



Clyde River Harbour Development

Construction Environmental Management Plan



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Chapter 1 Introduction

Fisheries and Oceans Canada - Small Craft Harbours (DFO-SCH) , as the proponent of the Clyde River Harbour Development Project, is proposing the construction of a small craft harbour in Clyde River, Nunavut (the Project). Clyde River is located within the Qikiqtaaluk Region, in the North Baffin Planning Region.

The purpose of this Construction Environmental Management Plan (CEMP) is to present and describe proposed environmental protection requirements and mitigation measures that shall be adhered to throughout the project lifespan. The CEMP will provide a framework for the development and implementation of safe and environmentally responsible practices to reduce environmental and social effects associated with construction activities.

This CEMP will be updated as required by terms and conditions defined by the Nunavut Impact Review Board (NIRB) screening decision report, other permit conditions, and any additional consultation commitments. Revisions will also be made if there are changes to design or construction methods and procedures. Mitigation measures outlined within this CEMP are based on guidelines, regulations, consultation comments, and Canadrill-CBCL's experience with similar project work.

Chapter 2 Project Overview

The primary objective of the Project is to establish a commercial fishing harbour in the Hamlet of Clyde River and provide safe and accessible facilities for community members pursuing their livelihoods in the local area. The intent is to enhance the local facilities for the benefit of both its direct users and the broader community, taking into consideration the anticipated future impacts of climate change.

2.1 Schedule

Construction of the Project is scheduled to occur over four open-water seasons, commencing in 2022. Site construction works will commence in 2022 and be completed by fall of 2025.

2.2 Project Components

The proposed small craft harbour layout consists of the following key features:

- ▶ Two large breakwater structures, which provide a sheltered basin for vessel mooring
- ▶ A revetment along the shoreline
- ▶ Two strings of floating docks, with the ability to expand to four floating docks, within the basin
- ▶ A community boat launch
- ▶ A new fixed wharf structure accessible via a road on the breakwater crest
- ▶ A retrofit of the existing sealift and breakwater to the north of the sealift to maintain and enhance the existing accessibility
- ▶ An upland area, or laydown area, for storage of materials and goods containing drainage features (i.e., culverts and ditches)
- ▶ Dredging within the small craft harbour entrance channel required to facilitate navigation of the design vessels as specified by DFO-SCH
- ▶ Placement of a new mooring bollard to facilitate offloading of fuel to the adjacent tank farm
- ▶ Harbour lighting along the breakwater access road, fixed wharf and floating docks landing area, and electrical service on the fixed wharf
- ▶ Navigation aids along the breakwaters, as required

2.3 Construction

In addition to the physical components of the Project, the following activities will be carried out during construction:

- ▶ Establishment of temporary construction work camp
- ▶ Establishment of temporary construction staging, laydown, and storage areas
- ▶ Haul road and river crossing upgrades
- ▶ Quarrying (drilling, blasting, excavation)
- ▶ Dredging and disposal of dredged material
- ▶ Pile driving
- ▶ Infilling
- ▶ Utility pole and lighting installation

Rock and gravel required to construct the small craft harbour will be sourced from a local quarry. The proposed quarry location is an existing quarry located approximately 5 km by road from the small craft harbour site. The haul road from the quarry crosses a watercourse and a new crossing is required.

Infilling will be carried out to establish the small craft harbour facilities and expand the upland area for the small craft harbour laydown area. Dredged material will be reused for infilling, if the material is suitable for such reuse; dredged material that cannot be reused at the site will be disposed of at sea.

It is expected that the contractor will establish a temporary work camp to accommodate personnel during construction.

Chapter 3 Roles and Responsibilities

For successful completion of the Project, all organizations involved shall be aware of their respective roles and responsibilities as presented below. The responsibility for the application of this CEMP encompasses all Project personnel from management to workers.

3.1 Proponent, Project Authority, and Contract Authority

DFO-SCH is the project proponent and is the main point of contact with the regulatory authorities on permitting and regulatory compliance. As the owner and Project Authority of the Project, DFO has the obligation to ensure that their commitments to protect the environment are met, and that these relevant obligations are known to the Contract Authority, Construction and Contract Administrator, and the Contractor. As the owner, DFO-SCH is also responsible for all post-construction activities.

As the Contract Authority of the Project, Public Services and Procurement Canada (PSPC) is ultimately responsible for the management and implementation of the CEMP; however, all Project personnel will share the responsibility of conducting Project activities in accordance with this CEMP and agreed upon standards and protocols.

3.2 Construction and Contract Administrator

Canadrill-CBCL is assigned as the Construction and Contract Administrator, whose role is to act as the DFO representative and is responsible for monitoring the selected Contractor's activities (i.e., compliance with contract, including environmental requirements and the CEMP). Canadrill-CBCL will also be responsible for supporting DFO-SCH in communicating the regulatory requirements to the Contractor and monitoring the Contractor's construction activities for compliance.

Within Canadrill-CBCL, the role of a Resident Inspector, who reports to the Construction and Contract Administrator will be assigned to monitor onsite staff and project progress during the Project. The Resident Inspector will have the overall responsibility for the monitoring the Contractor's implementation of activities associated with the CEMP for the Project.

3.3 Contractor and Environmental Monitor

The Contractor is responsible for the day-to-day management of construction activities and compliance with the terms of the contract, compliance with the conditions of all permits and approvals, and compliance with the CEMP. The Contractor's personnel (i.e., anyone working on behalf of the contractor, including subcontractors) will report to the Contractor directly, and the Contractor will report to DFO/PSPC. The Contractor will retain an Environmental Monitor whose responsibilities will include the environmental monitoring of construction activities, environmental sampling, reporting monitoring results, incident reporting, and communicating the requirements of the CEMP to the Contractor personnel.

The mitigation or protective measures identified in the CEMP will be primarily the responsibility of the Contractor.

