



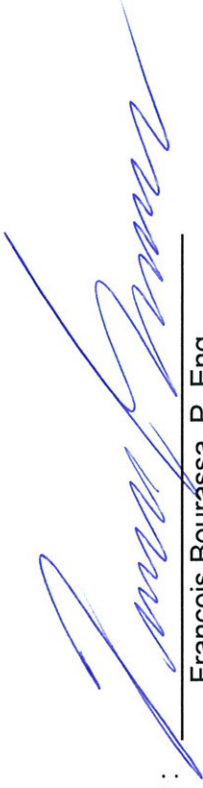
Review: October 2009

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**Environmental Protection Plan**  
**CAM-D DEW Line Environmental Remediation**

**SIMPSON LAKE, NUNAVUT**

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October 2009

## TABLE OF CONTENTS

|                                                       | PAGE      |
|-------------------------------------------------------|-----------|
| <b>1. INTRODUCTION .....</b>                          | <b>1</b>  |
| <b>2. CONSTRUCTION CAMP.....</b>                      | <b>2</b>  |
| 2.1 POTABLE WATER .....                               | 2         |
| 2.2 CAMP WASTE.....                                   | 3         |
| 2.3 GARAGE WASTE.....                                 | 3         |
| 2.4 CAMP CLEANING PRODUCTS.....                       | 3         |
| 2.5 WASTE WATER.....                                  | 3         |
| 2.6 FIRES .....                                       | 4         |
| 2.7 SITE MAINTENANCE .....                            | 4         |
| <b>3. EQUIPMENT VEHICLE USE AND MAINTENANCE .....</b> | <b>5</b>  |
| <b>4. ROAD CONSTRUCTION AND BORROW AREAS .....</b>    | <b>6</b>  |
| 4.1 ROAD CONSTRUCTION AND MAINTENANCE.....            | 6         |
| 4.2 BORROW PIT DEVELOPMENT AND OPERATION.....         | 6         |
| <b>5. ENVIRONMENTAL REMEDIATION ACTIVITIES.....</b>   | <b>7</b>  |
| 5.1 HAZARDOUS WASTE MATERIAL HANDLING.....            | 7         |
| 5.2 CONTAMINATED SOILS EXCAVATION AND DISPOSAL .....  | 7         |
| 5.3 LANDFILL EXCAVATION.....                          | 8         |
| 5.4 DEMOLITION OF BUILDINGS AND STRUCTURES .....      | 8         |
| 5.5 SURFACE DEBRIS COLLECTION .....                   | 9         |
| 5.6 ENVIRONMENTAL PROTECTION SUPPLIES .....           | 9         |
| <b>6. AIRCRAFT MOVEMENTS.....</b>                     | <b>10</b> |
| <b>7. RELICS AND ANTIQUITIES .....</b>                | <b>11</b> |
| <b>8. WILDLIFE ENCOUNTER.....</b>                     | <b>12</b> |

## 1. INTRODUCTION

This Environmental Protection Plan (EPP) has been prepared to minimize or avoid potential adverse environmental impacts associated with the construction and cleanup activities at the CAM-D DEW Line site. The plan describes environmental protection measures that will limit the environmental disturbances associated with all project activities. These measures are considered appropriate for known and anticipated situations and conditions. However, should certain procedures or protection measures proved impractical, imprudent or insufficient in field situations, appropriate modifications or substitutions will be proposed to PWGSC.

All works will be performed in accordance with all applicable environmental laws, regulations and requirements of Federal, territorial and other regional authorities. All project activities must also be performed in accordance with the Water Use License, the Land Use Permit and the Quarry Permit. Law references, codes and guidelines are listed in the contract specifications at section 01 41 00, Regulatory Requirements.

