DEPARTMENT OF NATIONAL DEFENCE
SPECIFICATIONS FOR THE CLEAN UP OF THE
FOX-5 Broughton Island
DEW LINE SITE

ENVIRONMENTAL PROTECTION PLAN
DRAFT

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1.0 INTRODUCTION

1.1 SCOPE AND OBJECTIVES

.1 This Environmental Protection Plan (EPP) has been prepared to detail mitigative measures for potential environmental impacts associated with the construction and clean up activities at the FOX-5, Broughton Island site as identified during the Environmental Screening Process. Environmental Screenings are a formal part of the Federal Environmental Assessment and Review Process (EARP). These screenings and all available environmental and engineering information were used to prepare this EPP. Although the *Canadian Environmental Assessment Act* is now in effect, this project was initiated under EARP and is subject to the requirements of that process.

.2 The EPP is to be implemented by the Contractor through appropriate actions and the application of contingency plans. The EPP is designed to be used during clean up activities in conjunction with the Contract Drawings and Specifications. It forms part of the Contract Documents and reference to it can be found throughout the Contract Specifications.

.3 The EPP provides:

- .1 an overview of the activities involved in construction and operation of a work camp, clean up and demolition activities, and closure of those portions of the DEW Line site not required as part of the North Warning System (NWS) (Section 2.0);
- .2 an overview of the regulatory environment which includes legislation and regulations from federal and territorial authorities. It also describes the requirements of other regional agencies (Section 3.0);
- .3 a description of the general environmental protection measures required to minimize or avoid potential adverse effects (Section 4.0);
- .4 a description of protection measures required for specific valued environmental components at the FOX-5, Broughton Island site (Section 5.0);
- .5 details related to environmental inspection responsibilities and procedures (Section 6.0); and
- .6 contingency plans describing emergency actions and reporting requirements (Section 7.0).

.4 The protection measures described herein are to be implemented by the Contractor to minimize or avoid potential adverse environmental impacts. These procedures are considered appropriate for known and anticipated situations and conditions. However, should certain procedures or protection measures prove impractical, imprudent or insufficient in field situations, appropriate modifications or substitutions are to be proposed by field personnel, reviewed and approved by the Engineer in consultation with regulatory officials.

.6 In 1998, A Cooperation Agreement (Environmental Provisions) between DND and Nunavut Tunngavik Incorporated (NTI) was signed, which specifically relates to the cooperation between DND and the Nunavutmiut for the restoration and clean up of the DEW Line sites, and related activities occurring at sites located within Nunavut.

.7 Specific to the FOX-5, Broughton Island Site, the primary cleanup requirements are as follows:

- demolition and disposal of infrastructure no longer required for the operation of the NWS SRR site;
- excavation and disposal of contaminated soils;
- collection and disposal of debris;
- closure of one existing landfill;
- excavation of one existing landfill;
- development of one new landfill for the disposal of non-hazardous site and demolition wastes from the cleanup of the FOX-5;
- development and operation of a hydrocarbon contaminated soil treatment area **(to be confirmed)**
- development of a new landfill for the disposal of all DCC Tier II soils; and
- development of a new landfill to the disposal of demolition debris containing PCB amended paint **(to be confirmed).**

2.2 PROJECT ACTIVITIES

.1 The clean up activities at FOX-5 are based on the DEW Line Clean Up Protocol outlined in the DND-NTI Cooperation Agreement, which targets contaminated soil, landfills, demolition and exposed debris for cleanup. The following sections describe the major activities to be performed in the clean up of the FOX-5 site. Detailed requirements are described in the Contract Specifications and Drawings. It is intended that the EPP be read in conjunction with these documents to determine all project requirements.

.2 The major clean up activities include the following:

- mobilization;
- establishment of a construction camp, including:
  - access and supply routes,
  - water supply,
  - waste management,
  - fuel handling and storage,
  - equipment and vehicle use, storage and maintenance;
- excavation of contaminated soil, including hydrocarbon contaminated soils;
- collection of site debris;
- collection and containerization of hazardous waste material;
- disposal of non-hazardous waste materials;

.4 Waste Management

.1 Provide waste management for all facilities operated by the Contractor.

.2 Only domestic and human waste shall be collected and disposed of in a wastewater treatment system. This excludes items such as waste oil and liquids containing hazardous material. The wastewater shall be disposed of in accordance with the wastewater discharge criteria provided in Section 01560 of the Contract Specifications.

.3 Dispose of non-hazardous solid wastes, generated as part of the operation of the construction camp, on site in the Non-Hazardous Waste Landfill.

.4 Domestic non-hazardous waste may be incinerated and disposed of as described above.

.5 Use of the Hamlet Landfill is subject to approval of the Hamlet authorities.

.5 Fuel Handling and Storage

.1 Transport fuel to the site and store in approved facilities, as described in Section 4.2, at the construction camp, storage compound or existing fuel storage facilities, if available.

.6 Equipment and Vehicle Use, Storage and Maintenance

.1 Transport equipment and vehicles to the site, store in approved locations, use only for contracted work, and maintain as required.

.2 Limit vehicle use, other than for contracted work, to the existing road network. No recreational use of vehicles, including all terrain vehicles (ATV) is permitted off the existing road network.

.4 Excavation of Contaminated Soil

.1 For this project, the definition of contaminated soil has been established in accordance with the DEW Line Clean Up Criteria (DCC) as shown in Table 2.1. These criteria target specific inorganic elements and PCBs, and are designed to be protective of the Arctic ecosystem. Soils contaminated at levels above DCC Tier I but less than DCC Tier II criteria are to be landfill on site. Soils containing contaminants equal to or exceeding DCC Tier II criteria are to be landfilled in the DCC Tier II disposal facility.

