10	3.0	1.3	<5.0	3.2	<0.050	<0.40	2.9	<0.50	<1.0	<0.30	<1.0	<1.0	6.5	<10									
TP13-56	Module Train	0.05	1-Aug-13	1.3	1.9	15	<0.40	0.11	12	1.5	<5.0	9.9	<0.050	<0.40	3.7	<0.50	<1.0	<0.30	<1.0	<1.0	6.2	55									
TP13-56	Module Train	0.6	1-Aug-13																												
TP13-56	Module Train	0.88	1-Aug-13																												
TP13-57	Module Train	0.05	1-Aug-13	<1.0	<1.0	<10	<0.40	<0.10	3.6	<1.0	5.7	15	<0.050	<0.40	2.2	<0.50	<1.0	<0.30	<1.0	<1.0	4.8	18									
TP13-57	Module Train	0.25	1-Aug-13																												
TP13-57	Module Train	0.56	1-Aug-13																												
TP13-58	Module Train	0.05	1-Aug-13	2.0	1.0	17	<0.40	0.20	11	1.8	**140**	12	<0.050	<0.40	4.4	<0.50	<1.0	<0.30	<1.0	<1.0	7.8	54	<0.010	<0.010	<0.010	<0.010	<0.010	0.066	0.076	<0.010	<0.010
TP13-58	Module Train	0.45	1-Aug-13																												
TP13-59	Module Train	0.05	1-Aug-13	<1.0	1.1	14	<0.40	0.18	9.3	1.6	<5.0	4.9	<0.050	<0.40	3.7	<0.50	<1.0	<0.30	<1.0	<1.0	6.4	65	<0.010	<0.010	<0.010	<0.010	<0.010	0.21	0.11	<0.010	<0.010
TP13-59	Module Train	0.36	1-Aug-13	<1.0	1.3	<10	<0.40	<0.10	3.5	1.6	<5.0	3.1	<0.050	<0.40	3.9	<0.50	<1.0	<0.30	<1.0	<1.0	7.9	<10									
TP13-59	Module Train	0.7	1-Aug-13	<1.0	<1.0	<10	<0.40	<0.10	1.4	<1.0	<5.0	1.6	<0.050	<0.40	1.5	<0.50	<1.0	<0.30	<1.0	<1.0	3.6	<10									
TP13-60(1) [1]	Tower	0.2	1-Aug-13	<1.0	<1.0	<10	<0.40	<0.10	2.6	1.2	<5.0	3.6	<0.050	<0.40	2.6	<0.50	<1.0	<0.30	<1.0	<1.0	7.1	11	<0.010	<0.010	<0.010	<0.010	<0.010	0.014	<0.010	<0.010	<0.010
TP13-60(2) [1]	Tower	0.2	2-Aug-13	<1.0	<1.0	<10	<0.40	<0.10	2.5	<1.0	<5.0	2.9	<0.050	<0.40	1.9	<0.50	<1.0	<0.30	<1.0	<1.0	5.4	<10									
TP13-60A	Tower	0.2	2-Aug-13	<1.0	<1.0	<10	<0.40	0.15	4.0	1.2	<5.0	4.4	<0.050	<0.40	2.5	<0.50	<1.0	<0.30	<1.0	<1.0	7.9	14	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
TP13-61	Tower	0.22	2-Aug-13	<1.0	1.2	12	<0.40	<0.10	7.9	1.7	<5.0	3.5	<0.050	<0.40	4.2	<0.50	<1.0	<0.30	<1.0	<1.0	9.1	23	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
TP13-62	Tower	0.25	2-Aug-13	<1.0	1.2	<10	<0.40	<0.10	4.6	1.6	<5.0	3.6	<0.050	<0.40	3.7	<0.50	<1.0	<0.30	<1.0	<1.0	8.8	10									
TP13-63	Module Train	0.05	2-Aug-13	<1.0	<1.0	16	<0.40	0.13	7.5	1.3	<5.0	4.7	<0.050	<0.40	3.4	<0.50	<1.0	<0.30	<1.0	<1.0	5.4	25	<0.010	<0.010	<0.010	<0.010	<0.010	0.082	0.035	<0.010	<0.010
TP13-63	Module Train	0.5	2-Aug-13																												
TP13-64	Module Train	0.05	2-Aug-13	<1.0	1.2	14	<0.40	0.39	8.0	2.1	6.3	5.3	<0.050	<0.40	5.3	<0.50	<1.0	<0.30	<1.0	<1.0	8.3	310	<0.010	<0.010	<0.010	<0.010	<0.010	0.037	0.084	<0.010	<0.010
TP13-64	Module Train	0.3	2-Aug-13	<1.0	1.5	11	<0.40	<0.10	5.0	2.1	<5.0	4.1	<0.050	<0.40	4.2	<0.50	<1.0	<0.30	<1.0	<1.0	10	11									
TP13-64	Module Train	0.65	2-Aug-13	<1.0	<1.0	<10	<0.40	0.15	3.3	1.3	<5.0	2.8	<0.050	<0.40	2.8	<0.50	<1.0	<0.30	<1.0	<1.0	7.3	<10									
TP13-65	Pumphouse	0.05	2-Aug-13	<1.0	<1.0	<10	<0.40	0.12	2.0	<1.0	<5.0	5.4	<0.050	<0.40	1.3	<0.50	<1.0	<0.30	<1.0	<1.0	6.6	34	<0.020	<0.020	<0.020	<0.020	<0.020	1.1	0.12	<0.020	<0.020
TP13-65	Pumphouse	0.3	2-Aug-13	<1.0	<1.0	<10	<0.40	<0.10	1.6	<1.0	<5.0	1.3	<0.050	<0.40	<1.0	<0.50	<1.0	<0.30	<1.0	<1.0	4.0	<10	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
TP13-65F	Pumphouse	0.3	2-Aug-13	<1.0	<1.0	<10	<0.40	<0.10	1.5	<1.0	<5.0	1.3	<0.050	<0.40	<1.0	<0.50	<1.0	<0.30	<1.0	<1.0	4.1	<10	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
TP13-65	Pumphouse	0.5	2-Aug-13	<1.0	<1.0	<10	<0.40	<0.10	3.5	1.0	<5.0	3.2	<0.050	<0.40	1.9	<0.50	<1.0	<0.30	<1.0	<1.0	10	<10	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
TP13-66	Pad East of Station Area	0.05	2-Aug-13	<1.0	<1.0	<10	<0.40	0.16	4.5	1.5	<5.0	4.0	<0.050	<0.40	3.7	<0.50	<1.0	<0.30	<1.0	<1.0	7.7	12	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.063	<0.010	<0.010
TP13-66	Pad East of Station Area	0.3	2-Aug-13	<1.0	<1.0	<10	<0.40	<0.10	3.1	1.1	<5.0	2.6	<0.050	<0.40	2.9	<0.50	<1.0	<0.30	<1.0	<1.0	6.2	<10	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
TP13-66	Pad East of Station Area	0.5	2-Aug-13	<1.0	1.1	<10	<0.40	<0.10	3.8	1.3	<5.0	2.8	<0.050	<0.40	3.0	<0.50	<1.0	<0.30	<1.0	<1.0	7.2	<10	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
TP13-67	Pad East of Station Area	0.05	2-Aug-13	1.1	<1.0	<10	<0.40	0.20	4.3	1.1	<5.0	5.6	<0.050	<0.40	2.8	<0.50	<1.0	<0.30	2.3	<1.0	6.7	13	<0.010	<0.010	<0.010	<0.010	<0.010	0.027	0.40	<0.010	<0.010
TP13-67	Pad East of Station Area	0.3	2-Aug-13	<1.0	<1.0	<10	<0.40	<0.10	4.1	1.3	<5.0	3.1	<0.050	<0.40	3.5	<0.50	<1.0	<0.30	<1.0	<1.0	8.1	17	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	<0.010

* Mislabeled in the field.

[1] Unintentional Duplicate

CAM-C 2013 Analytical Results with Relevant Guidelines

Table 2: Station Analytical

Sample #	Area	Depth (m)	Date	PCB Total (mg/kg or ppm)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylene (mg/kg)	m & p-Xylene (mg/kg)	o-Xylene (mg/kg)	F1 (mg/kg)	F1 minus BTEX (mg/kg)	F2 (mg/kg)	F3 (mg/kg)	F4 (mg/kg)	Total TPH (mg/kg or ppm)			
CEPA				**50**															
Tier II				**5**												**Dominant TPH Type**	**TYPE A ppm**	**TYPE B (0-0.5 m) ppm**	**TYPE B (>0.5 m) ppm**
Tier I				**1**															
PHCs/TPH - Protection of Freshwater Aquatic Life (within 30 m of water body)												**1290**	**330**					**330**	
PHCs/TPH - Protection of Terrestrial Wildlife																		**2,500**	
PHCs/TPH - Human Health													**11,000**	**20,000**			**20,000**		
PHCs/TPH - Management Limit																			**5,000**
SO-1	Sewage Outfall	0.34	30-Jul-13	0.023															
SO-2	Sewage Outfall	0.41	30-Jul-13	<0.010															
SO-3	Sewage Outfall	0.38	30-Jul-13	0.024															
SO-4	Sewage Outfall	0.31	30-Jul-13	0.088															
SO-5	Sewage Outfall	0.35	30-Jul-13	0.015															
SW-1	Station West - Lobe A	0.25	30-Jul-13	<0.010															
Debris Area 10*	Debris Area #10	0.05	1-Aug-13	**3.5**															
Debris @ West Station	Debris @ West Station	-	1-Aug-13	0.4															
TP13-01	Main Station - POL Tanks and Pumphouse	1.2	29-Jul-13	<0.010	<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	<10	<50	<50	NO TYPE	<50		<50
TP13-02	Main Station - POL Tanks and Pumphouse	0.5	29-Jul-13	<0.010	<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	<10	<50	<50	NO TYPE	<50	<50	
TP13-03	Main Station - POL Tanks and Pumphouse	0.7	29-Jul-13	<0.010	<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	<10	<50	<50	NO TYPE	<50		<50
TP13-04	Main Station - POL Tanks and Pumphouse	0.7	29-Jul-13		<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	<10	<50	<50	NO TYPE	<50		<50
TP13-05	Main Station - POL Tanks and Pumphouse	0.05	29-Jul-13																
TP13-05	Main Station - POL Tanks and Pumphouse	1.05	29-Jul-13		<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	**940**	78	<50	TYPE B	78		1,018
TP13-05	Main Station - POL Tanks and Pumphouse	1.25	29-Jul-13		<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	13	13	**3,100**	190	<50	TYPE B	190		3,303
TP13-05	Main Station - POL Tanks and Pumphouse	1.43	29-Jul-13		<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	**770**	53	<50	TYPE B	53		823
TP13-06	Main Station - POL Tanks and Pumphouse	0.05	29-Jul-13																
TP13-06	Main Station - POL Tanks and Pumphouse	0.43	29-Jul-13		<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	**1,300**	<50	<50	TYPE B	<50	**1,300**	
TP13-06	Main Station - POL Tanks and Pumphouse	0.92	29-Jul-13		<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	**2,700**	70	<50	TYPE B	70		2,770
TP13-07	Main Station - POL Tanks and Pumphouse	0.75	29-Jul-13		<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	<10	<50	<50	NO TYPE	<50		<50
TP13-07	Main Station - POL Tanks and Pumphouse	1.25	29-Jul-13		<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	90	<50	<50	TYPE B	<50		90
TP13-08	Main Station - POL Tanks and Pumphouse	0.85	29-Jul-13		<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	<10	<50	<50	NO TYPE	<50		<50
TP13-09	Main Station - POL Tanks and Pumphouse	0.05	29-Jul-13																
TP13-09	Main Station - POL Tanks and Pumphouse	0.4	29-Jul-13		<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	**2,000**	290	<50	TYPE B	290	**2,290**	
TP13-09	Main Station - POL Tanks and Pumphouse	0.81	29-Jul-13		<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	**1,900**	250	<50	TYPE B	250		2,150
TP13-10	Main Station - POL Tanks and Pumphouse	0.05	30-Jul-13																
TP13-10	Main Station - POL Tanks and Pumphouse	0.6	29-Jul-13		<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	92	92	**4,500**	500	<50	TYPE B	500		**5,000**
TP13-10	Main Station - POL Tanks and Pumphouse	1.24	29-Jul-13		<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	**560**	440	<50	TYPE B	440		1,000
TP13-10A	Main Station - POL Tanks and Pumphouse	1.24	29-Jul-13		<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	**880**	700	<50	TYPE B	700		1,580
TP13-11	Main Station - POL Tanks and Pumphouse	0.05	30-Jul-13																
TP13-11	Main Station - POL Tanks and Pumphouse	0.4	29-Jul-13		<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	**800**	260	<50	TYPE B	260	**1,060**	
TP13-11	Main Station - POL Tanks and Pumphouse	0.64	29-Jul-13		<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	25	25	**4,400**	520	<50	TYPE B	520		4,945
TP13-12	Main Station - POL Tanks and Pumphouse	0.05	30-Jul-13																
TP13-12	Main Station - POL Tanks and Pumphouse	0.7	29-Jul-13		<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	<10	<50	<50	NO TYPE	<50		<50
TP13-13	Main Station - POL Tanks and Pumphouse	0.7	29-Jul-13		<0.0050	<0.020	<0.010	0.40	<0.040	0.40	610	610	**7,600**	640	<50	TYPE B	640		**8,850**
TP13-14	Main Station - POL Tanks and Pumphouse	0.65	30-Jul-13		<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	**740**	190	<50	TYPE B	190		930
TP13-14	Main Station - POL Tanks and Pumphouse	1.2	30-Jul-13		<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	300	55	<50	TYPE B	55		355
TP13-15	Main Station - POL Tanks and Pumphouse	0.05	30-Jul-13																
TP13-15	Main Station - POL Tanks and Pumphouse	0.55	30-Jul-13		<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	**780**	71	<50	TYPE B	71		851
TP13-15	Main Station - POL Tanks and Pumphouse	1.01	30-Jul-13		<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	19	19	**1,900**	71	<50	TYPE B	71		1,990
TP13-16	Main Station - POL Tanks and Pumphouse	1.0	30-Jul-13		<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	**450**	88	<50	TYPE B	88		538
TP13-17	Main Station - POL Tanks and Pumphouse	0.55	30-Jul-13		<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	**1,000**	93	<50	TYPE B	93		1,093
TP13-18	Main Station - POL Tanks and Pumphouse	0.5	30-Jul-13		<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	**2,100**	110	<50	TYPE B	110	**2,210**	
TP13-18	Main Station - POL Tanks and Pumphouse	1.0	30-Jul-13		<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	57	57	**4,100**	190	<50	TYPE B	190		4,347
TP13-19	Main Station - POL Tanks and Pumphouse	0.64	30-Jul-13		<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	120	<50	<50	TYPE B	<50		120
TP13-19	Main Station - POL Tanks and Pumphouse	1.0	30-Jul-13		<0.0050	0.020	<0.010	0.067	<0.040	0.067	57	57	**3,100**	250	<50	TYPE B	250		3,350
TP13-20	Station Area	0.05	30-Jul-13	0.072															
TP13-20B	Station Area	0.05	30-Jul-13																
TP13-20	Station Area	0.5	30-Jul-13																
TP13-21	Building Train	0.05	30-Jul-13																
TP13-21	Building Train	0.5	30-Jul-13	0.071															
TP13-22	Warehouse Foundation	0.05	30-Jul-13																
TP13-22	Warehouse Foundation	0.5	30-Jul-13	**4.6**															
TP13-23	Warehouse Foundation	0.05	2-Aug-13	0.67															
TP13-23*	Warehouse Foundation	0.5	1-Aug-13	0.011	<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	230	54	<50	NO TYPE	54	284	
TP13-23*	Warehouse Foundation	0.75	1-Aug-13	<0.010	<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	120	<50	<50	NO TYPE	<50		120
TP13-40	Garage	0.05	1-Aug-13	0.47															
TP13-40E	Garage	0.05	1-Aug-13																
TP13-40	Garage	0.5	1-Aug-13		<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	<10	<50	<50	NO TYPE	<50	<50	
TP13-41	Garage	0.05	1-Aug-13	0.65															

CAM-C 2013 Analytical Results with Relevant Guidelines

Table 2: Station Analytical

Sample #	Area	Depth (m)	Date	PCB Total (mg/kg or ppm)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylene (mg/kg)	m & p-Xylene (mg/kg)	o-Xylene (mg/kg)	F1 (mg/kg)	F1 minus BTEX (mg/kg)	F2 (mg/kg)	F3 (mg/kg)	F4 (mg/kg)	Total TPH (mg/kg or ppm)			
CEPA				**50**															
Tier II				**5**												**Dominant TPH Type**	**TYPE A ppm**	**TYPE B (0-0.5 m) ppm**	**TYPE B (>0.5 m) ppm**
Tier I				**1**															
PHCs/TPH - Protection of Freshwater Aquatic Life (within 30 m of water body)												**1290**	**330**					**330**	
PHCs/TPH - Protection of Terrestrial Wildlife																		**2,500**	
PHCs/TPH - Human Health													**11,000**	**20,000**			**20,000**		
PHCs/TPH - Management Limit																			**5,000**
TP13-41	Garage	0.5	1-Aug-13	0.065	<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	<10	<50	<50	NO TYPE	<50	<50	
TP13-42	Garage	0.05	1-Aug-13	0.091	<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	<10	<50	<50	NO TYPE	<50	<50	
TP13-42	Garage	0.5	1-Aug-13		<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	<10	<50	<50	NO TYPE	<50	<50	
TP13-43	Garage	0.05	1-Aug-13	0.77															
TP13-43	Garage	0.5	1-Aug-13	0.055	<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	310	62	<50	TYPE B	62	**372**	
TP13-44	Garage	0.05	1-Aug-13	0.96															
TP13-44	Garage	0.45	1-Aug-13		<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	190	260	<50	TYPE B	260	**450**	
TP13-45	Garage	0.05	1-Aug-13																
TP13-45	Garage	0.5	1-Aug-13																
TP13-46	Garage	0.45	1-Aug-13		<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	<10	<50	<50	NO TYPE	<50	<50	
TP13-47	Garage	0.25	1-Aug-13		<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	320	270	<50	TYPE B	270	**590**	
TP13-47	Garage	0.8	1-Aug-13		<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	76	76	**3,000**	75	<50	TYPE B	75		3,151
TP13-48	Garage	0.35	1-Aug-13		<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	<10	<50	<50	NO TYPE	<50	<50	
TP13-48	Garage	0.8	1-Aug-13		<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	<10	<50	<50	NO TYPE	<50		<50
TP13-49	Garage	0.05	1-Aug-13	**1.3**															
TP13-49	Garage	0.45	1-Aug-13		<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	130	<50	<50	TYPE B	<50	130	
TP13-50	Garage	0.3	1-Aug-13		<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	**500**	<50	<50	TYPE B	<50	**500**	
TP13-50	Garage	0.7	1-Aug-13		<0.0050	<0.020	<0.010	0.097	<0.040	0.097	160	160	**3,800**	<50	<50	TYPE B	<50		3,960
TP13-50A	Garage	0.7	1-Aug-13		<0.0050	<0.020	<0.010	0.081	<0.040	0.081	130	130	**3,600**	69	<50	TYPE B	69		3,799
TP13-51	Garage	0.7	1-Aug-13	<0.010	<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	<10	<50	<50	NO TYPE	<50		<50
TP13-52	Garage	0.65	1-Aug-13	<0.010	<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	<10	<50	<50	NO TYPE	<50		<50
TP13-53	Module Train	0.05	1-Aug-13																
TP13-53	Module Train	0.35	1-Aug-13		<0.0050	<0.020	0.023	<0.040	<0.040	0.020	190	190	**3,200**	500	<50	TYPE B	500	**3,890**	
TP13-54	Module Train	0.45	1-Aug-13		<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	65	65	**1,900**	330	<50	TYPE B	330	**2,295**	
TP13-54	Module Train	0.57	1-Aug-13		<0.0050	<0.020	0.018	<0.040	<0.040	<0.020	150	150	**2,200**	380	<50	TYPE B	380		2,730
TP13-55	Module Train	0.45	1-Aug-13		<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	<10	<50	<50	NO TYPE	<50	<50	
TP13-56	Module Train	0.05	1-Aug-13																
TP13-56	Module Train	0.6	1-Aug-13		<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	240	80	<50	TYPE B	80		320
TP13-56	Module Train	0.88	1-Aug-13		<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	**860**	170	<50	TYPE B	170		1,030
TP13-57	Module Train	0.05	1-Aug-13																
TP13-57	Module Train	0.25	1-Aug-13		<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	**1,400**	320	51	TYPE B	371	**1,720**	
TP13-57	Module Train	0.56	1-Aug-13		<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	**740**	280	<50	TYPE B	280		1,020
TP13-58	Module Train	0.05	1-Aug-13	0.14															
TP13-58	Module Train	0.45	1-Aug-13		<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	<10	<50	<50	NO TYPE	<50	<50	
TP13-59	Module Train	0.05	1-Aug-13	0.32															
TP13-59	Module Train	0.36	1-Aug-13		<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	**1,800**	52	<50	TYPE B	52	**1,852**	
TP13-59	Module Train	0.7	1-Aug-13		<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	**810**	<50	<50	TYPE B	<50	810	
TP13-60(1) [1]	Tower	0.2	1-Aug-13	0.014															
TP13-60(2) [1]	Tower	0.2	2-Aug-13																
TP13-60A	Tower	0.2	2-Aug-13	<0.010															
TP13-61	Tower	0.22	2-Aug-13	<0.010															
TP13-62	Tower	0.25	2-Aug-13																
TP13-63	Module Train	0.05	2-Aug-13	0.12															
TP13-63	Module Train	0.5	2-Aug-13		<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	56	<50	<50	TYPE B	<50	56	
TP13-64	Module Train	0.05	2-Aug-13	0.12															
TP13-64	Module Train	0.3	2-Aug-13		<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	210	59	<50	TYPE B	59	269	
TP13-64	Module Train	0.65	2-Aug-13		<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	<10	<50	<50	NO TYPE	<50		<50
TP13-65	Pumphouse	0.05	2-Aug-13	**1.2**															
TP13-65	Pumphouse	0.3	2-Aug-13	<0.010															
TP13-65F	Pumphouse	0.3	2-Aug-13	<0.010															
TP13-65	Pumphouse	0.5	2-Aug-13	<0.010															
TP13-66	Pad East of Station Area	0.05	2-Aug-13	0.063															
TP13-66	Pad East of Station Area	0.3	2-Aug-13	<0.010															
TP13-66	Pad East of Station Area	0.5	2-Aug-13	<0.010															
TP13-67	Pad East of Station Area	0.05	2-Aug-13	0.43															
TP13-67	Pad East of Station Area	0.3	2-Aug-13	0.010															

* Mislabeled in the field.

[1] Unintentional Duplicate

CAM-C 2013 Analytical Results with Relevant Guidelines

Table 3: Landfills Analytical

Sample #	Area	Depth (m)	Date	Sb (mg/kg)	As (mg/kg)	Ba (mg/kg)	Be (mg/kg)	Cd (mg/kg)	Cr (mg/kg)	Co (mg/kg)	Cu (mg/kg)	Pb (mg/kg)	Hg (mg/kg)	Mo (mg/kg)	Ni (mg/kg)	Se (mg/kg)	Ag (mg/kg)	Tl (mg/kg)	Sn (mg/kg)	U (mg/kg)	V (mg/kg)	Zn (mg/kg)	Aroclor 1016 (mg/kg or ppm)	Aroclor 1221 (mg/kg or ppm)
CEPA																								
Tier II					**30**			**5**	**250**	**50**	**100**	**500**	**2**		**100**							**500**		
Tier I												**200**												
SLF-1	South Landfill	0.5	30-Jul-13	<1.0	<1.0	<10	<0.40	<0.10	3.9	1.3	<5.0	3.0	<0.050	<0.40	1.8	<0.50	<1.0	<0.30	<1.0	<1.0	7.9	<10	<0.010	<0.010
SLF-2	South Landfill	0.35	30-Jul-13	<1.0	1.5	<10	<0.40	<0.10	5.2	2.2	<5.0	4.7	0.052	<0.40	3.2	<0.50	<1.0	<0.30	<1.0	<1.0	10	10	<0.010	<0.010
SLF-3	South Landfill	0.41	30-Jul-13	<1.0	<1.0	<10	<0.40	<0.10	1.3	<1.0	<5.0	1.3	<0.050	<0.40	<1.0	<0.50	<1.0	<0.30	<1.0	<1.0	2.5	<10	<0.010	<0.010
SLF-4	South Landfill	0.25	30-Jul-13	<1.0	<1.0	<10	<0.40	<0.10	1.6	<1.0	<5.0	1.9	<0.050	<0.40	<1.0	<0.50	<1.0	<0.30	<1.0	<1.0	3.0	<10	<0.010	<0.010
SLF-5	South Landfill	0.45	30-Jul-13	<1.0	<1.0	<10	<0.40	<0.10	1.4	<1.0	<5.0	1.7	<0.050	<0.40	<1.0	<0.50	<1.0	<0.30	<1.0	<1.0	2.6	<10	<0.010	<0.010
SLF-6	South Landfill	0.4	30-Jul-13	<1.0	<1.0	<10	<0.40	<0.10	1.4	<1.0	<5.0	1.7	0.057	<0.40	1.4	<0.50	<1.0	<0.30	<1.0	<1.0	4.6	<10	<0.010	<0.010
SLF-7	South Landfill	0.6	30-Jul-13	<1.0	<1.0	<10	<0.40	<0.10	<1.0	<1.0	<5.0	1.4	<0.050	<0.40	<1.0	<0.50	<1.0	<0.30	<1.0	<1.0	2.8	<10	<0.010	<0.010
SLF-8	South Landfill	0.45	30-Jul-13	<1.0	<1.0	<10	<0.40	<0.10	1.1	<1.0	<5.0	1.5	0.12	<0.40	1.1	<0.50	<1.0	<0.30	<1.0	<1.0	4.3	<10	<0.010	<0.010
SLF-9	South Landfill	0.45	30-Jul-13	<1.0	<1.0	<10	<0.40	<0.10	1.3	<1.0	<5.0	2.5	0.094	<0.40	1.2	<0.50	<1.0	<0.30	<1.0	<1.0	4.6	<10	<0.010	<0.010
SLF-10	South Landfill	0.45	30-Jul-13	<1.0	1.3	<10	<0.40	<0.10	1.3	<1.0	<5.0	2.6	0.083	<0.40	2.2	<0.50	<1.0	<0.30	<1.0	<1.0	4.7	<10	<0.010	<0.010
Airstrip LF-1	Airstrip Landfill	0.45	31-Jul-13	<1.0	<1.0	<10	<0.40	<0.10	3.2	<1.0	<5.0	1.5	<0.050	<0.40	1.1	<0.50	<1.0	<0.30	<1.0	<1.0	9.4	<10	<0.010	<0.010
Airstrip LF-2	Airstrip Landfill	0.42	31-Jul-13	<1.0	<1.0	<10	<0.40	<0.10	3.8	1.2	<5.0	1.7	<0.050	<0.40	1.6	<0.50	<1.0	<0.30	<1.0	<1.0	11	<10	<0.010	<0.010
Airstrip LF-3	Airstrip Landfill	0.44	31-Jul-13	<1.0	<1.0	<10	<0.40	<0.10	3.2	1.3	<5.0	5.6	<0.050	<0.40	2.3	<0.50	<1.0	<0.30	<1.0	<1.0	8.3	<10	<0.010	<0.010
Airstrip LF-4	Airstrip Landfill	0.48	31-Jul-13	<1.0	<1.0	<10	<0.40	<0.10	2.0	<1.0	<5.0	2.1	<0.050	<0.40	1.5	<0.50	<1.0	<0.30	<1.0	<1.0	5.5	<10	<0.010	<0.010
Airstrip LF-5	Airstrip Landfill	0.6	31-Jul-13	<1.0	<1.0	<10	<0.40	<0.10	1.9	<1.0	<5.0	2.2	<0.050	<0.40	1.1	<0.50	<1.0	<0.30	<1.0	<1.0	4.9	<10	<0.010	<0.010
Airstrip LF-6	Airstrip Landfill	0.45	31-Jul-13	<1.0	<1.0	<10	<0.40	<0.10	3.3	<1.0	<5.0	1.5	<0.050	<0.40	1.0	<0.50	<1.0	<0.30	<1.0	<1.0	6.7	<10	<0.010	<0.010
Airstrip LF-7	Airstrip Landfill	0.6	31-Jul-13	<1.0	1.3	<10	<0.40	<0.10	4.5	1.2	<5.0	2.7	<0.050	<0.40	2.4	<0.50	<1.0	<0.30	<1.0	<1.0	10	<10	<0.010	<0.010

CAM-C 2013 Analytical Results with Relevant Guidelines

Table 3: Landfills Analytical

Sample #	Area	Depth (m)	Date	Aroclor 1232 (mg/kg or ppm)	Aroclor 1242 (mg/kg or ppm)	Aroclor 1248 (mg/kg or ppm)	Aroclor 1254 (mg/kg or ppm)	Aroclor 1260 (mg/kg or ppm)	Aroclor 1262 (mg/kg or ppm)	Aroclor 1268 (mg/kg or ppm)	PCB Total (mg/kg or ppm)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylene (mg/kg)	m & p-Xylene (mg/kg)	o-Xylene (mg/kg)	F1 (mg/kg)	F1 minus BTEX (mg/kg)	F2 (mg/kg)	F3 (mg/kg)	F4 (mg/kg)
CEPA											**50**											
Tier II											**5**											
Tier I											**1**											
SLF-1	South Landfill	0.5	30-Jul-13	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010											
SLF-2	South Landfill	0.35	30-Jul-13	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010											
SLF-3	South Landfill	0.41	30-Jul-13	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010											
SLF-4	South Landfill	0.25	30-Jul-13	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010											
SLF-5	South Landfill	0.45	30-Jul-13	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010											
SLF-6	South Landfill	0.4	30-Jul-13	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010											
SLF-7	South Landfill	0.6	30-Jul-13	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010											
SLF-8	South Landfill	0.45	30-Jul-13	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010											
SLF-9	South Landfill	0.45	30-Jul-13	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010											
SLF-10	South Landfill	0.45	30-Jul-13	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010											
Airstrip LF-1	Airstrip Landfill	0.45	31-Jul-13	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	<10	<50	<50
Airstrip LF-2	Airstrip Landfill	0.42	31-Jul-13	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	<10	<50	<50
Airstrip LF-3	Airstrip Landfill	0.44	31-Jul-13	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010											
Airstrip LF-4	Airstrip Landfill	0.48	31-Jul-13	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	<10	<50	<50
Airstrip LF-5	Airstrip Landfill	0.6	31-Jul-13	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	<10	<50	<50
Airstrip LF-6	Airstrip Landfill	0.45	31-Jul-13	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	<10	<50	<50
Airstrip LF-7	Airstrip Landfill	0.6	31-Jul-13	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	<10	<50	<50

CAM-C 2013 Analytical Results with Relevant Guidelines

Table 4: Water Analytical

Sample #	Date	Aroclor 1016 (µg/L)	Aroclor 1221 (µg/L)	Aroclor 1232 (µg/L)	Aroclor 1242 (µg/L)	Aroclor 1248 (µg/L)	Aroclor 1254 (µg/L)	Aroclor 1260 (µg/L)	Aroclor 1262 (µg/L)	Aroclor 1268 (µg/L)	Total Aroclors (µg/L)	Cd (mg/L)	pH	Aluminum (mg/L)	Antimony (mg/L)	Arsenic (mg/L)	Barium (mg/L)	Beryllium (mg/L)	Boron (mg/L)	Calcium (mg/L)	Chromium (mg/L)	Cobalt (mg/L)	Copper (mg/L)	Iron (mg/L)	Lead (mg/L)	Lithium (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Mercury (mg/L)	Molybdenum (mg/L)	Nickel (mg/L)	Phosphorus (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Silicon (mg/L)	Silver (mg/L)
Canadian Water Quality Guidelines for the Protection of Aquatic Life - Freshwater (December, 2007)													**6.5-9**	**0.1**[1]		**0.0050**					**0.0089**[2]		**0.002**[3]	**0.3**	**0.001**[4]					**0.073**	**0.025**[5]			**0.0010**		**0.0001**
Canadian Water Quality Guidelines for the Protection of Aquatic Life - Marine (December, 2007)													**7.0-8.7**			**0.0125**					**0.056**[2]														
Guidelines for Canadian Drinking Water Quality (May, 2008)												**0.005**	**6.5-8.5**		**0.006**	**0.010**	**1**		**5**		**0.05**		**1.0**	**0.3**	**0.01**			**0.05**						**0.01**		
Freshwater Lake	2-Aug-13	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	0.000037	7.86	**0.32**	0.00089	0.0023	0.078	<0.0010	0.14	54	<0.0010	0.00034	0.0033	**0.78**	0.00040	<0.020	13	**0.13**	<0.0020	0.035	0.0047	0.41	3.7	**0.0014**	3.6	**0.00012**

[1] Aluminum guideline for pH at ≥6.5

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

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

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

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

CAM-C 2013 Analytical Results with Relevant

Table 4: Water Analytical

Sample #	Date	Sodium (mg/L)	Strontium (mg/L)	Sulphur (mg/L)	Thallium (mg/L)	Tin (mg/L)	Titanium (mg/L)	Uranium (mg/L)	Vanadium (mg/L)	Zinc (mg/L)	PP - Alkalinity (as $CaCO_3$)	T - Alkalinity (as $CaCO_3$)	Bicarbonate (mg/L)	Carbonate (mg/L)	Hydroxide (mg/L)	Electrical Conductivity (µS/cm)	Sulphate (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Dissolved Aluminum (mg/L)	Dissolved Barium (mg/L)	Dissolved Boron (mg/L)	Dissolved Calcium (mg/L)	Dissolved Chromium (mg/L)	Dissolved Iron (mg/L)	Dissolved Lithium (mg/L)	Dissolved Magnesium (mg/L)	Dissolved Manganese (mg/L)	Dissolved Phosphorus (mg/L)	Dissolved Potassium (mg/L)	Dissolved Silicon (mg/L)	Dissolved Sodium (mg/L)	Dissolved Strontium (mg/L)	Dissolved Sulphur (mg/L)	Hardness (mg/L)	Ion Balance	Dissolved Nitrate (NO_3) (mg/L)	Dissolved Nitrite (NO_2) (mg/L)	Calculated TDS	Turbidity (NTU)	Nitrate + Nitrite-N (mg/L)	Nitrate-N (mg/L)	Nitrite-N (mg/L)
Canadian Water Quality Guidelines for the Protection of Aquatic Life - Freshwater (December, 2007)										**0.030**																																**2.900**	**0.060**
Canadian Water Quality Guidelines for the Protection of Aquatic Life - Marine (December, 2007)																																										**3.600**	
Guidelines for Canadian Drinking Water Quality (May, 2008)		**200**						**0.02**		**5**							**500**	**250**	**1.5**																					**500**			**45**	**3.2**
Freshwater Lake	2-Aug-13	72	0.34	26	<0.00020	<0.0010	0.0028	0.00053	0.043	0.021	<0.50	85	100	<0.50	<0.50	480	13	87	0.071	0.049	<0.010	0.027	24	<0.010	0.066	<0.020	17	<0.0040	<0.10	1.9	0.32	42	0.040	3.900	130	1.0	<0.013	<0.0099	240	6.6	<0.0030	<0.0030	<0.0030

(1) Aluminum guideline for pH at ≥6.5

(2) Chromium guideline for Trivalent chromiun

(3) Copper guideline based on hardness - most

(4) Lead guideline based on hardness - most st

(5) Nickel guideline based on hardness - most s

CAM-C 2013 Analytical Results with Relevant Guidelines

Table 5: Substrate Analytical

Sample #	Area	Depth (m)	Type	Date	Actinolite (%)	Amosite (%)	Anthophyllite (%)	Chrysotile (%)	Crocidolite (%)	Tremolite (%)	Cellulose (%)	Filler (%)	Glass Fibres (%)	Hair (%)	Other Fibers (%)
CEPA															
Tier II															
Tier I															
ASB-1	Warehouse Area		Painted Wall Board	30-Jul-13	ND	ND	ND	50-70	ND	ND	ND	30-50	ND	ND	ND
ASB-2	Warehouse Area		Floor Tile	30-Jul-13	ND	ND	ND	0.5-10	ND	ND	0.5-20	75-95	ND	ND	ND
ASB-3	Building Train		Weathered Pipe Wrap	30-Jul-13	ND	ND	ND	90-99	ND	ND	ND	0.5-10	ND	ND	ND
ASB-4	Garage		Weathered Tank Wrap	30-Jul-13	ND	ND	ND	90-99	ND	ND	ND	0.5-10	ND	ND	ND

ND = Not Detected

CAM-C 2013 Analytical Results for ARD

Table 6: ABA Test Results for CAM-C

Sample ID	Paste pH	Total S	HCl Extractable Sulphur	HNO_3 Extractable Sulphur	Non Extractable Sulphur (by diff.)	Acid Generation Potential	Mod. ABA Neutralization Potential	Fizz Rating	Net Neutralization Potential	Neutralization Potential Ratio
Units	pH Units	wt%	wt%	wt%	wt%	Kg $CaCO_3$/T	Kg $CaCO_3$/T	N/A	Kg $CaCO_3$/T	N/A
TP9, BA19	9.08	0.04	<0.01	<0.01	0.04	<0.3	185.8	MODERATE	185.8	N/A[1]
TP15, BA11	8.95	0.07	<0.01	0.02	0.05	0.6	280.0	MODERATE	279.4	466.7
Detection Limits	N/A	0.02	0.01	0.01	0.02	0.3	0.1	N/A	0.1	N/A

Notes:

Lawrence, R.W. 1991. Acid Rock Drainage Prediction Manual

[1] Sulphur was below detectable limits, so ratio could not be calculated.

References:

Acid Generation Potential = HNO_3 Extractable Sulphide Sulphur*31.25

Fizz Rating - Reference method used is based on NP method.

Non Extractable Sulphur = (Total Sulphur)-(HCl Extractable Sulphate Sulphur)-(HNO_3 Extractable Sulphide Sulphur)

Net Neutralization Potential = (Modified ABA Neutralization Potential)-(Acid Generation Potential (HNO_3 Extr))

Mod. ABA Neutralization Potential - MEND Acid Rock Drainage Prediction Manual, MEND Project 1.16.1b (pages 6.2-11 to 17), March 1991.

Neutralization Potential Ratio = (Neutralization Potential)/(Acid Generation Potential)

Paste pH - Field and Laboratory Methods Applicable to Overburdens and Minesoils, (EPA 600 / 2-78-054, March 1978).

HCl Extractable Sulphur and HNO3 Extractable Sulphur is based on a modified version of ASTM Method D 2492-02

Total sulphur, total carbon & carbonate carbon (CO_2; HCl direct method) by Leco done at Acme Labs.

CAM-C Analytical Results Quality Assurance and Quality Controls

Table 7: Analytical QA/QC

Parameter			Metals																		PCBs								
			Sb	As	Ba	Be	Cd	Cr	Co	Cu	Pb	Hg	Mo	Ni	Se	Ag	Tl	Sn	U	V	Zn	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1284	Aroclor 1254	Aroclor 1260	Aroclor 1262	Aroclor 1268
Reportable Detection Limit (RDL)			1.0	1.0	10	0.40	1.0	1.0	1.0	5.0	1.0	0.050	0.40	1.0	0.50	1.0	0.30	1.0	1.0	1.0	10	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010
Units			ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Sample	**Area**	**Depth**																												
TP13-10	Main Station - POL Tan	1.24																												
TP13-10A	Main Station - POL Tan	1.24																												
		RPD																												
		Pass/Fail																												
TP13-20	Beach POL Tanks and P	0.05	<1.0	1.0	22	<0.40	0.12	12	1.5	<5.0	4.2	0.091	<0.40	3.6	<0.50	<1.0	<0.30	<1.0	<1.0	4.0	64									
TP13-20B	Beach POL Tanks and P	0.05	<1.0	<1.0	16	<0.40	<0.10	8.4	1.1	<5.0	3.6	<0.050	<0.40	2.5	<0.50	<1.0	<0.30	<1.0	<1.0	3.7	45									
		RPD	N/A	N/A	32	N/A	N/A	35	31	N/A	15	N/A	N/A	36	N/A	N/A	N/A	N/A	N/A	8	35									
		Pass/Fail	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	**Fail**	Pass	Pass	Pass	Pass	Pass	Pass	Pass									
TP13-30	Beach POL Tanks and P	0.05	<1.0	<1.0	<10	<0.40	<0.10	2.4	<1.0	<5.0	4.5	<0.050	<0.40	2.2	<0.50	<1.0	<0.30	<1.0	<1.0	5.0	<10									
TP13-30A	Beach POL Tanks and P	0.05	<1.0	<1.0	<10	<0.40	<0.10	4.0	1.1	<5.0	3.2	<0.050	<0.40	2.4	<0.50	<1.0	<0.30	<1.0	<1.0	7.7	<10									
		RPD	N/A	N/A	N/A	N/A	N/A	50	N/A	N/A	34	N/A	N/A	9	N/A	N/A	N/A	N/A	N/A	43	N/A									
		Pass/Fail	Pass	Pass	Pass	Pass	Pass	**Fail**	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	**Fail**	N/A									
TP13-30	Beach POL Tanks and P	0.7																												
TP13-30A	Beach POL Tanks and P	0.7																												
		RPD																												
		Pass/Fail																												
TP13-32	Beach POL Tanks and P	0.7																												
TP13-32A	Beach POL Tanks and P	0.7																												
TP13-33	Beach POL Tanks and P	0.6																												
TP13-33D	Beach POL Tanks and P	0.6																												
		RPD																												
		Pass/Fail																												
TP13-40	Garage	0.05	5.0	1.0	<10	<0.40	1.1	3.8	1.1	14	13	<0.050	<0.40	2.9	<0.50	<1.0	<0.30	<1.0	<1.0	7.0	24									
TP13-40E	Garage	0.05	5.0	<1.0	<10	<0.40	1.3	8.2	1.3	8.1	14	<0.050	<0.40	3.6	<0.50	<1.0	<0.30	<1.0	<1.0	6.4	18									
		RPD	0	N/A	N/A	N/A	17	73	N/A	N/A	7	N/A	N/A	22	N/A	N/A	N/A	N/A	N/A	9	29									
		Pass/Fail	Pass	N/A	Pass	Pass	Pass	**Fail**	N/A	N/A	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass									
TP13-50	Garage	0.7	<1.0	<1	<10	<0.40	<0.10	4.5	2.0	<5.0	3.2	<0.050	<0.40	4.1	<0.50	<1.0	<0.30	<1.0	<1.0	9.0	<10									
TP13-50A	Garage	0.7	<1.0	1.2	<10	<0.40	<0.10	3.7	1.7	<5.0	3.2	<0.050	<0.40	3.9	<0.50	<1.0	<0.30	<1.0	<1.0	8.0	<10									
		RPD	N/A	18	N/A	N/A	N/A	20	16	N/A	0	N/A	N/A	5	N/A	N/A	N/A	N/A	N/A	12	N/A									
		Pass/Fail	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass									
TP13-60 (1)	Tower	0.2	<1.0	<1.0	<10	<0.40	<0.10	2.6	1.2	<5.0	3.6	<0.050	<0.40	2.6	<0.50	<1.0	<0.30	<1.0	<1.0	7.1	11	<0.010	<0.010	<0.010	<0.010	<0.010	0.014	<0.010	<0.010	<0.010
TP13-60A	Tower	0.2	<1.0	<1.0	<10	<0.40	0.15	4.0	1.2	<5.0	4.4	<0.050	<0.40	2.5	<0.50	<1.0	<0.30	<1.0	<1.0	7.9	14	<0.010	<0.010	<0.010	<0.010	<0.010	<0.01	<0.010	<0.010	<0.010
		RPD	N/A	N/A	N/A	N/A	N/A	42	0	N/A	20	N/A	N/A	4	N/A	N/A	N/A	N/A	N/A	11	24	N/A	N/A	N/A	N/A	N/A	33	N/A	N/A	N/A
		Pass/Fail	Pass	Pass	Pass	Pass	N/A	**Fail**	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
TP13-65		0.3	<1.0	<1.0	<10	<0.40	<0.10	1.6	<1.0	<5.0	1.3	<0.050	<0.40	<1.0	<0.50	<1.0	<0.30	<1.0	<1.0	4.0	<10	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
TP13-65F		0.3	<1.0	<1.0	<10	<0.40	<0.10	1.5	<1.0	<5.0	1.3	<0.050	<0.40	<1.0	<0.50	<1.0	<0.30	<1.0	<1.0	4.1	<10	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
		RPD	N/A	N/A	N/A	N/A	N/A	6	N/A	N/A	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		Pass/Fail	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass

Notes:

RPD Relative Percent Difference

Fail RPD is greater than 35% for metals and 50% for PHCs and PCBs

Pass RPD is less than 35% for metals and 50% for PHCs and PCBs

N/A RPD calculation is not applicable when concentrations are less than 10x the report detection limit

CAM-C Analytical Results Quality Assurance and Quality Controls

Table 7: Analytical QA/QC

Parameter			Metals																			BTEX, F1-F4 PHC										
			Sb	As	Ba	Be	Cd	Cr	Co	Cu	Pb	Hg	Mo	Ni	Se	Ag	Tl	Sn	U	V	Zn	Total PCBs	Benzene	Toluene	Ethylbenzene	Xylenes	m & p-Xylene	o-Xylene	F1 ppm	F1-minus BTEX	F2 ppm	F3 ppm	F4 ppm
Reportable Detection Limit (RDL)			1.0	1.0	10	0.40	1.0	1.0	1.0	5.0	1.0	0.050	0.40	1.0	0.50	1.0	0.30	1.0	1.0	1.0	10	0.010	0.0050	0.020	0.010	0.040	0.040	0.020	12	12	10	50	50
Units			ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Sample	**Area**	**Depth**																															
TP13-10	Main Station - POL Tan	1.24																					<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	560	440	<50
TP13-10A	Main Station - POL Tan	1.24																					<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	880	700	<50
		RPD																					N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	44	46	N/A
		Pass/Fail																					Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
TP13-20	Beach POL Tanks and P	0.05	<1.0	1.0	22	<0.40	0.12	12	1.5	<5.0	4.2	0.091	<0.40	3.6	<0.50	<1.0	<0.30	<1.0	<1.0	4.0	64												
TP13-20B	Beach POL Tanks and P	0.05	<1.0	<1.0	16	<0.40	<0.10	8.4	1.1	<5.0	3.6	<0.050	<0.40	2.5	<0.50	<1.0	<0.30	<1.0	<1.0	3.7	45												
		RPD	N/A	N/A	32	N/A	N/A	35	31	N/A	15	N/A	N/A	36	N/A	N/A	N/A	N/A	N/A	8	35												
		Pass/Fail	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	**Fail**	Pass	Pass	Pass	Pass	Pass	Pass	Pass												
TP13-30	Beach POL Tanks and P	0.05	<1.0	<1.0	<10	<0.40	<0.10	2.4	<1.0	<5.0	4.5	<0.050	<0.40	2.2	<0.50	<1.0	<0.30	<1.0	<1.0	5.0	<10												
TP13-30A	Beach POL Tanks and P	0.05	<1.0	<1.0	<10	<0.40	<0.10	4.0	1.1	<5.0	3.2	<0.050	<0.40	2.4	<0.50	<1.0	<0.30	<1.0	<1.0	7.7	<10												
		RPD	N/A	N/A	N/A	N/A	N/A	50	N/A	N/A	34	N/A	N/A	9	N/A	N/A	N/A	N/A	N/A	43	N/A												
		Pass/Fail	Pass	Pass	Pass	Pass	Pass	**Fail**	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	**Fail**	N/A												
TP13-30	Beach POL Tanks and P	0.7																					<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	<10	<50	<50
TP13-30A	Beach POL Tanks and P	0.7																					<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	230	<50	<50
		RPD																					N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	183	N/A	N/A
		Pass/Fail																					Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	**Fail**	Pass	Pass
TP13-32	Beach POL Tanks and P	0.7																					<0.0050	<0.020	<0.010	0.050	<0.040	0.050	53	53	**3,300**	<50	<50
TP13-32A	Beach POL Tanks and P	0.7																					<0.0050	<0.020	<0.010	<0.040	<0.040	<0.02	<12	<12	<10	<50	<50
																							N/A	N/A	N/A	N/A	N/A	N/A	126	126	199	N/A	N/A
																							Pass	Pass	Pass	Pass	Pass	Pass	**Fail**	**Fail**	**Fail**	Pass	Pass
TP13-33	Beach POL Tanks and P	0.6																					<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	<10	<50	<50
TP13-33D	Beach POL Tanks and P	0.6																					<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	<10	<50	<50
		RPD																					N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		Pass/Fail																					Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
TP13-40	Garage	0.05	5.0	1.0	<10	<0.40	1.1	3.8	1.1	14	13	<0.050	<0.40	2.9	<0.50	<1.0	<0.30	<1.0	<1.0	7.0	24												
TP13-40E	Garage	0.05	5.0	<1.0	<10	<0.40	1.3	8.2	1.3	8.1	14	<0.050	<0.40	3.6	<0.50	<1.0	<0.30	<1.0	<1.0	6.4	18												
		RPD	0	N/A	N/A	N/A	17	73	N/A	N/A	7	N/A	N/A	22	N/A	N/A	N/A	N/A	N/A	9	29												
		Pass/Fail	Pass	N/A	Pass	Pass	Pass	**Fail**	N/A	N/A	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass												
TP13-50	Garage	0.7	<1.0	<1	<10	<0.40	<0.10	4.5	2.0	<5.0	3.2	<0.050	<0.40	4.1	<0.50	<1.0	<0.30	<1.0	<1.0	9.0	<10		<0.0050	<0.020	<0.010	0.097	<0.040	0.097	160	160	3,800	<50	<50
TP13-50A	Garage	0.7	<1.0	1.2	<10	<0.40	<0.10	3.7	1.7	<5.0	3.2	<0.050	<0.40	3.9	<0.50	<1.0	<0.30	<1.0	<1.0	8.0	<10		<0.0050	<0.020	<0.010	0.081	<0.040	0.081	130	130	3,600	69	<50
		RPD	N/A	18	N/A	N/A	N/A	20	16	N/A	0	N/A	N/A	5	N/A	N/A	N/A	N/A	N/A	12	N/A		N/A	N/A	N/A	18	N/A	18	21	21	5	32	N/A
		Pass/Fail	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass		Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
TP13-60 (1)	Tower	0.2	<1.0	<1.0	<10	<0.40	<0.10	2.6	1.2	<5.0	3.6	<0.050	<0.40	2.6	<0.50	<1.0	<0.30	<1.0	<1.0	7.1	11	0.014											
TP13-60A	Tower	0.2	<1.0	<1.0	<10	<0.40	0.15	4.0	1.2	<5.0	4.4	<0.050	<0.40	2.5	<0.50	<1.0	<0.30	<1.0	<1.0	7.9	14	<0.01											
		RPD	N/A	N/A	N/A	N/A	N/A	42	0	N/A	20	N/A	N/A	4	N/A	N/A	N/A	N/A	N/A	11	24	33											
		Pass/Fail	Pass	Pass	Pass	Pass	N/A	Fail	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass											
TP13-65		0.3	<1.0	<1.0	<10	<0.40	<0.10	1.6	<1.0	<5.0	1.3	<0.050	<0.40	<1.0	<0.50	<1.0	<0.30	<1.0	<1.0	4.0	<10	<0.010											
TP13-65F		0.3	<1.0	<1.0	<10	<0.40	<0.10	1.5	<1.0	<5.0	1.3	<0.050	<0.40	<1.0	<0.50	<1.0	<0.30	<1.0	<1.0	4.1	<10	<0.010											
		RPD	N/A	N/A	N/A	N/A	N/A	6	N/A	N/A	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2	N/A	N/A											
		Pass/Fail	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass											

Notes:

RPD Relative Percent Difference

Fail RPD is greater than 35% for metals and 50% for PHCs and PCBs

Pass RPD is less than 35% for metals and 50% for PHCs and PCBs

N/A RPD calculation is not applicable when concentrations are less than 10x the report detection limit

CAM-C Historical Analytical Results

Table 8: Historical Analytical Results

Sample #	Area	Depth (m)	Date	Sb (mg/kg)	As (mg/kg)	Ba (mg/kg)	Be (mg/kg)	Cd (mg/kg)	Cr (mg/kg)	Co (mg/kg)	Cu (mg/kg)	Pb (mg/kg)	Hg (mg/kg)	Mo (mg/kg)	Ni (mg/kg)	Se (mg/kg)	Ag (mg/kg)	Tl (mg/kg)	Sn (mg/kg)	U (mg/kg)	V (mg/kg)	Zn (mg/kg)
CCME Residential/Parkland																						
CEPA																						
Tier II					**30**			**5**	**250**	**50**	**100**	**500**	**2**		**100**							**500**
Tier I												**200**										
PHCs/TPH - Protection of Freshwater Aquatic Life (within 30 m of water body)																						
PHCs/TPH - Protection of Terrestrial Wildlife																						
PHCs/TPH - Human Health																						
PHCs/TPH - Management Limit																						
1992 ESG Results																						
G3102	Garage Foundation	surface	7/16/1992									**348**										
G3104	South of Station Pad	surface	7/16/1992																			
G3105	South of Station Pad	surface	7/16/1992																			
G3109	Warehouse Foundation	surface	7/16/1992																			
2012 WESA Results																						
SS-0001	Station POL	0.3	8/28/2011	<1	4	21	<0.5	<0.5	10	4	8	39	<0.1	2	8	1	<0.3	<1	<5	<1	19	40
SS-0002	Station POL	0.3	8/28/2011	<1	2	26	<0.5	<0.5	13	4	6	26	<0.1	<1	9	<1	<0.3	<1	<5	<1	22	<20
SS-0003	Station POL	0.4	8/28/2011	<1	3	20	<0.5	<0.5	10	4	<5	10	<0.1	<1	7	<1	<0.3	<1	<5	<1	24	<20
SS-0004	Station POL	0.5	8/28/2011	<1	2	17	<0.5	<0.5	9	3	<5	7	<0.1	<1	7	<1	<0.3	<1	<5	<1	18	<20
SS-0005	North of Garage Found	0.4	8/28/2011	<1	3	24	<0.5	<0.5	13	5	<5	8	<0.1	<1	9	<1	<0.3	<1	<5	<1	26	<20
SS-0006	Warehouse Foundation	0.15	8/28/2011	5	2	9	<0.5	0.5	7	2	<5	42	<0.1	<1	<5	<1	<0.3	<1	<5	<1	10	<20
SS-0007	Garage Foundation	0.2	8/28/2011	<1	<1	67	<0.5	<0.5	7	2	10	29	<0.1	<1	<5	<1	<0.3	<1	<5	<1	<10	40
SS-0008	Airstrip	surface	8/28/2011	<1	1	9	<0.5	<0.5	6	2	<5	5	<0.1	<1	<5	<1	<0.3	<1	<5	<1	11	<20
SS-0009	Between Station and Be	0.15	8/28/2011	<1	<1	7	<0.5	<0.5	<5	1	<5	7	<0.1	<1	<5	<1	<0.3	<1	<5	<1	<10	<20
SS-0010	Beach POL Foundation	0.2	8/28/2011	<1	4	21	<0.5	<0.5	9	3	6	34	<0.1	<1	7	<1	<0.3	<1	<5	<1	14	<20
SS-0011	Beach POL Foundation	0.2	8/28/2011	<1	2	12	<0.5	<0.5	9	3	<5	39	<0.1	<1	7	<1	<0.3	<1	<5	<1	14	<20
SS-0012	Beach POL Foundation	0.2	8/28/2011	<1	6	11	<0.5	<0.5	7	3	6	22	<0.1	2	7	<1	<0.3	<1	<5	<1	11	<20
SS-0013	Beach	0.25	8/28/2011	<1	3	4	<0.5	<0.5	41	2	11	10	<0.1	1	9	<1	<0.3	<1	<5	<1	<10	<20
SS-0014	West Drum Cache	0.5	8/28/2011	<1	<1	2	<0.5	<0.5	<5	<1	<5	1	<0.1	<1	<5	<1	<0.3	<1	<5	<1	<10	<20
SS-0015	East Drum Cache	0.3	8/28/2011	<1	<1	2	<0.5	<0.5	<5	<1	<5	1	<0.1	<1	<5	<1	<0.3	<1	<5	<1	<10	<20
SS-0016	Background - Beach Are	0.25	8/28/2011	<1	2	12	<0.5	<0.5	10	3	<5	6	<0.1	<1	6	<1	<0.3	<1	<5	<1	<10	<20

Protection of Freshwater Aquatic Life applies (<30 m from water)

CAM-C Historical Analytical Results

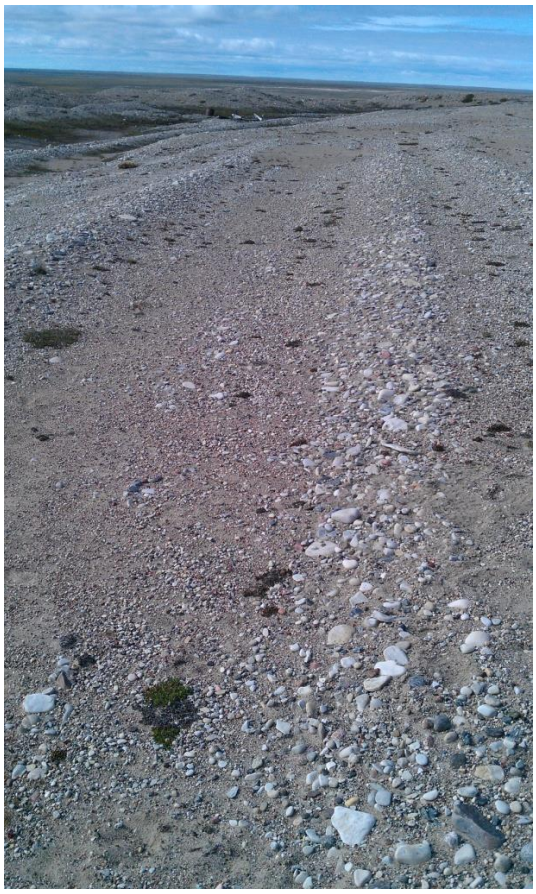
Table 8: Historical Analytical Results

Sample #	Area	Depth (m)	Date	Aroclor 1016 (mg/kg or ppm)	Aroclor 1221 (mg/kg or ppm)	Aroclor 1232 (mg/kg or ppm)	Aroclor 1242 (mg/kg or ppm)	Aroclor 1248 (mg/kg or ppm)	Aroclor 1254 (mg/kg or ppm)	Aroclor 1260 (mg/kg or ppm)	Aroclor 1262 (mg/kg or ppm)	Aroclor 1268 (mg/kg or ppm)	PCB Total (mg/kg or ppm)	Tetrachloro-ethylene	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-benzene (mg/kg)	Xylene (mg/kg)	m & p-Xylene (mg/kg)	o-Xylene (mg/kg)	F1 (mg/kg)	F1 minus BTEX (mg/kg)	F2 (mg/kg)	F3 (mg/kg)	F4 (mg/kg)	Total TPH (mg/kg or ppm)			
CCME Residential/Parkland														**0.2**															
CEPA													**50**														**Dominant TPH Type**	**TYPE A ppm**	**TYPE B (0-0.5 m) ppm**	**TYPE B (>0.5 m) ppm**
Tier II													**5**																
Tier I													**1**																
PHCs/TPH - Protection of Freshwater Aquatic Life (within 30 m of water body)																						**1,290**	**330**					**330**	
PHCs/TPH - Protection of Terrestrial Wildlife																												**2,500**	
PHCs/TPH - Human Health																							**11,000**	**20,000**			**20,000**		
PHCs/TPH - Management Limit																													**5,000**
1992 ESG Results																													
G3102	Garage Foundation	surface	7/16/1992				0.018		0.85	0.13			**1**																
G3104	South of Station Pad	surface	7/16/1992				0.0038		1.4	0.28			**1.7**																
G3105	South of Station Pad	surface	7/16/1992				0.62		1	0.22			**1.3**																
G3109	Warehouse Foundation	surface	7/16/1992				0.047		1.1	1			**2.1**																
2012 WESA Results																													
SS-0001	Station POL	0.3	8/28/2011																		23	23	**382**	140	<10	Type B		**545**	
SS-0002	Station POL	0.3	8/28/2011																		593	593	**3,920**	888	<10	Type B		**5,401**	
SS-0003	Station POL	0.4	8/28/2011																		<10	<10	**428**	<10	<10	Type B		**428**	
SS-0004	Station POL	0.5	8/28/2011																		<10	<10	**839**	126	<10	Type B		**839**	
SS-0005	North of Garage Found	0.4	8/28/2011											**0.4**							534	534	**1,340**	37	<10	Type B		**1,911**	
SS-0006	Warehouse Foundation	0.15	8/28/2011																		19	19	**987**	579	<10	Type B		**1,585**	
SS-0007	Garage Foundation	0.2	8/28/2011																		<10	<10	<10	6,330	469	Type A	**6,330**		
SS-0008	Airstrip	surface	8/28/2011																		<10	<10	<10	<10	<10			**0**	
SS-0009	Between Station and Be	0.15	8/28/2011																		<10	<10	139	86	<10	Type B		**225**	
SS-0010	Beach POL Foundation	0.2	8/28/2011																		167	167	**1,550**	175	<10	Type B		**1,892**	
SS-0011	Beach POL Foundation	0.2	8/28/2011																		337	337	**2,130**	271	<10	Type B		**2,738**	
SS-0012	Beach POL Foundation	0.2	8/28/2011																		512	512	**2,520**	119	<10	Type B		**3,151**	
SS-0013	Beach	0.25	8/28/2011																		<10	<10	<10	<10	<10			**0**	
SS-0014	West Drum Cache	0.5	8/28/2011																		<10	<10	<10	<10	<10			**0**	
SS-0015	East Drum Cache	0.3	8/28/2011																		<10	<10	295	147	29	Type B		**442**	
SS-0016	Background - Beach Are	0.25	8/28/2011	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<10	<10	<10	<10	<10				

Protection of Freshwater Aquatic Life applies (<30

Appendix C

Site Photographs



Photograph 1. Borrow Area 1 Surface ↑



Photograph 2. Borrow Area 1 Testpit Profile↑



Photograph 3. Borrow Area 2 Surface ↑



Photograph 4. Borrow Area 2 Testpit Profile↑



Photograph 5. Borrow Area 3 Surface ↑



Photograph 6. Borrow Area 3 Testpit Profile↑



Photograph 7. Borrow Area 4 Surface ↑



Photograph 8. Borrow Area 4 Testpit Profile↑



Photograph 9. Borrow Area 5 Testpit Profile ↑



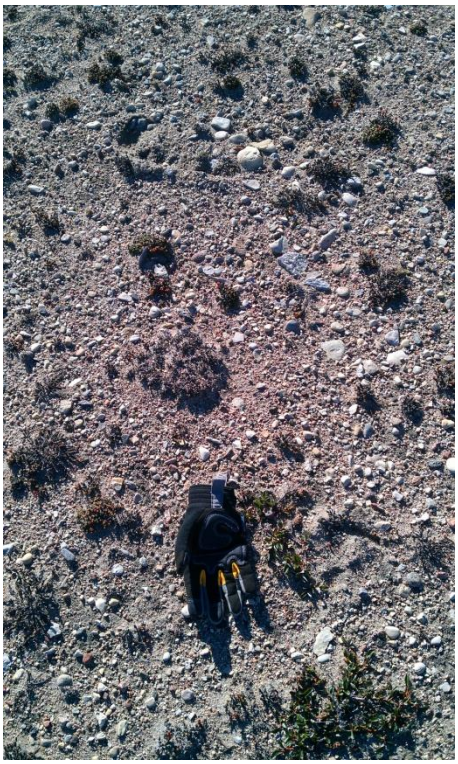
Photograph 10. Borrow Area 6 Surface↑



Photograph 11. Borrow Area 6 Testpit Profile↑



Photograph 12. Borrow Area 7 Testpit Profile ↑



Photograph 13. Borrow Area 8 Surface↑



Photograph 14. Borrow Area 8 Testpit Profile↑



Photograph 15. Borrow Area 9 Surface↑



Photograph 16. Borrow Area 12 Testpit Profile↑



Photograph 17. Borrow Area 13 Surface



Photograph 18. Borrow Area 13 Testpit Profile



Photograph 19. Borrow Area 14 Surface↑



Photograph 20. Borrow Area 14 Testpit Profile↑



Photograph 21. Borrow Area 15 Surface



Photograph 22. Borrow Area 15 Testpit Profile



Photograph 23. Borrow Area 16 Surface



Photograph 24. Borrow Area 16 Surface With Gravel



Photograph 25. Borrow Area 16 Testpit Profile↑



Photograph 26. Borrow Area 17 Testpit Profile↑



Photograph 27. Borrow Area 18 Testpit Profile↑



Photograph 28. Borrow Area 19 Testpit Profile↑



Photograph 29. Borrow Area 20 Testpit Profile↑

Appendix D

Environmental and Geotechnical Lab Reports (On DVD)

Success Through Science®

Your P.O. #: 700266069
Your Project #: 60299674, CAM-C
Your C.O.C. #: 40537405, 405374-05-01, 405374-08-01

Attention: NICK OKE
AECOM
EDMONTON
17007 - 107 Avenue
, Edmonton, AB
CANADA T5S 1G3

Report Date: 2013/08/16

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B367287
Received: 2013/08/01, 09:30

Sample Matrix: Soil
Samples Received: 15

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Asbestos Identification (1,2)	4	N/A	2013/08/15	BBY5SOP-00020	NIOSH Method 9002
Elements by ICPMS - Soils	1	2013/08/07	2013/08/07	AB SOP-00043	EPA 200.8
Elements by ICPMS - Soils	5	2013/08/07	2013/08/08	AB SOP-00043	EPA 200.8
Elements by ICPMS - Soils	5	2013/08/08	2013/08/08	AB SOP-00043	EPA 200.8
Moisture	11	N/A	2013/08/06	AB SOP-00002	CCME PHC-CWS
pH @25C (1:2 Extract)	10	2013/08/08	2013/08/08	AB SOP-00006	SSMA 16.2

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

(1) This test was performed by Maxxam Vancouver
(2) RDL = 0.5%

Encryption Key

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

Geraldyn Gouthro, Client Service Specialist
Email: GGouthro@maxxam.ca
Phone# (780) 577-7173

==========

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

Total cover pages: 1

Maxxam Job #: B367287
Report Date: 2013/08/16

AECOM
Client Project #: 60299674, CAM-C

Your P.O. #: 700266069

RESULTS OF CHEMICAL ANALYSES OF SOIL

Maxxam ID		HC1486	HC1487	HC1488	HC1489		
Sampling Date		2013/07/30 16:00	2013/07/30 09:30	2013/07/30 09:45	2013/07/30 09:55		
COC Number		405374-05-01	405374-05-01	405374-05-01	405374-05-01		
	UNITS	**SW#1 @ 0.25M**	**SLF#1 @ 0.5M**	**SLF#2 @ 0.35M**	**SLF#3 @ 0.41M**	**RDL**	**QC Batch**
Soluble Parameters							
Soluble (2:1) pH	N/A	7.97	7.61	7.93	7.42	N/A	7058697
Physical Properties							
Moisture	%	3.5	2.2	6.2	5.4	0.30	7049440

RDL = Reportable Detection Limit

Maxxam ID		HC1490	HC1490	HC1491	HC1492	HC1493		
Sampling Date		2013/07/30 10:10	2013/07/30 10:10	2013/07/30 10:30	2013/07/30 10:45	2013/07/30 11:00		
COC Number		405374-05-01	405374-05-01	405374-05-01	405374-05-01	405374-05-01		
	UNITS	**SLF#4 @ 0.25M**	**SLF#4 @ 0.25M Lab-Dup**	**SLF#5 @ 0.45M**	**SLF#6 @ 0.4M**	**SLF#7 @ 0.6M**	**RDL**	**QC Batch**
Soluble Parameters								
Soluble (2:1) pH	N/A	7.49	7.43	7.87	N/A	7.57	N/A	7058813
Physical Properties								
Moisture	%	5.4	5.5	2.7	4.3	6.8	0.30	7049440

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam ID		HC1494	HC1495	HC1496		
Sampling Date		2013/07/30 11:10	2013/07/30 11:15	2013/07/30 11:30		
COC Number		405374-05-01	405374-05-01	405374-08-01		
	UNITS	**SLF#8 @ 0.45M**	**SLF#9 @ 0.45M**	**SLF#10 @ 0.45**	**RDL**	**QC Batch**
Soluble Parameters						
Soluble (2:1) pH	N/A	7.81	7.85	8.96	N/A	7058813
Physical Properties						
Moisture	%	4.6	4.0	1.9	0.30	7049440

RDL = Reportable Detection Limit

Maxxam Job #: B367287
Report Date: 2013/08/16

AECOM
Client Project #: 60299674, CAM-C

Your P.O. #: 700266069

ASBESTOS IDENTIFICATION (SOIL)

Maxxam ID		HC1497	HC1498	HC1499	HC1500	
Sampling Date		2013/07/30 13:00	2013/07/30 13:10	2013/07/30 13:15	2013/07/30 13:20	
COC Number		405374-08-01	405374-08-01	405374-08-01	405374-08-01	
	UNITS	**ASB#1**	**ASB#2**	**ASB#3**	**ASB#4**	**QC Batch**
Asbestos Type						
Actinolite	% vol/vol	ND	ND	ND	ND	7084074
Amosite	% vol/vol	ND	ND	ND	ND	7084074
Anthophyllite	% vol/vol	ND	ND	ND	ND	7084074
Chrysotile	% vol/vol	50-70	0.5-10	90-99	90-99	7084074
Crocidolite	% vol/vol	ND	ND	ND	ND	7084074
Tremolite	% vol/vol	ND	ND	ND	ND	7084074
Others						
Cellulose	% vol/vol	ND	0.5-20	ND	ND	7084074
Filler	% vol/vol	30-50	75-95	0.5-10	0.5-10	7084074
Glass Fibres	% vol/vol	ND	ND	ND	ND	7084074
Hair	% vol/vol	ND	ND	ND	ND	7084074
Other Fibers	% vol/vol	ND	ND	ND	ND	7084074

ND = Not detected

Maxxam Job #: B367287
Report Date: 2013/08/16

AECOM
Client Project #: 60299674, CAM-C

Your P.O. #: 700266069

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		HC1486	HC1486		HC1487	HC1488		
Sampling Date		2013/07/30 16:00	2013/07/30 16:00		2013/07/30 09:30	2013/07/30 09:45		
COC Number		405374-05-01	405374-05-01		405374-05-01	405374-05-01		
	UNITS	**SW#1 @ 0.25M**	**SW#1 @ 0.25M Lab-Dup**	**QC Batch**	**SLF#1 @ 0.5M**	**SLF#2 @ 0.35M**	**RDL**	**QC Batch**
Elements								
Total Antimony (Sb)	mg/kg	<1.0	<1.0	7056652	<1.0	<1.0	1.0	7056583
Total Arsenic (As)	mg/kg	1.4	1.4	7056652	<1.0	1.5	1.0	7056583
Total Barium (Ba)	mg/kg	<10	<10	7056652	<10	<10	10	7056583
Total Beryllium (Be)	mg/kg	<0.40	<0.40	7056652	<0.40	<0.40	0.40	7056583
Total Cadmium (Cd)	mg/kg	<0.10	<0.10	7056652	<0.10	<0.10	0.10	7056583
Total Chromium (Cr)	mg/kg	1.8	2.2	7056652	3.9	5.2	1.0	7056583
Total Cobalt (Co)	mg/kg	1.4	1.4	7056652	1.3	2.2	1.0	7056583
Total Copper (Cu)	mg/kg	<5.0	<5.0	7056652	<5.0	<5.0	5.0	7056583
Total Lead (Pb)	mg/kg	2.7	2.7	7056652	3.0	4.7	1.0	7056583
Total Mercury (Hg)	mg/kg	0.14	0.11	7056652	<0.050	0.052	0.050	7056583
Total Molybdenum (Mo)	mg/kg	<0.40	<0.40	7056652	<0.40	<0.40	0.40	7056583
Total Nickel (Ni)	mg/kg	2.4	2.4	7056652	1.8	3.2	1.0	7056583
Total Selenium (Se)	mg/kg	<0.50	<0.50	7056652	<0.50	<0.50	0.50	7056583
Total Silver (Ag)	mg/kg	<1.0	<1.0	7056652	<1.0	<1.0	1.0	7056583
Total Thallium (Tl)	mg/kg	<0.30	<0.30	7056652	<0.30	<0.30	0.30	7056583
Total Tin (Sn)	mg/kg	<1.0	<1.0	7056652	<1.0	<1.0	1.0	7056583
Total Uranium (U)	mg/kg	<1.0	<1.0	7056652	<1.0	<1.0	1.0	7056583
Total Vanadium (V)	mg/kg	5.2	5.8	7056652	7.9	10	1.0	7056583
Total Zinc (Zn)	mg/kg	<10	<10	7056652	<10	10	10	7056583

RDL = Reportable Detection Limit

Maxxam Job #: B367287
Report Date: 2013/08/16

AECOM
Client Project #: 60299674, CAM-C

Your P.O. #: 700266069

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		HC1489	HC1490	HC1491		HC1492		
Sampling Date		2013/07/30 09:55	2013/07/30 10:10	2013/07/30 10:30		2013/07/30 10:45		
COC Number		405374-05-01	405374-05-01	405374-05-01		405374-05-01		
	UNITS	**SLF#3 @ 0.41M**	**SLF#4 @ 0.25M**	**SLF#5 @ 0.45M**	**QC Batch**	**SLF#6 @ 0.4M**	**RDL**	**QC Batch**
Elements								
Total Antimony (Sb)	mg/kg	<1.0	<1.0	<1.0	7056583	<1.0	1.0	7057858
Total Arsenic (As)	mg/kg	<1.0	<1.0	<1.0	7056583	<1.0	1.0	7057858
Total Barium (Ba)	mg/kg	<10	<10	<10	7056583	<10	10	7057858
Total Beryllium (Be)	mg/kg	<0.40	<0.40	<0.40	7056583	<0.40	0.40	7057858
Total Cadmium (Cd)	mg/kg	<0.10	<0.10	<0.10	7056583	<0.10	0.10	7057858
Total Chromium (Cr)	mg/kg	1.3	1.6	1.4	7056583	1.4	1.0	7057858
Total Cobalt (Co)	mg/kg	<1.0	<1.0	<1.0	7056583	<1.0	1.0	7057858
Total Copper (Cu)	mg/kg	<5.0	<5.0	<5.0	7056583	<5.0	5.0	7057858
Total Lead (Pb)	mg/kg	1.3	1.9	1.7	7056583	1.7	1.0	7057858
Total Mercury (Hg)	mg/kg	<0.050	<0.050	<0.050	7056583	0.057	0.050	7057858
Total Molybdenum (Mo)	mg/kg	<0.40	<0.40	<0.40	7056583	<0.40	0.40	7057858
Total Nickel (Ni)	mg/kg	<1.0	<1.0	<1.0	7056583	1.4	1.0	7057858
Total Selenium (Se)	mg/kg	<0.50	<0.50	<0.50	7056583	<0.50	0.50	7057858
Total Silver (Ag)	mg/kg	<1.0	<1.0	<1.0	7056583	<1.0	1.0	7057858
Total Thallium (Tl)	mg/kg	<0.30	<0.30	<0.30	7056583	<0.30	0.30	7057858
Total Tin (Sn)	mg/kg	<1.0	<1.0	<1.0	7056583	<1.0	1.0	7057858
Total Uranium (U)	mg/kg	<1.0	<1.0	<1.0	7056583	<1.0	1.0	7057858
Total Vanadium (V)	mg/kg	2.5	3.0	2.6	7056583	4.6	1.0	7057858
Total Zinc (Zn)	mg/kg	<10	<10	<10	7056583	<10	10	7057858

RDL = Reportable Detection Limit

Maxxam Job #: B367287
Report Date: 2013/08/16

AECOM
Client Project #: 60299674, CAM-C

Your P.O. #: 700266069

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		HC1492	HC1493	HC1494	HC1495		
Sampling Date		2013/07/30 10:45	2013/07/30 11:00	2013/07/30 11:10	2013/07/30 11:15		
COC Number		405374-05-01	405374-05-01	405374-05-01	405374-05-01		
	UNITS	**SLF#6 @ 0.4M Lab-Dup**	**SLF#7 @ 0.6M**	**SLF#8 @ 0.45M**	**SLF#9 @ 0.45M**	**RDL**	**QC Batch**
Elements							
Total Antimony (Sb)	mg/kg	<1.0	<1.0	<1.0	<1.0	1.0	7057858
Total Arsenic (As)	mg/kg	<1.0	<1.0	<1.0	<1.0	1.0	7057858
Total Barium (Ba)	mg/kg	<10	<10	<10	<10	10	7057858
Total Beryllium (Be)	mg/kg	<0.40	<0.40	<0.40	<0.40	0.40	7057858
Total Cadmium (Cd)	mg/kg	<0.10	<0.10	<0.10	<0.10	0.10	7057858
Total Chromium (Cr)	mg/kg	1.1	<1.0	1.1	1.3	1.0	7057858
Total Cobalt (Co)	mg/kg	<1.0	<1.0	<1.0	<1.0	1.0	7057858
Total Copper (Cu)	mg/kg	<5.0	<5.0	<5.0	<5.0	5.0	7057858
Total Lead (Pb)	mg/kg	1.5	1.4	1.5	2.5	1.0	7057858
Total Mercury (Hg)	mg/kg	<0.050	<0.050	0.12	0.094	0.050	7057858
Total Molybdenum (Mo)	mg/kg	<0.40	<0.40	<0.40	<0.40	0.40	7057858
Total Nickel (Ni)	mg/kg	<1.0	<1.0	1.1	1.2	1.0	7057858
Total Selenium (Se)	mg/kg	<0.50	<0.50	<0.50	<0.50	0.50	7057858
Total Silver (Ag)	mg/kg	<1.0	<1.0	<1.0	<1.0	1.0	7057858
Total Thallium (Tl)	mg/kg	<0.30	<0.30	<0.30	<0.30	0.30	7057858
Total Tin (Sn)	mg/kg	<1.0	<1.0	<1.0	<1.0	1.0	7057858
Total Uranium (U)	mg/kg	<1.0	<1.0	<1.0	<1.0	1.0	7057858
Total Vanadium (V)	mg/kg	3.6	2.8	4.3	4.6	1.0	7057858
Total Zinc (Zn)	mg/kg	<10	<10	<10	<10	10	7057858

RDL = Reportable Detection Limit

Maxxam Job #: B367287
Report Date: 2013/08/16

AECOM
Client Project #: 60299674, CAM-C

Your P.O. #: 700266069

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		HC1496		
Sampling Date		2013/07/30 11:30		
COC Number		405374-08-01		
	UNITS	**SLF#10 @ 0.45**	**RDL**	**QC Batch**
Elements				
Total Antimony (Sb)	mg/kg	<1.0	1.0	7057858
Total Arsenic (As)	mg/kg	1.3	1.0	7057858
Total Barium (Ba)	mg/kg	<10	10	7057858
Total Beryllium (Be)	mg/kg	<0.40	0.40	7057858
Total Cadmium (Cd)	mg/kg	<0.10	0.10	7057858
Total Chromium (Cr)	mg/kg	1.3	1.0	7057858
Total Cobalt (Co)	mg/kg	<1.0	1.0	7057858
Total Copper (Cu)	mg/kg	<5.0	5.0	7057858
Total Lead (Pb)	mg/kg	2.6	1.0	7057858
Total Mercury (Hg)	mg/kg	0.083	0.050	7057858
Total Molybdenum (Mo)	mg/kg	<0.40	0.40	7057858
Total Nickel (Ni)	mg/kg	2.2	1.0	7057858
Total Selenium (Se)	mg/kg	<0.50	0.50	7057858
Total Silver (Ag)	mg/kg	<1.0	1.0	7057858
Total Thallium (Tl)	mg/kg	<0.30	0.30	7057858
Total Tin (Sn)	mg/kg	<1.0	1.0	7057858
Total Uranium (U)	mg/kg	<1.0	1.0	7057858
Total Vanadium (V)	mg/kg	4.7	1.0	7057858
Total Zinc (Zn)	mg/kg	<10	10	7057858

RDL = Reportable Detection Limit

Maxxam Job #: B367287
Report Date: 2013/08/16

AECOM
Client Project #: 60299674, CAM-C

Your P.O. #: 700266069

General Comments

For Asbestos:

ND = Not detected. Below reportable detection limit of 0.5%
All layers found are homogeneous
Site Location: Not Provided

Sample HC1497-01: 2 layers: Beige paint and Grey fibrous mix. Asbestos is found in the Grey fibrous mix

Sample HC1498-01: 2 layers: Brown floor tile and Black fibrous backing. Asbestos is found in the brown floor tile

Sample HC1499-01: 1 layer: Grey fibrous mix

Sample HC1500-01: 1 layer: Grey fibrous mix

Results relate only to the items tested.

AECOM
Attention: NICK OKE
Client Project #: 60299674, CAM-C
P.O. #: 700266069
Site Location:

Quality Assurance Report

Maxxam Job Number: CB367287

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7049440	MWC	Method Blank	Moisture	2013/08/06	<0.30		%	
		RPD [HC1490-01]	Moisture	2013/08/06	1.8		%	20
7056583	TDB	Matrix Spike	Total Antimony (Sb)	2013/08/08		91	%	75 - 125
			Total Arsenic (As)	2013/08/08		100	%	75 - 125
			Total Barium (Ba)	2013/08/08		NC	%	75 - 125
			Total Beryllium (Be)	2013/08/08		101	%	75 - 125
			Total Cadmium (Cd)	2013/08/08		98	%	75 - 125
			Total Chromium (Cr)	2013/08/08		105	%	75 - 125
			Total Cobalt (Co)	2013/08/08		94	%	75 - 125
			Total Copper (Cu)	2013/08/08		94	%	75 - 125
			Total Lead (Pb)	2013/08/08		94	%	75 - 125
			Total Mercury (Hg)	2013/08/08		101	%	75 - 125
			Total Molybdenum (Mo)	2013/08/08		98	%	75 - 125
			Total Nickel (Ni)	2013/08/08		99	%	75 - 125
			Total Selenium (Se)	2013/08/08		100	%	75 - 125
			Total Silver (Ag)	2013/08/08		91	%	75 - 125
			Total Thallium (Tl)	2013/08/08		94	%	75 - 125
			Total Tin (Sn)	2013/08/08		96	%	75 - 125
			Total Uranium (U)	2013/08/08		95	%	75 - 125
			Total Vanadium (V)	2013/08/08		111	%	75 - 125
			Total Zinc (Zn)	2013/08/08		NC	%	75 - 125
		QC Standard	Total Arsenic (As)	2013/08/08		118	%	50 - 150
			Total Barium (Ba)	2013/08/08		109	%	69 - 131
			Total Chromium (Cr)	2013/08/08		104	%	41 - 159
			Total Cobalt (Co)	2013/08/08		105	%	75 - 125
			Total Copper (Cu)	2013/08/08		104	%	73 - 127
			Total Lead (Pb)	2013/08/08		101	%	54 - 146
			Total Nickel (Ni)	2013/08/08		112	%	61 - 139
			Total Vanadium (V)	2013/08/08		121	%	50 - 150
			Total Zinc (Zn)	2013/08/08		113	%	72 - 128
		Spiked Blank	Total Antimony (Sb)	2013/08/08		108	%	75 - 125
			Total Arsenic (As)	2013/08/08		103	%	75 - 125
			Total Barium (Ba)	2013/08/08		104	%	75 - 125
			Total Beryllium (Be)	2013/08/08		104	%	75 - 125
			Total Cadmium (Cd)	2013/08/08		102	%	75 - 125
			Total Chromium (Cr)	2013/08/08		102	%	75 - 125
			Total Cobalt (Co)	2013/08/08		104	%	75 - 125
			Total Copper (Cu)	2013/08/08		101	%	75 - 125
			Total Lead (Pb)	2013/08/08		100	%	75 - 125
			Total Mercury (Hg)	2013/08/08		104	%	75 - 125
			Total Molybdenum (Mo)	2013/08/08		102	%	75 - 125
			Total Nickel (Ni)	2013/08/08		103	%	75 - 125
			Total Selenium (Se)	2013/08/08		105	%	75 - 125
			Total Silver (Ag)	2013/08/08		94	%	75 - 125
			Total Thallium (Tl)	2013/08/08		99	%	75 - 125
			Total Tin (Sn)	2013/08/08		101	%	75 - 125
			Total Uranium (U)	2013/08/08		105	%	75 - 125
			Total Vanadium (V)	2013/08/08		106	%	75 - 125
			Total Zinc (Zn)	2013/08/08		104	%	75 - 125
		Method Blank	Total Antimony (Sb)	2013/08/08	<1.0		mg/kg	
			Total Arsenic (As)	2013/08/08	<1.0		mg/kg	
			Total Barium (Ba)	2013/08/08	<10		mg/kg	
			Total Beryllium (Be)	2013/08/08	<0.40		mg/kg	
			Total Cadmium (Cd)	2013/08/08	<0.10		mg/kg	
			Total Chromium (Cr)	2013/08/08	<1.0		mg/kg	

AECOM
Attention: NICK OKE
Client Project #: 60299674, CAM-C
P.O. #: 700266069
Site Location:

Quality Assurance Report (Continued)

Maxxam Job Number: CB367287

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7056583	TDB	Method Blank	Total Cobalt (Co)	2013/08/08	<1.0		mg/kg	
			Total Copper (Cu)	2013/08/08	<5.0		mg/kg	
			Total Lead (Pb)	2013/08/08	<1.0		mg/kg	
			Total Mercury (Hg)	2013/08/08	<0.050		mg/kg	
			Total Molybdenum (Mo)	2013/08/08	<0.40		mg/kg	
			Total Nickel (Ni)	2013/08/08	<1.0		mg/kg	
			Total Selenium (Se)	2013/08/08	<0.50		mg/kg	
			Total Silver (Ag)	2013/08/08	<1.0		mg/kg	
			Total Thallium (Tl)	2013/08/08	<0.30		mg/kg	
			Total Tin (Sn)	2013/08/08	<1.0		mg/kg	
			Total Uranium (U)	2013/08/08	<1.0		mg/kg	
			Total Vanadium (V)	2013/08/08	<1.0		mg/kg	
			Total Zinc (Zn)	2013/08/08	<10		mg/kg	
		RPD	Total Antimony (Sb)	2013/08/08	NC		%	35
			Total Arsenic (As)	2013/08/08	3.1		%	35
			Total Barium (Ba)	2013/08/08	1.5		%	35
			Total Beryllium (Be)	2013/08/08	NC		%	35
			Total Cadmium (Cd)	2013/08/08	NC		%	35
			Total Chromium (Cr)	2013/08/08	8.4		%	35
			Total Cobalt (Co)	2013/08/08	3.3		%	35
			Total Copper (Cu)	2013/08/08	NC		%	35
			Total Lead (Pb)	2013/08/08	4.1		%	35
			Total Mercury (Hg)	2013/08/08	NC		%	35
			Total Molybdenum (Mo)	2013/08/08	NC		%	35
			Total Nickel (Ni)	2013/08/08	2.5		%	35
			Total Selenium (Se)	2013/08/08	NC		%	35
			Total Silver (Ag)	2013/08/08	NC		%	35
			Total Thallium (Tl)	2013/08/08	NC		%	35
			Total Tin (Sn)	2013/08/08	NC		%	35
			Total Uranium (U)	2013/08/08	NC		%	35
			Total Vanadium (V)	2013/08/08	4.9		%	35
			Total Zinc (Zn)	2013/08/08	3.5		%	35
7056652	ST4	Matrix Spike [HC1486-01]	Total Antimony (Sb)	2013/08/09		114	%	75 - 125
			Total Arsenic (As)	2013/08/09		107	%	75 - 125
			Total Barium (Ba)	2013/08/09		105	%	75 - 125
			Total Beryllium (Be)	2013/08/09		110	%	75 - 125
			Total Cadmium (Cd)	2013/08/09		108	%	75 - 125
			Total Chromium (Cr)	2013/08/09		121	%	75 - 125
			Total Cobalt (Co)	2013/08/09		112	%	75 - 125
			Total Copper (Cu)	2013/08/09		108	%	75 - 125
			Total Lead (Pb)	2013/08/09		107	%	75 - 125
			Total Mercury (Hg)	2013/08/09		115	%	75 - 125
			Total Molybdenum (Mo)	2013/08/09		111	%	75 - 125
			Total Nickel (Ni)	2013/08/09		114	%	75 - 125
			Total Selenium (Se)	2013/08/09		107	%	75 - 125
			Total Silver (Ag)	2013/08/09		99	%	75 - 125
			Total Thallium (Tl)	2013/08/09		106	%	75 - 125
			Total Tin (Sn)	2013/08/09		110	%	75 - 125
			Total Uranium (U)	2013/08/09		103	%	75 - 125
			Total Vanadium (V)	2013/08/09		128 (1)	%	75 - 125
			Total Zinc (Zn)	2013/08/09		110	%	75 - 125
		QC Standard	Total Arsenic (As)	2013/08/07		113	%	50 - 150
			Total Barium (Ba)	2013/08/07		106	%	69 - 131
			Total Chromium (Cr)	2013/08/07		95	%	41 - 159

AECOM
Attention: NICK OKE
Client Project #: 60299674, CAM-C
P.O. #: 700266069
Site Location:

Quality Assurance Report (Continued)

Maxxam Job Number: CB367287

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7056652	ST4	QC Standard	Total Cobalt (Co)	2013/08/07		102	%	75 - 125
			Total Copper (Cu)	2013/08/07		106	%	73 - 127
			Total Lead (Pb)	2013/08/07		99	%	54 - 146
			Total Nickel (Ni)	2013/08/07		114	%	61 - 139
			Total Vanadium (V)	2013/08/07		110	%	50 - 150
			Total Zinc (Zn)	2013/08/07		113	%	72 - 128
		Spiked Blank	Total Antimony (Sb)	2013/08/07		100	%	75 - 125
			Total Arsenic (As)	2013/08/07		97	%	75 - 125
			Total Barium (Ba)	2013/08/07		99	%	75 - 125
			Total Beryllium (Be)	2013/08/07		97	%	75 - 125
			Total Cadmium (Cd)	2013/08/07		97	%	75 - 125
			Total Chromium (Cr)	2013/08/07		92	%	75 - 125
			Total Cobalt (Co)	2013/08/07		95	%	75 - 125
			Total Copper (Cu)	2013/08/07		96	%	75 - 125
			Total Lead (Pb)	2013/08/07		97	%	75 - 125
			Total Mercury (Hg)	2013/08/07		110	%	75 - 125
			Total Molybdenum (Mo)	2013/08/07		96	%	75 - 125
			Total Nickel (Ni)	2013/08/07		96	%	75 - 125
			Total Selenium (Se)	2013/08/07		94	%	75 - 125
			Total Silver (Ag)	2013/08/07		90	%	75 - 125
			Total Thallium (Tl)	2013/08/07		96	%	75 - 125
			Total Tin (Sn)	2013/08/07		89	%	75 - 125
			Total Uranium (U)	2013/08/07		102	%	75 - 125
			Total Vanadium (V)	2013/08/07		95	%	75 - 125
			Total Zinc (Zn)	2013/08/07		98	%	75 - 125
		Method Blank	Total Antimony (Sb)	2013/08/08	<1.0		mg/kg	
			Total Arsenic (As)	2013/08/08	<1.0		mg/kg	
			Total Barium (Ba)	2013/08/08	<10		mg/kg	
			Total Beryllium (Be)	2013/08/08	<0.40		mg/kg	
			Total Cadmium (Cd)	2013/08/08	<0.10		mg/kg	
			Total Chromium (Cr)	2013/08/08	<1.0		mg/kg	
			Total Cobalt (Co)	2013/08/08	<1.0		mg/kg	
			Total Copper (Cu)	2013/08/08	<5.0		mg/kg	
			Total Lead (Pb)	2013/08/08	<1.0		mg/kg	
			Total Mercury (Hg)	2013/08/08	<0.050		mg/kg	
			Total Molybdenum (Mo)	2013/08/08	<0.40		mg/kg	
			Total Nickel (Ni)	2013/08/08	<1.0		mg/kg	
			Total Selenium (Se)	2013/08/08	<0.50		mg/kg	
			Total Silver (Ag)	2013/08/08	<1.0		mg/kg	
			Total Thallium (Tl)	2013/08/08	<0.30		mg/kg	
			Total Tin (Sn)	2013/08/08	<1.0		mg/kg	
			Total Uranium (U)	2013/08/08	<1.0		mg/kg	
			Total Vanadium (V)	2013/08/08	<1.0		mg/kg	
			Total Zinc (Zn)	2013/08/08	<10		mg/kg	
		RPD [HC1486-01]	Total Antimony (Sb)	2013/08/07	NC		%	35
			Total Arsenic (As)	2013/08/07	NC		%	35
			Total Barium (Ba)	2013/08/07	NC		%	35
			Total Beryllium (Be)	2013/08/07	NC		%	35
			Total Cadmium (Cd)	2013/08/07	NC		%	35
			Total Chromium (Cr)	2013/08/07	NC		%	35
			Total Cobalt (Co)	2013/08/07	NC		%	35
			Total Copper (Cu)	2013/08/07	NC		%	35
			Total Lead (Pb)	2013/08/07	NC		%	35
			Total Mercury (Hg)	2013/08/07	NC		%	35
			Total Molybdenum (Mo)	2013/08/07	NC		%	35

AECOM
Attention: NICK OKE
Client Project #: 60299674, CAM-C
P.O. #: 700266069
Site Location:

Quality Assurance Report (Continued)

Maxxam Job Number: CB367287

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7056652	ST4	RPD [HC1486-01]	Total Nickel (Ni)	2013/08/07	NC		%	35
			Total Selenium (Se)	2013/08/07	NC		%	35
			Total Silver (Ag)	2013/08/07	NC		%	35
			Total Thallium (Tl)	2013/08/07	NC		%	35
			Total Tin (Sn)	2013/08/07	NC		%	35
			Total Uranium (U)	2013/08/07	NC		%	35
			Total Vanadium (V)	2013/08/07	10.9		%	35
			Total Zinc (Zn)	2013/08/07	NC		%	35
7057858	ST4	Matrix Spike [HC1492-01]	Total Antimony (Sb)	2013/08/08		92	%	75 - 125
			Total Arsenic (As)	2013/08/08		90	%	75 - 125
			Total Barium (Ba)	2013/08/08		91	%	75 - 125
			Total Beryllium (Be)	2013/08/08		95	%	75 - 125
			Total Cadmium (Cd)	2013/08/08		90	%	75 - 125
			Total Chromium (Cr)	2013/08/08		84	%	75 - 125
			Total Cobalt (Co)	2013/08/08		85	%	75 - 125
			Total Copper (Cu)	2013/08/08		88	%	75 - 125
			Total Lead (Pb)	2013/08/08		93	%	75 - 125
			Total Mercury (Hg)	2013/08/08		95	%	75 - 125
			Total Molybdenum (Mo)	2013/08/08		92	%	75 - 125
			Total Nickel (Ni)	2013/08/08		87	%	75 - 125
			Total Selenium (Se)	2013/08/08		90	%	75 - 125
			Total Silver (Ag)	2013/08/08		83	%	75 - 125
			Total Thallium (Tl)	2013/08/08		93	%	75 - 125
			Total Tin (Sn)	2013/08/08		90	%	75 - 125
			Total Uranium (U)	2013/08/08		92	%	75 - 125
			Total Vanadium (V)	2013/08/08		84	%	75 - 125
			Total Zinc (Zn)	2013/08/08		90	%	75 - 125
		QC Standard	Total Arsenic (As)	2013/08/08		120	%	50 - 150
			Total Barium (Ba)	2013/08/08		111	%	69 - 131
			Total Chromium (Cr)	2013/08/08		105	%	41 - 159
			Total Cobalt (Co)	2013/08/08		106	%	75 - 125
			Total Copper (Cu)	2013/08/08		108	%	73 - 127
			Total Lead (Pb)	2013/08/08		103	%	54 - 146
			Total Nickel (Ni)	2013/08/08		120	%	61 - 139
			Total Vanadium (V)	2013/08/08		121	%	50 - 150
			Total Zinc (Zn)	2013/08/08		118	%	72 - 128
		Spiked Blank	Total Antimony (Sb)	2013/08/08		96	%	75 - 125
			Total Arsenic (As)	2013/08/08		94	%	75 - 125
			Total Barium (Ba)	2013/08/08		95	%	75 - 125
			Total Beryllium (Be)	2013/08/08		97	%	75 - 125
			Total Cadmium (Cd)	2013/08/08		93	%	75 - 125
			Total Chromium (Cr)	2013/08/08		86	%	75 - 125
			Total Cobalt (Co)	2013/08/08		90	%	75 - 125
			Total Copper (Cu)	2013/08/08		93	%	75 - 125
			Total Lead (Pb)	2013/08/08		95	%	75 - 125
			Total Mercury (Hg)	2013/08/08		100	%	75 - 125
			Total Molybdenum (Mo)	2013/08/08		95	%	75 - 125
			Total Nickel (Ni)	2013/08/08		92	%	75 - 125
			Total Selenium (Se)	2013/08/08		94	%	75 - 125
			Total Silver (Ag)	2013/08/08		86	%	75 - 125
			Total Thallium (Tl)	2013/08/08		94	%	75 - 125
			Total Tin (Sn)	2013/08/08		91	%	75 - 125
			Total Uranium (U)	2013/08/08		101	%	75 - 125
			Total Vanadium (V)	2013/08/08		88	%	75 - 125

AECOM
Attention: NICK OKE
Client Project #: 60299674, CAM-C
P.O. #: 700266069
Site Location:

Quality Assurance Report (Continued)

Maxxam Job Number: CB367287

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7057858	ST4	Spiked Blank	Total Zinc (Zn)	2013/08/08		93	%	75 - 125
		Method Blank	Total Antimony (Sb)	2013/08/08	<1.0		mg/kg	
			Total Arsenic (As)	2013/08/08	<1.0		mg/kg	
			Total Barium (Ba)	2013/08/08	<10		mg/kg	
			Total Beryllium (Be)	2013/08/08	<0.40		mg/kg	
			Total Cadmium (Cd)	2013/08/08	<0.10		mg/kg	
			Total Chromium (Cr)	2013/08/08	<1.0		mg/kg	
			Total Cobalt (Co)	2013/08/08	<1.0		mg/kg	
			Total Copper (Cu)	2013/08/08	<5.0		mg/kg	
			Total Lead (Pb)	2013/08/08	<1.0		mg/kg	
			Total Mercury (Hg)	2013/08/08	0.087, RDL=0.050		mg/kg	
			Total Molybdenum (Mo)	2013/08/08	<0.40		mg/kg	
			Total Nickel (Ni)	2013/08/08	<1.0		mg/kg	
			Total Selenium (Se)	2013/08/08	<0.50		mg/kg	
			Total Silver (Ag)	2013/08/08	<1.0		mg/kg	
			Total Thallium (Tl)	2013/08/08	<0.30		mg/kg	
			Total Tin (Sn)	2013/08/08	<1.0		mg/kg	
			Total Uranium (U)	2013/08/08	<1.0		mg/kg	
			Total Vanadium (V)	2013/08/08	<1.0		mg/kg	
			Total Zinc (Zn)	2013/08/08	<10		mg/kg	
		RPD [HC1492-01]	Total Antimony (Sb)	2013/08/08	NC		%	35
			Total Arsenic (As)	2013/08/08	NC		%	35
			Total Barium (Ba)	2013/08/08	NC		%	35
			Total Beryllium (Be)	2013/08/08	NC		%	35
			Total Cadmium (Cd)	2013/08/08	NC		%	35
			Total Chromium (Cr)	2013/08/08	NC		%	35
			Total Cobalt (Co)	2013/08/08	NC		%	35
			Total Copper (Cu)	2013/08/08	NC		%	35
			Total Lead (Pb)	2013/08/08	NC		%	35
			Total Mercury (Hg)	2013/08/08	NC		%	35
			Total Molybdenum (Mo)	2013/08/08	NC		%	35
			Total Nickel (Ni)	2013/08/08	NC		%	35
			Total Selenium (Se)	2013/08/08	NC		%	35
			Total Silver (Ag)	2013/08/08	NC		%	35
			Total Thallium (Tl)	2013/08/08	NC		%	35
			Total Tin (Sn)	2013/08/08	NC		%	35
			Total Uranium (U)	2013/08/08	NC		%	35
			Total Vanadium (V)	2013/08/08	NC		%	35
			Total Zinc (Zn)	2013/08/08	NC		%	35
7058697	SMZ	QC Standard	Soluble (2:1) pH	2013/08/08		99	%	98 - 102
		Spiked Blank	Soluble (2:1) pH	2013/08/08		100	%	97 - 103
		RPD	Soluble (2:1) pH	2013/08/08	0.5		%	5
7058813	SMZ	QC Standard	Soluble (2:1) pH	2013/08/08		99	%	98 - 102
		Spiked Blank	Soluble (2:1) pH	2013/08/08		100	%	97 - 103
		RPD [HC1490-01]	Soluble (2:1) pH	2013/08/08	0.8		%	5
7084074	OG1	RPD	Actinolite	2013/08/15	NC		%	N/A
			Amosite	2013/08/15	NC		%	N/A
			Anthophyllite	2013/08/15	NC		%	N/A
			Chrysotile	2013/08/15	NC		%	N/A
			Crocidolite	2013/08/15	NC		%	N/A
			Tremolite	2013/08/15	NC		%	N/A
			Cellulose	2013/08/15	0		%	N/A
			Filler	2013/08/15	0		%	N/A
			Glass Fibres	2013/08/15	NC		%	N/A
			Hair	2013/08/15	NC		%	N/A

AECOM
Attention: NICK OKE
Client Project #: 60299674, CAM-C
P.O. #: 700266069
Site Location:

Quality Assurance Report (Continued)

Maxxam Job Number: CB367287

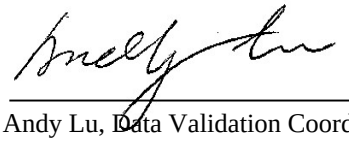
QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7084074	OG1	RPD	Other Fibers	2013/08/15	NC		%	N/A

N/A = Not Applicable
Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.
QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.
Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was not sufficiently significant to permit a reliable recovery calculation.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.
(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

Validation Signature Page

Maxxam Job #: B367287

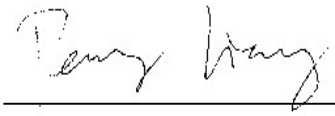
The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Andy Lu, Data Validation Coordinator



Jeanette Olivares, Senior Analyst



Peng Liang, Analyst II

==========

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Maxxam Analytics International Corporation o/a Maxxam Analytics

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CHAIN OF CUSTODY RECORD

INVOICE INFORMATION:		REPORT INFORMATION (if differs from invoice):		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#2597 PUBLIC WORKS & GOVERNMENT SERVI	Company Name:	#25925 AECOM	Quotation #:		MAXXAM JOB #:	BOTTLE ORDER #:
Contact Name:	Jessie Hoyt	Contact Name:	NICK OKE	P.O. #:	700266069		405374
Address:	TELUS TOWER NORTH, 5th FLOOR 10025 JASP	Address:	17007 - 107 Avenue	Project #:	60299674	CHAIN OF CUSTODY #:	PROJECT MANAGER:
	EDMONTON AB T5J 1S6		, Edmonton AB T5S 1G3	Project Name:	CAM-C	C#405374-05-01	Geraldyn Gouthro
Phone:	(780)497-3786 Fax: (780)497-3842	Phone:	(780)486-4057 Fax:	Site #:			
Email:	jessie.hoyt@psgsc-tpsgc.gc.ca	Email:	nick.oke@aecom.com eva.schultz	Sampled By:	E. Schultz		

REGULATORY CRITERIA:

- [ ] ATI
- [x] CCME
- [ ] OTHER

SPECIAL INSTRUCTIONS

SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

ANALYSIS REQUESTED (Please be specific):

TURNAROUND TIME (TAT) REQUIRED:

PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS

Regular (Standard) TAT: [x]
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests are > 5 days - contact your Project Manager for details

Job Specific Rush TAT (if applies to entire submission) [ ]

Date Required: _____

Rush Confirmation Number: _____ *(call lab for #)*

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Metals Field Filtered ? (Y / N)	metals	Total PCB's	# of Bottles	Comments
1		SW#1 @0.25m	July 30	11:00	soil		✓	✓	1	
2		SLF#1 @0.5m		9:30			✓	✓	1	
3		SLF#2 @ 0.35m		9:45			✓	✓	1	
4		SLF#3@ 0.4m		9:55			✓	✓	1	
5		SLF#4@ 0.25m		10:10			✓	✓	1	
6		SLF#5@ 0.45m		10:30			✓	✓	1	
7		SLF#6@ 0.4m		10:45			✓	✓	1	
8		SLF#7@ 0.6m		11:00			✓	✓	1	
9		SLF#8@ 0.45m		11:10			✓	✓	1	
10		SLF#9@ 0.45m		11:15			✓	✓	1	

1-Aug-13 09:30
Geraldyn Gouthro
B367287
ACI INS-0059

RECEIVED IN YELLOWKNIFE
By: [signature] 0930
2013 -08- 01

Temp: 3 3 3 / 3 4 4 from Bags

*RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	# Jars Used and Not Submitted
Eva Schultz	July 31/13	1009	Yuanpeng Lin MY	2013/08/02	1550	

Laboratory Use Only

Time Sensitive	Temperature (°C) on Receipt	Custody Seal Intact on Cooler?
[ ]	5.9.4 / 4.6.5. / 5.5.4	[x] Yes [ ] No

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

** ALL SAMPLES ARE HELD FOR 60 DAYS AFTER SAMPLE RECEIPT, FOR SPECIAL REQUESTS CONTACT YOUR PROJECT MANAGER

White: Maxxam Yellow: Client

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9331 - 48th Street, Edmonton, Alberta Canada T6B 2R4 Tel:(780) 577-7100 Toll-free:800-653-6266 Fax:780-450-4187 www.maxxam.ca

CHAIN OF CUSTODY RECORD

INVOICE INFORMATION:		REPORT INFORMATION (if differs from invoice):		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#2597 PUBLIC WORKS & GOVERNMENT SERVI	Company Name:	#25925 AECOM	Quotation #:		MAXXAM JOB #:	BOTTLE ORDER #:
Contact Name:	Jessie Hoyt	Contact Name:	NICK OKE	P.O. #:	700266069	B367287	405374
Address:	TELUS TOWER NORTH, 5th FLOOR 10025 JASP	Address:	17007 - 107 Avenue	Project #:	60299674	CHAIN OF CUSTODY #:	PROJECT MANAGER:
	EDMONTON AB T5J 1S6		, Edmonton AB T5S 1G3	Project Name:		C#405374-08-01	Geraldyn Gouthro
Phone:	(780)497-3786 Fax: (780)497-3842	Phone:	(780)486-4057 Fax:	Site #:	CAM-C		
Email:	jessie.hoyt@psgsc-tpsgc.gc.ca	Email:	nick.oke@aecom.com eva.schultz@aecom.com	Sampled By:	E. Schultz		

REGULATORY CRITERIA:
- [ ] ATI
- [x] CCME
- [ ] OTHER

SPECIAL INSTRUCTIONS

ANALYSIS REQUESTED (Please be specific):

TURNAROUND TIME (TAT) REQUIRED:

PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS

Regular (Standard) TAT: [x]
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests are > 5 days - contact your Project Manager for details

Job Specific Rush TAT (if applies to entire submission) [ ]
Date Required: _____
Rush Confirmation Number: _____ (call lab for #)

SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Metals Field Filtered ? (Y / N)	Metals	Total PCBs	Asbestos	# of Bottles	Comments
1		SLF#10C0.45	July30	11:30	soil		✓	✓	✓	1	
2		ASB#1	↓	1:00	wall board				✓	1	
3		ASB#2		1:10	tile				✓	1	
4		ASB#3		1:15	wrap				✓	1	
5		ASB#4		1:20	↓				✓	1	
6											RECEIVED IN YELLOWKNIFE By: 0930 2013-08-01
7											
8											
9											Temp: 3 3 3 3 4 4 From Bags
10											

*RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	# Jars Used and Not Submitted	Laboratory Use Only: Time Sensitive	Temperature (°C) on Receipt	Custody Seal Intact on Cooler?
eva Schultz	July31/13	10:00	Yuanpeng Lin	2013/08/02	1550		[ ]	5.9 4.6.5 5.5.4	[ ] Yes [ ] No

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.
** ALL SAMPLES ARE HELD FOR 60 DAYS AFTER SAMPLE RECEIPT, FOR SPECIAL REQUESTS CONTACT YOUR PROJECT MANAGER

White: Maxxam Yellow: Client

Your Project #: B367287
Your C.O.C. #: na

Attention: Geraldlyn Gouthro
Maxxam Analytics
2021 41st Ave NE
Calgary, AB
T2E 6P2

Report Date: 2013/08/14

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B3C8567
Received: 2013/08/07, 09:10

Sample Matrix: Soil
Samples Received: 11

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Moisture	11	N/A	2013/08/09	CAM SOP-00445	R.Carter,1993
Polychlorinated Biphenyl in Soil	11	2013/08/10	2013/08/13	CAM SOP-00309	SW846 8082

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

Encryption Key

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

Shaun Nowickyj,
Email: SNowickyj@maxxam.ca
Phone# (905) 817-5700

==========

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Total cover pages: 1

Maxxam Job #: B3C8567
Report Date: 2013/08/14

Maxxam Analytics
Client Project #: B367287

RESULTS OF ANALYSES OF SOIL

Maxxam ID		SN8400	SN8401	SN8402	SN8403		
Sampling Date		2013/07/30 16:00	2013/07/30 09:30	2013/07/30 09:45	2013/07/30 09:55		
COC Number		na	na	na	na		
	Units	**HC1486\SW#1@0.25M**	**HC1487\SLF#1@0.5M**	**HC1488\SLF#2@0.35M**	**HC1489\SLF#3@0.41M**	**RDL**	**QC Batch**
Moisture	%	3.0	2.5	8.6	6.8	1.0	3309075

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		SN8404	SN8405	SN8406	SN8407		
Sampling Date		2013/07/30 10:10	2013/07/30 10:30	2013/07/30 10:45	2013/07/30 11:00		
COC Number		na	na	na	na		
	Units	**HC1490\SLF#4@0.25M**	**HC1491\SLF#5@0.45M**	**HC1492\SLF#6@0.4M**	**HC1493\SLF#7@0.6M**	**RDL**	**QC Batch**
Moisture	%	8.6	3.0	4.9	6.9	1.0	3309075

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		SN8408	SN8409	SN8409	SN8410		
Sampling Date		2013/07/30 11:10	2013/07/30 11:15	2013/07/30 11:15	2013/07/30 11:30		
COC Number		na	na	na	na		
	Units	**HC1494\SLF#8@0.45M**	**HC1495\SLF#9@0.45M**	**HC1495\SLF#9@0.45M Lab-Dup**	**HC1496\SLF#10@0.45**	**RDL**	**QC Batch**
Moisture	%	3.4	4.0	3.9	1.5	1.0	3309075

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B3C8567
Report Date: 2013/08/14

Maxxam Analytics
Client Project #: B367287

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		SN8400	SN8401	SN8401		
Sampling Date		2013/07/30 16:00	2013/07/30 09:30	2013/07/30 09:30		
COC Number		na	na	na		
	Units	**HC1486\SW#1@0.25M**	**HC1487\SLF#1@0.5M**	**HC1487\SLF#1@0.5M Lab-Dup**	**RDL**	**QC Batch**
Aroclor 1016	ug/g	<0.010	<0.010	<0.010	0.010	3310364
Aroclor 1221	ug/g	<0.010	<0.010	<0.010	0.010	3310364
Aroclor 1232	ug/g	<0.010	<0.010	<0.010	0.010	3310364
Aroclor 1242	ug/g	<0.010	<0.010	<0.010	0.010	3310364
Aroclor 1248	ug/g	<0.010	<0.010	<0.010	0.010	3310364
Aroclor 1254	ug/g	<0.010	<0.010	<0.010	0.010	3310364
Aroclor 1260	ug/g	<0.010	<0.010	<0.010	0.010	3310364
Aroclor 1262	ug/g	<0.010	<0.010	<0.010	0.010	3310364
Aroclor 1268	ug/g	<0.010	<0.010	<0.010	0.010	3310364
Total PCB	ug/g	<0.010	<0.010	<0.010	0.010	3310364
Surrogate Recovery (%)						
Decachlorobiphenyl	%	91	90	103	N/A	3310364

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

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Maxxam Job #: B3C8567
Report Date: 2013/08/14

Maxxam Analytics
Client Project #: B367287

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		SN8402	SN8403	SN8404		
Sampling Date		2013/07/30 09:45	2013/07/30 09:55	2013/07/30 10:10		
COC Number		na	na	na		
	Units	**HC1488\SLF#2@0.35M**	**HC1489\SLF#3@0.41M**	**HC1490\SLF#4@0.25M**	**RDL**	**QC Batch**
Aroclor 1016	ug/g	<0.010	<0.010	<0.010	0.010	3310364
Aroclor 1221	ug/g	<0.010	<0.010	<0.010	0.010	3310364
Aroclor 1232	ug/g	<0.010	<0.010	<0.010	0.010	3310364
Aroclor 1242	ug/g	<0.010	<0.010	<0.010	0.010	3310364
Aroclor 1248	ug/g	<0.010	<0.010	<0.010	0.010	3310364
Aroclor 1254	ug/g	<0.010	<0.010	<0.010	0.010	3310364
Aroclor 1260	ug/g	<0.010	<0.010	<0.010	0.010	3310364
Aroclor 1262	ug/g	<0.010	<0.010	<0.010	0.010	3310364
Aroclor 1268	ug/g	<0.010	<0.010	<0.010	0.010	3310364
Total PCB	ug/g	<0.010	<0.010	<0.010	0.010	3310364
Surrogate Recovery (%)						
Decachlorobiphenyl	%	94	95	91	N/A	3310364

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

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Maxxam Job #: B3C8567
Report Date: 2013/08/14

Maxxam Analytics
Client Project #: B367287

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		SN8405	SN8406	SN8407		
Sampling Date		2013/07/30 10:30	2013/07/30 10:45	2013/07/30 11:00		
COC Number		na	na	na		
	Units	**HC1491\SLF#5@0.45M**	**HC1492\SLF#6@0.4M**	**HC1493\SLF#7@0.6M**	**RDL**	**QC Batch**
Aroclor 1016	ug/g	<0.010	<0.010	<0.010	0.010	3310364
Aroclor 1221	ug/g	<0.010	<0.010	<0.010	0.010	3310364
Aroclor 1232	ug/g	<0.010	<0.010	<0.010	0.010	3310364
Aroclor 1242	ug/g	<0.010	<0.010	<0.010	0.010	3310364
Aroclor 1248	ug/g	<0.010	<0.010	<0.010	0.010	3310364
Aroclor 1254	ug/g	<0.010	<0.010	<0.010	0.010	3310364
Aroclor 1260	ug/g	<0.010	<0.010	<0.010	0.010	3310364
Aroclor 1262	ug/g	<0.010	<0.010	<0.010	0.010	3310364
Aroclor 1268	ug/g	<0.010	<0.010	<0.010	0.010	3310364
Total PCB	ug/g	<0.010	<0.010	<0.010	0.010	3310364
Surrogate Recovery (%)						
Decachlorobiphenyl	%	89	91	91	N/A	3310364

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

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Maxxam Job #: B3C8567
Report Date: 2013/08/14

Maxxam Analytics
Client Project #: B367287

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		SN8408	SN8409	SN8410		
Sampling Date		2013/07/30 11:10	2013/07/30 11:15	2013/07/30 11:30		
COC Number		na	na	na		
	Units	**HC1494\SLF#8@0.45M**	**HC1495\SLF#9@0.45M**	**HC1496\SLF#10@0.45**	**RDL**	**QC Batch**
Aroclor 1016	ug/g	<0.010	<0.010	<0.010	0.010	3310364
Aroclor 1221	ug/g	<0.010	<0.010	<0.010	0.010	3310364
Aroclor 1232	ug/g	<0.010	<0.010	<0.010	0.010	3310364
Aroclor 1242	ug/g	<0.010	<0.010	<0.010	0.010	3310364
Aroclor 1248	ug/g	<0.010	<0.010	<0.010	0.010	3310364
Aroclor 1254	ug/g	<0.010	<0.010	<0.010	0.010	3310364
Aroclor 1260	ug/g	<0.010	<0.010	<0.010	0.010	3310364
Aroclor 1262	ug/g	<0.010	<0.010	<0.010	0.010	3310364
Aroclor 1268	ug/g	<0.010	<0.010	<0.010	0.010	3310364
Total PCB	ug/g	<0.010	<0.010	<0.010	0.010	3310364
Surrogate Recovery (%)						
Decachlorobiphenyl	%	88	90	88	N/A	3310364

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

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

Maxxam Job #: B3C8567
Report Date: 2013/08/14

Maxxam Analytics
Client Project #: B367287

Test Summary

Maxxam ID SN8400 **Collected** 2013/07/30
Sample ID HC1486\SW#1@0.25M **Shipped**
Matrix Soil **Received** 2013/08/07

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Moisture	BAL	3309075	N/A	2013/08/09	Chamika Deeyagaha
Polychlorinated Biphenyl in Soil	GC/ECD	3310364	2013/08/10	2013/08/13	Li Peng

Maxxam ID SN8401 **Collected** 2013/07/30
Sample ID HC1487\SLF#1@0.5M **Shipped**
Matrix Soil **Received** 2013/08/07

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Moisture	BAL	3309075	N/A	2013/08/09	Chamika Deeyagaha
Polychlorinated Biphenyl in Soil	GC/ECD	3310364	2013/08/10	2013/08/13	Li Peng

Maxxam ID SN8401 Dup **Collected** 2013/07/30
Sample ID HC1487\SLF#1@0.5M **Shipped**
Matrix Soil **Received** 2013/08/07

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Polychlorinated Biphenyl in Soil	GC/ECD	3310364	2013/08/10	2013/08/13	Li Peng

Maxxam ID SN8402 **Collected** 2013/07/30
Sample ID HC1488\SLF#2@0.35M **Shipped**
Matrix Soil **Received** 2013/08/07

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Moisture	BAL	3309075	N/A	2013/08/09	Chamika Deeyagaha
Polychlorinated Biphenyl in Soil	GC/ECD	3310364	2013/08/10	2013/08/13	Li Peng

Maxxam ID SN8403 **Collected** 2013/07/30
Sample ID HC1489\SLF#3@0.41M **Shipped**
Matrix Soil **Received** 2013/08/07

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Moisture	BAL	3309075	N/A	2013/08/09	Chamika Deeyagaha
Polychlorinated Biphenyl in Soil	GC/ECD	3310364	2013/08/10	2013/08/13	Li Peng

Maxxam ID SN8404 **Collected** 2013/07/30
Sample ID HC1490\SLF#4@0.25M **Shipped**
Matrix Soil **Received** 2013/08/07

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Moisture	BAL	3309075	N/A	2013/08/09	Chamika Deeyagaha
Polychlorinated Biphenyl in Soil	GC/ECD	3310364	2013/08/10	2013/08/13	Li Peng

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Maxxam Job #: B3C8567
Report Date: 2013/08/14

Maxxam Analytics
Client Project #: B367287

Test Summary

Maxxam ID SN8405 **Collected** 2013/07/30
Sample ID HC1491\SLF#5@0.45M **Shipped**
Matrix Soil **Received** 2013/08/07

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Moisture	BAL	3309075	N/A	2013/08/09	Chamika Deeyagaha
Polychlorinated Biphenyl in Soil	GC/ECD	3310364	2013/08/10	2013/08/13	Li Peng

Maxxam ID SN8406 **Collected** 2013/07/30
Sample ID HC1492\SLF#6@0.4M **Shipped**
Matrix Soil **Received** 2013/08/07

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Moisture	BAL	3309075	N/A	2013/08/09	Chamika Deeyagaha
Polychlorinated Biphenyl in Soil	GC/ECD	3310364	2013/08/10	2013/08/13	Li Peng

Maxxam ID SN8407 **Collected** 2013/07/30
Sample ID HC1493\SLF#7@0.6M **Shipped**
Matrix Soil **Received** 2013/08/07

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Moisture	BAL	3309075	N/A	2013/08/09	Chamika Deeyagaha
Polychlorinated Biphenyl in Soil	GC/ECD	3310364	2013/08/10	2013/08/13	Li Peng

Maxxam ID SN8408 **Collected** 2013/07/30
Sample ID HC1494\SLF#8@0.45M **Shipped**
Matrix Soil **Received** 2013/08/07

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Moisture	BAL	3309075	N/A	2013/08/09	Chamika Deeyagaha
Polychlorinated Biphenyl in Soil	GC/ECD	3310364	2013/08/10	2013/08/13	Li Peng

Maxxam ID SN8409 **Collected** 2013/07/30
Sample ID HC1495\SLF#9@0.45M **Shipped**
Matrix Soil **Received** 2013/08/07

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Moisture	BAL	3309075	N/A	2013/08/09	Chamika Deeyagaha
Polychlorinated Biphenyl in Soil	GC/ECD	3310364	2013/08/10	2013/08/13	Li Peng

Maxxam ID SN8409 Dup **Collected** 2013/07/30
Sample ID HC1495\SLF#9@0.45M **Shipped**
Matrix Soil **Received** 2013/08/07

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Moisture	BAL	3309075	N/A	2013/08/09	Chamika Deeyagaha

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Maxxam Job #: B3C8567
Report Date: 2013/08/14

Maxxam Analytics
Client Project #: B367287

Test Summary

Maxxam ID SN8410
Sample ID HC1496\SLF#10@0.45
Matrix Soil

Collected 2013/07/30
Shipped
Received 2013/08/07

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Moisture	BAL	3309075	N/A	2013/08/09	Chamika Deeyagaha
Polychlorinated Biphenyl in Soil	GC/ECD	3310364	2013/08/10	2013/08/13	Li Peng

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Maxxam Job #: B3C8567
Report Date: 2013/08/14

Maxxam Analytics
Client Project #: B367287

Package 1	9.0°C

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

GENERAL COMMENTS

Results relate only to the items tested.

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Maxxam Analytics
Attention: Geraldlyn Gouthro
Client Project #: B367287
P.O. #:
Site Location:

Quality Assurance Report

Maxxam Job Number: MB3C8567

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
3309075	THT	RPD - Sample/Sample Dup	Moisture	2013/08/09	NC		%	20
3310364	LPG	Matrix Spike	Decachlorobiphenyl	2013/08/13		95	%	60 - 130
		Matrix Spike (SN8401)	Aroclor 1260	2013/08/13		104	%	60 - 130
			Total PCB	2013/08/13		104	%	60 - 130
		Spiked Blank	Decachlorobiphenyl	2013/08/13		98	%	60 - 130
			Aroclor 1260	2013/08/13		109	%	60 - 130
			Total PCB	2013/08/13		109	%	60 - 130
		Method Blank	Decachlorobiphenyl	2013/08/13		103	%	60 - 130
			Aroclor 1016	2013/08/13	<0.010		ug/g	
			Aroclor 1221	2013/08/13	<0.010		ug/g	
			Aroclor 1232	2013/08/13	<0.010		ug/g	
			Aroclor 1242	2013/08/13	<0.010		ug/g	
			Aroclor 1248	2013/08/13	<0.010		ug/g	
			Aroclor 1254	2013/08/13	<0.010		ug/g	
			Aroclor 1260	2013/08/13	<0.010		ug/g	
			Aroclor 1262	2013/08/13	<0.010		ug/g	
			Aroclor 1268	2013/08/13	<0.010		ug/g	
			Total PCB	2013/08/13	<0.010		ug/g	
		RPD - Sample/Sample Dup	Aroclor 1016	2013/08/13	NC		%	50
			Aroclor 1221	2013/08/13	NC		%	50
			Aroclor 1232	2013/08/13	NC		%	50
			Aroclor 1242	2013/08/13	NC		%	50
			Aroclor 1248	2013/08/13	NC		%	50
			Aroclor 1254	2013/08/13	NC		%	50
			Aroclor 1260	2013/08/13	NC		%	50
			Aroclor 1262	2013/08/13	NC		%	50
			Aroclor 1268	2013/08/13	NC		%	50
			Total PCB	2013/08/13	NC		%	50

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.
Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.