3.3.1 Contractor Construction Work Plans

The selected Contractor will be required to prepare task and site-specific Contractor Construction Work Plans (CWPs) that will include environmental management, mitigation and monitoring measures that comply with the requirements of this CEMP, approval and permit obligations, and legal requirements. At a minimum, the Contractor will be required to prepare the following plans:

- ▶ Health and safety—this plan will detail the measures and procedures that will be employed to meet occupational health and safety requirements during construction.
- ▶ Quarry development and quarry operations—this plan will detail the measures and procedures that will be employed to control blasting and manage dust generated during construction.
- ▶ Spill prevention, contingency, and emergency response—this plan will detail the measures and procedures that will be employed to prevent, mitigate, and respond to a leak or spill of hazardous material during construction.
- ▶ Erosion and sediment control—this plan will detail the measures and procedures that will be employed to control site runoff and prevent and mitigate erosion and sedimentation during construction.
- ▶ Waste management—this plan will detail the measures and procedures that will be employed to store, handle, and dispose of waste generated during construction.
- ▶ Traffic management—this plan will detail the measures and procedures that will be employed to manage construction traffic and avoid or mitigate traffic conflicts during construction.
- ▶ Marine construction management—this plan will detail the measures and procedures that will be employed to manage marine construction activities and avoid or mitigate conflicts with marine fish and wildlife, and community users of the marine environment, during construction.
- ▶ Construction staging—this plan will detail the staging of construction activities to avoid conflicts with the sealift operations and harvesting activities during construction.

- Wildlife mitigation and monitoring—this plan will detail the measures and procedures that will be employed to monitor for the presence of wildlife and avoid conflicts with wildlife during construction.

The plans will be further described with additional context within the Project's specification documents. Additional plans may be required, which will be identified during design development, contracting, and from regulatory permits and approvals.

3.3.2 Training Requirements

Environmental training and orientation, as well as Indigenous cultural awareness training, will be mandatory for staff employed onsite. Topics to be discussed include but are not limited to an overview of environmental risks and mitigation, cultural awareness, accidental spill response, waste management, and contingency plans.

In general, training and orientation will include a review of the CEMP, Contractor CWP, Project conditions of approval, applicable environmental legislation, and standard practices and procedures.

3.4 Community Complaints

DFO-SCH will be responsible for receiving and responding to any comments or complaints received from the community. The Construction and Contract Administrator will prepare a communications protocol for review and approval by DFO-SCH and PSPC. If any complaints of or issues with construction activities are raised by the community, the Contractor will be required to prepare an Issue Resolution Plan that will be reviewed by the Construction and Contract Administrator for approval by DFO-SCH and PSPC.

Chapter 4 Summary of Existing Conditions and Construction Impacts

4.1 Existing Conditions

The Project is set to occur along the onshore and nearshore areas of the existing harbour in Clyde River. These areas include the small craft harbour site (including the new location of the mooring bollard), the haul road route (including the river crossing) to and from the quarry, and the quarry location. Figure 1.2 in the Project Proposal document presents the locations of these project components. The baseline site conditions in these areas are described in Project Proposal document and summarized below.

The onshore harbour area is part of the terrestrial environment and consists of a relatively flat, compacted sand parking area for the existing community sealift and boat launch. The parking area also functions as a temporary storage and stockpiling location for equipment, building supplies, and shipping containers. The intertidal shoreline is part of the marine environment and primarily consists of a shallow sloped sandy beach. Benthic substrate in the Project area is generally sand with small, patchy clusters of gravel, cobble, and boulders in the area. Infilling will be carried out to establish the small craft harbour facilities and expand the upland area for the small craft harbour laydown area. Dredging will be required to at least -5.0 m Chart Datum (CD) at the fixed wharf, entrance channel, and turning circle to accommodate larger vessels. Dredging will also be required to a depth of -1.5 m CD at the floating docks to accommodate vessels at low tide. Fish and shellfish are present in the small craft harbour footprint and the disposal at sea location. Fish and marine mammals are present in Patricia Bay, including in or near the small craft harbour location.

Rock and gravel required to construct the small craft harbour will be sourced from the quarry. The proposed quarry is an existing quarry located approximately 5 km by road from the small craft harbour site. The existing quarry boundaries are being expanded to allow extraction of the required volume of rock for the Project; the boundary of the quarry expansion will be within the quarry area identified in the Project Proposal. The haul road to and from the quarry is an existing road; this road crosses a watercourse and the existing bridge will require upgrades, or a new crossing will be required. The river is a relatively shallow river (i.e., less than 1.0 m depth). The riverbed is predominantly boulder and cobble, and the river is used as a migration corridor for Arctic Char to move between the freshwater lakes and the marine environment; the migration typically occurs in August and

September. In addition to the existing bridge, there is a site on the river that was used in approximately 2019 as a ford crossing.

Wildlife, including Threatened or Endangered species protected under the *Species at Risk Act* (SARA), may occur within the Project area, including the small craft harbour, along the haul road, or at the quarry. A list of species at risk—wildlife, marine and migratory birds, marine fish, and marine mammals—that may occur in the small craft harbour, and their likelihood of occurrence, is provided in the Project Proposal document.

4.2 Environmental and Socio-Economic Effects

The potential adverse environmental and socio-economic effects of the Project that may occur during construction are described in Project Proposal document and summarized below.

- ▶ Air emissions such as vehicle/equipment exhaust, dust and vapours associated with construction-related activities have the potential to cause adverse health, safety, nuisance, and other environmental effects both within and outside of the Project boundaries.
- ▶ High levels of ambient noise and vibrations resulting from construction activities, as well as instantaneous pressure changes from blasting, can affect the community by causing nuisance while in the vicinity of Project operations. Noise and pressure changes can also affect terrestrial and marine wildlife, causing changes in behaviour or avoidance of affected areas.
- ▶ Construction activities can adversely impact surrounding soils, including disturbing surface soils, inducing erosion and contributing sediment to nearby waterbodies, generating dust, and introducing contaminants to the subsurface.
- ▶ Additionally, construction activities have the potential to induce long-term impacts to permafrost (i.e., permafrost degradation). The ground is in its most vulnerable state during the summer thaw season (open-water season) when surface temperatures are increasing, and the active layer is thawing. Disturbance of the ground when it is in this vulnerable state can potentially cause increased ground temperatures, and future deformation and/or damage to permafrost.
- ▶ Disruption of native vegetation within the Project area can occur through the direct destruction/alteration of vegetated areas, the introduction and/or spread of invasive species, and the subsequent impacts of sedimentation, erosion, and drainage.
- ▶ Potential impacts to terrestrial wildlife are primarily associated with disturbance as a result of increased human activity.
- ▶ There will be a direct and permanent loss to aquatic habitat (destruction of fish habitat for which an application will be submitted for Authorisation under the *Fisheries Act*) in the footprint of the small craft harbour.
- ▶ In-water construction activities have the potential to temporarily affect marine water quality and increase turbidity and total suspended sediment (TSS) in the harbour. Dredging and the placement of materials can result in the resuspension of sediment.

