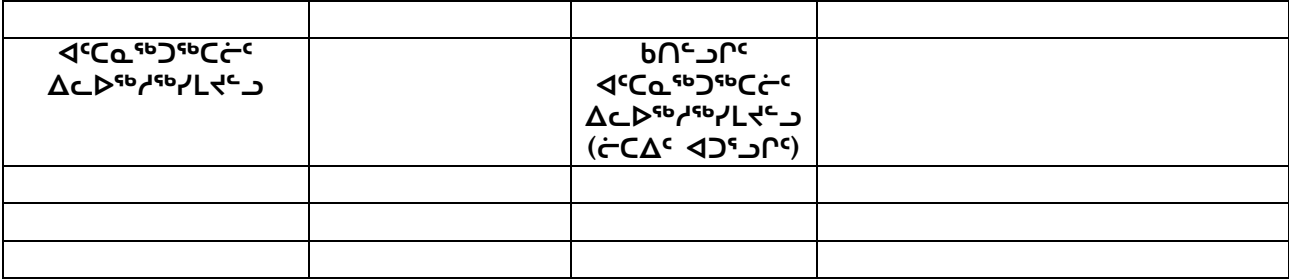


Water Licence Application

Durban and Padloping Islands
Remediation Project

Appendix 1

NIRB Part 1



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- ☐ Class B $\Delta\Gamma^{\text{bc}}C^{\text{cs}}\sigma^{\text{cs}}J^{\text{cs}}$ $\leq \Delta\Lambda^{\text{bc}}J^{\text{cs}}$

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PART 1 FORM PROJECT PROPOSAL INFORMATION REQUIREMENTS

To access NIRB documents, project screenings, and project reviews please visit the Nunavut Impact Review Board's ftp site <http://ftp.nirb.ca/>. The NIRB's website (www.nirb.ca) is currently under construction. Please contact info@nirb.ca should you have any questions or require further information.

IMPORTANT!

Please be advised that your application will not be processed until the Sections 1 - 9 are completed in their entirety, in both English and Inuktitut (+ Inuinnaqtun, if in the Kitikmeot).

SECTION 1: APPLICANT INFORMATION

1. Project Name **Durban and Padloping Islands Remediation Project**

2. Applicant's full name and mailing address:

Natalie Plato

Director, Contaminated Sites

Indian and Northern Affairs Canada

PO Box 2200 Iqaluit NU X0A 0H0

Phone: **867-975-4730**

Fax: **867-975-4736**

Email: **natalie.plato@inac.gc.ca**

3. Primary contact's full name and mailing address:

Stephen Hooey

Project Manager, Contaminated Sites

Indian and Northern Affairs Canada

PO Box 2200 Iqaluit NU X0A 0H0

Phone: **867-975-4731**

Fax: **867-975-4736**

Email: **stephen.hooey@aandc.gc.ca**

SECTION 2: AUTHORIZATION NEEDED

1. Indicate all authorizations associated with the project proposal:

<input checked="" type="checkbox"/>	Regional Inuit Association (RIA)	<input type="checkbox"/>	Canadian Launch Safety (CLS)
<input checked="" type="checkbox"/>	Nunavut Water Board (NWB)	<input type="checkbox"/>	Environment Canada (EC)
<input type="checkbox"/>	Nunavut Planning Commission (NPC)	<input type="checkbox"/>	Government of Nunavut (GN)
<input checked="" type="checkbox"/>	Indian and Northern Affairs Canada (INAC)	<input type="checkbox"/>	Department of National Defense (DND)
<input type="checkbox"/>	Department of Fisheries and Oceans (DFO)	<input type="checkbox"/>	Hamlet
<input type="checkbox"/>	Community Government & Services (CG&S)	<input type="checkbox"/>	Parks Canada (PC)
<input type="checkbox"/>	Nunavut Research Institute (NRI)	<input type="checkbox"/>	Canadian Wildlife Service (CWS)
<input type="checkbox"/>	Department of Culture, Language, Elders, and Youth (CLEY)	<input type="checkbox"/>	Other (please specify):

2. List the active permits, licenses, or other authorizations related to the project proposal, and their expiry date(s):

N/A



3. List the pending permits, licenses, or other authorizations related to the project proposal:

Nunavut Water Board Licence

Aboriginal Affairs and Northern Development Canada Land Use Permit

Qikiqtaaluk Inuit Association Certificate of Exemption

4. Has this project or any components of this project been previously screened or reviewed by NIRB?

☐ YES

☒ NO

If YES, indicate the previous project name and NIRB File No.

SECTION 3: PROJECT PROPOSAL DESCRIPTION

1. Indicate the type of project proposal (check all that apply)^(1,2):
(See Appendix A for Project Type Definitions)

1	All-Weather Road/Access Trail	<input type="checkbox"/>	9	Site Cleanup/Remediation	<input checked="" type="checkbox"/>
2	Winter Road/ Winter Trail	<input type="checkbox"/>	10	Oil and Natural Gas Exploration/Activities	<input type="checkbox"/>
3	Mineral Exploration	<input type="checkbox"/>	11	Marine Based Activities	<input type="checkbox"/>
4	Advanced Mineral Exploration	<input type="checkbox"/>	12	Scientific/International Polar Year Research*	<input type="checkbox"/>
5	Mine Development /Bulk Sampling	<input type="checkbox"/>	13	Harvesting Activities*	<input type="checkbox"/>
6	Pits and quarries	<input type="checkbox"/>	14	Tourism Activities*	<input type="checkbox"/>
7	Offshore Infrastructure (port, break water, dock)	<input type="checkbox"/>	15	Other ⁽²⁾ :	<input type="checkbox"/>
8	Seismic Survey	<input type="checkbox"/>			<input type="checkbox"/>

Please note:

- All project types listed above, except those marked with an asterisk (*), will also require the Proponent to submit a **Part 2 Project Specific Information Requirement (PSIR) Form**. The NIRB application process will not be considered complete without the Part 2 PSIR Form.
- Please be advised that in order to complete the NIRB process, the NIRB may request additional information at any time during the process.
- If "Other" is selected, contact NIRB for direction on whether a Part 2 PSIR Form is required.

2. If Project Type 3, 4 or 5 was selected above, please indicate the mineral of interest that is being extracted. Include a brief description.

<input type="checkbox"/>	Base Metals (zinc, copper, gold, silver, etc)	_____
<input type="checkbox"/>	Diamonds	_____
<input type="checkbox"/>	Uranium	_____
<input type="checkbox"/>	Other:	_____



6d. Indicate if there are any known archaeological/palaeontological historical sites in the area.

An Archaeological Assessment of both sites was conducted in 2010 by an Archaeologist from Golder Associates working under Nunavut Permit No. 2010-016A, issued by the Department of Language, Culture, Elders and Youth (CLEY).

Durban Island

MgBs -2 FOX-E Dewline Site:

Golder noted that the heritage significance of the feature is limited. No further work is recommended on the site prior to remediation.

MgBs-4 Stone Circle Feature:

This site is located close to the beach landing area. This site will not be impacted during the project.

Padloping Island

MgBu-5 Former Weather Station:

The former weather station was assessed as having limited heritage significance and no further work was recommended prior to remediation.