Validation Signature Page

Maxxam Job #: B3C8567

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

Charles Ancker, B.Sc., M.Sc., C.Chem, Senior Analyst

Cristina Carriere, Scientific Services

==========

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

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Your P.O. #: 700266069
Your Project #: 60299674, CAM-C

Attention: NICK OKE
AECOM
EDMONTON
17007 - 107 Avenue
, Edmonton, AB
CANADA T5S 1G3

Your C.O.C. #: 40537430, 405374-30-01, 405374-01-01, 405374-29-01, 405374-02-01, 405374-03-01, 405374-04-01

Report Date: 2013/08/16

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B367290
Received: 2013/08/01, 09:30

Sample Matrix: Soil
Samples Received: 50

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
BTEX/F1 by HS GC/MS (MeOH extract)	18	2013/08/03	2013/08/07	AB SOP-00039	CCME, EPA 8260C
BTEX/F1 by HS GC/MS (MeOH extract)	13	2013/08/03	2013/08/08	AB SOP-00039	CCME, EPA 8260C
CCME Hydrocarbons (F2-F4 in soil)	2	2013/08/03	2013/08/04	AB SOP-00040 AB SOP-00036	CCME PHC-CWS
CCME Hydrocarbons (F2-F4 in soil)	24	2013/08/03	2013/08/05	AB SOP-00040 AB SOP-00036	CCME PHC-CWS
CCME Hydrocarbons (F2-F4 in soil)	5	2013/08/03	2013/08/07	AB SOP-00040 AB SOP-00036	CCME PHC-CWS
Elements by ICPMS - Soils	10	2013/08/07	2013/08/07	AB SOP-00043	EPA 200.8
Elements by ICPMS - Soils	6	2013/08/07	2013/08/08	AB SOP-00043	EPA 200.8
Elements by ICPMS - Soils	3	2013/08/13	2013/08/13	AB SOP-00043	EPA 200.8
Moisture	43	N/A	2013/08/04	AB SOP-00002	CCME PHC-CWS
Moisture	4	N/A	2013/08/06	AB SOP-00002	CCME PHC-CWS
pH @25C (1:2 Extract)	16	2013/08/08	2013/08/08	AB SOP-00006	SSMA 16.2
pH @25C (1:2 Extract)	3	2013/08/13	2013/08/13	AB SOP-00006	SSMA 16.2

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

Encryption Key

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

Geraldyn Gouthro, Client Service Specialist
Email: GGouthro@maxxam.ca
Phone# (780) 577-7173

==========

Your P.O. #: 700266069
Your Project #: 60299674, CAM-C

Attention: NICK OKE
AECOM
EDMONTON
17007 - 107 Avenue
, Edmonton, AB
CANADA T5S 1G3

Your C.O.C. #: 40537430, 405374-30-01, 405374-01-01, 405374-29-01, 405374-02-01, 405374-03-01, 405374-04-01

Report Date: 2013/08/16

CERTIFICATE OF ANALYSIS

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Maxxam Analytics International Corporation o/a Maxxam Analytics Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone(403) 291-3077 Fax(403) 291-9468

Maxxam Job #: B367290
Report Date: 2013/08/16

AECOM
Client Project #: 60299674, CAM-C

Your P.O. #: 700266069

RESULTS OF CHEMICAL ANALYSES OF SOIL

Maxxam ID		HC1531	HC1532		HC1533	HC1534		
Sampling Date		2013/07/29 16:15	2013/07/29 16:10		2013/07/29 16:40	2013/07/29 16:55		
COC Number		405374-30-01	405374-30-01		405374-30-01	405374-30-01		
	UNITS	**TP13-7 @ 1.25M**	**TP13-7 @ 0.75M**	**QC Batch**	**TP13-8 @ 0.85M**	**TP13-9 @ 0.4M**	**RDL**	**QC Batch**
Physical Properties								
Moisture	%	3.5	2.6	7047627	2.7	3.9	0.30	7047640

RDL = Reportable Detection Limit

Maxxam ID		HC1535	HC1536	HC1537	HC1538	HC1539		
Sampling Date		2013/07/29 17:00	2013/07/29 17:15	2013/07/29 17:20	2013/07/29 17:25	2013/07/29 17:30		
COC Number		405374-30-01	405374-30-01	405374-30-01	405374-30-01	405374-30-01		
	UNITS	**TP13-9 @ 0.81M**	**TP13-10 @ 0.6M**	**TP13-10 @ 1.24M**	**TP13-10A @ 1.24M**	**TP13-11 @ 0.4M**	**RDL**	**QC Batch**
Physical Properties								
Moisture	%	12	6.4	9.0	9.0	3.5	0.30	7047640

RDL = Reportable Detection Limit

Maxxam ID		HC1540	HC1540	HC1549	HC1550	HC1551		
Sampling Date		2013/07/29 17:40	2013/07/29 17:40	2013/07/29 17:45	2013/07/29 18:00	2013/07/30 09:30		
COC Number		405374-30-01	405374-30-01	405374-01-01	405374-01-01	405374-01-01		
	UNITS	**TP13-11 @ 0.64M**	**TP13-11 @ 0.64M Lab-Dup**	**TP13-12 @ 0.7M**	**TP13-13 @ 0.7M**	**TP13-14 @ 0.65M**	**RDL**	**QC Batch**
Physical Properties								
Moisture	%	6.5	6.2	2.2	11	2.3	0.30	7047640

RDL = Reportable Detection Limit

Maxxam Job #: B367290
Report Date: 2013/08/16

AECOM
Client Project #: 60299674, CAM-C

Your P.O. #: 700266069

RESULTS OF CHEMICAL ANALYSES OF SOIL

Maxxam ID		HC1552	HC1553	HC1554	HC1555	HC1556		
Sampling Date		2013/07/30 09:40	2013/07/30 09:50	2013/07/30 09:55	2013/07/30 10:15	2013/07/30 11:00		
COC Number		405374-01-01	405374-01-01	405374-01-01	405374-01-01	405374-01-01		
	UNITS	**TP13-14 @ 1.2M**	**TP13-15 @ 0.55M**	**TP13-15 @ 1.01M**	**TP13-16 @ 1.0M**	**TP13-17 @ 0.55M**	**RDL**	**QC Batch**
Physical Properties								
Moisture	%	2.0	3.1	3.7	11	8.9	0.30	7047627

RDL = Reportable Detection Limit

Maxxam ID		HC1557	HC1558	HC1564	HC1565	HC1566		
Sampling Date		2013/07/30 11:30	2013/07/30 11:45	2013/07/30 13:10	2013/07/30 13:30	2013/07/30 13:55		
COC Number		405374-01-01	405374-01-01	405374-29-01	405374-29-01	405374-29-01		
	UNITS	**TP13-18 @ 0.5M**	**TP13-18 @ 1.0M**	**TP13-01 @ 1.2M**	**TP13-02 @ 0.5M**	**TP13-3 @ 0.7M**	**RDL**	**QC Batch**
Physical Properties								
Moisture	%	6.1	6.4	6.2	1.8	3.3	0.30	7047627

RDL = Reportable Detection Limit

Maxxam ID		HC1567	HC1567	HC1568		HC1569		
Sampling Date		2013/07/30 14:20	2013/07/30 14:20	2013/07/30 15:00		2013/07/30 15:10		
COC Number		405374-29-01	405374-29-01	405374-29-01		405374-29-01		
	UNITS	**TP13-4 @ 0.7M**	**TP13-4 @ 0.7M Lab-Dup**	**TP13-5 @ 1.05M**	**QC Batch**	**TP13-5 @ 1.25M**	**RDL**	**QC Batch**
Physical Properties								
Moisture	%	3.3	3.4	2.8	7047627	3.1	0.30	7047640

RDL = Reportable Detection Limit

Maxxam Job #: B367290
Report Date: 2013/08/16

AECOM
Client Project #: 60299674, CAM-C

Your P.O. #: 700266069

RESULTS OF CHEMICAL ANALYSES OF SOIL

Maxxam ID		HC1570	HC1571	HC1572	HC1581		
Sampling Date		2013/07/30 15:15	2013/07/30 15:45	2013/07/30 15:50	2013/07/30 12:00		
COC Number		405374-29-01	405374-29-01	405374-29-01	405374-02-01		
	UNITS	**TP13-5 @ 1.43M**	**TP13-6 @ 0.43M**	**TP13-6 @ 0.92M**	**TP13-19 @ 0.64M**	**RDL**	**QC Batch**
Physical Properties							
Moisture	%	3.1	2.6	2.7	2.8	0.30	7047640

RDL = Reportable Detection Limit

Maxxam ID		HC1582		HC1583	HC1583	HC1584		
Sampling Date		2013/07/30 12:15		2013/07/30 12:45	2013/07/30 12:45	2013/07/30 14:30		
COC Number		405374-02-01		405374-02-01	405374-02-01	405374-02-01		
	UNITS	**TP13-19 @ 1.0M**	**QC Batch**	**TP13-20 @ 0.05M**	**TP13-20 @ 0.05M Lab-Dup**	**TP13-21 @ 0.05**	**RDL**	**QC Batch**
Soluble Parameters								
Soluble (2:1) pH	N/A	N/A	N/A	8.01	8.05	8.13	N/A	7058697
Physical Properties								
Moisture	%	4.8	7047627	1.8	N/A	0.50	0.30	7047647

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam ID		HC1585		HC1586	HC1587	HC1588	HC1589		
Sampling Date		2013/07/30 15:00		2013/07/29	2013/07/29	2013/07/29	2013/07/30		
COC Number		405374-02-01		405374-02-01	405374-02-01	405374-02-01	405374-02-01		
	UNITS	**TP13-22 @ 0.05**	**QC Batch**	**TP13-05 @ 0.05M**	**TP13-06 @ 0.05M**	**TP13-09 @ 0.05M**	**TP13-10 @ 0.05**	**RDL**	**QC Batch**
Soluble Parameters									
Soluble (2:1) pH	N/A	8.36	7058697	8.35	8.15	7.21	8.17	N/A	7058697
Physical Properties									
Moisture	%	1.5	7049686	1.0	1.2	1.5	0.90	0.30	7047647

RDL = Reportable Detection Limit

Maxxam Job #: B367290
Report Date: 2013/08/16

AECOM
Client Project #: 60299674, CAM-C

Your P.O. #: 700266069

RESULTS OF CHEMICAL ANALYSES OF SOIL

Maxxam ID		HC1590	HC1597	HC1598	HC1599		HC1600		
Sampling Date		2013/07/30	2013/07/30	2013/07/30	2013/07/30		2013/07/30		
COC Number		405374-02-01	405374-03-01	405374-03-01	405374-03-01		405374-03-01		
	UNITS	**TP13-11 @ 0.05**	**TP13-12 @ 0.05M**	**TP13-15 @ 0.05M**	**TP13-20B @ 0.05M**	**QC Batch**	**TP13-20 @ 0.5**	**RDL**	**QC Batch**
Soluble Parameters									
Soluble (2:1) pH	N/A	7.51	8.27	7.91	8.09	7058697	8.75	N/A	7072655
Physical Properties									
Moisture	%	1.8	0.90	0.30	1.9	7047647	N/A	0.30	N/A

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam ID		HC1600	HC1601	HC1602		HC1603	HC1604		
Sampling Date		2013/07/30	2013/07/30	2013/07/30		2013/07/30 14:00	2013/07/30 14:15		
COC Number		405374-03-01	405374-03-01	405374-03-01		405374-03-01	405374-03-01		
	UNITS	**TP13-20 @ 0.5 Lab-Dup**	**TP13-21 @ 0.5M**	**TP13-22 @ 0.05M**	**QC Batch**	**SO #1 @ 0.34M**	**SO #2 @ 0.41M**	**RDL**	**QC Batch**
Soluble Parameters									
Soluble (2:1) pH	N/A	8.83	8.67	8.43	7072655	8.59	8.59	N/A	7058697
Physical Properties									
Moisture	%	N/A	N/A	N/A	N/A	15	3.5	0.30	7047647

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam ID		HC1605	HC1606	HC1607		
Sampling Date		2013/07/30 14:30	2013/07/30 14:40	2013/07/30 14:50		
COC Number		405374-03-01	405374-03-01	405374-04-01		
	UNITS	**SO #3 @ 0.38M**	**SO #4 @ 0.31M**	**SO #5 @ 0.35M**	**RDL**	**QC Batch**
Soluble Parameters						
Soluble (2:1) pH	N/A	8.19	7.62	8.40	N/A	7058697
Physical Properties						
Moisture	%	4.0	11	3.4	0.30	7049686

RDL = Reportable Detection Limit

Maxxam Job #: B367290
Report Date: 2013/08/16

AECOM
Client Project #: 60299674, CAM-C

Your P.O. #: 700266069

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		HC1531	HC1532	HC1533	HC1534		
Sampling Date		2013/07/29 16:15	2013/07/29 16:10	2013/07/29 16:40	2013/07/29 16:55		
COC Number		405374-30-01	405374-30-01	405374-30-01	405374-30-01		
	UNITS	**TP13-7 @ 1.25M**	**TP13-7 @ 0.75M**	**TP13-8 @ 0.85M**	**TP13-9 @ 0.4M**	**RDL**	**QC Batch**
Ext. Pet. Hydrocarbon							
F2 (C10-C16 Hydrocarbons)	mg/kg	90	<10	<10	2000	10	7047530
F3 (C16-C34 Hydrocarbons)	mg/kg	<50	<50	<50	290	50	7047530
F4 (C34-C50 Hydrocarbons)	mg/kg	<50	<50	<50	<50	50	7047530
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	Yes	N/A	7047530
Surrogate Recovery (%)							
O-TERPHENYL (sur.)	%	112	99	106	124	N/A	7047530

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam ID		HC1535	HC1536	HC1537	HC1537		
Sampling Date		2013/07/29 17:00	2013/07/29 17:15	2013/07/29 17:20	2013/07/29 17:20		
COC Number		405374-30-01	405374-30-01	405374-30-01	405374-30-01		
	UNITS	**TP13-9 @ 0.81M**	**TP13-10 @ 0.6M**	**TP13-10 @ 1.24M**	**TP13-10 @ 1.24M Lab-Dup**	**RDL**	**QC Batch**
Ext. Pet. Hydrocarbon							
F2 (C10-C16 Hydrocarbons)	mg/kg	1900	4500	560	560	10	7047530
F3 (C16-C34 Hydrocarbons)	mg/kg	250	500	440	450	50	7047530
F4 (C34-C50 Hydrocarbons)	mg/kg	<50	<50	<50	<50	50	7047530
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	Yes	N/A	7047530
Surrogate Recovery (%)							
O-TERPHENYL (sur.)	%	103	123	110	116	N/A	7047530

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: B367290
Report Date: 2013/08/16

AECOM
Client Project #: 60299674, CAM-C

Your P.O. #: 700266069

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		HC1538	HC1539	HC1540	HC1549		
Sampling Date		2013/07/29 17:25	2013/07/29 17:30	2013/07/29 17:40	2013/07/29 17:45		
COC Number		405374-30-01	405374-30-01	405374-30-01	405374-01-01		
	UNITS	**TP13-10A @ 1.24M**	**TP13-11 @ 0.4M**	**TP13-11 @ 0.64M**	**TP13-12 @ 0.7M**	**RDL**	**QC Batch**
Ext. Pet. Hydrocarbon							
F2 (C10-C16 Hydrocarbons)	mg/kg	880	800	4400	<10	10	7047530
F3 (C16-C34 Hydrocarbons)	mg/kg	700	260	520	<50	50	7047530
F4 (C34-C50 Hydrocarbons)	mg/kg	<50	<50	<50	<50	50	7047530
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	Yes	N/A	7047530
Surrogate Recovery (%)							
O-TERPHENYL (sur.)	%	110	96	129	116	N/A	7047530

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam ID		HC1550	HC1551	HC1552	HC1553		
Sampling Date		2013/07/29 18:00	2013/07/30 09:30	2013/07/30 09:40	2013/07/30 09:50		
COC Number		405374-01-01	405374-01-01	405374-01-01	405374-01-01		
	UNITS	**TP13-13 @ 0.7M**	**TP13-14 @ 0.65M**	**TP13-14 @ 1.2M**	**TP13-15 @ 0.55M**	**RDL**	**QC Batch**
Ext. Pet. Hydrocarbon							
F2 (C10-C16 Hydrocarbons)	mg/kg	7600	740	300	780	10	7047533
F3 (C16-C34 Hydrocarbons)	mg/kg	640	190	55	71	50	7047533
F4 (C34-C50 Hydrocarbons)	mg/kg	<50	<50	<50	<50	50	7047533
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	Yes	N/A	7047533
Surrogate Recovery (%)							
O-TERPHENYL (sur.)	%	110	118	96	100	N/A	7047533

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: B367290
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AECOM
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PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		HC1554	HC1555	HC1556	HC1557		
Sampling Date		2013/07/30 09:55	2013/07/30 10:15	2013/07/30 11:00	2013/07/30 11:30		
COC Number		405374-01-01	405374-01-01	405374-01-01	405374-01-01		
	UNITS	**TP13-15 @ 1.01M**	**TP13-16 @ 1.0M**	**TP13-17 @ 0.55M**	**TP13-18 @ 0.5M**	**RDL**	**QC Batch**
Ext. Pet. Hydrocarbon							
F2 (C10-C16 Hydrocarbons)	mg/kg	1900	450	1000	2100	10	7047533
F3 (C16-C34 Hydrocarbons)	mg/kg	71	88	93	110	50	7047533
F4 (C34-C50 Hydrocarbons)	mg/kg	<50	<50	<50	<50	50	7047533
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	Yes	N/A	7047533
Surrogate Recovery (%)							
O-TERPHENYL (sur.)	%	98	103	120	101	N/A	7047533

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam ID		HC1558	HC1558	HC1564	HC1565		
Sampling Date		2013/07/30 11:45	2013/07/30 11:45	2013/07/30 13:10	2013/07/30 13:30		
COC Number		405374-01-01	405374-01-01	405374-29-01	405374-29-01		
	UNITS	**TP13-18 @ 1.0M**	**TP13-18 @ 1.0M Lab-Dup**	**TP13-01 @ 1.2M**	**TP13-02 @ 0.5M**	**RDL**	**QC Batch**
Ext. Pet. Hydrocarbon							
F2 (C10-C16 Hydrocarbons)	mg/kg	4100	3500	<10	<10	10	7047533
F3 (C16-C34 Hydrocarbons)	mg/kg	190	160	<50	<50	50	7047533
F4 (C34-C50 Hydrocarbons)	mg/kg	<50	<50	<50	<50	50	7047533
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	Yes	N/A	7047533
Surrogate Recovery (%)							
O-TERPHENYL (sur.)	%	117	95	139 (1)	130	N/A	7047533

N/A = Not Applicable
RDL = Reportable Detection Limit
(1) Surrogate recovery is above control limit. This may represent a high bias for the parameters in this sample. However, since the results are non-detect, there is no impact on data quality.

Maxxam Job #: B367290
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PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		HC1566	HC1567	HC1568	HC1569		
Sampling Date		2013/07/30 13:55	2013/07/30 14:20	2013/07/30 15:00	2013/07/30 15:10		
COC Number		405374-29-01	405374-29-01	405374-29-01	405374-29-01		
	UNITS	**TP13-3 @ 0.7M**	**TP13-4 @ 0.7M**	**TP13-5 @ 1.05M**	**TP13-5 @ 1.25M**	**RDL**	**QC Batch**
Ext. Pet. Hydrocarbon							
F2 (C10-C16 Hydrocarbons)	mg/kg	<10	<10	940	3100	10	7047533
F3 (C16-C34 Hydrocarbons)	mg/kg	<50	<50	78	190	50	7047533
F4 (C34-C50 Hydrocarbons)	mg/kg	<50	<50	<50	<50	50	7047533
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	Yes	N/A	7047533
Surrogate Recovery (%)							
O-TERPHENYL (sur.)	%	123	122	117	115	N/A	7047533

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam ID		HC1570	HC1571	HC1572	HC1581		
Sampling Date		2013/07/30 15:15	2013/07/30 15:45	2013/07/30 15:50	2013/07/30 12:00		
COC Number		405374-29-01	405374-29-01	405374-29-01	405374-02-01		
	UNITS	**TP13-5 @ 1.43M**	**TP13-6 @ 0.43M**	**TP13-6 @ 0.92M**	**TP13-19 @ 0.64M**	**RDL**	**QC Batch**
Ext. Pet. Hydrocarbon							
F2 (C10-C16 Hydrocarbons)	mg/kg	770	1300	2700	120	10	7047533
F3 (C16-C34 Hydrocarbons)	mg/kg	53	<50	70	<50	50	7047533
F4 (C34-C50 Hydrocarbons)	mg/kg	<50	<50	<50	<50	50	7047533
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	Yes	N/A	7047533
Surrogate Recovery (%)							
O-TERPHENYL (sur.)	%	119	127	127	122	N/A	7047533

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: B367290
Report Date: 2013/08/16

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PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		HC1582		
Sampling Date		2013/07/30 12:15		
COC Number		405374-02-01		
	UNITS	**TP13-19 @ 1.0M**	**RDL**	**QC Batch**
Ext. Pet. Hydrocarbon				
F2 (C10-C16 Hydrocarbons)	mg/kg	3100	10	7047533
F3 (C16-C34 Hydrocarbons)	mg/kg	250	50	7047533
F4 (C34-C50 Hydrocarbons)	mg/kg	<50	50	7047533
Reached Baseline at C50	mg/kg	Yes	N/A	7047533
Surrogate Recovery (%)				
O-TERPHENYL (sur.)	%	111	N/A	7047533

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: B367290
Report Date: 2013/08/16

AECOM
Client Project #: 60299674, CAM-C

Your P.O. #: 700266069

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		HC1583		HC1584		HC1585	HC1586		
Sampling Date		2013/07/30 12:45		2013/07/30 14:30		2013/07/30 15:00	2013/07/29		
COC Number		405374-02-01		405374-02-01		405374-02-01	405374-02-01		
	UNITS	**TP13-20 @ 0.05M**	**QC Batch**	**TP13-21 @ 0.05**	**QC Batch**	**TP13-22 @ 0.05**	**TP13-05 @ 0.05M**	**RDL**	**QC Batch**
Elements									
Total Antimony (Sb)	mg/kg	<1.0	7056652	<1.0	7055889	4.9	<1.0	1.0	7056652
Total Arsenic (As)	mg/kg	1.0	7056652	1.1	7055889	1.8	<1.0	1.0	7056652
Total Barium (Ba)	mg/kg	22	7056652	<10	7055889	<10	<10	10	7056652
Total Beryllium (Be)	mg/kg	<0.40	7056652	<0.40	7055889	<0.40	<0.40	0.40	7056652
Total Cadmium (Cd)	mg/kg	0.12	7056652	<0.10	7055889	0.33	<0.10	0.10	7056652
Total Chromium (Cr)	mg/kg	12	7056652	3.4	7055889	2.0	1.5	1.0	7056652
Total Cobalt (Co)	mg/kg	1.5	7056652	<1.0	7055889	1.1	1.2	1.0	7056652
Total Copper (Cu)	mg/kg	<5.0	7056652	<5.0	7055889	<5.0	<5.0	5.0	7056652
Total Lead (Pb)	mg/kg	4.2	7056652	11	7055889	16	4.0	1.0	7056652
Total Mercury (Hg)	mg/kg	0.091	7056652	0.051	7055889	0.082	0.078	0.050	7056652
Total Molybdenum (Mo)	mg/kg	<0.40	7056652	<0.40	7055889	<0.40	<0.40	0.40	7056652
Total Nickel (Ni)	mg/kg	3.6	7056652	1.3	7055889	2.2	2.1	1.0	7056652
Total Selenium (Se)	mg/kg	<0.50	7056652	<0.50	7055889	<0.50	<0.50	0.50	7056652
Total Silver (Ag)	mg/kg	<1.0	7056652	<1.0	7055889	<1.0	<1.0	1.0	7056652
Total Thallium (Tl)	mg/kg	<0.30	7056652	<0.30	7055889	<0.30	<0.30	0.30	7056652
Total Tin (Sn)	mg/kg	<1.0	7056652	<1.0	7055889	<1.0	<1.0	1.0	7056652
Total Uranium (U)	mg/kg	<1.0	7056652	<1.0	7055889	<1.0	<1.0	1.0	7056652
Total Vanadium (V)	mg/kg	4.0	7056652	4.9	7055889	4.4	4.2	1.0	7056652
Total Zinc (Zn)	mg/kg	64	7056652	24	7055889	12	<10	10	7056652

RDL = Reportable Detection Limit

Maxxam Job #: B367290
Report Date: 2013/08/16

AECOM
Client Project #: 60299674, CAM-C

Your P.O. #: 700266069

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		HC1587	HC1588	HC1589	HC1590	HC1597	HC1598		
Sampling Date		2013/07/29	2013/07/29	2013/07/30	2013/07/30	2013/07/30	2013/07/30		
COC Number		405374-02-01	405374-02-01	405374-02-01	405374-02-01	405374-03-01	405374-03-01		
	UNITS	**TP13-06 @ 0.05M**	**TP13-09 @ 0.05M**	**TP13-10 @ 0.05**	**TP13-11 @ 0.05**	**TP13-12 @ 0.05M**	**TP13-15 @ 0.05M**	**RDL**	**QC Batch**
Elements									
Total Antimony (Sb)	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	7056652
Total Arsenic (As)	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	1.1	1.0	7056652
Total Barium (Ba)	mg/kg	<10	<10	<10	<10	<10	<10	10	7056652
Total Beryllium (Be)	mg/kg	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	0.40	7056652
Total Cadmium (Cd)	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	7056652
Total Chromium (Cr)	mg/kg	1.8	1.5	<1.0	<1.0	2.4	1.8	1.0	7056652
Total Cobalt (Co)	mg/kg	1.2	<1.0	<1.0	<1.0	1.0	<1.0	1.0	7056652
Total Copper (Cu)	mg/kg	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	7056652
Total Lead (Pb)	mg/kg	5.8	56	11	24	5.2	6.0	1.0	7056652
Total Mercury (Hg)	mg/kg	0.074	0.069	0.067	0.062	<0.050	<0.050	0.050	7056652
Total Molybdenum (Mo)	mg/kg	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	0.40	7056652
Total Nickel (Ni)	mg/kg	2.0	1.5	1.7	1.4	2.1	1.7	1.0	7056652
Total Selenium (Se)	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	7056652
Total Silver (Ag)	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	7056652
Total Thallium (Tl)	mg/kg	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	0.30	7056652
Total Tin (Sn)	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	7056652
Total Uranium (U)	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	7056652
Total Vanadium (V)	mg/kg	4.4	2.3	2.9	1.8	4.6	3.7	1.0	7056652
Total Zinc (Zn)	mg/kg	11	10	<10	<10	<10	11	10	7056652

RDL = Reportable Detection Limit

Maxxam Job #: B367290
Report Date: 2013/08/16

AECOM
Client Project #: 60299674, CAM-C

Your P.O. #: 700266069

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		HC1599		HC1600	HC1601	HC1602		
Sampling Date		2013/07/30		2013/07/30	2013/07/30	2013/07/30		
COC Number		405374-03-01		405374-03-01	405374-03-01	405374-03-01		
	UNITS	**TP13-20B @ 0.05M**	**QC Batch**	**TP13-20 @ 0.5**	**TP13-21 @ 0.5M**	**TP13-22 @ 0.05M**	**RDL**	**QC Batch**
Elements								
Total Antimony (Sb)	mg/kg	<1.0	7056652	<1.0	<1.0	<1.0	1.0	7072386
Total Arsenic (As)	mg/kg	<1.0	7056652	1.1	1.5	1.2	1.0	7072386
Total Barium (Ba)	mg/kg	16	7056652	<10	<10	<10	10	7072386
Total Beryllium (Be)	mg/kg	<0.40	7056652	<0.40	<0.40	<0.40	0.40	7072386
Total Cadmium (Cd)	mg/kg	<0.10	7056652	<0.10	<0.10	<0.10	0.10	7072386
Total Chromium (Cr)	mg/kg	8.4	7056652	30	3.2	3.1	1.0	7072386
Total Cobalt (Co)	mg/kg	1.1	7056652	1.5	1.2	1.4	1.0	7072386
Total Copper (Cu)	mg/kg	<5.0	7056652	<5.0	<5.0	<5.0	5.0	7072386
Total Lead (Pb)	mg/kg	3.6	7056652	3.7	3.5	3.1	1.0	7072386
Total Mercury (Hg)	mg/kg	<0.050	7056652	0.13	0.097	0.082	0.050	7072386
Total Molybdenum (Mo)	mg/kg	<0.40	7056652	0.46	<0.40	<0.40	0.40	7072386
Total Nickel (Ni)	mg/kg	2.5	7056652	15	2.1	2.5	1.0	7072386
Total Selenium (Se)	mg/kg	<0.50	7056652	<0.50	<0.50	<0.50	0.50	7072386
Total Silver (Ag)	mg/kg	<1.0	7056652	<1.0	<1.0	<1.0	1.0	7072386
Total Thallium (Tl)	mg/kg	<0.30	7056652	<0.30	<0.30	<0.30	0.30	7072386
Total Tin (Sn)	mg/kg	<1.0	7056652	<1.0	<1.0	<1.0	1.0	7072386
Total Uranium (U)	mg/kg	<1.0	7056652	<1.0	<1.0	<1.0	1.0	7072386
Total Vanadium (V)	mg/kg	3.7	7056652	6.1	5.6	7.1	1.0	7072386
Total Zinc (Zn)	mg/kg	45	7056652	<10	<10	<10	10	7072386

RDL = Reportable Detection Limit

Maxxam Job #: B367290
Report Date: 2013/08/16

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ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		HC1603	HC1604	HC1605	HC1606		
Sampling Date		2013/07/30 14:00	2013/07/30 14:15	2013/07/30 14:30	2013/07/30 14:40		
COC Number		405374-03-01	405374-03-01	405374-03-01	405374-03-01		
	UNITS	**SO #1 @ 0.34M**	**SO #2 @ 0.41M**	**SO #3 @ 0.38M**	**SO #4 @ 0.31M**	**RDL**	**QC Batch**
Elements							
Total Antimony (Sb)	mg/kg	<1.0	<1.0	<1.0	<1.0	1.0	7056652
Total Arsenic (As)	mg/kg	1.2	1.4	1.2	<1.0	1.0	7056652
Total Barium (Ba)	mg/kg	<10	<10	<10	<10	10	7056652
Total Beryllium (Be)	mg/kg	<0.40	<0.40	<0.40	<0.40	0.40	7056652
Total Cadmium (Cd)	mg/kg	<0.10	<0.10	<0.10	<0.10	0.10	7056652
Total Chromium (Cr)	mg/kg	2.6	3.2	2.3	1.5	1.0	7056652
Total Cobalt (Co)	mg/kg	1.4	1.6	<1.0	<1.0	1.0	7056652
Total Copper (Cu)	mg/kg	<5.0	<5.0	6.3	<5.0	5.0	7056652
Total Lead (Pb)	mg/kg	2.9	3.0	2.5	2.2	1.0	7056652
Total Mercury (Hg)	mg/kg	<0.050	<0.050	0.17	0.055	0.050	7056652
Total Molybdenum (Mo)	mg/kg	<0.40	<0.40	<0.40	<0.40	0.40	7056652
Total Nickel (Ni)	mg/kg	3.6	2.9	1.8	1.3	1.0	7056652
Total Selenium (Se)	mg/kg	<0.50	<0.50	<0.50	<0.50	0.50	7056652
Total Silver (Ag)	mg/kg	<1.0	<1.0	<1.0	<1.0	1.0	7056652
Total Thallium (Tl)	mg/kg	<0.30	<0.30	<0.30	<0.30	0.30	7056652
Total Tin (Sn)	mg/kg	<1.0	<1.0	<1.0	<1.0	1.0	7056652
Total Uranium (U)	mg/kg	<1.0	<1.0	<1.0	<1.0	1.0	7056652
Total Vanadium (V)	mg/kg	6.3	6.8	4.2	3.0	1.0	7056652
Total Zinc (Zn)	mg/kg	<10	<10	18	<10	10	7056652

RDL = Reportable Detection Limit

Maxxam Job #: B367290
Report Date: 2013/08/16

AECOM
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ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		HC1607		
Sampling Date		2013/07/30 14:50		
COC Number		405374-04-01		
	UNITS	**SO #5 @ 0.35M**	**RDL**	**QC Batch**
Elements				
Total Antimony (Sb)	mg/kg	<1.0	1.0	7056652
Total Arsenic (As)	mg/kg	<1.0	1.0	7056652
Total Barium (Ba)	mg/kg	<10	10	7056652
Total Beryllium (Be)	mg/kg	<0.40	0.40	7056652
Total Cadmium (Cd)	mg/kg	<0.10	0.10	7056652
Total Chromium (Cr)	mg/kg	1.8	1.0	7056652
Total Cobalt (Co)	mg/kg	<1.0	1.0	7056652
Total Copper (Cu)	mg/kg	<5.0	5.0	7056652
Total Lead (Pb)	mg/kg	2.5	1.0	7056652
Total Mercury (Hg)	mg/kg	<0.050	0.050	7056652
Total Molybdenum (Mo)	mg/kg	<0.40	0.40	7056652
Total Nickel (Ni)	mg/kg	1.7	1.0	7056652
Total Selenium (Se)	mg/kg	<0.50	0.50	7056652
Total Silver (Ag)	mg/kg	<1.0	1.0	7056652
Total Thallium (Tl)	mg/kg	<0.30	0.30	7056652
Total Tin (Sn)	mg/kg	<1.0	1.0	7056652
Total Uranium (U)	mg/kg	<1.0	1.0	7056652
Total Vanadium (V)	mg/kg	3.9	1.0	7056652
Total Zinc (Zn)	mg/kg	<10	10	7056652

RDL = Reportable Detection Limit

Maxxam Job #: B367290
Report Date: 2013/08/16

AECOM
Client Project #: 60299674, CAM-C

Your P.O. #: 700266069

VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		HC1531	HC1532	HC1533	HC1534		
Sampling Date		2013/07/29 16:15	2013/07/29 16:10	2013/07/29 16:40	2013/07/29 16:55		
COC Number		405374-30-01	405374-30-01	405374-30-01	405374-30-01		
	UNITS	**TP13-7 @ 1.25M**	**TP13-7 @ 0.75M**	**TP13-8 @ 0.85M**	**TP13-9 @ 0.4M**	**RDL**	**QC Batch**
Volatiles							
Benzene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	7053112
Toluene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	7053112
Ethylbenzene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	7053112
Xylenes (Total)	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	7053112
m & p-Xylene	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	7053112
o-Xylene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	7053112
F1 (C6-C10) - BTEX	mg/kg	<12	<12	<12	<12	12	7053112
(C6-C10)	mg/kg	<12	<12	<12	<12	12	7053112
Surrogate Recovery (%)							
1,4-Difluorobenzene (sur.)	%	96	97	96	106	N/A	7053112
4-BROMOFLUOROBENZENE (sur.)	%	89	90	91	92	N/A	7053112
D10-ETHYLBENZENE (sur.)	%	91	92	95	73	N/A	7053112
D4-1,2-DICHLOROETHANE (sur.)	%	93	92	95	90	N/A	7053112

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: B367290
Report Date: 2013/08/16

AECOM
Client Project #: 60299674, CAM-C

Your P.O. #: 700266069

VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		HC1535	HC1536	HC1537	HC1538		
Sampling Date		2013/07/29 17:00	2013/07/29 17:15	2013/07/29 17:20	2013/07/29 17:25		
COC Number		405374-30-01	405374-30-01	405374-30-01	405374-30-01		
	UNITS	**TP13-9 @ 0.81M**	**TP13-10 @ 0.6M**	**TP13-10 @ 1.24M**	**TP13-10A @ 1.24M**	**RDL**	**QC Batch**
Volatiles							
Benzene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	7053112
Toluene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	7053112
Ethylbenzene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	7053112
Xylenes (Total)	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	7053112
m & p-Xylene	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	7053112
o-Xylene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	7053112
F1 (C6-C10) - BTEX	mg/kg	<12	92	<12	<12	12	7053112
(C6-C10)	mg/kg	<12	92	<12	<12	12	7053112
Surrogate Recovery (%)							
1,4-Difluorobenzene (sur.)	%	104	107	106	105	N/A	7053112
4-BROMOFLUOROBENZENE (sur.)	%	95	101	94	93	N/A	7053112
D10-ETHYLBENZENE (sur.)	%	69	71	70	71	N/A	7053112
D4-1,2-DICHLOROETHANE (sur.)	%	88	81	86	85	N/A	7053112

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: B367290
Report Date: 2013/08/16

AECOM
Client Project #: 60299674, CAM-C

Your P.O. #: 700266069

VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		HC1539	HC1540	HC1549	HC1550		
Sampling Date		2013/07/29 17:30	2013/07/29 17:40	2013/07/29 17:45	2013/07/29 18:00		
COC Number		405374-30-01	405374-30-01	405374-01-01	405374-01-01		
	UNITS	**TP13-11 @ 0.4M**	**TP13-11 @ 0.64M**	**TP13-12 @ 0.7M**	**TP13-13 @ 0.7M**	**RDL**	**QC Batch**
Volatiles							
Benzene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	7053112
Toluene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	7053112
Ethylbenzene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	7053112
Xylenes (Total)	mg/kg	<0.040	<0.040	<0.040	0.40	0.040	7053112
m & p-Xylene	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	7053112
o-Xylene	mg/kg	<0.020	<0.020	<0.020	0.40	0.020	7053112
F1 (C6-C10) - BTEX	mg/kg	<12	25	<12	610	12	7053112
(C6-C10)	mg/kg	<12	25	<12	610	12	7053112
Surrogate Recovery (%)							
1,4-Difluorobenzene (sur.)	%	105	104	106	103	N/A	7053112
4-BROMOFLUOROBENZENE (sur.)	%	94	91	94	97	N/A	7053112
D10-ETHYLBENZENE (sur.)	%	71	72	72	68	N/A	7053112
D4-1,2-DICHLOROETHANE (sur.)	%	83	84	85	84	N/A	7053112

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: B367290
Report Date: 2013/08/16

AECOM
Client Project #: 60299674, CAM-C

Your P.O. #: 700266069

VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		HC1551	HC1552	HC1553	HC1554		
Sampling Date		2013/07/30 09:30	2013/07/30 09:40	2013/07/30 09:50	2013/07/30 09:55		
COC Number		405374-01-01	405374-01-01	405374-01-01	405374-01-01		
	UNITS	**TP13-14 @ 0.65M**	**TP13-14 @ 1.2M**	**TP13-15 @ 0.55M**	**TP13-15 @ 1.01M**	**RDL**	**QC Batch**
Volatiles							
Benzene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	7053112
Toluene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	7053112
Ethylbenzene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	7053112
Xylenes (Total)	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	7053112
m & p-Xylene	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	7053112
o-Xylene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	7053112
F1 (C6-C10) - BTEX	mg/kg	<12	<12	<12	19	12	7053112
(C6-C10)	mg/kg	<12	<12	<12	19	12	7053112
Surrogate Recovery (%)							
1,4-Difluorobenzene (sur.)	%	107	110	106	107	N/A	7053112
4-BROMOFLUOROBENZENE (sur.)	%	94	91	95	90	N/A	7053112
D10-ETHYLBENZENE (sur.)	%	72	73	73	72	N/A	7053112
D4-1,2-DICHLOROETHANE (sur.)	%	86	84	85	79	N/A	7053112

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: B367290
Report Date: 2013/08/16

AECOM
Client Project #: 60299674, CAM-C

Your P.O. #: 700266069

VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		HC1555	HC1556	HC1557	HC1558		
Sampling Date		2013/07/30 10:15	2013/07/30 11:00	2013/07/30 11:30	2013/07/30 11:45		
COC Number		405374-01-01	405374-01-01	405374-01-01	405374-01-01		
	UNITS	**TP13-16 @ 1.0M**	**TP13-17 @ 0.55M**	**TP13-18 @ 0.5M**	**TP13-18 @ 1.0M**	**RDL**	**QC Batch**
Volatiles							
Benzene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	7053112
Toluene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	7053112
Ethylbenzene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	7053112
Xylenes (Total)	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	7053112
m & p-Xylene	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	7053112
o-Xylene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	7053112
F1 (C6-C10) - BTEX	mg/kg	<12	<12	<12	57	12	7053112
(C6-C10)	mg/kg	<12	<12	<12	57	12	7053112
Surrogate Recovery (%)							
1,4-Difluorobenzene (sur.)	%	107	106	105	113	N/A	7053112
4-BROMOFLUOROBENZENE (sur.)	%	93	93	93	103	N/A	7053112
D10-ETHYLBENZENE (sur.)	%	69	70	68	72	N/A	7053112
D4-1,2-DICHLOROETHANE (sur.)	%	85	86	82	84	N/A	7053112

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: B367290
Report Date: 2013/08/16

AECOM
Client Project #: 60299674, CAM-C

Your P.O. #: 700266069

VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		HC1558		HC1564	HC1565		
Sampling Date		2013/07/30 11:45		2013/07/30 13:10	2013/07/30 13:30		
COC Number		405374-01-01		405374-29-01	405374-29-01		
	UNITS	**TP13-18 @ 1.0M Lab-Dup**	**QC Batch**	**TP13-01 @ 1.2M**	**TP13-02 @ 0.5M**	**RDL**	**QC Batch**
Volatiles							
Benzene	mg/kg	<0.0050	7053112	<0.0050	<0.0050	0.0050	7053173
Toluene	mg/kg	<0.020	7053112	<0.020	<0.020	0.020	7053173
Ethylbenzene	mg/kg	<0.010	7053112	<0.010	<0.010	0.010	7053173
Xylenes (Total)	mg/kg	<0.040	7053112	<0.040	<0.040	0.040	7053173
m & p-Xylene	mg/kg	<0.040	7053112	<0.040	<0.040	0.040	7053173
o-Xylene	mg/kg	<0.020	7053112	<0.020	<0.020	0.020	7053173
F1 (C6-C10) - BTEX	mg/kg	83	7053112	<12	<12	12	7053173
(C6-C10)	mg/kg	83	7053112	<12	<12	12	7053173
Surrogate Recovery (%)							
1,4-Difluorobenzene (sur.)	%	102	7053112	108	108	N/A	7053173
4-BROMOFLUOROBENZENE (sur.)	%	110	7053112	95	97	N/A	7053173
D10-ETHYLBENZENE (sur.)	%	70	7053112	88	91	N/A	7053173
D4-1,2-DICHLOROETHANE (sur.)	%	76	7053112	108	111	N/A	7053173

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: B367290
Report Date: 2013/08/16

AECOM
Client Project #: 60299674, CAM-C

Your P.O. #: 700266069

VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		HC1566	HC1567	HC1568	HC1569		
Sampling Date		2013/07/30 13:55	2013/07/30 14:20	2013/07/30 15:00	2013/07/30 15:10		
COC Number		405374-29-01	405374-29-01	405374-29-01	405374-29-01		
	UNITS	**TP13-3 @ 0.7M**	**TP13-4 @ 0.7M**	**TP13-5 @ 1.05M**	**TP13-5 @ 1.25M**	**RDL**	**QC Batch**
Volatiles							
Benzene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	7053173
Toluene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	7053173
Ethylbenzene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	7053173
Xylenes (Total)	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	7053173
m & p-Xylene	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	7053173
o-Xylene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	7053173
F1 (C6-C10) - BTEX	mg/kg	<12	<12	<12	13	12	7053173
(C6-C10)	mg/kg	<12	<12	<12	13	12	7053173
Surrogate Recovery (%)							
1,4-Difluorobenzene (sur.)	%	105	105	107	101	N/A	7053173
4-BROMOFLUOROBENZENE (sur.)	%	96	95	92	114	N/A	7053173
D10-ETHYLBENZENE (sur.)	%	90	87	91	95	N/A	7053173
D4-1,2-DICHLOROETHANE (sur.)	%	109	107	113	102	N/A	7053173

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: B367290
Report Date: 2013/08/16

AECOM
Client Project #: 60299674, CAM-C

Your P.O. #: 700266069

VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		HC1569	HC1570	HC1571	HC1572		
Sampling Date		2013/07/30 15:10	2013/07/30 15:15	2013/07/30 15:45	2013/07/30 15:50		
COC Number		405374-29-01	405374-29-01	405374-29-01	405374-29-01		
	UNITS	**TP13-5 @ 1.25M Lab-Dup**	**TP13-5 @ 1.43M**	**TP13-6 @ 0.43M**	**TP13-6 @ 0.92M**	**RDL**	**QC Batch**
Volatiles							
Benzene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	7053173
Toluene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	7053173
Ethylbenzene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	7053173
Xylenes (Total)	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	7053173
m & p-Xylene	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	7053173
o-Xylene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	7053173
F1 (C6-C10) - BTEX	mg/kg	<12	<12	<12	<12	12	7053173
(C6-C10)	mg/kg	<12	<12	<12	<12	12	7053173
Surrogate Recovery (%)							
1,4-Difluorobenzene (sur.)	%	102	102	102	104	N/A	7053173
4-BROMOFLUOROBENZENE (sur.)	%	113	108	107	106	N/A	7053173
D10-ETHYLBENZENE (sur.)	%	95	98	97	95	N/A	7053173
D4-1,2-DICHLOROETHANE (sur.)	%	102	103	101	100	N/A	7053173

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: B367290
Report Date: 2013/08/16

AECOM
Client Project #: 60299674, CAM-C

Your P.O. #: 700266069

VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		HC1581	HC1582		
Sampling Date		2013/07/30 12:00	2013/07/30 12:15		
COC Number		405374-02-01	405374-02-01		
	UNITS	**TP13-19 @ 0.64M**	**TP13-19 @ 1.0M**	**RDL**	**QC Batch**
Volatiles					
Benzene	mg/kg	<0.0050	<0.0050	0.0050	7053173
Toluene	mg/kg	<0.020	0.020	0.020	7053173
Ethylbenzene	mg/kg	<0.010	<0.010	0.010	7053173
Xylenes (Total)	mg/kg	<0.040	0.067	0.040	7053173
m & p-Xylene	mg/kg	<0.040	<0.040	0.040	7053173
o-Xylene	mg/kg	<0.020	0.067	0.020	7053173
F1 (C6-C10) - BTEX	mg/kg	<12	57	12	7053173
(C6-C10)	mg/kg	<12	57	12	7053173
Surrogate Recovery (%)					
1,4-Difluorobenzene (sur.)	%	105	103	N/A	7053173
4-BROMOFLUOROBENZENE (sur.)	%	116	115	N/A	7053173
D10-ETHYLBENZENE (sur.)	%	108	93	N/A	7053173
D4-1,2-DICHLOROETHANE (sur.)	%	96	103	N/A	7053173

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: B367290
Report Date: 2013/08/16

AECOM
Client Project #: 60299674, CAM-C

Your P.O. #: 700266069

General Comments

Results relate only to the items tested.

AECOM
Attention: NICK OKE
Client Project #: 60299674, CAM-C
P.O. #: 700266069
Site Location:

Quality Assurance Report

Maxxam Job Number: CB367290

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7047530	MWB	Matrix Spike						
		[HC1537-01]	O-TERPHENYL (sur.)	2013/08/07		83	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2013/08/07		NC	%	50 - 130
			F3 (C16-C34 Hydrocarbons)	2013/08/07		91	%	50 - 130
			F4 (C34-C50 Hydrocarbons)	2013/08/07		97	%	50 - 130
		Spiked Blank	O-TERPHENYL (sur.)	2013/08/06		81	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2013/08/06		89	%	70 - 130
			F3 (C16-C34 Hydrocarbons)	2013/08/06		97	%	70 - 130
			F4 (C34-C50 Hydrocarbons)	2013/08/06		98	%	70 - 130
		Method Blank	O-TERPHENYL (sur.)	2013/08/04		107	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2013/08/04	<10		mg/kg	
			F3 (C16-C34 Hydrocarbons)	2013/08/04	<50		mg/kg	
			F4 (C34-C50 Hydrocarbons)	2013/08/04	<50		mg/kg	
		RPD [HC1537-01]	F2 (C10-C16 Hydrocarbons)	2013/08/04	0.2		%	50
			F3 (C16-C34 Hydrocarbons)	2013/08/04	2.7		%	50
			F4 (C34-C50 Hydrocarbons)	2013/08/04	NC		%	50
7047533	MWB	Matrix Spike						
		[HC1558-01]	O-TERPHENYL (sur.)	2013/08/07		83	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2013/08/07		NC	%	50 - 130
			F3 (C16-C34 Hydrocarbons)	2013/08/07		89	%	50 - 130
			F4 (C34-C50 Hydrocarbons)	2013/08/07		92	%	50 - 130
		Spiked Blank	O-TERPHENYL (sur.)	2013/08/06		76	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2013/08/06		86	%	70 - 130
			F3 (C16-C34 Hydrocarbons)	2013/08/06		83	%	70 - 130
			F4 (C34-C50 Hydrocarbons)	2013/08/06		99	%	70 - 130
		Method Blank	O-TERPHENYL (sur.)	2013/08/05		107	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2013/08/05	<10		mg/kg	
			F3 (C16-C34 Hydrocarbons)	2013/08/05	<50		mg/kg	
			F4 (C34-C50 Hydrocarbons)	2013/08/05	<50		mg/kg	
		RPD [HC1558-01]	F2 (C10-C16 Hydrocarbons)	2013/08/05	15.5		%	50
			F3 (C16-C34 Hydrocarbons)	2013/08/05	NC		%	50
			F4 (C34-C50 Hydrocarbons)	2013/08/05	NC		%	50
7047627	AD9	Method Blank	Moisture	2013/08/04	<0.30		%	
		RPD [HC1567-01]	Moisture	2013/08/04	3.0		%	20
7047640	AD9	Method Blank	Moisture	2013/08/04	<0.30		%	
		RPD [HC1540-01]	Moisture	2013/08/04	4.7		%	20
7047647	AD9	Method Blank	Moisture	2013/08/04	<0.30		%	
		RPD	Moisture	2013/08/04	4.5		%	20
7049686	MWC	Method Blank	Moisture	2013/08/06	<0.30		%	
		RPD	Moisture	2013/08/06	6.3		%	20
7053112	RSU	Matrix Spike						
		[HC1558-01]	1,4-Difluorobenzene (sur.)	2013/08/08		113	%	60 - 140
			4-BROMOFLUOROBENZENE (sur.)	2013/08/08		124	%	60 - 140
			D10-ETHYLBENZENE (sur.)	2013/08/08		79	%	60 - 130
			D4-1,2-DICHLOROETHANE (sur.)	2013/08/08		97	%	60 - 140
			Benzene	2013/08/08		85	%	60 - 140
			Toluene	2013/08/08		85	%	60 - 140
			Ethylbenzene	2013/08/08		94	%	60 - 140
			m & p-Xylene	2013/08/08		92	%	60 - 140
			o-Xylene	2013/08/08		93	%	60 - 140
			(C6-C10)	2013/08/08		136	%	60 - 140
		Spiked Blank	1,4-Difluorobenzene (sur.)	2013/08/07		95	%	60 - 140
			4-BROMOFLUOROBENZENE (sur.)	2013/08/07		94	%	60 - 140
			D10-ETHYLBENZENE (sur.)	2013/08/07		92	%	60 - 130
			D4-1,2-DICHLOROETHANE (sur.)	2013/08/07		85	%	60 - 140

AECOM
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QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7053112	RSU	Spiked Blank	Benzene	2013/08/07		107	%	60 - 140
			Toluene	2013/08/07		103	%	60 - 140
			Ethylbenzene	2013/08/07		109	%	60 - 140
			m & p-Xylene	2013/08/07		106	%	60 - 140
			o-Xylene	2013/08/07		104	%	60 - 140
			(C6-C10)	2013/08/07		96	%	60 - 140
		Method Blank	1,4-Difluorobenzene (sur.)	2013/08/07		101	%	60 - 140
			4-BROMOFLUOROBENZENE (sur.)	2013/08/07		93	%	60 - 140
			D10-ETHYLBENZENE (sur.)	2013/08/07		89	%	60 - 130
			D4-1,2-DICHLOROETHANE (sur.)	2013/08/07		92	%	60 - 140
			Benzene	2013/08/07	<0.0050		mg/kg	
			Toluene	2013/08/07	<0.020		mg/kg	
			Ethylbenzene	2013/08/07	<0.010		mg/kg	
			Xylenes (Total)	2013/08/07	<0.040		mg/kg	
			m & p-Xylene	2013/08/07	<0.040		mg/kg	
			o-Xylene	2013/08/07	<0.020		mg/kg	
			F1 (C6-C10) - BTEX	2013/08/07	<12		mg/kg	
			(C6-C10)	2013/08/07	<12		mg/kg	
		RPD [HC1558-01]	Benzene	2013/08/08	NC		%	50
			Toluene	2013/08/08	NC		%	50
			Ethylbenzene	2013/08/08	NC		%	50
			Xylenes (Total)	2013/08/08	NC		%	50
			m & p-Xylene	2013/08/08	NC		%	50
			o-Xylene	2013/08/08	NC		%	50
			F1 (C6-C10) - BTEX	2013/08/08	NC		%	50
			(C6-C10)	2013/08/08	NC		%	50
7053173	GP4	Matrix Spike [HC1569-01]	1,4-Difluorobenzene (sur.)	2013/08/07		95	%	60 - 140
			4-BROMOFLUOROBENZENE (sur.)	2013/08/07		85	%	60 - 140
			D10-ETHYLBENZENE (sur.)	2013/08/07		79	%	60 - 130
			D4-1,2-DICHLOROETHANE (sur.)	2013/08/07		96	%	60 - 140
			Benzene	2013/08/07		83	%	60 - 140
			Toluene	2013/08/07		84	%	60 - 140
			Ethylbenzene	2013/08/07		100	%	60 - 140
			m & p-Xylene	2013/08/07		84	%	60 - 140
			o-Xylene	2013/08/07		91	%	60 - 140
			(C6-C10)	2013/08/07		100	%	60 - 140
		Spiked Blank	1,4-Difluorobenzene (sur.)	2013/08/07		103	%	60 - 140
			4-BROMOFLUOROBENZENE (sur.)	2013/08/07		97	%	60 - 140
			D10-ETHYLBENZENE (sur.)	2013/08/07		91	%	60 - 130
			D4-1,2-DICHLOROETHANE (sur.)	2013/08/07		109	%	60 - 140
			Benzene	2013/08/07		100	%	60 - 140
			Toluene	2013/08/07		96	%	60 - 140
			Ethylbenzene	2013/08/07		99	%	60 - 140
			m & p-Xylene	2013/08/07		98	%	60 - 140
			o-Xylene	2013/08/07		96	%	60 - 140
			(C6-C10)	2013/08/07		80	%	60 - 140
		Method Blank	1,4-Difluorobenzene (sur.)	2013/08/07		106	%	60 - 140
			4-BROMOFLUOROBENZENE (sur.)	2013/08/07		97	%	60 - 140
			D10-ETHYLBENZENE (sur.)	2013/08/07		91	%	60 - 130
			D4-1,2-DICHLOROETHANE (sur.)	2013/08/07		109	%	60 - 140
			Benzene	2013/08/07	<0.0050		mg/kg	
			Toluene	2013/08/07	<0.020		mg/kg	
			Ethylbenzene	2013/08/07	<0.010		mg/kg	
			Xylenes (Total)	2013/08/07	<0.040		mg/kg	

AECOM
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QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7053173	GP4	Method Blank	m & p-Xylene	2013/08/07	<0.040		mg/kg	
			o-Xylene	2013/08/07	<0.020		mg/kg	
			F1 (C6-C10) - BTEX	2013/08/07	<12		mg/kg	
			(C6-C10)	2013/08/07	<12		mg/kg	
		RPD [HC1569-01]	Benzene	2013/08/08	NC		%	50
			Toluene	2013/08/08	NC		%	50
			Ethylbenzene	2013/08/08	NC		%	50
			Xylenes (Total)	2013/08/08	NC		%	50
			m & p-Xylene	2013/08/08	NC		%	50
			o-Xylene	2013/08/08	NC		%	50
			F1 (C6-C10) - BTEX	2013/08/08	NC		%	50
			(C6-C10)	2013/08/08	NC		%	50
7055889	TDB	Matrix Spike	Total Antimony (Sb)	2013/08/07		92	%	75 - 125
			Total Arsenic (As)	2013/08/07		93	%	75 - 125
			Total Barium (Ba)	2013/08/07		NC	%	75 - 125
			Total Beryllium (Be)	2013/08/07		92	%	75 - 125
			Total Cadmium (Cd)	2013/08/07		93	%	75 - 125
			Total Chromium (Cr)	2013/08/07		94	%	75 - 125
			Total Cobalt (Co)	2013/08/07		90	%	75 - 125
			Total Copper (Cu)	2013/08/07		93	%	75 - 125
			Total Lead (Pb)	2013/08/07		90	%	75 - 125
			Total Mercury (Hg)	2013/08/07		97	%	75 - 125
			Total Molybdenum (Mo)	2013/08/07		92	%	75 - 125
			Total Nickel (Ni)	2013/08/07		94	%	75 - 125
			Total Selenium (Se)	2013/08/07		94	%	75 - 125
			Total Silver (Ag)	2013/08/07		85	%	75 - 125
			Total Thallium (Tl)	2013/08/07		91	%	75 - 125
			Total Tin (Sn)	2013/08/07		91	%	75 - 125
			Total Uranium (U)	2013/08/07		95	%	75 - 125
			Total Vanadium (V)	2013/08/07		97	%	75 - 125
			Total Zinc (Zn)	2013/08/07		100	%	75 - 125
		QC Standard	Total Arsenic (As)	2013/08/07		121	%	50 - 150
			Total Barium (Ba)	2013/08/07		112	%	69 - 131
			Total Chromium (Cr)	2013/08/07		108	%	41 - 159
			Total Cobalt (Co)	2013/08/07		109	%	75 - 125
			Total Copper (Cu)	2013/08/07		108	%	73 - 127
			Total Lead (Pb)	2013/08/07		105	%	54 - 146
			Total Nickel (Ni)	2013/08/07		117	%	61 - 139
			Total Vanadium (V)	2013/08/07		124	%	50 - 150
			Total Zinc (Zn)	2013/08/07		112	%	72 - 128
		Spiked Blank	Total Antimony (Sb)	2013/08/07		95	%	75 - 125
			Total Arsenic (As)	2013/08/07		96	%	75 - 125
			Total Barium (Ba)	2013/08/07		93	%	75 - 125
			Total Beryllium (Be)	2013/08/07		92	%	75 - 125
			Total Cadmium (Cd)	2013/08/07		95	%	75 - 125
			Total Chromium (Cr)	2013/08/07		94	%	75 - 125
			Total Cobalt (Co)	2013/08/07		95	%	75 - 125
			Total Copper (Cu)	2013/08/07		95	%	75 - 125
			Total Lead (Pb)	2013/08/07		93	%	75 - 125
			Total Mercury (Hg)	2013/08/07		108	%	75 - 125
			Total Molybdenum (Mo)	2013/08/07		94	%	75 - 125
			Total Nickel (Ni)	2013/08/07		97	%	75 - 125
			Total Selenium (Se)	2013/08/07		99	%	75 - 125
			Total Silver (Ag)	2013/08/07		87	%	75 - 125
			Total Thallium (Tl)	2013/08/07		95	%	75 - 125

AECOM
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QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7055889	TDB	Spiked Blank	Total Tin (Sn)	2013/08/07		89	%	75 - 125
			Total Uranium (U)	2013/08/07		100	%	75 - 125
			Total Vanadium (V)	2013/08/07		96	%	75 - 125
			Total Zinc (Zn)	2013/08/07		97	%	75 - 125
		Method Blank	Total Antimony (Sb)	2013/08/07	<1.0		mg/kg	
			Total Arsenic (As)	2013/08/07	<1.0		mg/kg	
			Total Barium (Ba)	2013/08/07	<10		mg/kg	
			Total Beryllium (Be)	2013/08/07	<0.40		mg/kg	
			Total Cadmium (Cd)	2013/08/07	<0.10		mg/kg	
			Total Chromium (Cr)	2013/08/07	<1.0		mg/kg	
			Total Cobalt (Co)	2013/08/07	<1.0		mg/kg	
			Total Copper (Cu)	2013/08/07	<5.0		mg/kg	
			Total Lead (Pb)	2013/08/07	<1.0		mg/kg	
			Total Mercury (Hg)	2013/08/07	0.085, RDL=0.050		mg/kg	
			Total Molybdenum (Mo)	2013/08/07	<0.40		mg/kg	
			Total Nickel (Ni)	2013/08/07	<1.0		mg/kg	
			Total Selenium (Se)	2013/08/07	<0.50		mg/kg	
			Total Silver (Ag)	2013/08/07	<1.0		mg/kg	
			Total Thallium (Tl)	2013/08/07	<0.30		mg/kg	
			Total Tin (Sn)	2013/08/07	<1.0		mg/kg	
			Total Uranium (U)	2013/08/07	<1.0		mg/kg	
			Total Vanadium (V)	2013/08/07	<1.0		mg/kg	
			Total Zinc (Zn)	2013/08/07	<10		mg/kg	
		RPD	Total Antimony (Sb)	2013/08/07	NC		%	35
			Total Arsenic (As)	2013/08/07	NC		%	35
			Total Barium (Ba)	2013/08/07	NC		%	35
			Total Beryllium (Be)	2013/08/07	NC		%	35
			Total Cadmium (Cd)	2013/08/07	NC		%	35
			Total Chromium (Cr)	2013/08/07	4.1		%	35
			Total Cobalt (Co)	2013/08/07	NC		%	35
			Total Copper (Cu)	2013/08/07	NC		%	35
			Total Lead (Pb)	2013/08/07	NC		%	35
			Total Molybdenum (Mo)	2013/08/07	NC		%	35
			Total Nickel (Ni)	2013/08/07	NC		%	35
			Total Selenium (Se)	2013/08/07	NC		%	35
			Total Silver (Ag)	2013/08/07	NC		%	35
			Total Thallium (Tl)	2013/08/07	NC		%	35
			Total Tin (Sn)	2013/08/07	NC		%	35
			Total Uranium (U)	2013/08/07	NC		%	35
			Total Vanadium (V)	2013/08/07	1.8		%	35
			Total Zinc (Zn)	2013/08/07	NC		%	35
7056652	ST4	Matrix Spike	Total Antimony (Sb)	2013/08/09		114	%	75 - 125
			Total Arsenic (As)	2013/08/09		107	%	75 - 125
			Total Barium (Ba)	2013/08/09		105	%	75 - 125
			Total Beryllium (Be)	2013/08/09		110	%	75 - 125
			Total Cadmium (Cd)	2013/08/09		108	%	75 - 125
			Total Chromium (Cr)	2013/08/09		121	%	75 - 125
			Total Cobalt (Co)	2013/08/09		112	%	75 - 125
			Total Copper (Cu)	2013/08/09		108	%	75 - 125
			Total Lead (Pb)	2013/08/09		107	%	75 - 125
			Total Mercury (Hg)	2013/08/09		115	%	75 - 125
			Total Molybdenum (Mo)	2013/08/09		111	%	75 - 125
			Total Nickel (Ni)	2013/08/09		114	%	75 - 125
			Total Selenium (Se)	2013/08/09		107	%	75 - 125
			Total Silver (Ag)	2013/08/09		99	%	75 - 125

AECOM
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Quality Assurance Report (Continued)

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QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7056652	ST4	Matrix Spike	Total Thallium (Tl)	2013/08/09		106	%	75 - 125
			Total Tin (Sn)	2013/08/09		110	%	75 - 125
			Total Uranium (U)	2013/08/09		103	%	75 - 125
			Total Vanadium (V)	2013/08/09		128 (1)	%	75 - 125
			Total Zinc (Zn)	2013/08/09		110	%	75 - 125
		QC Standard	Total Arsenic (As)	2013/08/07		113	%	50 - 150
			Total Barium (Ba)	2013/08/07		106	%	69 - 131
			Total Chromium (Cr)	2013/08/07		95	%	41 - 159
			Total Cobalt (Co)	2013/08/07		102	%	75 - 125
			Total Copper (Cu)	2013/08/07		106	%	73 - 127
			Total Lead (Pb)	2013/08/07		99	%	54 - 146
			Total Nickel (Ni)	2013/08/07		114	%	61 - 139
			Total Vanadium (V)	2013/08/07		110	%	50 - 150
			Total Zinc (Zn)	2013/08/07		113	%	72 - 128
		Spiked Blank	Total Antimony (Sb)	2013/08/07		100	%	75 - 125
			Total Arsenic (As)	2013/08/07		97	%	75 - 125
			Total Barium (Ba)	2013/08/07		99	%	75 - 125
			Total Beryllium (Be)	2013/08/07		97	%	75 - 125
			Total Cadmium (Cd)	2013/08/07		97	%	75 - 125
			Total Chromium (Cr)	2013/08/07		92	%	75 - 125
			Total Cobalt (Co)	2013/08/07		95	%	75 - 125
			Total Copper (Cu)	2013/08/07		96	%	75 - 125
			Total Lead (Pb)	2013/08/07		97	%	75 - 125
			Total Mercury (Hg)	2013/08/07		110	%	75 - 125
			Total Molybdenum (Mo)	2013/08/07		96	%	75 - 125
			Total Nickel (Ni)	2013/08/07		96	%	75 - 125
			Total Selenium (Se)	2013/08/07		94	%	75 - 125
			Total Silver (Ag)	2013/08/07		90	%	75 - 125
			Total Thallium (Tl)	2013/08/07		96	%	75 - 125
			Total Tin (Sn)	2013/08/07		89	%	75 - 125
			Total Uranium (U)	2013/08/07		102	%	75 - 125
			Total Vanadium (V)	2013/08/07		95	%	75 - 125
			Total Zinc (Zn)	2013/08/07		98	%	75 - 125
		Method Blank	Total Antimony (Sb)	2013/08/08	<1.0		mg/kg	
			Total Arsenic (As)	2013/08/08	<1.0		mg/kg	
			Total Barium (Ba)	2013/08/08	<10		mg/kg	
			Total Beryllium (Be)	2013/08/08	<0.40		mg/kg	
			Total Cadmium (Cd)	2013/08/08	<0.10		mg/kg	
			Total Chromium (Cr)	2013/08/08	<1.0		mg/kg	
			Total Cobalt (Co)	2013/08/08	<1.0		mg/kg	
			Total Copper (Cu)	2013/08/08	<5.0		mg/kg	
			Total Lead (Pb)	2013/08/08	<1.0		mg/kg	
			Total Mercury (Hg)	2013/08/08	<0.050		mg/kg	
			Total Molybdenum (Mo)	2013/08/08	<0.40		mg/kg	
			Total Nickel (Ni)	2013/08/08	<1.0		mg/kg	
			Total Selenium (Se)	2013/08/08	<0.50		mg/kg	
			Total Silver (Ag)	2013/08/08	<1.0		mg/kg	
			Total Thallium (Tl)	2013/08/08	<0.30		mg/kg	
			Total Tin (Sn)	2013/08/08	<1.0		mg/kg	
			Total Uranium (U)	2013/08/08	<1.0		mg/kg	
			Total Vanadium (V)	2013/08/08	<1.0		mg/kg	
			Total Zinc (Zn)	2013/08/08	<10		mg/kg	
		RPD	Total Antimony (Sb)	2013/08/07	NC		%	35
			Total Arsenic (As)	2013/08/07	NC		%	35
			Total Barium (Ba)	2013/08/07	NC		%	35

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Quality Assurance Report (Continued)

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QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7056652	ST4	RPD	Total Beryllium (Be)	2013/08/07	NC		%	35
			Total Cadmium (Cd)	2013/08/07	NC		%	35
			Total Chromium (Cr)	2013/08/07	NC		%	35
			Total Cobalt (Co)	2013/08/07	NC		%	35
			Total Copper (Cu)	2013/08/07	NC		%	35
			Total Lead (Pb)	2013/08/07	NC		%	35
			Total Mercury (Hg)	2013/08/07	NC		%	35
			Total Molybdenum (Mo)	2013/08/07	NC		%	35
			Total Nickel (Ni)	2013/08/07	NC		%	35
			Total Selenium (Se)	2013/08/07	NC		%	35
			Total Silver (Ag)	2013/08/07	NC		%	35
			Total Thallium (Tl)	2013/08/07	NC		%	35
			Total Tin (Sn)	2013/08/07	NC		%	35
			Total Uranium (U)	2013/08/07	NC		%	35
			Total Vanadium (V)	2013/08/07	10.9		%	35
			Total Zinc (Zn)	2013/08/07	NC		%	35
7058697	SMZ	QC Standard	Soluble (2:1) pH	2013/08/08		99	%	98 - 102
		Spiked Blank	Soluble (2:1) pH	2013/08/08		100	%	97 - 103
		RPD [HC1583-01]	Soluble (2:1) pH	2013/08/08	0.5		%	5
7072386	ST4	Matrix Spike	Total Antimony (Sb)	2013/08/14		101	%	75 - 125
			Total Arsenic (As)	2013/08/14		112	%	75 - 125
			Total Barium (Ba)	2013/08/14		NC	%	75 - 125
			Total Beryllium (Be)	2013/08/14		105	%	75 - 125
			Total Cadmium (Cd)	2013/08/14		107	%	75 - 125
			Total Chromium (Cr)	2013/08/14		NC	%	75 - 125
			Total Cobalt (Co)	2013/08/14		96	%	75 - 125
			Total Copper (Cu)	2013/08/14		97	%	75 - 125
			Total Lead (Pb)	2013/08/14		103	%	75 - 125
			Total Mercury (Hg)	2013/08/14		101	%	75 - 125
			Total Molybdenum (Mo)	2013/08/14		109	%	75 - 125
			Total Nickel (Ni)	2013/08/14		NC	%	75 - 125
			Total Selenium (Se)	2013/08/14		102	%	75 - 125
			Total Silver (Ag)	2013/08/14		95	%	75 - 125
			Total Thallium (Tl)	2013/08/14		102	%	75 - 125
			Total Tin (Sn)	2013/08/14		107	%	75 - 125
			Total Uranium (U)	2013/08/14		99	%	75 - 125
			Total Vanadium (V)	2013/08/14		105	%	75 - 125
			Total Zinc (Zn)	2013/08/14		NC	%	75 - 125
		QC Standard	Total Arsenic (As)	2013/08/14		110	%	50 - 150
			Total Barium (Ba)	2013/08/14		101	%	69 - 131
			Total Chromium (Cr)	2013/08/14		93	%	41 - 159
			Total Cobalt (Co)	2013/08/14		95	%	75 - 125
			Total Copper (Cu)	2013/08/14		99	%	73 - 127
			Total Lead (Pb)	2013/08/14		97	%	54 - 146
			Total Nickel (Ni)	2013/08/14		104	%	61 - 139
			Total Vanadium (V)	2013/08/14		111	%	50 - 150
			Total Zinc (Zn)	2013/08/14		108	%	72 - 128
		Spiked Blank	Total Antimony (Sb)	2013/08/13		106	%	75 - 125
			Total Arsenic (As)	2013/08/13		103	%	75 - 125
			Total Barium (Ba)	2013/08/13		103	%	75 - 125
			Total Beryllium (Be)	2013/08/13		112	%	75 - 125
			Total Cadmium (Cd)	2013/08/13		102	%	75 - 125
			Total Chromium (Cr)	2013/08/13		100	%	75 - 125
			Total Cobalt (Co)	2013/08/13		103	%	75 - 125
			Total Copper (Cu)	2013/08/13		103	%	75 - 125

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QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7072386	ST4	Spiked Blank	Total Lead (Pb)	2013/08/13		101	%	75 - 125
			Total Mercury (Hg)	2013/08/13		116	%	75 - 125
			Total Molybdenum (Mo)	2013/08/13		104	%	75 - 125
			Total Nickel (Ni)	2013/08/13		102	%	75 - 125
			Total Selenium (Se)	2013/08/13		106	%	75 - 125
			Total Silver (Ag)	2013/08/13		93	%	75 - 125
			Total Thallium (Tl)	2013/08/13		102	%	75 - 125
			Total Tin (Sn)	2013/08/13		102	%	75 - 125
			Total Uranium (U)	2013/08/13		110	%	75 - 125
			Total Vanadium (V)	2013/08/13		102	%	75 - 125
			Total Zinc (Zn)	2013/08/13		103	%	75 - 125
		Method Blank	Total Antimony (Sb)	2013/08/13	<1.0		mg/kg	
			Total Arsenic (As)	2013/08/13	<1.0		mg/kg	
			Total Barium (Ba)	2013/08/13	<10		mg/kg	
			Total Beryllium (Be)	2013/08/13	<0.40		mg/kg	
			Total Cadmium (Cd)	2013/08/13	<0.10		mg/kg	
			Total Chromium (Cr)	2013/08/13	<1.0		mg/kg	
			Total Cobalt (Co)	2013/08/13	<1.0		mg/kg	
			Total Copper (Cu)	2013/08/13	<5.0		mg/kg	
			Total Lead (Pb)	2013/08/13	<1.0		mg/kg	
			Total Mercury (Hg)	2013/08/13	<0.050		mg/kg	
			Total Molybdenum (Mo)	2013/08/13	<0.40		mg/kg	
			Total Nickel (Ni)	2013/08/13	<1.0		mg/kg	
			Total Selenium (Se)	2013/08/13	0.55, RDL=0.50		mg/kg	
			Total Silver (Ag)	2013/08/13	<1.0		mg/kg	
			Total Thallium (Tl)	2013/08/13	<0.30		mg/kg	
			Total Tin (Sn)	2013/08/13	<1.0		mg/kg	
			Total Uranium (U)	2013/08/13	<1.0		mg/kg	
			Total Vanadium (V)	2013/08/13	<1.0		mg/kg	
			Total Zinc (Zn)	2013/08/13	<10		mg/kg	
		RPD	Total Antimony (Sb)	2013/08/13	NC		%	35
			Total Arsenic (As)	2013/08/13	7.4		%	35
			Total Barium (Ba)	2013/08/13	7.2		%	35
			Total Beryllium (Be)	2013/08/13	NC		%	35
			Total Cadmium (Cd)	2013/08/13	3.5		%	35
			Total Chromium (Cr)	2013/08/13	32.8		%	35
			Total Cobalt (Co)	2013/08/13	0.8		%	35
			Total Copper (Cu)	2013/08/13	NC		%	35
			Total Lead (Pb)	2013/08/13	7.6		%	35
			Total Mercury (Hg)	2013/08/13	NC		%	35
			Total Molybdenum (Mo)	2013/08/13	NC		%	35
			Total Nickel (Ni)	2013/08/13	21.5		%	35
			Total Selenium (Se)	2013/08/13	NC		%	35
			Total Silver (Ag)	2013/08/13	NC		%	35
			Total Thallium (Tl)	2013/08/13	NC		%	35
			Total Tin (Sn)	2013/08/13	NC		%	35
			Total Uranium (U)	2013/08/13	NC		%	35
			Total Vanadium (V)	2013/08/13	3.1		%	35
			Total Zinc (Zn)	2013/08/13	3.0		%	35
7072655	SMZ	QC Standard	Soluble (2:1) pH	2013/08/13		100	%	98 - 102
		Spiked Blank	Soluble (2:1) pH	2013/08/13		100	%	97 - 103
		RPD [HC1600-01]	Soluble (2:1) pH	2013/08/13	0.9		%	5

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.
QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method

AECOM
Attention: NICK OKE
Client Project #: 60299674, CAM-C
P.O. #: 700266069
Site Location:

Quality Assurance Report (Continued)

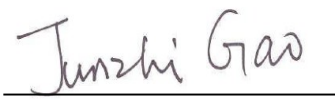
Maxxam Job Number: CB367290

accuracy.
Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.
NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was not sufficiently significant to permit a reliable recovery calculation.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.
(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

Validation Signature Page

Maxxam Job #: B367290

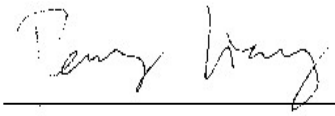
The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



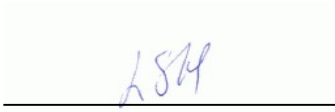
Janet Gao, Senior Analyst, Organics Department



Jeanette Olivares, Senior Analyst



Peng Liang, Analyst II



Luba Shymushovska, Senior Analyst, Organic Department

==========

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

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CHAIN OF CUSTODY RECORD

INVOICE INFORMATION:		REPORT INFORMATION (if differs from invoice):		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#2597 PUBLIC WORKS & GOVERNMENT SERVI	Company Name:	#25925 AECOM	Quotation #:		MAXXAM JOB #:	BOTTLE ORDER #:
Contact Name:	Jessie Hoyt	Contact Name:	NICK OKE	P.O. #:	700266069		405374
Address:	TELUS TOWER NORTH, 5th FLOOR 10025 JASP	Address:	17007 - 107 Avenue	Project #:	60299674	CHAIN OF CUSTODY #:	PROJECT MANAGER:
	EDMONTON AB T5J 1S6		, Edmonton AB T5S 1G3	Project Name:	CAM-C	C#405374-30-01	Geraldyn Gouthro
Phone:	(780)497-3786 Fax: (780)497-3842	Phone:	(780)486-4057 Fax:	Site #:			
Email:	jessie.hoyt@psgsc-tpsgc.gc.ca	Email:	nick.oke@aecom.com /eva.schulz@aecom.com	Sampled By:	J.McCallum		

REGULATORY CRITERIA:
- [ ] ATI
- [x] CCME
- [x] OTHER

SPECIAL INSTRUCTIONS

SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

ANALYSIS REQUESTED (Please be specific):

TURNAROUND TIME (TAT) REQUIRED:

PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS

Regular (Standard) TAT: [x]
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests are > 5 days - contact your Project Manager for details

Job Specific Rush TAT (if applies to entire submission) [ ]
Date Required: _____
Rush Confirmation Number: _____ *(call lab for #)*

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Metals Field Filtered ? (Y / N)	PHC F1-4	metals	total PCBs	# of Bottles	Comments
1		TP13-7@ 1.25m	Jul 29	4:15	Soil		✓			1	
2		TP13-7@ 0.75m	"	4:10	"		✓			1	
3		TP13-8@ 0.85m	"	4:40	"		✓			1	
4		TP13-9@ 0.4m	"	4:55	"		✓			1	
5		TP13-9@ 0.81m	"	5:00	"		✓			1	
6		TP13-10@0.6m	"	5:15	"		✓			1	
7		TP13-10@1.24m	"	5:20	"		✓			1	
8		TP13-10A@1.24m	"	5:25	"		✓			1	
9		TP13-11@0.4m	"	5:30	"		✓			1	
10		TP13-11@0.66m	"	5:40	"		✓			1	

1-Aug-13 09:30
Geraldyn Gouthro
B367290
ACI INS-0070

RECEIVED IN YELLOWKNIFE
By: 0930
2013 -08- 01

Temp: 3.1 3.4 1.3 From Bag 3

*RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	# Jars Used and Not Submitted	Laboratory Use Only: Time Sensitive	Temperature (°C) on Receipt	Custody Seal Intact on Cooler?
Eva Schulz	July 31/13	10 am	Yuanpeng Lin	2013/08/02	1550		[ ]	5.9.4 / 4.6.5 / 5.5.4	[x] Yes [ ] No

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.
** ALL SAMPLES ARE HELD FOR 60 DAYS AFTER SAMPLE RECEIPT, FOR SPECIAL REQUESTS CONTACT YOUR PROJECT MANAGER

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CHAIN OF CUSTODY RECORD

INVOICE INFORMATION:		REPORT INFORMATION (if differs from invoice):		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#2597 PUBLIC WORKS & GOVERNMENT SERVI	Company Name:	#25925 AECOM	Quotation #:		MAXXAM JOB #:	BOTTLE ORDER #:
Contact Name:	Jessie Hoyt	Contact Name:	NICK OKE	P.O. #:	700266069	B367290	405374
Address:	TELUS TOWER NORTH, 5th FLOOR 10025 JASP	Address:	17007 - 107 Avenue	Project #:	60299674	CHAIN OF CUSTODY #:	PROJECT MANAGER:
	EDMONTON AB T5J 1S6		, Edmonton AB T5S 1G3	Project Name:	CAM-C	C#405374-01-01	Geraldyn Gouthro
Phone:	(780)497-3786 Fax: (780)497-3842	Phone:	(780)486-4057 Fax:	Site #:			
Email:	jessie.hoyt@psgsc-tpsgc.gc.ca	Email:	nick.oke@aecom.com kera.schultz@aecom.com	Sampled By:	T.McCallum		

REGULATORY CRITERIA:
- [x] ATI
- [x] CCME
- [ ] OTHER

SPECIAL INSTRUCTIONS

SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

ANALYSIS REQUESTED (Please be specific):

TURNAROUND TIME (TAT) REQUIRED:

PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS

Regular (Standard) TAT: [x]
(will be applied if Rush TAT is not specified):
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Job Specific Rush TAT (if applies to entire submission) [ ]
Date Required: _____
Rush Confirmation Number: _____ *(call lab for #)*

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Metals Field Filtered ? (Y / N)	PHC F1-4	metals	total PCBs	# of Bottles	Comments
1		TP13-12@0.7m	Jul 29	5:45	Soil		✓			1	
2		TP13-13@0.7m	"	6:00	"		✓			1	
3		TP13-14@0.65m	Jul-30	9:30	"		✓			1	
4		TP13-14@1.2m	"	9:40	"		✓			1	
5		TP13-15@0.55m	"	9:50	"		✓			1	
6		TP13-15@1.0m	"	9:55	"		✓			1	RECEIVED IN YELLOWKNIFE By: 0930 2013-08-01
7		TP13-16@1.0m	"	10:15	"		✓			1	
8		TP13-17@0.55m	"	11:00	"		✓			1	
9		TP13-18@0.5m	"	11:30	"		✓			1	Temp: 3 3 3 / 3 4 4 From Bags
10		TP13-18@1.0m	"	11:45	"		✓			1	

*RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	# Jars Used and Not Submitted
Kera Schultz	July 31/13	10am	Yuanpeng Liu	2013/08/02	1550	

Laboratory Use Only

Time Sensitive	Temperature (°C) on Receipt	Custody Seal Intact on Cooler?
[ ]	5.9.4 / 4.6.5 / 5.5.4	[x] Yes [ ] No

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.
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CHAIN OF CUSTODY RECORD

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Company Name:	#2597 PUBLIC WORKS & GOVERNMENT SERVI	Company Name:	#25925 AECOM	Quotation #:		MAXXAM JOB #:	BOTTLE ORDER #:
Contact Name:	Jessie Hoyt	Contact Name:	NICK OKE	P.O. #:	700266069	B367290	405374
Address:	TELUS TOWER NORTH, 5th FLOOR 10025 JASP	Address:	17007 - 107 Avenue	Project #:	60299674	CHAIN OF CUSTODY #:	PROJECT MANAGER:
	EDMONTON AB T5J 1S6		, Edmonton AB T5S 1G3	Project Name:	CAM-C	C#405374-29-01	Geraldyn Gouthro
Phone:	(780)497-3786 Fax: (780)497-3842	Phone:	(780)486-4057 Fax:	Site #:			
Email:	jessie.hoyt@psgsc-tpsgc.gc.ca	Email:	nick.oke@aecom.com /eva.schultz@aecom.com	Sampled By:	Jennifer McCallum		

REGULATORY CRITERIA:
- [ ] ATI
- [x] CCME
- [x] OTHER

SPECIAL INSTRUCTIONS

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[x]

Job Specific Rush TAT (if applies to entire submission)
Date Required: _____
Rush Confirmation Number: _____ *(call lab for #)*
[ ]

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Metals Field Filtered ? (Y / N)	PHC F1-F4	Metals	Total PCBs	# of Bottles	Comments
1		TP13-01@1.2m	Jul-29	1:10	Soil		✓			1	
2		TP13-02@0.5m	"	1:30	"		✓			1	
3		TP13-3@0.7m	"	1:55	"		✓			1	
4		TP13-4@0.7m	"	2:20	"		✓			1	
5	✓	TP13-5@1.05m	"	3p	"		✓			1	
6	✓	TP13-5@1.25m	"	3.10	"		✓			1	RECEIVED IN YELLOWKNIFE
7	✓	TP13-6@1.43m	"	3:15	"		✓			1	By: C930
8	✓	TP13-6@0.43m	"	3:45	"		✓			1	2013-08-01
9		~~TP13-5@1.43m~~	"	~~3:15~~	"		✓			1	Temp: 3/3 3/4 /3 /4 From Bags
10		TP13-6@0.92m	"	3:50	"		✓			1	

*RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	# Jars Used and Not Submitted	Laboratory Use Only: Time Sensitive	Temperature (°C) on Receipt	Custody Seal Intact on Cooler?
Eva Schultz	July 31/13	10am	Yuanpeng Lin	2013/08/02	1550		[ ]	5, 9, 4 / 4, 6, 5 / 5, 5, 4	[x] Yes [ ] No

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.
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Company Name:	#2597 PUBLIC WORKS & GOVERNMENT SERVI	Company Name:	#25925 AECOM	Quotation #:		MAXXAM JOB #:	BOTTLE ORDER #:
Contact Name:	Jessie Hoyt	Contact Name:	NICK OKE	P.O. #:	700266069	B367290	405374
Address:	TELUS TOWER NORTH, 5th FLOOR 10025 JASP EDMONTON AB T5J 1S6	Address:	17007 - 107 Avenue , Edmonton AB T5S 1G3	Project #:	60299674	CHAIN OF CUSTODY #:	PROJECT MANAGER:
Phone:	(780)497-3786 Fax: (780)497-3842	Phone:	(780)486-4057 Fax:	Project Name:	CAM-C	C#405374-02-01	Geraldyn Gouthro
Email:	jessie.hoyt@psgsc-tpsgc.gc.ca	Email:	nick.oke@aecom.com eva.schultz@aecom.com	Site #:			
				Sampled By:	J. McCallum		

REGULATORY CRITERIA:
- [ ] ATI
- [x] CCME
- [x] OTHER

SPECIAL INSTRUCTIONS

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Job Specific Rush TAT (if applies to entire submission) [ ]
Date Required: _____
Rush Confirmation Number: _____ *(call lab for #)*

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Metals Field Filtered ? (Y / N)	PHC F1-F4	Metals	Total PCBs	# of Bottles	Comments
1		TP 13-19 @0.64m	Jul 30	12p	soil		✓			1	
2		TP13-19 @1.0m	"	12:15	"		✓			1	
3		TP13-20 @ 0.05m	"	12:45	"			✓	✓	2	
4		TP13-21 @ 0.05	"	2:30	"			✓	✓	2	
5		TP 13-22 @0.5	"	3p	"			✓	✓	2	
6		TP13-05 @ 0.05m	July 29		"			✓		1	RECEIVED IN YELLOWKNIFE By: 0930 2013-08-01
7		TP13-06 @ 0.05m	"		"			✓		1	
8		TP13-09 @0.05m	"		"			✓		1	
9		TP13-10 @ 0.05	July 30		"			✓		1	Temp: 3/3/13 3.4 4 From Bags
10		TP13-11 @0.05	"		"			✓		1	

*RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	# Jars Used and Not Submitted
Eva Schultz	July 31/13	10am	Yuan peng Liu	2013/08/02	1550	

Laboratory Use Only

Time Sensitive	Temperature (°C) on Receipt	Custody Seal Intact on Cooler?
[ ]	5.9.4 / 4.6.5 / 5.5.4	[x] Yes [ ] No

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Company Name:	#2597 PUBLIC WORKS & GOVERNMENT SERVI	Company Name:	#25925 AECOM	Quotation #:		MAXXAM JOB #:	BOTTLE ORDER #:
Contact Name:	Jessie Hoyt	Contact Name:	NICK OKE	P.O. #:	700266069	B367290	405374
Address:	TELUS TOWER NORTH, 5th FLOOR 10025 JASP	Address:	17007 - 107 Avenue	Project #:	60299674	CHAIN OF CUSTODY #:	PROJECT MANAGER:
	EDMONTON AB T5J 1S6		, Edmonton AB T5S 1G3	Project Name:	CAM-C	C#405374-03-01	Geraldyn Gouthro
Phone:	(780)497-3786 Fax: (780)497-3842	Phone:	(780)486-4057 Fax:	Site #:			
Email:	jessie.hoyt@psgsc-tpsgc.gc.ca	Email:	nick.oke@aecom.com leva.schultz.	Sampled By:	T.McCallum/E.Schultz		

REGULATORY CRITERIA:
- [ ] ATI
- [x] CCME
- [ ] OTHER

SPECIAL INSTRUCTIONS

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Rush Confirmation Number: _____ (call lab for #)

SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Metals Field Filtered ? (Y / N)	PHC F1-4	metals	PCB's	# of Bottles	Comments
1		TP13-12@0.05m	July30		Soil			✓		1	
2		TP13-15@0.05m	"		"			✓		1	
3		TP13-20b@0.05	"		"			✓		1	
4		TP13-20@0.5	"		"			✓		1	Hold
5		TP13-21@0.5m	"		"			✓		1	HOLD
6		TP13-22@0.5m	"		"			✓		1	HOLD
7		SO#1@0.34m	"	2:00	"			✓	✓	1	RECEIVED IN YELLOWKNIFE BY: 0430 2013-08-01
8		SO#2@0.41m	"	2:15	"			✓	✓	1	
9		SO#3@0.38m	"	2:30	"			✓	✓	1	
10		SO#4@0.31m	"	2:40	"			✓	✓	1	Temp: 3.3 3.1 4.3 1.4 SpongeBags

*RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	# Jars Used and Not Submitted	Laboratory Use Only: Time Sensitive	Temperature (°C) on Receipt	Custody Seal Intact on Cooler?
Eva Schultz	July30/13	10a.	Yuan pang Lin	2013/08/02	1550		[ ]	5.9.4. 4.6.5 5.5.4	[ ] Yes [ ] No

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.
** ALL SAMPLES ARE HELD FOR 60 DAYS AFTER SAMPLE RECEIPT, FOR SPECIAL REQUESTS CONTACT YOUR PROJECT MANAGER

White: Maxxam Yellow: Client

Maxxam

Maxxam Analytics International Corporation o/a Maxxam Analytics
9331 - 48th Street, Edmonton, Alberta Canada T6B 2R4 Tel:(780) 577-7100 Toll-free:800-653-6266 Fax:780-450-4187 www.maxxam.ca

CHAIN OF CUSTODY RECORD

INVOICE INFORMATION:		REPORT INFORMATION (if differs from invoice):		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#2597 PUBLIC WORKS & GOVERNMENT SERVI	Company Name:	#25925 AECOM	Quotation #:		MAXXAM JOB #:	BOTTLE ORDER #:
Contact Name:	Jessie Hoyt	Contact Name:	NICK OKE	P.O. #:	700266069	B367290	405374
Address:	TELUS TOWER NORTH, 5th FLOOR 10025 JASP	Address:	17007 - 107 Avenue	Project #:	60299674	CHAIN OF CUSTODY #:	PROJECT MANAGER:
	EDMONTON AB T5J 1S6		, Edmonton AB T5S 1G3	Project Name:	CAM-C	C#405374-04-01	Geraldyn Gouthro
Phone:	(780)497-3786 Fax: (780)497-3842	Phone:	(780)486-4057 Fax:	Site #:			
Email:	jessie.hoyt@psgsc-tpsgc.gc.ca	Email:	nick.oke@aecom.com eva.schultz@aecom.com	Sampled By:	E. Schultz		

REGULATORY CRITERIA:
- ☐ ATI
- ☑ CCME
- ☑ OTHER

SPECIAL INSTRUCTIONS

SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

ANALYSIS REQUESTED (Please be specific):

TURNAROUND TIME (TAT) REQUIRED:

PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS

Regular (Standard) TAT: ☑
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests are > 5 days - contact your Project Manager for details

Job Specific Rush TAT (if applies to entire submission) ☐
Date Required: _____
Rush Confirmation Number: _____ *(call lab for #)*

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Metals Field Filtered ? (Y / N)	PCB	Metals	# of Bottles	Comments
1		SO#5@0.35m	July30	2:50	Soil		✓	✓	1	
2										
3										
4										
5										
6										RECEIVED IN YELLOWKNIFE By: 0930 2013-08-01
7										
8										
9										Temp: 3.3 1.3 3.4 1.4 From Bag 3
10										

*RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	# Jars Used and Not Submitted	Laboratory Use Only: Time Sensitive	Temperature (°C) on Receipt	Custody Seal Intact on Cooler?
Eva Schultz	July 31/13	10a	Yuanpeng Lin	2013/08/02	1550		☐	5.9.4 4.6.5 5.5.4	☑ Yes ☐ No

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

** ALL SAMPLES ARE HELD FOR 60 DAYS AFTER SAMPLE RECEIPT, FOR SPECIAL REQUESTS CONTACT YOUR PROJECT MANAGER

White: Maxxam Yellow: Client

Your Project #: B367290
Your C.O.C. #: na

Attention: Geraldlyn Gouthro
Maxxam Analytics
2021 41st Ave NE
Calgary, AB
T2E 6P2

Report Date: 2013/08/14

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B3C8433
Received: 2013/08/07, 09:17

Sample Matrix: Soil
Samples Received: 8

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Moisture	8	N/A	2013/08/12	CAM SOP-00445	R.Carter,1993
Polychlorinated Biphenyl in Soil	4	2013/08/12	2013/08/12	CAM SOP-00309	SW846 8082
Polychlorinated Biphenyl in Soil	4	2013/08/12	2013/08/13	CAM SOP-00309	SW846 8082

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

Encryption Key

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

Shaun Nowickyj,
Email: SNowickyj@maxxam.ca
Phone# (905) 817-5700

==========

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Total cover pages: 1

Maxxam Job #: B3C8433
Report Date: 2013/08/14

Maxxam Analytics
Client Project #: B367290

RESULTS OF ANALYSES OF SOIL

Maxxam ID		SN7741	SN7742	SN7743	SN7744		
Sampling Date		2013/07/30 12:45	2013/07/30 14:30	2013/07/30 15:00	2013/07/30 14:00		
COC Number		na	na	na	na		
	Units	**HC1583\TP13-20@0.05M**	**HC1584\TP13-21@0.5**	**HC1585\TP13-22@0.5**	**HC1603\SO#1@0.34M**	**RDL**	**QC Batch**
Moisture	%	3.1	1.0	1.3	11	1.0	3310980

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		SN7745	SN7746	SN7747	SN7748		
Sampling Date		2013/07/30 14:15	2013/07/30 14:30	2013/07/30 14:40	2013/07/30 14:50		
COC Number		na	na	na	na		
	Units	**HC1604\SO#2@0.41M**	**HC1605\SO#3@0.38M**	**HC1606\SO#4@0.31M**	**HC1607\SO#5@0.35M**	**RDL**	**QC Batch**
Moisture	%	3.8	3.0	11	2.5	1.0	3310980

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B3C8433
Report Date: 2013/08/14

Maxxam Analytics
Client Project #: B367290

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		SN7741	SN7742		SN7743		
Sampling Date		2013/07/30 12:45	2013/07/30 14:30		2013/07/30 15:00		
COC Number		na	na		na		
	Units	**HC1583\TP13-20@0.05M**	**HC1584\TP13-21@0.5**	**RDL**	**HC1585\TP13-22@0.5**	**RDL**	**QC Batch**
Aroclor 1016	ug/g	<0.010	<0.010	0.010	<0.10	0.10	3310682
Aroclor 1221	ug/g	<0.010	<0.010	0.010	<0.10	0.10	3310682
Aroclor 1232	ug/g	<0.010	<0.010	0.010	<0.10	0.10	3310682
Aroclor 1242	ug/g	<0.010	<0.010	0.010	<0.10	0.10	3310682
Aroclor 1248	ug/g	<0.010	<0.010	0.010	<0.10	0.10	3310682
Aroclor 1254	ug/g	0.049	0.050	0.010	4.3	0.10	3310682
Aroclor 1260	ug/g	0.023	0.020	0.010	0.28	0.10	3310682
Aroclor 1262	ug/g	<0.010	<0.010	0.010	<0.10	0.10	3310682
Aroclor 1268	ug/g	<0.010	<0.010	0.010	<0.10	0.10	3310682
Total PCB	ug/g	0.072	0.071	0.010	4.6	0.10	3310682
Surrogate Recovery (%)							
Decachlorobiphenyl	%	85	77	N/A	87	N/A	3310682

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

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Maxxam Job #: B3C8433
Report Date: 2013/08/14

Maxxam Analytics
Client Project #: B367290

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		SN7744	SN7745	SN7746		
Sampling Date		2013/07/30 14:00	2013/07/30 14:15	2013/07/30 14:30		
COC Number		na	na	na		
	Units	**HC1603\SO#1@0.34M**	**HC1604\SO#2@0.41M**	**HC1605\SO#3@0.38M**	**RDL**	**QC Batch**
Aroclor 1016	ug/g	<0.010	<0.010	<0.010	0.010	3310682
Aroclor 1221	ug/g	<0.010	<0.010	<0.010	0.010	3310682
Aroclor 1232	ug/g	<0.010	<0.010	<0.010	0.010	3310682
Aroclor 1242	ug/g	<0.010	<0.010	<0.010	0.010	3310682
Aroclor 1248	ug/g	<0.010	<0.010	<0.010	0.010	3310682
Aroclor 1254	ug/g	0.023	<0.010	0.024	0.010	3310682
Aroclor 1260	ug/g	<0.010	<0.010	<0.010	0.010	3310682
Aroclor 1262	ug/g	<0.010	<0.010	<0.010	0.010	3310682
Aroclor 1268	ug/g	<0.010	<0.010	<0.010	0.010	3310682
Total PCB	ug/g	0.023	<0.010	0.024	0.010	3310682
Surrogate Recovery (%)						
Decachlorobiphenyl	%	82	75	101	N/A	3310682

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

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Maxxam Job #: B3C8433
Report Date: 2013/08/14

Maxxam Analytics
Client Project #: B367290

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		SN7746	SN7747	SN7748		
Sampling Date		2013/07/30 14:30	2013/07/30 14:40	2013/07/30 14:50		
COC Number		na	na	na		
	Units	**HC1605\SO#3@0.38M Lab-Dup**	**HC1606\SO#4@0.31M**	**HC1607\SO#5@0.35M**	**RDL**	**QC Batch**
Aroclor 1016	ug/g	<0.010	<0.010	<0.010	0.010	3310682
Aroclor 1221	ug/g	<0.010	<0.010	<0.010	0.010	3310682
Aroclor 1232	ug/g	<0.010	<0.010	<0.010	0.010	3310682
Aroclor 1242	ug/g	<0.010	<0.010	<0.010	0.010	3310682
Aroclor 1248	ug/g	<0.010	<0.010	<0.010	0.010	3310682
Aroclor 1254	ug/g	0.025	0.088	0.015	0.010	3310682
Aroclor 1260	ug/g	<0.010	<0.010	<0.010	0.010	3310682
Aroclor 1262	ug/g	<0.010	<0.010	<0.010	0.010	3310682
Aroclor 1268	ug/g	<0.010	<0.010	<0.010	0.010	3310682
Total PCB	ug/g	0.025	0.088	0.015	0.010	3310682
Surrogate Recovery (%)						
Decachlorobiphenyl	%	101	90	85	N/A	3310682

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

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Maxxam Job #: B3C8433
Report Date: 2013/08/14

Maxxam Analytics
Client Project #: B367290

Test Summary

Maxxam ID SN7741 **Collected** 2013/07/30
Sample ID HC1583\TP13-20@0.05M **Shipped**
Matrix Soil **Received** 2013/08/07

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Moisture	BAL	3310980	N/A	2013/08/12	Anita Cheema
Polychlorinated Biphenyl in Soil	GC/ECD	3310682	2013/08/12	2013/08/12	Li Peng

Maxxam ID SN7742 **Collected** 2013/07/30
Sample ID HC1584\TP13-21@0.5 **Shipped**
Matrix Soil **Received** 2013/08/07

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Moisture	BAL	3310980	N/A	2013/08/12	Anita Cheema
Polychlorinated Biphenyl in Soil	GC/ECD	3310682	2013/08/12	2013/08/13	Li Peng

Maxxam ID SN7743 **Collected** 2013/07/30
Sample ID HC1585\TP13-22@0.5 **Shipped**
Matrix Soil **Received** 2013/08/07

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Moisture	BAL	3310980	N/A	2013/08/12	Anita Cheema
Polychlorinated Biphenyl in Soil	GC/ECD	3310682	2013/08/12	2013/08/13	Li Peng

Maxxam ID SN7744 **Collected** 2013/07/30
Sample ID HC1603\SO#1@0.34M **Shipped**
Matrix Soil **Received** 2013/08/07

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Moisture	BAL	3310980	N/A	2013/08/12	Anita Cheema
Polychlorinated Biphenyl in Soil	GC/ECD	3310682	2013/08/12	2013/08/13	Li Peng

Maxxam ID SN7745 **Collected** 2013/07/30
Sample ID HC1604\SO#2@0.41M **Shipped**
Matrix Soil **Received** 2013/08/07

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Moisture	BAL	3310980	N/A	2013/08/12	Anita Cheema
Polychlorinated Biphenyl in Soil	GC/ECD	3310682	2013/08/12	2013/08/13	Li Peng

Maxxam ID SN7746 **Collected** 2013/07/30
Sample ID HC1605\SO#3@0.38M **Shipped**
Matrix Soil **Received** 2013/08/07

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Moisture	BAL	3310980	N/A	2013/08/12	Anita Cheema
Polychlorinated Biphenyl in Soil	GC/ECD	3310682	2013/08/12	2013/08/12	Li Peng

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Maxxam Job #: B3C8433
Report Date: 2013/08/14

Maxxam Analytics
Client Project #: B367290

Test Summary

Maxxam ID SN7746 Dup
Sample ID HC1605\SO#3@0.38M
Matrix Soil

Collected 2013/07/30
Shipped
Received 2013/08/07

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Polychlorinated Biphenyl in Soil	GC/ECD	3310682	2013/08/12	2013/08/12	Li Peng

Maxxam ID SN7747
Sample ID HC1606\SO#4@0.31M
Matrix Soil

Collected 2013/07/30
Shipped
Received 2013/08/07

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Moisture	BAL	3310980	N/A	2013/08/12	Anita Cheema
Polychlorinated Biphenyl in Soil	GC/ECD	3310682	2013/08/12	2013/08/12	Li Peng

Maxxam ID SN7748
Sample ID HC1607\SO#5@0.35M
Matrix Soil

Collected 2013/07/30
Shipped
Received 2013/08/07

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Moisture	BAL	3310980	N/A	2013/08/12	Anita Cheema
Polychlorinated Biphenyl in Soil	GC/ECD	3310682	2013/08/12	2013/08/12	Li Peng

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Maxxam Analytics
Client Project #: B367290

Maxxam Job #: B3C8433
Report Date: 2013/08/14

Package 1	8.7°C

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

GENERAL COMMENTS

Sample SN7743-01: PCB Analysis: Due to high concentrations of the target analytes, sample required dilution. Detection limits were adjusted accordingly.

Results relate only to the items tested.

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Maxxam Analytics
Attention: Geraldlyn Gouthro
Client Project #: B367290
P.O. #:
Site Location:

Quality Assurance Report

Maxxam Job Number: MB3C8433

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
3310682	LPG	Matrix Spike	Decachlorobiphenyl	2013/08/12		94	%	60 - 130
		Matrix Spike (SN7746)	Aroclor 1260	2013/08/12		104	%	60 - 130
			Total PCB	2013/08/12		104	%	60 - 130
		Spiked Blank	Decachlorobiphenyl	2013/08/12		79	%	60 - 130
			Aroclor 1260	2013/08/12		91	%	60 - 130
			Total PCB	2013/08/12		91	%	60 - 130
		Method Blank	Decachlorobiphenyl	2013/08/12		90	%	60 - 130
			Aroclor 1016	2013/08/12	<0.010		ug/g	
			Aroclor 1221	2013/08/12	<0.010		ug/g	
			Aroclor 1232	2013/08/12	<0.010		ug/g	
			Aroclor 1242	2013/08/12	<0.010		ug/g	
			Aroclor 1248	2013/08/12	<0.010		ug/g	
			Aroclor 1254	2013/08/12	<0.010		ug/g	
			Aroclor 1260	2013/08/12	<0.010		ug/g	
			Aroclor 1262	2013/08/12	<0.010		ug/g	
			Aroclor 1268	2013/08/12	<0.010		ug/g	
			Total PCB	2013/08/12	<0.010		ug/g	
		RPD - Sample/Sample Dup	Aroclor 1016	2013/08/12	NC		%	50
			Aroclor 1221	2013/08/12	NC		%	50
			Aroclor 1232	2013/08/12	NC		%	50
			Aroclor 1242	2013/08/12	NC		%	50
			Aroclor 1248	2013/08/12	NC		%	50
			Aroclor 1254	2013/08/12	NC		%	50
			Aroclor 1260	2013/08/12	NC		%	50
			Aroclor 1262	2013/08/12	NC		%	50
			Aroclor 1268	2013/08/12	NC		%	50
			Total PCB	2013/08/12	NC		%	50
3310980	THT	RPD - Sample/Sample Dup	Moisture	2013/08/12	0.8		%	20

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.
Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.

Validation Signature Page

Maxxam Job #: B3C8433

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

Charles Ancker, B.Sc., M.Sc., C.Chem, Senior Analyst

Cristina Carriere, Scientific Services

==========

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Your P.O. #: 700266069
Your Project #: 60299674, CAM-C
Your C.O.C. #: 40537406, 405374-06-01

Attention: NICK OKE
AECOM
EDMONTON
17007 - 107 Avenue
, Edmonton, AB
CANADA T5S 1G3

Report Date: 2013/08/26

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B367769
Received: 2013/08/04, 9:25

Sample Matrix: Soil
Samples Received: 11

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
BTEX/F1 by HS GC/MS (MeOH extract)	9	2013/08/06	2013/08/10	AB SOP-00039	CCME, EPA 8260C
CCME Hydrocarbons (F2-F4 in soil)	4	2013/08/06	2013/08/09	AB SOP-00040 AB SOP-00036	CCME PHC-CWS
CCME Hydrocarbons (F2-F4 in soil)	5	2013/08/06	2013/08/10	AB SOP-00040 AB SOP-00036	CCME PHC-CWS
Elements by ICPMS - Soils	9	2013/08/08	2013/08/10	AB SOP-00043	EPA 200.8
Moisture	11	N/A	2013/08/07	AB SOP-00002	CCME PHC-CWS
pH @25C (1:2 Extract)	9	2013/08/08	2013/08/08	AB SOP-00006	SSMA 16.2

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

Encryption Key

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

Geraldyn Gouthro, Client Service Specialist
Email: GGouthro@maxxam.ca
Phone# (780) 577-7173

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Total cover pages: 1

Maxxam Job #: B367769
Report Date: 2013/08/26

AECOM
Client Project #: 60299674, CAM-C

Your P.O. #: 700266069

RESULTS OF CHEMICAL ANALYSES OF SOIL

Maxxam ID		HC5402	HC5403	HC5404	HC5405	HC5406		
Sampling Date		2013/07/31 14:00	2013/07/31 14:10	2013/07/31 14:20	2013/07/31 14:35	2013/07/31 14:45		
COC Number		405374-06-01	405374-06-01	405374-06-01	405374-06-01	405374-06-01		
	UNITS	**AIRSHIP LF#1**	**AIRSHIP LF#2**	**AIRSHIP LF#3**	**AIRSHIP LF#4**	**AIRSHIP LF#5**	**RDL**	**QC Batch**
Soluble Parameters								
Soluble (2:1) pH	N/A	8.50	8.55	8.41	8.28	8.03	N/A	7060152
Physical Properties								
Moisture	%	15	12	11	2.8	2.6	0.30	7053326

RDL = Reportable Detection Limit

Maxxam ID		HC5407	HC5407	HC5408	HC5409	HC5410		
Sampling Date		2013/07/31 15:00	2013/07/31 15:00	2013/07/31 15:15	2013/07/31 09:30	2013/07/31 09:45		
COC Number		405374-06-01	405374-06-01	405374-06-01	405374-06-01	405374-06-01		
	UNITS	**AIRSHIP LF#6**	**AIRSHIP LF#6 Lab-Dup**	**AIRSHIP LF#7**	**EAST DRUM CACHE 1**	**EAST DRUM CACHE 2**	**RDL**	**QC Batch**
Soluble Parameters								
Soluble (2:1) pH	N/A	7.90	N/A	8.86	7.91	N/A	N/A	7060152
Physical Properties								
Moisture	%	2.5	2.1	2.1	5.5	6.2	0.30	7053326

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam ID		HC5411	HC5412		
Sampling Date		2013/07/31 09:55	2013/07/31 10:30		
COC Number		405374-06-01	405374-06-01		
	UNITS	**EAST DRUM CACHE 3**	**DEBRIS AREA 4**	**RDL**	**QC Batch**
Soluble Parameters					
Soluble (2:1) pH	N/A	N/A	7.48	N/A	7060152
Physical Properties					
Moisture	%	2.5	9.4	0.30	7053326

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: B367769
Report Date: 2013/08/26

AECOM
Client Project #: 60299674, CAM-C

Your P.O. #: 700266069

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		HC5402	HC5403	HC5405		HC5406		
Sampling Date		2013/07/31 14:00	2013/07/31 14:10	2013/07/31 14:35		2013/07/31 14:45		
COC Number		405374-06-01	405374-06-01	405374-06-01		405374-06-01		
	UNITS	**AIRSHIP LF#1**	**AIRSHIP LF#2**	**AIRSHIP LF#4**	**QC Batch**	**AIRSHIP LF#5**	**RDL**	**QC Batch**
Ext. Pet. Hydrocarbon								
F2 (C10-C16 Hydrocarbons)	mg/kg	<10	<10	<10	7061909	<10	10	7063974
F3 (C16-C34 Hydrocarbons)	mg/kg	<50	<50	<50	7061909	<50	50	7063974
F4 (C34-C50 Hydrocarbons)	mg/kg	<50	<50	<50	7061909	<50	50	7063974
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	7061909	Yes	N/A	7063974
Surrogate Recovery (%)								
O-TERPHENYL (sur.)	%	104	95	100	7061909	107	N/A	7063974

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam ID		HC5406		HC5407		HC5408		
Sampling Date		2013/07/31 14:45		2013/07/31 15:00		2013/07/31 15:15		
COC Number		405374-06-01		405374-06-01		405374-06-01		
	UNITS	**AIRSHIP LF#5 Lab-Dup**	**QC Batch**	**AIRSHIP LF#6**	**QC Batch**	**AIRSHIP LF#7**	**RDL**	**QC Batch**
Ext. Pet. Hydrocarbon								
F2 (C10-C16 Hydrocarbons)	mg/kg	<10	7063974	<10	7061909	<10	10	7063974
F3 (C16-C34 Hydrocarbons)	mg/kg	<50	7063974	<50	7061909	<50	50	7063974
F4 (C34-C50 Hydrocarbons)	mg/kg	<50	7063974	<50	7061909	<50	50	7063974
Reached Baseline at C50	mg/kg	Yes	7063974	Yes	7061909	Yes	N/A	7063974
Surrogate Recovery (%)								
O-TERPHENYL (sur.)	%	115	7063974	95	7061909	95	N/A	7063974

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: B367769
Report Date: 2013/08/26

AECOM
Client Project #: 60299674, CAM-C

Your P.O. #: 700266069

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		HC5409	HC5410	HC5411		
Sampling Date		2013/07/31 09:30	2013/07/31 09:45	2013/07/31 09:55		
COC Number		405374-06-01	405374-06-01	405374-06-01		
	UNITS	**EAST DRUM CACHE 1**	**EAST DRUM CACHE 2**	**EAST DRUM CACHE 3**	**RDL**	**QC Batch**
Ext. Pet. Hydrocarbon						
F2 (C10-C16 Hydrocarbons)	mg/kg	<10	43	<10	10	7063974
F3 (C16-C34 Hydrocarbons)	mg/kg	<50	83	80	50	7063974
F4 (C34-C50 Hydrocarbons)	mg/kg	<50	<50	<50	50	7063974
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	N/A	7063974
Surrogate Recovery (%)						
O-TERPHENYL (sur.)	%	112	111	104	N/A	7063974

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: B367769
Report Date: 2013/08/26

AECOM
Client Project #: 60299674, CAM-C

Your P.O. #: 700266069

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		HC5402	HC5403	HC5404	HC5405		
Sampling Date		2013/07/31 14:00	2013/07/31 14:10	2013/07/31 14:20	2013/07/31 14:35		
COC Number		405374-06-01	405374-06-01	405374-06-01	405374-06-01		
	UNITS	**AIRSHIP LF#1**	**AIRSHIP LF#2**	**AIRSHIP LF#3**	**AIRSHIP LF#4**	**RDL**	**QC Batch**
Elements							
Total Antimony (Sb)	mg/kg	<1.0	<1.0	<1.0	<1.0	1.0	7057901
Total Arsenic (As)	mg/kg	<1.0	<1.0	<1.0	<1.0	1.0	7057901
Total Barium (Ba)	mg/kg	<10	<10	<10	<10	10	7057901
Total Beryllium (Be)	mg/kg	<0.40	<0.40	<0.40	<0.40	0.40	7057901
Total Cadmium (Cd)	mg/kg	<0.10	<0.10	<0.10	<0.10	0.10	7057901
Total Chromium (Cr)	mg/kg	3.2	3.8	3.2	2.0	1.0	7057901
Total Cobalt (Co)	mg/kg	<1.0	1.2	1.3	<1.0	1.0	7057901
Total Copper (Cu)	mg/kg	<5.0	<5.0	<5.0	<5.0	5.0	7057901
Total Lead (Pb)	mg/kg	1.5	1.7	5.6	2.1	1.0	7057901
Total Mercury (Hg)	mg/kg	<0.050	<0.050	<0.050	<0.050	0.050	7057901
Total Molybdenum (Mo)	mg/kg	<0.40	<0.40	<0.40	<0.40	0.40	7057901
Total Nickel (Ni)	mg/kg	1.1	1.6	2.3	1.5	1.0	7057901
Total Selenium (Se)	mg/kg	<0.50	<0.50	<0.50	<0.50	0.50	7057901
Total Silver (Ag)	mg/kg	<1.0	<1.0	<1.0	<1.0	1.0	7057901
Total Thallium (Tl)	mg/kg	<0.30	<0.30	<0.30	<0.30	0.30	7057901
Total Tin (Sn)	mg/kg	<1.0	<1.0	<1.0	<1.0	1.0	7057901
Total Uranium (U)	mg/kg	<1.0	<1.0	<1.0	<1.0	1.0	7057901
Total Vanadium (V)	mg/kg	9.4	11	8.3	5.5	1.0	7057901
Total Zinc (Zn)	mg/kg	<10	<10	<10	<10	10	7057901

RDL = Reportable Detection Limit

Maxxam Job #: B367769
Report Date: 2013/08/26

AECOM
Client Project #: 60299674, CAM-C

Your P.O. #: 700266069

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		HC5406	HC5407	HC5408	HC5409		
Sampling Date		2013/07/31 14:45	2013/07/31 15:00	2013/07/31 15:15	2013/07/31 09:30		
COC Number		405374-06-01	405374-06-01	405374-06-01	405374-06-01		
	UNITS	**AIRSHIP LF#5**	**AIRSHIP LF#6**	**AIRSHIP LF#7**	**EAST DRUM CACHE 1**	**RDL**	**QC Batch**
Elements							
Total Antimony (Sb)	mg/kg	<1.0	<1.0	<1.0	<1.0	1.0	7057901
Total Arsenic (As)	mg/kg	<1.0	<1.0	1.3	<1.0	1.0	7057901
Total Barium (Ba)	mg/kg	<10	<10	<10	<10	10	7057901
Total Beryllium (Be)	mg/kg	<0.40	<0.40	<0.40	<0.40	0.40	7057901
Total Cadmium (Cd)	mg/kg	<0.10	<0.10	<0.10	<0.10	0.10	7057901
Total Chromium (Cr)	mg/kg	1.9	3.3	4.5	2.0	1.0	7057901
Total Cobalt (Co)	mg/kg	<1.0	<1.0	1.2	<1.0	1.0	7057901
Total Copper (Cu)	mg/kg	<5.0	<5.0	<5.0	<5.0	5.0	7057901
Total Lead (Pb)	mg/kg	2.2	1.5	2.7	1.8	1.0	7057901
Total Mercury (Hg)	mg/kg	<0.050	<0.050	<0.050	<0.050	0.050	7057901
Total Molybdenum (Mo)	mg/kg	<0.40	<0.40	<0.40	<0.40	0.40	7057901
Total Nickel (Ni)	mg/kg	1.1	1.0	2.4	<1.0	1.0	7057901
Total Selenium (Se)	mg/kg	<0.50	<0.50	<0.50	<0.50	0.50	7057901
Total Silver (Ag)	mg/kg	<1.0	<1.0	<1.0	<1.0	1.0	7057901
Total Thallium (Tl)	mg/kg	<0.30	<0.30	<0.30	<0.30	0.30	7057901
Total Tin (Sn)	mg/kg	<1.0	<1.0	<1.0	<1.0	1.0	7057901
Total Uranium (U)	mg/kg	<1.0	<1.0	<1.0	<1.0	1.0	7057901
Total Vanadium (V)	mg/kg	4.9	6.7	10	4.1	1.0	7057901
Total Zinc (Zn)	mg/kg	<10	<10	<10	<10	10	7057901

RDL = Reportable Detection Limit

Maxxam Job #: B367769
Report Date: 2013/08/26

AECOM
Client Project #: 60299674, CAM-C

Your P.O. #: 700266069

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		HC5412		
Sampling Date		2013/07/31 10:30		
COC Number		405374-06-01		
	UNITS	**DEBRIS AREA 4**	**RDL**	**QC Batch**
Elements				
Total Antimony (Sb)	mg/kg	2.5	1.0	7057901
Total Arsenic (As)	mg/kg	<1.0	1.0	7057901
Total Barium (Ba)	mg/kg	<10	10	7057901
Total Beryllium (Be)	mg/kg	<0.40	0.40	7057901
Total Cadmium (Cd)	mg/kg	0.13	0.10	7057901
Total Chromium (Cr)	mg/kg	2.1	1.0	7057901
Total Cobalt (Co)	mg/kg	<1.0	1.0	7057901
Total Copper (Cu)	mg/kg	<5.0	5.0	7057901
Total Lead (Pb)	mg/kg	4.3	1.0	7057901
Total Mercury (Hg)	mg/kg	<0.050	0.050	7057901
Total Molybdenum (Mo)	mg/kg	<0.40	0.40	7057901
Total Nickel (Ni)	mg/kg	<1.0	1.0	7057901
Total Selenium (Se)	mg/kg	<0.50	0.50	7057901
Total Silver (Ag)	mg/kg	<1.0	1.0	7057901
Total Thallium (Tl)	mg/kg	<0.30	0.30	7057901
Total Tin (Sn)	mg/kg	<1.0	1.0	7057901
Total Uranium (U)	mg/kg	<1.0	1.0	7057901
Total Vanadium (V)	mg/kg	4.9	1.0	7057901
Total Zinc (Zn)	mg/kg	27	10	7057901

RDL = Reportable Detection Limit

Maxxam Job #: B367769
Report Date: 2013/08/26

AECOM
Client Project #: 60299674, CAM-C

Your P.O. #: 700266069

VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		HC5402	HC5403	HC5405	HC5406		
Sampling Date		2013/07/31 14:00	2013/07/31 14:10	2013/07/31 14:35	2013/07/31 14:45		
COC Number		405374-06-01	405374-06-01	405374-06-01	405374-06-01		
	UNITS	**AIRSHIP LF#1**	**AIRSHIP LF#2**	**AIRSHIP LF#4**	**AIRSHIP LF#5**	**RDL**	**QC Batch**
Volatiles							
Benzene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	7063509
Toluene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	7063509
Ethylbenzene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	7063509
Xylenes (Total)	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	7063509
m & p-Xylene	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	7063509
o-Xylene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	7063509
F1 (C6-C10) - BTEX	mg/kg	<12	<12	<12	<12	12	7063509
(C6-C10)	mg/kg	<12	<12	<12	<12	12	7063509
Surrogate Recovery (%)							
1,4-Difluorobenzene (sur.)	%	95	95	95	93	N/A	7063509
4-BROMOFLUOROBENZENE (sur.)	%	99	99	98	100	N/A	7063509
D10-ETHYLBENZENE (sur.)	%	109	112	120	118	N/A	7063509
D4-1,2-DICHLOROETHANE (sur.)	%	114	115	115	117	N/A	7063509

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: B367769
Report Date: 2013/08/26

AECOM
Client Project #: 60299674, CAM-C

Your P.O. #: 700266069

VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		HC5407	HC5408	HC5409	HC5409		
Sampling Date		2013/07/31 15:00	2013/07/31 15:15	2013/07/31 09:30	2013/07/31 09:30		
COC Number		405374-06-01	405374-06-01	405374-06-01	405374-06-01		
	UNITS	**AIRSHIP LF#6**	**AIRSHIP LF#7**	**EAST DRUM CACHE 1**	**EAST DRUM CACHE 1 Lab-Dup**	**RDL**	**QC Batch**
Volatiles							
Benzene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	7063509
Toluene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	7063509
Ethylbenzene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	7063509
Xylenes (Total)	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	7063509
m & p-Xylene	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	7063509
o-Xylene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	7063509
F1 (C6-C10) - BTEX	mg/kg	<12	<12	<12	<12	12	7063509
(C6-C10)	mg/kg	<12	<12	<12	<12	12	7063509
Surrogate Recovery (%)							
1,4-Difluorobenzene (sur.)	%	93	106	105	106	N/A	7063509
4-BROMOFLUOROBENZENE (sur.)	%	99	94	95	95	N/A	7063509
D10-ETHYLBENZENE (sur.)	%	126	97	98	95	N/A	7063509
D4-1,2-DICHLOROETHANE (sur.)	%	116	104	105	104	N/A	7063509

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: B367769
Report Date: 2013/08/26

AECOM
Client Project #: 60299674, CAM-C

Your P.O. #: 700266069

VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		HC5410	HC5411		
Sampling Date		2013/07/31 09:45	2013/07/31 09:55		
COC Number		405374-06-01	405374-06-01		
	UNITS	**EAST DRUM CACHE 2**	**EAST DRUM CACHE 3**	**RDL**	**QC Batch**
Volatiles					
Benzene	mg/kg	<0.0050	<0.0050	0.0050	7063509
Toluene	mg/kg	<0.020	<0.020	0.020	7063509
Ethylbenzene	mg/kg	<0.010	<0.010	0.010	7063509
Xylenes (Total)	mg/kg	<0.040	<0.040	0.040	7063509
m & p-Xylene	mg/kg	<0.040	<0.040	0.040	7063509
o-Xylene	mg/kg	<0.020	<0.020	0.020	7063509
F1 (C6-C10) - BTEX	mg/kg	<12	<12	12	7063509
(C6-C10)	mg/kg	<12	<12	12	7063509
Surrogate Recovery (%)					
1,4-Difluorobenzene (sur.)	%	106	105	N/A	7063509
4-BROMOFLUOROBENZENE (sur.)	%	95	97	N/A	7063509
D10-ETHYLBENZENE (sur.)	%	97	95	N/A	7063509
D4-1,2-DICHLOROETHANE (sur.)	%	105	104	N/A	7063509

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: B367769
Report Date: 2013/08/26

AECOM
Client Project #: 60299674, CAM-C

Your P.O. #: 700266069

General Comments

SEE ATTACHED REPORT FOR PCB RESULTS.

Results relate only to the items tested.