- ▶ Haul road development activities, specifically the installation of a new river crossing, has the potential of interrupting Arctic Char passage within the river.
- ▶ Underwater noise may affect marine mammals migrating and foraging within the vicinity of the Project area during construction of the small craft harbour.
- ▶ Trucking and the use of heavy equipment within the Project area present a safety concern to the community of Clyde River.
- ▶ Power outage associated with the interconnection of the new overhead line has the potential to affect some QEC customers.

Chapter 5 Environmental Management and Mitigation Measures

This section outlines management, mitigation, and monitoring measures to be incorporated into the Construction Work Plan and implemented before and/or during construction.

5.1 Guidelines and Best Management Practices

Applicable guidelines and Best Management Practices (BMPs) for the CEMP include, but are not limited to, the following:

- ▶ Northern Land Use Guidelines (Indigenous and Northern Affairs Canada, 2011)
- ▶ Contingency Planning and Spill Reporting in Nunavut. A Guide to the Regulations. (Government of Nunavut, n.d.)
- ▶ Workplace Hazardous Materials Information System (WHMIS) (Health Canada, 2015)
- ▶ A Best Practices Guide to Solid Waste Reduction (Canadian Construction Association, 2001)
- ▶ Guidelines for Spill Contingency Planning (Indigenous and Northern Affairs Canada, 2007)
- ▶ Environmental Guideline for the General Management of Hazardous Waste (Government of Nunavut, 2010)
- ▶ National Oil Spill Preparedness and Response Regime (Transport Canada, 2019)
- ▶ Interim code of practice: end-of-pipe fish protection screens for small water intakes in freshwater (DFO, 2020)
- ▶ DFO: Fish and Fish Habitat Protection Policy statement (DFO, 2019a)
- ▶ DFO: Measures to Protect Fish and Fish Habitat (DFO, 2019c)
- ▶ DFO: Standards and Codes of Practice (DFO, 2019b)
- ▶ DFO: Nunavut Restricted Activity Timing Windows for the Protection of Fish and Fish Habitat (DFO, 2013)
- ▶ DFO: Projects Near Water - Nunavut Restricted Activity Timing Windows for the Protection of Fish and Fish Habitat (DFO, 2019d)
- ▶ DFO: Guidelines for the Use of Explosives in or Near Canadian Water (Wright & Hopky, 1998)
- ▶ Best Management Practices for Pile Driving and Related Operations (BC Marine and Pile Driving Contractors Association, 2003)

- ▶ National Oceanic Atmospheric Administration (NOAA): 2018 Revisions to: Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (Version 2.0) (NOAA, 2018)
- ▶ Environmental Protection Service, and Environmental Guideline for Dust Suppression (GN, 2002f)
- ▶ Government of Canada: General nesting periods of migratory birds (Government of Canada, 2018a)
- ▶ Government of Canada: Guidelines to reduce risk to migratory birds (Government of Canada, 2019b)
- ▶ Government of Canada: Guidelines to avoid disturbance to seabird and waterbird colonies in Canada (Government of Canada, 2018b).
- ▶ Government of Nunavut: Non-native and invasive species in Nunavut (Government of Nunavut, 2011)
- ▶ Government of Nunavut: Contingency Planning and Spill Reporting in Nunavut. A Guide to the New Regulations (Government of Nunavut, 2003)
- ▶ Indigenous and Northern Affairs Canada (INAC): Guidelines for Spill Contingency Planning (INAC, 2008)
- ▶ ECCC: Guidelines for the Preparation of Hazardous Material Spill Contingency Plans (ECCC, 1990)
- ▶ Government of Nunavut, Department of Environment (GN DoE):
- ▶ Environmental Guideline for the General Management of Hazardous Waste (GN DoE, 1999)
- ▶ Environmental Guideline for Used Oil and Waste Fuel (GN DoE, 2012)
- ▶ Environmental Guidelines for Industrial Waste Discharges into Municipal Waste and Sewage Treatment Facilities (GN DoE, 2011)
- ▶ Government of Northwest Territories (GNWT):
- ▶ Northern Land use Guidelines, Pits and Quarries (GNWT, 2015b)
- ▶ Northern Land Use Guidelines, Access: Roads and Trails (GNWT, 2015a)
- ▶ NIRB: Abandonment and Restoration Plan (NIRB, 2021)
- ▶ National Research Council Canada: National Fire Code of Canada, 2015 (National Research Council Canada, 2015)
- ▶ Workplace Hazardous Materials Information System (WHMIS) (Health Canada, 2020)

5.2 Mitigation and Protection Measures

5.2.1 General

Some of the general measures to protect the environment during construction include:

- ▶ **5.2.1.1** The Contractor, sub-contractors, and site managers must review this CEMP and the applicable guidelines prior to each construction phase or new activity.
- ▶ **5.2.1.2** Stockpile, or have readily available, supplies of materials as appropriate on-site to repair or replace damaged or destroyed protection measures.