MgBu-6 Inuit Settlement:

The Inuit Settlement was assessed as having a high heritage significance and avoidance of the structures was recommended. This includes not disturbing stone tent rings, house foundations or wooden flooring. In addition, the features are not to be disturbed by heavy traffic or used as borrow sources. Debris cleared from these feature areas will be collected by hand and only light vehicles (ATV's) will be used in the area.

MgBu-7 Inuit Cemetery

The Inuit cemetery is located close to the Tidal Bay. There are approximately twenty graves dating from 1948 to 1967. The cemetery will not be impacted during the remediation project.

7. Land Status (check all that applies):

<input checked="" type="checkbox"/> Crown	<input type="checkbox"/> Commissioners'	<input type="checkbox"/> Municipal
<input checked="" type="checkbox"/> Inuit Owned Surface Lands	<input type="checkbox"/> Inuit Owned Sub-Surface Lands	

8a. Co-ordinates:

Min Lat (degree/minute)	67°02'	Min Long (degree/minute)	63°14'
Max Lat (degree/minute)	67°06'	Max Long (degree/minute)	63°54'

NTS Map Sheet No: Delight Anchorage (16M2) Block Island (16M1)

(Please ensure that maps of the project are attached (1:50,000 if available, 1:250, 000 **Mandatory**) available from Natural Resources Canada)

8b. If the project proposal includes a camp, please provide the coordinates of the camp location

Min Lat (degree/minute)	67°02'	Min Long (degree/minute)	62°40'
Max Lat (degree/minute)	67°06'	Max Long (degree/minute)	62°05'



Propane			
Other			
Hazardous Materials and Chemicals		Total Amount of Hazardous Materials and Chemicals (in Litres)	

2b. Describe the proposed Spill Prevention Plan.

3a. Detail the anticipated daily water consumption rates

Daily amount (m ³)	Proposed water retrieval methods	Proposed water retrieval location

3b. Have you applied for a water License with the Nunavut Water Board?

☐ YES

☐ NO

If yes, what class of licence?

☐ Class A Water Licence

☐ Class B Water Licence

SECTION 6: WASTE DISPOSAL AND TREATMENT METHODS

1. List the types of waste associated with the proposed project activities:

Type of waste	Projected amount generated	Method of Disposal	Additional treatment procedures
Sewage (human waste)			
Greywater			
Combustible wastes			
Non-Combustible wastes			
Overburden (organic soil, waste material, tailings)			
Hazardous waste			
Other:			

2. Describe the proposed Waste Management Plan.

SECTION 7: COMMUNITY INVOLVEMENT & REGIONAL BENEFITS

1. List the community representatives that have been contacted and provide the minutes of the meetings if available:

Community	Name	Organization	Date Contacted



SECTION 8: GENERAL QUESTIONS

1. Will you be disturbing any known archaeological sites?

☒ YES

NO

SECTION 9: APPLICANT SIGNATURE

Please sign and date your application:

Original Signed by
Natalie Plato

Signature

Director, Contaminated Sites

Title

February 24, 2012

Date

Water Licence Application

Durban and Padloping Islands
Remediation Project

Appendix 2

NIRB Part 2



SCREENING PART 2 FORM PROJECT SPECIFIC INFORMATION REQUIREMENTS (PSIR)

1. SUBMISSIONS

The Proponent must submit all information pertaining to the Project as a whole. The information requirements below are designed for the purpose of environmental assessment and are not limited to the scope of a single permit or license application.

IMPORTANT: Please be advised of the following:

1. NIRB does not accept references to an ftp or web sites as a submission.
2. The Proponent must provide NIRB with 1 (one) electronic copy and 1 (one) hardcopy of the required information in English.
3. All maps should be shapefiles, be legible, and should include grids, be of appropriate scale, indicate the scale, include latitude and longitude references, NTS Maps numbers, title, legend and a north arrow. To the extent possible, avoid hand-drawn demarcations and faxed maps; and,
4. Please complete all required information in each section below. If the required information is not applicable to the project proposal, please indicate this in the response with "n/a". If the request has been provided in a different section or report, please note the section or report where the response can be found.

2. GENERAL PROJECT INFORMATION REQUIREMENTS

Project Coordinates and Maps

1. The preferred method for submitting project coordinates information is through the use of a Geographic Information System (GIS) compatible digital file. Although an ESRI ArcView 3.x shape file (in decimal degrees) is the preferred interchange format, the NIRB has the capacity to receive over 100 GIS and CAD related formats, including MapInfo and AutoCAD, provided proper format and projection metadata is also submitted. The NIRB requires coordinates for the project proposal which reflect the entire project area as defined by:

- Area/sites of investigation;
- Boundaries of the foreseen land use permit/right-of-way area(s) to be applied for;
- Location of any proposed infrastructure or activity(s); and,
- Boundaries of the mineral claim block(s) where proposed activities will be undertaken.

Project Extents

Overall Area

NW:	Latitude: (67° 05' 20" N)	Longitude: (62° 46' 13" W)
NE:	Latitude: (67° 05' 20" N)	Longitude: (62° 05' 30" W)
SE:	Latitude: (67° 02' 07" N)	Longitude: (62° 05' 30" W)
SW:	Latitude: (67° 02' 07" N)	Longitude: (62° 46' 13" W)

Durban Island

NW:	Latitude: (67° 05' 08" N)	Longitude: (62° 12' 20" W)
NE:	Latitude: (67° 06' 08" N)	Longitude: (62° 08' 22" W)
SE:	Latitude: (67° 05' 28" N)	Longitude: (62° 05' 49" W)
SW:	Latitude: (67° 04' 02" N)	Longitude: (62° 10' 50" W)

