APPENDIX A

Emergency Response and Contingency Plans

Environmental Protection Plan

Miramar Hope Bay Ltd. –
Emergency Response and Contingency Plans

MHBL STANDARD ENVIRONMENTAL OPERATING PROCEDURE

REGIONAL EXPLORATION PROJECT

EMERGENCY RESPONSE AND CONTINGENCY PLANS

In compliance with WUP # 2BE-HOP0207

Miramar Hope Bay Limited
Suit 300-889 Harbourside Drive
North Vancouver, BC V7P 3S1

December 07 2006

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DOCUMENT CONTROL RECORD

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The re-issues of this document, listed below, have been reviewed and approved by Quality Assurance and Management and are authorized for use within the Miramar Hope Bay Ltd organization.

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This is a Controlled Document As the registered recipient of this manual, you are responsible for keeping it up to date through the filing of all revisions and for returning the manual, should you transfer job, location, or leave the company.

Definitions

Adverse Effects – Impairment of or damage to the environment, human health or safety or property.

Emergency – Any unplanned occurrence either resulting in, or having the likely potential to result in environmental or human health impact or posing a threat to on-site personnel or the public, or interruption in company operations.

Emergency Log – A detailed written account of times, events and actions taken during an emergency.

Emergency Response Procedures – An outline of specific tasks required to implement the counter measures called for in the Emergency Response Plan. These tasks are often part of existing operating procedures for the facility.

Five (5) Point Safety System - 5 simple, practical steps to follow in assessing workplace hazards. See Safety manual in Appendix G.

Emergency Response Coordinator – The site supervisor or designated individual assigned to coordinate the deployment personnel for the purpose of spill clean up.

Emergency Response Team – A predetermined group of individuals whose purpose is to provide on-site expertise and labor to assist the on scene commander in bringing the emergency to an early, successful conclusion. This team will also response to wildlife incidents that represent risk to human or disrupts company activities.

Hazard Area – Any area where hazardous conditions exist, either during or as the result of an emergency. All non-essential personnel should be excluded from this area.

Levels of an Emergency – A subjective measure of the overall severity of the emergency.

Risk Assessment – Characterization of the nature, magnitude and likelihood of adverse effects on human health or ecosystems from exposure to one or more contaminating substances through various routes of exposure.

Spill Contingency Plan – A plan providing guidance on the counter measures needed to minimize or eliminate the consequences of specific hazards affecting the environment, facilities or operations. It also identifies the resources and their locations that are needed to implement the counter measures**.**

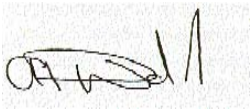
MIRAMAR HOPE BAY LIMITED

ENVIRONMENTAL POLICY

Miramar Hope Bay Limited (MHBL) is committed to maintaining sound environmental practices in all of its activities. To achieve this, MHBL is working with its employees and contractors will:

- Examine the potential impact to the environment of all proposed activities and take steps to minimize or where possible eliminate the impact.
- Ensure that all activities are in compliance with all environmental legislation and regulations.
- On a continuous basis, determine the MHBL impact to the environment and through continuous improvement, strive to attain higher levels of environmental performance.
- Maintain a high level of environmental protection by applying practices and technologies that minimize impacts and enhance environmental quality.
- Maintain dialogue with communities and other stakeholders within the area of influence of the Hope Bay Project.
- Progressively rehabilitate disturbed areas, develop closure plans that can be continuously improved and incorporate new technologies where practical.
- Encourage cooperative research programs with government and other stakeholders to better understand and monitor impacts associated with the Hope Bay Project.
- Train all employee and contractors to understand their environmental responsibility related to MHBL.

On behalf of Miramar Hope Bay Ltd.



Anthony Walsh
President and CEO
October 2006

MIRAMAR HOPE BAY LIMITED

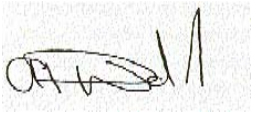
SAFETY POLICY

Miramar Hope Bay Ltd. is committed to providing a safe and healthy work place by developing, maintaining and promoting safe and productive work practices in all aspects of its business.

To achieve this, MHBL will:

- Include safety and occupational health considerations as an integral part of its operations, from design to closure.
- Take all reasonable and practical measures to ensure the work place is free of potentially hazardous conditions.
- Provide information, training, procedures and protective equipment to enable employees to work productively in a safe environment.
- Ensure that all employees understand and follow established safe work practices and procedures.
- Ensure that all contractors employed by MHBL abide by this policy.
- Maintain trained individuals or teams capable of dealing with medical and emergency situations.
- Improve occupational health and safety through continuous review and improvement of procedures.
- Ensure that all incidents are thoroughly investigated to eliminate or reduce any future occurrences.

On behalf of Miramar Hope Bay Ltd.



Anthony Walsh
President and CEO
October 2006

1 INTRODUCTION

The Emergency Response and Contingency Plans were revised to include recent comments received from Department of Fisheries and Oceans to include a portion covering Roberts Bay waterfront spill plan. The document was further developed to establish a guidance document for emergency responses at the Windy Exploration Project Camp and regional worksites (see Figure 1).

The document includes appendices to assist and inform all personnel on site so that they can respond to any site emergency that has the potential to adversely affect the natural environment and/or the safety of personnel.

The plan is driven by Miramar Hope Bay Limited (MHBL) environmental and safety policies and in compliance with regulatory requirements.

The Plan provides:

1 A clear chain of command for all emergency activities;

2 Accountability for the performance of the emergency response;

3 Well-defined task and operational hazards/risk; and

4 Reporting and record keeping requirements to track program progress.

The plan will be a "living" document and will be updated on a regular basis as new information comes to light or procedures, permits and authorizations change.

2 ADMINISTRATION

The responsibility for the administration of the plan will rest with the Vice Presidents of Exploration and Operation. The senior environment coordinator will support the Exploration Manager and General Manager, Northern Operations, and shall, in conjunction with Senior Safety Coordinator, Project Resource Managers, and Site Supervisors, review the plan on a regular basis and update as needed. The Occupational Health and Safety Committees will also review the plan periodically.

2.1 Purpose

The purpose of this document is to act as a general resource for each member of Management and all employees to enable them to react to emergencies at any Exploration Camps and Regional Worksites. The plan will act as a guidance tool to ensure immediate and effective handling of any emergency. Prompt, effective and organized Emergency Response by the company will ensure safety of the employees, minimize the impacts on the environment and maintain effective communication with the regulatory agencies.

Figure 1: Windy Camp Infrastructure Layout Map

Key: Numerical numbers indicating the general lay out for facilities at Windy Lake. Due to limited space, few location numbers will appear more than once.

1. 3 x Core storage area
2. Accommodation
3. Kitchen, Recreational, Office Complex
4. Enviro Emergency Response Equipment Storage
5. Freshwater Intake
6. Sauna
7. RBC Sewer System
8. Incinerator
9. Core logging/splitting shacks
10. Erection Tent (Muster Point)
11. Generator
12. Propane Storage Area
13. Jetty
14. Lined dyke
15. Land Treatment Area (LTA)
16. 2 x Helipad
17. Jet B Storage Area
18. 3 x AST fuel tanks & Gas drums
19. Contaminated fuel storage area
20. Gas drums (temporarily storage)
21. Emergency winter tent
22. Non-combustible solid waste storage
23. Unusable timbers/ply wood
24. Snow machines
25. Calcium Chloride (Salt)

2.2 Prevention

MHBL is committed to a prevention strategy of ongoing maintenance, inventory control, staff training and vigilance of all aspects of the work. The following will be standard practice on the Hope Bay Belt Exploration Camps and worksites:

Inventory control: All hazardous materials will be subject to strict inventory control from the time they enter the site. Logs will be kept as required for inspection by the regulatory agencies.

Storage: All hazardous goods will be stored in a manner that is required for the individual product as set out in the manufactures' material Safety Data Sheets (MSDS) (See Appendix B for list of Chemicals and Petroleum Products on site).

Daily inventory Balance: All liquid products will be checked on a daily basis and a balance sheet of inflow and outflow maintained.

Disposal: All hazardous materials will disposed in strict compliance with the laws and regulations of Nunavut. If such laws and regulation do not exit, use similar regulations for other provinces within Canada (for specific products etc).

Staff Reminders: Pre-Job meetings/safety meetings will contain a component to constantly remind employees to be on the look out for innovative ways to improve environmental and safety performances.

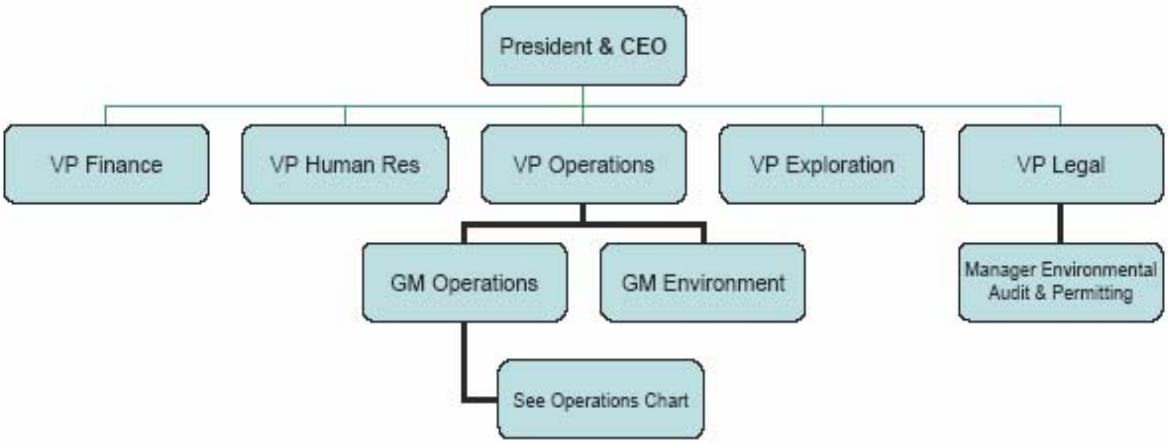
2.3 Distribution

This document will be available at strategic areas on property (through your supervisor as this is a controlled document) to all employees for reference. The Senior Environmental Coordinator is responsible to keep the information current and distribute updates to all participants as required. Copies of this report will be distributed to all stakeholders including Kitikmeot Inuit Association, Environment Canada, Fisheries and Oceans Canada, RCMP Cambridge Bay and Nunavut Department of Environment.

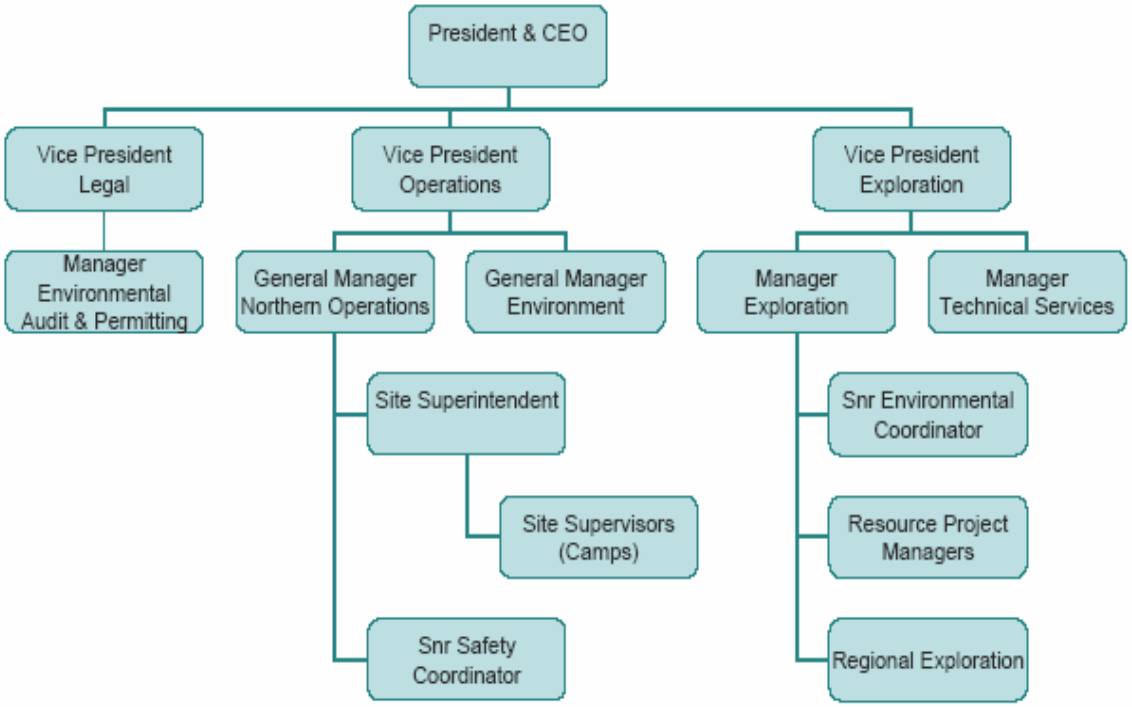
3 ORGANIZATION AND RESPONSIBILITY

The General Manager, Northern Operations has overall control of the camps operational aspect and supplies and all aspects of the response plan. He will be assisted and supported by the Exploration Manager and the Resource Project Managers who responsible for the exploration programs. The implementation of this plan is the responsibility of the Site Superintendent and the Camp Site Supervisors who are responsible for the fuel transportation, handling and storage, the powerhouse and the mechanical shop. The Senior Safety Coordinator and the Senior Environmental Coordinator will also play a supporting role by keeping current with regulations and providing advice during incidents as well as providing liaison with the regulatory agencies. If necessary, the General Manager, Northern Operations can call on corporate personnel: the Vice Presidents of Operation and Exploration, and the General Manager, Environment. The following chart is the chain of command within MHBL.

Figure 2: MHBL Corporate Chain of Command



Exploration Program Operational & Exploration Chain of Command



3.1 Communications

Senior staff will be in daily contact with senior management on site so that decisions can be made in an efficient and timely manner.

The site will be equipped with a satellite receiver and phone system as well as portable radios and a base station at the site office. All front line supervisors will carry a portable radio while working on site. Independent satellite phones will be available for crews working off site and for emergency communications if the phone system fails.

4 EMERGENCY RESPONSE

4.1 Natural Incidents

When a natural disaster such as a flood, earthquake or severe windstorm sufficient to cause damage occurs, carry out the following steps immediately:

- Sound the alarm;
- Designate the Responsible Person;
- Evacuate to muster point or shelter as instructed by Responsible Person;
- Hold a roll call and confirm everyone is accounted for;
- Report any missing personnel to the Emergency Response Team(ERT); and
- Call for outside help as required.
- The safety of the individual takes precedence over all else.

Depending upon the nature of the natural disaster, and whether or not there is any warning, it may or may not be possible to use the designated muster point and shelter. If either or both of the muster point or the shelter are unavailable, then the responsible person shall make alternative plans on the spot, depending upon the circumstances.

4.2 Severe Weather

4.2.1 Severe Cold

All workers will be expected to be familiar with working in the cold weather that is prevalent on site. Workers will receive orientation and training on the proper methods while working in the cold. There will, however be circumstances when work may be restricted because of extreme cold. Procedures will be established for the various work tasks to protect outside workers.

4.2.2 Whiteout Conditions

Cease physical work. This is particularly important for persons using equipment or cutting tools, because any person suffering an injury may be unable to either reach the first aid post, or be evacuated to a hospital until the conditions improve. Personnel are to remain within shelter until the emergency has passed. Remote sites will be equipped with emergency rations and a heat source. Those people working at these sites will be informed to cease work and to remain inside the shelter until the severe weather has passed. No one will be permitted to operate any vehicle (truck or snowmobile) except in extreme emergencies and only with the consent of the Resource Project Managers or Site Supervisors.

4.3 Human Caused Incidents

4.3.1 Facility Fire

Specific fire fighting procedures will be developed and special fire teams will be trained to deal with any special conditions that may be present in the mine mill or other processing facilities on site.

On discovering a fire, carry out the following steps immediately: Small fires that can be safely extinguished should be put out. Ensuring there is a safe exit or retreat and that you fight a fire from fresh air.

- If unable to put the fire out, initiate emergency procedures. Sound the alarm by using the radio;
- Remain calm;
- Report the fire to your Supervisor immediately and provide the following:
- Your Full Name,
- Your location(where you are calling from),
- The Location and size of the fire, and
- The Muster Station you are going to.
- Call out to people in your area to warn them of the danger;
- Evacuate all persons to the muster point;
- Do not pass through smoke;
- Feel all doors before you open them - if they are hot use another route. If no other route is available, return to the closest safe place and close the door;
- Go to the window and open it to get fresh air and call for help;
- Close (but do not lock) all doors behind you, as you leave the area;
- Report to the muster point;
- Hold a roll call and confirm everyone is accounted for; and
- Assign/Designate an Emergency Response Coordinator.

If you are able to put the fire out yourself, make sure the fire is completely out before leaving the scene. Use the radio to inform the site responsible person and inform them of the details. If you must leave the scene of the fire, make sure you or someone trained in fire fighting returns to the fire location to make sure it has not restarted. Maintain a fire watch until there is no chance that the fire will restart.

Once all persons are accounted for, arrange for their temporary shelter if required. The temporary

shelter should be in a suitable place of refuge, separate from and away from the facilities involved, where there are emergency rations, blankets, a method of heating the shelter, and where there are sufficient seats for everybody and an emergency means of communication to the outside world.

No one may re-enter a facility evacuated because of the fire until the Response Coordinator, or his designate, gives the "All Clear" signal. He will ensure the building has been checked out to ensure adequate ventilation is restored and the structural integrity of the building was not compromised.

4.3.2 Ground Fires

Ground fires are an uncommon occurrence in the high arctic however fire-fighting capability will be on hand in the form of pulaskis, back pack water fire extinguishers. In the event of a ground fire, the Nunavut Department of Environment will be contacted immediately. All available resources of the site will be used to assist the NDOE to fight the fire.

4.3.3 Medical Treatment and Emergencies

During all exploration programs, each operational camp will have a full time medic with the appropriate level of training for the number of personnel. The Medic in consultation with the Senior Safety Coordinator will develop the medical treatment and emergency procedures. All emergency procedures will comply with the Nunavut Mining regulations and the Workman's Compensation Board requirements.

4.4 Aircraft

Although most of the supply and re supply will be by sealift, there will be a large number of flights into the site carrying personnel and small cargo. Helicopter exploration flights may also use the site as a base.

4.4.1 Missing or Overdue Aircraft, and Aircraft Accident

Every aircraft transportation company has procedures for tracking overdue and lost aircraft. MHBL will integrate their procedures into this plan and will refer to it in this document. The aircraft company's procedure will be a companion document to this procedure.

However, in the event that a particular aircraft company has no procedure available, we will act as follows:

4.4.1.1 Helicopters

Because of fuel load helicopters will be working within approximately 2 hours of the site. For helicopters using the site as a base, it will be necessary for the pilot to file a flight plan with the MHBL logistics person responsible for aircraft on the site. The following procedure will be followed during helicopter use on site:

- If the helicopter is making short exploration flights to a number of areas then the pilot will

radio to camp on a predetermined schedule, as this will allow a faster response if an incident occurs.

- If there is no contact form the pilot at the predetermined time then the site person will attempt to contact the helicopter on the active frequency.
- Radio contact will be attempted every few minutes until 30 minutes has passed.
- If, after 30 minutes has passed, no contact has been established then the site person will call the helicopter company base to inform them and to ascertain whether the have heard from the pilot on another frequency.
- If other aircraft are in the area, they can be asked to attempt to contact the missing aircraft. If the pilot or crew is carrying a satellite phone then this should be used to attempt contact.
- When all attempts at contact are negative and the helicopter has been over due for 30 minutes the MHBL logistic person responsible will inform the Resource Project Managers and Site Supervisors and the helicopter company that a search should be initiated. The aircraft company will then use its standard operating procedures for overdue aircraft with the full cooperation and resources of MHBL. During this procedure the MHBL will continue to attempt contact with the aircraft.

4.4.1.2 Fixed Wing Aircraft

For the most part the fixed wing aircraft coming to site will be carrying people or supplies. These flights will likely be on prescribed schedule and most certainly have a defined flight plan filed with the originating airport. The MHBL person responsible for the landing strip will always know when an aircraft is scheduled to land. This is necessary to make sure that the landing area is free of debris and animals.

