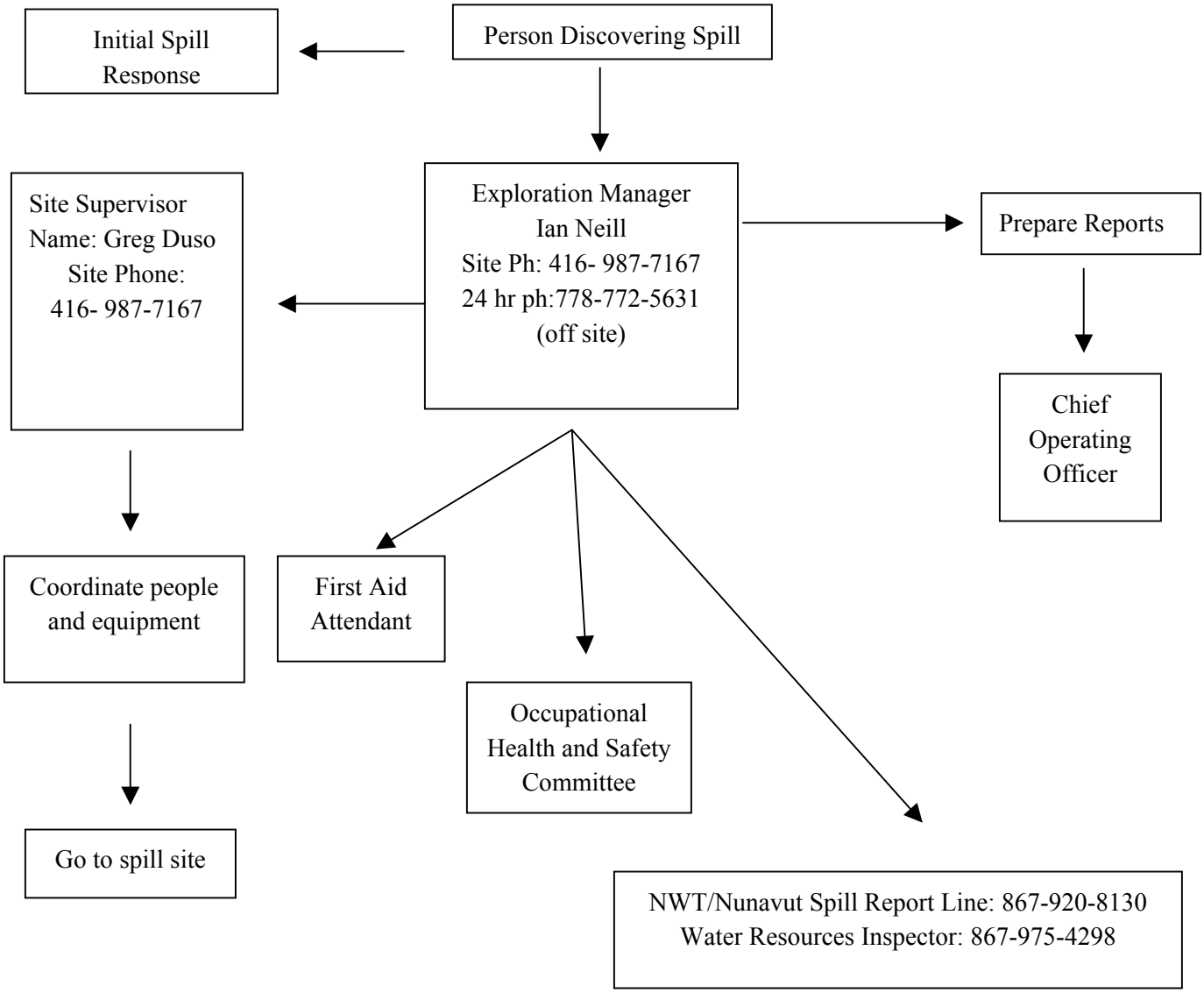
Spill Contingency Plan

High Lake Relicensing Project

Wolfden Resources Inc.
High Lake Project
Nunavut

Revised May 2006

Spill Response Flowsheet



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1. General

1.1 Preamble

This Spill Contingency Plan has been compiled with respect to the requirements within the Spill Contingency Planning and Reporting Regulations in Northwest Territories as adopted by the Government of Nunavut.

The High Lake Relicensing Program Spill Contingency Plan, is to be distributed to all appropriate contacts on the distribution list located in the front of this document.

1.2 Contact

Additional copies of this plan may be obtained by writing to:

Mr. Ewan Downie, President and Chief Executive Officer
Wolfden Resources Inc.
401-1113 Jade Court
Thunder Bay, ON P7B 6M7
Tel: (807) 346-1668
Fax: (807) 345-0284
E-mail: wolfden@baynet.net

As President, Mr. Ewan Downie is ultimately responsible for the High Lake project.

The on-site manager of the project is Mr. Ian Neill, Exploration Manager. His contact information is as follows:

Wolfden Resources Inc.
401-1113 Jade Court
Thunder Bay, ON P7B 6M7
Tel: (807) 346-1668
Fax: (807) 345-0284

Telephone at High Lake: 416- 987-7167
Fax at High Lake: 416-637-4950
E-mail: ian.neill@wolfdenresources.com

If Mr. Neill is not on site the alternate contact is Greg Duso, Assistant Exploration Manager at High Lake. He can be contacted at 416-987-7167.

1.3 Purpose

This Spill Contingency Plan is designed to provide the necessary background information and plans of action in the event of a failure at the facility or an incident associated with the High Lake Relicensing Program resulting in a spill of fluids (fuel, oil, sewage line) or of explosives. It is intended to outline the means for responding to failures and material spills within these systems in a way that will minimize potential health hazards, environmental damage and clean up costs.

The objectives of the Plan are to:

- Define the reporting procedures and communication network to be used in the event of a system failure or material spill.
- Define procedures for the safe and effective containment and cleanup/disposal of a system failure or material spill.
- Define specific individuals and their responsibilities with respect to responding to a spill.

1.4 Policy

1.4.1 Environmental Policy

The Board of Directors of Wolfden has established a corporate environmental policy that guides the actions of the firm and is followed and promoted by employees and contractors hired by the firm. This policy is considered to be a part of the overall corporate governance policy. It will be regularly monitored for compliance with the appropriate performance review to ensure effective implementation.

Wolfden is fully committed to sustainable development and will ensure that all phases of its projects will follow this approach to resource development. In the context of the High Lake Relicensing Project, Wolfden will:

- Ensure that responsible and effective environmental management planning is carried out for all aspects of the Project.

- Ensure that Inuit traditional knowledge is incorporated into environmental management plans for the Project.

- Ensure that an integrated approach is followed through all phases of development across all aspects of the organization.

- Monitor all activities through all phases of development of the Project for environmental compliance and management programs with a commitment to follow up in a timely and highly effective manner
- Continually improve in regards to environmental performance as a cornerstone of the corporate environmental management plan.

- Develop, design and operate facilities that are based upon the efficient use of energy, resources and materials.

- Identify, assess and manage environmental risks.

- Develop, maintain and test emergency preparedness plans to ensure protection of the environment, workers and northern communities.

- Require contractors and consultants to comply with corporate environmental requirements and to monitor their environmental performance.

- Ensure there is adequate environmental training for all staff and contractors and to encourage dialogue and understanding of environmental and community concerns through all phases of the Project.

- Ensure that closure and reclamation planning is integrated into project planning and that there are adequate resources available to deal with closure.

2. Reporting Procedures

2.1 Initial Reporting/Action

Upon encountering a failure within a disposal system or a petroleum/chemical spill, every Wolfden employee/contractor is responsible for **immediately reporting** the situation to their supervisor, or if unavailable, report directly to the Exploration Manager. A telephone listing of department management is included in Appendix 1.3. A copy of the Material Safety Data Sheets (MSDS) are available in Appendix 4 as well as the maintenance garages and first aid stations at the Weatherhaven Camp and Sand Lake Airstrip as identified in Figures 2 and 3 respectively. The MSDS is reviewed and updated on an annual basis.

An assessment of the spill or potential spill should be made, regarding identification of material, risk to personnel safety and the environment, cessation, control and containment. If you are **SURE it is SAFE** to do so, an attempt should be made to control the spill. Otherwise, after reporting the incident to a supervisor, you should **REMAIN CLEAR** and prevent others from inadvertently entering the area.

2.2 Internal Reporting

Once the incident has been reported to the supervisor and an assessment has been made, the spill reporting will be handled as an incident by the Exploration Manager. Upon proper notification of the personnel in the "Response Team Flowsheet" (Appendix 1.1), remedial action can commence in accordance with the corresponding response plan. Reportable quantities for spills in Nunavut are outlined in Appendix 1.2. If the quantity is above the amount indicated, the appropriate government agency should be contacted. The immediate reporting of the spill to the **N.W.T. /Nunavut Spill Line (867-920-8130) and the Water Resources Inspector in Iqaluit (867-975-4298)** will be carried out by either the Project Manager, or, if unavailable, the appropriate designate.