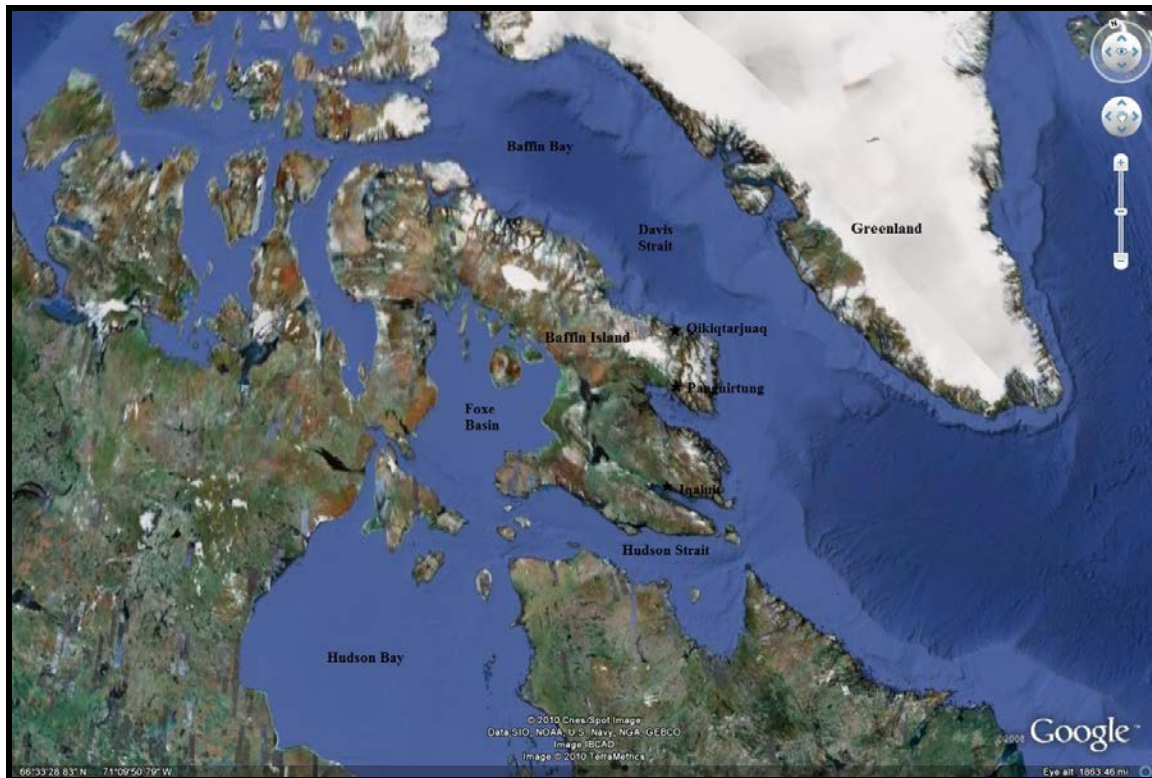
Padloping Island

NW:	Latitude: (67° 02' 52" N)	Longitude: (62° 45' 05" W)
NE:	Latitude: (67° 02' 52" N)	Longitude: (62° 42' 50" W)
SE:	Latitude: (67° 02' 22" N)	Longitude: (62° 40' 54" W)
SW:	Latitude: (67° 02' 04" N)	Longitude: (62° 44' 22" W)

Site Maps are provided in Appendix 5. Further details on site activities are available in the Remedial Action Plans (RAP) in Appendix 4.

2. Map of the project site within a regional context indicating the distance to the closest communities.

Padloping and Durban Islands are located off the east cost of Baffin Island in the Davis Strait. The closest community to the sites is Qikiqtarjuaq, located approximately 100 km NW of Durban Island.



3. Map of any camp site including locations of camp facilities.

There are three potential camp locations identified.

Durban Island

- 1) Old Construction Camp Area**
- 2) Main Station Area**

Padloping Island

- 1) Main Station Area**

The final selection of the camp location(s) will be determined after contract award but will be within existing project boundaries on Crown Land.





4. Map of the project site indicating existing and/or proposed infrastructure, proximity to water bodies and proximity to wildlife and wildlife habitat.

Detailed maps of the project site are provided in Appendix 5 and in the Remedial Action Plan (Appendix 4).

Project General Information

5. Discuss the need and purpose of the proposed project.

The purpose of the Durban Island and Padloping Island Remediation Project is to eliminate/reduce the hazards (human health and environmental) associated with the former Intermediate Distant Early Warning (DEW) Line site and Durban Island and the weather station and settlement at Padloping Island. The hazards at the site include PCBs, heavy metals, asbestos, petroleum hydrocarbons, and physical hazards associated with the site infrastructure and debris.

6. Discuss alternatives to the project and alternative methods of carrying out the project, including the no-go alternative. Provide justification for the chosen option(s).

Alternative methods for carrying out the project are discussed in the Remedial Action Plans developed for the sites. (Appendix 4). In this instance, the implementation of a Walkaway solution is being undertaken. All material and debris that may have been placed in a landfill on site will be shipped off-site for disposal in the south. No landfills will be constructed on Padloping or Durban Islands.

The Remedial Actions Plan also provides justification for the methods chosen based on eliminating/reducing the hazard and the associated costs.

7. Provide a schedule for all project activities.

A tentative project schedule is provided in Appendix 7. The current plan is to mobilize to the site in the late summer of summer of 2012 and start remedial works. Remedial activities will be completed during the summer of 2013 and 2014. At the end of the field season in 2014, equipment and materials will be demobilized from the site.

8. List the acts, regulations and guidelines that apply to project activities.

The project is being undertaken in accordance with the following federal and departmental regulations and policies:

- Nunavut Land Claim Agreement (Agreement Between the Inuit of the Nunavut Settlement Area and Her Majesty the Queen in Right of Canada, 1993)
- Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health (CCME, 1999)
- Canadian Water Quality Guidelines for the Protection of Aquatic Life (CCME, 1999)
- Canadian Environmental Protection Act (EC, 1999)
- Nunavut Waters and Surface Rights Tribunal Act (2002)
- Nunavut Environmental Guideline for Waste Asbestos (2002)
- Contaminated Sites Management Policy (INAC, 2002)
- Northern Affairs Contaminated Sites Management Policy (INAC, 2002)
- A Federal Approach to Contaminated Sites (CSMWG, 2002)
- Risk Management Guidance Document (INAC, 2006)
- Contaminated Sites Cost Estimating Guide (INAC, 2006)
- Treasury Board Policy on Management of Real Property (TB, 2006)
- Risk Management Tool & Reporting Tool User Guide (INAC, 2007)
- Canada-Wide Standard for Petroleum Hydrocarbons (PHC) in Soil (CCME, 2008)
- Environment, Health & Safety Management System Manual (INAC, 2008)
- Environment, Health & Safety Standard Operating Procedures Manual (INAC, 2008)
- Environment, Health & Safety Control Framework, Northern Contaminated Sites Program (INAC, 2008)
- Environment, Health & Safety Audit Program Guide (INAC, 2008)
- Construction Project Safety Management Guide, 5th Edition (PWGSC, 2008)
- PCB Regulations (EC, 2008)
- Abandoned Military Site Remediation Protocol (INAC, 2009)

9. List the approvals, permits and licenses required to conduct the project.

The approvals, permits and licenses required include:

- Water Licence (Nunavut Water Board)
- Crown Land Use Permit (Indian and Northern Affairs Canada)
- Inuit Owned Land Access Permit (Qikiqtaaluk Inuit Association)
- Crown Land Quarry Permits (Indian and Northern Affairs Canada)
- Quarry Permit (Qikiqtaaluk Inuit Association) - if required.

DFO Operational Statement (OS) Conformity

10. Indicate whether any of the following Department of Fisheries and Oceans (DFO) Operational Statement (OS) activities apply to the project proposal:

- Bridge Maintenance
- **Not Applicable**

- Clear Span Bridge
- **Not Applicable**
- Culvert Maintenance
- **Yes**
- Ice Bridge
- **Not Applicable**
- Routine Maintenance Dredging
- **Not Applicable**
- Installation of Moorings
- **Not Applicable**

Please see DFO's OS for specific definitions of these activities available from DFO's web-site at <http://www.dfo-mpo.gc.ca/regions/central/habitat/os-eo/index-eng.htm>

11. If any of the DFO's OS apply to the project proposal, does the Proponent agree to meet the conditions and incorporate the measures to protect fish and fish habitat as outlined in the applicable OS? If yes, provide a signed statement of confirmation.

The Department of Indian Affairs and Northern Development Canada agrees to meet the conditions and incorporate the measures to protect fish and fish habitat as outlined in the applicable Operational Statements.

