

5.0 PROTECTION MEASURES FOR VALUED ENVIRONMENTAL COMPONENTS

5.1 GENERAL

- .1 This section describes the required protection measures for the valued environmental components identified at the CAM-M, Cambridge Bay site. The Contractor shall comply with all requirements described in this section.

5.2 HUMAN HEALTH AND SAFETY

- .1 Potential hazards to human health and safety are present at the CAM-M site in the form of hazardous materials and contaminated soil, hazardous local terrain and unpredictable weather conditions. Hazardous material and contaminated soil have the potential to enter water bodies and the food chain, and thereby affect vegetation, fish, wildlife and the health of people who travel, hunt and fish in these areas. Site debris may present a physical hazard to people travelling through these locations.
- .2 Take all necessary precautions when handling and transporting hazardous materials and contaminated soil to ensure that the materials do not come into contact with site personnel or local residents. Site workers shall wear protective clothing as directed in Section 02090 of the Contract Specifications when handling hazardous materials.
- .3 All site personnel working on or in the vicinity of clean up operations must be trained in, made aware of, and adhere to the requirements of the Workplace Hazardous Materials Information System (WHMIS) program.
- .4 Outdoor recreation activities of site personnel have the potential to adversely affect nearby fish, wildlife and heritage resources. Although recreational time will be limited, some staff will undoubtedly wish to leave camp for recreational purposes. Subject to camp rules and the requirements of territorial fishing licenses and regulations, staff may be permitted to leave the site for recreational purposes. Normal precautions for Arctic travel include: provision for rapidly changing weather conditions; possible bear encounters; filing a trip plan; first aid kit, survival kit and insect repellent.
- .5 Personal firearms are not permitted in the construction camp. However, each camp superintendent shall keep sufficient weapons (including one for backup or replacement) for defence in the event of a bear encounter which threatens human safety. When not in use, all weapons shall be locked as per all applicable legislation and access controlled by the camp superintendent.

6. All country foods must be stored as to preclude the attraction of wildlife. This should include the need to store all foods in properly refrigerated areas that are indoors, in the construction camp.

5.3 LOCAL RESOURCE USE

1. The community of Cambridge Bay is located approximately three kilometres from the site. Local residents fish and hunt, including traditional hunts of sea mammals, in the general vicinity of the site. A potential concern involves physical conflicts between ship traffic and fishing nets, near shore pollution incidents during ship-to-shore transfer of fuel and equipment, shore-to-ship transfer of hazardous materials, and shoreline terrain damage during beach landing area preparation.

2. Clean up activities and related shipping shall not interfere with local resource use in excess of levels normally encountered by established local activities and shipping. To minimize disruption to hunting and fishing activities, vessel traffic shall be restricted to traditional shipping lanes where they exist. Vessel operators are to avoid marked fishing gear that may be encountered near shore.

3. Schedule annual meetings with local associations to discuss these issues and to minimize any potential problems. This will include consultation to confirm the scheduling and locations of hunting and fishing activities. Assign a contact person to answer questions and address concerns of local residents or resource users.

5.4 LOCAL ECONOMY AND CONTACT WITH LOCAL RESIDENTS

1. Cambridge Bay, with a population of over 1,000 people, offers a wide variety of services. Impacts and potential impacts of the clean up activities on the local economy are for the most part predicted to be positive. Benefits may accrue to Inuit and northern residents from employment prospects and training opportunities.

2. Maximize employment and business opportunities in the north, in accordance with the guidelines in the Contract Specifications. Provide communication with the community of Cambridge Bay to keep them informed of contracts and significant project developments for which local businesses and individuals may be qualified to work.

3. Schedule regular meetings with the community of Cambridge Bay to discuss ongoing work and to address any community concerns. Briefing meetings with all camp personnel are required to discuss and explain Camp rules which must be established to minimize conflict with local residents.

5.5 AESTHETIC VALUE

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

5.6 SURFACE WATER AND FISH HABITAT

- .1 The removal of the contaminated soil from the sewage outfall and remediation of main landfills requires general drainage maintenance. These activities have the potential to degrade the quality of surface water if executed improperly. Siltation, erosion and a decrease in water quality can result.
- .2 Arctic char and arctic grayling are known to exist in the water supply lake near the station. In addition, abundant lakes and ponds, as well as streams in the general vicinity may contain other fish species, and fish may appear in large numbers during spawning and migration. The timing of spawning and migrations is dependent upon the species; however, in rivers and streams, concentrations may be observed at any time during the ice-free period.
- .3 The following applies to work adjacent to waterways:
 - .1 Prevent siltation of water bodies supporting fish by the use of berms or silt fences as required, and by minimizing activities adjacent to watercourses.
 - .2 Do NOT operate equipment in waterways.
 - .3 Do NOT use streambeds for borrow material.
 - .4 Do NOT dispose of excavated fill, waste material or debris in waterways.
 - .5 Survey areas immediately upstream and for 100 m downstream of proposed work areas to determine presence of concentrations of fish.
 - .6 Avoid concentrations of fish during culvert removals and work adjacent to waterways.
 - .7 Do not ford streams at or immediately upstream of locations containing concentrations of fish.
 - .8 Restrict blasting to above water and more than 100 m from concentrations of fish.
 - .9 Where possible, conduct in-stream work during low flow periods.
 - .10 When removing culverts:
 - slope banks to conform to grade of adjacent stream bank as applicable; and
 - if required, stabilize bank using erosion resistant material.

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

5.7 PERMAFROST SOILS

1. Poorly drained soils are typically ice-rich, and thus susceptible to permafrost degradation. The top layer of soil provides a protective thermal barrier that prevents permafrost degradation. The often poorly developed organic layer and typically sparse vegetation cover results in soils that are easily eroded. Erosion removes the thermal protection and causes permafrost degradation. Vehicle and equipment traffic, and soil excavation can disturb the surface layer and degrade the permafrost.