- ▶ **5.2.1.3** Coordinate Project activities around seasonal constraints and weather. If inclement weather affects the safety of field personnel, equipment, or the environment, the Project shall be shut down until conditions on site are deemed safe.
- ▶ **5.2.1.4** Clean, drain, and dry equipment prior to being shipped to site from a southern location. Equipment that will enter the aquatic environment (e.g., drill) must be washed down with a phosphate-free cleaning solution before arriving to the Project area to prevent potential spreading of invasive species.
- ▶ **5.2.1.5** Stop-work procedures shall be defined for non-compliance with condition of the CEMP or any Permit, Approval, or Authorization.
- ▶ **5.2.1.6** Reported destruction or death to wildlife (including birds), fish, marine mammals, or SARA listed plants known to have been caused by construction activities.
- ▶ **5.2.1.7** Contractor employees shall be required to sign a Code of Conduct governing behaviour on the Project and during recreational hours to reduce the likelihood of negative social effects on the community. The Contractor shall implement a cultural awareness program for all staff to promote understanding and respect for local residents.
- ▶ **5.2.1.8** Review planned construction activities with the Hamlet to understand community access needs and important areas for collecting or harvesting.
- ▶ **5.2.1.9** The Contractor shall impose a zero-tolerance policy for alcohol and illicit drug possession or use for all Contractor personnel, including sub-contractors.

5.2.2 Community Infrastructure and Access

There is potential that during Project activities, there will be an increased pressure on community infrastructure such as roads, fuel supply, utility services (water, sewage, waste), and fire response. The following mitigation measures are planned:

- ▶ **5.2.2.1** The Contractor shall coordinate requirements for the laydown area around sealift delivery timelines to minimize obstructing access to the existing sealift during small craft harbour construction.
- ▶ **5.2.2.2** The Contractor shall coordinate with the Hamlet to provide access to the boat launch.
- ▶ **5.2.2.3** The Contractor shall implement a system of fixed and moveable fencing at the boat launch and sealift ramp to reduce access to unsafe areas within the active construction site.
- ▶ **5.2.2.4** The Project shall implement an on-site fire response plan to reduce impacts to local fire services. Project staff shall be trained in the use of fire suppression techniques.

5.2.3 Dust, Erosion and Sediment Control

Dust, sediment, and erosion controls are required for all activities, such as construction of the small craft harbour, haul road/quarry upgrades, and blasting. The Contractor shall prepare and implement an Erosion and Sediment Control Plan, to ensure that applicable sediment and erosion control methods are implemented (as needed) to meet environmental quality guidelines. The following mitigation measures are planned:

- ▶ **5.2.3.1** Suitable dust suppressants (i.e., calcium chloride and/or water) shall be implemented to reduce dust generation to acceptable levels.
- ▶ **5.2.3.2** Ongoing visual assessments of the potential for dust generation and combustion emissions shall be conducted (during work and/or when machinery is operating) to determine requirement for the implementation of dust suppression measures.
- ▶ **5.2.3.3** The Contractor shall obtain Hamlet approval for acceptable dust suppressants. Dust suppressants shall be selected in accordance with GN Sustainable Development, Environmental Protection Services, and Environmental Guideline for Dust Suppressants (GN, 2002).
- ▶ **5.2.3.4** Proactive maintenance shall be undertaken to address problem areas of the road which may produce significant dust.
- ▶ **5.2.3.5** Perimeter controls shall be applied to act as a barrier, preventing sediment from reaching surrounding water courses.
- ▶ **5.2.3.6** Temporary sediment control measures shall be applied at the base of any soil or rock stockpiles.
- ▶ **5.2.3.7** Water quality in the marine environment shall be monitored for sediment run-off.
 - If visual monitoring identifies sediment run-off, total suspended solids (TSS) or turbidity shall be measured and compared to the Canadian Council of Ministers of the Environment (CCME) guidelines for the protection of aquatic life.
 - Corrective actions, including stop work procedures if warranted, shall be implemented if CCME guideline exceedances are detected and attributable to the construction activities.
- ▶ **5.2.3.8** Materials shall be stockpiled so that soils/sediments do not enter the marine environment.
- ▶ **5.2.3.9** Permanent drainage features shall be incorporated into the laydown area design.
- ▶ **5.2.3.10** Equipment and/or vehicles shall not be moved unless the ground surface is in a state capable of fully supporting the load without rutting, gouging, and/or erosion of the ground surface.

5.2.4 Permafrost Management

The Contractor shall prepare and implement Permafrost Management Plan to mitigate impacts from permafrost degradation and associated erosion. The following mitigation measures are planned:

- ▶ **5.2.4.1** During construction, ground organics shall be left in place and excavations and/or disturbances shall be avoided, where possible. For wet or ice-rich permafrost sections, overland construction shall include no disturbance of the natural ground layer when possible.
- ▶ **5.2.4.2** If ice-rich permafrost is encountered during quarrying, measures shall be taken to protect permafrost and ground ice and shall be incorporated into the quarry development and quarry operations plan.

- ▶ **5.2.4.3** If snow clearing activities are required, snow cover shall be carefully removed to reduce settlement of the fill during the future thaw periods.
- ▶ **5.2.4.4** In areas where snow accumulation and/or drifting are an issue, the Contractor can implement mitigation measures such as flattening snow drifts or spreading plowed snow accumulation.
- ▶ **5.2.4.5** If areas with snow drifting become a re-occurring issue, snow fencing can be installed upwind of road embankments to keep snow drifts off the road surface and away from drainage ditches.

5.2.5 Vehicle Operation and Traffic

The primary objective of managing vehicle traffic is to ensure the safety of residents and to maintain road traffic flow. A Traffic Management Plan shall be prepared to supplement the following planned mitigation and monitoring measures:

- ▶ **5.2.5.1** Contractor drivers shall be properly trained and licensed.
- ▶ **5.2.5.2** All vehicles shall have adequate visibility lighting.
- ▶ **5.2.5.3** Road use shall not disrupt the delivery of community services and shall be done in consultation with the Hamlet administration. The Traffic Management Plan must be submitted to the Hamlet for review and approval.
- ▶ **5.2.5.4** Public notices—via community presentations, social media posts, and bulletin boards—shall be shared addressing issues and safety concerns around trucks traveling in the community. Construction vehicles shall be restricted to a speed limit set considering community safety concerns, and dust generation. This speed limit must be submitted to the Hamlet for review and approval. Any road use timing restrictions established by permitting or approvals or requested by the Hamlet shall be adhered to.
- ▶ **5.2.5.5** Construction equipment shall be sized correctly for the task and in compliance with any Hamlet road restrictions.
- ▶ **5.2.5.6** Traffic control measures shall be implemented at intersections along the haul road route, as required. This may include the use of a traffic flagger.
- ▶ **5.2.5.7** Haul road shall be maintained and repaired immediately if damaged. Undertaking regular grading and compacting to remove potholes.
- ▶ **5.2.5.8** Regular inspection and maintenance of water control features (i.e., culverts) shall be undertaken during construction.
- ▶ **5.2.5.9** A regular maintenance program for Project vehicles and equipment shall be implemented to ensure construction equipment is in good working order.
- ▶ **5.2.5.10** Gas or diesel engine exhausts shall be fitted with noise mufflers, where available.
- ▶ **5.2.5.11** When existing local facilities are not available for refuelling, equipment and vehicles must be serviced and refuelled at least 15 m away from sensitive habitats unless secondary containment is used, preferably over an impermeable surface (e.g., drip trays). There shall be designated servicing areas, as well as vehicle laydown areas identified and will be independent of fueling stations. Drip pans and / or other protective devices shall also be used to prevent spills of petroleum products and other potentially hazardous liquids (e.g., antifreeze) during servicing.

- ▶ **5.2.5.12** Revving of engines on mobile or stationary machines shall be limited and equipment not in use shall be shut down (restrict idling).
- ▶ **5.2.5.13** The use of horns, bells, hooters, or other audible signals on mobile equipment shall be limited, while maintaining safe operation.
- ▶ **5.2.5.14** Equipment, material stockpiles, and vehicle parking areas shall be located away from sensitive wildlife features (or habitats). If the noise source is directional, equipment shall be orientated to minimize propagation in critical directions.
- ▶ **5.2.5.15** Engines shall be shut off and smoking shall be prohibited during fueling.

5.2.6 Marine Vessel Operation and Traffic

A variety of vessels and equipment will be present in the waters around the small craft harbour during construction activities. There is a potential for construction vessels to interfere with existing marine use and navigation. The following mitigation and monitoring measures are planned:

- ▶ **5.2.6.1** Construction vessels shall keep to pre-defined work areas and routes that shall not interfere with sealift deliveries and to minimize the impact on existing traffic and navigation.
- ▶ **5.2.6.2** Clear communication protocols or procedures for vessels working in the area shall be established.
- ▶ **5.2.6.3** Communication protocols shall be established to notify the community of marine activities, including ongoing consultation with the community and shipping stakeholders.
- ▶ **5.2.6.4** When offshore equipment and marine vessels are refueled through a floating hose, the Contractor shall ensure that all hoses and equipment are in good working order, appropriate spill containment and clean-up equipment is available, and personnel are trained in refueling and spill response procedures.
- ▶ **5.2.6.5** Consultation with the sealift companies and Hamlet administration shall be undertaken to minimize obstructing access to the existing sealift during small craft harbour construction.
- ▶ **5.2.6.6** Rapid acceleration of vessels shall be avoided.

5.2.7 Marine Construction

Planned marine construction activities (i.e., placement of rock, pile-driving, dredging and re-use of dredged materials) have the potential to impact water, sediments, fish and fish habitat (Section 5.2.8) and mammals in the surrounding marine waters. Thus, the following mitigation and monitoring measures are planned:

- ▶ **5.2.7.1** Project-related vessels shall maintain vigilance for marine mammals, document sightings, and employ minimum distances and best practices if within 100 m of any marine mammals. Collisions or any injured or distressed marine mammal must be reported immediately to the Construction and Contract Administrator and DFO.
- ▶ **5.2.7.2** Vessels must follow the guidance for marine mammals and protected areas as outlined in the most recent Notice to Mariners published by the Canadian Coast Guard.

- ▶ **5.2.7.3** A Marine Monitoring Plan for the Project shall be developed that includes protections implemented during dredging and placement of quarry material. This must include allowable levels of turbidity and TSS, as well as marine mammal monitoring requirements.
- ▶ **5.2.7.4** Measures to reduce sediment mobilization during in-water activities shall be used by the Contractor when TSS/turbidity exceeds CCME water quality criteria.
- ▶ **5.2.7.5** Soft-start procedure shall be implemented for pile-driving that could generate underwater noise above auditory thresholds for marine mammals.
- ▶ **5.2.7.6** Mechanical dredging methods shall be used, which result in lower levels of underwater noise compared to hydraulic methods.
- ▶ **5.2.7.7** Prior to construction, stop-work conditions shall be specified. Such conditions would include exceedance of sound thresholds or sighting of a marine mammal within the exclusion zone. Work must not re-start until the marine mammal has moved out of the exclusion zone.
- ▶ **5.2.7.8** If construction is to occur during the iced-season, the in-air sound levels must be measured, and pinnipeds monitored on the ice. In the absence of Canadian guidelines, the US in-air acoustic threshold for non-harbour seal pinnipeds of 100 dB re20µPa rms will be adopted.
- ▶ **5.2.7.9** Rock material used for in-water construction shall be free of fines that could affect water quality.
- ▶ **5.2.7.10** All lubricants and hydraulic fluids used on equipment that will be working below the high-water level shall be biodegradable and non-toxic.
- ▶ **5.2.7.11** All Project marine construction vessels and equipment shall be clean and free of marine fouling to avoid the introduction of invasive species.

5.2.8 Fish and Fish Habitat

The majority of the Project activities will take place within an aquatic marine and freshwater environment. Dredging, infilling, disposal at sea, and rock piling will result in marine habitat loss and alteration. Underwater noise emissions have the potential to adversely affect marine fish, resulting in avoidance of the area, accidental mortality, and injury to fish during marine construction activities. The installation of culverts at the river crossing has the potential to impact the migration of Arctic Char in August and September. To mitigate negative effects to fish and fish habitat in the marine environment, the following mitigation measures will occur:

- ▶ **5.2.8.1** Implement soft-start procedures for pile-driving that could generate underwater noise above auditory thresholds, and using vibratory piling equipment, where possible, to reduce noise effects to community and marine fauna.
- ▶ **5.2.8.2** Maintain equipment in good running order to prevent leaking or spilling of potentially hazardous or toxic products.
- ▶ **5.2.8.3** Establish an aquatic monitoring program to verify that underwater noise levels generated from pile driving are less than 30 kPa at 10 m.
- ▶ **5.2.8.4** Recover waste or miscellaneous unused materials for disposal in a designated facility.
- ▶ **5.2.8.5** Avoid depositing deleterious substances in the watercourse.

