

4.3 ROAD CONSTRUCTION AND MAINTENANCE

- .1 Existing roads and trails provide access to most sources of aggregate, potable water and/or landfill locations. The 1984 DIAND report "Land Use Guidelines: Access Roads and Trails" shall be followed so that road and trail maintenance shall emphasize preservation of the permafrost regime, vegetation patterns, existing surface drainage patterns, water quality and stream flows.
- .2 Establishment of new roads off the DND Reserve is subject to the terms of the Land Use Permit.
- .3 Avoid any archaeological resources during construction. Do not site roads within 30 metres of any other ecologically sensitive areas. Ice-rich soils, especially peatlands, are also to be avoided during road construction.
- .4 Prepare the road bed with a sufficient thickness of fill to prevent terrain damage. Install culverts to maintain natural cross drainage and prevent ponding. These culverts shall be removed from such roads and drainage restored at the end of the clean up operations.
- .5 Monitor access roads for signs of erosion and take remedial action where necessary. Do NOT use oil for dust control. Dust suppression, if required, is to be effected with water only.

4.4 STREAM CROSSING AND DIVERSION

- .1 Adhere to all government regulations, licensing requirements/procedures and inspections regarding the protection of water quality and stream integrity to prevent destruction of spawning areas. Obtain Authorization from Fisheries and Oceans Canada for any works or undertakings affecting fish habitat including alterations, diversions, or crossings.
- .2 Prevent siltation of waterways and disruption of streambeds, using the following procedures:
 - .1 Minimize activities adjacent to watercourses.
 - .2 Install cofferdams, silt barriers, or other suitable barriers.
 - .3 Do NOT operate equipment in waterways.
 - .4 Do NOT use Streambeds for borrow material.
 - .5 Do NOT dispose of excavated fill, waste material or debris in waterways.
 - .6 Avoid concentrations of fish during activities adjacent to waterways.
 - .7 Do NOT ford streams at or immediately upstream of locations containing concentrations of fish.

- .3 When removing culverts, the following procedures are to be followed to minimize disruption to stream beds and potential fish habitat:
- .1 Schedule removal of culverts to avoid concentrations of fish if such concentrations exist.
 - .2 Install or construct cofferdams of non-erodible material, silt barriers, or other suitable methods to control siltation downstream of the work area.
 - .3 Reshape site to conform to grade of adjacent stream bank following removal of the culvert.
 - .4 Use riprap or other suitable methods, if required, to stabilize the bank at the worksite.
 - .5 Remove all silt controls following completion of work, and ensure the grade of the streambed is restored.

4.5 BORROW PIT AND QUARRY DEVELOPMENT AND OPERATION

- .1 The Northwest Territories has specific permit requirements for opening and operating gravel pits and quarries outside the DLCU reservation for CAM-M shown on the drawings. The Quarry Permit can be expected to have site-specific provisions for environmental protection. DIAND issues permits under the *Territorial Quarrying Regulations*. Permit environmental protection conditions are for the purpose of minimizing the impact of development and extraction activities on surface drainage patterns, water quality, soil erosion, vegetation and, in some cases, wildlife or fish.
- .2 Comply with all terms and conditions of the Quarry Permit, including recontouring/reclaiming and site clean up prior to site abandonment.
- .3 Minimize the number of borrow pits opened by using existing borrow pits and aggregate stockpiles where feasible. Use of alternate sources is subject to approval by the Engineer.
- .4 Avoid all archaeological resources during the siting of borrow areas. Borrow areas are to be located at least 30 metres from the nearest water body providing potential fish habitat, and other sensitive resources.
- .5 Strip organic overburden, if present, and stockpile separately for use in restoring the borrow area.
- .6 Following excavation, recontour the area to restore natural drainage patterns and work overburden into the recontoured borrow area to prevent erosion. Provide drainage and run-off control using diversion ditches and sediment filters, as required, to prevent sediment-laden run-off from reaching water bodies.

7. During aggregate extraction, control vehicle and equipment operations in areas adjacent to the borrow pit to minimize the extent of disturbance.
8. Stockpile aggregate on ice-poor, well drained ground such that surface drainage is not impeded. Locate the stockpile area a minimum of 30 metres from archaeological resources, water bodies, and other sensitive resources.
9. If archaeological features or artifacts are encountered during borrow pit operations, notify the Engineer, avoid the area of the find, and restrict activities to other areas of the pit until further instructions are received. (See Section 5.0.)
10. Development of additional borrow areas that are not identified on site plans will be at the discretion of the Engineer and shall meet all siting criteria and permit requirements as discussed above.

