APPENDIX 3:

BEAR ISLAND
EXECUTIVE SUMMARY (ENGLISH)

EXECUTIVE SUMMARY

1. PROJECT BACKGROUND & LOCATION

The Government of Canada has initiated the Federal Contaminated Sites Action Plan (FCSAP) to clean up federally owned contaminated sites and to address the environmental liabilities associated with each site. The FCSAP program provides funding for the remediation of contaminated sites posing risks to human health and/or the environment. Indian and Northern Affairs Canada (INAC) has applied for, and secured, funds under this program for the investigation and remediation of two abandoned Mid-Canada Line Radar Stations (Sites 412 and 413) located on Bear Island (54°20'N, 81°05'W) in the central northern portion of James Bay, Nunavut. Bear Island is approximately 160 km northwest of Chisasibi, Quebec and 300 km south of Sanikiluaq, Nunavut. Site maps and drawings are included in this submission (See Appendix B, C and E).

Bear Island is approximately 5 km long, north to south, by 1.5 km wide. It is a low lying black basalt outcrop, covered with small lakes and ponds, which were created by glacial scouring. Typical plants found in this region include ground cover of dwarf birch, willow, cotton grass, lichen and moss. Seabird activity and bear and fox evidence was noted in the 1995 investigation. The wildlife typically found in this region includes black and polar bears, wolf, red fox, snowshoe hare, raven, osprey, shorebirds, seabirds, waterfowl, seal, walrus and whale.

The two Doppler radar stations operated on Bear Island from the 1950s to 1965 as part of the former Mid-Canada Early Warning Line. They were abandoned in 1965 without any cleanup operations although the majority of the buildings were removed to their foundations. The environmental issues at Bear Island include former landfills and site buildings, as well as abandoned hazardous materials (lead acid batteries, petroleum products, asbestos), barrels and scrap metal.

At Site 413 there is a toppled radar tower and only the building foundation and most of the floor remains. The petroleum, oils and lubricants (POL) tanks have been removed but some piping is still present. The buildings appear to have been equipped with sanitary toilet systems, where the waste was discharged into a deep tank under the building. A partially covered landfill and a surface dump are present at the site, northeast of Site 412. In addition, there is a 3,300 m long pipeline and 2,850 m long electrical cable, which runs through the sites and physical debris is scattered throughout the island. A 1,500 m airstrip (abandoned) is located on the west side of the island, between the two stations; the roads between the two sites are connected via the airstrip. There is a beaching area on the east side of the island in a natural bay, approximately 1 km north of Site 412 and connected to the site by road. The beach area is believed to be where supplies were unloaded for the island and consists of a storage and hut area with a POL site to the south. There is very little of the POL site remaining with the exception of some petroleum piping.

A preliminary environmental assessment of Bear Island was conducted in 1995 by the Environmental Sciences Group (ESG) of Royal Roads Military College. Surface soil, vegetation and water samples, were collected, from various locations on the island to investigate possible contamination. Chemical contamination at Bear Island was reported to be minimal and mostly confined to localized areas. Physical debris, however, is ubiquitous and abundant.

An environmental site delineation and material inventory was completed over two days in 2001 by Earth Tech Canada, using the ESG report as a template for gathering and compiling more specific information on Bear Island. Soils contaminated with arsenic, cadmium, copper, chromium, lead, selenium and zinc were identified in a number of areas at the Main Doppler Detection Building Site 412, Barrel Cache Area, Beach Area and Northern Doppler Detection Building Site 413. Earth Tech reported an estimated 354 m^3 of soil contaminated with metals, which exceeds the CCME Environmental Soil Quality Guidelines for residential/parkland use. The volume of hydrocarbon-contamination on site, according to the Canada Wide Standards for Petroleum Hydrocarbons in Soil, is approximately 85 m^3 located around the landfill site northeast of the main site. Although PCBs were detected in a stained area at the eastern edge of the garage foundation at Site 412 and at a low area at the base of the dumpsite during the 1995 ESG assessment, the 2001 delineation analysis results reported all PCB levels were below the laboratory's detection limit. Volumes for the reported contaminated soils were calculated based on depth to the black shale bedrock as permafrost is not an issue at this site.