.2 All work related to the excavation and disposal of contaminated soils is to be completed in accordance with Section 02066 of the Contract Specifications.

.6 Handling of Hazardous Waste Materials

.1 "Hazardous" waste materials are defined as follows:
Hazardous waste materials are wastes or materials that are designated as "hazardous" under Nunavut Territorial or Federal legislation; or as "dangerous goods" under the *Transportation of Dangerous Goods Act* (TDGA). The *Canadian Environmental Protection Act* (CEPA) regulates material containing PCBs at greater than fifty parts per million (ppm). Specifically identified hazardous materials include: batteries; asbestos; fuel tank bottom sludges; solvents; PCB-containing liquids; fuels and lubricating oils; alcohols and glycols; and heavy metal-contaminated liquids. Disposal requirements of these hazardous waste materials are presented in Table 2.2.

.2 Hazardous waste materials may be encountered during sorting of site and demolition debris. Collect and sort hazardous waste materials using equipment suitable for the task.

.3 If a substance is discovered that is suspected to be explosive, immediately eliminate all ignition sources in the area (including smoking, flares or flames in the immediate area). Clean up the material and dispose of only under the supervision of a permitted explosive expert. If fire or heat threatens the area of the potentially explosive material, all personnel will move to a distance of at least 1000 metres from the material. Implement the procedure outlined in the Contractor's Contingency Plan for dealing with such substances.

.4 Test any suspected radioactive material and handle, package, and dispose of all confirmed radioactive materials as outlined under the *Transportation of Dangerous Goods Act* and the *Atomic Energy Control Act*.

.5 Package hazardous waste materials in accordance with the Transportation of Dangerous Goods Regulations, as applicable.

.6 Conduct all work related to hazardous waste materials in accordance with Section 02090 of the Contract Specifications.

TABLE 2.2
HAZARDOUS WASTE MATERIAL DISPOSAL REQUIREMENTS

Hazardous Waste Material	Disposal Requirement
• batteries • heavy metal-contaminated organic liquids: • Cadmium > 2 ppm • Chromium > 10 ppm • Lead > 100 ppm • liquids containing organic compounds with chlorine concentrations > 1000 ppm • liquids containing organic compounds with PCB concentrations > 2 ppm and < 50 ppm • liquids containing organic compounds other than those described above	Off-site licensed treatment/disposal facility (by others).
• asbestos	Double bag and dispose of in on-site

.2 Consolidate surface debris, i.e. fuel barrels and scrap metal prior to closure.

.3 Install a leachate containment system, consisting of a synthetic liner system that is keyed into the underlying permafrost at the Existing Main Landfill. Place granular fill over the landfill to the minimum dimensions as indicated on the Drawings.

.4 The Airstrip landfill is to be excavated.

.10 Landfill Excavation

.1 Excavate the Airstrip Landfill at the FOX-5 site in accordance with Section 02240 of the Contract Specifications.

.2 Transport excavated material to a hazardous materials processing area. Classify debris as hazardous or non-hazardous, and dispose of in accordance with the Specifications. The Owner will analyze potentially contaminated soil for classification purposes. Handle and dispose of contaminated soil as outlined in Section 02066 of the Specifications.

.11 Landfill Development

.1 Develop a new landfill at the FOX-5 site, in the designated area on the Drawings, for the disposal of non-hazardous waste materials generated during the cleanup of the FOX-5 site.

.2 Develop a new landfill, DCC Tier II Disposal Facility, in the area designated on the Drawings, for the disposal of DC Tier II contaminated soils.

.3 Develop a new landfill, PCB Amended Painted Materials (PAP) Landfill, in the area designated on the Drawings. **[to be confirmed]**

.3 Construct the new landfills in accordance with Sections 02209, 02498 and 02499 of the Contract Specifications.

.12 Development of Granular Borrow Areas

.1 Several sources of granular borrow material are identified on the Contract Drawings. Where possible, use existing sources of borrow material during clean up. Use of alternate sources requires approval from the Engineer. After site clean up, grade all borrow areas to match surrounding contours.

3.0 REGULATORY OVERVIEW

3.1 INTRODUCTION

.1 Comply with all applicable environmental laws, regulations and requirements of Federal, Territorial, and other regional authorities, and acquire and comply with such permits, approvals and authorizations as may be required.

.2 The Contractor is subject to and must comply with those permits and approvals obtained on behalf of and by DND to conduct this work.

.3 Through all project phases, work in close cooperation with regulatory authorities and DND to ensure compliance.

3.2 FEDERAL ACTS, REGULATIONS AND GUIDELINES

.1 Several federal Acts, regulations, and guidelines affect project activities across all Canadian jurisdictions. The most relevant to the DEW Line Clean Up EPP are outlined below:

.1 *The Canadian Environmental Protection Act* regulates toxic substances from their production or import, to consumption, storage and disposal. This Act also incorporates, amongst others, the former Ocean Dumping Regulations and PCB Storage Regulations.

.2 The *Transportation of Dangerous Goods Act* and Regulations promote public safety in the transportation of dangerous goods. The Act applies to all handling, offering for transport and transporting of dangerous goods by any means of transport whether or not the goods originate from or are destined for any place or places in Canada.

.3 The *Fisheries Act* protects fish and fish habitat from pollution, negative alteration or disturbance, or impediments to fish movement. Fisheries and Oceans Canada will be given the opportunity to review permit applications or restoration plans submitted by other agencies.

