MHBL Standard Environmental Operating Procedure

Environmental Protection Plan for Doris North Mine

Construction & Operational Activities

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

October 2006

SECTION 3-BEACH LANDING AREA

SECTION 4-ACCOMMODATIONS CAMP

SECTION 5-TAILINGS DAM FACILITY

SECTION 6-ABANDONMENT OF WORK AREAS

SECTION 7-CONTINGENCY PLANS

PREFACE

Maintenance of the EPP
Revision Request Initiation Form
Revision Control Record

RESPONSIBILITIES

The following provides the reader with a summary of who is responsible for the implementation, maintenance and follow up for the procedures contained within this Plan:

The Doris North Project Environmental Manager (*the senior environmental person delegated responsibility for Environmental Management during the Construction and the Operational phases of Miramar's Hope Bay Limited's Doris North Project*):

- 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.

Employee/Contractor 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 Environmental Manager on the Revision Request Initiation Form

REVISION PROCEDURES

The revision request must be approved by the Environmental Manager. The approved Revision will be issued to all EPP Holders.

Each revision will be accompanied by a Control Sheet 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- Lists the sections being superseded.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 Environmental Manager.

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;
- Send written confirmation (Chain of Custody) to the Environmental Manager when changes have been made and replaced sheets destroyed.

SECTION TO BE REVISED:

NATURE OF REVISION:

RATIONALE FOR REVISION:

(i.e. environment/worker safety, changes in legislative requirements, changes in exploration/mining/milling process, etc.)

SUBMISSION:

Please submit request to the Environmental Manager

CONTROL RECORD

Approved By:

Position	Name	Signature	Date
Vice President, Operations	Jim Currie		
Mine General Manager	To be advised		
General Manager - Environment	Larry Connell		
Quality Assurance			

The re-issue of this document, listed below, have been reviewed and approved by Management and are 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**
0	All	Original Document	Matthew Kawei	hmk	Sept 20 2005
1	All	To include stakeholder concerns and include Section 7.4 to Section 7.11	Matthew Kawei	hmk	Oct 02 2006

Distribution List

Date	Copy #	Name	Department/Location	Type
Original copy	0	Library	Z:….\\EMS\Environment Files - Vancouver	Electronic, pfd & doc
	1	To be advised	Surface/Maintenance Superintendent	
	2	To be advised	Administration Superintendent	
	3	To be advised	Environmental Manager	
	4	To be advised	Underground Superintendent	
	5	To be advised	Mine General Manager	
	6	To be advised	Mill Superintendent	
	7	To be advised	Safety/Health/Train Superintendent	
	8	To be advised	Technical Services Superintendent	
	9	To be advised	DIAND	
	10	To be advised	Kitikmeot Inuit Association	
	11	To be advised	Nunavut Water Board	
	12	To be advised	Environment Canada	
	13	To be advised	Dept of Fisheries and Oceans	

Section 1 Introduction

Environmental protection planning is an important component of overall life-of-project environmental management planning. Environmental Protection Plans provide a practical way for a Company to communicate to its employees and other interested stakeholders an understanding of environmental regulations, practices, and procedures required to minimize or eliminate potential environmental impacts resulting from a project, such as the Doris North Mine.

MHBL has 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 associated with the Doris North gold mine. An EPP is a working document for use in the field by both project personnel such as the Environmental Manager and Site Managers/Supervisors as well as at the corporate level for ensuring commitments made in policy statements are implemented, monitored, and reported. EPPs provide a guide for project personnel to monitor compliance and to make constructive suggestions for continual improvements.

EPPs typically undergo annual revisions and this EPP is structured to allow for regular updates and revisions as work continues.

Section 1.1 Purpose of the EPP

This part of the EPP (Phase II – Operational Activities) provides a guide to the protection measures for the Construction and Operational phase activities associated with the Doris North Project. The EPP forms an integral part of the overall Environmental Health and Safety Management System (EHSMS) based on the principles of ISO 9001 (Quality Systems) ISO 14001 (Environmental Systems) and ISO 18001 (Integrated Systems) approach by MHBL. Other aspects of EHSMS planning include: Abandonment and Reclamation planning, Environmental Emergency Planning (EP), Hazardous Materials Management, compliance and follow up monitoring, environmental effects monitoring, employee orientation and liaison with governments, communities, and interested 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.

Section 1.2 Organization of the EPP

This EPP provides instructions to help project personnel understand and implement environmental protection procedures for both routine activities and unplanned events associated with activities at the Doris North Mine.

The style and format of the EPP is intended to facilitate its use by project personnel in the field and to provide an important support document between the overall Environmental Health & Safety Management System 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: provides an introduction to the EPP. This section also provides the reader with important information on the context of the EPP.
- Section 2: describes the environmental concerns and environmental protection procedures.
- Section 3: describes the environmental concerns and environmental protection procedures specific to the Roberts Bay barge offloading site.
- Section 4: describes the environmental concerns and environmental protection plans specific to accommodation areas.
- Section 5: describes the environmental concerns and environmental protection plans specific to exploration drilling sites.
- Section 6: describes the environmental concerns and environmental protection plans specific to abandonment of work areas.
- Section 7: describes the environmental concerns and environmental protection plans specific to contingency planing.
- Section 8: contains a list of key project, regulatory and community contacts for the environmental team to enhance the implementation of the EPP.

Section 1.3 Implementation of the EPP

Figure 1.3.1 provides the reader with the organizational structure for Miramar Mining Corporation, the parent company to Miramar Hope Bay Limited (MHBL). Miramar Mining Corporation understand that it has a mandate and responsibility to provide the necessary commitment, resources and technical skill level to allow MHBL staff to take the appropriate action in support of the EPP.

Figure 1.3.1 Miramar Mining Corporation Organisational Chart

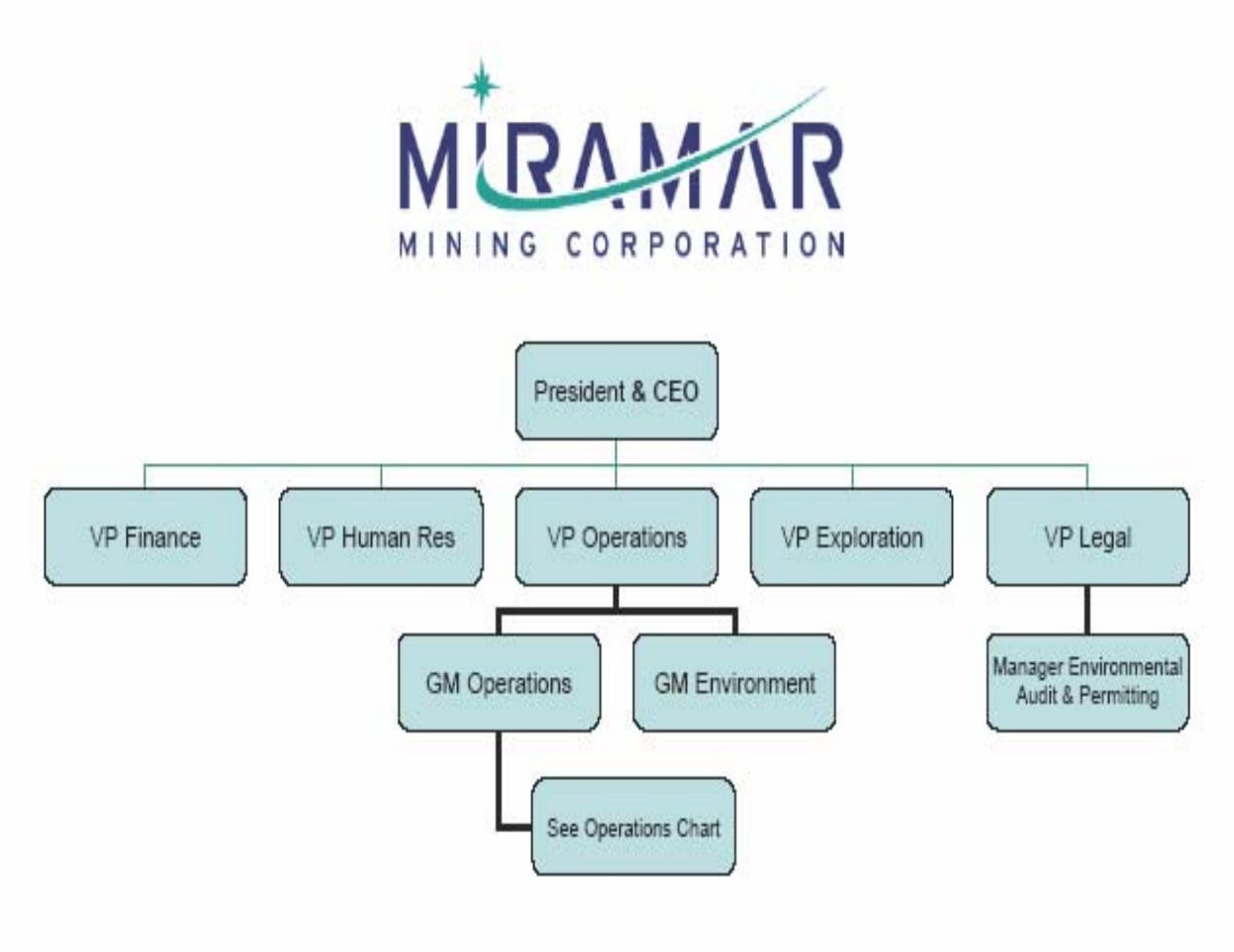
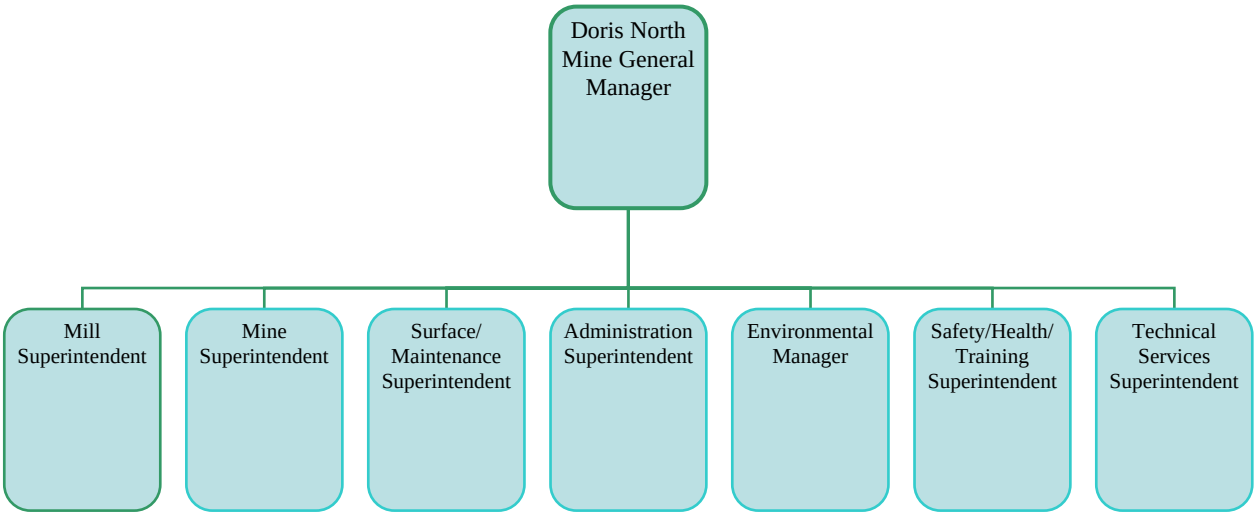