AECOM
Attention: NICK OKE
Client Project #: 60299674, CAM-C
P.O. #: 700266069
Site Location:

Quality Assurance Report

Maxxam Job Number: CB367769

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7053326	MWC	Method Blank	Moisture	2013/08/07	<0.30		%	
		RPD [HC5407-01]	Moisture	2013/08/07	17.4		%	20
7057901	ST4	Matrix Spike	Total Antimony (Sb)	2013/08/11		109	%	75 - 125
			Total Arsenic (As)	2013/08/11		103	%	75 - 125
			Total Barium (Ba)	2013/08/11		101	%	75 - 125
			Total Beryllium (Be)	2013/08/11		106	%	75 - 125
			Total Cadmium (Cd)	2013/08/11		104	%	75 - 125
			Total Chromium (Cr)	2013/08/11		101	%	75 - 125
			Total Cobalt (Co)	2013/08/11		99	%	75 - 125
			Total Copper (Cu)	2013/08/11		100	%	75 - 125
			Total Lead (Pb)	2013/08/11		105	%	75 - 125
			Total Mercury (Hg)	2013/08/11		97	%	75 - 125
			Total Molybdenum (Mo)	2013/08/11		107	%	75 - 125
			Total Nickel (Ni)	2013/08/11		100	%	75 - 125
			Total Selenium (Se)	2013/08/11		104	%	75 - 125
			Total Silver (Ag)	2013/08/11		95	%	75 - 125
			Total Thallium (Tl)	2013/08/11		105	%	75 - 125
			Total Tin (Sn)	2013/08/11		104	%	75 - 125
			Total Uranium (U)	2013/08/11		99	%	75 - 125
			Total Vanadium (V)	2013/08/11		107	%	75 - 125
			Total Zinc (Zn)	2013/08/11		103	%	75 - 125
		QC Standard	Total Arsenic (As)	2013/08/09		123	%	50 - 150
			Total Barium (Ba)	2013/08/09		115	%	69 - 131
			Total Chromium (Cr)	2013/08/09		115	%	41 - 159
			Total Cobalt (Co)	2013/08/09		115	%	75 - 125
			Total Copper (Cu)	2013/08/09		111	%	73 - 127
			Total Lead (Pb)	2013/08/09		104	%	54 - 146
			Total Nickel (Ni)	2013/08/09		128	%	61 - 139
			Total Vanadium (V)	2013/08/09		132	%	50 - 150
			Total Zinc (Zn)	2013/08/09		120	%	72 - 128
		Spiked Blank	Total Antimony (Sb)	2013/08/10		103	%	75 - 125
			Total Arsenic (As)	2013/08/10		99	%	75 - 125
			Total Barium (Ba)	2013/08/10		98	%	75 - 125
			Total Beryllium (Be)	2013/08/10		107	%	75 - 125
			Total Cadmium (Cd)	2013/08/10		99	%	75 - 125
			Total Chromium (Cr)	2013/08/10		100	%	75 - 125
			Total Cobalt (Co)	2013/08/10		98	%	75 - 125
			Total Copper (Cu)	2013/08/10		98	%	75 - 125
			Total Lead (Pb)	2013/08/10		102	%	75 - 125
			Total Mercury (Hg)	2013/08/10		104	%	75 - 125
			Total Molybdenum (Mo)	2013/08/10		100	%	75 - 125
			Total Nickel (Ni)	2013/08/10		99	%	75 - 125
			Total Selenium (Se)	2013/08/10		103	%	75 - 125
			Total Silver (Ag)	2013/08/10		92	%	75 - 125
			Total Thallium (Tl)	2013/08/10		104	%	75 - 125
			Total Tin (Sn)	2013/08/10		98	%	75 - 125
			Total Uranium (U)	2013/08/10		106	%	75 - 125
			Total Vanadium (V)	2013/08/10		103	%	75 - 125
			Total Zinc (Zn)	2013/08/10		101	%	75 - 125
		Method Blank	Total Antimony (Sb)	2013/08/09	<1.0		mg/kg	
			Total Arsenic (As)	2013/08/09	<1.0		mg/kg	
			Total Barium (Ba)	2013/08/09	<10		mg/kg	
			Total Beryllium (Be)	2013/08/09	<0.40		mg/kg	
			Total Cadmium (Cd)	2013/08/09	<0.10		mg/kg	
			Total Chromium (Cr)	2013/08/09	<1.0		mg/kg	

AECOM
Attention: NICK OKE
Client Project #: 60299674, CAM-C
P.O. #: 700266069
Site Location:

Quality Assurance Report (Continued)

Maxxam Job Number: CB367769

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7057901	ST4	Method Blank	Total Cobalt (Co)	2013/08/09	<1.0		mg/kg	
			Total Copper (Cu)	2013/08/09	<5.0		mg/kg	
			Total Lead (Pb)	2013/08/09	<1.0		mg/kg	
			Total Mercury (Hg)	2013/08/09	<0.050		mg/kg	
			Total Molybdenum (Mo)	2013/08/09	<0.40		mg/kg	
			Total Nickel (Ni)	2013/08/09	<1.0		mg/kg	
			Total Selenium (Se)	2013/08/09	<0.50		mg/kg	
			Total Silver (Ag)	2013/08/09	<1.0		mg/kg	
			Total Thallium (Tl)	2013/08/09	<0.30		mg/kg	
			Total Tin (Sn)	2013/08/09	<1.0		mg/kg	
			Total Uranium (U)	2013/08/09	<1.0		mg/kg	
			Total Vanadium (V)	2013/08/09	<1.0		mg/kg	
			Total Zinc (Zn)	2013/08/09	<10		mg/kg	
		RPD	Total Antimony (Sb)	2013/08/10	NC		%	35
			Total Arsenic (As)	2013/08/10	NC		%	35
			Total Barium (Ba)	2013/08/10	NC		%	35
			Total Beryllium (Be)	2013/08/10	NC		%	35
			Total Cadmium (Cd)	2013/08/10	NC		%	35
			Total Chromium (Cr)	2013/08/10	NC		%	35
			Total Cobalt (Co)	2013/08/10	NC		%	35
			Total Copper (Cu)	2013/08/10	NC		%	35
			Total Lead (Pb)	2013/08/10	NC		%	35
			Total Mercury (Hg)	2013/08/10	NC		%	35
			Total Molybdenum (Mo)	2013/08/10	NC		%	35
			Total Nickel (Ni)	2013/08/10	NC		%	35
			Total Selenium (Se)	2013/08/10	NC		%	35
			Total Silver (Ag)	2013/08/10	NC		%	35
			Total Thallium (Tl)	2013/08/10	NC		%	35
			Total Tin (Sn)	2013/08/10	NC		%	35
			Total Uranium (U)	2013/08/10	NC		%	35
			Total Vanadium (V)	2013/08/10	6.5		%	35
			Total Zinc (Zn)	2013/08/10	NC		%	35
7060152	SMZ	QC Standard	Soluble (2:1) pH	2013/08/08		99	%	98 - 102
		Spiked Blank	Soluble (2:1) pH	2013/08/08		100	%	97 - 103
		RPD	Soluble (2:1) pH	2013/08/08	1.3		%	5
7061909	NK3	Matrix Spike	O-TERPHENYL (sur.)	2013/08/09		94	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2013/08/09		98	%	50 - 130
			F3 (C16-C34 Hydrocarbons)	2013/08/09		102	%	50 - 130
			F4 (C34-C50 Hydrocarbons)	2013/08/09		102	%	50 - 130
		Spiked Blank	O-TERPHENYL (sur.)	2013/08/09		101	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2013/08/09		107	%	70 - 130
			F3 (C16-C34 Hydrocarbons)	2013/08/09		118	%	70 - 130
			F4 (C34-C50 Hydrocarbons)	2013/08/09		117	%	70 - 130
		Method Blank	O-TERPHENYL (sur.)	2013/08/09		122	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2013/08/09	<10		mg/kg	
			F3 (C16-C34 Hydrocarbons)	2013/08/09	<50		mg/kg	
			F4 (C34-C50 Hydrocarbons)	2013/08/09	<50		mg/kg	
		RPD	F2 (C10-C16 Hydrocarbons)	2013/08/09	NC		%	50
			F3 (C16-C34 Hydrocarbons)	2013/08/09	NC		%	50
			F4 (C34-C50 Hydrocarbons)	2013/08/09	NC		%	50
7063509	MZ	Matrix Spike						
		[HC5409-02]	1,4-Difluorobenzene (sur.)	2013/08/10		107	%	60 - 140
			4-BROMOFLUOROBENZENE (sur.)	2013/08/10		102	%	60 - 140
			D10-ETHYLBENZENE (sur.)	2013/08/10		102	%	60 - 130
			D4-1,2-DICHLOROETHANE (sur.)	2013/08/10		113	%	60 - 140

AECOM
Attention: NICK OKE
Client Project #: 60299674, CAM-C
P.O. #: 700266069
Site Location:

Quality Assurance Report (Continued)

Maxxam Job Number: CB367769

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7063509	MZ	Matrix Spike						
		[HC5409-02]	Benzene	2013/08/10		101	%	60 - 140
			Toluene	2013/08/10		97	%	60 - 140
			Ethylbenzene	2013/08/10		103	%	60 - 140
			m & p-Xylene	2013/08/10		101	%	60 - 140
			o-Xylene	2013/08/10		99	%	60 - 140
			(C6-C10)	2013/08/10		100	%	60 - 140
		Spiked Blank	1,4-Difluorobenzene (sur.)	2013/08/10		86	%	60 - 140
			4-BROMOFLUOROBENZENE (sur.)	2013/08/10		91	%	60 - 140
			D10-ETHYLBENZENE (sur.)	2013/08/10		115	%	60 - 130
			D4-1,2-DICHLOROETHANE (sur.)	2013/08/10		110	%	60 - 140
			Benzene	2013/08/10		118	%	60 - 140
			Toluene	2013/08/10		111	%	60 - 140
			Ethylbenzene	2013/08/10		121	%	60 - 140
			m & p-Xylene	2013/08/10		118	%	60 - 140
			o-Xylene	2013/08/10		117	%	60 - 140
			(C6-C10)	2013/08/10		84	%	60 - 140
		Method Blank	1,4-Difluorobenzene (sur.)	2013/08/10		96	%	60 - 140
			4-BROMOFLUOROBENZENE (sur.)	2013/08/10		98	%	60 - 140
			D10-ETHYLBENZENE (sur.)	2013/08/10		122	%	60 - 130
			D4-1,2-DICHLOROETHANE (sur.)	2013/08/10		112	%	60 - 140
			Benzene	2013/08/10	<0.0050		mg/kg	
			Toluene	2013/08/10	<0.020		mg/kg	
			Ethylbenzene	2013/08/10	<0.010		mg/kg	
			Xylenes (Total)	2013/08/10	<0.040		mg/kg	
			m & p-Xylene	2013/08/10	<0.040		mg/kg	
			o-Xylene	2013/08/10	<0.020		mg/kg	
			F1 (C6-C10) - BTEX	2013/08/10	<12		mg/kg	
			(C6-C10)	2013/08/10	<12		mg/kg	
		RPD [HC5409-02]	Benzene	2013/08/10	NC		%	50
			Toluene	2013/08/10	NC		%	50
			Ethylbenzene	2013/08/10	NC		%	50
			Xylenes (Total)	2013/08/10	NC		%	50
			m & p-Xylene	2013/08/10	NC		%	50
			o-Xylene	2013/08/10	NC		%	50
			F1 (C6-C10) - BTEX	2013/08/10	NC		%	50
			(C6-C10)	2013/08/10	NC		%	50
7063974	MWB	Matrix Spike						
		[HC5406-02]	O-TERPHENYL (sur.)	2013/08/10		87	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2013/08/10		79	%	50 - 130
			F3 (C16-C34 Hydrocarbons)	2013/08/10		88	%	50 - 130
			F4 (C34-C50 Hydrocarbons)	2013/08/10		91	%	50 - 130
		Spiked Blank	O-TERPHENYL (sur.)	2013/08/10		82	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2013/08/10		78	%	70 - 130
			F3 (C16-C34 Hydrocarbons)	2013/08/10		87	%	70 - 130
			F4 (C34-C50 Hydrocarbons)	2013/08/10		91	%	70 - 130
		Method Blank	O-TERPHENYL (sur.)	2013/08/10		104	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2013/08/10	<10		mg/kg	
			F3 (C16-C34 Hydrocarbons)	2013/08/10	<50		mg/kg	
			F4 (C34-C50 Hydrocarbons)	2013/08/10	<50		mg/kg	
		RPD [HC5406-02]	F2 (C10-C16 Hydrocarbons)	2013/08/10	NC		%	50
			F3 (C16-C34 Hydrocarbons)	2013/08/10	NC		%	50
			F4 (C34-C50 Hydrocarbons)	2013/08/10	NC		%	50

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

AECOM
Attention: NICK OKE
Client Project #: 60299674, CAM-C
P.O. #: 700266069
Site Location:

Quality Assurance Report (Continued)

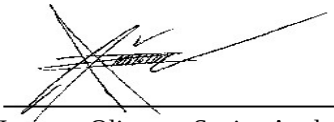
Maxxam Job Number: CB367769

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.
Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.

Validation Signature Page

Maxxam Job #: B367769

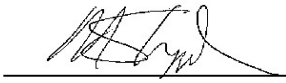
The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



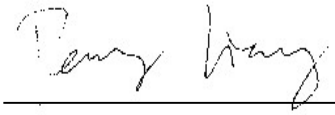
Jeanette Olivares, Senior Analyst



Luba Shymushovska, Senior Analyst, Organic Department



Michael Sheppard, Organics Supervisor



Peng Liang, Analyst II

==========

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Maxxam Analytics International Corporation o/a Maxxam Analytics
9331 - 48th Street, Edmonton, Alberta Canada T6B 2R4 Tel:(780) 577-7100 Toll-free:800-653-6266 Fax:780-450-4187 www.maxxam.ca

CHAIN OF CUSTODY RECORD

INVOICE INFORMATION:		REPORT INFORMATION (if differs from invoice):		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#2597 PUBLIC WORKS & GOVERNMENT SERVI	Company Name:	#25925 AECOM	Quotation #:		MAXXAM JOB #:	BOTTLE ORDER #:
Contact Name:	Jessie Hoyt	Contact Name:	NICK OKE	P.O. #:	700266069		405374
Address:	TELUS TOWER NORTH, 5th FLOOR 10025 JASP	Address:	17007 - 107 Avenue	Project #:	60299674	CHAIN OF CUSTODY #:	PROJECT MANAGER:
	EDMONTON AB T5J 1S6		, Edmonton AB T5S 1G3	Project Name:	CAM-C	C#405374-06-01	Geraldyn Gouthro
Phone:	(780)497-3786 Fax: (780)497-3842	Phone:	(780)486-4057 Fax:	Site #:			
Email:	jessie.hoyt@psgsc-tpsgc.gc.ca	Email:	nick.oke@aecom.com eva.schultz@	Sampled By:	E. Schultz		

REGULATORY CRITERIA:
- [ ] ATI
- [ ] CCME
- [x] OTHER

SPECIAL INSTRUCTIONS

aecom.com

ANALYSIS REQUESTED (Please be specific):

TURNAROUND TIME (TAT) REQUIRED:

PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS

Regular (Standard) TAT: [x]
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests are > 5 days - contact your Project Manager for details

Job Specific Rush TAT (if applies to entire submission) [ ]
Date Required: _____
Rush Confirmation Number: _____ *(call lab for #)*

SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Metals Field Filtered ? (Y / N)	metals	PHC F1-4	PCB's (Total)							# of Bottles
1		Airstrip LF #1	July 31	2pm	soil		✓	✓	✓							3
2		Airstrip LF #2		2:00pm			✓	✓	✓							3
3		Airstrip LF #3		2:20p			✓	✓	✓							3
4		Airstrip LF #4		2:35p			✓	✓	✓							3
5		Airstrip LF #5		2:45p			✓	✓	✓							3
6		Airstrip LF #6		3:00p			✓	✓	✓							3
7		Airstrip LF #7	↓	3:15p	↓		✓	✓	✓							3
8		East Drum Cache 1	Aug 1	9:30	↓		✓	✓								3
9		East Drum Cache 2 East Drum Cache 3	↓	9:45 9:55	↓			✓ ✓								2 2
10		Debris Area 4	↓	10:30	↓		✓		✓							2

6-Aug-13 07:40
Geraldyn Gouthro
B367769
HD0 INS-0011

RECEIVED IN YELLOWKNIFE
By: [signature] 09:25
2013 -08- 04

Temp: ON ACTR.

*RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	# Jars Used and Not Submitted	Laboratory Use Only: Time Sensitive	Temperature (°C) on Receipt	Custody Seal Intact on Cooler?
Eva Schultz	Aug. 2/13		Robert Adepegu Alabi	2013/08/06	0740	Not Submitted	[ ]		[ ] Yes [ ] No

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.
** ALL SAMPLES ARE HELD FOR 60 DAYS AFTER SAMPLE RECEIPT, FOR SPECIAL REQUESTS CONTACT YOUR PROJECT MANAGER

White: Maxxam Yellow: Client

151

Your Project #: B367769
Your C.O.C. #: NA

Attention: Geraldlyn Gouthro
Maxxam Analytics
2021 41st Ave NE
Calgary, AB
T2E 6P2

Report Date: 2013/08/14

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B3C9499
Received: 2013/08/08, 08:57

Sample Matrix: Soil
Samples Received: 8

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Moisture	8	N/A	2013/08/13	CAM SOP-00445	R.Carter,1993
Polychlorinated Biphenyl in Soil	7	2013/08/12	2013/08/12	CAM SOP-00309	SW846 8082
Polychlorinated Biphenyl in Soil	1	2013/08/12	2013/08/13	CAM SOP-00309	SW846 8082

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

Encryption Key

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

Shaun Nowickyj,
Email: SNowickyj@maxxam.ca
Phone# (905) 817-5700

==========

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Total cover pages: 1

Maxxam Job #: B3C9499
Report Date: 2013/08/14

Maxxam Analytics
Client Project #: B367769

RESULTS OF ANALYSES OF SOIL

Maxxam ID		SO2882	SO2883	SO2884	SO2885	SO2886		
Sampling Date		2013/07/31 14:00	2013/07/31 14:10	2013/07/31 14:20	2013/07/31 14:35	2013/07/31 14:45		
COC Number		NA	NA	NA	NA	NA		
	Units	**HC5402\AIRSHIP LF#1**	**HC5403\AIRSHIP LF#2**	**HC5404\AIRSHIP LF#3**	**HC5405\AIRSHIP LF#4**	**HC5406\AIRSHIP LF#5**	**RDL**	**QC Batch**
Moisture	%	15	13	9.8	4.4	2.2	1.0	3312237

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		SO2886	SO2887	SO2888	SO2889		
Sampling Date		2013/07/31 14:45	2013/07/31 15:00	2013/07/31 15:15	2013/07/31 10:30		
COC Number		NA	NA	NA	NA		
	Units	**HC5406\AIRSHIP LF#5 Lab-Dup**	**HC5407\AIRSHIP LF#6**	**HC5408\AIRSHIP LF#7**	**HC5412\DEBRIS AREA 4**	**RDL**	**QC Batch**
Moisture	%	2.4	3.1	2.3	14	1.0	3312237

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B3C9499
Report Date: 2013/08/14

Maxxam Analytics
Client Project #: B367769

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		SO2882	SO2883	SO2884	SO2885		
Sampling Date		2013/07/31 14:00	2013/07/31 14:10	2013/07/31 14:20	2013/07/31 14:35		
COC Number		NA	NA	NA	NA		
	Units	**HC5402\AIRSHIP LF#1**	**HC5403\AIRSHIP LF#2**	**HC5404\AIRSHIP LF#3**	**HC5405\AIRSHIP LF#4**	**RDL**	**QC Batch**
Aroclor 1016	ug/g	<0.010	<0.010	<0.010	<0.010	0.010	3310682
Aroclor 1221	ug/g	<0.010	<0.010	<0.010	<0.010	0.010	3310682
Aroclor 1232	ug/g	<0.010	<0.010	<0.010	<0.010	0.010	3310682
Aroclor 1242	ug/g	<0.010	<0.010	<0.010	<0.010	0.010	3310682
Aroclor 1248	ug/g	<0.010	<0.010	<0.010	<0.010	0.010	3310682
Aroclor 1254	ug/g	<0.010	<0.010	<0.010	<0.010	0.010	3310682
Aroclor 1260	ug/g	<0.010	<0.010	<0.010	<0.010	0.010	3310682
Aroclor 1262	ug/g	<0.010	<0.010	<0.010	<0.010	0.010	3310682
Aroclor 1268	ug/g	<0.010	<0.010	<0.010	<0.010	0.010	3310682
Total PCB	ug/g	<0.010	<0.010	<0.010	<0.010	0.010	3310682
Surrogate Recovery (%)							
Decachlorobiphenyl	%	90	88	89	79	N/A	3310682

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

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Maxxam Job #: B3C9499
Report Date: 2013/08/14

Maxxam Analytics
Client Project #: B367769

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		SO2886	SO2887	SO2888		SO2889		
Sampling Date		2013/07/31 14:45	2013/07/31 15:00	2013/07/31 15:15		2013/07/31 10:30		
COC Number		NA	NA	NA		NA		
	Units	**HC5406\AIRSHIP LF#5**	**HC5407\AIRSHIP LF#6**	**HC5408\AIRSHIP LF#7**	**RDL**	**HC5412\DEBRIS AREA 4**	**RDL**	**QC Batch**
Aroclor 1016	ug/g	<0.010	<0.010	<0.010	0.010	<0.10	0.10	3310682
Aroclor 1221	ug/g	<0.010	<0.010	<0.010	0.010	<0.10	0.10	3310682
Aroclor 1232	ug/g	<0.010	<0.010	<0.010	0.010	<0.10	0.10	3310682
Aroclor 1242	ug/g	<0.010	<0.010	<0.010	0.010	<0.10	0.10	3310682
Aroclor 1248	ug/g	<0.010	<0.010	<0.010	0.010	<0.10	0.10	3310682
Aroclor 1254	ug/g	<0.010	<0.010	<0.010	0.010	3.3	0.10	3310682
Aroclor 1260	ug/g	<0.010	<0.010	<0.010	0.010	0.26	0.10	3310682
Aroclor 1262	ug/g	<0.010	<0.010	<0.010	0.010	<0.10	0.10	3310682
Aroclor 1268	ug/g	<0.010	<0.010	<0.010	0.010	<0.10	0.10	3310682
Total PCB	ug/g	<0.010	<0.010	<0.010	0.010	3.5	0.10	3310682
Surrogate Recovery (%)								
Decachlorobiphenyl	%	84	86	83	N/A	106	N/A	3310682

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

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Maxxam Job #: B3C9499
Report Date: 2013/08/14

Maxxam Analytics
Client Project #: B367769

Test Summary

Maxxam ID SO2882 **Collected** 2013/07/31
Sample ID HC5402\AIRSHIP LF#1 **Shipped**
Matrix Soil **Received** 2013/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Moisture	BAL	3312237	N/A	2013/08/13	Valentina Kaftani
Polychlorinated Biphenyl in Soil	GC/ECD	3310682	2013/08/12	2013/08/12	Li Peng

Maxxam ID SO2883 **Collected** 2013/07/31
Sample ID HC5403\AIRSHIP LF#2 **Shipped**
Matrix Soil **Received** 2013/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Moisture	BAL	3312237	N/A	2013/08/13	Valentina Kaftani
Polychlorinated Biphenyl in Soil	GC/ECD	3310682	2013/08/12	2013/08/12	Li Peng

Maxxam ID SO2884 **Collected** 2013/07/31
Sample ID HC5404\AIRSHIP LF#3 **Shipped**
Matrix Soil **Received** 2013/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Moisture	BAL	3312237	N/A	2013/08/13	Valentina Kaftani
Polychlorinated Biphenyl in Soil	GC/ECD	3310682	2013/08/12	2013/08/12	Li Peng

Maxxam ID SO2885 **Collected** 2013/07/31
Sample ID HC5405\AIRSHIP LF#4 **Shipped**
Matrix Soil **Received** 2013/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Moisture	BAL	3312237	N/A	2013/08/13	Valentina Kaftani
Polychlorinated Biphenyl in Soil	GC/ECD	3310682	2013/08/12	2013/08/12	Li Peng

Maxxam ID SO2886 **Collected** 2013/07/31
Sample ID HC5406\AIRSHIP LF#5 **Shipped**
Matrix Soil **Received** 2013/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Moisture	BAL	3312237	N/A	2013/08/13	Valentina Kaftani
Polychlorinated Biphenyl in Soil	GC/ECD	3310682	2013/08/12	2013/08/12	Li Peng

Maxxam ID SO2886 Dup **Collected** 2013/07/31
Sample ID HC5406\AIRSHIP LF#5 **Shipped**
Matrix Soil **Received** 2013/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Moisture	BAL	3312237	N/A	2013/08/13	Valentina Kaftani

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

Maxxam Job #: B3C9499
Report Date: 2013/08/14

Maxxam Analytics
Client Project #: B367769

Test Summary

Maxxam ID SO2887 **Collected** 2013/07/31
Sample ID HC5407\AIRSHIP LF#6 **Shipped**
Matrix Soil **Received** 2013/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Moisture	BAL	3312237	N/A	2013/08/13	Valentina Kaftani
Polychlorinated Biphenyl in Soil	GC/ECD	3310682	2013/08/12	2013/08/12	Li Peng

Maxxam ID SO2888 **Collected** 2013/07/31
Sample ID HC5408\AIRSHIP LF#7 **Shipped**
Matrix Soil **Received** 2013/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Moisture	BAL	3312237	N/A	2013/08/13	Valentina Kaftani
Polychlorinated Biphenyl in Soil	GC/ECD	3310682	2013/08/12	2013/08/12	Li Peng

Maxxam ID SO2889 **Collected** 2013/07/31
Sample ID HC5412\DEBRIS AREA 4 **Shipped**
Matrix Soil **Received** 2013/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Moisture	BAL	3312237	N/A	2013/08/13	Valentina Kaftani
Polychlorinated Biphenyl in Soil	GC/ECD	3310682	2013/08/12	2013/08/13	Li Peng

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Maxxam Job #: B3C9499
Report Date: 2013/08/14

Maxxam Analytics
Client Project #: B367769

Package 1	6.0°C

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

GENERAL COMMENTS

Sample SO2889-01: PCB Analysis: Due to high concentrations of the target analytes, sample required dilution. Detection limits were adjusted accordingly.

Results relate only to the items tested.

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Maxxam Analytics
Attention: Geraldlyn Gouthro
Client Project #: B367769
P.O. #:
Site Location:

Quality Assurance Report

Maxxam Job Number: MB3C9499

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
3310682	LPG	Matrix Spike	Decachlorobiphenyl	2013/08/12		94	%	60 - 130
			Aroclor 1260	2013/08/12		104	%	60 - 130
			Total PCB	2013/08/12		104	%	60 - 130
		Spiked Blank	Decachlorobiphenyl	2013/08/12		79	%	60 - 130
			Aroclor 1260	2013/08/12		91	%	60 - 130
			Total PCB	2013/08/12		91	%	60 - 130
		Method Blank	Decachlorobiphenyl	2013/08/12		90	%	60 - 130
			Aroclor 1016	2013/08/12	<0.010		ug/g	
			Aroclor 1221	2013/08/12	<0.010		ug/g	
			Aroclor 1232	2013/08/12	<0.010		ug/g	
			Aroclor 1242	2013/08/12	<0.010		ug/g	
			Aroclor 1248	2013/08/12	<0.010		ug/g	
			Aroclor 1254	2013/08/12	<0.010		ug/g	
			Aroclor 1260	2013/08/12	<0.010		ug/g	
			Aroclor 1262	2013/08/12	<0.010		ug/g	
			Aroclor 1268	2013/08/12	<0.010		ug/g	
			Total PCB	2013/08/12	<0.010		ug/g	
		RPD - Sample/Sample Dup	Aroclor 1016	2013/08/12	NC		%	50
			Aroclor 1221	2013/08/12	NC		%	50
			Aroclor 1232	2013/08/12	NC		%	50
			Aroclor 1242	2013/08/12	NC		%	50
			Aroclor 1248	2013/08/12	NC		%	50
			Aroclor 1254	2013/08/12	NC		%	50
			Aroclor 1260	2013/08/12	NC		%	50
			Aroclor 1262	2013/08/12	NC		%	50
			Aroclor 1268	2013/08/12	NC		%	50
			Total PCB	2013/08/12	NC		%	50
3312237	JV1	RPD - Sample/Sample Dup	Moisture	2013/08/13	NC		%	20

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.
Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.

Validation Signature Page

Maxxam Job #: B3C9499

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

Charles Ancker, B.Sc., M.Sc., C.Chem, Senior Analyst

Cristina Carriere, Scientific Services

==========

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

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Your P.O. #: 700266069
Your Project #: 60299674
Site Location: CAM E

Attention: NICK OKE
AECOM
EDMONTON
17007 - 107 Avenue
, Edmonton, AB
CANADA T5S 1G3

Your C.O.C. #: 40537416, 405374-16-01, 405374-12-01, 405374-14-01

Report Date: 2013/08/16

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B367780
Received: 2013/08/06, 07:40

Sample Matrix: Soil
Samples Received: 31

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
BTEX/F1 by HS GC/MS (MeOH extract)	2	2013/08/07	2013/08/08	AB SOP-00039	CCME, EPA 8260C
BTEX/F1 by HS GC/MS (MeOH extract)	16	2013/08/07	2013/08/09	AB SOP-00039	CCME, EPA 8260C
BTEX/F1 by HS GC/MS (MeOH extract)	4	2013/08/08	2013/08/09	AB SOP-00039	CCME, EPA 8260C
CCME Hydrocarbons (F2-F4 in soil)	8	2013/08/07	2013/08/09	AB SOP-00040 AB SOP-00036	CCME PHC-CWS
CCME Hydrocarbons (F2-F4 in soil)	10	2013/08/07	2013/08/10	AB SOP-00040 AB SOP-00036	CCME PHC-CWS
CCME Hydrocarbons (F2-F4 in soil)	4	2013/08/08	2013/08/09	AB SOP-00040 AB SOP-00036	CCME PHC-CWS
Elements by ICPMS - Soils	24	2013/08/10	2013/08/11	AB SOP-00043	EPA 200.8
Elements by ICPMS - Soils	1	2013/08/11	2013/08/13	AB SOP-00043	EPA 200.8
Elements by ICPMS - Soils	1	2013/08/12	2013/08/13	AB SOP-00043	EPA 200.8
Moisture	1	N/A	2013/08/07	AB SOP-00002	CCME PHC-CWS
Moisture	21	N/A	2013/08/08	AB SOP-00002	CCME PHC-CWS
pH @25C (1:2 Extract)	1	2013/08/09	2013/08/09	AB SOP-00006	SSMA 16.2
pH @25C (1:2 Extract)	24	2013/08/10	2013/08/10	AB SOP-00006	SSMA 16.2
pH @25C (1:2 Extract)	1	2013/08/12	2013/08/12	AB SOP-00006	SSMA 16.2

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

Encryption Key

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

Geraldyn Gouthro, Client Service Specialist
Email: GGouthro@maxxam.ca
Phone# (780) 577-7173

Your P.O. #: 700266069
Your Project #: 60299674
Site Location: CAM E

Attention: NICK OKE
AECOM
EDMONTON
17007 - 107 Avenue
, Edmonton, AB
CANADA T5S 1G3

Your C.O.C. #: 40537416, 405374-16-01, 405374-12-01, 405374-14-01

Report Date: 2013/08/16

CERTIFICATE OF ANALYSIS

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Maxxam Analytics International Corporation o/a Maxxam Analytics Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone(403) 291-3077 Fax(403) 291-9468

Maxxam Job #: B367780
Report Date: 2013/08/16

AECOM
Client Project #: 60299674
Site Location: CAM E
Your P.O. #: 700266069
Sampler Initials: ES

RESULTS OF CHEMICAL ANALYSES OF SOIL

Maxxam ID		HC5509		HC5510	HC5511	HC5512		
Sampling Date		2013/08/01 09:45		2013/08/01 09:30	2013/08/01 08:45	2013/08/01 10:15		
COC Number		405374-16-01		405374-16-01	405374-16-01	405374-16-01		
	UNITS	**TP13-47 @ 0.25M**	**QC Batch**	**TP13-48 @ 0.35M**	**TP13-48 @ 0.8M**	**TP13-50 @ 0.7M**	**RDL**	**QC Batch**
Soluble Parameters								
Soluble (2:1) pH	N/A	7.42	7068260	8.62	8.97	8.63	N/A	7067164
Physical Properties								
Moisture	%	15	7058153	4.3	13	12	0.30	7058153

RDL = Reportable Detection Limit

Maxxam ID		HC5513		HC5514	HC5514	HC5515		
Sampling Date		2013/08/01 10:10		2013/08/01 10:15	2013/08/01 10:15	2013/08/01 13:15		
COC Number		405374-16-01		405374-16-01	405374-16-01	405374-16-01		
	UNITS	**TP13-50 @ 0.3M**	**QC Batch**	**TP13-50A @ 0.7M**	**TP13-50A @ 0.7M Lab-Dup**	**TP13-49 @ 0.05M**	**RDL**	**QC Batch**
Soluble Parameters								
Soluble (2:1) pH	N/A	7.86	7067164	8.58	8.42	8.00	N/A	7067160
Physical Properties								
Moisture	%	4.2	7058153	13	12	N/A	0.30	7058153

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam ID		HC5516	HC5517	HC5518		HC5594		
Sampling Date		2013/08/01 16:45	2013/08/01 16:15	2013/08/01 16:35		2013/08/01 08:55		
COC Number		405374-16-01	405374-16-01	405374-16-01		405374-12-01		
	UNITS	**TP13-63 @ 0.05M**	**TP13-64 @ 0.05M**	**TP13-64 @ 0.65M**	**QC Batch**	**TP13-24 @ 0.5M**	**RDL**	**QC Batch**
Soluble Parameters								
Soluble (2:1) pH	N/A	7.99	8.19	8.21	7067160	8.54	N/A	7067160
Physical Properties								
Moisture	%	N/A	N/A	8.7	7058153	3.6	0.30	7057929

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: B367780
Report Date: 2013/08/16

AECOM
Client Project #: 60299674
Site Location: CAM E
Your P.O. #: 700266069
Sampler Initials: ES

RESULTS OF CHEMICAL ANALYSES OF SOIL

Maxxam ID		HC5595	HC5596	HC5597		HC5598		
Sampling Date		2013/08/01 08:55	2013/08/01 09:00	2013/08/01 09:00		2013/08/01 08:55		
COC Number		405374-12-01	405374-12-01	405374-12-01		405374-12-01		
	UNITS	**TP13-24 @ 0.75M**	**TP13-40 @ 0.05M**	**TP13-40E @ 0.05M**	**QC Batch**	**TP13-40 @ 0.5M**	**RDL**	**QC Batch**
Soluble Parameters								
Soluble (2:1) pH	N/A	N/A	7.86	7.87	7067160	8.43	N/A	7067160
Physical Properties								
Moisture	%	3.9	N/A	N/A	7057929	3.6	0.30	7058153

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam ID		HC5599		HC5600		HC5601		
Sampling Date		2013/08/01 09:30		2013/08/01 09:35		2013/08/01 09:45		
COC Number		405374-12-01		405374-12-01		405374-12-01		
	UNITS	**TP13-41 @ 0.05M**	**QC Batch**	**TP13-41 @ 0.5M**	**QC Batch**	**TP13-42 @ 0.05M**	**RDL**	**QC Batch**
Soluble Parameters								
Soluble (2:1) pH	N/A	7.88	7067160	8.24	7067160	8.16	N/A	7067160
Physical Properties								
Moisture	%	N/A	7058153	5.8	7057929	1.8	0.30	7057170

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam ID		HC5602		HC5603	HC5616	HC5617		
Sampling Date		2013/08/01 09:55		2013/08/01 10:05	2013/08/01 10:30	2013/08/01 16:30		
COC Number		405374-12-01		405374-12-01	405374-14-01	405374-14-01		
	UNITS	**TP13-43 @ 0.5M**	**QC Batch**	**TP13-44 @ 0.05M**	**TP13-44 @ 0.45M**	**TP13-49 @ 0.45M**	**RDL**	**QC Batch**
Soluble Parameters								
Soluble (2:1) pH	N/A	9.04	7063124	8.38	N/A	N/A	N/A	7067160
Physical Properties								
Moisture	%	2.8	7057929	N/A	2.8	4.9	0.30	7058153

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: B367780
Report Date: 2013/08/16

AECOM
Client Project #: 60299674
Site Location: CAM E
Your P.O. #: 700266069
Sampler Initials: ES

RESULTS OF CHEMICAL ANALYSES OF SOIL

Maxxam ID		HC5618	HC5619	HC5620	HC5621		
Sampling Date		2013/08/01 15:30	2013/08/01 15:40	2013/08/01 15:45	2013/08/01 16:00		
COC Number		405374-14-01	405374-14-01	405374-14-01	405374-14-01		
	UNITS	**TP13-55 @ 0.45M**	**TP13-58 @ 0.05M**	**TP13-59 @ 0.05M**	**TP13-59 @ 0.36M**	**RDL**	**QC Batch**
Soluble Parameters							
Soluble (2:1) pH	N/A	N/A	8.19	8.40	8.92	N/A	7067160
Physical Properties							
Moisture	%	6.0	N/A	N/A	5.5	0.30	7058153

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam ID		HC5623	HC5623	HC5624		HC5625		
Sampling Date		2013/08/01 15:50	2013/08/01 15:50	2013/08/01 16:30		2013/08/01 08:45		
COC Number		405374-14-01	405374-14-01	405374-14-01		405374-14-01		
	UNITS	**TP13-59 @ 0.7M**	**TP13-59 @ 0.7M Lab-Dup**	**TP13-64 @ 0.3M**	**QC Batch**	**TP13-47 @ 0.8M**	**RDL**	**QC Batch**
Soluble Parameters								
Soluble (2:1) pH	N/A	8.32	N/A	8.66	7067160	7.91	N/A	7067160
Physical Properties								
Moisture	%	3.9	4.3	2.6	7057929	5.0	0.30	7058153

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam ID		HC5626	HC5705		
Sampling Date		2013/08/01 08:50	2013/08/01 09:45		
COC Number		405374-14-01	405374-14-01		
	UNITS	**TP13-46 @ 0.45M**	**TP13-42 @ 0.5M**	**RDL**	**QC Batch**
Soluble Parameters					
Soluble (2:1) pH	N/A	8.51	N/A	N/A	7067160
Physical Properties					
Moisture	%	3.4	1.5	0.30	7058153

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: B367780
Report Date: 2013/08/16

AECOM
Client Project #: 60299674
Site Location: CAM E
Your P.O. #: 700266069
Sampler Initials: ES

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		HC5509	HC5510		HC5511	HC5512		
Sampling Date		2013/08/01 09:45	2013/08/01 09:30		2013/08/01 08:45	2013/08/01 10:15		
COC Number		405374-16-01	405374-16-01		405374-16-01	405374-16-01		
	UNITS	**TP13-47 @ 0.25M**	**TP13-48 @ 0.35M**	**QC Batch**	**TP13-48 @ 0.8M**	**TP13-50 @ 0.7M**	**RDL**	**QC Batch**
Ext. Pet. Hydrocarbon								
F2 (C10-C16 Hydrocarbons)	mg/kg	320	<10	7059532	<10	3800	10	7059529
F3 (C16-C34 Hydrocarbons)	mg/kg	270	<50	7059532	<50	<50	50	7059529
F4 (C34-C50 Hydrocarbons)	mg/kg	<50	<50	7059532	<50	<50	50	7059529
Reached Baseline at C50	mg/kg	Yes	Yes	7059532	Yes	Yes	N/A	7059529
Surrogate Recovery (%)								
O-TERPHENYL (sur.)	%	119	116	7059532	124	124	N/A	7059529

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam ID		HC5513	HC5514	HC5518	HC5594		
Sampling Date		2013/08/01 10:10	2013/08/01 10:15	2013/08/01 16:35	2013/08/01 08:55		
COC Number		405374-16-01	405374-16-01	405374-16-01	405374-12-01		
	UNITS	**TP13-50 @ 0.3M**	**TP13-50A @ 0.7M**	**TP13-64 @ 0.65M**	**TP13-24 @ 0.5M**	**RDL**	**QC Batch**
Ext. Pet. Hydrocarbon							
F2 (C10-C16 Hydrocarbons)	mg/kg	500	3600	<10	230	10	7059529
F3 (C16-C34 Hydrocarbons)	mg/kg	<50	69	<50	54	50	7059529
F4 (C34-C50 Hydrocarbons)	mg/kg	<50	<50	<50	<50	50	7059529
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	Yes	N/A	7059529
Surrogate Recovery (%)							
O-TERPHENYL (sur.)	%	119	111	124	122	N/A	7059529

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: B367780
Report Date: 2013/08/16

AECOM
Client Project #: 60299674
Site Location: CAM E
Your P.O. #: 700266069
Sampler Initials: ES

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		HC5595	HC5598	HC5600	HC5601		
Sampling Date		2013/08/01 08:55	2013/08/01 08:55	2013/08/01 09:35	2013/08/01 09:45		
COC Number		405374-12-01	405374-12-01	405374-12-01	405374-12-01		
	UNITS	**TP13-24 @ 0.75M**	**TP13-40 @ 0.5M**	**TP13-41 @ 0.5M**	**TP13-42 @ 0.05M**	**RDL**	**QC Batch**
Ext. Pet. Hydrocarbon							
F2 (C10-C16 Hydrocarbons)	mg/kg	120	<10	<10	<10	10	7059529
F3 (C16-C34 Hydrocarbons)	mg/kg	<50	<50	<50	<50	50	7059529
F4 (C34-C50 Hydrocarbons)	mg/kg	<50	<50	<50	<50	50	7059529
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	Yes	N/A	7059529
Surrogate Recovery (%)							
O-TERPHENYL (sur.)	%	117	118	118	125	N/A	7059529

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam ID		HC5602	HC5616	HC5617	HC5618		
Sampling Date		2013/08/01 09:55	2013/08/01 10:30	2013/08/01 16:30	2013/08/01 15:30		
COC Number		405374-12-01	405374-14-01	405374-14-01	405374-14-01		
	UNITS	**TP13-43 @ 0.5M**	**TP13-44 @ 0.45M**	**TP13-49 @ 0.45M**	**TP13-55 @ 0.45M**	**RDL**	**QC Batch**
Ext. Pet. Hydrocarbon							
F2 (C10-C16 Hydrocarbons)	mg/kg	310	190	130	<10	10	7059529
F3 (C16-C34 Hydrocarbons)	mg/kg	62	260	<50	<50	50	7059529
F4 (C34-C50 Hydrocarbons)	mg/kg	<50	<50	<50	<50	50	7059529
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	Yes	N/A	7059529
Surrogate Recovery (%)							
O-TERPHENYL (sur.)	%	94	129	96	114	N/A	7059529

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: B367780
Report Date: 2013/08/16

AECOM
Client Project #: 60299674
Site Location: CAM E
Your P.O. #: 700266069
Sampler Initials: ES

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		HC5621	HC5623	HC5624	HC5625		
Sampling Date		2013/08/01 16:00	2013/08/01 15:50	2013/08/01 16:30	2013/08/01 08:45		
COC Number		405374-14-01	405374-14-01	405374-14-01	405374-14-01		
	UNITS	**TP13-59 @ 0.36M**	**TP13-59 @ 0.7M**	**TP13-64 @ 0.3M**	**TP13-47 @ 0.8M**	**RDL**	**QC Batch**
Ext. Pet. Hydrocarbon							
F2 (C10-C16 Hydrocarbons)	mg/kg	1800	810	210	3000	10	7059529
F3 (C16-C34 Hydrocarbons)	mg/kg	52	<50	59	75	50	7059529
F4 (C34-C50 Hydrocarbons)	mg/kg	<50	<50	<50	<50	50	7059529
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	Yes	N/A	7059529
Surrogate Recovery (%)							
O-TERPHENYL (sur.)	%	109	111	114	101	N/A	7059529

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam ID		HC5626	HC5626	HC5705		
Sampling Date		2013/08/01 08:50	2013/08/01 08:50	2013/08/01 09:45		
COC Number		405374-14-01	405374-14-01	405374-14-01		
	UNITS	**TP13-46 @ 0.45M**	**TP13-46 @ 0.45M Lab-Dup**	**TP13-42 @ 0.5M**	**RDL**	**QC Batch**
Ext. Pet. Hydrocarbon						
F2 (C10-C16 Hydrocarbons)	mg/kg	<10	11	<10	10	7059529
F3 (C16-C34 Hydrocarbons)	mg/kg	<50	<50	<50	50	7059529
F4 (C34-C50 Hydrocarbons)	mg/kg	<50	<50	<50	50	7059529
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	N/A	7059529
Surrogate Recovery (%)						
O-TERPHENYL (sur.)	%	113	124	106	N/A	7059529

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: B367780
Report Date: 2013/08/16

AECOM
Client Project #: 60299674
Site Location: CAM E
Your P.O. #: 700266069
Sampler Initials: ES

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		HC5509		HC5510	HC5511	HC5512		
Sampling Date		2013/08/01 09:45		2013/08/01 09:30	2013/08/01 08:45	2013/08/01 10:15		
COC Number		405374-16-01		405374-16-01	405374-16-01	405374-16-01		
	UNITS	**TP13-47 @ 0.25M**	**QC Batch**	**TP13-48 @ 0.35M**	**TP13-48 @ 0.8M**	**TP13-50 @ 0.7M**	**RDL**	**QC Batch**
Elements								
Total Antimony (Sb)	mg/kg	<1.0	7067816	<1.0	<1.0	<1.0	1.0	7066261
Total Arsenic (As)	mg/kg	<1.0	7067816	<1.0	1.3	<1.0	1.0	7066261
Total Barium (Ba)	mg/kg	<10	7067816	<10	<10	<10	10	7066261
Total Beryllium (Be)	mg/kg	<0.40	7067816	<0.40	<0.40	<0.40	0.40	7066261
Total Cadmium (Cd)	mg/kg	0.13	7067816	<0.10	<0.10	<0.10	0.10	7066261
Total Chromium (Cr)	mg/kg	1.6	7067816	3.8	5.2	4.5	1.0	7066261
Total Cobalt (Co)	mg/kg	<1.0	7067816	1.2	1.8	2.0	1.0	7066261
Total Copper (Cu)	mg/kg	<5.0	7067816	<5.0	<5.0	<5.0	5.0	7066261
Total Lead (Pb)	mg/kg	2.5	7067816	3.0	4.4	3.2	1.0	7066261
Total Mercury (Hg)	mg/kg	<0.050	7067816	<0.050	<0.050	<0.050	0.050	7066261
Total Molybdenum (Mo)	mg/kg	<0.40	7067816	<0.40	<0.40	<0.40	0.40	7066261
Total Nickel (Ni)	mg/kg	1.8	7067816	2.6	4.0	4.1	1.0	7066261
Total Selenium (Se)	mg/kg	<0.50	7067816	<0.50	<0.50	<0.50	0.50	7066261
Total Silver (Ag)	mg/kg	<1.0	7067816	<1.0	<1.0	<1.0	1.0	7066261
Total Thallium (Tl)	mg/kg	<0.30	7067816	<0.30	<0.30	<0.30	0.30	7066261
Total Tin (Sn)	mg/kg	<1.0	7067816	<1.0	<1.0	<1.0	1.0	7066261
Total Uranium (U)	mg/kg	<1.0	7067816	<1.0	<1.0	<1.0	1.0	7066261
Total Vanadium (V)	mg/kg	4.8	7067816	7.2	10	9.0	1.0	7066261
Total Zinc (Zn)	mg/kg	<10	7067816	<10	<10	<10	10	7066261

RDL = Reportable Detection Limit

Maxxam Job #: B367780
Report Date: 2013/08/16

AECOM
Client Project #: 60299674
Site Location: CAM E
Your P.O. #: 700266069
Sampler Initials: ES

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		HC5513		HC5514	HC5514	HC5515		
Sampling Date		2013/08/01 10:10		2013/08/01 10:15	2013/08/01 10:15	2013/08/01 13:15		
COC Number		405374-16-01		405374-16-01	405374-16-01	405374-16-01		
	UNITS	**TP13-50 @ 0.3M**	**QC Batch**	**TP13-50A @ 0.7M**	**TP13-50A @ 0.7M Lab-Dup**	**TP13-49 @ 0.05M**	**RDL**	**QC Batch**
Elements								
Total Antimony (Sb)	mg/kg	<1.0	7066261	<1.0	<1.0	54	1.0	7066367
Total Arsenic (As)	mg/kg	<1.0	7066261	1.2	1.6	1.1	1.0	7066367
Total Barium (Ba)	mg/kg	<10	7066261	<10	<10	12	10	7066367
Total Beryllium (Be)	mg/kg	<0.40	7066261	<0.40	<0.40	<0.40	0.40	7066367
Total Cadmium (Cd)	mg/kg	<0.10	7066261	<0.10	<0.10	0.84	0.10	7066367
Total Chromium (Cr)	mg/kg	2.9	7066261	3.7	3.4	8.7	1.0	7066367
Total Cobalt (Co)	mg/kg	<1.0	7066261	1.7	1.6	1.7	1.0	7066367
Total Copper (Cu)	mg/kg	<5.0	7066261	<5.0	<5.0	9.3	5.0	7066367
Total Lead (Pb)	mg/kg	2.4	7066261	3.2	3.7	46	1.0	7066367
Total Mercury (Hg)	mg/kg	<0.050	7066261	<0.050	<0.050	<0.050	0.050	7066367
Total Molybdenum (Mo)	mg/kg	<0.40	7066261	<0.40	<0.40	<0.40	0.40	7066367
Total Nickel (Ni)	mg/kg	1.7	7066261	3.9	3.9	5.7	1.0	7066367
Total Selenium (Se)	mg/kg	<0.50	7066261	<0.50	<0.50	<0.50	0.50	7066367
Total Silver (Ag)	mg/kg	<1.0	7066261	<1.0	<1.0	<1.0	1.0	7066367
Total Thallium (Tl)	mg/kg	<0.30	7066261	<0.30	<0.30	<0.30	0.30	7066367
Total Tin (Sn)	mg/kg	<1.0	7066261	<1.0	<1.0	<1.0	1.0	7066367
Total Uranium (U)	mg/kg	<1.0	7066261	<1.0	<1.0	<1.0	1.0	7066367
Total Vanadium (V)	mg/kg	6.0	7066261	8.0	8.2	7.5	1.0	7066367
Total Zinc (Zn)	mg/kg	<10	7066261	<10	<10	89	10	7066367

RDL = Reportable Detection Limit

Maxxam Job #: B367780
Report Date: 2013/08/16

AECOM
Client Project #: 60299674
Site Location: CAM E
Your P.O. #: 700266069
Sampler Initials: ES

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		HC5516	HC5517	HC5518	HC5594		
Sampling Date		2013/08/01 16:45	2013/08/01 16:15	2013/08/01 16:35	2013/08/01 08:55		
COC Number		405374-16-01	405374-16-01	405374-16-01	405374-12-01		
	UNITS	**TP13-63 @ 0.05M**	**TP13-64 @ 0.05M**	**TP13-64 @ 0.65M**	**TP13-24 @ 0.5M**	**RDL**	**QC Batch**
Elements							
Total Antimony (Sb)	mg/kg	<1.0	<1.0	<1.0	1.2	1.0	7066367
Total Arsenic (As)	mg/kg	<1.0	1.2	<1.0	<1.0	1.0	7066367
Total Barium (Ba)	mg/kg	16	14	<10	<10	10	7066367
Total Beryllium (Be)	mg/kg	<0.40	<0.40	<0.40	<0.40	0.40	7066367
Total Cadmium (Cd)	mg/kg	0.13	0.39	0.15	<0.10	0.10	7066367
Total Chromium (Cr)	mg/kg	7.5	8.0	3.3	3.0	1.0	7066367
Total Cobalt (Co)	mg/kg	1.3	2.1	1.3	1.2	1.0	7066367
Total Copper (Cu)	mg/kg	<5.0	6.3	<5.0	6.6	5.0	7066367
Total Lead (Pb)	mg/kg	4.7	5.3	2.8	3.8	1.0	7066367
Total Mercury (Hg)	mg/kg	<0.050	<0.050	<0.050	<0.050	0.050	7066367
Total Molybdenum (Mo)	mg/kg	<0.40	<0.40	<0.40	<0.40	0.40	7066367
Total Nickel (Ni)	mg/kg	3.4	5.5	2.8	3.4	1.0	7066367
Total Selenium (Se)	mg/kg	<0.50	<0.50	<0.50	<0.50	0.50	7066367
Total Silver (Ag)	mg/kg	<1.0	<1.0	<1.0	<1.0	1.0	7066367
Total Thallium (Tl)	mg/kg	<0.30	<0.30	<0.30	<0.30	0.30	7066367
Total Tin (Sn)	mg/kg	<1.0	<1.0	<1.0	<1.0	1.0	7066367
Total Uranium (U)	mg/kg	<1.0	<1.0	<1.0	<1.0	1.0	7066367
Total Vanadium (V)	mg/kg	5.4	8.3	7.3	6.9	1.0	7066367
Total Zinc (Zn)	mg/kg	25	310	<10	<10	10	7066367

RDL = Reportable Detection Limit

Maxxam Job #: B367780
Report Date: 2013/08/16

AECOM
Client Project #: 60299674
Site Location: CAM E
Your P.O. #: 700266069
Sampler Initials: ES

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		HC5596	HC5597	HC5598	HC5599		
Sampling Date		2013/08/01 09:00	2013/08/01 09:00	2013/08/01 08:55	2013/08/01 09:30		
COC Number		405374-12-01	405374-12-01	405374-12-01	405374-12-01		
	UNITS	**TP13-40 @ 0.05M**	**TP13-40E @ 0.05M**	**TP13-40 @ 0.5M**	**TP13-41 @ 0.05M**	**RDL**	**QC Batch**
Elements							
Total Antimony (Sb)	mg/kg	5.0	5.0	<1.0	1.0	1.0	7066367
Total Arsenic (As)	mg/kg	1.0	<1.0	1.4	<1.0	1.0	7066367
Total Barium (Ba)	mg/kg	<10	<10	<10	<10	10	7066367
Total Beryllium (Be)	mg/kg	<0.40	<0.40	<0.40	<0.40	0.40	7066367
Total Cadmium (Cd)	mg/kg	1.1	1.3	0.10	0.39	0.10	7066367
Total Chromium (Cr)	mg/kg	3.8	8.2	3.8	2.5	1.0	7066367
Total Cobalt (Co)	mg/kg	1.1	1.3	1.4	<1.0	1.0	7066367
Total Copper (Cu)	mg/kg	14	8.1	<5.0	<5.0	5.0	7066367
Total Lead (Pb)	mg/kg	13	14	3.5	13	1.0	7066367
Total Mercury (Hg)	mg/kg	<0.050	<0.050	<0.050	<0.050	0.050	7066367
Total Molybdenum (Mo)	mg/kg	<0.40	<0.40	<0.40	<0.40	0.40	7066367
Total Nickel (Ni)	mg/kg	2.9	3.6	3.6	2.2	1.0	7066367
Total Selenium (Se)	mg/kg	<0.50	<0.50	<0.50	<0.50	0.50	7066367
Total Silver (Ag)	mg/kg	<1.0	<1.0	<1.0	<1.0	1.0	7066367
Total Thallium (Tl)	mg/kg	<0.30	<0.30	<0.30	<0.30	0.30	7066367
Total Tin (Sn)	mg/kg	<1.0	<1.0	<1.0	<1.0	1.0	7066367
Total Uranium (U)	mg/kg	<1.0	<1.0	<1.0	<1.0	1.0	7066367
Total Vanadium (V)	mg/kg	7.0	6.4	8.0	6.0	1.0	7066367
Total Zinc (Zn)	mg/kg	24	18	<10	15	10	7066367

RDL = Reportable Detection Limit

Maxxam Job #: B367780
Report Date: 2013/08/16

AECOM
Client Project #: 60299674
Site Location: CAM E
Your P.O. #: 700266069
Sampler Initials: ES

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		HC5600	HC5601		HC5602		
Sampling Date		2013/08/01 09:35	2013/08/01 09:45		2013/08/01 09:55		
COC Number		405374-12-01	405374-12-01		405374-12-01		
	UNITS	**TP13-41 @ 0.5M**	**TP13-42 @ 0.05M**	**QC Batch**	**TP13-43 @ 0.5M**	**RDL**	**QC Batch**
Elements							
Total Antimony (Sb)	mg/kg	<1.0	<1.0	7066367	<1.0	1.0	7071541
Total Arsenic (As)	mg/kg	1.1	1.3	7066367	1.3	1.0	7071541
Total Barium (Ba)	mg/kg	<10	<10	7066367	<10	10	7071541
Total Beryllium (Be)	mg/kg	<0.40	<0.40	7066367	<0.40	0.40	7071541
Total Cadmium (Cd)	mg/kg	<0.10	0.27	7066367	<0.10	0.10	7071541
Total Chromium (Cr)	mg/kg	3.7	3.9	7066367	3.3	1.0	7071541
Total Cobalt (Co)	mg/kg	1.4	1.5	7066367	1.1	1.0	7071541
Total Copper (Cu)	mg/kg	<5.0	<5.0	7066367	<5.0	5.0	7071541
Total Lead (Pb)	mg/kg	3.5	12	7066367	3.9	1.0	7071541
Total Mercury (Hg)	mg/kg	<0.050	<0.050	7066367	<0.050	0.050	7071541
Total Molybdenum (Mo)	mg/kg	<0.40	<0.40	7066367	<0.40	0.40	7071541
Total Nickel (Ni)	mg/kg	3.3	3.4	7066367	1.7	1.0	7071541
Total Selenium (Se)	mg/kg	<0.50	<0.50	7066367	<0.50	0.50	7071541
Total Silver (Ag)	mg/kg	<1.0	<1.0	7066367	<1.0	1.0	7071541
Total Thallium (Tl)	mg/kg	<0.30	<0.30	7066367	<0.30	0.30	7071541
Total Tin (Sn)	mg/kg	<1.0	<1.0	7066367	<1.0	1.0	7071541
Total Uranium (U)	mg/kg	<1.0	<1.0	7066367	<1.0	1.0	7071541
Total Vanadium (V)	mg/kg	7.8	8.1	7066367	7.1	1.0	7071541
Total Zinc (Zn)	mg/kg	<10	14	7066367	<10	10	7071541

RDL = Reportable Detection Limit

Maxxam Job #: B367780
Report Date: 2013/08/16

AECOM
Client Project #: 60299674
Site Location: CAM E
Your P.O. #: 700266069
Sampler Initials: ES

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		HC5603	HC5619	HC5620	HC5621		
Sampling Date		2013/08/01 10:05	2013/08/01 15:40	2013/08/01 15:45	2013/08/01 16:00		
COC Number		405374-12-01	405374-14-01	405374-14-01	405374-14-01		
	UNITS	**TP13-44 @ 0.05M**	**TP13-58 @ 0.05M**	**TP13-59 @ 0.05M**	**TP13-59 @ 0.36M**	**RDL**	**QC Batch**
Elements							
Total Antimony (Sb)	mg/kg	9.3	2.0	<1.0	<1.0	1.0	7066367
Total Arsenic (As)	mg/kg	2.7	1.0	1.1	1.3	1.0	7066367
Total Barium (Ba)	mg/kg	16	17	14	<10	10	7066367
Total Beryllium (Be)	mg/kg	<0.40	<0.40	<0.40	<0.40	0.40	7066367
Total Cadmium (Cd)	mg/kg	0.89	0.20	0.18	<0.10	0.10	7066367
Total Chromium (Cr)	mg/kg	17	11	9.3	3.5	1.0	7066367
Total Cobalt (Co)	mg/kg	2.9	1.8	1.6	1.6	1.0	7066367
Total Copper (Cu)	mg/kg	20	140	<5.0	<5.0	5.0	7066367
Total Lead (Pb)	mg/kg	67	12	4.9	3.1	1.0	7066367
Total Mercury (Hg)	mg/kg	<0.050	<0.050	<0.050	<0.050	0.050	7066367
Total Molybdenum (Mo)	mg/kg	0.84	<0.40	<0.40	<0.40	0.40	7066367
Total Nickel (Ni)	mg/kg	6.5	4.4	3.7	3.9	1.0	7066367
Total Selenium (Se)	mg/kg	<0.50	<0.50	<0.50	<0.50	0.50	7066367
Total Silver (Ag)	mg/kg	<1.0	<1.0	<1.0	<1.0	1.0	7066367
Total Thallium (Tl)	mg/kg	<0.30	<0.30	<0.30	<0.30	0.30	7066367
Total Tin (Sn)	mg/kg	2.0	<1.0	<1.0	<1.0	1.0	7066367
Total Uranium (U)	mg/kg	<1.0	<1.0	<1.0	<1.0	1.0	7066367
Total Vanadium (V)	mg/kg	6.9	7.8	6.4	7.9	1.0	7066367
Total Zinc (Zn)	mg/kg	70	54	65	<10	10	7066367

RDL = Reportable Detection Limit

Maxxam Job #: B367780
Report Date: 2013/08/16

AECOM
Client Project #: 60299674
Site Location: CAM E
Your P.O. #: 700266069
Sampler Initials: ES

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		HC5623	HC5624	HC5625	HC5626		
Sampling Date		2013/08/01 15:50	2013/08/01 16:30	2013/08/01 08:45	2013/08/01 08:50		
COC Number		405374-14-01	405374-14-01	405374-14-01	405374-14-01		
	UNITS	**TP13-59 @ 0.7M**	**TP13-64 @ 0.3M**	**TP13-47 @ 0.8M**	**TP13-46 @ 0.45M**	**RDL**	**QC Batch**
Elements							
Total Antimony (Sb)	mg/kg	<1.0	<1.0	<1.0	<1.0	1.0	7066367
Total Arsenic (As)	mg/kg	<1.0	1.5	1.2	<1.0	1.0	7066367
Total Barium (Ba)	mg/kg	<10	11	<10	<10	10	7066367
Total Beryllium (Be)	mg/kg	<0.40	<0.40	<0.40	<0.40	0.40	7066367
Total Cadmium (Cd)	mg/kg	<0.10	<0.10	<0.10	<0.10	0.10	7066367
Total Chromium (Cr)	mg/kg	1.4	5.0	3.3	2.8	1.0	7066367
Total Cobalt (Co)	mg/kg	<1.0	2.1	1.7	1.2	1.0	7066367
Total Copper (Cu)	mg/kg	<5.0	<5.0	<5.0	<5.0	5.0	7066367
Total Lead (Pb)	mg/kg	1.6	4.1	2.9	3.9	1.0	7066367
Total Mercury (Hg)	mg/kg	<0.050	<0.050	<0.050	<0.050	0.050	7066367
Total Molybdenum (Mo)	mg/kg	<0.40	<0.40	<0.40	<0.40	0.40	7066367
Total Nickel (Ni)	mg/kg	1.5	4.2	3.5	2.5	1.0	7066367
Total Selenium (Se)	mg/kg	<0.50	<0.50	<0.50	<0.50	0.50	7066367
Total Silver (Ag)	mg/kg	<1.0	<1.0	<1.0	<1.0	1.0	7066367
Total Thallium (Tl)	mg/kg	<0.30	<0.30	<0.30	<0.30	0.30	7066367
Total Tin (Sn)	mg/kg	<1.0	<1.0	<1.0	<1.0	1.0	7066367
Total Uranium (U)	mg/kg	<1.0	<1.0	<1.0	<1.0	1.0	7066367
Total Vanadium (V)	mg/kg	3.6	10	7.8	7.4	1.0	7066367
Total Zinc (Zn)	mg/kg	<10	11	<10	<10	10	7066367

RDL = Reportable Detection Limit

Maxxam Job #: B367780
Report Date: 2013/08/16

AECOM
Client Project #: 60299674
Site Location: CAM E
Your P.O. #: 700266069
Sampler Initials: ES

VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		HC5509	HC5510	HC5511	HC5512		
Sampling Date		2013/08/01 09:45	2013/08/01 09:30	2013/08/01 08:45	2013/08/01 10:15		
COC Number		405374-16-01	405374-16-01	405374-16-01	405374-16-01		
	UNITS	**TP13-47 @ 0.25M**	**TP13-48 @ 0.35M**	**TP13-48 @ 0.8M**	**TP13-50 @ 0.7M**	**RDL**	**QC Batch**
Volatiles							
Benzene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	7058093
Toluene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	7058093
Ethylbenzene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	7058093
Xylenes (Total)	mg/kg	<0.040	<0.040	<0.040	0.097	0.040	7058093
m & p-Xylene	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	7058093
o-Xylene	mg/kg	<0.020	<0.020	<0.020	0.097	0.020	7058093
F1 (C6-C10) - BTEX	mg/kg	<12	<12	<12	160	12	7058093
(C6-C10)	mg/kg	<12	<12	<12	160	12	7058093
Surrogate Recovery (%)							
1,4-Difluorobenzene (sur.)	%	102	101	101	104	N/A	7058093
4-BROMOFLUOROBENZENE (sur.)	%	108	109	109	122	N/A	7058093
D10-ETHYLBENZENE (sur.)	%	88	91	87	88	N/A	7058093
D4-1,2-DICHLOROETHANE (sur.)	%	105	103	103	104	N/A	7058093

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: B367780
Report Date: 2013/08/16

AECOM
Client Project #: 60299674
Site Location: CAM E
Your P.O. #: 700266069
Sampler Initials: ES

VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		HC5513	HC5514	HC5518	HC5594		
Sampling Date		2013/08/01 10:10	2013/08/01 10:15	2013/08/01 16:35	2013/08/01 08:55		
COC Number		405374-16-01	405374-16-01	405374-16-01	405374-12-01		
	UNITS	**TP13-50 @ 0.3M**	**TP13-50A @ 0.7M**	**TP13-64 @ 0.65M**	**TP13-24 @ 0.5M**	**RDL**	**QC Batch**
Volatiles							
Benzene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	7058093
Toluene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	7058093
Ethylbenzene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	7058093
Xylenes (Total)	mg/kg	<0.040	0.081	<0.040	<0.040	0.040	7058093
m & p-Xylene	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	7058093
o-Xylene	mg/kg	<0.020	0.081	<0.020	<0.020	0.020	7058093
F1 (C6-C10) - BTEX	mg/kg	<12	130	<12	<12	12	7058093
(C6-C10)	mg/kg	<12	130	<12	<12	12	7058093
Surrogate Recovery (%)							
1,4-Difluorobenzene (sur.)	%	101	101	102	101	N/A	7058093
4-BROMOFLUOROBENZENE (sur.)	%	108	120	108	108	N/A	7058093
D10-ETHYLBENZENE (sur.)	%	92	89	91	95	N/A	7058093
D4-1,2-DICHLOROETHANE (sur.)	%	101	103	100	103	N/A	7058093

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: B367780
Report Date: 2013/08/16

AECOM
Client Project #: 60299674
Site Location: CAM E
Your P.O. #: 700266069
Sampler Initials: ES

VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		HC5595	HC5598	HC5600	HC5601		
Sampling Date		2013/08/01 08:55	2013/08/01 08:55	2013/08/01 09:35	2013/08/01 09:45		
COC Number		405374-12-01	405374-12-01	405374-12-01	405374-12-01		
	UNITS	**TP13-24 @ 0.75M**	**TP13-40 @ 0.5M**	**TP13-41 @ 0.5M**	**TP13-42 @ 0.05M**	**RDL**	**QC Batch**
Volatiles							
Benzene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	7058093
Toluene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	7058093
Ethylbenzene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	7058093
Xylenes (Total)	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	7058093
m & p-Xylene	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	7058093
o-Xylene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	7058093
F1 (C6-C10) - BTEX	mg/kg	<12	<12	<12	<12	12	7058093
(C6-C10)	mg/kg	<12	<12	<12	<12	12	7058093
Surrogate Recovery (%)							
1,4-Difluorobenzene (sur.)	%	101	101	101	100	N/A	7058093
4-BROMOFLUOROBENZENE (sur.)	%	108	108	108	108	N/A	7058093
D10-ETHYLBENZENE (sur.)	%	92	92	94	95	N/A	7058093
D4-1,2-DICHLOROETHANE (sur.)	%	103	103	103	102	N/A	7058093

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: B367780
Report Date: 2013/08/16

AECOM
Client Project #: 60299674
Site Location: CAM E
Your P.O. #: 700266069
Sampler Initials: ES

VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		HC5602	HC5616	HC5617	HC5618		
Sampling Date		2013/08/01 09:55	2013/08/01 10:30	2013/08/01 16:30	2013/08/01 15:30		
COC Number		405374-12-01	405374-14-01	405374-14-01	405374-14-01		
	UNITS	**TP13-43 @ 0.5M**	**TP13-44 @ 0.45M**	**TP13-49 @ 0.45M**	**TP13-55 @ 0.45M**	**RDL**	**QC Batch**
Volatiles							
Benzene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	7058093
Toluene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	7058093
Ethylbenzene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	7058093
Xylenes (Total)	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	7058093
m & p-Xylene	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	7058093
o-Xylene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	7058093
F1 (C6-C10) - BTEX	mg/kg	<12	<12	<12	<12	12	7058093
(C6-C10)	mg/kg	<12	<12	<12	<12	12	7058093
Surrogate Recovery (%)							
1,4-Difluorobenzene (sur.)	%	101	101	101	101	N/A	7058093
4-BROMOFLUOROBENZENE (sur.)	%	108	108	108	109	N/A	7058093
D10-ETHYLBENZENE (sur.)	%	95	94	94	93	N/A	7058093
D4-1,2-DICHLOROETHANE (sur.)	%	103	103	103	102	N/A	7058093

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: B367780
Report Date: 2013/08/16

AECOM
Client Project #: 60299674
Site Location: CAM E
Your P.O. #: 700266069
Sampler Initials: ES

VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		HC5621	HC5621	HC5623	HC5624		
Sampling Date		2013/08/01 16:00	2013/08/01 16:00	2013/08/01 15:50	2013/08/01 16:30		
COC Number		405374-14-01	405374-14-01	405374-14-01	405374-14-01		
	UNITS	**TP13-59 @ 0.36M**	**TP13-59 @ 0.36M Lab-Dup**	**TP13-59 @ 0.7M**	**TP13-64 @ 0.3M**	**RDL**	**QC Batch**
Volatiles							
Benzene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	7058093
Toluene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	7058093
Ethylbenzene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	7058093
Xylenes (Total)	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	7058093
m & p-Xylene	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	7058093
o-Xylene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	7058093
F1 (C6-C10) - BTEX	mg/kg	<12	<12	<12	<12	12	7058093
(C6-C10)	mg/kg	<12	<12	<12	<12	12	7058093
Surrogate Recovery (%)							
1,4-Difluorobenzene (sur.)	%	101	101	101	102	N/A	7058093
4-BROMOFLUOROBENZENE (sur.)	%	112	111	111	107	N/A	7058093
D10-ETHYLBENZENE (sur.)	%	92	93	94	95	N/A	7058093
D4-1,2-DICHLOROETHANE (sur.)	%	104	101	100	102	N/A	7058093

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: B367780
Report Date: 2013/08/16

AECOM
Client Project #: 60299674
Site Location: CAM E
Your P.O. #: 700266069
Sampler Initials: ES

VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		HC5625		HC5626	HC5705		
Sampling Date		2013/08/01 08:45		2013/08/01 08:50	2013/08/01 09:45		
COC Number		405374-14-01		405374-14-01	405374-14-01		
	UNITS	**TP13-47 @ 0.8M**	**QC Batch**	**TP13-46 @ 0.45M**	**TP13-42 @ 0.5M**	**RDL**	**QC Batch**
Volatiles							
Benzene	mg/kg	<0.0050	7058093	<0.0050	<0.0050	0.0050	7058064
Toluene	mg/kg	<0.020	7058093	<0.020	<0.020	0.020	7058064
Ethylbenzene	mg/kg	<0.010	7058093	<0.010	<0.010	0.010	7058064
Xylenes (Total)	mg/kg	<0.040	7058093	<0.040	<0.040	0.040	7058064
m & p-Xylene	mg/kg	<0.040	7058093	<0.040	<0.040	0.040	7058064
o-Xylene	mg/kg	<0.020	7058093	<0.020	<0.020	0.020	7058064
F1 (C6-C10) - BTEX	mg/kg	76	7058093	<12	<12	12	7058064
(C6-C10)	mg/kg	76	7058093	<12	<12	12	7058064
Surrogate Recovery (%)							
1,4-Difluorobenzene (sur.)	%	102	7058093	102	102	N/A	7058064
4-BROMOFLUOROBENZENE (sur.)	%	120	7058093	108	108	N/A	7058064
D10-ETHYLBENZENE (sur.)	%	93	7058093	89	92	N/A	7058064
D4-1,2-DICHLOROETHANE (sur.)	%	105	7058093	102	102	N/A	7058064

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: B367780
Report Date: 2013/08/16

AECOM
Client Project #: 60299674
Site Location: CAM E
Your P.O. #: 700266069
Sampler Initials: ES

General Comments

Results relate only to the items tested.

AECOM
Attention: NICK OKE
Client Project #: 60299674
P.O. #: 700266069
Site Location: CAM E

Quality Assurance Report

Maxxam Job Number: CB367780

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7057170	KSA	Method Blank	Moisture	2013/08/07	<0.30		%	
		RPD	Moisture	2013/08/07	2.1		%	20
7057929	MWC	Method Blank	Moisture	2013/08/08	<0.30		%	
		RPD [HC5623-02]	Moisture	2013/08/08	9.8		%	20
7058064	WZ0	Matrix Spike	1,4-Difluorobenzene (sur.)	2013/08/08		105	%	60 - 140
			4-BROMOFLUOROBENZENE (sur.)	2013/08/08		114	%	60 - 140
			D10-ETHYLBENZENE (sur.)	2013/08/08		71	%	60 - 130
			D4-1,2-DICHLOROETHANE (sur.)	2013/08/08		112	%	60 - 140
			Benzene	2013/08/08		71	%	60 - 140
			Toluene	2013/08/08		68	%	60 - 140
			Ethylbenzene	2013/08/08		72	%	60 - 140
			m & p-Xylene	2013/08/08		69	%	60 - 140
			o-Xylene	2013/08/08		68	%	60 - 140
			(C6-C10)	2013/08/08		78	%	60 - 140
		Spiked Blank	1,4-Difluorobenzene (sur.)	2013/08/08		101	%	60 - 140
			4-BROMOFLUOROBENZENE (sur.)	2013/08/08		113	%	60 - 140
			D10-ETHYLBENZENE (sur.)	2013/08/08		103	%	60 - 130
			D4-1,2-DICHLOROETHANE (sur.)	2013/08/08		115	%	60 - 140
			Benzene	2013/08/08		103	%	60 - 140
			Toluene	2013/08/08		100	%	60 - 140
			Ethylbenzene	2013/08/08		107	%	60 - 140
			m & p-Xylene	2013/08/08		104	%	60 - 140
			o-Xylene	2013/08/08		103	%	60 - 140
			(C6-C10)	2013/08/08		116	%	60 - 140
		Method Blank	1,4-Difluorobenzene (sur.)	2013/08/08		98	%	60 - 140
			4-BROMOFLUOROBENZENE (sur.)	2013/08/08		109	%	60 - 140
			D10-ETHYLBENZENE (sur.)	2013/08/08		98	%	60 - 130
			D4-1,2-DICHLOROETHANE (sur.)	2013/08/08		106	%	60 - 140
			Benzene	2013/08/08	<0.0050		mg/kg	
			Toluene	2013/08/08	<0.020		mg/kg	
			Ethylbenzene	2013/08/08	<0.010		mg/kg	
			Xylenes (Total)	2013/08/08	<0.040		mg/kg	
			m & p-Xylene	2013/08/08	<0.040		mg/kg	
			o-Xylene	2013/08/08	<0.020		mg/kg	
			F1 (C6-C10) - BTEX	2013/08/08	<12		mg/kg	
			(C6-C10)	2013/08/08	<12		mg/kg	
		RPD	Benzene	2013/08/08	NC		%	50
			Toluene	2013/08/08	NC		%	50
			Ethylbenzene	2013/08/08	NC		%	50
			Xylenes (Total)	2013/08/08	NC		%	50
			m & p-Xylene	2013/08/08	NC		%	50
			o-Xylene	2013/08/08	NC		%	50
			F1 (C6-C10) - BTEX	2013/08/08	NC		%	50
			(C6-C10)	2013/08/08	NC		%	50
7058093	WZ0	Matrix Spike [HC5621-02]	1,4-Difluorobenzene (sur.)	2013/08/09		104	%	60 - 140
			4-BROMOFLUOROBENZENE (sur.)	2013/08/09		116	%	60 - 140
			D10-ETHYLBENZENE (sur.)	2013/08/09		100	%	60 - 130
			D4-1,2-DICHLOROETHANE (sur.)	2013/08/09		110	%	60 - 140
			Benzene	2013/08/09		99	%	60 - 140
			Toluene	2013/08/09		97	%	60 - 140
			Ethylbenzene	2013/08/09		104	%	60 - 140
			m & p-Xylene	2013/08/09		101	%	60 - 140
			o-Xylene	2013/08/09		100	%	60 - 140
			(C6-C10)	2013/08/09		109	%	60 - 140

AECOM
Attention: NICK OKE
Client Project #: 60299674
P.O. #: 700266069
Site Location: CAM E

Quality Assurance Report (Continued)

Maxxam Job Number: CB367780

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7058093	WZ0	Spiked Blank	1,4-Difluorobenzene (sur.)	2013/08/09		105	%	60 - 140
			4-BROMOFLUOROBENZENE (sur.)	2013/08/09		112	%	60 - 140
			D10-ETHYLBENZENE (sur.)	2013/08/09		100	%	60 - 130
			D4-1,2-DICHLOROETHANE (sur.)	2013/08/09		112	%	60 - 140
			Benzene	2013/08/09		95	%	60 - 140
			Toluene	2013/08/09		91	%	60 - 140
			Ethylbenzene	2013/08/09		98	%	60 - 140
			m & p-Xylene	2013/08/09		95	%	60 - 140
			o-Xylene	2013/08/09		94	%	60 - 140
			(C6-C10)	2013/08/09		99	%	60 - 140
		Method Blank	1,4-Difluorobenzene (sur.)	2013/08/09		101	%	60 - 140
			4-BROMOFLUOROBENZENE (sur.)	2013/08/09		110	%	60 - 140
			D10-ETHYLBENZENE (sur.)	2013/08/09		93	%	60 - 130
			D4-1,2-DICHLOROETHANE (sur.)	2013/08/09		104	%	60 - 140
			Benzene	2013/08/09	<0.0050		mg/kg	
			Toluene	2013/08/09	<0.020		mg/kg	
			Ethylbenzene	2013/08/09	<0.010		mg/kg	
			Xylenes (Total)	2013/08/09	<0.040		mg/kg	
			m & p-Xylene	2013/08/09	<0.040		mg/kg	
			o-Xylene	2013/08/09	<0.020		mg/kg	
			F1 (C6-C10) - BTEX	2013/08/09	<12		mg/kg	
			(C6-C10)	2013/08/09	<12		mg/kg	
		RPD [HC5621-02]	Benzene	2013/08/09	NC		%	50
			Toluene	2013/08/09	NC		%	50
			Ethylbenzene	2013/08/09	NC		%	50
			Xylenes (Total)	2013/08/09	NC		%	50
			m & p-Xylene	2013/08/09	NC		%	50
			o-Xylene	2013/08/09	NC		%	50
			F1 (C6-C10) - BTEX	2013/08/09	NC		%	50
			(C6-C10)	2013/08/09	NC		%	50
7058153	AD9	Method Blank	Moisture	2013/08/08	<0.30		%	
		RPD [HC5514-02]	Moisture	2013/08/08	2.4		%	20
7059529	JP0	Matrix Spike [HC5626-02]	O-TERPHENYL (sur.)	2013/08/09		107	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2013/08/09		122	%	50 - 130
			F3 (C16-C34 Hydrocarbons)	2013/08/09		101	%	50 - 130
			F4 (C34-C50 Hydrocarbons)	2013/08/09		110	%	50 - 130
		Spiked Blank	O-TERPHENYL (sur.)	2013/08/09		115	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2013/08/09		101	%	70 - 130
			F3 (C16-C34 Hydrocarbons)	2013/08/09		94	%	70 - 130
			F4 (C34-C50 Hydrocarbons)	2013/08/09		107	%	70 - 130
		Method Blank	O-TERPHENYL (sur.)	2013/08/09		129	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2013/08/09	<10		mg/kg	
			F3 (C16-C34 Hydrocarbons)	2013/08/09	<50		mg/kg	
			F4 (C34-C50 Hydrocarbons)	2013/08/09	<50		mg/kg	
		RPD [HC5626-02]	F2 (C10-C16 Hydrocarbons)	2013/08/09	NC		%	50
			F3 (C16-C34 Hydrocarbons)	2013/08/09	NC		%	50
			F4 (C34-C50 Hydrocarbons)	2013/08/09	NC		%	50
7059532	DO1	Matrix Spike	O-TERPHENYL (sur.)	2013/08/08		107	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2013/08/08		106	%	50 - 130
			F3 (C16-C34 Hydrocarbons)	2013/08/08		113	%	50 - 130
			F4 (C34-C50 Hydrocarbons)	2013/08/08		111	%	50 - 130
		Spiked Blank	O-TERPHENYL (sur.)	2013/08/08		110	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2013/08/08		110	%	70 - 130
			F3 (C16-C34 Hydrocarbons)	2013/08/08		117	%	70 - 130

AECOM
Attention: NICK OKE
Client Project #: 60299674
P.O. #: 700266069
Site Location: CAM E

Quality Assurance Report (Continued)

Maxxam Job Number: CB367780

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7059532	DO1	Spiked Blank	F4 (C34-C50 Hydrocarbons)	2013/08/08		117	%	70 - 130
		Method Blank	O-TERPHENYL (sur.)	2013/08/08		112	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2013/08/08	<10		mg/kg	
			F3 (C16-C34 Hydrocarbons)	2013/08/08	<50		mg/kg	
			F4 (C34-C50 Hydrocarbons)	2013/08/08	<50		mg/kg	
		RPD	F2 (C10-C16 Hydrocarbons)	2013/08/08	NC		%	50
			F3 (C16-C34 Hydrocarbons)	2013/08/08	NC		%	50
			F4 (C34-C50 Hydrocarbons)	2013/08/08	NC		%	50
7063124	SMZ	QC Standard	Soluble (2:1) pH	2013/08/09		101	%	98 - 102
		Spiked Blank	Soluble (2:1) pH	2013/08/09		100	%	97 - 103
		RPD	Soluble (2:1) pH	2013/08/09	0.4		%	5
7066261	ST4	Matrix Spike	Total Antimony (Sb)	2013/08/11		98	%	75 - 125
			Total Arsenic (As)	2013/08/11		96	%	75 - 125
			Total Barium (Ba)	2013/08/11		94	%	75 - 125
			Total Beryllium (Be)	2013/08/11		101	%	75 - 125
			Total Cadmium (Cd)	2013/08/11		96	%	75 - 125
			Total Chromium (Cr)	2013/08/11		95	%	75 - 125
			Total Cobalt (Co)	2013/08/11		96	%	75 - 125
			Total Copper (Cu)	2013/08/11		91	%	75 - 125
			Total Lead (Pb)	2013/08/11		91	%	75 - 125
			Total Mercury (Hg)	2013/08/11		91	%	75 - 125
			Total Molybdenum (Mo)	2013/08/11		100	%	75 - 125
			Total Nickel (Ni)	2013/08/11		94	%	75 - 125
			Total Selenium (Se)	2013/08/11		97	%	75 - 125
			Total Silver (Ag)	2013/08/11		87	%	75 - 125
			Total Thallium (Tl)	2013/08/11		93	%	75 - 125
			Total Tin (Sn)	2013/08/11		98	%	75 - 125
			Total Uranium (U)	2013/08/11		96	%	75 - 125
			Total Vanadium (V)	2013/08/11		99	%	75 - 125
			Total Zinc (Zn)	2013/08/11		94	%	75 - 125
		QC Standard	Total Arsenic (As)	2013/08/11		113	%	50 - 150
			Total Barium (Ba)	2013/08/11		101	%	69 - 131
			Total Chromium (Cr)	2013/08/11		102	%	41 - 159
			Total Cobalt (Co)	2013/08/11		101	%	75 - 125
			Total Copper (Cu)	2013/08/11		99	%	73 - 127
			Total Lead (Pb)	2013/08/11		100	%	54 - 146
			Total Nickel (Ni)	2013/08/11		115	%	61 - 139
			Total Vanadium (V)	2013/08/11		116	%	50 - 150
			Total Zinc (Zn)	2013/08/11		108	%	72 - 128
		Spiked Blank	Total Antimony (Sb)	2013/08/11		106	%	75 - 125
			Total Arsenic (As)	2013/08/11		101	%	75 - 125
			Total Barium (Ba)	2013/08/11		100	%	75 - 125
			Total Beryllium (Be)	2013/08/11		110	%	75 - 125
			Total Cadmium (Cd)	2013/08/11		103	%	75 - 125
			Total Chromium (Cr)	2013/08/11		104	%	75 - 125
			Total Cobalt (Co)	2013/08/11		103	%	75 - 125
			Total Copper (Cu)	2013/08/11		101	%	75 - 125
			Total Lead (Pb)	2013/08/11		103	%	75 - 125
			Total Mercury (Hg)	2013/08/11		76	%	75 - 125
			Total Molybdenum (Mo)	2013/08/11		105	%	75 - 125
			Total Nickel (Ni)	2013/08/11		103	%	75 - 125
			Total Selenium (Se)	2013/08/11		104	%	75 - 125
			Total Silver (Ag)	2013/08/11		94	%	75 - 125
			Total Thallium (Tl)	2013/08/11		101	%	75 - 125
			Total Tin (Sn)	2013/08/11		104	%	75 - 125

AECOM
Attention: NICK OKE
Client Project #: 60299674
P.O. #: 700266069
Site Location: CAM E

Quality Assurance Report (Continued)

Maxxam Job Number: CB367780

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7066261 ST4	Spiked Blank	Total Uranium (U)	2013/08/11		109	%	75 - 125
		Total Vanadium (V)	2013/08/11		104	%	75 - 125
		Total Zinc (Zn)	2013/08/11		103	%	75 - 125
	Method Blank	Total Antimony (Sb)	2013/08/11	<1.0		mg/kg	
		Total Arsenic (As)	2013/08/11	<1.0		mg/kg	
		Total Barium (Ba)	2013/08/11	<10		mg/kg	
		Total Beryllium (Be)	2013/08/11	<0.40		mg/kg	
		Total Cadmium (Cd)	2013/08/11	<0.10		mg/kg	
		Total Chromium (Cr)	2013/08/11	1.9, RDL=1.0		mg/kg	
		Total Cobalt (Co)	2013/08/11	<1.0		mg/kg	
		Total Copper (Cu)	2013/08/11	<5.0		mg/kg	
		Total Lead (Pb)	2013/08/11	<1.0		mg/kg	
		Total Mercury (Hg)	2013/08/11	<0.050		mg/kg	
		Total Molybdenum (Mo)	2013/08/11	<0.40		mg/kg	
		Total Nickel (Ni)	2013/08/11	<1.0		mg/kg	
		Total Selenium (Se)	2013/08/11	<0.50		mg/kg	
		Total Silver (Ag)	2013/08/11	<1.0		mg/kg	
		Total Thallium (Tl)	2013/08/11	<0.30		mg/kg	
		Total Tin (Sn)	2013/08/11	<1.0		mg/kg	
		Total Uranium (U)	2013/08/11	<1.0		mg/kg	
		Total Vanadium (V)	2013/08/11	<1.0		mg/kg	
		Total Zinc (Zn)	2013/08/11	<10		mg/kg	
	RPD	Total Antimony (Sb)	2013/08/11	NC		%	35
		Total Arsenic (As)	2013/08/11	NC		%	35
		Total Barium (Ba)	2013/08/11	NC		%	35
		Total Beryllium (Be)	2013/08/11	NC		%	35
		Total Cadmium (Cd)	2013/08/11	NC		%	35
		Total Chromium (Cr)	2013/08/11	NC		%	35
		Total Cobalt (Co)	2013/08/11	NC		%	35
		Total Copper (Cu)	2013/08/11	NC		%	35
		Total Lead (Pb)	2013/08/11	NC		%	35
		Total Mercury (Hg)	2013/08/11	NC		%	35
		Total Molybdenum (Mo)	2013/08/11	NC		%	35
		Total Nickel (Ni)	2013/08/11	NC		%	35
		Total Selenium (Se)	2013/08/11	NC		%	35
		Total Silver (Ag)	2013/08/11	NC		%	35
		Total Thallium (Tl)	2013/08/11	NC		%	35
		Total Tin (Sn)	2013/08/11	NC		%	35
		Total Uranium (U)	2013/08/11	NC		%	35
		Total Vanadium (V)	2013/08/11	2.8		%	35
		Total Zinc (Zn)	2013/08/11	NC		%	35
7066367 ST4	Matrix Spike [HC5514-01]	Total Antimony (Sb)	2013/08/11		95	%	75 - 125
		Total Arsenic (As)	2013/08/11		93	%	75 - 125
		Total Barium (Ba)	2013/08/11		92	%	75 - 125
		Total Beryllium (Be)	2013/08/11		97	%	75 - 125
		Total Cadmium (Cd)	2013/08/11		92	%	75 - 125
		Total Chromium (Cr)	2013/08/11		96	%	75 - 125
		Total Cobalt (Co)	2013/08/11		93	%	75 - 125
		Total Copper (Cu)	2013/08/11		90	%	75 - 125
		Total Lead (Pb)	2013/08/11		90	%	75 - 125
		Total Mercury (Hg)	2013/08/11		101	%	75 - 125
		Total Molybdenum (Mo)	2013/08/11		98	%	75 - 125
		Total Nickel (Ni)	2013/08/11		93	%	75 - 125
		Total Selenium (Se)	2013/08/11		90	%	75 - 125

AECOM
Attention: NICK OKE
Client Project #: 60299674
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Site Location: CAM E

Quality Assurance Report (Continued)

Maxxam Job Number: CB367780

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7066367	ST4	Matrix Spike						
		[HC5514-01]	Total Silver (Ag)	2013/08/11		85	%	75 - 125
			Total Thallium (Tl)	2013/08/11		92	%	75 - 125
			Total Tin (Sn)	2013/08/11		95	%	75 - 125
			Total Uranium (U)	2013/08/11		89	%	75 - 125
			Total Vanadium (V)	2013/08/11		100	%	75 - 125
			Total Zinc (Zn)	2013/08/11		92	%	75 - 125
		QC Standard	Total Arsenic (As)	2013/08/11		115	%	50 - 150
			Total Barium (Ba)	2013/08/11		104	%	69 - 131
			Total Chromium (Cr)	2013/08/11		109	%	41 - 159
			Total Cobalt (Co)	2013/08/11		108	%	75 - 125
			Total Copper (Cu)	2013/08/11		102	%	73 - 127
			Total Lead (Pb)	2013/08/11		100	%	54 - 146
			Total Nickel (Ni)	2013/08/11		120	%	61 - 139
			Total Vanadium (V)	2013/08/11		124	%	50 - 150
			Total Zinc (Zn)	2013/08/11		111	%	72 - 128
		Spiked Blank	Total Antimony (Sb)	2013/08/11		103	%	75 - 125
			Total Arsenic (As)	2013/08/11		101	%	75 - 125
			Total Barium (Ba)	2013/08/11		99	%	75 - 125
			Total Beryllium (Be)	2013/08/11		107	%	75 - 125
			Total Cadmium (Cd)	2013/08/11		99	%	75 - 125
			Total Chromium (Cr)	2013/08/11		104	%	75 - 125
			Total Cobalt (Co)	2013/08/11		102	%	75 - 125
			Total Copper (Cu)	2013/08/11		102	%	75 - 125
			Total Lead (Pb)	2013/08/11		102	%	75 - 125
			Total Mercury (Hg)	2013/08/11		83	%	75 - 125
			Total Molybdenum (Mo)	2013/08/11		103	%	75 - 125
			Total Nickel (Ni)	2013/08/11		103	%	75 - 125
			Total Selenium (Se)	2013/08/11		97	%	75 - 125
			Total Silver (Ag)	2013/08/11		94	%	75 - 125
			Total Thallium (Tl)	2013/08/11		103	%	75 - 125
			Total Tin (Sn)	2013/08/11		99	%	75 - 125
			Total Uranium (U)	2013/08/11		110	%	75 - 125
			Total Vanadium (V)	2013/08/11		105	%	75 - 125
			Total Zinc (Zn)	2013/08/11		101	%	75 - 125
		Method Blank	Total Antimony (Sb)	2013/08/11	<1.0		mg/kg	
			Total Arsenic (As)	2013/08/11	<1.0		mg/kg	
			Total Barium (Ba)	2013/08/11	<10		mg/kg	
			Total Beryllium (Be)	2013/08/11	<0.40		mg/kg	
			Total Cadmium (Cd)	2013/08/11	<0.10		mg/kg	
			Total Chromium (Cr)	2013/08/11	<1.0		mg/kg	
			Total Cobalt (Co)	2013/08/11	<1.0		mg/kg	
			Total Copper (Cu)	2013/08/11	<5.0		mg/kg	
			Total Lead (Pb)	2013/08/11	<1.0		mg/kg	
			Total Mercury (Hg)	2013/08/11	<0.050		mg/kg	
			Total Molybdenum (Mo)	2013/08/11	<0.40		mg/kg	
			Total Nickel (Ni)	2013/08/11	<1.0		mg/kg	
			Total Selenium (Se)	2013/08/11	<0.50		mg/kg	
			Total Silver (Ag)	2013/08/11	<1.0		mg/kg	
			Total Thallium (Tl)	2013/08/11	<0.30		mg/kg	
			Total Tin (Sn)	2013/08/11	<1.0		mg/kg	
			Total Uranium (U)	2013/08/11	<1.0		mg/kg	
			Total Vanadium (V)	2013/08/11	<1.0		mg/kg	
			Total Zinc (Zn)	2013/08/11	<10		mg/kg	
		RPD [HC5514-01]	Total Antimony (Sb)	2013/08/11	NC		%	35

AECOM
Attention: NICK OKE
Client Project #: 60299674
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Site Location: CAM E

Quality Assurance Report (Continued)

Maxxam Job Number: CB367780

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7066367	ST4	RPD [HC5514-01]	Total Arsenic (As)	2013/08/11	NC		%	35
			Total Barium (Ba)	2013/08/11	NC		%	35
			Total Beryllium (Be)	2013/08/11	NC		%	35
			Total Cadmium (Cd)	2013/08/11	NC		%	35
			Total Chromium (Cr)	2013/08/11	NC		%	35
			Total Cobalt (Co)	2013/08/11	NC		%	35
			Total Copper (Cu)	2013/08/11	NC		%	35
			Total Lead (Pb)	2013/08/11	NC		%	35
			Total Mercury (Hg)	2013/08/11	NC		%	35
			Total Molybdenum (Mo)	2013/08/11	NC		%	35
			Total Nickel (Ni)	2013/08/11	NC		%	35
			Total Selenium (Se)	2013/08/11	NC		%	35
			Total Silver (Ag)	2013/08/11	NC		%	35
			Total Thallium (Tl)	2013/08/11	NC		%	35
			Total Tin (Sn)	2013/08/11	NC		%	35
			Total Uranium (U)	2013/08/11	NC		%	35
			Total Vanadium (V)	2013/08/11	1.8		%	35
			Total Zinc (Zn)	2013/08/11	NC		%	35
7067160	SMZ	QC Standard	Soluble (2:1) pH	2013/08/10		99	%	98 - 102
		Spiked Blank	Soluble (2:1) pH	2013/08/10		100	%	97 - 103
		RPD [HC5514-01]	Soluble (2:1) pH	2013/08/10	1.9		%	5
7067164	SMZ	QC Standard	Soluble (2:1) pH	2013/08/10		101	%	98 - 102
		Spiked Blank	Soluble (2:1) pH	2013/08/10		100	%	97 - 103
		RPD	Soluble (2:1) pH	2013/08/10	1.1		%	5
7067816	ST4	Matrix Spike	Total Antimony (Sb)	2013/08/12		86	%	75 - 125
			Total Arsenic (As)	2013/08/12		91	%	75 - 125
			Total Barium (Ba)	2013/08/12		NC	%	75 - 125
			Total Beryllium (Be)	2013/08/12		91	%	75 - 125
			Total Cadmium (Cd)	2013/08/12		93	%	75 - 125
			Total Chromium (Cr)	2013/08/12		91	%	75 - 125
			Total Cobalt (Co)	2013/08/12		86	%	75 - 125
			Total Copper (Cu)	2013/08/12		83	%	75 - 125
			Total Lead (Pb)	2013/08/12		89	%	75 - 125
			Total Mercury (Hg)	2013/08/12		101	%	75 - 125
			Total Molybdenum (Mo)	2013/08/12		94	%	75 - 125
			Total Nickel (Ni)	2013/08/12		86	%	75 - 125
			Total Selenium (Se)	2013/08/12		93	%	75 - 125
			Total Silver (Ag)	2013/08/12		82	%	75 - 125
			Total Thallium (Tl)	2013/08/12		91	%	75 - 125
			Total Tin (Sn)	2013/08/12		92	%	75 - 125
			Total Uranium (U)	2013/08/12		85	%	75 - 125
			Total Vanadium (V)	2013/08/12		NC	%	75 - 125
			Total Zinc (Zn)	2013/08/12		NC	%	75 - 125
		QC Standard	Total Arsenic (As)	2013/08/12		112	%	50 - 150
			Total Barium (Ba)	2013/08/12		99	%	69 - 131
			Total Chromium (Cr)	2013/08/12		98	%	41 - 159
			Total Cobalt (Co)	2013/08/12		96	%	75 - 125
			Total Lead (Pb)	2013/08/12		95	%	54 - 146
			Total Nickel (Ni)	2013/08/12		109	%	61 - 139
			Total Vanadium (V)	2013/08/12		115	%	50 - 150
			Total Zinc (Zn)	2013/08/12		103	%	72 - 128
		Spiked Blank	Total Antimony (Sb)	2013/08/12		103	%	75 - 125
			Total Arsenic (As)	2013/08/12		103	%	75 - 125
			Total Barium (Ba)	2013/08/12		98	%	75 - 125
			Total Beryllium (Be)	2013/08/12		114	%	75 - 125

AECOM
Attention: NICK OKE
Client Project #: 60299674
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Site Location: CAM E

Quality Assurance Report (Continued)

Maxxam Job Number: CB367780

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7067816 ST4	Spiked Blank	Total Cadmium (Cd)	2013/08/12		102	%	75 - 125
		Total Chromium (Cr)	2013/08/12		98	%	75 - 125
		Total Cobalt (Co)	2013/08/12		99	%	75 - 125
		Total Copper (Cu)	2013/08/12		99	%	75 - 125
		Total Lead (Pb)	2013/08/12		104	%	75 - 125
		Total Mercury (Hg)	2013/08/12		116	%	75 - 125
		Total Molybdenum (Mo)	2013/08/12		101	%	75 - 125
		Total Nickel (Ni)	2013/08/12		99	%	75 - 125
		Total Selenium (Se)	2013/08/12		105	%	75 - 125
		Total Silver (Ag)	2013/08/12		92	%	75 - 125
		Total Thallium (Tl)	2013/08/12		104	%	75 - 125
		Total Tin (Sn)	2013/08/12		96	%	75 - 125
		Total Uranium (U)	2013/08/12		111	%	75 - 125
		Total Vanadium (V)	2013/08/12		101	%	75 - 125
		Total Zinc (Zn)	2013/08/12		102	%	75 - 125
	Method Blank	Total Antimony (Sb)	2013/08/12	<1.0		mg/kg	
		Total Arsenic (As)	2013/08/12	<1.0		mg/kg	
		Total Barium (Ba)	2013/08/12	<10		mg/kg	
		Total Beryllium (Be)	2013/08/12	<0.40		mg/kg	
		Total Cadmium (Cd)	2013/08/12	<0.10		mg/kg	
		Total Chromium (Cr)	2013/08/12	<1.0		mg/kg	
		Total Cobalt (Co)	2013/08/12	<1.0		mg/kg	
		Total Copper (Cu)	2013/08/12	<5.0		mg/kg	
		Total Lead (Pb)	2013/08/12	<1.0		mg/kg	
		Total Mercury (Hg)	2013/08/12	<0.050		mg/kg	
		Total Molybdenum (Mo)	2013/08/12	<0.40		mg/kg	
		Total Nickel (Ni)	2013/08/12	<1.0		mg/kg	
		Total Selenium (Se)	2013/08/12	<0.50		mg/kg	
		Total Silver (Ag)	2013/08/12	<1.0		mg/kg	
		Total Thallium (Tl)	2013/08/12	<0.30		mg/kg	
		Total Tin (Sn)	2013/08/12	<1.0		mg/kg	
		Total Uranium (U)	2013/08/12	<1.0		mg/kg	
		Total Vanadium (V)	2013/08/12	1.6, RDL=1.0		mg/kg	
		Total Zinc (Zn)	2013/08/12	<10		mg/kg	
	RPD	Total Antimony (Sb)	2013/08/12	NC		%	35
		Total Arsenic (As)	2013/08/12	4.9		%	35
		Total Barium (Ba)	2013/08/12	14.7		%	35
		Total Beryllium (Be)	2013/08/12	NC		%	35
		Total Cadmium (Cd)	2013/08/12	10.5		%	35
		Total Chromium (Cr)	2013/08/12	4.7		%	35
		Total Cobalt (Co)	2013/08/12	3.3		%	35
		Total Copper (Cu)	2013/08/12	NC		%	35
		Total Lead (Pb)	2013/08/12	5.4		%	35
		Total Mercury (Hg)	2013/08/12	NC		%	35
		Total Molybdenum (Mo)	2013/08/12	NC		%	35
		Total Nickel (Ni)	2013/08/12	2.5		%	35
		Total Selenium (Se)	2013/08/12	NC		%	35
		Total Silver (Ag)	2013/08/12	NC		%	35
		Total Thallium (Tl)	2013/08/12	NC		%	35
		Total Tin (Sn)	2013/08/12	NC		%	35
		Total Uranium (U)	2013/08/12	NC		%	35
		Total Vanadium (V)	2013/08/12	5.8		%	35
		Total Zinc (Zn)	2013/08/12	3.4		%	35
7068260 MN0	QC Standard	Soluble (2:1) pH	2013/08/12		98	%	98 - 102
	Spiked Blank	Soluble (2:1) pH	2013/08/12		100	%	97 - 103

AECOM
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Quality Assurance Report (Continued)

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QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7068260	MN0	RPD	Soluble (2:1) pH	2013/08/12	1.5		%	5
7071541	TDB	Matrix Spike	Total Antimony (Sb)	2013/08/13		98	%	75 - 125
			Total Arsenic (As)	2013/08/13		95	%	75 - 125
			Total Barium (Ba)	2013/08/13		NC	%	75 - 125
			Total Beryllium (Be)	2013/08/13		93	%	75 - 125
			Total Cadmium (Cd)	2013/08/13		98	%	75 - 125
			Total Chromium (Cr)	2013/08/13		NC	%	75 - 125
			Total Cobalt (Co)	2013/08/13		89	%	75 - 125
			Total Copper (Cu)	2013/08/13		92	%	75 - 125
			Total Lead (Pb)	2013/08/13		90	%	75 - 125
			Total Mercury (Hg)	2013/08/13		96	%	75 - 125
			Total Molybdenum (Mo)	2013/08/13		98	%	75 - 125
			Total Nickel (Ni)	2013/08/13		100	%	75 - 125
			Total Selenium (Se)	2013/08/13		97	%	75 - 125
			Total Silver (Ag)	2013/08/13		87	%	75 - 125
			Total Thallium (Tl)	2013/08/13		91	%	75 - 125
			Total Tin (Sn)	2013/08/13		99	%	75 - 125
			Total Uranium (U)	2013/08/13		94	%	75 - 125
			Total Vanadium (V)	2013/08/13		105	%	75 - 125
			Total Zinc (Zn)	2013/08/13		NC	%	75 - 125
		QC Standard	Total Arsenic (As)	2013/08/13		119	%	50 - 150
			Total Barium (Ba)	2013/08/13		116	%	69 - 131
			Total Chromium (Cr)	2013/08/13		106	%	41 - 159
			Total Cobalt (Co)	2013/08/13		100	%	75 - 125
			Total Copper (Cu)	2013/08/13		104	%	73 - 127
			Total Lead (Pb)	2013/08/13		101	%	54 - 146
			Total Nickel (Ni)	2013/08/13		109	%	61 - 139
			Total Vanadium (V)	2013/08/13		123	%	50 - 150
			Total Zinc (Zn)	2013/08/13		108	%	72 - 128
		Spiked Blank	Total Antimony (Sb)	2013/08/13		100	%	75 - 125
			Total Arsenic (As)	2013/08/13		97	%	75 - 125
			Total Barium (Ba)	2013/08/13		99	%	75 - 125
			Total Beryllium (Be)	2013/08/13		91	%	75 - 125
			Total Cadmium (Cd)	2013/08/13		96	%	75 - 125
			Total Chromium (Cr)	2013/08/13		92	%	75 - 125
			Total Cobalt (Co)	2013/08/13		89	%	75 - 125
			Total Copper (Cu)	2013/08/13		93	%	75 - 125
			Total Lead (Pb)	2013/08/13		93	%	75 - 125
			Total Mercury (Hg)	2013/08/13		89	%	75 - 125
			Total Molybdenum (Mo)	2013/08/13		94	%	75 - 125
			Total Nickel (Ni)	2013/08/13		94	%	75 - 125
			Total Selenium (Se)	2013/08/13		97	%	75 - 125
			Total Silver (Ag)	2013/08/13		85	%	75 - 125
			Total Thallium (Tl)	2013/08/13		92	%	75 - 125
			Total Tin (Sn)	2013/08/13		93	%	75 - 125
			Total Uranium (U)	2013/08/13		99	%	75 - 125
			Total Vanadium (V)	2013/08/13		96	%	75 - 125
			Total Zinc (Zn)	2013/08/13		95	%	75 - 125
		Method Blank	Total Antimony (Sb)	2013/08/13	<1.0		mg/kg	
			Total Arsenic (As)	2013/08/13	<1.0		mg/kg	
			Total Barium (Ba)	2013/08/13	<10		mg/kg	
			Total Beryllium (Be)	2013/08/13	<0.40		mg/kg	
			Total Cadmium (Cd)	2013/08/13	<0.10		mg/kg	
			Total Chromium (Cr)	2013/08/13	<1.0		mg/kg	
			Total Cobalt (Co)	2013/08/13	<1.0		mg/kg	

AECOM
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Site Location: CAM E

Quality Assurance Report (Continued)

Maxxam Job Number: CB367780

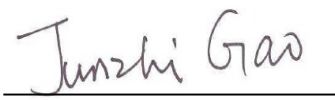
QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7071541	TDB	Method Blank	Total Copper (Cu)	2013/08/13	<5.0		mg/kg	
			Total Lead (Pb)	2013/08/13	<1.0		mg/kg	
			Total Mercury (Hg)	2013/08/13	<0.050		mg/kg	
			Total Molybdenum (Mo)	2013/08/13	<0.40		mg/kg	
			Total Nickel (Ni)	2013/08/13	<1.0		mg/kg	
			Total Selenium (Se)	2013/08/13	<0.50		mg/kg	
			Total Silver (Ag)	2013/08/13	<1.0		mg/kg	
			Total Thallium (Tl)	2013/08/13	<0.30		mg/kg	
			Total Tin (Sn)	2013/08/13	<1.0		mg/kg	
			Total Uranium (U)	2013/08/13	<1.0		mg/kg	
			Total Vanadium (V)	2013/08/13	<1.0		mg/kg	
			Total Zinc (Zn)	2013/08/13	<10		mg/kg	
		RPD	Total Antimony (Sb)	2013/08/13	NC		%	35
			Total Arsenic (As)	2013/08/13	NC		%	35
			Total Barium (Ba)	2013/08/13	1.6		%	35
			Total Beryllium (Be)	2013/08/13	NC		%	35
			Total Cadmium (Cd)	2013/08/13	NC		%	35
			Total Chromium (Cr)	2013/08/13	22.9		%	35
			Total Cobalt (Co)	2013/08/13	NC		%	35
			Total Copper (Cu)	2013/08/13	NC		%	35
			Total Lead (Pb)	2013/08/13	NC		%	35
			Total Mercury (Hg)	2013/08/13	NC		%	35
			Total Molybdenum (Mo)	2013/08/13	NC		%	35
			Total Nickel (Ni)	2013/08/13	17.6		%	35
			Total Selenium (Se)	2013/08/13	NC		%	35
			Total Silver (Ag)	2013/08/13	NC		%	35
			Total Thallium (Tl)	2013/08/13	NC		%	35
			Total Tin (Sn)	2013/08/13	NC		%	35
			Total Uranium (U)	2013/08/13	NC		%	35
			Total Vanadium (V)	2013/08/13	1.8		%	35
			Total Zinc (Zn)	2013/08/13	NC		%	35

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

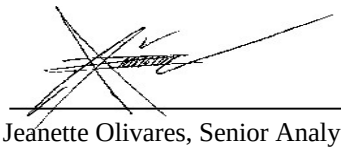
Validation Signature Page

Maxxam Job #: B367780

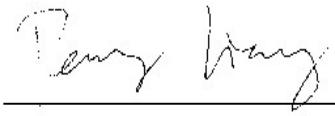
The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



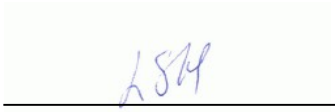
Janet Gao, Senior Analyst, Organics Department



Jeanette Olivares, Senior Analyst



Peng Liang, Analyst II



Luba Shymushovska, Senior Analyst, Organic Department

==========

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

Maxxam Analytics International Corporation o/a Maxxam Analytics
9331 - 48th Street, Edmonton, Alberta Canada T6B 2R4 Tel:(780) 577-7100 Toll-free:800-653-6266 Fax:780-450-4187 www.maxxam.ca

CHAIN OF CUSTODY RECORD

INVOICE INFORMATION:		REPORT INFORMATION (if differs from invoice):		PROJECT INFORMATION:	
Company Name:	#2597 PUBLIC WORKS & GOVERNMENT SERVI	Company Name:	#25925 AECOM	Quotation #:	
Contact Name:	Jessie Hoyt	Contact Name:	NICK OKE	P.O. #:	700266069
Address:	TELUS TOWER NORTH, 5th FLOOR 10025 JASP	Address:	17007 - 107 Avenue	Project #:	60299674
	EDMONTON AB T5J 1S6		, Edmonton AB T5S 1G3	Project Name:	CAME
Phone:	(780)497-3786 Fax: (780)497-3842	Phone:	(780)486-4057 Fax:	Site #:	
Email:	jessie.hoyt@psgsc-tpsgc.gc.ca	Email:	nick.oke@aecom.com / eva.schultz@aecom.com	Sampled By:	E.Schultz/J.McCallum

Laboratory Use Only:

MAXXAM JOB #:	BOTTLE ORDER #:
	405374
CHAIN OF CUSTODY #:	PROJECT MANAGER:
C#405374-16-01	Geraldyn Gouthro

REGULATORY CRITERIA:
- [ ] ATI
- [x] CCME
- [ ] OTHER

SPECIAL INSTRUCTIONS

ANALYSIS REQUESTED (Please be specific):

TURNAROUND TIME (TAT) REQUIRED:

PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS

Regular (Standard) TAT:
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests are > 5 days - contact your Project Manager for details
[x]

Job Specific Rush TAT (if applies to entire submission)
Date Required: _____
Rush Confirmation Number: _____ *(call lab for #)*
[ ]

SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Metals Field Filtered ? (Y / N)	BTEX, F1-F4	PCB	metals							# of Bottles	Comments
1		TP13-47 at 0.25m	Aug.1/13	9:45am	Soil		✓		✓							3	
2		TP13-48 at 0.35m	Aug.1/13	9:30am	Soil		✓		✓							3	
3		TP13-48 at 0.8m	Aug/13	8:45am	Soil		✓		✓							3	
4		TP13-50 at 0.7m	Aug/13	10:15am	Soil		✓		✓							3	
5		TP13-50 at 0.3m	Aug/13	10:10am	Soil		✓		✓							3	
6		TP13-50A at 0.7m	Aug/13	10:15am	Soil		✓		✓							3	
7		TP13-49 at 0.05m	Aug/13	1:15pm	Soil			✓	✓							2	
8		TP13-63 at 0.05m	Aug/13	4:45pm	Soil			✓	✓							2	
9		TP13-64 at 0.05m	Aug/13	4:15pm	Soil			✓	✓							2	
10		TP13-64 at 0.65m	Aug/13	4:35	Soil		✓		✓							3	

6-Aug-13 07:40
Geraldyn Gouthro
B367780
HD0 INS-0059

RECEIVED IN YELLOWKNIFE
By: [signature] 09:25
2013-08-04

Temp: on Ice

*RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	# Jars Used and Not Submitted	Laboratory Use Only: Time Sensitive	Temperature (°C) on Receipt	Custody Seal Intact on Cooler?
Eva Schultz	Aug.2	10a	Adejeji Afibi	2013/08/06	0740		☐		☐ Yes ☐ No

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.
** ALL SAMPLES ARE HELD FOR 60 DAYS AFTER SAMPLE RECEIPT, FOR SPECIAL REQUESTS CONTACT YOUR PROJECT MANAGER

White: Maxxam Yellow: Client

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CHAIN OF CUSTODY RECORD

INVOICE INFORMATION:		REPORT INFORMATION (if differs from invoice):		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#2597 PUBLIC WORKS & GOVERNMENT SERVI	Company Name:	#25925 AECOM	Quotation #:		MAXXAM JOB #: B367780	BOTTLE ORDER #: 405374
Contact Name:	Jessie Hoyt	Contact Name:	NICK OKE	P.O. #:	700266069		
Address:	TELUS TOWER NORTH, 5th FLOOR 10025 JASP EDMONTON AB T5J 1S6	Address:	17007 - 107 Avenue , Edmonton AB T5S 1G3	Project #:	60299674	CHAIN OF CUSTODY #: C#405374-12-01	PROJECT MANAGER: Geraldyn Gouthro
Phone:	(780)497-3786 Fax: (780)497-3842	Phone:	(780)486-4057 Fax:	Project Name:	CCME		
Email:	jessie.hoyt@psgsc-tpsgc.gc.ca	Email:	nick.oke@aecom.com eva.schultz@aecom.com	Site #:			
				Sampled By:	E. Schultz / J. McLellan		

REGULATORY CRITERIA:
- [ ] ATI
- [x] CCME
- [x] OTHER

SPECIAL INSTRUCTIONS

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Please note: Standard TAT for certain tests are > 5 days - contact your Project Manager for details

Job Specific Rush TAT (if applies to entire submission)
Date Required: _____
Rush Confirmation Number: _____ (call lab for #)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Metals Field Filtered ? (Y / N)	PHC (BTEX, F1-F4)	PCB	metals	# of Bottles	Comments
1		TP13-24 at 0.5m	Aug.1/13	8:55am	Soil		✓	✓	✓	3	
2		TP13-24 at 0.75m	Aug.1/13	8:55	Soil		✓	✓		2	
3		TP13-40 at 0.05m	Aug.1/13	9:00am	Soil			✓	✓	2	
4		TP13-40E at 0.05m	Aug.1/13	9:00am	Soil				✓	1	
5		TP13-40 at 0.5m	Aug1/13	8:55am	Soil		✓		✓	3	
6		TP13-41 at 0.05m	Aug1/13	9:30am	Soil			✓	✓	2	
7		TP13-41 at 0.5m	Aug1/13	9:35am	Soil		✓	✓	✓	3	RECEIVED IN YELLOWKNIFE By: 2013-08-04 09:25
8		TP13-42 at 0.05m	Aug1/13	9:45am	Soil			✓	✓	2	
9		TP13-43 at 0.5m	Aug1/13	9:55am	Soil		✓	✓		1	
10		TP13-44 at 0.05m	Aug1/13	10:05am	Soil			✓	✓	2	Temp: ON/AC/PR

*RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	# Jars Used and Not Submitted	Laboratory Use Only: Time Sensitive	Temperature (°C) on Receipt	Custody Seal Intact on Cooler?
Eva Schultz	Aug. 1	10a	Adejoju Akibi	2013/08/06	0740		☐		☐ Yes ☐ No

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.
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White: Maxxam Yellow: Client

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CHAIN OF CUSTODY RECORD

INVOICE INFORMATION:		REPORT INFORMATION (if differs from invoice):		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#2597 PUBLIC WORKS & GOVERNMENT SERVI	Company Name:	#25925 AECOM	Quotation #:		MAXXAM JOB #:	BOTTLE ORDER #:
Contact Name:	Jessie Hoyt	Contact Name:	NICK OKE	P.O. #:	700266069	B367780	405374
Address:	TELUS TOWER NORTH, 5th FLOOR 10025 JASP	Address:	17007 - 107 Avenue	Project #:	60299674	CHAIN OF CUSTODY #:	PROJECT MANAGER:
	EDMONTON AB T5J 1S6		, Edmonton AB T5S 1G3	Project Name:	CVM-C	C#405374-14-01	Geraldyn Gouthro
Phone:	(780)497-3786 Fax: (780)497-3842	Phone:	(780)486-4057 Fax:	Site #:			
Email:	jessie.hoyt@psgsc-tpsgc.gc.ca	Email:	nick.oke@aecom.com eva.schultz@aecom.com	Sampled By:	E. Schultz / JMcCallum		

REGULATORY CRITERIA:
- ☐ ATI
- ☐ CCME
- ☒ OTHER

SPECIAL INSTRUCTIONS

SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

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Please note: Standard TAT for certain tests are > 5 days - contact your Project Manager for details

Job Specific Rush TAT (if applies to entire submission) ☐
Date Required: _____
Rush Confirmation Number: _____ (call lab for #)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Metals Field Filtered ? (Y / N)	PHC (BTEX, F1-F4)	PCB	metals	# of Bottles	Comments
1		TP13-44 at 0.45m	Aug.1/13	10:30am	soil		✓			2	
2		TP13-49 at 0.45m	Aug.1/13	4:30pm	Soil		✓			2	
3		TP13-55 at 0.45m	Aug.1/13	3:30pm	Soil		✓			2	
4		TP13-58 at 0.05m	Aug.1/13	3:40pm	Soil			✓	✓	2	
5		TP13-59 at 0.05m	Aug.1/13	3:45pm	Soil			✓	✓	2	
6		TP13-59 at 0.36m	Aug.1/13	4:00pm	Soil		✓		✓	3	1 jar in different box.
7		TP13-59 at 0.7m	Aug1/13	3:50pm	Soil		✓		✓	3	RECEIVED IN YELLOWKNIFE By: 09:25 2013-08-04
8		TP13-64 at 0.3m	Aug.1/13	4:30pm	Soil		✓		✓	3	
9		TP13-47 at 0.8m	Aug1/13	8:45am	Soil		✓		✓	3	
10		TP13-46 at 0.45m	Aug1/13	8:50am	Soil		✓		✓		Temp: ON/ACTR

*RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	# Jars Used and Not Submitted	Laboratory Use Only: Time Sensitive	Temperature (°C) on Receipt	Custody Seal Intact on Cooler?
Eva Schultz	1Aug.13	10a	Adepeju Akbi	2013/08/06	0740		☐		☐ Yes ☐ No

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.
** ALL SAMPLES ARE HELD FOR 60 DAYS AFTER SAMPLE RECEIPT, FOR SPECIAL REQUESTS CONTACT YOUR PROJECT MANAGER

White: Maxxam Yellow: Client

15,

Your Project #: B367780
Your C.O.C. #: na

Attention: Geraldlyn Gouthro
Maxxam Analytics
2021 41st Ave NE
Calgary, AB
T2E 6P2

Report Date: 2013/08/15

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B3C9513
Received: 2013/08/08, 08:54

Sample Matrix: Soil
Samples Received: 14

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Moisture	14	N/A	2013/08/09	CAM SOP-00445	R.Carter,1993
Polychlorinated Biphenyl in Soil	5	2013/08/10	2013/08/14	CAM SOP-00309	SW846 8082
Polychlorinated Biphenyl in Soil	2	2013/08/10	2013/08/15	CAM SOP-00309	SW846 8082
Polychlorinated Biphenyl in Soil	6	2013/08/12	2013/08/14	CAM SOP-00309	SW846 8082
Polychlorinated Biphenyl in Soil	1	2013/08/12	2013/08/15	CAM SOP-00309	SW846 8082

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

Encryption Key

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

Shaun Nowickyj,
Email: SNowickyj@maxxam.ca
Phone# (905) 817-5700

==========

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Total cover pages: 1

Maxxam Job #: B3C9513
Report Date: 2013/08/15

Maxxam Analytics
Client Project #: B367780

RESULTS OF ANALYSES OF SOIL

Maxxam ID		SO2937	SO2938	SO2938	SO2939		
Sampling Date		2013/08/01 13:15	2013/08/01 16:45	2013/08/01 16:45	2013/08/01 16:15		
COC Number		na	na	na	na		
	Units	**HC5515\TP13-49@0.05M**	**HC5516\TP13-63@0.05M**	**HC5516\TP13-63@0.05M Lab-Dup**	**HC5517\TP13-64@0.05M**	**RDL**	**QC Batch**
Moisture	%	2.4	3.1	3.0	1.9	1.0	3309770

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		SO2940	SO2941	SO2942	SO2943		
Sampling Date		2013/08/01 08:55	2013/08/01 08:55	2013/08/01 09:00	2013/08/01 09:30		
COC Number		na	na	na	na		
	Units	**HC5594\TP13-24@0.5M**	**HC5595\TP13-24@0.75M**	**HC5596\TP13-40@0.05M**	**HC5599\TP13-41@0.05M**	**RDL**	**QC Batch**
Moisture	%	3.0	3.0	1.9	2.2	1.0	3309770

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		SO2944	SO2945	SO2946	SO2947		
Sampling Date		2013/08/01 09:35	2013/08/01 09:45	2013/08/01 09:55	2013/08/01 10:05		
COC Number		na	na	na	na		
	Units	**HC5600\TP13-41@0.5M**	**HC5601\TP13-42@0.05M**	**HC5602\TP13-43@0.5M**	**HC5603\TP13-44@0.05M**	**RDL**	**QC Batch**
Moisture	%	5.2	3.1	3.1	3.3	1.0	3309770

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		SO2948	SO2949	SO2950		
Sampling Date		2013/08/01 15:40	2013/08/01 15:45	2013/08/01 09:50		
COC Number		na	na	na		
	Units	**HC5619\TP13-58@0.05M**	**HC5620\TP13-59@0.05M**	**HC5706\TP13-43@0.05M**	**RDL**	**QC Batch**
Moisture	%	2.7	2.4	2.8	1.0	3309770

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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

Maxxam Job #: B3C9513
Report Date: 2013/08/15

Maxxam Analytics
Client Project #: B367780

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		SO2937		SO2938	SO2939		
Sampling Date		2013/08/01 13:15		2013/08/01 16:45	2013/08/01 16:15		
COC Number		na		na	na		
	Units	**HC5515\TP13-49@0.05M**	**RDL**	**HC5516\TP13-63@0.05M**	**HC5517\TP13-64@0.05M**	**RDL**	**QC Batch**
Aroclor 1016	ug/g	<0.050	0.050	<0.010	<0.010	0.010	3311017
Aroclor 1221	ug/g	<0.050	0.050	<0.010	<0.010	0.010	3311017
Aroclor 1232	ug/g	<0.050	0.050	<0.010	<0.010	0.010	3311017
Aroclor 1242	ug/g	<0.050	0.050	<0.010	<0.010	0.010	3311017
Aroclor 1248	ug/g	<0.050	0.050	<0.010	<0.010	0.010	3311017
Aroclor 1254	ug/g	1.2	0.050	0.082	0.037	0.010	3311017
Aroclor 1260	ug/g	0.10	0.050	0.035	0.084	0.010	3311017
Aroclor 1262	ug/g	<0.050	0.050	<0.010	<0.010	0.010	3311017
Aroclor 1268	ug/g	<0.050	0.050	<0.010	<0.010	0.010	3311017
Total PCB	ug/g	1.3	0.050	0.12	0.12	0.010	3311017
Surrogate Recovery (%)							
Decachlorobiphenyl	%	70	N/A	102	120	N/A	3311017

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

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Maxxam Job #: B3C9513
Report Date: 2013/08/15

Maxxam Analytics
Client Project #: B367780

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		SO2940	SO2941	SO2942		
Sampling Date		2013/08/01 08:55	2013/08/01 08:55	2013/08/01 09:00		
COC Number		na	na	na		
	Units	**HC5594\TP13-24@0.5M**	**HC5595\TP13-24@0.75M**	**HC5596\TP13-40@0.05M**	**RDL**	**QC Batch**
Aroclor 1016	ug/g	<0.010	<0.010	<0.010	0.010	3311017
Aroclor 1221	ug/g	<0.010	<0.010	<0.010	0.010	3311017
Aroclor 1232	ug/g	<0.010	<0.010	<0.010	0.010	3311017
Aroclor 1242	ug/g	<0.010	<0.010	<0.010	0.010	3311017
Aroclor 1248	ug/g	<0.010	<0.010	<0.010	0.010	3311017
Aroclor 1254	ug/g	0.011	<0.010	0.45	0.010	3311017
Aroclor 1260	ug/g	<0.010	<0.010	0.026	0.010	3311017
Aroclor 1262	ug/g	<0.010	<0.010	<0.010	0.010	3311017
Aroclor 1268	ug/g	<0.010	<0.010	<0.010	0.010	3311017
Total PCB	ug/g	0.011	<0.010	0.47	0.010	3311017
Surrogate Recovery (%)						
Decachlorobiphenyl	%	95	80	69	N/A	3311017

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

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Maxxam Job #: B3C9513
Report Date: 2013/08/15

Maxxam Analytics
Client Project #: B367780

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		SO2943	SO2944	SO2945		
Sampling Date		2013/08/01 09:30	2013/08/01 09:35	2013/08/01 09:45		
COC Number		na	na	na		
	Units	**HC5599\TP13-41@0.05M**	**HC5600\TP13-41@0.5M**	**HC5601\TP13-42@0.05M**	**RDL**	**QC Batch**
Aroclor 1016	ug/g	<0.010	<0.010	<0.010	0.010	3311017
Aroclor 1221	ug/g	<0.010	<0.010	<0.010	0.010	3311017
Aroclor 1232	ug/g	<0.010	<0.010	<0.010	0.010	3311017
Aroclor 1242	ug/g	<0.010	<0.010	<0.010	0.010	3311017
Aroclor 1248	ug/g	<0.010	<0.010	<0.010	0.010	3311017
Aroclor 1254	ug/g	0.57	0.065	0.076	0.010	3311017
Aroclor 1260	ug/g	0.075	<0.010	0.015	0.010	3311017
Aroclor 1262	ug/g	<0.010	<0.010	<0.010	0.010	3311017
Aroclor 1268	ug/g	<0.010	<0.010	<0.010	0.010	3311017
Total PCB	ug/g	0.65	0.065	0.091	0.010	3311017
Surrogate Recovery (%)						
Decachlorobiphenyl	%	65	84	74	N/A	3311017

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

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Maxxam Job #: B3C9513
Report Date: 2013/08/15

Maxxam Analytics
Client Project #: B367780

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		SO2946		SO2947		SO2948		
Sampling Date		2013/08/01 09:55		2013/08/01 10:05		2013/08/01 15:40		
COC Number		na		na		na		
	Units	**HC5602\TP13-43@0.5M**	**RDL**	**HC5603\TP13-44@0.05M**	**RDL**	**HC5619\TP13-58@0.05M**	**RDL**	**QC Batch**
Aroclor 1016	ug/g	<0.010	0.010	<0.020	0.020	<0.010	0.010	3311017
Aroclor 1221	ug/g	<0.010	0.010	<0.020	0.020	<0.010	0.010	3311017
Aroclor 1232	ug/g	<0.010	0.010	<0.020	0.020	<0.010	0.010	3311017
Aroclor 1242	ug/g	<0.010	0.010	<0.020	0.020	<0.010	0.010	3311017
Aroclor 1248	ug/g	<0.010	0.010	<0.020	0.020	<0.010	0.010	3311017
Aroclor 1254	ug/g	0.055	0.010	0.93	0.020	0.066	0.010	3311017
Aroclor 1260	ug/g	<0.010	0.010	0.024	0.020	0.076	0.010	3311017
Aroclor 1262	ug/g	<0.010	0.010	<0.020	0.020	<0.010	0.010	3311017
Aroclor 1268	ug/g	<0.010	0.010	<0.020	0.020	<0.010	0.010	3311017
Total PCB	ug/g	0.055	0.010	0.96	0.020	0.14	0.010	3311017
Surrogate Recovery (%)								
Decachlorobiphenyl	%	65	N/A	72	N/A	87	N/A	3311017

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

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Maxxam Job #: B3C9513
Report Date: 2013/08/15

Maxxam Analytics
Client Project #: B367780

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		SO2949		SO2950		
Sampling Date		2013/08/01 15:45		2013/08/01 09:50		
COC Number		na		na		
	Units	**HC5620\TP13-59@0.05M**	**RDL**	**HC5706\TP13-43@0.05M**	**RDL**	**QC Batch**
Aroclor 1016	ug/g	<0.010	0.010	<0.050	0.050	3311017
Aroclor 1221	ug/g	<0.010	0.010	<0.050	0.050	3311017
Aroclor 1232	ug/g	<0.010	0.010	<0.050	0.050	3311017
Aroclor 1242	ug/g	<0.010	0.010	<0.050	0.050	3311017
Aroclor 1248	ug/g	<0.010	0.010	<0.050	0.050	3311017
Aroclor 1254	ug/g	0.21	0.010	0.77	0.050	3311017
Aroclor 1260	ug/g	0.11	0.010	<0.050	0.050	3311017
Aroclor 1262	ug/g	<0.010	0.010	<0.050	0.050	3311017
Aroclor 1268	ug/g	<0.010	0.010	<0.050	0.050	3311017
Total PCB	ug/g	0.32	0.010	0.77	0.050	3311017
Surrogate Recovery (%)						
Decachlorobiphenyl	%	91	N/A	106	N/A	3311017

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

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Maxxam Job #: B3C9513
Report Date: 2013/08/15

Maxxam Analytics
Client Project #: B367780

Test Summary

Maxxam ID SO2937 **Collected** 2013/08/01
Sample ID HC5515\TP13-49@0.05M **Shipped**
Matrix Soil **Received** 2013/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Moisture	BAL	3309770	N/A	2013/08/09	Chamika Deeyagaha
Polychlorinated Biphenyl in Soil	GC/ECD	3311017	2013/08/12	2013/08/14	Li Peng

Maxxam ID SO2938 **Collected** 2013/08/01
Sample ID HC5516\TP13-63@0.05M **Shipped**
Matrix Soil **Received** 2013/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Moisture	BAL	3309770	N/A	2013/08/09	Chamika Deeyagaha
Polychlorinated Biphenyl in Soil	GC/ECD	3311017	2013/08/12	2013/08/14	Li Peng

Maxxam ID SO2938 Dup **Collected** 2013/08/01
Sample ID HC5516\TP13-63@0.05M **Shipped**
Matrix Soil **Received** 2013/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Moisture	BAL	3309770	N/A	2013/08/09	Chamika Deeyagaha

Maxxam ID SO2939 **Collected** 2013/08/01
Sample ID HC5517\TP13-64@0.05M **Shipped**
Matrix Soil **Received** 2013/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Moisture	BAL	3309770	N/A	2013/08/09	Chamika Deeyagaha
Polychlorinated Biphenyl in Soil	GC/ECD	3311017	2013/08/12	2013/08/14	Li Peng

Maxxam ID SO2940 **Collected** 2013/08/01
Sample ID HC5594\TP13-24@0.5M **Shipped**
Matrix Soil **Received** 2013/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Moisture	BAL	3309770	N/A	2013/08/09	Chamika Deeyagaha
Polychlorinated Biphenyl in Soil	GC/ECD	3311017	2013/08/12	2013/08/14	Li Peng

Maxxam ID SO2941 **Collected** 2013/08/01
Sample ID HC5595\TP13-24@0.75M **Shipped**
Matrix Soil **Received** 2013/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Moisture	BAL	3309770	N/A	2013/08/09	Chamika Deeyagaha
Polychlorinated Biphenyl in Soil	GC/ECD	3311017	2013/08/10	2013/08/14	Li Peng

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Maxxam Job #: B3C9513
Report Date: 2013/08/15

Maxxam Analytics
Client Project #: B367780

Test Summary

Maxxam ID SO2942 **Collected** 2013/08/01
Sample ID HC5596\TP13-40@0.05M **Shipped**
Matrix Soil **Received** 2013/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Moisture	BAL	3309770	N/A	2013/08/09	Chamika Deeyagaha
Polychlorinated Biphenyl in Soil	GC/ECD	3311017	2013/08/12	2013/08/14	Li Peng

Maxxam ID SO2943 **Collected** 2013/08/01
Sample ID HC5599\TP13-41@0.05M **Shipped**
Matrix Soil **Received** 2013/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Moisture	BAL	3309770	N/A	2013/08/09	Chamika Deeyagaha
Polychlorinated Biphenyl in Soil	GC/ECD	3311017	2013/08/10	2013/08/14	Li Peng

Maxxam ID SO2944 **Collected** 2013/08/01
Sample ID HC5600\TP13-41@0.5M **Shipped**
Matrix Soil **Received** 2013/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Moisture	BAL	3309770	N/A	2013/08/09	Chamika Deeyagaha
Polychlorinated Biphenyl in Soil	GC/ECD	3311017	2013/08/10	2013/08/15	Li Peng

Maxxam ID SO2945 **Collected** 2013/08/01
Sample ID HC5601\TP13-42@0.05M **Shipped**
Matrix Soil **Received** 2013/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Moisture	BAL	3309770	N/A	2013/08/09	Chamika Deeyagaha
Polychlorinated Biphenyl in Soil	GC/ECD	3311017	2013/08/10	2013/08/14	Li Peng

Maxxam ID SO2946 **Collected** 2013/08/01
Sample ID HC5602\TP13-43@0.5M **Shipped**
Matrix Soil **Received** 2013/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Moisture	BAL	3309770	N/A	2013/08/09	Chamika Deeyagaha
Polychlorinated Biphenyl in Soil	GC/ECD	3311017	2013/08/10	2013/08/14	Li Peng

Maxxam ID SO2947 **Collected** 2013/08/01
Sample ID HC5603\TP13-44@0.05M **Shipped**
Matrix Soil **Received** 2013/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Moisture	BAL	3309770	N/A	2013/08/09	Chamika Deeyagaha
Polychlorinated Biphenyl in Soil	GC/ECD	3311017	2013/08/10	2013/08/14	Li Peng

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Maxxam Job #: B3C9513
Report Date: 2013/08/15

Maxxam Analytics
Client Project #: B367780

Test Summary

Maxxam ID SO2948 **Collected** 2013/08/01
Sample ID HC5619\TP13-58@0.05M **Shipped**
Matrix Soil **Received** 2013/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Moisture	BAL	3309770	N/A	2013/08/09	Chamika Deeyagaha
Polychlorinated Biphenyl in Soil	GC/ECD	3311017	2013/08/10	2013/08/15	Li Peng

Maxxam ID SO2949 **Collected** 2013/08/01
Sample ID HC5620\TP13-59@0.05M **Shipped**
Matrix Soil **Received** 2013/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Moisture	BAL	3309770	N/A	2013/08/09	Chamika Deeyagaha
Polychlorinated Biphenyl in Soil	GC/ECD	3311017	2013/08/12	2013/08/15	Li Peng

Maxxam ID SO2950 **Collected** 2013/08/01
Sample ID HC5706\TP13-43@0.05M **Shipped**
Matrix Soil **Received** 2013/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Moisture	BAL	3309770	N/A	2013/08/09	Chamika Deeyagaha
Polychlorinated Biphenyl in Soil	GC/ECD	3311017	2013/08/12	2013/08/14	Li Peng

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Maxxam Job #: B3C9513
Report Date: 2013/08/15

Maxxam Analytics
Client Project #: B367780

Package 1	6.0°C

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

GENERAL COMMENTS

PCB Analysis: Due to high concentrations of the target analytes, some samples required dilution. Detection limits were adjusted accordingly.