Original Signed

February 24, 2012

Natalie Plato
Director – Contaminated Sites

Date

Transportation

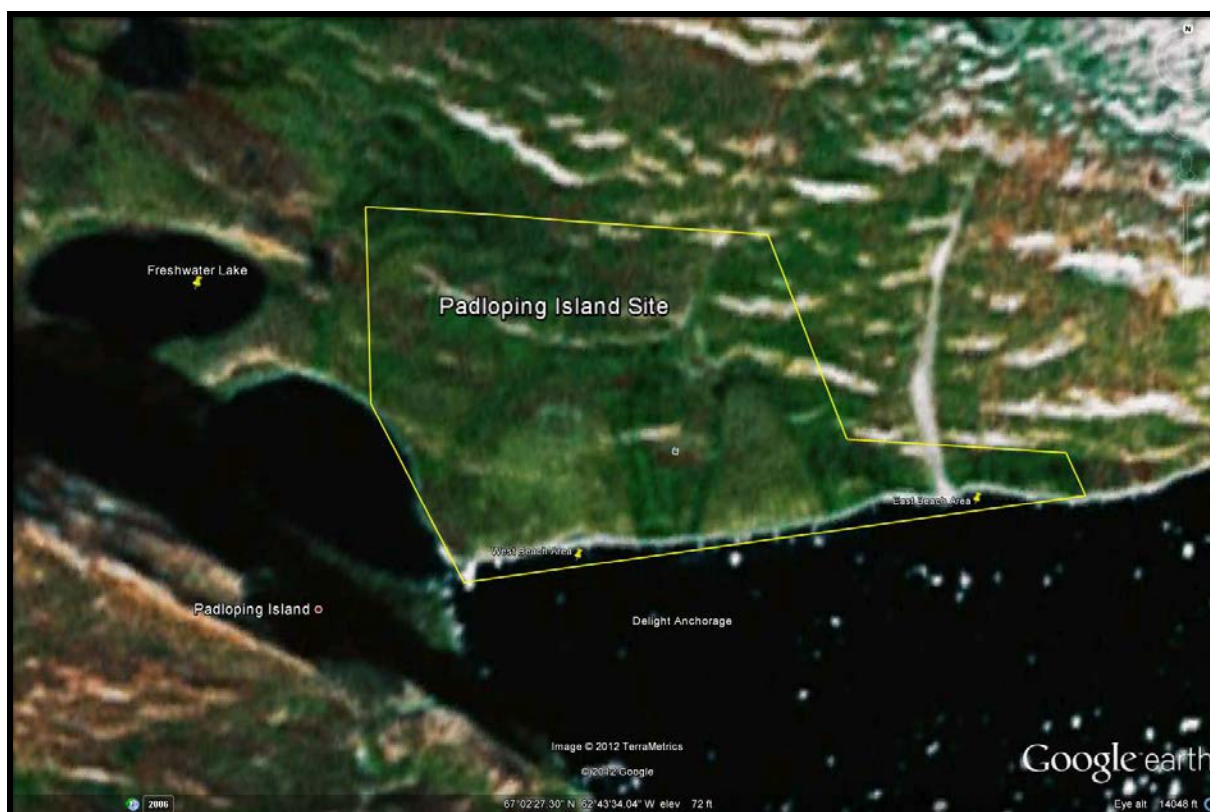
12. Describe how the project site will be accessed and how supplies will be brought to site. Provide a map showing access route(s).

Most equipment and materials will be mobilized to the site via sealift/barge. The sealift/barge will land at the beach landing areas indicated on the maps below.

Perishables and other material will be brought to the site by helicopter or boat from Qikiqtarjuaq.



Durban Island: Road and Beach Landing Area



Padloping: Beach Landing Areas (West Beach Area preferred).

13. If a previous airstrip is being used, provide a description of the type of airstrip (ice-strip/all-weather), including its location. Describe dust management procedures (if applicable) and provide a map showing location of airstrip.

There are no airstrips at Padloping or Durban Islands

14. If an airstrip is being constructed, provide the following information:
- a. Discuss design considerations for permafrost
- Not Applicable
 - b. Discuss construction techniques
- Not Applicable
 - c. Describe the construction materials, type and sources, and the acid rock drainage (ARD) and metal leaching (ML) characteristics (if rock material is required for airstrip bed).
- Not Applicable
 - d. Describe dust management procedures.
- Not Applicable
 - e. Provide a map showing location of proposed airstrip.
- Not Applicable
15. Describe expected flight altitudes, frequency of flights and anticipated flight routes.

Flights to and from Qikiqtarjuaq will occur the site will approximately twice per week using a helicopter. Flocks of birds and other wildlife will be avoided and altitude will typically be above 610 m. Additionally, trips between Padloping and Durban Islands will likely occur on a daily basis during remediation of Padloping Island.

Camp Site

16. Describe all existing and proposed camp structures and infrastructure

Existing (unusable) infrastructure on Durban Island includes a module train building, garage, Inuit hut, water reservoir building, downed antenna and fuel tanks.

Padloping Island has some remnants of dilapidated buildings and fuel tanks.

All existing structures will be demolished as part of the remedial activities, except features on Padloping Island that are identified as historically significant.

Proposed infrastructure (to support remedial activities) includes establishing two camps, one on Durban Island and a second on Padloping

Island. At a minimum, the camp established on Padloping Island must be hard-sided and be suitable for use as an emergency camp.

17. Describe the type of camp:

- a. Mobile
- Yes, camp will consist of mobile camp units transported to site
- b. Temporary
- Yes, camp facility will be removed upon project completion
- c. Seasonal
- Yes, camp will operate seasonally between June and September for parts of three summers (2012 - 2014)
- d. Permanent
- No
- e. Other
- Not applicable

18. Describe the maximum number of personnel expected on site, including the timing for those personnel involved with the project.

The maximum number of personnel expected to be on site is 50. Site activities will take place from June to September each year. The number of personnel on site will be lower at the beginning and end of each season as the camp is set-up/decommissioned/winterized.

Equipment

19. Provide a list of equipment required for the project and discuss the uses for the equipment.

The equipment required to complete the project include:

- **Loaders**
- **Bulldozers**
- **Excavators/backhoes**
- **Grader**
- **Compactor**
- **Rock Trucks**
- **Tandem Dump Trucks**
- **Water truck**
- **Crew-Cab Pick-Up Trucks/passenger vans**
- **ATVs**
- **Incinerators**
- **drills**
- **snowblowers**
- **Generators**

The exact quantity and specifications of equipment will be determined after contract award.

20. If possible, provide digital photos of equipment.

Not available

Water

21. Describe the location of water source(s), the water intake methods, and all methods employed to prevent fish entrapment. Provide a map showing the water intake locations.

Durban Island

Three sources of water have been identified on Durban Island, two streams and a blast hole.

On Padloping Island, Freshwater Lake will be used as a source of water.

Water will be pumped from the source into a tank on either a truck or trailer. The water intake hose will be covered with a screen (maximum screen size of 2.54 millimetres and maximum screen approach velocity of 0.038 metres/second) to ensure that no fish become trapped.

Figures showing water source locations are provided in Appendix 5.

22. Describe the estimated rate of water consumption (m³/day).

Total water consumption is estimated to be a maximum of 18 cubic metres per day:

- 120 litres/day x 50 people = 6,000 litres/day**
- 12,000 litres/day for miscellaneous activities (i.e. equipment and barrel washing)**

23. Describe how waste water will be managed. If relevant, provide detail regarding location of sumps, including capacity of sumps and monitoring.

