

Natural Resources Canada
Waste Management & Spill Contingency Plan
with mitigation measures
Community Geological Mapping of the Kivalliq Corridor
July 2 – August 2, 2023

1. Introduction

This proposal targets the southern half of the proposed Churchill-Kivalliq Hydro-fibre link corridor, western Hudson Bay region, a hard to access, heavily drift-covered region with outdated geological mapping (Davidson 1969; Eade 1970; Fraser and Eade 1978), rare obsolete (K/Ar biotite) age constraints, and no lithogeochemical knowledge with which to correlate units within, and beyond, the region. New mapping integrated with existing geophysical data combined with lithogeochemical and isotopic (Sm-Nd, U-Pb) analytical data for major units, will provide the constraints required to elucidate the prospectivity and evolutionary history of the region. This will be integrated with GEM1 acquired data from the Manitoba Far North Geomapping Initiative (2008-2010) to the south; and western Churchill NATMAP (1997-2002) knowledge to the north. The objective is to address critical gaps in the geoscience knowledge of the area, increase mineral exploration effectiveness and success rates, provide a foundation for local land-use decisions and stimulate the local economies and create social benefit opportunities. Results will be made freely available through the Natural Resources Canada website, and will be reproduced in a manner which allows uptake and understanding by local communities.

2. Location and Schedule of Activities

Proposed geoscience mapping of the Kivalliq corridor will target bedrock exposures surrounding and west of the hamlet of Whale Cove, and surrounding, west and northwest of the town of Arviat. All operations will be based from these two communities (hotel accommodation) according to a schedule discussed and recommended by the HTOs and residents. Proposed geoscience interpretation and mapping will take place over ~32 days from July 1 to August 2, 2023.

- **August 2022 to March 2023 activities** focussed on consultation and co-development with Inuit organizations (KIA Rankin Inlet) and community organizations in Whale Cove and Arviat to assess interest, discuss community priorities, and explore best practices to involve Kivallirmiut interested in participating. A bilingual (English – Inuktitut) presentation was delivered to the KIA in Rankin Inlet on Nov. 21 2022, to the Arviat Hunters and Trappers Organization on Nov. 24, to interested members of the public in Arviat on Nov. 25, 2022, and in a Public Meeting including members of the Issatik HTO in Whale Cove on Nov. 28, 2022. These presentations, related discussions, and workshops with highschool students in both Whale Cove and Arviat were effective in gaining insights into the moderate to high level of interest in training and jobs related to geoscience interpretation and bedrock mapping of the Kivalliq corridor. Consultation with the Resident Geologist based in Arviat, responsible for delivery of GN's Prospecting courses, was an essential component of our visit to Arviat.

- **July 1 – August 2, 2023 activities** will involve community-based, helicopter-assisted mapping from the central Nunavut hamlet of Whale Cove (2-weeks) and the lower Nunavut community of Arviat (3-weeks). Compilation maps and Landsat imagery combined with aeromagnetic data will be analysed with community members to devise a strategy for ground-truthing magnetic anomalies and new data collection. Interested Northerners, with a focus on youth 20-30 years, carvers and prospectors will be provided rotational opportunities as paid field assistants. Field data will be downloaded daily from handheld computers into a Geospatial database (co-ordinated by A. Ford). Report of field work in English and Inuktitut will be prepared and released in Fall 2023. Production of a preliminary bedrock geology map, acquisition of lithogeochemical data for prospective units, and isotopic analyses on major units, will be undertaken from Nov. 2023-March 2024

3. Preliminary Plan

A map showing the proposed region of bedrock mapping is attached as a separate file. This map shows the location of the airports to be used in Whale Cove and Arviat as well as the location of two small 8-drum fuel caches to be established for safety reasons if permits are granted.

4. Description of Undertaking & Equipment, Impacts

Mapping will involve examination and documentation of exposed bedrock within the Kivalliq region west of Whale Cove and Arviat (see map). Coverage will be via low-impact foot traverses by a 2-3 person team comprising the project proponent (Mary Sanborn-Barrie) and 1 or 2 community members. Transport to the exposures will be by helicopter which will return to Whale Cove (July 2-14) or Arviat (July 16-26) each evening.