Results relate only to the items tested.

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Maxxam Analytics
Attention: Geraldlyn Gouthro
Client Project #: B367780
P.O. #:
Site Location:

Quality Assurance Report

Maxxam Job Number: MB3C9513

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
3309770	IJ1	RPD - Sample/Sample Dup	Moisture	2013/08/09	NC		%	20
3311017	LPG	Matrix Spike	Decachlorobiphenyl	2013/08/14		96	%	60 - 130
			Aroclor 1260	2013/08/14		107	%	60 - 130
			Total PCB	2013/08/14		107	%	60 - 130
		Spiked Blank	Decachlorobiphenyl	2013/08/14		93	%	60 - 130
			Aroclor 1260	2013/08/14		104	%	60 - 130
			Total PCB	2013/08/14		104	%	60 - 130
		Method Blank	Decachlorobiphenyl	2013/08/14		97	%	60 - 130
			Aroclor 1016	2013/08/14	<0.010		ug/g	
			Aroclor 1221	2013/08/14	<0.010		ug/g	
			Aroclor 1232	2013/08/14	<0.010		ug/g	
			Aroclor 1242	2013/08/14	<0.010		ug/g	
			Aroclor 1248	2013/08/14	<0.010		ug/g	
			Aroclor 1254	2013/08/14	<0.010		ug/g	
			Aroclor 1260	2013/08/14	<0.010		ug/g	
			Aroclor 1262	2013/08/14	<0.010		ug/g	
			Aroclor 1268	2013/08/14	<0.010		ug/g	
			Total PCB	2013/08/14	<0.010		ug/g	
		RPD - Sample/Sample Dup	Aroclor 1242	2013/08/14	NC		%	50
			Aroclor 1248	2013/08/14	NC		%	50
			Aroclor 1254	2013/08/14	NC		%	50
			Aroclor 1260	2013/08/14	NC		%	50
			Total PCB	2013/08/14	NC		%	50

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.
Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.

Validation Signature Page

Maxxam Job #: B3C9513

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

Charles Ancker, B.Sc., M.Sc., C.Chem, Senior Analyst

Ewa Pranjic, M.Sc., C.Chem, Scientific Specialist

==========

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Your P.O. #: 700266069
Your Project #: 60299674, CAM-6

Attention: NICK OKE
AECOM
EDMONTON
17007 - 107 Avenue
, Edmonton, AB
CANADA T5S 1G3

Your C.O.C. #: 40537428, 405374-28-01, 405374-13-01, 405374-11-01

Report Date: 2013/08/16

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B367815
Received: 2013/08/04, 9:25

Sample Matrix: Soil
Samples Received: 29

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
BTEX/F1 by HS GC/MS (MeOH extract)	16	2013/08/06	2013/08/07	AB SOP-00039	CCME, EPA 8260C
BTEX/F1 by HS GC/MS (MeOH extract)	4	2013/08/06	2013/08/08	AB SOP-00039	CCME, EPA 8260C
CCME Hydrocarbons (F2-F4 in soil)	7	2013/08/06	2013/08/08	AB SOP-00040 AB SOP-00036	CCME PHC-CWS
CCME Hydrocarbons (F2-F4 in soil)	12	2013/08/06	2013/08/09	AB SOP-00040 AB SOP-00036	CCME PHC-CWS
CCME Hydrocarbons (F2-F4 in soil)	1	2013/08/08	2013/08/08	AB SOP-00040 AB SOP-00036	CCME PHC-CWS
Elements by ICPMS - Soils	9	2013/08/08	2013/08/10	AB SOP-00043	EPA 200.8
Elements by ICPMS - Soils	1	2013/08/08	2013/08/11	AB SOP-00043	EPA 200.8
Moisture	29	N/A	2013/08/07	AB SOP-00002	CCME PHC-CWS
pH @25C (1:2 Extract)	10	2013/08/08	2013/08/08	AB SOP-00006	SSMA 16.2

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

Encryption Key

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

Geraldyn Gouthro, Client Service Specialist
Email: GGouthro@maxxam.ca
Phone# (780) 577-7173

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Total cover pages: 1

Maxxam Job #: B367815
Report Date: 2013/08/16

AECOM
Client Project #: 60299674, CAM-6

Your P.O. #: 700266069

RESULTS OF CHEMICAL ANALYSES OF SOIL

Maxxam ID		HC5822	HC5822		HC5823	HC5824		
Sampling Date		2013/07/31 16:00	2013/07/31 16:00		2013/07/31 16:00	2013/07/31 16:00		
COC Number		405374-28-01	405374-28-01		405374-28-01	405374-28-01		
	UNITS	**TP13-32 @ 0.05M**	**TP13-32 @ 0.05M Lab-Dup**	**QC Batch**	**TP13-32 @ 0.4M**	**TP13-32 @ 0.7M**	**RDL**	**QC Batch**
Soluble Parameters								
Soluble (2:1) pH	N/A	8.57	8.46	7060152	N/A	N/A	N/A	N/A
Physical Properties								
Moisture	%	3.1	N/A	7053509	2.7	3.7	0.30	7053775

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam ID		HC5825	HC5826	HC5827		HC5828		
Sampling Date		2013/07/31 15:45	2013/07/31 15:45	2013/07/31 15:45		2013/07/31 15:45		
COC Number		405374-28-01	405374-28-01	405374-28-01		405374-28-01		
	UNITS	**TP13-31 @ 1.04M**	**TP13-31 @ 0.8M**	**TP13-31 @ 0.4M**	**QC Batch**	**TP13-31 @ 0.05M**	**RDL**	**QC Batch**
Soluble Parameters								
Soluble (2:1) pH	N/A	N/A	N/A	N/A	N/A	8.52	N/A	7060152
Physical Properties								
Moisture	%	4.7	3.9	3.5	7053775	3.3	0.30	7053509

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam ID		HC5829		HC5830	HC5831	HC5842		
Sampling Date		2013/07/31 15:30		2013/07/31 15:30	2013/07/31 15:30	2013/07/31 15:15		
COC Number		405374-28-01		405374-28-01	405374-28-01	405374-13-01		
	UNITS	**TP13-30 @ 0.05M**	**QC Batch**	**TP13-30 @ 0.7M**	**TP13-30A @ 0.7M**	**TP13-29 @ 0.7M**	**RDL**	**QC Batch**
Soluble Parameters								
Soluble (2:1) pH	N/A	8.60	7060152	N/A	N/A	N/A	N/A	N/A
Physical Properties								
Moisture	%	4.0	7053509	3.2	3.7	3.7	0.30	7053775

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: B367815
Report Date: 2013/08/16

AECOM
Client Project #: 60299674, CAM-6

Your P.O. #: 700266069

RESULTS OF CHEMICAL ANALYSES OF SOIL

Maxxam ID		HC5843		HC5844	HC5845		HC5846		
Sampling Date		2013/07/31 15:15		2013/07/31 15:00	2013/07/31 15:00		2013/07/31 15:00		
COC Number		405374-13-01		405374-13-01	405374-13-01		405374-13-01		
	UNITS	**TP13-29 @ 0.05M**	**QC Batch**	**TP13-28 @ 1.0M**	**TP13-28 @ 0.5M**	**QC Batch**	**TP13-28 @ 0.05M**	**RDL**	**QC Batch**
Soluble Parameters									
Soluble (2:1) pH	N/A	8.34	7060152	N/A	N/A	N/A	8.45	N/A	7060152
Physical Properties									
Moisture	%	2.9	7053509	7.2	2.3	7053775	4.8	0.30	7053509

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam ID		HC5847		HC5848	HC5849		HC5850		
Sampling Date		2013/07/31 14:00		2013/07/31 14:00	2013/08/01 14:00		2013/07/31 14:15		
COC Number		405374-13-01		405374-13-01	405374-13-01		405374-13-01		
	UNITS	**TP13-24 @ 0.05M**	**QC Batch**	**TP13-24 @ 0.15M**	**TP13-24 @ 0.7M**	**QC Batch**	**TP13-25 @ 0.05M**	**RDL**	**QC Batch**
Soluble Parameters									
Soluble (2:1) pH	N/A	8.02	7060152	N/A	8.48	7060152	8.33	N/A	7060152
Physical Properties									
Moisture	%	5.2	7053509	4.6	5.5	7053775	5.0	0.30	7053509

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam ID		HC5851	HC5851		HC5872	HC5873		
Sampling Date		2013/07/31 14:45	2013/07/31 14:45		2013/07/31 14:15	2013/07/31 14:15		
COC Number		405374-13-01	405374-13-01		405374-11-01	405374-11-01		
	UNITS	**TP13-27 @ 0.05M**	**TP13-27 @ 0.05M Lab-Dup**	**QC Batch**	**TP13-25 @ 0.2M**	**TP13-25 @ 0.4M**	**RDL**	**QC Batch**
Soluble Parameters								
Soluble (2:1) pH	N/A	8.46	N/A	7060152	N/A	N/A	N/A	N/A
Physical Properties								
Moisture	%	6.9	6.6	7053509	5.0	4.4	0.30	7053775

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: B367815
Report Date: 2013/08/16

AECOM
Client Project #: 60299674, CAM-6

Your P.O. #: 700266069

RESULTS OF CHEMICAL ANALYSES OF SOIL

Maxxam ID		HC5874	HC5875	HC5875	HC5876		
Sampling Date		2013/07/31 14:15	2013/07/31 14:30	2013/07/31 14:30	2013/07/31 14:30		
COC Number		405374-11-01	405374-11-01	405374-11-01	405374-11-01		
	UNITS	**TP13-25 @ 0.9M**	**TP13-26 @ 0.4M**	**TP13-26 @ 0.4M Lab-Dup**	**TP13-26 @ 0.65M**	**RDL**	**QC Batch**
Physical Properties							
Moisture	%	5.7	6.7	6.6	7.4	0.30	7053775

RDL = Reportable Detection Limit

Maxxam ID		HC5877		HC5878	HC5879	HC5880		
Sampling Date		2013/07/31 14:30		2013/07/31 14:30	2013/07/31 14:45	2013/07/31 14:45		
COC Number		405374-11-01		405374-11-01	405374-11-01	405374-11-01		
	UNITS	**TP13-26 @ 0.05M**	**QC Batch**	**TP13-26 @ 1.1M**	**TP13-27 @ 0.4M**	**TP13-27 @ 0.9M**	**RDL**	**QC Batch**
Soluble Parameters								
Soluble (2:1) pH	N/A	8.64	7060152	N/A	N/A	N/A	N/A	N/A
Physical Properties								
Moisture	%	5.0	7053509	6.4	3.0	4.0	0.30	7053775

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: B367815
Report Date: 2013/08/16

AECOM
Client Project #: 60299674, CAM-6

Your P.O. #: 700266069

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		HC5823	HC5823	HC5824	HC5825		
Sampling Date		2013/07/31 16:00	2013/07/31 16:00	2013/07/31 16:00	2013/07/31 15:45		
COC Number		405374-28-01	405374-28-01	405374-28-01	405374-28-01		
	UNITS	**TP13-32 @ 0.4M**	**TP13-32 @ 0.4M Lab-Dup**	**TP13-32 @ 0.7M**	**TP13-31 @ 1.04M**	**RDL**	**QC Batch**
Ext. Pet. Hydrocarbon							
F2 (C10-C16 Hydrocarbons)	mg/kg	<10	<10	3300	<10	10	7059147
F3 (C16-C34 Hydrocarbons)	mg/kg	<50	<50	<50	<50	50	7059147
F4 (C34-C50 Hydrocarbons)	mg/kg	<50	<50	<50	<50	50	7059147
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	Yes	N/A	7059147
Surrogate Recovery (%)							
O-TERPHENYL (sur.)	%	122	123	127	124	N/A	7059147

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam ID		HC5826	HC5827	HC5830	HC5831		
Sampling Date		2013/07/31 15:45	2013/07/31 15:45	2013/07/31 15:30	2013/07/31 15:30		
COC Number		405374-28-01	405374-28-01	405374-28-01	405374-28-01		
	UNITS	**TP13-31 @ 0.8M**	**TP13-31 @ 0.4M**	**TP13-30 @ 0.7M**	**TP13-30A @ 0.7M**	**RDL**	**QC Batch**
Ext. Pet. Hydrocarbon							
F2 (C10-C16 Hydrocarbons)	mg/kg	590	480	<10	230	10	7059147
F3 (C16-C34 Hydrocarbons)	mg/kg	110	<50	<50	<50	50	7059147
F4 (C34-C50 Hydrocarbons)	mg/kg	<50	<50	<50	<50	50	7059147
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	Yes	N/A	7059147
Surrogate Recovery (%)							
O-TERPHENYL (sur.)	%	126	125	119	118	N/A	7059147

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: B367815
Report Date: 2013/08/16

AECOM
Client Project #: 60299674, CAM-6

Your P.O. #: 700266069

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		HC5842	HC5844	HC5845	HC5848		
Sampling Date		2013/07/31 15:15	2013/07/31 15:00	2013/07/31 15:00	2013/07/31 14:00		
COC Number		405374-13-01	405374-13-01	405374-13-01	405374-13-01		
	UNITS	**TP13-29 @ 0.7M**	**TP13-28 @ 1.0M**	**TP13-28 @ 0.5M**	**TP13-24 @ 0.15M**	**RDL**	**QC Batch**
Ext. Pet. Hydrocarbon							
F2 (C10-C16 Hydrocarbons)	mg/kg	<10	<10	<10	3900	10	7059147
F3 (C16-C34 Hydrocarbons)	mg/kg	<50	<50	<50	<50	50	7059147
F4 (C34-C50 Hydrocarbons)	mg/kg	<50	<50	<50	<50	50	7059147
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	Yes	N/A	7059147
Surrogate Recovery (%)							
O-TERPHENYL (sur.)	%	124	116	113	117	N/A	7059147

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam ID		HC5849	HC5872	HC5873	HC5874		
Sampling Date		2013/08/01 14:00	2013/07/31 14:15	2013/07/31 14:15	2013/07/31 14:15		
COC Number		405374-13-01	405374-11-01	405374-11-01	405374-11-01		
	UNITS	**TP13-24 @ 0.7M**	**TP13-25 @ 0.2M**	**TP13-25 @ 0.4M**	**TP13-25 @ 0.9M**	**RDL**	**QC Batch**
Ext. Pet. Hydrocarbon							
F2 (C10-C16 Hydrocarbons)	mg/kg	8700	780	4800	8100	10	7059147
F3 (C16-C34 Hydrocarbons)	mg/kg	<50	<50	<50	<50	50	7059147
F4 (C34-C50 Hydrocarbons)	mg/kg	<50	<50	<50	<50	50	7059147
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	Yes	N/A	7059147
Surrogate Recovery (%)							
O-TERPHENYL (sur.)	%	124	125	118	120	N/A	7059147

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: B367815
Report Date: 2013/08/16

AECOM
Client Project #: 60299674, CAM-6

Your P.O. #: 700266069

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		HC5875	HC5876	HC5878	HC5879		
Sampling Date		2013/07/31 14:30	2013/07/31 14:30	2013/07/31 14:30	2013/07/31 14:45		
COC Number		405374-11-01	405374-11-01	405374-11-01	405374-11-01		
	UNITS	**TP13-26 @ 0.4M**	**TP13-26 @ 0.65M**	**TP13-26 @ 1.1M**	**TP13-27 @ 0.4M**	**RDL**	**QC Batch**
Ext. Pet. Hydrocarbon							
F2 (C10-C16 Hydrocarbons)	mg/kg	3000	3400	2500	250	10	7059147
F3 (C16-C34 Hydrocarbons)	mg/kg	<50	<50	<50	460	50	7059147
F4 (C34-C50 Hydrocarbons)	mg/kg	<50	<50	<50	100	50	7059147
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	Yes	N/A	7059147
Surrogate Recovery (%)							
O-TERPHENYL (sur.)	%	110	119	121	117	N/A	7059147

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam ID		HC5880		
Sampling Date		2013/07/31 14:45		
COC Number		405374-11-01		
	UNITS	**TP13-27 @ 0.9M**	**RDL**	**QC Batch**
Ext. Pet. Hydrocarbon				
F2 (C10-C16 Hydrocarbons)	mg/kg	<10	10	7059147
F3 (C16-C34 Hydrocarbons)	mg/kg	160	50	7059147
F4 (C34-C50 Hydrocarbons)	mg/kg	<50	50	7059147
Reached Baseline at C50	mg/kg	Yes	N/A	7059147
Surrogate Recovery (%)				
O-TERPHENYL (sur.)	%	125	N/A	7059147

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: B367815
Report Date: 2013/08/16

AECOM
Client Project #: 60299674, CAM-6

Your P.O. #: 700266069

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		HC5822	HC5822	HC5828	HC5829		
Sampling Date		2013/07/31 16:00	2013/07/31 16:00	2013/07/31 15:45	2013/07/31 15:30		
COC Number		405374-28-01	405374-28-01	405374-28-01	405374-28-01		
	UNITS	**TP13-32 @ 0.05M**	**TP13-32 @ 0.05M Lab-Dup**	**TP13-31 @ 0.05M**	**TP13-30 @ 0.05M**	**RDL**	**QC Batch**
Elements							
Total Antimony (Sb)	mg/kg	<1.0	<1.0	<1.0	<1.0	1.0	7057901
Total Arsenic (As)	mg/kg	<1.0	<1.0	<1.0	<1.0	1.0	7057901
Total Barium (Ba)	mg/kg	<10	<10	<10	<10	10	7057901
Total Beryllium (Be)	mg/kg	<0.40	<0.40	<0.40	<0.40	0.40	7057901
Total Cadmium (Cd)	mg/kg	<0.10	<0.10	<0.10	<0.10	0.10	7057901
Total Chromium (Cr)	mg/kg	3.2	3.5	4.0	4.0	1.0	7057901
Total Cobalt (Co)	mg/kg	<1.0	<1.0	<1.0	1.1	1.0	7057901
Total Copper (Cu)	mg/kg	<5.0	<5.0	<5.0	<5.0	5.0	7057901
Total Lead (Pb)	mg/kg	4.4	4.3	65	3.2	1.0	7057901
Total Mercury (Hg)	mg/kg	<0.050	<0.050	<0.050	<0.050	0.050	7057901
Total Molybdenum (Mo)	mg/kg	<0.40	<0.40	<0.40	<0.40	0.40	7057901
Total Nickel (Ni)	mg/kg	1.3	1.8	1.7	2.4	1.0	7057901
Total Selenium (Se)	mg/kg	<0.50	<0.50	<0.50	<0.50	0.50	7057901
Total Silver (Ag)	mg/kg	<1.0	<1.0	<1.0	<1.0	1.0	7057901
Total Thallium (Tl)	mg/kg	<0.30	<0.30	<0.30	<0.30	0.30	7057901
Total Tin (Sn)	mg/kg	<1.0	<1.0	<1.0	<1.0	1.0	7057901
Total Uranium (U)	mg/kg	<1.0	<1.0	<1.0	<1.0	1.0	7057901
Total Vanadium (V)	mg/kg	5.9	6.3	6.9	7.7	1.0	7057901
Total Zinc (Zn)	mg/kg	11	<10	<10	<10	10	7057901

RDL = Reportable Detection Limit

Maxxam Job #: B367815
Report Date: 2013/08/16

AECOM
Client Project #: 60299674, CAM-6

Your P.O. #: 700266069

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		HC5843	HC5846	HC5847	HC5849		
Sampling Date		2013/07/31 15:15	2013/07/31 15:00	2013/07/31 14:00	2013/08/01 14:00		
COC Number		405374-13-01	405374-13-01	405374-13-01	405374-13-01		
	UNITS	**TP13-29 @ 0.05M**	**TP13-28 @ 0.05M**	**TP13-24 @ 0.05M**	**TP13-24 @ 0.7M**	**RDL**	**QC Batch**
Elements							
Total Antimony (Sb)	mg/kg	<1.0	<1.0	<1.0	<1.0	1.0	7057901
Total Arsenic (As)	mg/kg	<1.0	<1.0	<1.0	1.3	1.0	7057901
Total Barium (Ba)	mg/kg	<10	<10	<10	<10	10	7057901
Total Beryllium (Be)	mg/kg	<0.40	<0.40	<0.40	<0.40	0.40	7057901
Total Cadmium (Cd)	mg/kg	<0.10	<0.10	0.20	<0.10	0.10	7057901
Total Chromium (Cr)	mg/kg	2.3	2.9	3.8	4.9	1.0	7057901
Total Cobalt (Co)	mg/kg	<1.0	<1.0	<1.0	1.5	1.0	7057901
Total Copper (Cu)	mg/kg	<5.0	<5.0	<5.0	<5.0	5.0	7057901
Total Lead (Pb)	mg/kg	3.7	16	14	2.9	1.0	7057901
Total Mercury (Hg)	mg/kg	<0.050	<0.050	<0.050	<0.050	0.050	7057901
Total Molybdenum (Mo)	mg/kg	<0.40	<0.40	<0.40	<0.40	0.40	7057901
Total Nickel (Ni)	mg/kg	1.2	1.3	1.3	3.2	1.0	7057901
Total Selenium (Se)	mg/kg	<0.50	<0.50	<0.50	<0.50	0.50	7057901
Total Silver (Ag)	mg/kg	<1.0	<1.0	<1.0	<1.0	1.0	7057901
Total Thallium (Tl)	mg/kg	<0.30	<0.30	<0.30	<0.30	0.30	7057901
Total Tin (Sn)	mg/kg	<1.0	<1.0	<1.0	<1.0	1.0	7057901
Total Uranium (U)	mg/kg	<1.0	<1.0	<1.0	<1.0	1.0	7057901
Total Vanadium (V)	mg/kg	4.8	5.7	6.4	9.2	1.0	7057901
Total Zinc (Zn)	mg/kg	<10	<10	<10	<10	10	7057901

RDL = Reportable Detection Limit

Maxxam Job #: B367815
Report Date: 2013/08/16

AECOM
Client Project #: 60299674, CAM-6

Your P.O. #: 700266069

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		HC5850	HC5851	HC5877		
Sampling Date		2013/07/31 14:15	2013/07/31 14:45	2013/07/31 14:30		
COC Number		405374-13-01	405374-13-01	405374-11-01		
	UNITS	**TP13-25 @ 0.05M**	**TP13-27 @ 0.05M**	**TP13-26 @ 0.05M**	**RDL**	**QC Batch**
Elements						
Total Antimony (Sb)	mg/kg	<1.0	<1.0	<1.0	1.0	7057901
Total Arsenic (As)	mg/kg	<1.0	<1.0	<1.0	1.0	7057901
Total Barium (Ba)	mg/kg	<10	<10	<10	10	7057901
Total Beryllium (Be)	mg/kg	<0.40	<0.40	<0.40	0.40	7057901
Total Cadmium (Cd)	mg/kg	0.23	<0.10	<0.10	0.10	7057901
Total Chromium (Cr)	mg/kg	3.1	4.3	4.3	1.0	7057901
Total Cobalt (Co)	mg/kg	1.1	<1.0	<1.0	1.0	7057901
Total Copper (Cu)	mg/kg	<5.0	<5.0	<5.0	5.0	7057901
Total Lead (Pb)	mg/kg	56	27	6.0	1.0	7057901
Total Mercury (Hg)	mg/kg	<0.050	<0.050	<0.050	0.050	7057901
Total Molybdenum (Mo)	mg/kg	<0.40	<0.40	<0.40	0.40	7057901
Total Nickel (Ni)	mg/kg	2.1	2.0	1.8	1.0	7057901
Total Selenium (Se)	mg/kg	<0.50	<0.50	<0.50	0.50	7057901
Total Silver (Ag)	mg/kg	<1.0	<1.0	<1.0	1.0	7057901
Total Thallium (Tl)	mg/kg	<0.30	<0.30	<0.30	0.30	7057901
Total Tin (Sn)	mg/kg	<1.0	<1.0	<1.0	1.0	7057901
Total Uranium (U)	mg/kg	<1.0	<1.0	<1.0	1.0	7057901
Total Vanadium (V)	mg/kg	6.6	8.3	8.6	1.0	7057901
Total Zinc (Zn)	mg/kg	<10	<10	<10	10	7057901

RDL = Reportable Detection Limit

Maxxam Job #: B367815
Report Date: 2013/08/16

AECOM
Client Project #: 60299674, CAM-6

Your P.O. #: 700266069

VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		HC5823	HC5824	HC5825	HC5826		
Sampling Date		2013/07/31 16:00	2013/07/31 16:00	2013/07/31 15:45	2013/07/31 15:45		
COC Number		405374-28-01	405374-28-01	405374-28-01	405374-28-01		
	UNITS	**TP13-32 @ 0.4M**	**TP13-32 @ 0.7M**	**TP13-31 @ 1.04M**	**TP13-31 @ 0.8M**	**RDL**	**QC Batch**
Volatiles							
Benzene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	7054516
Toluene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	7054516
Ethylbenzene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	7054516
Xylenes (Total)	mg/kg	<0.040	0.050	<0.040	<0.040	0.040	7054516
m & p-Xylene	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	7054516
o-Xylene	mg/kg	<0.020	0.050	<0.020	<0.020	0.020	7054516
F1 (C6-C10) - BTEX	mg/kg	<12	53	<12	<12	12	7054516
(C6-C10)	mg/kg	<12	53	<12	<12	12	7054516
Surrogate Recovery (%)							
1,4-Difluorobenzene (sur.)	%	97	97	97	97	N/A	7054516
4-BROMOFLUOROBENZENE (sur.)	%	109	119	108	107	N/A	7054516
D10-ETHYLBENZENE (sur.)	%	100	97	99	101	N/A	7054516
D4-1,2-DICHLOROETHANE (sur.)	%	108	108	106	108	N/A	7054516

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: B367815
Report Date: 2013/08/16

AECOM
Client Project #: 60299674, CAM-6

Your P.O. #: 700266069

VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		HC5827	HC5830	HC5831	HC5842		
Sampling Date		2013/07/31 15:45	2013/07/31 15:30	2013/07/31 15:30	2013/07/31 15:15		
COC Number		405374-28-01	405374-28-01	405374-28-01	405374-13-01		
	UNITS	**TP13-31 @ 0.4M**	**TP13-30 @ 0.7M**	**TP13-30A @ 0.7M**	**TP13-29 @ 0.7M**	**RDL**	**QC Batch**
Volatiles							
Benzene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	7054516
Toluene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	7054516
Ethylbenzene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	7054516
Xylenes (Total)	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	7054516
m & p-Xylene	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	7054516
o-Xylene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	7054516
F1 (C6-C10) - BTEX	mg/kg	<12	<12	<12	<12	12	7054516
(C6-C10)	mg/kg	<12	<12	<12	<12	12	7054516
Surrogate Recovery (%)							
1,4-Difluorobenzene (sur.)	%	96	97	98	96	N/A	7054516
4-BROMOFLUOROBENZENE (sur.)	%	107	108	107	109	N/A	7054516
D10-ETHYLBENZENE (sur.)	%	102	102	99	104	N/A	7054516
D4-1,2-DICHLOROETHANE (sur.)	%	108	108	107	110	N/A	7054516

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: B367815
Report Date: 2013/08/16

AECOM
Client Project #: 60299674, CAM-6

Your P.O. #: 700266069

VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		HC5844	HC5845	HC5848	HC5848		
Sampling Date		2013/07/31 15:00	2013/07/31 15:00	2013/07/31 14:00	2013/07/31 14:00		
COC Number		405374-13-01	405374-13-01	405374-13-01	405374-13-01		
	UNITS	**TP13-28 @ 1.0M**	**TP13-28 @ 0.5M**	**TP13-24 @ 0.15M**	**TP13-24 @ 0.15M Lab-Dup**	**RDL**	**QC Batch**
Volatiles							
Benzene	mg/kg	<0.0050	<0.0050	<0.0050	0.0086	0.0050	7054516
Toluene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	7054516
Ethylbenzene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	7054516
Xylenes (Total)	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	7054516
m & p-Xylene	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	7054516
o-Xylene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	7054516
F1 (C6-C10) - BTEX	mg/kg	<12	<12	29	37	12	7054516
(C6-C10)	mg/kg	<12	<12	29	37	12	7054516
Surrogate Recovery (%)							
1,4-Difluorobenzene (sur.)	%	98	96	97	96	N/A	7054516
4-BROMOFLUOROBENZENE (sur.)	%	108	109	114	115	N/A	7054516
D10-ETHYLBENZENE (sur.)	%	102	101	101	100	N/A	7054516
D4-1,2-DICHLOROETHANE (sur.)	%	111	111	112	110	N/A	7054516

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: B367815
Report Date: 2013/08/16

AECOM
Client Project #: 60299674, CAM-6

Your P.O. #: 700266069

VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		HC5849	HC5872	HC5873	HC5874		
Sampling Date		2013/08/01 14:00	2013/07/31 14:15	2013/07/31 14:15	2013/07/31 14:15		
COC Number		405374-13-01	405374-11-01	405374-11-01	405374-11-01		
	UNITS	**TP13-24 @ 0.7M**	**TP13-25 @ 0.2M**	**TP13-25 @ 0.4M**	**TP13-25 @ 0.9M**	**RDL**	**QC Batch**
Volatiles							
Benzene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	7054516
Toluene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	7054516
Ethylbenzene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	7054516
Xylenes (Total)	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	7054516
m & p-Xylene	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	7054516
o-Xylene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	7054516
F1 (C6-C10) - BTEX	mg/kg	200	<12	110	170	12	7054516
(C6-C10)	mg/kg	200	<12	110	170	12	7054516
Surrogate Recovery (%)							
1,4-Difluorobenzene (sur.)	%	97	95	97	94	N/A	7054516
4-BROMOFLUOROBENZENE (sur.)	%	109	111	124	124	N/A	7054516
D10-ETHYLBENZENE (sur.)	%	102	104	104	102	N/A	7054516
D4-1,2-DICHLOROETHANE (sur.)	%	110	110	111	109	N/A	7054516

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: B367815
Report Date: 2013/08/16

AECOM
Client Project #: 60299674, CAM-6

Your P.O. #: 700266069

VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		HC5875	HC5876	HC5878	HC5879		
Sampling Date		2013/07/31 14:30	2013/07/31 14:30	2013/07/31 14:30	2013/07/31 14:45		
COC Number		405374-11-01	405374-11-01	405374-11-01	405374-11-01		
	UNITS	**TP13-26 @ 0.4M**	**TP13-26 @ 0.65M**	**TP13-26 @ 1.1M**	**TP13-27 @ 0.4M**	**RDL**	**QC Batch**
Volatiles							
Benzene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	7054516
Toluene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	7054516
Ethylbenzene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	7054516
Xylenes (Total)	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	7054516
m & p-Xylene	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	7054516
o-Xylene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	7054516
F1 (C6-C10) - BTEX	mg/kg	39	110	<12	<12	12	7054516
(C6-C10)	mg/kg	39	110	<12	<12	12	7054516
Surrogate Recovery (%)							
1,4-Difluorobenzene (sur.)	%	95	95	94	93	N/A	7054516
4-BROMOFLUOROBENZENE (sur.)	%	116	126	113	109	N/A	7054516
D10-ETHYLBENZENE (sur.)	%	106	108	109	109	N/A	7054516
D4-1,2-DICHLOROETHANE (sur.)	%	112	112	113	111	N/A	7054516

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: B367815
Report Date: 2013/08/16

AECOM
Client Project #: 60299674, CAM-6

Your P.O. #: 700266069

VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		HC5880		
Sampling Date		2013/07/31 14:45		
COC Number		405374-11-01		
	UNITS	**TP13-27 @ 0.9M**	**RDL**	**QC Batch**
Volatiles				
Benzene	mg/kg	<0.0050	0.0050	7054516
Toluene	mg/kg	<0.020	0.020	7054516
Ethylbenzene	mg/kg	<0.010	0.010	7054516
Xylenes (Total)	mg/kg	<0.040	0.040	7054516
m & p-Xylene	mg/kg	<0.040	0.040	7054516
o-Xylene	mg/kg	<0.020	0.020	7054516
F1 (C6-C10) - BTEX	mg/kg	<12	12	7054516
(C6-C10)	mg/kg	<12	12	7054516
Surrogate Recovery (%)				
1,4-Difluorobenzene (sur.)	%	89	N/A	7054516
4-BROMOFLUOROBENZENE (sur.)	%	87	N/A	7054516
D10-ETHYLBENZENE (sur.)	%	79	N/A	7054516
D4-1,2-DICHLOROETHANE (sur.)	%	121	N/A	7054516

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: B367815
Report Date: 2013/08/16

AECOM
Client Project #: 60299674, CAM-6

Your P.O. #: 700266069

General Comments

Results relate only to the items tested.

AECOM
Attention: NICK OKE
Client Project #: 60299674, CAM-6
P.O. #: 700266069
Site Location:

Quality Assurance Report

Maxxam Job Number: CB367815

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7053509	KSA	Method Blank	Moisture	2013/08/07	<0.30		%	
		RPD [HC5851-01]	Moisture	2013/08/07	4.4		%	20
7053775	MWC	Method Blank	Moisture	2013/08/07	<0.30		%	
		RPD [HC5875-01]	Moisture	2013/08/07	1.5		%	20
7054516	MZ	Matrix Spike						
		[HC5848-01]	1,4-Difluorobenzene (sur.)	2013/08/07		99	%	60 - 140
			4-BROMOFLUOROBENZENE (sur.)	2013/08/07		119	%	60 - 140
			D10-ETHYLBENZENE (sur.)	2013/08/07		109	%	60 - 130
			D4-1,2-DICHLOROETHANE (sur.)	2013/08/07		122	%	60 - 140
			Benzene	2013/08/07		107	%	60 - 140
			Toluene	2013/08/07		102	%	60 - 140
			Ethylbenzene	2013/08/07		108	%	60 - 140
			m & p-Xylene	2013/08/07		106	%	60 - 140
			o-Xylene	2013/08/07		104	%	60 - 140
			(C6-C10)	2013/08/07		82	%	60 - 140
		Spiked Blank	1,4-Difluorobenzene (sur.)	2013/08/07		101	%	60 - 140
			4-BROMOFLUOROBENZENE (sur.)	2013/08/07		113	%	60 - 140
			D10-ETHYLBENZENE (sur.)	2013/08/07		109	%	60 - 130
			D4-1,2-DICHLOROETHANE (sur.)	2013/08/07		118	%	60 - 140
			Benzene	2013/08/07		114	%	60 - 140
			Toluene	2013/08/07		108	%	60 - 140
			Ethylbenzene	2013/08/07		117	%	60 - 140
			m & p-Xylene	2013/08/07		114	%	60 - 140
			o-Xylene	2013/08/07		113	%	60 - 140
			(C6-C10)	2013/08/07		109	%	60 - 140
		Method Blank	1,4-Difluorobenzene (sur.)	2013/08/07		98	%	60 - 140
			4-BROMOFLUOROBENZENE (sur.)	2013/08/07		108	%	60 - 140
			D10-ETHYLBENZENE (sur.)	2013/08/07		100	%	60 - 130
			D4-1,2-DICHLOROETHANE (sur.)	2013/08/07		106	%	60 - 140
			Benzene	2013/08/07	<0.0050		mg/kg	
			Toluene	2013/08/07	<0.020		mg/kg	
			Ethylbenzene	2013/08/07	<0.010		mg/kg	
			Xylenes (Total)	2013/08/07	<0.040		mg/kg	
			m & p-Xylene	2013/08/07	<0.040		mg/kg	
			o-Xylene	2013/08/07	<0.020		mg/kg	
			F1 (C6-C10) - BTEX	2013/08/07	<12		mg/kg	
			(C6-C10)	2013/08/07	<12		mg/kg	
		RPD [HC5848-01]	Benzene	2013/08/07	NC		%	50
			Toluene	2013/08/07	NC		%	50
			Ethylbenzene	2013/08/07	NC		%	50
			Xylenes (Total)	2013/08/07	NC		%	50
			m & p-Xylene	2013/08/07	NC		%	50
			o-Xylene	2013/08/07	NC		%	50
			F1 (C6-C10) - BTEX	2013/08/07	NC		%	50
			(C6-C10)	2013/08/07	NC		%	50
7057901	ST4	Matrix Spike						
		[HC5822-01]	Total Antimony (Sb)	2013/08/11		109	%	75 - 125
			Total Arsenic (As)	2013/08/11		103	%	75 - 125
			Total Barium (Ba)	2013/08/11		101	%	75 - 125
			Total Beryllium (Be)	2013/08/11		106	%	75 - 125
			Total Cadmium (Cd)	2013/08/11		104	%	75 - 125
			Total Chromium (Cr)	2013/08/11		101	%	75 - 125
			Total Cobalt (Co)	2013/08/11		99	%	75 - 125
			Total Copper (Cu)	2013/08/11		100	%	75 - 125
			Total Lead (Pb)	2013/08/11		105	%	75 - 125

AECOM
Attention: NICK OKE
Client Project #: 60299674, CAM-6
P.O. #: 700266069
Site Location:

Quality Assurance Report (Continued)

Maxxam Job Number: CB367815

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7057901	ST4	Matrix Spike						
		[HC5822-01]	Total Mercury (Hg)	2013/08/11		97	%	75 - 125
			Total Molybdenum (Mo)	2013/08/11		107	%	75 - 125
			Total Nickel (Ni)	2013/08/11		100	%	75 - 125
			Total Selenium (Se)	2013/08/11		104	%	75 - 125
			Total Silver (Ag)	2013/08/11		95	%	75 - 125
			Total Thallium (Tl)	2013/08/11		105	%	75 - 125
			Total Tin (Sn)	2013/08/11		104	%	75 - 125
			Total Uranium (U)	2013/08/11		99	%	75 - 125
			Total Vanadium (V)	2013/08/11		107	%	75 - 125
			Total Zinc (Zn)	2013/08/11		103	%	75 - 125
		QC Standard	Total Arsenic (As)	2013/08/09		123	%	50 - 150
			Total Barium (Ba)	2013/08/09		115	%	69 - 131
			Total Chromium (Cr)	2013/08/09		115	%	41 - 159
			Total Cobalt (Co)	2013/08/09		115	%	75 - 125
			Total Copper (Cu)	2013/08/09		111	%	73 - 127
			Total Lead (Pb)	2013/08/09		104	%	54 - 146
			Total Nickel (Ni)	2013/08/09		128	%	61 - 139
			Total Vanadium (V)	2013/08/09		132	%	50 - 150
			Total Zinc (Zn)	2013/08/09		120	%	72 - 128
		Spiked Blank	Total Antimony (Sb)	2013/08/10		103	%	75 - 125
			Total Arsenic (As)	2013/08/10		99	%	75 - 125
			Total Barium (Ba)	2013/08/10		98	%	75 - 125
			Total Beryllium (Be)	2013/08/10		107	%	75 - 125
			Total Cadmium (Cd)	2013/08/10		99	%	75 - 125
			Total Chromium (Cr)	2013/08/10		100	%	75 - 125
			Total Cobalt (Co)	2013/08/10		98	%	75 - 125
			Total Copper (Cu)	2013/08/10		98	%	75 - 125
			Total Lead (Pb)	2013/08/10		102	%	75 - 125
			Total Mercury (Hg)	2013/08/10		104	%	75 - 125
			Total Molybdenum (Mo)	2013/08/10		100	%	75 - 125
			Total Nickel (Ni)	2013/08/10		99	%	75 - 125
			Total Selenium (Se)	2013/08/10		103	%	75 - 125
			Total Silver (Ag)	2013/08/10		92	%	75 - 125
			Total Thallium (Tl)	2013/08/10		104	%	75 - 125
			Total Tin (Sn)	2013/08/10		98	%	75 - 125
			Total Uranium (U)	2013/08/10		106	%	75 - 125
			Total Vanadium (V)	2013/08/10		103	%	75 - 125
			Total Zinc (Zn)	2013/08/10		101	%	75 - 125
		Method Blank	Total Antimony (Sb)	2013/08/09	<1.0		mg/kg	
			Total Arsenic (As)	2013/08/09	<1.0		mg/kg	
			Total Barium (Ba)	2013/08/09	<10		mg/kg	
			Total Beryllium (Be)	2013/08/09	<0.40		mg/kg	
			Total Cadmium (Cd)	2013/08/09	<0.10		mg/kg	
			Total Chromium (Cr)	2013/08/09	<1.0		mg/kg	
			Total Cobalt (Co)	2013/08/09	<1.0		mg/kg	
			Total Copper (Cu)	2013/08/09	<5.0		mg/kg	
			Total Lead (Pb)	2013/08/09	<1.0		mg/kg	
			Total Mercury (Hg)	2013/08/09	<0.050		mg/kg	
			Total Molybdenum (Mo)	2013/08/09	<0.40		mg/kg	
			Total Nickel (Ni)	2013/08/09	<1.0		mg/kg	
			Total Selenium (Se)	2013/08/09	<0.50		mg/kg	
			Total Silver (Ag)	2013/08/09	<1.0		mg/kg	
			Total Thallium (Tl)	2013/08/09	<0.30		mg/kg	
			Total Tin (Sn)	2013/08/09	<1.0		mg/kg	

AECOM
Attention: NICK OKE
Client Project #: 60299674, CAM-6
P.O. #: 700266069
Site Location:

Quality Assurance Report (Continued)

Maxxam Job Number: CB367815

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7057901	ST4	Method Blank	Total Uranium (U)	2013/08/09	<1.0		mg/kg	
			Total Vanadium (V)	2013/08/09	<1.0		mg/kg	
			Total Zinc (Zn)	2013/08/09	<10		mg/kg	
		RPD [HC5822-01]	Total Antimony (Sb)	2013/08/10	NC		%	35
			Total Arsenic (As)	2013/08/10	NC		%	35
			Total Barium (Ba)	2013/08/10	NC		%	35
			Total Beryllium (Be)	2013/08/10	NC		%	35
			Total Cadmium (Cd)	2013/08/10	NC		%	35
			Total Chromium (Cr)	2013/08/10	NC		%	35
			Total Cobalt (Co)	2013/08/10	NC		%	35
			Total Copper (Cu)	2013/08/10	NC		%	35
			Total Lead (Pb)	2013/08/10	NC		%	35
			Total Mercury (Hg)	2013/08/10	NC		%	35
			Total Molybdenum (Mo)	2013/08/10	NC		%	35
			Total Nickel (Ni)	2013/08/10	NC		%	35
			Total Selenium (Se)	2013/08/10	NC		%	35
			Total Silver (Ag)	2013/08/10	NC		%	35
			Total Thallium (Tl)	2013/08/10	NC		%	35
			Total Tin (Sn)	2013/08/10	NC		%	35
			Total Uranium (U)	2013/08/10	NC		%	35
			Total Vanadium (V)	2013/08/10	6.5		%	35
			Total Zinc (Zn)	2013/08/10	NC		%	35
7059147	DO1	Matrix Spike						
		[HC5823-01]	O-TERPHENYL (sur.)	2013/08/08		125	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2013/08/08		117	%	50 - 130
			F3 (C16-C34 Hydrocarbons)	2013/08/08		104	%	50 - 130
			F4 (C34-C50 Hydrocarbons)	2013/08/08		115	%	50 - 130
		Spiked Blank	O-TERPHENYL (sur.)	2013/08/08		113	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2013/08/08		86	%	70 - 130
			F3 (C16-C34 Hydrocarbons)	2013/08/08		93	%	70 - 130
			F4 (C34-C50 Hydrocarbons)	2013/08/08		116	%	70 - 130
		Method Blank	O-TERPHENYL (sur.)	2013/08/08		113	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2013/08/08	<10		mg/kg	
			F3 (C16-C34 Hydrocarbons)	2013/08/08	<50		mg/kg	
			F4 (C34-C50 Hydrocarbons)	2013/08/08	<50		mg/kg	
		RPD [HC5823-01]	F2 (C10-C16 Hydrocarbons)	2013/08/08	NC		%	50
			F3 (C16-C34 Hydrocarbons)	2013/08/08	NC		%	50
			F4 (C34-C50 Hydrocarbons)	2013/08/08	NC		%	50
7060152	SMZ	QC Standard	Soluble (2:1) pH	2013/08/08		99	%	98 - 102
		Spiked Blank	Soluble (2:1) pH	2013/08/08		100	%	97 - 103
		RPD [HC5822-01]	Soluble (2:1) pH	2013/08/08	1.3		%	5

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.
QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.
Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.

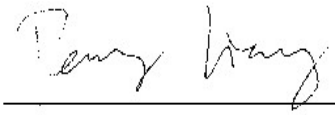
Validation Signature Page

Maxxam Job #: B367815

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



Luba Shymushovska, Senior Analyst, Organic Department



Peng Liang, Analyst II

==========

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

Maxxam Analytics International Corporation o/a Maxxam Analytics
9331 - 48th Street, Edmonton, Alberta Canada T6B 2R4 Tel:(780) 577-7100 Toll-free:800-653-6266 Fax:780-450-4187 www.maxxam.ca

CHAIN OF CUSTODY RECORD

INVOICE INFORMATION:		REPORT INFORMATION (if differs from invoice):		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#2597 PUBLIC WORKS & GOVERNMENT SERVI	Company Name:	#25925 AECOM	Quotation #:		MAXXAM JOB #:	BOTTLE ORDER #:
Contact Name:	Jessie Hoyt	Contact Name:	NICK OKE	P.O. #:	700266069		405374
Address:	TELUS TOWER NORTH, 5th FLOOR 10025 JASP	Address:	17007 - 107 Avenue	Project #:	60299674	CHAIN OF CUSTODY #:	PROJECT MANAGER:
	EDMONTON AB T5J 1S6		, Edmonton AB T5S 1G3	Project Name:	CAM-C	C#405374-28-01	Geraldyn Gouthro
Phone:	(780)497-3786 Fax: (780)497-3842	Phone:	(780)486-4057 Fax:	Site #:			
Email:	jessie.hoyt@psgsc-tpsgc.gc.ca	Email:	nick.oke@aecom.com eva.schultz@aecom.com	Sampled By:	E. Schultz / T. McCallum		

REGULATORY CRITERIA:
- [ ] ATI
- [x] CCME
- [x] OTHER

SPECIAL INSTRUCTIONS

SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

ANALYSIS REQUESTED (Please be specific):

TURNAROUND TIME (TAT) REQUIRED:

PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS

Regular (Standard) TAT:
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests are > 5 days - contact your Project Manager for details
[x]

Job Specific Rush TAT (if applies to entire submission)
Date Required: _____
Rush Confirmation Number: _____ (call lab for #)
[ ]

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Metals Field Filtered ? (Y / N)	PHC F1-4	Metals	PCBs							# of Bottles	Comments
1		TP13-32 @0.05	Jul 31	4pm	Soil			✓	✓							2	
2		TP13-32 @0.4m	✓	✓	✓		✓									2	
3		TP13-32 @0.7m	✓	✓	✓		✓									1	
4		TP13-31 @1.04m	✓	3:45	✓		✓									2	
5		TP13-31 @0.8m	✓	✓	✓		✓									2	
6		TP13-31 @0.4m	✓	✓	✓		✓									2	
7		TP13-31 @0.05m	✓	✓	✓			✓	✓							2	
8		TP13-30 @0.05	✓	3:30	✓			✓	✓							2	
9		TP13-30 @0.7m	✓	✓	✓		✓									2	
10		TP13-30(a) @0.7m	✓	✓	✓		✓									2	

6-Aug-13 07:40
Geraldyn Gouthro
B367815
HD0 INS-0054

RECEIVED IN YELLOWKNIFE
By: [signature] 09:25
2013 -08- 04

ON ACTR
Temp: 1.1 FORM

*RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	# Jars Used and Not Submitted	Laboratory Use Only: Time Sensitive	Temperature (°C) on Receipt	Custody Seal Intact on Cooler?
Eva Schultz	Aug. 2	10a.	[signature] Adejoju Alabi	2013/08/06	0740		☐		☐ Yes ☐ No

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.
** ALL SAMPLES ARE HELD FOR 60 DAYS AFTER SAMPLE RECEIPT, FOR SPECIAL REQUESTS CONTACT YOUR PROJECT MANAGER

White: Maxxam Yellow: Client

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Maxxam Analytics International Corporation o/a Maxxam Analytics
9331 - 48th Street, Edmonton, Alberta Canada T6B 2R4 Tel:(780) 577-7100 Toll-free:800-653-6266 Fax:780-450-4187 www.maxxam.ca

CHAIN OF CUSTODY RECORD

INVOICE INFORMATION:		REPORT INFORMATION (if differs from invoice):		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#2597 PUBLIC WORKS & GOVERNMENT SERVI	Company Name:	#25925 AECOM	Quotation #:		MAXXAM JOB #:	BOTTLE ORDER #:
Contact Name:	Jessie Hoyt	Contact Name:	NICK OKE	P.O. #:	700266069	367815	405374
Address:	TELUS TOWER NORTH, 5th FLOOR 10025 JASP	Address:	17007 - 107 Avenue	Project #:	60299674	CHAIN OF CUSTODY #:	PROJECT MANAGER:
	EDMONTON AB T5J 1S6		, Edmonton AB T5S 1G3	Project Name:	CAM-C	C#405374-13-01	Geraldyn Gouthro
Phone:	(780)497-3786 Fax: (780)497-3842	Phone:	(780)486-4057 Fax:	Site #:			
Email:	jessie.hoyt@psgsc-tpsgc.gc.ca	Email:	nick.oke@aecom.com eva.schultz@	Sampled By:	E.schultz/J.McCallum		

REGULATORY CRITERIA:
- [ ] ATI
- [x] CCME
- [ ] OTHER

SPECIAL INSTRUCTIONS

aecom.com

ANALYSIS REQUESTED (Please be specific):

TURNAROUND TIME (TAT) REQUIRED:

PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS

Regular (Standard) TAT:
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests are > 5 days - contact your Project Manager for details

Job Specific Rush TAT (if applies to entire submission)
Date Required: _____
Rush Confirmation Number: _____ *(call lab for #)*

SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Metals Field Filtered ? (Y / N)	PHCs F1-4	metals	PCBs	# of Bottles	Comments
1		TPB-29 @ 0.7m	July 31	3:15	Soil		✓			2	
2		TPB-29@0.05m	✓	✓	✓			✓	✓	2	
3		TPB-28@1.0m	✓	3:00	✓		✓			2	
4		TPB-28@0.5m	✓	✓	✓		✓			2	
5		TPB-28@0.05	✓	✓	✓		✓	✓	✓	2	
6		TPB-24@0.05	✓	2p	✓			✓	✓	2	
7		TPB-24@0.15	✓	✓	✓		✓			2	RECEIVED IN YELLOWKNIFE
8		TPB-24@0.7m	✓	✓	✓		✓	✓		3	By: 09:25
9		TPB-25@0.05	✓	2:15	✓			✓	✓	2	2013-08-04
10		TPB-27@0.05	✓	2:45	✓			✓	✓	2	Temp: ON ACPR Form

*RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	# Jars Used and Not Submitted
Eva Schultz	Aug. 2	10	Print Adejoju Alabi	2013/08/05	0740	

Laboratory Use Only

Time Sensitive	Temperature (°C) on Receipt	Custody Seal Intact on Cooler?
☐		☐ Yes ☐ No

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.
** ALL SAMPLES ARE HELD FOR 60 DAYS AFTER SAMPLE RECEIPT, FOR SPECIAL REQUESTS CONTACT YOUR PROJECT MANAGER

White: Maxxam Yellow: Client

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Maxxam Analytics International Corporation o/a Maxxam Analytics
9331 - 48th Street, Edmonton, Alberta Canada T6B 2R4 Tel:(780) 577-7100 Toll-free:800-653-6266 Fax:780-450-4187 www.maxxam.ca

CHAIN OF CUSTODY RECORD

INVOICE INFORMATION:		REPORT INFORMATION (if differs from invoice):		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#2597 PUBLIC WORKS & GOVERNMENT SERVI	Company Name:	#25925 AECOM	Quotation #:		MAXXAM JOB #:	BOTTLE ORDER #:
Contact Name:	Jessie Hoyt	Contact Name:	NICK OKE	P.O. #:	700266069	367815	405374
Address:	TELUS TOWER NORTH, 5th FLOOR 10025 JASP	Address:	17007 - 107 Avenue	Project #:	60299674	CHAIN OF CUSTODY #:	PROJECT MANAGER:
	EDMONTON AB T5J 1S6		, Edmonton AB T5S 1G3	Project Name:	CAMC	C#405374-11-01	Geraldyn Gouthro
Phone:	(780)497-3786 Fax: (780)497-3842	Phone:	(780)486-4057 Fax:	Site #:			
Email:	jessie.hoyt@psgsc-tpsgc.gc.ca	Email:	nick.oke@aecom.com /eva.schultz@aecom.com	Sampled By:	E.Schultz/J.McCallum		

REGULATORY CRITERIA:
- [ ] ATI
- [x] CCME
- [x] OTHER

SPECIAL INSTRUCTIONS

ANALYSIS REQUESTED (Please be specific):

TURNAROUND TIME (TAT) REQUIRED:

PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS

Regular (Standard) TAT:
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests are > 5 days - contact your Project Manager for details
- [x]

Job Specific Rush TAT (if applies to entire submission)
Date Required: _____
Rush Confirmation Number: _____ *(call lab for #)*
- [ ]

SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Metals Field Filtered ? (Y / N)	PHC F1-4	Metals	PCBs						# of Bottles	Comments
1		TP13-25 @ 0.2	Jul 31	2:15	Soil		✓								2	
2		TP13-25 @ 0.4	"	"	"		✓								2	
3		TP13-25 @ 0.9	"	"	"		✓								2	
4		TP13-26 @ 0.4	"	2:30	"		✓								2	
5		TP13-26 @ 0.65	"	"	"		✓								2	
6		~~TP13-26~~ TP13-26 @ 0.05	"	"	"			✓	✓						2	RECEIVED IN YELLOWKNIFE By:
7		TP13-26 @ 1.1m	"	2:30	"		✓								2	
8		TP13-27 @ 0.4m	"	2:45	"		✓								2	2013-08-04 09:25
9		TP13-27 @ 0.9	"	"	"		✓								2	Temp: 07 ACTR FORM
10																

*RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	# Jars Used and Not Submitted	Laboratory Use Only: Time Sensitive	Temperature (°C) on Receipt	Custody Seal Intact on Cooler?
Eva Schultz	Aug. 2	10a.	Adepoju Alabi	2013/08/05	0740		☐		☐ Yes ☐ No

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.
** ALL SAMPLES ARE HELD FOR 60 DAYS AFTER SAMPLE RECEIPT, FOR SPECIAL REQUESTS CONTACT YOUR PROJECT MANAGER

White: Maxxam Yellow: Client

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Your Project #: B367815
Your C.O.C. #: NA

Attention: Geraldlyn Gouthro
Maxxam Analytics
2021 41st Ave NE
Calgary, AB
T2E 6P2

Report Date: 2013/08/15

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B3C9553
Received: 2013/08/08, 08:54

Sample Matrix: Soil
Samples Received: 9

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Moisture	9	N/A	2013/08/13	CAM SOP-00445	R.Carter,1993
Polychlorinated Biphenyl in Soil	1	2013/08/12	2013/08/13	CAM SOP-00309	SW846 8082
Polychlorinated Biphenyl in Soil	6	2013/08/12	2013/08/14	CAM SOP-00309	SW846 8082
Polychlorinated Biphenyl in Soil	2	2013/08/12	2013/08/15	CAM SOP-00309	SW846 8082

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

Encryption Key

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

Shaun Nowickyj,
Email: SNowickyj@maxxam.ca
Phone# (905) 817-5700

==========

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

Total cover pages: 1

Maxxam Job #: B3C9553
Report Date: 2013/08/15

Maxxam Analytics
Client Project #: B367815

RESULTS OF ANALYSES OF SOIL

Maxxam ID		SO3058	SO3059	SO3060	SO3061	SO3061		
Sampling Date		2013/07/31 16:00	2013/07/31 15:45	2013/07/31 15:30	2013/07/31 15:15	2013/07/31 15:15		
COC Number		NA	NA	NA	NA	NA		
	Units	**HC5822\TP13-32 @0.05M**	**HC5828\TP13-31 @0.05M**	**HC5829\TP13-30 @0.05M**	**HC5843\TP13-29 @0.05M**	**HC5843\TP13-29 @0.05M Lab-Dup**	**RDL**	**QC Batch**
Moisture	%	3.0	2.8	3.1	2.6	2.7	1.0	3312163

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		SO3062	SO3063	SO3064	SO3065	SO3066		
Sampling Date		2013/07/31 15:00	2013/07/31 14:00	2013/07/31 14:15	2013/07/31 14:45	2013/07/31 14:30		
COC Number		NA	NA	NA	NA	NA		
	Units	**HC5846\TP13-28 @0.05M**	**HC5847\TP13-24 @0.05M**	**HC5850\TP13-25 @0.05M**	**HC5851\TP13-27 @0.05M**	**HC5877\TP13-26 @0.05M**	**RDL**	**QC Batch**
Moisture	%	4.6	4.6	4.4	4.1	4.5	1.0	3312163

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B3C9553
Report Date: 2013/08/15

Maxxam Analytics
Client Project #: B367815

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		SO3058	SO3059	SO3060	SO3061		
Sampling Date		2013/07/31 16:00	2013/07/31 15:45	2013/07/31 15:30	2013/07/31 15:15		
COC Number		NA	NA	NA	NA		
	Units	**HC5822\TP13-32 @0.05M**	**HC5828\TP13-31 @0.05M**	**HC5829\TP13-30 @0.05M**	**HC5843\TP13-29 @0.05M**	**RDL**	**QC Batch**
Aroclor 1016	ug/g	<0.010	<0.010	<0.010	<0.010	0.010	3311027
Aroclor 1221	ug/g	<0.010	<0.010	<0.010	<0.010	0.010	3311027
Aroclor 1232	ug/g	<0.010	<0.010	<0.010	<0.010	0.010	3311027
Aroclor 1242	ug/g	<0.010	<0.010	<0.010	<0.010	0.010	3311027
Aroclor 1248	ug/g	<0.010	<0.010	<0.010	<0.010	0.010	3311027
Aroclor 1254	ug/g	<0.010	<0.010	<0.010	<0.010	0.010	3311027
Aroclor 1260	ug/g	<0.010	<0.010	<0.010	<0.010	0.010	3311027
Aroclor 1262	ug/g	<0.010	<0.010	<0.010	<0.010	0.010	3311027
Aroclor 1268	ug/g	<0.010	<0.010	<0.010	<0.010	0.010	3311027
Total PCB	ug/g	<0.010	<0.010	<0.010	<0.010	0.010	3311027
Surrogate Recovery (%)							
Decachlorobiphenyl	%	97	165 (1)	81	77	N/A	3311027

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Surrogate recovery was above the upper control limit. This may represent a high bias in these samples. For results that were not detected (ND), this potential bias has no impact.

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Maxxam Job #: B3C9553
Report Date: 2013/08/15

Maxxam Analytics
Client Project #: B367815

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		SO3062		SO3063		SO3064		
Sampling Date		2013/07/31 15:00		2013/07/31 14:00		2013/07/31 14:15		
COC Number		NA		NA		NA		
	Units	**HC5846\TP13-28 @0.05M**	**RDL**	**HC5847\TP13-24 @0.05M**	**RDL**	**HC5850\TP13-25 @0.05M**	**RDL**	**QC Batch**
Aroclor 1016	ug/g	<0.010	0.010	<0.010	0.010	<0.10	0.10	3311027
Aroclor 1221	ug/g	<0.010	0.010	<0.010	0.010	<0.10	0.10	3311027
Aroclor 1232	ug/g	<0.010	0.010	<0.010	0.010	<0.10	0.10	3311027
Aroclor 1242	ug/g	<0.010	0.010	<0.010	0.010	<0.10	0.10	3311027
Aroclor 1248	ug/g	<0.010	0.010	<0.010	0.010	<0.10	0.10	3311027
Aroclor 1254	ug/g	<0.010	0.010	<0.020	0.020	<0.10	0.10	3311027
Aroclor 1260	ug/g	<0.010	0.010	<0.010	0.010	<0.10	0.10	3311027
Aroclor 1262	ug/g	<0.010	0.010	<0.010	0.010	<0.10	0.10	3311027
Aroclor 1268	ug/g	<0.010	0.010	<0.010	0.010	<0.10	0.10	3311027
Total PCB	ug/g	<0.010	0.010	<0.020	0.020	<0.10	0.10	3311027
Surrogate Recovery (%)								
Decachlorobiphenyl	%	103	N/A	134 (1)	N/A	122	N/A	3311027

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Surrogate recovery was above the upper control limit. This may represent a high bias in these samples. For results that were not detected (ND), this potential bias has no impact.

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Maxxam Job #: B3C9553
Report Date: 2013/08/15

Maxxam Analytics
Client Project #: B367815

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		SO3065		SO3066		
Sampling Date		2013/07/31 14:45		2013/07/31 14:30		
COC Number		NA		NA		
	Units	**HC5851\TP13-27 @0.05M**	**RDL**	**HC5877\TP13-26 @0.05M**	**RDL**	**QC Batch**
Aroclor 1016	ug/g	<0.050	0.050	<0.010	0.010	3311027
Aroclor 1221	ug/g	<0.050	0.050	<0.010	0.010	3311027
Aroclor 1232	ug/g	<0.050	0.050	<0.010	0.010	3311027
Aroclor 1242	ug/g	<0.050	0.050	<0.010	0.010	3311027
Aroclor 1248	ug/g	<0.050	0.050	<0.010	0.010	3311027
Aroclor 1254	ug/g	<0.050	0.050	<0.010	0.010	3311027
Aroclor 1260	ug/g	<0.050	0.050	<0.010	0.010	3311027
Aroclor 1262	ug/g	<0.050	0.050	<0.010	0.010	3311027
Aroclor 1268	ug/g	<0.050	0.050	<0.010	0.010	3311027
Total PCB	ug/g	<0.050	0.050	<0.010	0.010	3311027
Surrogate Recovery (%)						
Decachlorobiphenyl	%	111	N/A	80	N/A	3311027

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

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

Maxxam Job #: B3C9553
Report Date: 2013/08/15

Maxxam Analytics
Client Project #: B367815

Test Summary

Maxxam ID SO3058 **Collected** 2013/07/31
Sample ID HC5822\TP13-32 @0.05M **Shipped**
Matrix Soil **Received** 2013/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Moisture	BAL	3312163	N/A	2013/08/13	Valentina Kaftani
Polychlorinated Biphenyl in Soil	GC/ECD	3311027	2013/08/12	2013/08/13	Li Peng

Maxxam ID SO3059 **Collected** 2013/07/31
Sample ID HC5828\TP13-31 @0.05M **Shipped**
Matrix Soil **Received** 2013/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Moisture	BAL	3312163	N/A	2013/08/13	Valentina Kaftani
Polychlorinated Biphenyl in Soil	GC/ECD	3311027	2013/08/12	2013/08/14	Li Peng

Maxxam ID SO3060 **Collected** 2013/07/31
Sample ID HC5829\TP13-30 @0.05M **Shipped**
Matrix Soil **Received** 2013/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Moisture	BAL	3312163	N/A	2013/08/13	Valentina Kaftani
Polychlorinated Biphenyl in Soil	GC/ECD	3311027	2013/08/12	2013/08/14	Li Peng

Maxxam ID SO3061 **Collected** 2013/07/31
Sample ID HC5843\TP13-29 @0.05M **Shipped**
Matrix Soil **Received** 2013/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Moisture	BAL	3312163	N/A	2013/08/13	Valentina Kaftani
Polychlorinated Biphenyl in Soil	GC/ECD	3311027	2013/08/12	2013/08/14	Li Peng

Maxxam ID SO3061 Dup **Collected** 2013/07/31
Sample ID HC5843\TP13-29 @0.05M **Shipped**
Matrix Soil **Received** 2013/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Moisture	BAL	3312163	N/A	2013/08/13	Valentina Kaftani

Maxxam ID SO3062 **Collected** 2013/07/31
Sample ID HC5846\TP13-28 @0.05M **Shipped**
Matrix Soil **Received** 2013/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Moisture	BAL	3312163	N/A	2013/08/13	Valentina Kaftani
Polychlorinated Biphenyl in Soil	GC/ECD	3311027	2013/08/12	2013/08/14	Li Peng

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Maxxam Job #: B3C9553
Report Date: 2013/08/15

Maxxam Analytics
Client Project #: B367815

Test Summary

Maxxam ID SO3063 **Collected** 2013/07/31
Sample ID HC5847\TP13-24 @0.05M **Shipped**
Matrix Soil **Received** 2013/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Moisture	BAL	3312163	N/A	2013/08/13	Valentina Kaftani
Polychlorinated Biphenyl in Soil	GC/ECD	3311027	2013/08/12	2013/08/14	Li Peng

Maxxam ID SO3064 **Collected** 2013/07/31
Sample ID HC5850\TP13-25 @0.05M **Shipped**
Matrix Soil **Received** 2013/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Moisture	BAL	3312163	N/A	2013/08/13	Valentina Kaftani
Polychlorinated Biphenyl in Soil	GC/ECD	3311027	2013/08/12	2013/08/15	Li Peng

Maxxam ID SO3065 **Collected** 2013/07/31
Sample ID HC5851\TP13-27 @0.05M **Shipped**
Matrix Soil **Received** 2013/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Moisture	BAL	3312163	N/A	2013/08/13	Valentina Kaftani
Polychlorinated Biphenyl in Soil	GC/ECD	3311027	2013/08/12	2013/08/15	Li Peng

Maxxam ID SO3066 **Collected** 2013/07/31
Sample ID HC5877\TP13-26 @0.05M **Shipped**
Matrix Soil **Received** 2013/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Moisture	BAL	3312163	N/A	2013/08/13	Valentina Kaftani
Polychlorinated Biphenyl in Soil	GC/ECD	3311027	2013/08/12	2013/08/14	Li Peng

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

Maxxam Job #: B3C9553
Report Date: 2013/08/15

Maxxam Analytics
Client Project #: B367815

Package 1	6.0°C

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

GENERAL COMMENTS

Sample SO3064-01: PCB Analysis: Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.

Sample SO3065-01: PCB Analysis: Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.

Results relate only to the items tested.

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

Maxxam Analytics
Attention: Geraldlyn Gouthro
Client Project #: B367815
P.O. #:
Site Location:

Quality Assurance Report

Maxxam Job Number: MB3C9553

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
3311027	LPG	Matrix Spike	Decachlorobiphenyl	2013/08/13		92	%	60 - 130
			Aroclor 1260	2013/08/13		111	%	60 - 130
			Total PCB	2013/08/13		111	%	60 - 130
		Spiked Blank	Decachlorobiphenyl	2013/08/13		101	%	60 - 130
			Aroclor 1260	2013/08/13		115	%	60 - 130
			Total PCB	2013/08/13		115	%	60 - 130
		Method Blank	Decachlorobiphenyl	2013/08/13		117	%	60 - 130
			Aroclor 1016	2013/08/13	<0.010		ug/g	
			Aroclor 1221	2013/08/13	<0.010		ug/g	
			Aroclor 1232	2013/08/13	<0.010		ug/g	
			Aroclor 1242	2013/08/13	<0.010		ug/g	
			Aroclor 1248	2013/08/13	<0.010		ug/g	
			Aroclor 1254	2013/08/13	<0.010		ug/g	
			Aroclor 1260	2013/08/13	<0.010		ug/g	
			Aroclor 1262	2013/08/13	<0.010		ug/g	
			Aroclor 1268	2013/08/13	<0.010		ug/g	
			Total PCB	2013/08/13	<0.010		ug/g	
		RPD - Sample/Sample Dup	Aroclor 1016	2013/08/13	NC		%	50
			Aroclor 1221	2013/08/13	NC		%	50
			Aroclor 1232	2013/08/13	NC		%	50
			Aroclor 1242	2013/08/13	NC		%	50
			Aroclor 1248	2013/08/13	NC		%	50
			Aroclor 1254	2013/08/13	NC		%	50
			Aroclor 1260	2013/08/13	NC		%	50
			Aroclor 1262	2013/08/13	NC		%	50
			Aroclor 1268	2013/08/13	NC		%	50
			Total PCB	2013/08/13	NC		%	50
3312163	JV1	RPD - Sample/Sample Dup	Moisture	2013/08/13	NC		%	20

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.
Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.

Validation Signature Page

Maxxam Job #: B3C9553

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

Charles Ancker, B.Sc., M.Sc., C.Chem, Senior Analyst

Ewa Pranjic, M.Sc., C.Chem, Scientific Specialist

==========

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

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

Your P.O. #: 700266069
Your Project #: 60299674
Site Location: CAM-C

Attention: NICK OKE
AECOM
EDMONTON
17007 - 107 Avenue
, Edmonton, AB
CANADA T5S 1G3

Your C.O.C. #: 40537407, 405374-07-01, 405374-09-01, 405374-10-01

Report Date: 2013/08/26

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B367841
Received: 2013/08/06, 07:40

Sample Matrix: Soil
Samples Received: 26

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
BTEX/F1 by HS GC/MS (MeOH extract)	21	2013/08/07	2013/08/09	AB SOP-00039	CCME, EPA 8260C
BTEX/F1 by HS GC/MS (MeOH extract)	1	2013/08/08	2013/08/09	AB SOP-00039	CCME, EPA 8260C
CCME Hydrocarbons (F2-F4 in soil)	14	2013/08/07	2013/08/08	AB SOP-00040 AB SOP-00036	CCME PHC-CWS
CCME Hydrocarbons (F2-F4 in soil)	3	2013/08/07	2013/08/09	AB SOP-00040 AB SOP-00036	CCME PHC-CWS
CCME Hydrocarbons (F2-F4 in soil)	2	2013/08/07	2013/08/10	AB SOP-00040 AB SOP-00036	CCME PHC-CWS
CCME Hydrocarbons (F2-F4 in soil)	1	2013/08/08	2013/08/08	AB SOP-00040 AB SOP-00036	CCME PHC-CWS
CCME Hydrocarbons (F2-F4 in soil)	2	2013/08/09	2013/08/10	AB SOP-00040 AB SOP-00036	CCME PHC-CWS
Elements by ICPMS - Soils	3	2013/08/09	2013/08/10	AB SOP-00043	EPA 200.8
Elements by ICPMS - Soils	1	2013/08/09	2013/08/11	AB SOP-00043	EPA 200.8
Moisture	22	N/A	2013/08/08	AB SOP-00002	CCME PHC-CWS
pH @25C (1:2 Extract)	4	2013/08/09	2013/08/09	AB SOP-00006	SSMA 16.2

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

Encryption Key

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

Geraldyn Gouthro, Client Service Specialist
Email: GGouthro@maxxam.ca
Phone# (780) 577-7173

==========

Your P.O. #: 700266069
Your Project #: 60299674
Site Location: CAM-C

Attention: NICK OKE
AECOM
EDMONTON
17007 - 107 Avenue
, Edmonton, AB
CANADA T5S 1G3

Your C.O.C. #: 40537407, 405374-07-01, 405374-09-01, 405374-10-01

Report Date: 2013/08/26

CERTIFICATE OF ANALYSIS

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

Total cover pages: 2

Maxxam Job #: B367841
Report Date: 2013/08/26

AECOM
Client Project #: 60299674
Site Location: CAM-C
Your P.O. #: 700266069
Sampler Initials: ES

RESULTS OF CHEMICAL ANALYSES OF SOIL

Maxxam ID		HC6020	HC6021	HC6021	HC6022	HC6023		
Sampling Date		2013/08/01 15:30	2013/08/01 16:00	2013/08/01 16:00	2013/08/01 16:00	2013/08/01 15:00		
COC Number		405374-07-01	405374-07-01	405374-07-01	405374-07-01	405374-07-01		
	UNITS	**TP13-58 @ 0.45M**	**TP13-60 @ 0.2M**	**TP13-60 @ 0.2M Lab-Dup**	**TP13-60A @ 0.2M**	**TP13-61 @ 0.22M**	**RDL**	**QC Batch**
Soluble Parameters								
Soluble (2:1) pH	N/A	N/A	8.35	8.38	8.76	9.01	N/A	7063124
Physical Properties								
Moisture	%	2.8	N/A	N/A	N/A	N/A	0.30	7057871

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam ID		HC6024	HC6025	HC6026	HC6027		
Sampling Date		2013/08/01 10:50	2013/08/01 14:45	2013/08/01 14:50	2013/08/01 14:30		
COC Number		405374-07-01	405374-07-01	405374-07-01	405374-07-01		
	UNITS	**TP13-53 @ 0.35M**	**TP13-57 @ 0.25M**	**TP13-57 @ 0.56M**	**TP13-56 @ 0.88M**	**RDL**	**QC Batch**
Physical Properties							
Moisture	%	5.2	6.2	6.0	2.9	0.30	7057871

RDL = Reportable Detection Limit

Maxxam ID		HC6028		HC6029		HC6051	HC6051		
Sampling Date		2013/08/01 14:20		2013/08/01 11:30		2013/08/01 11:20	2013/08/01 11:20		
COC Number		405374-07-01		405374-07-01		405374-09-01	405374-09-01		
	UNITS	**TP13-56 @ 0.6M**	**QC Batch**	**TP13-52 @ 0.65M**	**QC Batch**	**TP13-51 @ 0.7M**	**TP13-51 @ 0.7M Lab-Dup**	**RDL**	**QC Batch**
Physical Properties									
Moisture	%	2.4	7057929	8.8	7057871	13	14	0.30	7058149

RDL = Reportable Detection Limit

Maxxam Job #: B367841
Report Date: 2013/08/26

AECOM
Client Project #: 60299674
Site Location: CAM-C
Your P.O. #: 700266069
Sampler Initials: ES

RESULTS OF CHEMICAL ANALYSES OF SOIL

Maxxam ID		HC6052	HC6053	HC6054	HC6055	HC6056		
Sampling Date		2013/08/01 12:00	2013/08/01 12:05	2013/07/31 18:00	2013/08/01 16:50	2013/07/31 18:00		
COC Number		405374-09-01	405374-09-01	405374-09-01	405374-09-01	405374-09-01		
	UNITS	**TP13-54 @ 0.45M**	**TP13-54 @ 0.57M**	**TP13-39 @ 0.45M**	**TP13-63 @ 0.5M**	**TP13-38 @ 0.5M**	**RDL**	**QC Batch**
Physical Properties								
Moisture	%	3.8	3.5	3.4	2.3	2.0	0.30	7057929

RDL = Reportable Detection Limit

Maxxam ID		HC6057	HC6058	HC6059	HC6070	HC6071		
Sampling Date		2013/07/31 17:45	2013/07/31 17:45	2013/07/31 17:40	2013/07/31 17:30	2013/07/31 17:20		
COC Number		405374-09-01	405374-09-01	405374-09-01	405374-10-01	405374-10-01		
	UNITS	**TP13-37 @ 0.55M**	**TP13-35 @ 0.5M**	**TP13-36 @ 0.6M**	**TP13-34 @ 0.6M**	**TP13-33 @ 1.15M**	**RDL**	**QC Batch**
Physical Properties								
Moisture	%	5.8	3.1	3.1	3.3	2.6	0.30	7057929

RDL = Reportable Detection Limit

Maxxam ID		HC6072	HC6073	HC6074	HC6075		
Sampling Date		2013/07/31 17:20	2013/07/31 17:20	2013/07/31 17:20	2013/07/31 17:10		
COC Number		405374-10-01	405374-10-01	405374-10-01	405374-10-01		
	UNITS	**TP13-33 @ 0.6M**	**TP13-33D @ 0.6M**	**TP13-33 @ 0.05M**	**TP13-32 @ 1.25M**	**RDL**	**QC Batch**
Soluble Parameters							
Soluble (2:1) pH	N/A	N/A	N/A	8.77	N/A	N/A	7063124
Physical Properties							
Moisture	%	4.0	3.8	N/A	4.1	0.30	7058149

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: B367841
Report Date: 2013/08/26

AECOM
Client Project #: 60299674
Site Location: CAM-C
Your P.O. #: 700266069
Sampler Initials: ES

RESULTS OF CHEMICAL ANALYSES OF SOIL

Maxxam ID		HC6076		
Sampling Date		2013/07/31 17:10		
COC Number		405374-10-01		
	UNITS	**TP13-32 @ 0.7M**	**RDL**	**QC Batch**
Physical Properties				
Moisture	%	4.1	0.30	7057871

RDL = Reportable Detection Limit

Maxxam Job #: B367841
Report Date: 2013/08/26

AECOM
Client Project #: 60299674
Site Location: CAM-C
Your P.O. #: 700266069
Sampler Initials: ES

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		HC6020	HC6024	HC6025	HC6026		
Sampling Date		2013/08/01 15:30	2013/08/01 10:50	2013/08/01 14:45	2013/08/01 14:50		
COC Number		405374-07-01	405374-07-01	405374-07-01	405374-07-01		
	UNITS	**TP13-58 @ 0.45M**	**TP13-53 @ 0.35M**	**TP13-57 @ 0.25M**	**TP13-57 @ 0.56M**	**RDL**	**QC Batch**
Ext. Pet. Hydrocarbon							
F2 (C10-C16 Hydrocarbons)	mg/kg	<10	3200	1400	740	10	7059985
F3 (C16-C34 Hydrocarbons)	mg/kg	<50	500	320	280	50	7059985
F4 (C34-C50 Hydrocarbons)	mg/kg	<50	<50	51	<50	50	7059985
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	Yes	N/A	7059985
Surrogate Recovery (%)							
O-TERPHENYL (sur.)	%	94	91	99	91	N/A	7059985

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam ID		HC6027	HC6028	HC6029	HC6051		
Sampling Date		2013/08/01 14:30	2013/08/01 14:20	2013/08/01 11:30	2013/08/01 11:20		
COC Number		405374-07-01	405374-07-01	405374-07-01	405374-09-01		
	UNITS	**TP13-56 @ 0.88M**	**TP13-56 @ 0.6M**	**TP13-52 @ 0.65M**	**TP13-51 @ 0.7M**	**RDL**	**QC Batch**
Ext. Pet. Hydrocarbon							
F2 (C10-C16 Hydrocarbons)	mg/kg	860	240	<10	<10	10	7059985
F3 (C16-C34 Hydrocarbons)	mg/kg	170	80	<50	<50	50	7059985
F4 (C34-C50 Hydrocarbons)	mg/kg	<50	<50	<50	<50	50	7059985
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	Yes	N/A	7059985
Surrogate Recovery (%)							
O-TERPHENYL (sur.)	%	95	90	97	103	N/A	7059985

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: B367841
Report Date: 2013/08/26

AECOM
Client Project #: 60299674
Site Location: CAM-C
Your P.O. #: 700266069
Sampler Initials: ES

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		HC6052	HC6053		HC6054	HC6055		
Sampling Date		2013/08/01 12:00	2013/08/01 12:05		2013/07/31 18:00	2013/08/01 16:50		
COC Number		405374-09-01	405374-09-01		405374-09-01	405374-09-01		
	UNITS	**TP13-54 @ 0.45M**	**TP13-54 @ 0.57M**	**QC Batch**	**TP13-39 @ 0.45M**	**TP13-63 @ 0.5M**	**RDL**	**QC Batch**
Ext. Pet. Hydrocarbon								
F2 (C10-C16 Hydrocarbons)	mg/kg	1900	2200	7059985	<10	56	10	7059532
F3 (C16-C34 Hydrocarbons)	mg/kg	330	380	7059985	<50	<50	50	7059532
F4 (C34-C50 Hydrocarbons)	mg/kg	<50	<50	7059985	<50	<50	50	7059532
Reached Baseline at C50	mg/kg	Yes	Yes	7059985	Yes	Yes	N/A	7059532
Surrogate Recovery (%)								
O-TERPHENYL (sur.)	%	101	86	7059985	121	101	N/A	7059532

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam ID		HC6056	HC6056		HC6057	HC6058		
Sampling Date		2013/07/31 18:00	2013/07/31 18:00		2013/07/31 17:45	2013/07/31 17:45		
COC Number		405374-09-01	405374-09-01		405374-09-01	405374-09-01		
	UNITS	**TP13-38 @ 0.5M**	**TP13-38 @ 0.5M Lab-Dup**	**QC Batch**	**TP13-37 @ 0.55M**	**TP13-35 @ 0.5M**	**RDL**	**QC Batch**
Ext. Pet. Hydrocarbon								
F2 (C10-C16 Hydrocarbons)	mg/kg	<10	<10	7059532	730	<10	10	7059985
F3 (C16-C34 Hydrocarbons)	mg/kg	<50	<50	7059532	<50	<50	50	7059985
F4 (C34-C50 Hydrocarbons)	mg/kg	<50	<50	7059532	<50	<50	50	7059985
Reached Baseline at C50	mg/kg	Yes	Yes	7059532	Yes	Yes	N/A	7059985
Surrogate Recovery (%)								
O-TERPHENYL (sur.)	%	133 (1)	98	7059532	97	89	N/A	7059985

N/A = Not Applicable
RDL = Reportable Detection Limit
(1) Surrogate recovery is outside acceptance criteria. Sample was run in duplicate with acceptable surrogate recoveries

Maxxam Job #: B367841
Report Date: 2013/08/26

AECOM
Client Project #: 60299674
Site Location: CAM-C
Your P.O. #: 700266069
Sampler Initials: ES

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		HC6059	HC6070	HC6070	HC6071		
Sampling Date		2013/07/31 17:40	2013/07/31 17:30	2013/07/31 17:30	2013/07/31 17:20		
COC Number		405374-09-01	405374-10-01	405374-10-01	405374-10-01		
	UNITS	**TP13-36 @ 0.6M**	**TP13-34 @ 0.6M**	**TP13-34 @ 0.6M Lab-Dup**	**TP13-33 @ 1.15M**	**RDL**	**QC Batch**
Ext. Pet. Hydrocarbon							
F2 (C10-C16 Hydrocarbons)	mg/kg	<10	<10	<10	<10	10	7059985
F3 (C16-C34 Hydrocarbons)	mg/kg	<50	<50	<50	<50	50	7059985
F4 (C34-C50 Hydrocarbons)	mg/kg	<50	<50	<50	<50	50	7059985
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	Yes	N/A	7059985
Surrogate Recovery (%)							
O-TERPHENYL (sur.)	%	82	93	105	92	N/A	7059985

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam ID		HC6072	HC6073	HC6075	HC6076		
Sampling Date		2013/07/31 17:20	2013/07/31 17:20	2013/07/31 17:10	2013/07/31 17:10		
COC Number		405374-10-01	405374-10-01	405374-10-01	405374-10-01		
	UNITS	**TP13-33 @ 0.6M**	**TP13-33D @ 0.6M**	**TP13-32 @ 1.25M**	**TP13-32 @ 0.7M**	**RDL**	**QC Batch**
Ext. Pet. Hydrocarbon							
F2 (C10-C16 Hydrocarbons)	mg/kg	<10	<10	2600	<10	10	7059985
F3 (C16-C34 Hydrocarbons)	mg/kg	<50	<50	78	<50	50	7059985
F4 (C34-C50 Hydrocarbons)	mg/kg	<50	<50	<50	<50	50	7059985
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	Yes	N/A	7059985
Surrogate Recovery (%)							
O-TERPHENYL (sur.)	%	84	98	106	94	N/A	7059985

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: B367841
Report Date: 2013/08/26

AECOM
Client Project #: 60299674
Site Location: CAM-C
Your P.O. #: 700266069
Sampler Initials: ES

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		HC6021		HC6022	HC6023	HC6074		
Sampling Date		2013/08/01 16:00		2013/08/01 16:00	2013/08/01 15:00	2013/07/31 17:20		
COC Number		405374-07-01		405374-07-01	405374-07-01	405374-10-01		
	UNITS	**TP13-60 @ 0.2M**	**QC Batch**	**TP13-60A @ 0.2M**	**TP13-61 @ 0.22M**	**TP13-33 @ 0.05M**	**RDL**	**QC Batch**
Elements								
Total Antimony (Sb)	mg/kg	<1.0	7062474	<1.0	<1.0	<1.0	1.0	7062461
Total Arsenic (As)	mg/kg	<1.0	7062474	<1.0	1.2	<1.0	1.0	7062461
Total Barium (Ba)	mg/kg	<10	7062474	<10	12	<10	10	7062461
Total Beryllium (Be)	mg/kg	<0.40	7062474	<0.40	<0.40	<0.40	0.40	7062461
Total Cadmium (Cd)	mg/kg	<0.10	7062474	0.15	<0.10	<0.10	0.10	7062461
Total Chromium (Cr)	mg/kg	2.5	7062474	4.0	7.9	2.5	1.0	7062461
Total Cobalt (Co)	mg/kg	<1.0	7062474	1.2	1.7	<1.0	1.0	7062461
Total Copper (Cu)	mg/kg	<5.0	7062474	<5.0	<5.0	<5.0	5.0	7062461
Total Lead (Pb)	mg/kg	2.9	7062474	4.4	3.5	8.4	1.0	7062461
Total Mercury (Hg)	mg/kg	<0.050	7062474	<0.050	<0.050	<0.050	0.050	7062461
Total Molybdenum (Mo)	mg/kg	<0.40	7062474	<0.40	<0.40	<0.40	0.40	7062461
Total Nickel (Ni)	mg/kg	1.9	7062474	2.5	4.2	1.5	1.0	7062461
Total Selenium (Se)	mg/kg	<0.50	7062474	<0.50	<0.50	<0.50	0.50	7062461
Total Silver (Ag)	mg/kg	<1.0	7062474	<1.0	<1.0	<1.0	1.0	7062461
Total Thallium (Tl)	mg/kg	<0.30	7062474	<0.30	<0.30	<0.30	0.30	7062461
Total Tin (Sn)	mg/kg	<1.0	7062474	<1.0	<1.0	<1.0	1.0	7062461
Total Uranium (U)	mg/kg	<1.0	7062474	<1.0	<1.0	<1.0	1.0	7062461
Total Vanadium (V)	mg/kg	5.4	7062474	7.9	9.1	5.4	1.0	7062461
Total Zinc (Zn)	mg/kg	<10	7062474	14	23	<10	10	7062461

RDL = Reportable Detection Limit

Maxxam Job #: B367841
Report Date: 2013/08/26

AECOM
Client Project #: 60299674
Site Location: CAM-C
Your P.O. #: 700266069
Sampler Initials: ES

VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		HC6020	HC6024	HC6025	HC6025		
Sampling Date		2013/08/01 15:30	2013/08/01 10:50	2013/08/01 14:45	2013/08/01 14:45		
COC Number		405374-07-01	405374-07-01	405374-07-01	405374-07-01		
	UNITS	**TP13-58 @ 0.45M**	**TP13-53 @ 0.35M**	**TP13-57 @ 0.25M**	**TP13-57 @ 0.25M Lab-Dup**	**RDL**	**QC Batch**
Volatiles							
Benzene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	7058139
Toluene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	7058139
Ethylbenzene	mg/kg	<0.010	0.023	<0.010	<0.010	0.010	7058139
Xylenes (Total)	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	7058139
m & p-Xylene	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	7058139
o-Xylene	mg/kg	<0.020	0.020	<0.020	<0.020	0.020	7058139
F1 (C6-C10) - BTEX	mg/kg	<12	190	<12	<12	12	7058139
(C6-C10)	mg/kg	<12	190	<12	<12	12	7058139
Surrogate Recovery (%)							
1,4-Difluorobenzene (sur.)	%	103	91	119	90	N/A	7058139
4-BROMOFLUOROBENZENE (sur.)	%	89	110	88	105	N/A	7058139
D10-ETHYLBENZENE (sur.)	%	72	83	115	89	N/A	7058139
D4-1,2-DICHLOROETHANE (sur.)	%	103	87	109	83	N/A	7058139

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: B367841
Report Date: 2013/08/26

AECOM
Client Project #: 60299674
Site Location: CAM-C
Your P.O. #: 700266069
Sampler Initials: ES

VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		HC6026	HC6027	HC6028	HC6029		
Sampling Date		2013/08/01 14:50	2013/08/01 14:30	2013/08/01 14:20	2013/08/01 11:30		
COC Number		405374-07-01	405374-07-01	405374-07-01	405374-07-01		
	UNITS	**TP13-57 @ 0.56M**	**TP13-56 @ 0.88M**	**TP13-56 @ 0.6M**	**TP13-52 @ 0.65M**	**RDL**	**QC Batch**
Volatiles							
Benzene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	7058139
Toluene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	7058139
Ethylbenzene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	7058139
Xylenes (Total)	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	7058139
m & p-Xylene	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	7058139
o-Xylene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	7058139
F1 (C6-C10) - BTEX	mg/kg	<12	<12	<12	<12	12	7058139
(C6-C10)	mg/kg	<12	<12	<12	<12	12	7058139
Surrogate Recovery (%)							
1,4-Difluorobenzene (sur.)	%	110	94	112	94	N/A	7058139
4-BROMOFLUOROBENZENE (sur.)	%	88	134	87	110	N/A	7058139
D10-ETHYLBENZENE (sur.)	%	106	109	108	92	N/A	7058139
D4-1,2-DICHLOROETHANE (sur.)	%	109	80	111	82	N/A	7058139

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: B367841
Report Date: 2013/08/26

AECOM
Client Project #: 60299674
Site Location: CAM-C
Your P.O. #: 700266069
Sampler Initials: ES

VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		HC6051		HC6052	HC6052		
Sampling Date		2013/08/01 11:20		2013/08/01 12:00	2013/08/01 12:00		
COC Number		405374-09-01		405374-09-01	405374-09-01		
	UNITS	**TP13-51 @ 0.7M**	**QC Batch**	**TP13-54 @ 0.45M**	**TP13-54 @ 0.45M Lab-Dup**	**RDL**	**QC Batch**
Volatiles							
Benzene	mg/kg	<0.0050	7058139	<0.0050	<0.0050	0.0050	7058154
Toluene	mg/kg	<0.020	7058139	<0.020	<0.020	0.020	7058154
Ethylbenzene	mg/kg	<0.010	7058139	<0.010	<0.010	0.010	7058154
Xylenes (Total)	mg/kg	<0.040	7058139	<0.040	<0.040	0.040	7058154
m & p-Xylene	mg/kg	<0.040	7058139	<0.040	<0.040	0.040	7058154
o-Xylene	mg/kg	<0.020	7058139	<0.020	<0.020	0.020	7058154
F1 (C6-C10) - BTEX	mg/kg	<12	7058139	65	62	12	7058154
(C6-C10)	mg/kg	<12	7058139	65	62	12	7058154
Surrogate Recovery (%)							
1,4-Difluorobenzene (sur.)	%	96	7058139	98	99	N/A	7058154
4-BROMOFLUOROBENZENE (sur.)	%	104	7058139	101	101	N/A	7058154
D10-ETHYLBENZENE (sur.)	%	80	7058139	104	109	N/A	7058154
D4-1,2-DICHLOROETHANE (sur.)	%	86	7058139	108	107	N/A	7058154

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: B367841
Report Date: 2013/08/26

AECOM
Client Project #: 60299674
Site Location: CAM-C
Your P.O. #: 700266069
Sampler Initials: ES

VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		HC6053	HC6054	HC6055	HC6056		
Sampling Date		2013/08/01 12:05	2013/07/31 18:00	2013/08/01 16:50	2013/07/31 18:00		
COC Number		405374-09-01	405374-09-01	405374-09-01	405374-09-01		
	UNITS	**TP13-54 @ 0.57M**	**TP13-39 @ 0.45M**	**TP13-63 @ 0.5M**	**TP13-38 @ 0.5M**	**RDL**	**QC Batch**
Volatiles							
Benzene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	7058139
Toluene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	7058139
Ethylbenzene	mg/kg	0.018	<0.010	<0.010	<0.010	0.010	7058139
Xylenes (Total)	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	7058139
m & p-Xylene	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	7058139
o-Xylene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	7058139
F1 (C6-C10) - BTEX	mg/kg	150	<12	<12	<12	12	7058139
(C6-C10)	mg/kg	150	<12	<12	<12	12	7058139
Surrogate Recovery (%)							
1,4-Difluorobenzene (sur.)	%	88	94	96	98	N/A	7058139
4-BROMOFLUOROBENZENE (sur.)	%	108	106	102	101	N/A	7058139
D10-ETHYLBENZENE (sur.)	%	84	84	82	81	N/A	7058139
D4-1,2-DICHLOROETHANE (sur.)	%	82	82	86	88	N/A	7058139

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: B367841
Report Date: 2013/08/26

AECOM
Client Project #: 60299674
Site Location: CAM-C
Your P.O. #: 700266069
Sampler Initials: ES

VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		HC6057	HC6058	HC6059	HC6070		
Sampling Date		2013/07/31 17:45	2013/07/31 17:45	2013/07/31 17:40	2013/07/31 17:30		
COC Number		405374-09-01	405374-09-01	405374-09-01	405374-10-01		
	UNITS	**TP13-37 @ 0.55M**	**TP13-35 @ 0.5M**	**TP13-36 @ 0.6M**	**TP13-34 @ 0.6M**	**RDL**	**QC Batch**
Volatiles							
Benzene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	7058139
Toluene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	7058139
Ethylbenzene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	7058139
Xylenes (Total)	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	7058139
m & p-Xylene	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	7058139
o-Xylene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	7058139
F1 (C6-C10) - BTEX	mg/kg	<12	<12	<12	<12	12	7058139
(C6-C10)	mg/kg	<12	<12	<12	<12	12	7058139
Surrogate Recovery (%)							
1,4-Difluorobenzene (sur.)	%	100	115	99	103	N/A	7058139
4-BROMOFLUOROBENZENE (sur.)	%	98	85	98	94	N/A	7058139
D10-ETHYLBENZENE (sur.)	%	77	111	78	78	N/A	7058139
D4-1,2-DICHLOROETHANE (sur.)	%	91	114	91	94	N/A	7058139

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: B367841
Report Date: 2013/08/26

AECOM
Client Project #: 60299674
Site Location: CAM-C
Your P.O. #: 700266069
Sampler Initials: ES

VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		HC6071	HC6072	HC6073	HC6075		
Sampling Date		2013/07/31 17:20	2013/07/31 17:20	2013/07/31 17:20	2013/07/31 17:10		
COC Number		405374-10-01	405374-10-01	405374-10-01	405374-10-01		
	UNITS	**TP13-33 @ 1.15M**	**TP13-33 @ 0.6M**	**TP13-33D @ 0.6M**	**TP13-32 @ 1.25M**	**RDL**	**QC Batch**
Volatiles							
Benzene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	7058139
Toluene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	7058139
Ethylbenzene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	7058139
Xylenes (Total)	mg/kg	<0.040	<0.040	<0.040	0.047	0.040	7058139
m & p-Xylene	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	7058139
o-Xylene	mg/kg	<0.020	<0.020	<0.020	0.047	0.020	7058139
F1 (C6-C10) - BTEX	mg/kg	<12	<12	<12	110	12	7058139
(C6-C10)	mg/kg	<12	<12	<12	110	12	7058139
Surrogate Recovery (%)							
1,4-Difluorobenzene (sur.)	%	100	101	101	92	N/A	7058139
4-BROMOFLUOROBENZENE (sur.)	%	94	92	94	117	N/A	7058139
D10-ETHYLBENZENE (sur.)	%	77	76	75	82	N/A	7058139
D4-1,2-DICHLOROETHANE (sur.)	%	91	92	93	86	N/A	7058139

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: B367841
Report Date: 2013/08/26

AECOM
Client Project #: 60299674
Site Location: CAM-C
Your P.O. #: 700266069
Sampler Initials: ES

VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		HC6076		
Sampling Date		2013/07/31 17:10		
COC Number		405374-10-01		
	UNITS	**TP13-32 @ 0.7M**	**RDL**	**QC Batch**
Volatiles				
Benzene	mg/kg	<0.0050	0.0050	7058154
Toluene	mg/kg	<0.020	0.020	7058154
Ethylbenzene	mg/kg	<0.010	0.010	7058154
Xylenes (Total)	mg/kg	<0.040	0.040	7058154
m & p-Xylene	mg/kg	<0.040	0.040	7058154
o-Xylene	mg/kg	<0.020	0.020	7058154
F1 (C6-C10) - BTEX	mg/kg	<12	12	7058154
(C6-C10)	mg/kg	<12	12	7058154
Surrogate Recovery (%)				
1,4-Difluorobenzene (sur.)	%	97	N/A	7058154
4-BROMOFLUOROBENZENE (sur.)	%	92	N/A	7058154
D10-ETHYLBENZENE (sur.)	%	127	N/A	7058154
D4-1,2-DICHLOROETHANE (sur.)	%	104	N/A	7058154

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: B367841
Report Date: 2013/08/26

AECOM
Client Project #: 60299674
Site Location: CAM-C
Your P.O. #: 700266069
Sampler Initials: ES

General Comments

SEE ATTACHED REPORT FOR PCB RESULTS.

Results relate only to the items tested.

AECOM
Attention: NICK OKE
Client Project #: 60299674
P.O. #: 700266069
Site Location: CAM-C

Quality Assurance Report

Maxxam Job Number: CB367841

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7057871	MWC	Method Blank	Moisture	2013/08/08	<0.30		%	
		RPD	Moisture	2013/08/08	3.0		%	20
7057929	MWC	Method Blank	Moisture	2013/08/08	<0.30		%	
		RPD	Moisture	2013/08/08	9.8		%	20
7058139	MZ	Matrix Spike						
		[HC6025-02]	1,4-Difluorobenzene (sur.)	2013/08/09		99	%	60 - 140
			4-BROMOFLUOROBENZENE (sur.)	2013/08/09		122	%	60 - 140
			D10-ETHYLBENZENE (sur.)	2013/08/09		96	%	60 - 130
			D4-1,2-DICHLOROETHANE (sur.)	2013/08/09		81	%	60 - 140
			Benzene	2013/08/09		71	%	60 - 140
			Toluene	2013/08/09		78	%	60 - 140
			Ethylbenzene	2013/08/09		91	%	60 - 140
			m & p-Xylene	2013/08/09		92	%	60 - 140
			o-Xylene	2013/08/09		96	%	60 - 140
			(C6-C10)	2013/08/09		108	%	60 - 140
		Spiked Blank	1,4-Difluorobenzene (sur.)	2013/08/09		98	%	60 - 140
			4-BROMOFLUOROBENZENE (sur.)	2013/08/09		102	%	60 - 140
			D10-ETHYLBENZENE (sur.)	2013/08/09		118	%	60 - 130
			D4-1,2-DICHLOROETHANE (sur.)	2013/08/09		102	%	60 - 140
			Benzene	2013/08/09		113	%	60 - 140
			Toluene	2013/08/09		107	%	60 - 140
			Ethylbenzene	2013/08/09		128	%	60 - 140
			m & p-Xylene	2013/08/09		130	%	60 - 140
			o-Xylene	2013/08/09		128	%	60 - 140
			(C6-C10)	2013/08/09		111	%	60 - 140
		Method Blank	1,4-Difluorobenzene (sur.)	2013/08/09		98	%	60 - 140
			4-BROMOFLUOROBENZENE (sur.)	2013/08/09		94	%	60 - 140
			D10-ETHYLBENZENE (sur.)	2013/08/09		73	%	60 - 130
			D4-1,2-DICHLOROETHANE (sur.)	2013/08/09		99	%	60 - 140
			Benzene	2013/08/09	<0.0050		mg/kg	
			Toluene	2013/08/09	<0.020		mg/kg	
			Ethylbenzene	2013/08/09	<0.010		mg/kg	
			Xylenes (Total)	2013/08/09	<0.040		mg/kg	
			m & p-Xylene	2013/08/09	<0.040		mg/kg	
			o-Xylene	2013/08/09	<0.020		mg/kg	
			F1 (C6-C10) - BTEX	2013/08/09	<12		mg/kg	
			(C6-C10)	2013/08/09	<12		mg/kg	
		RPD [HC6025-02]	Benzene	2013/08/09	NC		%	50
			Toluene	2013/08/09	NC		%	50
			Ethylbenzene	2013/08/09	NC		%	50
			Xylenes (Total)	2013/08/09	NC		%	50
			m & p-Xylene	2013/08/09	NC		%	50
			o-Xylene	2013/08/09	NC		%	50
			F1 (C6-C10) - BTEX	2013/08/09	NC		%	50
			(C6-C10)	2013/08/09	NC		%	50
7058149	MWC	Method Blank	Moisture	2013/08/08	<0.30		%	
		RPD [HC6051-02]	Moisture	2013/08/08	7.9		%	20
7058154	MZ	Matrix Spike						
		[HC6052-02]	1,4-Difluorobenzene (sur.)	2013/08/09		103	%	60 - 140
			4-BROMOFLUOROBENZENE (sur.)	2013/08/09		98	%	60 - 140
			D10-ETHYLBENZENE (sur.)	2013/08/09		118	%	60 - 130
			D4-1,2-DICHLOROETHANE (sur.)	2013/08/09		117	%	60 - 140
			Benzene	2013/08/09		115	%	60 - 140
			Toluene	2013/08/09		113	%	60 - 140
			Ethylbenzene	2013/08/09		120	%	60 - 140

AECOM
Attention: NICK OKE
Client Project #: 60299674
P.O. #: 700266069
Site Location: CAM-C

Quality Assurance Report (Continued)

Maxxam Job Number: CB367841

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7058154	MZ	Matrix Spike						
		[HC6052-02]	m & p-Xylene	2013/08/09		119	%	60 - 140
			o-Xylene	2013/08/09		118	%	60 - 140
			(C6-C10)	2013/08/09		67	%	60 - 140
		Spiked Blank	1,4-Difluorobenzene (sur.)	2013/08/09		100	%	60 - 140
			4-BROMOFLUOROBENZENE (sur.)	2013/08/09		115	%	60 - 140
			D10-ETHYLBENZENE (sur.)	2013/08/09		120	%	60 - 130
			D4-1,2-DICHLOROETHANE (sur.)	2013/08/09		116	%	60 - 140
			Benzene	2013/08/09		112	%	60 - 140
			Toluene	2013/08/09		109	%	60 - 140
			Ethylbenzene	2013/08/09		118	%	60 - 140
			m & p-Xylene	2013/08/09		116	%	60 - 140
			o-Xylene	2013/08/09		113	%	60 - 140
			(C6-C10)	2013/08/09		107	%	60 - 140
		Method Blank	1,4-Difluorobenzene (sur.)	2013/08/09		96	%	60 - 140
			4-BROMOFLUOROBENZENE (sur.)	2013/08/09		108	%	60 - 140
			D10-ETHYLBENZENE (sur.)	2013/08/09		112	%	60 - 130
			D4-1,2-DICHLOROETHANE (sur.)	2013/08/09		106	%	60 - 140
			Benzene	2013/08/09	<0.0050		mg/kg	
			Toluene	2013/08/09	<0.020		mg/kg	
			Ethylbenzene	2013/08/09	<0.010		mg/kg	
			Xylenes (Total)	2013/08/09	<0.040		mg/kg	
			m & p-Xylene	2013/08/09	<0.040		mg/kg	
			o-Xylene	2013/08/09	<0.020		mg/kg	
			F1 (C6-C10) - BTEX	2013/08/09	<12		mg/kg	
			(C6-C10)	2013/08/09	<12		mg/kg	
		RPD [HC6052-02]	Benzene	2013/08/09	NC		%	50
			Toluene	2013/08/09	NC		%	50
			Ethylbenzene	2013/08/09	NC		%	50
			Xylenes (Total)	2013/08/09	NC		%	50
			m & p-Xylene	2013/08/09	NC		%	50
			o-Xylene	2013/08/09	NC		%	50
			F1 (C6-C10) - BTEX	2013/08/09	5.3		%	50
			(C6-C10)	2013/08/09	5.3		%	50
7059532	DO1	Matrix Spike						
		[HC6056-01]	O-TERPHENYL (sur.)	2013/08/08		107	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2013/08/08		106	%	50 - 130
			F3 (C16-C34 Hydrocarbons)	2013/08/08		113	%	50 - 130
			F4 (C34-C50 Hydrocarbons)	2013/08/08		111	%	50 - 130
		Spiked Blank	O-TERPHENYL (sur.)	2013/08/08		110	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2013/08/08		110	%	70 - 130
			F3 (C16-C34 Hydrocarbons)	2013/08/08		117	%	70 - 130
			F4 (C34-C50 Hydrocarbons)	2013/08/08		117	%	70 - 130
		Method Blank	O-TERPHENYL (sur.)	2013/08/08		112	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2013/08/08	<10		mg/kg	
			F3 (C16-C34 Hydrocarbons)	2013/08/08	<50		mg/kg	
			F4 (C34-C50 Hydrocarbons)	2013/08/08	<50		mg/kg	
		RPD [HC6056-01]	F2 (C10-C16 Hydrocarbons)	2013/08/08	NC		%	50
			F3 (C16-C34 Hydrocarbons)	2013/08/08	NC		%	50
			F4 (C34-C50 Hydrocarbons)	2013/08/08	NC		%	50
7059985	DO1	Matrix Spike						
		[HC6070-01]	O-TERPHENYL (sur.)	2013/08/08		82	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2013/08/08		81	%	50 - 130
			F3 (C16-C34 Hydrocarbons)	2013/08/08		88	%	50 - 130
			F4 (C34-C50 Hydrocarbons)	2013/08/08		88	%	50 - 130

AECOM
Attention: NICK OKE
Client Project #: 60299674
P.O. #: 700266069
Site Location: CAM-C

Quality Assurance Report (Continued)

Maxxam Job Number: CB367841

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7059985	DO1	Spiked Blank	O-TERPHENYL (sur.)	2013/08/08		95	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2013/08/08		94	%	70 - 130
			F3 (C16-C34 Hydrocarbons)	2013/08/08		102	%	70 - 130
			F4 (C34-C50 Hydrocarbons)	2013/08/08		102	%	70 - 130
		Method Blank	O-TERPHENYL (sur.)	2013/08/08		94	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2013/08/08	<10		mg/kg	
			F3 (C16-C34 Hydrocarbons)	2013/08/08	<50		mg/kg	
			F4 (C34-C50 Hydrocarbons)	2013/08/08	<50		mg/kg	
		RPD [HC6070-01]	F2 (C10-C16 Hydrocarbons)	2013/08/08	NC		%	50
			F3 (C16-C34 Hydrocarbons)	2013/08/08	NC		%	50
			F4 (C34-C50 Hydrocarbons)	2013/08/08	NC		%	50
7062461	ST4	Matrix Spike	Total Antimony (Sb)	2013/08/09		101	%	75 - 125
			Total Arsenic (As)	2013/08/09		100	%	75 - 125
			Total Barium (Ba)	2013/08/09		NC	%	75 - 125
			Total Beryllium (Be)	2013/08/09		95	%	75 - 125
			Total Cadmium (Cd)	2013/08/09		99	%	75 - 125
			Total Chromium (Cr)	2013/08/09		113	%	75 - 125
			Total Cobalt (Co)	2013/08/09		105	%	75 - 125
			Total Copper (Cu)	2013/08/09		99	%	75 - 125
			Total Lead (Pb)	2013/08/09		91	%	75 - 125
			Total Mercury (Hg)	2013/08/09		104	%	75 - 125
			Total Molybdenum (Mo)	2013/08/09		103	%	75 - 125
			Total Nickel (Ni)	2013/08/09		105	%	75 - 125
			Total Selenium (Se)	2013/08/09		102	%	75 - 125
			Total Silver (Ag)	2013/08/09		90	%	75 - 125
			Total Thallium (Tl)	2013/08/09		93	%	75 - 125
			Total Tin (Sn)	2013/08/09		104	%	75 - 125
			Total Uranium (U)	2013/08/09		98	%	75 - 125
			Total Vanadium (V)	2013/08/09		120	%	75 - 125
			Total Zinc (Zn)	2013/08/09		NC	%	75 - 125
		QC Standard	Total Arsenic (As)	2013/08/09		118	%	50 - 150
			Total Barium (Ba)	2013/08/09		107	%	69 - 131
			Total Chromium (Cr)	2013/08/09		118	%	41 - 159
			Total Cobalt (Co)	2013/08/09		114	%	75 - 125
			Total Copper (Cu)	2013/08/09		108	%	73 - 127
			Total Lead (Pb)	2013/08/09		99	%	54 - 146
			Total Nickel (Ni)	2013/08/09		125	%	61 - 139
			Total Vanadium (V)	2013/08/09		144	%	50 - 150
			Total Zinc (Zn)	2013/08/09		116	%	72 - 128
		Spiked Blank	Total Antimony (Sb)	2013/08/09		106	%	75 - 125
			Total Arsenic (As)	2013/08/09		103	%	75 - 125
			Total Barium (Ba)	2013/08/09		109	%	75 - 125
			Total Beryllium (Be)	2013/08/09		106	%	75 - 125
			Total Cadmium (Cd)	2013/08/09		105	%	75 - 125
			Total Chromium (Cr)	2013/08/09		122	%	75 - 125
			Total Cobalt (Co)	2013/08/09		117	%	75 - 125
			Total Copper (Cu)	2013/08/09		111	%	75 - 125
			Total Lead (Pb)	2013/08/09		100	%	75 - 125
			Total Mercury (Hg)	2013/08/09		94	%	75 - 125
			Total Molybdenum (Mo)	2013/08/09		104	%	75 - 125
			Total Nickel (Ni)	2013/08/09		116	%	75 - 125
			Total Selenium (Se)	2013/08/09		107	%	75 - 125
			Total Silver (Ag)	2013/08/09		97	%	75 - 125
			Total Thallium (Tl)	2013/08/09		101	%	75 - 125
			Total Tin (Sn)	2013/08/09		105	%	75 - 125

AECOM
Attention: NICK OKE
Client Project #: 60299674
P.O. #: 700266069
Site Location: CAM-C

Quality Assurance Report (Continued)

Maxxam Job Number: CB367841

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7062461	ST4	Spiked Blank	Total Uranium (U)	2013/08/09		110	%	75 - 125
			Total Vanadium (V)	2013/08/09		123	%	75 - 125
			Total Zinc (Zn)	2013/08/09		110	%	75 - 125
		Method Blank	Total Antimony (Sb)	2013/08/09	<1.0		mg/kg	
			Total Arsenic (As)	2013/08/09	<1.0		mg/kg	
			Total Barium (Ba)	2013/08/09	<10		mg/kg	
			Total Beryllium (Be)	2013/08/09	<0.40		mg/kg	
			Total Cadmium (Cd)	2013/08/09	<0.10		mg/kg	
			Total Chromium (Cr)	2013/08/09	1.2, RDL=1.0		mg/kg	
			Total Cobalt (Co)	2013/08/09	<1.0		mg/kg	
			Total Copper (Cu)	2013/08/09	<5.0		mg/kg	
			Total Lead (Pb)	2013/08/09	<1.0		mg/kg	
			Total Mercury (Hg)	2013/08/09	<0.050		mg/kg	
			Total Molybdenum (Mo)	2013/08/09	<0.40		mg/kg	
			Total Nickel (Ni)	2013/08/09	<1.0		mg/kg	
			Total Selenium (Se)	2013/08/09	<0.50		mg/kg	
			Total Silver (Ag)	2013/08/09	<1.0		mg/kg	
			Total Thallium (Tl)	2013/08/09	<0.30		mg/kg	
			Total Tin (Sn)	2013/08/09	<1.0		mg/kg	
			Total Uranium (U)	2013/08/09	<1.0		mg/kg	
			Total Vanadium (V)	2013/08/09	<1.0		mg/kg	
			Total Zinc (Zn)	2013/08/09	<10		mg/kg	
		RPD	Total Antimony (Sb)	2013/08/09	NC		%	35
			Total Arsenic (As)	2013/08/09	NC		%	35
			Total Barium (Ba)	2013/08/09	4.8		%	35
			Total Beryllium (Be)	2013/08/09	NC		%	35
			Total Cadmium (Cd)	2013/08/09	NC		%	35
			Total Chromium (Cr)	2013/08/09	1.7		%	35
			Total Cobalt (Co)	2013/08/09	NC		%	35
			Total Copper (Cu)	2013/08/09	NC		%	35
			Total Lead (Pb)	2013/08/09	NC		%	35
			Total Mercury (Hg)	2013/08/09	NC		%	35
			Total Molybdenum (Mo)	2013/08/09	NC		%	35
			Total Nickel (Ni)	2013/08/09	2.6		%	35
			Total Selenium (Se)	2013/08/09	NC		%	35
			Total Silver (Ag)	2013/08/09	NC		%	35
			Total Thallium (Tl)	2013/08/09	NC		%	35
			Total Tin (Sn)	2013/08/09	NC		%	35
			Total Uranium (U)	2013/08/09	NC		%	35
			Total Vanadium (V)	2013/08/09	6.1		%	35
			Total Zinc (Zn)	2013/08/09	NC		%	35
7062474	ST4	Matrix Spike	Total Antimony (Sb)	2013/08/10		85	%	75 - 125
			Total Arsenic (As)	2013/08/10		90	%	75 - 125
			Total Barium (Ba)	2013/08/10		NC	%	75 - 125
			Total Beryllium (Be)	2013/08/10		86	%	75 - 125
			Total Cadmium (Cd)	2013/08/10		88	%	75 - 125
			Total Chromium (Cr)	2013/08/10		99	%	75 - 125
			Total Cobalt (Co)	2013/08/10		85	%	75 - 125
			Total Copper (Cu)	2013/08/10		87	%	75 - 125
			Total Lead (Pb)	2013/08/10		88	%	75 - 125
			Total Mercury (Hg)	2013/08/10		100	%	75 - 125
			Total Molybdenum (Mo)	2013/08/10		91	%	75 - 125
			Total Nickel (Ni)	2013/08/10		90	%	75 - 125
			Total Selenium (Se)	2013/08/10		91	%	75 - 125
			Total Silver (Ag)	2013/08/10		82	%	75 - 125

AECOM
Attention: NICK OKE
Client Project #: 60299674
P.O. #: 700266069
Site Location: CAM-C

Quality Assurance Report (Continued)

Maxxam Job Number: CB367841

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7062474	ST4	Matrix Spike	Total Thallium (Tl)	2013/08/10		88	%	75 - 125
			Total Tin (Sn)	2013/08/10		90	%	75 - 125
			Total Uranium (U)	2013/08/10		88	%	75 - 125
			Total Vanadium (V)	2013/08/10		NC	%	75 - 125
			Total Zinc (Zn)	2013/08/10		NC	%	75 - 125
		QC Standard	Total Arsenic (As)	2013/08/10		107	%	50 - 150
			Total Barium (Ba)	2013/08/10		97	%	69 - 131
			Total Chromium (Cr)	2013/08/10		109	%	41 - 159
			Total Cobalt (Co)	2013/08/10		98	%	75 - 125
			Total Copper (Cu)	2013/08/10		98	%	73 - 127
			Total Lead (Pb)	2013/08/10		97	%	54 - 146
			Total Nickel (Ni)	2013/08/10		109	%	61 - 139
			Total Vanadium (V)	2013/08/10		130	%	50 - 150
			Total Zinc (Zn)	2013/08/10		109	%	72 - 128
		Spiked Blank	Total Antimony (Sb)	2013/08/10		96	%	75 - 125
			Total Arsenic (As)	2013/08/10		95	%	75 - 125
			Total Barium (Ba)	2013/08/10		91	%	75 - 125
			Total Beryllium (Be)	2013/08/10		100	%	75 - 125
			Total Cadmium (Cd)	2013/08/10		95	%	75 - 125
			Total Chromium (Cr)	2013/08/10		94	%	75 - 125
			Total Cobalt (Co)	2013/08/10		91	%	75 - 125
			Total Copper (Cu)	2013/08/10		91	%	75 - 125
			Total Lead (Pb)	2013/08/10		98	%	75 - 125
			Total Mercury (Hg)	2013/08/10		93	%	75 - 125
			Total Molybdenum (Mo)	2013/08/10		96	%	75 - 125
			Total Nickel (Ni)	2013/08/10		91	%	75 - 125
			Total Selenium (Se)	2013/08/10		96	%	75 - 125
			Total Silver (Ag)	2013/08/10		86	%	75 - 125
			Total Thallium (Tl)	2013/08/10		96	%	75 - 125
			Total Tin (Sn)	2013/08/10		91	%	75 - 125
			Total Uranium (U)	2013/08/10		100	%	75 - 125
			Total Vanadium (V)	2013/08/10		102	%	75 - 125
			Total Zinc (Zn)	2013/08/10		96	%	75 - 125
		Method Blank	Total Antimony (Sb)	2013/08/10	<1.0		mg/kg	
			Total Arsenic (As)	2013/08/10	<1.0		mg/kg	
			Total Barium (Ba)	2013/08/10	<10		mg/kg	
			Total Beryllium (Be)	2013/08/10	<0.40		mg/kg	
			Total Cadmium (Cd)	2013/08/10	<0.10		mg/kg	
			Total Chromium (Cr)	2013/08/10	<1.0		mg/kg	
			Total Cobalt (Co)	2013/08/10	<1.0		mg/kg	
			Total Copper (Cu)	2013/08/10	<5.0		mg/kg	
			Total Lead (Pb)	2013/08/10	<1.0		mg/kg	
			Total Mercury (Hg)	2013/08/10	<0.050		mg/kg	
			Total Molybdenum (Mo)	2013/08/10	<0.40		mg/kg	
			Total Nickel (Ni)	2013/08/10	<1.0		mg/kg	
			Total Selenium (Se)	2013/08/10	<0.50		mg/kg	
			Total Silver (Ag)	2013/08/10	<1.0		mg/kg	
			Total Thallium (Tl)	2013/08/10	<0.30		mg/kg	
			Total Tin (Sn)	2013/08/10	<1.0		mg/kg	
			Total Uranium (U)	2013/08/10	<1.0		mg/kg	
			Total Vanadium (V)	2013/08/10	1.7, RDL=1.0		mg/kg	
			Total Zinc (Zn)	2013/08/10	<10		mg/kg	
		RPD	Total Antimony (Sb)	2013/08/10	NC		%	35
			Total Arsenic (As)	2013/08/10	7.2		%	35
			Total Barium (Ba)	2013/08/10	2.4		%	35

AECOM
Attention: NICK OKE
Client Project #: 60299674
P.O. #: 700266069
Site Location: CAM-C

Quality Assurance Report (Continued)

Maxxam Job Number: CB367841

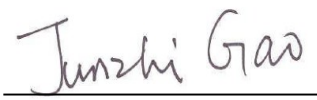
QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7062474	ST4	RPD	Total Beryllium (Be)	2013/08/10	NC		%	35
			Total Cadmium (Cd)	2013/08/10	NC		%	35
			Total Chromium (Cr)	2013/08/10	7.1		%	35
			Total Cobalt (Co)	2013/08/10	15.6		%	35
			Total Copper (Cu)	2013/08/10	NC		%	35
			Total Lead (Pb)	2013/08/10	3.1		%	35
			Total Mercury (Hg)	2013/08/10	NC		%	35
			Total Molybdenum (Mo)	2013/08/10	NC		%	35
			Total Nickel (Ni)	2013/08/10	3.3		%	35
			Total Selenium (Se)	2013/08/10	NC		%	35
			Total Silver (Ag)	2013/08/10	NC		%	35
			Total Thallium (Tl)	2013/08/10	NC		%	35
			Total Tin (Sn)	2013/08/10	NC		%	35
			Total Uranium (U)	2013/08/10	NC		%	35
			Total Vanadium (V)	2013/08/10	1.4		%	35
			Total Zinc (Zn)	2013/08/10	2.2		%	35
7063124	SMZ	QC Standard	Soluble (2:1) pH	2013/08/09		101	%	98 - 102
		Spiked Blank	Soluble (2:1) pH	2013/08/09		100	%	97 - 103
		RPD [HC6021-01]	Soluble (2:1) pH	2013/08/09	0.4		%	5

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

Validation Signature Page

Maxxam Job #: B367841

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



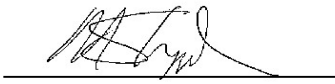
Janet Gao, Senior Analyst, Organics Department



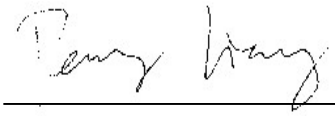
Jeanette Olivares, Senior Analyst



Luba Shymushovska, Senior Analyst, Organic Department



Michael Sheppard, Organics Supervisor



Peng Liang, Analyst II

==========

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

Maxxam Analytics International Corporation o/a Maxxam Analytics
9331 - 48th Street, Edmonton, Alberta Canada T6B 2R4 Tel:(780) 577-7100 Toll-free:800-653-6266 Fax:780-450-4187 www.maxxam.ca

CHAIN OF CUSTODY RECORD

INVOICE INFORMATION:		REPORT INFORMATION (if differs from invoice):		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#2597 PUBLIC WORKS & GOVERNMENT SERVI	Company Name:	#25925 AECOM	Quotation #:		MAXXAM JOB #:	BOTTLE ORDER #:
Contact Name:	Jessie Hoyt	Contact Name:	NICK OKE	P.O. #:	700266069	367841	405374
Address:	TELUS TOWER NORTH, 5th FLOOR 10025 JASP	Address:	17007 - 107 Avenue	Project #:	60299674	CHAIN OF CUSTODY #:	PROJECT MANAGER:
	EDMONTON AB T5J 1S6		, Edmonton AB T5S 1G3	Project Name:	CAM-C	C#405374-07-01	Geraldyn Gouthro
Phone:	(780)497-3786 Fax: (780)497-3842	Phone:	(780)486-4057 Fax:	Site #:			
Email:	jessie.hoyt@psgsc-tpsgc.gc.ca	Email:	nick.oke@aecom.com eva.schultz@aecom.com	Sampled By:	E.Schultz/T.McCallum		

REGULATORY CRITERIA: ☐ ATI ☑ CCME ☐ OTHER

SPECIAL INSTRUCTIONS

ANALYSIS REQUESTED (Please be specific):

TURNAROUND TIME (TAT) REQUIRED:

PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS

Regular (Standard) TAT: ☑
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests are > 5 days - contact your Project Manager for details

Job Specific Rush TAT (if applies to entire submission) ☐
Date Required: _____
Rush Confirmation Number: _____ (call lab for #)

SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Metals Field Filtered ? (Y / N)	PHC F1-4	Metals	PCBs	# of Bottles	Comments
1		TP13-58 @ 0.45m	Aug. 1	3:30	Soil		✓			2	
2		TP13-60 @ 0.2m		4:00				✓	✓	2	
3		TP13-60a @ 0.2m		4:00				✓	✓	2	
4		TP13-61 @ 0.22m		3:00				✓	✓	2	
5		TP13-53 @ 0.35m		10:50			✓			2	
6		TP13-57 @ 0.25m		2:45			✓			2	RECEIVED IN YELLOWKNIFE By: [signature] 09:25 2013-08-04
7		TP13-57 @ 0.55m		2:50			✓			2	
8		TP13-56 @ 0.88m		2:30			✓			2	On ACTR Form
9		TP13-56 @ 0.6m		2:20			✓			2	Temp: 1.1
10		TP13-52 @ 0.45m		11:30			✓		✓	2	

*RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	# Jars Used and Not Submitted	Laboratory Use Only: Time Sensitive	Temperature (°C) on Receipt	Custody Seal Intact on Cooler?
Eva Schultz	~~Aug. 1~~ Aug. 2	10am	~~Paul~~ Adepeju Alabi	2013/08/06	0740		☐		☐ Yes ☐ No

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.
** ALL SAMPLES ARE HELD FOR 60 DAYS AFTER SAMPLE RECEIPT, FOR SPECIAL REQUESTS CONTACT YOUR PROJECT MANAGER

White: Maxxam Yellow: Client

15.

