Site Visit Report

For

Doris North Gold Mine Project

(NIRB File No. 05MN047)

October, 2009

Project:	Doris North Gold Mine Project
Project Owner:	Hope Bay Mining Limited, 300-889 Harbourside Drive North Vancouver, BC V7P 3S1 Tel: (604) 985-2572 Fax: (604) 980 0731
Site location:	The West Kitikmeot region, Nunavut
Contact:	**Chris Hanks** Director of Environment and Social Responsibility, Hope Bay Mining Limited **Alex Buchan** Manager of Community and External Relations, Hope Bay Mining Limited
Visit conducted by:	Li Wan: NIRB's Monitoring Officer George Taptuna: NIRB's Assistant Technical Advisor
Date of visit:	August 18, 2009
Photography:	Li Wan

1. Introduction

The Doris North Gold Mine project (the Project) is located on the mainland in the West Kitikmeot region of Nunavut, approximately 125 kilometre (km) Southwest of Cambridge Bay, 75 km Northeast of Umingmaktok, and 5 km South of Roberts Bay. On September 15, 2006 the Nunavut Impact Review Board (NIRB) issued Project Certificate #003 to Miramar Hope Bay Mining Ltd. (Miramar), pursuant to Section 12.5.12 of Article 12 of the Nunavut Land Claims Agreement (NLCA).

In March 2008, Newmont Mining Corporation (Newmont) completed acquisition of the Doris North/Hope Bay property from Miramar, and established a new business entity, Hope Bay Mining Ltd. (HBML), to operate the Project.

At the time of the site visit, the construction of project infrastructure, mainly the all weather road connecting Roberts Bay and the Doris Camp, the airstrip, and the associated camp facilities at Doris North, has been completed. In order to pursue a broader belt-wide development strategy, HBML has deferred the originally planned development of an underground mine and mill plant at Doris North, and consequently the current infrastructure is primarily used to facilitate HBML's advance exploration and baseline environmental studies in the Hope Bay Belt.

2. Objectives & Purpose of Site Visit

Pursuant to Sections 12.7.1 and 12.7.2 of the NLCA, the NIRB is responsible for monitoring the Project in accordance with Project Certificate #003. As part of this monitoring program, the objectives of the NIRB's site visit included the requirements to:

a) determine whether, and to what extent, the land or resource use in question is being carried out within the predetermined terms and conditions [NLCA Section 12.7.2(b)]; and
b) provide the information necessary for agencies to enforce terms and conditions of land or resource use approvals [NLCA Section12.7.2(c)].

Prior to the site visit, the following documents were reviewed:

- Doris North Gold Mine Project Certificate #003;
- Correspondence from HBML dated April 20, 2009 re: *Status of Compliance with the Project Certificate*;
- HBML Doris North Gold Mine Project 2008 Annual Report; and
- Other miscellaneous correspondence relating to the project monitoring.

From this review, a monitoring check list for this site visit was prepared by the Monitoring Officer, which included inspection of the following project components:

The Roberts Bay Area

- Thermistor cables and temperature loggers at the Roberts Bay Jetty, installation completed in March, 2009;
- Repaired jetty and barge anchors;
- 5 million liter (L) fuel tank and associated secondary containment facilities, installation completed in 2008;
- Containment booms and berms to control potential spills and the availability of spill kits;

- Fuel transfer pipe/hose connecting from the jetty to 5 million L tank; and
- Solid waste disposal facilities.

Quarry #2

- Current status of Quarry #2; and
- Site waste management.

Doris Camp Site

- Completed campsite and associated facilities such as fire fighting and wastewater treatment facilities;
- Reclamation of the previous Matrix Camp (construction camp) site; and
- Camp waste containers and prevention measures for wildlife access.

Other Items

- Power line to weather station on Doris Mountain;
- Floating fresh water intake;
- Completed water intake pipe;
- Tail Lake and water fall location;
- Locations of proposed south dam and north dam associated with future tailings lake;
- Storage facilities for Explosives and Hazardous Materials;
- The All-Weather Roads and Airstrip;
- Dust suppression methods;
- General wildlife issues, including:
  - The training record of the on-site wildlife specialist, if any
  - Wildlife monitoring and observation log located on site
- Discuss the compliance status of HBML in respect to correspondence dated April 20th, 2009.