Figure 1.3.2 provides the reader with the planned organizational structure for Miramar Hope Bay Limited for the Doris North Mine. It is expected that all levels of management at MHBL will be aware of this EPP and it content and have a responsibility to ensure that it is put in place at the mine site. The MHBL management team are expected by the parent company to ensure that they provide the necessary commitment, resources and technical skill level to allow this EPP to be fully implemented.

Figure 1.3.2 Miramar Hope Bay Limited – Planned Doris Noorth Organisational Chart



Section 1.4 Environmental Orientation and Policy

MHBL is committed to providing environmental orientation and on going environmental awareness programs throughout its mining operation. All workers and visitors (including contractors) will receive safety and environmental orientation from the Safety, Health and Training Superintendent and the Environmental Manager respectively prior to starting any work at the Doris North site. Workplace specific induction will be given by Superintendents/Managers in-charge of these specific workplaces.

MHBL Environmental Policy

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

- Examine the potential impact to the environment of all proposed activities and take steps to minimize, mitigate or where possible eliminate the impact.
- Ensure that all activities are in compliance with environmental legislation and regulations.
- Through ongoing monitoring programs, determine the mine's 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 Doris North Mine.
- Progressively rehabilitate disturbed areas where practical; develop a Closure and Reclamation Plan for the Doris North Mine that will be periodically updated to reflect change and to new technologies where practical.
- Train all employee and contractors to understand their environmental responsibility related to MHBL.

Section 1.5 Project Description

MHBL is involved with exploration activities ranging from grassroots regional exploration to advance exploration confined to the Hope Bay Belt region in the west Kitikmeot Region of Nunavut.

MHBL is proposing to construct, operate and reclaim a small underground gold mine (the Doris North project), located approximately 110 km southwest of Cambridge Bay and 75 km northeast of Umingmaktok. The project is located on Inuit Owned Land at 68º09”North and 106º40”West, 5 km south of Roberts Bay.

Figure 1.5.1 shows the overall proposed Doris North infrastructure layout and gives the reader a general outline of the localized topography. The major proposed construction components and activities include:

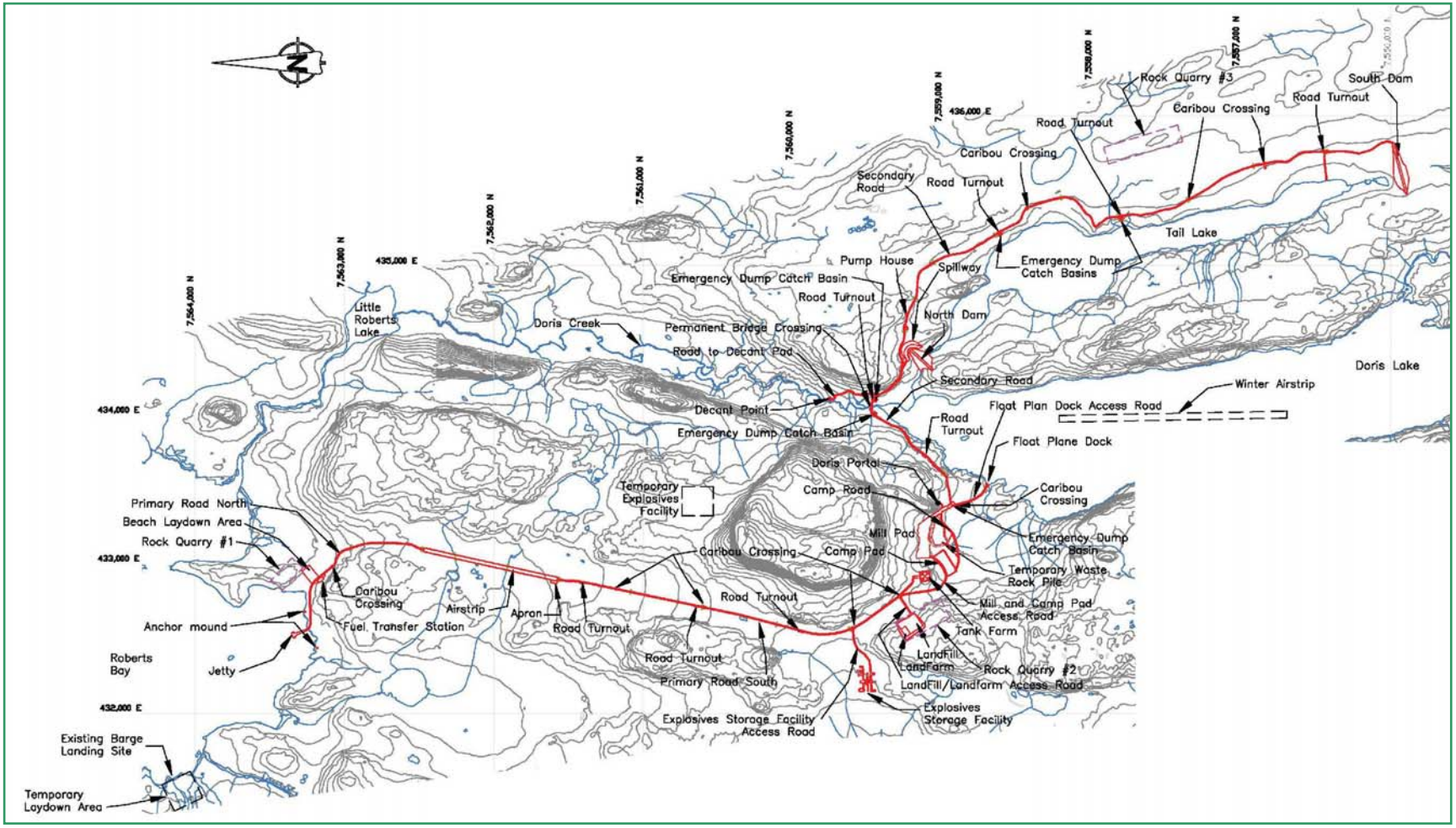
- Development of a rock quarry (Quarry 1) adjacent to the new jetty at the south end of Roberts Bay;
- Construction of a 103 m long rock fill jetty into the southern end of Roberts Bay to facilitate offloading of sealift barges during construction and operations;
- Construction of a rock fill lay down area near the south end of Roberts Bay to store equipment and materials arriving at site by barge, while awaiting transfer to the Doris North Project Site;
- Construction of a diesel fuel shore manifold and delivery piping system and a contained tank truck loading facility to be sited in a bermed facility located near Roberts Bay jetty;
- Construction of a 4.8 km long all weather access road from the south end of Roberts Bay to the Doris North Project site; the proposed road will generally follow the previous winter road alignment to the Doris North Project site;
- Construction of a 914 m long gravel airstrip runway and associated apron area along the all weather road between Roberts Bay and the Doris North Project area;
- Construction of a rock fill pad c/w safety berm at the end of a small spur road adjacent to the all-weather road, over the ridge west of the accommodation camp, to act as the permanent explosives storage area (explosives magazine);
- Installation of pre-fabricated explosives (powder) and detonator storage magazines (sea-can container storage units);
- The construction of an all-weather road to the shore of Doris Lake as access to the freshwater pump intake and float plane dock;
- Development of a second rock quarry near the Doris North Project plant site to provide clean broken rock for construction of roads and building pads (Quarry 2);

- Development of a third rock quarry (Quarry 4) at the Doris North Project plant site. This quarry will provide a source of clean broken rock for use in constructing the plant side-building pad. Quarry 4 is the levelling of a rock outcrop area to provide a solid bedrock foundation for the grinding circuit portion of the mill;
- Construction of a 7.5 million litre capacity fuel storage tank farm (5 x 1.5 million litre tanks) in a bermed lined containment area at the plant site;
- Construction of rock fill pads to accommodate various infrastructure components, including the camp, mill, mine site lay down area and ore;
- Development of the Doris North underground mine with access via a decline ramp from surface including construction of three ventilation raises that will come to surface;
- Construction of the ore processing plant (the mill). This will be a conventional steel frame steel clad building that will house the ore processing equipment, including a cyanide detoxification circuit);
- Installation of power generator units within a steel framed building (powerhouse);
- Construction of a maintenance/warehouse workshop building (a steel frame building);
- Installation of a waste oil burner unit c/w storage tank within the shop building to facilitate the disposal of waste hydrocarbons, and in the process, to generate heat for this area;
- Construction of a 175-person accommodation camp with attached offices and change house (dry) facilities (primarily composed of modular trailer units);
- Installation of a packaged potable water treatment plant;
- Installation of a packaged primary sewage treatment plant with the treated wastewater being pumped to the ore processing plant to be combined with the mill tailings slurry for discharge to Tail Lake;
- Installation of incinerator units to burn all kitchen and combustible waste generated by the camp;
- Construction of a floating float plane and boat dock on the northwest shore of Doris Lake;
- Construction of a potable water supply pump intake on the north end of Doris Lake and installation of a fresh water pipeline to the water treatment plant at the camp and to the mill;
- Installation of a freshwater storage tank and distribution piping adjacent to the mill;

- Construction of a rock fill all-weather road (length approximately 5.9 km) to the south end of Tail Lake, including a clear-span bridge crossing over the outlet creek from Doris Lake;
- Development of a fourth rock quarry (Quarry 3) on the east side of Tail Lake to provide broken rock for construction of roads and the tailings dams;
- Installation of a tailings pipeline along the side of the road to the south end of Tail Lake and the construction of four tailings pipeline dump catch basins at strategic points along the pipeline;
- Installation of a reclaim water pump in Tail Lake and a pipeline along the Tail Lake road to reclaim water back to the ore processing plant for use in milling;
- Construction of low permeability dams at the north and south ends of Tail Lake to create the tailings containment area;
- Installation of a pumping system and pipeline to manage periodic release of excess water from within the Tail Lake tailings containment area into the Doris Lake outflow creek; and
- Construction of a non-hazardous solid waste disposal site and landfarm facility within the quarry to be located northwest of the Doris North Project site camp (Quarry 2).

