APPENDIX B

TERMS OF REFERENCE

TERMS OF REFERENCE

FOR A
PHASE III SITE ASSESSMENT
AND WASTE AUDIT
FOR

THE FOX-C DEW LINE SITE

AT EKALUGAD FJORD, NUNAVUT

Prepared by: Environmental Services, Western Region
Public Works and Government Services Canada
June 16, 2004

1. Introduction

As the custodian of most federal lands in the North, Department of Indian Affairs and Northern Development (DIAND) has responsibility, through the Northern Contaminated Sites Program (CSP), to manage a number of contaminated properties that are no longer maintained by the original occupant. DIAND's portfolio of contaminated sites in the North originated from private sector mining, oil and gas activities and government military activity dating back over half a century, from a time long before the environmental impacts of such activities were adequately understood. CAM-F DEW Line is one of these sites.

FOX-C is located at 68°42' N, 68°33' W on the east coast of Baffin Island on the south shore of Ekalugad Fjord, 195 km south of the community of Clyde River, Nunavut. The terrain at FOX-C consists of high rugged hills cut by rock outcrop. The beaching area is located on Qarmaralik Cove, 3 km NW of the main station area. The main station area overlooks Ekalugad Fjord and is 770 m above sea level. A gravel road links the beaching area and the freshwater lake to the upper site.

The Treasury Board Secretariat, Environment Canada and other departments have developed the *Federal Contaminated Sites Accelerated Action Plan* (FCSAAP). FCSAAP is designed to accelerate the remediation of federal contaminated sites and reduce the government's associated financial liability. Treasury Board policies related to the management of federal contaminated sites will be adhered to under FCSAAP. The Secretariate will implement the *Accelerated Action Fund*, a fund created to help departments administer the FCSAAP. Remediation of CAM-F is being funded through this program.

2. Background

The site is accessible by barge. Due to the uneven terrain, an airstrip was never constructed at FOX-C. A freshwater lake has previously been used as a landing strip in the winter and a helipad is located at the upper site. Relevant site plans and photographs are attached.

The former DEW Line site was constructed in 1957 and subsequently closed and abandoned in 1963. The site has not been formally occupied since 1963. A hazardous materials removal program completed in 1985 and an assessment completed in 1994 have confirmed the presence of various hazardous materials and contaminated soil. A number of drum caches were identified. Many of the drums still contained product and were left in-place. In addition to drum caches, many drums were also strewn along the river, the road and in the bottom of the lake. Elevated PCB concentrations were noted in soil samples and paint. However, these investigations did not include assessment of hydrocarbon contamination that has the potential to be a significant source of contamination at the site.

Facilities constructed at the main operations site included a five module building train, warehouse, vehicle garage, Inuit house, three storage sheds, a POL (petroleum, oil, lubricants) drum storage area and a continuous wave tower. A gravel road was built linking the beaching area and the freshwater lake to the upper site. Due to the uneven terrain, an airstrip was never constructed at FOX-C. In the winter a freshwater lake served as a landing strip and a helipad was constructed at the upper site, to the east of the station buildings.

In 1985, a partial clean-up of the site was intiated by DIAND with assistance from Environmental Protection Branch of Environment Canada and the Department of National Defence (DND). The objective of the clean-up was to remove surface contaminants such as polycyclic biphenyls (PCBs) and POLs.

In 1993, the Environmental Sciences Group (ESG) of the Royal Roads Military College in Victoria, British Columbia, investigated FOX-C as part of an assessment of six intermediate DEW Line sites in the Eastern Arctic. The results of the 1993 program indicated areas of soil impacted by PCBs and inorganic elements (eg. copper, lead), paint containing PCBs and building materials containing asbestos. During the 1993 work the building train, warehouse and garage were still standing but had been severely weathered. The POL tanks were still in place but the road that linked the beach area and water site to the main station was severely eroded and unstable.