The following procedure is to be used for regular and extra ordinary fixed wing flights:

- After 30 minutes after scheduled arrival time with no contact from the aircraft and no information available, the MHBL logistic person will contact the aircraft company and the originating airport to advise them that the aircraft is overdue.
- If the site has the correct frequencies, the MHBL logistic person will attempt to contact the overdue aircraft and will continue until the aircraft company initiates their search procedure or the authorities take over the communications and the search.
- If there are other aircraft available on site, these will be made available immediately to the organized search.
- Site ERT personnel will be made available to the aircraft company as necessary for the search.
- The MHBL logistic person will inform the Resource Project Managers and the Site Superintendent as soon as the aircraft is deemed to be overdue.
- Do not give out information to unauthorized persons and refer all queries to the aircraft

company or the authorities.

4.5 Vehicle Incidents

There will be few vehicles on site; however, vehicle incidents and accidents are possible. For mishaps involving other vehicles or stationary objects, company procedures will be followed for insurance purposes. All vehicle incidents including near misses will be reported to the General Manager, Northern Operations. Vehicle impacts with wildlife have additional criteria. Wildlife encounters may occur at any time and it is everyone's responsibility to ensure the safety of people and animals on site. Remember wildlife has the right of way. The following procedures will be followed if there is a collision with any wildlife:

- The driver of the collision vehicle must immediately contact the immediate supervisor;
- If the vehicle has killed the animal, remove it from the roadway until it can be picked up;
- If the animal has been badly hurt but not killed you must kill it as quickly as possible to avoid suffering. Remember that hurt animals can be dangerous so do not put yourself in harms way by attempting to handle a wounded animal; and
- The Nunavut Department of Environment must be informed immediately and ask direction on proper disposal.

4.6 Equipment or People Falling Through Ice or Open Water

Travel and equipment over frozen lake or ocean will occur rarely at the site however, if accidents happen the following procedure will be the guide to response.

- First, ensure the safety and well being of personnel involved;
- Note that ice tends to fracture for a considerable distance away from any hole, and a ladder or long plank may be required to spread the weight of any rescuers over a wide area;
- Any person(s) attempting to rescue any other persons who have fallen through the ice will be secured by a rope to a point well removed from the hole, so that they can be hauled to safety if necessary;
- Use a rope to assist anybody in the water to get out. It is difficult to climb onto ice from water in the extreme cold in wet clothes;
- Any persons who have fallen through the ice are to be removed from the ice and water and immediately treated for hypothermia as follows:
    - Move them as soon as possible out of the wind;
    - Get dry clothes on the person;
    - If dry clothing is not available, remove wet clothing and place the chilled person in a sleeping bag;
    - Use a second warm person to provide body heat within the sleeping bag to help

warm up the chilled person if necessary; and

- Arrange for medical attention as soon as possible.

- Where equipment had fallen through the ice, if it is still accessible;
  - Arrange for it to be lifted or towed out as soon as possible; and
  - Ensure that leaks of fuel or engine oils are minimized wherever possible by pumping the fuel from tanks into other containers where this can be safely done without danger of a spill.
- Where a vehicle has gone completely through the ice and is submerged; and
  - Contact the appropriate government spills hot line and ask for advice. Where possible, also contact a specialist contractor to assist or to undertake the recovery of the submerged vehicle.
- Where a recreational boat has capsizes and people are in icy water;
  - Use available inflated boats to initiate the rescue effort;
  - Attend to human first and pull victims out of water;
  - Transport victims ashore;
  - Remove wet clothes and cover with dry blankets;
  - Call camp on radio Channel #1 to dispatch available helicopters for airlift; and
  - Tow capsized boat ashore then attempt recovery.

5 SPILL RESPONSE IN ROBERTS BAY WATERS

5.1 Introduction

This section was developed to provide MHBL personnel with petroleum product spill response guidance specific to the unique climatic and physiographic features of the Arctic environment. It provides general information on typical approaches to dealing with hydrocarbon spills in the marine environment.

All bulk fuels and the majority of hydrocarbon products will be shipped to Doris North Project site by barges and tugs under the operational control of the shipping company. MHBL will ensure that the selected shipping company has an appropriate spill response plan in place with trained responders and appropriate stores of spill response equipment and materials. At the current time, this shipping contractor is Northern Transportation Company Limited (NTCL – www.ntcl.com). MHBL will rely upon NTCL for spill response while bulk fuel and containerized shipments of hydrocarbon-based products are in transit from Hay River to the Doris North site. NTCL have many years of experience with such shipping operations in the Arctic.

MHBL will maintain marine spill response equipment at the Roberts Bay jetty site stored within a Seacan for use while barges are being off loaded. This equipment will include floating containment booms and a small skimmer[1] unit designed to address potential spills during the off-loading process at the Doris North Project site.

Consideration has to be given to the key features of the Arctic Region. Table 1 highlights such factors and considerations.

[1] Note: This equipment was not effective during the 2004 fuel at Windy Lake.

Table 1 Key features of Arctic regions

Environmental Factors
• high density of habitat use during summer seasons
• extreme seasonal ecological sensitivity variations
• unique shores types (ice shelves, glacier margins, ice foot features, tundra coasts)
• unique oceanographic and shoreline seasonal changes (open water, freeze-up, breakup, frozen conditions)
• slow weathering and longer persistence of spilled product
Operational Considerations
• remote logistical support
• need to improvise response using available means until support equipment arrives
• safety in cold, remote areas
• cold temperature effects on the efficiency of equipment and personnel
• boat operations in ice-infested waters during transition periods, winter dynamic ice conditions
• on-ice operations in winter
• seasonal daylight variation
• minimization of damage to permafrost during land-based staging and cleanup operations
• need of aircraft for logistics, surveillance, and tracking

This section of the document applies to all sizes of petroleum product spills. For simplicity, the wide range of crude and refine oils have been grouped into three types, based primarily on viscosity (Table 2). Table 3 presents definitions for three "sea conditions" (calm water, protected water, and open water) for spills of hydrocarbons in the marine environment that are used in this document.

Table 2 Oil viscosity ranges

Viscosity Ranges		
Light **Free flowing (like water)**	**Medium** **Slowly pouring (like molasses)**	**Heavy** **Barely flowing (like tar)**
• Diesel	• Bunker A	• Bunker B and C
• Gasoline	• Fuel Oil No. 4	• Fuel Oil No. 6
• Heating oil	• Lubricating Oil	• Weathered crudes
• Kerosene	• Medium crudes	• Bitumen

Table 3 Definitions of "Sea Condition" used in this document

Response Environment	Significant Wave Height (m)	Wind Speed (km/h)
• Calm water	• Less than 0.3	• Less than 10
• Protected water	• 0.3 - 2	• 10 - 30
• Open water	• 2 or greater	• 30 or greater

5.1.1 Objective

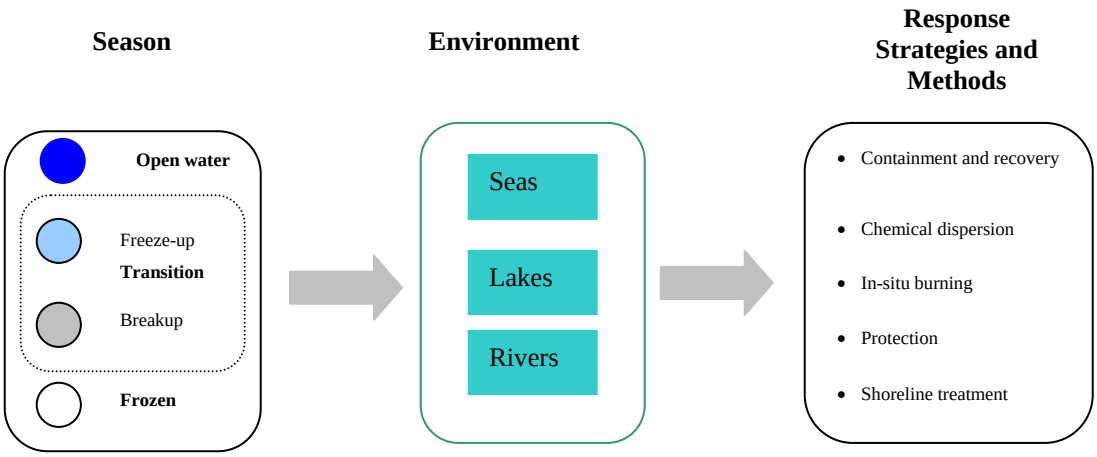
The section focuses on practical spill response strategies and tools for application to open water, ice and snow conditions in remote areas during cold weather. Information is provided relevant to the marine offshore and coastal environments, where bulk petroleum product is transported and where spills pose a threat to the environment and public health.

Marine offshore environments are of great ecological importance in Arctic Regions. MHBL will be moving its petroleum products to support its operation along the Hope Bay Belt using barges during open water season.

5.1.2 Practical Countermeasures

The following practical countermeasures are recommended for first responders, i.e. personnel with a range of technical experience who serve as onsite, trained MHBL employee responders and required to be first at the scene of a spill. Because the responder might receive very limited information when alerted about a spill, this section has been organized on the basis of ***season*** (open water, freeze-up and breakup transition, and frozen conditions as shown in Figure 3. ***Environment*** (seas, lakes and rivers) is a secondary index.

Figure 3 Diagram depicting seasons, environmental conditions and mitigations measures



Seasons are defined as follows:

- Open Water : Water is free of any ice form
- Freeze-up: New ice forming
- Breakup: Old ice melting
- Frozen: Solid, continuous ice is present

The methods of containment and recovery, chemical dispersion, in-situ burning and shoreline treatment are used in the context of the four response strategies:

- Source Control: A spill is controlled at or near its release point to prevent slicks from spreading.
- Control of Free Product: Response operations focus on slicks that have spread some distance from the source.
- Protection: Measures are taken to prevent shoreline and other resources from being contaminated.
- Shoreline Treatment: Product that has come ashore is treated.

5.2 Spill during Open-Water Season

5.2.1 Seas

5.2.1.1 General Guidelines

- MHBL personnel who respond to spills must be trained in the hazards of exposure to low temperatures, accidental immersion in cold water and other causes of hypothermia.
- The most effective way to minimize environmental damage is to focus on source control and to prevent product from spreading.
- Slick tracking and surveillance should utilize locally available resources to determine optimum response strategies:
    - Locate brown-colour slicks to be skimmed, burned and/or dispersed
    - Leave shiny, rainbow sheens to disperse naturally but plan for shoreline protection/treatment, if appropriate
    - In breaking waves higher than 1 m, surveillance and monitoring might be the only practical response options.

Table 4 presents description of countermeasures that are recommended for implementation in an uncontrolled environmental incident.

Table 4 Open-water response at sea or coastal waters

Environment		Responses			
Response	Product Location	Countermeasures			Feasibility
		Contain/recover	Burn	Disperse	
Source Control	On surface	• Mobile floating barriers • Stationary skimmers	Burn on water contained in booms	• Vessel dispersant application • Aerial dispersant application	Recommended
	Underwater	• Subsurface barriers			Not recommended
Control of Free Product	On surface	• Mobile floating barriers • Advancing skimmers	Burn on water contained in booms	• Vessel dispersant application • Aerial dispersant application	Recommended
	Underwater	• Subsurface barriers			Not Recommended
Protection	On surface	• Diversion booming	Burn on water contained in booms	• Vessel dispersant application • Aerial dispersant application	Recommended
	Underwater	• Subsurface barriers			Not Recommended

5.2.1.2 Response Strategies and Methods

Responding to spills from vessels and barges can involve controlling slick at source and removing product that escapes initial containment. The objective of both operations is to minimize the spreading of spilled product and subsequent environmental impacts. Control methods use similar approaches at source and to deal with remote slicks.

5.2.1.2.1 Containment and Recovery

5.2.1.2.1.1 Containment

- Use mobile floating booms best used downdrift from the release point to contain and concentrate product;
- Deploy mobile floating booms in U, V or J configurations. Interception of free-floating, thick slicks is not as effective as containment and removal of product at surface; and
- Mobile floating booms are effective in currents less than 0.5 m/s (1 knot) and winds less than 35 km/h (20 knots).

5.2.1.2.1.2 Recovery

- Advancing skimmers (Oleophilic Skimmers – units with a recovery mechanism to which oil adheres) are useful: Disc, drum and rope mop skimmers can remove light and medium viscosity oils; brush and belt skimmers can collect heavy oils;
- Large volume advancing skimmers can be used when oil/water separators are available or when there are large accumulations of thick, emulsifying oil;
- Subsurface barriers should be used to contain spilled oil that might sink before it submerges, if possible. Locating submerged oil is difficult, and control and collection is even more difficult;
- If brush or belt skimmers cannot collect heavy, floating oil then trawl systems can be tried for recovery;
- Planning adequate storage capacity is critical to the entire response operation to avoid operation bottlenecks; and
- Storage options include barges, towable tanks, tankers and/or other means that are appropriate for the type and volume of oil being recovered.

5.2.1.2.2 Dispersion

- Within mobile floating barriers, spills must be assessed to determine if dispersants will be effective and then treated quickly by trained personnel:
    - The oil should have a viscosity less than 10000 cSt, i.e. it should be less viscous than molasses;
    - The temperature of the water should be above the pour point of the oil, i.e., the oil should be freely flowing;
    - Slick thickness should be no more than 0.1 mm thick; and
    - Spraying operations should be conducted within 2 -5 days of a spill occurring when the oil is unweathered and can be dispersed.
- Within mobile floating and stationary barriers, both vessels and aircraft can be used to apply dispersants. Operations should be directed from aerial vintage points:
    - Use stock piles of chemicals located strategically to the spill site at dispersant-to-oil ratios of 1:10 to 1:100;
    - Use fix-wing planes and helicopters on offshore spills;
    - Vessels are more practical for nearshore coastal waters; and
    - Record information on dosage rates, areas treated and apparent effectiveness so that the data can be transferred to subsequent responders.

5.2.1.2.3 In-situ Burning

- In-situ burning must be quickly implemented, usually by trained personnel. In a remote area, the decision to burn should be based on the following factors:
    - Emulsion should be at least approximately 75% oil;
    - Slick thickness should be greater than 2-3 mm;
    - Waves should be less than 2 m high and not breaking;

  - Wind speed should be less than 35 km/h (20 knots); and
  - Crude oil should be burned within 2-5 days of the spill.

- An ignition system is needed; fire-resistant boom and spotter aircraft should be used, if available.
- A safety plan for response workers is required that addresses the location of ignition, burning and areas that would be affected by the smoke plume.
- Crude oil high sulphur content would likely present health and safety concerns either in an unburned state or upon ignition.
- A 10 km (6 mile) downwind exclusion zone provides adequate protection for response workers, the public and wildlife.
- Ensure that the risk of secondary fires is minimized or have the means to extinguish the burn.
- No burning should take place until KIA and/or regulatory authorities give approval.

5.2.1.2.4 Protection

Protecting resources in the spill path usually involves the deployment of mechanical equipment but may be accomplished by chemical dispersion or burning. The objective of protection is to prevent or minimize contact between the spilled oil and the resource at risk.

- Initially, estimate the direction and speed of movement of the oil. Then identify the resources at risk from the spill and evaluate whether protection operations actions are likely to be successful, and then take the following actions for mechanical containment and removal strategies:
  - Deploy diversion boom with both top and bottom tension members and high reserve buoyancy to exclude or divert oil; and
  - Secure and then regularly monitor anchor systems.
- Using stationary skimmer such as smaller oleophilic skimmers, e.g., disc, drum and rope mops units, to remove light and medium viscosity oils for storage in either water – or land-based storage systems.
- In storm surges, protection strategies might not work if oil mixes in the surf zone and if booms fail.
- In-situ burning is a possible protection option in nearshore waters, using an ignition device (s) in concentrated oil; fire-resistant booms and spotter aircraft should be used, if available.
- A safety plan for the burn operation must be prepared that considers the potential impacts of the burn, amenities at risk and the possible health effects of the smoke plume, e.g., 10 km (6 miles) downwind exclusion zone, sulphur content of crude and the means to extinguish the fire.
- Chemical dispersion is a possible protection technique in coastal waters characterized by:

  - Good flushing; and
  - Water depth greater than 10 – 20 m.

- For effective dispersion, oil must meet the following criteria:
  - Viscosity is less than 10 000 cSt, i.e., less viscous than molasses;
  - The temperature of the water is above the pour point of the oil, i.e., the oil is freely flowing; and
  - Slick thickness is more than 0.1 mm thick.
- Vessel application is likely to be as, or more effective than, aerial methods if:
  - Dispersant is applied within 2 – 5 days of spill;
  - The spill covers a relatively small coastal area that can be readily treated with dispersants from vessel;
  - Dispersant supplies and fuel are positioned on vessels and at selected sites onshore so that downtime is minimized; and
  - Good access to, and visibility of, slicks exists.
- Information on dosage rates, areas treated and apparent effectiveness should be recorded so that the data can be transferred to subsequent responders.

5.2.1.2.5 Shoreline Treatment

- First response activities usually take places on a shoreline only if available resources are not required for source control, recovery of free oil or protection. This might be the case for a land-based spill, e.g., a tank farm, or if all or most of the oil has washed ashore.
- Low pressure, cold-water wash is generally practical and effective before the oil has weathered, i.e., in the early stages of a spill, on:
  - Impermeable (bedrock, man-made) shore types;
  - Fine sediment beaches or flats (sand, mud); and
  - Vegetated shores (marshes, peat, low-lying tundra).
- On sheltered, low wave-energy shores with fine sediment, trenching can be rapid and effective method for containing stranded oil and preventing further redistribution. Oil in the trench can be removed by vacuum trucks. If such system is not available in remote areas, sufficient bags of corn-cobs should be used to absorb the remaining oil in the trench.
- Use manual and/or mechanical removal to recover oil on open beaches with wave action. Often it is important to remove oil that is on surface before the oil, sediments are reworked by wave action, and the oil is possibly buried.
- If oily waste generation and its disposal are issues (which is common in Arctic and many remote areas), mixing and sediment relocation on beaches are likely to be practical and highly effective since the oil would be relatively unweathered. Mixing (also known as tilling) and sediment reworking (surf washing) involve the use of earthmoving equipment to move oiled sediments so that they are exposed to weathering processes, such as evaporation or wave action, to accelerate natural cleaning of an oiled beached. The techniques do not involve mechanical removal of oiled sediments from beach for disposal.

- Land-based operations should avoid disturbances to the permafrost and the active layer above it, e.g., digging, the use of tracked vehicles and uncontrolled burns.

Table 5 list recommended initial treatment methods according to various shore type in an even of an uncontrolled environmental incident.

Table 5 Recommended initial treatment methods of an uncontrolled environmental incident.

Environmental Habitats - Shore Type	Recommended Initial Treatment Methods
Bedrock	• Low-pressure, cold water wash • Manual removal • Vacuum system
Man-made solid structures	• Low-pressure, cold water wash • Manual removal
Ice or ice covered shores	• Low-pressure, cold water wash • Low-pressure, warm or hot water wash • Manual removal • Vacuum systems • Burning
Sandy beaches	• Flooding • Low-pressure, cold-water wash • Manual removal • Mechanical removal • Mixing • Sediment relocation
Mixed-sediment beaches	• Flooding • Low-pressure, cold-water wash • Manual removal • Mechanical removal • Mixing • Sediment relocation
Pebble/cobble beaches	• Low-pressure, cold-water wash • Manual removal • Mechanical removal • Mixing • Sediment relocation
Boulder beaches and rip-rap	• Low-pressure, cold-water wash • Manual removal • Passive sorbents
Sand flats	• Low-pressure, cold-water wash • Manual removal • Vacuum systems • Mechanical removal
Mud flats	• Low-pressure, cold-water wash • Manual removal • Vacuum systems • Mechanical removal
Salt marshes	• Flooding • Low-pressure, cold-water wash • Manual removal • Vacuum systems • Passive sorbents
Peat shores	• Flooding • Low-pressure, cold-water wash

	• Manual removal • Vacuum systems • Mechanical removal
Inundated low-lying tundra shores	• Flooding • Low-pressure, cold-water wash • Manual removal • Vacuum systems
Tundra cliff shores	• Low-pressure, cold-water wash • Manual removal • Vacuum systems • Mixing • Sediment relocation
Shorelines with snow	• Vacuum systems • Manual removal • Mechanical removal • Burning

6 GENERAL SPILL RESPONSE PLAN

6.1 Introduction

The roles and responsibilities of Hope Bay Exploration Project personnel, contractors, and Government are described. Response and reporting procedures are also outlined.

