NORTH AMERICAN TUNGSTEN CORPORATION LTD.

STANDARD OPERATING PROCEDURES FOR ROAD CONSTRUCTION INCLUDING CULVERT INSTALLATION MACTUNG PROJECT, YUKON

W23101211.002

June 2009

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EXECUTIVE SUMMARY

Road construction is required as a part of North American Tungsten Corporation Ltd.'s (NATC) proposal to access the Mactung property. This road construction work includes, but is not limited to: clearing and grubbing; construction of sub grade; supply and installation of new culverts, and constructing granular base courses. The nature of these activities is such that some disturbance to the natural landscape of the project area will occur. It is also recognized that there are potential effects to water quality, fisheries, wildlife habitat, and streamflow.

This document, Standard Operating Procedures for Road Construction (SOPRC), provides a structure for mitigation of potential environmental effects for the project, and implementation of potential road work on the Mactung Property. In particular this SOPRC:

- Addresses contractual and regulatory requirements.
- References operational and emergency procedures, developed to address the environmental aspects of this project.
- Provides the implementation and operation of a plan to ensure that structure and responsibilities are assigned, staff are trained, aware and competent; and that there is proper communication, documentation, operational control, emergency preparedness and response.
- Provides checking and corrective action through monitoring and measurement.
- Includes a management review of the SOPRC which enables improvements to be incorporated.

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APPENDICES

1.0 INTRODUCTION

EBA Engineering Consultants Ltd. (EBA) was retained by North American Tungsten Corporation Ltd. (NATC) to complete a YESAB Application for the Mactung Advanced Exploration project. As part of the project, road construction and maintenance activities will be required. Due to the nature of project activities, the exact locations and details of the road work will be refined after the completion of a detailed engineering study. In lieu of those details, this report states the environmental Standard Operating Procedures for Road Construction (SOPRC) that will be followed for any road work that will occur as part of the proposed project. These practices are intended to minimize and mitigate the environmental effects from road construction.

1.1 GENERAL

This SOPRC consists of plans and written procedures that address the environmental protection concerns relevant to specific construction operations being performed. A key purpose of the SOPRC is to ensure that all parties are in agreement on the procedures, and environmental control devices to be used for the protection of the environment. Once work has commenced, changes can be made as conditions dictate if these changes remain within the scope of the YESAB assessment, applicable permit conditions and notification is made to applicable agencies. The reasons or circumstances that necessitate changes to the SOPRC, after the initiation of construction, must be documented.

The establishment and implementation of a SOPRC is intended to achieve the following benefits:

- Help to protect the environment.
- Allow road construction to occur on Site.
- Enable NATC to achieve better planning and awareness of the tasks and costs associated with proper environmental management.
- Provide staff and personnel working on road projects with practical information on standard environmental protection measures.
- Provide a positive training tool for staff. Staff may demonstrate a heightened environmental awareness on other projects, to clients, and at home.
- Promote NATC's environmental policies and improvement of Health, Safety, and Environmental programs.
- Reduce incidences of regulatory non-compliance and contract disputes.
- Demonstrate to the stakeholders and public that there is an environmental commitment by all parties involved, both in writing and in action.

1.2 PRIMARY RESPONSIBILITIES OF NATC

The following are the primary responsibilities of NATC concerning environmental protection on road construction within the Site:

- Prior to commencement of any ground-disturbing activities obtain approval of the SOPRC from the Project Manager or their designate.
- Implement environmental protection measures in accordance with the SOPRC. This includes having staff available for training sessions and meeting to reinforce the importance of the SOPRC.
- Monitor the work zone on a regular basis with the Project Manager or their designate to ensure that the SOPRC is effective for all conditions, including inclement weather conditions, during periods of construction, and shut down. Written inspection reports shall be issued following each monitoring event.
- Take appropriate and timely action to correct any deficiencies.
- Review contract specifications, permits, licenses, applicable standards, and other environmental material relevant to the project.

2.0 SITE ACTIVITIES

2.1 RELATED LEGISLATION AND REGULATORY APPROVALS

The materials within this SOPRC have been prepared as a guideline for the construction and maintenance of exploration roads, and do not represent legal or regulatory guidelines.

Throughout all exploration work, NATC is responsible for also ensuring compliance with any applicable legislation described in Appendix 1.

2.2 LAND WORK

This section describes the procedures and measures that shall be implemented for the components of the project that will be conducted on land.

2.2.1 Personnel Affected

All construction personnel who will be clearing or operating equipment will be trained and aware of the procedures listed in this subsection. The Project Manager or their designate will be the first point of contact for any issues or effects that may result from the activities listed below. Training will typically occur in conjunction with safety meetings at the start of the project. Informational material (refer to Appendix 3) will be available to all employees and will be used to train employees who start part way through the project.

The Project Manager or their designate will monitor Land Work on a routine basis.

2.2.2 Activities of Concern

1. Clearing and construction in the vicinity of watercourses;

2. Burning of brush;

3. Clearing and earthmoving of erosion-prone soils; and,

4. Equipment operation.

2.2.3 Possible Environmental Effects

1. Damage to watercourse banks, riparian areas, sensitive soils, or watercourses;

- Loss of vegetative cover and erosion of soils in the proximity of watercourses.
- Sedimentation of watercourse[1].
- Loss of functional fish habitat in riparian areas.

2. Wildfires;

3. Erosion and instability of soils; and,

- Loss of adjacent vegetation through sediment deposition.

4. Damage to vegetation, soils, and watercourses from oil, fuel or fluid leaks and spills.

2.2.4 Procedures/Practices

1. All equipment must stay within the alignments and boundaries set by the Project Engineer and as per Construction Drawings.

- Where the limits of clearing or construction are not clear, personnel shall seek clarification from the Project Manager or their designate; and
- Circumstances such as emergency situations and redesign may require adjustments to the alignments and boundaries from the current project plan. Other than in emergency situations, the Project Manager or his appointee will be notified for approval of such changes prior to implementation. The Site Supervisor will ensure that all equipment operators are familiar with such changes prior to implementation.

2. Burning of brush shall be conducted according to conditions of burning permit(s). There shall be at least 5 m clear of flammable materials between brush piles and undisturbed trees. All wildfires will be extinguished as fast as possible as per the Fire Fighting Contingency Plan in Appendix 2 of this document.

