



Geotechnical and Environmental Baseline Studies for Iqaluit Port Development

Spill Prevention Plan

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Geotechnical and Environmental Baseline
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Appendix List

Appendix 1 Study Area

Appendix 2 Nunavut/Northwest Territories Spill Report Form



1 Introduction

1.1 Purpose and Scope

The purpose of this Spill Prevention Plan (SPP) is to document and describe the systems and procedures for handling, storing, disposing and clean-up of hazardous materials during the geotechnical and environmental baseline studies (the Project) in support of the Iqaluit Port Development.

The primary objectives of this SPP are the following:

- Outline storage and handling procedures designed to prevent spills which can result in harm to personnel and the environment.
- Outline spill response and clean-up procedures to be followed in the event of a spill or leak.
- Define a process to ensure that site personnel and sub-contractors are aware of the project spill response procedures.

The SPP is organized as follows:

- Section 1 – outlines the purpose, scope, and objectives of the SPP, and presents an overview of the Project, including the environmental setting.
- Section 2 – presents summaries of environmental management plans related to the SPP.
- Section 3 – outlines regulatory requirements and best management practices relevant to spill prevention.
- Section 4 – describes potential environmental impacts associated with improper storage, handling and disposal of substances, procedures to mitigate such impacts, and spill response protocols.
- Section 5 – outlines monitoring, reporting and record keeping procedures to be implemented.
- Section 6 – presents training procedures and communication protocols to be implemented.

Project field staff will be required to review this SPP during the course of site orientation in order to inform staff of expectations and hazardous waste management requirements. A copy of this SPP will be kept on site at an appropriate location near to storage areas for fuels and any other hazardous materials.

1.2 Project Overview

Geotechnical and environmental baseline studies are required to support the design of a proposed deep water port and upgrades to a municipal breakwater and boat ramp in Iqaluit, Nunavut. These studies will support engineering design, future preparation of an Environmental Assessment (EA), as per Article 12, Part 4 of the Nunavut Land Claims Agreement, and post-EA permitting.

Site coordinates for the municipal breakwater and boat ramp are approximately 68°30'41.45" W and 63°44'24.67" N (Appendix 1). The site coordinates for the deepwater port are approximately 68°31'29.07" W and 63°43'26.82" N.



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Geotechnical and environmental baseline studies to be conducted include the following:

- Water and sediment quality
- Oceanography
- Fish and fish habitat
- Migratory and marine birds
- Terrestrial vegetation and rare plants
- Terrestrial landforms, soil and permafrost
- Traditional Knowledge (Inuit Qaujimajatuqangit)
- Geotechnical investigations

The geotechnical and environmental baseline studies will focus on the areas surrounding the proposed deep water port site, municipal breakwater and boat ramp. These field studies will be conducted on federal Crown land, Municipal land, and Commissioner's land.

The proponent's contact information is as follows:

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1.3 Existing Site Conditions

The Project site consists of the marine environment, natural tundra habitat, and rocky shoreline.

**2**

Related Environmental Management Plans

This SPP is one of four Environmental Management Plans (EMPs) to be referred to during the geotechnical and environmental baseline studies. The other EMPs include a Waste Management Plan, Wildlife Mitigation and Monitoring Plan, and an Abandonment and Restoration Plan. These plans should be read in conjunction with the SPP.

2.1 Waste Management Plan

A Waste Management Plan has been prepared to identify, manage, and minimize the waste generated during geotechnical and environmental baseline studies, and discusses the procedures to reduce or eliminate potential impacts associated with the studies.

2.2 Wildlife Mitigation and Monitoring Plan

A Wildlife Mitigation and Monitoring Plan have been prepared to describe management requirements regarding both terrestrial and marine wildlife during field-based geotechnical and environmental baseline studies. Contamination caused by spills may adversely affect wildlife and wildlife habitat.

2.3 Abandonment and Restoration Plan

An Abandonment and Restoration Plan has been prepared to describe the procedures to restore the Project site on completion of the geotechnical and environmental baseline studies.



3 Regulatory Requirements and Best Management Practices

3.1 Federal Legislation

The federal government of Canada, through Environment and Climate Change Canada manages waste disposal and discharge in the natural environment. In Canada, the powers to classify, manage, and regulate waste are provided by the *Canadian Environmental Protection Act*. Indigenous and Northern Affairs Canada, through the *Territorial Lands Act*, is responsible for the management of activities on federal Crown land in Nunavut. Additional federal acts that apply to spill prevention in Nunavut include:

- *Fisheries Act*
- *Migratory Birds Convention Act*
- *Transportation of Dangerous Goods Act*
- *Arctic Waters Pollution Prevention Act*
- *Canada Shipping Act, 2001*

3.2 Territorial Legislation

Jurisdiction over several territorial matters including wildlife management, land use planning and development, and natural resource management were granted to the territory by the Canadian government under the *Nunavut Land Claims Agreement*. Under this agreement, Institutions of Public Government (IPGs), including the Nunavut Impact Review Board (NIRB) and Nunavut Water Board (NWB) were created, both of which review and regulate activities pertaining to use or disturbance of the natural environment. In addition, various territorial agencies, including the Department of Environment and the Department of Health, and the municipalities, have responsibilities for the management of waste.