2.3 External Reporting

The Exploration Manager (or designate), upon receiving a report, will immediately notify the Response Team. The Response Team will then:

- Proceed to the failure/spill location and assess the situation;
- **DO NOT PUT YOUR PERSONAL SAFETY AT RISK;**
- make arrangements for first-aid and removal of injured personnel;
- co-ordinate equipment support and mobilize to location;

- liaison with Emergency Response personnel regarding containment, clean up and disposal procedures.
- when an unauthorized discharge of waste occurs or *where there is a reasonable likelihood* of a spill, **REGARDLESS OF QUANTITY**, fill out as complete as possible, a formal Spill Report Form (Appendix 1.4) and contact the **24 HOUR SPILL REPORT LINE** immediately at **(867) 920-8130** and the **WATER RESOURCES INSPECTOR IN IQALUIT** at **(867) 975-4298**, giving notification of the spill.
- A copy of the Material Safety Data Sheets (MSDS) are available in Appendix 4 and the maintenance garages at the Weatherhaven camp and Sand Lake Air strip as identified in Figure 2 and 3 respectively. The MSDS is reviewed and updated on an annual basis.
- retain the original and deliver one copy to:

President – Ewan Downie
Chief Operating Officer – John Begeman
Project Manager – Andrew Mitchell
Exploration Manager – Ian Neill
Environmental Coordinator – John Cook

- The Exploration Manager or designate shall complete a **Detailed Spill Report** and submit to an Inspector no later than 30 days after the initial report of the spill. Submit to:

Water Resources Officer
DIAND, Nunavut District, NU
Baffin Region
P.O. Box 100
Iqaluit, NU X0A 0H0

Several Government departments are available and may provide advice to assist in decision making where there are environmental concerns. A telephone listing of these departments is also included in the Appendix 1.3.

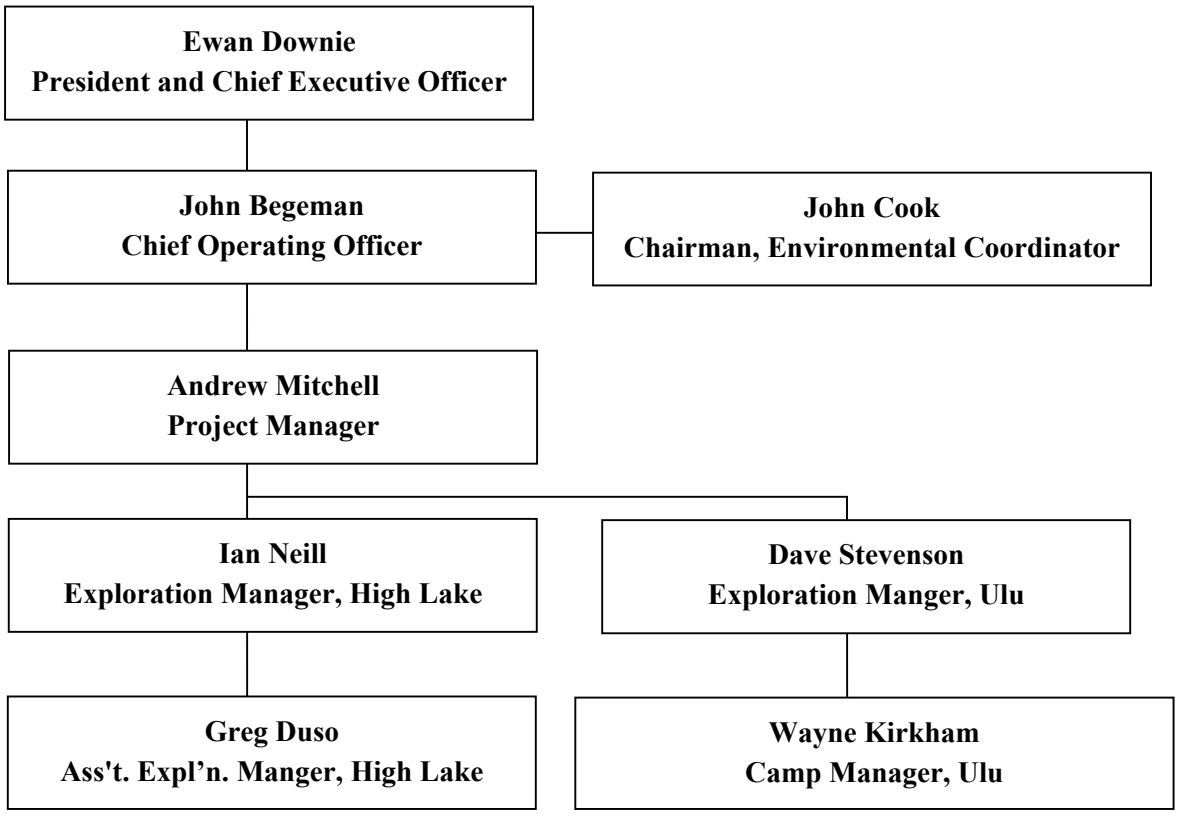
Where there is a concern for the general health and safety of the public, every effort should be made to contact local communities and hunters and trappers associations. See the Appendix 1.3 for current contacts and phone numbers.

2.4 Response Team Organization

The response team organization has been summarized in the Response Team Flow Sheet (Appendix 1.1). Within this team there are key personnel who will respond to all spills and assist in the implementation and coordination of the respective response plans. The titles and roles of these individuals include, but are not limited to those outlined below. Due to the rotational

schedule of many individuals, there is the possibility of one or more being off site at any one time. The alternate person(s) responsible for the specific role will be the designate identified below.

Table 1. High Lake Organizational Chart



2.4.1 Chief Operating Officer (John Begeman)

Through the Company's Policies, ensure that the Plan is properly distributed to those supervisory personnel most likely to encounter a spill or unauthorized release during normal operations. Ensure that all personnel are adequately trained in the safe working procedures and have access to the proper personal protection for handling hazardous material spills PRIOR TO an incident occurring. Ensure that all equipment is properly designed and maintained, and is available for an emergency situation to minimize the risk during response. All Media Relations should be carried out by the Chief Operating Officer or his designate.

ALTERNATE: Project Manager, or other as designated from time to time. The Chief Operating Officer or designate should carry out all Media Relations.

2.4.2 Project Manager – Andrew Mitchell

Through the Company's Policies, verify that the Plan is properly distributed to those supervisory personnel most likely to encounter a spill or unauthorized release during normal operations. Monitor and verify training of personnel. Monitor equipment deployment. In the absence of the Chief Operating Office, address Media Relations.

ALTERNATE: Exploration Manager, or other as designated from time to time.

2.4.3 Exploration Manager (Ian Neill)

Responsible for ensuring that adequate precautions are taken during normal operations in association will the High Lake Relicensing Project. Assign and supervise staff and supply equipment to contain, mitigate and clean-up the spill as required. If additional supplies are required, initiate the relocation of the "Emergency Spill Response Unit" (ESRU) to the spill location for immediate access. The ESRU is located next to the fuel tank farms at the Sand Lake Airstrip. The alternate spill response kit is in the sea container located at the fuel tank farm at the Weatherhaven Camp.

ALTERNATE: Camp Manager, Senior Geologist, or other as designated from time to time.

2.4.4 Safety Officer

Provide technical support and advice on personnel safety during control and clean-up operations. Ensure appropriate safety practices are in place and that the activity is performed according to standard safety procedures. Ensure, through regular training programs, that all personnel

involved in the response are trained in the techniques and procedures necessary to deal with the identified spills as provided in the contingency manual. Inform personnel of their responsibilities in preserving the health, safety and the environment with regard to equipment/ component failures and spills. In the event of a petroleum spill, mobilize the emergency response team to stand-by.

ALTERNATE: Project Manager, Senior Geologist, or other as designated from time to time.

2.4.5 Environmental Coordinator (John Cook)

Through evaluating the initial report and assessing the magnitude/potential impacts of the incident, provide direction and technical advice on the containment, clean-up and disposal procedures activated through the Plan. Liaison with Company Management and Government Agencies. Submit the spill report via the 24 hour Emergency Spill Line and follow-up with the formal written "Detailed Spill Report" within 30 days.

ALTERNATE: In the absence of environmental staff, spill reporting shall be the responsibility of the Exploration Manager (or alternate) responsible for initial spill discovery and response.

2.5 Response Team Role

Following consultation between the Exploration Manager, and other necessary High Lake personnel; the role of the Team(s) upon arrival at a failure, petroleum or chemical spill are as follows:

a) assemble the necessary personnel and equipment required to contain the spill; The Emergency Spill Response Unit is located next to the fuel tank farm at the Sand Lake Airstrip (Figure 3). The alternate spill response kit is in the sea container located at the Weatherhaven Camp (Figure 2).
b) proceed to the scene with the Response Team and co-ordinate the overall containment/clean up and/or repairs;
c) assess the possibilities of any danger to life, property or equipment;
d) determine if any product is escaping;
e) take necessary action required to stop/reduce/contain any further product from escaping;
f) attempt to determine the extent of the damage and if it extends beyond an original containment area;
g) if contained within a berm (fuel/oil), pump out that which is recoverable, then remove and replace the soil within the berm (contaminated soil to be removed to the landfarm or burned);
h) if outside the berm (fuel/oil) attempt to determine whether the cause is from overflow or a damaged berm/liner. Should the cause be a damaged liner, repair or replace it;

i) determine whether it would be safe to burn off the spilled fuel or would the surrounding soil have to be removed to a disposal area and burned. Any burning requires prior approval from regulatory authorities.
j) if chemical, determine extent of spill, whether any material is still escaping and the containment necessary.
k) all contaminated materials are to be removed and disposed of according to individual response plans, or as directed by appropriate regulatory personnel.

3. Site Information

The key components of the High Lake relicensing program include building an airstrip (and temporary construction camp) at Sand Lake, and establishing a new camp at High Lake (and eventually removing the existing High Lake exploration camp). In order to achieve this, various supplies and equipment will be barged to Grays Bay this summer (2006), unloaded and stored until they can be transported via winter trail to the Sand Lake and High Lake sites in January 2007. Construction of the airstrip and new High Lake camp would commence in early spring, 2007.