3. Clearing and earthmoving/construction activities will be conducted according to the following general guidelines:

- The Project Manager or their designate will identify and resolve any sediment or erosion control issues;

[1] The release of sediment into fish bearing waters or waters influencing fish is unlawful under the terms of the Federal *Fisheries Act*.

- Work will be conducted according to applicable mitigation measures in the YESAB decision document, other legislative authorizations, approvals and the water license;
- Unearthed structures or artifacts shall be immediately reported to the Project Manager or their designate;
- Hand clearing will be used in areas within 10 m horizontally of the ordinary high water mark of watercourses;
- The right of way for access to the work zone should be kept to a minimum. The access and work zone should be clearly delineated, and disturbance to vegetation outside the delineated area should be avoided;
- Terrestrial and runoff sediments from the work site should be controlled with sediment fences, which should be placed and maintained in a manner that effectively contains any disturbed and/or exposed soil;
- Top soil removed from the construction site should be stockpiled at least 30 m away from the watercourse, be kept covered, and provisions should be made to contain runoff (e.g., silt fences);
- Slopes and soils prone to erosion should be stabilized as soon as possible by revegetation or the use of erosion mats;
- Work must be discontinued in the event of storms or other weather that increase the erosion/runoff potential;
- Reclamation and stabilization of the site should be initiated as soon as practically possible. Initial stabilization might have to be undertaken using temporary measures such as ground coverings until permanent vegetation has become established;
- All construction-related structures and materials should be removed from the site upon completion of the works;
- Roads on slopes will have culverts removed with site specific recontouring conducted as required at decommissioning; and,
- Upon decommissioning of a specific area, vegetation will be restored using appropriate methods, either by replacement of a preserved vegetative mat or through re-seeding.

Effects or potential effects as a result of clearing and earthmoving will be reported to the Project Manager or his appointee for implementation of corrective measures.

4. Equipment will be inspected on a daily basis for leaks and spills, incidents will be reported to the Project Manager or his appointee. Spill response will follow the procedures outlined in the YESAA Application.

2.3 IN-STREAM WORK

This section describes the procedures and measures that will be implemented for the components of the project that will be conducted in watercourses below the regular high water mark.

2.3.1 Personnel Affected

All construction personnel who will be operating or servicing pumps or equipment and workers in the vicinity of watercourses will be trained and aware of the procedures listed in this subsection. The Project Manager or his appointee will be the first point of contact for any issues or effects that may result from the activities listed below. Training will typically occur in conjunction with safety meetings at the start of the project. Informational material (Appendix 3) will be available to all employees and will be used to train employees who start part way through the project.

The Project Manager or their designate will monitor in stream work on a routine basis.

2.3.2 Activities of Concern

1. Water withdrawal from all watercourses;

2. Culvert installations;

3. Retraining of watercourses including placement of rip-rap and altering riparian habitat; and,

4. Temporary diversions of watercourses during road construction activities.

2.3.3 Possible Environmental Effects

1. Short-term effects on aquatic habitat causing:

- Temporary changes in stream flow;
- Sedimentation of the watercourse;
- Intoduction of deleterious substances including petroleum products or fuels near or into the watercourse; and,
- Harmful alteration, disruption, and destruction of downstream fish habitat (HADD) as defined in Section 35 of the *Fisheries Act*.

2. Long-term erosion/ instability of streambed and banks causing degradation of water quality and fish habitat quality.

3. Permanent changes to channel morphology and ongoing channel erosion/migration that results in habitat loss and sediment deposit.

4. Sedimentation in watercourses.

2.3.4 Procedures/Practices

1. Withdrawal of water will follow the conditions listed below:

- Water truck loading area will be contoured to control drainage and reduce sedimentation potential;
- Any water withdrawl from fish bearing waters will use screened intakes according to the specifications in DFO's publication *Freshwater Intake End-of-Pipe Fish Screen Guideline*s (1995).
- Refueling procedures for pumps are outlined in YESAA Project Description 2008-0289.

2. General conditions for instream construction are listed below:

- Instream works will be monitored by a qualified professional to ensure that downstream sediment levels are maintained within acceptable levels. This monitor will advise the work crew of the need for further isolation measures and suspension of instream works where necessary. The standards to be used for monitoring are the *Ambient Water Quality Guidelines (Criteria) for Turbidity, Suspended and Benthic Sediments*, produced by the British Columbia Ministry of the Environment (2001);
- During construction activities in areas where there is a potential for surface water transport to watercourses, the effectiveness of the erosion and sediment control measures will be monitored regularly with adjustments being made where necessary (e.g. sediment fence, ground coverings, responses following large rainfall events, etc.);
- Additional geotextile, erosion blankets/tarps and rip-rap stockpiles will be available for emergency response to prevent watercourse damage;
- Construction equipment will be made available for emergency response;
- All instream activities will be performed according to the general instream construction procedures outlined in Appendix 4.1;
- Culvert installations will be performed according to isolation procedures outlined in Appendix 4.2; and,
- River training works, culvert installations, or other in stream works that have the potential to result in the harmful alteration or destruction of fish habitat, must be conducted in isolation from the active river channel using appropriate measures, and should be conducted according to the following measures:
  - In stream works will be conducted within low flow periods to minimize sedimentation, erosion, and transports of sediment and deleterious substances down stream.
  - Any water being pumped that is contaminated with silt should be directed towards a stable vegetated area, sediment bag, splash pad, or flow dissipating sheet sufficiently

far from the watercourse such that the water does not flow back to the watercourse but rather is dispersed by infiltration into the surrounding substrate.

3. Implementation of any watercourse crossings or crossing structures will be performed in accordance with the *Fisheries Act*, *Navigable Waters Protection Act*, and the *Waters Act*.

- All stream crossing works will be subject to regulatory review by DFO and these works will be executed according to the terms of any *Fisheries Act* Authorization or Letter of Advice that may be issued for those crossings.
- Fording of streams influencing fish habitat is not recommended, and must be individually approved by regulators. Fording of fish bearing waters will not be acceptable.

4. More detailed information for in stream works, regulatory requirements, and accepted practices for in stream works and watercourse crossings are available from the following resources:

- Land Development Guidelines for the Protection of Aquatic Habitat, Fisheries and Oceans Canada, September 1993. PDF available online at: www.dfo-mpo.gc.ca/Library/165353.pdf; and
- Standards and Best Practices for in stream Works, British Columbia Ministry of Water, Land and Air Protection, March 2004. PDF available online at: wlapwww.gov.bc.ca/wld/documents/TCRC/iswstdsbpsmarch2004.pdf.