To effectively utilize newly available funding under the FCSAAP, DIAND required that their contaminated sites be effectively prioritized for actioning. In September 2003, SENES Consultants Limited was retained by the DIAND to undertake Screening Level Risk Assessments (SLRAs) of the potential impacts on human health from exposure to hazards at eleven mine sites and thirteen former military sites in northern Canada. The SLRAs were to provide INAC with a basis of ranking the relative risks presented by the sites, for input to a process for prioritizing reclamation funding in future years.

One of the subject sites of these SLRAs was a former DEW Line site, FOX-C. The dominant vegetation near the main station-site was restricted to mosses and lichens and the beaching area was characterized as containing a wider variety of flora including sedges, grasses and willows. Native fauna at the site included seals, caribou, Thayer's gulls, snow goose and snow buntings.

To characterize the human health risks associated with the sites, standard approaches were developed for application to mine sites and former military sites, respectively. In both cases, the risk assessments were based on maximum likely exposures to chemical, radiological (where applicable) and physical hazards. In all cases, it was assumed that people would be on the sites for some portion of the year, even though some of the sites are at remote locations. It should be noted that risk assessment does not provide a precise measure of risk due to the fact that many assumptions must typically be made.

A SLRA for human health was carried out for existing conditions at the FOX-C site for the purpose of determining whether there were contaminant levels present in the aquatic and soil environments that may have an adverse effect on humans that either use, or may potentially use the site. The assessment included the following elements, which were

proposed and readily accepted by regulatory agencies such as Environment Canada and the U.S. Environmental Protection Agency:

- receptor characterization;
- exposure assessment;
- hazard assessment; and
- risk characterization.

Measured concentrations of contaminants in soil were used in the assessment. A statistical assessment of 1993 soil data was carried out to determine the appropriate concentrations to use in the assessment.

An Ecological Risk Evaluation was also undertaken at this site, and the findings thereof included potentially unacceptable ecological risks associated with PCBs and lead levels in soils at the site. This indicates that the subject site is indeed contaminated and requires further investigation. On this basis, FOX-C was prioritized high on the list of sites to be actioned.

Public Works and Government Services Canada (PWGSC) is inviting proposals from consultants to complete a Phase III Site Investigation & Waste Audit as identified in the Scope of Work that follows.

3. Scope of Work

The scope of work for the project has been separated into individual tasks required at the site. The work will be carried out at a "remote camp". Camp services including food, accommodation, transportation, water and wastewater infrastructure, power and telecommunications (satellite phones) will be provided. Heavy equipment (small rubber-tired backhoe) will be operated by a general contractor under the direction of the consultant. Wildlife monitors, with separate monitors for each remote crew, will also be provided by a general contractor.

PWGSC will also provide copies of all relevant permits to the consultant outlining all requirements that must be complied with.

In addition to the site investigation and waste audit, other activities will be carried out at the site either concurrently or after completion of this work including barrel consolidation and crushing; geotechnical/geophysical investigations; and ecological and human health risk assessment

Task 1: Site Logistics

Equipment to be provided by consultant includes: personal sampling equipment (hand auger, shovel, barrel thiefs and barrel wrenches); sampling containers; monitoring well supplies; personal protective equipment (Tyvek suits, respirators equipped with organic gas cartridges, nitrile gloves, etc.); and personal equipment.

The following supplies will be required for the monitoring well installations:

- three wells to be 3/4" steel construction, 2 meters deep (max) with 24" drive points, 1 meter stick up without casing;
- three wells to be 1" PVC construction, 2 meters deep (max), ½ screened, ½ solid, 1 meter stick up without casing; and
- sand, bentonite and any other materials required for well installations.

The consultant will be responsible for their own transportation to Iqaluit using regular commercial aircraft. The consultant should include this cost in their proposal. PWGSC will be providing charter aircraft from Iqaluit to the site at a previously determined set time.

A Health and Safety Plan for the site will be produced by the general contractor and will be signed by all personnel at the site. The consultant shall have a Health and Safety Plan to cover their specific activities that will be submitted to the contractor for approval.

For purposes of developing the project budget, the consultant should determine laboratory analytical costs and include these in a separate section of the cost part of the proposal. However, PWGSC will be paying these invoices directly using our own laboratory standing offers. The names of laboratories that are on PWGSC standing offer will be provided to the consultant upon award of contract.