Both black and grey water will be directed into a sewage lagoon system. This system will consist of two independently operated temporary lagoons. Each lagoon will have an individual capacity for 45 days of wastewater storage or one half of the duration of the construction season, whichever is more. Maximum fluid depth will not exceed one metre. The location of the lagoons will be a minimum of 100 metres from the construction camp or other temporary facilities and drainage paths, and downwind of the construction camp (based on the prevailing wind direction). Discharge criteria will be as follows:

- Biological Oxygen Demand (BOD) – 80 mg/kg**

- **Total Suspended Solids (TSS) – 100mg/kg**
- **Fecal Coliforms – 1 x 10⁴ CFU/100 mL**
- **pH – 6.0 to 9.0**
- **Oil and Grease – no visible sheen**

See Remedial Action Plan in Appendix 4 for additional details on the sewage lagoons.

24. If applicable, discuss how surface water and underground water will be managed and monitored.

- Not applicable

Waste Water (Grey water, Sewage, Other)

25. Describe the quantities, treatment, storage, transportation, and disposal methods for the following (where relevant):

- Sewage

The quantity of sewage (black water) that will be generated is estimated to be 1.5 cubic metres per day:

- **30 litres/day x 50 people (max) = 1,500 litres/day**

The sewage will be directed into a sewage lagoon system (as described in #23 above).

- Camp grey water

The quantity of camp grey water that will be generated is estimated to be 4.5 cubic metres per day:

- **90 litres/day x 50 people (max) = 4,500 litres/day**

The camp grey water will be directed into a sewage lagoon system (as described in #23 above).

- Combustible solid waste

Combustible solid waste generated from camp operations will be incinerated in an on-site incinerator.

- Non-combustible solid waste, including bulky items/scrap metal

Non-combustible solid waste collected around the site and generated during site operations will be packaged and shipped south for disposal.

- Hazardous waste or oil

All hazardous wastes and oil will be packaged as per Transportation of Dangerous Goods (TDG) requirements and shipped south to a facility licenced to dispose of the hazardous materials.

- Contaminated soils/snow

Contaminated soils will be handled as described in the Remedial Action Plan (Appendix 4). To summarize:

- **Type B (hydrocarbons) soil (Durban: 2,000 cubic metres , Padloping 100 cu. metres) will be treated in on-site landfarms.**
- **All other contaminated soils will be packaged and shipped south for disposal.**

- Empty barrels/ fuel drums

Empty barrels/fuel drums will be handled as per the Barrel Protocol described in the Abandoned Military Site Remediation Protocol (INAC 2009) which can be found in Appendix E of the Remedial Action Plan for Durban Island (Appendix 4).

There are approximately 7,000 barrels at Durban Island and 1,200 at Padloping Islands. Additional already crushed barrels are stockpiled at Padloping Island.

- **Barrels will be inspected, sampled, tested, have any contents removed and treated, cleaned, and crushed. Contents may be incinerated, treated and released, or packaged and sent south for disposal.**
- **Crushed barrels will be transported off-site for disposal and a southern waste facility.**
- **Additional barrels resulting from remedial activities will be handled in the same manner.**

- Any other waste produced

- None identified at this time.

26. If the project proposal includes a landfill or landfarm, indicate the locations on a map, provide the conceptual design parameters, and discuss waste management and contact-water management procedures.

Site Plans showing the Landfarm locations (Potential Soil Treatment Areas) at Padloping and Durban can be found in Appendix 5.

Padloping Island Drawing C53 - Overall Site Plan

Durban Island Drawing C03 – Overall Site Plan

A summary of the Landfarm construction and operation details are provided below:

- The Landfarm will be constructed to the INAC Abandoned Military Site Remediation Protocol (2009).
- Nutrients will be added to the Landfarm as required.
- The moisture content of the Landfarm will be monitored and modified as required.
- Contact water collected will be tested, treated as required, and discharged once Water Licence discharge criteria are met
- When operations are complete the Landfarm will be closed by taking confirmatory samples, removing the perimeter berms, regrading the area to fill in ditches and prevent ponding.

Fuel

27. Describe the types of fuel, quantities (number of containers, type of containers and capacity of containers), method of storage and containment. Indicate the location on a map where fuel is to be stored, and method of transportation of fuel to project site.

The table below provides a summary of the fuel types, quantities, container types and storage methods that we anticipate using:

FUEL TYPE*	QUANTITY (Estimated)*	CONTAINER (Type / # / Capacity)*	METHOD OF STORAGE*
Diesel	200,000 litres	Tanks registered with Environment Canada Federal Registry for Storage Tank Systems Additional storage in 205 l drums.	Tanks registered with Environment Canada Federal Registry for Storage Tank Systems & On pallets, 4 drums each, strapped
Gasoline	50,000 litres	Tanks registered with Environment Canada Federal Registry for Storage Tank Systems And/or Drums / 50 / 205 litres	Tanks registered with Environment Canada Federal Registry for Storage Tank Systems & On pallets, 4 drums each, strapped
Aviation Fuel	200,000 litres	Tanks registered with Environment Canada Federal Registry for Storage Tank Systems Additional storage in 205 l drums.	Tanks registered with Environment Canada Federal Registry for Storage Tank Systems & On pallets, 4 drums each,

			strapped.
Propane	2000 pounds	Cylinders / 5 / 100 pounds	Cylinders will be transported/stored in a cage where they are strapped to prevent movement

** Quantities and storage containers are subject to change by the contractor*

Fuel will be brought to site via sea-lift and stored not closer than 100 m to camp facilities.

The Contractor will be required to adhere to all existing regulations with respect to fuel storage and handling.

28. Describe any secondary containment measures to be employed, including the type of material or system used. If no secondary containment is to be employed, please provide justification.

Storage areas will be inspected daily. Drums that are in use will be stored in insta-berms (or similar) to contain any spills. Spill kits and empty drums or tanks will be kept in near the storage area so that any spills can be contained and cleaned up.

29. Describe the method of fuel transfer and the method of refuelling.

Electric pumps will typically be used to transfer fuel from the drums into the equipment or tank. All fuel transfers will be supervised and spill kits will be readily available to address any spills. Further information will be provided in the Spill Contingency Plan, provided by the contractor after award of contract.

30. Describe spill control measures in place.

All fuel transfers will be supervised and spill kits will be readily available to address any spills. The exact location and contents of the spill kits will be determined by the contractor. Further information will be provided in the Spill Contingency Plan, provided by the contractor after award of contract.

Please refer to Environment Canada's fuel storage tank system regulations (*Storage Tank System for Petroleum and Allied Petroleum Products*) website at <http://www.ec.gc.ca/st-rs/> for details on fuel storage requirements.

Chemicals and Hazardous Materials*

**included but not limited to oils, greases, drill mud, antifreeze, calcium or sodium chloride salt, lead acid batteries and cleaners*

31. Describe the types, quantities (number of containers, the type of container and capacity of containers), method of storage and containment. Indicate the location on a map where material is to be stored, and method of transportation of materials to project site.

A small amount of oil and grease will be brought to site to complete the maintenance requirements for the equipment on site. These will be transported as per the requirements of the Transportation of Dangerous Goods (TDG) Act & Regulations. The oil and grease will be stored in the fuel storage area until used. Used oil and grease will be collected and shipped off site for disposal at a licenced disposal facility. The exact quantities of these will be determined once a contractor is hired.