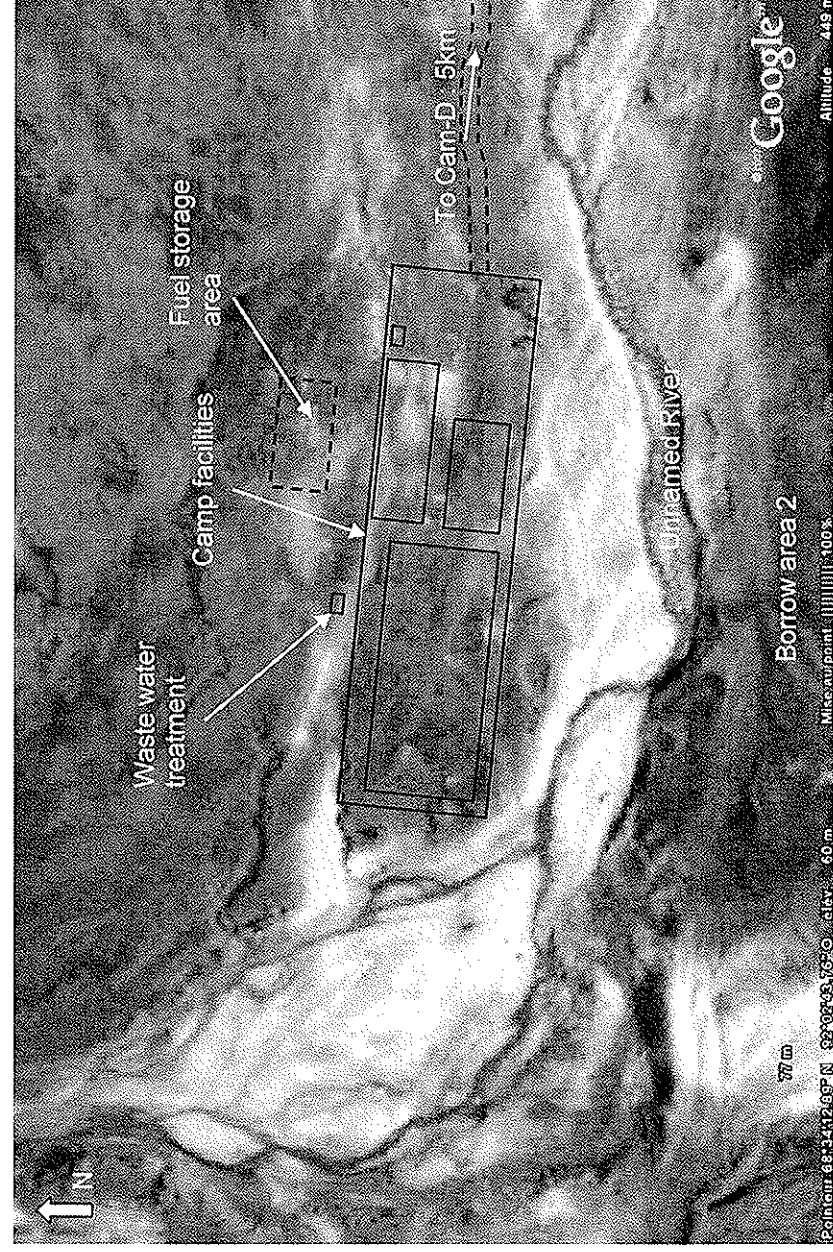
Figure 1: CAM-D Localization Map



## 2. CONSTRUCTION CAMP

The camp will be located inside the borrow area no.2 boundaries, nearby an unnamed river, which is a tributary of the Murchison River. The camp facilities will include dormitories, washrooms, kitchen, offices and the maintenance garage. The area is mainly flat, covered with sand and gravel and already disturbed by past activities.

Figure 2: Camp Location



### 2.1 POTABLE WATER

The potable water for the camp will be pumped directly from the unnamed river located nearby the camp. Water will be treated with UV and a filtration system. The water quality will be frequently monitored to ensure that it meets or exceeds the Guidelines for Canadian Drinking Water Quality. An off-road water trailer will be available on site for emergency water supply.

## 2.2 CAMP WASTE

Domestic garbage will be temporarily stored into a marine container and burned everyday with an incinerator. Ashes will be disposed according to the analytical results. Metal and other non-hazardous debris that are not suitable for incineration will be disposed into the project non-hazardous landfill.

## 2.3 GARAGE WASTE

Used oils will be incinerated on site with a device specially made for this purpose (*Smart Ash* drum burner). Ashes will be disposed according to analytical results. Used antifreeze, as other products that cannot be incinerated will be containerized in drums and shipped back to southern recycling and disposal facilities.

## 2.4 CAMP CLEANING PRODUCTS

All camp cleaning and maintenance products are biodegradable. They were bought from the company *Laboratoires Choisy Ltée* which are specialized in this kind of products.