3.1.1 Weatherhaven Camp

The Weatherhaven camp is located approximately 1 km southwest of the existing camp at High Lake (Figure 1). The Weatherhaven camp is fully equipped with sleeping quarters, kitchen, laundry, first aid and potable water and sewage treatment units for up to 70 persons. A detailed view of the camp containing infrastructure, and emergency response equipment/supplies information is located in Figure 2.

Diesel fuel is stored at the camp in a single-walled 55,000 litre fuel tank and a 3,000 litre tank. The fuel tanks are contained within a bermed area designed to hold 110% of the volume of the tank. A high-density polyethylene liner is installed as secondary containment for stored product. A liner would be placed at the loading apron, also as a secondary containment measure.

Fresh water will be sourced from a small lake, L22, located west of the proposed camp (Figure 2). L22 has an estimated volume of 192,000 m^3. Assuming a consumption rate of 250 liters/person /day, L22 would be able to supply the estimated 70-person camp and not exceed the extraction limit of 5% of total lake volume. The water intakes will be equipped with floating rafts to contain the pumps and the electrical service equipment. Heat-traced and insulated water lines will connect the fresh water pumps to the camp water treatment system.

Domestic sewage and grey water will be treated on site by means of a Rotating Biological Contactor system, similar to the one used successfully at Ulu. Treated effluent from the system would be discharged to Lake L20, a small lake southeast of the Weatherhaven camp, as shown on Figure 2. Studies completed over the last two years indicate that this lake does not support fish, and drains into non-fish bearing waters.

3.1.2 Sand Lake Airstrip

The airstrip is located 12 km northeast of the existing High Lake camp, just west of the Kennarctic River. It is accessed by a 12 km all-season road. Diesel fuel is stored at the airstrip.

A small maintenance garage and a temporary construction camp support the initial construction activities. A detailed figure of the Sand Lake Airstrip is outlined in Figure 3.

The camp will be connected to a portable generator and water/sewage treatment systems will be installed. Potable water will be drawn from Sand Lake. The sewage treatment plant will be a small self-contained Rotating Biological Contactor, or similar unit. Treated water from the plant will be discharged into the Kennarctic River.

Heating oil for the initial construction activities are transported in drums from Ulu. Once the camp is established, diesel fuel will be stored at the airstrip. The fuel storage area will consist of one 600,000 litre tank, and five 55,000 litre single-wall tanks with fuel dispensers. The fuel storage area will be constructed within a bermed area designed to contain 110% of the volume of the largest single tank. A high-density polyethylene liner is installed within each tank farm as a secondary containment measure. A liner placed alongside the tank farm at the loading aprons provides secondary containment of petroleum products.

An all-season access road connects the airstrip to the Weatherhaven camp. Some drilling and blasting is required to quarry material for construction of the camp, airstrip and access road. A temporary explosive storage area is established along the road about 5 km south of the airstrip. (Figure 4). The magazine consists of wood-lined, steel sea containers. The explosives are to remain on site securely locked at all times. For seasonal shut downs, the remaining inventory is to be taken off site either by winter road (to Lupin) or via air, depending on the timing of closure.

3.2 Storage Facilities

3.2.1 Petroleum Products

Petroleum products are stored in the fuel tank farms and maintenance garages at the Weatherhaven camp and at the Sand Lake Airstrip. A listing of types and quantities of petroleum products are located in Table 2..

Table 2. Petroleum Products and Locations

Location	UTM Coordinates	Type	Quantity
Weatherhaven Camp			
Tank Farm	506,030E, 7,473,280N	Diesel	1 x 55,000 L tank 1 x 3,000 L tank
		Gasoline	10 x 159 L drums
Maintenance Garage	506,090E, 7,473,200N	Hydraulic Oil	2 x 159 L drums
Sand Lake Airstrip			
Fuel Containment Area	507,810E, 7,485,630N	Diesel	1x 600,000 L tank 5 x 55,000 L tanks
Maintenance Garage	507,780E, 7,485,510 N	Hydraulic Oil	50 x 20 L pails
		Motor Oil	50 x 20 L pails
		Ethylene Glycol	50 x 20 L pails
		Varsol	5 x 205 L drums
		Transmission Fluid	50 x 20 L pails
		Heavy Grease	50 x 20 L pails
		Grease Cartridges	200 x 300 mL cartridges
		Soaps and detergents	1000 L various packaging

3.2.2 Chemical Products

Ammonium Nitrate Fuel Oil (ANFO) is stored in the explosives magazine south of the Sand Lake Airstrip Figure 4. All ANFO will be premixed and flown in to Sand Lake. The detonators and the ANFO will be stored in separate areas with bermed protection around the detonator storage area. For seasonal shut downs, the remaining inventory would be taken off site either by winter road (to Lupin) or via air, depending on the timing of closure.

Table 3. ANFO Quantities and Locations

Location	UTM Coordinates	Type	Quantity
Explosives Magazine (5 km south of Airstrip)	507,050E, 7,480,500N	ANFO for Construction	100,000 kg/year
Detonator Magazine (5 km south of Airstrip)	507,050E, 7,480,600N	Construction	800 units/year

3.3 Receiving Environment

The High Lake property is situated at an elevation of about 300 m above sea level, in rugged bedrock-dominated terrain, with moderate to steeply inclined slopes, occasional flatter ridge tops, and numerous lakes. The watershed of High Lake is approximately 380 hectares. High Lake itself, which is up to 38m deep, occupies about one quarter of the total watershed. There are ten other smaller lakes in the High Lake watershed, which drain into High Lake. High Lake drains into the Kennarctic River, located east of High Lake. This river flows north to the Coronation Gulf. No fish have be caught in High Lake over several years of monitoring. In addition, acute toxicity tests conducted in 2005 on the water of High Lake indicate an environment hostile to fish survival; therefore, it has been interpreted that there is no fishery in High Lake. Several of the smaller adjacent lakes have been found to contain trout. No arctic char have been detected in any of the lakes in the High Lake watershed; however, land-locked char have been found in lakes located in adjacent watersheds. A topographical map indicating the site components is located in Figure 4.

The site is underlain by permafrost to an estimated depth of 400 to 500 m. It is expected that the zone of thawed bedrock beneath High Lake does not extend through to the underlying regional groundwater system.

The harsh arctic climate at site supports low-lying vegetation. Surficial soils are discontinuous and relatively thin. Numerous cliffs and rock outcrops are visible across the site. No major archaeological sites have been detected in the proposed development area, and no major sensitive wildlife habitat features, such as raptor nests, have been identified within the High Lake catchment. Various mammals including grizzly bear, wolverine and caribou traverse the site.

4. Operations Systems Malfunction Prevention

As a regular daily inspection, the following checks are carried out by the Exploration Manager or designate:

4.1 Sewage Lines

- Visual inspection of the sewage treatment plant.
- Visual inspection of the pipeline and heat trace checks at locations along the pipeline.
- Visual inspection of the pump (lift) station at each camp.

4.2 Freshwater Line

- Building heater check; ambient room temperature.
- In-line heater check; discharge water temperature.
- Pump temperature.
- Doors and general condition.

4.3 Fuel Storage Facility

- Visual inspection of the bulk fuel storage facilities at both the Weatherhaven Camp and at the Airstrip. General condition of the two sites along with fuel transfer record keeping are essential. Fuel lines, valves and transfer aprons are to be checked on a weekly basis. Status of fuel transport vehicles is to be included in the inspections.

5. System Malfunction Response Information

The fuel storage facilities, sewage and water lines are the main components of concern with regard to ongoing activities and in discussing failures and system malfunctions.

5.1 Sewage

Sewage treatment and disposal facilities are operating at the Weatherhaven Camp and the Sand Lake construction camp. Both sewage treatment plants consist of a small self-contained premanufactured plants. Treated effluent at the Weatherhaven Camp empties into Lake L20. Treated effluent at the Sand Lake construction camp empties into a small lake south of Sand Lake that drains into the Kennarctic River.

The systems are checked on a regular basis, however should an upset situation occur, all overflow/releases would revert directly to their respective discharge lakes. The collection system is situated on wooden cribbing on top of a 1 m granular base. Releases from the collection system and piping would first be contained in the granular base and then spread to the camp area.

If a failure should result along the heat traced pipeline, a shutdown of the system would be required and repairs undertaken.

Appropriate response team action would have repairs completed to the satisfaction of the supervisor in charge and effluent returning directly to the respective lakes.

5.2 Petroleum and Chemical Products-Response Information

5.2.1 General

The petroleum and chemical products used for the High Lake Relicensing Project are summarized in Tables 2 and 3, Section 3.2. These tables indicate the petroleum/chemical product name, storage location and normal storage container packaging or storage volume utilized.

There are standard operational procedures where spill scenarios may be encountered involving petroleum/chemical products. These are:

1. The transfer of fuel from airplane to the storage tanks located at the Sand Lake airstrip;
2. the transfer of chemicals products from transport vehicles to the respective storage site(s)
3. the transfer of fuel during daily operations from the storage tanks at Sand Lake to the fuel tanker truck, and from the fuel tanker truck to satellite tanks at the Weatherhaven camp

4. the transfer of fuel from drums.

The measures outlined in the detailed response plans in **Appendix 2** are intended to minimize the potential impact to water and land following a petroleum/chemical spill. As the primary objective is to preserve human health and limit environmental damage, the plan deals with the procedures/methods of spill containment, termination, remedial measures and clean-up of spills related to those products used at the site.