Task 2: Delineation of Contaminated & Potentially Contaminated Areas

Previous studies identified a number of areas impacted by heavy metals and Petroleum Hydrocarbons (PHC's). Although no concerns were identified for other parameters, a limited number of samples will also be analyzed for PAH's. In general, during the previous programs, impacted areas were delineated laterally but not vertically.

Note that the DEW Line Protocol was used previously to laterally delineate the impacted areas, however, INAC has not determined to date what clean up criteria will be used at this site. Therefore, the consultant will be expected to delineate all impacted areas both laterally and vertically using the most stringent applicable criteria (see Table 1 below).

Table 1: Ekalugad Fjord Assessment Criteria

Assessment Comparison Criteria Inorganic and Organic Compounds in Soil			
Parameter	**Tier I DCC DEW Line Cleanup Criteria (ppm)**	**Tier II DCC DEW Line Cleanup Criteria (ppm)**	**CCME CEQG for Residential/Parkland Land Use (ppm)**
Inorganic Parameters			
Arsenic	N.G.	30	12
Cadmium	N.G.	5.0	10
Chromium	N.G.	250	64
Cobalt	N.G.	50	50
Copper	N.G.	100	63
Lead	200	500	140

Mercury	N.G.	2.0	6.6
Nickel	N.G.	100	50
Zinc	N.G.	500	200
Organic Parameters			
Benzene	N.G.	N.G.	0.5
Ethylbenzene	N.G.	N.G.	1.2
Toluene	N.G.	N.G.	0.8
Xylenes	N.G.	N.G.	1.0
PHC Fraction F1	N.G.	N.G.	N.A.
PHC Fraction F2	N.G.	N.G.	N.A.
PHC Fraction F3	N.G.	N.G.	N.A.
PHC Fraction F4	N.G.	N.G.	N.A.
PCBs	1.0	5.0	1.3
Notes: N.G. – No guideline limit established N.A. – Specific guideline concentration will be based on the type of soil and depth of the sample.			

Specific areas that must be delineated include:
Three discrete areas adjacent to the module train;
Two sediment locations in adjacent river & Water Lake;
One area below outfall;
Areas surrounding (two) upper dump sites;
Areas surrounding both upper site bulk fuel tank locations;
Area surrounding lower site bulk fuel tanks;
Beach area soils (for PHC's only);
Two areas surrounding large debris piles (for PHC's only); and
One location (soils) near Water Lake.

This list of sites is not exhaustive and allowances should also be made to sample other locations not previously sampled. should also be made to sample other locations not previously sampled. For the purposes of evaulating proposals, it should be assumed that 45 test pits will be advanced; 20 soil samples will be submitted to the laboratory for analysis of PCB's; 30 for target heavy metals; 8 for PAH's; and 45 PHC's (BTEX & TPH in accordance with CCME CWS for PHC's). Suitable field screening techniques that will allow fewer samples to be transported to the laboratory will be considered and evaluated.

With the exception of very small (less than 2 m^2) surface stains, areas where PHC's are suspected are to be delineated. PHC's are to be delineated to the extent possible using a suitable screening methodology followed by an adequate number of samples to be submitted to a CAEAL accredited laboratory for analysis. The Canadian Council of Ministers of the Environment's (CCME's) Canada Wide Standards (CWS) for PHC will be used as the applicable criteria.

The consultant will maintain a photographic record of all contaminated soil areas and sample locations. Photos of the interior and exterior of the buildings and any debris area shall also be obtained.

Task 3: Biological Sampling

Approximately four adult sportfish are to be collected by the consultant from Water Lake and four collected from the adjacent river. Tissue samples are to be taken and submitted to the laboratory and analyzed for the presence of PCB's and target metals.

Task 4: Sampling of Building Materials

Some building materials have been sampled and analyzed for potentially hazardous components. Principle contaminants of concern are asbestos and PBC's and lead in paint. Sampling has been carried out in specific areas of the facility, however, additional sampling will be required. For the purposes of proposal submission, consultants should assume that 12 separate samples will be submitted and analyzed for asbestos, 15 for PCB's in paint and 20 for lead in paint.