## 2.5 WASTE WATER

The camp waste water will be pumped through a waste water treatment system which will be installed outside of the north camp boundaries. The system, made by “Kodiak”, was developed specifically for northern applications. All components of the “Bionest” treatment system are installed into a 20 feet marine container. The primary treatment is a conventional septic tank equipped with an effluent filter. The second treatment is made into the “bioreactor” where wastewater is put in contact with microbiological cultures naturally fixed on a synthetic material. Continuous aeration of the first compartment of the “bioreactor” is provided with a linear air pump and fine bubble air diffusers. The tertiary treatment is made by ultraviolet rays. The treated water will be released onto the ground, on the flat area located north of the camp. Treated water quality will be monitored when the system will be started, during the middle of the summer and at the end of the working season. If the system must be stopped for any reason, a lined basin will be constructed nearby to provide temporary storage. Sludge generated by the system will be emptied at the end of each working season. Sludge will be disposed according to analytical results.

## **2.6 FIRES**

Fires and burning of rubbish on site are permitted only when approved by the department representative. When permitted, staining or smoke damage to structures, material or vegetation must be prevented.

## **2.7 SITE MAINTENANCE**

The site must be kept free from accumulation of waste materials and debris. Upon the completion of work, all surplus of material, supplies and rubbish must be removed and disposed in order to leave the site in neat and tidy conditions.

### 3. EQUIPMENT VEHICLE USE AND MAINTENANCE

Since most cleanup activities will require usage of heavy equipments and motorized vehicles, the following measures will be enforced:

- Vehicles and mobile equipment will travel on established roads, stream crossing and work pads unless specifically exempted by the PWGSC site representative;
- Overland movement of equipment and vehicles will not be allowed where damage to the vegetation or underlying soils may occur;
- Following heavy rains, vehicles and heavy equipment used outside of the road and work pad areas will not be permitted until the soil has drained sufficiently to prevent excessive rutting, and until authorized by PWGSC site representative;
- Vehicles and equipment service will be performed in designated areas only. Special care will be taken to contain, handle and dispose of maintenance fluids, parts, and waste;
- Fuelling and lubrication of equipment will be performed with leak-free containers and reinforced rip and puncture-proof hoses and nozzles
- Equipment will be inspected for leaking (hydraulic, fuel and cooling system) every day;

## **4. ROAD CONSTRUCTION AND BORROW AREAS**

### **4.1 ROAD CONSTRUCTION AND MAINTENANCE**

Roads and trails maintenance will be performed in a manner to preserve the permafrost regime, vegetation patterns, existing surface draining patterns, water quality and stream flows. When new roads are established, archaeological resources, ice-rich soil and peatlands will be avoided during road construction. The construction will be performed with a road bed of sufficient thickness to prevent terrain damage. Culverts will be installed to maintain natural cross drainage and prevent ponding. Siltation of waterways and disruption of streambeds will be prevented using the following procedures:

- Minimize activities adjacent to watercourses;
- Installation of cofferdams and silt barriers;
- Equipment will not be operated in waterways;
- Streambed will not be used for borrow material;
- Excavated fill, waste material or debris will not be disposed in waterways;

### **4.2 BORROW PIT DEVELOPMENT AND OPERATION**

Sand and gravel will be removed only from borrow areas identified on contractual documents. If additional sources of material are needed, the request will be transmitted to PWGSC in order to obtain the proper authorizations. During aggregate excavation, the operation of vehicles will be controlled in areas adjacent to the borrow pit to minimize the extent of disturbance. Aggregate will be stockpiled on ice-poor, well drained ground such as that surface drainage is not impeded. Stockpile will be located in an area at least 30 metres from archaeological resources, water bodies, and other sensitive resources. Following excavation, the natural drainage patterns will be restored and erosion will be prevented.

## **5. ENVIRONMENTAL REMEDIATION ACTIVITIES**

### **5.1 HAZARDOUS WASTE MATERIAL HANDLING**

The hazardous waste material found on site will be processed in the Hazardous Waste Processing Area that will be located nearby the garage to be demolished in the Main Station Area. This site is located at least 30 metres from the nearest archaeological site or water body, is well drained soil, and is close to the location of work.

The Hazardous Waste Processing Area will be well identified and only authorized personnel will be admitted. The movement of equipment will be controlled to prevent the spread of potentially hazardous material along roadways.

Some other Hazardous Waste Processing Area might be developed for remote sites. The same procedures will be applied.