All equipment to be used will fit into a small backpack to be provided to all field assistants along with a bagged lunch. Examination of rock exposures is done using a hand lens, structural compass for measurements, pen magnet, hammer (to break off a fresh sample), and digital camera. Observations and interpretations will be recorded on small, hand-held computers with bluetooth GPS.

**** No camps, buildings, ditches, trenches, dams, roads or other structures will be constructed ****

5. Fuels

Primary fuel caches will be established at the municipal airports in Whale Cove (32 sealed drums) and Arviat (40 sealed drums) following all safe handling and storage requirements. The fuel will be stored in neat orderly rows in berms with enough space in between rows to permit inspection. Bungs will face 12 o'clock (up) to minimize any leakage, in the unlikely event a seal breaks. These airport fuel caches will be inspected daily. Spill kits will be available at the refuelling sites. To ensure safe operations in the event of weather or emergency situations, two small fuel caches consisting of 8 sealed drums are planned. One cache is proposed to be 83 nautical miles west of Whale Cove at Lat: 62° 0.627'N, Long: 95° 28.275'W, with a second cache proposed 57 nautical miles west of Arviat at 61° 9.788'N, Long: 96° 1.849'W (indicated by green F on attached map). All fuel drums will be removed in August 2023.

6. Waste

Operations will be based from hamlets of Whale Cove and Arviat, such that there are no foreseen waste issues related to sewage, greywater, food or garbage.

7. Predicted environmental impacts and proposed mitigation measures

No permanent or long-term environmental impacts are expected from the proposed mapping activity. A helicopter (Bell 206L4) to transport the 1-3 person team to each exposure can land without any disruption to the tundra. Established airports will support the helicopter base and Primary fuel caches. The fuel will be stored in a self-supporting insta-berm and spill kits will be close by.

8. Petroleum Storage, Inventory and Transfer

Electrical pumps supplied by the helicopter contractors will be used for the transfer of Jet B aviation fuel. Smoking, sparks or open flames are prohibited in fuel storage and fuelling areas at all time.

Refuelling will be done in designated areas equipped with spill kits (see section 10.5). Secondary containment will be used in areas of refuelling.

9. Risk Assessment and Mitigation of Risk

9.1 Aviation Fuel

- 1) Drummed products: Leaks or ruptures may affect storage containers of petroleum products, including drums of Jet B aviation fuel

Regular inspection and maintenance in accordance with recognized and accepted standard practices will reduce any risks identified above. Spill kits will be positioned at all refuelling stations. A description of the contents and configuration of the fuel spill kits is provided in Section 10.5

No propane tanks, diesel heaters, or gasoline are required for this activity.

10. Responding to Failures and Spills

10.1 Spill Responses and Contact List

Nunavut & NWT 24-hour Spill Report Line
(867) 920-8130

Water Resources Inspector for Crown-Indigenous Relations & Northern Affairs Canada
(formerly INAC)
Iqaluit, NU
(867) 975-4550
24-hour pager (867) 766-3737

GN-Dept of Environment (DOE)
(867) 975-7700
Manager of Pollution Control and Air Quality
(867) 975-7748

Kivalliq Inuit Association, Lands Department
32-4 Sivulliq Avenue
340 Rankin Inlet, Nunavut XOC-0G0

Ph.: (867) 645-5731
Toll free 1-800-220-6581
FAX: (867) 645-2348

Michel Plouffe

GeoNorth Program Coordinator
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10.2 Basic Steps – Spill Procedure

In the case of any spill or other environmental emergency, it is necessary to react in the most immediate safe and environmentally responsible manner. No spill or incident is so minor that it can be ignored and every spill must be reported.