Task 5: Quantification of Non-Hazardous & Hazardous Materials (Waste Audit)

Non-hazardous materials at the site are predominantly associated with building materials and debris including equipment and barrels. Hazardous materials are predominantly associated with building materials including asbestos, both packaged and remaining in use, and lead and PCB's in paint. Small volumes of hazardous materials remain in storage, particularly in the storage shed.

The consultant shall inventory the buildings and site debris in order to calculate volumes and weights of materials. Wastes types must be identified. These include concrete, corrugated cardboard, unpainted drywall, steel and wood. The consultant will use this information to prepare a detailed waste summary. For each type of material, the summary must include: % of total, volume and weight of waste, method used to estimate the volume and weights, and any relevant comments.

Task 6: Barrel Sampling

An unknown number of unopened barrels remain at site, potentially containing some product. The consultant will attempt to sample a representative number of barrels (assume 10 for purposes of completing this proposal) and characterize this waste through submission of samples to the laboratory.

The five bulk fuel tanks (2 at the lower site & 3 at the upper site) may contain product. The consultant must determine fuel and sludge volumes in both tanks.

Task 7: Co-ordination with Other Consultants

In order to successfully complete this project, there will be some requirement to liase with the geophysical/geotechnical and remedial design consultants as follows:

Geotechnical requirements:

- sample points and other site features identified during the investigation are to be surveyed by the geotechnical consultant.
- geotechnical consultant will be provided with with an estimated required granular volume in order for them to identify the necessary borrow areas. geotechnical consultant will be testpitting at the landfill areas and any

anomalies noted during the geophysical work may be meshed in with this work.

Geophysical requirements:

- the dump sites (landfills) and potentially other areas with surface disturbances will be covered by geophysical surveys prior to the site investigation. This information is to be effectively communicated to the site investigation consultant prior to initiating any intrusive work in these areas.

Design requirements:

- results of the site investigation including findings and conclusions need to be effectively communicated to the design consultant, possibly verbally prior to completion of the draft report.

Risk assessment requirements:

- results of the site investigation including findings and conclusions need to be effectively communicated to the risk assessment consultant, possibly verbally prior to completion of the draft report.

Task 8: Reporting

Report will be prepared in a standard format utilizing the following sections:
Executive Summary
Table of Contents
Introduction
Background
Findings or Discussion (including waste audit information)
Conclusions
Drawings (base drawings to be provided)
Appendices including photos and detailed NCS scoring worksheets

Note: Recommendations and remedial options sections are not required.

Deliverables

Preliminary draft	One electronic copy in Adobe Acrobat
Draft report	Eight hard copies & one electronic copy in Adobe Acrobat (with draft clearly stated on every page)
Final report	Eight hard copies & one electronic copy in Adobe Acrobat (with AutoCAD drawings)

4. Scheduling

The following scheduled milestones must be met in order to coincide with camp operations and aircraft charter dates and to fulfill PWGSC commitments to INAC:

Field Investigation	first week of August 2004
Completion of Field Investigation	third week of August 2004
Completion of Draft Reports	fourth week of September 2004
Completion of Final Reports	two weeks after receipt of client comments

The consultant must include their intended schedule in the proposal.

5. Proposal Evaluation Criteria

Consultant proposals will be evaluated using the following criteria:

Criteria	Points Awarded
Northern Experience on Similar Projects	15
Project Team Experience on Similar Projects	15
Technical Approach to Project	30
Cost	40

6. Project Management

Chris Doupe
Manager, Environmental Assessment
Environmental Services
Public Works and Government Services Canada
Phone: (780) 497-3868
Fax: (780) 497-3842

7. Reference Documents

Relevant reports will be provided to the successful consultant as follows:

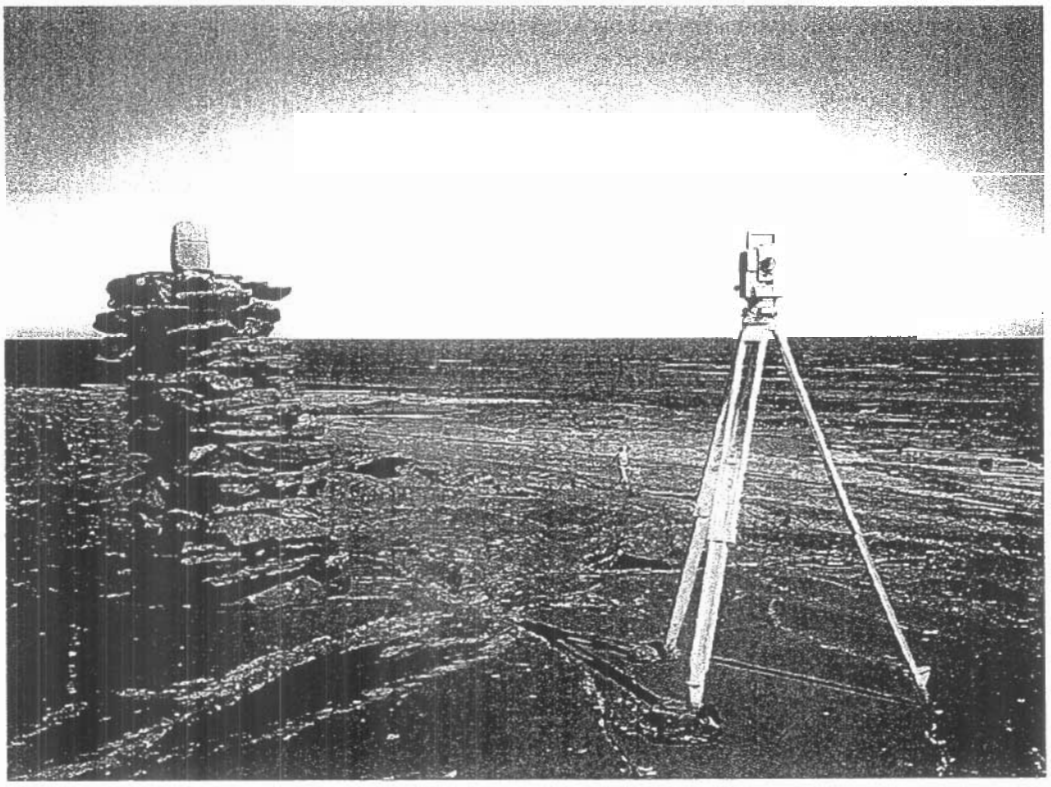
Title:	Contaminated Sites Water Monitoring Program – East Nunavut
Date:	March 2004
Author:	Gartner Lee Limited
Title:	Human Heath Risk Assessment for FOX-C Ekalugad Fjord Former Military Site
Date:	November 2003
Author:	Senes Consultants

Title:	Ecological Risk Evaluation for FOX-C Ekalugad Fjord Former Military Site
Date:	November 2003
Author:	Senes Consultants
Title:	Engineering Design (95% Submission) and Cost Estimates for the Clean Up of Ekalugad Fjord (FOX-C): Intermediate DEW Line Site
Date:	March 2001 (Revised October 2001)
Author:	Sinanni Inc. and Qikiqtaaluk Corporation
Title:	I – Site Risk Assessment Final Report Volume 1 of 2
Date:	June 1998
Author:	Gartner Lee Limited with Cantox Inc.
Title:	Environmental Study of Abandoned DEW Line Sites: II. Six Intermediate Sites in the Eastern Arctic
Date:	March 1994
Author:	Royal Roads Military College – Environmental Sciences Group

APPENDIX C

EARTH TECH SITE SPECIFIC HEALTH AND SAFETY PLAN

SITE SPECIFIC
HEALTH AND SAFETY PLAN
FOR EARTH TECH OPERATIONS
(Supplemental to Contractors General H/S Plan)
FOX-C DEW LINE SITE, ENVIRONMENTAL SITE INVESTIGATION
EKALUGAD FJORD, NUNAVUT
AUGUST 16TH TO AUGUST 26th, 2004



Prepared For: Public Works and Government Services Canada
Environmental Services Western Region
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TABLE OF CONTENTS

1.0 INTRODUCTION AND BACKGROUND

Public Works and Government Services Canada (PWGSC), Environmental Services division has been retained by INAC to continue site additional site investigations and clean up activities located at the former FOX-C DEW Line site located on the shore of Ekalugad Fjord, Nunavut.