### **5.2 CONTAMINATED SOILS EXCAVATION AND DISPOSAL**

Before starting the excavation, surface water must be drained out of the site. Surface water will be sampled few weeks before starting the excavation. According to the water sample analysis results, the water will be pumped out of the excavation area or collected for treatments.

The contaminated soils will be excavated in a manner to minimize disturbance to adjacent areas. Depending on the contamination level, the excavated soils will be containerized or disposed into the non-hazardous waste landfill. The containerized contaminated soils will be stored into the temporary storage area. This area will be developed on site. Special care will be taken to avoid spillage of material during the transportation between the excavation sites and the disposal/temporary storage location. Any spill will be cleaned at the satisfaction of the PWGSC site representative. The excavation equipment (bucket and tracks) will be decontaminated before moving to the next site to be excavated.

When soil analytical results will confirm that no further excavation is required, it will be backfilled with type 3 granular material. If secondary excavation is needed, it will be done according the above-mentioned procedure.

All containerized soils will be transported from the CAM-D temporary storage area up to the Shepherd Bay temporary storage area. After marine transportation, the containers will be unloaded in Montreal. From there, according to the contamination type, the contaminated soils will be transported to the appropriated disposal facilities.

### **5.3 LANDFILL EXCAVATION**

Before starting the landfill excavation, surface water must be drained out of the site. Surface water will be sampled few weeks before starting the excavation. According to the water sample analysis results, the water will be pumped out of the excavation area or collected for further treatments.

A processing area will be established nearby the sites to be excavated. The processing area must have the appropriate size to temporarily store the excavated material in 20 cubic meter piles in order to remove the debris from the piles.

Excavated material will be transported to the material processing area for classification and sorting. Hazardous material will be handled, containerized and labelled as per contract specifications. The non-hazardous debris will be disposed in the on-site landfill. The excavated soils will be disposed according to the analytical results.

Special care will be taken in order to avoid the release of any hazardous materials or contaminated soil into the environment during transport, handling or sorting of excavated waste material. Any spill will be cleaned at the satisfaction of the PWGSC site representative.

Once the landfill excavations are completed, the holes will be backfilled with clean gravel and the surface will be reshaped to promote proper drainage and to match with the adjacent topography. The processing area will be cleaned and any remaining contaminated soils will be removed.

### **5.4 DEMOLITION OF BUILDINGS AND STRUCTURES**

Once all hazardous materials will have been removed, the structure to be demolished will be cut in big sections and transported into the non-hazardous waste landfill. Once unloaded, the structure parts will be cut in smaller pieces and crushed with the excavator in order to reduce the volume as much as possible. Hazardous material will be managed as described in section "Hazardous Waste Material Handling".

## 5.5 SURFACE DEBRIS COLLECTION

Surface debris will be collected from the fourteenth area identified on contractual drawings. To make sure all terrain will be covered, each of these sections will be roughly staked out on the field and a sketch of it will be made out of the drawings. The team of labourers will be systematically walking all sections until the complete area is completely covered. According to their size, the surface debris spotted will be removed and transported to the non-hazardous landfill for final disposal.

Special care will be taken to avoid damaging the tundra when surface debris are removed from remote sites. Existing trails and light vehicles will be used as much as possible.