The basic steps of the spill response plan are as follows:

1. Ensure the safety of all persons at all times.
2. Identify and find the spill substance and its source, and, if possible, stop the process or shut off the source.
3. Inform the on-site coordinator or his/her designate at once, so that he/she may take the appropriate actions. Appropriate action includes the notification of the spill to the 24-hour Spill Report Line and INAC Water Resource Officer. A copy of the Spill Report form can be found in Appendix I.
4. Contain the spill or environmental hazard, as per its nature, and as per the advice of the Spill Line and INAC Water Resources Officer as required.
5. Implement any necessary clean-up and/or remedial action.

10.3 Basic Steps – Chain of Command

1. Immediately notify and report the 24-hour Spill Report Line at (867) 920-8130, the CIRNAC Water Resource Officer at (867) 975-4550, and Kivalliq Inuit Association at (867) 645-5731.
2. A Spill Report Form (Appendix 1) is filled out as completely as possible before or after contacting the 24-hour Spill Report Line. A copy of the guidelines for completing the Spill Report form is found in Appendix II.
3. Notify Marty McCurdy, GEM-GeoNorth Science Project Officer at 613-859-5835.

10.4 Other contacts for spill response/assistance and further reporting

Nunavut Water Board, Head Office Gjoa Haven	(867) 360-6338
Fisheries and Oceans Canada, Habitat Impact Biologist	(867) 979-8007
Government of Nunavut Emergency Health information	(867) 975-5910

10.5 Spill Equipment

Spill kits will be at all fuel storage and refuelling sites. Spill kits consist of:

- Heavy PVC tarp, impermeable to Jet B aviation and gasoline spills, sized in accordance with fuel containers (12'x14' for drums of Jet B, 4'x4' for plastic jerry cans (if used))

- Aluminum stakes to secure impermeable tarp to ground
- Particulate absorbent
- Petroleum sorben pads
- 2 pair PVC gloves
- 2 pair safety goggles
- Disposable bags
- 1 shovel
- Fire extinguisher per spill site

11. Taking Action

11.1 Spill Response Actions for Jet B Aviation Fuel

Take action only if safety permits. Stop the source flow if safe to do so and eliminate all ignition sources. Never smoke when dealing with these types of spills.

On Land

Build a containment berm using soil material or snow and place a plastic tarp at the foot of the berm for easy capture of the spill after all vapours have dissipated.

Remove the spill by using absorbent pads or excavating the soil, gravel or snow.

Remove spill splashed on vegetation using particulate absorbent material.

Contact regulatory agencies for approval before commencing with the removal of any soil, gravel or vegetation.

On Muskeg

Do not deploy personnel and equipment on marsh and vegetation/;

Remove pooled gasoline or Jet B with sorbent pads and/or skimmer.

Flush with low pressure water to push toward collection point.

On advice from regulatory agencies, burn only in localized areas, e.g. trenches, piles or windrows.

Do not burn if root systems can be damaged (low water table).

Minimize damage caused by equipment and excavation.

On Water

Contain spill as close to release point as possible.

Use containment boom to capture spill for recovery after vapours have dissipated.

Use absorbent pads to capture smaller spills.

Use skimmer for larger spills.

On Snow and Ice

Build a containment berm around spill using snow.

Remove the spill using absorbent pads or particulate sorbent material/

The contaminated ice and snow must be scraped and shovelled into plastic buckets with lids, 205 litre drums, or polypropylene bags

Storage and Transfer

All contaminated water, ice, snow, soil and clean-up supplies will be stored in closed, labelled containers. All containers will be stored in a well-ventilated area away from incompatible materials.

Disposal

Any contaminated material will be shipped to an appropriate and approved disposal facility. The DOE monitors the movement of hazardous wastes from generators, carriers to receivers, through a tracking document (Waste Manifest). A waste manifest will accompany all movements.

12. Permits and Licences

The applicant is applying for all necessary Land Use and Scientific Research permits and licences. These include:

- Nunavut Research Institute
- Kivalliq Inuit Association Exemption certificate
- Application for Land Use Permit, Class B

13. Contacts

Project Proponent / Field Supervisor:

Mary Sanborn-Barrie

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Appendix A: Spill Report Form

Appendix B: Guidelines for completing a Spill Report