Key pieces of territorial legislation also exist that provide the framework for managing and preventing spills. These include the following:

- *Environmental Protection Act*
- *Public Health Act*
- *Fire Prevention Act*
- *Safety Act*
- *Wildlife Act*



3.3 Best Management Practices and Guidelines

Relevant Best Management Practices for spill prevention include:

- Northern Land Use Guidelines – Indigenous and Northern Affairs Canada
- National Fire Code of Canada – National Research Council Canada
- Workplace Hazardous Materials Information System (WHMIS) – Health Canada
- Guidelines for Spill Contingency Planning – Indigenous and Northern Affairs Canada
- Guideline for Industrial Waste Discharges in Nunavut – Nunavut Department of Sustainable Development
- Environmental Guideline for the General Management of Hazardous Waste – Nunavut Department of Sustainable Development
- Guidelines for the Preparation of Hazardous Material Spill Contingency Plans – Environment Canada
- Emergency and continuity management program – Canadian Standards Association (CSA) Z1600-14
- National Oil Spill Preparedness and Response Regime – Transport Canada

3.4 Permits and Authorizations

The geotechnical and environmental baseline studies will require several permits and/or authorizations before proceeding. These include a variety of federal and territorial permits to allow for the collection of sediments, deployment of instruments, and land access.

A list of applicable federal permits/approvals is provided below:

- *Fisheries Act* Self-Assessment and, if required, a Request for Review (geotechnical drilling).
- *Fisheries Act* Licence to Fish for Scientific Purposes (invertebrate collection and retention).
- *Navigation Protection Act* Notice of Works (if required; barge placement during open water period).
- Indigenous and Northern Affairs Canada Class A land use permit (use of Crown Land).

A list of applicable territorial and IPG permits/approvals is provided below:

- Nunavut Research Institute project registration
- Nunavut Planning Commission *Review/Determination*
- Nunavut Impact Review Board *Screening/Decision*
- Nunavut Water Board Type B Water Licence or Authorization (water use and waste disposal for geotechnical drilling program)



4 Potential Environmental Impacts and Mitigation Measures

4.1 Environmental Impacts

The geotechnical and environmental baseline studies will occur both in terrestrial and marine environments. Waste will be generated and risks of spills of hazardous waste are present. If not managed properly, potential environmental impacts could occur, including leaks or spills that could have a deleterious impact on public health, wildlife, and the local environment.

4.2 Mitigation Measures

4.2.1 General

During the execution of the studies there is an increased potential to spill liquid and solid hazardous waste. The following measures will be implemented by field personnel to prevent and/or manage spills:

- Hazardous wastes must be segregated, stored, handled and disposed of in accordance with labels, MSDS and government regulations.
- Hydrocarbons and hydrocarbon waste (i.e. engine oils and lubricants) will be stored in separate leak-proof sealed containers.
- Empty chemical containers will be disposed of appropriately, with reference to the MSDS or with a licensed waste contractor.
- Corrosive materials must be kept away from flammable materials.
- Routine inspections of active worksites, equipment, as required to ensure regulatory compliance and spill prevention.
- Emergency response kits and spill kits will be onsite and will be appropriate to the type and amount of hazardous materials associated with the geotechnical and environmental studies. Spill kits will contain absorbent booms, socks and/or pads, waste bags and ties, and Personal Protection Equipment (PPE) such as gloves and goggles. Further details on the contents of the spill kits will be provided by the contractor.
- Oily waste products, including cans, rags, filters, and leaking equipment, should be stored in leak-proof containers for disposal off site.
- Hazardous waste will be stored in labelled containers and appropriately segregated based on material.
- General housekeeping rules will be used to minimize clutter.



4.2.2 Geotechnical Studies

Geotechnical studies will include vibrocore and borehole drilling. Drilling activities will be conducted from an operational platform that will be placed over top of the selected sampling location. Drilling is planned to occur on land (quarry) and, depending on season, on ice and/or on a barge (subtidal sites). Vibrocores will be undertaken in intertidal areas.

Hazardous products associated with the drilling program that have a potential to be leaked or spilled include the following:

- Diesel fuel
- Gasoline
- Hydraulic and lubricating oils
- Engine coolants

Potential environmental effects associated with the geotechnical studies include:

- Leaks or spills that can adversely affect human health.
- Leaks or spills that can adversely affect wildlife and wildlife habitat.