5.2.2 Spill Containment, Recovery and Disposal

The potential exists for spills of both petroleum products and chemical (ammonium nitrate fuel oil) used at the High Lake Relicensing Project. A spill may be in the form of a liquid as in petroleum products, or in the form of a solid as in the ANFO.

The spill of either form may occur in one or a combination of the following areas; on land, snow, ice, or in the water. Various proven practical methods of containment and recovery are well documented for use in northern climates and are summarized below. For additional technical information, refer to the Environment Canada Report EPS 9/SP/2- Survey of Chemical Spill Countermeasures, December, 1986.

The first initial response is to prevent any direct health risk to response personnel. Persons not directly associated with the clean-up operations are to be directed to leave the immediate area. The area will be isolated and limited to traffic as directed by the response team personnel.

Containment

On Land

Petroleum products spilling onto frozen snow covered ground may be contained by the construction of **snow dykes**. For fast initial containment of smaller spills the dykes can be built manually with shovels. Larger spills may require the use of heavy equipment such as graders and bulldozers.

The impermeability of dykes may be ensured by lining with a polyethylene plastic liner, plastic tarpaulin or similar synthetic material. Alternatively, in freezing temperatures, water may be sprayed or poured over the dykes to further enhance the barrier to the spilled material. This method assumes that water is available or may be accessible from the spill site or camp. Synthetically lined dykes are more effective than just snow or snow and ice-lined dykes.

During warmer months, containment dykes may be constructed from **sand or gravel** if these materials are available in an unfrozen form. Again, for smaller spills, the dykes can be fashioned manually with shovels, where for larger spills, trucks or other heavy equipment (front end loaders) will normally be required to transport and handle sand and gravel.

Trenching or ditching can be used as a method for containing and/or intercepting the flow of liquid spills on land. Ice, snow, loose sand, gravel and surface layers of organic material can usually be scraped or dug away until the underlying frozen substrate is reached. This can be effective in re-directing flow or simple containment prior to pumping or absorbing the spilled material. Trenching in solid frozen ground or rocky substrate is neither practical nor possible.

The spillage of solid materials on land is much simpler to contain and recover. During the winter months, spilled material is generally self-contained due to its nature. Some precaution with regard to wind-blown dispersion may be required with lighter materials (ANFO). In these cases, a **layer of snow** placed on top of the spilled material will suffice until removal to appropriate disposal is arranged. In summer months, minor containment berms will be required when there is moisture present or precipitation is occurring or is likely to occur.

On Snow

Containment on snow is readily achieved and is very effective due to its absorbent quality. Liquid spills (petroleum) will become immobile within the snow pack and easily removed for transport for recovery or disposal. Snow can be used in construction of snow dykes/dams. Whenever possible, the snow pack should be left in place to avoid impact on the underlying substrate.

On Ice

Spills that occur on ice, from either direct spillage or migration to the ice, are greatly affected by the strength of the ice. If the spill does not penetrate the ice, and the ice is safe to work on, then the methods of containment are similar to that on land. Where the spill has penetrated the ice, the situation should be handled similar to that on open water. If, as in petroleum spills, the material floats, then every effort should focus on the recovery of the material using pumping/suction methods, and absorbents.

On Open Water

A spill occurring on or into open water is very difficult to contain and every effort should be made to prevent the material from entering the water. If in the case of petroleum products, the material floats, then immediate deployment of surface booms should take place to control the spread of material. Pumping is the method of choice for removal of contained material on the shore during the unloading procedure.

Recovery

Spilled petroleum products contained within a dyked or trenched area should be recovered by pumping into a, portable storage tank or drums dependent on volume involved. Pump and suction hoses should be screened to prevent snow, ice or debris from clogging the line or pump.

Any remaining material may be absorbed by use of a variety of natural and commercially available products. Synthetic products such as **MorWik, OilWik and Peak Performance** pads,

rolls, socks and pillows and others are easier to use and more efficient than natural products. These products are supplied by Pigmalion Environmental Services. A complete list of spill recovery components is located in Appendix 3.

The availability of shovels, rakes and pitchforks are invaluable in any spill clean-up and recovery operation. The use of heavy equipment for larger spill situations such as front-end loaders and haul trucks, make the removal of material easier. It also ensures that all materials, including absorbent sand, snow etc. have been removed from the site.

Disposal
Petroleum products such as fuel or oil that have been recovered by pumping into portable tanks or drums.

All impacted soil remaining should be transported to the lined landfill south of the Weatherhaven camp.

In-situ combustion may be used as a final means of disposal after every effort has been made to remove the spilled fuel/oil etc. **Approval for burning of petroleum products must be obtained prior to combustion.** Burning should never be carried out on land where combustible organics are present and the oil has migrated into the soil. Removal is the method of choice in this case.

The most efficient means of igniting diesel oil for in-situ combustion is with a large size portable propane torch. Other highly flammable products such as gasoline or alcohol, or combustible products, such as wood may also be used to promote ignition of the spilled product. Spilled oil should be ignited where it has pooled naturally or been contained by dykes, trenches or depressions.

Hydrocarbon contaminated materials are removed to either the landfarm or the incinerator for ignition. Spilled chemical products should be recovered and reused wherever possible. All materials unable to be used are currently collected and incinerated.

5.2.3 Other Concerns

Fire
In the event that the accident/incident is in combination with a fire, extinguishing the fire may be required prior to initiating efforts to stop the spillage.

In order to control the resulting runoff (in cases where water is used), and the subsequent spreading of the spilled material, any indication of slope away from the area of the spill should be dyked for containment.

Petroleum and chemical fires have the potential to generate toxic fumes under poor combustion conditions. Approaching and dealing with any fire from upwind is recommended as well as caution with regard to breathing the vapours generated from the fire. High Lake personnel have access to the proper Personal Protective Equipment.

In the case where ANFO is the material involved the following action should be taken;

1) rope off the area and control entry;
2) evacuate the area and do not attempt to fight the fire;
3) the ANFO, or any resulting solution (fire in winter on snow or ice) must be prevented from entering bodies of water, especially flowing streams/rivers;
4) fires involving small quantities of ANFO may be fought using water, however if the fire is not a hazard to persons or the surrounding environment, it is generally acceptable to allow the material to burn off and then initiate clean-up measures.

Fuel Tank Farms

In the event of any emergency at the tank farms relating to fire, flooding, spills, etc; any electrical power in the area shall be shut off as quickly as possible to minimize further damage.

6. Spill Response Resources

A wide variety of spill control/recovery equipment and materials exist at the site for dealing with emergency spills of petroleum products and chemicals. Heavy construction equipment is also available for use on demand.

6.1 Response Equipment

All equipment is stored in such a manner as to be readily available on short notice. The Exploration Manager would immediately respond to a reported spill site by notifying the equipment operators to move equipment and material necessary to provide control and cleanup measures at the reported spill.

Emergency spill containment and recovery materials and supplies are available for immediate mobilization at any time. Mobile spill kits are located in dry shelters at the fuel dispensing/handling locations at the Sand Lake Airstrip (Figure 3) and Weatherhaven Camp (Figure 2).

These kits contain a supply of absorbent pads, floor-dry absorbent, pumps, hoses, couplings and miscellaneous parts for recovery equipment. The kits are designed for a spill capacity of 190 litres.

A medium sized spill will be kept in the Commander unit used for transport along the Winter Trail. This spill kit is designed for a spill capacity of 76 litres. Each light truck will also be equipped with smaller spill kits with a capacity of 25 litres. Contents of the spill kits are detailed in Appendix 3.2 to 3.5.

6.2 Response Team

Authorization for deployment of personnel, containment, clean-up and recovery equipment are as per Appendix 1.1 - "Response Team Flowsheet" organizational chart.

The designate/next-in-line authority shall be contacted if management is off site and unavailable.

A telephone listing of the High Lake Relicensing Project contact personnel is included in Appendix 1.3.

6.3 Training and Exercises

All response team staff will maintain familiarity with the continually updated Spill Contingency Plan by scheduling periodic reviews.

All personnel operating the heavy equipment that would be involved in cleaning up any spills have extensive experience as heavy equipment operators and, therefore, further training in this area is not applicable. Roadway construction (materials hauling, grading) and snow removal/clearing are all part of day to day activities.

Training with regard to hazardous materials handling will be carried out as required and in conjunction with the *Transportation of Dangerous Goods Regulations.*

WHMIS (*Workplace Hazardous Material Information System*) training is provided to all new employees as well as in the form of annual refresher courses for current employees. Core WHMIS training and job specific training is covered in these programs.

Environmental Awareness Program sessions are held in conjunction with safety sessions that deal with employee environmental responsibility and spill reporting. Initial orientation prior to beginning employment also includes the importance of environmental awareness.