5. All instream construction activities (including river training and rip-rap placement) will be conducted using a backhoe or excavator located outside of any current active channel area.

2.4 WILDLIFE AND WILDLIFE HABITAT

2.4.1 Personnel Affected

All construction personnel will be trained and aware of the procedures listed in this subsection. The Project Manager or their designate will be the first point of contact for any issues or effects that may result from the activities listed below. Training will typically occur in conjunction with safety meetings at the start of the project. Informational material (Appendix 3) will be available to all employees and will be used to train employees who start part way through the project.

The Project Manager or their designate will routinely monitor for wildlife sightings and interactions.

2.4.2 Activities of Concern

1. Clearing of brush and construction of roads;

2. Recreational use of fragile or undisturbed wildlife habitat;

3. Hunting or trapping access; and,

4. Handling of domestic waste on the right-of-ways, staging area and camp.

2.4.3 Possible Environmental Effects

1. Destruction of wildlife habitat and increased access into remote areas. Disturbance of wildlife due to increased human activity.

2. Increased wildlife mortalities due to vehicle collisions or human activities.

3. Enabling access into more animal habitat resulting in elevated hunting success.

4. Attraction of wildlife to unnatural food sources:

- Creating "nuisance" animals, which may have to be destroyed;
- Scattering of wastes by scavengers;
- Increased danger to construction personnel and the traveling public from wildlife encounters near the road; and,
- Litter ending up scattered along right-of-ways.

5. Disturbance of nesting migratory birds contravenes the *Migratory Bird Convention Act*.

2.4.4 Procedures/Practices

1. Clearing and grubbing will adhere to the terms of the *Migratory Bird Convention Act*.

- Nest searches will be conducted by a qualified biologist prior to any clearing of vegetation conducted between the period of May 1 to July 31. Nesting survey results will be incorporated into the development of any road alignment modifications prior to implementation;
- A log of wildlife sightings in the project areas will be maintained, including dates, species/number, locations, and any other information or remarks;
- All wildlife encounters will be reported to the Project Manager or their designate who will, in turn, report them to the Conservation Officer in Ross River;
- Wildlife will be given right of way on roads and construction sites and be allowed to exit prior to renewed activities; and,
- Personnel shall not feed or harass wildlife or dispose of wastes in a manner that will attract wildlife to the service or construction area.

2. All equipment must stay within the alignments and boundaries set by the Project Engineer and as per construction drawings to ensure that the footprint of the operation is controlled to limit the potential impact to wildlife habitat, wildlife corridors, and public use of the area;

3. All domestic waste will be placed in containers and appropriately secured with lids to prevent attraction to wildlife, and containers will be emptied on a daily basis.

2.5 MATERIALS MANAGEMENT

2.5.1 Personnel Affected

All Equipment and Service Personnel will be trained and aware of the procedures listed in this subsection. The Project Manager or their designate will be the first point of contact for any issues or effects that may result from the activities listed below. Training will typically occur in conjunction with safety meetings at the start of the project. Informational material (Appendix 3) will be available to all employees and will be used to train employees who start part way through the project.

The Project Manager or their designate will routinely inspect storage and handling areas and identify any deficiencies as well as noting these in the inspection reports. Spills occurring during storage, transportation, or refuelling will be reported to the Project Manager or his appointee.

2.5.2 Activities of Concern

Storage of materials for servicing, equipment maintenance and road maintenance.

2.5.3 Possible Environmental Effects

Soil and water contamination from improper handling of materials.

2.5.4 Procedures/Practices

- Storage of small quantities of materials such as oils, lubricants, and antifreeze will be in the parts trailers or designated near a maintenance shed;
- Fuel storage facilities will be designed according to appropriate standards and legislation;
- Spill response kits will be maintained near to storage areas for fuels and other fluids described above;
- These areas will be kept in a clean and tidy order; and,
- Workers will have appropriate WHMIS training and material safety data sheets (MSDS) will be available on-site.

2.6 EQUIPMENT AND EQUIPMENT SERVICING AND STORAGE

The heavy equipment and vehicles required for the project include the following types of equipment:

- 1 * Caterpillar D6 Bulldozer (20,000 kg)
- 1 * Caterpillar D9 Bulldozer (50,000 kg)
- 1 * Caterpillar 315 Excavator (18,000 kg)
- 1 * Caterpillar 345 Excavator (45,000 kg)

- 1 * Caterpillar 775F Truck (14,000 kg)
- 1 * Caterpillar CS563 Compactor (12,000 kg)
- 1 * Caterpillar Loader 950 (16,000 kg)
- 1 * Caterpillar Loader 980 (31,000 kg)
- 1 * Development Jumbo/ Tamrock DD420-40C (20,500 kg)
- 3 1 * Caterpillar 631G Scrapper (38,000 kg)
- 1 * Mechanic's Truck/ Toyota HZJ79 (2,300 kg)
- 1 * Supervisor's Truck/ Toyota HZJ79 (2,300 kg)
- 1 * Electrician's Scissor Lift Truck/ Toyota HZJ79 (1,000 kg)
- 1 * Water Truck 1700 L capacity (4,000 kg)
- 1 * Tamrock 345 Electric Hydraulic Drill (11,000 kg)
- 1 * Air Drill (22,000 kg)
- 4 * Stoper Unit/ PHQ250SMCSR (50 kg)
- 4 * Jackleg Unit/ PHQ250JHML (75 kg)
- 2 * Exploration Drill Unit/ Diamec 252-1600U4PHC (3,000 kg)

2.6.1 Personnel Affected

All Service Personnel and personnel operating equipment will be trained and aware of the procedures listed in this subsection. The Project Manager or their designate will be the first point of contact for any issues or effects that may result from the activities listed below. Training will typically occur in conjunction with safety meetings at the start of the project. Informational material (Appendix 3) will be available to all employees and will be used to train employees who start part way through the project.

The Project Manager or their designate will routinely inspect equipment, refueling areas, and the maintenance shed to identify any deficiencies or risks. Inspections will be documented and kept on record as dated inspection reports.