In order to develop a remedial plan for the CAMF site, PWGSC is required to complete further assessments at the site. The assessments include the following components:

- Geotechnical Assessment/Site Survey – assessment of volumes of types of local available borrow materials, and topographic surveys.
- Geophysical Assessment – geophysical assessment of dump sites and other disturbances.
- Phase III ESA and Waste Audit - completion of environmental investigation order to delineate areas of environmental concern as well as to determine volumes of hazardous and non hazardous waste materials.
- Risk Assessment – completion of ecological human health risk assessment based on the contaminated levels determined in the Phase III ESA program.
- Remedial Design – based on the results of all the above programs a remedial design will be completed.

The objectives of the Phase III ESA and Waste Audit portion of the project include the following:

- Quantify the volume of contaminated soil through at the site both horizontal and vertical delineation (Contaminants of concern included PCBs, petroleum hydrocarbons and metals).
- Quantify the volume of hazardous materials at the site (i.e. asbestos, paint with PCBs/lead).
- Quantify the volume of non-hazardous materials at the site.
- Quantify and identify the volume of liquid waste located in barrels and tanks.

1.1 Technical Approach

One of the main goals of the Phase III ESA is to complete the delineation of subsurface contamination horizontally, as well as vertically, in all areas of environmental concern. It is understood that previous studies have identified areas with heavy metals and hydrocarbons and that in general the delineation was achieved horizontally but not vertically. Therefore the intent of this investigation is to fill in the data gaps. The delineation work will be completed comparing the analytical data to the most stringent applicable remediation criteria for each parameter in question (Tier I and Tier II DCC Clean up Criteria and CCME Residential/Parkland).

Due to the remote nature of the site, the proposed work plan and sampling program is designed to try to accomplish full contaminant delineation during one site visit. In addition to meeting the technical requirements of this assignment, it is recognized that

detailed logistical planning and preparation are required to carrying out the work in an efficient and cost effective manner while up keeping the highest level of safety and awareness.

1.2 Site Logistics/Health and Safety

It is understood that the work base will be a General Contractor operated camp. Camp services will include food, accommodations, transportation, water, wastewater, and power. PWGSC will provide all necessary charter flights to/from Hall Beach. A small rubber tired backhoe will also be onsite and available for subsurface investigation work.

It is understood that the General Contractor will be producing a Health and Safety Plan. This plan will need to be signed by all personnel at the site.

The Earth Tech team will travel to Hall Beach via regularly scheduled aircraft in order to meet the previously determined PWGSC schedule time for the charter flight to the CAM F site. The Earth Tech field equipment and sampling supplies will be sent to Hall Beach via air cargo prior to the field team leaving Edmonton. It is understood that Earth Tech will supply all field equipment and supplies for this project. Earth Tech employees are fully trained in all operations their field equipment including workplace ergonomics, and awareness of repetitive stress injuries.

Upon arrival at the site, Earth Tech will complete the following items prior to commencing with the items listed in the Phase III ESA/ Waste Audit work plan:

- Meet with the General Contractor and get site and safety orientations; discuss Health and Safety Plan, Earth Tech work plan, equipment usage schedule.
- During the completion of the field activities, Earth Tech will inspect all study areas of the site to identify all potential risks/hazards to human health (structurally unsafe buildings, open excavations, tripping hazards, broken glass, rebar, chemical hazards, explosive hazards etc)
- Mark, sign and label all hazards upon identification.
- Locate previously investigated areas of environmental concern

2.0 BACKGROUND DATA

2.1 Location

FOX-C is located on Melville Peninsula between Foxe Basin and Committee Bay (68°33' N, 83 °19' W); 85km west of Hall Beach and 100km southwest of Igloolik. FOX-C (at Ekalugad Fjord) was reserved for use as an Intermediate DEW Line site from 1956 to 1963. The station was constructed in 1957 and the site was closed and abandoned in 1963. The site was converted to a scientific research station in 1977 under the auspices of the Science Institute of the Northwest Territories and DIAND.