32. Describe any secondary containment measures to be employed, including the type of material or system used.

The secondary containment that will be employed are insta-berms (or similar) for the products that are in use.

33. Describe the method of chemical transfer.

Not applicable

34. Describe spill control measures in place.

Spill kits will be readily available on all equipment and in areas that the oil and grease are being used. Further information will be provided in the Spill Contingency Plan, provided by the contractor after award of contract.

Workforce and Human Resources/Socio-Economic Impacts

35. Discuss opportunities for training and employment of local Inuit beneficiaries.

The contract for remedial activities contains an Aboriginal Opportunities Considerations (AOC) clause that requires the contractor to maintain a target level of Inuit employment on the project and applies a penalty if the contractor fails to meet the target levels.

36. Discuss workforce mobilization and schedule, including the duration of work and rotation length, and the transportation of workers to site.

The workforce will be mobilized to site from Qikiqtarjuaq via helicopter or boat. Work will take place during August to September in the first year and then between June and September of the second year and third years.

The exact schedule will depend on the contractor hired and the sealift/barge schedules. Workers will work on a rotational schedule to be determined by the contractor.

37. Discuss, where relevant, any specific hiring policies for Inuit beneficiaries.

Not applicable

Public Involvement/ Traditional Knowledge

38. Indicate which communities, groups, or organizations would be affected by this project proposal.

This project is closest to Qikiqtarjuaq. Residents of Qikiqtarjuaq will be positively affected by this project and the employment/training opportunities it provides. The project will also remove hazardous materials from the environment; this will benefit human and environmental health in the area.

In the mid 1990's residents of Qikiqtarjuaq initiated a clean-up of hundreds of barrels from the Island.

39. Describe any consultation with interested Parties which has occurred regarding the development of the project proposal.

A community consultation was held in Qikiqtarjuaq in February 2011 to discuss the draft Remedial Action Plan (RAP) prior to it being finalized. The proposed 'Walk-away' solution was proposed to the community.

40. Provide a summary of public involvement measures, a summary of concerns expressed, and strategies employed to address any concerns.

No concerns were expressed during the public consultation process.

Following the public forum, the local Hunter's and Trappers Organization (HTO) expressed concerns about possible impacts to the fish in the Tidal Bay and Freshwater Lake and shellfish at the beach landing area of Padloping Island.

The fish and shellfish will be sampled and analysed for contaminants and the results assessed for impacts. The results will be communicated to the HTO and residents of Qikiqtarjuaq.

41. Describe how traditional knowledge was obtained, and how it has been integrated into the project.

During the Phase III Environmental Site Assessment local wildlife monitors familiar with the sites were employed. In addition to providing on-site assistance with the remediation they provided information related to traditional site use, history and general knowledge of the site.

In addition, particular attention was made of traditional knowledge related to the sites at the formal community consultation. A large number of Qikiqtarjuaq resident attended, including former residents of Padloping Island. Members of the local Hunter's and Trappers Orgainzation provided valuable information related to current fishing and shellfish collection at Padloping Island which will be followed up by AANDC during the remediation project.

42. Discuss future consultation plans.

Annual community consultations will be conducted to keep residents informed of the Hamlet informed about the progress of the clean-up, allow a forum to express any concerns and respond to questions as well as highlight any employment or subcontracting opportunities.

3. PROJECT SPECIFIC INFORMATION

The following table identifies the project types identified in Section 3 of the NIRB, Part 1 Form. Please complete all relevant sections.

It is the proponent's responsibility to review all sections in addition to the required sections to ensure a complete application form.

Table 1: Project Type and Information Required

Project Type	Type of Project Proposal	Information Request
1	All-Weather Road/Access Trail	Section A-1 and Section A-2
2	Winter Road/Winter Trail	Section A-1 and Section A-3
3	Mineral Exploration	Section B-1 through Section B-4
4	Advanced Mineral Exploration	Section B-1 through Section B-8
5	Mine Development/Bulk Sampling	Section B-1 through Section B-12
6	Pits and Quarries	Section C
7	Offshore Infrastructure(port, break water, dock)	Section D
8	Seismic Survey	Section E
9	Site Cleanup/Remediation	Section F
10	Oil and Natural Gas Exploration/Activities	Section B-3 and Section G
11	Marine Based Activities	Section H
12	Municipal and Industrial Development	Section I

SECTION A: Roads/Trails

A-1. Project Information

1. Describe any field investigations and the results of field investigations used in selecting the proposed route (e.g. geotechnical, snow pack)

Pre-existing roads/trails on site will be used.

2. Provide a conceptual plan of the road, including example road cross-sections and water crossings.

Pre-existing roads/trails on site will be used.

3. Discuss the type and volume of traffic using the road/trail (i.e. type of vehicles and cargo and number of trips annually).

Only temporary upgrades will be used for the project duration.

4. Discuss public access to the road.

Public access will not be permitted.

5. Describe maintenance procedures.

Maintenance will be performed as required to maintain safe driving conditions.

A-2. All-Weather Road/Access Trail

6. Discuss road design considerations for permafrost.

Not applicable.

7. Describe the construction materials (type and sources for materials), and the acid rock drainage (ARD) and metal leaching characteristics of the construction materials.

Not applicable.

8. Discuss construction techniques, including timing for construction activities.

Not applicable.

9. Indicate on a map the locations of designated refuelling areas, water crossings, culverts, and quarries/borrow sources.

See Appendix 5 - Site Maps and Drawings.

10. Identify the proposed traffic speed and measures employed to ensure public safety.

Speed limit will be 30 kilometres per hour. No public access permitted.

11. Describe dust management procedures.

None planned. If necessary, dust will be suppressed by adding water to the roads.

A-3. Winter Road/Trail

12. Describe the surface preparation, including the use of snow berms or compaction, and any flooding. If flooding is to be used, provide the location of the water source on a map.

No winter road planned.

13. Describe the operating time period.

Not applicable.

14. Identify the proposed traffic speed and measures employed to ensure public safety.

Not applicable.

15. Discuss whether the selected route traverses any fish-bearing water bodies.

Not applicable.

SECTION B: Mineral Exploration /Advanced Exploration /Development

B-5 Stripping/ Trenching/ Pit Excavation

1. Discuss methods employed. (i.e. mechanical, manual, hydraulic, blasting, other)

No mineral exploration being conducted.

2. Describe expected dimensions of excavation(s) including depth(s).

Minor excavation of borrow sources for road upgrades and regarding only. No mineral development.

3. Indicate the locations on a map.

See Appendix 5 - Site Maps and Drawings for locations of potential borrow sources.

4. Discuss the expected volume material to be removed.

The expected volume of material required:

Durban Island

- **Type 2 Granular Fill = 10,000 cubic metres**
- **Type 3 Granular Fill = 500 cubic metres**

Padloping Island

- **Type 2 Granular Fill = 5,000 cubic metres**
- **Type 3 Granular Fill = 500 cubic metres**

Fill is required for landfarm development, regrading and road improvements.

5. Discuss methods used to determine acid rock drainage (ARD) and metal leaching potential and results.

Borrow sources not in areas of mineral exploration or development. If the borrow material is suspected of having acid rock drainage and metal leaching potential then it will be sampled. This is unlikely as the material used will be from the surface/near surface and no blasting will occur to extract sand and gravel.