2.6.2 Activities of Concern

1. Use of construction equipment;

2. Equipment servicing; and,

3. Storage of out-of-service equipment.

2.6.3 Possible Environmental Effects

1. Construction machinery can leak or spill hydrocarbons resulting in contaminated soil, groundwater, or watercourses.

2. Servicing creates the potential for spills and leaks resulting in contaminated soil, groundwater, and watercourses.

3. Leaks from out-of-service equipment may result in contamination.

2.6.4 Procedures/Practices

1. Heavy machinery and other hydrocarbon fuelled or lubricated equipment used on the Site will be maintained regularly to limit hydrocarbon leaks and spills. Leaking machinery will be immediately taken out of service and repaired. Appropriate measures such as protective matting or catchments must be used to contain any fluids on leaking equipment.

2. Minor equipment servicing will occur within the maintenance shed. Major equipment servicing will be done off Site. These locations will be used to limit the size of any area potentially impacted by repairs, servicing, washing of vehicles, and the storage of out-of-service equipment:

- Unless emergency repairs are required, all repairs will occur within the maintenance shed. A supply of spill response materials will be maintained in the Mechanics truck for maintenance conducted outside of the maintenance shed;
- If emergency repairs are needed, tarps, absorbent pads, berms, or other means of preventing soil and water contamination will be used according to the location and circumstances of the repairs;
- Under no circumstances will repairs be performed within 30 m of a watercourse;
- Service personnel working within the maintenance shed are responsible for conducting repairs and servicing in a manner that will prevent soil contamination;
- Major equipment repairs will be carried out off Site, in an approved facility;
- Scheduled equipment servicing will be carried out at the repair bay of the maintenance shed;
- Spills will be reported to the Project Manager or their designate and clean-ups will follow the procedures outlined in the Spill Response Plan; and,
- Any spills or leaks that contaminate soil will be immediately contained and cleaned up. This should include the relocation of contaminated soil to a permitted treatment facility under the authority of a relocation permit.

3. Out-of-service equipment will be removed from the Site and stored in an appropriate location.

2.7 FUEL STORAGE AND TRANSPORT

2.7.1 Personnel Affected

Fuel truck operators and equipment operators will be trained and aware of the procedures listed in this subsection. The Project Manager or their designate will be the first point of

contact for any issues or effects that may result from the activities listed below. Training will typically occur in conjunction with safety meetings at the start of the Project. Informational material (Appendix 3) be available to all employees and will be used to train employees who start part way through the project.

The Project Manager or their designate will routinely inspect equipment, refueling, and maintenance shed and identify any deficiencies as well as noting these in the inspection reports. Spills occurring during storage, transportation or refueling will be reported to the Project Manager or their designate.

2.7.2 Activities of Concern

1. Bulk storage of fuel;

2. Transport of fuel between bulk storage tanks and equipment; and,

3. Refuelling of equipment.

2.7.3 Possible Environmental Effects

Release of fuel products poses serious environmental contamination risks for soil, groundwater, and surface water.

1. Bulk fuel storage containers could fail.

2. Fuel transport vehicles could fail or leak fuel.

3. While transferring fuel spillage might occur.

2.7.4 Procedures/Practices

1. The bulk fuel storage site will be permitted according to regulatory requirements. All fuel storage will be managed to comply with the Storage Tank Regulations (Environment Act). All spills or leaks involving bulk fuel storage will be immediately reported to the Project Manager or his appointee. The Project Manager or their designate will ensure that the spill response plan is followed;

2. All spills or leaks involving transport will be immediately reported to the Project Manager or their designate. The Project Manager or their designate will ensure that the spill response plan is followed;

3. Fuel truck operators shall read and follow the refuelling procedures outlined in YESAB Project Description 2008-0289. In particular:

- No refueling will be conducted within 30 m of the high water mark of watercourses (with the exception of pumps and equipment with limited mobility); all equipment will be fuelled and maintained in a designated refueling area or within the maintenance shed;
- Refueling of water pumps will be conducted with jerry cans or similar containers, which will be refilled at a location beyond the normal high water level;

- Where immobile equipment must be re-fuelled within <30 m form a water body, spill kits will be kept at these locations and absorbent pads or booms will be used under/around the equipment;
- Spill kits will be located at all water withdrawal locations, culvert installation locations with visible surface water, and adjacent to the construction area during any work within a watercourse; and,
- When refueling equipment on road sections adjacent to a water body the following procedure will be used:
  - Fuel will be transported to the site in a fuel truck that meets current regulatory codes, equipped with an appropriate spill kit, and on an as needed basis. To the extent possible fuel trucks will avoid backing near any watercourses or along the temporary access road;
  - Personnel involved in refueling will receive specific training on the equipment in the spill kit carried on the fuel truck;
  - Fuel transfer equipment components such as pumps, hoses, and nozzles will be visually checked for leaks or damage prior to each refueling operation;
  - No other activities will be allowed in the area while refueling is underway;
  - The fuel transfer will be visually and continually monitored;
  - A containment tray will be placed below the vehicle's refueling portal;
  - Fuel transfer nozzles will be operated manually and will not be locked in the open position;
  - All fueling valves will have dead man valves;
  - Fuel transfers will require an operator to be present at all times during refueling and to the extent possible will be scheduled during daylight hours; and,
  - The fuel truck will be placed as close as possible to the equipment being refueled. Where fuel transfer hoses are laid on the ground to reach equipment being refueled, no other equipment will be allow to work within five meters of the hose or vehicles while the fuel transfer is taking place.

2.8 WASTE MANAGEMENT

2.8.1 Personnel Affected

All NATC employees on Site will be trained and aware of the procedures listed in this subsection. The Project Manager or their designate will be the first point of contact for any issues or effects that may result from the activities listed below. Training will typically occur in conjunction with safety meetings at the start of the Project. Informational material (Appendix 3) will be available to all employees and will be used to train employees who start part way through the project.

The Project Manager or their designate will routinely inspect waste storage and disposal practices and discuss any deficiencies and corrective actions.

2.8.2 Activities of Concern

1. Storage of waste materials from the servicing and repair of equipment;

2. Storage of domestic waste materials;

3. Disposal of waste materials; and,

4. Sewage collection and disposal.

2.8.3 Possible Environmental Effects

1. Spills or leakage from improperly stored materials could cause soil and water contamination.

2. Improperly stored domestic wastes may cause wildlife concerns, such as:

- Attraction of wildlife to unnatural food sources;
- Creating "nuisance" animals, which may have to be destroyed; and,
- Increased encounters with wildlife which could result in injury.

3. Improper disposal of wastes can cause contamination and litter concerns, such as:

- Chemical wastes can cause soil and water contamination;
- Domestic wastes can cause wildlife, human health concerns; and,
- Accumulation of domestic wastes can cause health concerns.