## 5.6 ENVIRONMENTAL PROTECTION SUPPLIES

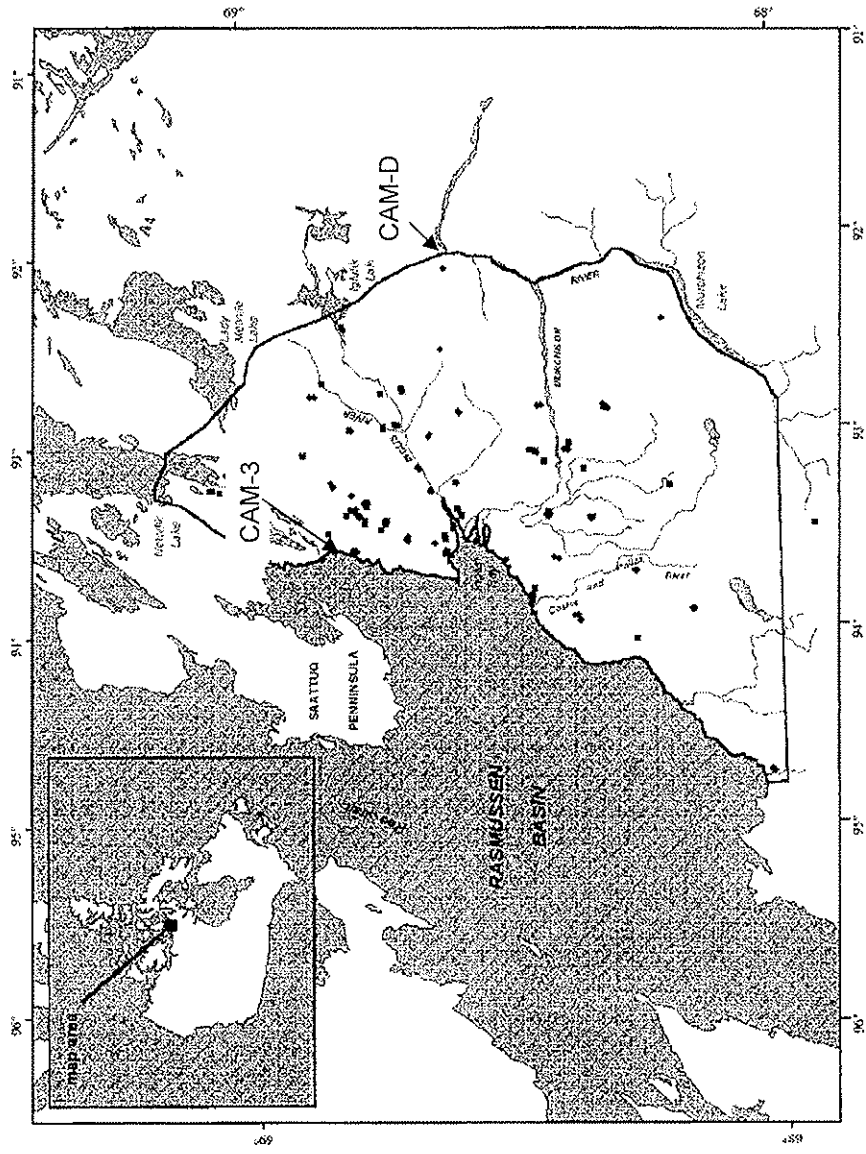
The following environmental supplies will be left in a container well identified:

- 200 mm diameter hydrophobic sorbent booms
- 100 mm diameter hydrophobic sorbent booms
- Silt fences
- Hydrocarbon absorbent pads
- Hydrocarbon absorbent rolls
- All purpose organic absorbents
- Empty drums
- Empty tote tanks
- Pumps
- Bags
- Tarps
- Shovels and rakes
- PPE

## 6. AIRCRAFT MOVEMENTS

Where concentration of birds or mammals are known to be near construction sites, the pilots of the charter will be advised to maintain a sufficient altitude above ground or water when passing over these sensitive areas. The figure 3 is shows the limits of the Rasmussen Bassin Bird sanctuary. During the bird migration period, aircraft must not fly lower than 610 meters over this area.