3. 2009 Site Visit

On Tuesday August 18, 2008, NIRB Monitoring Officer Li Wan and Assistant Technical Advisor George Taptuna flew to the Doris North site from Cambridge Bay via HBML's air charter. Upon arrival at the Doris North site, a safety briefing was delivered by HBML's camp security personnel. The morning site tour included Roberts Bay area, the all weather road, Doris North camp site and the Doris Lake facilities. The NIRB staff was accompanied by Chris Hanks, Director of Environment and Social Responsibility for HBML, Bill Patterson and Katsky Venter, senior environment site staff. For the afternoon, the NIRB staff visited the air quality monitoring station located at Doris Mountain with Bill Patterson and Katsky Venter. At the conclusion of the site visit, the NIRB staff met with HBML staff to discuss the site visit, outstanding issues from previous correspondence and HBML's follow-up to the outstanding issues. The site tour was a great success encompassing all relevant project components and pertinent issues raised by both parties.

3.1. General update on project sites

In the Roberts Bay area, the jetty has been fully constructed and has been in operation since 2008. During the 2008 site visit, it was noted that the jetty in the Roberts Bay area was in need of repair as

part of the front of the jetty has slumped. Maintenance work on the slumped portion at the front end is still ongoing without hampering the current use of the jetty as an offloading facility.

HBML completed the installation of the required thermistor cables and temperature loggers in March 2009 as per Condition 19. These instruments are functioning in accordance with the designed monitoring plan.