The following mitigation measures will be implemented:

- Storage areas should be covered to keep out rainwater and snow.
- Fuel handling and refuelling activities will be conducted in a designated area of the site and in a manner that ensures the risk of spills, or the impacts from spills, is kept at a minimum.
- Secondary containment, spill prevention supplies (drip pans, liners, containment pads) will be used for the fuel storage and the fuel transfer area to catch drips, leaks or spills.

4.2.3 Environmental Baseline Studies

Environmental baseline studies will occur largely on foot in both terrestrial and the intertidal marine environments. Bulk waste is not anticipated for the environmental field studies. The marine water quality and sediment baseline study will require the collection of water and sediment samples from a vessel. Water samples will be collected using a grab sample (i.e. Niskin or Van Dorn bottle) and sediment samples will be collected using a clamshell grab (i.e. Ponar or Van Veen).

The potential environmental effect associated specifically with the environmental baseline studies includes the accidental spillage of equipment preservatives, decontamination agents, and fuels.

The following mitigation measures will be implemented during the environmental baseline studies:

- Sampling equipment will be decontaminated before travelling to study sites to eliminate the need for cleaning at site. Cleaning will only involve phosphate-free laboratory detergent.
- Water quality sample preservatives (nitric acid, sulphuric acid) will be added to samples from pre-measured containers, minimizing the risk of spillage. Formalin may be used and will be poured



into wide-mouth sample jars in secondary containment (i.e. Rubbermaid tote) to minimize risk of release into the marine environment.

- Should refuelling of the supply truck or boat need to take place onsite, secondary containment will be provided and spill response supplies will be on hand for the environmental baseline studies.

4.2.4 Study Spill Response Protocol

Accidental releases of deleterious substances, such as hydrocarbons, can affect soils, freshwater fish and aquatic life, terrestrial wildlife, birds, or marine mammals or fish in the area. Whether the spill is on land, water, or snow/ice, the following measures will be implemented if a spill occurs during the geotechnical and environmental baseline studies:

- In the event of a spill, activities will be immediately suspended, and emergency response procedures will be initiated.
- Stop the spill or leak, where practical and safe to do so.
- Identify, if possible, the substance involved and review applicable MSDS prior to attempting further mitigation. Obtain safety equipment as necessary before proceeding.
- Obtain and use spill control equipment to contain the spill.
- Contain any spill to water bodies by installing berms or aquatic containment (e.g., floating oil booms) appropriate for the type and size of spill.
- Contain the spill on land with sandbags, spill pads, berms, etc.
- Contain any spill on snow or ice and prevent spilled liquids from moving towards waterways using absorbent materials or a snow dike.
- Determine if external support, such as local authorities, should be called to assist.
- Determine if the spill is reportable by consult per the Reportable Threshold Table (<http://www.enr.gov.nt.ca/programs/hazardous-materials-spills/reporting-spills>)
- Divert potential runoff away from the spill area, if possible.
- Store and/or dispose of contaminated materials resulting from the spill as per Waste Management Plan and regulatory requirements.
- Determine the extent of the spill, volume, area affected and equipment required to conduct remediation works.
- Plan and implement remediation works.
- Complete an incident report.



5 Monitoring, Reporting, and Record Keeping

5.1 Monitoring

During the geotechnical and environmental baseline studies, field personnel will inspect and monitor equipment daily for damage. These inspections will occur before each shift and throughout the day. Monitoring of hazardous materials will also occur daily and will include:

- Confirming labelling and signage on containers is legible and in good condition.
- Routine inspection of storage areas, secondary containment, and containers for leaks, and addressing leaks or containers found in poor condition or improperly sealed.

5.2 Reporting

Within 24 hours of a reportable spill, a written incident report will be prepared and submitted to the Project Manager and applicable regulatory agencies. Information provided in the report will include the reporting organization, date, time, location, hazardous materials involved and quantities, source, persons or organizations notified details of how the spill occurred, remedial action taken or planned, and actions necessary to prevent recurrence.

5.3 Record Keeping

Observations, field notes, checklists, inspection reports, corrective action plans, including non-compliances or non-conformances and non-reportable spills are to be maintained. Records shall be legible, identifiable, and traceable. Records may be recorded in hard copy as long as an electronic copy is also kept.



6 Training, Competency, and Communications

6.1 Training and Competency

Prior to the commencement of the studies, site personnel will attend a site orientation. Site-specific emergency response procedures will be prepared and hazards will be identified, emphasizing the hazards and mitigation measures associated with containment, clean-up, and documentation of hazardous materials and spills of petroleum products. For each work site and task, field personnel will:

- List possible areas where emergencies (including spills) might occur.
- Identify the possible outcome (injury, environmental damage, fatality).
- Determine required response and control measures (spill control, firefighting, etc.).
- Determine resources that will be required to respond to the emergency, and in what quantities.
- Determine training required to effectively respond to the emergency.