Figure 3: Rasmussen Basin area

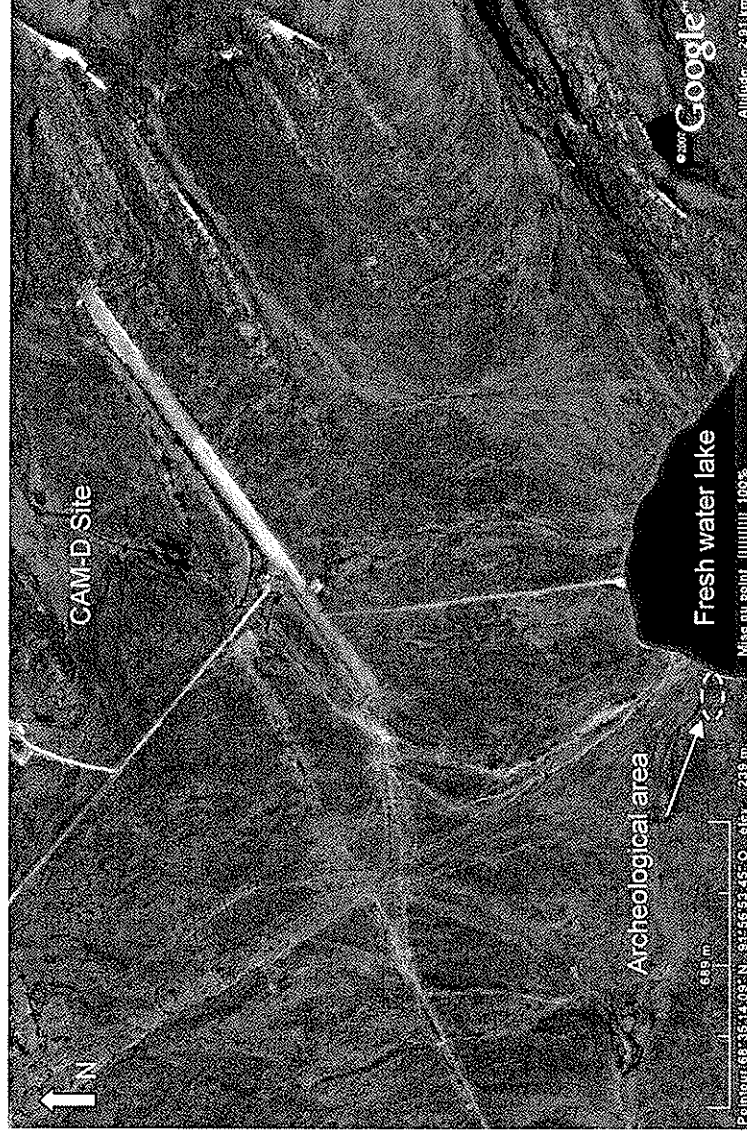


## 7. RELICS AND ANTIQUITIES

Relics antiquities and items of historical or scientific interest such as, but not limited to, cairns, tent rings, commemorative plaques, inscribed tablets, and similar objects found on-site or in buildings to be demolished will remain the property of the appropriate AHJ. A tent ring was found on the area located nearby the freshwater lake, as indicated on figure 4. The extent of this archaeological sensitive area will be marked by the Archaeologists at the beginning of the construction. In the event that other heritage resources are discovered during cleanup activities, the following procedures will be applied:

- Cease work immediately
- Report discovery of archaeological or artefacts to the site superintendent and the PWGCS site representative;
- Do not disturb archaeological sites or artefacts discovered until appropriate authorities are notified;
- Do not resume activities in the vicinity of the find until confirmation and direction from appropriate authorities is received

Figure 4: Archaeological Area



## 8. WILDLIFE ENCOUNTER

Bears are a potential hazard to workers at all times and the situation can be exacerbated by the presence of any substance that a bear perceives to be food. The manual "Safety in Bear Country" will be introduced to every worker during the worker orientation seminar.

Wildlife monitors will be on duty during the site work activities. One wildlife monitor will be responsible for night monitoring and safety. Each wildlife monitor is responsible for his firearm maintenance and storage. One additional firearm will be stored in a locked cabinet at the camp. The camp manager and the site safety representative will keep the key. Any wildlife encounters and sightings must be reported to the site superintendent and described into the progress weekly report. The presence of polar or grizzly bear(s) must be reported immediately on the radio as a general call.

Operators of vehicles and equipment shall make every effort to avoid encounters with large mammals. Congregations of animals near food or garbage are a potential problem, which can be overcome by proper disposal of food wastes. Concentrations of scavenger animals, such as wolves, foxes and bears, increase the risk of diseases, particularly rabies, and danger to personnel. The following precautions and actions are to be taken:

1. The killing of wildlife for any reason is at variance with the Wildlife Act and regulations and represents an offence. Coordinate procedures for handling wildlife problems and incidents with the regional Nunavut wildlife office.
2. Use vehicle, noisemakers and, if necessary, a firearm to frighten the bear away from the site.
3. Shoot the bear only if the bear returns repeatedly, refuses to leave or directly threatens human safety. Killing is considered a last resort and, if at all possible, the appropriate wildlife officer should be contacted to alert them of the problem. If a bear is to be shot, assign the task only to a person familiar and competent with the camp firearm. Wounded or otherwise aggravated bears can be extremely dangerous.
4. Report the death of a bear to the site superintendent, the PWGSC site representative and to the appropriate wildlife officer who will issue instructions as to the disposal of the carcass and the formal reporting procedures to be followed.

5. Due to the possibility of rabies, shoot any animal that bites a human and retain the carcass intact pending instructions from the appropriate wildlife officer. If possible, notify the wildlife officer before any drastic action is taken. Seek medical advice from the appropriate medical facility for treatment of animal-inflicted wounds.