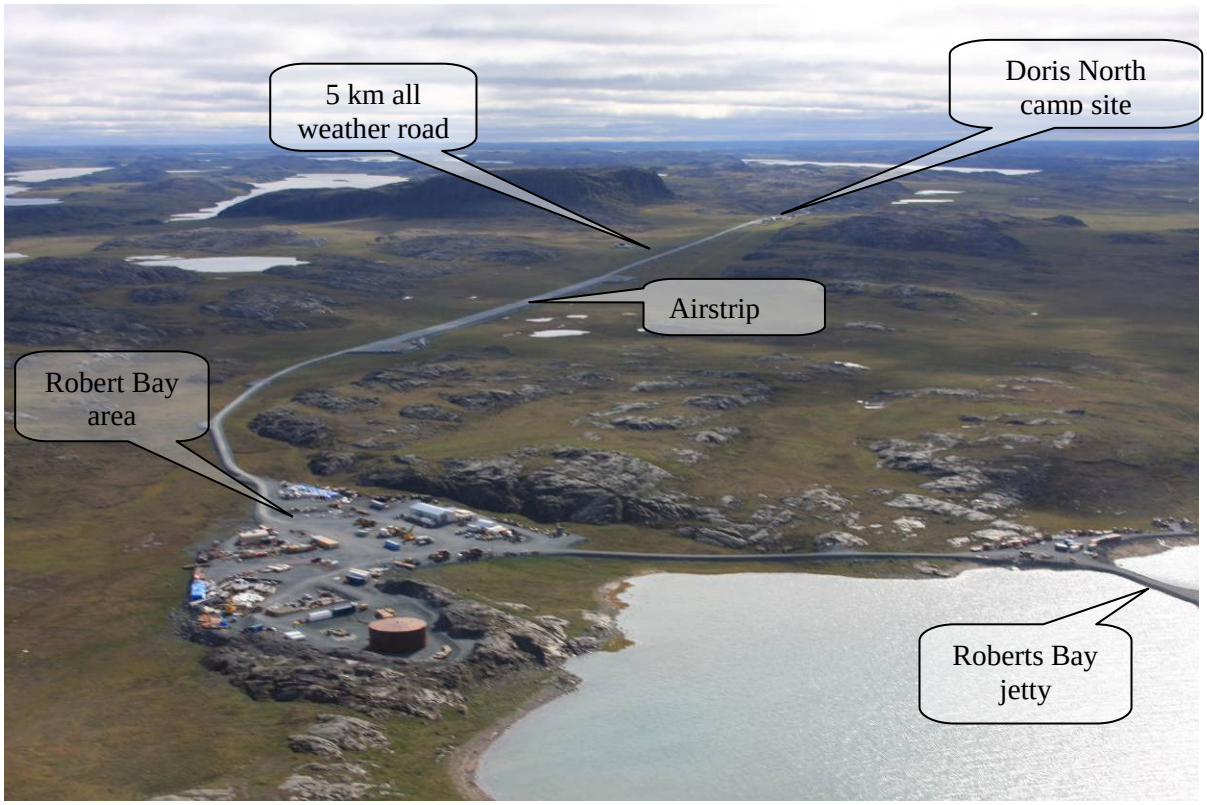

Figure 1. Aerial view of the whole Doris North Project Site (from Roberts Bay)

A 5 million L carbon steel fuel tank has been constructed and installed within a secondary containment berm in 2008 at the Roberts Bay site. Project staff explained that NTCL (Northern Transportation Company Limited) will be transferring all fuel from the barge at the jetty to the storage tank via a dedicated fuel line. Fuel transfer including spill prevention is the sole responsibility of NTCL before the fuel is filled into the storage tank.

All mine construction materials shipped in by the previous owner, Miramar, are stacked in the laydown areas, and kept in a neat and orderly condition. Included in this material is a large amount of empty fuel barrels which are under inspection by HBML's environment staff. Upon completion of the inspection and proper labeling, the empty fuel barrels will be shipped out by sealift. Also at the laydown area in Robert Bay, various construction wastes were stored and were waiting to be ship out to an approved waste disposal facilities in the Northwest Territories (NWT).

The all-weather road which connects Roberts Bay Jetty and Doris North camp site, and a 900 meter airstrip combined with the all weather road at upper portion of the road, have been in full operation to support ongoing advanced geotechnical and drilling programs in the Hope Bay District.

At the Doris camp site, the permanent camp and other campsite facilities, including the fire water tank, power generator house, a modular sewage packaging plant and core storage building are in operation. The permanent potable water pipeline with heat tracing has been installed along the main road to supply potable water for the camp from Doris Lake. The previous construction camp has been reclaimed and the site has been modified into helicopter pads.

From on-site observations, each completed project component is functioning as designed and maintained in good working order.

3.2. Roberts Bay Area

3.2.1. Roberts Bay Jetty

Condition 19 states:

> *MHBL shall install thermistor cables and temperature loggers in the jetty foundation. MHBL shall monitor the effects of the jetty on shallow water permafrost through operations and report the results of the monitoring collection to NIRB's Monitoring Officer.*

The thermistor cables and temperature loggers in the jetty foundation required by NIRB's Project Certificate were installed in March 2009. Data is being collected continuously and downloaded on a monthly basis by site personnel, and is transferred for monitoring and analysis by SRK (SRK Consulting [Canada] Inc.), The design of the monitoring protocol was reported to NIRB Monitoring Officer during the site visit and the first monitoring report will be submitted to the NIRB in 2010 according to HBML.