.4 The *Arctic Waters Pollution Prevention Act and Regulations* govern development and shipping activity in Arctic waters adjacent to the mainland and islands of the Canadian Arctic, to ensure the continuing welfare of the residents of the areas, and to protect the ecological balance in water, ice and land areas.

.5 The *Migratory Birds Convention Act* provides for the protection of designated migratory species, including birds of prey, their habitats, and the regulated harvest of certain species.

.6 The *Canada Wildlife Act* provides for the involvement of the Government of Canada in cooperative research and management programs involving wildlife species normally the responsibility of provinces or territories. This is particularly relevant to rare and endangered species or species such as caribou which seasonally move across various regulatory boundaries.

.15 National Fire Code (NFC) establishes the standard for fire prevention, fire fighting and life safety in buildings in use, including standards for the conduct of activities causing fire hazards, maintenance of fire safety equipment and egress facilities, standards for fire extinguishers, etc. In addition, the NFC establishes the standard for prevention, containment and fighting of fires originating outside buildings which may present a hazard to a nearby community, and sets the standards for the storage and handling of dangerous goods, flammable liquids and combustible liquids.

.2 The following guidelines were used as reference in the development of the DEW Line Clean Up Protocol and Contract Specifications. These guidelines are identified as reference materials only.

.1 Guidelines for Effluent Quality and Wastewater Treatment at Federal Establishments indicate the degree of treatment and effluent quality that will be applicable to all wastewater discharged from existing and proposed Federal installations.

.2 National Guidelines for the Landfilling of Hazardous Waste (CCME Report, April 1991) are to be used by regulators, designers, owners, and operators of hazardous waste facilities. They cover site selection, design, construction, closure and post-closure care, monitoring, and operation. They are intended for new, not existing facilities.

.3 Guidelines for Preparation of Hazardous Material Spill Contingency Plans identify factors that should be considered in the development of hazardous material spill contingency plans and the information that should be incorporated into a comprehensive contingency plan.

.4 Code of Good Practice on Dump Closing or Conversion to Sanitary Landfill at Federal Establishments (1977) outlines the guidelines to improve operation and properly close existing dumps. It is intended to promote a consistent approach to the clean up of existing dumps to prevent contamination of water, air and land and to ensure that the best particular control technology is used.

.5 Code of Practice for Used Oil Management in Canada describes environmentally sound options for the handling, storage, collection, transportation, recycling, reuse and disposal of used oils in Canada. It is intended to provide guidance for used oil generators and to regulatory authorities in the formulation of provincial or regional used oil management strategies.

.6 Canadian Environmental Quality Criteria for Contaminated Sites compiled by the Canadian Council of Ministers of the Environment (CCME) provide numerical limits for contaminants in soil and water intended to maintain, improve, or protect environmental quality and human health at contaminated sites. The criteria are intended to provide general technical and scientific guidance to provincial, federal, territorial and non-governmental agencies in the assessment and remediation of contaminated sites across Canada. They serve as bench marks against which to assess the degree of contamination at a site.

.9 *Safety Act*: Occupational Health Regulations outline the health and safety standards to be maintained at workplaces to ensure the health and safety of persons.

.10 Guidelines for Removal of Materials Containing Friable Asbestos outline guidelines to be used to remove friable asbestos.

3.4 TUNGAVIK FEDERATION OF NUNAVUT

Activities associated with clean up of FOX-5 in Nunavut may require the provision of Land Use Permits and Quarry Licenses if they occur outside the DND reservation as shown on the Contract Drawings. Under the terms of the permits and licenses, a variety of user fees are specified. Requirements governing access and use of Inuit owned lands are provided in the document "*Nunavut Land Claims Agreement*".

3.4 OTHER

Transportation and disposal of hazardous wastes is to be conducted by licensed waste handlers, in compliance with the appropriate legislation.

3.5 PERMITS

The Contractor involved in the site clean up process will be required to acquire and pay for all necessary permits, approvals and authorizations associated with the Contractor's site operations, and with the handling, transport and disposal of hazardous material. A partial list of these requirements is presented in Table 3.1.

TABLE 3.1
LIST OF AUTHORIZATIONS FOR SPECIFIC CLEAN UP ACTIVITIES

Authorization	Authority	Activity to Which Authorization Applies	Contact Number	Minimum Turnaround Time*
Archaeological Research Permit	Nunavut Land Claims Agreement Act, Inuit Heritage Trust	Investigation of archaeological sites, mitigation, monitoring.	(867) 979-0731	3 weeks
Authorization for Works or Undertakings Affecting Fish Habitat	Fisheries and Oceans Canada (Iqaluit)	Stream crossing, culverts, drainage, siltation and erosion control, effluent discharge.	(867) 979-8002	1 week
Transportation Permits	Transportation of Dangerous Goods Act	Shipping.		Advance notification 30 days
Transportation Permits	International Air Transport Association Dangerous Goods Regulations	Air transport.		Advance notification 30 days
Fishing Licenses	Department of Sustainable development	Recreational fishing.	Any Sustainable Development office	None
Firearms Acquisition Certificates/ Firearms Licence (course required)	RCMP	Use and storage of firearms.	Any RCMP detachment	6 weeks
Water Use and Waste Disposal Licences	Nunavut Land Claims Agreement Act, Nunavut Water Board	Water use and waste disposal	(867) 360-6338	8 weeks

4.0 GENERAL ENVIRONMENTAL PROTECTION MEASURES

4.1 GENERAL

The lands associated with the FOX-5, Broughton Island site have distinctive biophysical characteristics associated with arctic environments. Potential impacts related to the clean up of the site include degradation of the permafrost regime, disturbance of existing vegetation, uncontrolled erosion, point source contamination, and disruption of terrestrial and wildlife populations, as well as human health impacts. The procedures and requirements provided in this section are intended to be protective of these ecosystem components.