Pits and Quarries

1. Describe all activities included in this project.

- Pitting

None

- Quarrying

See Section B-5 above

- Overburden removal

None

- Road use and/or construction (please complete Section A)

See Section A above

- Explosives transportation and storage

If contractor proposes use of explosive for road improvements, details will be provided after contract award.

- Work within navigable waters

Removal of two partially to fully submerged barges at Padloping Island.

- Blasting

If contractor proposes use of explosive for road improvements, details will be provided after contract award.

- Stockpiling

None

- Crushing

None

- Washing

None

- Other

None

2. Describe any field investigations and the results of field investigations used in determining new extraction sites.

A geotechnical assessment was completed in 2009. The Remedial Action Plan (Appendix 4) summarizes the identified borrow areas.

3. Identify any carving stone deposits.

None identified

4. Provide a conceptual design including footprint.

See Appendix 5 - Site Maps and Drawings

5. Describe the type and volume of material to be extracted.

See Section B-5 above

6. Describe the depth of overburden.

None

7. Describe any existing and potential for thermokarst development and any thermokarst prevention measures.

None

8. Describe any existing or potential for flooding and any flood control measures.

None

9. Describe any existing or potential for erosion and any erosion control measures.

Borrow areas will be re-graded and sloped to prevent erosion.

10. Describe any existing or potential for sedimentation and any sedimentation control measures.

If necessary, silt fences will be installed.

11. Describe any existing or potential for slumping and any slump control measures.

None

12. Describe the moisture content of the ground.

Durban Island is typically well drained.

Padloping Island has low lying wet areas.

13. Describe any evidence of ice lenses.

None

14. If blasting, describe methods employed.

If contractor proposes use of explosive for road improvements, details will be provided after contract award.

15. Describe the explosive type(s), hazard class, volumes, uses, location of storage (show on map), and method of storage.

If contractor proposes use of explosive for road improvements, details will be provided after contract award.

16. Discuss methods used to determine acid rock drainage (ARD) and metal leaching (ML) potential and results.

If the borrow material is suspected of having acid rock drainage and metal leaching potential then it will be sampled. This is unlikely as the material used will be from the surface/near surface and no blasting will occur to extract sand and gravel.

17. Discuss safety measures for the workforce and the public.

A Site Specific Health and Safety Plan (SSHSP) will be prepared by the contractor after contractor award. Public access is prohibited.

SECTION F: Site Cleanup/Remediation

1. Describe the location, content, and condition of any existing landfills and dumps (indicate locations on a map).

Information on the dumps can be found in the Remedial Action Plan (RAP) in Appendix 4. The Site Maps and Drawings in Appendix 5 show the locations of the dumps.

2. Identify salvageable equipment, infrastructure and/or supplies.

No salvageable materials or equipment has been identified.

3. Provide a list of all contaminants to be cleaned up, anticipated volumes and a map delineating contaminated areas. This includes buildings, equipment, scrap metal and debris, and barrels as well as soil, water (surface and groundwater) and sediment.

Maps delineating the contaminated areas can be found in the Remedial Action Plans (RAP) (Appendix 4) and the Site Maps and Drawings (Appendix 5).

4. Describe the degree of pollution/contamination, and list the contaminants and toxicity.

The degree of pollution/contamination is moderate. Please refer to Appendix 4 for details.

5. Describe technologies used for clean-up and/or disposal of contaminated materials. Include a list of all the physical, chemical and biological cleanup/ remediation methods, operational procedures, and the dosage/frequency of reagents and bacterial medium.

Only proven methods/technologies will be used. See the Remedial Action Plan (Appendix 4) for the clean-up plans.

6. Identify and describe all materials to be disposed of off site, including the proposed off site facilities, method of transport and containment measures.

Soil contaminated with Type B hydrocarbons will be treated on-site using land farms. All other hazardous and non-hazardous materials collected or excavated will be shipped off site to southern licenced disposal facilities (exact facilities to be determined).

See the Remedial Action Plan (Appendix 4) for further details.

7. Discuss the viability of landfarming, given site specific climate and geographic conditions.

Landfarming has proven to be a viable option for the treatment of hydrocarbons (F1-F3) on other Distant Early Warning (DEW) Line sites. This technique is most effective on lighter end hydrocarbons and typically requires a couple of seasons to reduce contaminant levels to below criteria. Building the landfarm and starting treatment of hydrocarbon contaminated soil will be a high priority for the contractor on this project. Completing this task early in the schedule will allow for the maximum about of treatment time.

8. Describe the explosive types, hazard classes, volumes, uses, location of storage (indicate on a map), and method of storage (if applicable).

None

9. If blasting, describe the methods employed.

If blasting is employed, it will be for road upgrades at Durban Island. The contractor must include details in a Site Access Upgrade Plan after contract award.

10. Describe all methods of erosion control, dust suppression, and contouring and re-vegetation of lands.

Regrading of excavated areas will be conducted. If dust suppression is required, water will be used. No re-vegetation is planned.

11. Describe **all** activities included in this project.

- Excavation (please complete Section B-5)

See Section B-5

- Road use and/or construction (please complete Section A)

See Section A

- Airstrip use and/or construction

None.

- Camp use and/or construction

See Part 2 – Camp Site Transportation Questions 16-18.

- Stockpiling of contaminated material

Contaminated materials will be consolidated and packaged for transportation. They will be stored at a staging area until they are loaded onto the barge/sealift for removal from site. Confirmatory samples will be taken from the staging area once the materials are removed to confirm that the area is not contaminated.

- Pit and/or quarry (please complete Section C)

See Section C

- Work within navigable waters (please complete Section H)

Removal of two fully to partially submerged barges near-shore at Padloping Island (West Beach Area). The barges are located close to shore and no extensive marine program will be required. It is anticipated that both barges can be removed at low tide using equipment based on-shore. Required erosion and sedimentation

**control will be used. (Please see h
H)Section H).**

- Barrel crushing

See Part 2 – Waste Water Questions 25. Empty barrels will be handled as pre the Barrel Protocol described in the Abandoned Military Site Remediation Protocol (INAC 2009) which can be found in the Remedial Action Plans (Appendix 4).

- Building Demolition

Existing infrastructure (un-useable) on Durban Island includes module train buildings, garage, water reservoir building, downed antenna and fuel tanks.

Existing infrastructure on Padloping Island includes the dilapidated remains of buildings.

All existing structures, except those identified as archaeologically significant, will be demolished as part of the remedial activities. See Appendix 4 for details.

- Other

None

4. DESCRIPTION OF THE EXISTING ENVIRONMENT

Describe the existing environment, including physical, biological and socioeconomic aspects. Where appropriate, identify local study areas (LSA) and regional study areas (RSA).

Please note that the detail provided in the description of the existing environment should be appropriate for the type of project proposal and its scope.

The following is intended as a guide only.

The existing environment is described in the “Environmental Assessment Screening Reports in Appendix 6.

Physical Environment

Please note that a description of the physical environment is intended to cover all components of a project, including roads/trails, marine routes, etc. that are in existence at present time.