Figures

Figure 1. Site Overview Map

Figure 2. Weatherhaven Camp

Figure 3. Airstrip at Sand Lake

Figure 4. Winter Trail and Temporary Explosives Site Map

Appendices

1) Spill Response Reporting
2) Detailed Response Plans
3) Response Equipment
4) MSDS Sheets

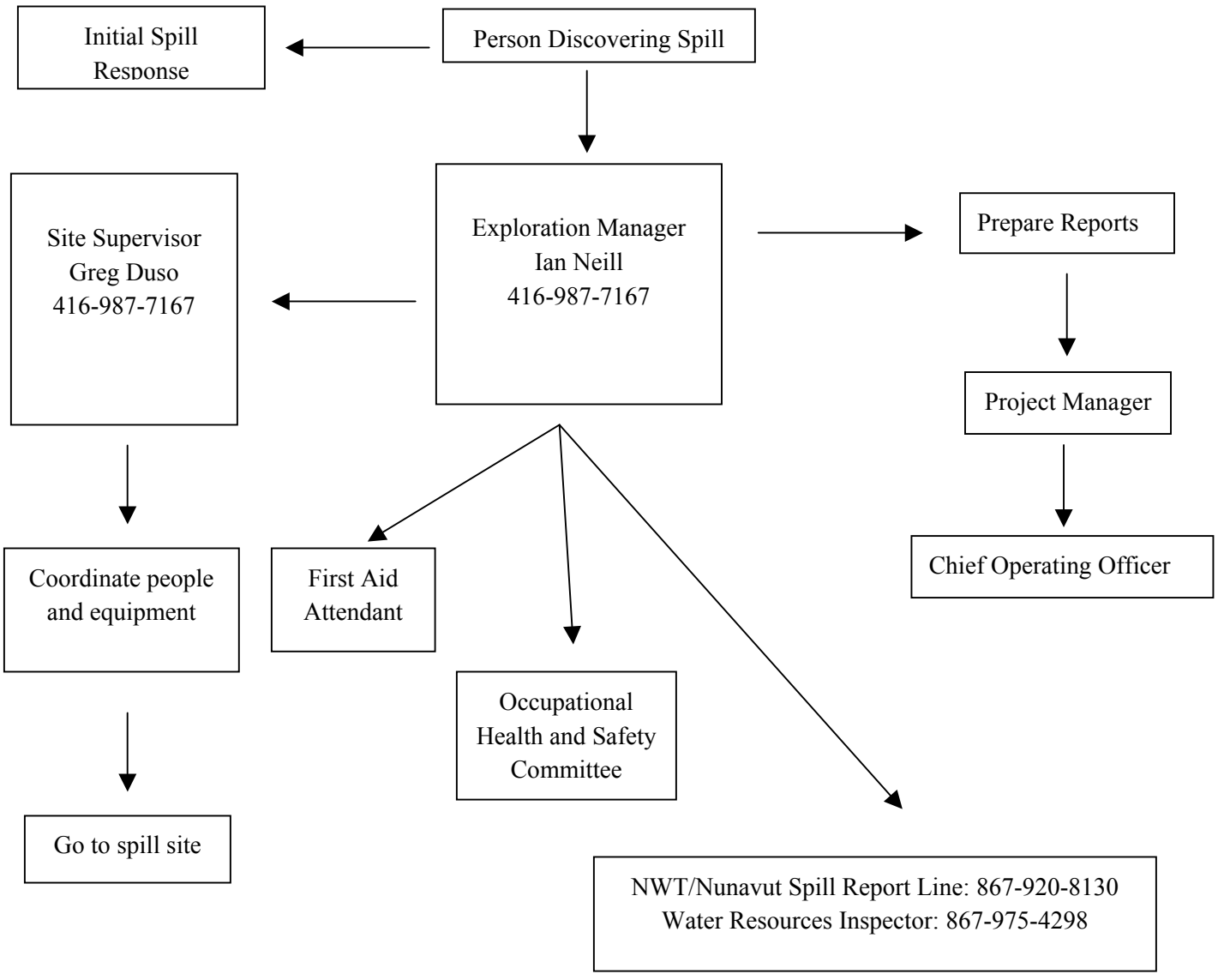
Appendix 1. Spill Response

1) Response Flowsheet
2) Contacts
3) Spill Report Form

Appendix 1.1

Response Team Flowsheet

Petroleum/Chemical Spill Procedure – High Lake



Appendix 1.2
Reportable Quantities for Spills in Nunavut Territory

Item No.	TDGA Class	Description of Contaminant	Amount Spilled
1	1	Explosives **ANFO**	Any amount
2	2.1	Compressed gas (flammable)	Any amount of gas from containers with a capacity great than 100 L
3	2.2	Compressed gas (non-corrosive, non flammable)	Any amount of gas from containers with a capacity great than 100 L
4	2.3	Compressed gas (toxic)	Any amount
5	2.4	Compressed gas (corrosive)	Any amount
6	3.1, 3.2, 3.3	**Diesel, other fuel**	100 L
7	4.1	Flammable solid	25 kg
8	4.2	Spontaneously combustible solids	25 kg
9	4.3	Water reactant solids	25 kg
10	5.1	Oxidizing substances	50 L or 50 kg
11	5.2	Organic Peroxides	1 L or 1 kg
12	6.1	Poisonous substances	5 L or 5 kg
13	6.2	Infectious substances	Any amount
14	7	Radioactive	Any amount
15	8	Corrosive substances	5 L or 5 kg
16	9.1 (in part)	Miscellaneous products of substances, excluding PCB mixtures	50 L or 50 kg
17	9.2	Environmental hazardous	1 L or 1 kg
18	9.3	Dangerous wastes	5 L or 5 kg
19	9.1 (in part)	PCB mixtures of 5 or more ppm	0.5 L or 0.5 kg
20	None	Other contaminants	100 L or 100 kg

Appendix 1.3

CONTACT LISTING

Contact	Phone
First Aid Attendant	416-987-7167
Ian Neill, Exploration Manager	416-987-7167
Ewan Downie, President and CEO	807-346-1668
John Cook, Environmental Coordinator	416-200-8073
Greg Duso, Senior Geologist	416-987-7167
Andrew Mitchell, Project Manger	807-346-1668

It shall be the responsibility of the Exploration Manager or his designate to notify the Company President.

TELEPHONE LISTING

GOVERNMENT AGENCIES	TELEPHONE	FACSIMILE
24 HOUR SPILL REPORT LINE GNWT – Dept. of Renewable Resources	(867) 920-8130	(867) 873-6924
DIAND Water Resources Inspector – Iqaluit	(867) 975-4298	(867) 979-6445
NUNAVUT WATER BOARD	(867) 360-6338	(867) 360-6369
Kitikmeot Inuit Association, Kugluktuk	(867) 982-3310	(867) 982-3311
GOVERNMENT OF NUNAVUT		
Department of the Environment – Iqaluit	(867) 975-5910	
Department of the Environment – Kugluktuk	(867) 982-3204	
GOVERNMENT NWT – Department of Renewable Resources		
Environmental Protection Division		
Mr. Ken Hall; Manager Env. Prot. Mr. Harvey Gaukel; Hazmat Specialist	(867) 920-6476 (867) 873-7654	(867) 873-0221
Wildlife Management Division		
Wildlife Biologist	(867) 920-6190	(867) 873-0293
GOVERNMENT OF CANADA		
Indian and Northern Affairs Canada Land Use and Water Use		
Regulatory Approvals, Water Resources	(867) 669-2650	(867) 669-2716
Land Use; Reg. Manager, Land	(867) 669-2763	(867) 669-2731

NUNAVUT District Office; Iqaluit (Water)	(867) 979-4407	(867) 979-6445
Environment Canada Environmental Protection Branch	(867) 975-4644	
Environment Canada Emergency Response and Enforcement 24-hour pager	(867) 920-5131	
DFO Fisheries Habitat Biologist (Iqaluit)	(867) 979-8007	(867) 979-8039
OTHERS		
Kugluktuk Hunters and Trapper Assoc.	(867) 982-4908	(867) 982-4047

ADDITIONAL COMMUNICATIONS

EMERGENCY CONTACTS

Contact	Phone
Dupont	905-821-5660
Emergency Response Centre (24 Hour)	1-800-387-2122
Pigmalion Environmental Services	905 602-4349 1-800-387-7581

Appendix 1.4
Spill Report Form

Northwest Territories

N.W.T. SPILL REPORT (Oil, Gas, Hazardous Chemicals or other Materials)

ᓄᓇᕗᑦ ᑯᐊᐸᒥ ᐅᓂᒃᑳᖅ (ᐅᖃᓕᓕᐅᔪᑦ, ᓴᓗᑦ, ᐊᑦᑕᓇᖏᑦ ᐃᓚᖓᔪᑦ ᐅᑭᐅᖃᖅᑐᑦ)

24-Hour Report Line
24-ᓂᑦ ᐃᑲᖏᓂᑦ ᐅᓂᒃᑲᕐᔪᐊᓇᖏᑐᖅ ᐅᖅᑭᒃᑲᓂᕐᒥ
Phone/ᐅᖅᑭᒃᑲᓂᐅᑦ (867) 920-8130
Fax/ᓱᒃᑐᒃᑯᑦ (867) 873-6924