6.2 Purpose

Recognizing that spills or leaks of petroleum products and chemical substances have the potential of posing a variety of hazards and can endanger both short or long term public health and the environment, MHBL has developed and implemented this Spill Response Plan to address accidental releases of hazardous substances. Hazards that may exits at Exploration Camps and Regional worksites include the release of toxic vapors, fire, spills, and explosions.

6.3 Objectives

Principal objectives of the Spill Response Plan are:

- To provide information to cleanup crews, employees, contractors, KIA, and government agencies in the event of a spill;
- To promote the safe and effective recovery or disposal of spilled materials;
- To comply with the Miramar Hope Bay Limited (MHBL) environmental safety policies
- To comply with federal and territorial regulations pertaining to the preparation of contingency plans and reporting requirements; and
- To minimize the negative impacts of spills on the receiving environment (water/ice and/or land).

6.4 Scope

This Plan addresses the organization of the Hope Bay Exploration Project spill response and related emergency measures. Alerting and notification procedures and cleanup strategies are outlined along with the duties and responsibilities of key spill response personnel.

The petroleum derived materials included in this Plan can generally be divided into two categories:

- flammable immiscible liquids; and
- flammable compressed gases.

6.4.1 Flammable Immiscible Liquids

These substances are all hydrocarbon-based and will ignite under certain conditions. Gasoline and aviation fuel pose the greatest fire (and safety) hazard and usually cannot be recovered when

spilled on water. The remaining materials generally do not pose a hazard at ambient temperatures. They are all insoluble, float unless mixed into the water column and can be recovered when safety allows. They are:

- Gasoline Low Flash Point (burns easily);
- Jet A;
- Turbo B;
- Diesel Fuel;
- Waste Oil; and
- Lube Oil High Flash Point.

6.4.2 Flammable Compressed Gasses

- Usually highly explosive;
- May be heavier than air and therefore concentrate in low lying locations; and
- May be lighter than air and highly noxious or toxic.
- Propane, acetylene and oxygen are the most likely flammable gases to be on site.

6.4.3 Other Products

Because of the nature of the milling process, there are chemicals and reagents that are needed for use in the gold abstraction process. These products are:

- Reagents such as Sulphuric Acid, Sodium Chloride and Calcium Chloride;
- Explosives (ammonium nitrate fertilizer, emulsions and high explosive(stick Powder));
- Domestic sewage; and
- Petroleum contaminated soil.

Specific response procedures with the MSDS sheets will be available on site and available to the regulatory agencies.

6.5 Spill Response

6.5.1 Responsibilities

During the training (see section 9) site personnel will learn their roles in a spill incident. The following are the roles for the Hope Bay Exploration and On-site Contractor Personnel.

6.5.1.1 On scene – First Respondent:

- Assess the initial severity of the spill and note any safety concerns;

- Report the incident to immediate supervisor immediately;
- Determine the source of the spill and stop or contain it, if possible; and
- Participate in spill response as member of cleanup crew.

6.5.1.2 General Manager, Northern Operations

- Reports the spill to Nunavut 24-Hour Spill Report Line at (867) 920-8130;
- Decides if additional equipment is required o contain and clean up spills;
- Records the time of the report, source of information and details on location, size, type of pill as well as any other information available on the spill report form;
- Oversees the cleanup operation until it is completed satisfactorily;
- Notifies government agencies and Miramar Corporate Personnel on spill details;
- Oversees completion and distribution of Spill Report;
- Responsible for all communication with the media;
- Ensures that all press releases are accurate and in accordance with company policy;
- Ensures all reporting requirement are met to MHBL standard and regulative requirements;
- Initiates Mutual Aid Agreements if response requires outside assistance; and
- Ensures investigation identifies.
    - Measures to prevent similar spills in the near future; and
    - Ensures Emergency Response Team members are adequately trained in spill response.

6.5.1.3 Site Superintendent and Site Supervisors:

- Supervise the Emergency Response Team;
- Assist in initial and ongoing response and recovery efforts;
- With work crew, take initial action to prevent further mishap to people, property or the environment;
- Continue actions until relieved or supplemented by other Supervisors;
- Decide with On-Scene Response Coordinator if mobilization of additional equipment from Emergency Response Organization or Contractor is warranted; and
- If petroleum product has found its way into a water body, assess whether burning is a viable clean up measure; by consultation with regulatory authorities.

6.5.1.4 Emergency Response Team:

- Take appropriate response measures;
- Conduct recovery process under direction of On-Scene Emergency Response Coordinator;

- Deploy booms, sorbents and other equipment and materials as required; and
- Continue cleanup as directed by Emergency Response Supervisor until relieved.

6.6 Emergency Contacts

- The General Manager, Northern Operations or his designate is responsible to:
    - By phone, contact the regulatory authorities within 24 hours of a reported major spill; and
    - Fax in the Nunavut/NWT Spill Report Form.
- If the volume spilled required by mandatory reporting as specified in Schedule B from the Regulation R-068-93 Spill Contingency Planning And Reporting Regulations(July 22 1993) Consolidation Issued July 15 1998 (see Appendix C), the General Manager, Northern Operations (using the Nunavut Spill Report Form) is responsible to notify the Nunavut Spill Report line **(867 920 8130)** and the Kitikmeot Inuit Association Lands Manager **(867 982 3310)**.

Table 6 Notification Contact List

Organization/Personnel	Contact Information
Nunavut/NWT 24 hour Spill Report Line	867 920 8130
Environment Canada – Environmental Protection Emergency 24 Hrs.	867 920 6060
RCMP	867 983 1111
Emergency Measures Organization Nunavut	867 979 6262 After hours 800 693 1666
Department of Fisheries and Oceans	867 979 6274
Miramar Mining Corporation Head Office North Vancouver B.C.	1 604 985 2572
Site Medic	To be advised
General Manager, Northern Operations	1-867-766-5311
Senior Environmental Coordinator	1-800-663-8780
Kitikmeot Inuit Association Lands Manager	867 982 3310

6.6.1 Log of Contacts

- The General Manager, Northern Operations or designate will maintain a log of all external contacts made which will include the date, time and organization contacted, essence of the notice or information transmitted/received, whenever possible the name and title of individuals receiving or issuing notification or instructions.

6.6.2 Communications

- The General Manager, Northern Operations will maintain a standby position at the site or a regional office (Vancouver or Yellowknife) , or designate some other competent person, in order to maintain spill related communications; and
- Depending on the severity of the spill, any outside help if required is the responsibility of the General Manager, Northern Operations.

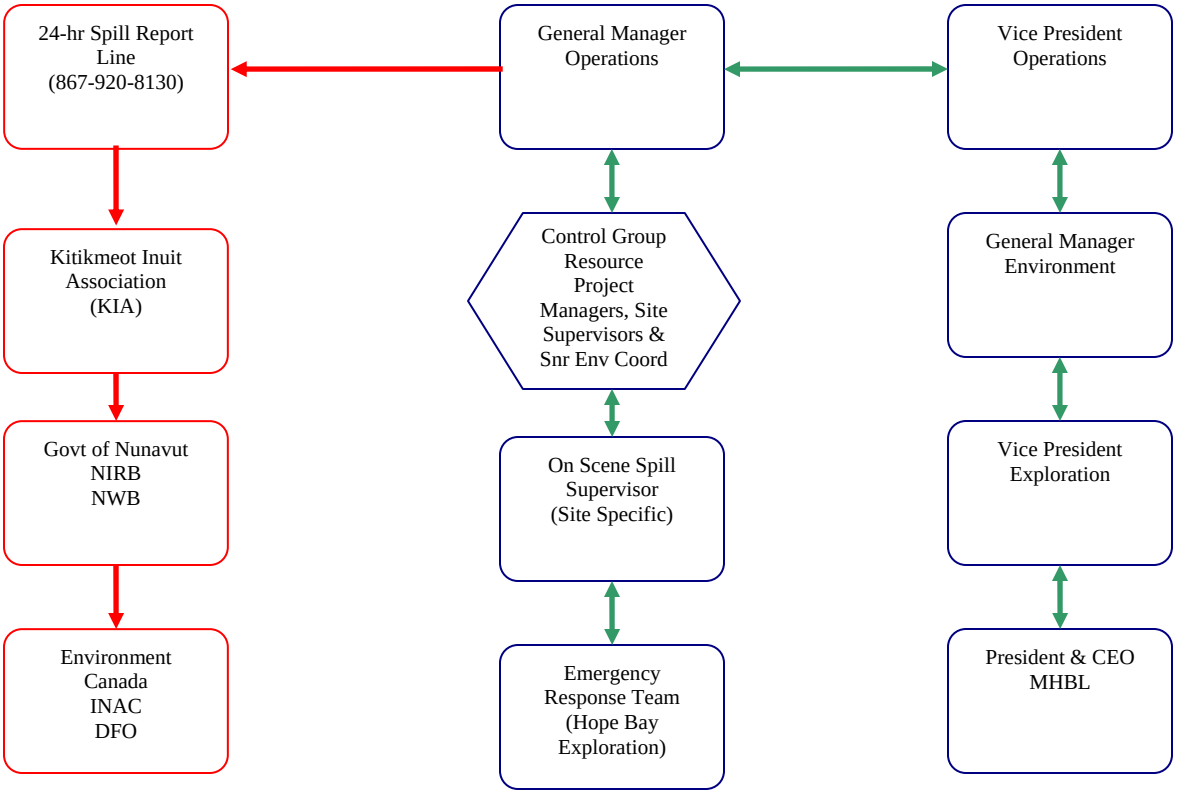
6.7 Discovery and Response

- Any employee noticing an environmentally hazardous spill is required to notify immediately their supervisor or the onsite Resource Project Manager or the Site Supervisor; and
- The person reporting will try to ascertain whether there is a danger to life and if it is safe attempt to stop the spill.

6.7.1 Response

- The Emergency Response Coordinator shall proceed immediately to the scene where he/she will make an assessment of:
    - Specific hazards of an imminent nature that may endanger life of humans or animals;
    - The type of material spilled;
    - The estimated quantity;
    - The potential for further spillage; and
    - Criteria and equipment required to contain and clean up the spill.
- The Emergency Response Coordinator will advise the Site Superintendent, the Resource Project Manager and the General Manager, Northern Operations of any additional notifications that depend on the quantity (see Appendix C) that he/she believes are necessary. The Emergency Response Coordinator will also advise if any additional outside equipment is needed.
- The Emergency Response Coordinator will then directly control all activities relating to the stemming of additional flow or escape, containment and extraction of spilled material and the restoration of the site.
- The Emergency Response Coordinator will ensure that containment and recovery equipment is available on site in such quantities and character to sufficiently respond to the most serious spill condition identified through the materials inventory.
- The General Manager, Northern Operations will liaise with MHBL CEO, Vice Presidents – Operations, Exploration and General Manager Environment, Regulatory Agencies and the KIA to keep them informed as to the status of the ongoing operations.

Figure 4: Chain of Communication for Spill Response



6.8 Disposal

- The disposal of spilled material and/or contaminated soil is governed under the Waste Management Act and its regulations. A copy of the Act and the Special Waste Regulation and the Contaminated Sites Regulation will be maintained on site for reference.
- Clarifications and information regarding waste management and disposal issues can be obtained from the Nunavut government and DIAND. Two approved Land Treatment Area (LTA) are currently in operation on the Belt. One is located atWindy Camp and the other is located at Windy Lake camp. Petroleum contaminated top soil will be removed and placed in these LTA for treatment. In situations where these facilities are have reached maximum capacity, contaminated top-soil will sealed in 45-gallon drums and transported offsite to approve facilities in Yellowknife for disposal purposes.
- The Emergency Response Coordinator, the Site Superintendent and the General Manager, Northern Operations in consultation with the Senior Environmental Coordinator shall investigate the most appropriate disposal options for the spilled material. Disposal may include burning, disposal in waste areas or recycling.

6.9 Documentation and Reporting

- The Emergency Response Coordinator or a designate will be responsible to attend the scene of any spilled materials or contaminated soils to photograph and measure the affected area. They shall be responsible to engage properly qualified personnel to collect samples of the materials or soils. No person should sample or handle spilled hazardous materials unless the person has received adequate training in safe sampling procedures, use/selections of protective clothing and identification of the hazards associated with the respective spilled material.
- The General Manager, Northern Operations will submit a detailed report to the appropriate agencies within thirty (30) days starting from the day of the reported spill. Progressive reports are submitted regularly until the completion of remedial activities. The report will include but not be limited to:
    - Reporting person's name and telephone number;
    - Name and telephone number of the person/company who caused the spill;
    - Location and time of the spill;
    - Type and quantity of the substance spilled;
    - Cause and effect of the spill;
    - Details of action taken or proposed;
    - Description of the spill location and of the area surrounding the spill;
    - Details of further action contemplated or required;
    - Names of agencies on the scene;
    - Names of other persons or agencies advised concerning the spill;
    - Chronological sequence of events including internal and external notifications;
    - Copies of analytical results from external laboratories; and

- Analysis of the events leading up to the spill, and a critique of the internal response and handling of the incident.

6.10 Spill Equipment

- Spill kits will be placed in the following locations:
  - Tank Farm;
  - Refueling Station;
  - Incinerator;
  - Power House;
  - Water Intake;
  - Reagent Storage area;
  - Landing Dock;
  - Fuel Delivery truck;
  - Jetty;
  - Workshop;
  - Airstrip, Helipad; and
  - Drill sites.
- Each spill kit will contain a minimum of:
  - 1 roll absorbent;
  - 2 plug and dyke kits;
  - 1 3mx 4m tarpaulin;
  - 2 Tyvek suits;
  - 4 mini booms;
  - 25 spill pads;
  - 2 pr of neoprene gloves;
  - 2 splash proof goggles.
- The earth moving equipment such, loaders, and backhoes are also available for constructing dykes and moving contaminated material. The fuel delivery truck will carry a spill response kit containing absorbent pads and material as well as large disposal bags for small spills.

7 WILDLIFE ENCOUNTERS

- Wildlife encounters pose a risk for stress or injury to both site personnel and wildlife. Control measures and environmental protection procedures have been put in place to minimize this risk to wildlife and humans. Of particular importance is the proper handling of kitchen refuse. MHBL employees, consultants, or contractors involved in outcrop mapping, monitoring, sampling, surveying or drilling, lunch bags and leftovers must be brought back to camp for proper disposal.
- Report and record all wildlife sighting to the Site Supervisor.
- No attempt to chase, catch, divert, follow or otherwise harass wildlife by any form of motorised mode of transportation will be made by any person at the MHBL Project sites. The only exception is when a bear is sighted in close proximity of the camp or work areas; attempts will be made to scare off the bear with a motorised form of transportation. This approach has to be approved by the Site Supervisor;
- Equipment and vehicles will yield the right-of-way to wildlife;
- When nuisance animals (e.g. grizzly bears, wolves) are identified at the MHBL exploration sites, and pose immediate danger to the safety of the employees, the Site Supervisor will be responsible for all subsequent actions. The Site Supervisor in consultation with the Senior Management Personnel at site who may consult regulatory authorities will determine responsive actions. All actions must comply with the regulative requirements and directives;
- The Site Supervisor may first use deterrent measures that include crackers and rubber bullets;
- In an event where all deterrent measure have failed to deter a nuisance animal, and based on risks posed to the safety of the employees or camp residences, the Site Supervisor will determine if an animal is to be put down and will designate a licensed person who will destroy the animal. The only firearm(s) allowed within the MHBL exploration camps are those under the control of the Site Supervisor (or his/her designate). Anytime an animal is put down, the regulatory authorities will be notified by phone;
- Any bear that has been put down will have the head removed, and will be skinned and preserved. The carcass will be provided to the local community or in an event where transportation is difficult to arrange, the carcass will be incinerated on site;
- An internal incident report will be completed by the Site Supervisor within 72 hours of the putting down of a bear and kept on property; and
- The report of the displacement or putting down of a bear shall be submitted to the Senior Environmental Coordinator for inclusion in the MHBL monthly report to the regulating authorities.

8 ARCHAEOLOGICAL AND HISTORICAL DISCOVERIES

- All new archaeological and historical discoveries will be reported;
- Employees are not to disturb any suspected archaeological or historical sites. Any such suspected site must be left alone and reported immediately to your immediate supervisor. Taking souvenirs or disturbing such sites is illegal no matter how small the site or how insignificant it may appear to the employee;
- Within any area proposed for intensive development and/or exploration, all efforts will be made to identify all heritage resources present. MHBL will avoid archaeological sites whenever possible. When avoidance is not possible, MHBL will contact regulatory authorities and take appropriate as required. All pertinent data will be gathered for each identified archaeological site to develop appropriate mitigation recommendations;
- Subsurface evaluative testing should be conducted at potentially threatened sites to determine if buried cultural deposits are present;
- All testing and collection must be done under an approved plan and conducted by an archaeologist holding a valid archaeological permit;
- MHBL will endeavor to have a qualified archaeologist obtain a Nunavut Territory Archaeologist Permit under such circumstances;
- Scientific and cultural analysis and interpretation of the archaeological data collected during mitigation is an integral part of the process and will be undertaken on behalf of MHBL in a timely fashion;
- MHBL will work with both archaeologists;
- Local Inuit groups on issues related to site interpretation. Protocols for dealing with archaeological sites are contained in the Doris North (Hope Bay) Heritage Resource Protection Plan 2005; and
- Contact the Senior Environmental Coordinator immediately when a potential site is detected or suspected.

9 TRAINING

9.1 Orientation and Training

All employees, contractors and visitors will be introduced and instructed on the policies and procedures established with this plan. Area specific inductions will be given to individuals working in high activity areas such as the drill sites and core shack.

Safety and Environmental concerns and awareness will also be discussed at every safety meetings and at the start up of any new operations that may affect the environment. If an incident happens all employees will be informed and re-instructed and retrained as deemed necessary.

The training for spill response will be part of the worker orientation at all Hope Bay Explorations Caps and Regional worksites. All personnel will be made aware of the products present on site through the orientation program and the availability of Material Safety Data Sheets (MSDS) in prominent locations. Supervisors who will fill the role of an Emergency Response Coordinator or part of the Clean-up Crew will receive a more detailed training allowing them to respond quickly and safely to any spill on the mine site. All employees on site will have valid WHIMS certificates and will be familiar with MSDS.

Each employee will be made aware of the locations of storage facilities and the locations of spill containment and recovery equipment.

9.2 Responsibilities

The ultimate responsibility for up-to-date emergency training plans is with the Senior Safety Coordinator. The Senior Safety Coordinator and the Senior Environmental Coordinator, in consultation with the General Manager, Northern Operations and the Exploration Manager or designates will review the emergency preparedness and response procedures on a annual basis or as required. Review of the emergency response procedures will include the periodic verification of any telephone number contacts for the various organizations that may be needed. Such verification shall be undertaken at a minimum of once per year. Revisions will be made to the procedures where necessary to comply with changing site conditions and any new relevant legislation. Personnel will be notified on any changes and if necessary retraining will take place. In the case that someone other than the Senior Safety Coordinator and the Senior Environmental Coordinator conducts these reviews, findings of these reviews be made available to the Senior Safety Coordinator and the Senior Environmental Coordinator for review, and for possible improvements in the procedures.

9.3 Drills and Practices

The responsibility for carrying out annual drill is the responsibility of the Site Superintendent and the Site Supervisors. Personnel at all MHBL camps will undertake periodic testing of the emergency response procedures. These tests will be undertaken on a twice-yearly basis. These intervals shall be more frequent if there is a high turnover of employees at the site. The outcome

of each exercise is to be recorded, and reviewed for areas of improvement by the Responsible Person for the respective area. The findings will be forwarded to the Senior Safety Coordinator and the Senior Environmental Coordinator.

