

## **Miramar Hope Bay Ltd.**

### **Environmental, Health and Safety Management System**

### **Outline**

**Description:** Miramar Hope Bay Ltd. (MHBL) Senior Management is committed to managing all aspects of their organization's environmental, health and safety requirements and commitments through a formal, independently audited system (EHSMS). The MHBL EHSMS will be developed in the first half of 2007 with the objective of being in place in time for the transportation of equipment to the Doris North site in mid 2007 and for the planned start of construction on the Doris North Project in 2008. As well as applying to the Doris North Project, the Corporate-wide EHSMS will be implemented throughout MHBL. The EHSMS will provide assurance to MHBL Management that the MHBL Environmental, and Health and Safety Policies will be followed at all operations by not only MHBL staff, but all of its primary contractors.

**Doris North Project:** The Doris North project will be a relatively small underground gold mine producing about 311,000 ounces of gold from 460,000 tonnes of ore over a two-year life span. Ore will be processed on site. The project is located on the mainland in the West Kitikmeot region of Nunavut approximately 110 km southwest of Cambridge Bay and 75 km northeast of Umingmaktok and 5 km south of the Arctic Ocean. The mine site, with a footprint of approximately 54 ha, will be built on Inuit-owned lands. Infrastructure for the site, including a mill, crushing plant, aboveground fuel farm, sewage treatment plant, camp, office, workshops and water treatment plant will be constructed to support the mine operations. Supply in winter will be by air in the ice-free season, from sealift barges via Hay River to the sealift site on Roberts Bay. The sealift site will be connected to the mine site by a 4.8 km all-weather road. Construction equipment is scheduled to be shipped to the site in the summer of 2007 with construction commencing early in the winter of 2008 and production starting late in 2008. Mining will be completed at the end of 2010. Construction workforce will peak at about 120 in 2008. Operation workforce will include 24 mill workers, 60 underground miners and 91 support staff, totaling 175, half of whom will be on site at any one time.

The proposed layout of the Doris North mine site is shown in Figure 1.

The map shows the Yangtze River flowing through a mountainous region. The Three Gorges Dam is located on the river. The map includes labels for various locations such as Yichang, Yichang City, and the surrounding mountains. The map is oriented with North at the top. A scale bar is provided at the bottom left, indicating distances in kilometers and miles. The map is titled 'Three Gorges Dam' at the top center.

All aspects of the operations – staging, transportation, construction, operation, closure and reclamation will be covered by the EHSMS. All activities, products and services will be considered in the scope, including:

- Air, Land and Water Protection (Legal and Permit Expectations)
- Fish and Wildlife Protection (Legal Permit Expectations)
- Fuel, oil and chemical management
- Solid, liquid and hazardous waste management
- Occupational Hygiene and Safety management
- Monitoring and measurement of EHSMS
- Monitoring of compliance
- Training and Awareness
- Contractor and Supplier management
- Documentation and Record Keeping
- Communication – internal and external
- Emergency management

**Background:** Approval to proceed with permitting of the Doris North Project was granted to MHBL by the Nunavut Impact Review Board in a Project Certificate issued in September of 2006, following review of the October 2005 Project Environmental Impact Statement (EIS). In the EIS, a detailed review of potential environmental effects was provided (Section 5), and the approach to environmental management and mitigation was described (Section 6). Commitments to monitoring and auditing environmental performance were described in Sections 7 and 8. In the Technical Report, accompanying the EIS, a description of the proposed system to manage aspects of environment, health and safety was presented in Chapter 6. In Chapter 6, the system for managing all the required environmental plans was provided. The plans, covering everything from environmental protection, to education and orientation, waste management, emergency response and reclamation are laid out in detail. All of these plans will be managed through the Doris North Management system which in turn will be managed within the corporate EHSMS.

The following description provides an overview of the EHSMS and the roles and responsibilities of MHBL management and staff in developing, implementing and continually improving the system throughout the life of the Doris North Project and other company operations.