A construction workforce peaking at 120 will be required to carry out construction and site development work from January through December 2008. The number may fluctuate depending on the needs of the project at the start of the construction phase.

Figure 1.5.1 Doris North Proposed Infrastructure Layout



Section 2.0 General Environmental Protection Procedures

Section 2.0 provides general environmental protection procedures for anticipated activities routinely associated with mining operation in remote areas. 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 will be added to address future activities as they are identified.

Information documents referenced in this EPP can be obtained through the Environmental Manager at the Doris North project site. In most cases these documents are also available in electronic format on the Miramar Vancouver Library server. The Environmental Manager should be contacted if an electronic version is needed.

The hard copies of the EPP will be available thru the following individuals or locations at the Doris North Mine site and at MHBL regional exploration camps:

- Doris North Mine General Manager
- Mine General Manager
- Surface/Maintenance Superintendent
- Underground Superintendent
- Mill Superintendent
- Camp Manager

Section 2.1 Grubbing and Disposal of Related Debris

Environmental Concerns

The principle concerns associated with grubbing and disposal of related debris are:

- Potential effects on water quality caused by erosion and sedimentation.
- Disturbance of the permafrost leading to ground failure (slumping, erosion, etc.)

MHBL is committed to meeting regulatory standards for maximum allowable concentrations of total suspended solids (TSS) (also may be measured as turbidity). Prevailing regulatory standards for TSS applicable to the Doris North and Hope Bay sites are contained within the following permits and regulations:

- Water License for the Doris North Project (anticipated issue in 2007);
- Metal Mining Effluent Regulation under the Fisheries Act (TSS – monthly mean of 15 mg/L; Maximum grab of 30 mg/L);
- Water Licenses 2BB-BOS0106 and 2BE-HOP0207 issued by the Nunavut Water Board for the Boston and Windy exploration camps.

Environmental Protection Procedures

All grubbing and disposal of related debris near watercourses will comply with approvals from the Department of Fisheries and Oceans and the KIA. At a minimum measures to be 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.

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

Section 2.2 Storage, Handling and Transfer of Fuel and Other Hazardous Materials

This section of the EPP is to provide a consolidated source of information on the safe and environmentally sound transportation, storage, and handling of the major hazardous products to be used at the Doris North Project during the operational phase. These procedures are an integral component of the overall Environmental Protection Plan (EPP) for the proposed Doris North Project and will be periodically reviewed and updated as the Project moves through environmental assessment, permitting, construction, operations, and final closure and reclamation.

A hazardous material is one that, because of its physical, chemical, or other properties, poses a potential hazard to human health or the environment when it is improperly handled, used, stored, disposed of, spilled or otherwise managed. This section of the EPP should be read in conjunction with MHBL's "*Emergency Response and Contingency Plan*" and the Hazardous Materials Management Procedures (HMMP), which provides detailed instruction on the prevention, detection, containment, response, and mitigation of accidents that, could result from handling of hazardous materials at the proposed Doris North Project.

These procedures are based on the following principles for best practice management of hazardous materials:

- Purchasing controls – control of shipping methods, appropriate packaging, shipping schedules, etc;
- Shipment Tracking procedures;
- Inventory controls on site – periodic inventory of materials in storage on site to determine usage and to identify and manage any unexpected loss;
- Maintenance of current safe handling and storage procedures – MSDS, WHMIS, TDG data and labelling – made available to those in contact throughout the operational site;
- Characterization of potential environmental hazards posed by these materials through the Environmental Management System;
- Allocation of clear responsibility for managing shipment, storage, handling and use of potentially hazardous materials;
- Defined methods for transport, storage, handling, and use;
- Identification of disposal methods for potentially hazardous waste generated from use of these products;
- Preparation of contingency and emergency response plans;
- Adequate type and delivery of training for management, workers, and contractors whose responsibilities include handling potentially hazardous materials;
- Maintenance and review of records of hazardous material consumption and incidents in order to anticipate and avoid impacts on personal health and the environment; and

- Procedures to track and manage wastes generated through use of these products, including regular shipments of potentially hazardous waste to appropriate licensed disposal facilities following all relevant regulatory requirements (packaging, labelling, inventory tracking and waste manifesting).

MHBL requires that the transportation, storage, handling and use of hydrocarbon based products, ammonium nitrate, and all other chemicals to be used at the proposed Doris North Project be conducted in a safe and efficient manner. Prevention, detection, containment, response, and mitigation are the key elements in the management of hazardous materials. MHBL is committed to minimizing the potential for adverse environmental effects on terrestrial and aquatic biota and ecosystems that may result from accidental release. The first step in accomplishing this is to apply consistent practices towards the management of hazardous materials site-wide. MHBL will incorporate proper hazardous material management procedures into its EMS for the proposed Doris North Project to eliminate or minimise risk of significant reportable accidental release.

All hazardous materials to be used at the Doris North operation will be manufactured, delivered, stored, and handled in compliance with all applicable federal and territorial regulations, as well as ISO 9001, 14001 and 18001 management protocols. MHBL is strongly committed to preventing, to the greatest extent possible, both inadvertent release of these substances to the environment and accidents resulting from mishandling or mishap. MHBL will institute programs for employee training, facility inspection, periodic drills to test systems, and procedural review to address deficiencies, accountability, and continual improvement objectives.

MHBL will actively work towards minimizing the generation of hazardous wastes by investigating alternatives to the use of hazardous materials, by recycling products and containers wherever feasible, and by treating wastes using state-of-the-art technologies before any release to the environment.

As with all other aspects of health and safety policy at the Doris North mine, all employees will be expected to comply with all applicable precautions and handling procedures with regard to hazardous materials. Employees are also expected to report any concerns to their supervisors, the Health and Safety Committee, or senior site management. All staff is encouraged to bring forward suggestions for improvements that can be incorporated into procedure revisions as appropriate.

Petroleum Products: Permanent Tank Farm

Every year 7.5 million litres of fuel would be shipped to Roberts Bay via barge, from where it would be pumped to a transfer station followed by trucking to a permanent tank farm located at the mill site. The 7.5 million-litre capacity fuel tank farm (five 1.5 million litre tanks, measuring 14 m diameter and 10 m high) will be erected in an engineered containment area consisting of a HDPE lined pad, with 1 m high lined containment berms that has sufficient capacity to retain 100% of the volume of the largest single fuel tank (1.65 million litres).

Mill Reagent Storage Area

Mill reagents will be shipped and stored in 40 ft x 8 ft sea containers. A storage area will be provided immediately adjacent to the mill.

Reagents and mill supplies for the first year of ore processing, including:

- 45 tonnes of sodium cyanide in 1 tonne tote bags;
- 2.5 tonnes of sodium hydroxide (caustic) in 1 tonne tote bags;
- 25 tonnes of copper sulphate in 1 tonne tote bags;
- 4 tonnes of frothing agent (for flotation) in drums;
- 9 tonnes of 3418A promoter in 1 tonne tote bags;
- 18 tonnes of Potassium Amyl Xanthate (PAX) collector in drums;
- 118 tonnes (98,000 liters) of 50% hydrogen peroxide and 917 tonnes (715,000 liters) of 37% sulphuric acid delivered in either 1000 litre bulk tanks or 208 litre drums for use in making Caro's Acid for cyanide detoxification;
- 440 tonnes of steel grinding media (steel balls) in barrels;
- 1 tonne of zinc dust; and
- 6 tonnes of smelting flux (borax, sodium nitrate, silica sand) in 1 tonne tote bags; and

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

MHBL will implement the following minimum standards for the transportation, storage, usage and handling of hazardous materials, fuel and chemical reagents for use at the Doris North project site.

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

b) All fuel storage tanks will be constructed and operated in accordance with the published guidance provided in the Canadian Council of Ministers of the Environment (2003) "Environmental Code of Practice for Aboveground Storage Tank Systems Containing Petroleum Products" (see Environmental Manager to obtain a copy). Verification of all storage tank regulatory approvals will be retained for MHBL. Approval for constructing of dykes and lined secondary containment berms for stored petroleum products will be obtained from the KIA.

c) Only trained and competent operators should handle these materials in accordance with MHBL standards and operating procedures, the manufacturer's instructions and government laws, and regulations.

d) Operators will be in attendance for the duration of a refuelling operation. In the event of an unexpected fuel spill in a waterway, 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 DIAND Water Resource Inspector at **(867) 975-4298** as per the MHBL Spills Contingency Plan (Section 7.1).