Debris is scattered throughout the island, although there was a neatly stacked pile at the beach. A dump is located in a small area 150 m north of Site 412 where a concentrated pile of debris is found and the toe of this dump is in a small pond which is connected to a large lake. There are approximately 4,000 barrels at the site. The Barrel Cache area has approximately 3,000 barrels stockpiled on the ground surface in an area halfway between Site 412 and the Beaching area. There is approximately 1,000 m^3 of non-hazardous debris that can be landfilled on site. An estimated 35 m^3 of hazardous materials such as batteries, various liquid products in barrels, asbestos board and lead sheathing were also identified and inventoried. Only one landfill was identified during the 1995 and 2001 assessments, located near the stack of barrels halfway between Site 412 and the beaching area. No detectable concentrations of PCBs or inorganic elements were detected in the landfill area besides the reported hydrocarbon soil contamination.

INAC augmented the work carried out in previous years with a detailed site investigation in the summer of 2007. At the same time, a geotechnical investigation was completed to identify suitable borrow source material and potential locations for non hazardous landfills. An archaeological assessment was also completed to identify areas of potential cultural or historical significance.

Based on the results of these investigations, as well as information gathered during the public consultation process, INAC has finalized the Bear Island Mid-Canada Line Radar Station Remedial Action Plan (RAP) in accordance with the *Abandoned Military Sites Remediation Protocol* and proposes initiating this work in the summer of 2009.

2. PROJECT ACTIVITIES & SCHEDULE

Site investigation and site characterization phases were completed in the summer of 2007. A Remedial Action Plan (RAP) for the proposed activities was prepared and is included in this submission package. Project work is to be started in the summer 2009 with the mobilization of equipment to the site via sealift/barge. A detailed project schedule is also included in this submission (see Appendix G).

All existing site infrastructure will be demolished and the material will be segregated into hazardous and non hazardous waste streams. Hazardous wastes will be packaged and transported south for disposal. Non hazardous building debris and other non hazardous wastes identified at the site will be put into the on-site non hazardous landfill that will be constructed as part of the clean up activities.

Waste consolidation activities will be primarily focused on the removal of contaminated soils and surface debris. There are also small amounts of POL fluids, lead paint/cables, batteries, and asbestos to remediate. The soils are contaminated with hydrocarbons and some metals.

Barrels can be found throughout the site; these will be handled and disposed of in accordance with the INAC *DEW Line Barrel Protocol*. The barrels assessed during the site investigation were empty but it is anticipated that some containing product may be found. Subsurface soil conditions below the barrels will be determined following their removal. All barrels will be consolidated, crushed and buried at the site.

INAC formally adopted the *Abandoned Military Sites Remediation Protocol* for use at all INAC controlled military sites in the north in March of 2005. This document identifies how INAC will handle most aspects of the site clean up including cleanup criteria, landfill establishment and closure, hazardous materials and wastes handling and disposal, barrel protocol, building demolition and disposal, borrow source development and final site reclamation. Site Specific Risk Assessments (SSRAs) will be used to augment CCME and other previously identified criteria where criteria are not available for the contaminant(s) of concern, based on site-specific issues.

A temporary camp and associated sewage treatment lagoons will be constructed. This facility will allow for a maximum of 50 personnel to reside on site for the duration of the construction season, which is anticipated to take up to 90 days during the 2009 and 2010 field seasons. Following the proposed site remediation work the temporary camp will be demobilized.

Personnel will normally be mobilized to site by air using the on-site airstrip. At completion of the project in 2010, the site surface will be restored based on the detailed remediation work plan that is also included in this submission.

3. SOCIAL IMPACT OF THE PROJECT

Wherever possible, the project has adopted solutions tailored to the northern environment and its inhabitants by using local knowledge and including the unique needs of northerners and their environments in the remediation work plan.

Consultations were completed during the Phase III Environmental Site Assessment and are presented in the final report (see Appendix E). In addition, community consultations with the Hamlet Council, Hunters and Trappers Organization and community residents were completed in February 2008 in Chisasibi, Quebec. The results of the assessment and the various remediation options being considered for the site were presented. These meetings were used to solicit input as to the community's preferred remedial option. Please see attached public consultation records appended to the Bear Island Mid-Canada Line Radar Station Remedial Action Plan (Appendix B) for additional details. The community presentations were used to complete the following objectives:

- To share information on the project with the community;
- To hear site-specific concerns from local people who are familiar with current conditions at the site or were familiar with on-site activities during facility operation;
- To identify the issues and concerns the communities had with the site and the proposed work;
- To identify resources (labour and equipment) in the community that would be able to assist in the execution of the project; and
- To develop a better remediation plan.