**System Standards:** The EHSMS will be based on the most recent standards for environmental management – ISO 14001:04, and for health and safety – Canadian Standards Association (CSA) Z1000-06. The newly released CSA Z1000 standard closely follows the OHSAS 18001:1999 standard. A decision to certify the system(s) to these standards will be made in the future by MHBL

management. The EHSMS will provide overall control over MHL's commitments to meet all applicable laws and regulations, permit requirements, monitoring and reporting requirements, best management practices and community involvement programs. Descriptions of the ISO and CSA Standards are readily available on websites.

Specific environmental conditions for the Doris North Project were established within the Project Certificate issued by the NRB in September of 2006. These will be combined with regulatory and statutory requirements and will form the conditions attached to the various permits and authorizations that the Doris North Mine will require for construction, operation and reclamation. The Water License Application document submitted by MHL to the Nunavut Water Board in October of 2006 presents additional information on how the Doris North Project will be managed and operated to meet these requirements. The various management and operating plans are included within the October 2006 Water License application support document as supporting documents under the umbrella Environmental Protection Plan.

**MHL Management Commitment:** The development of the MHL EHSMS will be overseen and approved by the President and CEO (Figure 2). The VP of Operations will be responsible for the structure and function of all aspects of the corporate EHSMS. The General Manager Environment has been appointed by the President and CEO as the specific management representative who will ensure the EHSMS is implemented and maintained and will report on its performance on a regular basis. The General Manager, Doris North will be directly responsible to the VP of Operations for all aspects of environmental, and health and safety Management at Doris North. To ensure the system is meeting all expectations, a Manager Environmental Auditing, reporting to the VP Legal has been appointed and will develop and oversee all activities of auditing throughout MHL related to the EHSMS.

The system will apply to all contractors involved in the project whose activities could have a significant effect on the environment – including auditing their activities during all phases of the operations.

**Structure of the System:** As with ISO 14001 and CSA 1000, the MHL EHSMS will be developed on the PLAN, DO, CHECK, ACT and continual improvement principles. Basically this approach ensures that expectations are clearly stated, all individuals understand their responsibilities in normal and accidental situations, there is regular monitoring of expected performance and changes made to the system as operations change or tests of the system indicate a need for change. At the heart of the system is a commitment to clear and appropriate communication – both internal and external. Following is a brief outline of the main components that will comprise the EHSMS:

**Policies** – Environmental, and health and safety policies are the concise, public expression of commitment of MHBL's President & CEO to environmental, health and safety management. The policies are reviewed on an annual basis and assessed for continuing applicability to the nature and scope of the organization and its operations. MHBL's current Environmental Policy is attached as Appendix A and MHBL's current Safety Policy is attached as Appendix B.

**Planning:** At the core of an EHSMS is the requirement to understand and identify the known or potential effects or risk of all **aspects** of an organization's operations, both ongoing and planned. At the outset of development of the EHSMS, all aspects, including those of Doris North will be reviewed to identify environmental and health & safety risks. A determination of significance will be made using an established system and significant aspects will be assessed for **legal requirements** and level of ongoing or proposed controls. The risks to the environment, and health and safety will be evaluated. Specific **objectives and measurable targets** will be established for significant aspects and where necessary, **management plans** will be developed to manage the significant aspects. Procedures will be developed for these planning steps to ensure accuracy of identification of risks and appropriate development of expected operational controls in the EHSMS. This will be documented in the MHBL Environmental Protection Plan

Over and above standard legal requirements of any similar organization operating in Nunavut, MHBL is working at various stages in the permitting and approvals process to meet requirements of the following organizations:

- Nunavut Impact Review Board
- Nunavut Water Board
- Kitikmeot Inuit Association
- Nunavut Tunngavik Incorporated
- Indian and Northern Affairs Canada
- Environment Canada
- Fisheries and Oceans Canada
- Natural Resources Canada
- Transport Canada
- Health Canada
- Worker's Compensation Board
- Nunavut Department of Environment
- Nunavut Department of Culture, Language, Elders and Youth
- Nunavut Department of Health and Social Services
- Nunavut Department of Community and Government Services

- Nunavut Department of Economic Development and Transportation

Specific requirements for all of these organizations will be included in the EHSMS.