4. Health concerns can be associated with improper sanitation systems.

2.8.4 Procedures/Practices

1. Oils and fluids waste, such as waste oil (oil changes and drip pan collection), filters, lubricants, hydraulic oil, antifreeze, battery fluid, paints and solvents, and chemicals will be handled in accordance with a Special Waste Permit.

- Oils and fluids from equipment maintenance will be contained in specified containers;
- Liquid tight containers will be located in the maintenance shed; and,
- Containers will be kept out of the weather where water may affect the contents within them.

2. All domestic wastes will be stored in containers with lids that prevent wildlife from having access to wastes.

- Domestic waste containers will be monitored for wildlife problems; and
- Containers will be emptied on a daily basis.

3. Waste from construction activities, servicing of equipment, and other chemical wastes, will be hauled off site for recycling or disposal.

- Containers, drums, and barrels will be recycled or disposed in an authorized landfill as appropriate;
- Special wastes, such as used oil, will be shipped for recycling or disposal at authorized facilities; and,
- Special wastes will be disposed in accordance with Yukon Special Waste Regulations. Typically the majority of special wastes are used oil, which will be collected in drums or cubes and transported back to Whitehorse for use as an alternate fuel.

4. Sanitation at the camp will meet requirements in the Occupational Health and Safety Act, Yukon.

2.9 EMERGENCY RESPONSE PROCEDURES

2.9.1 Personnel Affected

All construction personnel will be trained and aware of the procedures listed in this subsection. The Project Manager or their designate will be the first point of contact for any issues or effects that may result from the activities listed below. Training will typically occur in conjunction with safety meetings at the start of the Project. Informational material (Appendix 3) will be available to all employees and will be used to train employees who start part way through the project.

The Project Manager or their designate will be notified of all spills or releases.

2.9.2 Activities of Concern

1. Contaminants spills and releases (land and water); and

2. A high water event (greater than a 1:50 year return period storm event) particularly related to a culvert installation.

2.9.3 Possible Environmental Effects

1. Contamination of soil and water as the result of spills or releases; and

2. Erosion of watercourses during flood events causing:

- Increased sedimentation of streams;
- Damage to streambeds and banks; and,
- Negative effects on fish.

2.9.4 Procedures/Practices

1. Personnel will be trained in the prevention of spills and know proper response procedures.

- Spill kits are located in the maintenance shed, at all water withdrawal locations, and culvert installation locations with visible surface water and drill sites. Spill kits will also be carried on all service vehicles and the refueling vehicles.
- The emergency response procedures outlined in the original project proposal will be used for all spills or releases.
- The emergency response procedures include identification and assessment of the extent of the spill; containment, transportation, and disposal of materials; and final assessment of spill area.

2. In stream work will be suspended during significant rain events or flooding that may cause watercourse damage.

- Additional material such as rip-rap, silt fence, and geotextile will be on hand to respond to flood events.

2.10 CONSTRUCTION TIMING AND SEQUENCE

2.10.1 Personnel Affected

All construction personnel shall be aware of the procedures listed in this subsection.

2.10.2 Activities of Concern

1. In-stream construction activities;

2. Blasting in close proximity to fish bearing waters; and,

3. Operation of construction site.

2.10.3 Possible Environmental Effects

1. Watercourse damage cause by construction operation.

- Sedimentation in watercourse.
- Streambed and bank erosion.
- Risks to fish during sensitive life cycles (i.e. breeding, etc.).

2. Damage to aquatic ecosystems from blasting causing:

- Injury or mortality of fish; and
- Destruction of habitat.

3. Wildlife concerns caused by human presence.

2.10.4 Procedures/Practices

1. All road construction will be monitored by the Project Manager or their designate to ensure sediments are not entering watercourses. If sediments enter watercourses the construction of the road should stop immediately and resume after the Project Manager or their designate mitigates the sedimentation.

2. A certified blasting consultant will carry out all blasting work. Their procedures will follow Canadian Technical Report of Fisheries and Aquatic Sciences 2107 Guidelines for the Use of Explosives In or Near Canadian Fisheries Waters or as instructed by the Department of Fisheries and Oceans Canada when detonating explosives within 100 meters of any body of water which is not completely and demonstrably frozen to the bottom.

3. Where wildlife is sighted, personnel will report these sightings to the Project Manager or their designate who will advise the Conservation Officer in Whitehorse.

3.0 IMPLEMENTATION AND OPERATION

Implementation of the SOPRC will involve ongoing review and adjustment as appropriate. Training, communication, documentation, monitoring, and adjustments are key to the successful implementation of the SOPRC.

3.1 STRUCTURE AND RESPONSIBILITY

It is the responsibility of NATC to provide the resources to ensure the implementation and control of the SOPRC. The Project Manager or their designate has been assigned responsibility of:

- Ensuring that the SOPRC requirements are established, implemented, maintained, and monitored;
- Reporting on the performance of the SOPRC to management for review and the basis for improvement of the SOPRC. Each subcontractor will be responsible to NATC for compliance with the SOPRC and will ensure that all project staff are trained and procedures are understood and followed; and,
- Maintenance of environmental control devices and addressing environmental protection issues that may arise is necessary.

3.2 TRAINING, AWARENESS AND COMPETENCE

NATC is aware that all personnel on this project have the potential to create a significant impact on the environment and therefore require appropriate training. To address this, packages for personnel and subcontractors detailing the requirements of the SOPRC as it relates to their activities and the protection of the environment, are outlined in Appendix 3. Awareness session(s) will be delivered by the Project Manager or their designate at an environmental briefing at the start of road construction activities. Personnel must attend these sessions and demonstrate knowledge and understanding of the SOPRC. New or

replacement personnel to the project must also be orientated. Personnel, through training and awareness sessions, will be made aware of:

- The importance of conformance with the policy, procedures, and requirements of the SOPRC;
- The significant environmental effects, actual or potential, of their work activities and the environmental benefits of improved personal performance;
- Their roles and responsibilities in achieving conformance with the policy, procedures, and requirements of the SOPRC including emergency preparedness and response; and,
- The potential consequences of not following the procedures in the SOPRC.

Training of personnel, as well as update training and ongoing training to new staff, is to be documented. SOPRC revisions and updates, and issues related to the SOPRC, are to be communicated to staff. This will be done by bulletin board notices, newsletters, memo circulation, or by other means. Employees can provide input and suggestions during the safety meetings.