4.2 SITE OPERATIONS

.1 Construction Camp

.1 At the FOX-5 site, the Contractor will likely establish a construction camp on the site.

.2 Locate the camp site in an area with minimal vegetative ground cover. A potential construction camp site has been identified on the Construction Drawings.

.3 Locate the construction camp in an area that is as close as practical to the main area(s) of clean up and where possible, on an existing gravel pad or former borrow area.

.4 Do not impede surface drainage, and maintain a distance of at least 30 metres from the nearest water body.

.5 Avoid ice-rich substrates, where possible.

.6 Protect permafrost by construction of gravel pads and/or elevation of heated buildings on wooden supports.

.7 Avoid areas containing archaeological resources.

.8 Do not interfere with SRR activities, and comply with provisions of the Site Use Restrictions (SUR).

.2 Equipment and Vehicle Use and Maintenance

.1 Restrict vehicle and mobile equipment travel at the site to established roads, stream crossings and work pads unless specifically exempted by the Engineer. Recreational use of vehicles, including all terrain vehicles (ATVs) is NOT permitted off of the existing road network.

.2 Overland movement of equipment and vehicles is not allowed where damage to the vegetation or underlying soils may occur.

.3 Following heavy rains, vehicle and heavy equipment use outside of road and work pad areas is not permitted until the soil has drained sufficiently to prevent excessive rutting, and until authorized by the Engineer.

.10 Pre-assemble and maintain emergency spill equipment including at least two fuel pumps, empty 200 litre barrels and absorbent material sufficient to clean up a 1,000 litre spill at all permanent fuel storage sites and work camps (see Contingency Plans, Section 7.0).

.11 Remove all barrels, redundant fuel storage facilities and associated materials and equipment from the site at the conclusion of the work.

.4 Water Management

.1 The existing water supply at FOX-5 may be used as a potable water source providing such use does not adversely affect fish habitats.

.2 Treat potable water where required to protect human health. The camp water supply shall be remote from sources of contamination.

.3 Provide a standard chlorination or iodisation unit for treatment of potable water, and test potable water for bacteria as required by the appropriate public health ordinances.

.4 Obtain a Water Use Licence from the Nunavut Water Board for the development of alternative water supply sources, as required, and comply with all conditions of the licence.

.5 Water withdrawals must not endanger fish or draw down the water level so as to adversely affect fish habitat. Water withdrawal rates are not to exceed 10% of existing stream flow or 10% of total water body volume.

.6 Equip all water intake hoses with screens with a mesh size of 2.5 millimetres or less to prevent the intake of fish.

.5 Domestic Waste Management

.1 Dispose of all kitchen wastes and other non-hazardous wastes in the existing site landfills unless otherwise specified. The landfill selection is to be determined jointly by the Contractor and the Engineer. The location is not to interfere with NWS Operations.

.2 Temporarily store kitchen wastes in metal, animal-proof containers to prevent scavenging of waste by wildlife and to reduce scattering of debris.

.3 The Contractor, in consultation with the Engineer, will determine acceptable options for sewage disposal. Each construction camp shall provide at minimum primary sewage treatment, with a minimum retention time of 24 hours prior to discharge. Discharge of sewage waste water shall meet the criteria outlined in Section 01560 of the Specifications.

.4 Use of the Hamlet Sewage Lagoon is subject to the approval of the Hamlet authorities.

4.5 BORROW PIT AND QUARRY DEVELOPMENT AND OPERATION

.1 Environmental protection measures are for the purpose of minimizing the impact of development and extraction activities on surface drainage patterns, water quality, soil erosion, and in some cases, wildlife or fish.

.2 Minimize the number of borrow pits opened by using existing borrow pits, roads and building pads where feasible. Use of alternative sources is subject to the approval of the Engineer.

.3 Avoid all archaeological resources during the siting of borrow area. Comply with all terms and conditions of the Quarry Permit, including recontouring/reclaiming and site clean up prior to site abandonment.

.4 Locate borrow area at least 30 metes from the nearest water body providing potential fish habitat, and other sensitive resources. In consultation with the Engineer, mark out a 30 metre buffer zone prior to commencement of gravel quarrying operations.

.5 Strip organic overburden, if present, and stockpile separately for use in restoring the borrow area.

.6 Following excavation, recontour the area to restore natural drainage patterns and work overburden into the recontoured borrow area to prevent erosion. Provide drainage and run-off control using diversion ditches and sediment filters, as required, to prevent sediment-laden run-off from reaching water bodies.

.7 During aggregate extraction, control vehicle and equipment operations in areas adjacent to the borrow pit to minimize the extent of disturbance.

.8 Stockpile aggregate on ice-poor, well drained ground such that surface drainage is not impeded. Locate the stockpile area a minimum of 30 metres from archaeological resources, water bodies, and other sensitive resources.

.9 If archaeological features or artifacts are encountered during borrow pit operations, notify the Engineer, avoid the area of the find, and restrict activities to other areas of the pit until further instructions are received. (See Section 5.0.)

.10 Development of additional borrow areas that are not identified on site plans will be at the discretion of the Engineer and shall meet all siting criteria and permit requirements as discussed above.