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

f) Chemical reagents and petroleum products (Oils, grease, gasoline, diesel or other fuels) will be stored at least 100 m from any water bodies.

g) Handling and fuelling procedures will comply with MHBL Standard Maintenance Operating Procedure (Hydrocarbon Fuel and Gas Dispensing Procedure, August 2004.

h) All fuel transfers from the main storage tanks will take place within a contained area so that spillage is retained for treatment.

i) All approved AST tanks will have secondary containment (Secondary containment tanks or bermed areas.

j) 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.

a) 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 WHIMS reference guide.

b) Waste oils, lubricants, and other used oil will be disposed of by incineration in a waste oil burner or removed from site for recycling or disposal at a licensed disposal facility.

c) All storage tank systems will be inspected on a regular basis as per daily camp check procedure. A checklist will be used and retained for follow up audit purposes. This involves, but is not limited to, gauging or dipping and the keeping of reconciliation records of fuel deliveries versus use.

d) Contracted fuel suppliers will, before transporting or positioning fuel at Roberts Bay, 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.

e) Smoking is prohibited at all fuel storage areas and during transporting and dispensing activities.

f) 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.

g) MHBL will, within thirty (30) days of known final decommissioning of a storage tank system, empty the system of all products. Contaminated top soil will be removed and placed in the land treatment area (landfarm (LTA) on site.

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

i) 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.

j) 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.

k) Hazardous waste will be stored in seacan containers or within the Land Treatment Area (LTA) at the Doris North mine site pending off site removal.

Section 2.3 Sewage 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 the requirements set out in the following permits:

- Water License for the Doris North Project (expected to be issued in 2007)
- Water Use Permit Number 2BB-BOS0106 and 2BE-HOP0207 for the Boston and Windy exploration camps.

b) At Doris North during the operational phase, all treated sewage grey water and sludge will be co-disposed with the mill tailings into the tailings containment system (Tail Lake).

c) At the exploration camps, treated sewage effluent will be discharged onto the tundra in a manner approved by the NWB and KIA. Areas designated for such land application shall not be located within thirty (30) metres of the ordinary high water mark of any body of water.

d) All sewage and grey water generated by MHBL activities will be treated through a rotary biological contactor (RBC) sewage treatment plant both at Doris North and at all exploration camps.

e) At a minimum, once monthly during open water season, treated sewage effluent will be sampled at the point 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).

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

g) All land application of treated grey water will be in a manner to minimize surface erosion.

h) At the exploration camps, 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. At Doris North sludge will be co-disposed in Tail Lake.

Section 2.4 Solid Waste Disposal

Environmental Concerns

- Attraction of wildlife to the mine site or exploration camps
- Release of contaminants into local waters
- Unsightly spread of garbage due to poor housekeeping or wind

Environmental Protection Procedures

a) The solid waste management system will comply with the requirements set out in:

- Water License for the Doris North Project (expected to be issued in 2007);
- Water Use Permit Numbers 2BB-BOS0106 and 2BE-HOP0207 for the Boston and Windy exploration camps.

b) Non-hazardous combustible solid wastes will be disposed of by periodic burning within the designated landfill area at the Doris North site or at designated burn pits at the exploration camps.

c) Putrescible kitchen waste will be burned on a daily basis using incinerators to reduce the risk of attracting wildlife. The incinerators will be operated in accordance with regulatory guidance provided by the Nunavut Department of Environment (see Environmental for a copy of this published guidance. Incinerator air emissions must meet the Canada Wide Standards for Dioxins and Furans.

d) Incinerator ash will be mixed with hydrocarbon contaminated soil in the on-site landfarm facility. This soil/ash mix will be sampled and only removed for use in site reclamation when CCME contaminant guidance for remediated soil is met (remediated to industrial standards). Soil/ash mix that does not meet these standards will be placed underground in the mine for permanent disposal.

e) Non-Combustible non-hazardous solid wastes (e.g. metal, electrical cable, machine damaged parts, computer parts, etc) will be collected, and disposed of in the onsite landfill at the Doris North site. This waste will be buried under rockfill on an annual basis.

f) No solid waste material will be deposited in a body of water or stored within 30 meters of any water body.

g) Other hazardous wastes apart from contaminated topsoil or snow from petroleum products that could not be treated safely on site will be collected, placed in appropriate containers and shipped off-site for recycling or disposal at a licensed waste disposal site.

Section 2.5 Quarrying and Aggregate Removal

Site development is scheduled to commence in the 1st quarter of 2008 with the construction of a winter road from Roberts Bay to the mine site and the collaring of the underground adit portal. This would be followed by the development of four rock quarry sites (Quarry 1 at Roberts Bay, Quarry 2 near the proposed explosives storage area, Quarry 3 adjacent to the east of Tail Lake and Quarry 4 at the plant site (see Figure 1.6). Quarry 4 will provide a source of "clean" (non-acid generating) rock for construction of the all-weather roads, the airstrip, the jetty, building pads, material lay-down areas, fuel storage tank farm pad and the tailings dams. "Clean" quarried rock is defined as rock that has been certified through testing as having low acid generation potential and low metal leaching potential.

Environmental Concerns

The principal concerns for quarry development and associated aggregate removal include the potential for sediment, ammonia and metals release to nearby freshwater systems and loss of terrestrial habitat and land use.

MHBL must contain, monitor and manage snow melt and precipitation runoff water from these quarry sites. To protect and support vegetation that inhibits surface erosion, it is critical that MHBL minimize the amount of grubbing and stripping required at these quarry sites and that MHBL conserve all topsoil recovered.

Topsoil contains valuable nutrients, micro-organisms, 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:

- 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;

- 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;
- the area to be excavated will be grubbed prior to any excavation or removal of any material (Section 2.1);
- 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;
- Organic matter and topsoil 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.); and
- soil should be covered with permanent or temporary vegetation to prevent erosion.

c) A settling pond will be established within each quarry developed, and cleaned on a regular basis to ensure that the retention capacity for sediment removal is maintained at all times.

d) Report of quarry usage at each location (Quarry 1 - Quarry 4) will be submitted to the regulatory authorities by March 31 of each year.

Section 2.6 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) Remove all food waste and another waste that has the potential to attract wildlife closer to camp facilities, i.e. do not leave waste behind – bring it back with you.

c) Vegetation removal is not permitted for surveying and establishing site lines without prior approval from the Environmental Manager.

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) 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 Environmental Manager (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 Environmental Manager.

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

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 Environmental Manager 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.

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

- All equipment, including any tape, string lines, wire that are used must be removed once they are no longer required for the survey program;
- Conspicuous markers such as pegs and tape are to be removed wherever possible, especially from the beginning of the grid lines (special attention should be given to this in sensitive areas); and
- Remove all pickets from ice or 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.

Section 2.7 Equipment Movement/Supply - Exploration

Environmental Concerns

Doris North and the Hope Bay exploration sites are located in a fragile Arctic environment. Permafrost prevails with a summer active layer of approximately 1 meter. The vegetative cover (the tundra) is very susceptible to damage by any vehicle movement across the surface. Summer travel across the tundra by any vehicle will result in severe damage to the vegetation. This damage can take many decades to naturally recover. Damage to the tundra surface will cause permafrost degradation and is likely to result in ground instability such as localized slumping and increased erosion. This in turn leads to increased release of sediment which has the potential to harm nearby lakes, creeks, streams, rivers, etc.

As a net work of road systems and winter trials are established during the development and construction phase of the project and the usage of such infrastructures are seasonal, mode of transportation also varies depending on the ground condition.

Environmental Protection Procedures

a) At the Doris North site all equipment movement is to be restricted to the all-weather roads unless special authorization is obtained from the Environmental Manager. Such authorization is to be withheld without good cause and only following consultation with the landowner (the KIA).

b) At Doris North all quarrying and earthwork construction will be done under winter conditions to minimize disturbance of the natural ground to prevent permafrost degradation and resultant generation of mud and sediments that could affect surface waters.

c) The use of ATVs will be restricted to designated trails, thus minimizing ground disturbance.

d) During winter when the ground is covered with snow, all weather track vehicles and 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). 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.

e) The use of heavy equipment in and near watercourses is not permitted without prior approval from the site's Environmental Manager. Where it is necessary to do so, in stream work will be performed under the following conditions:

    1. With approval from the Site's Environmental Manager who will not give such authorizations until a detailed work plan has been prepared;

    2. The proposed activity must meet all requirements under the Fisheries Act (require consultation with DFO) and must be approved by the landowner (the KIA);

3. Approved in-stream work must minimize the time that the vehicle is in the water, and include provisions for ensuring no transfer of hydrocarbons (fuel, hydraulic fluid, lubricating oil) into the stream and provisions to minimize and mitigate against release of sediment.

Section 2.8 Buffer Zones

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 should 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 Environmental Manager 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.

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.

Section 2.9 Erosion Prevention

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 to avoid or minimize activities that may contribute to erosion.

All areas of exposed erodible soils are to be stabilized by back-blading or grading to meet engineered slope requirements followed by the placement of an armour material such as geotextile matting, rock or a combination thereof. 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.

Roberts Bay Beach Front

No material is to be deposited within 100 meters above the high water mark of the seashore. All debris should be placed in proper storage bins.

Section 2.10 Drilling - Exploration

Environmental Concerns

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

All exploration drilling operations must comply with Part H: Conditions Applying to Drilling of the Part D of the Water Use Permit Number 2BE-HOP0207 for Hope Bay.

Environmental Protection Procedures

a) All materials and personnel are to be transported to drill site locations via helicopter or along designated approved trails using snow machines.

b) Waste oil is to be transported back to the Camp and stored for burning in the waste oil burner or for disposal in an approved off-site facility.

c) For non-submersible pumps that use a hydrocarbon based fuel, the pump should be placed in a secondary containment tray to capture any unexpected fuel/oil leaks or spills.

d) Water used throughout the drilling process must remain at the drill site. Every effort is to be made to prevent any turbid water from drilling entering any watercourse. This is a legal requirement.

e) Cuttings from drill activities are to be captured at the drill site; the water decanted from the cuttings and the cuttings then moved to approved storage area on the property. They will remain in the immediate location of drilling activities. Cuttings are not placed back down the hole.

f) All garbage and solid waste will be removed from the drill site and disposed of in an appropriate manner at the Doris North site.

g) Due to the nature of drilling activities oil drops and leaks sometimes occur. Every attempt possible is to be made to clean up this oil. All drill 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 drill site to absorb any contaminants after the drill has been relocated. Photos of the drills sites are to be taken after clean up for reporting purposes.

h) During the winter season, snow machines are to be used to transport drill materials, core, and personnel to and from the drill sites. Helicopters are to be used during summer months.

i) If drilling is done underground, water used for drilling will be recycled. The same water will be used to control dust over muck.

j) Potential exists for the disturbance of archaeological resources during exploration drilling activities. This is to be avoided. Disturbance of any archaeological or culturally significant site without appropriate authorization from government is illegal. 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.

k) Casing at the abandoned drill site is to be removed once further drilling at this specific site is not required. All holes are to be sealed with a plug.