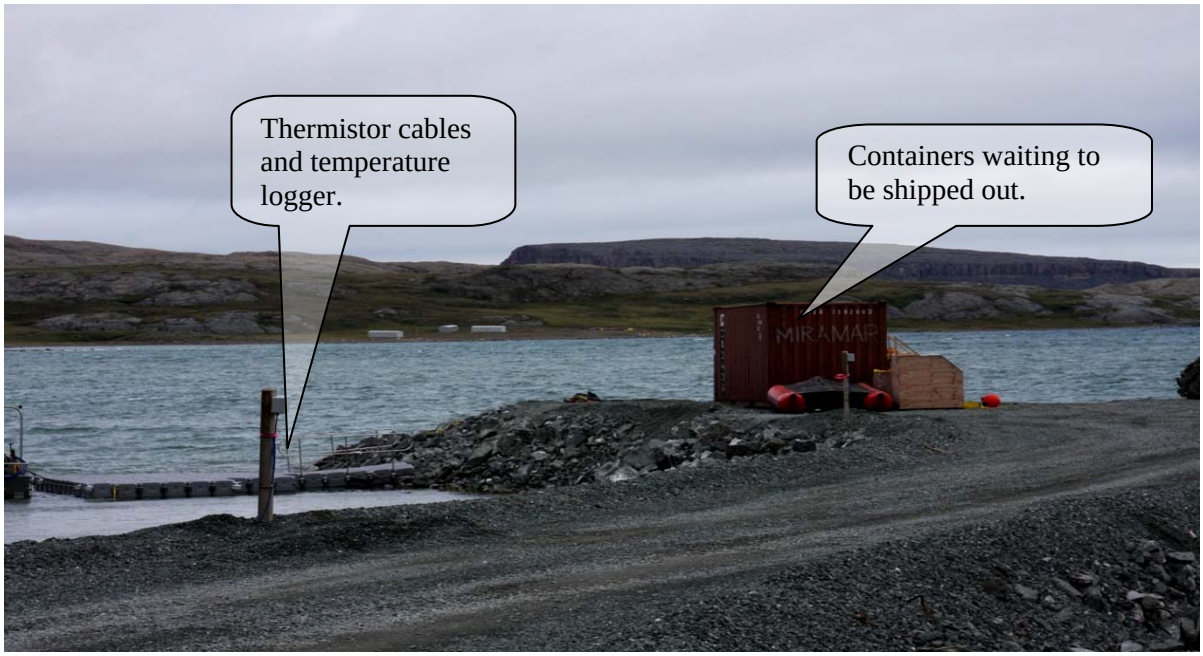

Figure 2. The jetty at Robert's Bay with installed thermistor and temperature loggers.

3.2.2. Fuel Tanks

Condition 33 states:

> *MHBL shall ensure that areas used to store fuel or hazardous materials are contained using the safest methods practically available.*

A 5 million L fuel tank made of carbon steel has been installed in a tank farm within the former Quarry #1 with pipelines connecting it to the pump station (see Figure 3). A secondary berm, with a 110% containment capacity of the fuel tank, has been installed surrounding the fuel tank. An impermeable lining was buried about 0.3 metres (m) under the surface of crushed granular materials within the secondary containment berm. The fuel tank is registered through Indian and Northern Affairs Canada (INAC). The facilities have been in operation since 2008 upon the completion of construction, and have been operating properly (no fuel spills to date).

Figure 3. Fuel Tank (5 million liter) at the former Quarry #1 site near Roberts Bay

3.2.3. Fuel transfer at Roberts Bay jetty

Condition 20 states:

> *MHBL shall ensure the use of containment booms and berms to control potential spills whenever fuel and or waste is transferred between a barge and the shore. MHBL shall ensure spill kits are at hand at these locations at all times.*

Fuel is pumped from a barge/container through a specifically designed hose system by NTCL. Proper equipment was on site in accordance with NTCL procedures and HBML's Emergency Response/Spill and General Contingency Plan during the transfer of fuel. According to the HBML site personnel during the site visit, booms are deployed and trained personal was at the transfer point throughout the entire operation. This was observed during last year's site visit when fuel was transferred from a barge to an on-shore facility.

As part of its comments on HBML's 2007 Doris North Project annual report, Transport Canada (TC) raised an issue related to HBML's operation of Oil Handling Facility (OHF) and associated regulatory requirements of an OHF. NIRB provided recommendations to HBML dated December 5, 2008, based on NIRB's monitoring in 2008. In correspondence dated February 23, 2009, HBML indicated that the implementation of an Oil Pollution Prevention/Emergency Plan was not a requirement under the NIRB Project Certificate. However, HBML did follow-up with NTCL with regards to this plan, and believed that the compliance with such a plan was the responsibility of NTCL. TC does not agree with HBML's interpretation and currently this issue remains unresolved.

Figure 4. Fuel transfer station and containers beside the fuel tank at Robert Bay

3.2.4. Waste management at Roberts Bay site

At the Roberts Bay laydown area, wastes are segregated and the site kept in neat and tidy condition. All non-combustible wastes generated during the camp construction as well as demolishing of the previous construction camp has been transported to the waste management area at Roberts Bay for shipping out by sealift. All hazardous materials are regularly shipped off site to authorized waste

disposal facilities in the NWT or Alberta. All combustible waste (including food and human waste) generated at Doris camp is transferred to Roberts Bay site and incinerated on a daily basis.