9.3.1 Areas Covered

Emergency preparedness training must, at a minimum, address the following:

- Medical emergency, accident or fatality;
- Fuel spill or effluent spill or leak;
- Fire;
- Extreme cold emergency;
- Equipment or people falling through ice or in open water;
- Aircraft missing or crash;
- Wildlife (bear) in camp;
- Missing person(s); and
- Winter survival training.

10 EMPLOYEE SAFETY HANDBOOK

MHBL believes that all incidents and near misses are preventable. An employee safety handbook has been developed and will be given to each employee upon completion of the Site Induction process. The handbook will be updated from time to time as new information or experience comes available.

The Senior Safety Coordinator is responsible for keeping the Employee Safety Handbook current. The Site Superintendent and Site Supervisors will ensure the Employee Safety Handbook are made available to each new employee upon arrival at any MHBL property along the Belt.

11 REFERENCES

Contingency Planning and Spill Reporting in Nunavut A Guide to the new Regulations, Department of Environment, Iqualuit, Nunavut.

Consolidation of Regulation R-068-93 *Spill Contingency Planning and Reporting Regulations* (Dated 22 July, 1993); Department of Environment, Iqualuit, Nunavut.

Mine Health and Safety Regulations, Government of Nunavut.

MHBL Exploration Environmental Protection Plan, March 16 2006

12 APPENDIX A

Spill Procedures for Products on Site

DIESEL / P40 / P50, HYDRAULIC, LUBE and WASTE OIL

CONSIDER ACTION ONLY IF SAFETY PERMITS! ELIMINATE IGNITION SOURCES. If safe, stop the source of spill

On Land	• Block entry into waterways; • Do not flush into sewer/drainage system; • Contain spill by dyking with earth or other barrier; • If liquid, remove minor spills with sorbent, large spills with pumps or vacuum equipment; and • Prills /granules can be shoveled or removed mechanically.
On Snow and Ice	• Block entry into waterways and contain with snow or other barrier; • Remove minor spills with sorbent pads and/or snow; • Use ice augers and pump to recover diesel under ice; • Slots in ice can be cut over slow moving water to contain oil; and • Burn accumulated diesel from the surface using Tiger Torches if feasible and safe to do so.
On Tundra	• Do not flush into ditches or drainage systems; • Block entry into waterways and contain with earth, snow or other barrier; • Remove small spills with sorbent pads; • On tundra use peat moss and leave in place to degrade, if practical; • Do not deploy personnel and equipment on marsh or vegetation; • Remove pooled diesel with pumps and skimmers; • Flush with low pressure water to herd diesel to collection point; • Burn only in localized areas, e.g., trenches, piles or windrows; • Do not burn if root systems can be damaged (low water table); and • Minimize damage caused by equipment and excavation.
On Water	• Contain spill as close to release point as possible; • Use spill containment boom to concentrate slicks for recovery; • On small spills, use sorbent pads to pick up contained oil; • On larger spills, use skimmer on contained slicks; and • Do not deploy personnel and equipment onto mudflats or into wetlands.
Streams	• Prevent entry into water, if possible, by building berm or trench; • Intercept moving slicks in quiet areas using (sorbent) booms; and • Do not use sorbent booms/pads in fast currents and turbulent water.
Storage and Transfer	• Store closed labelled containers outside away from flammable sources; and • Electrically ground containers and vehicles during transfer.
Disposal	• Segregate waste types; • Place contaminated materials into marked containers; and • Consult Site Services Manager on disposal procedures.

JET A, JET B & Gasoline

CONSIDER ACTION ONLY IF SAFETY PERMITS! ELIMINATE IGNITION SOURCES. If safe, stop the source of spill immediately.

On Land	• Block entry into waterways; • Do not flush into ditches sewer/drainage system; • Contain spill by dyking with earth or other barrier; • If liquid, remove minor spills with sorbent, large spills with pumps or vacuum equipment; and • Prills /granules can be shoveled or removed mechanically.
On Snow and Ice	• Block entry into waterways by dyking with snow or other barrier; • Do not contain spill if there is any chance of igniting vapours; and • In work/depot yards, apply particulate sorbents.
On Tundra	• Block entry into waterways by dyking with earth, snow or other barrier(s); • Do not contain spill if there is any chance of igniting vapours; • On shop floors and in work/depot yards, apply particulate sorbents; • On tundra use peat moss and leave to degrade if feasible to do so; • Remove pooled liquid with pumps, if safe to do so; • Do not deploy personnel and equipment on marsh or vegetation; • Low pressure flushing can be tried to disperse small spills; • Burn CAREFULLY only in localized areas, e.g., trenches, piles or windrows; • Do not burn if root systems can be damaged (low water table); and • Minimize damage caused by equipment and digging.
On Water	• Contain or remove spills ONLY AFTER VAPORS DISSIPATE; • Use booms to protect water intakes; and • Skimming can be tried once light ends evaporate.
On Streams	• Prevent entry into water, if possible, by building berm or trench; • Intercept moving slicks in quiet areas using (sorbent) booms; and • Do not use sorbent booms/pads in fast currents and turbulent water.
Storage and Transfer	• Store closed, labeled containers in cool, ventilated areas away from incompatible materials; and • Electrically ground containers and vehicles during transfer.
Disposal	• Segregate waste types; • Place contaminated materials into marked containers; and • Consult Site Services Manager on disposal procedures.

ANTIFREEZE (ETHYLENE GLYCOL)

CONSIDER ACTION ONLY IF SAFETY PERMITS! If safe, stop the source of spill

On Land	• Block entry into waterways; • Do not flush into ditch/drainage system; • Contain spill by dyking with earth, snow or other barrier;; • Remove minor spills with peat moss and/or sorbent pads; and • Remove large spills with pumps or vacuum equipment.
On Snow and Ice	• Block entry into waterways by dyking with snow or other barrier; • Do not contain spill if there is any chance of igniting vapours; • In work/depot yards, apply particulate sorbents; and • Remove contaminated snow with shovels or mechanical equipment.
On Tundra	• Do not deploy personnel and equipment on marsh or vegetation; • Block entry into waterways by dyking with earth, snow or other barrier(s); • On shop floors and in work/depot yards, apply particulate sorbents; • Low pressure flushing can be tried to disperse small spills; • Burning is not feasible; and • Minimize damage caused by equipment and digging.
On Water	• Ethylene glycol sinks and mixes with water; • Contain spill by isolating contaminated water through damming or diversion; and • Use spill containment boom to protect water intakes and sensitive areas.
On Streams	• Prevent entry into water, if possible, by building berm or trench; • Intercept moving slicks in quiet areas using (sorbent) booms; and • Do not use sorbent booms/pads in fast currents and turbulent water.
Storage and Transfer	• Store closed labelled containers in cool, ventilated areas away from incompatible materials, e.g., oxidizable materials, finely divided metals and organics.
Disposal	• Segregate waste types; • Place contaminated materials into marked containers; and • Consult with environmental authorities during final disposal

RAW SEWAGE

CONSIDER ACTION ONLY IF SAFETY PERMITS! Avoid direct contact with raw sewage. If safe, stop the source of spill

On Land	• Block entry into waterways; • Do not flush into ditch/drain systems; • Contain spill by dyking with earth or other barrier; • Remove spill with pumps or vacuum equipment; and • On tundra use peat moss and leave in place to degrade, if feasible.
On Snow and Ice	• Block entry into waterways; • Contain spill by dyking with snow or other barrier; • Do not flush into ditch/drain systems; and • Remove contaminated snow with shovels or other mechanical means.
On Tundra	• Do not deploy personnel and equipment on marsh or vegetation; • Remove pooled sewage with pump or vacuum equipment; and • Minimize damage caused by equipment and excavation.
On Water	• Isolate/confine spill by damming or diversion if feasible; and • If not possible to confine and pump, disperse using water flushing
Storage and Transfer	• Store closed, labelled containers in cool, ventilated areas; and • Avoid contact with collected material.
Disposal	• Place contaminated materials into marked containers; • Transport to sewage treatment plant; • Dispose of in accordance with local, provincial and federal environmental regulations; and • Consult with environmental authorities during final disposal.

ACETYLENE and PROPANE

CONSIDER ACTION ONLY IF SAFETY PERMITS! ELIMINATE IGNITION SOURCES, Keep vehicles away from accident area. If safe, stop the source of spill.

- Vaporous cannot be contained when released
- Water spray can be used to knock down vaporous if there is NO chance of ignition
- Personnel should withdraw immediately from area unless it is a small leak that has been stopped immediately after detection
- If tanks are damaged, gas should be allowed top disperse and no attempted recovery made
- Personnel should avoid touching release point on container since frost quickly forms
- Keep away from tank ends.

13 APPENDIX B1

Figure 13.1 Nunavut/NWT Spill Report Form

Northwest Territories

NWT SPILL REPORT
(Oil, Gas, Hazardous Chemicals or other Materials)

24 – Hour Report Line
Phone: (867) 920-8130
Fax: (867) 873-6924

A Report Date and Time	B Date and Time of spill (if known)	C ☐ Original Report ☐ Update no._____	Spill Number
D Location and map coordinates (if known) and direction (if moving)			
E Partly responsible for spill			
F Product(s) spilled and estimated quantities (provide metric volumes/weights if possible)			
G Cause of spill			
H Is spill terminated? ☐ yes ☐ no	I If spill is continuing, give estimated rate	J Is further spillage possible? ☐ yes ☐ no	K Extent of contaminated area (in square meters if possible)
L Factors effecting spill or recovery (weather conditions, terrain, snow cover, etc.)		M Containment (natural depression, dikes, etc.)	
N Action, if any, taken or proposed to contain, recover, clean up or dispose of product(s) and contaminated materials			
O Do you require assistance? ☐ no ☐ yes, describe:	P Possible hazards to person, property, or environment; eg: fire, drink water, fish or wildlife		
Q Comments or recommendations		FOR SPILL LINE USE ONLY Lead agency Spill significance Lead Agency contact and time _____ _____ _____ Is this file now closed? ☐ yes ☐ no	
Reported by	Position, Employer, Location	Telephone	
Reported to	Position, Employer, Location	Telephone	

NWT 1752/0202

Schedule B2[1]

Reportable Spill Quantities

Item No.	TDGA Class	Description of Contaminant	Amount Spilled
1.	1	Explosives	Any amount
2.	2.1	Compressed gas (flammable)	Any amount of gas from containers with a capacity greater than 100[1].
3.	2.2	Compressed gas (no corrosive, non flammable)	Any amount of gas from containers with a capacity greater than 100[1].
4.	2.3	Compressed gas (toxic)	Any amount
5.	2.4	Compressed gas (corrosive)	Any amount
6.	3.1, 3.2, 3.3	Flammable liquid	100 l
7.	4.1	Flammable solid	25 kg
8.	4.2	Spontaneously combustible solids	25kg
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 or substances, excluding PCB mixtures	50 l or 5 kg
17.	9.2	Environmentally 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 parts per million	0.5 l or 0.5 kg
20.	None	Other contaminants	100 l or 100 kg

1 1
From: Consolidation of Regulation R-068-93 Spill Contingency Planning And Reporting Regulations (July 22 1993) Consolidation Issued July 15 1998

14 APPENDIX C

Contact Numbers (Note: key list of MHBL, KIA, government agencies, enforcement etc.)

Key Miramar Hope Bay Limited personnel responsible for the Implementation of this EPP			
Name	**Position**	**Address**	**Contact**
Jim Currie	Vice President, Operation	Suite 300- 889 Harbourside Drive North Vancouver, BC V7P 3S1	Tel: 604-985-2572 Fax: 604-980-0731 Email:jcurrie@miramarmining.com
John Wakeford	Vice President, Exploration		Tel:604-985- 2572 Fax:604-980-0731 Email:jwakeford@miramarmining.com
Larry Connell	General Manager, Environment		Tel:604-985- 2572 Fax:604-980-0731 Email:lconnell@miramarmining.com
Terry Maloof	Manager, Environmental Audit & Permitting		Tel:604-985- 2572 Fax:604-980-0731 Email:tmaloof@miramarmining.com
Scott Stringer	General Manager, Northern Operations	Miramar Hope Bay Limited *(Contact during height of exploration programs. Email is the preferred method for external communication due communication difficulties experienced at times out in field).*	Tel:867-766-5311 Fax:867-873-6357 Email:sstringer@miramaryk.com
Matthew Kawei	Snr Environmental Coord; – MHBL		Tel:867-766-5321 Fax:867-873-6357 Email:mkawei@miramarmining.com
Darren Lindsay	Exploration Manager – Hope Bay Belt		Tel:1-800-667-8780 Fax: Radio Channel: 1 & Channel Email:dlindsay@miramarmining.com
Ross Sherlock	Snr Research Geologist – Regional Exploration		Tel:1-604-677-0617 Fax: Radio Channel: 1 & Channel 2 Email:rsherlock@miramarmining.com
Mike Cripps	Site Supervisor		Tel: Fax: Radio Channel: 1 & Channel 2 Email:mcripps@miramarmining.com Tel:

Key Government personnel responsible for activities relating MHBL Exploration programs			
Name	**Position**	**Address**	**Contact**
Spill Center	NWT 24 hours Spill Report Line	Yellowknife, NT	Tel:867-920-8130 Fax:867-873-6924
Philippe di Pizzo	Executive Director, Nunavut Water Board (NWB)	Iqualuit, Nunavut	Tel:867-360-6338 Fax:867-360-3669 Email:
DIAND	Water Resource Inspector	Iqualuit, Nunavut	Tel:867-975-4546 Fax: Email:
Jack Kaniak	Lands Manager, Kitikmeot Inuit Association (KIA)	Kugluktuk, Nunavut	Tel:867-928-3310 Fax:867-982-3311 Email:jkaniak@polarnet.ca
Colette Meloche	Environment Canada (EC)	Iqualuit, Nunavut	Tel:867-975-4639 Fax: Email:Colette.meloche@ec.gc.ca
Tania Gordanier	Department of Fisheries & Oceans (DFO)	Iqualuit, Nunavut	Tel:867-979-8007 Fax:867-989-8039 Email:gordaniert@dfo-mpo.gc.ca

Miramar Hope Bay Ltd. - Environmental Protection Plan

MHBL Standard Environmental Operating Procedure

Miramar Hope Bay Limited Environmental Protection Plan (EPP) for Exploration Activities in the Hope Bay Belt

Photograph showing surface drilling at Naartok; outcrop used for drill cutting storage

Prepared by:
Matthew H Kawei, Senior Environmental Coordinator
Miramar Hope Bay Limited
Suite 300, 889 Harbourside Drive
North Vancouver, BC V7P 3S1

In Compliance with the following Permits:

Nunavut Water Board Water License No: NWB1BOS0106 & NWB2HOP0207
Kitikmeot Inuit Association Land Use Permit No: KTL399C029 & KTL303C056

Updated Version – March 16, 2006

Document # MHBLENV-MHBLEPP-SEOP-01-2006
March 16, 2006

SECTION 3-BEACH LANDING AREA

SECTION 4-ACCOMMODATIONS CAMP

SECTION 5-DRILL SITES

SECTION 6-ABANDONMENT OF WORK AREAS

SECTION 7-CONTINGENCY PLANS

PREFACE

Maintenance of the EPP
Revision Request Initiation Form
Revision Control Record

RESPONSIBILITIES

Senior Environmental Coordinator (*the senior environmental personnel delegated the responsibility for the Environmental Management during the various stages of Miramar's Hope Bay Limited Exploration (Grassroots - Advance) activities along Hope Bay Belt*):

- Review revision requests;
- Conduct a review of the EPP on an as needed basis;
- Ensure revisions are distributed to EPP holders;
- Document control;
- Ensure EPP Holders and their staff are familiar with the EPP and its procedures;
- Ensure compliance with all permits, approvals, and authorizations;
- Revise and update other standards, procedures and/or management plans as a result of significant changes to EPP; and
- Submit updated documents to regulatory authorities for approval.

EPP Holders:

- Keep copy current and ensure all revisions are entered on revision control record;
- Familiarize themselves and their personnel with the EPP and any revisions; and
- Initiate changes to improve the quality of the plan.

Personnel Responsibilities:

- Familiarize themselves with the EPP; and
- Knowledge of reporting procedures.

INITIATING REVISIONS

EPP Holders and readers may initiate proposed revisions by forwarding recommended revisions to the Senior Environmental Coordinator on the Revision Request Initiation Form

REVISION PROCEDURES

The Senior Environmental Coordinator must approve the revision request. The approved Revision will be issued to all EPP Holders. A Control Sheet will accompany each revision that:

- Provides the revision instructions; and
- Lists the sections being superseded.

An updated table of contents will be included with each revision. This table of contents will indicate status of each section contained in the plan. A copy of a Chain of Custody will also be

issued, signed by respective EPP Holders to confirm actions taken and returned to Senior Environmental Coordinator.

Maintenance of the EPP

When EPP Holders receive a revision within two working days they will:

- Read the text of the revision;
- Check the Control Sheet to ensure that all the listed pages have been received;
- Remove and destroy the superseded pages;
- Insert the revised pages in the proper place;
- Page check the plan, using the updated table of contents to ensure the plan is complete and current;
- Enter the revision number and date entered on the Revision Control Record;
- Incorporate the revision into the area of responsibility, as appropriate;
- Ensure that their personnel are familiar with the revisions; and
- Send written confirmation (Chain of Custody) to the Senior Environmental Coordinator when changes have been made and replaced sheets destroyed.

Revision Request Initiation Form

SECTION TO BE REVISED:

Section #	Page Numbers
e.g. Section 8 – Contact List	*Page 1of 1*

NATURE OF REVISION:

Section #	Details *(Attach additional comments on a separated sheet if required)*
e.g. Section 8	*Table 8.1; replace (Name) Joe Blow with Joe B Blow and change email contact to: jbblow@miramarmining.com*

RATIONALE FOR REVISION:

(i.e. environmental impact monitoring results, worker safety concerns, stakeholder concerns, changes in legislative requirements, changes in exploration, mining, milling, maintenance, and operational process.)

Section #	Rationale Details
e.g. Section 8	*Joe Blow no longer works for MHBL. Replaced by Joe B Blow*

SUBMISSION:

Name	Organisation	Date Submitted	Date Received	Date Revised
e.g. Joe B Blow	*MHBL*	*Oct 30, 2005*	*Oct 30, 2005*	*Nov 01, 2005*

Please submit request to the Senior Environment Coordinator

CONTROL RECORD

Approved By:

Position	Name	Signature	Date
Executive VP, Chief Operating Officer	Brian Labadie		
General Manager, Northern Operations	Scott Stringer		
Vice President, Exploration	John Wakeford		
Exploration Manager	Darren Lindsay		

The re-issue of this document, listed below, has been reviewed and approved by Management and is authorised for use within the Miramar Hope Bay Ltd. The footer "Control Document" is in red.

DOCUMENT CONTROL REVISION HISTORY					
Rev No	**Sections**	**Details of Issue**	**Authorization**		
0	All	Original Document	**Name**	**Initial**	**Date**
R1	All	EPP – Phase I – Exploration Activities	Matthew Kawei	hmk	Sept 20 2005
R2	All	Changes to document in light of expansion to the 2006 exploration program	Matthew Kawei	hmk	March 16 2006

Distribution List

Date	Copy #	Name	Department/Location	Type
Original copy	0	Library	Z:….\\EMS\Environment Files - Vancouver	Electronic, pfd & doc
	1	Darren Lindsay	Exploration Manager	
	2	Ross Sherlock	Senior Research Geologist – Regional Exploration	
	3	Mike Cripps	Windy & Boston – Site Supervisor	
	4	Major Drilling	Patch Lake Major Shop	
	5	Matthew Kawei	Snr Environmental Coordinator	
	6		DIAND	
	7		Kitikmeot Inuit Association	
	8		Nunavut Water Board	

Our Values require us to think and act not only on the present challenges, but also with the legacy in mind that we leave for those who will come after us... as well as the commitments made by those that came before us.

Environmental protection planning has become an important component of the overall life of the Project environmental management planning. Environmental Protection Plans are commonly required as part of a Project approval process by Aboriginal groups, governments, non-government organizations and the interested stakeholders during, and as the Project proceeds. Environmental Protection Plans provide a practical way in which proponents can demonstrate their understanding of environmental regulations, practices, and procedures required to minimize or eliminate predicted potential environmental impacts because of the Project.