Section 2.11 Drilling - Geotechnical

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 Environmental Manager or his designate.

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

b) Fuel will be stored, handled, and transported according to Section 2.2.

c) Water 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.

Section 2.12 Dust Control

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

Environmental Protection Procedures

Water will be used to control dust from surface operational activities during the summer months. Waste oil will not be used for dust control. No other chemical agents are to be applied to roads, airstrip, etc for dust control.

Water for drilling and dust suppression underground will be supplied from sumps and re-cycled to them. Due to the freezing conditions, a brine solution will be used.

Section 2.13 Working in or Near Water

Environmental Concerns

Silt refers to fine grained sediment particles which are sometimes transported in the water column. Turbidity is a term used to refer to the "cloudiness" created in the water column by the suspended sediment (silt) particles. Sediment can settle on the bottom of a stream, river or lake, covering areas where fish feed, hide from predators or lay eggs. It can also smother and kill fish eggs. Sediment suspended in the water can clog fish gills and also obscure vision, making it difficult for fish to find food and see predators. If enough sediment enters a body of water, the aquatic environment can change permanently, harming fish, wildlife and people.

The federal *Fisheries Act* provides for the protection of fish habitat. Under this Act, no one may carry out any work that harmfully alters, disrupts or destroys fish habitat, unless authorized by Fisheries and Oceans Canada. The Act also states that no one is permitted to deposit a deleterious (harmful) substance into water containing fish. Sediment is considered a harmful substance under the *Fisheries Act.* Sediment is considered a harmful substance under the *Fisheries Act*. Violations can result in substantial fines, imprisonment and a requirement to cover the costs of returning the site to its original state.

Get an expert to help you assess the risk of erosion at your site and to develop a plan for erosion control when:

- you don't have the knowledge and skills to plan and implement erosion control measures
- steep slopes, highly erodible soils or other factors make your site vulnerable to erosion
- you are working in or near water
- your project is large

Environmental Protection Procedures

1. The use of heavy equipment in and near watercourses is not permitted without prior approval from the site's Environmental Manager. Where it is necessary to do so, in stream work will be performed under the following conditions:

    1. With approval from the Site's Environmental Manager who will not give such authorizations until a detailed work plan has been prepared;

    2. The proposed activity must meet all requirements under the Fisheries Act (require consultation with DFO) and must be approved by the landowner (the KIA);

    3. Approved in-stream work must minimize the time that the vehicle is in the water, and include provisions for ensuring no transfer of hydrocarbons (fuel, hydraulic fluid, lubricating oil) into the stream and provisions to minimize and mitigate against release of sediment.

2. Plan ahead to ensure that your project does not harm the environment or violate the *Fisheries Act* or other laws. Before you build, determine exactly how you will

reduce soil erosion and sedimentation. Base your plan on sound engineering practices used by experts in the construction industry.

3. Respecting the natural contours of a site can reduce the risk of erosion and often the cost of construction. If possible, work on level ground rather than slopes. The steeper the slope, the greater the chance of soil erosion. If you must work on a slope, make sure the construction site is at a stable angle.

4. When working around water, avoid using sand or other materials to fill in uneven ground or to change the angle of a slope. Fill materials are often unstable and vulnerable to erosion. If you must fill, use erosion-resistant materials such as coarse gravel or rock.

5. Gravity will carry water and sediments downhill. Determine where your slopes are and what paths the water will take as it flows toward water bodies. Plan your project to keep construction away from drainage areas and to reduce the amount of sediment carried away.

6. Grasses, shrubs and other plants stabilize the soil and trap sediments. Map your vegetation and plan how best to preserve it. If you must disturb vegetation, restore it quickly by seeding or planting. Keep a buffer of undisturbed vegetation at least 30 meters wide between the construction area and a water body to slow down the water draining from the site and to trap sediments.

7. Exposure -

- Consider the degree to which the site is sheltered or exposed to wind, rain or other eroding forces.
- Disturb the smallest area possible. The less soil you disturb, the better, so keep your work area as small as possible.
- Work quickly. The faster you get the job done, the better. The longer the ground is exposed to wind and rain, the greater the risk of erosion.

8. Whenever possible, undertake construction in the late spring or early summer. This will enable vegetation to re-establish. During the spring freshet, avoid working in areas that are vulnerable to erosion. There are timing restrictions if the activity will potentially deposit sediment in water so fish spawning and egg incubation periods are not effected.

9. Straw bales can be installed as barriers to trap sediment and slow water flow. They should be in a trench, staked and backfilled. When straw bales are installed as a filter fence to trap sediment coming off a slope, they should be placed away from the top for increased holding capacity. When used as a barrier in a ditch or gully, they allow water to flow through, rather than over the barrier and no apron is required.

10. An erosion blanket is usually made of natural fibers such as straw or coconut fiber. It acts as a protective barrier between the soil and the rain or the wind. You can buy erosion-control blankets at building-supply stores. Place erosion blankets:

a. in high-risk places such as steep slopes or areas with highly erodible soil
b. while vegetation is establishing in areas you have seeded

11. Wherever possible in-stream works associated should be carried out in the dry. Construction should be carried out in such a manner that silt does not enter watercourses/ water bodies. A no-grub buffer zone (recommend 30 meters) should be maintained adjacent to all watercourses; there should be no grubbing within this zone.

12. Only clean, non-erodible materials should be used for infilling water bodies (e.g., blasted rock containing no, or a minimum of: fines),

13. Stabilization of stream crossing areas should be carried out as soon as possible after the crossing structure has been installed and certainly within the same construction season.

Section 2.14 Dewatering – Work Area

Work areas, during site development and operational phases, 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 land applied to vegetated 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 release to follow natural surface drainage patterns.

e) Proper precautionary measures will be employed to prevent the alteration, disruption, and smothering of fish habitat. Damage to fish habitat is illegal.

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 must meet water quality requirement under the Water Use License issued by the NWM and MMER limits.

Section 2.15 Marine Vessels

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 comply 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:

- The shipping company will be required to have an Emergency Response and Spill Contingency Plan that includes adequate training in place covering transport of hazardous materials on their vessels;
- 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
- project vessels must notify the MHBL logistics of their progress at sea or, if stopping at other ports en-route if they depart from their expected schedule, i.e. to update their ETA.

Section 2.16 Pumps and Generators

Environmental Concerns

A variety of fuel driven water pumps, generators are in frequent use in many areas of exploration and mining operations away from the main camp power supply. Environmental concerns are associated with any accidental spills or chronic leaks contaminating topsoil and water bodies.

Environmental Protection Procedure

a) All oil, grease, gasoline, diesel, or other fuels will be stored at least 50m from any surface water.

b) Secondary containment trays must be placed underneath fuel driven portable pumps and generators at all times.

c) All hoses and connections on equipment are to be inspected routinely for leaks and drips (every 4 hours at a minimum).

d) All leaks/spills should be cleaned and reported immediately to the Surface/Maintenance Superintendent and the Environmental Manager.

Section 2.17 Noise Control

Environmental Concerns

Noise associated with exploration, construction and mine operational activities can cause negative effects on wildlife resources in terms of their distribution and abundance. Noise associated with surface 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) Surface blasting plans will be developed that include provision to conduct wildlife surveillance prior to blasting and to adjust blasting times accordingly to occur when wildlife are not present.

b) All fuel powered equipment will have exhaust systems (mufflers) to reduce noise. These systems will be inspected and maintained.

c) Stationary equipment such as the mill and power generators will be placed indoors to muffle noise.

Section 2.18 Blasting on Land

Environmental Concerns

Surface blasting will be conducted during the construction phase of the Doris North Project to extract construction rockfill materials from the site quarries. Trench blasting will be periodically conducted during the exploration activity associated with the Project.

The principle environmental concerns associated with surface blasting include the following:

- destruction of vegetation around the outcrop or outside the quarry limits;
- release of nitrogen compounds and dust to air and residual blasting agents (ammonia and other nitrogen compound) to local water;
- 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 pattern and procedures will be used which minimize shock or instantaneous peak noise levels.

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

d) The amount of explosives used (powder factor) will be minimized to prevent potential release of ammonia to local watercourses.

e) Blasting will not occur in the vicinity of fuel storage facilities.

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 cap magazine for dynamite blasting caps.

h) Site personnel will survey the immediate area of the blasting site within three hours prior to a blast and curtail operations if sensitive animals (e.g. grizzly bears, caribou, and other mammals) are observed within 500 m.

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 Surface/Maintenance Superintendent and the Environmental Manager.

Section 2.19 Winter Trails

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 must conform to KIA permit number KTL303F055.

Environmental Protection Procedures

a) Winter vehicles should be confined to properly prepared and groomed trails.

b) Vehicle use on these trails is 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.

g) All known archaeological sites must be avoided.

Section 3.0 Beach Landing Area

Proposed New Barge Landing Area – Roberts Bay

A proposed new permanent barge-landing site is located on the south-eastern shore of Roberts Bay (see Figure 1.5.1). The bay is relatively shallow at this location, necessitating the construction of a 103 m long jetty out into the bay. The jetty will be constructed from clean quarry rocks, and dumped directly onto the bay sediments. The final jetty traffic surface will be at least 0.5 meters at the highest high-tide level, which will require an overall jetty thickness of approximately 2 m (allowing for 0.5 m of sediment settlement). The overall jetty width will be 6 m, which would allow easy and safe offloading of the 20ft (6.1 m) and 40ft (12.2 m) long sea containers with forklift trucks. The jetty will end in a T-section, 6 m wide and 25 m long. This would allow the barges to be pushed up immediately alongside the jetty for the most efficient offload. Bollards and mooring chains will be anchored into the jetty and the on shore.