3.3 COMMUNICATION

The SOPRC will be discussed at the site meetings held by the Project Manager or their designate. Information and changes to the SOPRC discussed at these meetings will be documented and disseminated to staff through the meeting participants.

Communications relating to the SOPRC that will be conducted throughout the duration of the project include the following:

- The Project Manager or their designate will be responsible to communicate with environmental regulators;
- Training sessions presented to project personnel;
- SOPRC update training sessions; and,
- Communication by the Project Manager or his appointee to personnel to guide task-specific environmental practices.

Typically the Project Manager or their designate will conduct inspections on a weekly basis and if required following any major environmental incidents (spills, sedimentation/erosion problems). Each inspection will be recorded by the Project Manager or their designate. Concerns identified by the Project Manager or their designate will be forwarded to NATC for follow-up action.

3.4 DOCUMENTATION

This report and updates to this report will address the documentation requirements for the SOPRC. Information will be gathered and stored to document significant events and issues relating to the implementation and adjustment of the SOPRC. This information will be

kept updated and on-file at the Site, with a copy maintained off-Site by NATC. Examples of events and issues that shall be documented include the following:

- Accidents, spills, and releases and the procedure followed in those events;
- Reviews, improvements, and adjustments to the SOPRC;
- Training;
- Materials inventory;
- Waste inventory; and,
- Equipment inspections and maintenance.

Any revisions to the SOPRC are to be controlled through dated revisions to this document. A binder or file with all relevant information will be retained at the Site. NATC will retain a second copy, with parallel updates, off-site.

3.5 EMERGENCY PREPAREDNESS AND RESPONSE

This document includes procedures that are designed to respond to accident and emergency situations. NATC will continue to review the project with the goal to identify the potential for accidents and emergency situations and will design procedures to respond to those potentials. Emergency Spill Response Plans are outlined in the original project proposal for the Mactung project.

3.6 MONITORING AND MEASUREMENT

Personnel are required to report to the Project Manager or their designate any activities or situations that may carry a significant impact to the environment. The Project Manager or their designate will oversee the implementation of the SOPRC and monitor its success. The individual aspects of monitoring inspections are provided under the heading "Responsibility and Authority" for each activity in Section 4. The responsible person and procedures for developing and implementing corrective action are also provided under this heading.

3.7 NON-CONFORMANCE AND CORRECTIVE AND PREVENTATIVE ACTION

When investigating and correcting issues of non-conformance with the SOPRC the following actions will be taken:

- Identify the cause;
- Implement corrective actions;
- Implement and modify controls to avoid repetition;
- Record changes to the written procedures; and,
- Communicate the changes to appropriate staff. Specific plans for situations identified for this project are included in this document.

3.8 RECORDS

NATC will maintain records for the following:

- Training;
- Reviews and changes/additions to SOPRC; and,
- Significant environmental events, such as those that require reporting and/or corrective action.

APPENDIX

APPENDIX 1 REGULATORY REFERENCE INFORMATION

Appendix 1: List of Relevant Environmental Legislation, Documents and Guidelines for Road Construction at Mactung Property, Yukon.

Federal

- *Fisheries Act*
- Hazardous Products Act
- Navigable Waters Protection Act
- Species at Risk Act
- Migratory Birds Convention Act
- Canada Wildlife Act
- Canadian Environmental Protection Act
- Allied Petroleum Products of Federal Lands Regulations
- Explosives Act and Regulations
- Guideline for the Use of Explosives In or Near Canadian Fisheries Waters

Territorial

- Environment Act (and Regulations)
- Yukon Environmental and Socio-economic Assessment Act
- Occupational Health & Safety Act (and Regulations)
- Transportation of Dangerous Goods Act (and Regulations)
- Territorial Lands Act (and Regulations)
- Waters Act (and Regulations)
- Quartz Mining Land Use Regulations

Other

- Contract Specifications
- Available project licenses, permits or authorizations
- Miscellaneous regulatory application information

APPENDIX

APPENDIX 2 FIRE FIGHTING CONTINGENCY PLAN

APPENDIX 2 FIRE FIGHTING CONTINGENCY PLAN

Introduction

This fire fighting contingency plan has been developed to provide a guide for handling fires that may result from road construction work. This plan is intended to address fires that can be extinguished with the equipment available at the construction site. If fires cannot be controlled with the available equipment, then additional resources would be called in by the Project Manager or their designate. This plan should be used in conjunction with requirements of the terms and conditions of the contract and Water Licenses that are applicable for the activity. Fire fighting procedures will be reviewed during environmental briefings held prior to the start of construction, as well as periodically throughout the construction season.

Prevention

The following measures will be taken to ensure that wildfires are prevented:

The conditions of burning permits are to be reviewed and followed.

- There shall be at least 5 meters clear of flammable materials between brush piles and undisturbed trees.
- Firefighting equipment shall be readily available at all times when burning of brush is occurring.
- Burning is to be monitored according to the conditions at the time of burning.
- Burning during conditions of extreme wind is to be avoided.

Firefighting Equipment

For the most part firefighting equipment will consist of equipment used during road construction. Typically this will include the following:

- Equipment such as dozers, loaders and excavators located throughout the job site;
- Water trucks;
- Trucks to mobilize personnel;
- Assorted hand tools for use by individuals;
- Water pumps; and
- Fire extinguishers cared in vehicles and on heavy equipment.

Firefighting Procedures

Monitoring of burning will help in the early detection of wildfires and also improve the chances that the fire can be extinguished with hand tools and fire extinguishers. Regardless of the size of the fire the following procedures should be followed once a wildfire has been detected:

- Assess the likelihood of extinguishing the fire using available equipment and call for assistance;
- If the fire cannot be immediately extinguished using readily available equipment notify the Project Manager or their designate and request additional equipment and personnel as needed;
- Alert response agencies as to the situation and steps being taken to extinguish fire. Forest Fire Yukon (867) 798-3473, Ross River Lake Fire Department (867) 969-2222;
- Use Equipment such as dozers to attempt to contain the fire and hand tools to extinguish "hot spots"; and,
- Request assistance from response agencies if there appears to be any chance that the available equipment will not be able to contain and extinguish the fire.

APPENDIX

APPENDIX 3 TRAINING PACKAGES

Appendix 3.1 Equipment Operators

Appendix 3.2 Equipment Service Personnel

Appendix 3.3 All Construction Personnel

Appendix 3.1 Equipment Operators

Fuel Storage and Transport

Activities of Concern

Refuelling of equipment.