**Implementing the System:** The EHSMS will be implemented throughout the organization by the following procedures -

***Resources, Roles and Responsibilities*** – The President and CEO of MHBL will ensure that adequate resources are available to develop, implement and maintain all components of the EHSMS. The President, through senior levels of management will ensure that all managers and staff are made aware of their responsibilities under the law and all additional requirements, and the consequences to MHBL and themselves for not complying with these requirements. In turn the General Manager for the Doris North Project will communicate these same responsibilities and expectations to all levels of management (including primary contractors) involved in the operation of the Doris North Mine. Responsibilities for the various levels of management within the organizational chart for the Doris North Mine are identified in Figure 3.

***Competence, Awareness and Training*** – Through a combination of selection and on-the-job training, management will ensure that all MHBL staff, or people working on its behalf, has appropriate training for positions where they have direct control over potentially significant environmental and/or health and safety aspects. MHBL is committed to developing procedures for identifying training needs and establishing monitoring programs to ensure appropriate training is carried out.

***Communication*** – MHBL management is committed to an extensive program of internal and external communication on legal requirements, specific permits and reportable emergencies. A plan and detailed procedures will be developed that specify communication requirements at all levels in the organization and from appropriate levels in the organization with outside interested parties. Communication procedures related to emergencies among internal and external parties are outlined in the current Emergency Response and Spill Contingency Plan for the Doris North Project (last updated in 2006 and attached as a supporting document to the Water License Application as a component of the Environmental Protection Plan).

***Documentation and Record Keeping*** – Development and management of core Documents that describe fundamentals of EHSMS and the Records to indicate the system is functioning as expected will be a vital contributor to success of the system. Core documents include policies, programs, procedures and contracts. Key records include monitoring reports (regular and incident), audit reports and management reviews. Document management and control for regulatory

requirements and internal standards will be a focus of the system. A system of storage, replacement and distribution will be developed and implemented.

***Operational Procedures*** – Based on the identification of significant aspects of all operations, legal requirements and other obligations, operational control procedures will be developed and maintained. These procedures will be developed to cover commitments in all individual EH&S management plans and will be the main focus of training and awareness programs. The operational procedures will cover risks of goods and services used by MHBL and include those related to specific activities of contractors and suppliers. The procedures will be assessed for applicability to new or changing activities as the project develops and moves through its various phases.

***Emergency Preparedness and Response*** – The MHBL EHSMS will include a procedure to develop and implement emergency response plans for all its operations. The Miramar Hope Bay Ltd. Emergency Response and Spill Contingency Plan (last updated in October of 2006), was specifically developed to apply to the Doris North Mine, but also addresses the corporate management role in emergencies. Emergency response plans will be tested and reviewed on a regular basis and modified to correspond to changes in regulations, activities or operating conditions.

### **Checking and Correcting the System**

***Monitoring and Measurement*** – A major component of the EHSMS will be the commitments to monitoring related to specified programs under various permits and agreements. Many of these programs will be covered with detailed procedures regarding data to be collected, analysis and reporting requirements. Procedures will be developed to ensure that monitoring is carried out as required and that monitoring equipment is maintained in reliable working order to meet manufacturers' specifications.

***Accidents, Incidents and Corrective Actions*** – The EHSMS will include procedures for handling and investigating accidents and incidents arising from normal and unplanned activities. The corrective action system will include assessment of causes, taking corrective actions and following successful improvements – including modifying procedures. Prevention will be a major focus of the system, and success of the preventive action programs – training, communication and review, will be measured and reported.

***Audits*** – MHBL has already established the foundation of its Corporate Audit Program and will apply the program to the Doris North Project. The audit program will be expanded to cover all components of the EHSMS including compliance and success in implementing the EHSMS. The program will be based on Standards for Systems and Auditing such as ISO 14001, CSA Z1000, CSA Z773 and ISO 19011. The audit program will be carried out by both internal

and external auditors. All auditors will meet the requirements outlined in the standards and in the MHBL internal auditing procedures. Audits on the Doris North Project will be carried out at prescribed intervals on all phases, for example at 3mos, 6mos, 12, 18, 24 mos. and post-closure.