4.8 HYDROCARBON CONTAMINATED SOILS

.1 The requirements for remediation of hydrocarbon contaminated soil at the FOX-5 site were developed using a risk management approach. Locations of hydrocarbon contaminated soil are indicated on the Drawings and levels of hydrocarbon contamination are provided in the Contract Specifications. Hydrocarbon contaminated soil areas designated for clean up are to be excavated and treated/ disposed of as detailed in the Contract Specifications and Drawings.

.2 Minimize disturbance to adjacent areas during excavation.

.3 Avoid spillage of material during transportation from the excavation site and the disposal/landfarm location.

.4 Following excavation of hydrocarbon contaminated soil, decontaminate excavation equipment as detailed in the Contract Specifications.

.5 A program of sampling and confirmatory testing of hydrocarbon contaminated areas will be carried out by the Owner as outlined in the Specifications.

.6 A landfarm facility for the treatment of Type B hydrocarbon contaminated soils will be constructed at the FOX-5 site.

.7 Locate the landfarm in an area with minimal vegetative ground cover. A potential landfarm site has been identified on the Construction Drawings.

.8 Locate the landfarm in an area that is as close as practical to the main areas of hydrocarbon contaminated soil excavation, and where possible, on an existing gravel pad or former borrow area.

.9 Do not impede surface drainage, and maintain a distance of at least 100 m from the nearest water body.

.10 The minimum distance between the landfarm and construction camp, Engineer office and site laboratory is 500 metres. Locate facilities accordingly.

.6 Avoid areas having overall slopes greater than 6%.

.7 Avoid areas containing archaeological resources.

.8 Do not interfere with SRR activities, and comply with provisions of the Site Use Restrictions (SUR).

.9 Construct the landfarm to the lines and dimensions as indicated on the Contract Drawings and in accordance with Section 02067 of the Specifications.

.10 Operate the landfarm in accordance with Section 02067 of the Specifications.

.2 Provide drainage controls such as diversion ditches and sediment filters to prevent runoff/leachate from reaching water bodies during excavation.

.3 Transport excavated material to the hazardous material processing area, for classification and sorting.

.4 Handle, containerize and label hazardous material in accordance with Section 02090 of the Contract Specifications.

.5 Dispose of non-hazardous debris in an on-site landfill in accordance with Section 02209 of the Contract Specifications.

.6 Handle, containerize or landfill contaminated soil as described in Section 02066 of the Contract Specifications.

.7 All workers to wear appropriate protective clothing/equipment when handling hazardous or potential hazardous materials as directed in Section 02240 of the Contract Specifications.

.8 Avoid releasing any hazardous materials or contaminated soil into the environment during the transport, handling or sorting of excavated waste materials. Invoke the emergency response plan (Section 7.0) and the appropriate action in the event of a spill or other emergency situation.

4.11 DISPOSAL OF SITE DEBRIS

.1 Collect, sort and dispose of hazardous and non-hazardous site debris in accordance with Section 02219 of the Contract Specifications.

.2 Test contents of intact barrels and dispose of as described in the Contract Specifications, Section 02090.

.3 Handle and dispose of asbestos according to the methods described in the Contract Specifications, Section 02081.

.4 Workers are to wear appropriate protective clothing when handling potentially hazardous waste material as directed in Section 02090 of the Contract Specifications.

.5 Minimize off-road activity during collection of site debris.

.6 Avoid releasing any hazardous waste materials into the environment during the handling of hazardous waste materials. Invoke the emergency response plan (Section 7.0) and take appropriate action in the event of a spill or other emergency situation.

4.15 HANDLING OF HAZARDOUS WASTE MATERIALS

.1 Treat and dispose of hazardous waste material, including hazardous barrel contents, in accordance with Section 02090 of the Contract Specifications.

.2 Store hazardous and non-hazardous waste materials in accordance with Section 02090 of the Contract Specifications. Ensure each storage area is separated from the nearest water body by a 30 metre buffer zone; at beach storage areas consideration must be given to the reach of sea ice and storm tides.

.3 Packaging

.1 The *Transportation of Dangerous Goods Act* (TDGA) Dangerous Goods Regulations govern the packaging and shipment of hazardous goods within Canada. If shipping out of Canada, Canadian regulations and regulations of the destination country both apply. Requirements of the International Marine Dangerous Goods Code (IMDGC) must be addressed in international waters (e.g. near Greenland).

.2 Any material classified as hazardous by the TDGA must be accompanied by the appropriate TDG shipping documents. The documents are to state the shipper, the receiver and all carriers involved in the transport of the shipment. Non-hazardous materials are also to be accompanied by a document indicating ownership and responsibility of the receiver.

.3 Package all hazardous material in accordance with the Transportation of Dangerous Goods Regulations.

.4 For TDG classification 9.3, dangerous goods in quantities larger than 5 kilograms or 5 litres, and for wastes that contain more than 500 grams of PCB mixture (a mixture with PCB concentration >50 ppm), the following procedures apply:

.1 Complete a waste manifest for each shipment, specifying a unique reference number and DND's waste generator number, to accompany the shipment to the final destination. The Department of Sustainable Development administers the manifesting system in Nunavut and is responsible for issuing the generator numbers.

.2 Document on the manifest the origin and destination of the shipment.

.3 All manifests are to be reviewed and signed by the Engineer prior to submission.