Permanent Beach lay-down Area

The land mass immediately inshore from the permanent barge landing site is relatively flat tundra, with rock outcrops on either side. A pad to be used as a lay-down area for annual temporary storage of equipment and supplies off-loaded from the barge will be constructed in this area. This-lay-down area will be at least 100 m inshore from the highest high-tide level, and will connected to the jetty via an all weather road.

Section 3.1 Environmental Sensitivities

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

Section 3.2 Beach Offloading and Storage Areas

- Unloading of bulk petroleum products;
- Unloading of Gas and Jet B drums;
- Unloading hazardous materials (Lubricants, mill reagents, etc.);
- Unloading of machines;
- Building Materials;
- Transporting of petroleum products and hazardous materials; and
- Temporary storage of hazardous materials.

Section 3.3 Environmental Concerns

- Unexpected release of petroleum products;
- Unexpected release of hazardous materials;

- Sedimentation;
- Unexpected fire or explosion; and
- Combustible and non-combustible solid wastes.

Section 3.4 Sensitive Areas and Periods

- Spring runoff into Roberts Bay;
- Contamination of the beach; and
- Contamination of the vegetation cover along the beachfront.

Section 3.5 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; Section 7.6
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; Section 7.6; Section 7.8

Section 4.0 Accommodations Camp

Section 4.1 Environmental Sensitivities

- Freshwater supply
- Tundra

Section 4.2 Camp Activities

- Sewage 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

Section 4.3 Environmental Concerns

- Contamination of drinking water source;
- Waste Management storage and disposal;
- Storage, Transfer and dispensing of petroleum products; and
- Attracting Wildlife.

Section 4.4 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 wastes	• Section 2.4; Section 7.8 • 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

Section 5.0 Tailings Dam Facility

Section 5.1 Environmental Sensitivities

- Deposition of treated waste water
- Deposition of treated tailings
- Initial Construction of tailings dam
- Erosion of shoreline
- Usage of facility by wildlife

Section 5.2 Activities at the Tailings Dam Facilities

- Discharge of treated waste water
- Discharge of tailings
- Construction of dams
- Installation of tailings line and ongoing maintenance

Section 5.3 Environmental Concerns

- Seepage into the receiving environment
- High TSS into water body leaving facility
- Impact on shoreline
- Impact on permafrost during warm summer months
- Tailings Water Balance
- Treated Waster Water Quality in the facility
- Released Waste Water Quality leaving the facility
- Wildlife use of the facility
- Dam failure
- Rupturing/leaks in tailings line

Section 5.4 Environmental Protection Procedures

Activities	Impacts	Management Measures (See Sections 2 & Section 7 for details)
Construction phase	• Noise • 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
Operational Phase	• Placement of water pumps • Placement of generators • Generation of tailings • Accidental spills/leaks • Generation of solid wastes • Noise generation • Abstraction of water • Discharge of used water • Erosion/sediment • Damaged to tundra • Loss of topsoil • Loss of aquatic life	• Section 2.16 • Section 2.16 • Section 2.10 • Section 2.4; Section 7.1; Section 7.6 • Section 2.17; Section 7.2; Section 7.5 • Section 2.14; Section 2.16 • Section 2.9 • Section 2.9; Section 7.11 • Section 2.9; Section 2.19 • Section 2.9; Section 2.19 • Section 2.9; Section 2.19
Closure of Facility	• Loss of topsoil • Accidental spills/leaks • Solid waste generation • Loss of vegetation • Loss of aquatic life	• Section 2.9; Section 2.19 • Section 2.2; Section 7.1; Section 7.6 • Section 2.4; Section 7.10; Section 7.6 • Section 2.9; Section 2.19 • Section 7.10; Section 7.11

Section 6.0 Abandonment of Work Areas

Section 6.1 Environmental Sensitivities

- Drill sites on lakes
- Drill sites on tundra
- Accommodation sites near watercourse
- Unmanaged hazardous solid wastes
- Tailings containment system

Section 6.2 Environmental Concerns

- Contamination release to surrounding environment
- Unsafe environment for wildlife
- Damage to tundra
- Increased rate of erosion/sedimentation

Section 6.3 Sensitive Areas and Periods

- Contamination of aquatic ecosystems during spring runoffs
- Erosion/sediment during spring runoff
- Dust issue during summer month

Section 6.4 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 • Erosion/sedimentation • Dust • Reclamation/re-vegetation	• Section 2.5 • Section 2.9 • Section 2.12 • Section 2.5

Section 7.0 Contingency Plans

Section 7.1 Fuel and Hazardous Material Spills

This section of the EPP has to be implemented in conjunction with the MHBL Emergency Response and Contingency Plan, October 2006.

An Emergency Response and Spill Contingency Plan has been developed by MHBL. The Plan deals with accidents and unplanned situations. The plan was revised in October 2006 to include Section 5 "Spill Response in Roberts Bay Waters", which covers guidelines for response strategies and methods that 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 plans have been developed for the management of the following accidental and unplanned situations.

- Fuel and Hazardous Material Spills
- Wildlife Encounters
- 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) 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.

b) All spills/leaks of petroleum products will be reported immediately to immediate supervisor.

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 Surface/Maintenance Superintendent, who will activate the MHBL Spill Contingency Plan.

d) Surface/Maintenance Superintendent shall immediately report any petroleum products released to the receiving environment of 25 L or more to the Mine General Manager.

e) A spill report form (NWT/Nunavut Spill Report Form) will be filled out by Surface/Maintenance Superintendent and sent to Mine General Manager.

f) The Mine General Manager 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**. DIAND Water Resource Inspector will be contacted on Phone Number **(867) 975-4298**.

g) All reportable spill or leak of fuel, in the aquatic environment or, 25 L or more on land will require pertinent information which includes:

- name of the individual reporting, position, and contact information;
- time of spill or leak;
- time of detection of spill or leak;
- type of product spilled or leaked;
- amount of product spilled or leaked;
- location of spill or leak;
- source of spill or leak;
- type of accident - collision, rupture, overflow, other;
- owner of product and phone number;
- if the spill or leak is still occurring;
- if the spill or leaked product is contained, and if not, where it is flowing;
- wind velocity and direction;
- temperature;
- proximity to water bodies, water intakes, and facilities; and
- snow cover and depth, terrain, and soil conditions.

h) The Surface/Maintenance Superintendent with technical assistance from the Environmental Manager will act as the "On-Scene-Coordinator" for the purposes of cleaning up a fuel or hazardous materials spill.

i) The overall responsibility for providing additional resources and external support for the clean-up rests with the Mine General Manager.

j) The Environmental Manager will be responsible for maintaining this contingency plan current.

k) The On-Scene-Coordinator (normally the Surface/Maintenance Superintendent) will act in consultation with the Environmental Manager and Mine General Manager to:

- assess site conditions and environmental impacts of various cleanup procedures;
- assess potential for fuel recovery versus burning;
- deploy on-site staff to mobilize pumps and empty 205 L drums or other appropriate storage containers to the spill site;
- deploy on-site staff to build containment dykes and commence pumping contaminant into drums;
- apply absorbent as necessary;
- dispose of all contaminated debris, cleaning materials and absorbent by burning, if appropriate, or by placing it in an approved land-fill site; and
- take all necessary precautions to ensure that the incident does not recur.

l) The Surface/Maintenance Superintendent with technical help from the Environmental Manager will be responsible for the preparation of a detailed written report, develop long-term monitoring and management strategies. The prepared report will be submitted to NWB, KIA, and DIAND with 30 days from the day is the reported spill as per conditions stipulated in Water and Land Use permits issued to MHBL.

m) 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
1TDS-118 Drum Skimmer
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
Sony Hi8 Video Camera

SPILL KIT FOR WHARF

50 feet of Rope
Container of Gap Seal Drum Sealant
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

Section 7.2 Wildlife Encounters

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 waste.

As a protection measure, hunting and trapping by all MHBL personnel and contractors is not permitted at the exploration sites.

Environmental Protection Procedures

Prevention

The Surface/Maintenance Superintendent and Camp Manager are responsible to see that the following procedures relating to food preparation, storage and waste disposal are implemented:

- Accommodation area and all work sites will be kept clean of food scraps and garbage.
- Combustible kitchen waste will be collected daily for incineration in the approved incinerator at Doris North.

Inspections of all surface workshops and accommodation areas will be carried out by the Surface/Maintenance Superintendent in addition to regular inspections by the Camp Manager.

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 Environmental Manager or Environmental technicians.

c) 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; in which case attempts will be being made to scare off the bear with a motorised form of transportation.

d) Equipment and vehicles will yield the right-of-way to wildlife.

e) No personal pets, domestic or wild, will be allowed at Doris North Project site.

f) When nuisance animals (e.g. grizzly bear, wolverine, or wolf) are identified at the Doris North Mine site or exploration camps, and pose an immediate danger to the safety of the employees, the General Manager will be notified and will take further responsibility for all subsequent actions. The General Manager in consultation with the Senior MHBL

management personnel will determine responsive actions, including consultation with government wildlife officials and the KIA. All actions must comply with the regulative requirements and directives.

g) The Camp Manager will first use deterrent measures that include crackers and rubber bullets.

h) Based on the ongoing risk posed to the safety of the employees or camp residents, the General Manager will determine if an animal is to be put down and will designate a qualified person to shoot the animal. This action will only be taken after all other deterrent measures have been tried or the risk is too high by not proceeding.

i) The only firearm(s) allowed at the Doris North Mine site or at the MHBL exploration camps are those under the control of the General Manager (Camp Manager at the exploration camps) (or his/her designate). Anytime an animal is put down, the regulatory authorities and the land owner (the KIA) will be notified by phone.

j) Any bear that has been put down will have the head removed, 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.

k) An internal incident report will be completed by the General Manager within 72 hours of the putting down of a bear. A copy of this report shall be sent to the following people:

    a. GN – Department of the Environment;

    b. Kitikmeot Inuit Association;

    c. General Manager, Environment – Miramar Mining Corporation

Section 7.3 Discovery of Historic Resources

This section of the EPP has to be implemented in conjunction with the MHBL Heritage Protection Plan, 2005.

Environmental Concerns

There is always the possibility that undiscovered archaeological sites such as remnants of structures, tools, butchered animal bones, and graves may be discovered or disturbed during the operational and exploration activities at Doris North project site.