- Proximity to protected areas, including:
 - i. designated environmental areas, including parks;
 - ii. heritage sites;
 - iii. sensitive areas, including all sensitive marine habitat areas;
 - iv. recreational areas;
 - v. sport and commercial fishing areas;
 - vi. breeding, spawning and nursery areas;
 - vii. known migration routes of terrestrial and marine species;
 - viii. marine resources;
 - ix. areas of natural beauty, cultural or historical history;
 - x. protected wildlife areas; and
 - xi. other protected areas.
- Eskers and other unique landscapes (e.g. sand hills, marshes, wetlands, floodplains).
- Evidence of ground, slope or rock instability, seismicity.
- Evidence of thermokarsts.
- Evidence of ice lenses.
- Surface and bedrock geology.
- Topography.
- Permafrost (e.g. stability, depth, thickness, continuity, taliks).
- Sediment and soil quality.
- Hydrology/ limnology (e.g. watershed boundaries, lakes, streams, sediment geochemistry, surface water flow, groundwater flow, flood zones).
- Tidal processes and bathymetry in the project area (if applicable).
- Water quality and quantity.
- Air quality.
- Climate conditions and predicted future climate trends.
- Noise levels.
- Other physical Valued Ecosystem Components (VEC) as determined through community consultation and/or literature review.

Biological Environment

- Vegetation (terrestrial as well as freshwater and marine where applicable).
- Wildlife, including habitat and migration patterns.
- Birds, including habitat and migration patterns.
- Species of concern as identified by federal or territorial agencies, including any wildlife species listed under the *Species at Risk Act (SARA)*, its critical habitat or the residences of individuals of the species.
- Aquatic (freshwater and marine) species, including habitat and migration/spawning patterns.
- Other biological Valued Ecosystem Components (VEC) as determined through community consultation and/or literature review.

Socioeconomic Environment

- Proximity to communities.
- Archaeological and culturally significant sites (e.g. pingos, soap stone quarries) in the project (Local Study Area) and adjacent area (Regional Study Area).
- Palaeontological component of surface and bedrock geology.
- Land and resource use in the area, including subsistence harvesting, tourism, trapping and guiding operations.
- Local and regional traffic patterns.
- Human Health, broadly defined as a complete state of wellbeing (including physical, social, psychological, and spiritual aspects).
- Other Valued Socioeconomic Components (VSEC) as determined through community consultation and/or literature review.

5. IDENTIFICATION OF IMPACTS AND PROPOSED MITIGATION MEASURES

The identification of impacts and proposed mitigation measures are described in the Environmental Impact Assessments found in Appendix 6.

1. Please complete the attached Table 1 – Identification of Environmental Impacts, taking into consideration the components/activities and project phase(s) identified in Section 4 of this document. Identify impacts in Table 1 as either positive (P), negative and mitigable (M), negative and non-mitigable (N), or unknown (U).

See Table 1 below.

2. Discuss the impacts identified in the above table.

Please see Appendix 6 for details on impacts.

3. Discuss potential socioeconomic impacts, including human health.

Please see Appendix 6 for details.

4. Discuss potential for transboundary effects related to the project.

None

5. Identify any potentially adverse effects of the project proposal on species listed under the *Species at Risk Act (SARA)* and their critical habitats or residences, what measures will be taken to avoid or lessen those effects and how the effects will be monitored.

Please see Appendix 6.

6. Discuss proposed measures to mitigate all identified negative impacts.

Please see Appendix 6.

6. CUMULATIVE EFFECTS

Discuss how the effects of this project interact with the effects of relevant past, present and reasonably foreseeable projects in a regional context.

The cumulative effects of this project are discussed in the Environmental Impact Assessments, provided in Appendix 6.

7. SUPPORTING DOCUMENTS

Where relevant, provide the following supporting documents:

- Abandonment and Decommissioning Plan

See Remedial Action Plan in Appendix 4.

- Existing site photos with descriptions

Not included. Site photos are available in the Phase III Environmental Site Assessment.

- Emergency Response Plan

Site Specific Health and Safety Plan will be provided by the contractor after contract award.

- Comprehensive Spill Prevention/Plan (must consider hazardous waste and fuel handling, storage, disposal, spill prevention measures, staff training and emergency contacts)

Comprehensive Spill Contingency Plan will be completed by the contractor prior to mobilizing to site.

- Waste Management Plan/Program

Waste Management Plan will be completed prior to mobilizing to site.

- Monitoring and Management Plans (e.g. water quality, air pollution, noise control and wildlife protection etc.)

Not available, will be completed prior to mobilizing to site.

- If project activities are located within Caribou Protection Areas or Schedule 1 Species at Risk known locations, please provide a Wildlife Mitigation and Monitoring Plan

Not applicable

In addition, for Project Type 9 (Site Cleanup/Remediation), please provide the following additional supporting documents:

- Remediation Plan including cleanup criteria and how the criteria were derived.

See Remedial Action Plans in Appendix 4.

- Human Health Risk Assessment of the contaminants at the site.

Not available

Section H: Marine Based Activities

H-1 Vessel Use

1. Describe the purpose of vessel operations.
2. List classes and sizes of vessels to be used.
3. Indicate crew size.
4. Indicate operating schedule.
5. Provide a description of route to be traveled (include map).
6. Indicate whether the vessel will call at any ports. If so, where and why?
7. Describe wastes produced or carried onboard including the quantities, storage, treatment, handling and disposal methods for the following:
 - a. Ballast water
 - b. Bilge water
 - c. Deck drainage
 - d. Grey and black water
 - e. Solid waste
 - f. Waste oil
 - g. Hazardous or toxic waste
8. List all applicable regulations concerning management of wastes and discharges of materials into the marine environment
9. Provide detailed Waste Management, Emergency Response and Spill Contingency Plans
10. Does the vessel(s) possess an Arctic Pollution Prevention Certificate? If yes, indicate the date of issue and the name of the classification society.
11. Describe the source of fresh water and potable water
12. Indicate whether ice-breaking will be required, and if so, approximately where and when? Discuss any possible impacts to caribou migration, Inuit harvesting or travel routes, and outline proposed mitigation measures.
13. Indicate whether the operation will be conducted within the Outer Land Fast Ice Zone of the East Baffin Coast. For more information on the Outer Land Fast Ice Zone, please see the Nunavut Land Claims Agreement (NLCA), Articles 1 and 16.
14. Indicate whether Fisheries or Environmental Observers or any other *Qualified Marine Observer* will be onboard during the proposed project activities. If yes, describe their function and responsibilities.
15. Describe all proposed measures for reducing impacts to marine habitat and marine wildlife (including mammals, birds, reptiles, fish, and invertebrates).
16. Describe whether any part of the project will be located outside of the Nunavut Settlement Area and whether any other regulatory requirements must be met (e.g. CEAA).

The removal of two barges at Padloping Island West Beach Area will be conducted from shore at low tide. The barges are partially to fully submerged depending on the tide. No large vessels will be required for support. The contractor is required to submit a Work Methodology to ensure erosion control and fish salvage measures are taken. See Photographs below.



Debris Area 3: Partially Submerged Barge



Debris Area 3: Partially Submerged Trailer Hitch and Barge

TABLE 1 - IDENTIFICATION OF ENVIRONMENTAL IMPACTS

[illegible]

Note: Please indicate in the matrix cell whether the interaction causes an impact and whether the impact is

P = Positive

N = Negative and non-mitigatable

M = Negative and mitigatable

U = Unknown