Mineral prospecting and exploration in Canada does not follow the same planning process of other proposed developments whereby approval by governments is allowed only after a period of formal environmental assessment. Exploration and the various stages of mining activities, such as those occurring in the Hope Bay Belt by Miramar Hope Bay Limited (MHBL) are reviewed and approved by governments through a variety of permits, authorizations and approvals ranging from issues of human health and sanitation to fisheries and wildlife habitat avoidance or protection. Any proposal to develop and operate a mine or activities in support of the mining activities will require a thorough environmental assessment review by governments and interested parties prior to proceeding.

MHBL, through its Environmental Policy, have committed to the development and implementation of a comprehensive EPP to help ensure and sustain a high level of environmental stewardship throughout its work areas and activities, as well as goods and services associated with the continued exploration in the Hope Bay Belt. An EPP is a working document for use in the field for both Project personnel such as the Senior Environmental Coordinator and Site Managers/Supervisors as well as at the corporate level. This is to ensure corporate commitments made in policy statements are sufficiently resourced to develop, implement, monitor, review and report stated objectives and targets annually to corporate managers and regulatory authorities. The EPP provide a guide for Project personnel to monitor compliance and to make constructive suggestions for continual improvements.

The EPP typically undergo annual revisions for Projects such as mineral exploration and this EPP is structured to allow for regular updates and revisions as project continues.

Purpose

This EPP provides a guide to the protection measures for the routine activities associated with site exploration activities, goods and services. The EPP forms an integral part of the overall Environmental Management System (EMS) based on the principles of ISO 9001 (Quality Systems) ISO 14001 (Environmental Systems) and ISO 18001 (Integrated Systems) approach by MHBL. Other aspects of environmental management planning include Abandonment and

Reclamation planning, Environmental Emergency Planning (E2), compliance monitoring, collating and reporting, environmental effects monitoring, and employee orientation and liaison with governments, communities, and interest stakeholders.

The purpose of the EPP is to:

- Ensure compliance to corporate policies and standards;
- Ensure compliance to regulatory requirements and obligations;
- Ensure that commitments to minimize and/or eliminate adverse impacts will be met;
- Document environmental concerns and appropriate protection measures;
- Provide concise and clear instructions to Project personnel regarding procedures for protecting the environment through minimizing and/or elimination adverse impacts;
- Provide a reference document for personnel when planning and/or conducting specific activities;
- Provide a training aid during implementation efforts;
- Communicate changes in the program through the revision process; and
- Provide a reference document to applicable legislative requirements.

Organization

This EPP provides instructions to ensure Project personnel understand and implement environmental protection procedures for both routine activities and unplanned events associated with activities, goods and services in the Hope Bay Belt Project.

The style and format of the EPP is intended to enhance its use by Project personnel in the field and to provide an important support document between the overall Environmental Management System (EMS) and the various permits, approvals and authorizations issued for specific Project components and activities.

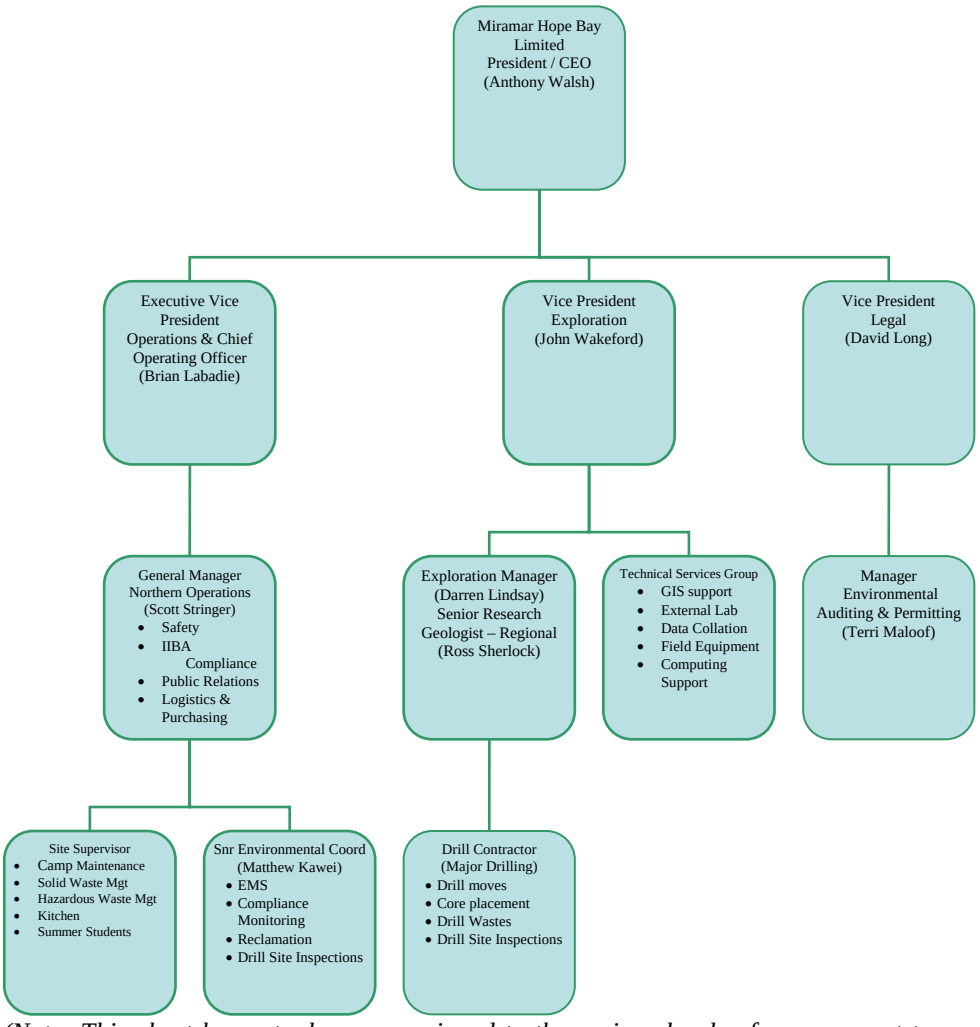
The EPP comprises the following sections:

- The Preface provides the records for the distribution of the EPP as well as EPP maintenance and revision control procedures.
- Section 1: introduces the EPP. This section also provides the reader with important information on the context of the EPP in terms of the stage of development of the property as an exploration site.
- Section 2: describes the environmental concerns and environmental protection procedures.
- Section 3: describes the environmental concerns and environmental protection procedures specific to Beach Landing Area.
- Section 4: describes the environmental concerns and environmental protection procedures specific to Accommodation Camp.
- Section 5: describes the environmental concerns and environmental protection procedures specific to the Drill sites.
- Section 6: provides an outline of the Abandonment of work areas.
- Section 7: provides response instructions to Project personnel for unplanned events.
- Section 8: contains a list of key MHBL projects, regulatory and community contacts.

Implementation of the EPP

MHBL has an organizational structure (see Figure 1.3.1 Organizational Chart) to provide the necessary resources for implementing the Exploration Activities of this EPP. The internal reporting structure ensures all reporting levels of management are aware of EPP performance. MHBL understand that its organization needs to focus on what must be done (the purpose) and have the necessary commitment, resources and technical skill level to take the appropriate action in support of the EPP.

Figure 1.3.1 MHBL Organisational Chart - Implementation of Exploration EPP



(Note: This chart has actual names assigned to the various levels of management to correspond with Section 8 – Contact List of this EPP- Exploration Activities as such positions do exist at the current phase of the exploration project along Hope Bay).

Environmental Orientation

MHBL is committed to an active environmental orientation and on going environmental awareness program throughout its exploration program. All workers and visitors will receive environmental orientation from the Senior Environmental Coordinator or site supervisor prior to initiating work in the Hope Bay Belt. These orientation sessions will occur at the respective MHBL camp upon arrival. An important aspect of MHBL's environmental management strategy is the commitment to having on-site Senior Environmental Coordinator to further increase the overall awareness and importance of environmental protection planning. The implementation of the EMS is the responsibility for all employees, contractors, and visitors upon arrival at respective MHBL camp and work sites.

MHBL Environmental Policy

Miramar Hope Bay Limited (MHBL) is committed to maintaining sound environmental practices in all of its activities. To achieve this, MHBL is working with its employees and contractors to:

- Examine the potential impact to the environment of all proposed activities and take steps to minimize, or where possible, eliminate, the impact;
- Ensure that all activities are in compliance with all environmental legislation and regulations;
- On a continuous basis, determine the MHBL impact to the environment and through continuous improvement, strive to attain higher levels of environmental performance;
- Maintain a high level of environmental protection by applying practices and technologies that minimize impacts and enhance environmental quality;
- Maintain dialogue with communities and other stakeholders within the area of influence of the Hope Bay Project;
- Progressively rehabilitate disturbed areas, develop closure plans that can be continuously improved and incorporate new technologies where practical;
- Encourage cooperative research programs with government and other stakeholders to better understand and monitor impacts associated with the Hope Bay Project; and
- Train all employees and contractors to understand their environmental responsibility related to MHBL.

On behalf of Miramar Hope Bay Ltd.
Anthony Walsh
President and CEO
March 2006

Project Description

MHBL is involved with exploration activities in the Hope Bay Belt in the west Kitikmeot Region of Nunavut. At present, although exploration continues, sufficient reserves have been discovered to confirm the viability of a mine, mill and concentration facility. Exploration will continue throughout the life of the Doris North Gold Project with the hope of further defining more mineable ore reserves in other nearby mines such as Doris Central, Madrid, and Boston.

In addition to personnel support facilities, the major exploration activity now is infill drilling which is currently being carried out at Doris Central and Madrid areas. Exploration activities at Boston will be limited to outcrop mapping in 2005.

Diamond Drills:

There are six (6) drills operating on Hope Bay Belt. Of these 6 drills, depending on the long-term exploration strategy, four (4) drills will be operating in and around Madrid during the summer of 2005, while the other two (2) drills will be relocated to Boston. However, if the drilling objectives change due to results of the current drilling program, drill movement will change accordingly, thereby triggering a change in the levels of support personnel and goods and services provided to support the program on the Hope Bay Belt.

People:

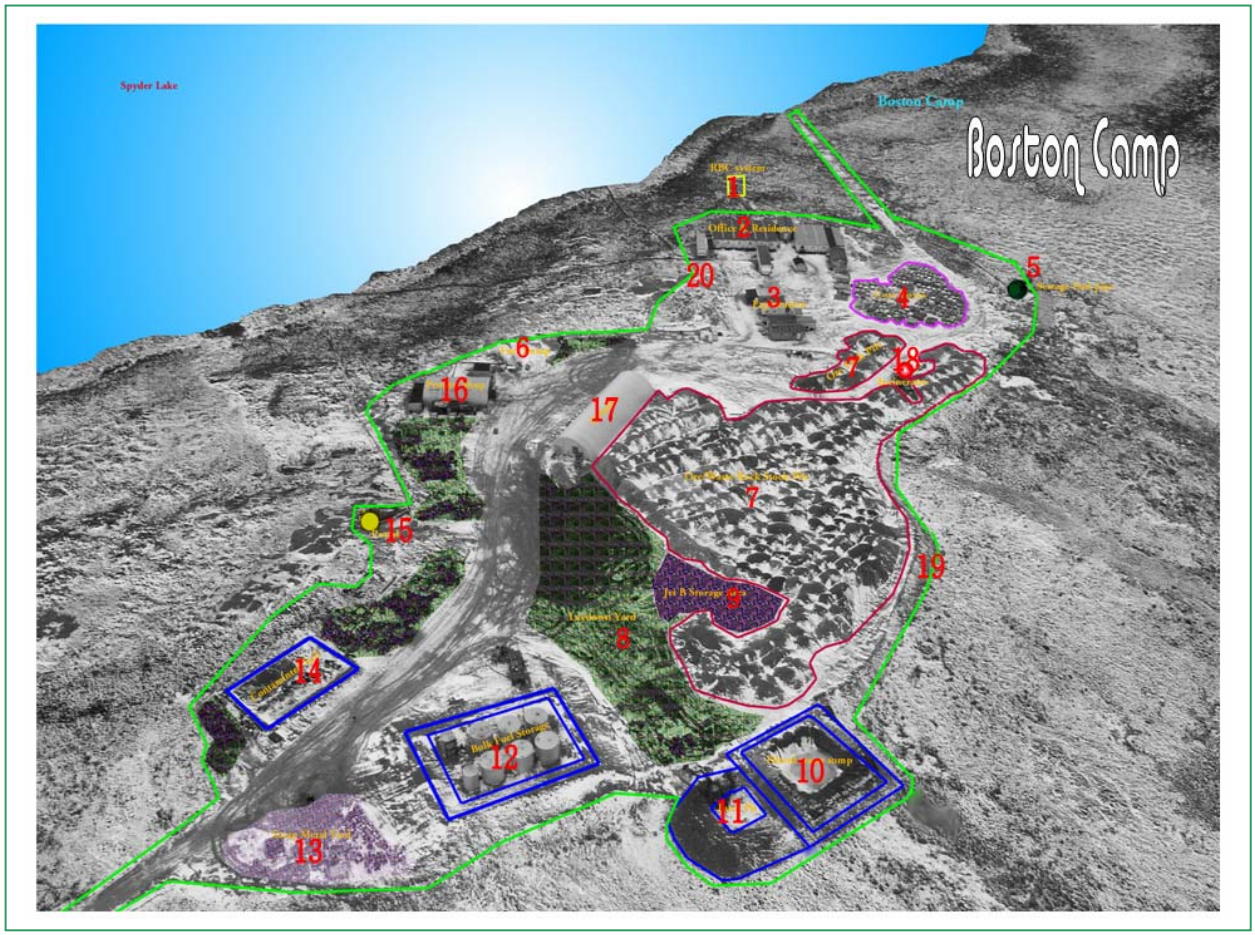
The table below provides an overview of work force for the Hope Bay Exploration program. The number of contract personnel fluctuates a lot depending on the needs of the program at each location.

Table 1.4.1 Hope Bay Exploration Program minimum Manpower

Hope Bay Exploration Program Manpower		Quantity
MHBL Staff	Exploration Geology	7
	Technical Support – Geology*	2
	Environmental	1
	Administrative Environmental Support*	1
	Community Relations*	1
	Administration*	2
Contract Personnel	Camp maintenance/Logistics/Kitchen/Medic	18
	Field Geologist & Technicians	10
	Major Drilling (Contractor)	18
Total Manpower		**60**

** MHBL staff personnel that provides administrative and technical support from either Vancouver or Yellowknife Office. Site visits is done on need to go bases or if required.*

Figure 1.4a Boston Camp Existing Infrastructure



Key: Numbers indicating lay out of various areas

1 RBC sewage system
2 Accommodation, water pump and generator
3 Exploration Office/Core logging area
4 Core storage lay down area
5 RBC release area
6 EnviroTank - Fuel Pump station
7 Ore stockpile
8 General lay down area
9 Jet B storage area (Bermed)
10 Lined water sump (Bermed)
11 South settling pond – Unlined, bermed first cell of proposed solid waste disposal area)
12 Bulk Fuel Storage (Bermed / Lined)
13 Scrap Metal Yard
14 Lined Contaminated soil lay down (Bermed / Lined)
15 Enclosed Portal
16 Procon Shop
17 Crusher Building
18 Incinerator – surrounded by ore stockpile
19 Site footprint - green line
20 Helipad

Figure 1.4b Windy Lake Camp Existing Infrastructure

Key: Numerical numbers indicating the general lay out for facilities at Windy Lake. Due to limited space, few location numbers will appear more than once.

1. 3 x Core storage area
2. Accommodation
3. Kitchen, Recreational, Office Complex
4. Enviro Emergency Response Equipment Storage
5. Freshwater Intake
6. Sauna
7. RBC Sewer System
8. Incinerator
9. Core logging/splitting shacks
10. Erection Tent (Muster Point)
11. Generator
12. Propane Storage Area
13. Jetty
14. Lined dyke
15. Land Treatment Area (LTA)
16. 2 x Helipad
17. Jet B Storage Area
18. 3 x AST fuel tanks & Gas drums
19. Contaminated fuel storage area
20. Gas drums (temporarily storage)
21. Emergency winter tent
22. Non-combustible solid waste storage
23. Unusable timbers/ply wood
24. Snow machines
25. Calcium Chloride (Salt)

Introduction

Section 2.0 provides general environmental protection procedures for anticipated activities routinely associated with mineral exploration and remote camp construction and operation. The development of an exploration program occurs largely on an *ad hoc* basis as new information arises. As such, this EPP is structured to provide for specific references in Section 3.0, 4.0, 5.0, 6.0, 7.0 and 8.0 to the relevant procedures in Section 2.0. As needed, any additional protection procedures can be added to address future activities.

Information documents referenced in this EPP can be found with the Senior Environmental Coordinator at the exploration site or are electronically available on the Vancouver Library server and Windy Lake and Boston servers.

The hard copies of the EPP will be made available to the following individuals or locations at MHBL exploration camps:

- Boston Camp - Senior Exploration Geologist
- Boston Camp - Site Supervisor
- Windy Lake - Senior Program Manager – Exploration
- Windy Lake – Senior Research Geologist – Hope Bay Regional Exploration
- Windy Lake - Site Supervisor
- Patch Lake Major Shop Supervisor

Environmental Concerns

The principle concerns associated with grubbing and disposal of related debris are the potential effects on water quality caused by erosion and sedimentation.

Water quality concentrations indicator, total suspended solids (TSS) will conform to requirements contained in permits NWB1BOS0106 and NWB2HOP0207 issued by the Nunavut Water Board.

Environmental Protection Procedures

All grubbing and disposal of related debris near watercourses will comply with approvals from the Department of Fisheries and Oceans and KIA. Measures undertaken to minimize effects on aquatic habitat and resources are as follows:

a) Grubbing of the organic vegetation mat and/or the upper soil horizons will be minimized, and left in place where possible due to the sensitivity of arctic soils;

b) If needed, the organic vegetation mat and upper soil horizon material, which has been grubbed, will be spread in a manner that attempts to cover exposed areas. Any surplus of such material will be stored or stockpiled for site rehabilitation and re-vegetation purposes elsewhere in the Project area. Topsoil will be stockpiled separately from the overburden. The location of the stockpiles will be recorded and accessible for future rehabilitation purposes;

c) The length of time that grubbed areas will be left exposed to the natural elements will be minimized to prevent unnecessary erosion; and

d) During grubbing, care will be taken to ensure that grubbed material will not be pushed into areas that are to be left undisturbed.

There are varieties of fuel containers stored at the site as shown in the table below. The storage containers range in size from 80,000 L upright AST tanks to 1 L containers. However, use of 1-litre containers is not encouraged on the property.

The table below provides locations and numbers of major petroleum products storage containers stationed at the Hope Bay Belt. The fuel quantity varies a lot depending on daily usage during exploration season. The second portion of the table gives the worst-case scenario, assuming that all storage AST tanks on the Hope Bay Belt are filled to 85% capacity, except for the 205 L drums, which are filled to capacity. During summer months, tanks will be filled to 95% capacity.

Knowing the approximate amount of petroleum products and where they are located on the Belt helps to determine the type and quantity of environmental emergency response equipment required to be stationed at each of the locations. Other factors crucial in containing an unexpected spill are slope elevations and whether or not AST tanks are contained in a lined secondary containment berm.