.5 Test any waste of unknown TDGA hazard to determine whether any transport hazard exists according to the regulations. Package any substance that is considered hazardous under the TDGA in accordance with the regulations and the national standard Performance Packaging for Transportation of Dangerous Goods. The TDGA regulations specify the packaging requirements for dangerous or hazardous goods according to risk.

TABLE 4.1
TDGA CLASSIFICATION AND PACKAGING REQUIREMENTS FOR SPECIFIC SUBSTANCES

Substance	Class/Packing Group	Packaging/Shipping Criteria
Miscellaneous Degreasing Solvents, Waste Type 1 (TDG)	6.1 II - a poisonous liquid waste with a medium risk for this class.	- cargo vehicle or vessel only. - should be packaged in sealed, leak-proof containers for ground transport.
Batteries, Wet, Acid Filled[6] (TDG)	8 III - corrosive substances contained in equipment or part of an item are considered low risk (Packing Group III).	- should be packaged in sealed, leak-proof containers for ground transport, or air transport.
Compressed Gases: i) Flammable Gases (TDG)	2.1 X - any pressurized or liquified gas which is ignitable at normal atmospheric pressure when in a mixture of 13% or less in air by volume.	- any compressed gas should be contained in cylinders according to the standards in the CSA document Cylinders, Spheres, and Tubes for the Transportation of Dangerous Goods.
ii) Non-Flammable, Non-Poisonous, Non-Corrosive Gases (TDG)	2.2 X - any pressurized or liquified gas which does not meet the criteria of divisions 2.1, 2.2 or 2.4.	
iii) Poison Gas (TDG)	2.3 X - any pressurized or liquified gas that has an LC50 value less than 5,000 mL/m^3 at normal atmospheric pressure by reason of toxicity.	
iv) Corrosive Gases (TDG)	2.4 X - any pressurized or liquified gas that has an LC50 value less than 5,000 mL/m^3 at normal atmospheric pressure by reason of corrosion effects on the tissues of the respiratory tract.	
Radioactive Material, N.O.S. (TDG)	7 X - any product, substance or article with activity greater than 74 kBq/kg.	- must be packaged and handled according to the Transport Packaging of Radioactive Materials Regulations.

Note:

1. Standard documentation applies for all of the above, except any item with "waste" in the name must have a waste manifest as well as a standard shipping document. (Ground and sea transport only.)
2. Special notification is needed for any PCB mixture transport.
3. These items may be shipped by a licensed TDG shipper only.
5. Packing Group X indicates special packaging required.
6. Wet acid filled batteries can be transported as described or alternatively they can be neutralized. Neutralization would make the batteries a "waste" under TDG and would require them to be manifested.

5.0 PROTECTION MEASURES FOR VALUED ENVIRONMENTAL COMPONENTS

5.1 GENERAL

.1 This section describes the required protection measures for the valued environmental components identified at the FOX-5, Broughton Island site. Comply with all requirements described in this section.

5.2 HUMAN HEALTH AND SAFETY

.1 Potential hazards to human health and safety are present at the FOX-5 site in the form of hazardous materials and contaminated soil, hazardous local terrain and unpredictable weather conditions. Hazardous material and contaminated soil have the potential to enter water bodies and the food chain, and thereby affect vegetation, fish, wildlife and the health of people who travel, hunt and fish in these areas. Contaminated soil is to be excavated and disposed of in accordance with Section 02066 of the Contract Specifications. Site debris may present a physical hazard to people traveling through these locations. All surface debris scattered throughout the site is to be collected and disposed of in accordance with Section 02219 of the Contract Specifications and Drawings.

.2 Take all necessary precautions when handling and transporting hazardous materials and contaminated soil to ensure that the materials do not come into contact with site personnel or local residents. Site workers shall wear protective clothing as directed in Section 02090 of the Contract Specifications when handling hazardous materials.

.3 All site personnel working on or in the vicinity of clean up operations must be trained in, made aware of, and adhere to the requirements of the Workplace Hazardous Materials Information System (WHMIS) program.

.4 Outdoor recreation activities of site personnel have the potential to adversely affect nearby fish, wildlife and heritage resources. Subject to camp rules, terms of the Land Use Permit and the requirements of territorial fishing licenses and regulations, staff may be permitted to leave the site for recreational purposes. However, recreational use of vehicles, including ATV's, is NOT permitted off of the existing road network. Normal precautions for Arctic travel include: provision for rapidly changing weather conditions; tactics for possible bear and other wildlife encounters; filing a trip plan; first aid kit, survival kit and insect repellant.

5.5 AESTHETIC VALUE

.1 It is anticipated that the clean up activities will have an overall positive effect on the aesthetic value of the FOX-5 site in that redundant buildings and structures will be demolished, and all disturbed areas (landfills, debris piles, sewage outfalls and borrow pits) will be restored as closely as possible to their original appearance. Construction personnel are to ensure that their activities do not contribute to any additional degradation of the local environment.

5.6 SURFACE WATER AND FISH HABITAT

.1 The following applies to work adjacent to waterways:

.1 Prevent siltation of water bodies supporting fish by the use of berms or silt fences as required, and by minimizing activities adjacent to watercourses.
.2 Do NOT operate equipment in waterways.
.3 Do NOT use streambeds for borrow material.
.4 Do NOT dispose of excavated fill, waste material or debris in waterways.
.5 Survey areas immediately upstream and for 100 m downstream of proposed work areas to determine presence of concentrations of fish.
.6 Avoid concentrations of fish during culvert removals and work adjacent to waterways.
.7 Do NOT ford streams at or immediately upstream of locations containing concentrations of fish.
.8 Restrict blasting to above water and more than 100 m from concentrations of fish.
.9 Where possible, conduct in-stream work during low flow periods.
.10 When removing culverts:
- slope banks to conform to grade of adjacent stream bank as applicable; and
- if required, stabilize bank using erosion resistant material.