2. Minimize disturbance to permafrost soils by restricting vehicle and heavy equipment traffic to existing roads and designated work areas unless approved by the Engineer.

3. Minimize activity in areas adjacent to work areas.

4. Do NOT operate vehicles or heavy equipment off-road following heavy rain or melting snow until the soil has dried sufficiently to prevent excess rutting.

5. Install appropriate drainage and erosion control structures along access roads, where required.

6. Implement the following procedures during facility siting and excavations to minimize disruption of permafrost:

1. Site facilities such as work camps and storage areas such that they do not impede surface drainage or result in ponding. Construct gravel pads or use other appropriate methods to protect ice-rich soil from thermal or physical damage.

2. Minimize extent of disturbance during excavations.
3. Promptly backfill excavated areas with granular fill as indicated on the Contract Drawings and Specifications.
4. Minimize the development of new borrow areas.
5. Do NOT store materials directly on unprotected ground.
6. Regrade disturbed areas to restore natural drainage patterns.

7. Repair rutting that impedes local drainage or exposes permafrost in ice rich soils to the satisfaction of the Engineer.

5.8 COASTAL MARINE RESOURCES

- .1 The coastline adjacent to Cambridge Bay on Victoria Island is used by marine mammals and seabirds for feeding, migration and breeding. These mammals and birds are particularly vulnerable to oil spills since they spend a significant amount of time on the surface; some may occur in large concentrations.
- .2 Seabirds are also vulnerable to disturbance during the nesting period. Species such as fulmars, murres, and terns nest in colonies that may be disrupted by low-flying aircraft and close approaches by ships.
- .3 Where concentrations of birds and mammals are known to be near construction sites, advise chartered aircraft pilots to maintain an altitude of at least 500 metres and preferably 1000 metres above ground or water when passing over these areas. Low-level flights to observe or photograph wildlife shall not be permitted. Inform charter aircraft pilots of all applicable EPP requirements when scheduling arrangements are made or at other appropriate periods prior to the arrival of the aircraft at the site.
- .4 Marine mammals and flocks of seabirds must be avoided by all shipping. Where feasible, ships shall maintain a minimum distance of 1 km from known seabird colonies.
- .5 During transfer of fuel to land-based storage tanks, equip the hoses or pipes with properly functioning and approved check valves to prevent backflow of fuel in the case of failure. Attend all fuel transfer operations at all times. In the event of a spill of fuel, implement the appropriate contingency plan as detailed in Section 7 of this EPP.

5.9 TERRESTRIAL RESOURCES

- .1 Peary caribou, muskoxen, arctic fox, raptors (birds of prey), waterfowl and other wildlife have been reported at the CAM-M site. Polar bear encounters in the vicinity of the Station appear to be rare. Concern for human/wildlife contact, which may include wildlife harassment, habitat degradation or dangerous encounters, is based on the potential for disruption of activities and increased wildlife mortality. Wildlife mortality may also result from consumption of waste or contaminated substances.
- .2 Protect wildlife from avoidable impacts using the following procedures:
 - .1 EMPLOY A DEDICATED BEAR MONITOR(S) AT ALL TIMES.
 - .2 Require all on-site personnel to be familiar with the contents of "Safety in Bear Country".
 - .3 Do NOT feed, injure or harass wildlife.

4. Ensure that clean up activities do Not interfere with wildlife movement through the area.
 5. Do NOT disturb birds nesting on site.
 6. Vehicle, vessel and aircraft movements shall conscientiously avoid all known concentrations of wildlife or areas known to be frequented by important species or concentrations of wildlife.
 7. Do NOT attempt to chase, catch, divert, follow or otherwise harass wildlife by aircraft, vehicle, boat or on foot.
 8. Control refuse and make inaccessible to bears and other scavengers.
 9. In the event of unanticipated or unavoidable contact with mammals, particularly polar bears, act in accordance with the contingency plan (Section 7.0). Familiarize all individuals working at or visiting the site with this plan as part of their orientation to the work site.
 10. Equipment and vehicles shall yield to wildlife, where possible.
 11. Except in the vicinity of the airfield, advise charter aircraft pilots not to fly at elevations lower than 500 metres above ground or water.
 12. In the event that wildlife are spotted from the air, aircraft shall not make descents for observation or photography.
 13. Domestic or wild pets are not allowed in camps with the exception of controlled watch dogs.
 14. Project personnel shall not be permitted to possess personal firearms. The only firearms allowed on site shall be for protection from bears and shooting of animals exhibiting aberrant behaviour. The firearms shall be controlled by the camp superintendent.
 15. Report vehicle collisions with wildlife, encounters with troublesome animals, and/or the presence of potentially troublesome animals to the Engineer and to the District Wildlife Officer.
3. At the CAM-M site, several species of avifauna have been observed, including Rough-Legged Hawk, nesting in a communication dish at the Station, shorebirds nesting in high concentrations in the vicinity of the sewage outfall, and Snow Buntings, eiders, ptarmigan, plovers and turnstones all nesting in the general vicinity of Station facilities.
4. Disruption of avifauna during the nesting period can result in reproductive failure. The arrival of avifauna at specific locations in the Arctic is influenced by weather conditions and other factors. Inclement weather or a delayed spring melt may delay arrival by several weeks. In general however, the chronology of arrival, nesting, and departure is relatively consistent between years.
5. Typically within two weeks of arrival, nesting commences and continues for one to two months until the young leave the nest. Following this, the birds feed in preparation for the fall migration and depart by mid to late September.