Table 2.2.1 Petroleum products storage facilities and container at respective Exploration Camps, 2005

Location	Tank Type	Quantity @ 85% Capacity	Remarks
Patch Lake	5 x 70,000 L	297,500 L	AST Fuel Storage Tanks
	2 x 75,000 L	127,500 L	AST Fuel Storage Tanks
	1 x 1,243 L	1,056 L	Tidy Tank
Windy Lake	1 x 70,000 L	59,500 L	AST Fuel Storage Tanks
	1 x 50,000 L	42,500 L	AST Fuel Storage Tank
	5 x 1,243 L	5,285	Tidy Tanks
	125 x 205 L	25,625	Jet B 45 gallon drums
	1 x 1,243 L	1,056 L	Tidy Tank – Gas storage
Boston Camp	6 x 80,000 L	480,000 L	Upright Tanks
	2 x 50,000 L	85,000	Upright Tanks
	1 x 70,000 L	59,500 L	AST Fuel Storage Tank
	2 x 1,243 L	2,114	Tidy Tanks (diesel fuel)
	125 x 205 L	25,625 L	Jet B 45 gallon drums
	1 x 1,243 L	1,056 L	Tidy Tank – Gas storage

80,000 L AST	6	480,000	Up right AST Tanks
50,000 AST	2	85,000	Up Right Storage Tanks
75,000 L AST	2	127,500	Double walled AST Tanks
70,000 L AST	7	357,000	Double walled AST Tanks
50,000 L AST	4	170,000	Enviro Tanks
1,243 L AST	10	10,565	Tidy Tanks
205 L drums	250	51,250	205 L drums
Grand Total Fuel on Belt @85% capacity		**1,281,315**	

Environmental Concerns

The major concern regarding the use of these substances is their uncontrolled release to the environment through spillage and subsequent adverse impacts on terrestrial, aquatic, and marine habitat and species, soil and human health and safety.

Environmental Protection Procedures

The Hope Bay Belt exploration area has implemented high standards for the storage and handling of fuel. Fuel and other materials under the exploration program are brought to the site by a barge between late summer and early fall and moved to various camp facilities by skid during winter exploration program.

Currently, bulk fuel storage at Boston Camp and Windy Lake Camp are contained in a lined secondary containment berm. Construction for such facility at Patch Lake is 80% complete. Completion of this project is expected by the summer of 2006. Plans are underway to build a similar facility at Boston Camp for the last remaining AST 50,000 L enviro-tank. It is planned to carryout construction in the summer of 2006.

At Windy Camp and Patch Lake, fuel required for drilling operations out on the tundra during the summer program are normally flown in by a helicopter, while at Boston the fuel is delivered by an ATV as the drills are located close to the land airstrip. For drills away from the airstrip, transportation is also by helicopter.

The following procedures will apply to the use of fuel and other hazardous materials:

a) All necessary precautions will be taken to prevent and minimize the spillage, misplacement, or loss of fuels and other hazardous materials;

b) Before installing fuel storage tanks, the necessary approvals in compliance with Canadian Council of Ministers of the Environment (1994). Environmental Code of Practice for Aboveground Storage Tank Systems Containing Petroleum Products will be obtained from the regulatory authorities. Verification of the storage tank approval will be retained for MHBL. Approval for constructing of dykes and lined secondary containment berms for stored petroleum products will be obtained from KIA;

c) Fuels and other hazardous materials will be handled only by persons who are trained and are competent in handling these materials in accordance with MHBL standards and operating procedures, the manufacturer's instructions and government laws and regulations. Operators will be in attendance for the duration of a refuelling operation. In the event of an unexpected fuel spill in the waterways, or 25L or more on land, the regulatory authorities will be contacted immediately at NWT 24-Hour Spill Report Line at **(867) 920-8130** and to INAC Water Resource Inspector at **(867) 975-4298** as per the MHBL Spills Contingency Plan (Section 7.1);

d) Submit a detailed report to DIAND **within 30** days from the date of the reported spill;

e) Petroleum products (oils, grease, gasoline, diesel or other fuels) will be stored at least 50 m from any water bodies, depending very much on the slope gradient of the storage locations;

f) Handling and fuelling procedures will comply with MHBL Standard Maintenance Operating Procedure (Hydrocarbon Fuel and Gas Dispensing Procedure, August 2004) and any additional requirements put forth by the regulating authorities as per water licence NWB1BOS0106 and NWB2HOP0207 in order to limit potential contamination of soil or water;

g) All AST tanks from Tidy Tanks (1,247 L) to upright 80,000 L tanks shall be filled to 85% of total tank capacity during winter months and 95% tank capacity during summer months;

h) All approved AST tanks exceeding 4,000 L in volume will be contained in a lined secondary containment berm surrounded by an impervious dyke of sufficient height (minimum height 0.6 m) to contain;

- where a dyked area contains only one storage tank the dyked area shall retain not less than 110% of the capacity of the tank; and
- where a dyked area contains more than one storage tank, the dyked area shall retain not less than 110% of the capacity of the largest tank or 100% of the capacity of the largest tank plus 10% of the aggregate capacity of all the other tanks whichever is greater. Otherwise approved self-dyked storage tanks will be used where required.

Any dykes of earthwork construction will have a flat top not less than 0.6 m wide, and be constructed and maintained to be liquid tight to a permeability of 25 L/m²/day. The distance between a storage tank shell and the centre line of a dyke will be at least one-half the tank height.

i) Fuel storage areas and non-portable transfer lines will be clearly marked or barricaded to ensure that they are not damaged by moving vehicles. The signs will be visible under all weather conditions following Canadian WHMIS reference guide;

j) Waste oils, lubricants, and other used oil will be disposed of by incineration as stipulated in Land Use Permits KTL303C056 (Hope Bay) and KTL399C029 (Boston Camp). Other contaminated petroleum such as diesel fuel and Jet B will be recovered. If sufficient volume exists, it will be used as fuel source for camp heating purposes;

k) All storage tank systems will be inspected on a regular basis as per daily camp check procedure using a check list. This involves, but is not limited to, gauging or dipping and the keeping of reconciliation records for the duration of the program;

l) Contracted fuel suppliers will, before transporting or positioning fuel at the exploration site, have on file at the MHBL office a copy of their "Fuel and Hazardous Material Spills Contingency Plan". The Spills Contingency Plan for MHBL is provided in Section 7.1;

m) Smoking is prohibited at all fuel storage area and during transporting and dispensing activities;

n) Temporary fuelling or servicing of mobile equipment in areas other then the main fuel storage site will not be allowed within 30 m of a watercourse;

o) MHBL will, within thirty (30) days of known decommissioning of a storage tank system, empty the system of all products. The tanks will only be moved during the winter's months. Contaminated top soil topsoil will be removed and placed in the LTA on site. If the area is not needed for any other activities, the area will be reclaimed as per the MHBL Closure and Restoration Plan;

p) Any soil contaminated by small leaks of any petroleum products from equipment will be treated in accordance with the procedures outlined in the MHBL Spill Contingency Plan;

q) A copy of the Contingency Plan for Fuel and Hazardous Material Spills (Section 7.1) will be present at storage facilities and during transfer of fuel. In the event of a spill, the outlined emergency procedures will be implemented;

r) Bulk fuel storage facilities will be dipped on a weekly basis in order to accurately gauge fuel consumption. These consumption rates will allow for visually undetectable sources of contamination to be identified and corrected. In an event where bulk AST tanks are used for daily activities, they will be dipped on a daily bases; and

s) Hazardous waste material will be stored in proper containers and labelled accordingly. The materials will be stored temporarily at either Windy Lake Land Treatment Areas (LTA) or at Boston Camp LTA depending on the origin of the waste. These materials will be transported to an approved facility either on site or offsite for disposal.

Environmental Concerns

The release of untreated sewage is a concern to human health, drinking water quality, and freshwater ecosystems.

Environmental Protection Procedures

a) The sewage disposal system will comply with Water Use Permit Numbers NWB1BOS0106 and NWB2HOP0207;

b) Development of sewage facilities will proceed in consultation with the relevant regulatory agencies;

c) Chlorine will not be used for sewage waste disinfection;

d) Areas designated for waste disposal that may impair the quality, quantity, or flow of water shall not be located within thirty (30) metres of the ordinary high water mark of any body of water;

e) Dispose all sewage and greywater to the RBC ROTODISC Treatment Plant;

f) Once monthly during open water season, greywater shall be sampled at the point of discharge from the RBC ROTODISC and at a location where treated effluent may enter lake water. The following parameters will be analysed:

- Biological Oxygen Demand (BOD_5);
- Total Suspended solids (TSS);
- Hydrogen Ions (pH);
- Faecal Coliforms; and
- Oil/Grease (visual).

g) A monthly report shall be submitted to the NWB for review thirty (30) days following the sampling date;

h) Discharge grey water in such a manner to minimize surface erosion; and

i) During routine maintenance of the RBC, sludge shall be collected in clearly labelled 45-gallon drums and transported to the hazardous waste collection area onsite for proper disposal.

Environmental Concerns

Combustible solid waste (e.g. domestic waste, paper, cardboard, wood), if not properly controlled and disposed of, will be unsightly and may cause human safety and health concerns and could result in conflict with wildlife. Solid waste will be disposed of using incinerators following all regulatory approvals for the establishment and operation of incinerators. Ash will be disposed of after analytical testing has confirmed to be safe for disposal at the existing Land Treatment Farm (LTA) located at Windy and Boston Camps.

Non-Combustible Solid Wastes (e.g. batteries, iron rods, wires, machine damaged parts, computer parts, etc) will be collected, sorted out by hazard type, packed and placed in the non-combustible waste management area for backhauling and disposed of in an approved facility in Yellowknife or disposal of by a recycle company.

Environmental Protection Procedures

a) The solid waste management system will comply with Water Use Permit Numbers NWB1BOS0106 and NWB2HOP0207;

b) Combustible solid waste produced by site personnel and operations will be collected and incinerated. Emissions will comply with all standards set forth by the conditions set in permits NWB1BOS0106 and NWB2HOP0207;

c) Once tested and certified safe for disposal, ash collected from the incinerators will be placed in the LTA at Windy and Boston Camps and used for progressive revegetation program;

d) Non-combustible solid waste accumulated on site prior to disposal will be confined in a designated area so that it does not pose an environmental or health hazard or cause conflict with wildlife;

e) No solid waste material will be deposited in a body of water or stored within 30 meters of any water body; and

f) Other hazardous wastes apart from contaminated topsoil or snow from petroleum products that could not be treated safely on site and non-combustible waste generated through the course of the operation are backhauled and disposed of in an approved waste disposal site in Yellowknife.

Environmental Concerns

The principal concerns for quarry development and associated aggregate removal include the potential for sedimentation freshwater systems and loss of terrestrial habitat and land use. In order to protect and support vegetation that inhabits surface erosion, it is critical that MHBL conserve topsoil in proposed disturbed areas.

Topsoil contains valuable nutrients, microorganisms, minerals, seeds, and roots stocks, which are important for reclamation. Of particular importance is the seed resource of native species contained in topsoil. This seed source is essential to restoring the diversity of plant species within the disturbed area.

Environmental Protection Procedures

Permits to Quarry will be obtained from KIA before quarries are established.

The following measures will be implemented to minimize the potential impacts of quarrying activities and subsequent aggregate removal:

a) Quarry activity will adhere to all relevant Federal and Territorial laws and regulations, and will be undertaken in strict compliance with quarry permits;

b) Quarry areas will be developed in a controlled manner to minimize potential environmental effects. The following protection procedures will be implemented to minimize disturbance and facilitate rehabilitation:

   (i) where possible, quarries will be located a minimum of 100 m from any watercourse or water body. Deviations from this requirement will only be made under permit conditions and with written approval from KIA;

   (ii) the development area, stockpile area and limits of development will be staked and/or flagged to prevent over-extension of the development, thereby minimizing the extent of the operation;

   (iii) the area to be excavated will be grubbed prior to any excavation or removal of any material (Section 2.1);

   (iv) all organic matter and soil will be stripped from the area to be excavated and stockpiled at least 5 m from un-impacted areas and re-spread over disturbed areas during progressive reclamation, once quarry site is no longer required;

   (v) topsoil and subsoil should be stored in separate piles no higher than 1-2 meters. This ensures proper aeration for soil fauna. (Best practice for topsoil storage height from various sources ranges between 0.6 and 3m. The 1-2 m height has been chosen here as a reasonable mid-point within this range.);

   (vi) soil should be covered with permanent or temporary vegetation to prevent erosion; and

(vii) subsoil needs to be reapplied before topsoil.

c) A settling pond will be established, if required, and cleaned on a regular basis as required to ensure that the retention capacity is maintained at all times;

d) Dust from aggregate storage and handling will be controlled with water as required (Section 2.12);

e) If crushing activities in the quarry require a water source, approval from the Nunavut Water Board will be obtained prior to any water use. This will involve making amendment to the exiting Water Use Permits issued for Hope Bay and Boston; and

f) Report of quarry usage will be submitted to the regulatory authorities by March 31 of each year.

Surveying

Site surveying activities will be conducted primarily on undisturbed land. The following surveying activities that may be required include:

- traversing; and
- establishing targets, permanent bench marks and transponder stations.

Environmental Concerns

Surveying activities may disturb wildlife species, vegetation, historic resources, and littering of food wastes may attract wildlife.

Environmental Protection Procedures

Vegetation Removal & Wildlife

a) Whenever possible, every attempt will be made to minimize the disturbance of vegetation;

b) Removal of all food waste and other waste that has the potential to attract wildlife closer to camp facilities;

c) Vegetation removal is not required for surveying and establishing site lines;

d) No attempt to harass or disturb wildlife will be made by any person;

e) Vehicles will yield the right-of-way to wildlife;

f) There will be no vegetation disturbance in areas designated as sensitive without notification and approval of the Senior Environmental Coordinator; and

g) Archaeological sites and features such as tent rings, caches (boulder piles) and inuksuk (stacked boulders or slabs) will not be disturbed during survey work. Any discovered sites will be reported to the Senior Environmental Coordinator (see Section 7.3).

Traversing

a) During summer programs, movement of personnel will be done by helicopter for surveying purposes. During winter programs, ski-doos will be the main form of transportation on the tundra;

b) No attempt to harass or disturb wildlife will be made by any person;

c) No motorized vehicles will enter the areas designated as sensitive without notification and approval of the Senior Environmental Coordinator;

d) The extent of activities in sensitive areas will be minimized; and

e) Walking in sensitive areas will be restricted to established walking paths, if available.

Establishing Targets, Permanent Benchmarks, and Transponder Locations

a) A driven T-bar, well embedded to readily identify each benchmark location will be used;

b) No attempt to harass or disturb wildlife will be made by any person;

c) Access to sensitive areas is to be approved by the Senior Environmental Coordinator in consultation with KIA;

d) Standard iron bars and sledge hammers are to be used to establish benchmarks;

e) Heavy equipment will not access sensitive areas;

f) Temporary photo targets established for the purposes of aerial survey work must be removed as soon as work is complete; and

g) On completion of the program, surveyors should ensure that:

- All equipment, including any wires used, should be removed from the grid;
- Conspicuous markers such as pegs and tape are removed wherever possible, especially from the beginning of the grid lines (special attention should be given to this in sensitive areas); and
- All pickets are removed from ice on watercourses prior to break-up. If this could not be done safely, pickets should be removed during summer months using a boat or a helicopter.

Environmental Concerns

The majority of physical disturbances to the environment are a result of motorized vehicle movements needed during the establishment and supply of camps and drill sites. Typically, mineral exploration activities are supported by the use of helicopters, ski-doos, challengers, and tracked vehicles that could result in ground disturbance. As exploration programs are seasonal, mode of transportation also varies depending on the ground condition.

Environmental Protection Procedures

a) MHBL is committed to the use of helicopters and operating ATVs and snow machines along designated trails to supply its operations, thus minimizing ground disturbances;

b) Where possible, the use of ATVs will be restricted to designated trails, thus minimizing ground disturbance. Any form of transportation will support the exploration program and will conform to specific permit issued either by both KIA and NWB;

c) During winter when the ground is covered with snow, snow machines will be used for equipment movement and supply. Where possible, snow machines will use established pathways, also minimizing disturbances to vegetation (via compaction);

d) During winter when the ground is covered with snow, snow machines, as well as heavy equipment, will be used for equipment movement and supply. Snow machines will use established pathways covered in KIA issued Licence Number KTL303F055, which covers the winter track from Roberts Bay via Windy Lake to Boston Camp; and

e) The use of heavy equipment in and near watercourses will be minimized and restricted; where possible an excavator will be used from shore rather than a bulldozer in the watercourse. Where it is necessary to do so, in stream work will be performed by rubber-tired vehicles only, and will only be done in compliance with permits and approvals from both KIA and NWB.

This general procedure is addressed in detail in other General Procedures (Sections 2.1 and 2.12). Buffer Zones are reiterated in this section to provide a better reference for the application of Environmental Protection Procedures discussed in Sections 3 through 8.

Environmental Protection Procedures

a) Where possible, a buffer zone of undisturbed natural vegetation is to be maintained between construction areas and all water bodies. Any construction or storage of hazardous materials should not take place within 30 meters of any water body;

b) Silt runoff control fences will be constructed at the toe of the slope outside the buffer zone when required to control runoff from areas of exposed soils towards water bodies. The Senior Environmental Coordinator will inspect silt fences and buffer strips on a regular basis. Any accumulations of silt witnessed should be removed and disposed of in an area where it will not re-enter any water body. Also, repairs and replacement of damaged silt fences will be addressed immediately; and

c) A minimum buffer zone of 25 m will be maintained around any archaeological site within which no construction activities will take place. Where available, space poses constraints; this width may be reduced and supplemented by other protective measures.

Environmental Concerns

Erosion prevention practices will be applied throughout all work areas on exposed or erodible soils. The application of erosion control measures is addressed in previous General Procedures but reiterated here to provide emphasis.

Environmental Protection Procedures

General

The primary means of erosion control is avoiding or minimizing activities contributing to erosion.

All areas of exposed erodible soils are to be stabilized by back-blading or grading to meet engineered slope requirements. Where erosion along exposed erodible slopes is a potential, natural buffer zones will be maintained and a silt fence, or other erosion control measures, will be constructed to control silt runoff.

Engineering requirements will vary depending on the locations of the silt fence and will consider such factors as drainage/surface area of exposed soils and time of year the silt fences are employed.

Specific erosion and sedimentation control measures have been designed for construction in Nunavut to minimize the effects of construction activities on the environment. They include: site drainage ditching system, including culverts and risers; installation of piped outlet siltation control ponds; temporary run-off interceptor ditches; and check sediment dam traps which will provide both energy dissipation and siltation control. However, regardless of these protection measures, if an environmental inspection reveals that silt is entering a watercourse, further mitigative measures will be implemented.

Streams

All stream bank sections that contain loose or erodible materials are to be stabilized. No material is to be deposited within the watercourse. Sloping is to be accomplished by back-blading and the material removed is to be deposited above the high water mark of any watercourse. A field survey will be conducted at all stream crossings prior to construction to determine sensitivity.

Environmental Concerns

The environmental concerns with exploration drilling are surface disturbances, disposal of drilling fluids and cuttings, generation of dust, noise, and the potential effects on terrestrial habitats, air quality, aquatic ecosystems, and historic resources.

Drilling operations have to comply with Part H: Conditions Applying to Drilling of the Water Use Permit Number NWB1BOS0106 for Boston and Part D of the Water Use Permit Number NWB2HOP0207 for Hope Bay.

Environmental Protection Procedures

a) All materials and personnel are transported to drill site locations via helicopter or along designated trails using ATVs snow machines or necessary transport equipment (All track truck etc.);

b) Waste oil is transported back to the Camp and stored for disposal in an approved facility;

c) Water pump pumping water required for drilling purpose should not be placed within 30 meters of high water mark of any water body. The pumps should be placed in a secondary containment tray to capture any unexpected fuel/oil leaks or spills;

d) Water used throughout the drilling process remains on the drill site. Water use is approved as part of the approval for exploration activities from the Nunavut Water Board. Every effort will be made to prevent the turbid water from entering any watercourse;

e) Hot water drilling method will be encouraged at all drilling sites. Limited amount of drilling salt (NaCl or CaCl) will be used on as required bases;

f) When drilling is conducted on a lake, cuttings from drill activities shall be captured; water decanted when solids are settled and moved to an approved storage area on property. They will remain in the immediate location of drilling activities. Cuttings are not placed back down the hole;

g) When drilling is conducted on land, cuttings from drill activities shall be placed using a hose into identified natural depressions such as a sinkhole or large cracks in an outcrop close to a drill site. This will allow the suspended solids to settle allowing clear water to filter out via the natural vegetation;

h) Combustible garbage and solid waste will be removed from the drill site and incinerated at the respective Camp;

i) Due to the nature of drilling activities (i.e. quick snaps, couplings) oil drops and leaks sometimes occur and every attempt possible is made to clean up the area. All rigs are equipped with oil absorbent material in the event of a leak or spill. If drilling is done on land,

peat moss will be applied to the drilling to absorb any contaminants after the drill has been relocated;

j) During winter season drilling program, snow machines or other necessary transport equipment (all track, truck etc) is used to transport drill materials, core, and personnel to and from the drill sites. Helicopters are used during summer months, especially along Hope Bay.

k) Potential exists for the disturbance of archaeological resources during exploration drilling activities. All site workers should be familiar with the contents of the contingency plan for the Discovery of Historic Resources (Section 7.3) to be provided to all EPP holders.

l) Casing at the abandoned drill holes will be removed and the anchor holes capped;

m) When drilling is done on lake, water samples will be collected at each drill site before drilling commences and at the closure of the drill program for each drill site on lake. Water samples collected will be sent to a certified external laboratory for analytical analyses and the results reported in the month-end report as stipulated in the regulatory permit requirements. The parameters analysed and reported will comply with regulatory requirements;

n) Drill inspections will be done a few days after a drill move. Information will be collection using pro forma stored electronically on a palm top. If nonconformity is identified, the drill contractor will be notified of the corrective and prevention action (s). Still photographs of the respective abandon drill sites will be taken for reporting purposes.