Figure 5. Incinerator at Roberts Bay

3.3. The All-Weather Road and Airstrip

An approximately 5 km all-weather road linking the jetty at Roberts Bay to the Doris camp site has been completed and has been in operation since 2008. Within the alignment of the all-weather road, a 900 m airstrip was constructed by widening a significant portion of the road. Road turnouts are available on both sides of the road for every 1 km interval. The all-weather road and airstrip are in good operating condition, and currently support project activities including advanced geotechnical and explorations programs being conducted by HBML for the Hope Bay belt development. As a dust suppressant, HBML will use EK-35, a widely used dust suppressant at mines in NWT, on its airstrip, roads and camp facilities.

3.4. Doris North camp site

3.4.1. Doris North Camp

Condition 34

> *If it becomes necessary, MHBL shall give notice of any planned changes to the mine facility, including Tail Lake and its operation, to the regulatory authorities and NIRB through its Monitoring Officer, immediately.*

The Doris North camp is located in the previous Quarry #4 site, which provided construction material for the camp and other facilities at Doris North camp site. The quarry operation was completed in early June 2008 followed by site restoration including site grading and slope stabilization. The construction of the 118-person camp was completed at the end of October 2008 and it has been in

operation since then. The Doris North camp facilities include a waste water treatment plant, a power generator house, fire water tank and related accessories. An additional treatment unit of blue-green algae for potable water from Doris Lake has been installed in the camp and is in operation.

During the camp construction phase, some non-substantial but necessary modifications were made to the initial plans based on design delineation and engineering practice. HBML has submitted detailed as-built drawings to the NIRB Monitoring officer in the February 2009 for review.