- ▶ **5.2.8.6** Implement a Spill Response Plan (per Section 6.1).
- ▶ **5.2.8.7** Plan activities near water such that materials and chemicals don't enter the watercourse.
- ▶ **5.2.8.8** Clean, refuel, and service machinery, and store fuel and other materials for the machinery, in such a way as to prevent any deleterious substances from entering the water.
- ▶ **5.2.8.9** Handle construction material used in a watercourse in a manner to prevent to release of substances in the water that may be deleterious to fish.

The following additional mitigation measures will be implemented at the river crossing:

- ▶ **5.2.8.10** Install culverts to allow for fish passage and avoid obstructing or interfering with the movement and migration of fish.
- ▶ **5.2.8.11** Blasting setback distances shall be established in accordance with the *Guidelines for the Use of Explosives in Near Canadian Water* (Wright & Hopky, 1998).
- ▶ **5.2.8.12** Replace/restore disturbed habitat features and remediate any areas impacted by the work, undertaking, or activity.
- ▶ **5.2.8.13** Maintain an appropriate depth and flow (i.e., base flow and seasonal flow of water) for the protection of fish and fish habitat.
- ▶ **5.2.8.14** Dispose of, and stabilize, all excavated material above the High-Water Mark or top of bank of nearby waterbodies and prevent sediment re-entry to the watercourse.

5.2.9 Blasting

The Contractor will be required to prepare a Quarry and Development Plan, that must include a Blasting Management Plan. These Plans will build upon the planned mitigation and monitoring measures provided below:

- ▶ **5.2.9.1** Blasting shall be restricted to hours as agreed upon with the Hamlet. The blasting schedule shall be submitted to the Hamlet for review and approval prior to commencing blasting.
- ▶ **5.2.9.2** A notification protocol with input from the local community and other stakeholders for advance notification of planned substantial noise-causing activities shall be implemented. The notification protocol shall be submitted to the Hamlet for review and approval.
- ▶ **5.2.9.3** Buffers or exclusion zones shall be implemented, in the event a sensitive species or feature (e.g., nest) is identified, to ensure wildlife are not disturbed.
- ▶ **5.2.9.4** Prior to blasting occurring, a warning must be issued in affected area using loud signaling devices.
- ▶ **5.2.9.5** Quarry development should be initiated prior to the arrival of migratory birds (breeding season mid-May to mid-August) such that the quarry and surrounding area becomes unattractive for nesting.

5.2.10 Non-Hazardous Waste and Wastewater

It is expected that there will be a minimal amount of construction waste produced on the site. Existing materials on site consist of gravels and the only demolition planned is for the

removal of the existing bollard. The majority of waste expected will be from having the additional construction workers in the community generating typical household waste. The Contractor's Waste Management Plan will expand upon the planned mitigation and monitoring measures below:

- ▶ **5.2.10.1** Waste containers shall be provided onsite.
- ▶ **5.2.10.2** Staff shall be trained on sorting and storage requirements of specific wastes or materials that are to be reused; or are prohibited from disposal in the non-hazardous waste system. Containers used for hazardous waste shall not be used for non-hazardous waste types.
- ▶ **5.2.10.3** Domestic waste is to be regularly removed from site and disposed of at the municipal landfill or an appropriate disposal facility.
- ▶ **5.2.10.4** Domestic waste containers shall be kept closed (e.g., equipped with lids, covers/ tarps over skips) at all times except when bins are being emptied or filled, to prevent scavenging by wildlife and domestic animals, as well as to control odour.
- ▶ **5.2.10.5** No burning of refuse or waste materials shall be permitted onsite.
- ▶ **5.2.10.6** Food waste shall be stored in a manner that does not attract wildlife.
- ▶ **5.2.10.7** All waste shall be stored in plastic bags while conducting marine work to prevent waste being released into the water.
- ▶ **5.2.10.8** Used oil filters, grease cartridge containers and other products associated with equipment maintenance shall be collected, stored in sealed containers, and shipped south for disposal in accordance with applicable regulations.
- ▶ **5.2.10.9** All equipment and material shall be removed from the site at the completion of the program.
- ▶ **5.2.10.10** Daily site cleaning (housekeeping practices) and routine inspections shall be completed to ensure materials are correctly sorted and placed in the proper bins.

In addition to non-hazardous wastes, wastewater will be generated during Project activities. The Contractor will be responsible to provide temporary washroom facilities on site for construction personnel. The requirements for wastewater management will be detailed in the Contractor's Waste Management Plan, which will incorporate the following proposed mitigation and monitoring measures:

- ▶ **5.2.10.11** Portable washrooms shall be located within the Project area.
- ▶ **5.2.10.12** Wastewater shall not be deposited in, or placed on land or ice, under any conditions where the waste may enter arctic waters.
- ▶ **5.2.10.13** Sanitary waste generated shall be disposed of at the municipal facility through a contract with the municipal services.