4.6 HAZARDOUS MATERIAL PROCESSING AREAS

1. Develop a hazardous material processing area for the processing of hazardous materials in accordance with Section 02090 of the Contract Specifications.
2. Locate the hazardous material processing area a minimum of 30 metres from the nearest archaeological site or water body, on ice-poor, well drained soil, and as close to the location of work as is practicable.
3. Control movement of vehicles and equipment between the hazardous material processing area and work site to prevent the spread of potentially hazardous material and contaminated soils along roadways.

4.7 CONTAMINATED SOILS

1. DEW Line Clean Up Criteria (DCC) have been established as remediation criteria for contaminated soil. Locations of contaminated soil are delineated on the Drawings. Soils exceeding the DCC criteria are to be removed as detailed in the Contract Specifications and Drawings.
2. Minimize disturbance to adjacent areas during excavation.
3. Avoid spillage of material during transportation between the excavation site and the disposal location.
4. Following excavation of DCC Tier II soil, decontaminate excavation equipment as detailed in Section 02066 of the Contract Specifications.
5. A program of confirmatory testing of contaminated areas will be carried out by the Owner as outlined in the Contract Specifications.

4.8 LANDFILL CLOSURE AND DEVELOPMENT

- .1 Install geocomposite clay liners where indicated on the Contract Drawings. Cover landfills with granular fill material to provide a minimum cover thickness as indicated on the Contract Drawings. Regrade the landfill areas to restore natural drainage patterns and topography.
- .2 Provide drainage controls such as diversion ditches and sediment filters, as required, to prevent runoff from reaching water bodies during closure, remediation and construction of landfills.

4.9 DISPOSAL OF SITE DEBRIS

- .1 Collect, sort and dispose of hazardous and non-hazardous site debris in accordance with Section 02219 of the Contract Specifications.
- .2 Test contents of intact barrels and dispose of as described in the Contract Specifications, Section 02090.
- .3 Handle and dispose of asbestos according to the methods described in the Contract Specifications, Section 02081.
- .4 Workers are to wear appropriate protective clothing when handling potentially hazardous material as directed in Section 02090 of the Contract Specifications.
- .5 Minimize off-road activity during collection of site debris.
- .6 Avoid releasing any hazardous materials into the environment during the handling of hazardous materials. Invoke the emergency response plan (Section 7.0) and take appropriate action in the event of a spill or other emergency situation.

4.10 DEMOLITION OF BUILDINGS AND STRUCTURES

- .1 Carry out demolition, sorting and disposal of hazardous and non-hazardous demolition waste in accordance with Section 02060 of the Contract Specifications.
- .2 Do NOT dismantle or disturb structures containing nests actively occupied by birds of prey during the nesting season (see Section 5.0).

4.11 MARINE VESSEL MOVEMENTS

- .1 It is anticipated that marine vessels will be used for the transport of equipment and materials to and from the CAM-M site. Under certain circumstances, marine vessels can adversely affect wildlife. Sea mammals and flocks of waterfowl are to be avoided by all shipping.

2. 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. Inform all marine vessel operators of all applicable EPP requirements when scheduling arrangements are made or at other appropriate periods prior to the arrival of the vessel at the site.

4.12 AIRCRAFT MOVEMENTS

1. It is anticipated that fixed wing commercial and, if required, chartered aircraft will be used at the CAM-M construction site to transport personnel, perishable supplies and various construction materials and equipment.

2. Where concentrations of birds or mammals are known to be near construction sites, charter pilots shall be advised to maintain an altitude of at least 500 metres and preferably 1,000 metres, above ground or water, when passing over these areas. Low-level flights to observe or photograph wildlife shall not be permitted.

3. Inform all 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.

4.13 TRANSPORTATION OF HAZARDOUS MATERIALS

1. Store hazardous materials in accordance with Section 02090 of the Contract Specifications and ensure that each storage area is separated from the nearest water body by a 30 metre buffer zone; at beach storage areas consideration must be given to the reach of sea ice and storm tides.