The Environmental Manager upon notification from the Surface/Maintenance Superintendent will contract a qualified archaeologist to examine the sites. 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. Development and construction activities 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 he 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 artefacts must 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 scaled 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 an 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. The MHBL senior management will first approve any proposed mitigation.

f). The followed actions must be adhered to for already identified archaeological sites on MHBL properties:

- No site personal shall alter or deface these sites or site markers;
- The location of these site markers shall be reported to the Environmental Manager who shall keep a log of all reports; and
- 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 Environmental Manager 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.

Section 7.4 Air Quality Management Plan

This section of the EPP has to be implemented in conjunction with the MHBL Air Quality Management Plan, October 2006.

The main objective of the Air Quality Management Plan (AQMP) is to comply with regulatory requirements set out in the Project Certificate issued by the Nunavut Impact Review Board.

The management plan includes control measures that will be established to mitigate combustion and fugitive emissions from the Mine. It also includes a monitoring plan which will collect on-site air quality and meteorological data to allow for an adaptive approach to air quality management at the Doris North Mine.

Environmental Concerns

The purpose of the AQMP is to determine the effects of the Mine on air quality and to demonstrate that air quality criteria are being met. The air quality monitoring data will be reviewed annually to determine if any trends are evident. Corrective actions based on the air quality monitoring results will be determined on a case-by-case basis; however, examples of responses are provided below:

- If particulate matter concentrations show an increasing trend, the issue will be investigated and additional control measures will be implemented where possible;
- If issues are raised by regulators or local communities, discussions will be initiated to resolve the issues.

It is possible that components of the AQMP may need to be revised over the life of the Mine based on regulatory changes and technological advances. The air quality monitoring data and input from the operators and the environmental manager will be used to modify the AQMP accordingly. Any modifications made to the AQMP will be communicated to regulatory authorities where applicable.

Environmental Protection Procedures

MHBL has committed to employ the following mitigation measures during the construction and operation phases of the Mine:

- Use of an aggressive fuel conservation effort;
- Use of dust suppression methods as outlined in the Nunavut Environmental Protection Act (EPA);
- Use of coarse rock in roads, airstrip, building pads and laydown areas to minimize dust during construction;
- Driving at designated speeds on site roads;
- Application of water to roadways in summer to reduce dust from ore and waste rock haulage and road grading to a minimum;

- Installation of dust covers, sonic sprays, etc. to suppress dust generation from equipment in the crushing facility;
- Installation of a dust scrubber on the smelting off-gas stream;
- Submerged release of tailings deposition to avoid tailings dust emissions;
- Installation of a waste oil burner unit equipped with a settling tank and filter system for particulate removal from the waste oil;
- Installation of an incinerator that complies with the Nunavut EPA standards, Canada-Wide Standards for Dioxins and Furans and Canada-Wide Standards for Mercury emissions. A waste segregation program will be implemented (i.e., materials that are unsuitable for incineration, e.g., chlorinated plastics will be diverted to alternate waste disposal facilities) and personnel will be properly trained in incinerator operations.
- Regular servicing of all mobile and stationary engines to maintain efficiency;
- Proper equipment maintenance; and
- Adherence to all permits, authorizations and approvals.

Section 7.5 Noise Abatement Plan

This section of the EPP has to be implemented in conjunction with the MHBL Noise Abatement Plan, October 2006.

Environmental Concerns

Noise generated as a result of construction and mining will occur. The effects on the wildlife and humans can be summarized as follows:

Potential Effects on

- caribou migration and land use patterns in the local area of the mine;
- bird migration patterns in the local area of the mine;
- Aquatic biota response in the area of the mine;
- bear hibernation; and
- times when major wildlife events occur such as having young, migration patterns, hunting patterns, etc.

Environmental Protection Procedures

Monitoring programs will be conducted 3-4 times in each project stage: pre-construction (baseline), construction, operation and reclamation. Construction operations are scheduled to start early in 2008 therefore baseline monitoring can be conducted in 2007. Monitoring periods and dates are yet to be determined; however the date selection will consider the potentially affected VECs. The following are factors that will be used to finalize the scheduling of baseline, construction, operations and reclamation monitoring:

- season;
- caribou migration;
- bird migration;
- the month before bear hibernation; and
- times when major wildlife events occur.

The EIS proposed the Alberta EUB guideline limit of 40 dBA at 1.5 km from project activity as criteria. There are no set noise criteria for worker camps in Nunavut. However, Health Canada and the World Bank Organization have guidelines surrounding worker camps and sleep disturbance. Based on other recent assessments for camps in remote areas, indoor noise levels of 30 to 35 dBA will be the criteria used to ensure sleep disturbance is not an issue in the worker camp. OHS requirements procedures will take precedence in worker camp assessment as required.

Section 7.6 Hazardous Materials Management Plan

This section of the EPP has to be implemented in conjunction with the MHBL Hazardous Materials Management Plan, October 2006.

Environmental Concerns

The Doris North Gold Mine will use the following types of hazardous materials in the day-to-day operation of the underground mine and in the extraction of gold from the ore mined:

- Fuel and Lubricants – diesel fuel, oils, greases, anti-freeze, and solvents for power generation, building heating, equipment operation and maintenance;
- Process Plant/Milling Reagents/Consumables – Potassium Amyl Xanthate flotation collector, Aerophine 3418 Flotation Promoter, methyl isobutyl carbinol (MIBC) flotation frother, sodium cyanide for gold leaching, zinc dust for gold recovery, activated carbon, caustic soda (sodium hydroxide), hydrogen peroxide for effluent treatment, sulphuric acid for effluent treatment, copper sulphate for effluent treatment, hydrochloric acid, and borax, sodium nitrate, silica sand for bullion refining;
- Explosives – ammonium nitrate and high explosives used for blasting in the mine;
- Laboratory chemicals – small volumes of various chemicals in the on-site analytical laboratory to analyze rock and water samples for grade control, to monitor metallurgical performance and to monitor environmental performance.

MHBL requires that the transportation, storage, handling and use of hydrocarbon based products, ammonium nitrate, and all other chemicals to be used at the proposed Doris North Gold Mine be conducted in a safe and efficient manner. Prevention, detection, containment, response, and mitigation are the key elements in the management of hazardous materials. MHBL is committed to minimizing the potential for adverse environmental effects on terrestrial and aquatic biota and ecosystems that may result from accidental release. The first step in accomplishing this is to apply consistent practices towards the management of hazardous materials site-wide. MHBL will incorporate proper hazardous material management procedures into its environmental management plans and systems for the proposed Doris North Gold Mine to reduce risk of accidental release.

Environmental Protection Procedures

MHBL will actively work towards minimizing the generation of hazardous wastes by investigating alternatives to the use of hazardous materials, by recycling products and containers wherever feasible, and by treating wastes using state-of-the-art technologies before any release to the environment.

All employees will be expected to comply with all applicable precautions and handling procedures with regard to hazardous materials. Employees are also expected to report any concerns to their supervisors, the Health and Safety Committee, or senior site management. All

staff are encouraged to bring forward suggestions for improvements that can be incorporated into procedure revisions as appropriate.

MHBL will ensure site procedures are based on the following principles for best practice management of hazardous materials:

- Purchasing controls – control of shipping methods, appropriate packaging, shipping schedules;
- Shipment Tracking procedures;
- Inventory controls on site – periodic inventory of materials in storage on site to determine usage and to identify and manage any unexpected loss;
- Maintenance of current safe handling and storage procedures – MSDS, WHMIS, TDG data and labelling – made available to those in contact throughout the operational site;
- Characterization of potential environmental hazards posed by these materials through the Environmental Management System;
- Allocation of clear responsibility for managing shipment, storage, handling and use of potentially hazardous materials;
- Defined methods for transport, storage, handling, and use;
- Identification of disposal methods for potentially hazardous waste generated from use of these products;
- Preparation of contingency and emergency response plans;
- Adequate type and delivery of training for management, workers, and contractors whose responsibilities include handling potentially hazardous materials;
- Maintenance and review of records of hazardous material consumption and incidents in order to anticipate and avoid impacts on personal health and the environment; and
- Procedures to track and manage wastes generated through use of these products, including regular shipments of potentially hazardous waste to appropriate licensed disposal facilities following all relevant regulatory requirements (packaging, labelling, inventory tracking and waste manifesting).

Section 7.7 Ammonium Nitrate Management Plan

The implementation of this plan has to be done in conjunction with the MHBL Ammonium Nitrate Management Plan, October 2006.

Environmental Concerns

The primary explosive to be used at the Doris North Project is ANFO, a mixture of ammonium nitrate prills and diesel fuel. Ammonium nitrate (AN) is a stable, inorganic, solid compound. It is completely soluble in water and must be kept dry to remain effective for its intended purpose. AN prills (pellets) produced for use in ANFO explosives are intentionally porous to permit the fuel oil to be absorbed. AN is of low toxicity to aquatic life but may promote eutrophication in waterways (water becomes pollution rich in dissolved nutrients).

Environmental Protection Procedures

Although AN is classified as a hazardous product, its storage and handling at Doris North is not considered to be a significant risk activity.

- AN will be delivered to site in heavy-duty, one-tonne tote-bags.
- At site, explosives will be handled and managed by MHBL personnel qualified and trained in safe handling procedures and in accordance with applicable legislation and regulations.
- In the event runoff transports sediment, temporary silt curtains can be placed in the water path to screen sediment.
- AN bags will be stored within seagoing containers within the designated storage area at the permanent explosives storage area away from water bodies and from the explosive caps/detonator storage magazines. The bags will be handled individually when needed for the preparation of batches of explosive.
- Any spills will be swept up and placed in suitable containers for use or disposal. Typically empty bags are not considered to be hazardous waste. However to prevent the uncontrolled release of fine AN material (that may be coating the inside of the bags) into nearby water courses, the empty bags will be shaken clean at the point of use and then burned in an approved burning pit at the site for non-hazardous landfill area in a similar manner as other empty reagent bulk bags. This will prevent the empty bags from being used for other purposes.
- All personnel exposed to AN will wear suitable personal protective equipment.

Section 7.8 Landfill Management Plan

This section of the EPP has to be implemented in conjunction with the MHBL Landfill Design and Management Plan, October 2006.