Additional environmental and/or safety training will be provided depending on the requirements of the individual's specific assignment and the work to be performed. Environmental and safety topics, including spill prevention, will be discussed regularly at Health, Safety and Environment meetings, tailgate meetings, kick-off meetings, and work plan development. It is the responsibility of the field supervisor to provide the field team with this information for spill prevention matters. Records of personnel training will be maintained.

6.2 Communications

Field personnel will communicate directly with the field supervisor who in-turn will communicate with the Project Manager. If required, the Project Manager will communicate incidents/issues/concerns to the relevant regulatory bodies. The Project Manager, with assistance from the field supervisor, will immediately report spills to the **24-HOUR SPILL REPORT LINE** (1-867-920-8130), and complete and submit the NT/NU Spill Report Form (Appendix 2). The NT/NU Spill Report Form will either be faxed (1-867-873-9624) or emailed (spills@gov.nt.ca) to the Government of Nunavut.



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Appendix 1 Study Area







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Appendix 2 Nunavut/Northwest Territories Spill Report Form





Canada

NT-NU SPILL REPORT

OIL, GASOLINE, CHEMICALS AND OTHER HAZARDOUS MATERIALS

NT-NU 24-HOUR SPILL REPORT LINE

TEL: (867) 920-8130

FAX: (867) 873-6924

EMAIL: spills@gov.nt.ca

REPORT LINE USE ONLY

A	REPORT DATE: MONTH – DAY – YEAR		REPORT TIME		<input type="checkbox"/> ORIGINAL SPILL REPORT, OR <input type="checkbox"/> UPDATE # _____ TO THE ORIGINAL SPILL REPORT	REPORT NUMBER _____ - _____
B	OCCURRENCE DATE: MONTH – DAY – YEAR		OCCURRENCE TIME			
C	LAND USE PERMIT NUMBER (IF APPLICABLE)		WATER LICENCE NUMBER (IF APPLICABLE)			
D	GEOGRAPHIC PLACE NAME OR DISTANCE AND DIRECTION FROM NAMED LOCATION		REGION <input type="checkbox"/> NWT <input type="checkbox"/> NUNAVUT <input type="checkbox"/> ADJACENT JURISDICTION OR OCEAN			
E	LATITUDE DEGREES	MINUTES	SECONDS	LONGITUDE DEGREES	MINUTES	SECONDS
F	RESPONSIBLE PARTY OR VESSEL NAME		RESPONSIBLE PARTY ADDRESS OR OFFICE LOCATION			
G	ANY CONTRACTOR INVOLVED		CONTRACTOR ADDRESS OR OFFICE LOCATION			
H	PRODUCT SPILLED		QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES		U.N. NUMBER	
I	SECOND PRODUCT SPILLED (IF APPLICABLE)		QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES		U.N. NUMBER	
J	SPILL SOURCE		SPILL CAUSE		AREA OF CONTAMINATION IN SQUARE METRES	
K	FACTORS AFFECTING SPILL OR RECOVERY					
L	DESCRIBE ANY ASSISTANCE REQUIRED		HAZARDS TO PERSONS, PROPERTY OR ENVIRONMENT			
M	ADDITIONAL INFORMATION, COMMENTS, ACTIONS PROPOSED OR TAKEN TO CONTAIN, RECOVER OR DISPOSE OF SPILLED PRODUCT AND CONTAMINATED MATERIALS					
N	REPORTED TO SPILL LINE BY STATION OPERATOR		POSITION	EMPLOYER	LOCATION CALLING FROM	TELEPHONE
M	ANY ALTERNATE CONTACT		POSITION	EMPLOYER	ALTERNATE CONTACT LOCATION	ALTERNATE TELEPHONE

REPORT LINE USE ONLY

N	RECEIVED AT SPILL LINE BY STATION OPERATOR	POSITION	EMPLOYER	LOCATION CALLED YELLOWKNIFE, NT	REPORT LINE NUMBER (867) 920-8130
LEAD AGENCY <input type="checkbox"/> EC <input type="checkbox"/> CCG <input type="checkbox"/> GNWT <input type="checkbox"/> GN <input type="checkbox"/> ILA <input type="checkbox"/> INAC <input type="checkbox"/> NEB <input type="checkbox"/> TC			SIGNIFICANCE <input type="checkbox"/> MINOR <input type="checkbox"/> MAJOR <input type="checkbox"/> UNKNOWN	FILE STATUS <input type="checkbox"/> OPEN <input type="checkbox"/> CLOSED	
AGENCY		CONTACT NAME	CONTACT TIME	REMARKS	
LEAD AGENCY					
FIRST SUPPORT AGENCY					
SECOND SUPPORT AGENCY					
THIRD SUPPORT AGENCY					