2. Shipping

1. The *Transportation of Dangerous Goods Act* (TDGA) and the *International Air Transport Association* (IATA) *Dangerous Goods Regulations* govern the shipment of hazardous goods within Canada. If shipping out of Canada, Canadian regulations and regulations of the destination country both apply. Requirements of the International Marine Dangerous Goods Code (IMDGC) must be addressed in international waters (e.g., near Greenland).
2. Any material classified as hazardous by the TDGA must be accompanied by the appropriate TDG shipping documents. The documents are to state the shipper, the receiver and all carriers involved in the transport of the shipment. Non-hazardous materials are also to be accompanied by a document indicating ownership and responsibility of the receiver.
3. Package all hazardous material in accordance with the *Transportation of Dangerous Goods Regulations*.

- .4 For TDG classification 9.3, dangerous goods in quantities larger than 5 kilograms or 5 litres, and for wastes that contain more than 500 grams of PCB mixture (a mixture with PCB concentration > 50 ppm), the following procedures apply:
 - .1 Complete a waste manifest for each shipment, specifying a unique reference number and DND's waste generator number, to accompany the shipment to the final destination.
 - .2 Document on the manifest the origin and destination of the shipment.
 - .3 All manifests are to be reviewed and signed by the Engineer prior to submission.
 - .4 Deliver the manifest to the initial carrier and forward to the relevant government agencies within two days of sending the shipment.
 - .5 On receipt of the dangerous goods, the receiver shall send a copy of the manifest to the sender, the carrier of the shipment, and the relevant government agencies within two working days.
 - .6 The Contractor is responsible for submitting the signed TDG shipping documents and waste manifests to the relevant parties as detailed in the TDG Regulations.
 - .7 Notify provincial and territorial governments of any shipments of PCB mixtures which pass through their borders.
- .5 Test any waste of unknown TDGA hazard to determine whether any transport hazard exists according to the regulations. Package any substance which is considered hazardous under the TDGA in accordance with the regulations and the national standard Performance Packaging for Transportation of Dangerous Goods. For shipment off-site by air, the IATA Dangerous Goods Regulations and its standards will apply. Both the TDGA and the IATA regulations specify the packaging requirements for dangerous or hazardous goods according to risk.

.3 Labelling

- .1 Label and placard packages according to class and division of the hazardous item. Requirements may differ between the IATA and TDGA regulations. A label or placard design is unique to each classification.
- .2 Label all packages on at least two sides and write the name of the hazardous substance beside the label. Placard large containers as defined by the class and division with the TDG product identification number clearly displayed. The product identification number is indicated by the substance name in the regulations.

- .1 Remove all buildings, fuel barrels, vehicles, equipment and surplus materials from the site following completion of work.
- .2 Stabilize all large earthwork slopes. Gravel access roads required for operation and maintenance may remain.
- .3 Regrade all disturbed areas to restore natural drainage patterns.

4.15 WORK SITE CLEAN UP AND ABANDONMENT

- .1 Comply with all provisions as detailed in the SUR.
- .2 Obtain all necessary permits and licenses.
- .3 Handle, transport, store, and use explosives and all other related hazardous material in accordance with all applicable laws, regulations and orders of regulating authorities.
- .4 Electric detonation methods are PROHIBITED.
- .5 Restrict use of explosives to authorized and certified/licensed personnel who have been trained in their use.
- .6 Minimize defacement of landscape features and other surrounding objects controlling the scatter of blasted material beyond the cleared working area.
- .7 Minimize shock or instantaneous peak noise levels.
- .8 Prevent scatter from blasting from reaching fuel or hazardous substance storage locations. A minimum distance of 300 metres in rocky terrain, and 1,000 metres in the presence of metal is required.
- .9 Do NOT conduct blasting in the vicinity of concentrations of wildlife.
- .10 Restrict blasting to above water and a minimum of 100 metres from concentrations of fish.

BLASTING SHALL NOT OCCUR UNLESS SPECIFIC PERMISSION IS GRANTED BY THE NORTH WARNING SYSTEM AND THROUGH THE SITE ENGINEER. The use of explosives is potentially dangerous to human and animal health. The following procedures apply:

4.14 EXPLOSIVES