### **Management Review**

Senior Managers at MHBL are committed to the development, implementation and successful continual improvement of the EHSMS. At the development stage, senior management will review and approve all core documentation such as policies and procedures. They will approve the EHSMS development plan and ensure financial and human resources are made available to meet objectives of the plan. Senior Management will be informed of successful implementation of the system through regular reports from the General Manager of Environment and the Site Managers. Senior Management will also review all audits and reports on significant accidents and environmental incidents. They will be informed immediately of all significant accidents and incidents, and respond in a way appropriate to procedures outlined in the Emergency Response Plan.

On a pre-established basis, (annually or in some cases bi-annually) Senior Management and the Environmental Committee of the Miramar Mining Corporation Board of Directors will review a report on the EHSMS. In the interest of continual improvement, Senior Management will provide guidance on changes to the system and access to the resources needed to make the changes.



## **References**

Canadian Standards Association/International Association of Standardization (ISO).  
14001:04. Environmental Management Systems – Requirements with Guidance for Use.  
23 pp.

Canadian Standards Association/International Association of Standardization (ISO).  
19011:03. Guidelines for quality and/or environmental management systems auditing.  
31 pp.

Canadian Standards Association. Z773-03. Environmental Compliance Auditing. 21 pp.

Canadian Standards Association. Z1000-06. Occupational Health and Safety  
Management. 41 pp.

Miramar Hope Bay Ltd. Emergency Response and Contingency Plan. October, 2005. 38  
pp. plus Appendices.

Miramar Hope Bay Ltd. Environmental Impact Statement. Doris North Project. Nunavut,  
Canada. October 28, 2005.

Miramar Hope Bay Ltd. Environment, Health and Safety Management System. Chapter  
6. Technical Report. October 2005.

Miramar Hope Bay Ltd. Environmental Policy. September, 2006. 2 pp.

Miramar Hope Bay Ltd. Health & Safety Policy. September, 2006. 2 pp.

Occupational Health and Safety Management Systems. OHSAS 18001:1999.

## **Appendix A**

### **Environmental Policy**



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### **Miramar's Environmental Policy**

We are committed to engaging in responsible, sustainable business practices in the way we deal with our investors, northern communities, and the environment. To this end, the Board of Directors adopted the following Environmental Policy:

*Miramar takes very seriously its responsibility to act as a steward of the environment. Therefore, Miramar will:*

- Conduct all operations in an environmentally sound manner which ensures compliance with all applicable national and local regulations
- Assign accountability and responsibility for implementation of the environmental policy and make environmental performance an important factor in the management review process
- Provide adequate resources, personnel and training so that all employees are aware of and able to carry out their responsibilities in accordance with the environmental policy
- Communicate openly with employees, regulatory agencies and the public on environmental issues and address concerns pertaining to potential hazards and impacts
- Work in cooperation with industry, the public and government toward the development of responsible environmental policies, laws, and regulations
- In locations where environmental regulations are absent, apply best management practices to achieve environmental protection consistent with industry standards
- Implement operating practices which incorporate the efficient use of energy and materials and minimizes the use and production of hazardous substances
- Establish and maintain appropriate emergency response plans for all activities and facilities
- Maintain a self-monitoring program at each facility to ensure compliance
- Conduct periodic environmental assessments at all Miramar facilities and develop and implement action plans to correct potential deficiencies in a timely manner
- Encourage all employees to report to management any known or suspicious departure from this policy or related procedures

Approved:



\_\_\_\_\_  
Tony Walsh, President and CEO

10/11/02

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Date

## **Appendix B**

### **Safety Policy**

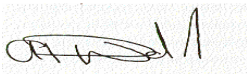
## **HOPE BAY SAFETY POLICY**

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

To achieve this, MHB will:

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

On behalf of Miramar Hope Bay Ltd.



Anthony Walsh  
President and CEO  
Miramar Hope Bay Ltd.

April 2005