2.2 Scope of Work

The scope of work for the project has been separated into individual tasks required at the site. The work will be carried out at a "remote camp". In addition to the site

investigation and waste audit, other activities will be carried out at the site either concurrently or after completion of this work including barrel consolidation and crushing; geotechnical/geophysical investigations; and ecological and human health risk assessment. Specific Standard Operating Procedures (SOP), for tasks that may undertaken during the course of site activities, are included in the appendices of this plan.

Task 1: Site Logistics

PWGSC will be providing charter aircraft from Hall Beach to the site at a previously determined set time. From Hall Beach, personnel are to be transported via fixed wing aircraft to the site. All aircraft safety precautions will be adhered to as per the carrier's guidelines and Transport Canada Regulations.

Task 2: Delineation of Contaminated & Potentially Contaminated Areas

In general, during the previous programs, impacted areas were delineated laterally but not vertically. Therefore, Earth Tech will be expected to delineate all impacted areas. Specific areas that must be delineated include:

- Sediments in Ekalugad Fjord at point nearest to the construction camp;
- Station proximity soils in nine discrete areas (areas adjacent to four module train exterior staircases, a drainage area northwest of the module train, stained area at the station pad, stained area at the warehouse bay door, below transformer casing at north end of garage, stained area on south side of garage);
- Soils beneath the sewage outfall;
- Soils at a stained area and vehicle pile south of the Station;
- Soils at Dumps A & B;
- Soils at two locations adjacent to drum storage area; and
- Soils at one location in construction camp area.

This list of sites is not exhaustive and allowances will also be made to sample other locations not previously sampled. The estimated number of test pits is assumed to be approximately 50. Earth Tech will sample these locations with the means available (i.e. sediment sampler, hand auger, backhoe, etc.) and a specific safety review will be carried with the operator and/or other team members prior to commencing the work.

Task 3: Biological Sampling

Approximately five adult sportfish are to be collected by Earth Tech from Ekalugad Fjord and five collected from Hall Lake near the effluent of Kingora River. Tissue samples are to be taken and submitted to the laboratory and analyzed for the presence of PCB's and target metals. This will be completed by gill nets, rod and tackle, and the assistance of the local labours familiar with the area. Earth Tech will complete this by following the necessary precautions required when working near water (i.e. life preservers, land lines, hypothermia awareness, boat safety, etc.)

Task 4: Sampling of Building Materials

Some building materials have been sampled and analyzed for potentially hazardous components. Principle contaminants of concern are asbestos and PCB's and lead in paint. Much of the asbestos has been removed and is currently stored in bags in the quonset hut. Sampling has been carried out in specific areas of the facility, however, additional sampling will be required. It is assumed that 15 separate samples will be submitted and analyzed for asbestos, 20 for PCB's in paint and 20 for lead in paint. These hazardous material samples will be retrieved under OSHA, NIOSH, and EPA sampling protocol and guidelines (e.g. Adequately-wet NIOSH guideline for sampling asbestos.) Level C PPE will be dawned where and when required.

Task 5: Quantification of Non-Hazardous & Hazardous Materials (Waste Audit)

Non-hazardous materials at the site are predominantly associated with building materials and debris including equipment and barrels. Hazardous materials are predominantly associated with building materials including asbestos, both packaged and remaining in use, and lead and PCB's in paint. Small volumes of hazardous materials remain in storage, particularly in the storage shed. Earth Tech will inventory the buildings and site debris in order to calculate volumes and weights of materials. Personnel will be cognizant of sharp objects, slippery and unstable surfaces. At no time will personnel climb, or place themselves beneath waste piles for investigation purposes

Task 6: Barrel Sampling

An unknown number of unopened barrels remain at site, potentially containing some product. Earth Tech will attempt to sample a representative number of barrels (assume 10) and characterize this waste through submission of samples to the laboratory. (In particular, the barrels located near the airstrip that contain debris and waste.) These barrels contain partially burned debris. Earth Tech will utilize drum sampler, syringes, and laceration proof gloves to conduct this task. At least one member of the Earth Tech team will have been trained and certified to package and ship I.A.T.A. and T.D.G. regulated (Class 3 only) substances via air.