A Report date and time ᐅᑦᓗᖅ ᓯᕗᓕᒧᑦᓗ ᖃᓄᐃᓕᖅᑎᑦᓗᒍ ᐅᓂᒃᑲᐅᑎᓕᐃᑦ	**B** Date and time of spill (if known) ᐅᑦᓗᖓ ᑯᐃᑎᑦᓗᒍ ᖃᓄᐃᓕᖅᑎᑦᓗᒍ (ᖃᐅᔨᒪᓕᐅᔪᑦ)	**C** ☐ Original report ᓯᓚᑦᓂᖅᓯᒪᔪᑦ ᐅᓂᒃᑲᐅᔪᓐᓇᖅ ☐ Update no. ____ ᐅᓂᒃᑲᐅᔪᓐᓇᖅᓂᕐᒧᖅ ᐊᓕᐅᑦ __	Spill number ᑯᐃᔪᑦ ᐊᓕᐅᑦ
D Location and map coordinates (if known) and direction (if moving) ᓇᓂ ᑯᐃᑦ ᑐᓴᒪᓗ ᓇᓇᕐᓴᐃᑦ ᐊᓕᐅᑎᖏᑦ (ᖃᐅᔨᒪᓕᐅᔪᑦ) ᑐᓴᒪᓗ ᓇᓕᖏᐅᔪᓐᓇᕐᓂᒪᓴᑦ (ᐃᖏᕐᔪᑦ)			
E Party responsible for spill ᑭᓇᑦ ᑯᐃᑎᑎᑎᑦ			
F Product(s) spilled and estimated quantities (provide metric volumes/weights if possible) ᑭᓯᑦ ᑭᓯᓕᓐᓂᑦ ᑯᐃᑦ ᖃᓄᑎᓗ ᐊᖏᓂᖃᖅᑐᑦ (ᐊᖏᓂᒃ ᐅᖅᑭᓂᓂᕐᓕᓐᓂᑦ ᐊᑦᓇᖏᑦᑐᑦ)			
G Cause of spill ᑭᓯ ᑯᐃᕐᐊᑕᐅᑦ			
H Is spill terminated? ᑯᐃᑦᖅ ᓄᖅᖢᑎᑕᐅᑦ? ☐ yes/ Δ ☐ no/ ᐊᖅ	**I** If spill is continuing, give estimated rate ᓯᓚ ᑯᐃᕐᑦ ᖃᓄᑎᑎ ᓯᖅᓚᑎᖅᓄᑲᖅᑐᑦ	**J** Is further spillage possible? ᑯᐃᖃᖅᓂᑐᐃᓇᐅᖃᖅᑐᑦ? ☐ yes/ Δ ☐ no/ ᐊᖅ	**K** Extent of contaminated area (in square metres if possible) ᖃᓄᖅ ᐊᖏᑎᑎᑦ ᑯᐃᐱᐅᔪᖅ (ᐅᕗᑐᓴᓚᒍ ᐊᔪᓇᖏᑦᑐᑦ)
L Factors affecting spill or recovery (weather conditions, terrain, snow cover, etc.) ᑭᓯᑦ ᐱᕐᔪᑕᐅᑦ ᑯᐃᔪᒍ ᐅᖅᑭᑦ ᐊᖏᑭᑕᐅᓂᕐᓂᒍ (ᓯᓚ ᖃᓄᐃᓕᖅᓂᖅᓄᓂᑦ, ᓄᓇ ᖃᓄᐃᓕᖅᓂᖅᓄᓂᑦ ᐊᑐᓵᑎᑦ/ᒪᓂᖅᓄᓂ, ᐊᖏᑭᓚᑐᓴᖏᑦᑐᓗ)		**M** Containment (natural depression, dykes, etc.) ᐅᖅᑭᒃᑲᖃᐃᑎᑦ ᑭᓚᐊᒍᑦ ᐃᓕᖅᓂᕐᓂᒪᔪᖅ (ᓄᓇᒥ ᐃᓕᖅᓂᐃᑦ, ᐊᖏᑭᓚᑐᓴᖏᑦᑐᓗ)	
N Action, if any, taken or proposed to contain, recover, clean up or dispose of product(s) and contaminated materials ᖃᓄᐃᓕᓚᑎᑦ, ᖃᓄᐃᓕᓚᑎᑎᖅᓂᑦ ᐅᑭᑦ ᖃᓄᐃᓕᓚᑎᑎᓄᖅᓂᑦ ᐊᑕᑎᓯᒥᑎᑕᐅᓂᕐᓂ, ᓄᖅᖢᖅᑎᑕᐅᓂᕐᓂ, ᓴᓚᒪᓂᖅᑕᑎᑦ ᐅᑭᑦ ᐃᒥᑕᐅᓄᖅᓂᑦ ᑯᐃᔪᖅ (ᑯᐃᔪᕐᓗᓂᑦ) ᑐᓴᒪᓗ ᑯᐃᐱᐅᑦ.			
O Do you require assistance? ᐃᑲᔪᖅᑕᑎᓚᖅᖢᖅᐱᑦ? ☐ no ᐊᖅ ☐ yes, describe: Δ - ᓇᓗᐃᓚᓴᓗᒍ	**P** Possible hazards to persons, property, or environment; eg: fire, drinking water, fish or wildlife ᐊᑦᑕᓪᓗᑐᐃᓇᖅᖢᖅᑎᑦ ᐃᓇᓐᓂᑦ, ᐱᖓᑎᒋᓚᐅᔪᑦ ᐅᑭᑦ ᐊᒋᑦᑕᒥ ᓯᓗ - ᐃᑭᓕᓂ, ᐃᒥᓪᓚᑦ ᓂᐅᖅᓄᑕᐅᓯᒪᔭᓂ, ᐃᖅᑲᓇᑦ ᐅᑭᑦ ᓂᐲᑎᓂ		
Q Comments and/or recommendations ᐅᖅᑲᐅᓯᖏᓐᓇᐃᑦ ᑯᐃᓗ ᐅᑭᑦᓂᕐᓂ ᖃᓄᐃᓕᓴᐅᓯᐅᔪᑦ		**FOR SPILL LINE USE ONLY** ᐊᑐᖅᑕᐅᔨᖏᖅ ᑯᐃᔪᓂᑦ ᐅᖃᓕᑭᐅᑎᓕᐃᓐᓇᖅᖢᖅ Lead Agency ᐃᖅᓄᓇᕗᑦᓂᓕᕆᓂᖅ ᑯᐃᔪᓐ ᑲᒪᔨᖅᖢᖅᓯᓂ- Spill significance ᑯᐃᔪᑦ ᖃᓄᐃᓕᖅᓄᓂᖅ- Lead Agency contact and time ᐃᖅᓄᓇᕗᑦᓂᓕᕆᓂᖅ ᑯᐃᔪᓐ ᑲᒪᔨᖅᖢᖅᓯᓂ ᖃᐅᔨᓄᖅᑕᐅᓄᖅ ᑐᓴᒪᓗ ᖃᓄᐃᓕᖅᑎᑦᓗᒍ Is this file now closed? ᑕᕐᓇ ᐅᓂᒃᓄᓕᕐᓂᖅ ᒪᑐᐅᑦ?	
Reported by ᐅᓂᒃᖢᖅᑐᖅ	Position, Employer, Location ᖃᓄᐃᑎᑐᑦ ᐃᖅᓄᓇᕗᑦᓂᑦ, ᐃᖅᓄᓇᕗᑦᓂᕐᒪᖅ, ᓇᒥ	Telephone ᐅᖅᑭᒃᑲᓂᐅᑦ	
Reported to ᑭᓇᐅᔪᑦ ᐅᓂᒃᑲᑕᐅᓂᖅ	Position, Employer, Location ᖃᓄᐃᑎᑐᑦ ᐃᖅᓄᓇᕗᑦᓂᑦ, ᐃᖅᓄᓇᕗᑦᓂᕐᒪᖅ, ᓇᒥ	Telephone ᐅᖅᑭᒃᑲᓂᐅᑦ	

NWT 1752/0593

Appendix 1. Detailed Response Plans

1) Sewage
2) Diesel
3) Gasoline and Aviation Fuel
4) Lubricating and Hydraulic Oil
5) Ethylene Glycol
6) ANFO Explosives

In the event of a **SEWAGE SYSTEM FAILURE (TREATMENT FACILITY/PIPING)** the following action plan is to be initiated.

24 HOUR SPILL REPORT LINE (867) 920-8130
WATER RESOURCES INSPECTOR (867) 975-4298

INITIAL SPILL RESPONSE

- Notify the Project Manager or designate immediately via radio, phone or in person and initiate the response team. Spill reported via 24 hour emergency spill line, above;
- If necessary, direct the initiation of shut down procedures for the pumping system in order to STOP the flow of sewage through to the environment;
- If the failure is piping related, the sewage discharge will be shut down.
- A detailed spill report shall be submitted as per Section 2.2 and 2.3

HAZARDS

- the sewage stream from the site contains grey water from all sources.
- there are no chemicals used in the process;
- due to the nature of the source, health risks are associated with bacterial infections and disease that may be transmitted through exposure.

ACTION FOR FIRE

- Non-flammable
- use CO_2, dry chemical, foam or water spray (fog), although water may spread the contaminant;
- use water to cool other flammable materials;

RECOVERY

- Ground dispersal; any sewage material that has escaped from the pipeline or containment areas onto surrounding tundra shall be removed, where possible and disposed of by incineration
- If required, gravel and/or crushed quarry rock shall be used to fill any depressions left after excavation of the spill material.
- Solutions, where contained, shall be pumped back into the sewage treatment system.
- Water contamination; these areas are difficult to mitigate as movement of contaminated material (and water) may continue long after the initial incident;
- local authorities should be contacted regarding advice for cleanup or additional work to be carried out. DIAND Water Resources, Environment Canada, or Fisheries and Oceans Canada

DISPOSAL

- contaminated materials are to be disposed of by incineration

PROPERTIES

- the site sewage system contains a mixture of camp waters which include camp drys, accommodation washroom facilities, and the kitchen.
- water accounts for greater than 90% of the component which is used during day to day activities; the remainder is organic solids which are treated within the package sewage treatment facility.

ENVIRONMENTAL CONCERNS

- solution only mildly toxic to fish and other aquatic organisms due to the low dissolved oxygen that may occur due to biological loading;
- effluents could contain minor amounts of nutrients (nitrogen and phosphate components) that may promote plant growth in downstream water bodies.

CONTAINERS

- N/A

SUPPLIER

- N/A

In the event of a **DIESEL FUEL** spill the following action plan is to be initiated.

