



Environment Canada
Environnement Canada

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Our File: 4703 003 018

June 26, 2008

Richard Dwyer
Licensing Administrator
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P.O. Box 119
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By email

Re: 2BB-MRY0710/TR/B5 Baffinland Iron Mines Corp. Submission of 2007 Annual Report

On behalf of Environment Canada (EC) I have reviewed the information submitted in connection with the above-noted report. The following specialist advice has been provided pursuant to Environment Canada's mandated responsibilities for the enforcement of the *Canadian Environmental Protection Act*, Section 36(3) of the *Fisheries Act*, the *Migratory Birds Convention Act*, and the *Species at Risk Act*.

Brief summary of project:

The Mary River Project, classified as a Type "B" Mining and Milling Undertaking, is an iron ore advance exploration project with a planned bulk sampling of iron ore using a free-draining open pit (side hill cut, with no generation of impounded water) with stockpiling ore at Milne Inlet for later shipping to Europe. Some 8 million liters of fuel (involving 11,000 fuel drums) will be used. In 2007, construction and drilling activities were initiated involving 31 exploration drill holes at two deposits, 139 geotechnical drill holes at the Mary River mine site, proposed rail alignment and proposed port sites. Drilling activities were completed in September. Road, airstrips and the Mary River camp were upgraded. In addition to the drilling and upgrade activities, two wastewater treatment facilities, two polishing/waste stabilization ponds, the Milne bulk fuel storage facility and the installation of a wind test tower near Mary River were completed in 2007. Several environmental studies were also undertaken. In 2008, drilling, blasting, and crushing of 250,000 tonnes of iron ore bulk sample from Deposit No. 1 at Mary River is scheduled with barge and ship loadings at Milne Inlet. A proposed reverse osmosis desalination plant for drinking water at Steensby is also being considered. The following comments, concerns and recommendations bear on activities that could potentially affect water quality.

Comments:

Environment Canada is of the opinion that some of the current and planned project activities may result in the deposit of deleterious substances to fish bearing waters.

Review of the 2007 report indicated:

- That there were five unauthorized discharges in 2007 (Table 6.1):
 - Unauthorized discharges occurred at both the Mary River and Milne Inlet sewage systems. The spill at the Mary River site was vacuumed up and stored in drums while the 2,700 L treated sewage spill at Milne Inlet froze in place to be monitored until it could be vacuumed up in spring 2008. EC is concerned that no follow-up appears to be planned to assess the effectiveness of the clean-up of the 2,700 L treated sewage spill at Milne Inlet camp.
 - Three fuel spills also occurred in 2007. The largest (~1,000 L) occurred approximately 25 m from the shore of Sheardown Lake and was cleaned up. The other two minor fuel drum spills were also cleaned up. However EC notes that there is no indication that the soil at the Sheardown Lake spill site was tested for residual contamination after the cleanup; therefore, it is unknown if the cleanup was complete.
- Ground water flow was observed below the drilling waste sumps on July 14, 2007 but no corrective action or source investigation had been carried as of December 31, 2007. EC is concerned that no follow-up was carried out to assess the quality of the water observed flowing toward the Mary River below the drill sumps
- The containment systems for the fuel storage facility (fuel bladder) and fuel stations at the Milne Inlet Bulk Fuel Storage Facility consist of sumps for the collection of precipitation within these areas. A mobile oil/water separator separates the oil from the water and the effluent (cleaned water) is discharged to the outside (Appendix C1, p. 2 of 40). EC is concerned that the proponent is proposing to discharge the cleaned water from the oil/water separator at the Milne Inlet Bulk Fuel Storage Facility prior to testing.
- The effluent of concentrated seawater resulting from a proposed Steensby Inlet Reverse Osmosis desalination plant will be discharged to the ocean. EC is concerned that impact or potential impact of the effluent has not been addressed in the current Abandonment & Reclamation Plan.
- Some 11,000 fuel drums (205 L) will be used during the bulk sampling program. It is proposed that empty drums unsuitable for reuse will be disposed of at the on-site landfill. Given that the overall volume of residual fuel in these drums could be considerable depending on the fuel transfer method employed and the number of drums involved, EC is concerned that the Abandonment and Reclamation Plan does not address the management of residual fuel from “empty” fuel drums that are unsuitable-for-reuse.
- Drilling waste management (Section 1.3 Summary of Project Plans for 2008 - Exploration Drilling): “Baffinland plans to replace the existing salt stations with new batch systems designed to reduce opportunities for spillage and reduce water use by utilizing on-demand water pumps, as well as increase brine solution consistency to better manage salt use.” Baffinland is to be commended for pursuing improved practices to reduce the opportunity for migration of salts into Mary River. EC would

appreciate receiving further details on how the proponent plans to follow up to assess the effectiveness of this mitigation in particular but also on any other measures Baffinland is pursuing to ensure containment of drilling waste fluids.

- EC also notes that the impacts of nutrient addition to Sheardown Lake as a result of sewage input are not assessed. Loadings from a 100 person camp could be significant, and the lake appears to be large enough to support a fish population so conforming with section 36(3) of the Fisheries Act is required. Appendix C-2 indicates that the proponent plans to use alum to remove phosphorus but no target levels for phosphorus are specified. The report is also unclear if the existing polishing ponds will continue to provide contingency storage for the new system. Is there a backup plan for sewage treatment/disposal in case of system upset?

Recommendations:

EC is of the opinion that the followings actions are needed to properly address concerns regarding the potential for contamination and evaluate the environmental risk to water quality:

- Provide an update of the follow-up actions taken to clean up the 2,700 L treated sewage discharge at the Milne Inlet camp.
- Assess the Sheardown Lake fuel spill site to confirm adequate excavation of the fuel contaminated soil.
- Provide an update of the investigation of the ground water flow observed below the drill sumps at the Mary River site and, if warranted, a risk assessment of this type of flow.
- Plans and facilities should be put in place to allow storage and testing the oil/water separator effluent prior to discharge.
- Assess the potential impact of the reject stream from the proposed Steensby Inlet Reverse Osmosis plant.
- In the Abandonment & Reclamation Plan, clarify the protocol for the removal of residual fuel prior to the disposal of empty fuel drums to the on-site landfill.
- Provide further details on the effectiveness of mitigation measures to reduce the potential for migration of salts into Mary River and of other drilling fluid containment measures.
- Assess of the impact of the addition of nutrient (treated sewage) into the Sheardown Lake and the planned target level of phosphorus removal by alum.
- Provide the details of contingency plan for managing sewage in the event of system upsets at treatment/disposal facilities.

Remarks Regarding the Report:

Here is a list of errors detected:

- In many places in the report, Part B Item (2) should read Part B Item (5).
- In Appendix E, the year in the letter "Baffinland Response to INAC (January 10, 2007)" should read 2008.

Please do not hesitate to contact me at 780-951-8976 with any questions or comments regarding the foregoing.

Sincerely,

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cc. Mike Fournier (Coordinator, EA-North, Yellowknife)
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