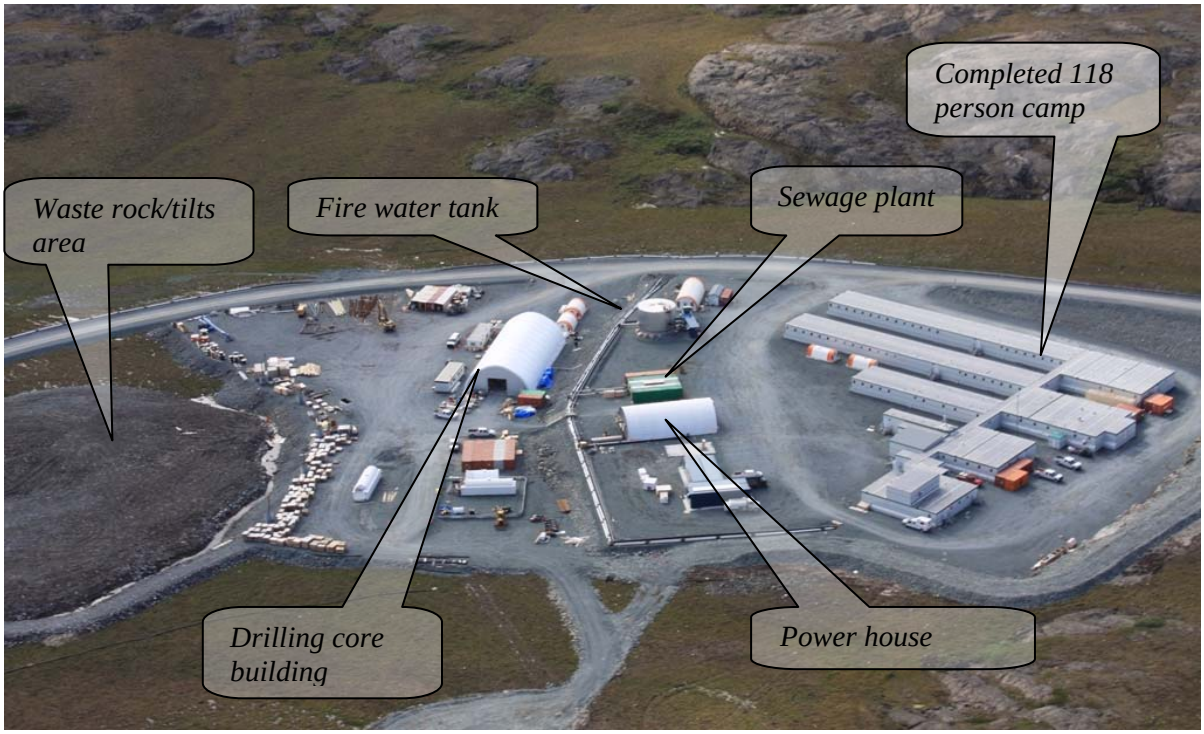

Figure 6. Campsite at Doris North

3.4.2. Construction Camp

The original construction camp (Matrix Camp) has been demolished and the site has been modified into helicopter pads, with associated communication and office facilities for helicopter operation.

Figure 7. Helicopter pads at original construction site at Doris North

3.4.3. Freshwater Intake

Potable water is taken from Doris Lake by a floating device and pumped to the Doris North camp through a water pump house located on the north shore of Doris Lake. A permanent potable water pipeline with insulation and heat tracing routes have been installed along the all-weather road from Doris Lake to the Doris North camp site. All facilities have been in operation and in good condition.

Figure 8. Potable water pump house at Doris Lake shore

3.4.4. Quarry #2

Quarry #2 is still in full operation, with quarry material being extracted and transported to a nearby facility for crushing and classification of rock fines. This quarry provides granular materials for all site construction. During this site visit, Quarry #2 was well organized. All wastes were properly segregated and stored appropriately at the site.

Figure 9. Quarry #2

3.4.5. Explosive Facilities

HBML indicated during the site visit that currently explosives required for use in Quarry #2 are ready-made off-site and brought to site for immediate use. An explosive preparation and storage unit has been built at the east side of the all weather road, a good distance from the road away from other facility in the area. Currently this facility is not in use but will be put into operation in the future.

Figure 10. Explosive storage and anufacturing facility

3.4.6. Tailings impoundment area (Tail Lake) and associated infrastructure

According to the Environmental Impact Statement for the Doris North project, Tail Lake, which is located at east side of Doris Lake, will be used as a tailings impoundment area. A North dam and a South dam would be constructed, and built prior to operation of a mill at the mine site. To date, no dams or related works have been constructed at Tail Lake.