5.2.11 Hazardous Materials

Hazardous materials may be used and/or generated in construction activities such as quarrying, maintenance of mobile equipment, welding and cutting of steel, painting wharf hardware and other miscellaneous components. The requirements for hazardous materials management will be detailed in the Contractor's Waste Management Plan, which will incorporate the following proposed mitigation and monitoring measures:

- ▶ **5.2.11.1** Ensure staff are trained and qualified to safely handle the hazardous waste and materials.
- ▶ **5.2.11.2** Hazardous waste and materials shall be stored a minimum 30 m distance from a waterbody or identified sensitive environmental area.
- ▶ **5.2.11.3** Containers used for hazardous waste and materials shall not be used for non-hazardous waste types.
- ▶ **5.2.11.4** All hazardous waste and materials shall be stored within a container which has at least 10% more capacity than the total volume of substances to be stored.
- ▶ **5.2.11.5** Containers shall be sound, sealable, and not damaged or leaking.
- ▶ **5.2.11.6** All hazardous waste and materials shall be classified and labelled – containers must be clearly labelled to identify their contents according to requirements of the WHMIS and the relevant Transport Authority.
- ▶ **5.2.11.7** All hazardous waste and materials containers shall be accompanied by the Material Safety Data Sheet (MSDS) or have the MSDS on file available.
- ▶ **5.2.11.8** Incompatible waste and materials shall be stored in a manner that contact, in the event of a spill or accidental release, is not possible (i.e., corrosive materials must be kept away from flammable materials).
- ▶ **5.2.11.9** Containers shall be placed so that each can readily and easily be inspected for signs of leakage, corrosion, or deterioration. Leaking, corroded, or deteriorated containers shall immediately be removed, and their contents transferred to a sound container.
- ▶ **5.2.11.10** Inspections of the hazardous waste and materials management shall be performed and recorded at least weekly.
- ▶ **5.2.11.11** Records are to be maintained indicating the type and quantity of waste being stored along with the date, type and quantity of hazardous waste brought into or removed from the facility.
- ▶ **5.2.11.12** A registered hazardous waste carrier shall be used to transport the waste to a registered receiver or hazardous waste management facility if disposal is required.
- ▶ **5.2.11.13** During transfer of petroleum products, a trained person must be in attendance for the entire duration of the operation. Reasonable precautions shall be taken to avoid the discharge of petroleum products onto land or into water (i.e., fuel transfers must be stopped prior to overflowing to leave room for expansion).
- ▶ **5.2.11.14** Used petroleum and chemical products shall be stored in appropriate tanks, sealed, and placed into containers, and shipped south for disposal of in compliance with applicable regulations.

5.2.12 Vegetation and Wildlife

The Project will potentially affect wildlife (birds, fish, and mammals) and vegetation during construction. Proposed mitigation and monitoring measures to minimize the potential adverse effects on vegetation and wildlife are presented below:

- ▶ **5.2.12.1** Working areas, vehicles, and equipment shall be inspected prior to clearing to ensure they are clean and free of soil, invasive plants and/or their seeds.

- ▶ **5.2.12.2** All personnel shall be trained through the induction and subsequent toolbox talk session on the risk of damaging or disturbing vegetation and sensitive communities.
- ▶ **5.2.12.3** Monitoring of disturbed areas for weed infestations shall occur on a regular basis.
- ▶ **5.2.12.4** A zero-tolerance policy regarding the harassment, disturbance, and feeding of wildlife shall be implemented and communicated through the induction process.
- ▶ **5.2.12.5** All workers shall be trained in relation to the wildlife (particularly species at risk) expected to occur in the area, including traditional knowledge, through site induction and toolbox sessions.
- ▶ **5.2.12.6** Polar bear sightings shall be reported immediately.
- ▶ **5.2.12.7** In the event caribou are sighted, protection measures implemented shall follow those outlined in Appendix I of the North Baffin Regional Land Use Plan.
- ▶ **5.2.12.8** Wildlife sightings shall be reported immediately and tracked in order to respond appropriately to emerging trends.
- ▶ **5.2.12.9** Food, food waste, and other attractants shall be handled, stored, and disposed of safely to avoid attracting and habituating animals.
- ▶ **5.2.12.10** Speed limits shall be implemented and enforced on all roadways and wildlife will be given the right-of-way so as not to chase, weary, harass or injure animals on the road.
- ▶ **5.2.12.11** Escape routes for wildlife within the quarry shall be provided (where possible), particularly during winter (i.e., avoid creating continuous berms of snow adjacent to roads that restrict wildlife).
- ▶ **5.2.12.12** Appropriate mitigation measures shall be implemented in the event large congregations of wildlife and birds occur in the Project area.
- ▶ **5.2.12.13** A pre-construction wildlife sweep shall be conducted to identify all sensitive wildlife features (e.g., active bird nests, wildlife dens, and wildlife foraging or traveling) by a qualified professional/biologist who is familiar with Arctic biology. Construction activities shall not begin until the area has been surveyed for migratory birds and nests (in a non-intrusive manner).
- ▶ **5.2.12.14** When possible, activities and infrastructure shall be sited away from nests and roosts that will be protected by prohibited entry buffers based upon government or biologist recommended setback distances.
- ▶ **5.2.12.15** Nest monitoring may be periodically required to determine efficacy of setbacks and buffers.

5.2.13 Archaeological Resources

There is potential to unearth archaeological resources during Project activities, such as the preparation of the Contractor laydown area, excavation/dredging, development of the quarry, and haul road maintenance and/or upgrading. Most of the Project area has been surveyed for archaeological resources; however, portions of the expanded quarry area must be surveyed prior to construction. Prior to the quarry expansion, an archeological survey will be conducted in the areas that are within 100 m of the quarry expansion boundary and were not previously surveyed. The following proposed mitigation and

monitoring measures aim to minimize the potential negative effects on archaeological resources:

- ▶ **5.2.13.1** If any archaeological sites are discovered within 100 m of the expanded quarry boundary, a 30-m buffer shall be implemented during construction to conserve the site. The 30-m buffer shall be delineated using visible fencing or other material to restrict access by equipment or vehicles. The fencing shall be maintained for the duration of the Project quarrying activities.
- ▶ **5.2.13.2** Suspend work immediately in the vicinity of any newly discovered archaeological, palaeontological, historical, or traditional land use site. Work may not resume until all appropriate measures are undertaken.
- ▶ **5.2.13.3** In the event that suspected human remains are discovered during construction, suspend work immediately. Work may not resume until all measures are undertaken.