24 HOUR SPILL REPORT LINE (867) 920-8130 INITIAL SPILL RESPONSE
WATER RESOURCES INSPECTOR (867) 975-4298

- Notify the Project Manager or designate immediately via radio, phone or in person and initiate the response team. Spill reported via 24 hour emergency spill line, above;
- STOP the flow of diesel fuel if possible;
- ELIMINATE open flame ignition sources;
- CONTAIN flow of oil by dyking, barricading or blocking flow by any means available. Use earthmoving equipment if nearby;
- if flow has reached flowing natural stream, mobilize team to deploy skimmer and sorbent booms.
- A detailed spill report shall be submitted as per Section 2.2 and 2.3

HAZARDS

- low toxicity by ingestion, mildly irritating to eyes
- combustible, low fire hazard;
- avoid contact with oxidizing materials

ACTION FOR FIRE

- use CO2, dry chemical, foam or water spray (fog), although water may spread the fire;
- use fog streams to protect rescue team and trapped people;
- use water to cool surface of tanks;
- divert the diesel fuel to an open area and let it burn off under control;
- if the fire is put out before all diesel fuel is consumed, beware of re-ignition;
- where diesel fuel is running downhill, try to contain it as quickly as possible;
- rubber tires are almost impossible to extinguish after involvement with a fire. Have vehicles with burning tires removed from the danger area.

RECOVERY

- Recovered soils from contaminated fuel can be soaked up by sand and peat moss or snow if available, or by synthetic sorbents such as MorWik, OilWik and Peak Performance;
- if necessary, contaminated soil should be excavated;
- diesel fuel entering the ground can be recovered by digging sumps or trenches;
- diesel fuel on a water surface should be recovered by skimmers and sorbent booms (See Section on Recovery of Oil Spills).

DISPOSAL

- disposal at landfill.
- incineration under controlled conditions; obtain prior approval.

PROPERTIES

- chemical composition: mixture of hydrocarbons in the range C9 to C18;
- clear to yellow, bright oily liquid with hydrocarbon odour;
- not soluble, floats on water.

ENVIRONMENTAL CONCERNS

- moderately toxic to fish and other aquatic organisms;
- harmful to waterfowl;
- may create unsightly film on water.

CONTAINERS

- transported by tanker truck and transferred to various storage tanks in the tank farm. See inventory in Table 2 Section 3.2.1.

SUPPLIER

- As per annual tendering.
- **SEE MSDS, LOCATED IN EACH MAINTENANCE GARAGE OR FIRST AID STATION, FOR ADDITIONAL INFORMATION**

In the event of a **GASOLINE OR AVIATION FUEL** spill, the following action plan is to be initiated.

24 HOUR SPILL REPORT LINE (867) 920-8130 INITIAL SPILL RESPONSE
WATER RESOURCES INSPECTOR (867) 975-4298

- Notify the Project Manager or designate immediately via radio, phone or in person and initiate the response team. Spill reported via 24 hour emergency spill line, above;
- STOP the flow of gasoline or aviation fuel if possible;
- ELIMINATE all possible sources of IGNITION, e.g., extinguish cigarettes, shut off motors (from a remote location if surrounded by vapours);
- EVACUATE personnel from danger area;
- CAREFULLY CONSIDER the hazards and merits of trying to contain the spill. Contain only if safe to do so, and obvious benefit of containment is apparent (i.e., contain if flowing towards a creek or water body). Otherwise leave gasoline to spread and evaporate. Do not attempt to contain a gasoline spill on water. Allow it to spread and evaporate;
- if spilled in an enclosed area, **VENTILATE** vapours.
- A detailed spill report shall be submitted as per Section 2.2 and 2.3

HAZARDS

- EXTREME FIRE HAZARD (Jet A, MODERATE), highly flammable;
- forms explosive mixture with air; is heavier than air and can migrate considerable distances to sources of ignition and flashback;
- easily ignited by flame or spark;
- avoid contact with oxidizing materials (e.g., Lead Nitrate, acids);
- moderately toxic by ingestion, highly toxic if aspirated.
- Note: Jet B contains a small amount of Benzene which is a suspect human carcinogen.

ACTION FOR FIRE

- use CO2, dry chemical, foam or water spray (fog), although water may spread the fire;
- use jet streams to wash away burning gasoline;
- use fog streams to protect rescue team and trapped people;
- use water to cool surface of tanks;
- divert the gasoline to an open area and let it burn off under control;
- if the fire is put out before all gasoline is consumed, beware of re-ignition;
- where gasoline is running downhill, try to contain it at the bottom prior to reaching lakes or streams;
- rubber tires are almost impossible to extinguish after involvement with a fire. Have vehicles with burning tires removed from the danger area.

RECOVERY

- unburned gasoline can be soaked up by sand and peat moss and snow when available, or by synthetic sorbents such as MorWik, OilWik and Peak Performance;
- if necessary, contaminated soil should be excavated;
- gasoline entering the ground can be recovered by digging sumps or trenches.

DISPOSAL

- disposal at landfarm
- incineration under controlled conditions; obtain prior approval.

PROPERTIES

- chemical composition: mixture of hydrocarbons; Gasoline C4-C12, Jet B C6-C14 and Jet A C9-C16
- light green, clear, amber coloured liquids;
- volatile;
  not soluble, floats on water

ENVIRONMENTAL CONCERNS

- moderately toxic to fish and other aquatic organisms;
- may create unsightly film on water.

CONTAINERS

- Gasoline is transported in 205 litre drums;
- Drum shipping and storage of various grade fuels is in limited quantities. See Table 2 in Section 3.2.1 for details.

SUPPLIERS

- As per annual tendering.
- SEE MSDS, LOCATED IN EACH MAINTENANCE GARAGE OR FIRST AID STATIONS, FOR ADDITIONAL INFORMATION

In the event of a **LUBRICATING OIL OR HYDRAULIC OIL** spill the following action plan is to be initiated.

24 HOUR SPILL REPORT LINE (867) 920-8130 INITIAL SPILL RESPONSE
WATER RESOURCES INSPECTOR (867) 975-4298

- Notify the Project Manager or designate immediately via radio, phone or in person and initiate the response team. Spill reported via 24 hour emergency spill line, above;
- STOP the flow of oil if possible;
- ELIMINATE open flame ignition sources;
- CONTAIN flow of oil by dyking, barricading or blocking flow by any means available. Use earthmoving equipment if nearby;
- A detailed spill report shall be submitted as per Section 2.2 and 2.3

HAZARDS

- low toxicity by ingestion, mildly irritating to eyes
- combustible, low fire hazard;
- avoid contact with oxidizing materials (e.g., Lead Nitrate, acids).

ACTION FOR FIRE

- use CO2, dry chemical, foam or water spray (fog), although water may spread the fire;
- use fog streams to protect rescue team and trapped people;
- use water to cool surface fire exposed containers;
- divert the oil to an open area and let it burn off under control;
- if the fire is put out before all oil is consumed, beware of re-ignition;
- rubber tires are almost impossible to extinguish after involvement with a fire. Have vehicles with burning tires removed from the danger area.

RECOVERY

- after containment, recover as much oil as possible by pumping into drums;
- residual oil may be burned in-situ, upon approval;
- remaining unburned oil can be soaked up by sand, peat moss and snow when available, or by synthetic sorbents such as MorWik, OilWik and Peak Performance;
- if necessary, contaminated soil should be excavated;
  oil on a water surface should be recovered by skimmers and sorbent booms.

DISPOSAL

- incineration under controlled conditions, prior approval required;

PROPERTIES

- chemical composition: mixture of hydrocarbons and conventional industrial oil additives; C20-C66
- generally viscous liquids, light to dark amber colours;
- not soluble, floats on water.

ENVIRONMENTAL CONCERNS

- moderately toxic to fish and other aquatic organisms;
- harmful to waterfowl;
- may create unsightly film on water and shorelines.

CONTAINERS

- transported and stored in steel drums or cubes. See Table 2 in Section 3.2.1 for details.

SUPPLIER

- As per annual tendering.
- SEE MSDS, LOCATED IN EACH MAINTENANCE GARAGE OR FIRST AID STATIONS, FOR ADDITIONAL INFORMATION

In the event of an **ANTIFREEZE (GLYCOL)** spill the following action plan is to be initiated.

24 HOUR SPILL REPORT LINE (867) 920-8130 INITIAL SPILL RESPONSE
WATER RESOURCES INSPECTOR (867) 975-4298

- Notify the Project Manager or designate immediately via radio, phone or in person and initiate the response team. Spill reported via 24 hour emergency spill line, above;
- STOP the flow of Antifreeze at source if possible;
- ELIMINATE open flame ignition sources;
- CONTAIN flow of liquid by dyking, barricading or blocking flow by any means available;
- PREVENT antifreeze from entering any flowing streams.
- A detailed spill report shall be submitted as per Section 2.2 and 2.3

HAZARDS

- inhalation of mist may cause irritation of nose, throat and headache;
- moderately toxic by ingestion, can be fatal;
- avoid contact with strong oxidizing agents
- flammable, decomposition products include carbon dioxide and/or carbon monoxide.

ACTION FOR FIRE

- use alcohol type or all purpose foam for large fires; CO2, dry chemical or water spray (fog) for small fires. Do not force solid streams into the burning liquid.

RECOVERY

- ethylene glycol antifreeze can be soaked up by peat moss or snow when available, or by synthetic sorbents such as MorWik, OilWik and Peak Performance;
- small spills may be washed with copious amounts of water for dilution;
- access to spilled or recovered ethylene glycol by animals should be prevented.