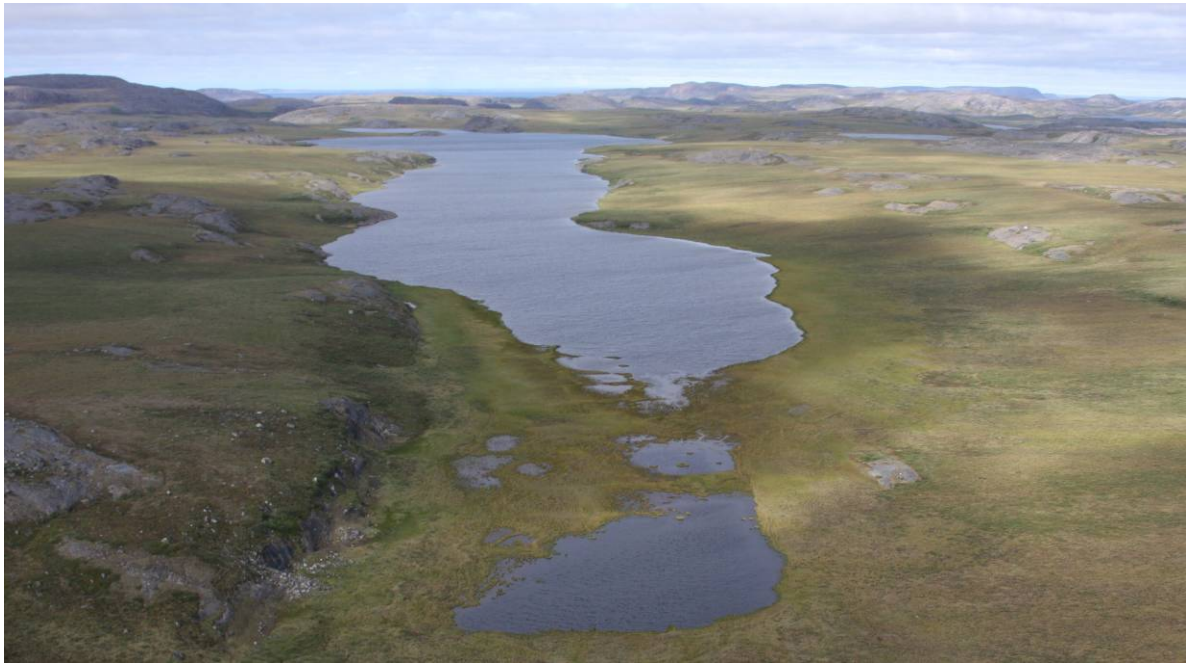

Figure 11. Northern aerial view of Tail Lake

3.5. Other Issues

3.5.1. Wildlife monitoring

Condition 23:

> *MHBL shall designate one of its employees as a primary wildlife contact for the mine, who will work with NIRB's Monitoring Officer and regulatory officials in communicating on-site activities and to fulfill reporting requirements.*

Condition 24:

> *As part of the training for MHBL's on-site wildlife specialist, MHBL shall provide training to that person in areas of bear encounters and safety, effects of noise on wildlife, recording wildlife sightings, waste management, records management, and reporting to NIRB's Monitoring Officer and regulatory officials.*

Due to its operation schedule (employees work on 3-by-3 week cross-shift), HBML has biologists as its onsite Environmental Coordinators that acts as the primary wildlife contact for the mine. In addition, site operations personnel and HBML's manager of Social Responsibility located in Cambridge Bay also share responsibilities for these conditions. Furthermore, according to HBML, *Bear*Wise, a Yellowknife, NWT firm that specializes in the management of wildlife encounters, is brought on site each year to provide bear safety training for all project staff.

In regards to HBML's Wildlife Mitigation and Monitoring Plan, GN-DoE raised an issue related to the baseline study methods of carnivore species, specifically grizzly bears and wolverines in the Hope Bay region. Based on its review of HBML's 2007 and 2008 Wildlife Mitigation and Monitoring Plan annual reports, GN-DoE recommended that HBML use DNA sampling as part of its baseline study methods for carnivore species. HBML did not agree with this approach based on the opinion of its professional biologist, however, HBML has agreed to use the DNA sampling technique recommended by GN-DoE for the 2010 field study season in conjunction with its other baseline sampling methods for grizzly bears and wolverines.

3.5.2. Noise monitoring

Condition 29 states:

> *MHBL shall develop and implement a noise abatement plan to protect people and wildlife from mine activity noise, including blasting, drilling, equipment, vehicles and aircraft. The noise abatement plan will be developed in consultation with GN-DoE, EC and HC, and includes: restrictions on blasting and drilling when migrating caribou, birds or local carnivores may be affected; the establishment of strict standards for noise levels; use of equipment and vehicles with the best noise attenuation devices; when practical, the use of fences or berms around noisy machinery or sites; flight corridor restrictions over sensitive areas with known concentrations of wildlife and birds whenever possible; and requiring with the exception of take off and approach for landing, a minimum flight altitude of 300 metres above ground level when flights to and from the mine site are passing near sensitive wildlife and bird areas. The noise abatement plan will also incorporate the use of sound meters to monitor sound levels at sites in and around the mine site and local study area. The location and design of the sound meters shall be selected in consultation with EC and set up immediately upon issuance of the Project Certificate for the purpose of obtaining baseline data, and during and after operations. The final noise abatement*

plan shall be filed with NIRB's Monitoring Officer within six (6) months of the issuance of the Project Certificate.

On March 14, 2007 MHBL filed a *Noise Abatement Plan* with the NIRB. According to the plan, noise baseline data was collected and analyzed from four different monitoring locations in 2007 and 2008 field seasons and results were report to NIRB. It has been found that certain areas (such as abatement measures to mitigate the potential impact) in the reports need to be addressed to better fit the *Noise Abatement Plan*.