Possible Environmental Effects

Release of fuel products poses serious environmental problems for soil, groundwater, and surface water.

Procedures/Practices

No refuelling shall be conducted in creek beds or active drainage courses. With the exception of pumps, equipment with limited mobility and emergency equipment all equipment shall be fuelled and maintained in the designated refuelling areas.

Clearing and General Earthmoving/Construction

Activities of Concern

Clearing and general construction in the vicinity of watercourses.

Clearing and earthmoving of erosion-prone soils

Equipment operation

Possible Environmental Effects

Damage to banks or watercourses

Loss of vegetative cover and damage to soils next to watercourses

Sedimentation of watercourse

Erosion of soil

Damage to vegetation and watercourses from oil, fuel or fluid leaks and spills

Procedures/Practices

Effects or potential effects to watercourses as a result of clearing and earthmoving will be reported to the Project Manager or his appointee for implementation of corrective measures.

Construction limits will be set prior to onset of construction. Where the limits of clearing or construction are not clear, personnel shall seek clarification from the Project Manager or his appointee.

Unearthed structures or artefacts shall be immediately reported to the Project Manager or their designate.

Personnel will cooperate fully with the Project Manager or their designate to identify and resolve any sediment or erosion control issues.

Minimize surface disturbances.

Equipment shall be inspected on a daily basis for leaks and spills, incidents shall be reported to the Project Manager or their designate. Spill response shall follow the procedures outlined in the Spill Response Plan for the Mactung Project.

Equipment and Equipment Servicing and Storage

Activities of Concern

Equipment servicing

Storage of out-of-service equipment

Possible Environmental Effects

Servicing creates the potential for spills and leaks resulting in contaminated soil and groundwater. Leaks from out-of-service equipment may result in contaminated soil and groundwater.

Procedures/Practices

Unless emergency repairs are required, all repairs shall occur within the maintenance shed. Spills shall be reported to the Project Manager or their designate and clean-ups will follow the procedures outlined in the Spill Response Plan for the Mactung Project.

Any spills or leaks that contaminant soil outside of the maintenance shed shall be immediately cleaned up and soil placed within the designated area in the maintenance shed. Out-of-service equipment shall be stored of Site.

Where equipment leaks are of a rate that would release 2 L or more of liquid in a 12-hour period, then a drip pan must be used regardless even if the equipment is parked in the maintenance shed.

No equipment shall be allowed to work in and no leaky equipment should be allowed near watercourses.

No equipment shall be allowed to work in and no leaky equipment should be allowed near watercourses.

Appendix 3.2 Equipment Service Personnel

Equipment and Equipment Servicing and Storage

Activities of Concern

Equipment servicing

Storage of out-of-service equipment

Operation of maintenance shed

Possible Environmental Effects

Servicing creates the potential for spills and leaks resulting in contaminated soil and groundwater.

Leaks from out-of-service equipment may result in contaminated soil and groundwater. Wash water or precipitation may collect with in the maintenance shed.

Waste liquids and parts from servicing require proper storage prior to disposal.

Procedures/Practices

The maintenance shed will be used to limit the size of any area potentially impacted by repairs, servicing, and the storage of out-of-service equipment. Unless emergency repairs are required, all repairs will occur within the maintenance shed. Service Personnel working within the maintenance shed are responsible for conducting repairs and servicing in a manner that will prevent soil contamination. Spills should be reported to the Project Manager or his appointee and clean-ups shall follow the procedures outlined in the Spill Response Plan for the Mactung Project.

Any spills or leaks that contaminate soil outside of the maintenance shed shall be immediately removed to a licensed land treatment site. Out-of-service equipment shall be stored off Site.

Where equipment leaks are of a rate that would release 2 L or more of liquid in a 12-hour period, then a drip pan must be used regardless even if the equipment is parked in the maintenance shed.

Used filters, oils, lubricants, antifreeze, and other waste materials shall be contained in liquid tight containers within the refuelling and maintenance areas and transferred off site to appropriate disposal facilities.

Materials Management

Activities of Concern

Storage materials for servicing, equipment maintenance and road maintenance.

Possible Environmental Effects

Soil and water contamination from improper handling of materials.

Procedures/Practices

Storage of small quantities of materials such as oils, lubricants, and antifreeze shall be in the parts trailers or designated areas within the maintenance shed. These areas shall be kept in a clean and tidy order. Workers shall have appropriate WHMIS training.

Waste Management

Activities of Concern

Storage of waste materials from the servicing and repair of equipment.

Possible Environmental Effects

Spills or leakage from improperly stored materials could cause soil and water contamination.

Chemical wastes can cause soil and water contamination

Procedures/Practices

Oils and fluids waste, such as waste oil (oil changes and drip pan collection), filters, lubricants, hydraulic oil, antifreeze, battery fluid, paints and solvents and chemicals require special handling and management procedures. Oils and fluids from equipment maintenance shall be contained in specified containers Liquid tight containers will be located in the maintenance shed.

Waste from servicing of equipment and other chemical wastes will be hauled off site for recycling or disposal.

Containers, drums and barrels will be recycled or disposed in an authorized landfill as appropriate

Appendix 3.3 All Construction Personnel

Clearing and General Earthmoving/Construction

Activities of Concern

Clearing and general construction in the vicinity of watercourses.

Burning of brush

Clearing or earthmoving in the vicinity of private property or First Nation Land.

Clearing and earthmoving of erosion-prone soils

Possible Environmental Effects

Damage to banks or watercourses

Loss of vegetative cover and damage to soils next to watercourses

Sedimentation of watercourse

Wildfires

Disruption/damage to private or First Nation Land

Erosion of soil

Damage to vegetation and watercourses from oil, fuel or fluid leaks and spills

Procedures/Practices

Effects or potential effects to watercourses as a result of clearing and earthmoving will be reported to the Project Manager or their designate for implementation of corrective measures.

Where the limits of clearing or construction are not clear, personnel shall seek clarification from the Project Manager or his appointee.

Burning of brush shall be conducted according to conditions of burning permit. There shall be at least 5 meters clear of flammable materials between brush piles and undisturbed trees. All wildfires shall be extinguished as fast as possible as per the Fire Fighting Contingency Plan Appendix 2.

Wildlife and Wildlife Habitat

Activities of Concern

Location of construction site in wildlife habitat causing disturbances to wildlife.

Recreational use of fragile or undisturbed wildlife habitat.