DISPOSAL

- incinerated under controlled conditions where approved by appropriate federal, provincial and local regulations;
- burial at an approved site.

PROPERTIES

- chemical composition: 96% ethylene glycol (CH2OHCH2OH)
- 4% water and rust inhibitors
- clear, syrupy liquid normally contains a dye for identification in water sources;
- 100% soluble in water;
- flammable.

ENVIRONMENTAL THREAT

- low to moderate toxicity for fish and other aquatic organisms;
- attractive smell and taste to some mammals, and toxic by ingestion.

CONTAINERS

- transported and stored in steel drums or cubes (which are a self-contained unit with an 8 drum capacity). See Table 2 in Section 3.2.1 for details.

SUPPLIER

- DOW Chemical of Canada Ltd., Van Waters & Rogers Ltd.
- **SEE MSDS, LOCATED IN EACH MAINTENANCE GARAGE OR FIRST AID STATIONS, FOR ADDITIONAL INFORMATION**

In the event of a **AMMONIUM NITRATE/FUEL OIL** spill the following action plan is to be initiated.

24 HOUR SPILL REPORT LINE (867) 920-8130 INITIAL SPILL RESPONSE
WATER RESOURCES INSPECTOR (867) 975-4298

- Notify the Manager or designate immediately via radio, phone or in person and initiate the response team. Spill reported via 24 hour emergency spill line, above;
- STOP the spill of ANFO at the source if possible;
- evacuate all non-essential personnel from the area and ensure the health and safety of those remaining;
- ELIMINATE all possible sources of ignition;
- PREVENT ANFO from contacting water;
- if ANFO does contact water, CONTAIN solution to as small an area as possible. Consider dyking with sand or snow to minimize travel;
- ISOLATE area of spill preferably by roping off affected area.
- A detailed spill report shall be submitted as per Section 2.2 and 2.3
- HAZARDS
- may explode under confinement or high temperatures and friction;
- avoid contact with strong oxidizers (i.e., Lead Nitrate)
- flammable;
- combustion products are toxic and may include hydrocarbons, oxides of carbon and nitrogen;
- low toxicity.

ACTION FOR FIRE

- for fires involving large quantities of ANFO, evacuate and Do Not Attempt to fight fires;
- for fires involving small quantities of ANFO, use large amounts of water to extinguish, control runoff;

ANFO may detonate in fire, under severe impact or confinement.

RECOVERY

- spills of ANFO on dry surfaces can be shovelled into containers;
- spills of ANFO on wet surfaces or exposed to rain should be shovelled into waterproof containers as soon as possible to minimize the quantity of ammonium nitrate being dissolved;
- ANFO, or a resulting ammonium nitrate solution, must not be allowed access to any flowing stream;
- sorbents such as peat moss, MorWik, OilWik and Peak Performance should be used to recover any oil emanating from the ANFO spill; snow may be used during the winter months
- under freezing conditions.

- soil heavily contaminated with ammonium nitrate should be excavated for incineration if the affected groundwater threatens to travel to an adjacent flowing stream.

DISPOSAL

- sorbents used to recover the oil may be incinerated under controlled conditions or buried at an approved site;
- ANFO can be disposed of by detonation or incineration under knowledgeable supervision.

PROPERTIES

- comprised of 94% prilled ammonium nitrate (NH4NO3) and 6% No.2 fuel oil, trade name: Amex II
- small porous pellets coated with oil, may be dyed with bright colours (yellow), odour of fuel oil;
- ammonium nitrate is Very Soluble in water; the oil is not soluble and will float;
- strong oxidizing agent;
- flammable.

ENVIRONMENTAL CONCERNS

- ammonium nitrate is moderately toxic to fish and other aquatic organisms at low concentrations. Toxicity increases with increased pH and temperature of the water.
- being very water soluble, the ammonium nitrate in the ANFO can readily dissolve and enter the natural surface or ground water streams.

CONTAINERS

- ANFO is transported and stored in 25 kg polyethylene bags at the temporary explosives magazine south of the Sand Lake airstrip.

SUPPLIER

- Orica Explosives Limited (Calgary, Alberta)
- SEE MSDS, LOCATED IN EACH MAINTENANCE GARAGE OR FIRST AID STATIONS, FOR ADDITIONAL INFORMATION

Appendix 2. Response Equipment

- Heavy Equipment Inventory
- Spill Containment/Recovery Materials – Weatherhaven Camp
- Spill Containment/Recovery Materials – Airstrip
- Commander Spill Kit
- Vehicle Spill Kit

Appendix 3.1

HEAVY EQUIPMENT INVENTORY
WOLFDEN RESOURCES INC.
HIGH LAKE PROJECT, NUNAVUT

Equipment to be transported via winter trail from Ulu to High Lake:

- Caterpillar Grader 120G (1 unit)
- Caterpillar Backhoe 311 (Tracked)
- Foremost Commander
- Water Truck
- Caterpillar Dozer D8N – (tracked)
- Caterpillar Wheel Loader 966D
- Caterpillar 769 Rock Truck (2 units)
- Commander Unit
- Six 55,000 litre single-wall fuel tanks
- Cummins Generator –800 kW
- Detroit Generator – 250 kW (2 units)
- Gilson Cement Mixer
- Two Fold-a-way buildings (garage)
- 30-person construction camp (7 Units)
- Tractor-Flatbed Combo

Equipment and supplies to be transported via winter trail from Grays Bay to High Lake:

- Power generation Plant for Weatherhaven camp
- Two Caterpillar 330DL or 345DL hydraulic excavators
- Two pick up trucks (Ford F 250)
- Caterpillar Soil Compactor
- Caterpillar Telehandler
- Two 40 ft. portable bridge kits
- Corrugated Steel Pipe Culvert materials
- 600,000 litre diesel tank
- 3,000 litre double walled fuel tank
- Geomembrane materials for secondary containment liners at fuel storage areas
- Two premanufactured, containerized sewage treatment plants (for Sand Lake and Weatherhaven camps)
- Two premanufactured, containerized potable water treatment plants (for Sand Lake and Weatherhaven camps)
- Fuel Truck (3,000 gal)
- Sewage Sludge transportation truck
- Portable rock crushing plant (Metso)

- Two Tamrock Ranger 7002 hydraulic crawler blasthole drills with spare parts and drill steel and bits.
- Weatherhaven camp materials (containerized)
- Four portable, diesel powered lighting plants
- Miscellaneous building materials (wood, steel, cement)
- Miscellaneous spare equipment and machine parts, tools and lubricants
- Miscellaneous small equipment (pumps, portable generators, portable air compressors, etc.)

Note: The above list of construction plant and supplies is provided to illustrate the magnitude of the project requirements. The actual volume of freight will be subject to revision in response to detailed project requirements, based on the final configuration of the works and the availability and procurement of construction plant and building materials when shipping commences.

SPILL CONTAINMENT/RECOVERY MATERIALS

Large mobile spill kits at the High Lake Project are available at two locations; the sea container located at the fuel tank farm at Weatherhaven Camp, and the "Emergency Spill Response Unit" at the Sand lake Airstrip. The ESRU holds additional equipment and supplies to deal with spills in excess of 200 litres. Additional smaller spill kits are located in each of the vehicles.

Appendix 3.2

Weatherhaven Spill Kit

The Spill Kit has one Pigmalion Environmental Services (PES) mobile responder kit that has an absorption capacity of 190 liters. The kit is located adjacent to the fuel tank farm in the Weatherhaven Camp. This kit includes:

6	blue socks, (3 in x 4 ft)
6	blue socks, (3 in x 12 ft)
50	pads, (17 in x 19 in)
10	pillows, small (9 in x 9 in)
3	disposal bags with ties
1	cardboard warning/spill sign
2	safety goggles, pair
2	protective gloves, pair
1	literature package (MSDS, Instructions)

Appendix 3.3

Sand Lake Airstrip Spill Kit

The Spill Kit and accessories is located at the fuel tank farm at the airstrip near Sand Lake contains the following inventory and has an absorption capacity in excess of 200 liters:

1 PES mobile responder kit (as above)
3 Shovels;
2 Roll Poly; 4mL, 500 ft.;
1 Crate of floordry; (50) 20kg bags;
4 Booms, 11 ft.;
1 Pump; 2" Honda;
1 Safety approved 2 gallon gas container;
2 20 ft. 2" hoses;
1 Oil Skimmer;
10 45 gallon drums (no lids) for collection of contaminated materials (several lidded 45 gallon containers are available on site if contaminated liquid is required to be transferred from the non-lidded containers);
1 100 ft. rope;
2 Fire extinguishers;
1 4 lb sledge;
1 Box, dust masks

In addition to the above, Wolfden's High Lake camp maintains a supply of the smaller items such as floordry, absorbent pads, shovels, dust masks and are available if required.

Appendix 3.4

Commander Spill Kit

50	Pads(17”x19”x2/8”)
3	Socks (3”x4’)
1	Socks(3”x10’)
2	Pillows (9”x9”x2”)
1	Epoxy Putty Patchstick (4 oz.)
1	Pair of Gloves
2	Disposal Bags
1	Warning Sign
1	Chemical Reference Guidebook
1	Literature (Inventory List, MSDS, Instructions)
76	Sorption Capacity (L.)

Appendix 3.5

Vehicle Spill Kit

10	Pads (17”x19”x2/8”)
3	Socks (3”x4’)
0	Pillows (9”x9”x2”)
1	Pair of Gloves
1	Disposal Bags
1	Warning Sign
1	Literature (Inventory List, MSDS, Instructions)
25	Sorption Capacity (L.)

Appendix 4. MSDS Sheets