Drilling will be required on land during geotechnical investigations to recover soil samples.

Environmental Concerns

The environmental concerns associated with drilling on land are surface disturbances, disposal of drilling fluids and cuttings, generation of dust, noise and the potential effects on terrestrial habitats, air quality, and aquatic ecosystems.

Environmental Protection Procedures

Potential drilling sites in sensitive areas will be inspected by the Senior Environmental Coordinator or his designate, whenever possible.

a) Disposal of all drilling materials and associated solid wastes will be undertaken in accordance with the procedures in Section 2.4;

b) Petroleum products will be stored, handled, and transported according to Section 2.2;

c) Water applications will be used to control dust, where necessary and the source of water will be approved for use. The use of water for dust control or lubrication during drilling will be undertaken in a manner that ensures that runoff does not enter watercourses;

d) Drilling equipment will have muffled exhaust to minimize generated noise;

e) Drilling of water wells must be conducted in compliance with the regulatory requirements. If such water wells are required, an amendment to the current permit will be submitted to Nunavut Water Board for consideration; and

f) All abandoned geotechnical water wells will be capped.

Dust Control

The environmental concerns associated with dust include human health effects and potential effects on aquatic ecosystems and vegetation.

Environmental Protection Procedures

Using water will control dust from construction activities. Waste oil will not be used for dust control. However, if water is not effective or increases the likelihood for top soil erosion, other agents such as calcium chloride may be used with the approval obtained from regulatory agencies.

Exploration trenching involves excavating of dirt to expose mineralised outcrop for mapping and rock sampling. This is done by excavating trenches of various sizes depending on the needs of the exploration program. Water is used to wash the surface of the outcrop.

The development of water and sewer infrastructure may require trenching for the burial of lines depending various much on the surrounding physical environment.

Environmental Concerns

If excavation for the construction of water lines, trenching for outcrop mapping or any other infrastructure is undertaken, potential runoff of sediment-laden water could result in effects on marine or freshwater fish habitat and water quality. Other concern is related to leaving a significant hole in the ground which may endanger both wildlife and exploration personnel.

Environmental Protection Procedures

The following measures will be implemented to minimize the potential impacts of trenching:

a) Soil, excavated overburden and bedrock will be stored in separate stockpiles for later use during rehabilitation;

b) Reclamation of the trenches will be done following management measures outline in Sections 2.1 and 2.5 of this Plan;

c) Any unsuitable material will be disposed of in a disposal area approved by the Senior Environmental Coordinator; and

d) Dewatering of trenches will make use of measures to minimize and control the release of sediment-laden water by filtration through erosion control devices, settling ponds, silt fences, geotextile, or other devices.

Work areas, during site development, may require dewatering.

Environmental Concerns

The major concern associated with dewatering is siltation and direct fish mortality and/or habitat lost by smothering action for freshwater and marine species.

Environmental Protection Procedures

a) Filtration or other suitable measures, such as settling ponds, silt fences and dykes, will be provided to remove silt from, and reduce the turbidity of water pumped from work areas before discharging;

b) Where possible, filtered water should be released to vegetated work areas to further reduce any potential impacts on watercourses;

c) If settling ponds are required, the area of settling ponds will be gauged to accommodate the anticipated volume of discharged water;

d) Released treated water will be released to follow natural surface drainage patterns;

e) Proper precautionary measures will be employed to prevent the alteration, disruption, and smothering of fish habitat; and

f) Water pumped from excavations or work areas, or any runoff or effluent directed out of the Project site must have silt removed by filtration or other suitable treatment before releasing to the tundra. Effluent release will comply with NWB1BOS0106 and NWB2HOP0207 permits requirements.

Supply vessels, barges, and tugs will be transporting goods and equipment to Roberts Bay, Nunavut.

Environmental Concerns

The potential exists for vessels to collide, run aground, and/or sink. Such events may lead to the accidental release of fuel and other hazardous materials to the marine environment.

Environmental Protection Procedures

a) The contracting company providing such a service for MHBL is responsible to ensure that the barge(s) assigned to this task complies will all regulatory requirements;

b) The delivery of hazardous materials has to comply with the Canadian Transportation of Dangerous Goods Code;

c) Project vessel masters will observe the following basic rules:

   i. all Project vessels are required to acknowledge receipt of and maintain on hand procedures and provide supporting information to MHBL logistics by fax or cable before leaving port of origin;

   ii. all Project vessels are required to advise the MHBL logistics of their time of departure from their port of origin and their estimated time of arrival at Roberts Bay, Nunavut; and

   iii. Project vessels must notify the MHBL logistics of their progress at sea or, if stopping at other ports enroute, update their ETA.

d) All crew members will be familiar with emergency procedures for both life threatening and potentially polluting situations.

Environmental Concerns

A variety of water pumps, hoses, and generators are in frequent use in many areas of exploration sites and the support and supply for remote activities. Environmental concerns are associated with any accidental spills or chronic leaks contaminating topsoil and water bodies.

Environmental Protection Procedure

a) Generators, oils, grease, gasoline, diesel, or other fuels will be stored at least 50m from any surface water;

b) Secondary containment trays should be placed underneath portable pumps and generators at all times;

c) Hoses and connections on equipment located near water bodies should be inspected routinely for leaks and drips; and

d) Clean all leaks/spills immediately using proper materials. Report leaks/spills and submit in-house accident report form immediately to the Site Supervisor and the Senior Environmental Coordinator for further action.

Environmental Concerns

A variety of noises associated with exploration, construction and operation activities can cause negative effects on wildlife resources in terms of their distribution and abundance. Noises associated with blasting are temporary in nature and noises associated with drilling are considered long term, but localized. Even though drilling noise is considered to be localized, it has been observed to attract wildlife, especially caribou.

Environmental Protection Procedures

Measures will be implemented wherever possible to minimize potential effects arising from a variety of noise sources.

a) Adherence to all permits and approvals;

b) Blasting plans should be developed and wildlife surveillance undertaken prior to blasting, as required;

c) All equipment will have exhaust systems regularly inspected and mufflers will be operating properly; and

d) Ensure generators operating within the accommodation area are fitted with approved noise reduction mufflers.

Environmental Concerns

Blasting is part of exploration process, either during grassroots exploration or advanced exploration phase. It is also undertaken in association with quarry development. The principle environmental concerns include the following:

- destruction of vegetation around the outcrop or outside the quarry limits;
- noise disturbances to wildlife; and
- disturbance of archaeological resources.

All blasting will be done in compliance with the appropriate permits and approvals. All blasters will have a Blasters Safety Certificate from the regulatory authorities. Magazine storage and disposal will comply with regulatory requirements.

Environmental Protection Procedures

The handling, transportation, storage, and use of explosives and all other hazardous materials will be conducted in compliance with all applicable laws and regulations. The following measures will be implemented to minimize the impact of the use of explosives and blasting.

a) Explosives will be used in a manner that will minimize damage or defacement of landscape features, trees, and other surrounding objects by controlling through the best methods possible, the scatter of blasted material beyond the limits of activity;

b) Blasting patterns and procedures will be used which minimize shock or instantaneous peak noise levels;

c) Time delay blasting cycles will be used if necessary, to control the scatter of blasted material;

d) Blasting will not occur in the vicinity of fuel storage facilities;

e) The Blasters Safety Certificates and the Temporary Magazine Licence will be obtained prior to drilling and blasting;

f) Use of explosives will be restricted to authorized personnel who have been trained in their use;

g) There will be separate magazines on site, a magazine for explosives and a smaller magazine for (spacing) blasting caps;

h) The immediate area of the site will be surveyed within three hours prior to a blast and operations will be curtailed if sensitive animals (e.g. grizzly bears, caribou, and other mammals) are observed within 500 m. Any individual animal sightings will be reported to the Site Supervisor. Patrols of (spacing) the area will be carried out before setting off the blast; and

i) If blasting is necessary within the vicinity of an archaeological site, precautions must be taken to ensure that blasted material and shock waves do not disturb any part of the site. Blasting shall not be undertaken in these areas without notifying the Senior Environmental Coordinator.

Environmental Concerns

The principle concerns associated with winter trails are the potential effects on marine and freshwater ecosystems and water quality as well as the terrestrial ecosystem (snow compaction). Any activities on the winter trails will conform to KIA permit number KTL303F055.

Environmental Protection Procedures

a) Winter vehicles should be confined to properly prepared and groomed trails and to camp and work sites;

b) Vehicles used on this trail are for the winter season only. To the extent, possible trails should be located on frozen water bodies;

c) Maintenance and refuelling of vehicles shall be restricted to designated areas;

d) Only streams or water bodies that are frozen shall be traversed;

e) Any debris or materials placed upon the ice surface of any water body shall be removed prior to spring break up;

f) A good snow cover is required for all trails with no ground disturbance; and

g) All known archaeological sites must be avoided.

Roberts Bay is the main landing site for most of the hazardous materials, building supplies and mobile equipment for the exploration actives at the Hope Bay Belt.

3.1 Environmental Sensitivities

- The estuary confluence of Little Roberts meeting Roberts Bay;
- Beach front at Roberts Bay; and
- Vegetation covers along the beachfront.

3.2 Beach Offloading and Storage Areas

- Unloading of bulk petroleum products;
- Unloading of Gas and Jet A/B drums;
- Unloading hazardous materials (Magazines, cement bags, NaCl & CaCl);
- Unloading of machines;
- Building materials;
- Transporting of petroleum products and hazardous materials; and
- Temporary storage of hazardous materials.

3.3 Environmental Concerns

- Unexpected release of petroleum products;
- Unexpected release of hazardous materials;
- Erosions & Sedimentation;
- Unexpected fire or explosion; and
- Hazardous wastes & non-combustible solid wastes.

3.4 Sensitive Areas and Periods

- Spring runoff into Roberts Bay;
- Contaminated beachfront; and
- Contaminated vegetation covers along the beachfront.

3.5 Permits, Approvals, and Authorizations

The table below lists all Water and Land Use current permits/licences issued to MHBL by various regulatory authorities. MHBL librarian keeps the history of changes current. Signed original hard copies are filed systematically, while electronic copies are made available on MHBL server with read access only.

Exploration			
Boston Camp	**History of Permit Changes**	**Issuing Authority**	**Expiry Date**
Land Use Permits	I95C058...KTL399C029	KIA	August 31, 2006
Water Use Permits	N7L2-1652...NWB1BOS9801...NWB1BOS0106	Nunavut Water Board	Dec 31, 2006
	NWB4WEI9799...NWB4WEI0002...NWB1B0S0106		
Hope Bay	**History of Permit Changes**	**Issuing Authority**	**Expiry Date**
Land Use Permits	I97C141...KTL399C028...KTL303C056	Kitikmeot Inuit Association (KIA)	Jan 31, 2006
	KTL303F002...KTL303F055		unknown
	KTL304C004		March 31, 2006
Water Use Permits	NWB2HOP0002...NWB2HOP0207	Nunavut Water Board	March 10, 2007

3.6 Relevant Drawings

- (see Figure 1.6.1)

3.7 Environmental Protection Procedures

Activities	Impacts	Management Measures (See Section 2 for details)
Loading & Unloading	• Accidental spill/leak	• Section 2.1; Section 2.2; Section 2.15
Temporary Storage	• Leakage - damaged containers	• Section 2.2; Section 2.4
Transportation	• Erosion/Sedimentation • Spills	• Section 2.2; Section 2.7; Section 2.8; Section 2.9; Section 2.19
Waste Management	• Seepage of hazardous materials	• Section 2.4

4.1 Environmental Sensitivities

- Freshwater supply; and
- Tundra

4.2 Camp Activities

- Sewer disposal system;
- Kitchen waste;
- Hazardous waste;
- Storage areas for hazardous products;
- Transfer and dispensing of petroleum products;
- Incineration;
- Recreational Activities;
- Energy generation;
- Camp maintenance;
- Core logging and cutting; and
- Relaxation

4.3 Environmental Concerns

- Contamination of drinking water source;
- Hazardous waste management storage and disposal;
- Storage, Transfer and dispensing of petroleum products;
- Incineration fumes;
- Constant noise from camp generators;
- Reactive Maintenance; and
- Management of kitchen wastes – a source of attraction for wildlife, especially grizzly bears.

4.4 Sensitive Areas and Periods

- Start up of camps;
- Height of exploration activities; and
- Temporary shut down of camps

4.5 Permits, Approvals, and Authorizations

- (See Section 3.5 of this document)

4.6 Relevant Drawings

- (See Figures 1.4a (Boston Camp) & 1.4b (Windy Lake Camp)

4.7 Environmental Protection Procedures

Activities	Impacts	Management Measures (See Sections 2 & Section 7 for details)
RBC discharge system	• Contamination of water source • Erosion/High TSS	• Section 2.1; Section 2.3; Section 2.9 • Section 2.3; Section 2.9
Hazardous waste storage	• Seepage	• Section 2.2; Section 7.1; Section 2.4
Petroleum products	• Spills/Leaks	• Section 2.2; Section 7.1; Section 2.16
Camp Maintenance	• Generation of solid wastes • Construction of structures • Disposal of hazardous waste	• Section 2.4 • Section 2.8 • Section 2.2
Incineration	• Air emissions • Spills/Leaks	• Section 2.2 • Section 2.2; Section 7.1
Kitchen waste	• Attraction for wildlife	• Section 7.2
Transportation	• Spills – refuelling aircrafts • Trails – vegetation cover • Dust generation	• Section 2.2; Section 7.1 • Section 2.19 • Sections 2.9; Section 2.12
Recreational Activities	• Fishing activities • Unusable electronic media	• Section 7.2 • Section 2.4

5.1 Environmental Sensitivities

- Drilling on lake;
- Drilling near a water body; and
- Drilling close or around historical sites

5.2 Activities at Drill Sites

- Setting up drills;
- Moving of support equipment for drilling;
- Moving of petroleum products;
- Water abstraction, use and release;
- Capturing drill cuttings and storage;
- Placing drill cuttings into natural depressions;
- Storing and moving core;
- Solid waste management;
- Storage and use of Salts; and
- Demobilizing and cleanup

5.3 Environmental Concerns

- Petroleum products spill/leaks into the receiving environment;
- Drilling salts and other drilling additives spills;
- High TSS into the water body;
- Drilling in the vicinity of historical sites;
- Solid waste management; and
- Management of drill cuttings (identification of suitable lay down areas - cracks in outcrops & natural sinkholes).

5.4 Sensitive Areas and Periods

- Known historical sites – summer months;
- Drilling on lakes during winter months;
- Activities on tundra during summer months; and
- Runoff from drill sites during spring thaws.

5.5 Permits, Approvals, and Authorizations

- (See Section 3.5 of this document)

5.6 Relevant Drawings

- (see Figure 1.6.1)

5.7 Environmental Protection Procedures

Activities	Impacts	Management Measures (See Sections 2 & Section 7 for details)
Drill Set Up	• Noise (helicopter) • Use of vehicles on tundra • Accidental Spills/Leaks • Solid Waste Management • Unexpected historical finds	• Section 2.17; Section 7.2 • Section 2.19 • Section2.2; Section 7.1 • Section 2.4 • Section 7.3
Moving of support equipment & personnel	• Noise (helicopter) • Use of tundra • Accidental spills/Leaks	• Section 2.17; Section 7.2 • Section 2.19 • Section 2.2; Section 7.1
Operation of drills	• Placement of water pumps • Placement of generators • Generation of drill cuttings • Accidental spills/leaks • Generation of solid wastes • Noise generation • Abstraction of water • Discharge of used water • Erosion/sediment • Damage to tundra • Loss of topsoil	• Section 2.16 • Section 2.16 • Section 2.10 • Section 2.4; Section 7.1 • Section 2.17; Section 7.2 • Section 2.14; Section 2.16 • Section 2.9 • Section 2.9 • Section 2.9; Section 2.19 • Section 2.9; Section 2.19 • Section 2.9; Section 2.19
Drill shut down & relocation	• Loss of topsoil • Accidental spills/leaks • Solid waste generation • Loss of vegetation	• Section 2.9; Section 2.19 • Section 2.2; Section 7.1 • Section 2.4 • Section 2.9; Section 2.19

6.1 Environmental Sensitivities

- Drill sites on lakes;
- Drill sites on tundra;
- Camp sites on lake shoreline;
- Fuel storage areas on elevations of greater than 6% slope gradient landscape; and
- Unmanaged hazardous solid wastes

6.2 Activities for the Abandonment of Specific Work Areas

- Abandon Drill sites;
- Camp buildings;
- Workshops;
- Airstrips;
- Incinerators;
- Landing beach;
- Winter trails;
- Contaminated Land Treatment Areas;
- Lined Fuel Farms;
- Non-combustible Solid Wastes;
- RBC sledges and discharge systems;
- Core storage;
- Drill cutting storage;
- Magazines; and
- Fuel tanks

6.3 Environmental Concerns

- Contamination to surrounding environment;
- Unsafe environment for wildlife;
- Lack of land space for non-combustible solid wastes;
- Seepage of hazardous materials – contamination to surface and ground water sources;
- Damage to tundra; and
- Increase rate of erosion/sedimentation

6.4 Sensitive Areas and Periods

- Contamination of aquatic ecosystems during spring runoffs;
- Erosion/sediment during spring runoff; and
- Dust issues during summer months

6.5 Permits, Approvals, and Authorizations

- (See Section 3.5 of this document)

6.6 Relevant Drawings

- (see Figure 1.6.1)

6.7 Environmental Protection Procedures

Activities	Impacts	Management Measures (See Sections 2 & Section 7 for details)
Demolition of infrastructure	• Generation of non-combustible solids waste • Generation of combustible solid waste • Potential for spills/leaks • Generation of hazardous materials • Dust • Erosion/Sedimentation	• Section 2.4; Section 2.8 • Section 2.4 • Section 2.2; Section 7.1 • Section 2.2; Section 2.4 • Section 2.12 • Section 2.9
Sorting, packing & storage	• Generation of combustion wastes	• Section 2.4; Section 2.8
Transportation hazardous wastes	• Spills/Leaks • Damage to tundra vegetation • Topsoil erosion/sedimentation	• Section 2.2; Section 7.1 • Section 2.19 • Section 2.9
Transportation of petroleum products	• Spills/Leaks • Damage to tundra • Topsoil erosion/sedimentation	• Section 2.2; Section 7.1 • Section 2.19 • Section 2.9
Transportation of non-combustible solid waste	• Damage to tundra • Topsoil erosion/sedimentation	• Section 2.19 • Section 2.9
Land treatment	• Removing contaminated topsoil • Erosion/sedimentation	• Section 2.5; Section 2.2 • Section 2.9
Land reclamation	• Spreading treated topsoil & slope contouring • Erosion/sedimentation • Dust • Reclamation/re-vegetation	• Section 2.5 • Section 2.9 • Section 2.12 • Section 2.5

A Spill Contingency Plan has been developed by MHBL for its exploration programs as part of the requirements stated in its exploration operating permits. The Plan deals with accidents and unplanned situations. It is anticipated that the Plan will be reviewed annually or as required throughout the Project.