.2 Obtain authorization from Fisheries and Oceans Canada for alterations or crossings of any water body constituting fish habitat. (See Section 3.0.)

5.7 PERMAFROST SOILS

.1 Ice-rich soils are common in areas that are maintained by extensive vegetation cover, and thus susceptible to permafrost degradation. The top layer provides a protective thermal barrier that prevents permafrost degradation. These soils are susceptible to erosion due to their fine texture and hilly topography. Erosion removes the thermal protection and causes permafrost degradation. Vehicle and equipment traffic, and soil excavation can disturb the surface layer and degrade the permafrost.

arrangements are made or at other appropriate periods prior to the arrival of the aircraft at the site.

.4 Marine mammals and flocks of seabirds must be avoided by all shipping. Where feasible, ships shall maintain a minimum distance of 1 km from known seabird colonies.

.5 During transfer of fuel to land-based storage tanks, equip the hoses or pipes with properly functioning and approved check valves to prevent backflow of fuel in the case of failure. Attend all fuel transfer operations at all times. In the event of a spill of fuel, implement the appropriate contingency plan as detailed in Section 7.0 of this EPP.

5.9 TERRESTRIAL RESOURCES

.1 Polar bears, lemmings, arctic hare, ermine, and arctic fox have been reported seasonally or year round at FOX-5. Birds, including ptarmigan, ravens, loons and snow buntings, have been observed in the area. Raptors such as snowy owl, gyrfalcons, peregrine flacons are known to occur in the area. Raptors are especially sensitive to disturbances. There is concern over human/wildlife contact, which could include harassment by project personnel causing disruption of activities such as calving, breeding, nesting and rearing, all of which may take place on the site proper.

.2 Prevent avoidable conflicts with wildlife using the following procedures:

.1 EMPLOY A DEDICATED BEAR MONITOR(S) AT ALL TIMES.
.2 Require all on-site personnel to be familiar with the contents of "Safety in Bear Country".
.3 Do NOT feed, injure or harass wildlife.
.4 Ensure that clean up activities do NOT interfere with wildlife movement through the area.
.5 Do NOT disturb birds nesting on site.
.6 Vehicle, vessel and aircraft movements shall conscientiously avoid all known concentrations of wildlife or areas known to be frequented by important species or concentrations of wildlife.
.7 Do NOT attempt to chase, catch, divert, follow or otherwise harass wildlife by aircraft, vehicle, and boat or on foot.
.8 Control refuse and make inaccessible to bears and other scavengers.
.9 In the event of unanticipated or unavoidable contact with mammals, act in accordance with the contingency plan (Section 7.0). Familiarize all individuals working at or visiting the site with this plan as part of their orientation to the work site.
.10 Equipment and vehicles shall yield to wildlife, where possible.
.11 Except in the vicinity of the airfield, advise charter aircraft pilots not to fly at elevations lower than 500 metres above ground or water.

5.10 HERITAGE RESOURCES

.1 DEW Line sites are often located in areas which have been seasonally settled or visited by Inuit over the past 1,000 years; by their Palaeo-Eskimo predecessors for as many as three thousand years before the Inuit; and by Europeans and Eurocanadians over the past four centuries. Archaeological sites and recent camps and cemeteries exhibiting evidence of the presence of former occupants have been found on or adjacent to all of the DEW Line stations. Many of the sites have been disturbed by previous DEW Line activities. The traditional and scientific value of heritage resources is greatly diminished if they are disturbed or moved. Archaeological sites in Nunavut are protected by law, and disturbance of archaeological sites and collection of archaeological specimens is prohibited except under the terms of an archaeological research permit.

.2 Obtain a generic pamphlet from the regulatory authorities for use at the site, which illustrates typical site and artifact types, and describes procedures to follow in the event of encountering an archaeological site.

.3 In the event that heritage resources are discovered during clean up activities, the following procedures apply:

- .1 Report discovery of archaeological site or artifacts immediately to the Engineer.
- .2 Do NOT disturb archaeological sites or artifacts discovered and cease work in that area until appropriate authorities are notified.
- .3 Report all archaeological finds in accordance with Section 7.4 of this EPP.
- .4 Do NOT resume activities in the vicinity of the find until confirmation and direction from appropriate authorities is received.

.4 Reports of archaeological sites found shall include:

- .1 the identity of the person making the discovery;
- .2 description of the site location, including topography, landmarks, etc.;
- .3 the nature of the activity resulting in the discovery;
- .4 description of the archaeological site, including size, features, or details visible, supplemented by sketches or photographs;
- .5 actions currently taken to protect the archaeological features; and
- .6 extenuating circumstances.

.5 All personnel are to be discouraged from visiting archaeological and other heritage sites.

7.0 CONTINGENCY PLANS

7.1 GENERAL

.1 The following generic contingency plans present the prescribed course of action to be followed in the case of unanticipated events during clean up such as fuel or chemical spills, potentially dangerous wildlife encounters, and the discovery of heritage resources. The plans will enable persons in a particular contingency situation to maximize the effectiveness of the environmental protection response and meet all regulatory requirements for reporting to the appropriate authorities.