Task 7: Co-ordination with Other Consultants

All though not a physical safety item, this task is important to be aware of site operations and necessary rescue planning if needed. In general, there will be some requirement to liase with the risk assessment group, geophysical/geotechnical, and remedial design consultants. Communications with these parties will be established at the start of each working day. Earth Tech personnel will be equipped for communications on site with two-way radios, safety whistle, and emergency flares.

2.3 Training Requirements

As indicated in the TOR, only personnel having received the OSHA 40 Hour HAZWOPER training course will be allowed to handle any contaminated material.

All personal on site shall be responsible for attending a pre-job safety meeting held on site the morning of each workday. The meeting will be conducted as a daily tailgate safety meeting and an understating of each days scope of work will be established prior to commencing any activities on site. Other mid-day safety awareness and planning meeting will be held at the discretion of the onsite Earth Tech Engineer(s).

2.5 Project Personnel

Name	Position	Company	Phone
Chris Doupe Jared Buchko	Client Representative and Project Manager	P.W.G.S.C.	(780) 497-3868
Gordon Woollett	Project Manager	Earth Tech Canada	(780) 453-0710
Don Roy	Onsite Safety Officer and Team Leader	Earth Tech Canada	(780) 453-0709 Cell (780) 717-2755
Greg Wright	Project Field Scientist	Earth Tech Canada	(780) 488-6800

2.6 Work Schedule

The proposed work outlined in this health and safety plan is scheduled for August 8, 2004 to August 18th, 2004 and will be completed during daylight hours.

2.7 Project Roles

Projects of this nature often require the input and participation of several different types of professionals. The paragraph below briefly outlines the roles of each participant for the investigation and closure of each site.

Indian and Northern Affairs Canada (INAC)

Client.

Public Works and Government Services Canada (PWGSC)

Clients project managing body responsible for contracts with consultant and other parties involved with project. Liaison for project staff and client.

Earth Tech Canada Inc.

Project environmental investigation consultant. Responsible for project design, sampling, laboratory analyses, liaison with PWGSC.

3.0 SITE CHARACTERISTICS

3.1 General

(See Section 2.1)

3.2 Access

Plans to access the site with the least amount of damage and disturbance will be implemented. Site access will be via fixed wing aircraft.

3.3 Topography

The sit is situated on the Canadian Shield with sandy gravel deposits throughout. The main site is approximately 220 m above mean sea level and is comprised of gently slopes and drainage valleys.

3.4 Site Plans

A site plan is included with the appendices.

4.0 GENERAL HAZARDS

General site hazards have been identified as:

- Tripping, slipping, or stumbling on uneven or slippery/frozen terrain.
- Cold stress and weather conditions that may cause dehydration or wind burn.
- Loss of traction under wet driving/walking conditions.
- Lifting hazards during any site clearing activities.
- Noise and vibration hazards.
- Eye irritants or projectiles caused by wind.
- Working near wildlife.
- Contact with sharp or jagged objects while soil sampling off augers.
- Destructive sampling hazardous material assessment.

5.0 PROJECT SPECIFIC HAZARDS

5.1 Level of Safety

The investigation of possible subsurface contaminants presents specific safety precautions that must be adhered to.

Potential exposure pathways of chemical exposure these contaminants on site are primarily through dermal exposure and inhalation, and secondly through ingestion exposure.

All personal working are handling potentially hazardous substances shall be required to dawn a minimal of OSHA/NIOSH Level C Personal Protective Equipment (PPE). Level C PPE consists of:

- **Hard Hat**
- **Hearing protection where appropriate (e.g. concrete breaking with hydraulic hammer)**
- **Safety Glasses**
- **Steel Toed Boots**