Maxxam Analytics International Corporation o/a Maxxam Analytics
9331 - 43th Street, Edmonton, Alberta Canada T6B 2R4 Tel:(780) 577-7100 Toll-free:800-653-6266 Fax:780-450-4187 www.maxxam.ca

CHAIN OF CUSTODY RECORD

INVOICE INFORMATION:		REPORT INFORMATION (if differs from invoice):		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#2597 PUBLIC WORKS & GOVERNMENT SERVI	Company Name:	#25925 AECOM	Quotation #:		MAXXAM JOB #:	BOTTLE ORDER #:
Contact Name:	Jessie Hoyt	Contact Name:	NICK OKE	P.O. #:	700266069	367841	405374
Address:	TELUS TOWER NORTH, 5th FLOOR 10025 JASP	Address:	17007 - 107 Avenue	Project #:	60299674	CHAIN OF CUSTODY #:	PROJECT MANAGER:
	EDMONTON AB T5J 1S6		, Edmonton AB T5S 1G3	Project Name:		C#405374-09-01	Geraldyn Gouthro
Phone:	(780)497-3786 Fax: (780)497-3842	Phone:	(780)486-4057 Fax:	Site #:			
Email:	jessie.hoyt@psgsc-tpsgc.gc.ca	Email:	nick.oke@aecom.com / eva.schultz@aecom.com	Sampled By:	E. Schultz / J. McCallam		

REGULATORY CRITERIA:
- [x] ATI
- [x] CCME
- [x] OTHER

SPECIAL INSTRUCTIONS

SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

ANALYSIS REQUESTED (Please be specific):

TURNAROUND TIME (TAT) REQUIRED:

PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS

Regular (Standard) TAT: [x]
(will be applied if Rush TAT is not specified):
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Please note: Standard TAT for certain tests are > 5 days - contact your Project Manager for details

Job Specific Rush TAT (if applies to entire submission) [ ]
Date Required: _____
Rush Confirmation Number: _____ *(call lab for #)*

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Metals Field Filtered ? (Y / N)	metals	PHC	PCB	# of Bottles	Comments
1		TPB-51 @ 0.7m	Aug.1	11:20	Soil			✓	✓	2	
2		TPB-54 @ 0.45m	↓	12:00	↓			✓		2	
3		TPB-54 @ 0.57m	↓	12:05	↓			✓		2	
4		TPB-39 @ 0.45m	July 31	6pm	✓			✓		2	
5		TPB-63 @ 0.5m	Aug.1	4:50	↓			✓		2	
6		TPB-39 @ 0.5m	July 31	6:00	↓			✓		2	RECEIVED IN YELLOWKNIFE By: MOquila 09:25 2013-08-04
7		TPB-37 @ 0.55m	↓	5:45	↓			✓		2	
8		TPB-35 @ 0.5m	↓	5:45	↓			✓		2	ON ACTR FORM
9		TPB-36 @ 0.6m	↓	5:40	↓			✓		2	Temp: 1 1
10		TPB-35 @ 0.5m	↓	5:45	↓			✓		2	

*RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	# Jars Used and Not Submitted	Laboratory Use Only: Time Sensitive	Temperature (°C) on Receipt	Custody Seal Intact on Cooler?
Eva Schultz	Aug.2	10am	Adeyeye Afisi	2013/08/06	0740		☐		☐ Yes ☐ No

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.
** ALL SAMPLES ARE HELD FOR 60 DAYS AFTER SAMPLE RECEIPT, FOR SPECIAL REQUESTS CONTACT YOUR PROJECT MANAGER

White: Maxxam Yellow: Client

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9331 - 48th Street, Edmonton, Alberta Canada T6B 2R4 Tel:(780) 577-7100 Toll-free:800-653-6266 Fax:780-450-4187 www.maxxam.ca

CHAIN OF CUSTODY RECORD

INVOICE INFORMATION:		REPORT INFORMATION (if differs from invoice):		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#2597 PUBLIC WORKS & GOVERNMENT SERVI	Company Name:	#25925 AECOM	Quotation #:		MAXXAM JOB #:	BOTTLE ORDER #:
Contact Name:	Jessie Hoyt	Contact Name:	NICK OKE	P.O. #:	700266069	367841	405374
Address:	TELUS TOWER NORTH, 5th FLOOR 10025 JASP	Address:	17007 - 107 Avenue	Project #:	60299674	CHAIN OF CUSTODY #:	PROJECT MANAGER:
	EDMONTON AB T5J 1S6		, Edmonton AB T5S 1G3	Project Name:		C#405374-10-01	Geraldyn Gouthro
Phone:	(780)497-3786 Fax: (780)497-3842	Phone:	(780)486-4057 Fax:	Site #:			
Email:	jessie.hoyt@psgsc-tpsgc.gc.ca	Email:	nick.oke@aecom.com /eva.schultz@aecom.com	Sampled By:	E. Schultz / J. McCallum		

REGULATORY CRITERIA:
- [ ] ATI
- [x] CCME
- [x] OTHER

SPECIAL INSTRUCTIONS

SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

ANALYSIS REQUESTED (Please be specific):

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PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS

Regular (Standard) TAT: [x]
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests are > 5 days - contact your Project Manager for details

Job Specific Rush TAT (if applies to entire submission) [ ]
Date Required: _____
Rush Confirmation Number: _____ (call lab for #)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Metals Field Filtered ? (Y / N)	PHC F1-4	Metals	PCBs	# of Bottles	Comments
1		TP13-34@0.6m	July31	5:30	soil		✓			2	
2		TP13-33@1.15m	↓	5:20	↓		✓			2	
3		TP13-33@0.6m	↓	5:20	↓		✓			2	
4		TP13-330@0.6m	↓	5:20	↓		✓			2	
5		TP13-33@0.05m	↓	5:20	↓			✓	✓	1	
6		TP13-32@1.25m	↓	5:10	↓		✓			2	
7		TPB-32@0.7m	↓	5:10	↓		✓			1	RECEIVED IN YELLOWKNIFE By: 09:25 2013-08-04
8											
9											
10											Temp: ON ACTR FORM

*RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	# Jars Used and Not Submitted	Laboratory Use Only: Time Sensitive	Temperature (°C) on Receipt	Custody Seal Intact on Cooler?
Eva Schultz	Aug.2	10a	Adepgn Alesi	2013/08/06	0740		[ ]		[ ] Yes [ ] No

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.
** ALL SAMPLES ARE HELD FOR 60 DAYS AFTER SAMPLE RECEIPT, FOR SPECIAL REQUESTS CONTACT YOUR PROJECT MANAGER

White: Maxxam Yellow: Client

Your Project #: B367841
Your C.O.C. #: NA

Attention: Geraldlyn Gouthro
Maxxam Analytics
2021 41st Ave NE
Calgary, AB
T2E 6P2

Report Date: 2013/08/14

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B3C9567
Received: 2013/08/08, 08:54

Sample Matrix: Soil
Samples Received: 6

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Moisture	5	N/A	2013/08/09	CAM SOP-00445	R.Carter,1993
Moisture	1	N/A	2013/08/12	CAM SOP-00445	R.Carter,1993
Polychlorinated Biphenyl in Soil	6	2013/08/13	2013/08/14	CAM SOP-00309	SW846 8082

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

Encryption Key

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

Shaun Nowickyj,
Email: SNowickyj@maxxam.ca
Phone# (905) 817-5700

==========

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Total cover pages: 1

Maxxam Job #: B3C9567
Report Date: 2013/08/14

Maxxam Analytics
Client Project #: B367841

RESULTS OF ANALYSES OF SOIL

Maxxam ID		SO3114	SO3115	SO3116	SO3117	SO3118		
Sampling Date		2013/08/01 16:00	2013/08/01 16:00	2013/08/01 15:00	2013/08/01 11:30	2013/07/31 17:20		
COC Number		NA	NA	NA	NA	NA		
	Units	**HC6021\TP13-60 @ 0.2M**	**HC6022\TP13-60A @ 0.2M**	**HC6023\TP13-61 @ 0.22M**	**HC6029\TP13-52 @ 0.65M**	**HC6074\TP13-33 @ 0.05M**	**RDL**	**QC Batch**
Moisture	%	7.8	6.7	2.2	11	3.0	1.0	3309770

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		SO7637		
Sampling Date		2013/08/01 11:20		
COC Number		NA		
	Units	**HC6051\TP13-51 @ 0.7M**	**RDL**	**QC Batch**
Moisture	%	12	1.0	3310851

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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

Maxxam Job #: B3C9567
Report Date: 2013/08/14

Maxxam Analytics
Client Project #: B367841

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		SO3114	SO3115	SO3116	SO3117		
Sampling Date		2013/08/01 16:00	2013/08/01 16:00	2013/08/01 15:00	2013/08/01 11:30		
COC Number		NA	NA	NA	NA		
	Units	**HC6021\TP13-60 @ 0.2M**	**HC6022\TP13-60A @ 0.2M**	**HC6023\TP13-61 @ 0.22M**	**HC6029\TP13-52 @ 0.65M**	**RDL**	**QC Batch**
Aroclor 1016	ug/g	<0.010	<0.010	<0.010	<0.010	0.010	3312022
Aroclor 1221	ug/g	<0.010	<0.010	<0.010	<0.010	0.010	3312022
Aroclor 1232	ug/g	<0.010	<0.010	<0.010	<0.010	0.010	3312022
Aroclor 1242	ug/g	<0.010	<0.010	<0.010	<0.010	0.010	3312022
Aroclor 1248	ug/g	<0.010	<0.010	<0.010	<0.010	0.010	3312022
Aroclor 1254	ug/g	0.014	<0.010	<0.010	<0.010	0.010	3312022
Aroclor 1260	ug/g	<0.010	<0.010	<0.010	<0.010	0.010	3312022
Aroclor 1262	ug/g	<0.010	<0.010	<0.010	<0.010	0.010	3312022
Aroclor 1268	ug/g	<0.010	<0.010	<0.010	<0.010	0.010	3312022
Total PCB	ug/g	0.014	<0.010	<0.010	<0.010	0.010	3312022
Surrogate Recovery (%)							
Decachlorobiphenyl	%	88	90	83	103	N/A	3312022

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

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Maxxam Job #: B3C9567
Report Date: 2013/08/14

Maxxam Analytics
Client Project #: B367841

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		SO3118	SO7637		
Sampling Date		2013/07/31 17:20	2013/08/01 11:20		
COC Number		NA	NA		
	Units	**HC6074\TP13-33 @ 0.05M**	**HC6051\TP13-51 @ 0.7M**	**RDL**	**QC Batch**
Aroclor 1016	ug/g	<0.010	<0.010	0.010	3312022
Aroclor 1221	ug/g	<0.010	<0.010	0.010	3312022
Aroclor 1232	ug/g	<0.010	<0.010	0.010	3312022
Aroclor 1242	ug/g	<0.010	<0.010	0.010	3312022
Aroclor 1248	ug/g	<0.010	<0.010	0.010	3312022
Aroclor 1254	ug/g	<0.010	<0.010	0.010	3312022
Aroclor 1260	ug/g	<0.010	<0.010	0.010	3312022
Aroclor 1262	ug/g	<0.010	<0.010	0.010	3312022
Aroclor 1268	ug/g	<0.010	<0.010	0.010	3312022
Total PCB	ug/g	<0.010	<0.010	0.010	3312022
Surrogate Recovery (%)					
Decachlorobiphenyl	%	90	87	N/A	3312022

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

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Maxxam Job #: B3C9567
Report Date: 2013/08/14

Maxxam Analytics
Client Project #: B367841

Test Summary

Maxxam ID SO3114 **Collected** 2013/08/01
Sample ID HC6021\TP13-60 @ 0.2M **Shipped**
Matrix Soil **Received** 2013/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Moisture	BAL	3309770	N/A	2013/08/09	Chamika Deeyagaha
Polychlorinated Biphenyl in Soil	GC/ECD	3312022	2013/08/13	2013/08/14	Sarah Huang

Maxxam ID SO3115 **Collected** 2013/08/01
Sample ID HC6022\TP13-60A @ 0.2M **Shipped**
Matrix Soil **Received** 2013/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Moisture	BAL	3309770	N/A	2013/08/09	Chamika Deeyagaha
Polychlorinated Biphenyl in Soil	GC/ECD	3312022	2013/08/13	2013/08/14	Sarah Huang

Maxxam ID SO3116 **Collected** 2013/08/01
Sample ID HC6023\TP13-61 @ 0.22M **Shipped**
Matrix Soil **Received** 2013/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Moisture	BAL	3309770	N/A	2013/08/09	Chamika Deeyagaha
Polychlorinated Biphenyl in Soil	GC/ECD	3312022	2013/08/13	2013/08/14	Sarah Huang

Maxxam ID SO3117 **Collected** 2013/08/01
Sample ID HC6029\TP13-52 @ 0.65M **Shipped**
Matrix Soil **Received** 2013/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Moisture	BAL	3309770	N/A	2013/08/09	Chamika Deeyagaha
Polychlorinated Biphenyl in Soil	GC/ECD	3312022	2013/08/13	2013/08/14	Sarah Huang

Maxxam ID SO3118 **Collected** 2013/07/31
Sample ID HC6074\TP13-33 @ 0.05M **Shipped**
Matrix Soil **Received** 2013/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Moisture	BAL	3309770	N/A	2013/08/09	Chamika Deeyagaha
Polychlorinated Biphenyl in Soil	GC/ECD	3312022	2013/08/13	2013/08/14	Sarah Huang

Maxxam ID SO7637 **Collected** 2013/08/01
Sample ID HC6051\TP13-51 @ 0.7M **Shipped**
Matrix Soil **Received** 2013/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Moisture	BAL	3310851	N/A	2013/08/12	Anita Cheema
Polychlorinated Biphenyl in Soil	GC/ECD	3312022	2013/08/13	2013/08/14	Sarah Huang

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Maxxam Job #: B3C9567
Report Date: 2013/08/14

Maxxam Analytics
Client Project #: B367841

Package 1	6.0°C

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

GENERAL COMMENTS

Results relate only to the items tested.

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

Maxxam Analytics
Attention: Geraldlyn Gouthro
Client Project #: B367841
P.O. #:
Site Location:

Quality Assurance Report

Maxxam Job Number: MB3C9567

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
3309770	IJ1	RPD - Sample/Sample Dup	Moisture	2013/08/09	NC		%	20
3310851	MYG	RPD - Sample/Sample Dup	Moisture	2013/08/12	0		%	20
3312022	SHG	Matrix Spike	Decachlorobiphenyl	2013/08/14		100	%	60 - 130
			Aroclor 1260	2013/08/14		116	%	60 - 130
			Total PCB	2013/08/14		116	%	60 - 130
		Spiked Blank	Decachlorobiphenyl	2013/08/14		104	%	60 - 130
			Aroclor 1260	2013/08/14		110	%	60 - 130
			Total PCB	2013/08/14		110	%	60 - 130
		Method Blank	Decachlorobiphenyl	2013/08/14		92	%	60 - 130
			Aroclor 1016	2013/08/14	<0.010		ug/g	
			Aroclor 1221	2013/08/14	<0.010		ug/g	
			Aroclor 1232	2013/08/14	<0.010		ug/g	
			Aroclor 1242	2013/08/14	<0.010		ug/g	
			Aroclor 1248	2013/08/14	<0.010		ug/g	
			Aroclor 1254	2013/08/14	<0.010		ug/g	
			Aroclor 1260	2013/08/14	<0.010		ug/g	
			Aroclor 1262	2013/08/14	<0.010		ug/g	
			Aroclor 1268	2013/08/14	<0.010		ug/g	
			Total PCB	2013/08/14	<0.010		ug/g	
		RPD - Sample/Sample Dup	Aroclor 1242	2013/08/14	NC		%	50
			Aroclor 1248	2013/08/14	NC		%	50
			Aroclor 1254	2013/08/14	NC		%	50
			Aroclor 1260	2013/08/14	NC		%	50
			Total PCB	2013/08/14	NC		%	50

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.
Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.

Validation Signature Page

Maxxam Job #: B3C9567

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

Charles Ancker, B.Sc., M.Sc., C.Chem, Senior Analyst

Ewa Pranjic, M.Sc., C.Chem, Scientific Specialist

==========

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Maxxam

Your P.O. #: 700266069
Your Project #: 60299674
Site Location: CAM C

Attention: NICK OKE
AECOM
EDMONTON
17007 - 107 Avenue
, Edmonton, AB
CANADA T5S 1G3

Your C.O.C. #: 40537417, 405374-17-01, 405374-18-01, 405374-19-01

Report Date: 2013/08/26

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B367894
Received: 2013/08/06, 07:40

Sample Matrix: Soil
Samples Received: 29

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Elements by ICPMS - Soils (1)	1	2013/08/09	2013/08/10	AB SOP-00043	EPA 200.8
Elements by ICPMS - Soils (1)	26	2013/08/10	2013/08/11	AB SOP-00043	EPA 200.8
Moisture (1)	2	N/A	2013/08/09	AB SOP-00002	CCME PHC-CWS
pH @25C (1:2 Extract) (1)	1	2013/08/09	2013/08/09	AB SOP-00006	SSMA 16.2
pH @25C (1:2 Extract) (1)	26	2013/08/10	2013/08/10	AB SOP-00006	SSMA 16.2
Particle Size by Sieve (75 micron) (1)	2	N/A	2013/08/09	AB SOP-00022	SSMA 55.4

Sample Matrix: Water
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Alkalinity @25C (pp, total), CO3,HCO3,OH (1)	1	N/A	2013/08/07	AB SOP-00005	SM 2320-B
Cadmium - low level CCME (Total) (1)	1	2013/08/07	2013/08/12	AB SOP-00043	EPA 200.8
Chloride by Automated Colourimetry (1)	1	N/A	2013/08/09	AB SOP-00020	SSMA 4500 CL- E
Conductivity @25C (1)	1	N/A	2013/08/07	AB SOP-00005	SM 2510-B
Fluoride (1)	1	N/A	2013/08/07	AB SOP-00005	SM 4500-F C
Hardness (1)	1	N/A	2013/08/10	AB WI-00065	SM 2340B
Mercury - Low Level (Total) (1)	1	2013/08/09	2013/08/09	CAL SOP-00007	EPA 1631
Elements by ICP (Dissolved) Lab Filtered (1)	1	N/A	2013/08/09	AB SOP-00042	EPA 200.7
Elements by ICP - Total (1)	1	2013/08/09	2013/08/09	AB SOP-00042	EPA 200.7
Elements by ICPMS - Total (1)	1	2013/08/09	2013/08/10	AB SOP-00043	EPA 200.8
Ion Balance (1)	1	N/A	2013/08/08	AB WI-00065	SM 1030E
Nitrate and Nitrite (1)	1	N/A	2013/08/08	AB SOP-00023	SM4110B
Nitrate + Nitrite-N (calculated) (1)	1	N/A	2013/08/08	AB SOP-00023	SM 4110-B
Nitrogen, (Nitrite, Nitrate) by IC (1)	1	N/A	2013/08/07	AB SOP-00023	SM 4110-B
Polychlorinated Biphenyls (1)	1	2013/08/08	2013/08/09	CAL SOP-00149	EPA 3510C, EPA 8082A
pH @25°C (Alkalinity titrator) (1)	1	N/A	2013/08/07	AB SOP-00005	SM 4500-H+B
Sulphate by Automated Colourimetry (1)	1	N/A	2013/08/09	AB SOP-00018	EPA 375.4
Total Dissolved Solids (Calculated) (1)	1	N/A	2013/08/10	AB WI-00065	SM 1030E
Turbidity (1)	1	N/A	2013/08/08	CAL SOP-00081	SM 2130B

Your P.O. #: 700266069
Your Project #: 60299674
Site Location: CAM C

Attention: NICK OKE
AECOM
EDMONTON
17007 - 107 Avenue
, Edmonton, AB
CANADA T5S 1G3

Your C.O.C. #: 40537417, 405374-17-01, 405374-18-01, 405374-19-01

Report Date: 2013/08/26

CERTIFICATE OF ANALYSIS

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

(1) This test was performed by Maxxam Calgary Environmental

Encryption Key

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

Geraldyn Gouthro, Client Service Specialist
Email: GGouthro@maxxam.ca
Phone# (780) 577-7173

==========

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Maxxam Job #: B367894
Report Date: 2013/08/26

AECOM
Client Project #: 60299674
Site Location: CAM C
Your P.O. #: 700266069
Sampler Initials: ES

RESULTS OF CHEMICAL ANALYSES OF SOIL

Maxxam ID		HC6259	HC6259	HC6261	HC6262	HC6263	HC6264	
Sampling Date		2013/08/01	2013/08/01	2013/08/01	2013/08/01	2013/08/01	2013/08/01	
COC Number		405374-17-01	405374-17-01	405374-17-01	405374-17-01	405374-17-01	405374-17-01	
	UNITS	**TP13-42 @ 0.5M**	**TP13-42 @ 0.5M Lab-Dup**	**TP13-43 @ 0.05M**	**TP13-43 @ 0.5M**	**TP13-44 @ 0.45M**	**TP13-53 @ 0.05M**	**QC Batch**
Soluble Parameters								
Soluble (2:1) pH	N/A	8.90	8.93	8.25	8.73	8.69	7.86	7067159

Maxxam ID		HC6265	HC6266	HC6267	HC6268	HC6269	HC6295	
Sampling Date		2013/08/01 14:30	2013/08/01	2013/08/01	2013/08/01	2013/08/01	2013/08/01	
COC Number		405374-17-01	405374-17-01	405374-17-01	405374-17-01	405374-17-01	405374-18-01	
	UNITS	**TP13-55 @ 0.45M**	**TP13-45 @ 0.05M**	**TP13-56 @ 0.05M**	**TP13-45 @ 0.5M**	**TP13-49 @ 0.45M**	**TP13-57 @ 0.05M**	**QC Batch**
Soluble Parameters								
Soluble (2:1) pH	N/A	8.28	8.44	8.17	8.54	8.64	8.01	7067159

Maxxam ID		HC6296	HC6297	HC6298	HC6299	HC6300	
Sampling Date		2013/08/01 15:30	2013/08/01 15:45	2013/07/31	2013/07/31	2013/07/31	
COC Number		405374-18-01	405374-18-01	405374-18-01	405374-18-01	405374-18-01	
	UNITS	**TP13-60 @ 0.2M**	**TP13-62 @ 0.25M**	**TP13-30 @ 0.05M**	**TP13-33 @ 0.05M**	**TP13-34 @ 0.05M**	**QC Batch**
Soluble Parameters							
Soluble (2:1) pH	N/A	8.36	8.11	8.56	8.25	8.09	7067159

Maxxam Job #: B367894
Report Date: 2013/08/26

AECOM
Client Project #: 60299674
Site Location: CAM C
Your P.O. #: 700266069
Sampler Initials: ES

RESULTS OF CHEMICAL ANALYSES OF SOIL

Maxxam ID		HC6301	HC6302	HC6303	HC6341	HC6342		
Sampling Date		2013/07/31 18:15	2013/07/31	2013/07/31	2013/08/02 10:00	2013/08/02 10:00		
COC Number		405374-18-01	405374-18-01	405374-18-01	405374-19-01	405374-19-01		
	UNITS	**TP13-39 @ 0.05M**	**BEACH POL @ 0.6M**	**BEACH POL @ <1.0M**	**TP13-65 @ 0.05M**	**TP13-65 @ 0.3M**	**RDL**	**QC Batch**
Soluble Parameters								
Soluble (2:1) pH	N/A	8.26	N/A	N/A	7.67	7.59	N/A	7067159
Physical Properties								
Moisture	%	N/A	3.3	3.7	N/A	N/A	0.30	7062632
Sieve - Pan	%	N/A	12	13	N/A	N/A	0.20	7062263
Sieve - #200 (>0.075mm)	%	N/A	88	87	N/A	N/A	0.20	7062263
Grain Size	%	N/A	COARSE	COARSE	N/A	N/A	0.20	7062263

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam ID		HC6343		HC6344	HC6345	HC6346		
Sampling Date		2013/08/02 10:00		2013/08/02 10:00	2013/08/02 10:30	2013/08/02 10:30		
COC Number		405374-19-01		405374-19-01	405374-19-01	405374-19-01		
	UNITS	**TP13-65F @ 0.3M**	**QC Batch**	**TP13-65 @ 0.5M**	**TP13-66 @ 0.05M**	**TP13-66 @ 0.5M**	**RDL**	**QC Batch**
Soluble Parameters								
Soluble (2:1) pH	N/A	7.58	7067159	8.12	8.31	8.77	N/A	7067164

RDL = Reportable Detection Limit

Maxxam ID		HC6347	HC6348	HC6348	HC6349		
Sampling Date		2013/08/02 10:30	2013/08/02 10:45	2013/08/02 10:45	2013/08/02 10:45		
COC Number		405374-19-01	405374-19-01	405374-19-01	405374-19-01		
	UNITS	**TP13-66 @ 0.3M**	**TP13-67 @ 0.05M**	**TP13-67 @ 0.05M Lab-Dup**	**TP13-67 @ 0.3M**	**RDL**	**QC Batch**
Soluble Parameters							
Soluble (2:1) pH	N/A	8.51	7.51	7.59	8.53	N/A	7067164

RDL = Reportable Detection Limit

Maxxam Job #: B367894
Report Date: 2013/08/26

AECOM
Client Project #: 60299674
Site Location: CAM C
Your P.O. #: 700266069
Sampler Initials: ES

RESULTS OF CHEMICAL ANALYSES OF SOIL

Maxxam ID		HC6350		
Sampling Date		2013/08/01 10:45		
COC Number		405374-19-01		
	UNITS	**TP13-23 @ 0.05**	**RDL**	**QC Batch**
Soluble Parameters				
Soluble (2:1) pH	N/A	8.49	N/A	7063124

RDL = Reportable Detection Limit

Maxxam Job #: B367894
Report Date: 2013/08/26

AECOM
Client Project #: 60299674
Site Location: CAM C
Your P.O. #: 700266069
Sampler Initials: ES

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		HC6259	HC6259	HC6261	HC6262	HC6263	HC6264		
Sampling Date		2013/08/01	2013/08/01	2013/08/01	2013/08/01	2013/08/01	2013/08/01		
COC Number		405374-17-01	405374-17-01	405374-17-01	405374-17-01	405374-17-01	405374-17-01		
	UNITS	**TP13-42 @ 0.5M**	**TP13-42 @ 0.5M Lab-Dup**	**TP13-43 @ 0.05M**	**TP13-43 @ 0.5M**	**TP13-44 @ 0.45M**	**TP13-53 @ 0.05M**	**RDL**	**QC Batch**
Elements									
Total Antimony (Sb)	mg/kg	<1.0	<1.0	13	<1.0	<1.0	<1.0	1.0	7066365
Total Arsenic (As)	mg/kg	1.2	<1.0	1.3	1.5	1.1	<1.0	1.0	7066365
Total Barium (Ba)	mg/kg	<10	<10	15	<10	<10	<10	10	7066365
Total Beryllium (Be)	mg/kg	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	0.40	7066365
Total Cadmium (Cd)	mg/kg	<0.10	<0.10	0.84	<0.10	<0.10	0.22	0.10	7066365
Total Chromium (Cr)	mg/kg	3.4	2.9	9.7	2.7	3.1	5.7	1.0	7066365
Total Cobalt (Co)	mg/kg	1.5	1.2	1.6	1.3	1.2	1.3	1.0	7066365
Total Copper (Cu)	mg/kg	7.2	9.0	37	<5.0	<5.0	8.1	5.0	7066365
Total Lead (Pb)	mg/kg	3.6	3.2	65	4.7	5.8	14	1.0	7066365
Total Mercury (Hg)	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	7066365
Total Molybdenum (Mo)	mg/kg	<0.40	<0.40	0.54	<0.40	<0.40	<0.40	0.40	7066365
Total Nickel (Ni)	mg/kg	3.8	3.0	5.1	2.8	3.1	3.0	1.0	7066365
Total Selenium (Se)	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	7066365
Total Silver (Ag)	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	7066365
Total Thallium (Tl)	mg/kg	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	0.30	7066365
Total Tin (Sn)	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	7066365
Total Uranium (U)	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	7066365
Total Vanadium (V)	mg/kg	8.6	6.1	6.7	7.1	5.6	6.5	1.0	7066365
Total Zinc (Zn)	mg/kg	<10	<10	43	<10	<10	77	10	7066365

RDL = Reportable Detection Limit

Maxxam Job #: B367894
Report Date: 2013/08/26

AECOM
Client Project #: 60299674
Site Location: CAM C
Your P.O. #: 700266069
Sampler Initials: ES

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		HC6265	HC6266	HC6267	HC6268	HC6269	HC6295		
Sampling Date		2013/08/01 14:30	2013/08/01	2013/08/01	2013/08/01	2013/08/01	2013/08/01		
COC Number		405374-17-01	405374-17-01	405374-17-01	405374-17-01	405374-17-01	405374-18-01		
	UNITS	**TP13-55 @ 0.45M**	**TP13-45 @ 0.05M**	**TP13-56 @ 0.05M**	**TP13-45 @ 0.5M**	**TP13-49 @ 0.45M**	**TP13-57 @ 0.05M**	**RDL**	**QC Batch**
Elements									
Total Antimony (Sb)	mg/kg	<1.0	1.4	1.3	<1.0	<1.0	<1.0	1.0	7066365
Total Arsenic (As)	mg/kg	1.1	<1.0	1.9	1.1	<1.0	<1.0	1.0	7066365
Total Barium (Ba)	mg/kg	<10	10	15	<10	<10	<10	10	7066365
Total Beryllium (Be)	mg/kg	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	0.40	7066365
Total Cadmium (Cd)	mg/kg	<0.10	0.27	0.11	<0.10	<0.10	<0.10	0.10	7066365
Total Chromium (Cr)	mg/kg	3.0	11	12	3.1	2.6	3.6	1.0	7066365
Total Cobalt (Co)	mg/kg	1.3	1.5	1.5	1.2	<1.0	<1.0	1.0	7066365
Total Copper (Cu)	mg/kg	<5.0	6.8	<5.0	<5.0	<5.0	5.7	5.0	7066365
Total Lead (Pb)	mg/kg	3.2	48	9.9	3.3	2.4	15	1.0	7066365
Total Mercury (Hg)	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	7066365
Total Molybdenum (Mo)	mg/kg	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	0.40	7066365
Total Nickel (Ni)	mg/kg	2.9	3.5	3.7	2.6	2.2	2.2	1.0	7066365
Total Selenium (Se)	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	7066365
Total Silver (Ag)	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	7066365
Total Thallium (Tl)	mg/kg	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	0.30	7066365
Total Tin (Sn)	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	7066365
Total Uranium (U)	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	7066365
Total Vanadium (V)	mg/kg	6.5	7.4	6.2	7.1	4.6	4.8	1.0	7066365
Total Zinc (Zn)	mg/kg	<10	24	55	<10	<10	18	10	7066365

RDL = Reportable Detection Limit

Maxxam Job #: B367894
Report Date: 2013/08/26

AECOM
Client Project #: 60299674
Site Location: CAM C
Your P.O. #: 700266069
Sampler Initials: ES

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		HC6296	HC6297	HC6298	HC6299	HC6300		
Sampling Date		2013/08/01 15:30	2013/08/01 15:45	2013/07/31	2013/07/31	2013/07/31		
COC Number		405374-18-01	405374-18-01	405374-18-01	405374-18-01	405374-18-01		
	UNITS	**TP13-60 @ 0.2M**	**TP13-62 @ 0.25M**	**TP13-30 @ 0.05M**	**TP13-33 @ 0.05M**	**TP13-34 @ 0.05M**	**RDL**	**QC Batch**
Elements								
Total Antimony (Sb)	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	7066365
Total Arsenic (As)	mg/kg	<1.0	1.2	<1.0	<1.0	<1.0	1.0	7066365
Total Barium (Ba)	mg/kg	<10	<10	<10	<10	<10	10	7066365
Total Beryllium (Be)	mg/kg	<0.40	<0.40	<0.40	<0.40	<0.40	0.40	7066365
Total Cadmium (Cd)	mg/kg	<0.10	<0.10	<0.10	0.12	<0.10	0.10	7066365
Total Chromium (Cr)	mg/kg	2.6	4.6	2.4	2.1	2.2	1.0	7066365
Total Cobalt (Co)	mg/kg	1.2	1.6	<1.0	<1.0	<1.0	1.0	7066365
Total Copper (Cu)	mg/kg	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	7066365
Total Lead (Pb)	mg/kg	3.6	3.6	4.5	4.3	5.5	1.0	7066365
Total Mercury (Hg)	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	7066365
Total Molybdenum (Mo)	mg/kg	<0.40	<0.40	<0.40	<0.40	<0.40	0.40	7066365
Total Nickel (Ni)	mg/kg	2.6	3.7	2.2	1.8	1.5	1.0	7066365
Total Selenium (Se)	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	7066365
Total Silver (Ag)	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	7066365
Total Thallium (Tl)	mg/kg	<0.30	<0.30	<0.30	<0.30	<0.30	0.30	7066365
Total Tin (Sn)	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	7066365
Total Uranium (U)	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	7066365
Total Vanadium (V)	mg/kg	7.1	8.8	5.0	4.7	3.9	1.0	7066365
Total Zinc (Zn)	mg/kg	11	10	<10	<10	<10	10	7066365

RDL = Reportable Detection Limit

Maxxam Job #: B367894
Report Date: 2013/08/26

AECOM
Client Project #: 60299674
Site Location: CAM C
Your P.O. #: 700266069
Sampler Initials: ES

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		HC6301	HC6341	HC6342	HC6343		
Sampling Date		2013/07/31 18:15	2013/08/02 10:00	2013/08/02 10:00	2013/08/02 10:00		
COC Number		405374-18-01	405374-19-01	405374-19-01	405374-19-01		
	UNITS	**TP13-39 @ 0.05M**	**TP13-65 @ 0.05M**	**TP13-65 @ 0.3M**	**TP13-65F @ 0.3M**	**RDL**	**QC Batch**
Elements							
Total Antimony (Sb)	mg/kg	<1.0	<1.0	<1.0	<1.0	1.0	7066365
Total Arsenic (As)	mg/kg	1.1	<1.0	<1.0	<1.0	1.0	7066365
Total Barium (Ba)	mg/kg	<10	<10	<10	<10	10	7066365
Total Beryllium (Be)	mg/kg	<0.40	<0.40	<0.40	<0.40	0.40	7066365
Total Cadmium (Cd)	mg/kg	0.12	0.12	<0.10	<0.10	0.10	7066365
Total Chromium (Cr)	mg/kg	3.9	2.0	1.6	1.5	1.0	7066365
Total Cobalt (Co)	mg/kg	1.5	<1.0	<1.0	<1.0	1.0	7066365
Total Copper (Cu)	mg/kg	<5.0	<5.0	<5.0	<5.0	5.0	7066365
Total Lead (Pb)	mg/kg	5.6	5.4	1.3	1.3	1.0	7066365
Total Mercury (Hg)	mg/kg	<0.050	<0.050	<0.050	<0.050	0.050	7066365
Total Molybdenum (Mo)	mg/kg	<0.40	<0.40	<0.40	<0.40	0.40	7066365
Total Nickel (Ni)	mg/kg	3.6	1.3	<1.0	<1.0	1.0	7066365
Total Selenium (Se)	mg/kg	<0.50	<0.50	<0.50	<0.50	0.50	7066365
Total Silver (Ag)	mg/kg	<1.0	<1.0	<1.0	<1.0	1.0	7066365
Total Thallium (Tl)	mg/kg	<0.30	<0.30	<0.30	<0.30	0.30	7066365
Total Tin (Sn)	mg/kg	<1.0	<1.0	<1.0	<1.0	1.0	7066365
Total Uranium (U)	mg/kg	<1.0	<1.0	<1.0	<1.0	1.0	7066365
Total Vanadium (V)	mg/kg	7.1	6.6	4.0	4.1	1.0	7066365
Total Zinc (Zn)	mg/kg	<10	34	<10	<10	10	7066365

RDL = Reportable Detection Limit

Maxxam Job #: B367894
Report Date: 2013/08/26

AECOM
Client Project #: 60299674
Site Location: CAM C
Your P.O. #: 700266069
Sampler Initials: ES

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		HC6344	HC6345	HC6346	HC6347		
Sampling Date		2013/08/02 10:00	2013/08/02 10:30	2013/08/02 10:30	2013/08/02 10:30		
COC Number		405374-19-01	405374-19-01	405374-19-01	405374-19-01		
	UNITS	**TP13-65 @ 0.5M**	**TP13-66 @ 0.05M**	**TP13-66 @ 0.5M**	**TP13-66 @ 0.3M**	**RDL**	**QC Batch**
Elements							
Total Antimony (Sb)	mg/kg	<1.0	<1.0	<1.0	<1.0	1.0	7066261
Total Arsenic (As)	mg/kg	<1.0	<1.0	1.1	<1.0	1.0	7066261
Total Barium (Ba)	mg/kg	<10	<10	<10	<10	10	7066261
Total Beryllium (Be)	mg/kg	<0.40	<0.40	<0.40	<0.40	0.40	7066261
Total Cadmium (Cd)	mg/kg	<0.10	0.16	<0.10	<0.10	0.10	7066261
Total Chromium (Cr)	mg/kg	3.5	4.5	3.8	3.1	1.0	7066261
Total Cobalt (Co)	mg/kg	1.0	1.5	1.3	1.1	1.0	7066261
Total Copper (Cu)	mg/kg	<5.0	<5.0	<5.0	<5.0	5.0	7066261
Total Lead (Pb)	mg/kg	3.2	4.0	2.8	2.6	1.0	7066261
Total Mercury (Hg)	mg/kg	<0.050	<0.050	<0.050	<0.050	0.050	7066261
Total Molybdenum (Mo)	mg/kg	<0.40	<0.40	<0.40	<0.40	0.40	7066261
Total Nickel (Ni)	mg/kg	1.9	3.7	3.0	2.9	1.0	7066261
Total Selenium (Se)	mg/kg	<0.50	<0.50	<0.50	<0.50	0.50	7066261
Total Silver (Ag)	mg/kg	<1.0	<1.0	<1.0	<1.0	1.0	7066261
Total Thallium (Tl)	mg/kg	<0.30	<0.30	<0.30	<0.30	0.30	7066261
Total Tin (Sn)	mg/kg	<1.0	<1.0	<1.0	<1.0	1.0	7066261
Total Uranium (U)	mg/kg	<1.0	<1.0	<1.0	<1.0	1.0	7066261
Total Vanadium (V)	mg/kg	10	7.7	7.2	6.2	1.0	7066261
Total Zinc (Zn)	mg/kg	<10	12	<10	<10	10	7066261

RDL = Reportable Detection Limit

Maxxam Job #: B367894
Report Date: 2013/08/26

AECOM
Client Project #: 60299674
Site Location: CAM C
Your P.O. #: 700266069
Sampler Initials: ES

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		HC6348	HC6348	HC6349		HC6350		
Sampling Date		2013/08/02 10:45	2013/08/02 10:45	2013/08/02 10:45		2013/08/01 10:45		
COC Number		405374-19-01	405374-19-01	405374-19-01		405374-19-01		
	UNITS	**TP13-67 @ 0.05M**	**TP13-67 @ 0.05M Lab-Dup**	**TP13-67 @ 0.3M**	**QC Batch**	**TP13-23 @ 0.05**	**RDL**	**QC Batch**
Elements								
Total Antimony (Sb)	mg/kg	1.1	<1.0	<1.0	7066261	2.1	1.0	7062461
Total Arsenic (As)	mg/kg	<1.0	<1.0	<1.0	7066261	<1.0	1.0	7062461
Total Barium (Ba)	mg/kg	<10	<10	<10	7066261	<10	10	7062461
Total Beryllium (Be)	mg/kg	<0.40	<0.40	<0.40	7066261	<0.40	0.40	7062461
Total Cadmium (Cd)	mg/kg	0.20	0.17	<0.10	7066261	0.46	0.10	7062461
Total Chromium (Cr)	mg/kg	4.3	3.9	4.1	7066261	4.9	1.0	7062461
Total Cobalt (Co)	mg/kg	1.1	1.1	1.3	7066261	1.3	1.0	7062461
Total Copper (Cu)	mg/kg	<5.0	<5.0	<5.0	7066261	<5.0	5.0	7062461
Total Lead (Pb)	mg/kg	5.6	4.8	3.1	7066261	11	1.0	7062461
Total Mercury (Hg)	mg/kg	<0.050	<0.050	<0.050	7066261	<0.050	0.050	7062461
Total Molybdenum (Mo)	mg/kg	<0.40	<0.40	<0.40	7066261	<0.40	0.40	7062461
Total Nickel (Ni)	mg/kg	2.8	2.8	3.5	7066261	2.8	1.0	7062461
Total Selenium (Se)	mg/kg	<0.50	<0.50	<0.50	7066261	<0.50	0.50	7062461
Total Silver (Ag)	mg/kg	<1.0	<1.0	<1.0	7066261	<1.0	1.0	7062461
Total Thallium (Tl)	mg/kg	<0.30	<0.30	<0.30	7066261	<0.30	0.30	7062461
Total Tin (Sn)	mg/kg	2.3	1.8	<1.0	7066261	<1.0	1.0	7062461
Total Uranium (U)	mg/kg	<1.0	<1.0	<1.0	7066261	<1.0	1.0	7062461
Total Vanadium (V)	mg/kg	6.7	6.5	6.9	7066261	8.1	1.0	7062461
Total Zinc (Zn)	mg/kg	13	12	<10	7066261	17	10	7062461

RDL = Reportable Detection Limit

Maxxam Job #: B367894
Report Date: 2013/08/26

AECOM
Client Project #: 60299674
Site Location: CAM C
Your P.O. #: 700266069
Sampler Initials: ES

RESULTS OF CHEMICAL ANALYSES OF WATER

Maxxam ID		HC6304		
Sampling Date		2013/08/02 11:30		
COC Number		405374-18-01		
	UNITS	**FRESHWATER LAKE**	**RDL**	**QC Batch**
Calculated Parameters				
Hardness (CaCO3)	mg/L	130	0.50	7053286
Ion Balance	N/A	1.0	0.010	7053287
Dissolved Nitrate (NO3)	mg/L	<0.013	0.013	7053289
Nitrate plus Nitrite (N)	mg/L	<0.0030	0.0030	7053290
Dissolved Nitrite (NO2)	mg/L	<0.0099	0.0099	7053289
Total Dissolved Solids	mg/L	240	10	7053291
Misc. Inorganics				
Conductivity	uS/cm	480	1.0	7055902
pH	N/A	7.86	N/A	7055904
Low Level Elements				
Total Cadmium (Cd)	ug/L	0.037	0.0050	7053284
Anions				
Alkalinity (PP as CaCO3)	mg/L	<0.50	0.50	7055898
Alkalinity (Total as CaCO3)	mg/L	85	0.50	7055898
Bicarbonate (HCO3)	mg/L	100	0.50	7055898
Carbonate (CO3)	mg/L	<0.50	0.50	7055898
Dissolved Fluoride (F)	mg/L	0.071	0.050	7056484
Hydroxide (OH)	mg/L	<0.50	0.50	7055898
Dissolved Sulphate (SO4)	mg/L	13	1.0	7063646
Dissolved Chloride (Cl)	mg/L	87	1.0	7063634
Nutrients				
Dissolved Nitrite (N)	mg/L	<0.0030	0.0030	7056153
Dissolved Nitrate (N)	mg/L	<0.0030	0.0030	7056153
Physical Properties				
Turbidity	NTU	6.6	0.10	7057780

RDL = Reportable Detection Limit

Maxxam Job #: B367894
Report Date: 2013/08/26

AECOM
Client Project #: 60299674
Site Location: CAM C
Your P.O. #: 700266069
Sampler Initials: ES

POLYCHLORINATED BIPHENYLS BY GC-ECD (WATER)

Maxxam ID		HC6304		
Sampling Date		2013/08/02 11:30		
COC Number		405374-18-01		
	UNITS	**FRESHWATER LAKE**	**RDL**	**QC Batch**
Polychlorinated Biphenyls				
Aroclor 1016	mg/L	<0.000050	0.000050	7057995
Aroclor 1221	mg/L	<0.000050	0.000050	7057995
Aroclor 1232	mg/L	<0.000050	0.000050	7057995
Aroclor 1242	mg/L	<0.000050	0.000050	7057995
Aroclor 1248	mg/L	<0.000050	0.000050	7057995
Aroclor 1254	mg/L	<0.000050	0.000050	7057995
Aroclor 1260	mg/L	<0.000050	0.000050	7057995
Aroclor 1262	mg/L	<0.000050	0.000050	7057995
Aroclor 1268	mg/L	<0.000050	0.000050	7057995
Total Aroclors	mg/L	<0.000050	0.000050	7057995
Surrogate Recovery (%)				
NONACHLOROBIPHENYL (sur.)	%	92	N/A	7057995

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: B367894
Report Date: 2013/08/26

AECOM
Client Project #: 60299674
Site Location: CAM C
Your P.O. #: 700266069
Sampler Initials: ES

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		HC6304		
Sampling Date		2013/08/02 11:30		
COC Number		405374-18-01		
	UNITS	**FRESHWATER LAKE**	**RDL**	**QC Batch**
Elements				
Dissolved Aluminum (Al)	mg/L	0.049	0.040	7064817
Total Aluminum (Al)	mg/L	0.32	0.0030	7064117
Total Antimony (Sb)	mg/L	0.00089	0.00060	7064117
Total Arsenic (As)	mg/L	0.0023	0.00020	7064117
Dissolved Barium (Ba)	mg/L	<0.010	0.010	7064817
Total Barium (Ba)	mg/L	0.078	0.010	7064155
Total Beryllium (Be)	mg/L	<0.0010	0.0010	7064117
Dissolved Boron (B)	mg/L	0.027	0.020	7064817
Total Boron (B)	mg/L	0.14	0.020	7064155
Dissolved Calcium (Ca)	mg/L	24	0.30	7064817
Total Calcium (Ca)	mg/L	54	0.30	7064155
Dissolved Chromium (Cr)	mg/L	<0.010	0.010	7064817
Total Chromium (Cr)	mg/L	<0.0010	0.0010	7064117
Total Cobalt (Co)	mg/L	0.00034	0.00030	7064117
Total Copper (Cu)	mg/L	0.0033	0.00020	7064117
Dissolved Iron (Fe)	mg/L	0.066	0.060	7064817
Total Iron (Fe)	mg/L	0.78	0.060	7064155
Total Lead (Pb)	mg/L	0.00040	0.00020	7064117
Dissolved Lithium (Li)	mg/L	<0.020	0.020	7064817
Total Lithium (Li)	mg/L	<0.020	0.020	7064155
Dissolved Magnesium (Mg)	mg/L	17 (1)	0.20	7064817
Total Magnesium (Mg)	mg/L	13	0.20	7064155
Dissolved Manganese (Mn)	mg/L	<0.0040	0.0040	7064817
Total Manganese (Mn)	mg/L	0.13	0.0040	7064155
Total Molybdenum (Mo)	mg/L	0.035	0.00020	7064117
Total Nickel (Ni)	mg/L	0.0047	0.00050	7064117
Dissolved Phosphorus (P)	mg/L	<0.10	0.10	7064817
Total Phosphorus (P)	mg/L	0.41	0.10	7064155
Dissolved Potassium (K)	mg/L	1.9	0.30	7064817
Total Potassium (K)	mg/L	3.7	0.30	7064155

RDL = Reportable Detection Limit
(1) Dissolved greater than total. Reanalysis yields similar results.

Maxxam Job #: B367894
Report Date: 2013/08/26

AECOM
Client Project #: 60299674
Site Location: CAM C
Your P.O. #: 700266069
Sampler Initials: ES

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		HC6304		
Sampling Date		2013/08/02 11:30		
COC Number		405374-18-01		
	UNITS	**FRESHWATER LAKE**	**RDL**	**QC Batch**
Total Selenium (Se)	mg/L	0.0014	0.00020	7064117
Dissolved Silicon (Si)	mg/L	0.32	0.10	7064817
Total Silicon (Si)	mg/L	3.6	0.10	7064155
Total Silver (Ag)	mg/L	0.00012	0.00010	7064117
Dissolved Sodium (Na)	mg/L	42	0.50	7064817
Total Sodium (Na)	mg/L	72	0.50	7064155
Dissolved Strontium (Sr)	mg/L	0.040	0.020	7064817
Total Strontium (Sr)	mg/L	0.34	0.020	7064155
Dissolved Sulphur (S)	mg/L	3.9	0.20	7064817
Total Sulphur (S)	mg/L	26	0.20	7064155
Total Thallium (Tl)	mg/L	<0.00020	0.00020	7064117
Total Tin (Sn)	mg/L	<0.0010	0.0010	7064117
Total Titanium (Ti)	mg/L	0.0028	0.0010	7064117
Total Uranium (U)	mg/L	0.00053	0.00010	7064117
Total Vanadium (V)	mg/L	0.043	0.0010	7064117
Total Zinc (Zn)	mg/L	0.021	0.0030	7064117
Low Level Elements				
Total Mercury (Hg)	ug/L	<0.0020	0.0020	7063169

RDL = Reportable Detection Limit

Maxxam Job #: B367894
Report Date: 2013/08/26

AECOM
Client Project #: 60299674
Site Location: CAM C
Your P.O. #: 700266069
Sampler Initials: ES

General Comments

SEE ATTACHED REPORT FOR PCB RESULTS.

Results relate only to the items tested.

AECOM
Attention: NICK OKE
Client Project #: 60299674
P.O. #: 700266069
Site Location: CAM C

Quality Assurance Report

Maxxam Job Number: EYKB367894

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7055898	FT2	Spiked Blank	Alkalinity (Total as CaCO3)	2013/08/07		94	%	80 - 120
		Method Blank	Alkalinity (PP as CaCO3)	2013/08/07	<0.50		mg/L	
			Alkalinity (Total as CaCO3)	2013/08/07	<0.50		mg/L	
			Bicarbonate (HCO3)	2013/08/07	<0.50		mg/L	
			Carbonate (CO3)	2013/08/07	<0.50		mg/L	
			Hydroxide (OH)	2013/08/07	<0.50		mg/L	
		RPD	Alkalinity (PP as CaCO3)	2013/08/07	NC		%	20
			Alkalinity (Total as CaCO3)	2013/08/07	0.8		%	20
			Bicarbonate (HCO3)	2013/08/07	0.8		%	20
			Carbonate (CO3)	2013/08/07	NC		%	20
			Hydroxide (OH)	2013/08/07	NC		%	20
7055902	FT2	Spiked Blank	Conductivity	2013/08/07		100	%	90 - 110
		Method Blank	Conductivity	2013/08/07	<1.0		uS/cm	
		RPD	Conductivity	2013/08/07	1.0		%	20
7055904	FT2	Spiked Blank	pH	2013/08/07		100	%	97 - 102
		RPD	pH	2013/08/07	0.2		%	5
7056153	DA4	Matrix Spike	Dissolved Nitrite (N)	2013/08/07		100	%	80 - 120
			Dissolved Nitrate (N)	2013/08/07		100	%	80 - 120
		Spiked Blank	Dissolved Nitrite (N)	2013/08/07		98	%	90 - 110
			Dissolved Nitrate (N)	2013/08/07		98	%	90 - 110
		Method Blank	Dissolved Nitrite (N)	2013/08/07	<0.0030		mg/L	
			Dissolved Nitrate (N)	2013/08/07	0.0058, RDL=0.0030		mg/L	
		RPD	Dissolved Nitrite (N)	2013/08/07	NC		%	20
			Dissolved Nitrate (N)	2013/08/07	NC		%	20
7056484	FT2	Matrix Spike	Dissolved Fluoride (F)	2013/08/07		102	%	80 - 120
		Spiked Blank	Dissolved Fluoride (F)	2013/08/07		99	%	80 - 120
		Method Blank	Dissolved Fluoride (F)	2013/08/07	<0.050		mg/L	
		RPD	Dissolved Fluoride (F)	2013/08/07	NC		%	20
7057780	HE1	Spiked Blank	Turbidity	2013/08/08		97	%	80 - 120
		Method Blank	Turbidity	2013/08/08	<0.10		NTU	
		RPD	Turbidity	2013/08/08	3.2		%	20
7057995	SJ1	Spiked Blank	NONACHLOROBIPHENYL (sur.)	2013/08/09		93	%	30 - 130
			Aroclor 1260	2013/08/09		97	%	30 - 130
		Method Blank	NONACHLOROBIPHENYL (sur.)	2013/08/09		87	%	30 - 130
			Aroclor 1016	2013/08/09	<0.000050		mg/L	
			Aroclor 1221	2013/08/09	<0.000050		mg/L	
			Aroclor 1232	2013/08/09	<0.000050		mg/L	
			Aroclor 1242	2013/08/09	<0.000050		mg/L	
			Aroclor 1248	2013/08/09	<0.000050		mg/L	
			Aroclor 1254	2013/08/09	<0.000050		mg/L	
			Aroclor 1260	2013/08/09	<0.000050		mg/L	
			Aroclor 1262	2013/08/09	<0.000050		mg/L	
			Aroclor 1268	2013/08/09	<0.000050		mg/L	
			Total Aroclors	2013/08/09	<0.000050		mg/L	
7062263	DN6	QC Standard	Sieve - Pan	2013/08/09		99	%	94 - 106
			Sieve - #200 (>0.075mm)	2013/08/09		102	%	86 - 114
		RPD	Sieve - Pan	2013/08/09	3.0		%	35
			Sieve - #200 (>0.075mm)	2013/08/09	0.1		%	35
7062461	ST4	Matrix Spike	Total Antimony (Sb)	2013/08/09		101	%	75 - 125
			Total Arsenic (As)	2013/08/09		100	%	75 - 125
			Total Barium (Ba)	2013/08/09		NC	%	75 - 125
			Total Beryllium (Be)	2013/08/09		95	%	75 - 125
			Total Cadmium (Cd)	2013/08/09		99	%	75 - 125
			Total Chromium (Cr)	2013/08/09		113	%	75 - 125
			Total Cobalt (Co)	2013/08/09		105	%	75 - 125

AECOM
Attention: NICK OKE
Client Project #: 60299674
P.O. #: 700266069
Site Location: CAM C

Quality Assurance Report (Continued)

Maxxam Job Number: EYKB367894

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7062461	ST4	Matrix Spike	Total Copper (Cu)	2013/08/09		99	%	75 - 125
			Total Lead (Pb)	2013/08/09		91	%	75 - 125
			Total Mercury (Hg)	2013/08/09		104	%	75 - 125
			Total Molybdenum (Mo)	2013/08/09		103	%	75 - 125
			Total Nickel (Ni)	2013/08/09		105	%	75 - 125
			Total Selenium (Se)	2013/08/09		102	%	75 - 125
			Total Silver (Ag)	2013/08/09		90	%	75 - 125
			Total Thallium (Tl)	2013/08/09		93	%	75 - 125
			Total Tin (Sn)	2013/08/09		104	%	75 - 125
			Total Uranium (U)	2013/08/09		98	%	75 - 125
			Total Vanadium (V)	2013/08/09		120	%	75 - 125
			Total Zinc (Zn)	2013/08/09		NC	%	75 - 125
		QC Standard	Total Arsenic (As)	2013/08/09		118	%	50 - 150
			Total Barium (Ba)	2013/08/09		107	%	69 - 131
			Total Chromium (Cr)	2013/08/09		118	%	41 - 159
			Total Cobalt (Co)	2013/08/09		114	%	75 - 125
			Total Copper (Cu)	2013/08/09		108	%	73 - 127
			Total Lead (Pb)	2013/08/09		99	%	54 - 146
			Total Nickel (Ni)	2013/08/09		125	%	61 - 139
			Total Vanadium (V)	2013/08/09		144	%	50 - 150
			Total Zinc (Zn)	2013/08/09		116	%	72 - 128
		Spiked Blank	Total Antimony (Sb)	2013/08/09		106	%	75 - 125
			Total Arsenic (As)	2013/08/09		103	%	75 - 125
			Total Barium (Ba)	2013/08/09		109	%	75 - 125
			Total Beryllium (Be)	2013/08/09		106	%	75 - 125
			Total Cadmium (Cd)	2013/08/09		105	%	75 - 125
			Total Chromium (Cr)	2013/08/09		122	%	75 - 125
			Total Cobalt (Co)	2013/08/09		117	%	75 - 125
			Total Copper (Cu)	2013/08/09		111	%	75 - 125
			Total Lead (Pb)	2013/08/09		100	%	75 - 125
			Total Mercury (Hg)	2013/08/09		94	%	75 - 125
			Total Molybdenum (Mo)	2013/08/09		104	%	75 - 125
			Total Nickel (Ni)	2013/08/09		116	%	75 - 125
			Total Selenium (Se)	2013/08/09		107	%	75 - 125
			Total Silver (Ag)	2013/08/09		97	%	75 - 125
			Total Thallium (Tl)	2013/08/09		101	%	75 - 125
			Total Tin (Sn)	2013/08/09		105	%	75 - 125
			Total Uranium (U)	2013/08/09		110	%	75 - 125
			Total Vanadium (V)	2013/08/09		123	%	75 - 125
			Total Zinc (Zn)	2013/08/09		110	%	75 - 125
		Method Blank	Total Antimony (Sb)	2013/08/09	<1.0		mg/kg	
			Total Arsenic (As)	2013/08/09	<1.0		mg/kg	
			Total Barium (Ba)	2013/08/09	<10		mg/kg	
			Total Beryllium (Be)	2013/08/09	<0.40		mg/kg	
			Total Cadmium (Cd)	2013/08/09	<0.10		mg/kg	
			Total Chromium (Cr)	2013/08/09	1.2, RDL=1.0		mg/kg	
			Total Cobalt (Co)	2013/08/09	<1.0		mg/kg	
			Total Copper (Cu)	2013/08/09	<5.0		mg/kg	
			Total Lead (Pb)	2013/08/09	<1.0		mg/kg	
			Total Mercury (Hg)	2013/08/09	<0.050		mg/kg	
			Total Molybdenum (Mo)	2013/08/09	<0.40		mg/kg	
			Total Nickel (Ni)	2013/08/09	<1.0		mg/kg	
			Total Selenium (Se)	2013/08/09	<0.50		mg/kg	
			Total Silver (Ag)	2013/08/09	<1.0		mg/kg	
			Total Thallium (Tl)	2013/08/09	<0.30		mg/kg	

Quality Assurance Report (Continued)

Maxxam Job Number: EYKB367894

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7062461	ST4	Method Blank	Total Tin (Sn)	2013/08/09	<1.0		mg/kg	
			Total Uranium (U)	2013/08/09	<1.0		mg/kg	
			Total Vanadium (V)	2013/08/09	<1.0		mg/kg	
			Total Zinc (Zn)	2013/08/09	<10		mg/kg	
		RPD	Total Antimony (Sb)	2013/08/09	NC		%	35
			Total Arsenic (As)	2013/08/09	NC		%	35
			Total Barium (Ba)	2013/08/09	4.8		%	35
			Total Beryllium (Be)	2013/08/09	NC		%	35
			Total Cadmium (Cd)	2013/08/09	NC		%	35
			Total Chromium (Cr)	2013/08/09	1.7		%	35
			Total Cobalt (Co)	2013/08/09	NC		%	35
			Total Copper (Cu)	2013/08/09	NC		%	35
			Total Lead (Pb)	2013/08/09	NC		%	35
			Total Mercury (Hg)	2013/08/09	NC		%	35
			Total Molybdenum (Mo)	2013/08/09	NC		%	35
			Total Nickel (Ni)	2013/08/09	2.6		%	35
			Total Selenium (Se)	2013/08/09	NC		%	35
			Total Silver (Ag)	2013/08/09	NC		%	35
			Total Thallium (Tl)	2013/08/09	NC		%	35
			Total Tin (Sn)	2013/08/09	NC		%	35
			Total Uranium (U)	2013/08/09	NC		%	35
			Total Vanadium (V)	2013/08/09	6.1		%	35
			Total Zinc (Zn)	2013/08/09	NC		%	35
7062632	KSA	Method Blank	Moisture	2013/08/09	<0.30		%	
		RPD	Moisture	2013/08/09	2.2		%	20
7063124	SMZ	QC Standard	Soluble (2:1) pH	2013/08/09		101	%	98 - 102
		Spiked Blank	Soluble (2:1) pH	2013/08/09		100	%	97 - 103
		RPD	Soluble (2:1) pH	2013/08/09	0.4		%	5
7063169	AM0	Matrix Spike	Total Mercury (Hg)	2013/08/09		83	%	80 - 120
		Spiked Blank	Total Mercury (Hg)	2013/08/09		84	%	80 - 120
		Method Blank	Total Mercury (Hg)	2013/08/09	<0.0020		ug/L	
		RPD	Total Mercury (Hg)	2013/08/09	NC		%	20
7063634	ZI	Matrix Spike	Dissolved Chloride (Cl)	2013/08/09		113	%	80 - 120
		Spiked Blank	Dissolved Chloride (Cl)	2013/08/09		108	%	80 - 120
		Method Blank	Dissolved Chloride (Cl)	2013/08/09	<1.0		mg/L	
		RPD	Dissolved Chloride (Cl)	2013/08/09	0.1		%	20
7063646	ZI	Matrix Spike	Dissolved Sulphate (SO4)	2013/08/09		NC	%	80 - 120
		Spiked Blank	Dissolved Sulphate (SO4)	2013/08/09		104	%	80 - 120
		Method Blank	Dissolved Sulphate (SO4)	2013/08/09	<1.0		mg/L	
		RPD	Dissolved Sulphate (SO4)	2013/08/09	0.5		%	20
7064117	TDB	Matrix Spike	Total Aluminum (Al)	2013/08/09		NC	%	80 - 120
			Total Antimony (Sb)	2013/08/09		112	%	80 - 120
			Total Arsenic (As)	2013/08/09		100	%	80 - 120
			Total Beryllium (Be)	2013/08/09		99	%	80 - 120
			Total Chromium (Cr)	2013/08/09		104	%	80 - 120
			Total Cobalt (Co)	2013/08/09		100	%	80 - 120
			Total Copper (Cu)	2013/08/09		98	%	80 - 120
			Total Lead (Pb)	2013/08/09		98	%	80 - 120
			Total Molybdenum (Mo)	2013/08/09		108	%	80 - 120
			Total Nickel (Ni)	2013/08/09		101	%	80 - 120
			Total Selenium (Se)	2013/08/09		95	%	80 - 120
			Total Silver (Ag)	2013/08/09		102	%	80 - 120
			Total Thallium (Tl)	2013/08/09		96	%	80 - 120
			Total Tin (Sn)	2013/08/09		104	%	80 - 120
			Total Titanium (Ti)	2013/08/09		99	%	80 - 120

AECOM
Attention: NICK OKE
Client Project #: 60299674
P.O. #: 700266069
Site Location: CAM C

Quality Assurance Report (Continued)

Maxxam Job Number: EYKB367894

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7064117	TDB	Matrix Spike	Total Uranium (U)	2013/08/09		103	%	80 - 120
			Total Vanadium (V)	2013/08/09		102	%	80 - 120
			Total Zinc (Zn)	2013/08/09		87	%	80 - 120
		Spiked Blank	Total Aluminum (Al)	2013/08/09		106	%	80 - 120
			Total Antimony (Sb)	2013/08/09		110	%	80 - 120
			Total Arsenic (As)	2013/08/09		100	%	80 - 120
			Total Beryllium (Be)	2013/08/09		93	%	80 - 120
			Total Chromium (Cr)	2013/08/09		104	%	80 - 120
			Total Cobalt (Co)	2013/08/09		101	%	80 - 120
			Total Copper (Cu)	2013/08/09		103	%	80 - 120
			Total Lead (Pb)	2013/08/09		102	%	80 - 120
			Total Molybdenum (Mo)	2013/08/09		105	%	80 - 120
			Total Nickel (Ni)	2013/08/09		102	%	80 - 120
			Total Selenium (Se)	2013/08/09		93	%	80 - 120
			Total Silver (Ag)	2013/08/09		102	%	80 - 120
			Total Thallium (Tl)	2013/08/09		98	%	80 - 120
			Total Tin (Sn)	2013/08/09		103	%	80 - 120
			Total Titanium (Ti)	2013/08/09		101	%	80 - 120
			Total Uranium (U)	2013/08/09		103	%	80 - 120
			Total Vanadium (V)	2013/08/09		103	%	80 - 120
			Total Zinc (Zn)	2013/08/09		103	%	80 - 120
		Method Blank	Total Aluminum (Al)	2013/08/09	<0.0030		mg/L	
			Total Antimony (Sb)	2013/08/09	<0.00060		mg/L	
			Total Arsenic (As)	2013/08/09	<0.00020		mg/L	
			Total Beryllium (Be)	2013/08/09	<0.0010		mg/L	
			Total Chromium (Cr)	2013/08/09	<0.0010		mg/L	
			Total Cobalt (Co)	2013/08/09	<0.00030		mg/L	
			Total Copper (Cu)	2013/08/09	<0.00020		mg/L	
			Total Lead (Pb)	2013/08/09	<0.00020		mg/L	
			Total Molybdenum (Mo)	2013/08/09	<0.00020		mg/L	
			Total Nickel (Ni)	2013/08/09	<0.00050		mg/L	
			Total Selenium (Se)	2013/08/09	<0.00020		mg/L	
			Total Silver (Ag)	2013/08/09	<0.00010		mg/L	
			Total Thallium (Tl)	2013/08/09	<0.00020		mg/L	
			Total Tin (Sn)	2013/08/09	<0.0010		mg/L	
			Total Titanium (Ti)	2013/08/09	<0.0010		mg/L	
			Total Uranium (U)	2013/08/09	<0.00010		mg/L	
			Total Vanadium (V)	2013/08/09	<0.0010		mg/L	
			Total Zinc (Zn)	2013/08/09	<0.0030		mg/L	
		RPD	Total Antimony (Sb)	2013/08/09	NC		%	20
			Total Arsenic (As)	2013/08/09	7.9		%	20
			Total Beryllium (Be)	2013/08/09	NC		%	20
			Total Chromium (Cr)	2013/08/09	NC		%	20
			Total Cobalt (Co)	2013/08/09	NC		%	20
			Total Copper (Cu)	2013/08/09	0.7		%	20
			Total Lead (Pb)	2013/08/09	NC		%	20
			Total Molybdenum (Mo)	2013/08/09	4.8		%	20
			Total Nickel (Ni)	2013/08/09	NC		%	20
			Total Selenium (Se)	2013/08/09	NC		%	20
			Total Silver (Ag)	2013/08/09	NC		%	20
			Total Thallium (Tl)	2013/08/09	NC		%	20
			Total Tin (Sn)	2013/08/09	NC		%	20
			Total Titanium (Ti)	2013/08/09	NC		%	20
			Total Vanadium (V)	2013/08/09	NC		%	20
			Total Zinc (Zn)	2013/08/09	NC		%	20

AECOM
Attention: NICK OKE
Client Project #: 60299674
P.O. #: 700266069
Site Location: CAM C

Quality Assurance Report (Continued)

Maxxam Job Number: EYKB367894

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7064155	STI	Matrix Spike	Total Barium (Ba)	2013/08/09		97	%	80 - 120
			Total Boron (B)	2013/08/09		112	%	80 - 120
			Total Calcium (Ca)	2013/08/09		NC	%	80 - 120
			Total Iron (Fe)	2013/08/09		NC	%	80 - 120
			Total Lithium (Li)	2013/08/09		101	%	80 - 120
			Total Magnesium (Mg)	2013/08/09		102	%	80 - 120
			Total Manganese (Mn)	2013/08/09		99	%	80 - 120
			Total Phosphorus (P)	2013/08/09		104	%	80 - 120
			Total Potassium (K)	2013/08/09		106	%	80 - 120
			Total Silicon (Si)	2013/08/09		121 (1)	%	80 - 120
			Total Sodium (Na)	2013/08/09		NC	%	80 - 120
			Total Strontium (Sr)	2013/08/09		106	%	80 - 120
		Spiked Blank	Total Barium (Ba)	2013/08/09		96	%	80 - 120
			Total Boron (B)	2013/08/09		110	%	80 - 120
			Total Calcium (Ca)	2013/08/09		101	%	80 - 120
			Total Iron (Fe)	2013/08/09		101	%	80 - 120
			Total Lithium (Li)	2013/08/09		99	%	80 - 120
			Total Magnesium (Mg)	2013/08/09		100	%	80 - 120
			Total Manganese (Mn)	2013/08/09		97	%	80 - 120
			Total Phosphorus (P)	2013/08/09		99	%	80 - 120
			Total Potassium (K)	2013/08/09		103	%	80 - 120
			Total Silicon (Si)	2013/08/09		118	%	80 - 120
			Total Sodium (Na)	2013/08/09		102	%	80 - 120
			Total Strontium (Sr)	2013/08/09		98	%	80 - 120
		Method Blank	Total Barium (Ba)	2013/08/09	<0.010		mg/L	
			Total Boron (B)	2013/08/09	<0.020		mg/L	
			Total Calcium (Ca)	2013/08/09	<0.30		mg/L	
			Total Iron (Fe)	2013/08/09	<0.060		mg/L	
			Total Lithium (Li)	2013/08/09	<0.020		mg/L	
			Total Magnesium (Mg)	2013/08/09	<0.20		mg/L	
			Total Manganese (Mn)	2013/08/09	<0.0040		mg/L	
			Total Phosphorus (P)	2013/08/09	<0.10		mg/L	
			Total Potassium (K)	2013/08/09	<0.30		mg/L	
			Total Silicon (Si)	2013/08/09	<0.10		mg/L	
			Total Sodium (Na)	2013/08/09	<0.50		mg/L	
			Total Strontium (Sr)	2013/08/09	<0.020		mg/L	
			Total Sulphur (S)	2013/08/09	<0.20		mg/L	
		RPD	Total Boron (B)	2013/08/09	NC		%	20
			Total Iron (Fe)	2013/08/09	4.4		%	20
			Total Manganese (Mn)	2013/08/09	NC		%	20
7064817	STI	Matrix Spike	Dissolved Aluminum (Al)	2013/08/09		98	%	80 - 120
			Dissolved Barium (Ba)	2013/08/09		93	%	80 - 120
			Dissolved Boron (B)	2013/08/09		92	%	80 - 120
			Dissolved Calcium (Ca)	2013/08/09		94	%	80 - 120
			Dissolved Chromium (Cr)	2013/08/09		89	%	80 - 120
			Dissolved Iron (Fe)	2013/08/09		97	%	80 - 120
			Dissolved Lithium (Li)	2013/08/09		95	%	80 - 120
			Dissolved Magnesium (Mg)	2013/08/09		98	%	80 - 120
			Dissolved Manganese (Mn)	2013/08/09		92	%	80 - 120
			Dissolved Phosphorus (P)	2013/08/09		100	%	80 - 120
			Dissolved Potassium (K)	2013/08/09		102	%	80 - 120
			Dissolved Silicon (Si)	2013/08/09		98	%	80 - 120
			Dissolved Sodium (Na)	2013/08/09		94	%	80 - 120
			Dissolved Strontium (Sr)	2013/08/09		95	%	80 - 120
		Spiked Blank	Dissolved Aluminum (Al)	2013/08/09		100	%	80 - 120

AECOM
Attention: NICK OKE
Client Project #: 60299674
P.O. #: 700266069
Site Location: CAM C

Quality Assurance Report (Continued)

Maxxam Job Number: EYKB367894

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7064817	STI	Spiked Blank	Dissolved Barium (Ba)	2013/08/09		94	%	80 - 120
			Dissolved Boron (B)	2013/08/09		93	%	80 - 120
			Dissolved Calcium (Ca)	2013/08/09		98	%	80 - 120
			Dissolved Chromium (Cr)	2013/08/09		90	%	80 - 120
			Dissolved Iron (Fe)	2013/08/09		98	%	80 - 120
			Dissolved Lithium (Li)	2013/08/09		96	%	80 - 120
			Dissolved Magnesium (Mg)	2013/08/09		99	%	80 - 120
			Dissolved Manganese (Mn)	2013/08/09		94	%	80 - 120
			Dissolved Phosphorus (P)	2013/08/09		100	%	80 - 120
			Dissolved Potassium (K)	2013/08/09		103	%	80 - 120
			Dissolved Silicon (Si)	2013/08/09		99	%	80 - 120
			Dissolved Sodium (Na)	2013/08/09		97	%	80 - 120
			Dissolved Strontium (Sr)	2013/08/09		96	%	80 - 120
		Method Blank	Dissolved Aluminum (Al)	2013/08/09	<0.040		mg/L	
			Dissolved Barium (Ba)	2013/08/09	<0.010		mg/L	
			Dissolved Boron (B)	2013/08/09	<0.020		mg/L	
			Dissolved Calcium (Ca)	2013/08/09	<0.30		mg/L	
			Dissolved Chromium (Cr)	2013/08/09	<0.010		mg/L	
			Dissolved Iron (Fe)	2013/08/09	<0.060		mg/L	
			Dissolved Lithium (Li)	2013/08/09	<0.020		mg/L	
			Dissolved Magnesium (Mg)	2013/08/09	<0.20		mg/L	
			Dissolved Manganese (Mn)	2013/08/09	<0.0040		mg/L	
			Dissolved Phosphorus (P)	2013/08/09	<0.10		mg/L	
			Dissolved Potassium (K)	2013/08/09	<0.30		mg/L	
			Dissolved Silicon (Si)	2013/08/09	<0.10		mg/L	
			Dissolved Sodium (Na)	2013/08/09	<0.50		mg/L	
			Dissolved Strontium (Sr)	2013/08/09	<0.020		mg/L	
			Dissolved Sulphur (S)	2013/08/09	<0.20		mg/L	
		RPD	Dissolved Calcium (Ca)	2013/08/09	0.7		%	20
			Dissolved Magnesium (Mg)	2013/08/09	0.5		%	20
7066261	ST4	Matrix Spike [HC6348-01]	Total Antimony (Sb)	2013/08/11		98	%	75 - 125
			Total Arsenic (As)	2013/08/11		96	%	75 - 125
			Total Barium (Ba)	2013/08/11		94	%	75 - 125
			Total Beryllium (Be)	2013/08/11		101	%	75 - 125
			Total Cadmium (Cd)	2013/08/11		96	%	75 - 125
			Total Chromium (Cr)	2013/08/11		95	%	75 - 125
			Total Cobalt (Co)	2013/08/11		96	%	75 - 125
			Total Copper (Cu)	2013/08/11		91	%	75 - 125
			Total Lead (Pb)	2013/08/11		91	%	75 - 125
			Total Mercury (Hg)	2013/08/11		91	%	75 - 125
			Total Molybdenum (Mo)	2013/08/11		100	%	75 - 125
			Total Nickel (Ni)	2013/08/11		94	%	75 - 125
			Total Selenium (Se)	2013/08/11		97	%	75 - 125
			Total Silver (Ag)	2013/08/11		87	%	75 - 125
			Total Thallium (Tl)	2013/08/11		93	%	75 - 125
			Total Tin (Sn)	2013/08/11		98	%	75 - 125
			Total Uranium (U)	2013/08/11		96	%	75 - 125
			Total Vanadium (V)	2013/08/11		99	%	75 - 125
			Total Zinc (Zn)	2013/08/11		94	%	75 - 125
		QC Standard	Total Arsenic (As)	2013/08/11		113	%	50 - 150
			Total Barium (Ba)	2013/08/11		101	%	69 - 131
			Total Chromium (Cr)	2013/08/11		102	%	41 - 159
			Total Cobalt (Co)	2013/08/11		101	%	75 - 125
			Total Copper (Cu)	2013/08/11		99	%	73 - 127

AECOM
Attention: NICK OKE
Client Project #: 60299674
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Site Location: CAM C

Quality Assurance Report (Continued)

Maxxam Job Number: EYKB367894

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7066261	ST4	QC Standard	Total Lead (Pb)	2013/08/11		100	%	54 - 146
			Total Nickel (Ni)	2013/08/11		115	%	61 - 139
			Total Vanadium (V)	2013/08/11		116	%	50 - 150
			Total Zinc (Zn)	2013/08/11		108	%	72 - 128
		Spiked Blank	Total Antimony (Sb)	2013/08/11		106	%	75 - 125
			Total Arsenic (As)	2013/08/11		101	%	75 - 125
			Total Barium (Ba)	2013/08/11		100	%	75 - 125
			Total Beryllium (Be)	2013/08/11		110	%	75 - 125
			Total Cadmium (Cd)	2013/08/11		103	%	75 - 125
			Total Chromium (Cr)	2013/08/11		104	%	75 - 125
			Total Cobalt (Co)	2013/08/11		103	%	75 - 125
			Total Copper (Cu)	2013/08/11		101	%	75 - 125
			Total Lead (Pb)	2013/08/11		103	%	75 - 125
			Total Mercury (Hg)	2013/08/11		76	%	75 - 125
			Total Molybdenum (Mo)	2013/08/11		105	%	75 - 125
			Total Nickel (Ni)	2013/08/11		103	%	75 - 125
			Total Selenium (Se)	2013/08/11		104	%	75 - 125
			Total Silver (Ag)	2013/08/11		94	%	75 - 125
			Total Thallium (Tl)	2013/08/11		101	%	75 - 125
			Total Tin (Sn)	2013/08/11		104	%	75 - 125
			Total Uranium (U)	2013/08/11		109	%	75 - 125
			Total Vanadium (V)	2013/08/11		104	%	75 - 125
			Total Zinc (Zn)	2013/08/11		103	%	75 - 125
		Method Blank	Total Antimony (Sb)	2013/08/11	<1.0		mg/kg	
			Total Arsenic (As)	2013/08/11	<1.0		mg/kg	
			Total Barium (Ba)	2013/08/11	<10		mg/kg	
			Total Beryllium (Be)	2013/08/11	<0.40		mg/kg	
			Total Cadmium (Cd)	2013/08/11	<0.10		mg/kg	
			Total Chromium (Cr)	2013/08/11	1.9, RDL=1.0		mg/kg	
			Total Cobalt (Co)	2013/08/11	<1.0		mg/kg	
			Total Copper (Cu)	2013/08/11	<5.0		mg/kg	
			Total Lead (Pb)	2013/08/11	<1.0		mg/kg	
			Total Mercury (Hg)	2013/08/11	<0.050		mg/kg	
			Total Molybdenum (Mo)	2013/08/11	<0.40		mg/kg	
			Total Nickel (Ni)	2013/08/11	<1.0		mg/kg	
			Total Selenium (Se)	2013/08/11	<0.50		mg/kg	
			Total Silver (Ag)	2013/08/11	<1.0		mg/kg	
			Total Thallium (Tl)	2013/08/11	<0.30		mg/kg	
			Total Tin (Sn)	2013/08/11	<1.0		mg/kg	
			Total Uranium (U)	2013/08/11	<1.0		mg/kg	
			Total Vanadium (V)	2013/08/11	<1.0		mg/kg	
			Total Zinc (Zn)	2013/08/11	<10		mg/kg	
		RPD [HC6348-01]	Total Antimony (Sb)	2013/08/11	NC		%	35
			Total Arsenic (As)	2013/08/11	NC		%	35
			Total Barium (Ba)	2013/08/11	NC		%	35
			Total Beryllium (Be)	2013/08/11	NC		%	35
			Total Cadmium (Cd)	2013/08/11	NC		%	35
			Total Chromium (Cr)	2013/08/11	NC		%	35
			Total Cobalt (Co)	2013/08/11	NC		%	35
			Total Copper (Cu)	2013/08/11	NC		%	35
			Total Lead (Pb)	2013/08/11	NC		%	35
			Total Mercury (Hg)	2013/08/11	NC		%	35
			Total Molybdenum (Mo)	2013/08/11	NC		%	35
			Total Nickel (Ni)	2013/08/11	NC		%	35
			Total Selenium (Se)	2013/08/11	NC		%	35

AECOM
Attention: NICK OKE
Client Project #: 60299674
P.O. #: 700266069
Site Location: CAM C

Quality Assurance Report (Continued)

Maxxam Job Number: EYKB367894

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7066261	ST4	RPD [HC6348-01]	Total Silver (Ag)	2013/08/11	NC		%	35
			Total Thallium (Tl)	2013/08/11	NC		%	35
			Total Tin (Sn)	2013/08/11	NC		%	35
			Total Uranium (U)	2013/08/11	NC		%	35
			Total Vanadium (V)	2013/08/11	2.8		%	35
			Total Zinc (Zn)	2013/08/11	NC		%	35
7066365	ST4	Matrix Spike [HC6259-01]	Total Antimony (Sb)	2013/08/11		95	%	75 - 125
			Total Arsenic (As)	2013/08/11		92	%	75 - 125
			Total Barium (Ba)	2013/08/11		87	%	75 - 125
			Total Beryllium (Be)	2013/08/11		94	%	75 - 125
			Total Cadmium (Cd)	2013/08/11		91	%	75 - 125
			Total Chromium (Cr)	2013/08/11		93	%	75 - 125
			Total Cobalt (Co)	2013/08/11		91	%	75 - 125
			Total Copper (Cu)	2013/08/11		91	%	75 - 125
			Total Lead (Pb)	2013/08/11		90	%	75 - 125
			Total Mercury (Hg)	2013/08/11		107	%	75 - 125
			Total Molybdenum (Mo)	2013/08/11		97	%	75 - 125
			Total Nickel (Ni)	2013/08/11		89	%	75 - 125
			Total Selenium (Se)	2013/08/11		89	%	75 - 125
			Total Silver (Ag)	2013/08/11		86	%	75 - 125
			Total Thallium (Tl)	2013/08/11		90	%	75 - 125
			Total Tin (Sn)	2013/08/11		94	%	75 - 125
			Total Uranium (U)	2013/08/11		89	%	75 - 125
			Total Vanadium (V)	2013/08/11		92	%	75 - 125
			Total Zinc (Zn)	2013/08/11		89	%	75 - 125
		QC Standard	Total Arsenic (As)	2013/08/11		111	%	75 - 125
			Total Barium (Ba)	2013/08/11		103	%	75 - 125
			Total Chromium (Cr)	2013/08/11		105	%	75 - 125
			Total Cobalt (Co)	2013/08/11		104	%	75 - 125
			Total Copper (Cu)	2013/08/11		102	%	75 - 125
			Total Lead (Pb)	2013/08/11		100	%	75 - 125
			Total Nickel (Ni)	2013/08/11		114	%	75 - 125
			Total Vanadium (V)	2013/08/11		120	%	75 - 125
			Total Zinc (Zn)	2013/08/11		108	%	75 - 125
		Spiked Blank	Total Antimony (Sb)	2013/08/11		95	%	75 - 125
			Total Arsenic (As)	2013/08/11		96	%	75 - 125
			Total Barium (Ba)	2013/08/11		94	%	75 - 125
			Total Beryllium (Be)	2013/08/11		98	%	75 - 125
			Total Cadmium (Cd)	2013/08/11		91	%	75 - 125
			Total Chromium (Cr)	2013/08/11		98	%	75 - 125
			Total Cobalt (Co)	2013/08/11		97	%	75 - 125
			Total Copper (Cu)	2013/08/11		98	%	75 - 125
			Total Lead (Pb)	2013/08/11		96	%	75 - 125
			Total Mercury (Hg)	2013/08/11		90	%	75 - 125
			Total Molybdenum (Mo)	2013/08/11		96	%	75 - 125
			Total Nickel (Ni)	2013/08/11		98	%	75 - 125
			Total Selenium (Se)	2013/08/11		92	%	75 - 125
			Total Silver (Ag)	2013/08/11		86	%	75 - 125
			Total Thallium (Tl)	2013/08/11		95	%	75 - 125
			Total Tin (Sn)	2013/08/11		92	%	75 - 125
			Total Uranium (U)	2013/08/11		99	%	75 - 125
			Total Vanadium (V)	2013/08/11		98	%	75 - 125
			Total Zinc (Zn)	2013/08/11		94	%	75 - 125
		Method Blank	Total Antimony (Sb)	2013/08/11	<1.0		mg/kg	

AECOM
Attention: NICK OKE
Client Project #: 60299674
P.O. #: 700266069
Site Location: CAM C

Quality Assurance Report (Continued)

Maxxam Job Number: EYKB367894

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7066365	ST4	Method Blank	Total Arsenic (As)	2013/08/11	<1.0		mg/kg	
			Total Barium (Ba)	2013/08/11	<10		mg/kg	
			Total Beryllium (Be)	2013/08/11	<0.40		mg/kg	
			Total Cadmium (Cd)	2013/08/11	<0.10		mg/kg	
			Total Chromium (Cr)	2013/08/11	<1.0		mg/kg	
			Total Cobalt (Co)	2013/08/11	<1.0		mg/kg	
			Total Copper (Cu)	2013/08/11	<5.0		mg/kg	
			Total Lead (Pb)	2013/08/11	<1.0		mg/kg	
			Total Mercury (Hg)	2013/08/11	<0.050		mg/kg	
			Total Molybdenum (Mo)	2013/08/11	<0.40		mg/kg	
			Total Nickel (Ni)	2013/08/11	<1.0		mg/kg	
			Total Selenium (Se)	2013/08/11	<0.50		mg/kg	
			Total Silver (Ag)	2013/08/11	<1.0		mg/kg	
			Total Thallium (Tl)	2013/08/11	<0.30		mg/kg	
			Total Tin (Sn)	2013/08/11	<1.0		mg/kg	
			Total Uranium (U)	2013/08/11	<1.0		mg/kg	
			Total Vanadium (V)	2013/08/11	<1.0		mg/kg	
			Total Zinc (Zn)	2013/08/11	<10		mg/kg	
		RPD [HC6259-01]	Total Antimony (Sb)	2013/08/11	NC		%	35
			Total Arsenic (As)	2013/08/11	NC		%	35
			Total Barium (Ba)	2013/08/11	NC		%	35
			Total Beryllium (Be)	2013/08/11	NC		%	35
			Total Cadmium (Cd)	2013/08/11	NC		%	35
			Total Chromium (Cr)	2013/08/11	NC		%	35
			Total Cobalt (Co)	2013/08/11	NC		%	35
			Total Copper (Cu)	2013/08/11	NC		%	35
			Total Lead (Pb)	2013/08/11	NC		%	35
			Total Mercury (Hg)	2013/08/11	NC		%	35
			Total Molybdenum (Mo)	2013/08/11	NC		%	35
			Total Nickel (Ni)	2013/08/11	NC		%	35
			Total Selenium (Se)	2013/08/11	NC		%	35
			Total Silver (Ag)	2013/08/11	NC		%	35
			Total Thallium (Tl)	2013/08/11	NC		%	35
			Total Tin (Sn)	2013/08/11	NC		%	35
			Total Uranium (U)	2013/08/11	NC		%	35
			Total Vanadium (V)	2013/08/11	34.6		%	35
			Total Zinc (Zn)	2013/08/11	NC		%	35
7067159	SMZ	QC Standard	Soluble (2:1) pH	2013/08/10		99	%	98 - 102
		Spiked Blank	Soluble (2:1) pH	2013/08/10		100	%	97 - 103
		RPD [HC6259-01]	Soluble (2:1) pH	2013/08/10	0.3		%	5
7067164	SMZ	QC Standard	Soluble (2:1) pH	2013/08/10		101	%	98 - 102
		Spiked Blank	Soluble (2:1) pH	2013/08/10		100	%	97 - 103
		RPD [HC6348-01]	Soluble (2:1) pH	2013/08/10	1.1		%	5

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

AECOM
Attention: NICK OKE
Client Project #: 60299674
P.O. #: 700266069
Site Location: CAM C

Quality Assurance Report (Continued)

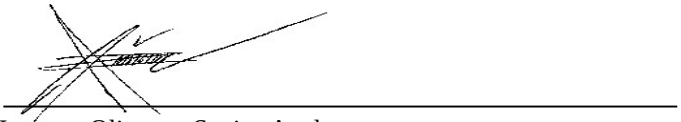
Maxxam Job Number: EYKB367894

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.								

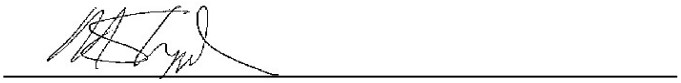
Validation Signature Page

Maxxam Job #: B367894

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



Jeanette Olivares, Senior Analyst



Michael Sheppard, Organics Supervisor



Peng Liang, Analyst II

==========

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

Maxxam Analytics International Corporation o/a Maxxam Analytics
9331 - 48th Street, Edmonton, Alberta Canada T6B 2R4 Tel:(780) 577-7100 Toll-free:800-653-6266 Fax:780-450-4187 www.maxxam.ca

CHAIN OF CUSTODY RECORD

INVOICE INFORMATION:		REPORT INFORMATION (if differs from invoice):		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#2597 PUBLIC WORKS & GOVERNMENT SERVI	Company Name:	#25925 AECOM	Quotation #:		MAXXAM JOB #:	BOTTLE ORDER #:
Contact Name:	Jessie Hoyt	Contact Name:	NICK OKE	P.O. #:	700266069		405374
Address:	TELUS TOWER NORTH, 5th FLOOR 10025 JASP	Address:	17007 - 107 Avenue	Project #:	60299674	CHAIN OF CUSTODY #:	PROJECT MANAGER:
	EDMONTON AB T5J 1S6		, Edmonton AB T5S 1G3	Project Name:	CAMC	C#405374-17-01	Geraldyn Gouthro
Phone:	(780)497-3786 Fax: (780)497-3842	Phone:	(780)486-4057 Fax:	Site #:			
Email:	jessie.hoyt@psgsc-tpsgc.gc.ca	Email:	nick.oke@aecom.com / eva.schultz@aecom.com	Sampled By:	E.Schultz / J.McCallum		

REGULATORY CRITERIA:
- [ ] ATI
- [x] CCME
- [ ] OTHER

SPECIAL INSTRUCTIONS

Metals Field Filtered ? (Y / N): Y

ANALYSIS REQUESTED (Please be specific): Metals

TURNAROUND TIME (TAT) REQUIRED:

PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS

Regular (Standard) TAT: [x]
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests are > 5 days - contact your Project Manager for details

Job Specific Rush TAT (if applies to entire submission) [ ]
Date Required:
Rush Confirmation Number: (call lab for #)

SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	# of Bottles	Comments
1		TPB-42@ 0.5m	Aug.1	-	soil	1	
2		TPB-43@ 0.05m	"	-	↓	1	
3		TP-43@ 0.5m	"	-	↓	1	
4		TPB-44@ 0.45m	"	-	↓	1	
5		TPB-53@ 0.05m	"	-	↓	1	
6		TPB-55@ 0.45m	"	2:30	↓	1	
7		TPB-45@ 0.05m	"	-	↓	1	
8		TPB-56@ 0.05m	"	-	↓	1	
9		TPB-45@0.5m	"	-	↓	1	
10		TPB-49@ 0.45m	"	-	↓	1	

6-Aug-13 07:40
Geraldyn Gouthro
B367894
HD0 INS-0027

RECEIVED IN YELLOWKNIFE
By: 09:25
2013 -08- 04

Temp: ON/ACTR

*RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	# Jars Used and Not Submitted	Laboratory Use Only: Time Sensitive	Temperature (°C) on Receipt	Custody Seal Intact on Cooler?
Eva Schultz	Aug.2	10a	Adegoke Akisi	2013/08/06	0740		[ ]		[ ] Yes [ ] No

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.
** ALL SAMPLES ARE HELD FOR 60 DAYS AFTER SAMPLE RECEIPT, FOR SPECIAL REQUESTS CONTACT YOUR PROJECT MANAGER

White: Maxxam Yellow: Client

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9331 - 48th Street, Edmonton, Alberta Canada T6B 2R4 Tel:(780) 577-7100 Toll-free:800-653-6266 Fax:780-450-4187 www.maxxam.ca

CHAIN OF CUSTODY RECORD

INVOICE INFORMATION:		REPORT INFORMATION (if differs from invoice):		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#2597 PUBLIC WORKS & GOVERNMENT SERVI	Company Name:	#25925 AECOM	Quotation #:		MAXXAM JOB #:	BOTTLE ORDER #:
Contact Name:	Jessie Hoyt	Contact Name:	NICK OKE	P.O. #:	700266069	367894	405374
Address:	TELUS TOWER NORTH, 5th FLOOR 10025 JASP	Address:	17007 - 107 Avenue	Project #:	60299674	CHAIN OF CUSTODY #:	PROJECT MANAGER:
	EDMONTON AB T5J 1S6		, Edmonton AB T5S 1G3	Project Name:	CAM-C	C#405374-18-01	Geraldyn Gouthro
Phone:	(780)497-3786 Fax: (780)497-3842	Phone:	(780)486-4057 Fax:	Site #:			
Email:	jessie.hoyt@psgsc-tpsgc.gc.ca	Email:	nick.oke@aecom.com /eva.schulz @aecom.com	Sampled By:	E. Schulz / J. McCallum		

REGULATORY CRITERIA:
- [ ] ATI
- [x] CCME
- [x] OTHER

SPECIAL INSTRUCTIONS

SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

ANALYSIS REQUESTED (Please be specific):

TURNAROUND TIME (TAT) REQUIRED:

PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS

Regular (Standard) TAT: [x]
(will be applied if Rush TAT is not specified)
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests are > 5 days - contact your Project Manager for details

Job Specific Rush TAT (if applies to entire submission) [ ]
Date Required: _____
Rush Confirmation Number: _____ *(call lab for #)*

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Metals Field Filtered ? (Y / N)	Metals	Grain Size	Routine	Drinking Water	PCB	Metals	# of Bottles	Comments
1		Pbrw) @ West 5m.	Aug.1	4p	wood						✓		1	
		TP13-57@0.05m	Aug.1	—	soil		✓						1	
2		TPB-60 @ 0.2m	"	3:30	✓		✓						1	
3		TP13-62@0.25m	↓	3:45	✓		✓						1	
4		TP13-30@0.05m	July31	—	✓		✓						1	
5		TP13-33@ 0.05m	✓	—	✓		✓						1	
6		TP13-34@ 0.05m	✓	—	✓		✓						1	RECEIVED IN YELLOWKNIFE By: 09:25 2013-08-04
7		TP13-39 @0.05m	✓	6:15 pm	✓		✓						1	
8		Beach POL @0.6m	✓	—	✓		✓	✓					1	
9		Beach POL @ <1.0m	✓	—	✓			✓					1	Temp: ON ACTR
10		Freshwater Lake	Aug.2	11:30	Water				✓	✓	✓	✓	4	

*RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	# Jars Used and Not Submitted
Eva Schulz	Aug.2	10a	[illegible] Adegun Afesi	2013/08/06	0740	

Laboratory Use Only

Time Sensitive	Temperature (°C) on Receipt	Custody Seal Intact on Cooler?
[ ]		[ ] Yes [ ] No

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.
** ALL SAMPLES ARE HELD FOR 60 DAYS AFTER SAMPLE RECEIPT, FOR SPECIAL REQUESTS CONTACT YOUR PROJECT MANAGER

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15,

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9331 - 48th Street, Edmonton, Alberta Canada T6B 2R4 Tel:(780) 577-7100 Toll-free:800-653-6266 Fax:780-450-4187 www.maxxam.ca

CHAIN OF CUSTODY RECORD

INVOICE INFORMATION:		REPORT INFORMATION (if differs from invoice):		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#2597 PUBLIC WORKS & GOVERNMENT SERVI	Company Name:	#25925 AECOM	Quotation #:		MAXXAM JOB #:	BOTTLE ORDER #:
Contact Name:	Jessie Hoyt	Contact Name:	NICK OKE	P.O. #:	700266069	367894	405374
Address:	TELUS TOWER NORTH, 5th FLOOR 10025 JASP	Address:	17007 - 107 Avenue	Project #:	60299674	CHAIN OF CUSTODY #:	PROJECT MANAGER:
	EDMONTON AB T5J 1S6		, Edmonton AB T5S 1G3	Project Name:	CAM-C	C#405374-19-01	Geraldyn Gouthro
Phone:	(780)497-3786 Fax: (780)497-3842	Phone:	(780)486-4057 Fax:	Site #:			
Email:	jessie.hoyt@psgsc-tpsgc.gc.ca	Email:	nick.oke@aecom.com / eva.schultz@aecom.com	Sampled By:	E. Schultz / J. McCallum		

REGULATORY CRITERIA:
- ☐ ATI
- ☑ CCME
- ☑ OTHER

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SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

ANALYSIS REQUESTED (Please be specific):

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(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests are > 5 days - contact your Project Manager for details

Job Specific Rush TAT (if applies to entire submission) ☐
Date Required: _____
Rush Confirmation Number: _____ (call lab for #)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Metals Field Filtered ? (Y / N)	PCBs	metals								# of Bottles	Comments
1		TPB-65 @ 0.05m	Aug. 2	10am	Soil		V	V								2	
2		TPB-65 @ 0.3m.	"	"	Soil		V	V								2	
3		TPB-65F @ 0.3m	"	"	"		V	V								2	
4		TPB-65 @ 0.5m	"	"	"		V	V								2	
5		TPB-66 @ 0.05m	"	10:30	"		V	V								2	
6		TPB-66 @ 0.5m	"	"	"		V	V								2	RECEIVED IN YELLOWKNIFE By: 09:25 2013-08-04
7		TPB-66 @ 0.3m	"	"	"		V	V								2	
8		TPB-67 @ 0.05m	"	10:45	"		V	V								2	
9		TPB-67 @ 0.3m	"	"	"		V	V								2	Temp: ON ARRIVAL.
10		TPB-23 @ 0.05m	"	"	"		V	V								2	

*RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	# Jars Used and Not Submitted	Laboratory Use Only: Time Sensitive	Temperature (°C) on Receipt	Custody Seal Intact on Cooler?
Eva Schultz	Aug. 2	10a	Adepeju Akisi	2013/08/06	0740		☐		☐ Yes ☐ No

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.
** ALL SAMPLES ARE HELD FOR 60 DAYS AFTER SAMPLE RECEIPT, FOR SPECIAL REQUESTS CONTACT YOUR PROJECT MANAGER

White: Maxxam Yellow: Client

151.

Your Project #: B367894
Your C.O.C. #: na

Attention: Geraldlyn Gouthro
Maxxam Analytics
2021 41st Ave NE
Calgary, AB
T2E 6P2

Report Date: 2013/08/16

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B3C9529
Received: 2013/08/08, 08:54

Sample Matrix: Soil
Samples Received: 11

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Polychlorinated Biphenyl in Solids (1)	1	2013/08/14	2013/08/16	CAM SOP-00307	EPA 8082
Moisture	10	N/A	2013/08/13	CAM SOP-00445	R.Carter,1993
Polychlorinated Biphenyl in Soil	2	2013/08/12	2013/08/13	CAM SOP-00309	SW846 8082
Polychlorinated Biphenyl in Soil	6	2013/08/12	2013/08/15	CAM SOP-00309	SW846 8082
Polychlorinated Biphenyl in Soil	2	2013/08/14	2013/08/15	CAM SOP-00309	SW846 8082

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

(1) Sample(s) analyzed using methodologies that have not been subjected to Maxxam's standard validation process for the submitted matrix and is not an Accredited method. Analysis performed with client consent, however results should be viewed with discretion

Encryption Key

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

Shaun Nowickyj,
Email: SNowickyj@maxxam.ca
Phone# (905) 817-5700

==========

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

Total cover pages: 1

Maxxam Job #: B3C9529
Report Date: 2013/08/16

Maxxam Analytics
Client Project #: B367894

RESULTS OF ANALYSES OF SOIL

Maxxam ID		SO2976	SO2977	SO2978	SO2979		
Sampling Date		2013/08/02 10:00	2013/08/02 10:00	2013/08/02 10:00	2013/08/02 10:00		
COC Number		na	na	na	na		
	Units	**HC6341\TP13-65@0.05M**	**HC6342\TP13-65@0.3M**	**HC6343\TP13-65F@0.3M**	**HC6344\TP13-65@0.5M**	**RDL**	**QC Batch**
Moisture	%	3.9	2.3	2.1	3.8	1.0	3312163

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		SO2980	SO2981	SO2982	SO2983		
Sampling Date		2013/08/02 10:30	2013/08/02 10:30	2013/08/02 10:30	2013/08/02 10:45		
COC Number		na	na	na	na		
	Units	**HC6345\TP13-66@0.05M**	**HC6346\TP13-66@0.5M**	**HC6347\TP13-66@0.3M**	**HC6348\TP13-67@0.05M**	**RDL**	**QC Batch**
Moisture	%	3.7	1.8	4.2	4.2	1.0	3312163

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		SO2984	SO2985		
Sampling Date		2013/08/02 10:45	2013/08/02 10:45		
COC Number		na	na		
	Units	**HC6349\TP13-67@0.3M**	**HC6350\TP13-23@0.05**	**RDL**	**QC Batch**
Moisture	%	4.1	3.1	1.0	3312163

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B3C9529
Report Date: 2013/08/16

Maxxam Analytics
Client Project #: B367894

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		SO2976		SO2977	SO2978		
Sampling Date		2013/08/02 10:00		2013/08/02 10:00	2013/08/02 10:00		
COC Number		na		na	na		
	Units	**HC6341\TP13-65@0.05M**	**RDL**	**HC6342\TP13-65@0.3M**	**HC6343\TP13-65F@0.3M**	**RDL**	**QC Batch**
Aroclor 1016	ug/g	<0.020	0.020	<0.010	<0.010	0.010	3311027
Aroclor 1221	ug/g	<0.020	0.020	<0.010	<0.010	0.010	3311027
Aroclor 1232	ug/g	<0.020	0.020	<0.010	<0.010	0.010	3311027
Aroclor 1242	ug/g	<0.020	0.020	<0.010	<0.010	0.010	3311027
Aroclor 1248	ug/g	<0.020	0.020	<0.010	<0.010	0.010	3311027
Aroclor 1254	ug/g	1.1	0.020	<0.010	<0.010	0.010	3311027
Aroclor 1260	ug/g	0.12	0.020	<0.010	<0.010	0.010	3311027
Aroclor 1262	ug/g	<0.020	0.020	<0.010	<0.010	0.010	3311027
Aroclor 1268	ug/g	<0.020	0.020	<0.010	<0.010	0.010	3311027
Total PCB	ug/g	1.2	0.020	<0.010	<0.010	0.010	3311027
Surrogate Recovery (%)							
Decachlorobiphenyl	%	101	N/A	113	117	N/A	3311027

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

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Maxxam Job #: B3C9529
Report Date: 2013/08/16

Maxxam Analytics
Client Project #: B367894

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		SO2978	SO2979		SO2980		
Sampling Date		2013/08/02 10:00	2013/08/02 10:00		2013/08/02 10:30		
COC Number		na	na		na		
	Units	**HC6343\TP13-65F@0.3M Lab-Dup**	**HC6344\TP13-65@0.5M**	**QC Batch**	**HC6345\TP13-66@0.05M**	**RDL**	**QC Batch**
Aroclor 1016	ug/g	<0.010	<0.010	3311027	<0.010	0.010	3314541
Aroclor 1221	ug/g	<0.010	<0.010	3311027	<0.010	0.010	3314541
Aroclor 1232	ug/g	<0.010	<0.010	3311027	<0.010	0.010	3314541
Aroclor 1242	ug/g	<0.010	<0.010	3311027	<0.010	0.010	3314541
Aroclor 1248	ug/g	<0.010	<0.010	3311027	<0.010	0.010	3314541
Aroclor 1254	ug/g	<0.010	<0.010	3311027	<0.010	0.010	3314541
Aroclor 1260	ug/g	<0.010	<0.010	3311027	0.063	0.010	3314541
Aroclor 1262	ug/g	<0.010	<0.010	3311027	<0.010	0.010	3314541
Aroclor 1268	ug/g	<0.010	<0.010	3311027	<0.010	0.010	3314541
Total PCB	ug/g	<0.010	<0.010	3311027	0.063	0.010	3314541
Surrogate Recovery (%)							
Decachlorobiphenyl	%	97	106	3311027	92	N/A	3314541

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

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Maxxam Job #: B3C9529
Report Date: 2013/08/16

Maxxam Analytics
Client Project #: B367894

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		SO2981	SO2982		SO2983		
Sampling Date		2013/08/02 10:30	2013/08/02 10:30		2013/08/02 10:45		
COC Number		na	na		na		
	Units	**HC6346\TP13-66@0.5M**	**HC6347\TP13-66@0.3M**	**QC Batch**	**HC6348\TP13-67@0.05M**	**RDL**	**QC Batch**
Aroclor 1016	ug/g	<0.010	<0.010	3311027	<0.010	0.010	3314541
Aroclor 1221	ug/g	<0.010	<0.010	3311027	<0.010	0.010	3314541
Aroclor 1232	ug/g	<0.010	<0.010	3311027	<0.010	0.010	3314541
Aroclor 1242	ug/g	<0.010	<0.010	3311027	<0.010	0.010	3314541
Aroclor 1248	ug/g	<0.010	<0.010	3311027	<0.010	0.010	3314541
Aroclor 1254	ug/g	<0.010	<0.010	3311027	0.027	0.010	3314541
Aroclor 1260	ug/g	<0.010	<0.010	3311027	0.40	0.010	3314541
Aroclor 1262	ug/g	<0.010	<0.010	3311027	<0.010	0.010	3314541
Aroclor 1268	ug/g	<0.010	<0.010	3311027	<0.010	0.010	3314541
Total PCB	ug/g	<0.010	<0.010	3311027	0.43	0.010	3314541
Surrogate Recovery (%)							
Decachlorobiphenyl	%	85	91	3311027	121	N/A	3314541

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

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Maxxam Job #: B3C9529
Report Date: 2013/08/16

Maxxam Analytics
Client Project #: B367894

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		SO2984	SO2985			SP7638		
Sampling Date		2013/08/02 10:45	2013/08/02 10:45					
COC Number		na	na			na		
	Units	**HC6349\TP13-67@0.3M**	**HC6350\TP13-23@0.05**	**RDL**	**QC Batch**	**HC6294\DEBRIS@WEST STN**	**RDL**	**QC Batch**
Aroclor 1262	ug/g	N/A	N/A	0.1	N/A	<0.1	0.1	3313764
Aroclor 1016	ug/g	<0.010	<0.010	0.010	3311027	<0.1	0.1	3313764
Aroclor 1221	ug/g	<0.010	<0.010	0.010	3311027	<0.1	0.1	3313764
Aroclor 1232	ug/g	<0.010	<0.010	0.010	3311027	<0.1	0.1	3313764
Aroclor 1242	ug/g	<0.010	<0.010	0.010	3311027	<0.1	0.1	3313764
Aroclor 1248	ug/g	<0.010	<0.010	0.010	3311027	<0.1	0.1	3313764
Aroclor 1254	ug/g	<0.010	0.62	0.010	3311027	0.4	0.1	3313764
Aroclor 1260	ug/g	<0.010	0.057	0.010	3311027	<0.1	0.1	3313764
Aroclor 1262	ug/g	0.010	<0.010	0.010	3311027	N/A	N/A	N/A
Aroclor 1268	ug/g	<0.010	<0.010	0.010	3311027	<0.1	0.1	3313764
Total PCB	ug/g	0.010	0.67	0.010	3311027	0.4	0.1	3313764
Surrogate Recovery (%)								
Decachlorobiphenyl	%	96	78	N/A	3311027	75	N/A	3313764

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

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Maxxam Job #: B3C9529
Report Date: 2013/08/16

Maxxam Analytics
Client Project #: B367894

Test Summary

Maxxam ID SO2976 **Collected** 2013/08/02
Sample ID HC6341\TP13-65@0.05M **Shipped**
Matrix Soil **Received** 2013/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Moisture	BAL	3312163	N/A	2013/08/13	Valentina Kaftani
Polychlorinated Biphenyl in Soil	GC/ECD	3311027	2013/08/12	2013/08/15	Li Peng

Maxxam ID SO2977 **Collected** 2013/08/02
Sample ID HC6342\TP13-65@0.3M **Shipped**
Matrix Soil **Received** 2013/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Moisture	BAL	3312163	N/A	2013/08/13	Valentina Kaftani
Polychlorinated Biphenyl in Soil	GC/ECD	3311027	2013/08/12	2013/08/15	Li Peng

Maxxam ID SO2978 **Collected** 2013/08/02
Sample ID HC6343\TP13-65F@0.3M **Shipped**
Matrix Soil **Received** 2013/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Moisture	BAL	3312163	N/A	2013/08/13	Valentina Kaftani
Polychlorinated Biphenyl in Soil	GC/ECD	3311027	2013/08/12	2013/08/13	Li Peng

Maxxam ID SO2978 Dup **Collected** 2013/08/02
Sample ID HC6343\TP13-65F@0.3M **Shipped**
Matrix Soil **Received** 2013/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Polychlorinated Biphenyl in Soil	GC/ECD	3311027	2013/08/12	2013/08/13	Li Peng

Maxxam ID SO2979 **Collected** 2013/08/02
Sample ID HC6344\TP13-65@0.5M **Shipped**
Matrix Soil **Received** 2013/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Moisture	BAL	3312163	N/A	2013/08/13	Valentina Kaftani
Polychlorinated Biphenyl in Soil	GC/ECD	3311027	2013/08/12	2013/08/13	Li Peng

Maxxam ID SO2980 **Collected** 2013/08/02
Sample ID HC6345\TP13-66@0.05M **Shipped**
Matrix Soil **Received** 2013/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Moisture	BAL	3312163	N/A	2013/08/13	Valentina Kaftani
Polychlorinated Biphenyl in Soil	GC/ECD	3314541	2013/08/14	2013/08/15	Sarah Huang

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Maxxam Job #: B3C9529
Report Date: 2013/08/16

Maxxam Analytics
Client Project #: B367894

Test Summary

Maxxam ID SO2981 **Collected** 2013/08/02
Sample ID HC6346\TP13-66@0.5M **Shipped**
Matrix Soil **Received** 2013/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Moisture	BAL	3312163	N/A	2013/08/13	Valentina Kaftani
Polychlorinated Biphenyl in Soil	GC/ECD	3311027	2013/08/12	2013/08/15	Li Peng

Maxxam ID SO2982 **Collected** 2013/08/02
Sample ID HC6347\TP13-66@0.3M **Shipped**
Matrix Soil **Received** 2013/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Moisture	BAL	3312163	N/A	2013/08/13	Valentina Kaftani
Polychlorinated Biphenyl in Soil	GC/ECD	3311027	2013/08/12	2013/08/15	Li Peng

Maxxam ID SO2983 **Collected** 2013/08/02
Sample ID HC6348\TP13-67@0.05M **Shipped**
Matrix Soil **Received** 2013/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Moisture	BAL	3312163	N/A	2013/08/13	Valentina Kaftani
Polychlorinated Biphenyl in Soil	GC/ECD	3314541	2013/08/14	2013/08/15	Sarah Huang

Maxxam ID SO2984 **Collected** 2013/08/02
Sample ID HC6349\TP13-67@0.3M **Shipped**
Matrix Soil **Received** 2013/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Moisture	BAL	3312163	N/A	2013/08/13	Valentina Kaftani
Polychlorinated Biphenyl in Soil	GC/ECD	3311027	2013/08/12	2013/08/15	Li Peng

Maxxam ID SO2985 **Collected** 2013/08/02
Sample ID HC6350\TP13-23@0.05 **Shipped**
Matrix Soil **Received** 2013/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Moisture	BAL	3312163	N/A	2013/08/13	Valentina Kaftani
Polychlorinated Biphenyl in Soil	GC/ECD	3311027	2013/08/12	2013/08/15	Li Peng

Maxxam ID SP7638 **Collected**
Sample ID HC6294\DEBRIS@WEST STN **Shipped**
Matrix Soil **Received** 2013/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Polychlorinated Biphenyl in Solids	GC/ECD	3313764	2013/08/14	2013/08/16	Sarah Huang

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Maxxam Job #: B3C9529
Report Date: 2013/08/16

Maxxam Analytics
Client Project #: B367894

Package 1	6.0°C

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

GENERAL COMMENTS

Sample SO2976-01: PCB Analysis: Due to high concentrations of the target analytes, sample required dilution. Detection limits were adjusted accordingly.

Sample SP7638-01: PCB Analysis: Results were not moisture corrected.

Results relate only to the items tested.

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Maxxam Analytics
Attention: Geraldlyn Gouthro
Client Project #: B367894
P.O. #:
Site Location:

Quality Assurance Report

Maxxam Job Number: MB3C9529

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
3311027	LPG	Matrix Spike	Decachlorobiphenyl	2013/08/13		92	%	60 - 130
		Matrix Spike (SO2978)	Aroclor 1260	2013/08/13		111	%	60 - 130
			Total PCB	2013/08/13		111	%	60 - 130
		Spiked Blank	Decachlorobiphenyl	2013/08/13		101	%	60 - 130
			Aroclor 1260	2013/08/13		115	%	60 - 130
			Total PCB	2013/08/13		115	%	60 - 130
		Method Blank	Decachlorobiphenyl	2013/08/13		117	%	60 - 130
			Aroclor 1016	2013/08/13	<0.010		ug/g	
			Aroclor 1221	2013/08/13	<0.010		ug/g	
			Aroclor 1232	2013/08/13	<0.010		ug/g	
			Aroclor 1242	2013/08/13	<0.010		ug/g	
			Aroclor 1248	2013/08/13	<0.010		ug/g	
			Aroclor 1254	2013/08/13	<0.010		ug/g	
			Aroclor 1260	2013/08/13	<0.010		ug/g	
			Aroclor 1262	2013/08/13	<0.010		ug/g	
			Aroclor 1268	2013/08/13	<0.010		ug/g	
			Total PCB	2013/08/13	<0.010		ug/g	
		RPD - Sample/Sample Dup	Aroclor 1016	2013/08/13	NC		%	50
			Aroclor 1221	2013/08/13	NC		%	50
			Aroclor 1232	2013/08/13	NC		%	50
			Aroclor 1242	2013/08/13	NC		%	50
			Aroclor 1248	2013/08/13	NC		%	50
			Aroclor 1254	2013/08/13	NC		%	50
			Aroclor 1260	2013/08/13	NC		%	50
			Aroclor 1262	2013/08/13	NC		%	50
			Aroclor 1268	2013/08/13	NC		%	50
			Total PCB	2013/08/13	NC		%	50
3312163	JV1	RPD - Sample/Sample Dup	Moisture	2013/08/13	NC		%	20
3313764	SHG	Matrix Spike	Decachlorobiphenyl	2013/08/16		80	%	40 - 130
		Matrix Spike (SP7638)	Aroclor 1260	2013/08/16		83	%	60 - 130
			Total PCB	2013/08/16		83	%	60 - 130
		Spiked Blank	Decachlorobiphenyl	2013/08/16		95	%	40 - 130
		Spiked Blank DUP	Decachlorobiphenyl	2013/08/16		91	%	40 - 130
		Spiked Blank	Aroclor 1260	2013/08/16		105	%	60 - 130
		Spiked Blank DUP	Aroclor 1260	2013/08/16		107	%	60 - 130
		RPD	Aroclor 1260	2013/08/16	1.5		%	50
		Spiked Blank	Total PCB	2013/08/16		105	%	60 - 130
		Spiked Blank DUP	Total PCB	2013/08/16		107	%	60 - 130
		RPD	Total PCB	2013/08/16	1.5		%	50
		Method Blank	Decachlorobiphenyl	2013/08/16		95	%	40 - 130
			Aroclor 1262	2013/08/16	<0.01		ug/g	
			Aroclor 1016	2013/08/16	<0.01		ug/g	
			Aroclor 1221	2013/08/16	<0.01		ug/g	
			Aroclor 1232	2013/08/16	<0.01		ug/g	
			Aroclor 1242	2013/08/16	<0.01		ug/g	
			Aroclor 1248	2013/08/16	<0.01		ug/g	
			Aroclor 1254	2013/08/16	<0.01		ug/g	
			Aroclor 1260	2013/08/16	<0.01		ug/g	
			Aroclor 1268	2013/08/16	<0.01		ug/g	

Maxxam Analytics
Attention: Geraldlyn Gouthro
Client Project #: B367894
P.O. #:
Site Location:

Quality Assurance Report (Continued)

Maxxam Job Number: MB3C9529

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
3313764	SHG	Method Blank	Total PCB	2013/08/16	<0.01		ug/g	
3314541	SHG	Matrix Spike	Decachlorobiphenyl	2013/08/15		96	%	60 - 130
			Aroclor 1260	2013/08/15		106	%	60 - 130
			Total PCB	2013/08/15		106	%	60 - 130
		Spiked Blank	Decachlorobiphenyl	2013/08/15		92	%	60 - 130
			Aroclor 1260	2013/08/15		99	%	60 - 130
			Total PCB	2013/08/15		99	%	60 - 130
		Method Blank	Decachlorobiphenyl	2013/08/15		100	%	60 - 130
			Aroclor 1016	2013/08/15	<0.010		ug/g	
			Aroclor 1221	2013/08/15	<0.010		ug/g	
			Aroclor 1232	2013/08/15	<0.010		ug/g	
			Aroclor 1242	2013/08/15	<0.010		ug/g	
			Aroclor 1248	2013/08/15	<0.010		ug/g	
			Aroclor 1254	2013/08/15	<0.010		ug/g	
			Aroclor 1260	2013/08/15	<0.010		ug/g	
			Aroclor 1262	2013/08/15	<0.010		ug/g	
			Aroclor 1268	2013/08/15	<0.010		ug/g	
			Total PCB	2013/08/15	<0.010		ug/g	
		RPD - Sample/Sample Dup	Aroclor 1242	2013/08/15	NC		%	50
			Aroclor 1248	2013/08/15	NC		%	50
			Aroclor 1254	2013/08/15	NC		%	50
			Aroclor 1260	2013/08/15	NC		%	50
			Total PCB	2013/08/15	NC		%	50

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

Validation Signature Page

Maxxam Job #: B3C9529

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

Charles Ancker, B.Sc., M.Sc., C.Chem, Senior Analyst

Ewa Pranjic, M.Sc., C.Chem, Scientific Specialist

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

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Client: PUBLIC WORKS & GOVERNMENT SERV

Table 1: ABA Test Results for project CAM C

Maxxam Sample No	Sample ID	Paste pH	Total S	HCl Extractable Sulphur	HNO3 Extractable Sulphur	Non Extractable Sulphur (by diff.)	Acid Generation Potential	Mod. ABA Neutralization Potential	Fizz Rating	Net Neutralization Potential	Neutralization Potential Ratio
	Units	pH Units	wt%	wt%	wt%	wt%	Kg CaCO3/T	Kg CaCO3/T	N/A	Kg CaCO3/T	N/A
HE8164	TP9, BA19	9.08	0.04	<0.01	<0.01	0.04	<0.3	185.8	MODERATE	185.8	#N/A
HE8165	TP15, BA11	8.95	0.07	<0.01	0.02	0.05	0.6	280.0	MODERATE	279.4	466.7
Detection Limits		*N/A*	*0.02*	*0.01*	*0.01*	*0.02*	*0.3*	*0.1*	*N/A*	*0.1*	*N/A*
Maxxam SOP #		*BBY0-000*	*Acme*	*BBY0-00010*	*BBY0-00010*	*Calculation*	*Calculation*	*BBY0SOP-00020*	*BBY0SOP-00*	*Calculation*	*Calculation*

Notes:

Lawrence, R.W. 1991. Acid Rock Drainage Prediction Manual

References:

Acid Generation Potential = HNO3 Extractable Sulphide Sulphur*31.25

Fizz Rating - Reference method used is based on NP method.

Non Extractable Sulphur = (Total Sulphur)-(HCl Extractable Sulphate Sulphur)-(HNO3 Extractable Sulphide Sulphur)

Net Neutralization Potential = (Modified ABA Neutralization Potential)-(Acid Generation Potential (HNO3 Extr))

Mod. ABA Neutralization Potential - MEND Acid Rock Drainage Prediction Manual, MEND Project 1.16.1b (pages 6.2-11 to 17), March 1991.

Neutralization Potential Ratio = (Neutralization Potential)/(Acid Generation Potential)

Paste pH - Field and Laboratory Methods Applicable to Overburdens and Minesoils, (EPA 600 / 2-78-054, March 1978).

HCl Extractable Sulphur and HNO3 Extractable Sulphur is based on a modified version of ASTM Method D 2492-02

Total sulphur, total carbon & carbonate carbon (CO2; HCl direct method) by Leco done at Acme Labs.

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Client: PUBLIC WORKS & GOVERNMENT SERV

Table 2: ABA QAQC Test Results for project CAM C

Duplicate QC

Maxxam Sample No	Sample ID	Paste pH Reported	Paste pH Dup		HCl Extractable Sulphur Reported	HCl Extractable Sulphur Dup	HNO3 Extractable Sulphur Reported	HNO3 Extractable Sulphur Dup	Mod. ABA Neutralization Potential Reported	Mod. ABA Neutralization Potential Dup	Fizz Rating Reported	Fizz Rating Dup
	Units	pH Units	pH Units		wt%	wt%	wt%	wt%	Kg CaCO3/T	Kg CaCO3/T	N/A	N/A
HE8164 Dup	TP9, BA19	9.08	9.08		<0.01	<0.01	<0.01	<0.01	185.8	183.8	MODERATE	MODERATE

Reference Material QC

	Paste pH		Total S	HCl Extractable Sulphur		HNO3 Extractable Sulphur		Mod. ABA Neutralization Potential
Units	pH Units		wt%	wt%		wt%		Kg CaCO3/T
Reference Material								
ARD Ref Mat C&S (0.16 wt%)			0.17					
PPHARD 2012-1 (8.34 pH Units)	8.23							
KZK-1ModS Slight (58.9 Kg CaCO3/T)								55.8
ARD Ref Mat C&S (2.35 wt%)			2.29					
ARD Ref Mat SO4-S (0.06 wt%)				0.06				
ARD Ref Mat SO4-S (0.27 wt%)				0.28				
ARD Ref Mat S-S (0.37 wt%)						0.40		

Blank QC

Method Blank			<0.02					
Method Blank				<0.01				
Method Blank						<0.01		

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Table 3: Sample List Test Results for project CAM C

Maxxam Sample ID	Client Sample ID	Sample Form	Dry Weight Received (kg)
HE8164	TP9, BA19	SOIL	1.013
HE8165	TP15, BA11	SOIL	1.005

Total Weight	2.02
Total Samples Received	2

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Table 4: Sample Summary for project CAM C

PUBLIC WORKS & GOVERNMENT SERV, CAM C

Date Samples Rec'd by Maxxam:	2 sample were rec'd on 15-Aug-2013.
Sample Prep Conducted by Maxxam:	YES
Date of Analysis:	August 2013

Client:	PUBLIC WORKS & GOVERNMENT SERV
Client Project Name:	CAM C
Client Project No:	60299674 CAM C
ARD Project #:	2-21-900
Maxxam Job No:	B371668
Contact Person:	Jennifer McCallum:
E-mail Address:	jennifer.mccallum@aecom.com

Data Validated by:	Kevin Bunten
Position:	ARD - Senior Scientific Specialist

Sample Storage

Sample rejects (and selected test residues where applicable) have been archived
Standard archive protocol is archiving for samples for 3 months after testing is complete.
If archiving is required past 3 months a fee will be required.