3.5.3. Air quality

Condition 23:

MHBL will install and fund an atmospheric monitoring station. This station and its location shall be developed in consultation with EC and HC air quality officials and focus on particulates of concern generated at the mine site. The results of air-quality monitoring are to be reported every six (6) months to NIRB through the Monitoring Officer, and from there to all of the parties.

Metrological monitoring stations have been installed on the north Shore of Doris Lake in 2007 and the southwest side of the Doris camp, and are fully operational. These monitoring stations are operated and maintained by trained professionals, and appeared to be in good working condition. HBML stated the collected meteorological data has been reported to the NIRB's Monitoring Officer in *2008 Air Quality Monitoring Summary report* as per Condition 23.

Figure 12. Meteorological monitoring station on the north shore of Doris Lake.

An atmospheric monitoring station has been built on the Doris Mountain near a radio repeater station and has been put into operation since August 17, 2009. Total Suspended Particulate ("TSP") for PM10 and PM2.5 are being collected in accordance with the National Air Pollution Surveillance Network, the air quality monitoring data and analysis is expected to be reported in the next report.

Figure 13. Atmospheric monitoring station on Doris Mountain.

4. Findings

4.1. Fuel transfer from barge at jetty to fuel tank in Quarry #1

HBML told the NIRB staff that specifically designed hose system is applied when fuel is transferred from barge to the fuel tanks, furthermore, associated booms and berms are employed during transfer period (as it was found during site visit in 2008). There was no fuel transferring during this site visit, therefore the NIRB stuff did not see the hose system, and booms and berms on site.

The Oil Handling Facility in Roberts Bay has to comply with *Canada Shipping Act* as indicated by TC in correspondence dated July 28, 2008. HBML regards this as the responsibility of it's the oil shipping contractor (NTCL) before the fuel is transferred into HBML's fuel tank. HBML has discussed this issue with NTCL to confirm that NTCL has in place all of the pollution prevention and response plans required by TC under the *Canada Shipping Act*, Part 8 and under the Regulations. HBML is continuing to follow up with NTCL with respect to these requirements. Further communication between HBML and TC may be necessary to determine which company should be responsible for this regulatory requirement.

4.2. Wildlife issues

- On-site wildlife specialist training:

  All on-site personnel including HBML's on-site wildlife specialist, get wildlife safety related training two times a year, and wildlife sightings are reported and subsequently recorded in the

annual Wildlife Mitigation and Monitoring Report and quarterly wildlife report. These two reports have been submitted to NIRB Monitoring Officer by HBML, however the information regarding training for site wildlife specialist (responsible personnel) were not included nor submitted to the NIRB. The required training includes: effects of noise on wildlife, recording wildlife sightings, waste management, records management, which are required by Condition # 24 in the Project Certificate.

- Wildlife Mitigation and Monitoring Plan

  As discussed above, GN-DoE recommended that HBML should use DNA sampling as part of their baseline study methods for carnivore species. HBML has agreed to use the recommended DNA sampling method for the 2010 field study season along with its other baseline study methods and to run the DNA hair sampling technique for one year for both grizzly bear and wolverine. Further discussion is required by both parties to resolve the outstanding issues in regards to the Wildlife Mitigation and Monitoring Plan.

5. Summary

The construction of key infrastructure including the Roberts Bay jetty, tank farm, all-weather road and airstrip, Doris North campsite and accessory utilities have been completed, and are currently in operation to support HBML's advance exploration activities in Hope Bay belt. These facilities and associated operations activities show well managed conditions and maintenance, with adequate environmental protection protocols and procedures in place.

NIRB acknowledges that significant efforts have been made by HBML to meet the compliance requirements, and noticeable achievements have been achieved since the site visit in 2008. These include the installation of thermistor cables and temperature loggers in Robert Bay jetty foundation, and the installation of the air quality monitoring station at Doris North. Observations made by NIRB staff during the site visit in 2009 have shown that HBML has been compliant with the majority of the terms and conditions contained within the Doris North Gold Mine Project Certificate. The findings listed in this report may warrant further discussion between the NIRB and HBML in order to ensure the objectives of the terms and conditions in Project Certificate #003 are satisfied.