The Landfill Design and Management Plan provides pre-construction information on how inert industrial wastes will be handled in a safe and environmentally sound manner at Doris North Gold Mine. The proposed landfill is relatively small, consistent with the mine size and underground operations mode, but designed to be expandable to the extent required to accommodate all inert industrial waste anticipated to be generated during the life of mine and during reclamation. The proposed landfill is to be constructed within the mined out footprint of Quarry 2. The quarry location is large enough to accommodate industrial waste from an expanded mine, should additional reserves be proven and the Doris North mine continue operation beyond the current projection of two years.

The proposed landfill is designed to operate in a safe, efficient and environmentally sound manner. All wastes and drainage will be contained. No hazardous wastes will be placed in the industrial landfill.

Environmental Concerns

- Release of contaminants into the receiving environment with snowmelt and precipitation runoff;
- Release of wind blown garbage from the landfill site

Environmental Protection Procedures

- Annual landfill operation will involve clearing of snow prior to spring melt, placement of waste rock over the summer period, and placement of a graded cover prior to the winter period of snow accumulation;
- Wastes produced during the winter months would be stored temporarily in the solid waste disposal site and relocated to its final location following snow removal;
- An area method of dumping will be used such that materials will be dumped in rows and covered as required; and
- Wastes will be disposed of directly on the ground and compacted with heavy equipment against the berm or existing row. To the extent, practical dumped materials will be segregated in the strips so that each major type occupies a subsection of the operating cell.
- Snow melt and precipitation runoff will be deflected away from the landfill by upslope diversion berms;
- Snowmelt and precipitation runoff from within the landfill will be collected in a containment sump, analyzed for contaminants and land applied onto the adjoining tundra if this water is of acceptable quality for direct discharge. If the quality is not

good enough for release it will be transferred to the tailings containment area by tank truck.

- Inert combustible garbage will be burned in a burning pit located within the landfill area;
- Non-combustible garbage will be periodically compacted and covered with rockfill to reduce risk of garbage being scattered by wind.

Section 7.9 Landfarm Management Plan

This section of the EPP has to be implemented in conjunction with the MHBL Landfarm Design and Management Plan, October 2006.

The Landfarm Design and Management Plan provides pre-construction information on contaminated soil and snow handling in a safe and environmentally sound manner at the Doris North Project.

Landfarming is a form of bioremediation that uses naturally occurring micro-organisms (yeast, fungi or bacteria) to metabolize or break down petroleum hydrocarbons. Natural processes include volatilization, aeration, biodegradation and photolysis. End products are micro-organism protein, carbon dioxide and water. Stimulation of microbial growth and activity for hydrocarbon removal is accomplished primarily through the addition of air and nutrients (metabolism of hydrocarbons is mediated predominantly through aerobic microbes).

The proposed landfarm will be 50 m by 25 m constructed within quarry #2 and thus will be within a controlled drainage area. The landfarm will be bermed and underlain by a geomembrane to prevent leachate flows out of the facility. The design and proposed management are based on successful landfarms operated at the Boston and Windy exploration camps operated by MHBL.

Environment Concerns

The focus of management of the landfarm will be safety and environmental responsibility. Employees working in the landfarm will be trained prior to commencement of work so that they are aware of the health and safety risks associated with the landfarm.

There are four primary exposure pathways to chemicals within the landfarm:

- inhalation;
- ingestion;
- skin contact; and
- eye contact.

Since the facility is outside and concentrations of contaminants will be generally relatively low, inhalation exposure is not likely to be problematic. In special circumstances where contamination is heavy, respirators can be worn to scrub the air of volatile organics. Ingestion, under normal circumstances is very unlikely.

Skin contact will be prevented by issuing suitable personal protective equipment to employees working in the landfarm.

Eye contact is unlikely under normal circumstances. Where hand work is to be carried out in the landfarm with the risk of eye contact, protective goggles will be required.

Environmental Protection Procedures

- The geomembrane and berm under the landfarm will ensure that all leachate is captured within the facility.
- No water from the landfarm will flow directly to the surrounding environment. Further, the landfarm will be placed in a controlled drainage area (Quarry 2) where any accidental release can be captured and treated.
- A record will be kept of the amount of contaminated soil and snow placed in the landfarm by environmental staff.
- Incinerator ash will be mixed in with the contaminated soil undergoing remediation within the landfarm.
- The landfarm will be monitored weekly during summer months by environmental staff to ensure proper operating conditions of soil moisture and aeration, i.e., moisture content between 15 and 30%, uncompacted soil.
- Soil samples will be collected and tested for BTEX and CCME PHA's. Monitor records will be kept by the Environmental Manager and reported as required.
- Any repairs to the landfarm facility will be noted during weekly inspections if not reported separately by mine services staff. Repairs will be effected promptly. The nature of the repairs required and when repairs were completed will be recorded in the landfarm log.
- Any unauthorized use of the facility noted on inspections will be reported to the Surface Superintendent and Mine General Manager and, if required, will be discussed at Health and Safety Committee meetings.
- Equipment used in the landfarming operation will be cleaned off within the landfarm area prior to exiting to ensure that contaminated soil is not transferred away from the landfarm on the wheels and other parts of this equipment.
- Any standing water in the landfarm will be passed through an oil-water filter style separator prior to discharge to the environment.
- Remediated soil that meets CCME Guidance for remediated soils (industrial standard) will be used for site remediation as a vegetation growth media. Soils that do not meet this standard will be placed underground for permanent disposal.

Section 7.10 Mine Closure and Reclamation Management Plan

This section of the EPP has to be implemented in conjunction with the MHBL Mine Closure and Reclamation Plan, October 2006.

MHBL has developed a detailed Mine Closure and Reclamation Plan for the Doris North Project. This Plan forms a component of the Environmental Protection Plan for the Project.

MHBL is committed to a program of progressive reclamation at the Doris North Project site. Consequently, MHBL intends to manage its reclamation liability at Doris North by initiating reclamation work at an early point in the mine life where practical, thereby limiting the expansion of overall liability over time.

Environmental Concerns

- Jetty: Physical Structure and associated impacts to the surrounding environment;
- Underground Mine: Workings and products used;
- Surface Infrastructure and Facilities;
- Tailings Management System;
- Roads and Airstrip;
- Landfill and Landfarm;
- Post Closure Water Management;
- Post Closure Water Quality; and
- Post Closure Monitoring.

Environmental Protection Procedures

- All buildings and equipment will be cleaned of hazardous materials at closure. Hazardous materials will be shipped off-site for recycle or disposal at a licensed facility. Non-hazardous debris from building demolition and equipment with no salvage value will be placed within the site landfill and covered with a layer of rock.
- The underground will be sealed to prevent access to people or wildlife.
- The Mine Closure and Reclamation Plan includes MHBL's commitment to ongoing environmental monitoring and maintenance of the Doris North Project site until it can be demonstrated that reclamation objectives have been achieved and that the site will not have any significant effects on the receiving environment into the future.
- The responsibility for implementing and paying for post closure monitoring and maintenance lies with MHBL and would be transferred to any new owner unless alternate arrangements were made that were acceptable to the land owner and other applicable regulatory agencies.

Section 7.11 Monitoring and Follow-Up Plan

This section of the EPP has to be implemented in conjunction with the MHBL Monitoring and Follow-up Management Plan, October 2006.

A follow-up monitoring program is used to verify the accuracy of the environmental assessment and/or to determine the effectiveness of mitigation. Typically, follow-up programs are focused on issues associated with potentially significant adverse environmental effects or negotiated mitigations, such as fisheries compensation to replace productive capacity of lost fisheries habitat due to the project. Monitoring data will be analyzed to help determine if there are any undesirable environmental effects as a result of project activities. All environmental monitoring programs are designed by qualified scientists using widely-accepted scientific standards. The monitoring and follow-up programs will be conducted by qualified and experienced professionals or technicians, with assistance, where practical, of Inuit hired from the region.

Environmental Concerns

- Monitoring to ensure that the mine is compliant with all regulatory requirements and commitments;
- Monitoring to ensure that mine impacts are being appropriately mitigated and to verify the accuracy of impact predictions made in the EIS predictions and to provide data so that change can be made where necessary to address impacts that exceed expectations;
- Monitoring to determine downstream aquatic effects of the mine; and

Environmental Protection Procedures

- The monitoring protocols documented in MHBL Monitoring and Follow-up Plan, October 2006 will be implemented.

Section 8.0 Contact List

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**
Anthony Walsh	President & Chief Executive Officer	300- 800 Harbourside Drive North Vancouver, BC V7P 3S1	Tel: 604-677-0675; Fax:604-980-0731 Email:awalsh@miramarmining.com
Jim Currie	Vice President -- Operations		Tel: 604-677-0675; Fax:604-980-0731 Email:jcurrie@miramarmining.com
Larry Connell	General Manager, Environment		Tel: 604-677-0675; Fax:604-980-0731 Email:lconnell@miramarmining.com
Scott Stringer	General Manager, Northern Operations	Miramar Hope Bay Limited 75 Con Road, P.O. Box 2000 Yellowknife, NWT X1A 2M1	Tel: 876-766-5311; Fax:876-766-06357 Email:sstringer@miramaryk.com
To be advised	Environmental Manager	To be advised	To be advised
To be advised	Surface/Maintenance Superintendent	To be advised	To be advised
To be advised	Mill Superintendent	To be advised	To be advised
To be advised	Mine Superintendent	To be advised	To be advised
To be advised	Technical Services Superintendent	To be advised	To be advised
To be advised	Administration Superintendent	To be advised	To be advised
To be advised	Safety/Health/Training Supt	To be advised	To be advised

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: exec@nwb.nunavut.ca
DIAND	Water Resource Inspector	Iqualuit, Nunavut	Tel:867-975-4546
Jack Kaniak	Lands Manager, Kitikmeot Inuit Association (KIA)	Kugluktuk, Nunavut	Tel:867-928-3310; Fax:867-982-3311 Email: jack_kaniak2005@qiniq.com
Colette Spagnuolo	Environment Canada (EC)	Iqualuit, Nunavut	Tel:867-975-4639 Email: colette.spagnuolo@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