GRAIN SIZE ANALYSIS

AECOM

CLIENT :	Public Works and Government Services Canada		
PROJECT :	CAM-C Matheson Point		
JOB No. :	60299674 - 9.6		
LOCATION :		SAMPLE:	BA-5
TESTHOLE:	TP-17	DEPTH :	
DATE :	Aug. 19, 2013	TECHNICIAN :	KL/GU

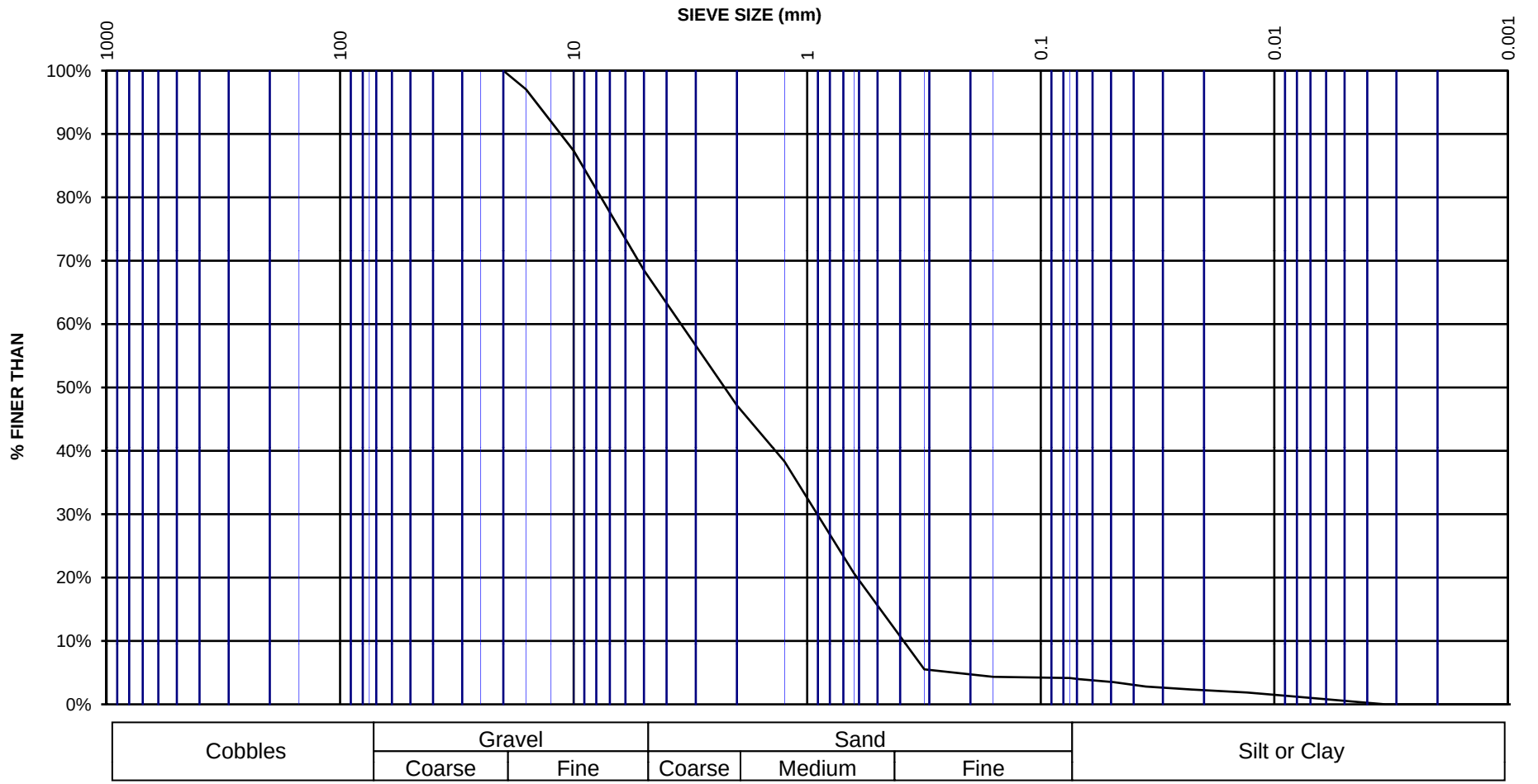
TOTAL DRY WEIGHT OF SAMPLE		SIEVE NO. (μm)	SIZE OF OPENING APPROX. INCHES	SIZE OF OPENING mm	WEIGHT RETAINED (g)	PERCENT RETAINED	PERCENT FINER THAN	REMARKS
Before Washing		150,000	6	150.0		0%	100%	
Wet + Tare		75,000	3	75.0		0%	100%	
Dry+Tare	880.6	50,000	2	50.0		0%	100%	
Tare	100.0	40,000	1 1/2	40.0		0%	100%	
Wt. Dry	780.6	25,000	1	25.0		0%	100%	
Moisture Content		20,000	3/4	20.0		0%	100%	
Wet + Tare		16,000	5/8	16.0	23.1	3%	97%	
Dry+Tare		12,500	1/2	12.5	62.7	8%	92%	
Tare		10,000	3/8	10.0	98.8	13%	87%	
MC (%)		5,000	0.185	5.0	246.0	32%	68.5%	
	Passing							
After Washing		2,000	0.0937	2.0	412.4	53%	47.2%	
Wt. Dry+Tare		1,250	0.0469	1.25	481.6	62%	38.3%	
Tare		630	0.0234	0.63	619.3	79%	20.7%	
Wt. Dry		315	0.0116	0.315	737.5	94%	5.5%	
Tare No.		160	0.0059	0.160	746.7	96%	4.3%	
		75	0.00295	0.075	748.2	96%	4.2%	
		PAN						

HYDROMETER DATA		READING	TIME (min)	DIAMETER (mm)	TEMP. (°C)	CORR. READING	PERCENT FINER THAN	REMARKS
Wt Dry+Tare	880.6	12	0.5	0.069	24	9	4.0%	
Wt Tare	100.0	11	1	0.049	24	8	3.5%	
Wt Dry	780.6	10	2	0.036	22	6	2.8%	
Sample Size :	100	9	5	0.023	22	5	2.3%	
Wt Retained 2 mm:	412.4	8	15	0.013	22	4	1.9%	
% Passing 2 mm:	47.2%	7	30	0.009	22	3	1.4%	
Specific Gravity :	2.70	6	60	0.007	22	2	0.9%	
Hydrometer No.:	43-9856	5	120	0.005	22	1	0.5%	
Solution (g/L) :	40	4	240	0.003	22	0	0.0%	
		4	1440	0.001	22	0	0.0%	
		4	2880	0.001	22	0	0.0%	

GRAIN SIZE ANALYSIS

AECOM

CLIENT :	Public Works and Government Services Canada		
PROJECT :	CAM-C Matheson Point		
JOB No. :	60299674 - 9.6		
LOCATION :		SAMPLE:	BA-5
TESTHOLE:	TP-17	DEPTH :	
DATE :	Aug. 19, 2013	TECHNICIAN :	KL/GU



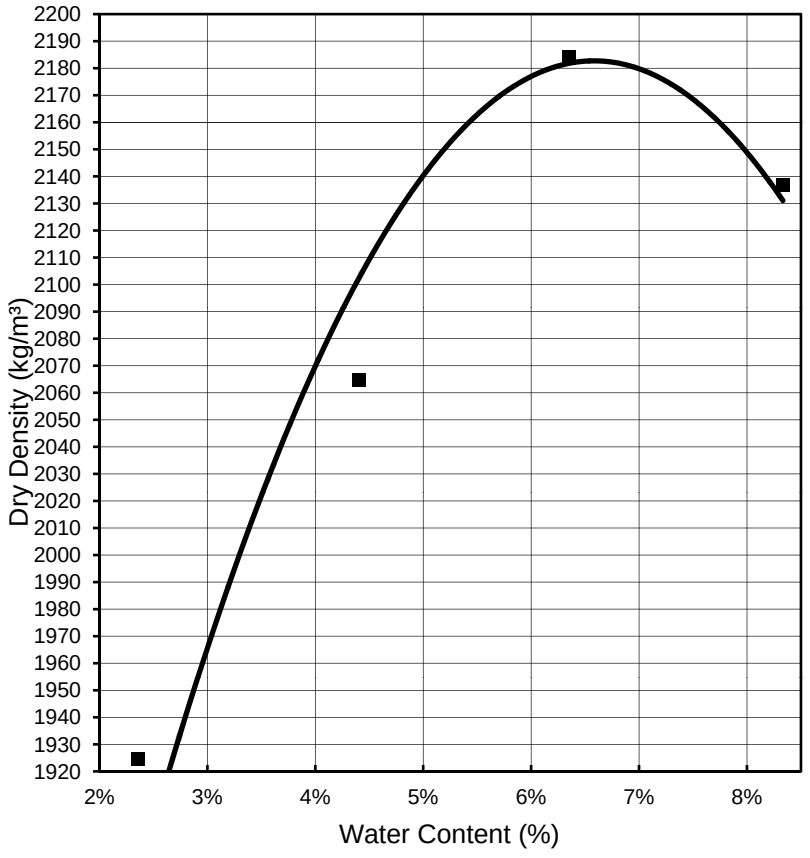
FORM: Public Work Hydro. TP17 BA 5 .xls
DATE: 8/27/2013

PROCTOR TEST

AECOM

CLIENT :	Public Works and Government Services Canada		
PROJECT :	CAM-C Matheson Point		
JOB No. :	60299674 - 9.6		
LOCATION :		SAMPLE:	BA-16
TESTHOLE :	TP-21	DEPTH :	
DATE :	26-Aug-13	TECHNICIAN :	GU

TRIAL No.	1	2	3	4		
DENSITY DETERMINATION						
Mould Number						
Volume of Mould (cm³)	940.0	940.0	940.0	940.0		
Wt. Sample (wet+mould)(g)	6222.7	6379.9	6372.5	6048.3		
Wt. Mould (g)	4196.6	4196.6	4196.6	4196.6		
Wet Density (kg/m³)	2155	2323	2315	1970		
Dry Density (kg/m³)	2065	2184	2137	1925		
WATER CONTENT DETERMINATION						
Tare Number						
Wt. Sample (wet+tare)(g)	599.8	635.5	777.7	795.7		
Wt. Sample (dry+tare)(g)	575.2	598.5	718.9	777.7		
Wt. Tare (g)	16.1	15.9	13.2	13.4		
Wt. Dry Soil (g)	559.1	582.6	705.7	764.3		
Wt. Water (g)	24.6	37.0	58.8	18.0		
Water Content (%)	4.4%	6.4%	8.3%	2.4%		



At Optimum:

Water Content	6.5%
Dry Density (kg/m³)	2182

Method of Compaction:	D-698
Dia. of Mould (cm):	10
No. of Layers:	3
No. Blows per Layer:	25
Ht. of Free Fall (cm):	30
Wt. of Tamper (g)	2500
Shape of Tamping Face:	FLAT

Description of Sample:
Gravel with some Sand

Rock Corrections:

% Rock	Density	Optimum
5%	2205	6.2%
10%	2228	5.9%
15%	2252	5.6%
20%	2276	5.2%

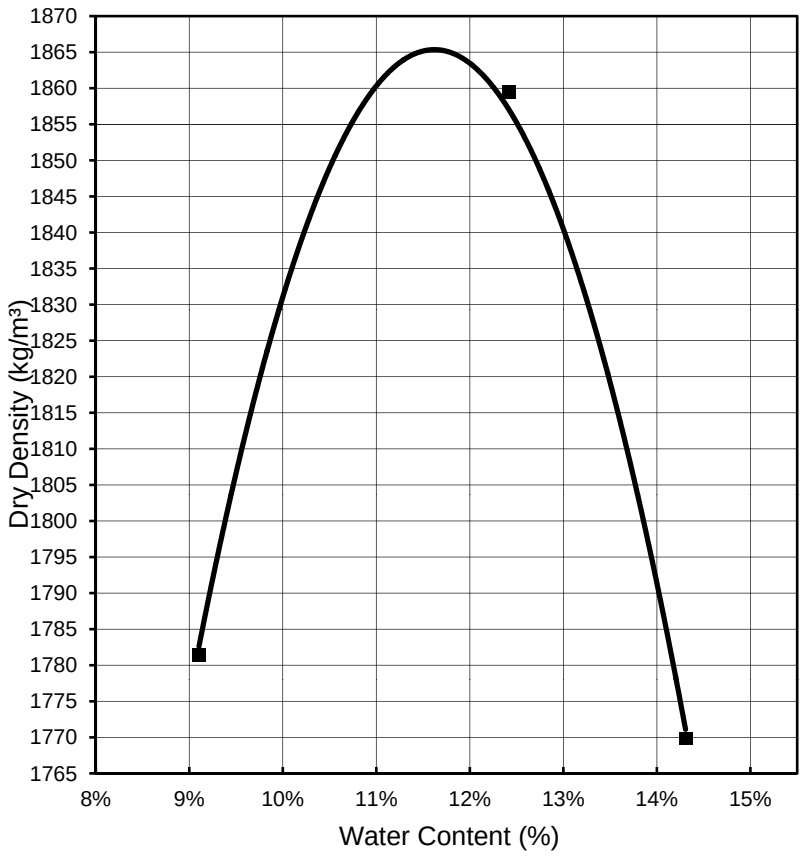
Remarks:

PROCTOR TEST

AECOM

CLIENT :	Public Works and Government Services Canada		
PROJECT :	CAM-C Matheson Point		
JOB No. :	60299674 - 9.6		
LOCATION :		SAMPLE:	BA-18
TESTHOLE :	TP-6	DEPTH :	
DATE :	19-Aug-13	TECHNICIAN :	KL/GU

TRIAL No.	1	2	3	4		
DENSITY DETERMINATION						
Mould Number						
Volume of Mould (cm³)	940.0	940.0	940.0	940.0		
Wt. Sample (wet+mould)(g)	6130.6	6152.9	6015.3	6090.0		
Wt. Mould (g)	4196.7	4196.7	4196.7	4196.7		
Wet Density (kg/m³)	2057	2081	1935	2014		
Dry Density (kg/m³)	2057	1860	1781	1770		
WATER CONTENT DETERMINATION						
Tare Number						
Wt. Sample (wet+tare)(g)	394.3	573.3	424.8	460.9		
Wt. Sample (dry+tare)(g)	356.0	513.7	392.2	406.6		
Wt. Tare (g)	13.6	13.5	13.3	13.3		
Wt. Dry Soil (g)	342.4	500.2	378.9	393.3		
Wt. Water (g)	38.3	59.6	32.6	54.3		
Water Content (%)		11.9%	8.6%	13.8%		



At Optimum:

Water Content	11.5%
Dry Density (kg/m³)	1865

Method of Compaction:	D-698
Dia. of Mould (cm):	10
No. of Layers:	3
No. Blows per Layer:	25
Ht. of Free Fall (cm):	30
Wt. of Tamper (g)	2500
Shape of Tamping Face:	FLAT

Description of Sample:
Gravel With Some Sand

Rock Corrections:

% Rock	Density	Optimum

Remarks:

CAM - C MATHESON POINT DEW LINE SITE

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

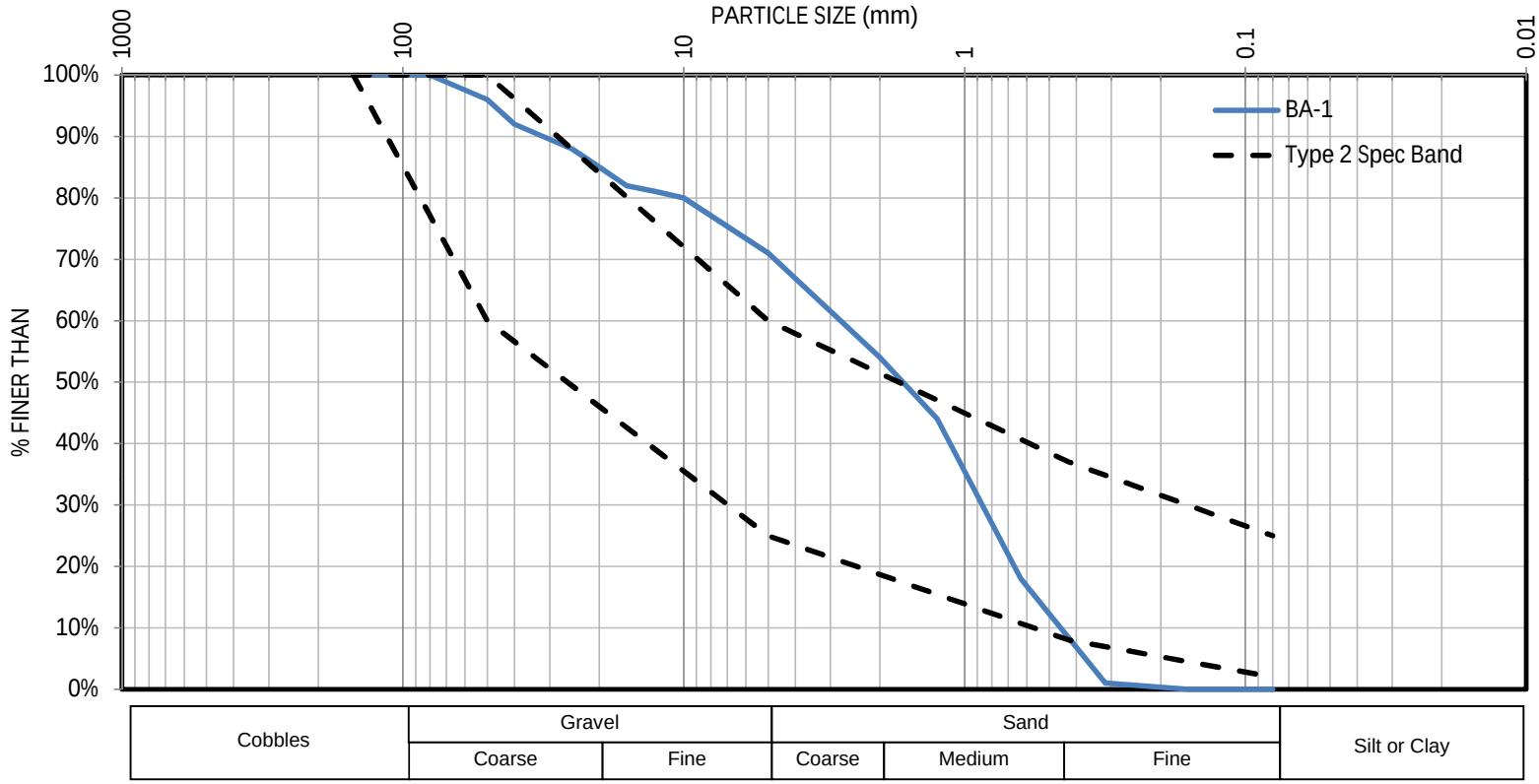


Figure 3-1

CAM - C MATHESON POINT DEW LINE SITE

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

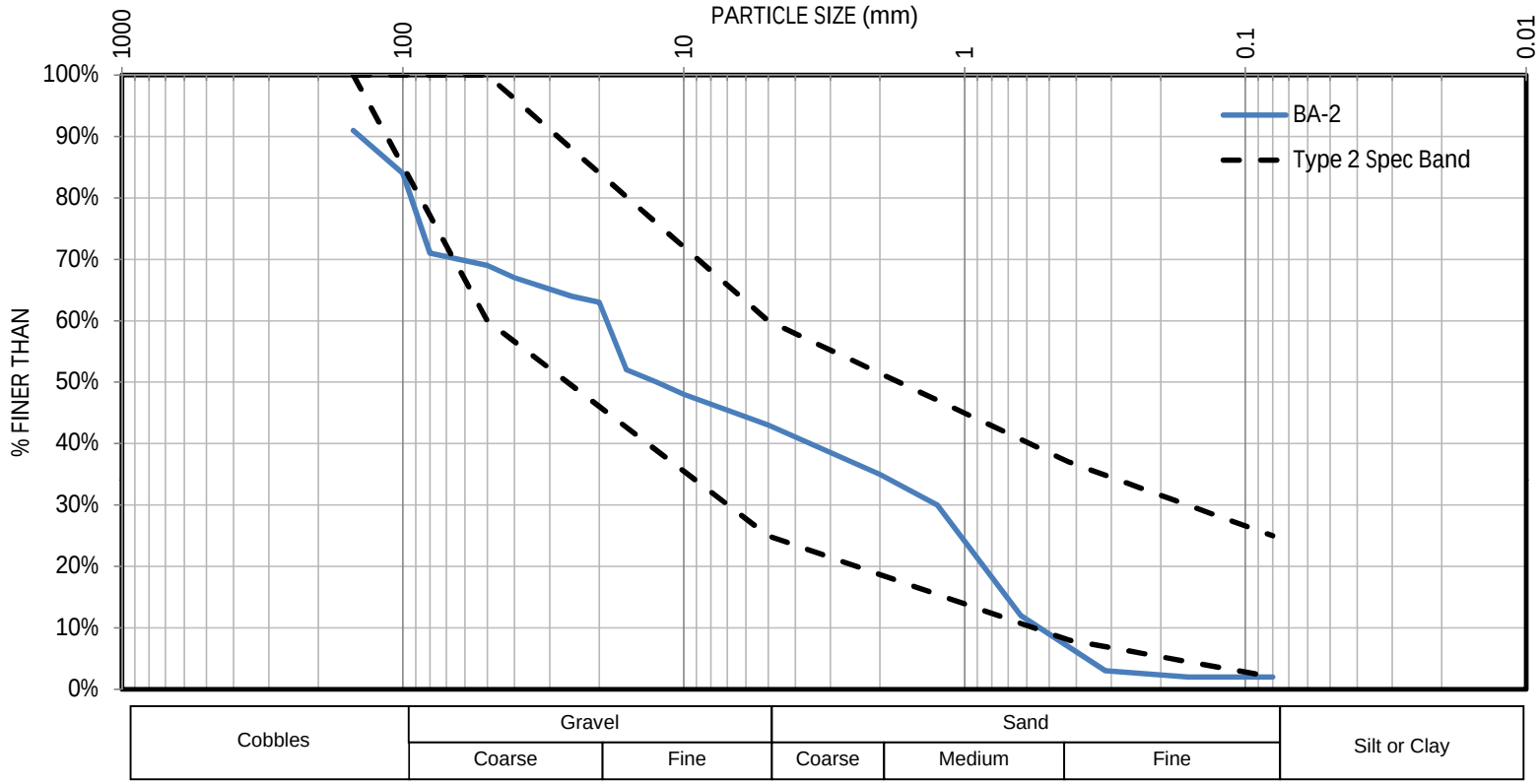


Figure 3-2

CAM - C MATHESON POINT DEW LINE SITE

GRAIN SIZE DISTRIBUTION CURVES - BORROW AREA 3 (TYPE 2 MATERIAL)

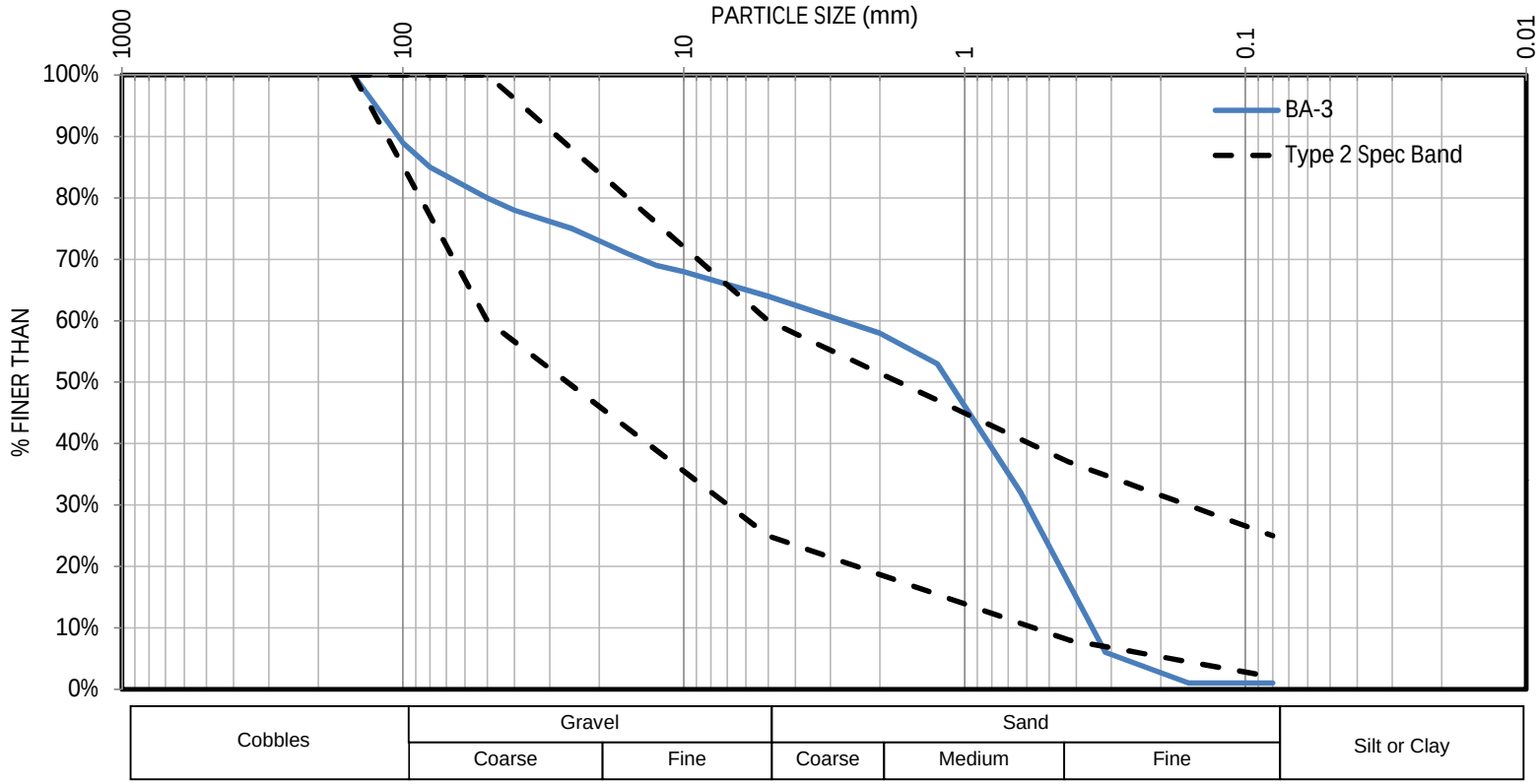


Figure 3-3

CAM - C MATHESON POINT DEW LINE SITE

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

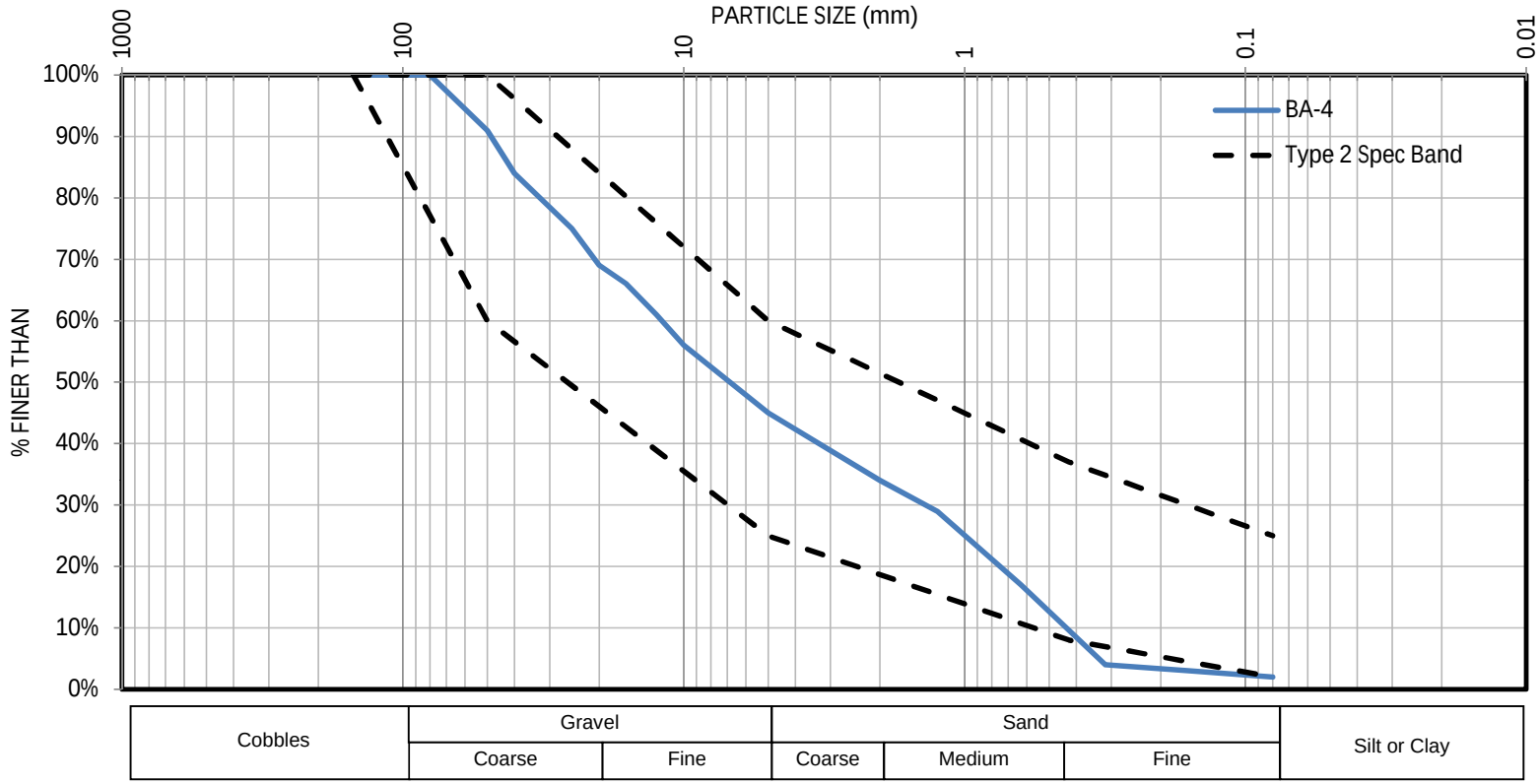


Figure 3-4

CAM - C MATHESON POINT DEW LINE SITE

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

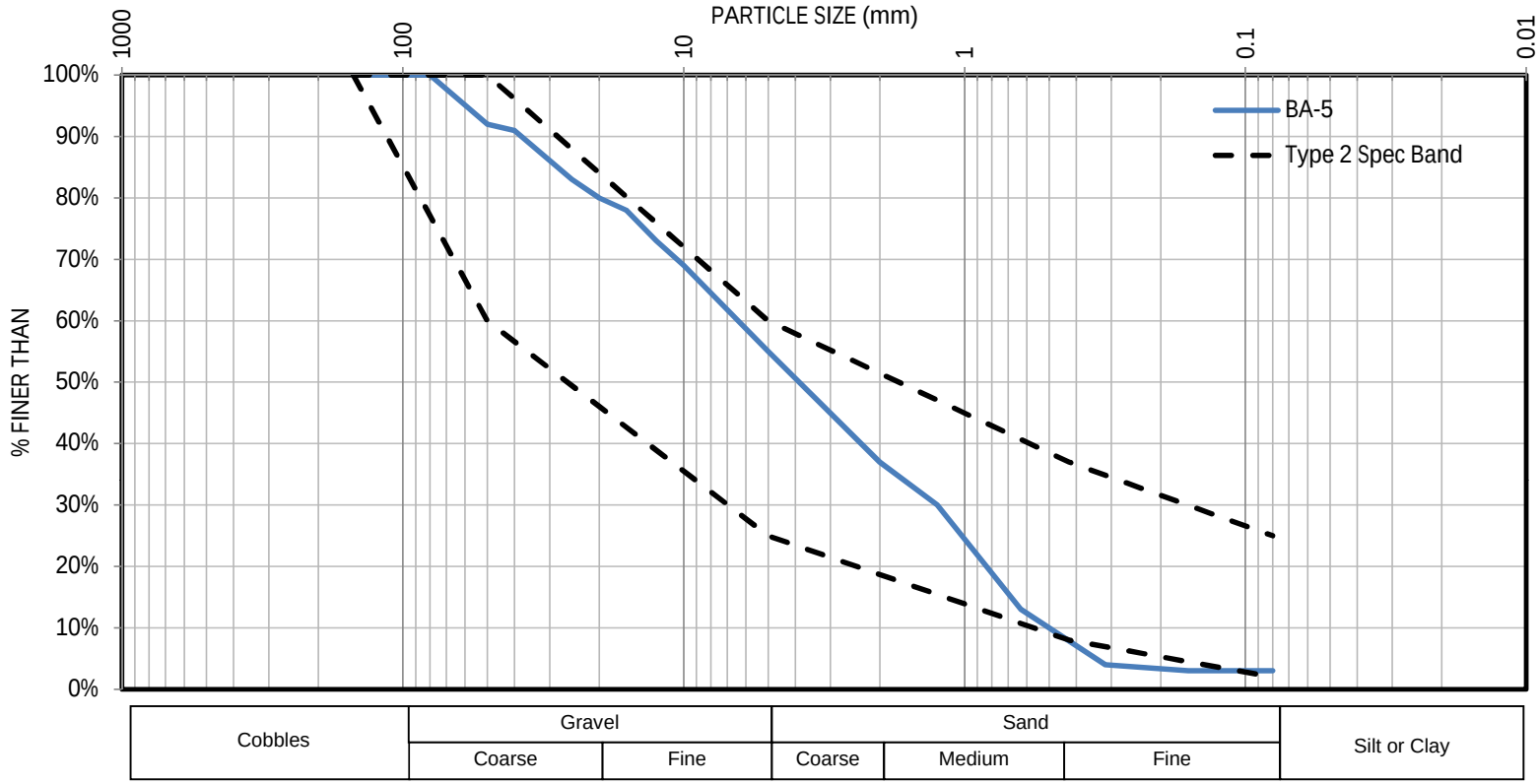


Figure 3-5

CAM - C MATHESON POINT DEW LINE SITE

GRAIN SIZE DISTRIBUTION CURVES - BORROW AREA 6 (TYPE 2 MATERIAL)

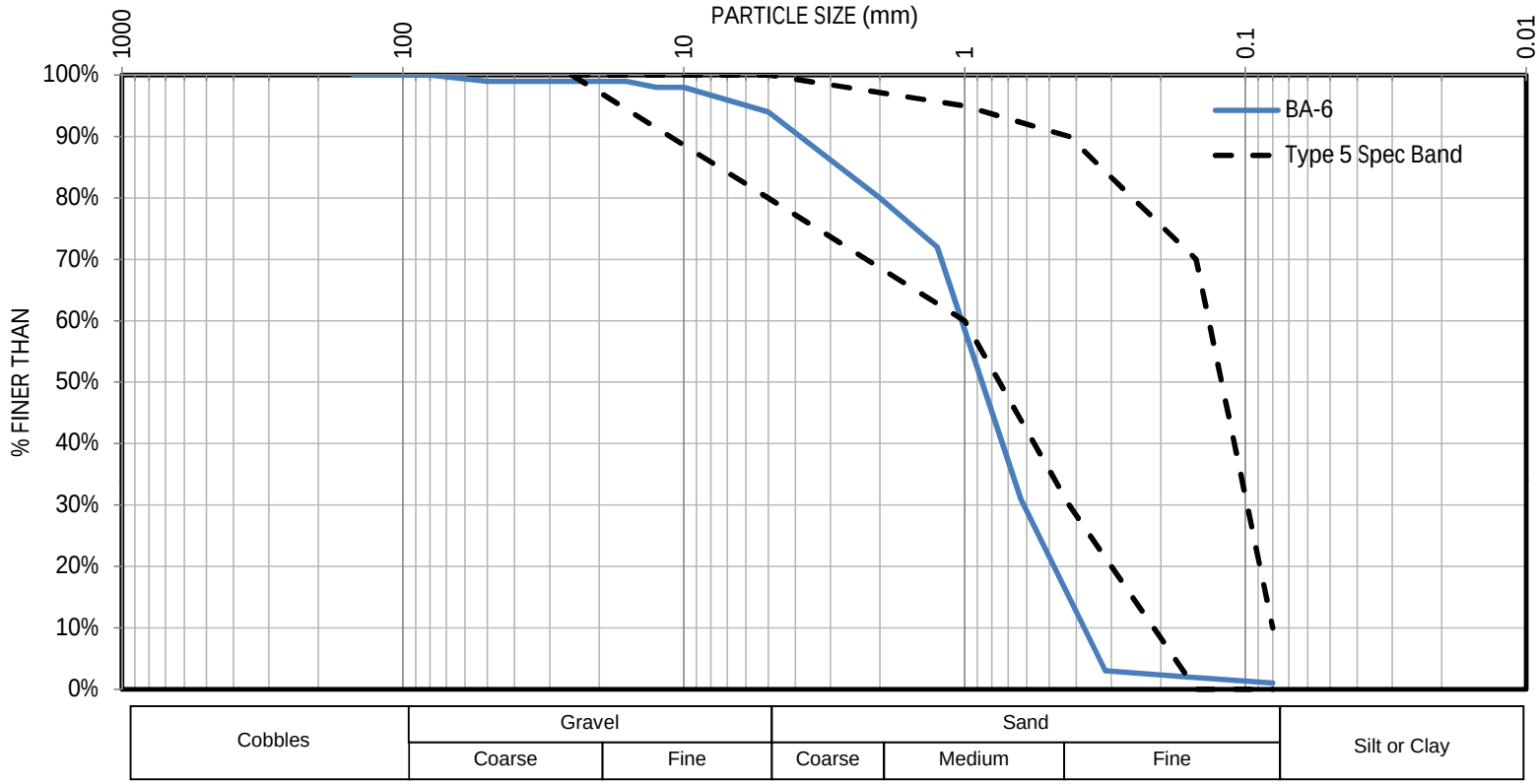


Figure 3-6

CAM - C MATHESON POINT DEW LINE SITE

GRAIN SIZE DISTRIBUTION CURVES - BORROW AREA 7 (TYPE 5 MATERIAL)

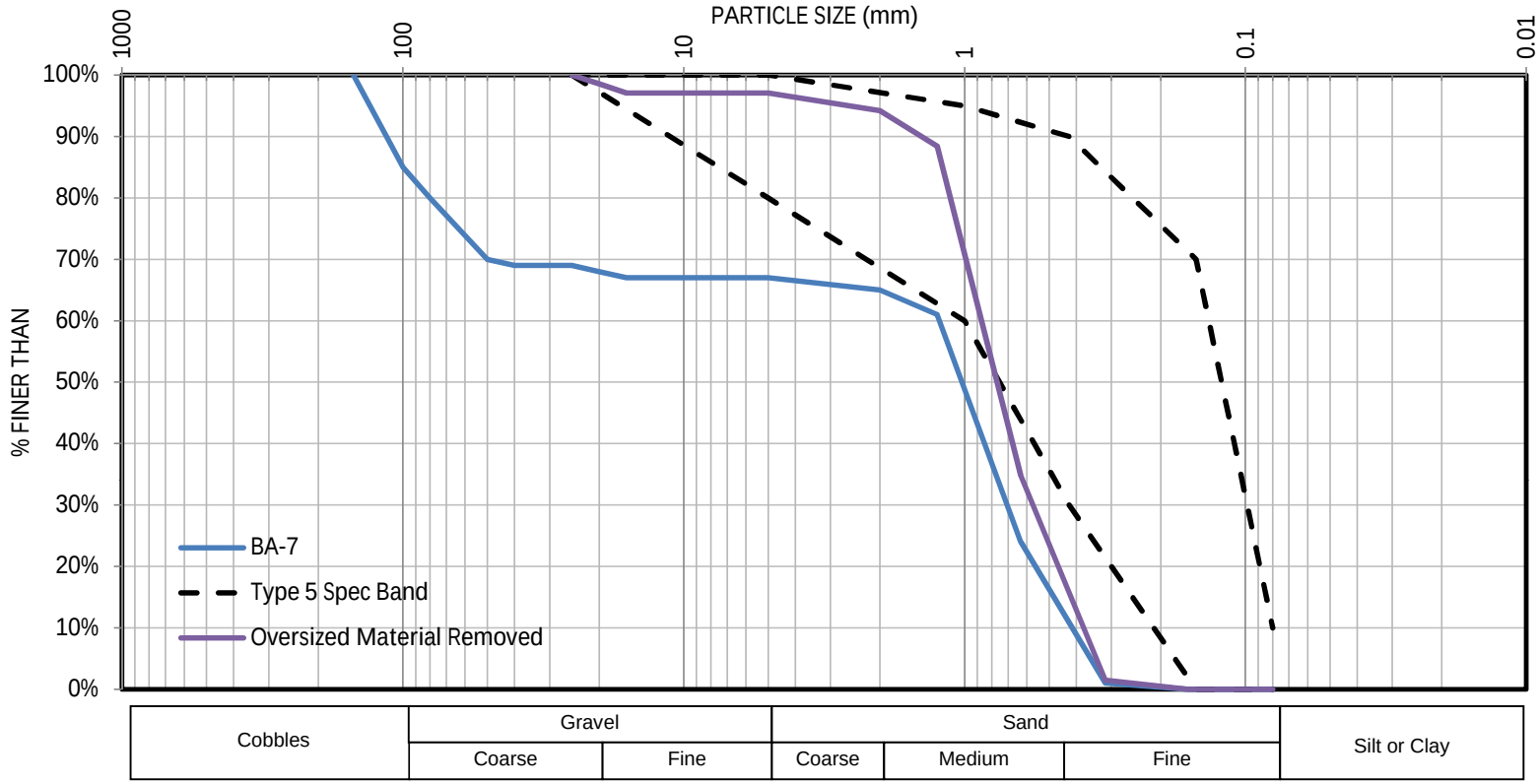


Figure 3-7

CAM - C MATHESON POINT DEW LINE SITE

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

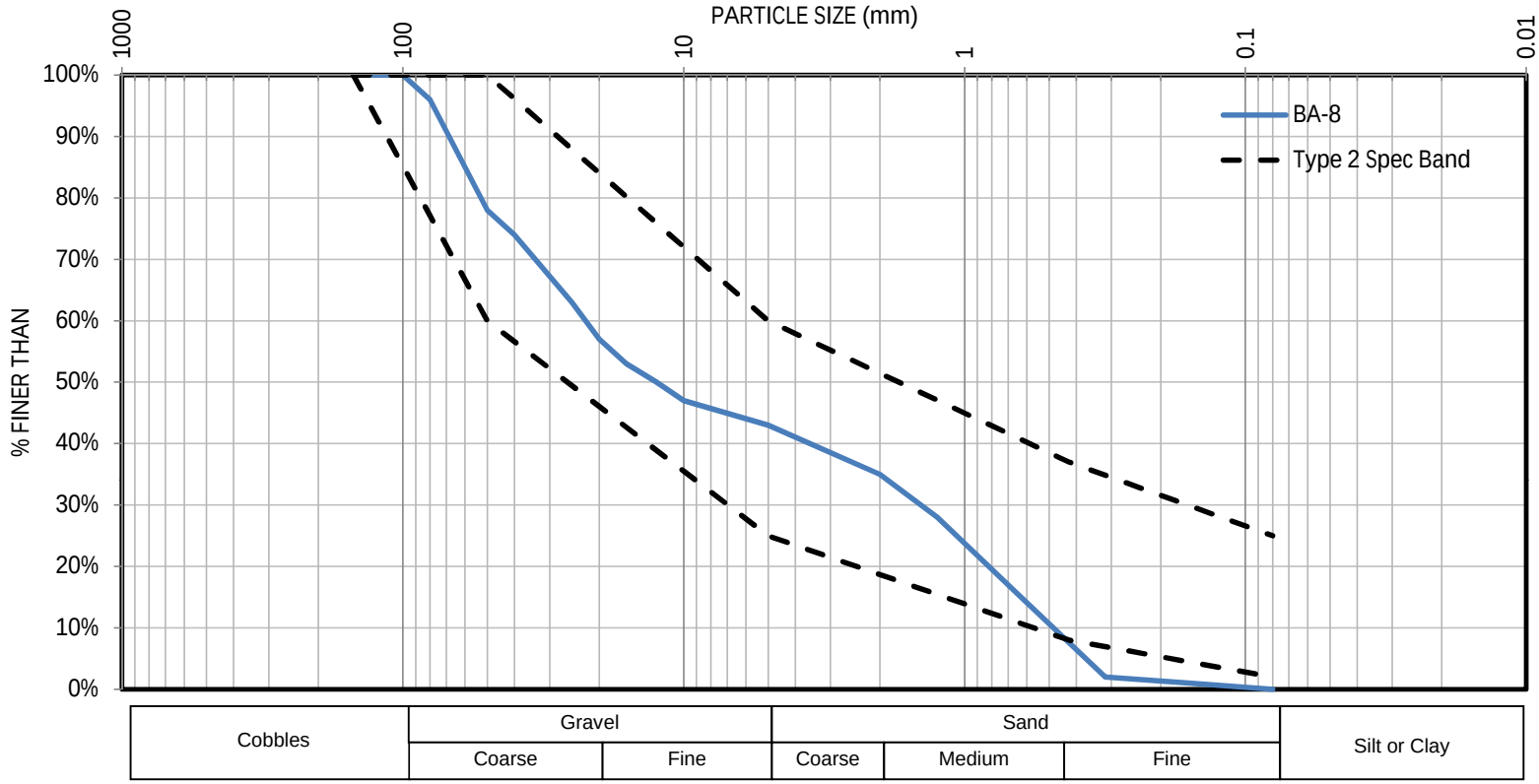


Figure 3-8

CAM - C MATHESON POINT DEW LINE SITE

GRAIN SIZE DISTRIBUTION CURVES - BORROW AREA 9 (TYPE 2 MATERIAL)

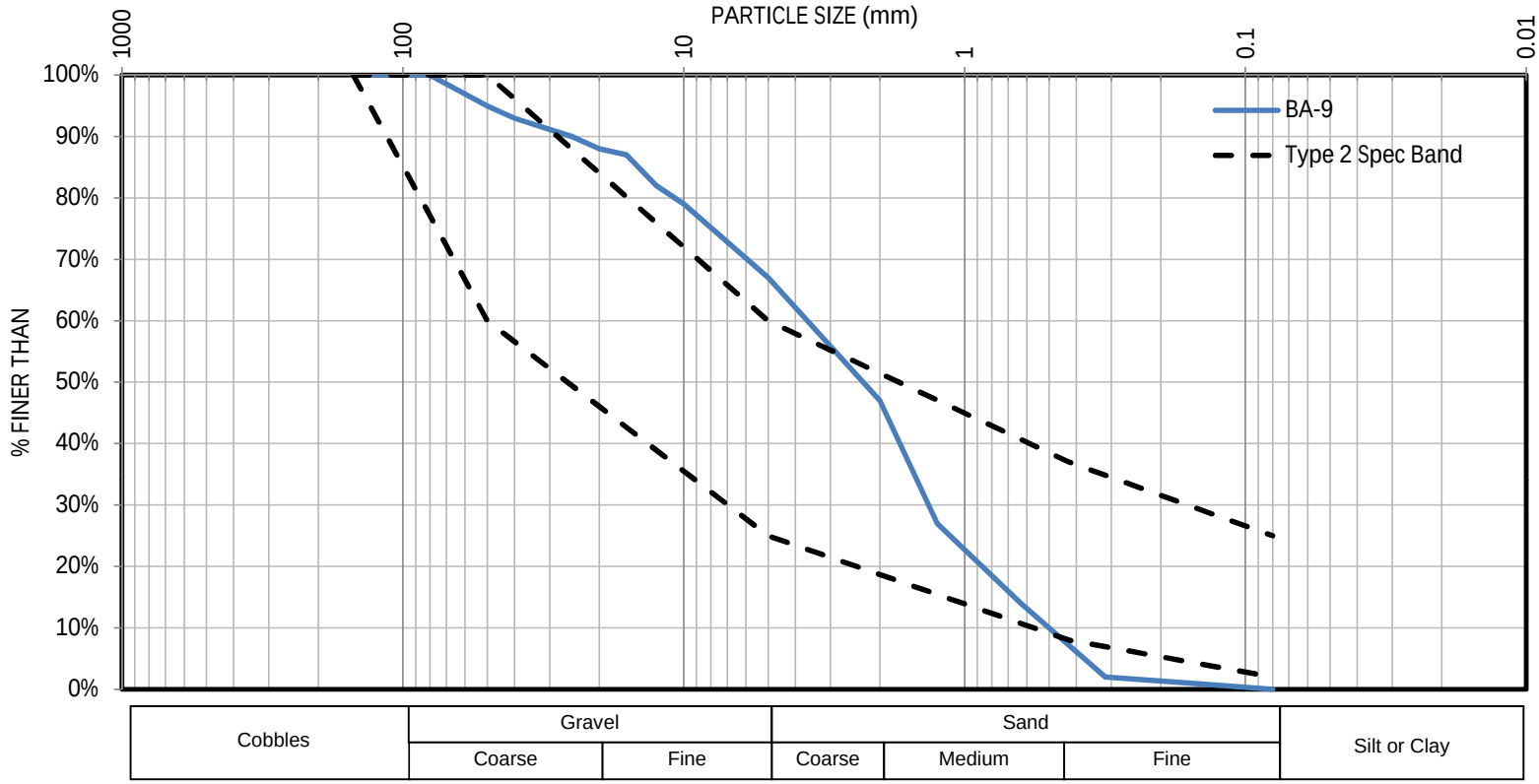


Figure 3-9

AECOM

CAM - C MATHESON POINT DEW LINE SITE

GRAIN SIZE DISTRIBUTION CURVES - BORROW AREA 10 (TYPE 5 MATERIAL)

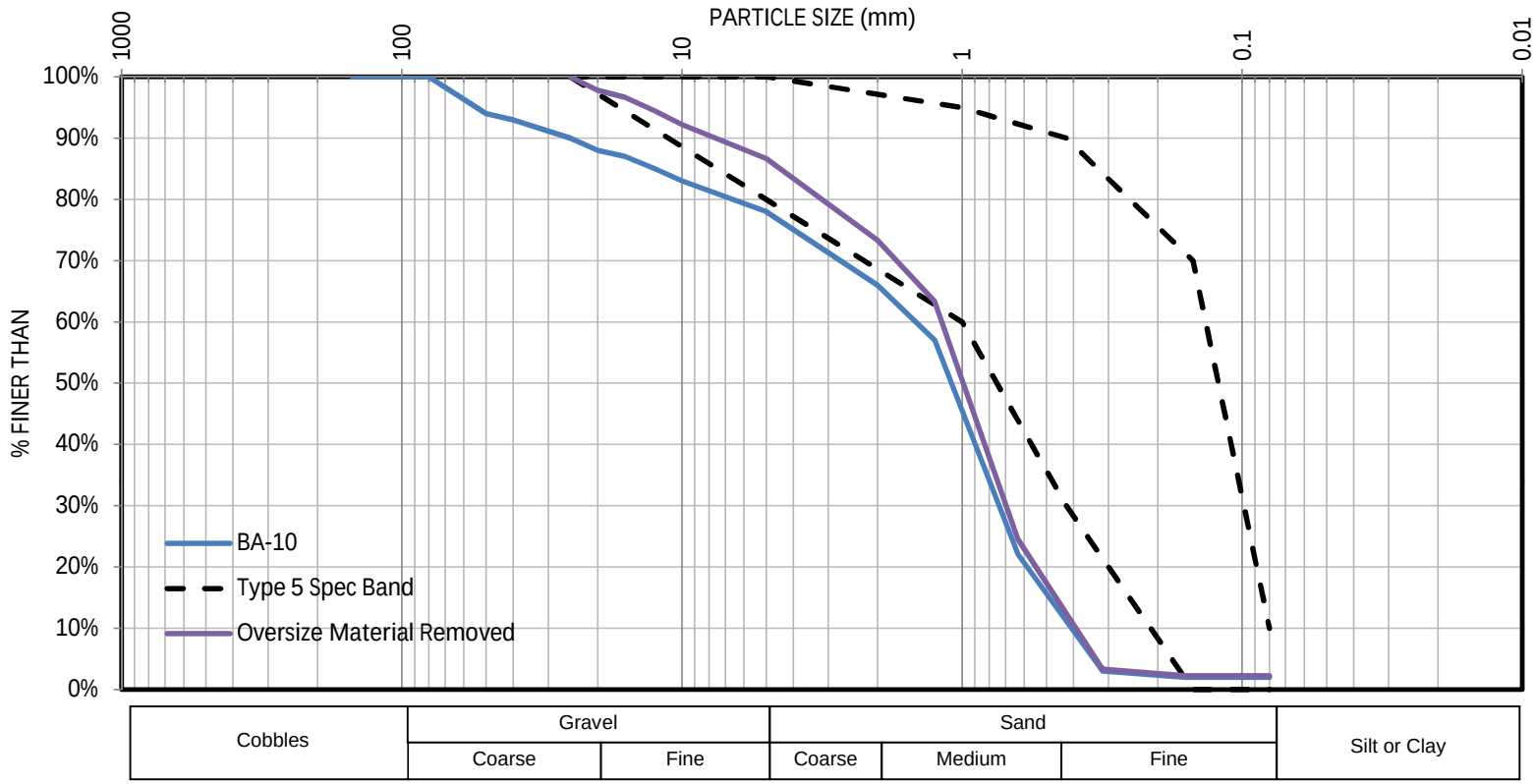


Figure 3-10

CAM - C MATHESON POINT DEW LINE SITE

GRAIN SIZE DISTRIBUTION CURVES - BORROW AREA 11 (TYPE 2 MATERIAL)

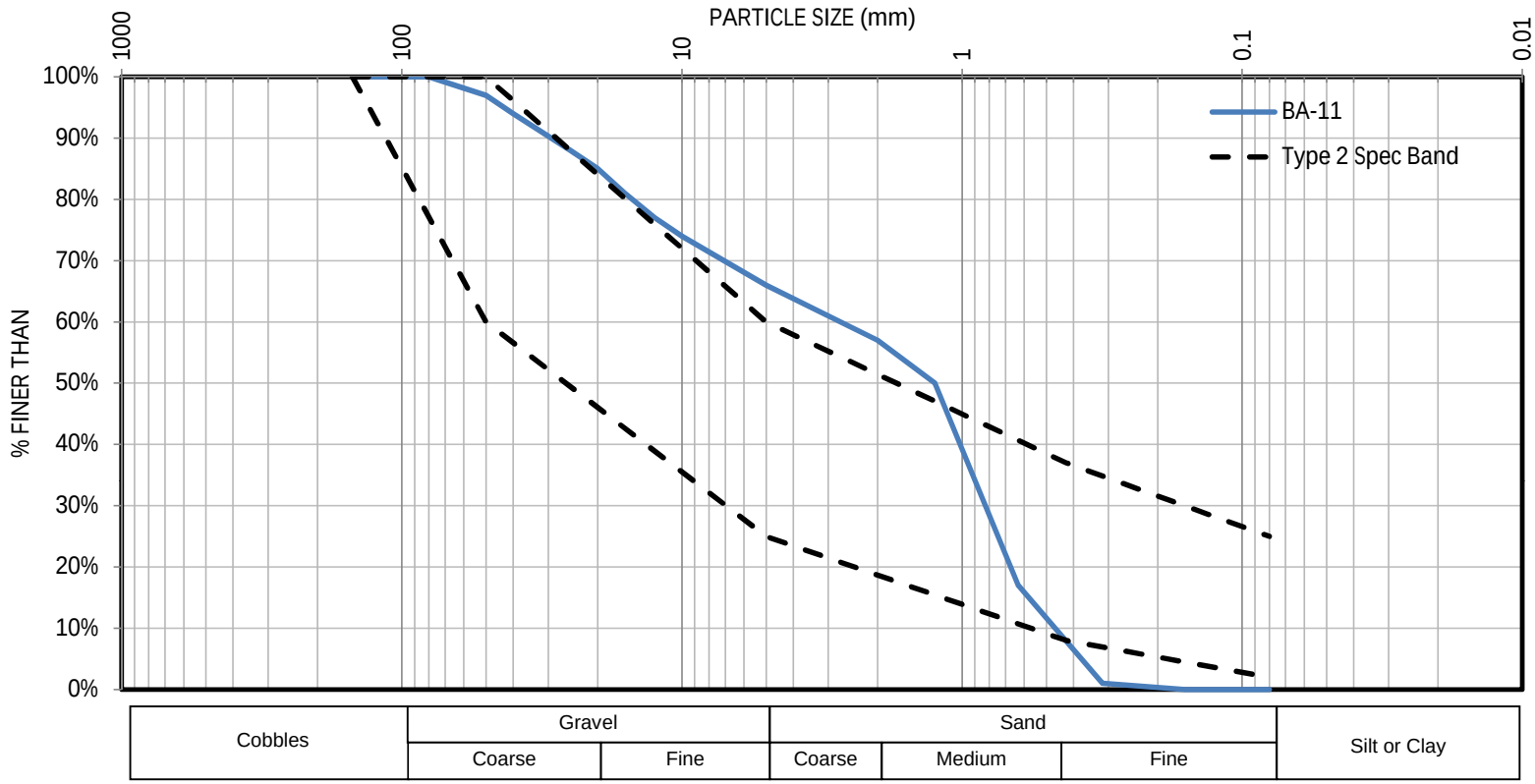


Figure 3-11

CAM - C MATHESON POINT DEW LINE SITE

GRAIN SIZE DISTRIBUTION CURVES - BORROW AREA 12 (TYPE 2 MATERIAL)

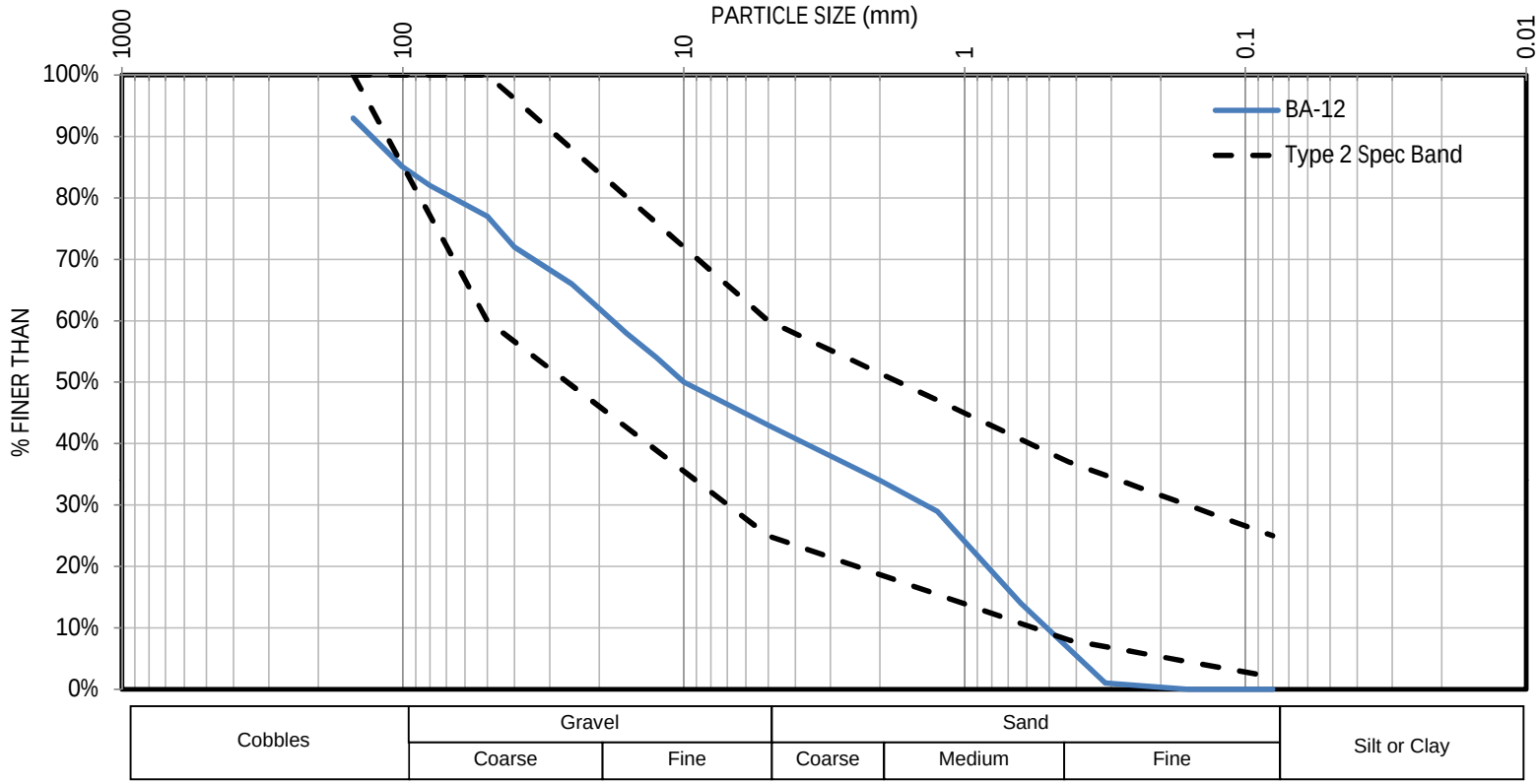


Figure 3-12

CAM - C MATHESON POINT DEW LINE SITE

GRAIN SIZE DISTRIBUTION CURVES - BORROW AREA 13 (TYPE 2 MATERIAL)

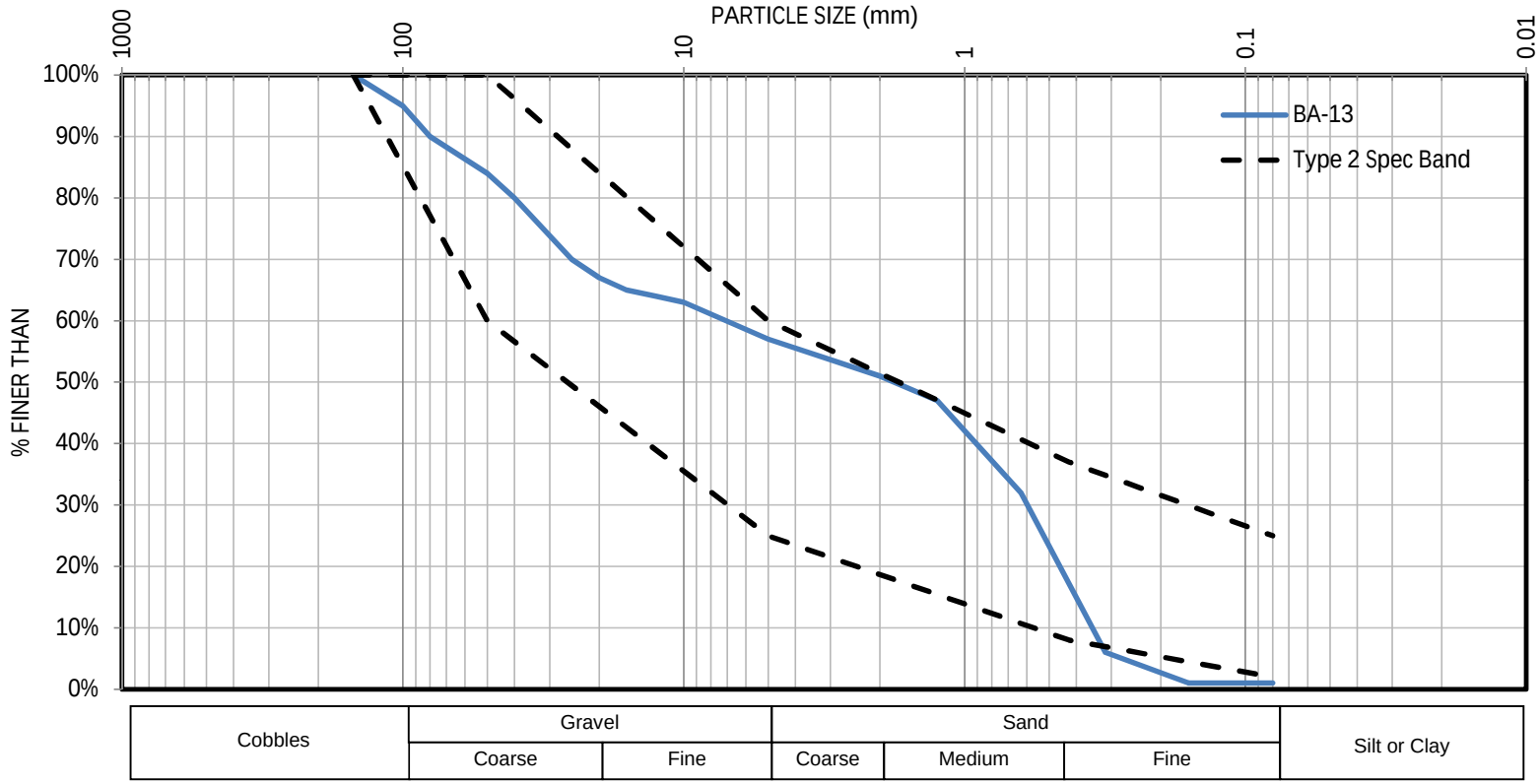


Figure 3-13

CAM - C MATHESON POINT DEW LINE SITE

GRAIN SIZE DISTRIBUTION CURVES - BORROW AREA 14 (TYPE 2 MATERIAL)

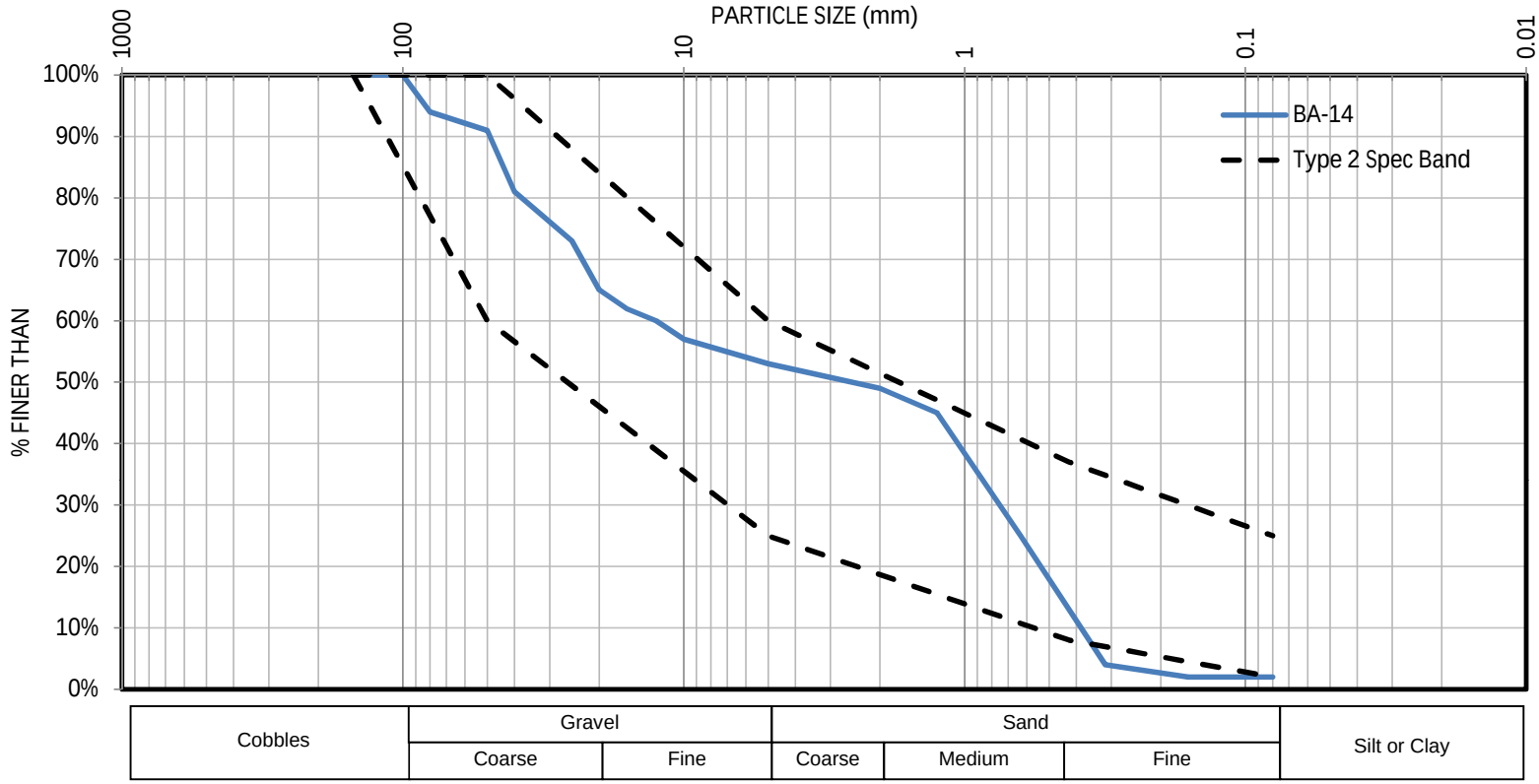


Figure 3-14

CAM - C MATHESON POINT DEW LINE SITE

GRAIN SIZE DISTRIBUTION CURVES - BORROW AREA 15 (TYPE 2 MATERIAL)

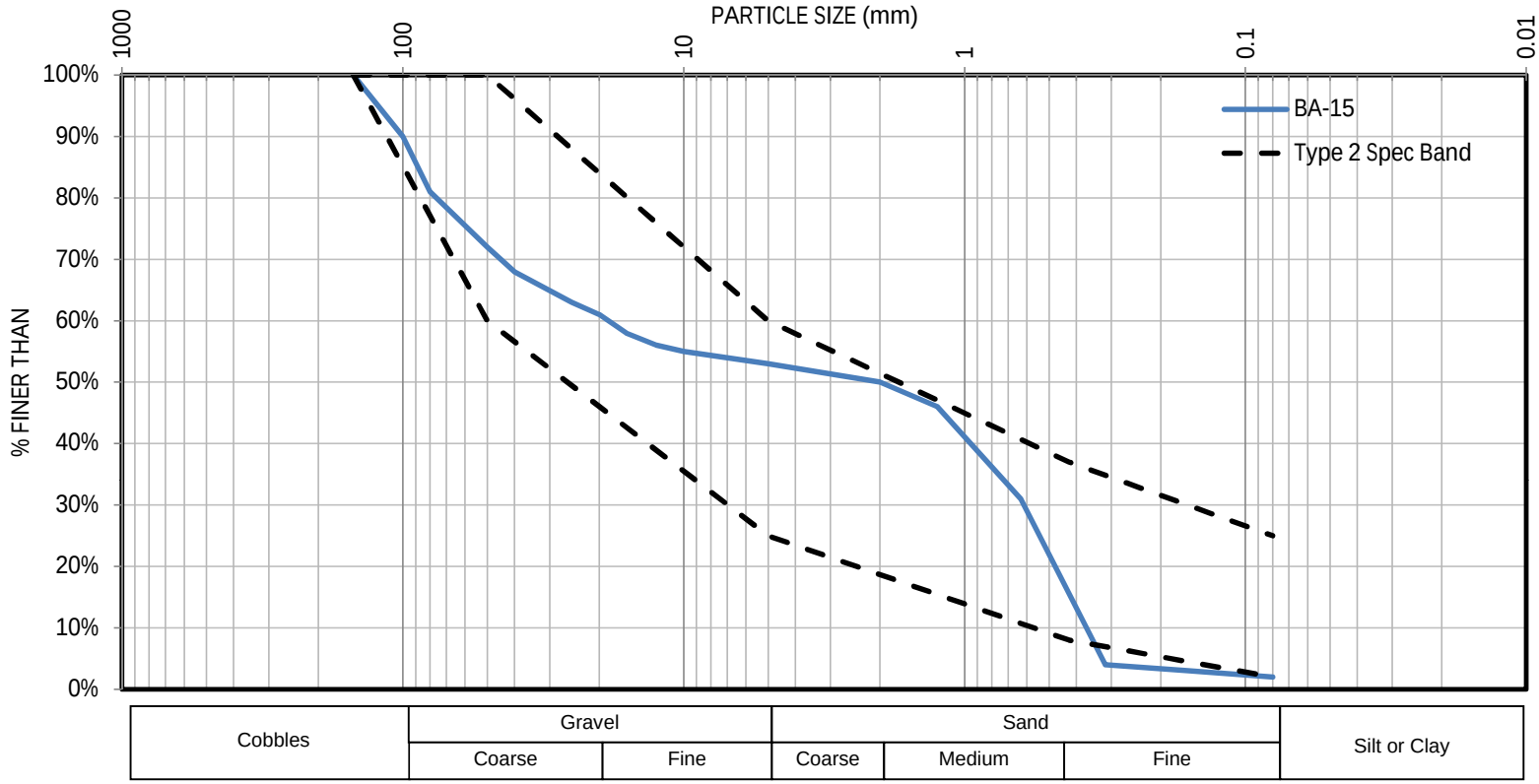


Figure 3-15

CAM - C MATHESON POINT DEW LINE SITE

GRAIN SIZE DISTRIBUTION CURVES - BORROW AREA 16 (TYPE 4 MATERIAL)

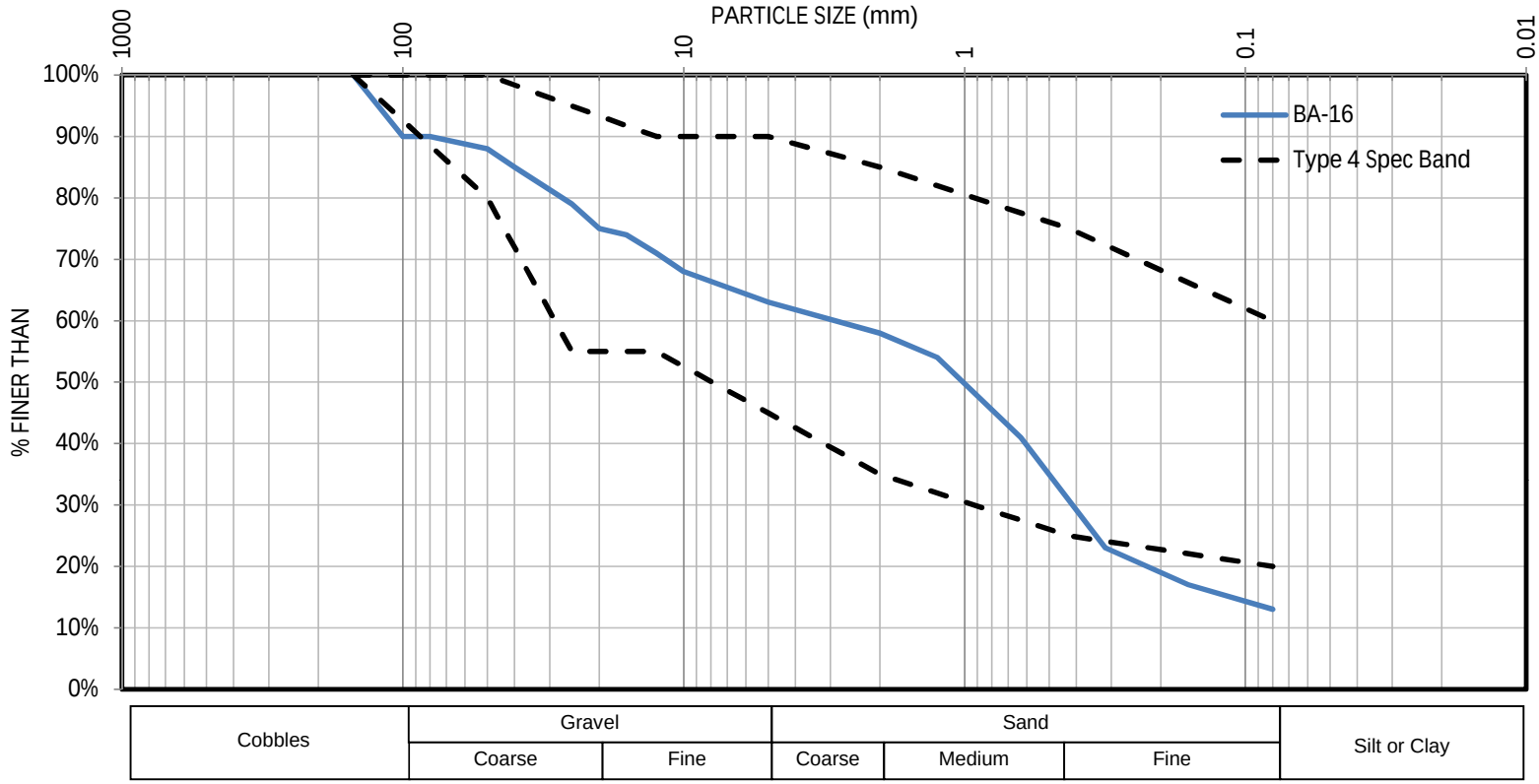


Figure 3-16

CAM - C MATHESON POINT DEW LINE SITE

GRAIN SIZE DISTRIBUTION CURVES - BORROW AREA 17 (TYPE 2 MATERIAL)

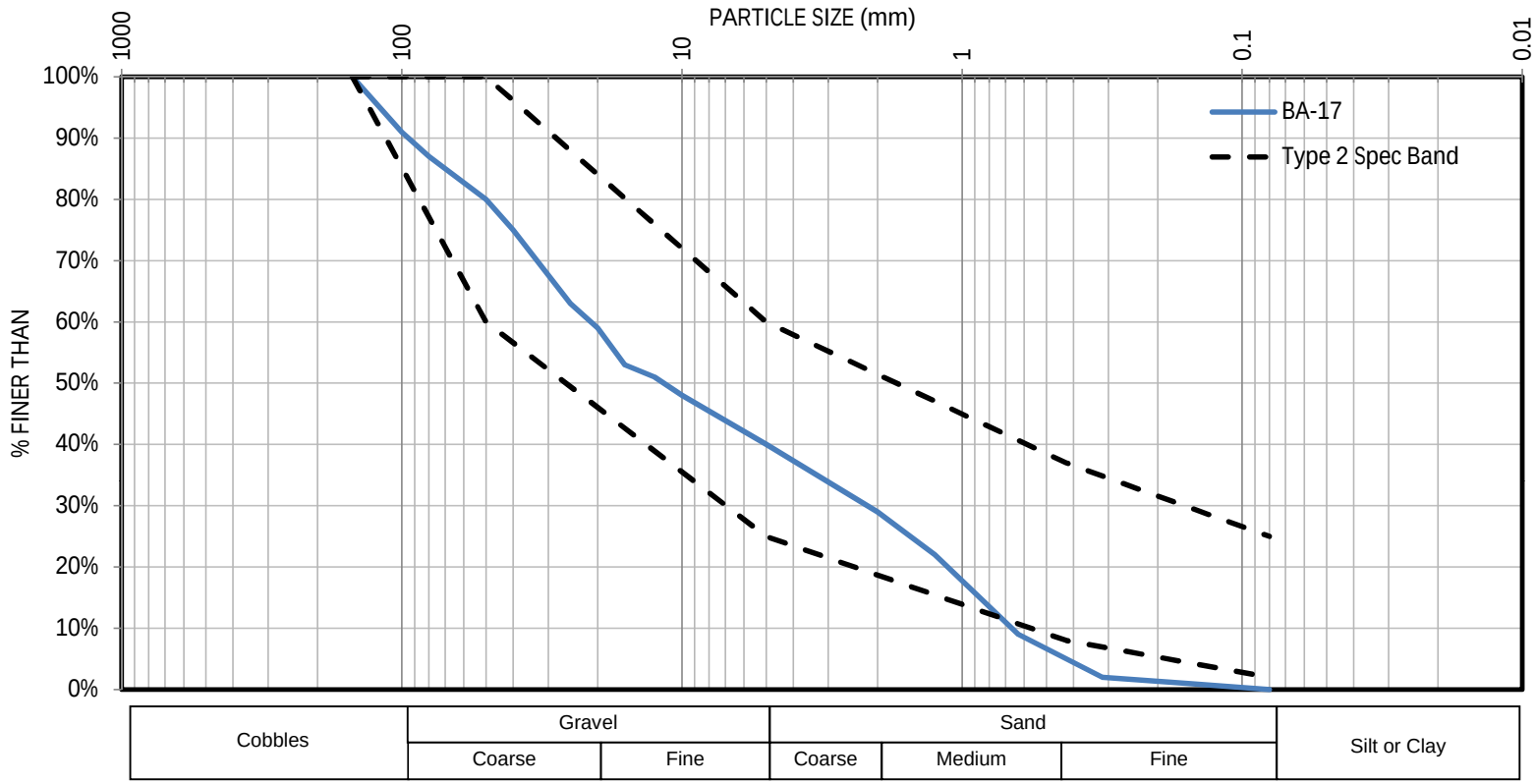


Figure 3-17

AECOM

CAM - C MATHESON POINT DEW LINE SITE

GRAIN SIZE DISTRIBUTION CURVES - BORROW AREA 18 (TYPE 5 MATERIAL)

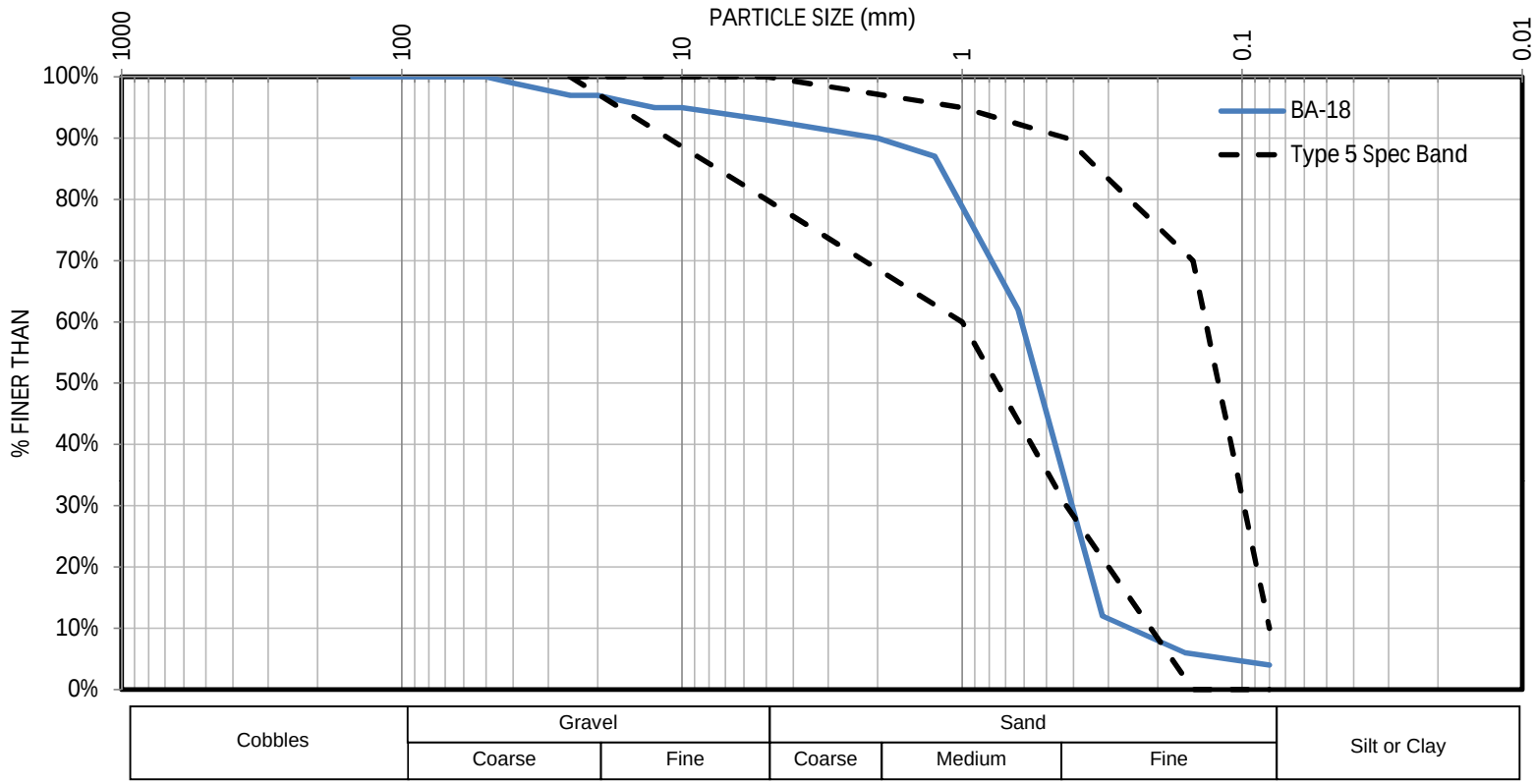


Figure 3-18

CAM - C MATHESON POINT DEW LINE SITE

GRAIN SIZE DISTRIBUTION CURVES - BORROW AREA 19 (TYPE 2 MATERIAL)

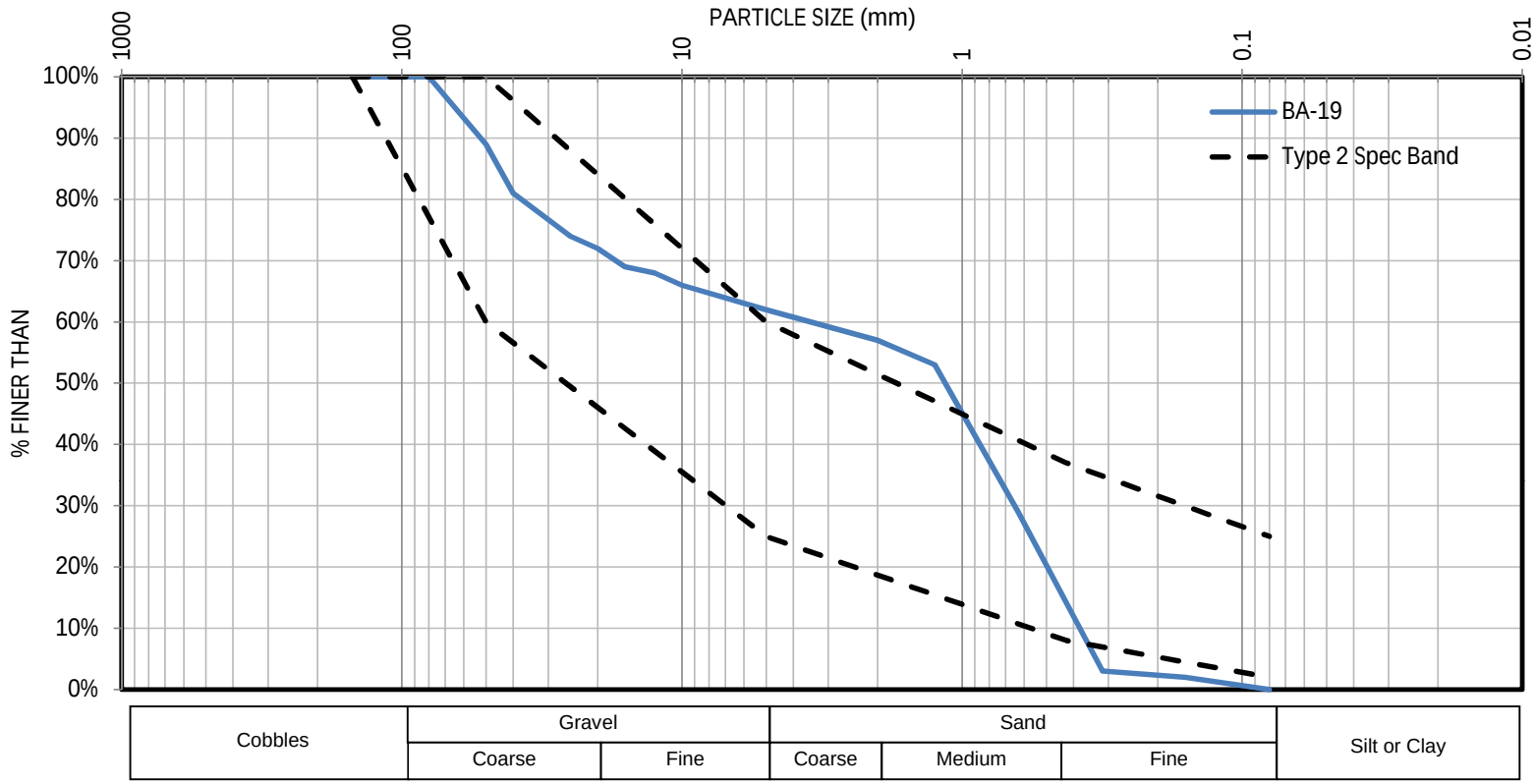


Figure 3-19

CAM - C MATHESON POINT DEW LINE SITE

GRAIN SIZE DISTRIBUTION CURVES - BORROW AREA 20 (TYPE 2 MATERIAL)

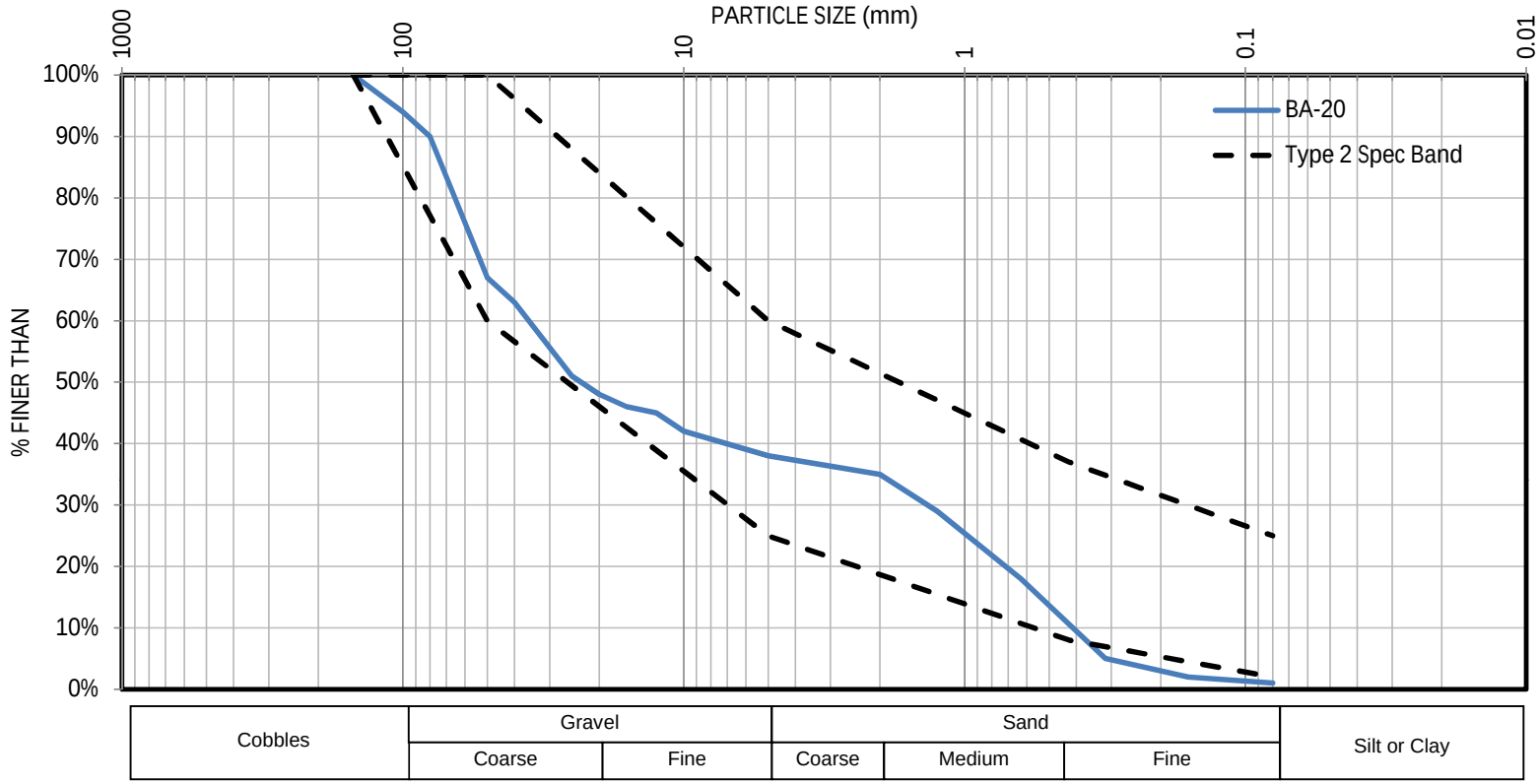


Figure 3-20

Appendix E

Geophysics Survey

DMT Geosciences

AECOM

Overhauser Magnetometer Survey







Prepared For: AECOM

Prepared By:
DMT Geosciences Ltd.
Calgary, Canada
(APEGA Permit P-09454)

Date: August, 2013

DMT Geosciences

File: 2013-CGAA.217

August 30th, 2013

AECOM
200 - 6807 Railway Street SE
Calgary, Alberta
T2H 2V6

DMT Geosciences Ltd.
Suite 415, 708-11th Avenue S.W.,
Calgary, Alberta,
CANADA, T2R 0E4

General: +1.403.264.9496
Fax: +1.403.263.7641

www.dmtgeosciences.ca

Attention: Eva Schulz, P.Ag.

Dear Eva;

DMT Geosciences Ltd. (DMT) is pleased to submit the following report entitled:

Overhauser Magnetometer Survey

We would like to express our thanks to AECOM for the opportunity to provide our services in relation to this project.

If you have any questions, or require any additional information, please do not hesitate to contact our office.

Yours sincerely,

DMT GEOSCIENCES LTD.

PERMIT No. P9454

Jim Henderson, Ph.D., P.Geoph., FEC(H)
Director, Geophysics & Consulting

for

Adam Peake, B.Sc., Geoph. I.T.
Junior Geophysicist

1.0 INTRODUCTION

In accordance with DMT Geosciences Ltd. proposal AMP902 to AECOM, a geophysical investigation was completed by DMT Geosciences Ltd. at Matheson Point, Nunavut, from late July to early August, 2013. This survey formed one component of environmental assessments being conducted onsite during the same time. The objective of the survey was to delineate the extents of buried landfills within the site.

1.1 Site Description

The site was located at approximately 407700mE 7635900mN on the eastern point of King William Island. It consisted of a pre-existing DEW line station known as CAM-C. Where structures existed, only concrete foundations remained and the radio tower still remained but had been downed previously and was lying on the ground.

The station itself was located on a topographically high plateau relative to the surrounding land around site. Support facilities existed on the beach to the southeast and the freshwater lake to the northwest.

Two known landfills were identified and surveyed; one to the south of the main station area and another southeast of the south end of the runway in a ravine. Other areas were identified where buried debris existed. See Figure 1 for a site location and approximate landfill locations.

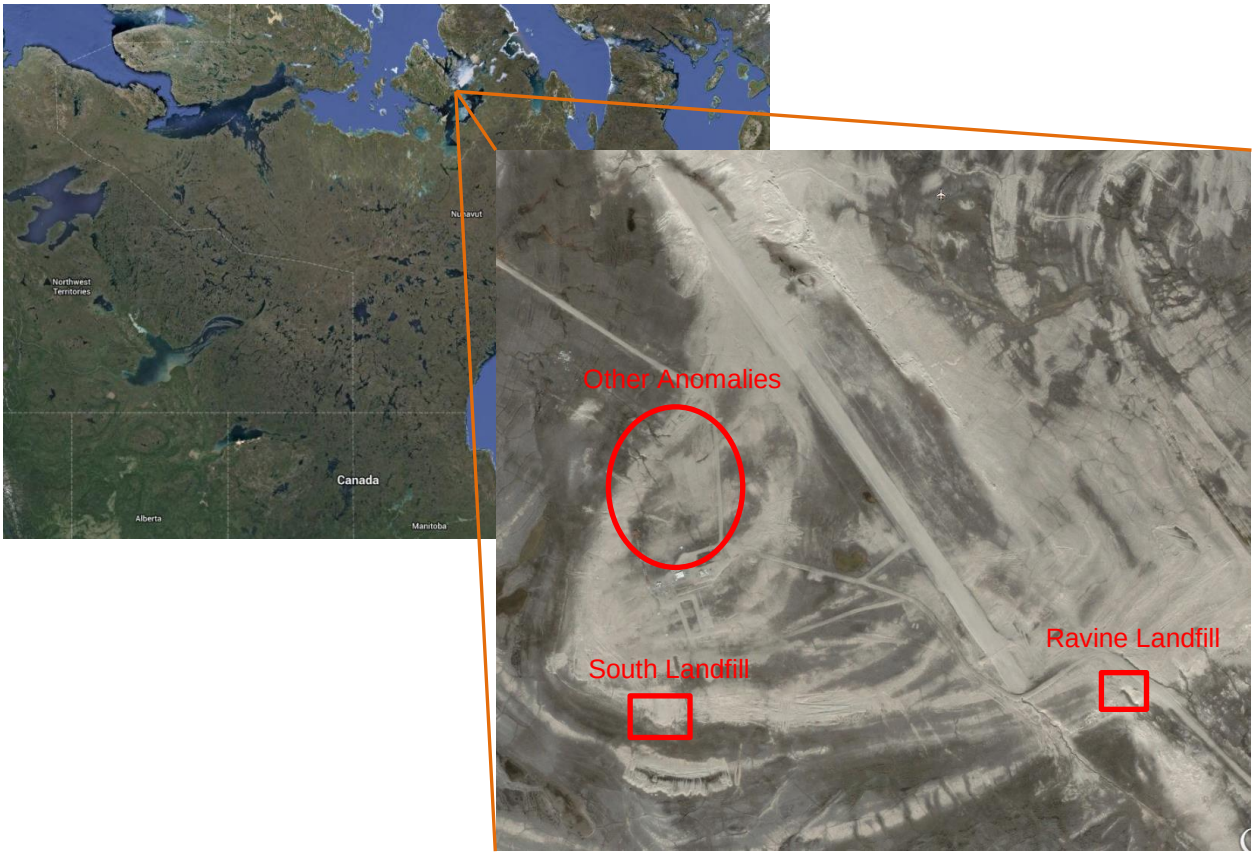


Figure 1: Map location (upper left), satellite image of site (lower right, Google). Approx. landfills and anomalies identified by red.

2.0 METHODS

2.1 Overhauser Magnetometer

Total field magnetic intensity is a scalar measurement of the Earth's magnetic field. Anomalies within this field are due to two types of magnetism: induced and remnant. Induced magnetism results in the enhancement of the ambient field causing it to act as a magnet. Resulting magnetism is directly proportional to the intensity of the ambient field, and the ability of the material to enhance the local field (magnetic susceptibility). Remnant magnetism is a permanent magnetism of the material that depends on the metallurgical properties, and the thermal, mechanical and magnetic history of the material. It is independent of the field in which it is measured.

In an Overhauser effect magnetometer, the hydrogen-rich fluid in the magnetometer sensor is mixed with an electron-bearing fluid and is subjected to a strong radio-frequency current that polarizes the protons. Protons are then deflected into their plane of precession by a short duration pulse. After a brief pause to allow transient currents to subside, the slowly decaying proton precession signal remains. The precession frequency is measured and transformed to magnetic field units, i.e. nanoTesla (nT). For each measurement, the time, position and magnetic field values are digitally stored. The Overhauser effect results in a greater polarization of the proton-rich fluid, translating to stronger signals with less power consumption than proton precession instruments.

Variations in the Earth's total magnetic field were measured using the GSM-19 Overhauser Effect Gradiometer with integrated GPS. The internal GPS receiver utilized Canadian Differential GPS (CDGPS) corrections to provide sub-meter accuracy.

The total field survey data were collected at 0.5 second intervals as the operator walked over areas suspected of containing buried metallic debris. These areas were either deemed suspicious ahead of time, or deemed suspicious by their appearance or by the presence of debris sticking out of the ground. Within these areas, only disturbed ground was surveyed, and ground with no grading, piling, or vegetation disturbance was assumed to be free of landfills. In areas where magnetic anomalies were identified, the operator surveyed their extents and subsequently flagged their boundaries so that soil sampling could be done.





Figure 2: Overhauser Magnetometer setup.

3.0 RESULTS

In many cases, the potential landfill zones exhibited surface debris which affected the apparent lobes in the data. The boundaries of most identified zones were flagged and surveyed by AECOM immediately after they were surveyed with the magnetometer.

In general, small amounts of surface debris did not induce a large response relative to the maximums which made the identification of landfill boundaries obvious. For example, piles of cans on the surface did not register a notable difference.

3.1 South Landfill

The results for the survey of the South Landfill are displayed in Figure 3. This area indicates the presence of an isolated landfill lobe with buried debris, labeled South Landfill on Figure 3. Two other notable locations were discovered farther south of the landfill labeled Pit1 (407550mE, 7635565mN) and Pit2 (407513mE, 7635405mN) in Figure 3. The large swath of disturbed ground south of the landfill was surveyed but no anomalies were discovered.

3.2 Ravine Landfill

The results of the survey of the Ravine Landfill are displayed in Figure 4. This area indicates the bulk of the buried debris is within the ravine, labeled Ravine Landfill, and two isolated anomalies slightly to the west of the Ravine Landfill (anomalies R1: 408372mE, 7635687mN and R2: 408358mE, 7635683mN).

3.3 Other Anomalies

Located near the fallen tower, there were isolated responses, some of which had little to no surficial expression of debris. Anomalies A through H are identified in Figure 5. Upon discovery of some anomalies that were not obvious visually (Anomalies B, C and D), a regular grid was performed to decide whether or not there were more unknown anomalies present. No additional anomalies were found in the area.

Two other anomalies were flagged in the field upon request, due to an expression of surficial debris, which were located to the west of the fallen tower (Figure 5, Anomalies G and H). These were small relative magnitude and isolated. Possible sources could be a very small buried structure and/or garbage.

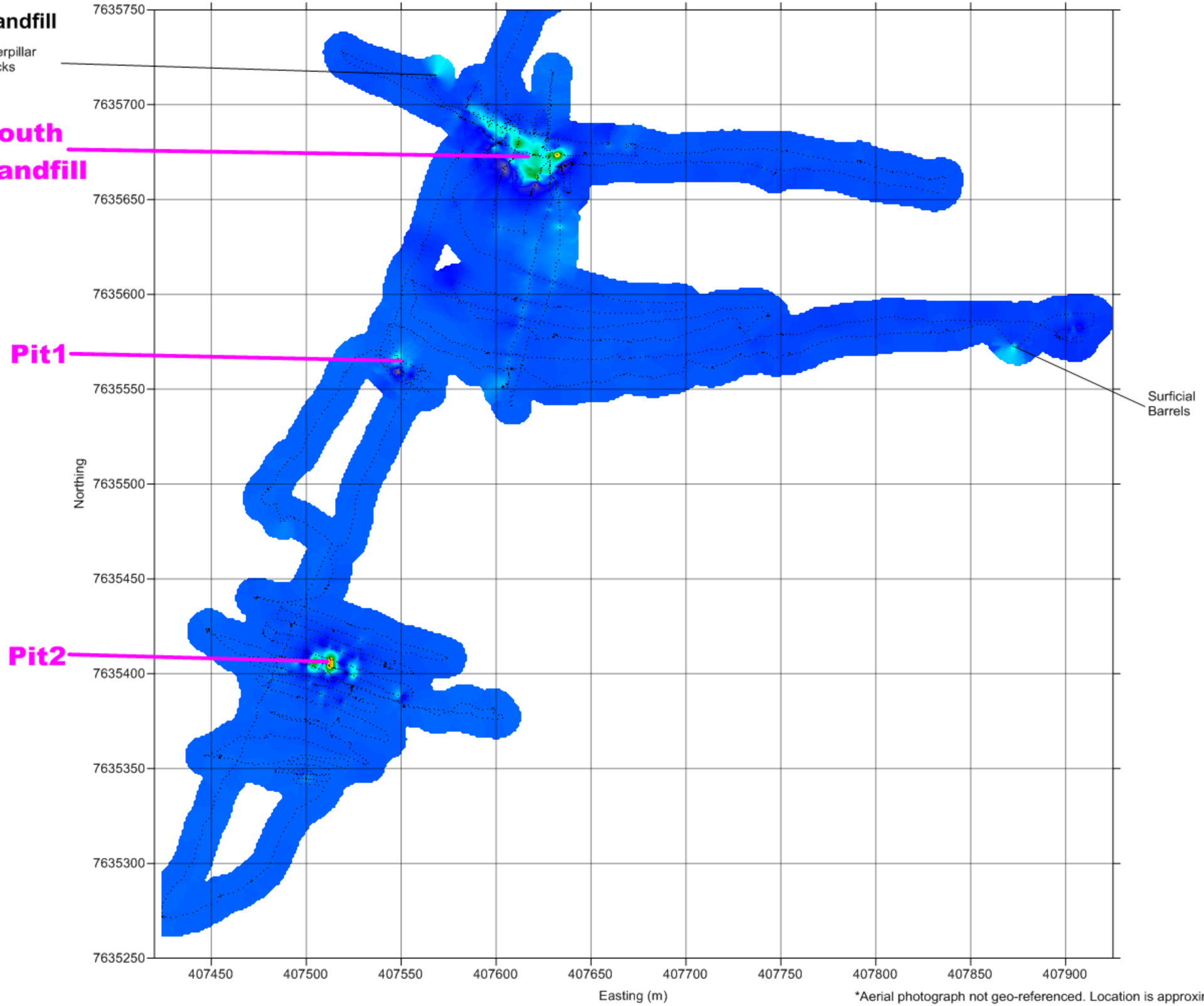
Table 1: Anomaly locations (approximate centre).

Anomaly	Easting (m)	Northing (m)
A	407649	7636004
B	407648	7636018
C	407622	7636009
D	407700	7636063
E	407728	7635988
F	407695	7635956
G	407538	7636010
H	407517	7635949

4.0 CONCLUSION

The magnetic gradiometer survey conducted at Matheson Point on King William Island, Nunavut, successfully delineated several landfills containing ferrous metals. Throughout the site, two major landfill lobes were detected as well as other anomalous responses, and their boundaries were delineated in the field, which allowed AECOM to survey their boundaries, and sample the soil surrounding them.

South Landfill



2970
2860
2750
2640
2530
2420
2310
2200
2090
1980
1870
1760
1650
1540
1430
1320
1210
1100
990
880
770
660
550
440
330
220
110
0

Relative Total Magnetic Field (nT)

*Aerial photograph not geo-referenced. Location is approximate.

Location:
CAM-C, Matheson Pt. NU

Scale:
1:2000

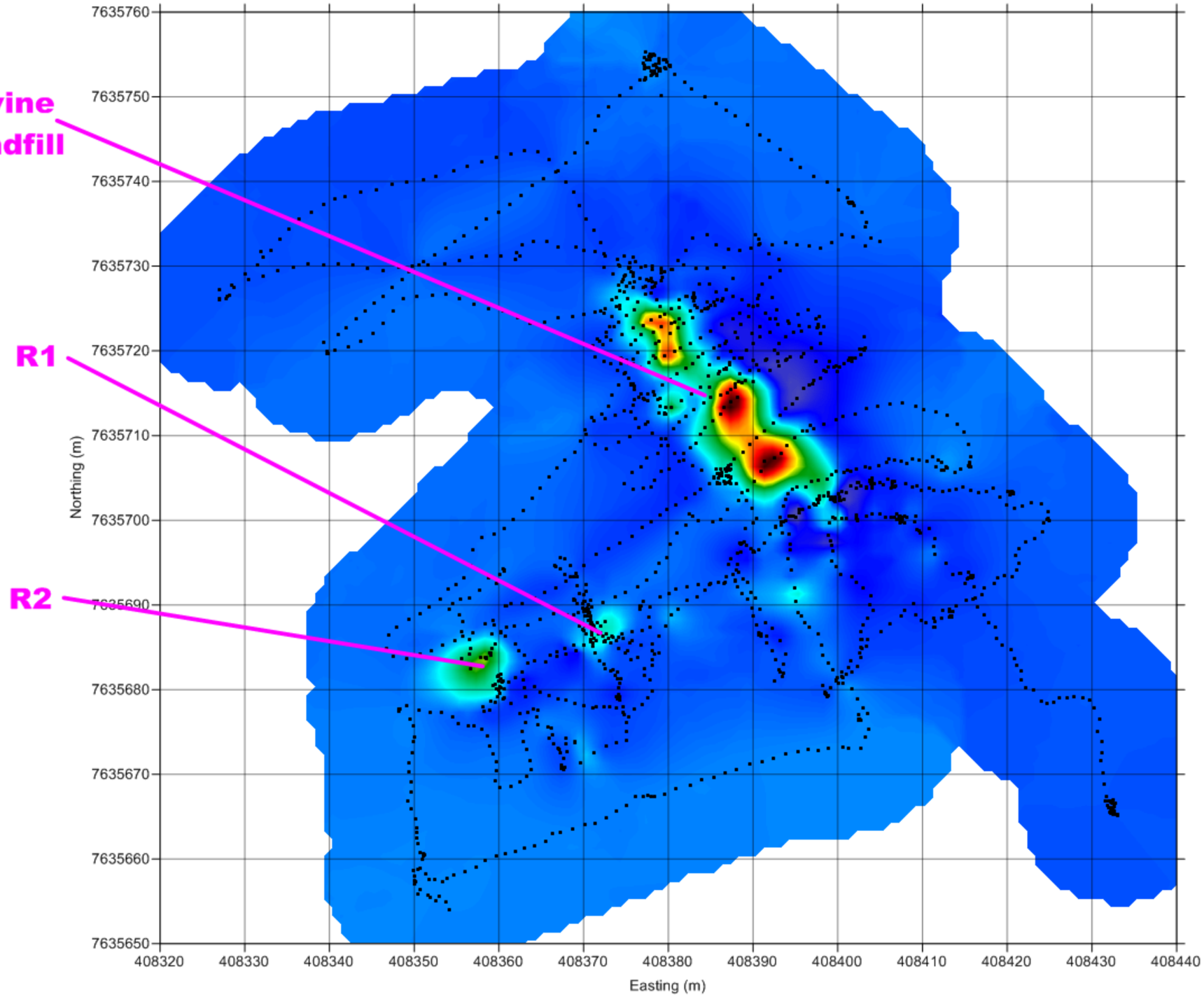
Zone:
UTM Zone 15 North (NAD 83)

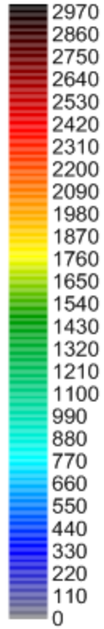
Figure #:
3

Survey Type:
Overhauser Magnetometer
Total Magnetic Field

AECOM℠ DMT

Ravine Landfill





Location:
CAM-C, Matheson Pt. NU

Scale:
1:500

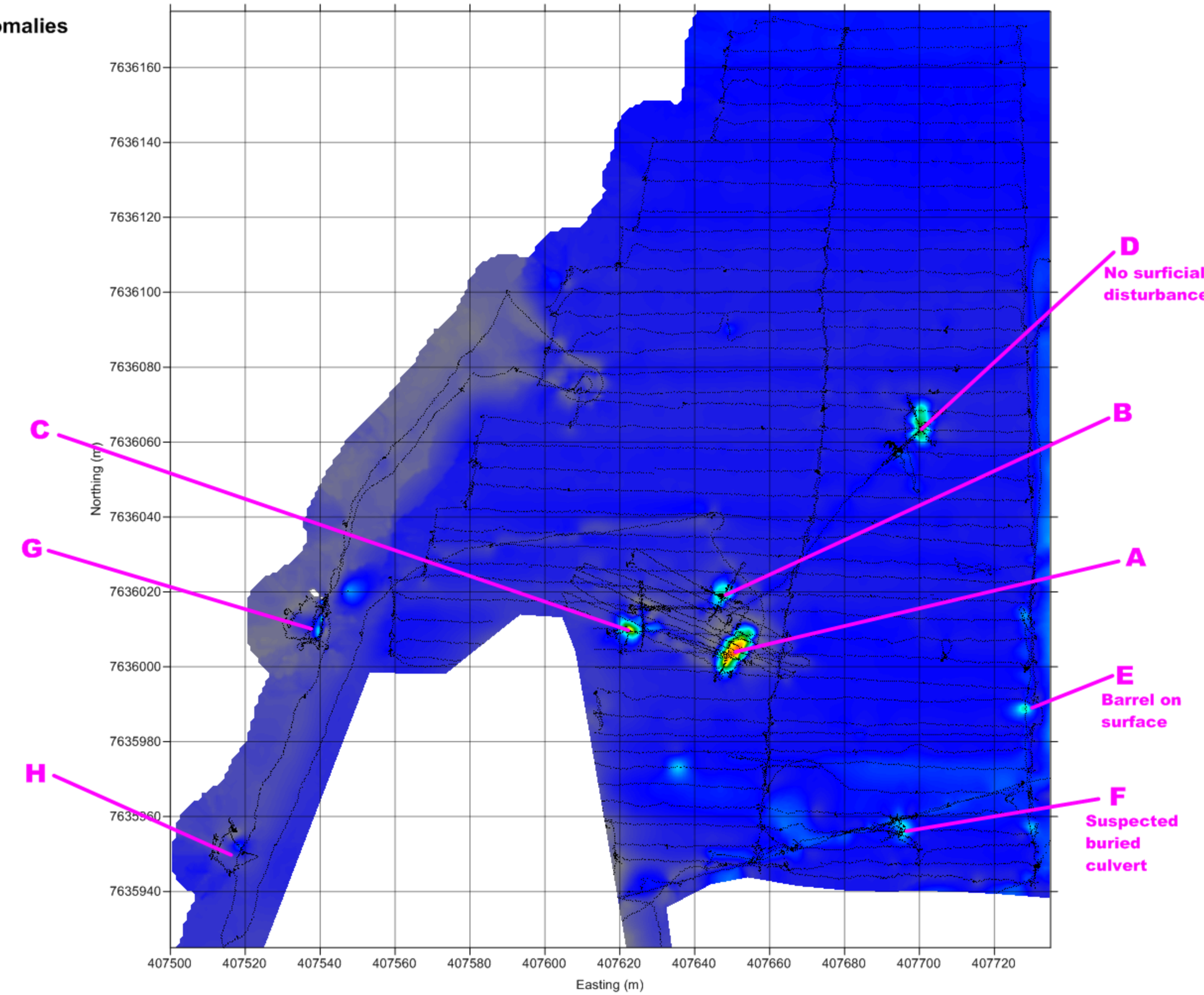
Zone:
UTM Zone 15 North (NAD 83)

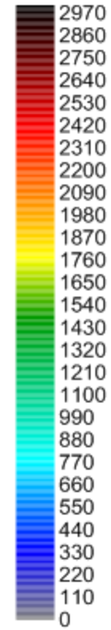
Figure #:
4

Survey Type:
Overhauser Magnetometer
Total Magnetic Field

AECOM℠ DMT

Other Anomalies





Relative Total Magnetic Field (nT)

Location:
CAM-C, Matheson Pt. NU

Scale:
1:1000

Zone:
UTM Zone 15 North (NAD 83)

Figure #:
5

Survey Type:
Overhauser Magnetometer
Total Magnetic Field

AECOM DMT

Appendix F

Testpit Logs

PROJECT: CAM-C Borrow Investigation	CLIENT:	TESTHOLE NO.: **TP-10**
LOCATION: Borrow Area 17	COORDINATES: N 7634750 E 409288	PROJECT NO.: 60299674
CONTRACTOR:	METHOD: Quadavator	ELEVATION (m):

SAMPLE TYPE ■ GRAB ▥ SHELBY TUBE ▩ SPLIT SPOON ▤ BULK ▨ NO RECOVERY ◧ CORE

DEPTH (m)	USC	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	COMMENTS	DEPTH (m)
0			GRAVEL and SAND - some cobbles, trace boulders, coarse, some angular, brown, damp				
	SP		- gravel = 60%. sand = 40%, fines = 0%				
			- seepage from sand observed				
1			END OF TESTPIT AT 1.2 mBGS - Water observed at 0.8 mGBGS.				1
2							

AECOM

LOGGED BY: BW	COMPLETION DEPTH: 0.95 m
REVIEWED BY: BF	COMPLETION DATE: 8/1/2013
PROJECT ENGINEER: Nick Oke	Page 1 of 1

LOG OF TESTHOLE 60299674 - CAM C.GPJ UMA_COC.GDT PRINT: 11/8/13 By:

PROJECT: CAM-C Borrow Investigation	CLIENT:	TESTHOLE NO.: **TP-11**
LOCATION: Borrow Area 20	COORDINATES: N 7634809 E 409449	PROJECT NO.: 60299674
CONTRACTOR:	METHOD: Quadavator	ELEVATION (m):

SAMPLE TYPE ■ GRAB ▯ SHELBY TUBE ☒ SPLIT SPOON ☰ BULK ⧄ NO RECOVERY ◧ CORE

DEPTH (m)	USC	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	COMMENTS	DEPTH (m)
0			GRAVEL and SAND - coarse, some cobbles, some boulders, trace fines, brown, damp				
	GP		- gravel = 62%. sand = 37%, fines = 1%				
			END OF TESTPIT AT 0.9 mBGS - Refusal on boulders.				
1							1
2							

AECOM

LOGGED BY: BW	COMPLETION DEPTH: 0.90 m
REVIEWED BY: BF	COMPLETION DATE: 8/1/2013
PROJECT ENGINEER: Nick Oke	Page 1 of 1

LOG OF TESTHOLE 60299674 - CAM C.GPJ UMA_COC.GDT PRINT: 11/8/13 By:

PROJECT: CAM-C Borrow Investigation	CLIENT:	TESTHOLE NO.: **TP-12**
LOCATION: Borrow Area 1	COORDINATES: N 7635592 E 407655	PROJECT NO.: 60299674
CONTRACTOR:	METHOD: Quadavator	ELEVATION (m):

SAMPLE TYPE ■ GRAB ▯ SHELBY TUBE ☒ SPLIT SPOON ☰ BULK ⧄ NO RECOVERY ◧ CORE

DEPTH (m)	USC	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	COMMENTS	DEPTH (m)
0			SAND - coarse grained, gravelly, trace cobbles, brown, primarily smooth with some fractured and angular gravel				
			- damp				
	SP		- gravel = 29%. sand = 71%, fines = 0%				
1							1
			END OF TESTPIT AT 1.1 mBGS - Refusal on permafrost.				
2							

AECOM

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LOG OF TESTHOLE 60299674 - CAM C.GPJ UMA_COC.GDT PRINT: 11/8/13 By:

PROJECT: CAM-C Borrow Investigation	CLIENT:	TESTHOLE NO.: **TP-13**
LOCATION: Borrow Area 4	COORDINATES: N 7635693 E 408129	PROJECT NO.: 60299674
CONTRACTOR:	METHOD: Shovel	ELEVATION (m):

SAMPLE TYPE ■ GRAB ▯ SHELBY TUBE ☒ SPLIT SPOON ☰ BULK ⊘ NO RECOVERY ◧ CORE

DEPTH (m)	USC	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	COMMENTS	DEPTH (m)
0	SP		GRAVEL and SAND - trace to some cobbles, trace fines, smooth, brown - damp - gravel = 55%. sand = 43%, fines = 2%				
			END OF TESTPIT AT 0.75 mBGS - Refusal on gravel.				
1							1
2							

AECOM

LOGGED BY: BW	COMPLETION DEPTH: 0.75 m
REVIEWED BY: BF	COMPLETION DATE: 7/30/2013
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LOG OF TESTHOLE 60299674 - CAM C.GPJ UMA_COC.GDT PRINT: 11/8/13 By:

PROJECT: CAM-C Borrow Investigation	CLIENT:	TESTHOLE NO.: **TP-14**
LOCATION: Borrow Area 12	COORDINATES: N 7635700 E 408374	PROJECT NO.: 60299674
CONTRACTOR:	METHOD: Shovel	ELEVATION (m):

SAMPLE TYPE ■ GRAB ▥ SHELBY TUBE ▨ SPLIT SPOON ▤ BULK ▨ NO RECOVERY ◧ CORE

DEPTH (m)	USC	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	COMMENTS	DEPTH (m)
0	SM		SAND - coarse grained, some gravel, damp, brown				
	SP		GRAVEL AND SAND - trace cobbles, smooth, brown, damp - gravel = 57%. sand = 43%, fines = 0%				
1			END OF TESTPIT AT 1.1 mBGS - Refusal on permafrost.				1
2							

AECOM

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LOG OF TESTHOLE 60299674 - CAM C.GPJ UMA_COC.GDT PRINT: 11/8/13 By:

PROJECT: CAM-C Borrow Investigation	CLIENT:	TESTHOLE NO.: **TP-15**
LOCATION: Borrow Area 11	COORDINATES: N 7635785 E 408257	PROJECT NO.: 60299674
CONTRACTOR:	METHOD: Quadavator	ELEVATION (m):

SAMPLE TYPE ■ GRAB ▯ SHELBY TUBE ☒ SPLIT SPOON ☰ BULK ⊘ NO RECOVERY ◧ CORE

DEPTH (m)	USC	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	COMMENTS	DEPTH (m)
0			SAND - coarse grained, gravelly, trace cobbles, brown, damp, 10 cm max size				
			- gravel = 34%. sand = 66%, fines = 0%				
	SM						
1			- gravel content increased				1
			END OF TESTPIT AT 1.2 mBGS - Excessive sloughing encountered.				
2							

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PROJECT: CAM-C Borrow Investigation	CLIENT:	TESTHOLE NO.: **TP-16**
LOCATION: Borrow Area 10	COORDINATES: N 7635931 E 408159	PROJECT NO.: 60299674
CONTRACTOR:	METHOD: Quadavator	ELEVATION (m):

SAMPLE TYPE ■ GRAB ▯ SHELBY TUBE ☒ SPLIT SPOON ☰ BULK ⊘ NO RECOVERY ◧ CORE

DEPTH (m)	USC	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	COMMENTS	DEPTH (m)
0			SAND - coarse grained, gravelly, trace small cobbles, brown, damp				
			- gravel = 22%. sand = 76%, fines = 2%				
	SM						
			- boulders encountered				
1							1
			- moist				
			END OF TESTPIT AT 1.3 mBGS - Refusal on permafrost.				
2							

AECOM

LOGGED BY: BW	COMPLETION DEPTH: 1.20 m
REVIEWED BY: BF	COMPLETION DATE: 8/1/2013
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LOG OF TESTHOLE 60299674 - CAM C.GPJ UMA_COC.GDT PRINT: 11/8/13 By:

PROJECT: CAM-C Borrow Investigation	CLIENT:	TESTHOLE NO.: **TP-17**
LOCATION: Borrow Area 5	COORDINATES: N 7635880 E 408068	PROJECT NO.: 60299674
CONTRACTOR:	METHOD: Quadavator	ELEVATION (m):

SAMPLE TYPE ■ GRAB ▥ SHELBY TUBE ▨ SPLIT SPOON ▤ BULK ▨ NO RECOVERY ◧ CORE

DEPTH (m)	USC	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	COMMENTS	DEPTH (m)
0			SAND and GRAVEL - some cobbles, trace fines, damp, brown, 100 mm max size				
	SP		- gravel content increased				
			- gravel = 45%. sand = 52%, fines = 3%				
1							1
			END OF TESTPIT AT 1.1 mBGS - Significant sloughing encountered.				
2							

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PROJECT: CAM-C Borrow Investigation	CLIENT:	TESTHOLE NO.: **TP-18**
LOCATION: Borrow Area 6	COORDINATES: N 7635965 E 408008	PROJECT NO.: 60299674
CONTRACTOR:	METHOD: Quadavator	ELEVATION (m):

SAMPLE TYPE ■ GRAB ▯ SHELBY TUBE ☒ SPLIT SPOON ☰ BULK ⧄ NO RECOVERY ◧ CORE

DEPTH (m)	USC	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	COMMENTS	DEPTH (m)
0			SAND - coarse grained, trace gravel, trace fines, brown, damp				
	SM		- gravel = 6%. sand = 93%, fines = 1%				
1			END OF TESTPIT AT 1.2 mBGS - Refusal on permafrost.				1
2							

AECOM

LOGGED BY: BW	COMPLETION DEPTH: 1.20 m
REVIEWED BY: BF	COMPLETION DATE: 8/1/2013
PROJECT ENGINEER: Nick Oke	Page 1 of 1

LOG OF TESTHOLE 60299674 - CAM C.GPJ UMA_COC.GDT PRINT: 11/8/13 By:

PROJECT: CAM-C Borrow Investigation	CLIENT:	TESTHOLE NO.: **TP-19**
LOCATION: Borrow Area 7	COORDINATES: N 7636000 E 407821	PROJECT NO.: 60299674
CONTRACTOR:	METHOD: Shovel	ELEVATION (m):

SAMPLE TYPE ■ GRAB ▥ SHELBY TUBE ▩ SPLIT SPOON ▤ BULK ▨ NO RECOVERY ◧ CORE

DEPTH (m)	USC	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	COMMENTS	DEPTH (m)
0			SAND - coarse grained, some gravel, some boulders, brown, damp				
	SP		- gravel = 33%. sand = 67%, fines = 0%				
1			END OF TESTPIT AT 1.0 mBGS - Refusal on boulders.				1
2							

AECOM

LOGGED BY: BW	COMPLETION DEPTH: 1.00 m
REVIEWED BY: BF	COMPLETION DATE: 7/31/2013
PROJECT ENGINEER: Nick Oke	Page 1 of 1

LOG OF TESTHOLE 60299674 - CAM C.GPJ UMA_COC.GDT PRINT: 11/8/13 By:

PROJECT: CAM-C Borrow Investigation	CLIENT:	TESTHOLE NO.: **TP-2**
LOCATION: Borrow Area 15	COORDINATES: N 7636685 E 407771	PROJECT NO.: 60299674
CONTRACTOR:	METHOD: Quadavator	ELEVATION (m):

SAMPLE TYPE ■ GRAB ▯ SHELBY TUBE ☒ SPLIT SPOON ☰ BULK ⧄ NO RECOVERY ◧ CORE

DEPTH (m)	USC	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	COMMENTS	DEPTH (m)
0			SAND - coarse grained, trace to some gravel, moist, brown				
			- some gravel, trace cobbles, trace to some silt				
	SM						
1							1
			END OF TESTPIT AT 1.1 mBGS - Refusal on permafrost.				
2							

AECOM

LOGGED BY: BW	COMPLETION DEPTH: 1.10 m
REVIEWED BY: BF	COMPLETION DATE: 7/31/2013
PROJECT ENGINEER: Nick Oke	Page 1 of 1

LOG OF TESTHOLE 60299674 - CAM C.GPJ UMA_COC.GDT PRINT: 11/8/13 By:

PROJECT: CAM-C Borrow Investigation	CLIENT:	TESTHOLE NO.: **TP-20**
LOCATION: Borrow Area 8	COORDINATES: N 7636162 E 407798	PROJECT NO.: 60299674
CONTRACTOR:	METHOD: Shovel	ELEVATION (m):

SAMPLE TYPE ■ GRAB ▯ SHELBY TUBE ☒ SPLIT SPOON ☰ BULK ⊘ NO RECOVERY ◧ CORE

DEPTH (m)	USC	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	COMMENTS	DEPTH (m)
0	GP		GRAVEL - sandy, smooth				
	SM		SAND - coarse grained, some gravel, smooth, brown, damp - gravel = 57%. sand = 43%, fines = 0%				
1	GP		GRAVEL - max size 150 mm				1
2			END OF TESTPIT AT 1.3 mBGS - Refusal on permafrost.				