Chapter 6 Spill and Emergency Response Plans

6.1 Spill Response Plan

The spill response plan will be prepared and implemented to provide guidance for Project personnel on the required actions responding to a fuel or hazardous material spill. In the unlikely event of a fuel or hazardous material spill, the following actions will be taken:

- ▶ Include a pre-work hazard analysis which requires Contractors to identify spill hazards, pathways of exposure to environmental receptors, access for emergency/clean-up vehicles, and storage facilities for spill response gear.
- ▶ Immediately stop work activities and assess the hazard to persons and the environment.
- ▶ If possible and safe to do so, stop the source of the spill.
- ▶ Shut down sources of ignition.
- ▶ Deploy spill kits to contain spills.
- ▶ Identify spilled material and consult MSDS to appropriate containment and clean-up procedures.
- ▶ Determine if additional, external clean-up support is required.
- ▶ Spilled hazardous material, such as fuels or lubricants, will be contained and transferred into an appropriate container; remaining residues would be mixed with unconsolidated absorbent materials and transferred into appropriate containers. Containers with spilled material will be sealed and transported south for disposal in accordance with applicable regulations following the Waste Management Plan.
- ▶ Reportable spills will be reported to the Nunavut Department of Environment 24-hour spill report line (1-867-920-8130). A NT-NU spill form will be submitted within 24-hours of any significant spill of hazardous materials. An NT-NU spill report form is appended to this EMP (Appendix A). The form will either be faxed (1-867-873-6924) or emailed (spills@gov.nt.ca) to the Nunavut Department of Environment.

6.2 Emergency Response Plan

An Emergency Response Plan will be prepared for the Project by the Contractor and will outline the protection of the environment, personnel, and the public in the event of an emergency. At a minimum, the emergency response plan will:

- ▶ Define the roles and responsibilities in the event of an environmental emergency.
- ▶ Include emergency classification procedures (as necessary).

- ▶ Define communication protocols including a key contact list for emergency response.
- ▶ Define incident reporting guidelines and necessary information.
- ▶ Include post-incident reporting requirements.
- ▶ Be developed in conjunction with hazardous waste management and spill prevention / response plan.

Chapter 7 Monitoring, Reporting and Communications

7.1 Environmental Monitoring

The effectiveness of environmental protection measures will be assessed regularly by the chosen Contractor and reviewed by the Construction and Contract Administrator. Contractor monitoring will occur throughout construction with the frequency and type of monitoring dependent on the construction activities taking place. In addition, the Construction and Contract Administrator will conduct routine inspections of construction activities.

7.2 Reporting

All records, checklists, inspection reports, including any non-compliances or non-conformances and corrective action plans are to be maintained. Records shall be and remain legible, identifiable, and traceable. Daily and/or weekly Environmental Monitoring Reports shall be issued by the Contractor to the Construction and Contract Administrator for review prior to being sent to DFO-SCH and PCSP, and will include the following:

- ▶ Description of environmental incidents
- ▶ Detail of environmental inspections
- ▶ Review of environmental issues raised by employees at meetings or reported to the Contractor's site team and the respective corrective actions
- ▶ Overview of past month's environmental activities
- ▶ Overview of the upcoming month's environmental activities
- ▶ List environmental concerns, environmental milestones, and environmental initiatives implemented

Changes to work processes/procedures or design must be evaluated through a management of change process to ensure risks are being properly managed. The Contractor shall establish a management of change procedure and all workers must receive training on how to identify a change, how to initiate the management of change process to a work procedure, and how to evaluate risks associated with change.

7.3 Communications

The Construction and Contract Administrator will prepare a protocol outlining communications during the Project lifespan. The Contractor will prepare and submit a Communications Plan in accordance with the Communications Protocol. Communications related to the implementation of the CEMP shall include:

- ▶ Formal written correspondence among all relevant parties including the Proponent, Project Authority, Contract Authority, Construction and Contract Administrator, Contractor, the Hamlet, regulators (e.g., Government of Nunavut, DFO Fish and Fish Habitat Protection Program, Transport Canada) and other stakeholders (e.g., Hunters and Trappers Association).
- ▶ Attendance at design, construction, and planning meetings
- ▶ Field inspections and reports
- ▶ Electronic communications
- ▶ Toolbox Meetings
- ▶ Meetings with local communities
- ▶ Meetings with representatives of regulatory authorities
- ▶ Formal environmental and social awareness training

PSPC/DFO will work with the community and the Contractor to establish a communications plan to allow for the consultation with community members, in order to keep the community informed of ongoing construction activities. As part of this plan, a complaints process will be designed, in which complaints are received and recorded by the Contractor and responded to as required. See Section 3.4 of this CEMP for additional guidance on community complaint handling and issue resolution.

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APPENDIX A

NT-NU Spill Form

NT-NU SPILL REPORT

OIL, GASOLINE, CHEMICALS AND
OTHER HAZARDOUS MATERIALS



Canada



Inuvialuit Land Administration

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:	MM	DD	YY	Report Time:	<input type="checkbox"/> Original Spill Report OR <input type="checkbox"/> Update # _____ to the Original Spill Report	Report Number:
	Occurrence Date:	MM	DD	YY	Occurrence Time:		
C	Land Use Permit Number (if applicable):				Water Licence Number (if applicable):		
D	Geographic Place Name or Distance and Direction from the Named Location:					Region: <input type="checkbox"/> NT <input type="checkbox"/> Nunavut <input type="checkbox"/> Adjacent Jurisdiction or Ocean	
E	Latitude:				Longitude:		
	_____ Degrees	_____ Minutes	_____ Seconds		_____ 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: <input type="checkbox"/> Potential Spill		Quantity in Litres, Kilograms or Cubic Metres:		U.N. Number:		
I	Spill Source:		Spill Cause:		Area of Contamination in Square Metres:		
J	Factors Affecting Spill or Recovery:		Describe Any Assistance Required:		Hazards to Persons, Property or Environment:		
K	Additional Information, Comments, Actions Proposed or Taken to Contain, Recover or Dispose of Spilled Product and Contaminated Materials:						
L	Reported to Spill Line by:		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:		Position:	Employer:	Location Called:	Report Line Number:	
Lead Agency: <input type="checkbox"/> EC <input type="checkbox"/> CCG/TCMSS <input type="checkbox"/> GNWT <input type="checkbox"/> GN <input type="checkbox"/> ILA <input type="checkbox"/> AANDC <input type="checkbox"/> NEB <input type="checkbox"/> Other: _____				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:							



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