.2 Submit to the Engineer for approval detailed spill contingency plans for the site. Identify response capabilities by detailing response times, and types and volumes of spills to which the Contractor can respond. The following information is required as a minimum:

.1 a description of pre-emergency planning;
.2 personnel roles, lines of authority and communication;
.3 emergency alerting and response procedures;
.4 evacuation routes and procedures, safe distances and places of refuge;
.5 emergency phone numbers;
.6 directions/methods of getting to the nearest medical facility;
.7 emergency decontamination procedure;
.8 emergency medical treatment and first aid;
.9 emergency equipment and materials;
.10 emergency protective equipment;
.11 procedures for reporting incidents; and
.12 spill response and containment plans for all materials that could potentially be spilled.

7.2 FUEL AND HAZARDOUS MATERIAL SPILLS

.1 The objective of the fuel-related contingency plan is to protect the environment and human health by minimizing the impacts of spill events through clear and concise instructions to all personnel.

.2 A variety of fuels and other hazardous materials may be in use at the FOX-5 site during clean up. The greatest volumes will likely involve Arctic diesel fuel. Other substances such as acids, solvents, lubricants, hydraulic fluid, antifreeze, fuel additives and engine coolants also pose potential environmental and safety hazards. For simplicity, POL and minor chemical spills will be considered together. As chemicals are usually stored and transferred in barrels of 205 litres or smaller capacity, any spill quantity is likely to be small.

.5 In the event of a shoreline spill, provide information about beach location, contaminated area, beach characteristics, presence of wildlife and archaeological sites which might be threatened.

.2 Both the Contractor and the Engineer have specific responsibilities in responding to a spill event. These are described as follows:

.1 Contractor's Responsibilities:

.1 Ensure response crew members are appropriately trained.

.2 Practice spill prevention by performing regular maintenance on all POL systems, and by using proper methods for the handling of POL products.

.3 Provide personnel, materials, and equipment necessary for adequate response to POL and hazardous material spills.

.4 Establish communications and verbally report all spills to the Engineer as soon as practical.

.5 Isolate and eliminate all ignition sources.

.6 Ensure safety and security at the spill site.

.7 Stop or reduce discharge, if safe to do so.

.8 Make every effort to contain the spill by dyking with earth or other barriers on land and containment booms on water.

.9 Assess potential for fuel/chemical recovery.

.10 Deploy on-site crews to mobilize pumps, empty 200 L drums, hand tools and absorbents to the spill site.

.11 Request assistance, if required, from DND (through the Engineer) and the Canadian Coast Guard.

.12 Hire additional assistance, if required, from northern residents, local communities, and commercial spill response firms.

.13 Follow all guidelines and regulations for disposal of spilled materials, associated debris, contaminated soil and water as established by appropriate government agencies.

.14 Assess potential terrain and wildlife disturbance, erosion and archaeological site disturbance in any areas to be affected by clean up operations and contact relevant authorities.

.15 Document all events/actions.

.16 Report the spill to the Spill Report Line and follow up with a written spill report. This report shall summarize the initial report information; confirmation of spill volume; actions taken; future remediation/monitoring requirements; and a sketch map and/or photographs of the spill area.

.9 Assess and appropriately treat any areas disturbed by clean up activities.

.10 Ensure the site has been completely restored and leave the site only when all work is finalized.

.6 Report spills immediately on the 24 Hour Spill Report Line (867) 920-8130 (NWT; Nunavut Spill line not yet in place). Prepare a written spill report and submit it to the Engineer and the supervisor of the Spill Report Line who shall forward copies to DIAND and Environment Canada.

.7 Include the following specific information when reporting a spill:

.1 report date and time of spill;

.2 location and map coordinates (if known) and direction of spill movement;

.3 party responsible;

.4 product identification and quantity spilled;

.5 conditions at the spill site including weather, depth of snow cover, proximity of spill to bodies of water, wind speed and direction, and wave height (for marine spills);

.6 cause of spill;

.7 whether the spill has terminated or is continuing;

.8 extent of contaminated area;

.9 factors affecting spill recovery;

.10 containment measures;

.11 response actions to date;

.12 request for assistance;

.13 hazards and dangers;

.14 comments and recommendations;

.15 name of the person reporting the spill; and

.16 name of the person to whom the spill is reported.

7.3 WILDLIFE ENCOUNTER

.1 Polar bear and grizzly bear occurrences are rare in the vicinity of the FOX-5 site. However, bears are a potential hazard to workers at all times and the situation can be aggravated by the presence of any substance that a bear perceives to be food.

.2 EMPLOY DEDICATED BEAR MONITORS AT ALL TIMES DURING CLEAN UP OPERATIONS.

.3 Be familiar with bear deterrent procedures and ensure that at least one designated staff member is competent with the camp firearms. Be familiar with the GNWT "Safety in Bear Country" manual and make available a reference copy at the site office.

.1 Cease site work immediately in the area; do NOT remove any artifacts or other associated objects from the site unless their integrity is threatened in any way.

.2 Mark the site's visible boundaries and avoid the area during clean up activities.

.3 Report the discovery of the site immediately to the Engineer and the Heritage Branch of the Nunavut Territorial Government by phone or fax and comply with any site protection instructions issued. Do not engage in any archaeological excavation activities.

.4 Prepare reports of any discovery for the respective regulatory authority and DND/PMO indicating:

- the identity of the person making the discovery;
- the nature of the material;
- the nature of the activity resulting in its discovery;
- the location of the find including a description of the site location, topography, landmarks, etc.
- a description of the archaeological site including size, features or details visible, supplemented by sketches or photographs;
- protection measures instituted;
- the present location of any heritage material removed for safekeeping; and
- extenuating circumstances.