AECOM	LOGGED BY: BW	COMPLETION DEPTH: 1.30 m
	REVIEWED BY: BF	COMPLETION DATE: 7/31/2013
	PROJECT ENGINEER: Nick Oke	Page 1 of 1

LOG OF TESTHOLE 60299674 - CAM C.GPJ UMA_COC.GDT PRINT: 11/8/13 By:

PROJECT: CAM-C Borrow Investigation	CLIENT:	TESTHOLE NO.: **TP-21**
LOCATION: Borrow Area 16	COORDINATES: N 7636494 E 407854	PROJECT NO.: 60299674
CONTRACTOR:	METHOD: Quadavator	ELEVATION (m):

SAMPLE TYPE ■ GRAB ▥ SHELBY TUBE ▨ SPLIT SPOON ▤ BULK ▧ NO RECOVERY ◧ CORE

DEPTH (m)	USC	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	COMMENTS	DEPTH (m)
0	SP		SAND and GRAVEL - some cobbles, fractured, redish brown, damp - gravel = 37%. sand = 50%, fines = 13%				
	ML		SILT - sandy, some gravel, stiff				
1			END OF TESTPIT AT 0.5 mBGS - Refusal on stiff silt and gravel.				1
2							

AECOM

LOGGED BY: BW	COMPLETION DEPTH: 0.50 m
REVIEWED BY: BF	COMPLETION DATE: 7/31/2013
PROJECT ENGINEER: Nick Oke	Page 1 of 1

LOG OF TESTHOLE 60299674 - CAM C.GPJ UMA_COC.GDT PRINT: 11/8/13 By:

PROJECT: CAM-C Borrow Investigation	CLIENT:	TESTHOLE NO.: **TP-22**
LOCATION: Borrow Area 14	COORDINATES: N 7636627 E 407042	PROJECT NO.: 60299674
CONTRACTOR:	METHOD: Quadavator	ELEVATION (m):

SAMPLE TYPE ■ GRAB ▯ SHELBY TUBE ☒ SPLIT SPOON ☰ BULK ⊘ NO RECOVERY ◧ CORE

DEPTH (m)	USC	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	COMMENTS	DEPTH (m)
0			GRAVEL and SAND - some cobbles, angular, coarse, trace boulders, brown, damp				
	SP		- gravel = 47%. sand = 51%, fines = 2%				
1			END OF TESTPIT AT 1.1 mBGS - Refusal on permafrost.				1
2							

AECOM

LOGGED BY: BW	COMPLETION DEPTH: 1.10 m
REVIEWED BY: BF	COMPLETION DATE: 8/1/2013
PROJECT ENGINEER: Nick Oke	Page 1 of 1

LOG OF TESTHOLE 60299674 - CAM C.GPJ UMA_COC.GDT PRINT: 11/8/13 By:

PROJECT: CAM-C Borrow Investigation	CLIENT:	TESTHOLE NO.: **TP-23**
LOCATION: Borrow Area 13	COORDINATES: N 7636591 E 406995	PROJECT NO.: 60299674
CONTRACTOR:	METHOD: Quadavator	ELEVATION (m):

SAMPLE TYPE ■ GRAB ▯ SHELBY TUBE ☒ SPLIT SPOON ☰ BULK ⊘ NO RECOVERY ◧ CORE

DEPTH (m)	USC	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	COMMENTS	DEPTH (m)
0	GP		GRAVEL and SAND - some cobbles, trace boulders, angular, brown, damp, 50 cm max size				
	SM		SAND - coarse grained, trace to some gravel, brown, damp - gravel = 43%. sand = 56%, fines = 1%				
1			END OF TESTPIT AT 1.3 mBGS - Refusal on permafrost.				1
2							

LOG OF TESTHOLE 60299674 - CAM C.GPJ UMA_COC.GDT PRINT: 11/8/13 By:

AECOM

LOGGED BY: BW	COMPLETION DEPTH: 1.30 m
REVIEWED BY: BF	COMPLETION DATE: 8/1/2013
PROJECT ENGINEER: Nick Oke	Page 1 of 1

PROJECT: CAM-C Borrow Investigation	CLIENT:	TESTHOLE NO.: **TP-24**
LOCATION: Borrow Area 2	COORDINATES: N 7635698 E 407620	PROJECT NO.: 60299674
CONTRACTOR:	METHOD: Shovel	ELEVATION (m):

SAMPLE TYPE ■ GRAB ▥ SHELBY TUBE ▩ SPLIT SPOON ▤ BULK ▨ NO RECOVERY ◧ CORE

DEPTH (m)	USC	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	COMMENTS	DEPTH (m)
0			SAND - coarse grained, some gravel, trace cobbles, brown, smooth				
			- damp				
			- gravel = 57%. sand = 41%, fines = 2%				
	SP						
1							1
			END OF TESTPIT AT 1.2 mBGS - Refusal on permafrost.				
2							

LOG OF TESTHOLE 60299674 - CAM C.GPJ UMA_COC.GDT PRINT: 11/8/13 By:

AECOM

LOGGED BY: BW	COMPLETION DEPTH: 1.20 m
REVIEWED BY: BF	COMPLETION DATE: 7/30/2013
PROJECT ENGINEER: Nick Oke	Page 1 of 1

PROJECT: CAM-C Borrow Investigation	CLIENT:	TESTHOLE NO.: **TP-3**
LOCATION: Borrow Area 9	COORDINATES: N 7636290 E 407776	PROJECT NO.: 60299674
CONTRACTOR:	METHOD: Shovel	ELEVATION (m):

SAMPLE TYPE ■ GRAB ▯ SHELBY TUBE ☒ SPLIT SPOON ☰ BULK ⊘ NO RECOVERY ◧ CORE

DEPTH (m)	USC	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	COMMENTS	DEPTH (m)
0			SAND - coarse grained, some gravel, smooth, brown, damp, max size 10 cm				
	SM		- gravel = 33%. sand = 67%, fines = 0%				
1			- gravel size and content increased				1
			END OF TESTPIT AT 1.15 mBGS - Refusal on permafrost.				
2							

AECOM

LOGGED BY: BW	COMPLETION DEPTH: 1.15 m
REVIEWED BY: BF	COMPLETION DATE: 7/31/2013
PROJECT ENGINEER: Nick Oke	Page 1 of 1

LOG OF TESTHOLE 60299674 - CAM C.GPJ UMA_COC.GDT PRINT: 11/8/13 By:

PROJECT: CAM-C Borrow Investigation	CLIENT:	TESTHOLE NO.: **TP-6**
LOCATION: Borrow Area 18	COORDINATES: N 7635512 E 408539	PROJECT NO.: 60299674
CONTRACTOR:	METHOD: Quadavator	ELEVATION (m):

SAMPLE TYPE ■ GRAB ▯ SHELBY TUBE ☒ SPLIT SPOON ☰ BULK ⊘ NO RECOVERY ◧ CORE

DEPTH (m)	USC	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	COMMENTS	DEPTH (m)
0			SAND - medium to coarse grained, trace to some gravel, trace cobbles, brown, moist				
	SM		- gravel = 7%. sand = 89%, fines = 4%				
			- seepage from sand observed				
			END OF TESTPIT AT 0.6 mBGS - Seepage at 0.5 mBGS. - Excessive sloughing encountered.				
1							1
2							

AECOM

LOGGED BY: BW	COMPLETION DEPTH: 0.60 m
REVIEWED BY: BF	COMPLETION DATE: 8/1/2013
PROJECT ENGINEER: Nick Oke	Page 1 of 1

LOG OF TESTHOLE 60299674 - CAM C.GPJ UMA_COC.GDT PRINT: 11/8/13 By:

PROJECT: CAM-C Borrow Investigation	CLIENT:	TESTHOLE NO.: **TP-7**
LOCATION: Borrow Area 3	COORDINATES: N 7635695 E 407756	PROJECT NO.: 60299674
CONTRACTOR:	METHOD: Shovel	ELEVATION (m):

SAMPLE TYPE ■ GRAB ▥ SHELBY TUBE ▩ SPLIT SPOON ▤ BULK ▨ NO RECOVERY ◧ CORE

DEPTH (m)	USC	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	COMMENTS	DEPTH (m)
0	SP		SAND - coarse grained, some gravel, trace cobbles, brown, primarily smooth with some fractured and angular gravel/cobbles - damp - gravel = 36%. sand = 63%, fines = 1%				
1			END OF TESTPIT AT 1.3 mBGS - Refusal on permafrost.				1
2							

AECOM

LOGGED BY: BW	COMPLETION DEPTH: 1.30 m
REVIEWED BY: BF	COMPLETION DATE: 7/30/2013
PROJECT ENGINEER: Nick Oke	Page 1 of 1

LOG OF TESTHOLE 60299674 - CAM C.GPJ UMA_COC.GDT PRINT: 11/8/13 By:

PROJECT: CAM-C Borrow Investigation	CLIENT:	TESTHOLE NO.: **TP-9**
LOCATION: Borrow Area 19	COORDINATES: N 7634936 E 409275	PROJECT NO.: 60299674
CONTRACTOR:	METHOD: Quadavator	ELEVATION (m):

SAMPLE TYPE ■ GRAB ▯ SHELBY TUBE ☒ SPLIT SPOON ☰ BULK ⧄ NO RECOVERY ◧ CORE

DEPTH (m)	USC	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	COMMENTS	DEPTH (m)
0			SAND - coarse grained, trace to some gravel, trace cobbles, brown, damp				
	SM		- gravel = 38%. sand = 62%, fines = 0%				
1			END OF TESTPIT AT 1.05 mBGS - Refusal on permafrost.				1
2							

AECOM

LOGGED BY: BW	COMPLETION DEPTH: 1.05 m
REVIEWED BY: BF	COMPLETION DATE: 8/1/2013
PROJECT ENGINEER: Nick Oke	Page 1 of 1

LOG OF TESTHOLE 60299674 - CAM C.GPJ UMA_COC.GDT PRINT: 11/8/13 By:

Appendix G

Archaeological Report

FINAL REPORT

ARCHAEOLOGICAL INVENTORY AND ASSESSMENT AT CAM-C, MATHESON POINT, KING WILLIAM ISLAND, KITIKMEOT, NU



Cover Photo: AECOM field crew unloading Summit Air Skyvan at CAM-C airstrip

REPORT PREPARED FOR

AECOM Canada Limited
17007 17 Avenue, Edmonton, AB T5S 1G3

FINAL REPORT ON ARCHAEOLOGICAL INVENTORY AND ASSESSMENT AT CAM-C, MATHESON POINT, KING WILLIAM ISLAND, KITIKMEOT, NU

PROJECT NO.
THC2013-2

REPORT PREPARED BY

Callum Thomson, Sandra Ratch and Jane Sproull Thomson
Thomson Heritage Consultants, Inc.

February 14, 2014
Nunavut Permit: 2013-23A

EXECUTIVE SUMMARY

CAM-C, Matheson Point, is one of a string of radar and communications stations that were built in the 1950s as part of North America's defence against air attack during the Cold War. CAM-C is an intermediate site between the larger DEW Line stations of CAM-2, Gladman Point and CAM-3, Shepherd Bay, and is situated on the northeast coast of King William Island on the Gibson Peninsula between Brands Point and Mount Matheson. The station faces out across Rae Strait towards the Saattuq Peninsula and Boothia Peninsula on the famed Northwest Passage. The station was abandoned in 1963, leaving debris fields from the shore of Rae Strait to the main facility area on the summit of a 70 m high plateau. The purpose of the visit to CAM-C was for AECOM Limited Canada (AECOM) to assess clean up and remediation needs, and for Thomson Heritage Consultants, Inc. (THC) to conduct an archaeological inventory and assessment of mitigation requirements during the AECOM assessment and the planned clean up. The study area between the shore of Rae Strait and the top of Mount Matheson consists largely of old beach terraces left as land rebounded relative to sea level after the last deglaciation, and a 70 m high sandy plateau (Mount Matheson) on which the CAM-C station facilities were built.

The archaeological inventory and assessment began on July 29 and extended over three full days until July 31. The survey and evaluation of mitigation needs was successful in that all of the known areas of previous disturbance at the Station Area and Beach Area and other terrain between and around the station were surveyed, resulting in the recording and assessment of eighteen archaeological or recent cultural sites. Of these, ten sites date to the last few decades, so may not meet the Government of Nunavut definition of an archaeological site, which is defined as containing evidence of human activity that is more than 50 years old. Eight date to the early historic or pre-contact period, including three Palaeoeskimo sites that may date back to the early exploration and settlement of the Canadian Arctic around 4,000 years ago. Avoidance of the recent sites, as well as the archaeological sites, is recommended due to their significance to local Inuit, their contribution to knowledge of traditional land use, and the difficulty in assigning an exact date to their earliest period of use.

It seems likely that all recorded sites can be preserved through avoidance (M. Yetman, 2014, personal communication). However, we recommend that once a final cleanup plan is available, the distribution of archaeological and recent site locations be overlain on the site plans and a final review of mitigation requirements be undertaken by an archaeologist. Meanwhile, this report contains details on the location and contents of all sites found and a tentative evaluation of mitigation needs should project cleanup plans change and any of the sites be at risk of disturbance. The potential for additional sites to be present around CAM-C is considered to be moderate; additional archaeological surveys are recommended in any new project areas.

Recommended Mitigation For Sites Recorded in 2013 at CAM-C, Matheson Point, King William Island, NU			
Borden No.	**Location**	**Nature of Disturbance noted in 2013**	**Recommended Mitigation**
Beach Area			
NeJv-1	On ridge top east of Beach Area	None	Avoidance within 30 m buffer zone
CAM-C 1	On access road to beach	Site features removed from beach access road	None required
CAM-C 2	West of end of beach access road	None	Avoidance within 30 m buffer zone
CAM-C 3	East of end of beach access road	None	Avoidance within 30 m buffer zone
CAM-C 4	Below barrel dump east of access road	None	Avoidance within 30 m buffer zone
CAM-C 5	Below south end of ridge	None	Avoidance within 30 m buffer zone
Station Area			
CAM-C 9	Adjacent to northeast end of airstrip	Minor past disturbance by bulldozer	Avoidance within 30 m buffer zone
Higher Beach Terraces			
NeJv-2	High beach ridge between Station Area and Water Supply Lake	None	Avoidance within 30 m buffer zone
NeJv-3	High beach ridge south of Station Area	None	Avoidance within 30 m buffer zone
NeJv-4	High beach ridge south of Station Area	None	Avoidance within 30 m buffer zone
NeJv-5	High beach ridge south of Station Area	None	Avoidance within 30 m buffer zone
NeJv-6	High beach ridge south of Station Area	None	Avoidance within 30 m buffer zone
NeJv-7	High beach ridge south of Station Area	None	Avoidance within 30 m buffer zone
NeJv-8	High beach ridge north of Beach Area ridge	None	Avoidance within 30 m buffer zone
CAM-C 6	Just west of POL Line, south of Station Area ridge	None	Avoidance within 30 m buffer zone
CAM-C 7	South of Station Area ridge adjacent to small landfill	None	Avoidance within 30 m buffer zone
CAM-C 8	At northwest end of Water Supply Lake access road	None	Avoidance within 30 m buffer zone
CAM-C 10	On flat plain east of beach access road	None	Avoidance within 30 m buffer zone

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1 Introduction

1.1 Proponent's Activities

Aboriginal Affairs and Northern Development Canada (AANDC) has responsibility through the Contaminated Sites Program (CSP) to manage a number of contaminated properties that are no longer maintained by the original occupant. CAM-C, an intermediate radar and communication site along the Distant Early Warning line (DEW Line) on the east side of King William Island, Kitikmeot, Nunavut is one such site, abandoned in 1963. Public Works and Government Services Canada (PWGSC), on behalf of AANDC, contracted AECOM Canada Ltd. (AECOM) to undertake in July-August 2013 an evaluation of remediation and mitigation needs at CAM-C. This involved the deployment of a team of scientists and engineers under the watchful eye of local wildlife monitors to collect samples, evaluate aggregate occurrences, map areas of contamination and undertake other tasks around the facility area. Thomson Heritage Consultants, Inc. (THC) was subcontracted by AECOM to prepare an archaeological inventory and assessment of the project area.

CAM-C is divided into a Beach Area, where materials were landed and stored during construction and operation of the station, and the Station Area, which contained the accommodations, warehouse, communication tower and other buildings and facilities related to the operation of the station. Connecting the two areas was a gravel access road. A second access road was built 1.5 km from the Station Area to a small lake where fresh water was extracted. A third road ran southeast from the Station Area to the coast north of the Beach Area, used as an aggregate source. A POL (Petroleum, Oils and Lubricants) Line ran north from the Beach Area to the Station Area, to carry fuel from holding tanks at the beach (Figure 1-1).

CAM-C is situated between the larger DEW Line stations of CAM-2, Gladman Point and CAM-3, Shepherd Bay (Thomson 2006), on the northeast coast of King William Island on the Gibson Peninsula between Brands Point and Mount Matheson (Figure 1-2). The station was abandoned in 1963, leaving debris fields from the shore of Rae Strait to the main facility area on the summit of a low rise. The purpose of the visit to CAM-C was for AECOM Limited Canada (AECOM) to assess clean up and remediation needs, and for Thomson Heritage Consultants, Inc. (THC) to conduct an archaeological inventory and assessment of mitigation requirements during the AECOM assessment and the planned clean up. The study area between the shore of Rae Strait and the top of Mount Matheson consists largely of old beach terraces left as land rebounded relative to sea level after the last deglaciation, and a 70 m high sandy plateau (Mount Matheson) on which the CAM-C station facilities were built.

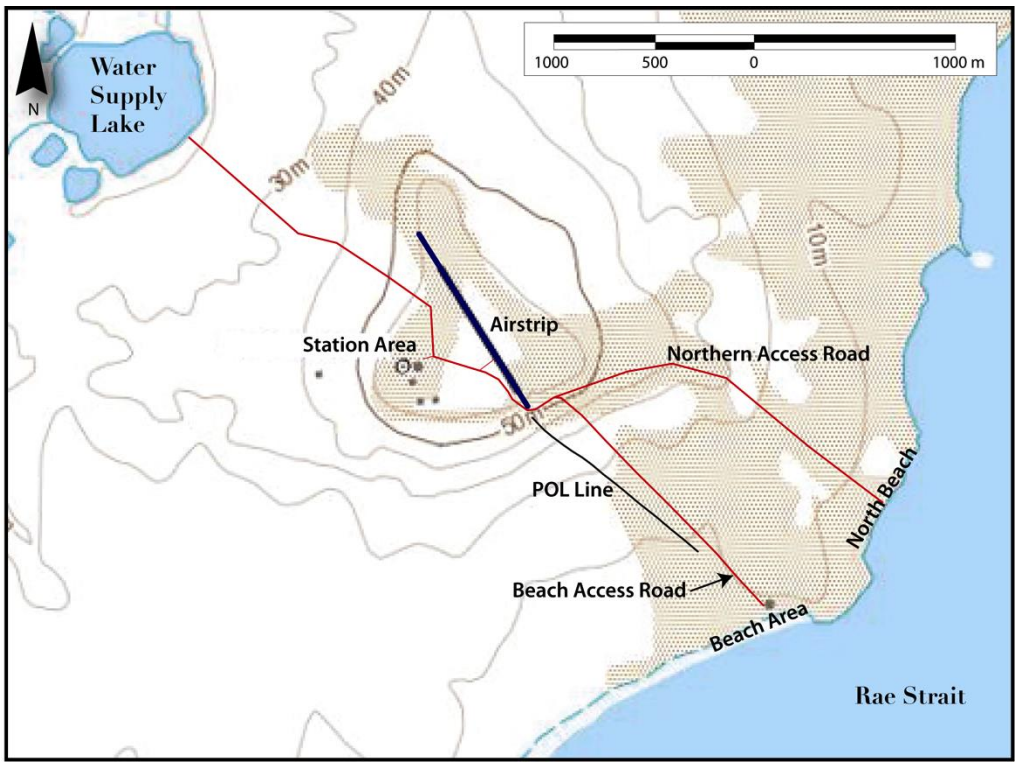


Figure 1-1 CAM-C Project Layout

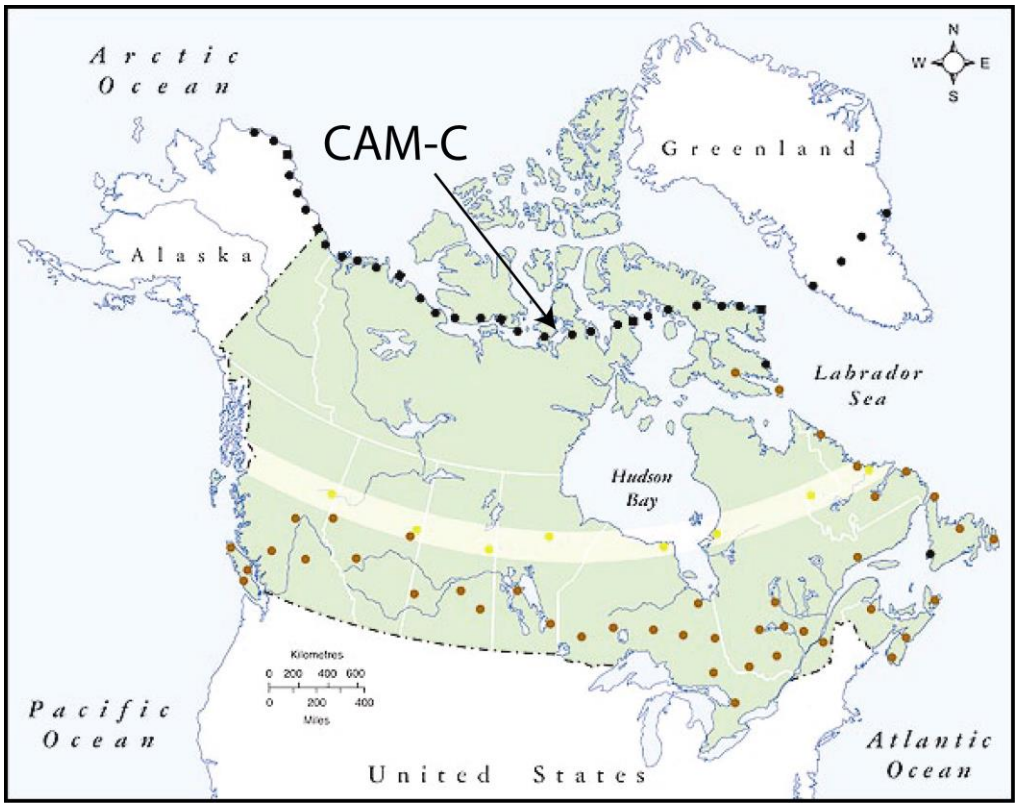


Figure 1-2 Dew Line Sites

1.2 Archaeological Project Activities

Clean up and remediation activities may include the excavation of contaminated soil, collection of fuel lines and barrels, excavation of landfills, clearing of site debris, removal of materials from site, and other tasks in order to transform CAM-C and vicinity to a cleaner and safer state. As no previous archaeological work had been conducted in the project area and the extent and location of contaminated soil and debris areas was incompletely known, archaeological surveys were conducted on foot around the core camp, airstrip, tower, beach landing and landfill areas. This involved the identification, recording, interpretation, mapping, assessment of significance and evaluation of mitigation requirements of all sites encountered.

Table 1-1 CAM-C Facility Areas Inspected for Archaeological/Recent Sites, 2013

Facility	Location	Results (recent historic and archaeological sites)
Station Area and Airstrip	Summit of Mount Matheson (ca. 70 m asl)	1 recent site
Beach Area	1.5 km southeast of south end of airstrip	1 archaeological site 4 recent sites
Water Supply Lake	At northwest end of road from Station Area	1 recent site
Access Roads	To Water Supply Lake, 1.6 km northwest of Station Area; From Station Area-Beach Area, 1.6 km southeast from Station Area to Beach Area west of headland; To North Beach Area aggregate sources 3 km southeast from south end of airstrip, north of Beach Area	1 recent site
POL Line	1.7 km from Beach Area to Station area, roughly parallel to and west of main access road	1 recent site
Adjacent Beach Ridges	Prominent Beach ridges south of Station Area, northwest of Station Area, north of Beach Area, and northeast of Beach Access Road	7 archaeological sites 2 recent sites

1.3 Report Organization

This report is intended to provide AECOM and regulators with details on the distribution and significance of archaeological sites in the project area, measures instituted to ensure the safety of sites encountered during the duration of the archaeological field project, and recommendations for continuing site protection into the future. No archaeological sites were previously known within the project area; however, five recent campsites are shown on the Rae Strait page of the Nunavut Atlas on the Gibson Peninsula, including one at the CAM-C Beach Area (Riewe 1992: 126). Brief summaries are included below of the environmental setting, past and present land use, regional historical notes and previous archaeological investigations (Section 2); the methodology employed in the field (Section 3); the results of the field investigations (Section 4); conclusions including data gaps, potential project effects and mitigation options (Section 5); a summary and recommendations (Section 6); and references and a glossary (Section 7). A copy of archaeological and historic site forms for each site found, a copy of the research permit and a

photo catalogue follow in the appendices. A CD attached to the back cover of the report contains labelled copies of all photographs taken.

2 STUDY AREA

2.1 Environmental Setting

CAM-C (Matheson Point) is located on the Gibson Peninsula, which forms the easternmost extent of King William Island in the Kitikmeot Region of Nunavut (Figure 2-1). Gibson Peninsula faces eastward across 20-km wide Rae Strait to the Saattuq Peninsula, southward to Chantrey Inlet and the mouth of the Back River, and northwards over the St. Roch Basin and James Ross Strait towards Boothia Peninsula. The Gibson Peninsula rises from the sea over a series of parallel beach ridges formed of gravel to a 70-m high sandy summit (Mount Matheson) extending southeast-northwest for approximately 1.25 km. West of the summit, the land drops to elevations below 30 m above sea level (asl) and becomes dotted with numerous ponds. Gjoa Haven, the only community on King William Island, is situated near the southeastern corner of the main body of the island. The Station facilities are located west of the airstrip on a level, sand and gravel plain. The Beach Area facilities are located close to and parallel to the shore of Rae Strait on level terraces. Vegetation in the study area is sparse to non-existent.

Banfield's Mammals of Canada lists many species of terrestrial and marine mammals present in and around the study area. No animals other than a few seals were observed during the course of the archaeological survey. Mammals that would have been and in some cases continue to be exploited for food and other resources by Inuit and, to a lesser extent, explorers in the region include arctic hare, brown lemming, collared lemming, wolf, arctic fox, polar bear, ermine, wolverine, walrus (extra-limital record), bearded seal and ringed seal. No whales are present in the region, no doubt due to the shallow waters, distance from the Beaufort Sea, and risk of being trapped by sea ice, and Banfield does not record the presence of either caribou or muskox (Banfield 1974). In addition to mammals, resources available for food include waterfowl, gulls, birds' eggs, Arctic char, cod, whitefish and clams. Driftwood is plentiful along the shorelines, where it is deposited by currents and ice flow carrying material from Russian and Canadian rivers out of the Arctic Ocean via the many southward-leading channels.



Figure 2-1 Location of CAM-C and Regional Setting

Riewe presents additional information on resources and land use in the Rae Strait section of the Nunavut Atlas. Seals, polar bear and waterfowl are present in the vicinity of Gibson Peninsula and arctic char and lake trout fishing sites are shown to the west. Five recent camp sites are illustrated on the north and east shore of the peninsula, including one in the CAM-C area. Winter travel routes between Gjoa Haven and Spence Bay follow the Gibson Peninsula; fox traps are set along the route. Hunters cross Rae Strait and Rasmussen Basin in winter and summer to hunt caribou on the mainland and seals on ice and in the water; arctic char, lake trout and whitefish are harvested on the Back River and its associated lakes; white-fronted and snow geese are taken in summer by Gjoa Haven hunters at the mouth of the Inglis and Murchison rivers on Shepherd Bay and many other waterfowl spend part of the summer on land around Rasmussen Basin. White whale (beluga) have also been observed and hunted recently in Rasmussen Basin (Riewe 1992: 126, 127, 232-236).

Barren-ground caribou are summer migrants on King William Island, crossing the narrow straits from the mainland over the sea ice. Population numbers dropped drastically with the

introduction of the rifle in the 1930s and 1940s, to the point of cessation of the migration; major Thule archaeological sites are associated with these landing points, suggesting that the migrations were well-known and exploited by at least the Thule over several centuries prior to European contact. Muskoxen are now present on King William Island, suggesting that a local pre-contact population may also have been eliminated during the late historic period, but is now repopulating the island (Dyke and Savelle 2009).

This summary of resources indicates that King William Island and its marine and ice environs has, or has had in the past, a broad variety of food resources available in the form of mammals, birds and fish, which also provided many of the other necessities of life including materials for clothing, boat and tent covers, fuel, tools and utensils.

2.2 Past Land Use

King William Island lies on the transitional zone between the Netsilik Inuit to the east and the Copper Inuit to the west, part of a group known collectively as the Central Eskimos, whose territory extended from Committee Bay to eastern Victoria Island and north to Bellot Strait and whose inhabitants depended largely on caribou, seals and fish (Mathiassen 1927; Balikci 1970). Prehistorically, King William Island and its surrounding waters and ice were on the eastward travel route of the two main migrations across the Canadian Arctic towards Greenland, Quebec and Labrador, beginning with the Palaeoeskimos leaving the Bering Strait area around 4500 years ago (Maxwell 1985; McGhee 1996) and followed at around 1000 A.D. by the Neoeskimos, the ancestors of today's Inuit (Mathiassen 1927). Many archaeological sites have been recorded on the northwest and northeast coasts of King William Island spanning both the Early (Pre-Dorset) and Late (Dorset) Palaeoeskimo phases between about 4500-800 years ago (Dyke and Savelle 2009), and Thule sites (early Neoeskimo) are present along the south coast of the island (Mathiassen 1927).

Dyke and Savelle paint a picture of this region as one of the harshest in the Canadian Arctic, suffering through a dramatic human population crash following the initial occupation between about 4500-3600 BP (BP: years before present), a modest recovery between 3100-2500 BP, and a final recovery of the Palaeoeskimo population during the Late Dorset period until as late as 800 BP. They suggest that this cycle might relate more to overharvesting of limited local resources than climate change during this period (Dyke and Savelle 2009).

Thule populations in the region may have been more successful than their Palaeoeskimo predecessors, with adaptations such as dog teams and larger sleds, large skin boats to assist in camp moves, as well as kayaks, the bow and arrow for more accurate hunting, particularly of land mammals, and metal-working. Their descendants, the Copper and Netsilik Inuit, devised different strategies to help them cope with the diverse environments and fauna and climate/weather, and inhabited areas where they felt comfortable and capable of making a living. Thus, several dozen individual but shifting bands of Copper and Netsilik Inuit, identifying themselves with particular areas and seasonal movements, occupied this region (Balikci 1970; Jenness 1970; McGhee 1972; Bennett and Rowley 2004).

In 1923, Knud Rasmussen spent several weeks on the south coast of King William Island investigating early Thule sites. One site, called Malerualik, meaning "the place where one

follows the caribou", is located at one of the most important crossing sites for caribou travelling between the mainland and the island, and is also adjacent to a good sealing ground and salmon (char) river. The location of the winter houses on beach terraces 15-22 m above sea level and the nature of the artifacts indicated to Rasmussen that this site fell relatively early in the Thule chronology, suggesting initial occupation during the continuing migration of this people from the Bering Strait eastward through the Northwest Passage. Rasmussen's analysis of the type and quality of artifacts recovered suggested to him that people here depended mostly upon caribou for food, skins, and materials for making tools and utensils, *i.e.*, antler and bone, whereas groups further west and east had access to more varied resources including walrus, narwhal and whale, with their richer supply of materials (Mathiassen 1927: 305-327).

2.3 Historical Notes

King William Island has been occupied for more than 4,000 years by Palaeoeskimo, Neoeskimo and Inuit and has been visited or noted by European explorers for almost 180 years. In 1830, James Clark Ross crossed a body of water from Boothia Peninsula to land that he named after reigning British monarch King William IV, although it was not clear at the time that the land was in fact an island. Nine years later, Dease and Simpson noted King William Island from Chantrey Inlet, but were also unaware that it was an island. It wasn't until 1854 that John Rae was able to prove its insular nature (Berton 1988). The following discusses some of the possible derivations of other place names and geographic features in the vicinity of the study area as shown on current topographic maps – Inuit names are not so readily available but might provide more instructive indications of features' actual importance (Figure 2-2).

Rae Strait is named for John Rae, a Scottish doctor hired by the Hudson's Bay Company who made three journeys along the Arctic coast between 1848 and 1851, discovering and reporting the fate of the Franklin Expedition. Matheson Point was named by John Rae during his Arctic travels. Mount Matheson was named after John Rae's Matheson Point by a later explorer. St. Roch Basin, between James Ross and Rae Straits, was named in 1960 after the RCMP vessel that successfully traversed the Northwest Passage in 1941. Rasmussen Basin honours Knud Rasmussen, famed Danish-Greenlandic explorer and ethnographer, who wintered in this area during the Fifth Thule Expedition, 1923-24, and conducted archaeological investigations on the south coast of King William Island. Luigi d'Abruzzi Cape was named for Prince Luigi Amedeo Giuseppe Maria Ferdinando Francesco of Savoy-Aosta, Duke of the Abruzzi (January 29, 1873 - March 18, 1933), an Italian mountaineer and a grandson of King Vittorio Emanuele II of Italy. His polar expedition of 1899-1900 under the leadership of Umberto Cagni reached farthest north and stopped 237 miles short of the Pole. His was the first ascent of Mount Saint Elias in 1897. Schwatka Bay was named for Lieutenant Frederick Schwatka, a U.S. cavalry officer trained in medicine and law who undertook a search expedition for the American Geographical Society and found evidence from the Franklin Expedition on King William Island in 1878. Like Amundsen nearly fifty years later, he adopted the practice of Arctic travel with a small party using Inuit diet, clothing, equipment and techniques. Gjoa Haven was named after Roald Amundsen's ship, *Gjøa*, which was the first vessel to transit the Northwest Passage in one continuous voyage. With a small crew of only six and using Inuit knowledge, Roald Amundsen traversed the passage in a three year journey, finishing in 1906. Chantrey Inlet may be named for devotions completed by relatives back home for the safety and survival of one of the many expeditions that passed through this area at the mouth of the Back River, given the difficult exploration history of the

area. A chantry is an endowment to cover expenses for the saying of masses and prayers, usually for the soul of the founder of the endowment, or an altar or chapel built with such an endowment. Admiral Sir George Back FRS (6 November 1796 – 23 June 1878) was a British naval officer, naturalist and artist who served with John Franklin on three of his expeditions to the Canadian Arctic between 1818 and 1826. The Back Expedition of 1833-34 traversed the Back River and explored Chantrey Inlet. The Inuktitut *saattuq* means *to be thin*, and probably refers to the thin ice around the Saattuq Peninsula on the east side of Rae Strait. No information was found on the derivation of Beads Island, Brands Point, or Gibson Peninsula.



Figure 2-2 Map of Place Names Associated with CAM-C, King William Island

3 METHODOLOGY

The 2013 field survey team consisted of Callum Thomson, principal of Thomson Heritage Consultants, Inc. and permit holder, accompanied on occasion by Jessie Hoyt, PWGSC. The archaeological survey and assessment began on July 29 and extended over three full days until July 31. The AECOM field team, consisting of 11 individuals, was flown daily from our base in Gjoa Haven to CAM-C by a Summit Air Shorts Skyvan, landing on the gravel airstrip atop Mount Matheson and returning the same way. As no quad (ATV) was available, the archaeological survey was conducted entirely on foot, over a 12 km² area measuring approximately 4 x 3 km.

An account of each day's activities as background to how the investigations were conducted was presented in an Interim Report prepared and updated daily in the field and submitted to the AECOM team leader prior to departure from Gjoa Haven on August 1; a revised version was sent to the project manager in Edmonton on August 2 (Thomson 2013). All known project activity areas such as debris areas, borrow areas, storage areas, the station area and the beach area were surveyed. En route to or between some of these areas, numerous beach ridges were also inspected.



Plate 3-1 AECOM field crew unloading Summit Air Skyvan on CAM-C airstrip, King William Island

The terrain between the Station Area and the Beach Area consists largely of old beach ridges, some parallel to the present beach, others curving around former now relict bays, with the access road and a POL Line crossing them from the Station to the beach. Additional surveys were conducted around the Station Area and northwest of the Station to the water supply lake.



Plate 3-2 Aerial view to northeast of CAM-C Beach Area. CAM-C 1 site on ridge at centre top of photo. Beach access road left to right across centre.

4 ARCHAEOLOGICAL AND HISTORIC SITES RECORDED

Ten sites dating to the recent historic period and eight sites from the early historic or pre-contact periods were recorded during the three-day archaeological survey (Figure 4-1). Locations range from the beach area to the upper station area at 70 m asl and on beach ridges between the active beach and the water supply lake, 4 km northwest of the Beach Site. All eighteen sites are described in detail and assessed for mitigation needs below. Site record forms are contained in Appendix 1 and site photographs are contained in the attached CD-ROM.

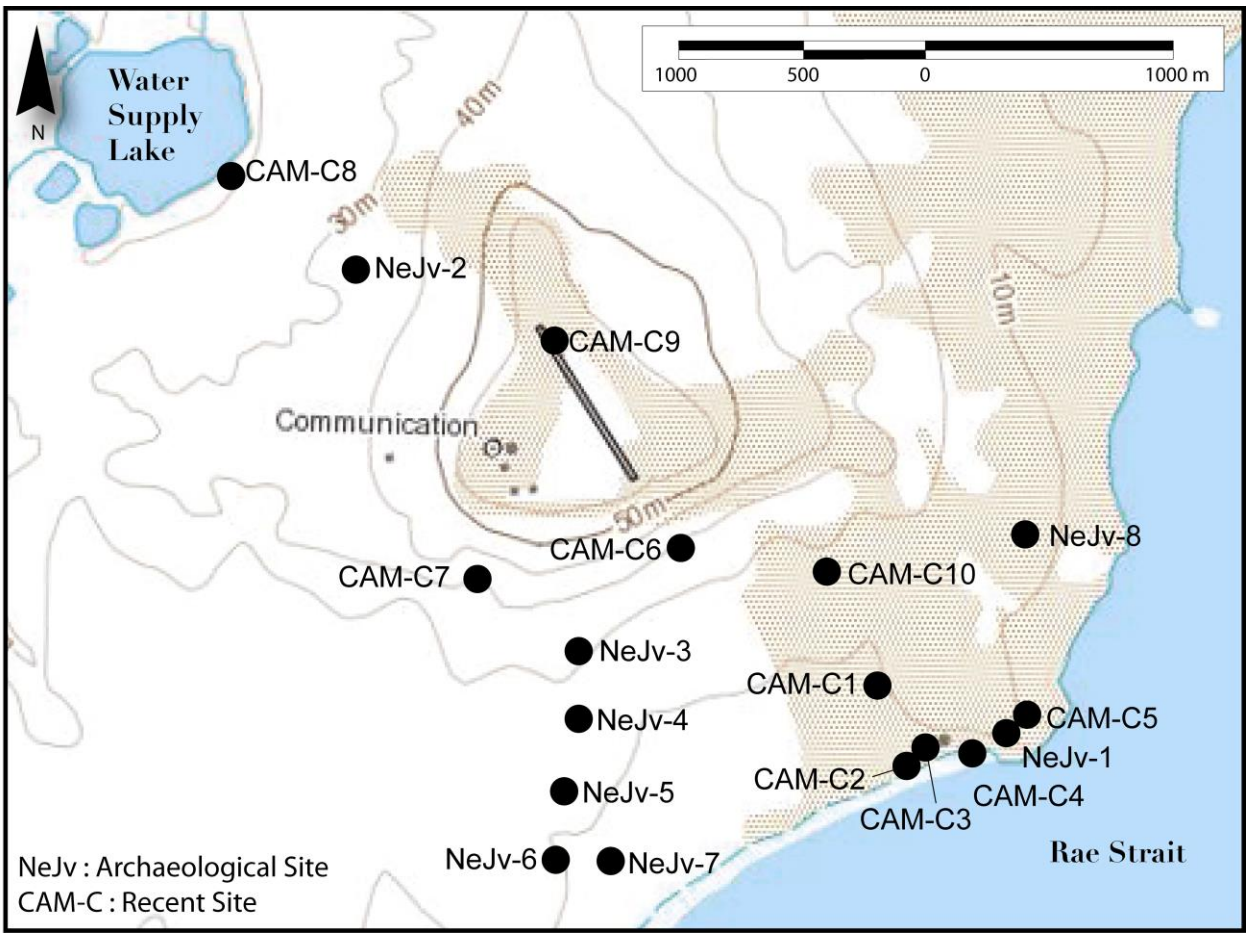


Figure 4-1 Archaeological and Recent Historic Sites Recorded at CAM-C, King William Island, 2013

CAM-C 1

Description

CAM-C 1 was located on the main road from the airstrip/Station Area to the Beach Area and consisted of five small tent rings, some with discarded tea bags still looking quite fresh, so obviously very recent. Each of the tent rings had an outer ring of guy rope rocks as well as the inner tent ring.

Table 1 Feature Data Recorded at CAM-C 1, King William Island, Map Sheet 57 B/13E, Zone 15W

Feature No.	GPS Record No.	Feature Type	Easting	Northing	Size (m)	Work Area	Date Recorded
1	573	Tent ring	409122	7635018	2 x 2	Beach	July 29
2	574	Tent ring	409138	7635006	2 x 2	Beach	July 29
3	575	Tent ring	409159	7634988	2 x 2	Beach	July 29
4	576	Tent ring	409191	7634949	2 x 4	Beach	July 29
5	577	Tent ring	409179	7634962	3 x 2	Beach	July 29

Discussion
Paul Ikuallak later told me that CAM-C 1 was a Ranger camp occupied last October, accessed from Gjoa Haven by quad or snowmobile during a training exercise.

Recommendations
This site was dismantled by one or more of the wildlife monitors some time after it was recorded as it interfered with quad travel on the access road, so no longer exists or requires any further mitigation beyond that already obtained: photographs, site sketches, GPS co-ordinates and description.

CAM-C 2
Description
CAM-C 2 was located about 100 m west of the south end of the Station-Beach access road on a sandy terrace behind the beach. One tent ring was found, containing recent materials such as wooden stakes and a rusted tin can.

Table 2 Feature Data Recorded at CAM-C: 1, King William Island, Map Sheet 57 B/13E, Zone 15W

Feature No.	GPS Record No.	Feature Type	Easting	Northing	Size (m)	Work Area	Date Recorded
1	578	Tent ring	409285	7634642	2 x 3	Beach	July 29

Discussion
Recent sites along this seaward side of Gibson Peninsula, facing out over Rae Strait, are most likely associated with the hunting of seal and/or waterfowl, and were/are most likely occupied by residents of Gjoa Haven. Some may also have been occupied prior to or following a crossing of Rae Strait by sea or over the ice.

Recommendations
This site is unlikely to be affected by any clean up operations, but should be left intact and not disturbed by vehicle traffic.

CAM-C 3
Description
CAM-C 3 was located on a rectangular gravel storage pad, most likely used for the storage of POL (Petroleum, Oils and Lubricants) containers above the beach northeast of the south end of the access road. The site consists of one rectangular tent ring with recent tin cans inside.

Table 3 Feature Data Recorded at CAM-C 3, King William Island, Map Sheet 57 B/13E, Zone 15W

Feature No.	GPS Record No.	Feature Type	Easting	Northing	Size (m)	Work Area	Date Recorded
1	579	Tent ring	409362	7634717	23 x 3.5	Beach	July 29

Discussion
This site may also be associated with hunting or travel on Rae Strait.

Recommendations
This site is unlikely to be affected by testing and clean up operations on the POL pad. The feature should be left intact and not disturbed.

CAM-C 4
Description
CAM-C 4 was located on a terrace below the fuel tank storage pad east of the lower end of the beach access road and extending northeastward about 200 m. Seven tent rings were found, most containing recent materials.

Table 4 Feature Data Recorded at CAM-C 4, King William Island, Map Sheet 57 B/13E, Zone 15W

Feature No.	GPS Record No.	Feature Type	Easting	Northing	Size (m)	Work Area	Date Recorded
1	580	Tent ring	409451	7634687	2.5 x 3	Beach	July 29
2	581	Tent ring	409559	7634719	2 x 3	Beach	July 29
3	582	Tent ring	409596	7634694	2 x 3	Beach	July 29
4	583	Tent ring	409629	7634686	2.5 x 2.5	Beach	July 29
5	584	Tent ring	409637	7634681	4 x 3.5	Beach	July 29
6	585	Tent ring	409648	7634667	2.5 x 2	Beach	July 29
7	586	Tent ring	409656	7634685	2.5 x 2.5	Beach	July 29

Discussion
As with the other recent sites along this shoreline, these camps were most likely occupied for access to resources on Rae Strait and possibly also for travel to or from the communities of Taloyoak or Kugaaruk on Boothia Peninsula and Pelly Bay, respectively.

Recommendations
This site is unlikely to be affected by testing and clean up operations. The habitation features should be left intact and not disturbed.

NeJv-1
Description
THC2013-2:1, attributed the Borden site number NeJv-1 by the Sites Office, Archaeological Survey of Canada, Canadian Museum of Civilization in Gatineau, PQ (L. Johanis 2013, pers. comm.), is a mostly-older site that was found on top of a high ridge between the elevations of about 17-21 m above sea level (asl), above the beach northeast of the end of the beach road. Six boulder features were initially recorded; two recent-looking *inuksuit* apparently used to mark suitable crossing points for an access road between the Beach Area and a series of beach ridges used as aggregate sources to the north were not initially recorded. The top of the ridge is littered with animal bone: caribou, muskox and seal, and some bird bone, much of it covered with lichen or partially overgrown by vegetation and soil. A few rusted tin cans and other recent debris were also found. The site was revisited on two later occasions during which an additional seven

features were recorded; these have been added to the table below. Note that features 11 and 12 are located on either side of the same boulder; inadvertently, no co-ordinates were obtained for #11, which is 1 m north of #12.

Table 5 Archaeological Feature Data Recorded at NeJv-1, CAM-C, King William Island, Map Sheet 57 B/13E, Zone 15W

Feature No.	GPS Record No.	Feature Type	Easting	Northing	Size (m)	Work Area	Date Recorded
1	587	*Qammaq* (autumn house)	409726	7634751	2.5 x 2.5	Beach	July 29
2	588	Tent ring	409715	7634774	3 x 4	Beach	July 29
3	589	Cache	409689	7634798	4 x 3	Beach	July 29
4	590	Tent ring	409629	7634869	1.5 x 2	Beach	July 29
5	591	Tent ring	409737	7634762	1.5 x 2.5	Beach	July 29
6	592	Cache	409742	7634766	3 x 3	Beach	July 29
7	617	*Inuksuk*	409673	7634824	1	Beach	July 30
8	618	*Inuksuk*	409704	7634751	1	Beach	July 30
9	618	*Qammaq*	409727	7634738	3 x 3	Beach	July 30
10	619	Cache	409725	7634732	4 x 4	Beach	July 30
11		Cache			1.5 x 1.5	Beach	July 31
12	636	Cache	409713	7634744	2 x 1.5	Beach	July 31
13	637	Cache	409716	7634733	2 x 2	Beach	July 31

Discussion

This site occupies the highest landform along this part of Gibson Peninsula, rising to about 20 m asl, and has been used as a habitation and hunting site in summer and fall, for storage, most likely of meat, and as a travel route for trucks transporting gravel from an aggregate source to the north to the Beach Area. Faunal materials and the elevated nature of the ridge suggest that it was also used as a hunting lookout place for observation of seals and land mammals. Due to the nature of the ridge – covered in places by boulders – additional features may be present.

Recommendations

This site does not appear to be at risk of disturbance from clean up operations. Vehicles traversing the ridge should stay on the established trail, not disturb any of the archaeological features (which include faunal material and other contents as well as the more visible boulders), and operate outside a 30 m buffer zone around this site.

CAM-C 5

Description

CAM-C 5 is a larger modern site extending for more than 200 m along the first terrace above the beach, at about 10 m asl, from the southeast end of the high ridge described above. The terrace is littered with modern debris. Nine tent rings were recorded; other features may be present.

Table 6 Feature Data Recorded at CAM-C 5, King William Island, Map Sheet 57 B/13E, Zone 15W							
Feature No.	**GPS Record No.**	**Feature Type**	**Easting**	**Northing**	**Size (m)**	**Work Area**	**Date Recorded**
1	593	Tent ring	409755	7634772	2.5 x 3	Beach	July 29
2	594	Tent ring	409779	7634777	2.5 x 2.5	Beach	July 29
3	595	Tent ring	409785	7634779	3 x 3	Beach	July 29
4	596	Tent ring	409807	7634815	2.5 x 2	Beach	July 29
5	597	Tent ring	409825	7634824	2 x 2	Beach	July 29
6	598	Tent ring	409844	7634857	3 x 4	Beach	July 29
7	599	Tent ring	409846	7634900	2.5 x 4	Beach	July 29
8	600	Tent ring	409798	7634915	2.5 x 3	Beach	July 29
9	601	Tent ring	409794	7634924	2.5 x 2.5	Beach	July 29

Discussion
CAM-C 5 is located north of the Beach Area so is not likely to be at risk from cleanup activities. The tent rings are modern and may still be in use periodically by hunters and people travelling across Rae Strait.

Recommendations
This site does not appear to be at risk of disturbance from clean up operations. Vehicles should avoid the site within a 30 m buffer zone around the site perimeter, and not disturb any of the cultural features.

CAM-C 6
Description
CAM-C 6 is a small goose hunting camp consisting of two tent rings, one with a buckshot cartridge inside. The site is located adjacent to the Station-Beach road immediately west of the POL line from the beach to the station area on a 30 m asl terrace with abundant goose droppings.

Table 7 Feature Data Recorded at CAM-C 6, King William Island, Map Sheet 57 B/13E, Zone 15W							
Feature No.	**GPS Record No.**	**Feature Type**	**Easting**	**Northing**	**Size (m)**	**Work Area**	**Date Recorded**
1	602	Tent ring	408368	7635527	2 x 2.5	POL line	July 29
2	603	Tent ring	408355	7635533	2.5 x 2	POL line	July 29

Discussion
This site is located near the POL alignment that runs from the Beach Area to the Station Area, and was used to transport fuel from the bulk tanks at the beach to the station facilities. The fuel line was supported in places by empty or rock-filled barrels.

Recommendations
The tent rings and associated cultural materials should be avoided during removal of the line and clean up of associated debris.

CAM-C 7
Description
CAM-C 7 was reported by DMT Geosciences staff member, Adam Peake, near a small landfill and consists of a circular tent ring on largely undisturbed tundra below the southwest corner of the Station plateau, at an elevation of 30 m asl. The contents, including a battery and several wooden tent stakes, and the location suggest a fairly recent occupation, possibly taking advantage of the shelter offered by the Station ridge.

Table 8 Archaeological Feature Data Recorded at CAM-C 7, King William Island, Map Sheet 57 B/13E, Zone 15W

Feature No.	GPS Record No.	Feature Type	Easting	Northing	Size (m)	Work Area	Date Recorded
1	604	Tent ring	407542	7635401	2 x 2	Station	July 30

Discussion
The tent ring is quite recent so not of archaeological value, but as with many of the similar structures recorded around the Station Area and Beach Area and elsewhere, it may be re-occupied by Inuit from Gjoa Haven or elsewhere so should be left intact if possible.

Recommendations
The tent ring, associated cultural materials, and a buffer zone of 30 m around the feature should be avoided during any soil testing in the vicinity or clean up of the nearby landfill.

CAM-C 8
Description
CAM-C 8 is located at 40 m asl 55 m southeast of the water supply lake, which is 1.5 km northwest of the station. The tent ring is situated directly on the access road so must post-date the station era as the access road to the water supply lake would have been in almost-daily use. One wooden tent stake was noted.

Table 9 Feature Data Recorded at CAM-C 8, King William Island, Map Sheet 57 B/13E, Zone 15W

Feature No.	GPS Record No.	Feature Type	Easting	Northing	Size (m)	Work Area	Date Recorded
1	605	Tent ring	406541	7637037	3 x 3	Station	July 30

Discussion
This tent ring is not at risk of any clean up-related activities. However, there is some potential for the water supply to be used during any prolonged clean up of CAM-C.

Recommendations
The tent ring and associated cultural material should be avoided by any vehicle traffic using the access road to the water supply lake.

NeJv-2
Description
NeJv-2 is an early historic period hearth or foxtrap anchor consisting of flat limestone slabs on a high, undisturbed beach ridge 50 m north of the water supply lake road at approximately 30 m asl. A cut wood stake is present under the limestone slabs; heavy vegetation cover including arctic heather over some of the component slabs indicates an old site.

Table 10 Archaeological Feature Data Recorded at NeJv-2, CAM-C, King William Island, Map Sheet 57 B/13E, Zone 15W

Feature No.	GPS Record No.	Feature Type	Easting	Northing	Size (m)	Work Area	Date Recorded
1	606	Hearth or foxtrap anchor	407048	7636657	1 x1	Station	July 30

Discussion
No lithic materials indicating pre-contact use of this hearth were found in or around the feature or elsewhere on the same beach ridge. The wooden stake possibly indicates re-use of the collapsed hearth in recent times, placement of the stake as a marker for some unknown reason, or most likely as an anchor for a leg-hold foxtrap, no longer present.

Recommendations
This site is not at risk from any clean up operations at CAM-C, but should be avoided and not disturbed by any vehicle traffic.

NeJv-3
Description
NeJv-3 is a circular tent ring on a beach ridge 28 m asl about 500 m west of the north end of the beach access road. The structural rocks are well buried in the sand and vegetation, and no historic materials are associated. A probable hearth is located inside and a gap in the rock alignment may be a possible entrance.

Table 11 Archaeological Feature Data Recorded at NeJv-3 , CAM-C, King William Island, Map Sheet 57 B/13E, Zone 15W

Feature No.	GPS Record No.	Feature Type	Easting	Northing	Size (m)	Work Area	Date Recorded
1	607	Tent ring	407953	7635108	2 x 2	Beach	July 30

Discussion
This feature may date to the Palaeoeskimo period, judging by the 28 m asl elevation of the beach ridge and the proximity of a Palaeoeskimo site several hundred metres to the south on another beach ridge. However, no chert or other lithic materials typically found in Palaeoeskimo habitation sites were found in association. While the structure is more reminiscent of a Neoeskimo than a Palaeoeskimo tent ring, with a possible entrance on the east side and a hearth structure in the southeast corner, circular and oval tent rings were found in the large Palaeoeskimo sites, including the Pre-Dorset components, at Peel Inlet and Cape Jane Franklin on King William Island (Dyke and Savelle 2009: 379).

Recommendations
This site is not at risk from any clean up operations at CAM-C, but should be avoided and not disturbed by any vehicle traffic.

NeJv-4
Description
NeJv-4 is a Palaeoeskimo site comprising two separate loci. The site is located on the front edge of a long high beach that curves inland around a large relict marine bay, about 250 m west of NeJv-3, at an elevation of 28 m asl. Locus 1 is a rectangular tent ring with a scatter of patinated and black chert inside the structure, which has a central mid-passage aligned north-south. Locus 2, about 30 m southwest of Locus 1 on the same beach ridge, was found by Jessie Hoyt, and consists of a scatter of patinated chert and one piece of grey chert, with no discernible structure associated. One tool fragment was located: the midsection of a patinated chert biface missing both its distal tip and proximal end. A slight indication was noted of side-notching, suggesting use as an endblade.

Table 12 Archaeological Feature Data Recorded at NeJv-4, CAM-C, King William Island, Map Sheet 57 B/13E, Zone 15W

Locus No.	GPS Record No.	Feature Type	Easting	Northing	Size (m)	Work Area	Date Recorded
1	608	Tent ring with black and patinated chert	407948	7634848	2 x 2.5	West of Beach Area	July 30
2	609	Lithic scatter	407961	7634824	25 x 5	West of Beach Area	July 30



Plate 4-1 Palaeoeskimo patinated chert endblade fragment, NeJv-4

Discussion

This site most likely dates back to the Pre-Dorset phase of the Palaeoeskimo tradition, which begins about 4500 years ago in the Canadian Arctic. No collections were made; all lithic materials were left in situ pending a potential, more controlled, investigation of the site as part of a more widespread survey. Dyke and Savelle used reservoir-corrected radiocarbon dates from marine shells, whale bones and driftwood to produce a relative sea level curve to date a cluster of Palaeoeskimo sites found in similar beach-ridge locations on the north and northwest coasts of King William Island at 30 m asl between 3500-4500 BP (Dyke and Savelle 2009: 375). These sites contain stone structure types ranging from isolated box hearths to rectangular tent rings with or without midpassages, to midpassages without tent rings, and circular or oval tent rings. All are interpreted as having been occupied at or within a few metres of the active beach. Pre-Dorset sites on King William island were found at as low elevations as 10 m asl, and subsequent Dorset Palaeoeskimo and Neoeskimo sites below that elevation.

Recommendations

NeJv-4 is significant because of its age and the knowledge that Early Palaeoeskimo people (*i.e.*, Pre-Dorset) occupied higher (10-30 m asl) beach ridges in the vicinity of CAM-C, at some distance from the present shoreline, and their successors, the Dorset Palaeoeskimo and Thule Neoeskimo beach ridges below10 m. This indicates that potential exists for disturbance of these and other sites not yet recorded, which are extremely difficult for untrained laypersons to see due to the general absence of robust habitation and other structures and the paucity of preserved

animal bone and other cultural materials. Quads being driven across or along these flat beach ridges could easily displace structural elements and crush the fragile stone tools and flakes, animal bone and wood fragments which could help with dating and interpretation of seasonality and function. It is recommended that all beach ridges between about 5-40 m asl, which may contain Palaeoeskimo sites, be avoided by vehicular traffic. In the event of discovery of additional sites, under no circumstances should any lithic or organic materials be collected or moved or structural rocks moved.

NeJv-5

Description

NeJv-5 is another Palaeoeskimo scatter of patinated chert found by Jessie Hoyt on the front edge of a long high beach ridge that curves inland around a large relict marine bay at about 12 m asl. No structures were identified; several locations were noted where flat limestone slabs occurred but could not be interpreted as elements within a dwelling structure.

Table 13 Archaeological Feature Data Recorded at NeJv-5, CAM-C, King William Island, Map Sheet 57 B/13E, Zone 15W

Feature No.	GPS Record No.	Feature Type	Easting	Northing	Size (m)	Work Area	Date Recorded
1	610	Lithic scatter	407894	7634539	20 x 10	West of Beach Area	July 30

Discussion

This site has potential to be quite informative given the relatively large number of lithic fragments, none of which were identified as tools or tool fragments in a cursory inspection, and the possibility of interpreting the limestone slabs as parts of a habitation structure using precise mapping techniques.

Recommendations

As with NeJv-4, NeJv-5 is significant because of its apparent age and the knowledge that Palaeoeskimo people occupied higher (10-30 m asl) beach ridges in the vicinity of CAM-C, at some distance from the present shoreline. This indicates that potential exists for disturbance of these sites, which are extremely difficult for untrained laypersons to see due to the general absence of robust habitation and other structures and the paucity of preserved animal bone and other cultural materials. Quads being driven over or along these flat beach ridges could easily displace structural elements and crush fragile stone tools and flakes and organic materials. It is recommended that all Palaeoeskimo sites around CAM-C and beach ridges between about 5-40 m asl, including NeJv-5, be avoided by vehicular traffic. In the event of discovery of additional sites, under no circumstances should any lithic or organic materials be collected or moved or structural rocks moved.

NeJv-6

Description

NeJv-6 is a large boulder meat cache on a terrace near the Palaeoeskimo beach ridges, at approximately 15 m asl and 1.4 km from the shore of Rae Strait, probably dating to the Thule period.

Table 14 Archaeological Feature Data Recorded at NeJv-6, CAM-C, King William Island, Map Sheet 57 B/13E, Zone 15W

Feature No.	GPS Record No.	Feature Type	Easting	Northing	Size (m)	Work Area	Date Recorded
1	611	Cache	407860	7634261	1.5 x 2	West of Beach Area	July 30

Discussion

The location of this cache, probably built to contain surplus seal meat for winter use, so far from the sea might indicate that it was built early in the Neoeskimo period or that it was built where suitable construction materials were present. Rather than hauling rocks to where the seals were brought ashore, the seals could more easily be dragged by dogsled to where the cache was built.

Recommendations

This site should not be at any risk from clean up operations, and should be avoided.

NeJv-7

Description

NeJv-7 is located on a lower beach terrace 9-11 m asl approximately 800 m from the shore and consists of three recent tent rings and an older meat cache, possibly dating to the Thule period given its degree of lichen cover and surrounding vegetation and the distance of the beach ridge from the present shoreline**.**

Table 15 Archaeological Feature Data Recorded at NeJv-7, CAM-C, King William Island, Map Sheet 57 B/13E, Zone 15W

Feature No.	GPS Record No.	Feature Type	Easting	Northing	Size (m)	Work Area	Date Recorded
1	612	Tent ring	408033	7634240	2.5 x 3	West of Beach Area	July 30
2	613	Cache	408046	7634213	4 x 4	West of Beach Area	July 30
3	614	Tent ring	408098	7634262	3 x 3	West of Beach Area	July 30
4	615	Tent ring	408126	7634293	4 x 3	West of Beach Area	July 30

Discussion
The cache is built on a high point on the beach ridge so is prominently visible from a long distance. The tent rings contain recent materials such as a 6″ nail, tin cans, wire and wood, so possibly post-date the original construction and use of the tent rings, and certainly that of the cache.

Recommendations
This site does not appear to be at any risk from cleanup activities, and should be avoided.

CAM-C 9
Description
CAM-C 9 is a large tent ring site located on top of the Station Area plateau immediately east of the airstrip near its north end, at an elevation of about 64 m asl. The site was recorded after Adam Peake reported seeing a possible grave beside the runway. The "cross" interpreted by Adam as a grave marker is more likely to be a T-shaped wooden sign with the cross piece nailed to the upright, possibly originally displaying the name of the person or family who occupied a large rectangular tent adjacent to the sign, as interpreted from the rock and gravel used to hold down the bottom of the tent walls. Additional features associated included a ring of larger rocks used to anchor guy ropes, a paved entrance to the tent area and a raised, walled bed of soil that may have been used as a garden for local flora. An additional eleven smaller tent rings were also recorded in the vicinity, on the east side of the runway, southeast of the larger tent ring.

Table 16 Feature Data Recorded at CAM-C 9, King William Island, Map Sheet 57 B/13E, Zone 15W

Feature No.	GPS Record No.	Feature Type	Easting	Northing	Size (m)	Work Area	Date Recorded
1	621	Tent ring	407848	7636399	5 x 5	Station	July 31
2	622	Tent ring	407831	7636379	3 x 4	Station	July 31
3	623	Tent ring	407827	7636370	3 x 3	Station	July 31
4	624	Tent ring	407837	7636375	3 x3	Station	July 31
5	625	Tent ring	407837	7636367	3 x 3	Station	July 31
6	626	Tent ring	407850	7636365	4 x 4	Station	July 31
7	627	Tent ring	407853	7636355	3 x 3	Station	July 31
8	628	Tent ring	407846	7636355	4 x 4	Station	July 31
9	629	Tent ring	407849	7636361	4 x 4	Station	July 31
10	630	Tent ring	407861	7636352	3.5 x 3	Station	July 31
11	631	Tent ring	407867	7636359	3 x 3	Station	July 31
12	632	Tent ring	407863	7636340	3 x 3	Station	July 31



Plate 4-2 Tent ring, Feature 12, CAM-C 9, view south to Skyvan on airstrip

Discussion

The features are all contained within the eastern margin of the airstrip and a parallel alignment of boulders possibly cleared from the vicinity of the airstrip to provide a level apron or winter alternate runway. If so, it is possible that the features all post-date the abandonment of CAM-C in 1963. To counter this, at least one of the tent rings has been disturbed by bulldozer cuts, suggesting that they may pre-date the use of CAM-C, the tent ring boulders are mostly well-seated in the soil rather than perched on top as in recent structures, and no historic materials were found in association, all suggesting some antiquity beyond the CAM-C period. The site, on top of the ridge, provides a good viewpoint to the north and east. CAM-C 9 has been recorded as a recent historic site based on interpretation of the age of F-1. The other 11 tent rings may be older, as discussed above, in which case the site should more accurately be described as archaeological rather than recent in nature, or may have been occupied by Inuit visiting or working at CAM-C.

Recommendations

This site should not be affected by clean up operations. Its location adjacent to the airstrip should be protected from any potential use as a laydown and storage area during the clean up. The question on the age of occupation could be addressed by consultation with residents of Gjoa Haven who may have worked at CAM-C.

CAM-C 10

Description

CAM-C 10 consists of a recent alignment of rocks, most likely a disturbed tent ring, and a hearth containing some broken bottle or jar glass. The site is located on a flat, vegetated plain at 18 m asl on the east side of the beach access road.

Table 17 Feature Data Recorded at CAM-C 10, King William Island, Map Sheet 57 B/13E, Zone 15W

Feature No.	GPS Record No.	Feature Type	Easting	Northing	Size (m)	Work Area	Date Recorded
1	634	Tent ring, hearth	408961	7635431	2 x 2	Beach	July 31

Discussion

The site's location does not give any ready information on why it is located there, other than the presence of a small trickle of water nearby.

Recommendations

This site does not appear to be at any risk from clean up operations and should be avoided.

NeJv-8

Description

NeJv-8 is another Palaeoeskimo tent ring with associated patinated chert found on a beach terrace approximately 1 km east of the beach access road, just east of a secondary, northernmost access road from the Station Area to an area used for aggregate extraction, at an elevation of 18 m asl. En route from CAM-C 9 to CAM-C 1 on the ridge above the landing beach, a prominent beach terrace was noted that was similar in characteristics and elevation to those on which we had previously found several Palaeoeskimo sites. The survey route was diverted to inspect part of the beach ridge. This site contains a tent ring built largely of now badly eroding flat limestone slabs in a rectangular shape with an apparent midpassage. Several fragments of patinated chert and a large piece of green chert were present inside the structure and old sea mammal bone was scattered inside and outside the structure.

Table 18 Archaeological Feature Data Recorded at NeJv-8, CAM-C, King William Island, Map Sheet 57 B/13E, Zone 15W

Feature No.	GPS Record No.	Feature Type	Easting	Northing	Size (m)	Work Area	Date Recorded
1	635	Tent ring, lithic scatter, bone	409767	7635582	2.5 x 2.5	Beach	July 31



Plate 4-3 Patinated chert flakes, NeJv-8

Discussion

The terrace curves around what was likely an old marine bay several thousand years ago when this beach ridge would have been at or near sea level. Other similar sites may well be present on this beach ridge and adjacent ones upslope and downslope from this approximately 15 m asl elevation, running northwards to Matheson Point and the northern tip of Gibson Peninsula on St. Roch Basin.

Recommendations

As with NeJv-4 and NeJv-5, JeNv-8 is significant because of its apparent age and the knowledge that Palaeoeskimo people occupied higher (10-30 m asl) beach ridges in the vicinity of CAM-C, at some distance from the present shoreline. This indicates that potential exists for disturbance of these sites, which are extremely difficult for untrained laypersons to see due to the general absence of robust habitation and other structures and the paucity of preserved animal bone and other cultural materials. Quads being driven over or along these flat beach ridges could easily displace structural elements and crush the fragile stone tools and flakes and organic materials. It is recommended that all Palaeoeskimo sites around CAM-C and beach ridges between about 5-40 m asl, including NeJv-8, be avoided by vehicular traffic. In the event of discovery of additional sites, under no circumstances should any lithic or organic materials be collected or moved or structural rocks moved.

Summary of Archaeological Site Findings
Eighteen sites were found during the three full days at CAM-C: ten recent sites most likely all post-dating the closure of CAM-C in 1963 and thus not considered to be or at least not proven to be archaeological sites (*i.e.*, more than 50 years old), and eight other sites with at least one feature dating to prior to the construction of CAM-C in the 1950s and thus more than 50 years old and therefore classified as archaeological sites. Of these, three are from the Palaeoeskimo period that dates from 4500-800 years ago in this area, and the other five are from the Thule period or early Inuit period. None of the sites appears to have been disturbed by any site activities other than CAM-C 9, where one tent ring may have been truncated by a bulldozer; however, the extent of site disturbance around the Station and Beach areas, particularly in the seemingly endless search by bulldozer for suitable aggregate sources by Station employees, most likely destroyed some sites.

Recommendations for preservation of the ten recent sites has been included for reasons stated previously: precise dating of the original occupation of the sites is impossible and thus some of those judged to be less than 50 years old (the Nunavut Government definition of an archaeological site is one that contains evidence of human activity more than 50 years old) may well have been occupied prior to 1963; some sites may be in active use and thus their disturbance might be viewed by Inuit as disrespectful; and all habitation sites contribute to knowledge of Inuit land use in the region. Thus, as long as there are no plans for clean up operations or other activities that may result in site disturbance, our recommendation is to avoid all of the recent sites as well as the archaeological sites.

Additional Inuit sites are no doubt present both north of the Beach Area towards Matheson Point and southwest of the Beach Area towards the deep bay and Luigi d'Abruzzi Cape, as well as on beach ridges between 5-40 m asl, and in the interior. The Gibson Peninsula appears to have been a location favoured by Inuit and their Palaeoeskimo and Neoeskimo predecessors, and continues to be used for hunting and as a crossing point on Rae Strait.

5. CONCLUSIONS

5.1 Introduction

The CAM-C radar and communication site was occupied from the late 1950s until 1963, when it was abandoned. Debris fields, small landfills and isolated surface debris are present throughout the site area, along with a 750 m long airstrip, formal access roads, informal trails, aggregate extraction areas and contaminated soil. Prior to the occupation of Mount Matheson and the adjacent area, Palaeoeskimo, Thule and Inuit used this land and the adjacent sea and sea ice for travel, hunting, trapping, fishing and gathering. Habitation sites such as tent rings and fall *qammat* and their contents and meat caches relate part of the story of this land use, which continues today with Inuit from the settled communities of Gjoa Haven and elsewhere travelling, camping and exploiting the resources around CAM-C (Figure 5-1).

CAM-C is in the early stages of clean up and remediation. It can be expected that this will involve relatively small scale terrain disturbance (compared to the much larger full DEW Line sites, which were occupied for much longer by many times the number of people present at

CAM-C) in the form of excavation, aggregate extraction, activities associated with demolition and removal of built and buried materials, removal of surface debris, vehicle traffic, and construction of a work camp and storage areas. All of these activities have the potential to disturb known and any currently unknown archaeological and recent historic sites, without appropriate mitigation.

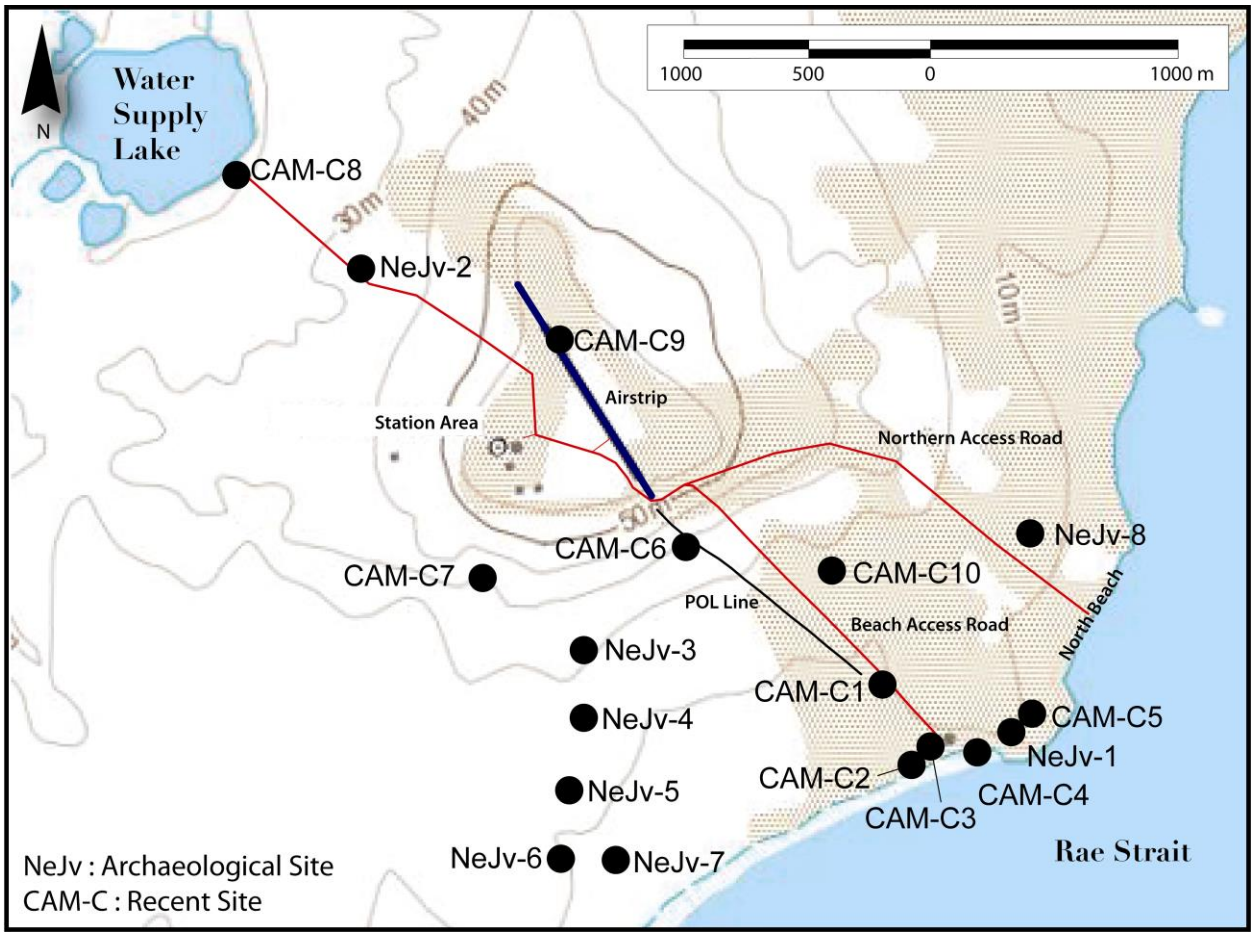


Figure 5-1 CAM-C Facilities and Archaeological/Historic Sites

5.2 Data Gaps

Ideally, archaeological baseline surveys should focus on a wide variety of landforms and environmental zones to understand past human site location preferences and needs. The surveys conducted at CAM-C over three days attempted to include this diversity, as well as visiting all known areas of previous disturbance and planned scientific and engineering investigations and a selection of areas judged to be of high archaeological potential.

Although 18 separate sites were recorded, including 64 individual structures, some sites may contain additional features that were not immediately apparent, some may contain lithic material that was not noted, and some areas not inspected may contain archaeological or recent sites and materials.

5.3 Site Prediction

The most likely areas where additional precontact sites may be present are the beach ridges between about 5-40 m above sea level that for the most part parallel the present shoreline and would have been occupied during the Palaeoeskimo (both Pre-Dorset and Dorset) and early Neoeskimo periods, when sea level was higher than present relative to land elevation. The sites, as many Inuit habitation sites are today, primarily would have been adjacent to the then active shoreline for ready access to the resources of sea and ice, although if land mammals such as caribou, muskox and arctic fox were available on the island during this period they and fish in the numerous streams and lakes would have been exploited also, with associated camps, caches, hunting blinds, traps and other features located further inland. Inuit sites dating from the last few decades right up to the present were found in a wide range of environments and locations, with many close to the present shoreline but others as far as 2-3.5 km distant and some at relatively high elevation. This inconsistency perhaps reflects the broader spectrum of adaptations and resource gathering techniques developed during the Neoeskimo period and passed on to the present-day Inuit of Gjoa Haven and other central arctic communities nearby.

5.4 Heritage Resources Values

All archaeological sites are unique and provide some information on human use and occupation of the environment of which they are a part. Archaeological sites are protected under Government of Nunavut and Federal legislation; sites and their contents must not be disturbed except under the terms and provisions of a permit issued by the Nunavut Department of Culture and Heritage following the submission of a mitigation plan and review of the permit application by affected local communities and agencies. Sites dating to the past 50 years are not considered to be archaeological sites so do not normally have the same status; however, out of respect for the people who left the remains and in some cases may return to use them again, if possible they should not be disturbed unless absolutely necessary. The relatively large number of sites found in the study area, including many quite distant from the marine shoreline as well as the expected proliferation along the coast, is a finding that could influence decisions by proponents and regulatory agencies on the necessity for archaeological inventories and assessments in similar environments and in the early stages of development or other project activity.

The archaeological sites found, particularly those from the Palaeoeskimo period, help to illustrate the passage taken by the first people to enter Arctic Canada from the Bering Strait area about 4500 years ago, travelling through what is now known as the Northwest Passage, or at least through one of its alternate avenues. The subsequent migration of Thule Neoeskimos about 1000 years ago followed much the same route. In both cases, groups had the option to remain in a particular region where they found adequate resources and an environment in which they felt comfortable rather than pressing on eastward (the possible impetus for these migrations is still under debate but may include population pressure, climate change, search for exotic resources such as copper and other stimuli). By about 4000 years ago, Pre-Dorset people had reached northern Labrador and spread down the coast into Newfoundland, meeting First Nations Maritime Archaic populations. A new migration of Dorset Palaeoskimos entered Labrador and Nunavik about 2500 B.P., and survived in both areas until about 600 B.P., when the Thule ancestors of today's Inuit arrived from Baffin Island and possibly assimilated teh last of the Dorset (Fitzhugh 1980: Plumet and Badgley 1980; Thomson 1988). King William Island was periodically occupied by both the Pre-Dorset and Dorset Palaeoeskimos between at least 4000-

800 years ago (Dyke and Savelle 2009). In historic times, the traditional lands of the Copper Inuit to the west and the Netsilik Inuit to the east overlapped at King William Island and both groups exploited its resources.

Of the 18 sites recorded during the CAM-C survey, 10 were judged on the basis of preliminary examination to be of low significance, three of medium significance, and five of high significance (Table 5-1). However, as mentioned above, while some sites are considered significant because of the number of features, the age, or some other attribute, each site is significant in that it contributes either individually or in combination with other nearby or similar sites to an increase in knowledge of land use in the immediate area and the broader region around it.

Table 5-1 Site Significance, Sites Recorded in 2013 at CAM-C, Matheson Point, King William Island, NU

Borden or Site No.	Location	No. of Features	Significance		
			High	Medium	Low
Archaeological Sites					
NeJv-1		13	√		
NeJv-2		1			√
NeJv-3		1	√		
NeJv-4		2	√		
NeJv-5		1		√	
NeJv-6		1			√
NeJv-7		4			√
NeJv-8		1	√		
Recent Historic Sites					
CAM-C1		5			√
CAM-C2		1			√
CAM-C3		1			√
CAM-C4		7		√	
CAM-C5		9		√	
CAM-C6		2			√
CAM-C7		1			√
CAM-C8		1			√
CAM-C9		12	√		
CAM-C10		1			√
Totals		**64**	**5**	**3**	**10**

5.5 Potential Project Effects

With the exception of Thule and Dorset Palaeoeskimo winter villages, often re-occupied over several generations and thus accumulating large deposits of organically-rich artifacts and food waste which nourish soil and sod development, archaeological sites in the Canadian Arctic occur primarily on the surface, in immediate subsurface soil deposits, or below vegetation cover. In the event that sites are present on or in the near vicinity of areas undergoing environmental testing or where clean up will be required they could be affected by:

- their relative invisibility to the untrained eye, as with the Palaeoeskimo sites on the higher beach ridges, and likelihood of inadvertent disturbance;
- concealment by soil or vegetation;

- soil testing during site evaluation;
- aggregate testing;
- aggregate extraction;
- clearing of surface and subsurface debris;
- remediation;
- disturbance by vehicle traffic, including pressure through snow cover;
- construction and use of site clean up camp and storage areas; and
- other related activities

The effects of project activities on archaeological and historic resources are normally predictable, given accurate project description details and adequate time and resources for an archaeological investigation of project areas. Nunavut regulations prohibit the disturbance of archaeological resources. Most potential project effects can be mitigated by avoidance or, when this is not practicable, by collaboration between project managers and the archaeologist at the planning stage, with approval by the regulator.

5.6 Mitigation Options

Impact management options are available which will minimize risk to known heritage resources. Territorial land use regulations include requirements for land use permittees, which prohibit land use operations within 30 m of a known or suspected archaeological site. Should project plans change, and archaeological or recent land use sites become subject to risk of disturbance, mitigation options at CAM-C could include, subject to approval from Nunavut Department of Culture and Heritage:

- avoidance of known archaeological and recent historic sites and, ideally, a buffer zone of at least 30 m around them, during clean up operations;
- prohibition of vehicle traffic in or within 30 m of heritage resource sites;
- placement of barriers around sites to more clearly identify them;
- hand collection of any CAM-C related surface debris associated with archaeological sites;
- development of a specific mitigation plan in the event that surface or subsurface debris must be collected within an archaeological site.

There are eighteen recorded archaeological and recent historic sites in the vicinity of CAM-C; others may be present in areas not visited during the 2013 archaeological survey. Each requires some form of mitigation to help in preservation (Table 5.2). More detailed mitigation recommendations are presented in the summary and recommendations section (Section 6) below. If none of these strategies apply, a site specific mitigation plan can be developed in collaboration with the regulator and local authorities which could permit the partial or complete destruction of a heritage resource at risk. This would include complete and detailed documentation of the resource.

Table 5-2 Summary Recommendations for Site Facility Areas and Related Archaeological or Recent Historic Sites			
Facility	**Location**	**Results**	**Recommendations**
Beach Area: POL pad, tank farm pad, access road, trails, surface and buried debris, barrel dumps, POL line, contaminated soil	1.5 km southeast of Station at end of access road	1 archaeological site 5 recent historic sites	Avoidance
Station Area: buildings, communication tower, cables, POL line, other surface and buried debris, contaminated soil	Mount Matheson	1 recent historic site	Avoidance
Higher Beach Ridges: water supply lake and access road, informal trails, aggregate sources	Surrounding Mount Matheson	7 archaeological sites 4 recent historic sites	Avoidance

The scope of work as understood from AECOM was fully completed. All areas being evaluated for aggregate sources, tested for contaminants and surveyed were walked over and sites present were recorded. Within the time available and in the absence of an available quad, areas identified as former borrow areas, debris areas, the south end of the water supply lake, the Station Area and the Beach Area were all inspected and sites recorded as encountered. Two sites were reported by DMT Geosciences crew member, Adam Peake, and were followed up, and Jessie Hoyt (PWGSC) also located archaeological features and lithic scatters during our walk on July 30. Archaeological sites identified were inventoried and assessed so that any mitigation measures necessary could be instituted during the course of the project and beyond. Potential risks to the safety of archaeological resources could occur from vehicle traffic, excavation of contaminated soil and buried debris, construction of landfills and use of borrow pits, for example. Mitigation other than avoidance currently did not appear to be necessary; however, co-ordinates for all features recorded are included in this report and could be transferred to a cultural resources overlay on the site plans so that no future disturbance occurs.

Recommendations for the remainder of this evaluation project pertaining to heritage resource preservation were presented to AECOM in the form of an Interim Report left with the team leader on August 1, and included:

- Vehicles should avoid any site features;
- Co-ordinates for all site features should be plotted on revised site plans for guidance of project management and site workers;
- New crew members should receive a briefing on archaeological site conservation on arrival in camp; and

- Any further sites or site features should be reported to AECOM along with a brief description of contents and precise location so that it can be determined whether this is a new find and appropriate measures taken for preservation (Thomson 2013).

No further investigations appear to be necessary at CAM-C; however, when firm plans are made for development of landfills, borrow pits and other areas of disturbance or should additional archaeological sites or features be encountered during the remainder of the project, consideration should be given to a follow-up archaeological assessment so that any cultural resources can be professionally verified and recorded, mitigation requirements assessed, and the sites added to the list and map of archaeological resources in the area.

6. SUMMARY AND RECOMMENDATIONS

Eighteen archaeological (8) and recent historic (10) sites were found on the CAM-C property during extensive but not complete pedestrian surveys in 2013. The sites range in time from the early Palaeoeskimo period, perhaps 4,000 years ago, through the historic period to the very recent Inuit era, with some features being only a year or two old. Our preliminary conclusion is that the potential for additional archaeological and historic sites is moderate. Depending on future clean up and remediation activities, potential risks to heritage resources are low to moderate. Should additional areas be identified for investigation or clean up, additional site inventory and assessment is recommended. As clean up and remediation plans proceed, the tentative mitigation recommendations contained in this report should be reviewed and, if necessary, modified.

We inferred from the location and content of the 18 recorded sites that most were situated for access to resources such as seals, polar bear, waterfowl and fish in the marine environment, with a few interior sites more likely situated for access to terrestrial resources such as caribou, muskox, waterfowl and fish. The Palaeoeskimo sites are today situated at some distance from the active shoreline, but the beach ridges on which they were found would have been just above or close to sea level when occupied for easy access to the sea and sea ice and associated resources. Some or all of the following attributes, among others, were present at most of the sites:

- a relatively level gravel or vegetated gravel terrace or beach ridge, with good drainage;
- proximity to and a view of the sea or sea ice;
- presence of materials for building habitation structures, caches, hearths and other features, *e.g.*, boulders and slabs; and
- accessibility to a breeze in summer.

Proximity to fresh water does not seem to have been a high priority for site location. In two cases, NeJv-1 and CAM-C 9, elevation for a view of the surrounding terrain and/or access to breeze seemed to have contributed to the rationale for site location.

6.1 Assessment

Several sites were considered during the survey to lie within areas of likely disturbance from clean up and remediation activities (Table 6-1); however, it has been stated by PWGSC that no

disturbance will occur or require specific mitigation measures (M. Yetman, 2013, personal communication). One site (CAM-C 9) exhibited evidence of disturbance from site activities, adjacent to the airstrip. Additional survey should be conducted of any new camp locations, aggregate sources and other facilities once selected.

6.2 Recommendations

Because of the potential for accidental site disturbance during future clean up and remediation activities, it is recommended that mitigation measures be implemented at all of the sites found, mostly involving avoidance (Table 6-1).

Measures to help site workers at CAM-C continue to abide fully by applicable heritage legislation include:

- use of a desktop or field archaeological evaluation of any new areas of intensive land use around CAM-C, such as new camp areas that have not previously been intensively surveyed, new areas of proposed clean up not previously identified and new aggregate sources;
- provision of an education programme for field personnel on how to recognize and report archaeological features and avoid disturbance, including a training session for field workers by an archaeologist;
- annual review of project plans to assess the need for additional field surveys and/or modifications to mitigation plans;
- continuing interaction with residents of Gjoa Haven familiar with resources and resource use in the study area to help interpret site seasonality and function; and
- continuing access to archaeological advice in the event that field personnel continue to encounter features that requires interpretation in the absence of the project archaeologist (*i.e.*, temporary remote identification and recording as an archaeological site pending inspection by an archaeologist).

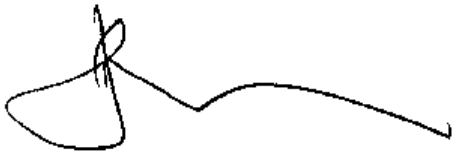
Table 6-1 presents mitigation recommendations for the sites found in 2013. In the event of any potential future conflict between heritage resources and project activities, the avoidance option proposed as the principal means of mitigation could be re-considered in consultation with the Department of Culture and Heritage by evaluation of the site's significance, the significance of loss of all or part of the site and the availability of other mitigation options. These might include temporary protection during the project activity or detailed investigation and site recording prior to disturbance.

Table 6-1 Recommended Mitigation For Sites Recorded in 2013 at CAM-C, Matheson Point, King William Island, NU			
Borden No.	**Location**	**Nature of Disturbance noted in 2013**	**Recommended Mitigation**
Beach Area			
NeJv-1	On ridge top east of Beach Area	None	Avoidance
CAM-C 1	On access road to beach	Site features removed from beach access road	Avoidance
CAM-C 2	West of end of beach access road	None	Avoidance
CAM-C 3	East of end of beach access road	None	Avoidance
CAM-C 4	Below barrel dump east of access road	None	Avoidance
CAM-C 5	Below south end of ridge	None	Avoidance
Station Area			
CAM-C 9	Adjacent to northeast end of airstrip	Minor past disturbance by bulldozer	Avoidance
Higher Beach Terraces			
NeJv-2	High beach ridge between Station Area and Water Supply Lake	None	Avoidance
NeJv-3	High beach ridge south of Station Area	None	Avoidance
NeJv-4	High beach ridge south of Station Area	None	Avoidance
NeJv-5	High beach ridge south of Station Area	None	Avoidance
NeJv-6	High beach ridge south of Station Area	None	Avoidance
NeJv-7	High beach ridge south of Station Area	None	Avoidance
NeJv-8	High beach ridge north of Beach Area ridge	None	Avoidance
CAM-C 6	Just west of POL Line, south of Station Area ridge	None	Avoidance
CAM-C 7	South of Station Area ridge adjacent to small landfill	None	Avoidance
CAM-C 8	At northwest end of Water Supply Lake access road	None	Avoidance
CAM-C 10	On flat plain east of beach access road	None	Avoidance

In general, it is strongly recommended that archaeological inventories and assessments should be incorporated at an early stage in all similar clean up and remediation projects in the Canadian Arctic, prior to the development of camps, construction and use of all-season and winter access routes, and environmental testing. While no disturbance was noted from the site investigations at any of the sites recorded during this project, the potential is present for conflict between archaeological sites and such activities without prior archaeological inventory and assessment and development of any required mitigation measures.

6.3 Closure

It is our professional opinion that the likelihood of disturbance of archaeological and more recent heritage sites and features by continuing environmental and engineering investigations and subsequent clean up and remediation at CAM-C is low, given the above mitigation recommendation (*i.e.,* avoidance, 30 m buffer zone, and previous site recording), and that approval should be given to the project as proposed in 2013, from a cultural resources perspective. Should clean up and remediation activities expand away from the locations as currently known, and in order to better understand and document regional land use, additional archaeological surveys and assessment should be conducted as the potential for additional sites being present is moderate. A programme of informant interviews should be initiated to gather additional information on land use in the CAM-C area, particularly pertaining to the 18 sites recorded in 2013.



J. Callum Thomson,
Principal, Thomson Heritage Consultants, Inc.
Pictou Landing, NS, February 14, 2014

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7.3 Glossary

a.s.l. Above sea level, elevation expressed in metres.
Archaeology. The branch of anthropology devoted to studying the material remains of past human events.
Artifact. An object of human manufacture or use.
B.P. Before present, with "present" being defined as A.D. 1950.
Borden System. An alpha-numeric classification system used in Canada to identify the location of **archaeological sites**, based on the 1: 50,000 topographic map system, *e.g.*, NeJv-1.
Cache. A structure used to store meat, blubber and fish for later planned or emergency use, or to store clothing, tools, utensils for use in a future season; may be built above ground out of boulders and slabs or dug partly into a cobble or boulder beach ridge.
Caribou. Herd animal essential in northern cultures for food and materials such as hide, antler, bone, and sinew. Commonly obtained in large numbers at water or ice crossing routes. Sometimes driven in desired direction by use of **inuksuit** or fences of aligned spaced boulders; often hunted on trails used by caribou as travel routes.
Dorset. A **prehistoric Palaeoeskimo** culture present in the Canadian Arctic and Labrador from approximately 2500 **B.P.** to 500 B.P. Descended from **Pre-Dorset.**
Faunal. Pertaining to animals, as in **faunal** remains. Animal (and bird, fish, *etc.*) bone provides information on the season(s) in which a **site** was occupied and which animals were exploited.
Feature. A term used to include evidence such as a stone habitation structure, **hearth**, buried layer of food bone, charcoal or **flaking** debris, a discoloured soil layer, or some other collection of cultural material assembled within a usually small, restricted area.
Flake. A thin flat fragment of stone removed by pressure- or percussion-**flaking** during the process of stone tool manufacture or repair. **Flakes**, removed from **preforms**, are often the desired end product and are formed into tools.
Foxtrap. A stone structure used to trap small fur-bearing mammals such as foxes and wolves. May be built around a narrow rectangular chamber in which the animal is trapped by a falling drop rock or a beehive-shaped hollow chamber out of which the animal cannot climb due to the corbelled construction. After European contact and access to trade goods, steel leghold traps

generally replaced the stone versions, using a chain attached to a piece of wood anchored under stone slabs or boulders.
Hearth. Fireplace.
Inuit. The preferred term for the aboriginal occupants of the Arctic descended from people of the **Thule** tradition, whose origins are in the Alaska/Bering Strait area.
Inuksuk, pl**. Inuksuit.** A cairn or carefully-built stack of rocks and slabs resembling a person (**inuk**, pl. **Inuit**).
Inuktitut. The traditional **Inuit** language.
Lithic. Of stone.
Locus, pl. **Loci**. A discrete location within a larger **site.**
Mitigation. The process whereby negative impacts on an archaeological site can be eliminated, reduced or controlled.
Neoeskimo. An **archaeological** term used to define the **prehistoric Thule** culture and early historic ancestors of today's **Inuit.**
Palaeoeskimo. The original occupants of the Arctic, who spread west from Alaska approximately 4500-5000 years ago across the Canadian Arctic to Greenland, Labrador, Quebec and Newfoundland. Divided into **Pre-Dorset** and **Dorset**. Replaced by Neoeskimos after 1000 B.P. in the western and central Arctic and as late as 500 B.P. in the eastern Arctic, Nunavik and Labrador.
Pre-contact. The period prior to the arrival or influence of European/Euro-Canadian culture in the Arctic.
Pre-Dorset. The original occupants of much of Arctic Canada, 4500-2500 **B.P.** Noted for manufacture of tiny finely-made stone tools. **Dorset** culture evolved from **Pre-Dorset.**
Preform. A partially-made stone tool.
Prehistory. The period prior to the invention or adoption of writing: in the Arctic, prior to the arrival of Europeans and Euro-Canadians and the development of syllabics and, later, written **Inuktitut**.
***Qammaq*,** pl**. *Qammat*.** A stone house built up with multiple courses and covered with skin, used in fall before snow houses can be built.
Semi-subterranean. House dug partially into the ground for additional shelter and stability, or into a sloping bank as a labour-saving method, then walled up with stone and sod and roofed with bone or wood, skin and sod. Commonly used in late fall to early spring by **Dorset Palaeoeskimo**, **Thule** and **Inuit.**
Site. Location **of archaeological** remains.
Subsistence. The means of providing food and other essentials of life.
Tent ring. The outline formed by rocks formerly used to hold down the walls and guy ropes of a tent-like structure made of skin or canvas.
Thule. The ancestors of today's **Inuit** who arrived in the western arctic around 1000 B.P. and spread rapidly across the Arctic to Nunavut, Greenland, Quebec and Labrador over the next few centuries, gradually replacing the incumbent Late Palaeoeskimos.
***Umiaq*,** pl**. *umiat*.** Large open boat made of sealskin or split walrus hide stretched over frame of wood and/or bone used for camp moves and whaling.

Appendix 1

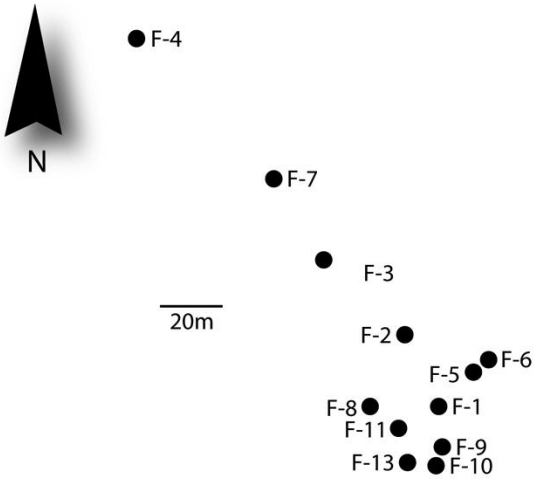
New Archaeological Site Record Forms, CAM-C, King William Island, NU

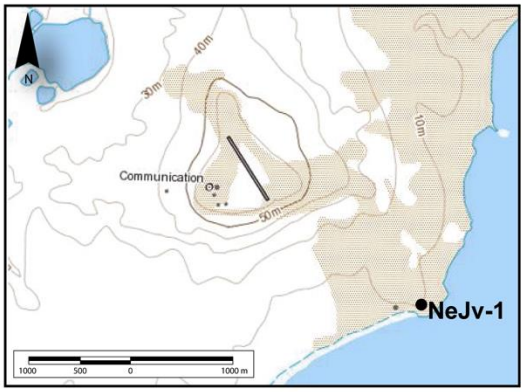
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PN= 2013-023A
PRO= Archaeological Inventory and Assessment at CAM-C Matheson Point, King William Island, Kitikmeot, Nunavut, 2013
LOC= East coast of King William Island overlooking Rae Strait, on a ridge 500 m east of the south end of the beach access road on the CAM-C Matheson Point communication site.
TER= Nunavut
DST= Kitikmeot
MR= 57 B/13E
JUR= Federal
LAT=
LNG=
UTM= Zone 15 409726E 7634751N, at approximate centre of site
AIR=
EL= 20 m est.
SIZ= 5000 m²
CON= Stable, with roads crossing from the Beach Site to gravel sources on the east side
TYC= Historic; possibly prehistoric
TY= Camp
FE= Qammaq (2), tent ring (3), cache (3), inuksuk (2)
CU= Inuit
PER= 19th-20th centuries, possibly earlier Inuit components
DAT=
RES= Callum Thomson, Thomson Heritage Consultants, Inc., Pictou Landing, NS
OD= July 2013
COL= None
PRE=
UPRE= Report on Archaeological Inventory and Assessment at CAM-C Matheson Point, King William Island, Kitikmeot, Nunavut
RE=

Archaeological Feature Data Recorded at NeJv-1, CAM-C, King William Island, Map Sheet 57 B/13E, Zone 15W

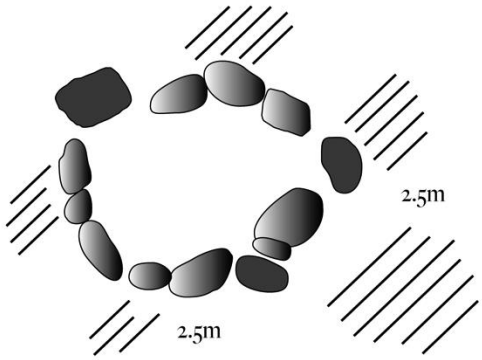
Feature No.	GPS Record No.	Feature Type	Easting	Northing	Size (m)	Work Area	Date Recorded
1	587	*Qamaq* (autumn house)	409726	7634751	2.5 x 2.5	Beach	July 29
2	588	Tent ring	409715	7634774	3 x 4	Beach	July 29
3	589	Cache	409689	7634798	4 x 3	Beach	July 29
4	590	Tent ring	409629	7634869	1.5 x 2	Beach	July 29
5	591	Tent ring	409737	7634762	1.5 x 2.5	Beach	July 29
6	592	Cache	409742	7634766	3 x 3	Beach	July 29
7	617	*Inuksuk*	409673	7634824	1	Beach	July 30

8	618	*Inuksuk*	409704	7634751	1	Beach	July 30
9	619	*Qammaq*	409727	7634738	3 x 3	Beach	July 30
10	620	Cache	409725	7634732	4 x 4	Beach	July 30
11		Cache			1.5 x 1.5	Beach	July 31
12	636	Cache	409713	7634744	2 x 1.5	Beach	July 31
13	637	Cache	409716	7634733	2 x 2	Beach	July 31





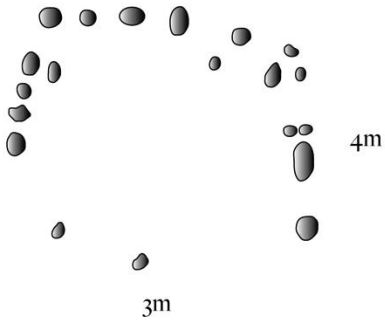
SITE MAP



Feature 1 - Qammaq



Feature 1 - Qammaq - view W



Feature 2 - Tent Ring

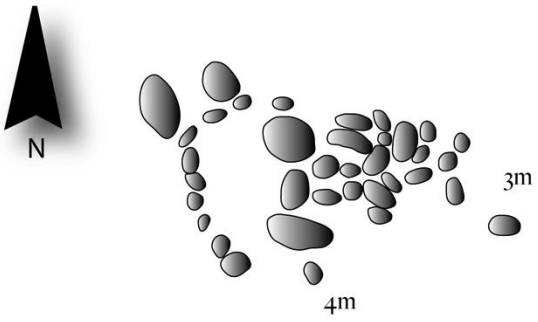


Feature 2 - tent ring - view S

FEATURES
(scale approximate)

NeJv-1

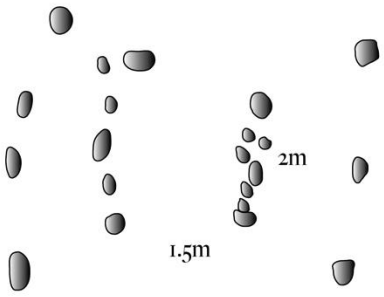
LEGEND fallen stone stone
scatter of old mammal bone, wood and rusted metal



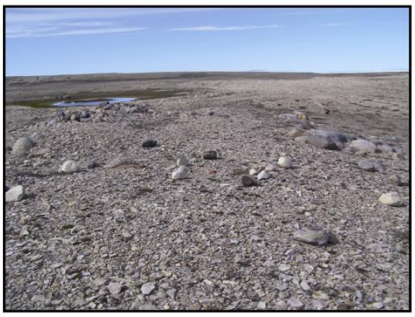
Feature 3 - Cache



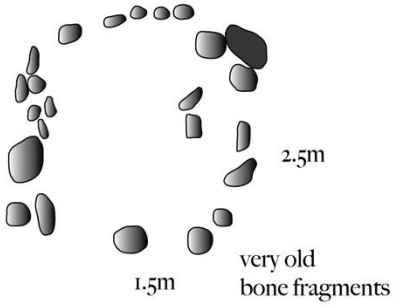
Feature 3 - cache - view NW



Feature 4 - Tent Ring



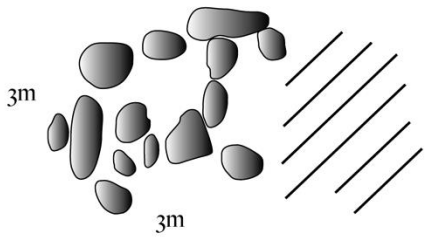
Feature 4 - tent ring - view N



Feature 5 - Tent Ring



Feature 5 - tent ring - view N



Feature 6 - Cache



Feature 6 - cache - view W

NeJv-1 cont'd

LEGEND fallen stone stone bone

N

No Drawing Available

Feature 7 - Inuksuk



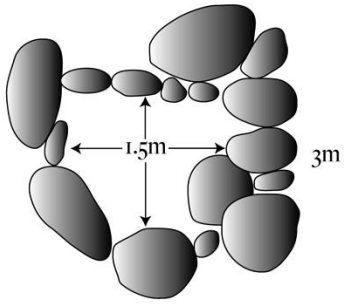
Feature 7 - inuksuk - view NE

No Drawing Available

Feature 8 - Inuksuk



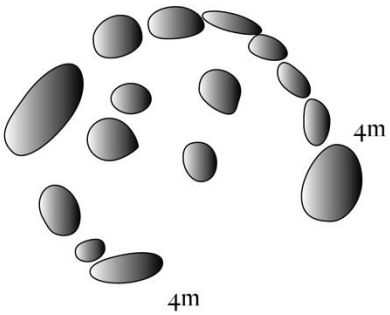
Feature 8 - inuksuk - view SW



Feature 9 - Qammak



Feature 9 - qammak - view



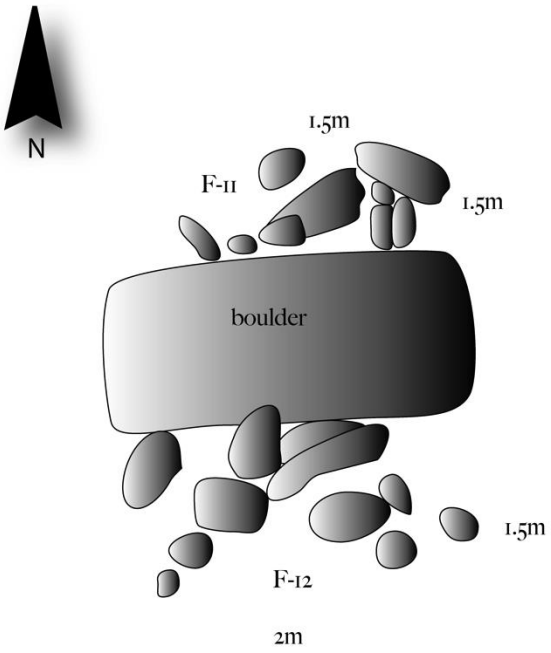
Feature 10 - Cache

No Photo Available

NeJv-1 cont'd

LEGEND

stone



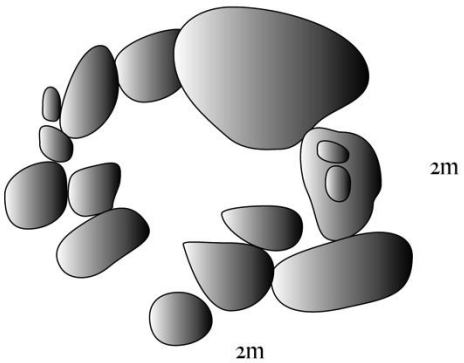
Features 11 and 12 - Caches



Feature 11 - cache - view S



Feature 12 - cache - view N



Feature 13 - Cache



LEGEND

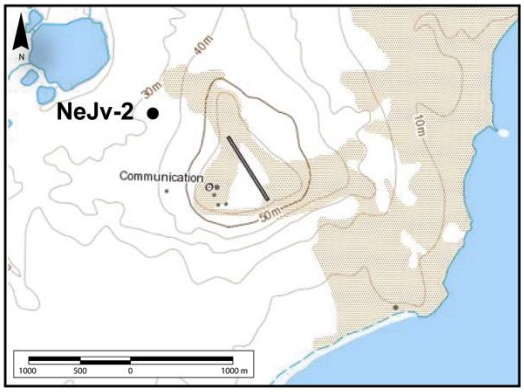
stone

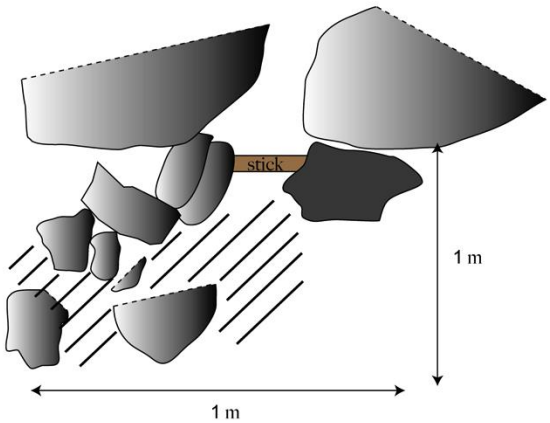
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PN= 2013-023A
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LOC= East coast of King William Island overlooking Rae Strait, on a beach ridge 50 m northeast of the access road to the water supply lake, which is 2 km northwest of the CAM-C Matheson Point communication station site.
TER= Nunavut
DST= Kitikmeot
MR= 57 B/13E
JUR= Federal
LAT=
LNG=
UTM= Zone 15 407048E 7636657N
AIR=
EL= 30 m est.
SIZ= 100 m²
CON= Stable
TYC= Prehistoric
TY= Camp
FE= Hearth or foxtrap
CU= Inuit
PER=
DAT=
RES= Callum Thomson, Thomson Heritage Consultants, Inc., Pictou Landing, NS
OD= July 2013
COL= None
PRE=
UPRE= Report on Archaeological Inventory and Assessment at CAM-C Matheson Point, King William Island, Kitikmeot, Nunavut
RE= The wood may have been used as an anchor for a leghold foxtrap chain, held in place beneath the limestone slabs.