Storage and disposal of domestic wastes at the construction site.

Handling of domestic waste on the right-of-way.

Possible Environmental Effects

Increased danger to construction personnel and the traveling public from wildlife encounters near the Road and at the construction site.

Disturbance of wildlife due to increased human activity

Destruction of habitat and increased access into remote areas

Attraction of wildlife to unnatural food sources

Creating "nuisance" animals, which may have to be destroyed

Scattering of wastes by scavengers

Litter ending up scattered along right-of-ways.

Procedures/Practices

All wildlife encounters shall be reported to the Project Manager or their designate who will report to the Project Manager or his appointee.

All wildlife will be given right of way and allowed to exit corridor or construction area prior to proceeding with activities.

Wastes originating from servicing and construction areas shall be placed in containers with lids to prevent attraction to wildlife and containers will be emptied on a daily basis.

All domestic waste will be placed in containers with lids and containers emptied on a daily basis.

Emergency Response Procedures

Activities of Concern

Contaminants spills and releases (land and water)

A high water event (greater than a 1:50 year return period storm event) particularly related to a culvert installation.

Possible Environmental Effects

Contamination of soil and water as the result of spills or releases.

Erosion of watercourses during flood events

Increased sedimentation of streams

Damage to streambeds and banks

Effects on fish

Procedures/Practices

Personnel shall be trained in the prevention of spills and know proper response procedures. Spill kits are located in the maintenance shed and in areas where Equipment is operating. The emergency response procedures outlined in the original project proposal shall be used for all spills or releases.

Construction Timing and Sequence

Activities of Concern

In stream construction activities

Operation of construction site

Possible Environmental Effects

Watercourse damage cause by construction operation

Increased levels of sedimentation in watercourse

Excess streambed and bank erosion

Undue risk to fish by operating during sensitive periods (i.e. spawning)

Undue disturbances to migratory birds.

Procedures/Practices

Where wildlife is sighted these sightings will be reported to the Conservation Officer in Whitehorse.

In stream works will be conducted within low water periods.

All clearing will be carried out in accordance with the requirements of the Migratory Birds ACT and pre-clearing nesting surveys will be conducted by a qualified biologist.

APPENDIX

APPENDIX 4 IN-STREAM WORK PROCEDURES

Appendix 4.1 General In stream Work Procedure

Appendix 4.2: Culvert Installation Stream Isolation Procedures

Appendix 4.3 Fisheries and Oceans Operational Statements

Appendix 4.1: General In stream Work Procedure

The following are general recommendations, highlighting the practices for in stream works.

- All work in areas below the high water level (i.e., areas without existing riparian vegetation) will be properly contained and isolated prior to larger machinery working within the area (e.g., diversion dam);
- All diverted flows for isolating work areas will not cut off flow to downstream portions of the stream at any time;
- All machinery work within the wetted perimeter of a stream will be pressure cleaned, free of leaks, excess oil, and, grease;
- Refueling of equipment will follow procedures outlined in Appendix 4;
- Spill containment kits will be readily accessible on site and staff will be trained in the use of the kit;
- No in stream work shall take place during periods of high water such as freshet or excessive rain events;
- All unnatural materials, altered or introduced material found within the construction area or used during construction will be removed from the stream channel before finalizing the project and disposed of in an appropriate location;
- Any ice removed to gain entry into the construction area will be placed within the channel, on the downstream side of the work area;
- Water may accumulate within the construction area throughout the construction process. Any silt-laden water that is removed from the construction area will be pumped to an area approved by the environmental representative on site. Water will be pumped to a vegetated area, splash pad, filter bag that prevents erosion, and in an area sufficiently far from the watercourse and beyond the watercourse slope such that the water infiltrates into the substrate and does not flow via surface to any watercourse. Sediment or chemical laden water will not be introduced into the stream at any point in time.

Appendix 4.2: Culvert Installation Stream Isolation Procedures

The following recommendations outline the procedure for properly isolating the work area during the installation of a culvert:

- The procedures outlined herein apply to culverts installed in fish bearing waters or waters influencing fish bearing waters;
- Culverts must be installed in the dry streambed, within an isolation area that includes the entire area of disturbance for culvert installation;
- Work areas must be salvaged for fish prior to being dewatered or any works commencing; and,
- The work area must be monitored by an environmental professional if influencing fish bearing waters.

Dewatering and Isolation Method:

- In order to allow instream excavation, the main channel will be bermed (blocked) using appropriate materials. Recommended options include:
  - Clean, coarse rubble, or boulder material placed over geotextile and polyethylene sheeting, such the sheeting can be pulled over the material to provide a water barrier to downstream flow.
  - A suitable commercial berm structure such as the "AquaDam".
- Prior to closing off the channel in the isolation area, pumping will be established from above the work area to below it. Pumping capacity required on site will need to exceed the maximum potential flow at the site – double the required capacity is recommended, and includes having a backup pump on site in case of failures. Water will be pumped via protected hoses to the downstream end, where the water outlet will be protected with riprap or similar material to prevent scour and introduction of sediment.
- Berms shall be placed on the upstream end of the work area first, followed by the downstream end.
- Once berms are in place, fish salvage is completed, and the isolation is confirmed to be working properly, the work area will be de-watered and maintained in such state.
- A sump excavated in the downstream end of the isolation area is recommended to keep the site dry, and this water should be disposed of as sediment contaminated water (described earlier).
- When the work area has been dewatered, instream works can be completed.

Fish Salvage Prior to De-Watering:

The following points are applicable to all construction sites on watercourses that are fish bearing:

- The entire isolated area between the berms must be salvaged by qualified professionals prior to dewatering and instream excavation;
- Salvage will be conducted immediately following the installation of isolation berms at the upper and lower ends of the isolation area; and,
- Dewatering and instream work will only be commenced following notification by the salvage crew that salvage is complete.

Resumption of Natural Flow Following Completion of Instream Works:

Following the completion of the culvert installation, flow will be re-introduced to the watercourse according the following points:

- The isolated channel area will be inspected by the environmental representative to confirm appropriateness of bed and back materials and completion, and the complete removal of work materials.
- The isolated area will be washed using pumps, from the upstream to downstream ends, and with silt-laden water being removed by pump at the downstream end (to a suitable location as described above).
- The isolation berms will be removed, with the downstream end removed first, followed be the upstream end second.
- Pumping across the isolation area will then be halted.

Appendix 4.3: Fisheries and Oceans Operational Statements