In reaching decisions on containment and clean-up procedures, the objectives of these contingency plans are to minimize the following:

- danger to persons;
- pollution to watercourses;
- area affected by the spill or fire;
- degree of disturbance to the area and watercourses during clean-up; and
- degree of disturbance to wildlife.

Notwithstanding contingency plans, MHBL will adopt a policy to implement preventative measures as its first line of defence against the possibility of accidents.

Additional contingency plans have been developed for the following accidental and unplanned situations.

7.1 Fuel and Hazardous Material Spills

7.2 Wildlife Encounters

7.3 Discovery of Historic Resources

Environmental Concerns

Fuel and hazardous materials can be damaging to vegetation, soil, surface water, ground water, wildlife, aquatic organisms, historic resources and human health and safety.

Environmental Protection Procedures

In the event of a fuel or hazardous material spill, the following procedures will apply:

a) Spill clean up, short and long term remedial strategy and reporting process will conform to the permit conditions outline in NBW1BOS0106 and NWB2HOP0207;

b) The individual who discovers the leak or spill if safe to do so will make a reasonable attempt to immediately stop the leakage and contain the flow;

c) Spill location, type of fuel or hazardous material, volume and terrain condition at the spill site will be determined and reported immediately to the Site Supervisor, who will activate the MHBL Spill Contingency Plan;

d) All spills/leaks of petroleum products will be reported immediately to immediate supervisor;

e) Site Supervisor shall immediately report any petroleum products released to the receiving environment of 25 L or more to the General Manager, Northern Operations;

f) A spill report form (NWT/Nunavut Spill Report Form) will be filled out by Site Supervisor and sent to General Manager, Northern Operations;

g) The General Manager, Northern Operations reports the incident to regulatory authorities via NWT 24 hours Spill Report Line on Phone Number **(867) 920-8130** and fax the NWT/Nunavut Spill Report Form to Fax Number **(867) 873-6924**. INAC Water Resource Inspector will be contacted on Phone Number **(867) 975-4298**;

h) All reportable spills or leaks of fuel, in the aquatic environment or, 25 L or more on land will require pertinent information which includes:

i) name of the individual reporting, position, and contact information;

ii) time of spill or leak;

iii) time of detection of spill or leak;

iv) type of product spilled or leaked;

v) amount of product spilled or leaked;

vi) location of spill or leak;

vii) source of spill or leak;

viii) type of accident - collision, rupture, overflow, other;

ix) owner of product and phone number;

x) if the spill or leak is still occurring;

xi) if the spill or leaked product is contained, and if not, where it is flowing;

xii) wind velocity and direction;

xiii) temperature;

xiv) proximity to water bodies, water intakes, and facilities; and

xv) snow cover and depth, terrain, and soil conditions.

i). The Site Supervisor with technical assistance from the Senior Environmental Coordinator will act as the "On-Scene-Coordinator" for the purposes of cleaning up a fuel or hazardous materials spill;

j). The overall responsibility for providing additional resources and external support for the clean-up rests with the General Manager, Northern Operations;

k). The On-Scene-Coordinator will act in consultation with the Senior Environmental Coordinator and General Manager, Northern Operations to:

i. assess site conditions and environmental impacts of various cleanup procedures;

ii. assess potential for fuel recovery versus burning;

iii. deploy on-site staff to mobilize pumps and empty 205 L drums or other appropriate storage containers to the spill site;

iv. deploy on-site staff to build containment dykes and commence pumping contaminant into drums;

v. apply absorbent as necessary;

vi. dispose of all contaminated debris, cleaning materials and absorbent by burning, if appropriate, or by placing it in an approved land-fill site; and

vii. take all necessary precautions to ensure that the incident does not recur.

l). The Site Supervisor will be responsible for the preparation of a detailed written report, and to develop longterm monitoring and management strategies. The prepared report will be submitted to NWB, KIA, and DIAND within 30 days from the day the spill is the reported as per conditions stipulated in Water and Land Use permits issued to MHBL.

m). The Senior Environmental Coordinator will be responsible for maintaining the Environmental Emergency Response plan current;

n). The cleanup equipment present at the site includes the following:

PROJECT SITE:

450 feet of 24" Solid Floatation Boom
2 - 34 lb Grapnel Anchors
4 Norwegian Anchor Buoys
2 Anchor lines
150 feet Towline
20 foot Response boat, c/w 80 HP outboard motor
8 foot Zodiac
1 P10E Power Pack
1 Pump
3 - 175 L Drum Response Kits c/w lids
POL resistant gloves
POL resistant goggles
Toolbox c/w assorted tools
2 - 6.5 Gallon (25 L) containers c/w lids
300 foot Nylon rope (3/8)
3 Bags of Oclansorb Peat Moss
5 Bundles of Oil Sorbent Pads
20 Oil Sorbent Mini Booms
2 Rolls of Geotextile (12 ft length)
12 Boxes of Sorb Sox

EMERGENCY FIELD KIT

50 feet of ½ Inch Rope
2 Spark Proof Shovels
1 Bundle of Oil Sorbent Pads (250)
1 Drum Roll Kit
20 Emergency flags/markers
3 pairs Safety Glasses
3 Chemical Resistant Safety Gloves
5 Sorb Socks
Emergency First Aid Kit
Roll Fluorescent Tape
1 Container of Gap Seal Drum Sealant
Axe
Hammer
5 Hazardous Waste Bags
Bag of Oil Sorbent Peat Moss
4 Rakes
4 Grubbers
2 Flashlights
2 Lifejackets
4 Suits of Rain Clothes
Hip Waders
Chest Waders
Knee Rubbers
1 GPS Unit
2 - 35 mm Automatic Camera

SPILL KIT FOR ROBERTS BAY

50 feet of Rope
Container of Gap Seal Drum Scalant
6 - 4 foot lengths of Sorb Sox
2 Mini Booms
Drum Roll Kit
Bag of Oclansorb Peat Moss
5 Hazardous Waste Bags
Chemical Resistant Safety Gloves

Figure 7.1.1 NWT/Nunavut Spill Report Form

Northwest Territories

NWT SPILL REPORT

(Oil, Gas, Hazardous Chemicals or other Materials)

24 – Hour Report Line
Phone: (867) 920-8130
Fax: (867) 873-6924

A Report Date and Time	B Date and Time of spill (if known)	C ☐ Original Report ☐ Update no._____	Spill Number
D Location and map coordinates (if known) and direction (if moving)			
E Partly responsible for spill			
F Product(s) spilled and estimated quantities (provide metric volumes/weights if possible)			
G Cause of spill			
H Is spill terminated? ☐ yes ☐ no	I If spill is continuing, give estimated rate	J Is further spillage possible? ☐ yes ☐ no	K Extent of contaminated area (in square meters if possible)
L Factors effecting spill or recovery (weather conditions, terrain, snow cover, etc.)		M Containment (natural depression, dikes, etc.)	
N Action, if any, taken or proposed to contain, recover, clean up or dispose of product(s) and contaminated materials			
O Do you require assistance? ☐ no ☐ yes, describe:	P Possible hazards to person, property, or environment; eg: fire, drink water, fish or wildlife		
Q Comments or recommendations		FOR SPILL LINE USE ONLY Lead agency Spill significance Lead Agency contact and time _____ _____ _____ Is this file now closed? ☐ yes ☐ no	
Reported by	Position. Employer, Location	Telephone	
Reported to	Position. Employer, Location	Telephone	

NWT 1752/0202

Environmental Concerns

Wildlife encounters pose a risk for stress or injury to both site personnel and wildlife. Control measures and environmental protection procedures have been put in place to minimize this risk to wildlife and humans. Of particular importance is the proper handling of kitchen refuse. MHBL employees, consultants, or contractors involved in outcrop mapping, monitoring, sampling, surveying or drilling, lunch bags and leftovers must be brought back to camp for proper disposal.

As a protection measure, hunting and trapping by all MHBL personnel and contractors is NOT permitted at all MHBL exploration sites. Recreational fishing is allowable within a recreational zone area established by MHBL at Boston and Windy Lake camps (see Figure 7.2.1). Those employees that wish to fish need to have a valid Nunavut recreational fishing license. The Memorandums to personnel concerning this matter are displayed on public notice boards at respective camps.

Environmental Protection Procedures

Prevention

The Site Supervisor's are responsible to see that the following procedures relating to food preparation, storage and waste disposal are implemented:

a) Camp site and exploration working areas will be kept clean of food scraps and garbage;

b) Combustible kitchen waste will be collected daily for incineration in the approved incinerator at respective camp sites; and

c) Kitchen refuse after supper, are properly secured for the night before disposed off the next morning.

Inspections of the exploration work areas may be carried out by the supervising geologists in addition to regular inspections by the Senior Project Manager, his delegate, or representatives from Environment department. The Site Supervisor or his delegate will conduct daily inspections around the camp and kitchen facilities.

Response Actions

All Project personnel will abide by the following rules in cases of wildlife encounters:

a) Report and record all wildlife sighting to the Site Supervisor.

b) No attempt to chase, catch, divert, follow or otherwise harass wildlife by any form of motorised mode of transportation will be made by any person at the MHBL Project sites. The only exception is when a bear is sighted in close proximity of the camp or work areas;

attempts will be made to scare off the bear with a motorised form of transportation. This approach has to be approved by the Site Supervisor;

c) Equipment and vehicles will yield the right-of-way to wildlife;

d) No personal pets, domestic or wild, will be allowed on the site. However, if a dog is required for deterrence purposes, approval will be obtained from regulating authorities;

e) When nuisance animals (e.g. grizzly bears, wolves) are identified at the MHBL exploration sites, and pose immediate danger to the safety of the employees, the Site Supervisor will be responsible for all subsequent actions. The Site Supervisor in consultation with the Senior Management Personnel who may consult regulatory authorities will determine responsive actions. All actions must comply with the regulative requirements and directives;

f) The Site Supervisor may first use deterrent measures that include crackers and rubber bullets;

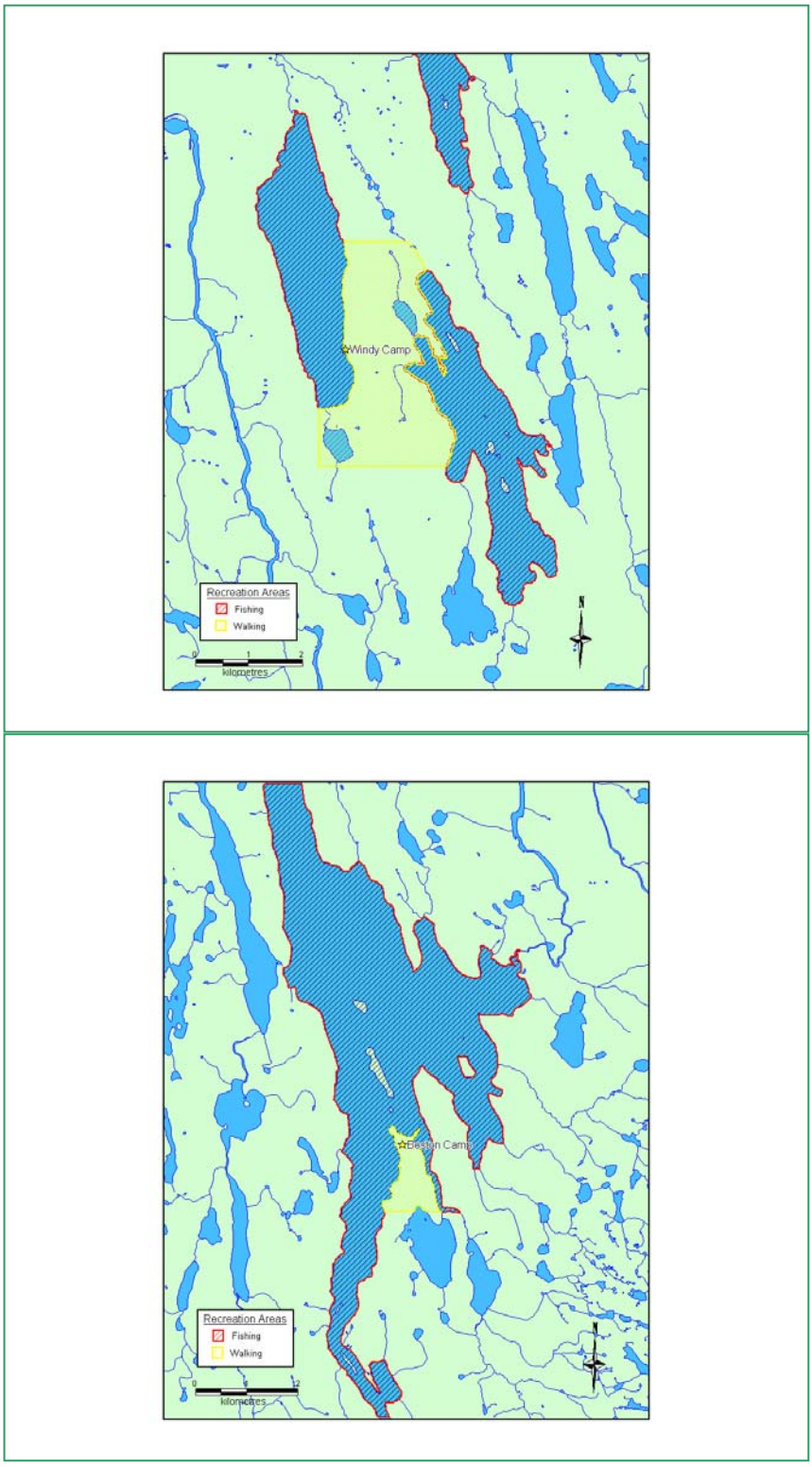
g) In an event where all deterrent measure have failed to deter a nuisance animal, and based on risks posed to the safety of the employees or camp residences, the Site Supervisor will determine if an animal is to be put down and will designate a licensed person who will destroy the animal. The only firearm(s) allowed within the MHBL exploration camps are those under the control of the Site Supervisor (or his/her designate). Anytime an animal is put down, the regulatory authorities will be notified by phone;

h) Any bear that has been put down will have the head removed, and will be skinned and preserved. The carcass will be provided to the local community or in an event where transportation is difficult to arrange, the carcass will be incinerated on site;

i) An internal incident report will be completed by the Site Supervisor within 72 hours of the putting down of a bear and kept on property; and

j) A report of the displacement or putting down of a bear will be included in the MHBL monthly report to the regulating authorities. An internal memorandum prepared by the Senior Environmental Coordinator will be submitted to MHBL.

Figure 7.2.1 Windy lake Camp and Boston Camp Recreational Zone Areas



Environmental Concerns

The exploration program will continue in the Hope Bay area. There is always the possibility that undiscovered archaeological sites such as structures, tools, butchered animal bones, and graves may be discovered or disturbed during exploration activities.

The Senior Environmental Coordinator upon notification from the Senior Program Manager – (Exploration) or the Senior Research Geologist – (Regional Exploration) will contract a qualified archaeologist to examine the sites of any proposed activity involving potential surface disturbance that have not previously been surveyed. This will be done to determine whether the location of such activities is in an area of high archaeological potential, and to identify any site-specific practical precautions, which should be taken. Exploration activity proposed for that specific location will not proceed until recommended precautions are implemented by MHBL.

If there is a need to conduct a detailed investigation, a permit application to conduct a staged archaeological assessment will be submitted by the contractor/consultant to regulatory authorities, including the following details on procedures to conduct a field survey:

- area defined;
- nature of survey, documentation;
- report to be produced; and
- people/agencies will be advised.

A report of the detailed investigation will be submitted to MHBL within 60 days at the completion of the field investigations. MHBL will provide KIA copies of the field report as per obligation stipulated in the Hope Bay Land Use Permit.

Environmental Protection Procedures

All employees and contractors will be informed of the historic resources potential of the area, of their responsibility to report any unusual findings, and to leave such findings undisturbed. Information will be provided in the form of the "Historic Resources Contingency Plan" included as reference material. In the event of the discovery of a historic or prehistoric artefact or archaeological site, the following procedures will apply:

a) No archaeological sites and/or artefacts shall be disturbed. MHBL or the Contractor will take all reasonable precautions to prevent employees in their care or other persons from removing or damaging any such articles or sites;

b) Personnel working in the vicinity will be advised of the find and the site area will be flagged for protection and avoidance;

c) Depending on the nature of the find, all work will be scale down or cease in the immediate area of the discovery until MHBL advises the authorities of the discovery. In consultation with the regulating authorities, resumption of the work will resume accordingly;

d) Archaeological materials encountered will be reported initially to the immediate supervisor. The following information is required initially:

   i. nature of activity;

   ii. nature of the material discovered; and

   iii. precise location of the find.

e) Following a field assessment of the significance and mitigation needs, a report will be made to MHBL. MHBL will provide copies of the report to the regulating authorities. Any proposed mitigation will first be approved by the MHBL senior management;

f) The following will be adhered to for already identified archaeological sites on MHBL properties:

   i. No site personnel shall alter or deface these markers;

   ii. The location of these markers shall be reported to the Senior Environmental Coordinator who shall keep a log of all reports; and

   iii. Out of respect for the aboriginal cultures, no personnel shall construct or emulate these structures. Survey monuments should be marked in a way to make them distinct from historic structures (e.g., with paint, flagging tape, survey stakes). Survey monuments should be dismantled when they are no longer required.

g) Regular monitoring will be conducted by the Senior Environmental Coordinator to ensure that site protection measures are adequate and that the terms and intent of this EPP and its Historic Resources Contingency Plan are being met. Photographs of the sites will be taken and filed electronically.

EPP Contact Numbers (Note: key list of MHBL, KIA, government agencies, enforcement etc.)

Key Miramar Hope Bay Limited personnel responsible for the Implementation of this EPP

Name	Position	Address	Contact
Brian Labadie	Executive Vice President, Operation & Chief Operating Officer	Suite 300- 889 Harbourside Drive North Vancouver, BC V7P 3S1	Tel: 604-985-2572 Fax: 604-980-0731 Email:blabadie@miramarmining.com
John Wakeford	Vice President, Exploration		Tel:604-985- 2572 Fax:604-980-0731 Email:jwakeford@miramarmining.com
Scott Stringer	General Manager, Northern Operations	Miramar Hope Bay Limited 75 Con Road P.O. Box 2000 Yellowknife, NT X1A 2M1	Tel:867-766-5311 Fax:867-873-6357 Email:sstringer@miramaryk.com
Matthew Kawei	Snr Environmental Coord; – MHBL		Tel:867-766-5321 Fax:867-873-6357 Email:mkawei@miramarmining.com
Darren Lindsay	Snr Program Manager – Exploration – Hope Bay	Miramar Hope Bay Limited *(Contact during height of exploration programs. Email is the preferred method for external communication due communication difficulties experienced at times out in field).*	Tel:1-800-667-8780 Fax: Radio Channel: 1 & Channel Email:dlindsay@miramarmining.com
Ross Sherlock	Snr Research Geologist – Regional Exploration		Tel:1-604-677-0617 Fax: Radio Channel: 1 & Channel 2 Email:rsherlock@miramarmining.com
Mike Cripps	Site Supervisor		Tel: Fax: Radio Channel: 1 & Channel 2 Email:mcripps@miramarmining.com Tel:

Key Government personnel responsible for activities relating MHBL Exploration programs

Name	Position	Address	Contact
Spill Center	NWT 24 hours Spill Report Line	Yellowknife, NT	Tel:867-920-8130 Fax:867-873-6924
Philippe di Pizzo	Executive Director, Nunavut Water Board (NWB)	Iqualuit, Nunavut	Tel:867-360-6338 Fax:867-360-3669 Email:
DIAND	Water Resource Inspector	Iqualuit, Nunavut	Tel:867-975-4546 Fax: Email:
Jack Kaniak	Lands Manager, Kitikmeot Inuit Association (KIA)	Kugluktuk, Nunavut	Tel:867-928-3310 Fax:867-982-3311 Email:jkaniak@polarnet.ca
Colette Meloche	Environment Canada (EC)	Iqualuit, Nunavut	Tel:867-975-4639 Fax: Email:Colette.meloche@ec.gc.ca
Tania Gordanier	Department of Fisheries & Oceans (DFO)	Iqualuit, Nunavut	Tel:867-979-8007 Fax:867-989-8039 Email:gordaniert@dfo-mpo.gc.ca

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