Archaeological Feature Data Recorded at NeJv-2, CAM-C, King William Island, Map Sheet 57 B/13E, Zone 15W

Feature No.	GPS Record No.	Feature Type	Easting	Northing	Size (m)	Work Area	Date Recorded
1	606	Hearth or foxtrap	407048	7636657	1 x 1	Station	July 30







Feature 1 - Hearth



Feature 1 - hearth - view N

FEATURES
(scale approximate)

NeJv-2

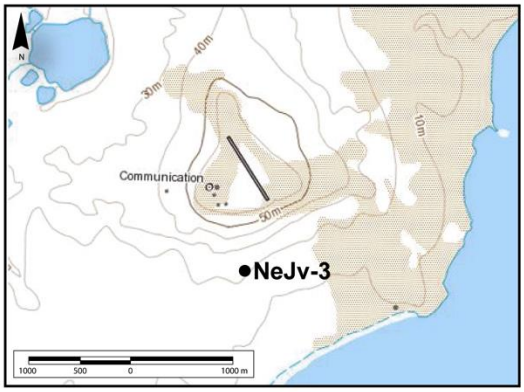
LEGEND fallen stone stone
heather

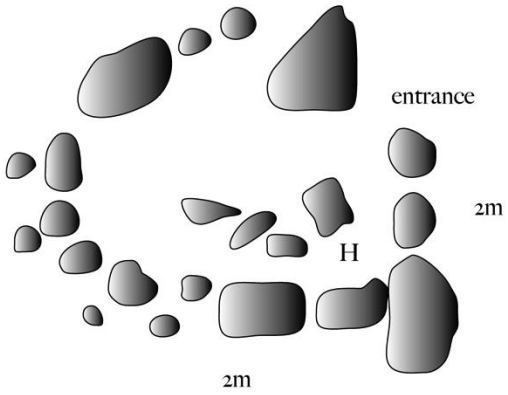
BN= NeJv-3
NAM=
RN= THC2013-2: 3
PN= 2013-023A
PRO= Archaeological Inventory and Assessment at CAM-C Matheson Point, King William Island, Kitikmeot, Nunavut, 2013
LOC= East coast of King William Island overlooking Rae Strait, on a beach ridge 500 m west of the access road to the Beach Area and south of the Station Area.
TER= Nunavut
DST= Kitikmeot
MR= 57 B/13E
JUR= Federal
LAT=
LNG=
UTM= Zone 15 407953E 7635108N
AIR=
EL= 28 m (Garmin eTrex GPS)
SIZ= 100 m²
CON= Stable
TYC= Prehistoric
TY= Camp
FE= Tent ring
CU=
PER=
DAT=
RES= Callum Thomson, Thomson Heritage Consultants, Inc., Pictou Landing, NS
OD= July 2013
COL= None
PRE=
UPRE= Report on Archaeological Inventory and Assessment at CAM-C Matheson Point, King William Island, Kitikmeot, Nunavut
RE=

Archaeological Feature Data Recorded at NeJv-3, CAM-C, King William Island, Map Sheet 57 B/13E, Zone 15W

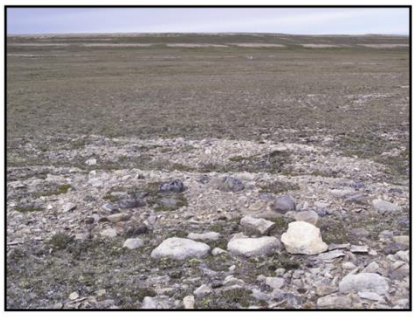
Feature No.	GPS Record No.	Feature Type	Easting	Northing	Size (m)	Work Area	Date Recorded
1	607	Tent ring	407953	7635108	2 x 2	Station	July 30







Feature 1 - Tent Ring



Feature 1 - tent ring - view N

FEATURES
(scale approximate)

NeJv-3

LEGEND

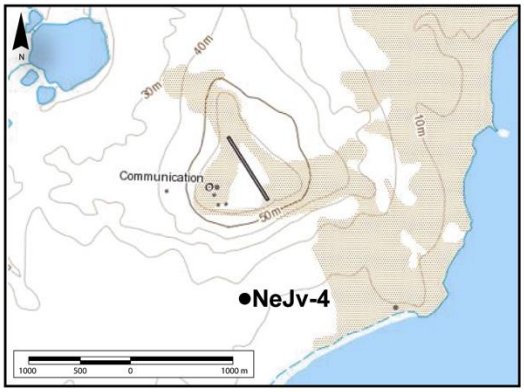
H = hearth stone

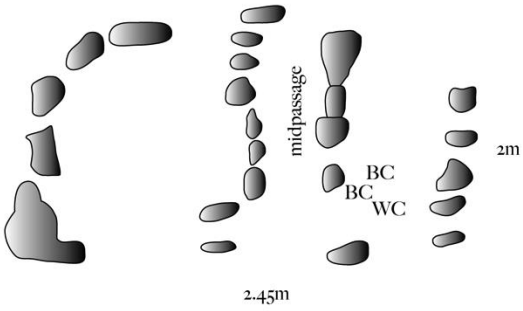
BN= NeJv-4
NAM=
RN= THC2013-2: 4
PN= 2013-023A
PRO= Archaeological Inventory and Assessment at CAM-C Matheson Point, King William Island, Kitikmeot, Nunavut, 2013
LOC= East coast of King William Island overlooking Rae Strait, on a high, old beach ridge south of the Station Area, west of the beach access road.
TER= Nunavut
DST= Kitikmeot
MR= 57 B/13E
JUR= Federal
LAT=
LNG=
UTM= Zone 15 407948E 7634848N
AIR=
EL= 28 m (Garmin eTrex GPS)
SIZ= 1000 m²
CON= Stable
TYC= Prehistoric
TY= Camp
FE= Tent ring with midpassage, lithic scatter
CU= Palaeoeskimo
PER= Pre-Dorset
DAT=
RES= Callum Thomson, Thomson Heritage Consultants, Inc., Pictou Landing, NS, and Jessie Hoyt, PWGSC
OD= July 2013
COL= None
PRE=
UPRE= Report on Archaeological Inventory and Assessment at CAM-C Matheson Point, King William Island, Kitikmeot, Nunavut
RE=

Archaeological Feature Data Recorded at NeJv-4, CAM-C, King William Island, Map Sheet 57 B/13E, Zone 15W

Feature No.	GPS Record No.	Feature Type	Easting	Northing	Size (m)	Work Area	Date Recorded
1	608	Tent ring with black chert and patinated chert	407948	7634848	2 x 2.5	West of Beach Area	July 30
2	609	Lithic scatter	407961	7634824	25 x 5	West of Beach Area	July 30







Feature 1 - Tent Ring



Feature 1 - tent ring - view N



Feature 1 - tent ring - view overhead showing chert

NeJv-4

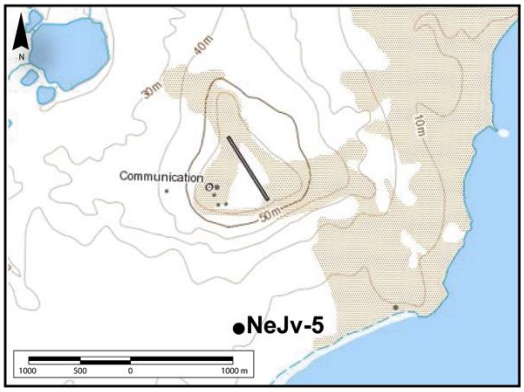
LEGEND fallen stone stone

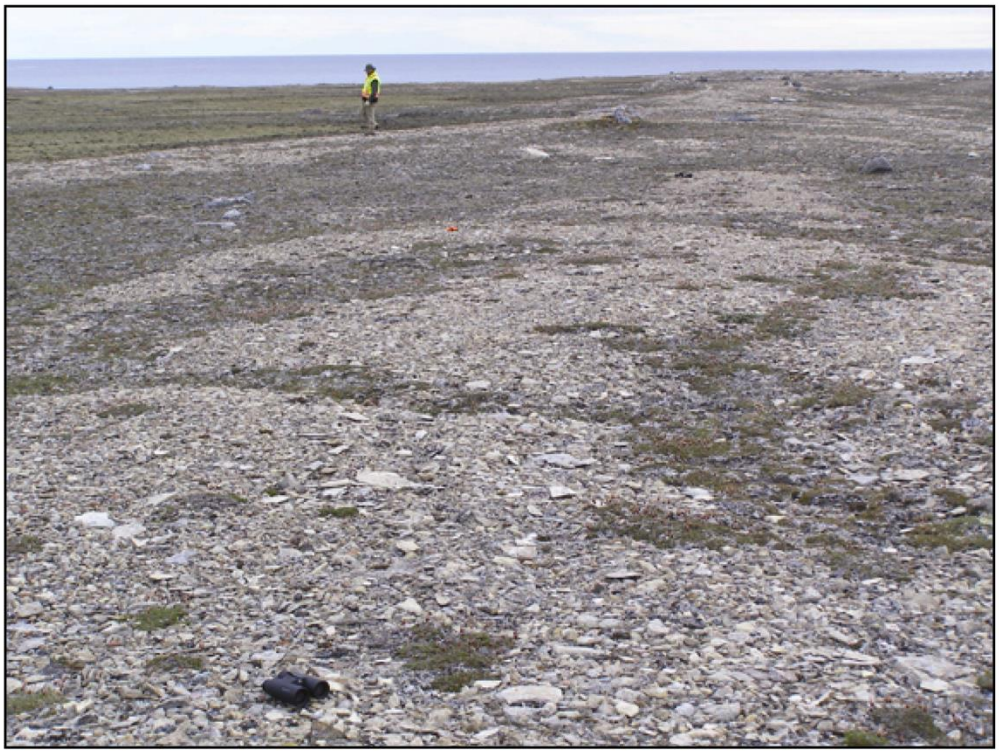
H = hearth WC = white chert BC = black chert

BN= NeJv-5
NAM=
RN= THC2013-2: 5
PN= 2013-023A
PRO= Archaeological Inventory and Assessment at CAM-C Matheson Point, King William Island, Kitikmeot, Nunavut, 2013
LOC= East coast of King William Island overlooking Rae Strait, on a high, old beach ridge south of the Station Area, west of the beach access road.
TER= Nunavut
DST= Kitikmeot
MR= 57 B/13E
JUR= Federal
LAT=
LNG=
UTM= Zone 15 407894E 7634539N
AIR=
EL= 12 m (Garmin eTrex GPS)
SIZ= 500 m²
CON= Stable
TYC= Prehistoric
TY= Lithic scatter
FE= Scatter of patinated chert, limestone slabs possibly tent ring hold down rocks
CU= Palaeoeskimo
PER= Pre-Dorset
DAT=
RES= Callum Thomson, Thomson Heritage Consultants, Inc., Pictou Landing, NS, and Jessie Hoyt, PWGSC
OD= July 2013
COL= None
PRE=
UPRE= Report on Archaeological Inventory and Assessment at CAM-C Matheson Point, King William Island, Kitikmeot, Nunavut
RE=

Archaeological Feature Data Recorded at NeJv-5, CAM-C, King William Island, Map Sheet 57 B/13E, Zone 15W

Feature No.	GPS Record No.	Feature Type	Easting	Northing	Size (m)	Work Area	Date Recorded
1	610	Lithic scatter	407894	7634539	20 x 10	West of Beach Area	July 30





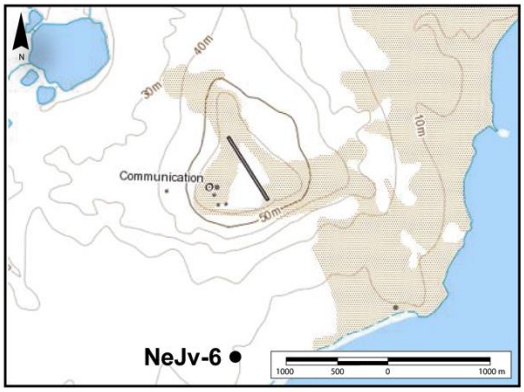
Feature 1 - chert scatter - view S

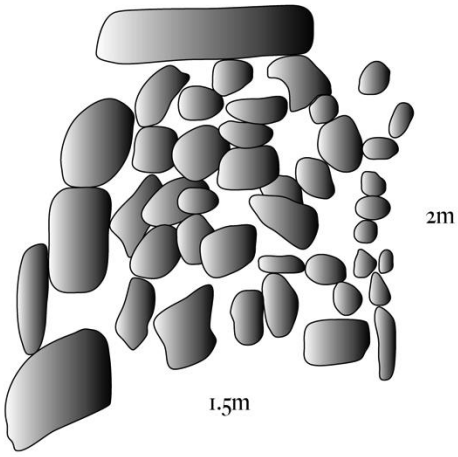
BN= NeJv-6
NAM=
RN= THC2013-2: 6
PN= 2013-023A
PRO= Archaeological Inventory and Assessment at CAM-C Matheson Point, King William Island, Kitikmeot, Nunavut, 2013
LOC= East coast of King William Island overlooking Rae Strait, on a high, old beach ridge south of the Station Area, below the Palaeoeskimo ridge, west of the beach access road.
TER= Nunavut
DST= Kitikmeot
MR= 57 B/13E
JUR= Federal
LAT=
LNG=
UTM= Zone 15 407860E 7634261N
AIR=
EL= 15 m (Garmin eTrex GPS)
SIZ= 100 m²
CON= Stable
TYC= Prehistoric
TY=
FE= Cache
CU= Neo-Eskimo
PER= Possibly Thule
DAT=
RES= Callum Thomson, Thomson Heritage Consultants, Inc., Pictou Landing, NS, and Jessie Hoyt, PWGSC
OD= July 2013
COL= None
PRE=
UPRE= Report on Archaeological Inventory and Assessment at CAM-C Matheson Point, King William Island, Kitikmeot, Nunavut
RE=

Archaeological Feature Data Recorded at NeJv-6, CAM-C, King William Island, Map Sheet 57 B/13E, Zone 15W

Feature No.	GPS Record No.	Feature Type	Easting	Northing	Size (m)	Work Area	Date Recorded
1	611	Cache	407860	7634261	1.5 x 2	West of Beach Area	July 30







Feature 1 - Cache



Feature 1 - cache - view N

FEATURES
(scale approximate)

NeJv-6

LEGEND

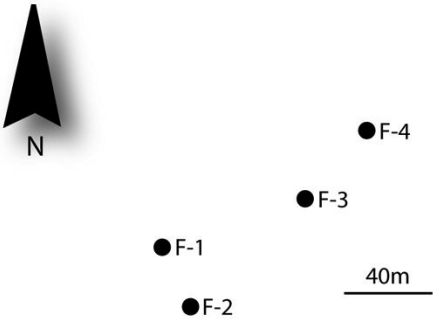
stone

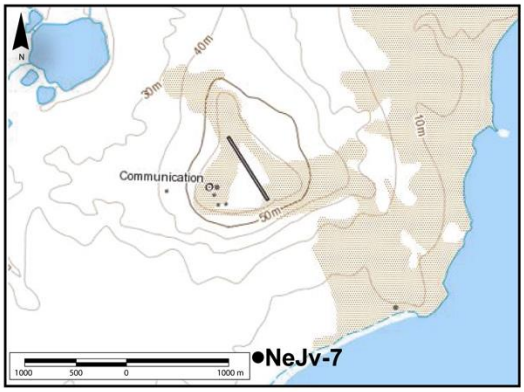
BN= NeJv-7
NAM=
RN= THC2013-2: 7
PN= 2013-023A
PRO= Archaeological Inventory and Assessment at CAM-C Matheson Point, King William Island, Kitikmeot, Nunavut, 2013
LOC= East coast of King William Island overlooking Rae Strait, on a beach ridge south of the Station Area, below the Palaeoeskimo ridge, west of the beach access road.
TER= Nunavut
DST= Kitikmeot
MR= 57 B/13E
JUR= Federal
LAT=
LNG=
UTM= Zone 15 408046E 7634213N
AIR=
EL= 10 m (Garmin eTrex GPS)
SIZ= 1000 m²
CON= Stable
TYC= Prehistoric
TY= Camp
FE= Tent ring (3), cache
CU= Neo-Eskimo
PER= Possibly Thule, Inuit
DAT=
RES= Callum Thomson, Thomson Heritage Consultants, Inc., Pictou Landing, NS, and Jessie Hoyt, PWGSC
OD= July 2013
COL= None
PRE=
UPRE= Report on Archaeological Inventory and Assessment at CAM-C Matheson Point, King William Island, Kitikmeot, Nunavut
RE=

Archaeological Feature Data Recorded at NeJv-7, CAM-C, King William Island, Map Sheet 57 B/13E, Zone 15W

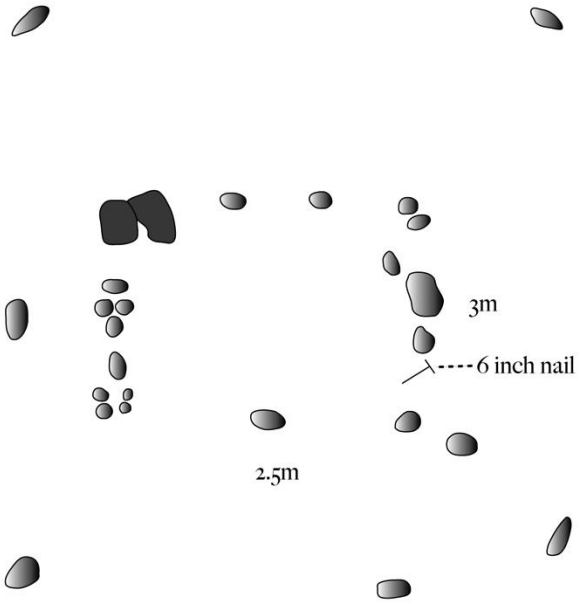
Feature No.	GPS Record No.	Feature Type	Easting	Northing	Size (m)	Work Area	Date Recorded
1	612	Tent ring	408033	7634240	2.5 x 3	West of Beach Area	July 30
2	613	Cache	408046	7634213	4 x 4	West of Beach Area	July 30
3	614	Tent ring	408098	7634262	3 x 3	West of	July 30

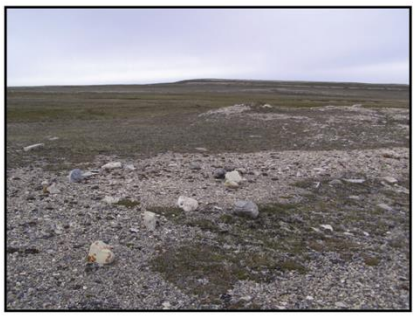
						Beach Area	
4	615	Tent ring	408126	7634293	4 x 3	West of Beach Area	July 30





SITE MAP





Feature 1 - tent ring - view N

Feature 1 - Tent Ring

FEATURES
(scale approximate)

NeJv-7

LEGEND
fallen stone
stone

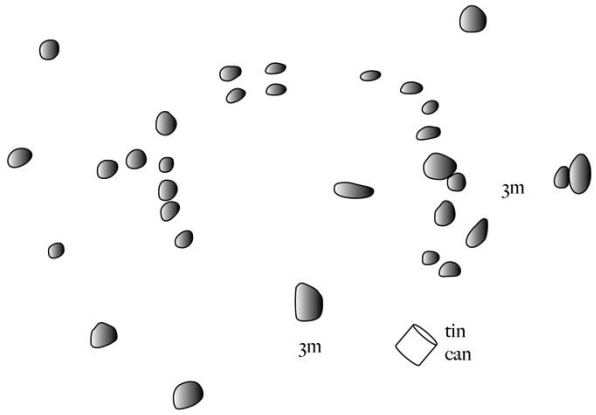
N

No Drawing Available

Feature 2 - Cache



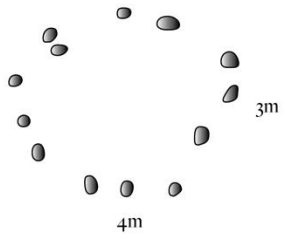
Feature 2 - cache - view NE



Feature 3 - Tent Ring



Feature 3 - tent ring - view N



Feature 4 - Tent Ring



Feature 4 - tent ring - view N

NeJv-7 cont'd

LEGEND

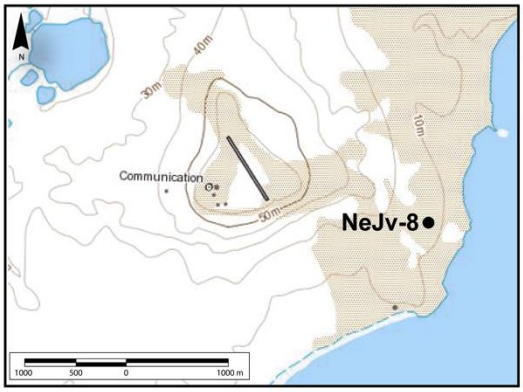
stone

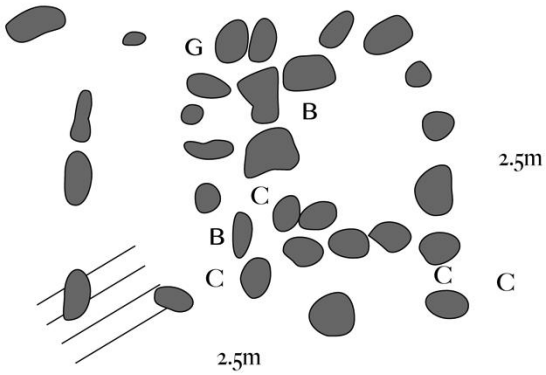
BN= NeJv-8
NAM=
RN= THC2013-2: 8
PN= 2013-023A
PRO= Archaeological Inventory and Assessment at CAM-C Matheson Point, King William Island, Kitikmeot, Nunavut, 2013
LOC= East coast of King William Island overlooking Rae Strait, on a beach ridge north of the Beach Area and 100 m north of the northernmost access road from the Station Area to gravel sources near the shore.
TER= Nunavut
DST= Kitikmeot
MR= 57 B/13E
JUR= Federal
LAT=
LNG=
UTM= Zone 15 409767E 7635582N
AIR=
EL= 18 m (Garmin eTrex GPS)
SIZ= 100 m²
CON= Stable
TYC= Prehistoric
TY= Camp
FE= Tent ring, lithic scatter
CU= Palaeoeskimo
PER= Pre-Dorset
DAT=
RES= Callum Thomson, Thomson Heritage Consultants, Inc., Pictou Landing, NS
OD= July 2013
COL= None
PRE=
UPRE= Report on Archaeological Inventory and Assessment at CAM-C Matheson Point, King William Island, Kitikmeot, Nunavut
RE=

Archaeological Feature Data Recorded at NeJv-8, CAM-C, King William Island, Map Sheet 57 B/13E, Zone 15W

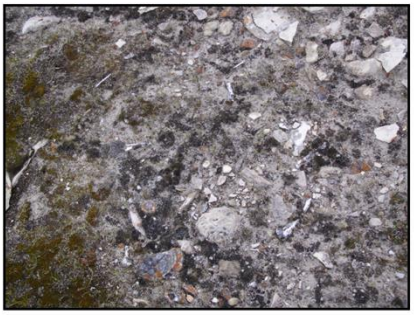
Feature No.	GPS Record No.	Feature Type	Easting	Northing	Size (m)	Work Area	Date Recorded
1	635	Tent ring, lithic scatter, bone	409767	7635582	2.5 x 2.5	Beach	July 31







Feature 1 - Tent Ring



Feature 1 - tent ring - detail



Feature 1 - tent ring - view E

NeJv-8

LEGEND
C = patinated chert
B = bone
G = green chert
flat limestone slab
bone scatter

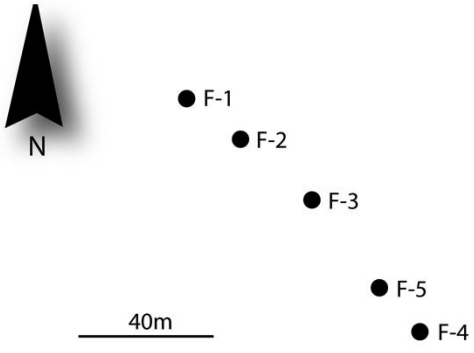
Appendix 2

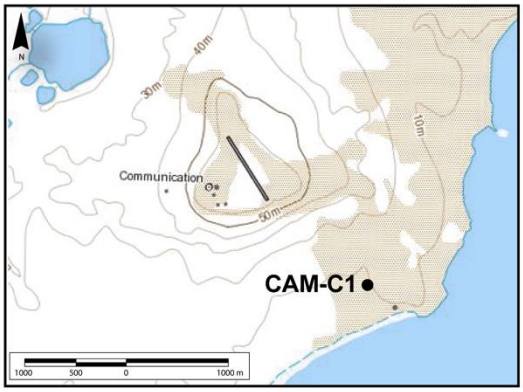
Recent Cultural Site Record Forms (not registered as archaeological sites)

BN=
NAM=
RN= CAM-C 1
PN= 2013-0223A
PRO= Archaeological Inventory and Assessment at CAM-C Matheson Point, King William Island, Kitikmeot, Nunavut, 2013
LOC= East coast of King William Island overlooking Rae Strait, on the main access road between the Station Area and the Beach Area
TER= Nunavut
DST= Kitikmeot
MR= 57 B/13E
JUR= Federal
LAT=
LNG=
UTM= Zone 15 409159E 7634988N, at approximate centre of site
AIR=
EL= 10 m est.
SIZ= 2000 m²
CON= At risk of and to quad traffic. Tent rings were subsequently removed from the road as an unnecessary hazard by the wildlife monitors.
TYC= Very recent
TY= Camp
FE= Tent ring (5)
CU= Inuit
PER= 21st century
DAT= October 2012
RES= Callum Thomson, Thomson Heritage Consultants, Inc., Pictou Landing, NS
OD= July 2013
COL= None
PRE=
UPRE= Report on Archaeological Inventory and Assessment at CAM-C Matheson Point, King William Island, Kitikmeot, Nunavut
RE= This camp was used by Rangers from Gjoa Haven on a training exercise in October 2012

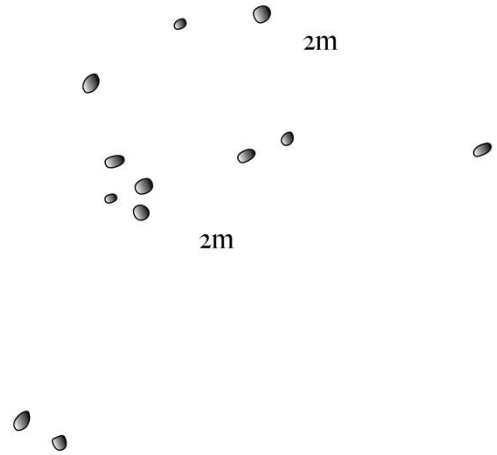
Feature Data Recorded at CAM-C 1 Recent Site, CAM-C, King William Island, Map Sheet 57 B/13E, Zone 15W

Feature No.	GPS Record No.	Feature Type	Easting	Northing	Size (m)	Work Area	Date Recorded
1	573	Tent ring	409122	7635018	2 x 2	Beach	July 29
2	574	Tent ring	409138	7635006	2 x 2	Beach	July 29
3	575	Tent ring	409159	7634988	2 x 2	Beach	July 29
4	576	Tent ring	409191	7634949	2 x 4	Beach	July 29
5	577	Tent ring	409179	7634962	3 x 2	Beach	July 29





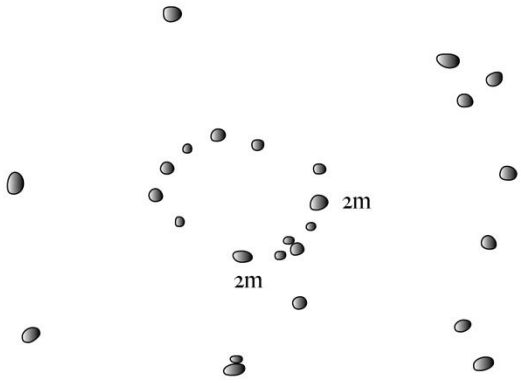
SITE MAP



Feature 1 - Tent Ring



Feature 1 - tent ring - view NW



Feature 2 - Tent Ring



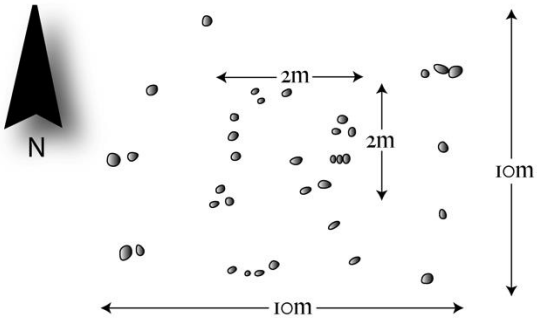
Feature 2 - tent ring - view NW

FEATURES
(scale approximate)

CAM-C1

LEGEND

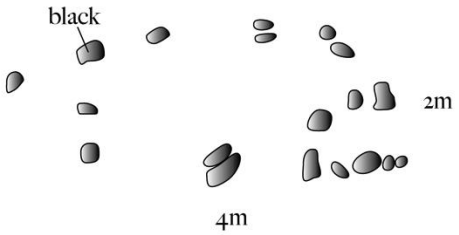
stone



Feature 3 - Tent Ring



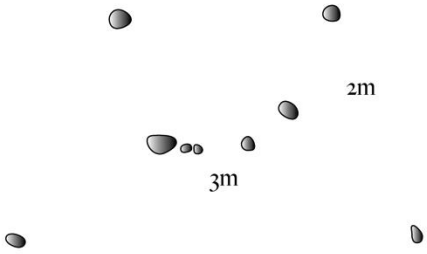
Feature 3 - tent ring - view NW



Feature 4 - Tent Ring



Feature 4 - tent ring - view NW



Feature 5 - Tent Ring



Feature 5 - tent ring - view NW

LEGEND

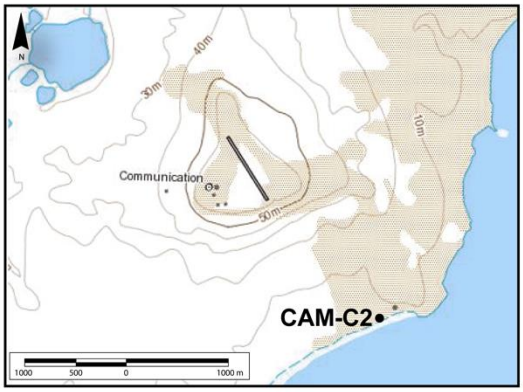
stone

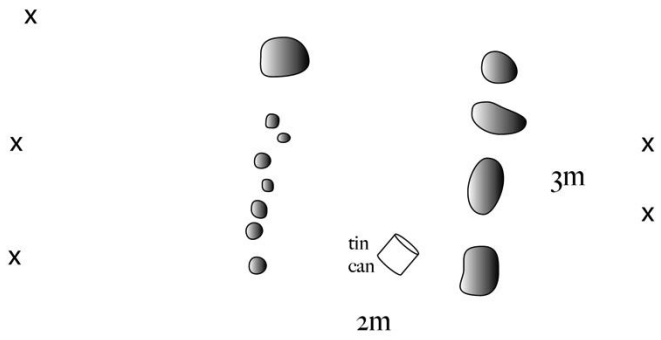
BN=
NAM=
RN= CAM-C 2
PN= 2013-023A
PRO= Archaeological Inventory and Assessment at CAM-C Matheson Point, King William Island, Kitikmeot, Nunavut, 2013
LOC= East coast of King William Island overlooking Rae Strait, west of the end of the Beach Area access road on sand behind the active beach
TER= Nunavut
DST= Kitikmeot
MR= 57 B/13E
JUR= Federal
LAT=
LNG=
UTM= Zone 15 409285E 7634642N
AIR=
EL= 2 m est.
SIZ= 100 m²
CON= Stable
TYC= Recent
TY= Camp
FE= Tent ring
CU= Inuit
PER= 20th- 21st century
DAT=
RES= Callum Thomson, Thomson Heritage Consultants, Inc., Pictou Landing, NS
OD= July 2013
COL= None
PRE=
UPRE= Report on Archaeological Inventory and Assessment at CAM-C Matheson Point, King William Island, Kitikmeot, Nunavut
RE=

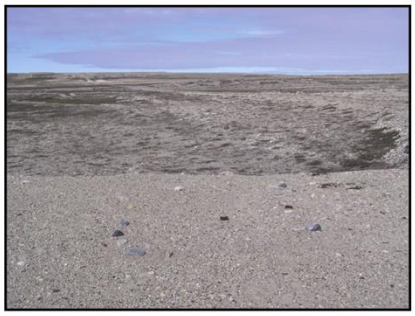
Feature Data Recorded at CAM-C 2 Recent Site, CAM-C, King William Island, Map Sheet 57 B/13E, Zone 15W

Feature No.	GPS Record No.	Feature Type	Easting	Northing	Size (m)	Work Area	Date Recorded
1	578	Tent ring	409285	7634642	2 x 3	Beach	July 29









Feature 1 - tent ring - view N

Feature 1 - Tent Ring

FEATURES
(scale approximate)

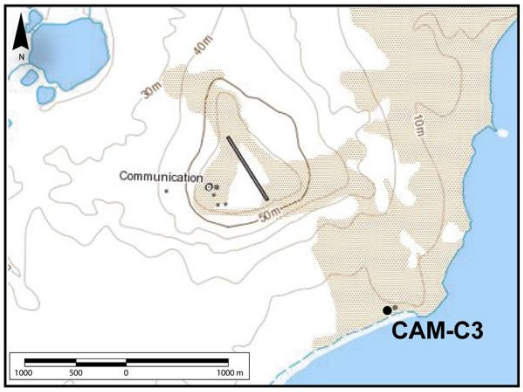
CAM-C2

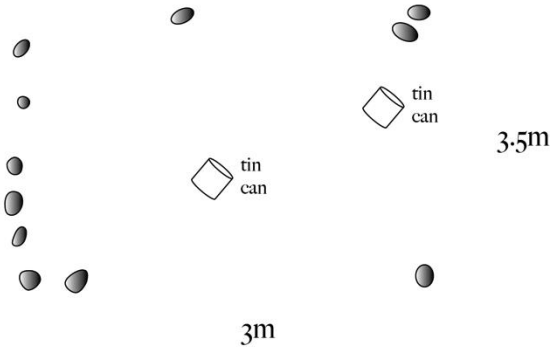
LEGEND
x = stake
stone

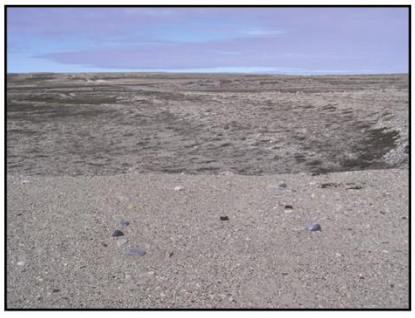
BN=
NAM=
RN= CAM-C 3
PN= 2013-023A
PRO= Archaeological Inventory and Assessment at CAM-C Matheson Point, King William Island, Kitikmeot, Nunavut, 2013
LOC= East coast of King William Island overlooking Rae Strait, on a rectangular gravel pad (POL Area?) above the beach at the end of the Beach Area access road
TER= Nunavut
DST= Kitikmeot
MR= 57 B/13E
JUR= Federal
LAT=
LNG=
UTM= Zone 15 409362E 7634717N
AIR=
EL= 4 m est.
SIZ= 100 m²
CON= Stable
TYC= Recent
TY= Camp
FE= Tent ring
CU= Inuit
PER= 20th- 21st century
DAT=
RES= Callum Thomson, Thomson Heritage Consultants, Inc., Pictou Landing, NS
OD= July 2013
COL= None
PRE=
UPRE= Report on Archaeological Inventory and Assessment at CAM-C Matheson Point, King William Island, Kitikmeot, Nunavut
RE=

Feature Data Recorded at CAM-C 3 Recent Site, CAM-C, King William Island, Map Sheet 57 B/13E, Zone 15W							
Feature No.	**GPS Record No.**	**Feature Type**	**Easting**	**Northing**	**Size (m)**	**Work Area**	**Date Recorded**
1	579	Tent ring	409362	7634642	23 x 3.5	Beach	July 29









Feature 1 - tent ring - view N

Feature 1 - Tent Ring

FEATURES
(scale approximate)

CAM-C3

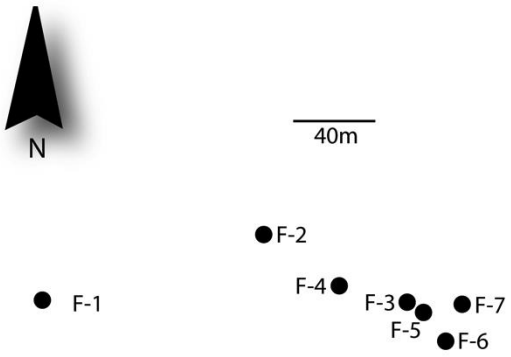
LEGEND

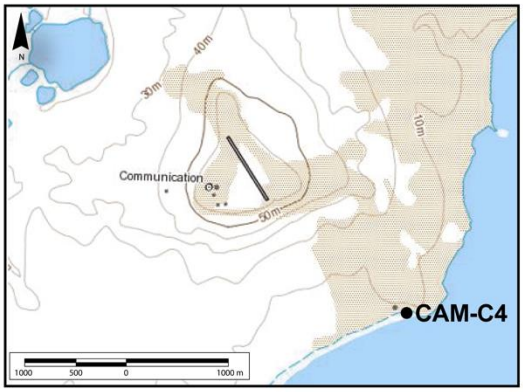
stone

BN=
NAM=
RN= CAM-C 4
PN= 2013-023A
PRO= Archaeological Inventory and Assessment at CAM-C Matheson Point, King William Island, Kitikmeot, Nunavut, 2013
LOC= East coast of King William Island overlooking Rae Strait, on the first terrace above the beach extending north around the seaward end of a high ridge, north of the end of the Beach Area access road
TER= Nunavut
DST= Kitikmeot
MR= 57 B/13E
JUR= Federal
LAT=
LNG=
UTM= Zone 15 409629E 7634686N
AIR=
EL= 2-4 m est.
SIZ= 1000 m²
CON= Stable
TYC= Recent
TY= Camp
FE= Tent ring (7)
CU= Inuit
PER= 20th- 21st century
DAT=
RES= Callum Thomson, Thomson Heritage Consultants, Inc., Pictou Landing, NS
OD= July 2013
COL= None
PRE=
UPRE= Report on Archaeological Inventory and Assessment at CAM-C Matheson Point, King William Island, Kitikmeot, Nunavut
RE=

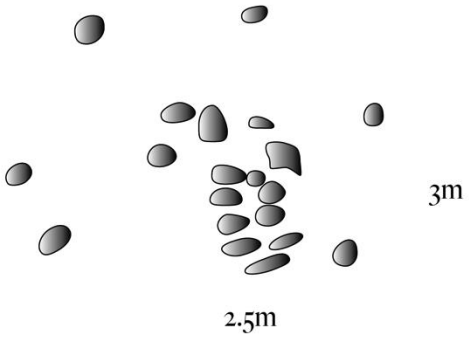
Feature Data Recorded at CAM-C 4 Recent Site, CAM-C, King William Island, Map Sheet 57 B/13E, Zone 15W

Feature No.	GPS Record No.	Feature Type	Easting	Northing	Size (m)	Work Area	Date Recorded
1	580	Tent ring	409451	7634687	2.5 x 3	Beach	July 29
2	581	Tent ring	409559	7634719	2 x 3	Beach	July 29
3	582	Tent ring	409596	7634694	2 x 3	Beach	July 29
4	583	Tent ring	409629	7634686	2.5 x 2.5	Beach	July 29
5	584	Tent ring	409637	7634681	4 x 3.5	Beach	July 29
6	585	Tent ring	409648	7634667	2.5 x 2	Beach	July 29
7	586	Tent ring	409656	7634685	2.5 x 2.5	Beach	July 29





SITE MAP



Feature 1 - Tent Ring



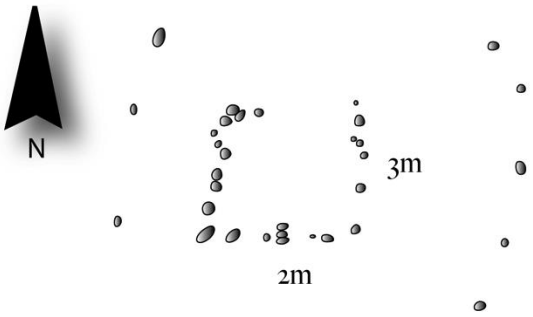
Feature 1 - tent ring - view N

FEATURES
(scale approximate)

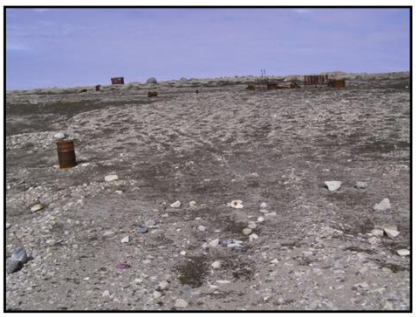
CAM-C4

LEGEND

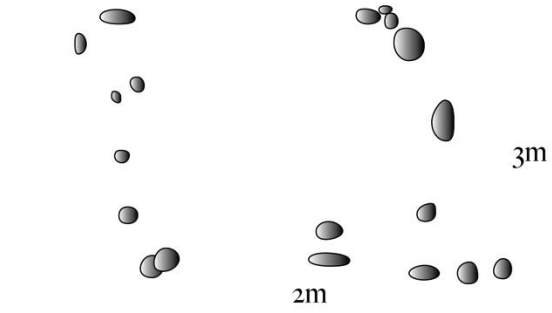
stone



Feature 2 - Tent Ring



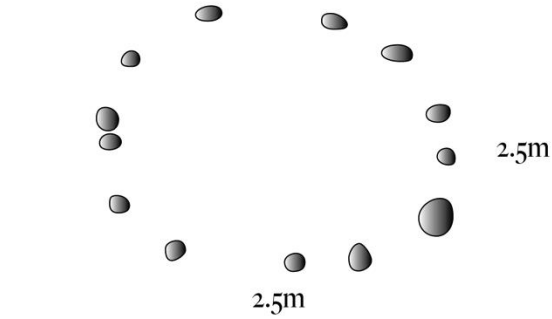
Feature 2 - tent ring - view N



Feature 3 - Tent Ring



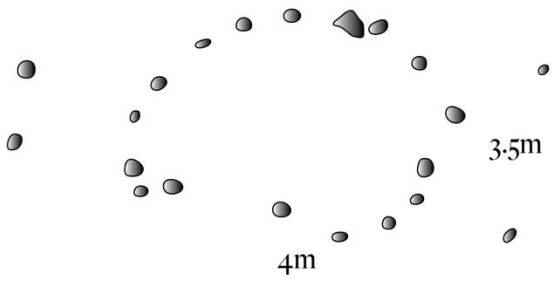
Feature 3 - tent ring - view N



Feature 4 - Tent Ring



Feature 4 - tent ring - view NW



Feature 5 - Cache



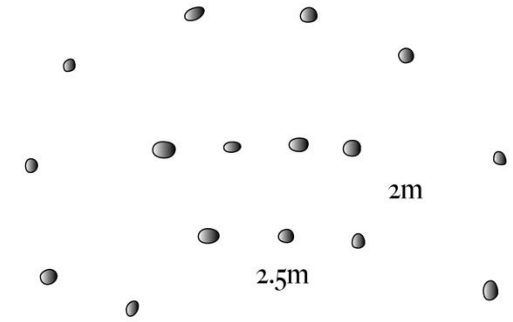
Feature 5 - cache - view NW

CAM-C4 cont'd

LEGEND

stone

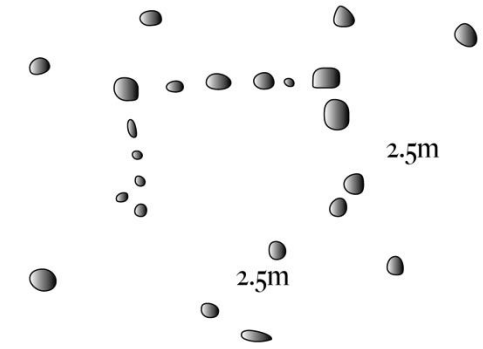




Feature 6 - Tent Ring



Feature 6 - tent ring - view NW



Feature 7 - Tent Ring



Feature 7 - tent ring - view NW

CAM-C4 cont'd

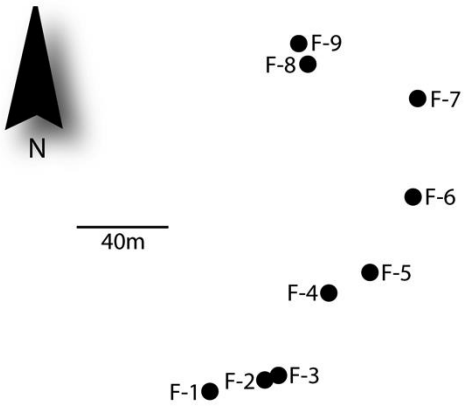
LEGEND

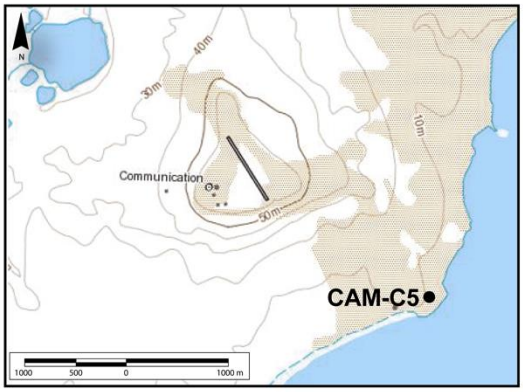
stone

BN=
NAM=
RN= CAM-C 5
PN= 2013-023A
PRO= Archaeological Inventory and Assessment at CAM-C Matheson Point, King William Island, Kitikmeot, Nunavut, 2013
LOC= East coast of King William Island overlooking Rae Strait, on the first terrace above the beach to the north of the east end of the high ridge above the Beach Area
TER= Nunavut
DST= Kitikmeot
MR= 57 B/13E
JUR= Federal
LAT=
LNG=
UTM= Zone 15 409844E 7634857N at approximate centre of site
AIR=
EL= 2-4 m est.
SIZ= 5000 m²
CON= Stable
TYC= Recent
TY= Camp
FE= Tent ring (9)
CU= Inuit
PER= 20th- 21st century
DAT=
RES= Callum Thomson, Thomson Heritage Consultants, Inc., Pictou Landing, NS
OD= July 2013
COL= None
PRE=
UPRE= Report on Archaeological Inventory and Assessment at CAM-C Matheson Point, King William Island, Kitikmeot, Nunavut
RE=

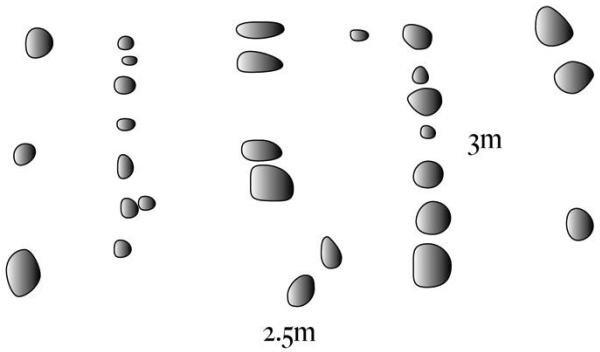
Feature Data Recorded at CAM-C 5 Recent Site, CAM-C, King William Island, Map Sheet 57 B/13E, Zone 15W

Feature No.	GPS Record No.	Feature Type	Easting	Northing	Size (m)	Work Area	Date Recorded
1	593	Tent ring	409755	7634772	2.5 x 3	Beach	July 29
2	594	Tent ring	409779	7634777	2.5 x 2.5	Beach	July 29
3	595	Tent ring	409785	7634779	3 x 3	Beach	July 29
4	596	Tent ring	409807	7634815	2.5 x 2	Beach	July 29
5	597	Tent ring	409825	7634824	2 x 2	Beach	July 29
6	598	Tent ring	409844	7634857	3 x 4	Beach	July 29
7	599	Tent ring	409846	7634900	2.5 x 4	Beach	July 29
8	600	Tent ring	409798	7634915	2.5 x 3	Beach	July 29
9	601	Tent ring	409794	7634924	2.5 x 2.5	Beach	July 29





SITE MAP



Feature 1 - Tent Ring

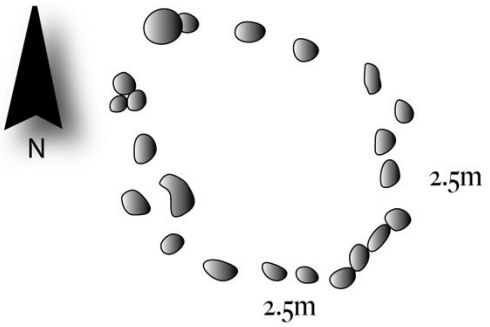


Feature 1 - tent ring - view N

FEATURES
(scale approximate)

CAM-C5

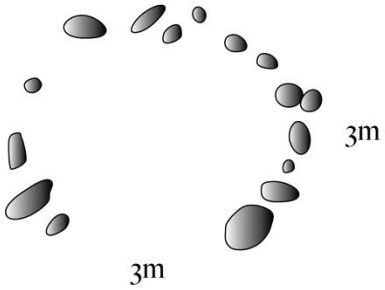
LEGEND
stone



Feature 2 - Tent Ring



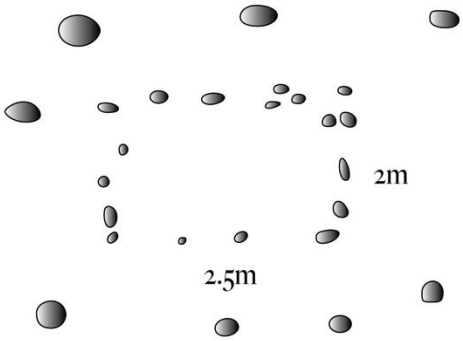
Feature 2 - tent ring - view NW



Feature 3 - Tent Ring



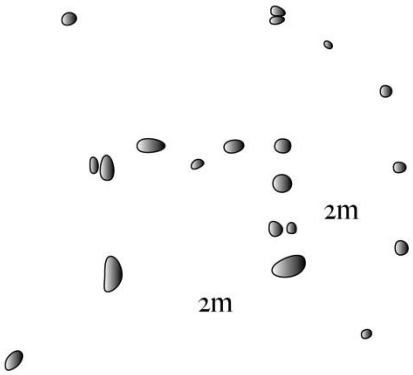
Feature 3 - tent ring - view NW



Feature 4 - Tent Ring



Feature 4 - tent ring - view NW



Feature 5 - Cache

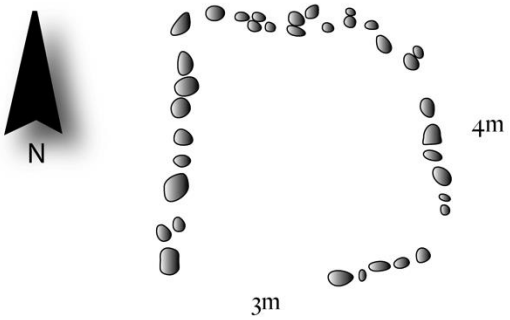


Feature 5 - cache - view NW

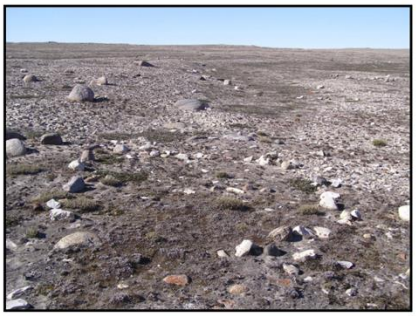
CAM-C5 cont'd

LEGEND

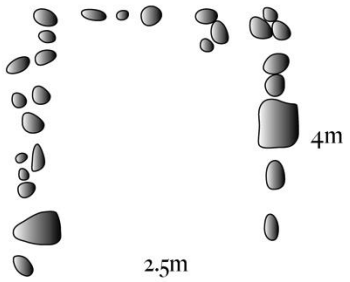
stone



Feature 6 - Tent Ring



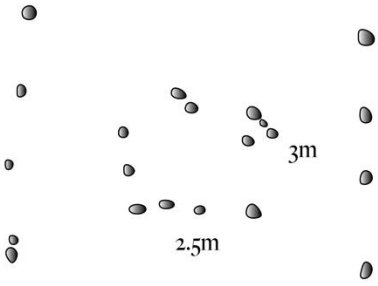
Feature 6 - tent ring - view NW



Feature 7 - Tent Ring

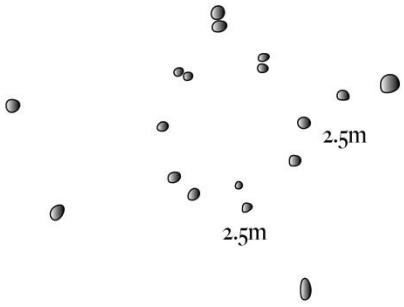


Feature 7 - tent ring - view NW



Feature 8 - Tent Ring

No Photo Available



Feature 9 - Tent Ring

No Photo Available

CAM-C5 cont'd

LEGEND

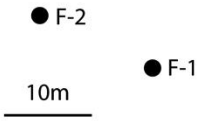
stone

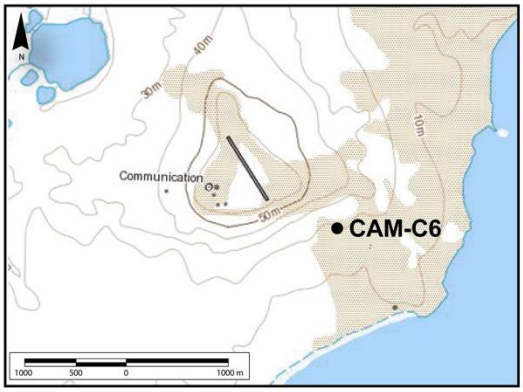
BN=
NAM=
RN= CAM-C 6
PN= 2013-023A
PRO= Archaeological Inventory and Assessment at CAM-C Matheson Point, King William Island, Kitikmeot, Nunavut, 2013
LOC= East coast of King William Island overlooking Rae Strait, on POL Line west of the Beach Area access road just below the south end of the airstrip
TER= Nunavut
DST= Kitikmeot
MR= 57 B/13E
JUR= Federal
LAT=
LNG=
UTM= Zone 15 408368E 7635527N
AIR=
EL= 25 m est.
SIZ= 200 m²
CON= Stable
TYC= Recent
TY= Camp
FE= Tent ring (2)
CU= Inuit
PER= 20th century
DAT=
RES= Callum Thomson, Thomson Heritage Consultants, Inc., Pictou Landing, NS
OD= July 2013
COL= None
PRE=
UPRE= Report on Archaeological Inventory and Assessment at CAM-C Matheson Point, King William Island, Kitikmeot, Nunavut
RE= Shotgun shell in one of the tent rings suggests occupation in the 1980s. Goose droppings on the tundra around the tents suggest goose hunting as the reason for the location.

Feature Data Recorded at CAM-C 7 Recent Site, CAM-C, King William Island, Map Sheet 57 B/13E, Zone 15W

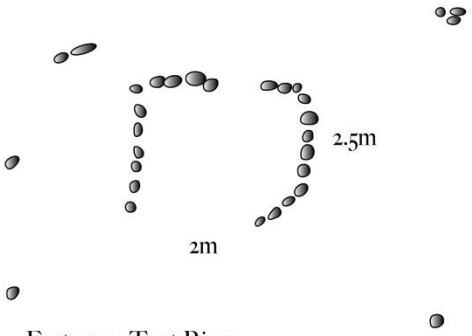
Feature No.	GPS Record No.	Feature Type	Easting	Northing	Size (m)	Work Area	Date Recorded
1	602	Tent ring	408368	7635527	2 x 2.5	POL line	July 29
2	603	Tent ring	408355	7635533	2.5 x 2	POL line	July 29







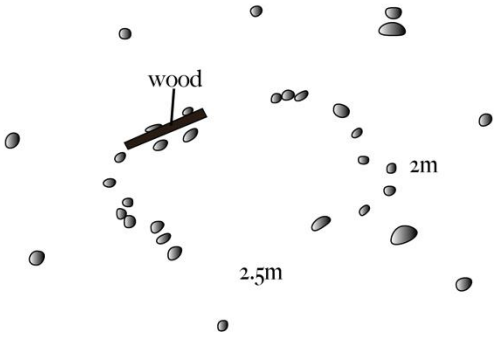
SITE MAP



Feature 1 - Tent Ring



Feature 1 - tent ring - view N



Feature 2 - Tent Ring



Feature 2 - tent ring - view NW

FEATURES
(scale approximate)

CAM-C6

LEGEND

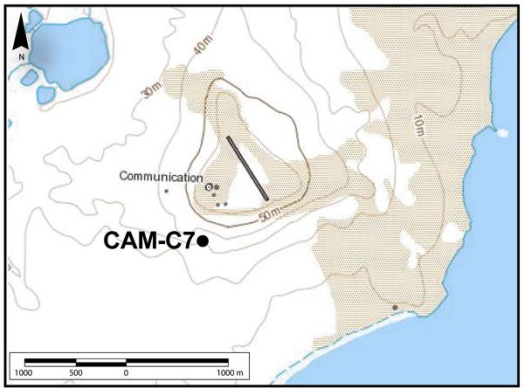
stone

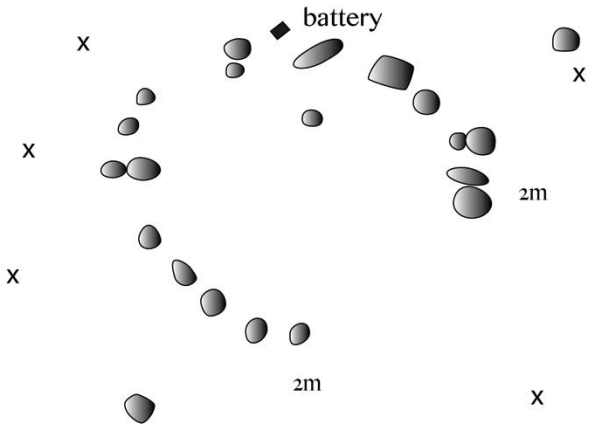
BN=
NAM=
RN= CAM-C 7
PN= 2013-023A
PRO= Archaeological Inventory and Assessment at CAM-C Matheson Point, King William Island, Kitikmeot, Nunavut, 2013
LOC= East coast of King William Island overlooking Rae Strait, in the vicinity of a large debris area southwest of the Station Area on largely undisturbed tundra below the slope from the Station Area plateau. Site reported by DMT Geosciences crew member Adam Peake
TER= Nunavut
DST= Kitikmeot
MR= 57 B/13E
JUR= Federal
LAT=
LNG=
UTM= Zone 15 407542E 7635401N
AIR=
EL= 25 m est.
SIZ= 100 m²
CON= Stable
TYC= Recent
TY= Camp
FE= Tent ring
CU= Inuit
PER= 20th century
DAT=
RES= Callum Thomson, Thomson Heritage Consultants, Inc., Pictou Landing, NS
OD= July 2013
COL= None
PRE=
UPRE= Report on Archaeological Inventory and Assessment at CAM-C Matheson Point, King William Island, Kitikmeot, Nunavut
RE= Battery and wood fragments in association

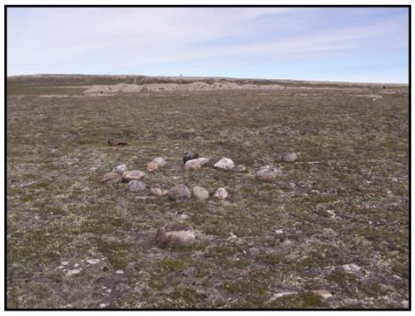
Feature Data Recorded at CAM-C 7 Recent Site, CAM-C, King William Island, Map Sheet 57 B/13E, Zone 15W

Feature No.	GPS Record No.	Feature Type	Easting	Northing	Size (m)	Work Area	Date Recorded
1	604	Tent ring	407542	7635401	2 x 2	Station	July 30









Feature 1 - Tent Ring

CAM-C7

LEGEND

x = stake

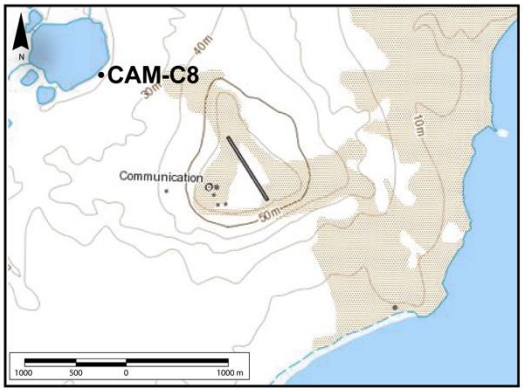
stone

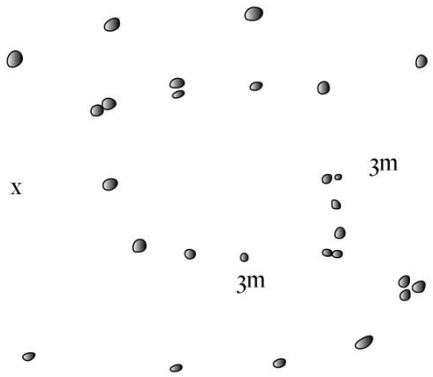
BN=
NAM=
RN= CAM-C 8
PN= 2013-023A
PRO= Archaeological Inventory and Assessment at CAM-C Matheson Point, King William Island, Kitikmeot, Nunavut, 2013
LOC= East coast of King William Island overlooking Rae Strait, 55 m north of the access road to the former water supply lake northwest of the Station Area on a high beach ridge
TER= Nunavut
DST= Kitikmeot
MR= 57 B/13E
JUR= Federal
LAT=
LNG=
UTM= Zone 15 407541E 7637037N
AIR=
EL= 25 m est.
SIZ= 100 m²
CON= Stable
TYC= Recent
TY= Camp
FE= Tent ring
CU= Inuit
PER= 19th-20th century
DAT=
RES= Callum Thomson, Thomson Heritage Consultants, Inc., Pictou Landing, NS
OD= July 2013
COL= None
PRE=
UPRE= Report on Archaeological Inventory and Assessment at CAM-C Matheson Point, King William Island, Kitikmeot, Nunavut
RE= Wooden stake, outer ring of guy rope boulders

Feature Data Recorded at CAM-C 8 Recent Site, CAM-C, King William Island, Map Sheet 57 B/13E, Zone 15W

Feature No.	GPS Record No.	Feature Type	Easting	Northing	Size (m)	Work Area	Date Recorded
1	605	Tent ring	406541	7637037	3 x 3	Station	July 30







Feature 1 - Tent Ring



Feature 1 - tent ring - view NW

FEATURES
(scale approximate)

CAM-C8

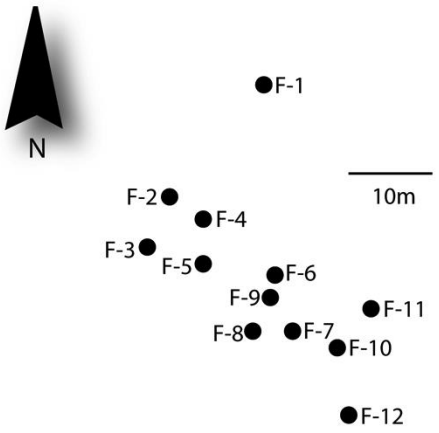
LEGEND
x = stake
stone

BN=
NAM=
RN= CAM-C 9
PN= 2013-023A
PRO= Archaeological Inventory and Assessment at CAM-C Matheson Point, King William Island, Kitikmeot, Nunavut, 2013
LOC= East coast of King William Island overlooking Rae Strait, on northeast side of northwest end of airstrip in cleared area on summit of Station Area plateau
TER= Nunavut
DST= Kitikmeot
MR= 57 B/13E
JUR= Federal
LAT=
LNG=
UTM= Zone 15 407853E 7636355N
AIR=
EL= 60 m est.
SIZ= 5000 m²
CON= Stable
TYC= Recent
TY= Camp
FE= Tent ring (12)
CU= Inuit
PER= 20th century
DAT= Post-airstrip construction
RES= Callum Thomson, Thomson Heritage Consultants, Inc., Pictou Landing, NS
OD= July 2013
COL= None
PRE=
UPRE= Report on Archaeological Inventory and Assessment at CAM-C Matheson Point, King William Island, Kitikmeot, Nunavut
RE= Very few recent artifacts in association with the tent rings, but this terrace appears to have been levelled during construction of the airstrip. Site reported by DMT Geosciences crew member, Adam Peake.

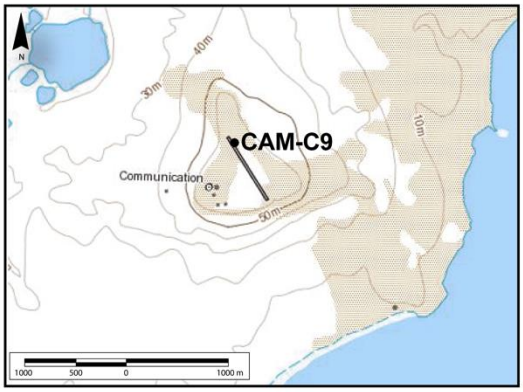
Feature Data Recorded at CAM-C 9 Recent Site, CAM-C, King William Island, Map Sheet 57 B/13E, Zone 15W

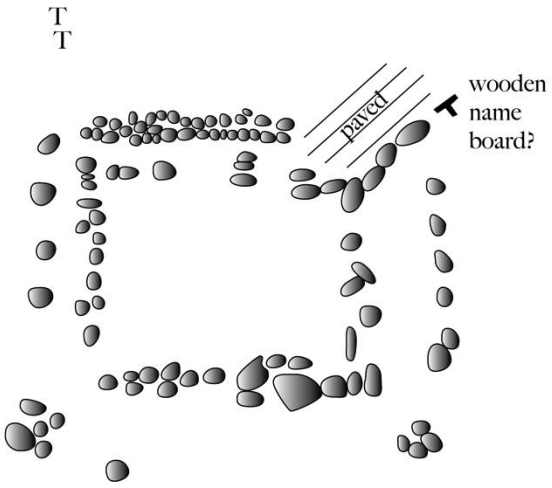
Feature No.	GPS Record No.	Feature Type	Easting	Northing	Size (m)	Work Area	Date Recorded
1	621	Tent ring	407848	7636399	5 x 5	Station	July 31
2	622	Tent ring	407831	7636379	3 x 4	Station	July 31
3	623	Tent ring	407827	7636370	3 x 3	Station	July 31
4	624	Tent ring	407837	7636375	3 x3	Station	July 31
5	625	Tent ring	407837	7636367	3 x 3	Station	July 31
6	626	Tent ring	407850	7636365	4 x 4	Station	July 31
7	627	Tent ring	407853	7636355	3 x 3	Station	July 31

8	628	Tent ring	407846	7636355	4 x 4	Station	July 31
9	629	Tent ring	407849	7636361	4 x 4	Station	July 31
10	630	Tent ring	407861	7636352	3.5 x 3	Station	July 31
11	631	Tent ring	407867	7636359	3 x 3	Station	July 31
12	632	Tent ring	407863	7636340	3 x 3	Station	July 31

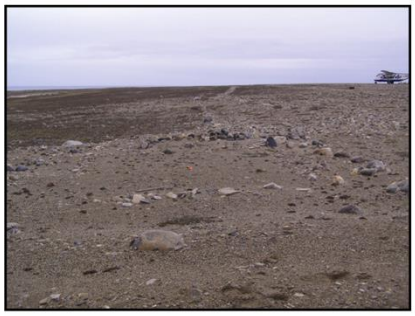


SITE MAP





Feature 1 - Tent Ring

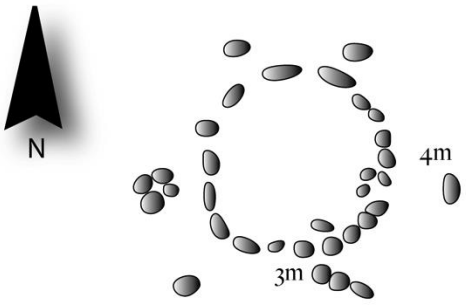


Feature 1 - tent ring - view N

FEATURES
(scale approximate)

CAM-C9

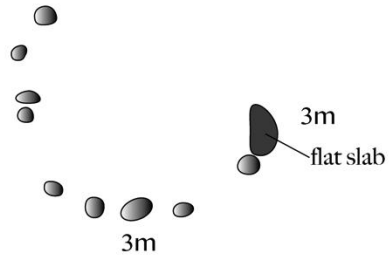
LEGEND
T = fox trap
stone



Feature 2 - Tent Ring



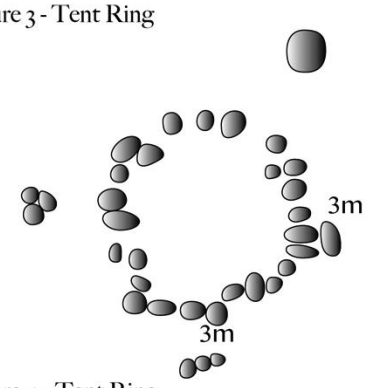
Feature 2 - tent ring - view N



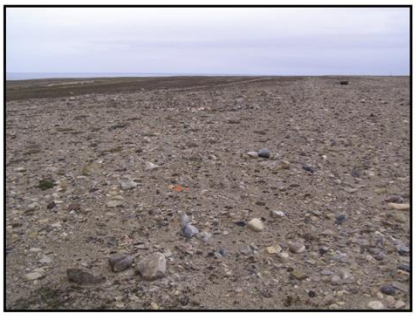
Feature 3 - Tent Ring



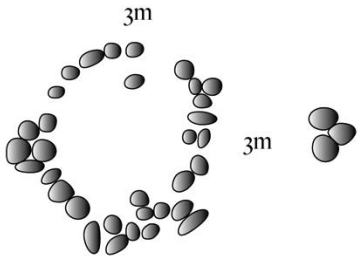
Feature 3 - tent ring - view N



Feature 4 - Tent Ring



Feature 4 - tent ring - view N



Feature 5 - Tent Ring

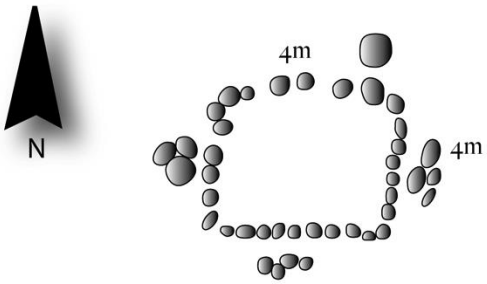


Feature 5 - tent ring - view N

CAM-C9 cont'd

LEGEND

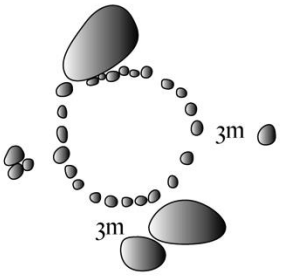
stone



Feature 6 - Tent Ring



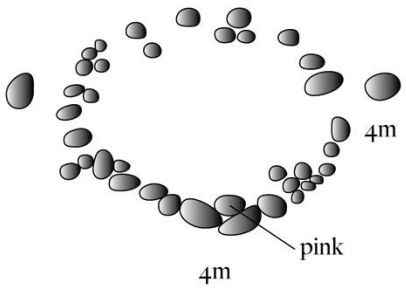
Feature 6 - tent ring - view N



Feature 7 - Tent Ring



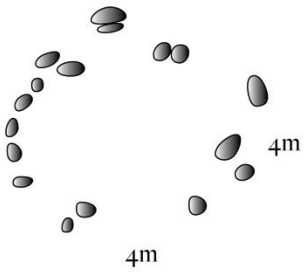
Feature 7 - tent ring - view N



Feature 8 - Tent Ring



Feature 8 - tent ring - view N



Feature 9 - Tent Ring

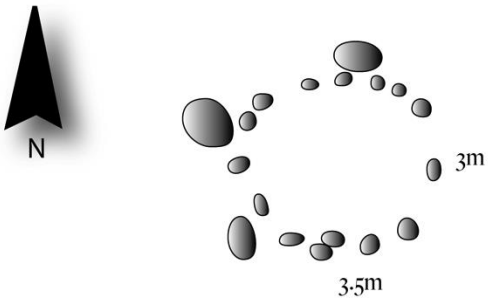


Feature 9 - tent ring - view N

CAM-C9 cont'd

LEGEND

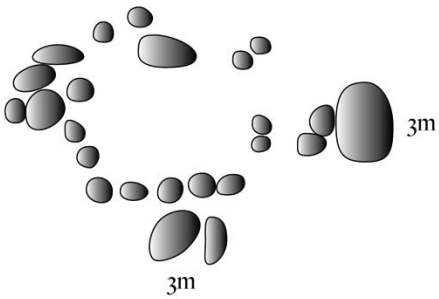
stone



Feature 10 - Tent Ring



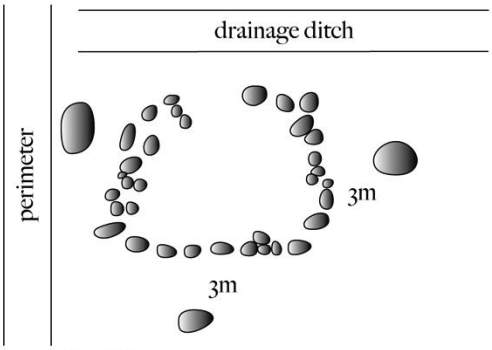
Feature 10 - tent ring - view N



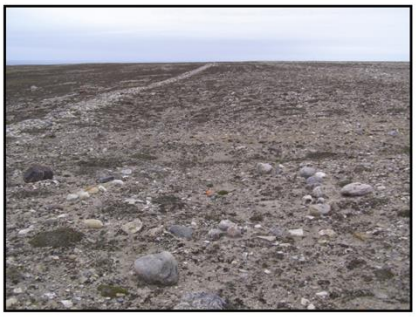
Feature 11 - Tent Ring



Feature 11 - tent ring - view N



Feature 12 - Tent Ring



Feature 12 - tent ring - view N

CAM-C9 cont'd

LEGEND

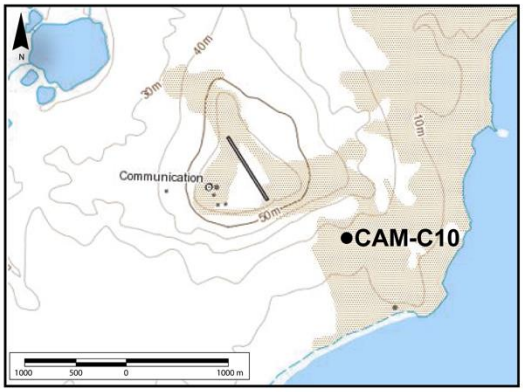
stone

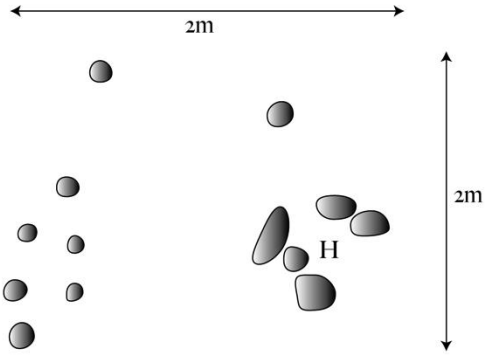
BN=
NAM=
RN= CAM-C 10
PN= 2013-023A
PRO= Archaeological Inventory and Assessment at CAM-C Matheson Point, King William Island, Kitikmeot, Nunavut, 2013
LOC= East coast of King William Island overlooking Rae Strait, on north side of access road to the Beach Area on undisturbed tundra
TER= Nunavut
DST= Kitikmeot
MR= 57 B/13E
JUR= Federal
LAT=
LNG=
UTM= Zone 15 408961E 7635431N
AIR=
EL= 15 m est.
SIZ= 100 m²
CON= Stable
TYC= Recent
TY= Camp
FE= Tent ring, hearth
CU= Inuit
PER= 20th century
DAT=
RES= Callum Thomson, Thomson Heritage Consultants, Inc., Pictou Landing, NS
OD= July 2013
COL= None
PRE=
UPRE= Report on Archaeological Inventory and Assessment at CAM-C Matheson Point, King William Island, Kitikmeot, Nunavut
RE= Glass fragments in hearth

Feature Data Recorded at CAM-C 10 Recent Site, King William Island, Map Sheet 57 B/13E, Zone 15W

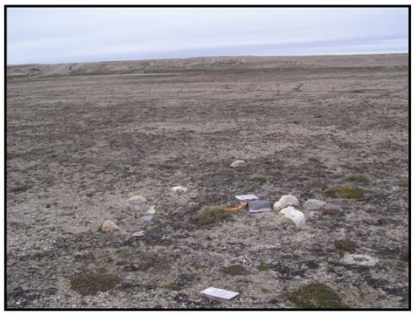
Feature No.	GPS Record No.	Feature Type	Easting	Northing	Size (m)	Work Area	Date Recorded
1	621	Tent ring, hearth	408961	7635431	2 x 2	Access Road	July 31







Feature 1 - Tent Ring



Feature 1 - tent ring - view N

FEATURES
(scale approximate)

CAM-C10

LEGEND
H = hearth
stone

Appendix 3

Nunavut Archaeological Permit 013-023A

NUNAVUT ARCHAEOLOGIST PERMIT

Permit Number	Permit Year	Permit Class
2013-23A	2013	Class 2

Under the authority of the *Nunavut Act* and the *Nunavut Archaeological and Palaeontological Sites Regulations*, authorization is granted to:

Permit Holder: Callum Thomson

Affiliation: Thomson Heritage Consultants

Name of Project: *Inventory, Assessment and Mitigation Study at CAM-C, King William Island*

For the purpose of: Archaeological inventory, assessment and mitigation of the former intermediate radar and communication site at CAM-C, Matheson Point, for Public Works and Government Services Canada. The collection of artifacts or specimens is authorized under this permit.

Permit Period: This Permit is valid from 21 June, 2013 to 31 December, 2013.

Conditions:

1. *The Permittee shall abide by the Nunavut Archaeological and Palaeontological Sites Regulations*
2. *The Permittee shall abide by the Guidelines for Nunavut Archaeological and Palaeontological Sites*
3. *The Permittee shall comply with all conditions attached to this permit.*
4. *The Permittee shall distribute materials and documentation to the agencies identified below according to this schedule:*

	Government of Nunavut Department of Culture and Heritage Box 310 Iqaluit, NU X0A 0H0	Canadian Museum of Civilization Box 3100, Station 'B' Hull, PQ J8X 4H2	Canadian Museum of Nature PO Box 3443, Stn D Ottawa, ON K1P 6P4	Inuit Heritage Trust Box 2080 Iqaluit, NU X0A 0H0
Required by September 30, 2013:				
One-page non-technical summary and two (2) colour photographs	X			
Required 60 days after return from field:				
Site Forms and Maps	X	X		
Required by March 31, 2014:				
1. Report	X	X		X
2. Field Notes	X			
3. (1) Artifacts, (2) Catalogue and (3) Loan Arrangements			**(1), (2), (3)**	

Approved by:

Minister
Department of Culture and Heritage
Government of Nunavut

Issued at: Iqaluit, Nunavut

Date of Issue: 21 June, 2013

Appendix 4

Project Photograph Catalogue

Photo Catalogue CAM-C, King William Island, July 29-31 2013, Project no. THC2013-2, NU Permit No. 2013-23A					
Photo No.	**View**	**Site/ Scene**	**Feature**	**Feature description**	**Date**
107		Skyvan		Gjoa Haven	July 29 2013
108		Skyvan		Gjoa Haven	July 29 2013
109		Skyvan		Interior	July 29 2013
110		Skyvan		Unloading at CAM-C airstrip	July 29 2013
111	NW	CAM-C 1	1	Tent ring	July 29 2013
112	NW	CAM-C 1	2	Tent ring	July 29 2013
113	NW	CAM-C 1	3	Tent ring	July 29 2013
114	NW	CAM-C 1	4	Tent ring	July 29 2013
115	NW	CAM-C 1	5	Tent ring	July 29 2013
116				deleted	
117	NW	CAM-C 1	View from 5 to 1	Tent rings, view NW to Station Area	July 29 2013
118		Arctic poppies			July 29 2013
119				Deleted	July 29 2013
120		Arctic poppy			July 29 2013
121	N	CAM-C 2	1	Tent ring with stakes	July 29 2013
122	N	CAM-C 3	1	Tent ring on former POL pad	July 29 2013
123	N	CAM-C 4	1	Tent ring with interior paving	July 29 2013
124	N	CAM-C 4	2	Small rectangular tent ring with outer guy rope boulders	July 29 2013
125	N	CAM-C 4	3	Tent ring and barrel dump on trail to borrow area	July 29 2013
126	NW	CAM-C 4	4	Small circular tent ring	July 29 2013
127	NW	CAM-C 4	5	Tent ring	July 29 2013
128	NW	CAM-C 4	6	Tent ring	July 29 2013
129	NW	CAM-C 4	7	Tent ring	July 29 2013
130	NW	CAM-C 4	7	Tent ring	July 29 2013
131	NW	NeJv-1	1	*Qammaq*	July 29 2013
132	SW	NeJv-1	1	*Qammaq*	July 29 2013
133	N	JeNv-1	2	Rectangular tent ring	July 29 2013
134	S	JeNv-1	2	Rectangular tent ring	July 29 2013
137	NW	JeNv-1	3	Cache	July 29 2013
138	SE	JeNv-1	3	Cache	July 29 2013
139	N	JeNv-1	4	Tent ring	July 29 2013
140	NE	JeNv-1	5	Rectangular tent ring	July 29 2013
141	NE	JeNv-1	5	Rectangular tent ring, view NE to F6	July 29 2013
142	W	JeNv-1	6	Cache, bone scatter	July 29 2013
143	N	CAM-C 5	1	Rectangular tent ring	July 29 2013
144	NW	CAM-C 5	2	Circular tent ring	July 29 2013
145	NW	CAM-C 5	3	Circular tent ring	July 29 2013
146	NW	CAM-C 5	4	Rectangular tent ring	July 29 2013
147	NW	CAM-C 5	5	Rectangular tent ring	July 29 2013
148	NW	CAM-C 5	6	Rectangular tent ring	July 29 2013
149	NW	CAM-C 5	7	Rectangular tent ring	July 29 2013
150				Deleted	
151	W	CAM-C 6	1	Rectangular tent ring	July 29 2013
152	NW	CAM-C 6	2	Circular tent ring	July 29 2013

153	NW	CAM-C 6		Tea break	July 29 2013
154	NW	CAM-C 6		Tea break	July 29 2013
155	N	CAM-C 6		View north over F-1 and F-2	July 29 2013
156	NW	CAM-C 6		View north over F-2	July 29 2013
157	NE	CAM-C Beach Area		Aerial photo	July 29 2013
158	NE	CAM-C Beach Area		Aerial photo	July 29 2013
159	N	CAM-C 7	1	Tent ring	July 30 2013
160	W	CAM-C 7	1	Tent ring	July 30 2013
161	NW	CAM-C 8	1	Circular tent ring	July 30 2013
162	SE	NeJv-2	1	Hearth	July 30 2013
163	NE	NeJv-2	1	Hearth on high beach ridge	July 30 2013
164				Deleted	
165				Deleted	
166	E	NeJv-3	1	Tent ring and interior hearth on high beach ridge	July 30 2013
167	N	NeJv-3	1	Tent ring and interior hearth on high beach ridge	July 30 2013
168				Deleted	
169	N	NeJv-4	1	Tent ring with midpassage and chert scatter on high beach ridge	July 30 2013
170	N	NeJv-4	1	Tent ring with midpassage and chert scatter on high beach ridge	July 30 2013
171	N	NeJv-4	Locus 2	Scatter of patinated and grey chert on high beach ridge	July 30 2013
172	N	NeJv-4	Locus 2	Scatter of patinated and grey chert on high beach ridge	July 30 2013
173	N	NeJv-4	Locus 2	Scatter of patinated and grey chert on high beach ridge	July 30 2013
174	N	NeJv-4	Locus 2	Scatter of patinated and grey chert on high beach ridge	July 30 2013
175	S	NeJv-5	Locus 1	Scatter of patinated chert and possible structure on high beach ridge below NeJv-3 and -4	July 30 2013
176	N	NeJv-6	1	Cache on lower beach terrace	July 30 2013
177	N	NeJv-7	1	Rectangular tent ring	July 30 2013
178	NE	NeJv-7	2	Old cache, Jessie Hoyt, and view along beach ridge	July 30 2013
179	N	NeJv-7	3	Circular tent ring	July 30 2013
180	N	NeJv-7	4	Recent circular tent ring	July 30 2013
181	NE	NeJv-1	7	Inuksuk on boulder	July 30 2013
182	SW	NeJv-1	8	Inuksuk on boulder	July 30 2013
183	E	NeJv-1	9	Qammaq	July 30 2013
184				Deleted	July 30 2013
185	N	CAM-C 9	1	Rectangular tent ring	July 31 2013
186	SE	CAM-C 9	1	Leghold fox traps and tent ring	July 31 2013
187	N	CAM-C 9	2	Circular tent ring	July 31 2013
188	N	CAM-C 9	3	Disturbed tent ring	July 31 2013
189	N	CAM-C 9	4	Circular tent ring	July 31 2013
190	N	CAM-C 9	5	Circular tent ring	July 31 2013
191	N	CAM-C 9	6	Rectangular tent ring	July 31 2013
192	N	CAM-C 9	7	Circular tent ring	July 31 2013

193	N	CAM-C 9	8	Circular tent ring	July 31 2013
194	N	CAM-C 9	9	Circular tent ring	July 31 2013
195	N	CAM-C 9	9	Circular tent ring	July 31 2013
196	N	CAM-C 9	10	Circular tent ring	July 31 2013
197	N	CAM-C 9	11	Circular tent ring	July 31 2013
198	N	CAM-C 9	12	Disturbed rectangular tent ring	July 31 2013
199	N			Raptor nest on boulder south of runway	July 31 2013
200	N	CAM-C 10	1	Circular tent ring and hearth	July 31 2013
201	E	NeJv-8	1	Midpassage tent ring	July 31 2013
202	W	NeJv-8	1	Midpassage tent ring	July 31 2013
203	Overhead	NeJv-8	1	Patinated chert core fragments	July 31 2013
204	Overhead	NeJv-8	1	Patinated chert fragments	July 31 2013
205	Overhead	NeJv-8	1	Green chert core	July 21 2013
206	N	NeJv-8	1	Midpassage tent ring	July 31 2013
207				Golden plover	July 31 2013
208				Golden plover	July 31 2013
209				Golden plover	July 31 2013
210				Golden plover	July 31 2013
211				Golden plover	July 31 2013
212				Golden plover	July 31 2013
213				Golden plover	July 31 2013
214				Golden plover	July 31 2013
215	W	NeJv-1	11	Cache	July 31 2013
216	E	NeJv-1	12	Cache	July 31 2013
217	N	NeJv-1	13	Cache	July 31 2013
218	N	NeJv-1	13	Cache	July 31 2013

Appendix H

NCSCS Scoring Sheets

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

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

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

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

Subject Site:	**CAM-C, Matheson Point, Nunavut**	
Civic Address: *(or other description of location)*	CAM-C, Matheson Point, Nunavut	
Site Common Name : *(if applicable)*	CAM-C Intermediate DEW Line Site	
Site Owner or Custodian: *(Organization and Contact Person)*	Aboriginal Affairs and Northern Development Canada (AANDC)	
Legal description *or* metes and bounds:	CAM-C Matheson Point is located on King William Island, Nunavut (68.81871147'N and 95.28926238'W).	
Approximate Site area:	2,210 Ha	
PID(s) : *(or Parcel Identification Numbers [PIN] if untitled Crown land)*	Canada Survey Records: Group 1424 and Quad 057B/13, Canada Lands	
Centre of site: *(provide latitude/longitude or UTM coordinates)*	Latitude: Longitude:	68 degrees 49 min 7 secs 95 degrees 17 min 21 secs
	UTM Coordinate:	Northing 7635867 Easting 407707
Site Land Use:	Current:	Not used. Abandoned Intermediate DEW Line Site
	Proposed:	Remediation to eliminate exposure to physical and chemical hazards; agricultural/wildland land use.
Site Plan	**To delineate the bounds of the Site a site plan MUST be attached. The plan must be drawn to scale indicating the boundaries in relation to well-defined reference points and/or legal descriptions. Delineation of the contamination should also be indicated on the site plan.**	
Provide a brief description of the Site:	CAM-C Matheson Point is a DEW Line site on the southeast coast of King William Island in Nunavut, with access to (and infrastructure on the beach of) the Beaufort Sea. Site co-ordinates are: 68.81871147oN and 95.28926238oW. The closest community is Gjoa Haven (estimated population of 1,279, Statistics Canada, 2011), which is situated approximately 30 kilometres (km) southwest of CAM-C. The site has an airstrip, which is seasonally accessible by aircraft; barge access is possible by sea in the summer. The beach has a barge landing historically used when CAM-C was an active site. There is ATV access from Gjoa Haven to the CAM-C site. The site was constructed in the 1950's and consisted of two main areas: the Station Area and the Beach Area. It operated until 1963, and at an unspecified time following its abandonment, site buildings were dismantled and the refuse placed in non-engineered landfills in undisclosed locations on the site. The total area of impact by CAM-C is estimated to be 22.1 km2 (or 8.54 square miles as per DIAND, 1982).	
Affected media and Contaminants of Potential Concern (COPC):	The investigation and delineation of contaminated soil at CAM-C was completed for the contaminants of concern listed in the INAC Abandoned Military Site Remediation Protocol. The contaminants of concern are: petroleum hydrocarbons (soil), aluminum (surface water), copper (soil), iron (surface water), manganese (surface water), selenium (surface water), silver (surface water), and PCBs (soil). Delineation of petroleum hydrocarbon (PHC) impacts was completed using the INAC Arctic PHC Evaluation Process, which is included in the INAC Abandoned Military Site Protocol (2009).	

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

Site Letter Grade **C**

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

Scoring Completed By:	Jennifer McCallum
Date Scoring Completed:	10-Sep-13

CCME National Classification System (2008, 2010 v 1.2)

(I) Contaminant Characteristics

CAM-C, Matheson Point, Nunavut

Definition	Score	Rationale for Score (document any assumptions, reports, or site-specific information; provide references)	Method of Evaluation	Notes
1. Residency Media (replaces physical state)				
Which of the following residency media are known (or strongly suspected) to have one or more exceedances of the applicable CCME guidelines? **yes** = has an exceedance or strongly suspected to have an exceedance **no** = does not have an exceedance or strongly suspected not to have an exceedance		Soil concentrations have been compared to the DEW Line Cleanup Criteria outlined in the Abandoned Military Site Remediation Protocol published by INAC (2009). Exceedances for lead, copper, Type B PHC (F2) and Tier I PCBs were identified in the soil (based on AECOM, ESG, and WESA studies). WESA noted a tetrachloroethylene exceedance of CCME guidelines (AMSRP guideline) in 2011. The Guidelines for Canadian Drinking Water Quality (May 2008) were exceeded for manganese for the sample taken at the Freshwater Lake; from the same sample, concentrations of aluminum, iron, manganese, selenium, and silver, exceeded the CCME Protection of Aquatic Life Guideline - Freshwater. These results are summarized in the Phase III ESA (AECOM, 2014).	The overall score is calculated by adding the individual scores from each residency media (having one or more exceedance of the most conservative media specific and land-use appropriate CCME guideline). Summary tables of the Canadian Environmental Quality Guidelines for soil, water (aquatic life, non-potable groundwater environments, and agricultural water uses) and sediment are available on the CCME website at http://www.ccme.ca/publications/cegg_rcge.html?category_id=124. For potable groundwater environments, guidelines for Canadian Drinking Water Quality (for comparison with groundwater monitoring data) are available on the Health Canada website at http://www.hc-sc.gc.ca/ewh-semt/pubs/water-eau/doc_sup-appui/sum_guide-res_recom/index_e.html.	An increasing number of residency media containing chemical exceedances often equates to a greater potential risk due to an increase in the number of potential exposure pathways.
A. Soil	Yes			
Yes No Do Not Know				
B. Groundwater	Do Not Know			
Yes No Do Not Know				
C. Surface water	Yes			
Yes No Do Not Know				
D. Sediment	Do Not Know			
Yes No Do Not Know				
"Known" -score	4			
"Potential" - score	2			
2. Chemical Hazard				
What is the relative degree of chemical hazard of the contaminant in the list of hazard rankings proposed by the Federal Contaminated Sites Action Plan (FCSAP)?	High	Tetrachloroethylene (high) from WESA, 2012, and PCB (high) soil impacts were detected onsite (AECOM, 2014).	The relative degree of chemical hazard should be selected based on the most hazardous contaminant known or suspected to be present at the site. The degree of hazard has been defined by the Federal Contaminated Sites Action Plan (FCSAP) and a list of substances with their associated hazard (Low, Medium and High) has been provided as a separate sheet in this file. *See Attached Reference Material for Contaminant Hazard Rankings.*	Hazard as defined in the revised NCS pertains to the physical properties of a chemical which can cause harm. Properties can include toxic potency, propensity to biomagnify, persistence in the environment, etc. Although there is some overlap between hazard and contaminant exceedance factor below, it will not be possible to derive contaminant exceedance factors for many substances which have a designated chemical hazard designation, but don't have a CCME guideline. The purpose of this category is to avoid missing a measure of toxic potential.
High Medium Low Do Not Know				
"Known" -score	8			
"Potential" - score	---			
3. Contaminant Exceedence Factor				
What is the ratio between the measured contaminant concentration and the applicable CCME guidelines (or other "standards")?	Low (1x to 10x)	PCB soil impact of 3.5 ppm (vs. 1 ppm guideline) detected onsite. (AECOM, 2014)	Ranking of contaminant "exceedance" is determined by comparing contaminant concentrations with the *most conservative media-specific and land-use appropriate CCME* environmental quality guidelines. **Ranking should be based on contaminant with greatest exceedance of CCME guidelines.** Ranking of contaminant hazard as high, medium and low is as follows: High = One or more measured contaminant concentration is greater than 100 X appropriate CCME guidelines Medium = One or more measured contaminant concentration is 10 - 99.99 X appropriate CCME guidelines Low = One or more measured contaminant concentration is 1 - 9.99 X appropriate CCME guidelines Mobile NAPL = Contaminant is a non-aqueous phase liquid (i.e., due to its low solubility, it does not dissolve in water, but remains as a separate liquid) and is present at a sufficiently high saturation (i.e., greater than residual NAPL saturation) such that there is significant potential for mobility either downwards or laterally. Other standards may include local background concentration or published toxicity benchmarks. Results of toxicity testing with site samples can be used as an alternative. This approach is only relevant for contaminants that do not biomagnify in the food web, since toxicity tests would not indicate potential effects at higher trophic levels. High = lethality observed. Medium = no lethality, but sub lethal effects observed. Low = neither lethal nor sub lethal effects observed.	In the event that elevated levels of a material with no associated CCME guidelines are present, check provincial and USEPA environmental criteria. Hazard Quotients (sometimes referred to as a screening quotient in risk assessments) refer to the ratio of measured concentration to the concentration believed to be the threshold for toxicity. A similar calculation is used here to determine the contaminant exceedance factor (CEF). Concentrations greater than one times the applicable CCME guideline (i.e., CEF=>1) indicate that risks are possible. Mobile NAPL has the highest associated score (8) because of its highly concentrated nature and potential for increase in the size of the impacted zone.
Mobile NAPL High (>100x) Medium (10x to 100x) Low (1x to 10x) Do Not Know				
"Known" -score	2			
"Potential" - score	---			

CCME National Classification System (2008, 2010 v 1.2)

(I) Contaminant Characteristics

CAM-C, Matheson Point, Nunavut

Definition	Score	Rationale for Score (document any assumptions, reports, or site-specific information; provide references)	Method of Evaluation	Notes
4. Contaminant Quantity (known or strongly suspected)				
What is the known or strongly suspected quantity of all contaminants? >10 hectare (ha) or 5000 m^3 2 to 10 ha or 1000 to 5000 m^3 <2 ha or 1000 m^3 Do Not Know	<2 ha or 1000 m3	642 m3, impacted soil + 608 m3 suspected from buried debris areas/landfills (AECOM, 2014)	Measure or estimate the area or quantity of total contamination (i.e, all contaminants known or strongly suspected to be present on the site). The "Area of Contamination" is defined as the area or volume of contaminated media (soil, sediment, groundwater, surface water) exceeding appropriate environmental criteria.	A larger quantity of a potentially toxic substance can result in a larger frequency of exposure as well as a greater probability of migration, therefore, larger quantities of these substances earn a higher score.
"Known" -score	2			
"Potential" - score	---			
5. Modifying Factors				
Does the chemical fall in the class of persistent chemicals based on its behavior in the environment? Yes No Do Not Know	Yes	PCB soil impact detected onsite. (AECOM, 2014)	Persistent chemicals, e.g., PCBs, chlorinated pesticides etc. either do not degrade or take longer to degrade, and therefore may be available to cause effects for a longer period of time. Canadian Environmental Protection Act (CEPA) classifies a chemical as persistent when it has at least one of the following characteristics: (a) in air, (i) its half-life is equal to or greater than 2 days, or (ii) it is subject to atmospheric transport from its source to a remote area; (b) in water, its half-life is equal to or greater than 182 days; (c) in sediments, its half-life is equal to or greater than 365 days; or (d) in soil, its half-life is equal to or greater than 182 days. This list does not include metals or metalloids, which in their elemental form do not degrade. However metals and metalloids form chemical species in the environment, many of which are not readily bioavailable.	*Examples of Persistent Substances are provided in attached Reference Materials*
Are there contaminants present that could cause damage to utilities and infrastructure, either now or in the future, given their location? Yes No Do Not Know	No	There is currently no standing infrastructure remaining on the site.		Some contaminants may react or absorb into underground utilities and infrastructure. For example, organic solvents may degrade some plastics, and salts could cause corrosion of metal.
How many different contaminant classes have representative CCME guideline exceedances? one two to four five or more Do Not Know	two to four	Chlorinated hydrocarbons, inorganics (metals), light extractable PHCs.	For the purposes of the revised NCS ranking system, the following chemicals represent distinct chemical "classes": inorganic substances (including metals), volatile petroleum hydrocarbons, light extractable petroleum hydrocarbons, heavy extractable petroleum hydrocarbons, PAHs, phenolic substances, chlorinated hydrocarbons, halogenated methanes, phthalate esters, pesticides.	*Refer to the Reference Material sheet for a list of example substances that fall under the various chemical classes.*
"Known" - Score	4			
"Potential" - Score	---			

Contaminant Characteristic Total

Raw Total Scores- "Known"	20
Raw Total Scores- "Potential"	2
Raw Combined Total Scores	22
Total Score (Raw Combined / 40 * 33)	**18.2**

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

CAM-C, Matheson Point, Nunavut

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

Definition	Score	Rationale for Score (document any assumptions, reports, or site-specific information; provide references)	Method Of Evaluation	Notes
	3 m or less		1) The presence and thickness of saturated subsurface materials that impede the vertical migration of contaminants to lower aquifer units which can or are used as drinking water sources or 2) The presence and thickness of unsaturated subsurface materials that impede the vertical migration of contaminants from the source location to the saturated zone (e.g., water table aquifer, first hydrostratigraphic unit or other groundwater pathway).	
Score	1			
d. Hydraulic conductivity of confining layer >10^{-4} cm/s or no confining layer 10^{-4} to 10^{-6} cm/s <10^{-6} cm/s Do Not Know			Determine the nature of geologic materials and estimate hydraulic conductivity from published material (or use "Range of Values of Hydraulic Conductivity and Permeability" figure in the Reference Material sheet). Unfractured clays should be scored low. Silts should be scored medium. Sand, gravel should be scored high. The evaluation of this category is based on: 1) The presence and hydraulic conductivity ("K") of saturated subsurface materials that impede the vertical migration of contaminants to lower aquifer units which can or are used as a drinking water source, groundwater exposure pathway or 2) The presence and permeability ("k") of unsaturated subsurface materials that impede the vertical migration of contaminants from the source location to the saturated water table aquifer, first hydrostratigraphic unit or other groundwater pathway.	
	>10-4 cm/s			
Score	1			
B. Potential for groundwater pathway.				
e. Precipitation infiltration rate (Annual precipitation factor x surface soil relative permeability factor) High Moderate Low Very Low None Do Not Know		Annual precipitation = 208.9 mm (AECOM, 2014) Precipitation factor = 0.2 Permeability factor = 0.09 (assuming sand)	<u>Precipitation</u> Refer to Environment Canada precipitation records for relevant areas. Divide annual precipitation by 1000 and round to nearest tenth (e.g., 667 mm = 0.7 score). <u>Permeability</u> For surface soil relative permeability (i.e., infiltration) assume: gravel (1), sand (0.6), loam (0.3) and pavement or clay (0). Multiply the surface soil relative permeability factor with precipitation factor to obtain the score for precipitation infiltration rate.	
	Very Low			
Score	0.2			
f. Hydraulic conductivity of aquifer >10^{-2} cm/s 10^{-2} to 10^{-4} cm/s <10^{-4} cm/s Do Not Know		Soil composition was sand and gravel (10^-6); AECOM, 2014.	Determine the nature of geologic materials and estimate hydraulic conductivity of all aquifers of concern from published material (refer to "Range of Values of Hydraulic Conductivity and Permeability" in the Reference Material sheet).	
	<10-4 cm/s			
Score	0			
Potential groundwater pathway total	7.2			
Allowed Potential score	---	Note: If a "known" score is provided, the "potential" score is disallowed.		
Groundwater pathway total	**12**			
2. Surface Water Movement				
A. Demonstrated migration of COPC in surface water above background conditions				
Known concentrations of surface water: i) Concentrations exceed background concentrations and exceed CCME CWQG for protection of aquatic life, irrigation, livestock water, and/or recreation (whichever uses are applicable at the site) by >1 X; or There is known contact of contaminants with surface water based on site observations. or In the absence of CWQG, chemicals have been proven to be toxic based on site specific testing (e.g. toxicity testing; or other indicator testing of exposure).	12	The criteria for the Guidelines for Canadian Drinking Water Quality (May 2008) were exceeded for manganese for the surface water sample taken at the Freshwater Lake; from the same sample, concentrations of aluminum, iron, manganese, selenium, and silver, exceeded the CCME Protection of Aquatic Life Guideline - Freshwater. It is unknown whether these exceedances can be attributed to site activities. Samples have not been obtained from the ocean, but it is presumed that some level of PHC migration has occurred historically. (AECOM, 2014)	Collect all available information on quality of surface water near to site. Evaluate available data against Canadian Water Quality Guidelines (select appropriate guidelines based on local water use, e.g., recreation, irrigation, aquatic life, livestock watering, etc.). The evaluation method concentrates on the surface water flow system and its potential to be an exposure pathway. Contamination is present on the surface (above ground) and has the potential to impact surface water bodies. Surface water is defined as a water body that supports one of the following uses: recreation, irrigation, livestock watering, aquatic life.	General Notes: Someone experienced must provide a thorough description of the sources researched to classify the surface water body in the vicinity of the contaminated site. This information must be documented in the NCS Site Classification Worksheet including contact names, phone numbers, e-mail correspondence and/or reference maps/reports and other resource such as internet links. Selected References: CCME. 1999. Canadian Water Quality Guidelines for the Protection of Aquatic Life <u>www.ccme.ca</u> CCME. 1999. Canadian Water Quality Guidelines for the Protection of Agricultural Water Uses (Irrigation and Livestock Water) <u>www.ccme.ca</u> Health and Welfare Canada. 1992. Guidelines for Canadian Recreational Water Quality.
ii) Same as (i) except the information is not known but <u>strongly suspected</u> based on indirect observations.	8			
iii) Meets CWQG or absence of surface water exposure pathway (i.e., Distance to nearest surface water is > 5 km.)	0			

Definition	Score	Rationale for Score (document any assumptions, reports, or site-specific information; provide references)	Method Of Evaluation	Notes
	12			
Score	12			
NOTE: If a score is assigned here for Demonstrated Migration in Surface Water, then you can skip Part B (Potential for migration of COPCs in surface water) and go to Section 3 (Surface Soils)				
B. Potential for migration of COPCs in surface water				
a. Presence of containment No containment Partial containment Full containment Do Not Know			Review the existing engineered systems and relate these structures to site conditions and proximity to surface water and determine if full containment is achieved: score low if there is full containment such as capping, berms, dikes; score medium if there is partial containment such as natural barriers, trees, ditches, sedimentation ponds; score high if there are no intervening barriers between the site and nearby surface water. Full containment must include containment of all chemicals.	
	No containment			
Score	5			
b. Distance to Surface Water 0 to <100 m 100 - 300 m >300 m Do Not Know			Review available mapping and survey data to determine distance to nearest surface water bodies.	
	0 to <100 m			
Score	3			
c. Topography Contaminants above ground level and slope is steep Contaminants at or below ground level and slope is steep Contaminants above ground level and slope is intermediate Contaminants at or below ground level and slope is Contaminants above ground level and slope is flat Contaminants at or below ground level and slope is flat Do Not Know			Review engineering documents on the topography of the site and the slope of surrounding terrain. Steep slope = >50% Intermediate slope = between 5 and 50% Flat slope = < 5% Note: Type of fill placement (e.g., trench, above ground, etc.).	
	At/below and interme			
Score	1			
d. Run-off potential High (rainfall run-off score > 0.6) Moderate (0.4 < rainfall run-off score <0.6) Low (0.2 < rainfall run-off score <0.4) Very Low (0 < rainfall run-off score < 0.2) None (rainfall run-off score = 0) Do Not Know		Annual precipitation = 208.9 mm (AECOM, 2014) Precipitation factor = 0.2 Infiltration factor = 0.045 (assuming sand)	Rainfall Refer to Environment Canada precipitation records for relevant areas. Divide rainfall by 1000 and round to nearest tenth (e.g., 667 mm = 0.7 score). The former definition of "annual rainfall" did not include the precipitation as snow. This minor adjustment has been made. The second modification was the inclusion of permeability of surface materials as an evaluation factor. Permeability For infiltration assume: gravel (0), sand (0.3), loam (0.6) and pavement or clay (1). Multiply the infiltration factor with precipitation factor to obtain rainfall run off score.	Selected Sources: Environment Canada web page link: www.msc.ec.gc.ca Snow to rainfall conversion apply ratio of 15 (snow):1(water)
	Very Low			
Score	0.2			
e. Flood potential 1 in 2 years 1 in 10 years 1 in 50 years Not in floodplain Do Not Know			Review published data such as flood plain mapping or flood potential (e.g., spring or mountain run-off) and Conservation Authority records to evaluate flood potential of nearby water courses both up and down gradient. Rate zero if site not in flood plain.	
	Do Not Know			
Score	0.5			
Potential surface water pathway total	9.7			
Allowed Potential score	---	Note: If a "known" score is provided, the "potential" score is disallowed.		
Surface water pathway total	**12**			
3. Surface Soils (potential for dust, dermal and ingestion exposure)				
A. Demonstrated concentrations of COPC in surface soils (top 1.5 m)				
COPCs measured in surface soils exceed the CCME soil quality guideline. Strongly suspected that soils exceed guidelines COPCs in surface soils does not exceed the CCME soil quality guideline or is not present (i.e., bedrock).	12 9 0	COPCs measured in surface soils exceed relevant site guidelines (DEW Line Cleanup Criteria) outlined in the INAC Abandoned Military Site Remediation Protocol (2009). Documented in the ESG, WESA and AECOM site investigation data.	Collect all available information on quality of surface soils (i.e., top 1.5 metres) at the site. Evaluate available data against Canadian Soil Quality Guidelines. Select appropriate guidelines based on current (or proposed future) land use (i.e, agricultural, residential/parkland, commercial, or industrial), and soil texture if applicable (i.e., coarse or fine).	Selected References: CCME. 1999. Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health www.ccme.ca
	12			
Score	12			
NOTE: If a score is assigned here for Demonstrated Concentrations in Surface Soils, then you can skip Part B (Potential for a surface soils migration pathway) and go to Section 4 (Vapour)				
B. Potential for a surface soils (top 1.5 m) migration pathway				

Definition	Score	Rationale for Score (document any assumptions, reports, or site-specific information; provide references)	Method Of Evaluation	Notes
a. Are the soils in question covered? Exposed Vegetated Landscaped Paved Do Not Know	Exposed	Soils are exposed both covered with moss and vegetation and exposed in some areas.	Consult engineering or risk assessment reports for the site. Alternatively, review photographs or perform a site visit. Landscaped surface soils must include a minimum of 0.5 m of topsoil.	The possibility of contaminants in blowing snow have not been included in the revised NCS as it is difficult to assess what constitutes an unacceptable concentration and secondly, spills to snow or ice are most efficiently mitigated while freezing conditions remain.
Score	6			
b. For what proportion of the year does the site remain covered by snow? 0 to 10% of the year 10 to 30% of the year More than 30% of the year Do Not Know	>30% of year	**NOTE: The value of this selection should score a 2, not a zero. The potential surface soil pathway total is actually 8.	Consult climatic information for the site. The increments represent the full span from soils which are always wet or covered with snow (and therefore less likely to generate dust) to those soils which are predominantly dry and not covered by snow (and therefore are more likely to generate dust).	
Score	0			
Potential surface soil pathway total	6			
Allowed Potential score	---	**Note: If a "known" score is provided, the "potential" score is disallowed.**		
Soil pathway total	**12**			
4. Vapour				
A. Demonstrated COPCs in vapour.				
Vapour has been measured (indoor or outdoor) in concentrations exceeding risk based concentrations.	12		Consult previous investigations, including human health risk assessments, for reports of vapours detected.	
Strongly suspected (based on observations and/or modelling)	9			
Vapour has not been measured and volatile hydrocarbons have not been found in site soils or groundwater.	0			
Score	Go to Potential ---			
NOTE: If a score is assigned here for Demonstrated COPCs in Vapour, then you can skip Part B (Potential for COPCs in vapour) and go to Section 5 (Sediment)				
B. Potential for COPCs in vapour				
a. Relative Volatility based on Henry's Law Constant, H' (dimensionless) High (H' > 1.0E-1) Moderate (H' = 1.0E-1 to 1.0E-3) Low (H' < 1.0E-3) Not Volatile Do Not Know	Low	Low volatility has been applied because there are minimal detectable BTEXs for the majority of the site, but there is an isolated plume of tetrachloroethylene, which is 7.54 E-1. Most contaminants of concern (i.e. Metals and PCBs) have no volatility or low volatility (F2 PHC).	Reference: US EPA Soil Screening Guidance (Part 5 - Table 36) *Provided in Attached Reference Materials*	If the Henry's Law Constant for a substance indicates that it is not volatile, and a score of zero is assigned here for relative volatility, then the other three questions in this section on Potential for COPCs will be automatically assigned scores of zero and you can skip to section 5.
Score	1			
b. What is the soil grain size? Fine Coarse Do Not Know	Coarse	All field records and laboratory sieves completed for the soil samples on site indicated coarse grained material. (AECOM, 2014)	Review soil permeability data in engineering reports. The greater the permeability of soils, the greater the possible movement of vapours. Fine-grained soils are defined as those which contain greater than 50% by mass particles less than 75 µm mean diameter (D50 < 75 µm). Coarse-grained soils are defined as those which contain greater than 50% by mass particles greater than 75 µm mean diameter (D50 > 75 µm).	
Score	4			
c. Is the depth to the source less than 10m? Yes No Do Not Know	Yes	Surface issues widely noted for PCBs and the isolated plumes of copper, lead, and tetrachloroethylene. Source is at the surface. (AECOM, 2014)	Review groundwater depths below grade for the site.	
Score	2			
d. Are there any preferential pathways? Yes No Do Not Know	No	Coarse-grained material over permafrost; no preferential pathways (AECOM, 2014).	Visit the site during dry summer conditions and/or review available photographs. Where bedrock is present, fractures would likely act as preferential pathyways.	Preferential pathways refer to areas where vapour migration is more likely to occur because there is lower resistance to flow than in the surrounding materials. For example, underground conduits such as sewer and utility lines, drains, or septic systems may serve as preferential pathways. Features of the building itself that may also be preferential pathways include earthen floors, expansion joints, wall cracks, or foundation perforations for subsurface features such as utility pipes, sumps, and drains.
Score	0			
Potential vapour pathway total	7			
Allowed Potential score	7	Note: If a "known" score is provided, the "potential" score is disallowed.		
Vapour pathway total	**7**			

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

CAM-C, Matheson Point, Nunavut

Definition	Score	Rationale for Score (document any assumptions, reports, or site-specific information; provide references)	Method Of Evaluation	Notes
5. Sediment Movement				
A. Demonstrated migration of sediments containing COPCs				
There is evidence to suggest that sediments originally deposited to the site (exceeding the CCME sediment quality guidelines) have migrated.	12	Sediments in the Freshwater Lake do not contain COPCs. (ESG, 1994)	Review sediment assessment reports. Evidence of migration of contaminants in sediments must be reported by someone experienced in this area.	Usually not considered a significant concern in lakes/marine environments, but could be very important in rivers where transport downstream could be significant.
Strongly suspected (based on observations and/or modelling)	9			
Sediments have been contained and there is no indication that sediments will migrate in future. **or** Absence of sediment exposure pathway (i.e., within 5 km of the site there are no aquatic receiving environments, and therefore no sediments).	0			
	0			
Score	0			
NOTE: If a score is assigned here for Demonstrated Migration of Sediments, then you can skip Part B (Potential for Sediment Migration) and go to Section 6 (Modifying Factors)				
B. Potential for sediment migration				
a. Are the sediments having COPC exceedances capped with sediments having no exceedances ("clean sediments")?	Do Not Know		Review existing sediment assessments. If sediment coring has been completed, it may indicate that historically contaminated sediments have been covered over by newer "clean" sediments. This assessment will require that cores collected demonstrate a low concentration near the top and higher concentration with sediment depth.	
Yes No Do Not Know	2			
b. For lakes and marine habitats, are the contaminated sediments in shallow water and therefore likely to be affected by tidal action, wave action or propeller wash?	Do Not Know		Review existing sediment assessments. If the sediments present at the site are in a river, select "no" for this question.	
Yes No Do Not Know	2			
c. For rivers, are the contaminated sediments in an area prone to sediment scouring?	Do Not Know		Review existing sediment assessments. It is important that the assessment is made under worst case flows (high yearly flows). Under high yearly flows, areas which are commonly depositional	
Yes No Do Not Know	2			
Potential sediment pathway total	6			
Allowed Potential score	---	Note: If a "known" score is provided, the "potential" score is disallowed.		
Sediment pathway total	**0**			
6. Modifying Factors				
Are there subsurface utility conduits in the area affected by contamination?	No	No utilities remain on site (AECOM, 2014).	Consult existing engineering reports. Subsurface utilities can act as conduits for contaminant migration.	
Yes No Do Not Know				
Known	0			
Potential	0			

Migration Potential Total

Raw "known" total	36	
Raw "potential" total	7.0	
Raw combined total	43.0	Note: If "Known" and "Potential" scores are provided, the checklist defaults to known. Therefore, the total "Potential" Score may not reflect the sum of the individual "Potential" scores.
Total (max 33)	**22.2**	

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

CAM-C, Matheson Point, Nunavut

Definition	Score	Rationale for Score (document any assumptions, reports, or site-specific information; provide references)	Method Of Evaluation	Notes
1. Human				
A. Known exposure				
Documented adverse impact or high quantified exposure which has or will result in an adverse effect, injury or harm or impairment of the safety to humans as a result of the contaminated site. (Class 1 Site*)	22	Site is infrequently used by humans.	*Where adverse effects on humans are documented, the site should be automatically designated as a Class 1 site (i.e., action required). There is no need to proceed through the NCS in this case. However, a scoring guideline (22) is provided in case a numerical score for the site is still desired (e.g., for comparison with other Class 1 sites). This category can be based on the outcomes of risk assessments and applies to studies which have reported Hazard Quotients >1 for noncarcinogenic chemicals and incremental cancer risks that exceed acceptable levels defined by the jurisdiction for carcinogenic chemicals (for most jurisdictions this is typically either >10^{-5} or >10^{-6}). Known impacts can also be evaluated based on blood testing (e.g. blood lead >10 ug/dL) or other health based testing. This category can be based on the outcomes of risk assessments and applies to studies which have reported Hazard Quotients of less than 0.2 for non-carcinogenic chemicals and incremental lifetime cancer risks for carcinogenic chemicals that are within acceptable levels as defined by the jurisdiction (for most jurisdictions this is less than either 10^{-6} or 10^{-5}).	Known adverse impact includes domestic and traditional food sources. Adverse effects based on food chain transfer to humans and/or animals can be scored in this category. However, the weight of evidence must show a direct link of a contaminated food source/supply and subsequent ingestion/transfer to humans. Any associated adverse effects to the environment are scored separately later in this worksheet. Someone experienced must provide a thorough description of the sources researched to evaluate and determine the quantified exposure/impact (adverse effect) in the vicinity of the contaminated site. **Selected References:** Health Canada – Federal Contaminated Site Risk Assessment in Canada Parts 1 and 2 Guidance on Human Heath Screening Level Risk Assessments (www.hc-sc.gc.ca/ewh-semt/pubs/contamsite/index_e.html) United States Environmental Protection Agency, Integrated Risk Information System (IRIS) – http://toxnet.nml.nih.gov
Same as above, but "Strongly Suspected" based on observations or indirect evidence.	10			
No quantified or suspected exposures/impacts in humans.	0			
	Go to Potential			
Score	---			
NOTE: If a score is assigned here for Known Exposure, then you can skip Part B (Potential for Human Exposure) and go to Section 2 (Human Exposure Modifying Factors)				
B. Potential for human exposure				
a) Land use (provides an indication of potential human exposure scenarios) Agricultural Residential / Parkland Commercial Industrial Do Not Know		The site is accesible by land year round and by boat in the summer and is used for recreational purposes and hunting (AECOM, 2014). This site is classified as Agricultural.	Review zoning and land use maps over the distances indicated. If the proposed future land use is more "sensitive" than the current land use, evaluate this factor assuming the proposed future use is in place. Agricultural land use is defined as uses of land where the activities are related to the productive capability of the land or facility (e.g., greenhouse) and are agricultural in nature, or activities related to the feeding and housing of animals as livestock. Residential/Parkland land uses are defined as uses of land on which dwelling on a permanent, temporary, or seasonal basis is the activity (residential), as well as uses on which the activities are recreational in nature and require the natural or human designed capability of the land to sustain that activity (parkland). Commercial/Industrial land uses are defined as land on which the activities are related to the buying, selling, or trading of merchandise or services (commercial), as well as land uses which are related to the production, manufacture, or storage of materials (industrial).	This is the main "receptor" factor used in site scoring. A higher score implies a greater exposure and/or exposure of more sensitive human receptors (e.g., children).
	Agricultural			
Score	3			
b. Indicate the level of accessibility to the contaminated portion of the site (e.g., the potential for coming in contact with contamination) Limited barriers to prevent site access; contamination not covered Moderate access or no intervening barriers, contaminants are covered. Remote locations in which contaminants not covered. Controlled access or remote location and contaminants are covered Do Not Know		Site has unlimited access and the contaminants are not covered. (AECOM, 2014)	Review location and structures and contaminants at the site and determine if there are intervening barriers between the site and humans. A low rating should be assigned to a (covered) site surrounded by a fence or in a remote location, whereas a high score should be assigned to a site that has no cover, fence, natural barriers or buffer.	
	Access, not covered			
Score	2			
B. Potential for human exposure				
c) Potential for intake of contaminated soil, water, sediment or foods for operable or potentially operable pathways, as identified in Worksheet II (Migration Potential). i) direct contact Is dermal contact with contaminated surface water, groundwater, sediments or soils anticipated? Yes No Do Not Know		Soils exceeded surface guidelines for the site; therefore dermal contact is possible. (AECOM, 2014)	If soils or potable groundwater are present exceeding their respective CCME guidelines, dermal contact is assumed. Exposure to surface water, non-potable groundwater or sediments exceeding their respective CCME guidelines will depend on the site. Select "Yes" if dermal exposure to surface water, non-potable groundwater or sediments is expected. For instance, dermal contact with sediments would not be expected in an active port. Only soils in the top 1.5 m are defined by CCME (2003) as surface soils. If contaminated soils are only located deeper than 1.5 m, direct contact with soils is not anticipated to be an operable contaminant exposure pathway.	Exposure via the skin is generally believed to be a minor exposure route. However for some organic contaminants, skin exposure can play a very important component of overall exposure. Dermal exposure can occur while swimming in contaminated waters, bathing with contaminated surface water/groundwater and digging in contaminated dirt, etc.
	Yes			
Score	3			
ii) inhalation (i.e., inhalation of dust, vapour) Vapour - Are there inhabitable buildings on the site within 30 m of soils or groundwater with volatile contamination as determined in Worksheet II (Migration Potential)? Yes No Do Not Know		No buildings remain and no buildings are within 30 of the site. (AECOM, 2014)	If inhabitable buildings are on the site within 30 m of soils or groundwater exceeding their respective guidelines for volatile chemicals, there is a potential of risk to human health (Health Canada, 2004). Review site investigations for location of soil samples (having exceedances of volatile substances) relative to buildings. Refer to (II) Migration Potential worksheet, 4B.a), *Potential for COPCs in Vapour* for a definition of volatility.	Exposure via the lungs (inhalation) can be a very important exposure pathway. Inhalation can be via both particulates (dust) and gas (vapours). Vapours can be a problem where buildings have been built on former industrial sites or where volatile contaminants have migrated below buildings resulting in the potential for vapour intrusion. Assesses the potential for humans to be exposed to vapours originating from site soils. The closer the receptor is to a source of volatile chemicals in soil, the greater the potential of exposure. Also, coarser-grained soil will convey vapour much more efficiently in the soil than finer grained material such as clays and silts. General Notes; Someone experienced must provide a thorough description of the sources researched to determine the presence/absence of a vapour migration and/or dust generation in the vicinity of the contaminated site. This information must be documented in the NCS Site Classification Worksheet including contact names, phone numbers, e-mail correspondence and/or reference maps/reports and other resource such as internet links. Selected References; Canadian Council of Ministers of the Environment (CCME). 2006. Protocol for the Derivation of Environmental and Human Health Soil Quality Guidelines. PN 1332. www.ccme.ca Golder, 2004. Soil Vapour Intrusion Guidance for Health Canada Screening Level Risk Assessment (SLRA) Submitted to Health Canada, Burnaby, BC
	No			
Score	0			
Dust - If there is contaminated surface soil (e.g. top 1.5 m) , indicate whether the soil is fine or coarse textured. If it is known that surface soil is not contaminated, enter a score of zero. Fine Coarse Surface soil is not contaminated or absent (bedrock) Do Not Know Texture		All field records and laboratory sieves completed for the soil samples on site indicated coarse-grained material. (AECOM, 2014)	Consult grain size data for the site. If soils (containing exceedances of the CCME soil quality guidelines) predominantly consist of fine material (having a median grain size of 75 microns; as defined by CCME (2006)) then these soils are more likely to generate dusts.	
	Coarse			
	1			
inhalation total	1			
B. Potential for human exposure				
iii) Ingestion (i.e., ingestion of food items, water and soils [for children]), including traditional foods.		There is non-hazardous debris within 100 m of the Freshwater Lake on site, however the closest impacted soil/hazardous materials are located more than one kilometre away from the lake. (AECOM, 2014)	Review available site data to determine if drinking water (groundwater, surface water, private, commercial or municipal supply) is known or suspected to be contaminated above Guidelines for	**Selected References:** Guidelines for Canadian Drinking Water Quality: www.hc-sc.gc.ca/hecs-sesc/water/publications/drinking_water_quality_guidelines/toc.htm

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

CAM-C, Matheson Point, Nunavut

Definition	Score	Rationale for Score (document any assumptions, reports, or site-specific information; provide references)	Method Of Evaluation	Notes
Drinking Water: Choose a score based on the proximity to a drinking water supply, to indicate the potential for contamination (present or future). 0 to 100 m 100 to 300 m 300 m to 1 km 1 to 5 km No drinking water present Do Not Know		more than one kilometre away from the lake. (AECOM, 2014)	commercial or municipal supply) is known or suspected to be contaminated above Guidelines for Canadian Drinking Water Quality. If drinking water supply is known to be contaminated, some immediate action (e.g., provision of alternate drinking water supply) should be initiated to reduce or eliminate exposure. The evaluation of significant potential for exceedances of the water supply in the future may be based on the capture zones of the drinking water wells; contaminant travel times; computer modelling of flow and contaminant transport.	ssc/water/publication/summary_water_quality_guidelines.htm Drinking water can be an extremely important exposure pathway to humans. If site groundwater or surface water is not used for drinking, then this pathway is considered to be inoperable. Consider both wild foods such as salmon, venison, caribou, as well as agricultural sources of food items if the contaminated site is on or adjacent to agricultural land uses.
	0 to 100 m			
Score	3			
Is an alternative water supply readily available? Yes No Do Not Know	No	No other freshwater source is close to the site.		
Score	1			
Is human ingestion of contaminated soils possible? Yes No Do Not Know	Yes	Surface soil is impacted. (AECOM, 2014; WESA, 2012; ESG, 1994)	If contaminated soils are located within the top 1.5 m, it is assumed that ingestion of soils is an operable exposure pathway. Exposure to soils deeper than 1.5 m is possible, but less likely, and the duration is shorter. Refer to human health risk assessment reports for the site in question.	
Score	3			
Are food items consumed by people, such as plants, domestic animals or wildlife harvested from the contaminated land and its surroundings? Yes No Do Not Know	Yes	Yes. The land is used for hunting and occasionally camping. (AECOM, 2014)	Use human health risk assessment reports (or others) to determine if there is significant reliance on traditional food sources associated with the site. Is the food item in question going to spend a large proportion of its time at the site (e.g., large mammals may spend a very small amount of time at a small contaminated site)? Human health risk assessment reports for the site in question will also provide information on potential bioaccumulation of the COPC in question.	
Score	1			
Ingestion total	8			
Human Health Total "Potential" Score	17	Note if a "Known" Human Health score is provided, the "Potential" score is disallowed.		
Allowed "Potential" Score	17			
2. Human Exposure Modifying Factors				
a) Strong reliance of local people on natural resources for survival (i.e., food, water, shelter, etc.) Yes No Do Not Know	Yes	Local people use the area for hunting (AECOM, 2014).		
Known	6			
Potential	---			
Raw Human "known" total	6			
Raw Human "potential" total	17			
Raw Human Exposure Total Score	23			
Human Health Total (max 22)	**22.0**			
3. Ecological				
A. Known exposure				
Documented adverse impact or high quantified exposure which has or will result in an adverse effect, injury or harm or impairment of the safety to terrestrial or aquatic organisms as a result of the contaminated site.	18	Terrestrial wildlife observed (or evidence observed) on site included muskox, caribou, several birds (waterfowl and songbirds), rodents, and hares (AECOM, 2014). There is a chance that they would be exposured to impacted material. The sediment sample from the lake contained concentrations below applicable guidelines (ESG, 1994), so it is assumed that aquatic organisms are not affected.	Some low levels of impact to ecological receptors are considered acceptable, particularly on commercial and industrial land uses. However, if ecological effects are deemed to be severe, the site may be categorized as class one (i.e., a priority for remediation or risk management), regardless of the numerical total NCS score. For the purpose of application of the NCS, effects that would be considered severe include observed effects on survival, growth or reproduction which could threaten the viability of a population of ecological receptors at the site. Other evidence that qualifies as severe adverse effects may be determined based on professional judgement and in consultation with the relevant jurisdiction. If ecological effects are determined to be severe and an automatic Class 1 is assigned, there is no need to proceed through the NCS. However, a scoring guideline (18) is provided in case a numerical score for the site is still desired (e.g., for comparison with other Class 1 sites).	CCME, 1999: Canadian Water Quality Guidelines for the Protection of Aquatic Life. www.ccme.ca CCME, 1999: Canadian Water Quality Guidelines for the Protection of Agricultural Water Uses. www.ccme.ca Sensitive receptors- review: Canadian Council on Ecological Areas; www.ccea.org. Ecological effects should be evaluated at a population or community level, as opposed to at the level of individuals. For example, population-level effects could include reduced reproduction, growth or survival in a species. Community-level effects could include reduced species diversity or relative abundances. Further discussion of ecological assessment endpoints is provided in *A Framework for Ecological Risk Assessment: General Guidance* (CCME 1996). Notes: Someone experienced must provide a thorough description of the sources researched to classify the environmental receptors in the vicinity of the contaminated site. This information must be documented in the NCS Site Classification Worksheet including contact names, phone numbers, e-mail correspondence and/or reference maps/reports and other resource such as internet links.
Same as above, but "Strongly Suspected" based on observations or indirect evidence.	12		This category can be based on the outcomes of risk assessments and applies to studies which have reported Hazard Quotients >1. Alternatively, known impacts can also be evaluated based on a weight of evidence assessment involving a combination of site observations, tissue testing, toxicity testing and quantitative community assessments. Scoring of adverse effects on individual rare or endangered species will be completed on a case-by-case basis with full scientific justification.	
No quantified or suspected exposures/impacts in terrestrial or aquatic organisms	0		This category can be based on the outcomes of risk assessments and applies to studies which have reported Hazard Quotients of less than 1 and no other observable or measurable sign of impacts. Alternatively, it can be based on a combination of other lines of evidence showing no adverse effects, such as site observations, tissue testing, toxicity testing and quantitative community assessments.	
	12			
Score	12			
NOTE: If a score is assigned here for Known Exposure, then you can skip Part B (Potential for Ecological Exposure) and go to Section 4 (Ecological Exposure Modifying Factors)				
B. Potential for ecological exposure (for the contaminated portion of the site)				
a) Terrestrial i) Land use		The site is located in the wilderness and is a habitat for species of special concern (i.e. barren ground caribou and polar bears) under Committee on the Status of Endangered Wildlife in Canada (COSEWIC)	Review zoning and land use maps. If the proposed future land use is more "sensitive" than the current land use, evaluate this factor assuming the proposed future use is in place (indicate in the worksheet that future land use is the consideration)	

Definition	Score	Rationale for Score (document any assumptions, reports, or site-specific information; provide references)	Method Of Evaluation	Notes
Agricultural (or Wild lands) Residential/Parkland Commercial Industrial Do Not Know		on the Status of Endangered Wildlife in Canada (COSEWIC).	worksheet that future land use is the consideration). Agricultural land use is defined as uses of land where the activities are related to the productive capability of the land or facility (e.g., greenhouse) and are agricultural in nature, or activities related to the feeding and housing of animals as livestock. Wild lands are grouped with agricultural land due to the similarities in receptors that would be expected to occur there (e.g., herbivorous mammals and birds) and the similar need for a high level of protection to ensure ecological functioning. Residential/Parkland land uses are defined as uses of land on which dwelling on a permanent, temporary, or seasonal basis is the activity (residential), as well as uses on which the activities are recreational in nature and require the natural or human designed capability of the land to sustain that activity (parkland). Commercial/Industrial land uses are defined as land on which the activities are related to the buying, selling, or trading of merchandise or services (commercial), as well as land uses which are related to the production, manufacture, or storage of materials (industrial).	
	Agricultural (or Wild lands			
Score	3			
ii) Uptake potential		Impacted soils are located within the upper 1.5 m of the site. (AECOM, 2014)	If contaminated soils are located within the top 1.5 m, it is assumed that direct contact of soils with plants and soil invertebrates is an operable exposure pathway. Exposure to soils deeper than 1.5 m is possible, but less likely.	
Direct Contact - Are plants and/or soil invertebrates likely exposed to contaminated soils at the site?	Yes			
Yes No Do Not Know				
Score	1			
iii) Ingestion (i.e., wildlife or domestic animals ingesting contaminated food items, soils or water)		The surface water sample from the Freshwater Lake indicated metals impacts; a loon and chick were noted in this lake and there were no barriers to wildlife access. (AECOM, 2014)		
Are terrestrial animals likely to be ingesting contaminated water at the site?			Refer to an Ecological Risk Assessment for the site. If there is contaminated surface water at the site, assume that terrestrial organisms will ingest it.	
Yes No Do Not Know	Yes			
Score	1			
Are terrestrial animals likely to be ingesting contaminated soils at the site?		Bioaccummulation of COPCs was noted in the plants by ESG, 1994.	Refer to an Ecological Risk Assessment report. Most animals will co-ingest some soil while eating plant matter or soil invertebrates.	
Yes No Do Not Know	Yes			
Score	1			
Can the contamination identified bioaccumulate?		PCBs can bioaccummulate and are documented on the site (AECOM, 2014).	Bioaccumulation of contaminants within food items is considered possible if: 1) The Log(Kow) of the contaminant is greater than 4 (as per the chemical characteristics work sheet) and concentrations in soils exceed the most conservative CCME soil quality guideline for the intended land use, or 2) The contaminant in collected tissue samples exceeds the Canadian Tissue Residue Guidelines.	
Yes No Do Not Know	Yes			
Score	1			
Distance to sensitive terrestrial ecological area		The entire site is located within a sensitive terrestrial ecological area. (AECOM, 2014)	It is considered that within 300 m of a site, there is a concern for contamination. Therefore an environmental receptor located within this area of the site will be subject to further evaluations. It is also considered that any environmental receptor located greater than 5 km will not be a concern for evaluation. Review Conservation Authority mapping and literature including Canadian Council on Ecological Areas link: www.ccea.org.	Environmental receptors include: local, regional or provincial species of interest or significance; arctic environments (on a site specific basis); nature preserves, habitats for species at risk, sensitive forests, natural parks or forests.
0 to 300 m 300 m to 1 km 1 to 5 km > 5 km Do Not Know	0 to 300 m			
Score	3			
Raw Terrestrial Total Potential	10	Note if a "Known" Ecological Effects score is provided, the "Potential" score is disallowed.		
Allowed Terrestrial Total Potential	---			
B. Potential for ecological exposure (for the contaminated portion of the site)				
b) Aquatic				
i) Classification of aquatic environment		There are no protected aquatic environments on King William Island (Nunavut Wildlife Resource and Habitat Values (Amendment) , Nunami Stantec, February 2012: http://nunavut.ca/files/wildlife_report/Nunavut_Wildlife_Resource_and_Habitat_Values_2012_3.pdf). However, it can be generally considered that the Arctic Ocean is a sensitive environment.	"Sensitive aquatic environments" include those in or adjacent to shellfish or fish harvesting areas, marine parks, ecological reserves and fish migration paths. Also includes those areas deemed to have ecological significance such as for fish food resources, spawning areas or having rare or endangered species. "Typical aquatic environments" include those in areas other than those listed above.	
Sensitive Typical Not Applicable (no aquatic environment present) Do Not Know	Sensitive			
Score	3			
ii) Uptake potential		Impacted soils have been identified within 30 m of the marine habitat (WESA, 2012; AECOM, 2014). The general site topography slows down towards the Freshwater Lake or the Rae Strait. (AECOM, 2014)	Groundwater concentrations of contaminants at the point of contact with an aquatic receiving environment can be estimated in three ways: 1) by comparing collected nearshore groundwater concentrations to the CCME water quality guidelines (this will be a conservative comparison, as contaminant concentrations in groundwater often decrease between nearshore wells and the point of discharge). 2) by conducting groundwater modeling to estimate the concentration of groundwater immediately before discharge. 3) by installing water samplers, "peepers", in the sediments in the area of daylighting groundwater.	
Does groundwater daylighting to an aquatic environment exceed the CCME water quality guidelines for the protection of aquatic life at the point of contact?				
Yes No (or Not Applicable) Do Not Know	Do Not Know			
Score	0.5			
Distance from the contaminated site to an important surface water resource		Impacted soils have been identified within 30 m of the marine habitat (AECOM, 2014).	It is considered that within 300 m of a site, there is a concern for contamination. Therefore an environmental receptor or important water resource located within this area of the site will be subject to further evaluation. It is also considered that any environmental receptor located greater than 5 km away will not be a concern for evaluation. Review Conservation Authority mapping and literature including Canadian Council on Ecological Areas link: www.ccea.org.	Environmental receptors include: local, regional or provincial species of interest or significance, sensitive wetlands and fens and other aquatic environments.
0 to 300 m 300 m to 1 km 1 to 5 km > 5 km Do Not Know	0 to 300 m			
Score	3			
Are aquatic species (i.e., forage fish, invertebrates or plants) that are consumed by predatory fish or wildlife consumers, such as mammals and birds, likely to accumulate contaminants in their tissues?		PCBs can bioaccummulate and are documented on the site (AECOM, 2014).	Bioaccumulation of food items is possible if: 1) The Log(Kow) of the contaminant is greater than 4 (as per the chemical characteristics work sheet) and concentrations in sediments exceed the CCME ISQGs. 2) The contaminant in collected tissue samples exceeds the CCME tissue quality guidelines.	
Yes No				

CCME National Classification System (2008, 2010 v 1.2)

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

CAM-C, Matheson Point, Nunavut

Definition	Score	Rationale for Score (document any assumptions, reports, or site-specific information; provide references)	Method Of Evaluation	Notes
Do Not Know	Yes			
Score	1			
Raw Aquatic Total Potential	7.5	Note if a "Known" Ecological Effects score is provided, the "Potential" score is disallowed.		
Allowed Aquatic Total Potential	---			
4. Ecological Exposure Modifying Factors				
a) Known occurrence of a species at risk.		The site is located in the wilderness and is a habitat for species of special concern (i.e. barren ground caribou and polar bears) under Committee on the Status of Endangered Wildlife in Canada (COSEWIC).	Consult any ecological risk assessment reports. If information is not present, utilize on-line databases such as Eco Explorer. Regional, Provincial (Environment Ministries), or Federal staff (Fisheries and Oceans or Environment Canada) should be able to provide some guidance.	Species at risk include those that are extirpated, endangered, threatened, or of special concern. For a list of species at risk, consult Schedule 1 of the federal Species at Risk Act (http://www.sararegistry.gc.ca/species/schedules_e.cfm?id=1). Many provincial governments may also provide regionally applicable lists of species at risk. For example, in British Columbia, consult: BCMWLAP. 2005. Endangered Species and Ecosystems in British Columbia. Provincial red and blue lists. Ministry of Sustainable Resource Management and Water, Land and Air Protection. http://srmwww.gov.bc.ca/atrisk/red-blue.htm
Is there a potential for a species at risk to be present at the site?				
Yes				
No				
Do Not Know	Yes			
Score	2			
	---			
b) Potential impact of aesthetics (e.g., enrichment of a lake or tainting of food flavor).				
Is there evidence of aesthetic impact to receiving water bodies?	No		Documentation may consist of environmental investigation reports, press articles, petitions or other records.	This Item will require some level of documentation by user, including contact names, addresses, phone numbers, e-mail addresses. Evidence of changes must be documented, please attach copy of report containing relevant information.
Yes				
No	0			
Do Not Know	---			
Is there evidence of olfactory impact (i.e., unpleasant smell)?	Yes		Examples of olfactory change can include the smell of a COPC or an increase in the rate of decay in an aquatic habitat.	
Yes		In some areas, the soil has a hydrocarbon odor. (AECOM, 2014)		
No	2			
Do Not Know	---			
Is there evidence of increase in plant growth in the lake or water body?	No	No evidence of plant growth noted in any water body; windy at time of site visit (AECOM, 2014).	A distinct increase of plant growth in an aquatic environment may suggest enrichment. Nutrients e.g., nitrogen or phosphorous releases to an aquatic body can act as a fertilizer.	
Yes				
No	0			
Do Not Know	---			
Is there evidence that fish or meat taken from or adjacent to the site smells or tastes different?	Do Not Know	No samples obtained.	Some contaminants can result in a distinctive change in the way food gathered from the site tastes or smells.	
Yes	---			
No	1			
Do Not Know				
Ecological Modifying Factors Total - Known	**4**			
Ecological Modifying Factors Total - Potential	**1**			
Raw Ecological Total - Known	16			
Raw Ecological Total - Potential	1			
Raw Ecological Total	17			
Ecological Total (Max 18)	**17.0**			
5. Other Potential Contaminant Receptors				
a) Exposure of permafrost (leading to erosion and structural concerns)		Permafrost encountered between 1-1.3 mBGS (AECOM, 2014).		Plants and lichens provide a natural insulating layer which will help prevent thawing of the permafrost during the summer. Plants and lichens may also absorb less solar radiation. Solar radiation is turned into heat which can also cause underlying permafrost to melt.
Are there improvements (roads, buildings) at the site dependant upon the permafrost for structural integrity?	Yes		Consult engineering reports, site plans or air photos of the site. When permafrost melts, the stability of the soil decreases, leading to erosion. Human structures, such as roads and/or buildings are often dependent on the stability that the permafrost provides.	
Yes				
No	4			
Do Not Know	---			
Is there a physical pathway which can transport soils released by damaged permafrost to a nearby aquatic environment?	Yes	In the event that permafrost melts, PHCs can migrate deeper and further towards the ocean.	Melting permafrost leads to a decreased stability of underlying soils. Wind or surface run-off erosion can carry soils into nearby aquatic habitats. The increased soil loadings into a river can cause an increase in total dissolved solids and a resulting decrease in aquatic habitat quality. In addition, the erosion can bring contaminants from soils to aquatic environments.	
Yes				
No	2			
Do Not Know	---			
Other Potential Receptors Total - Known	**6**			
Other Potential Receptors Total - Potential	**0**			

Exposure Total		
Raw Human Health + Ecological Total - Known	28	Only includes "Allowed potential" - if a "Known" score was supplied under a given category then the "Potential" score was not included.
Raw Human Health + Ecological Total - Potential	18	
Raw Total	46	
Exposure Total (max 34)	**34.0**	

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

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

I. Contaminant Characteristics	Known	Potential
1. Residency Media	4	2
2. Chemical Hazard	8	---
3. Contaminant Exceedance Factor	2	---
4. Contaminant Quantity	2	---
5. Modifying Factors	4	---
Raw Total Score	20	2
Raw Total Score (Known + Potential)	22	
Adjusted Total Score (Raw Total / 40 *33)	**18.2**	(max 33)

II. Migration Potential	Known	Potential
1. Groundwater Movement	12	---
2. Surface Water Movement	12	---
3. Soil	12	---
4. Vapour	---	7
5. Sediment Movement	0	---
6. Modifying Factors	0	0
Raw Total Score	36	7
Raw Total Score (Known + Potential)	43	
Adjusted Total Score (Raw Total / 64 * 33)	**22.2**	(max 33)

III. Exposure	Known	Potential
1. Human Receptors		
A. Known Impact	---	
B Potential		
a. Land Use		3
b. Accessibility		2
c. Exposure Route		
i. Direct Contact		3
ii. Inhalation		1
iii. Ingestion		8
2. Human Receptors Modifying Factors	6	---
Raw Total Human Score	6	17
Raw Total Human Score (Known + Potential)	23	
Adjusted Total Human Score	22.0	(maximum 22)
3. Ecological Receptors		
A. Known Impact	12	
B. Potential		
a. Terrestrial		---
b. Aquatic		---
4. Ecological Receptors Modifying Factors	4	1
Raw Total Ecological Score	16	1
Raw Total Ecological Score (Known + Potential)	17	
Adjusted Total Ecological Score	17.0	(maximum 18)
5. Other Receptors	6	0
Total Other Receptors Score (Known + Potential)	6	
Total Exposure Score (Human + Ecological + Other)	**45.0**	
Adjusted Total Exposure Score (Total Exposure / 46 * 34)	**33.3**	(max 34)

Site Score

CAM-C, Matheson Point, Nunavut

Site Letter Grade	**C**
Certainty Percentage	**88%**
% Responses that are "Do Not Know"	**-29%**
Total NCSCS Score for site	**73.6**
Site Classification Category	**1**

Site Classification Categories*:

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

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

Appendix I

DVD of Site Features