Fisheries and Oceans Canada | Pêches et Océans Canada

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June 26, 2015

Your file *Votre référence*
2AM- MRY1325

Our file *Notre référence*
07-HCAA-CA7-00050

Nunavut Water Board
Attention: Robin Ikkutisluk
Licensing Administrative Assistant
PO Box 119
Gjoa Haven, NU
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Dear Robin Ikkutisluk

Subject: Comments on Baffinland Iron Mines Corporation –150506 2AM-MRY1325 Interim Closure and Reclamation Plan (Revision 3) & Aquatics Effects Monitoring Plan (AEMP)

The Fisheries Protection Program (the Program) of Fisheries and Oceans Canada (DFO) would like to thank the Nunavut Water Board (NWB) for the opportunity to provide comments on 2AM-MR1325 Interim Closure and Reclamation Plan (rev. 3) & Aquatic Effects Monitoring Plan provided by Baffinland Iron Mines Corporation (BIMC).

As outlined in your request dated May 6, 2015, reviewers are invited to submit comments and recommendations to the NWB by June 26, 2015.

The Program has reviewed BIMC's *Interim Closure and Reclamation Plan* (*revision 3*) with the attached appendices A through C, and the *Aquatic Effects Monitoring Plan (AEMP)* with the attached appendices A through H, to provide comments related to the Program's mandate to maintain the sustainability and ongoing productivity of commercial, recreational and Aboriginal fisheries.

Interim Closure and Reclamation Plan:

Section 9.2.1 Accelerated Pit Filling

As part of the final mine closure and reclamation, DFO notes that BIMC has proposed accelerated open pit refilling options via pumping water from nearby water sources. Specifically, DFO notes that BIMC suggests four water sources that may be used for filling the pit: Sheardown Lake, Camp Lake, Mary Lake and Mary River. Based on the pumping costs associated with pumping distance and the maximum water extraction limits, BIMC considered Mary River as the preferred water source for pit filling. Additionally, BIMC states *"It has been calculated that the Mary River can run at the*

"10-year-dry" conditions, which runs approximately 67% less than the mean flow, with no loss of habitat or damage to the aquatic ecosystem. The difference between the mean flow and the 10-year-dry flow provides us with a volume of 25,000,000 m³. BIMC also states that "*Mary River is expected to freeze solid during the winter months*" and as such pumping from Mary River would have to occur during the summer months only.

DFO Comments:

Based on the information provided above it is DFO's interpretation that the "10 year dry" is the minimum flow conditions for the Mary River that avoids negative impacts to fish and fish habitat and that pumping will not occur when flow is at or below this rate.

According to Table 9-1, on average 25,000,000 m^3 of water would be available each year and this value was used in setting the optimum pumping rate. These estimates are based on average flow rates, however, flows do vary and in the case of higher than average flows, DFO assumes that flow in excess of the pumping rate (which has a fixed maximum) would remain in the Mary River. DFO also assumes that flows that are less than average would be pumped if greater than the low flow limit (10-year-dry) and no water would be pumped at flows that are at or below the low flow limit. When flows are less than average, it would take more than 2 years to fill the pit.

1. DFO requests that Baffinland confirm whether our interpretation of the proposed pit refilling scenario is correct.

It is DFO's opinion that flows which are 67% less than the mean flow seem quite low to avoid negative impacts to fish and fish habitat in the Mary River. The *"Framework for assessing the ecological flow requirements to support fisheries in Canada*" (DFO- CSAS 2013-017) recommends the following:

- Cumulative flow alterations <10% in amplitude of the actual (instantaneous) flow in the river relative to a "natural flow regime" have a low probability of detectable impacts to ecosystems that support commercial, recreational or Aboriginal fisheries.
- Cumulative flow alterations that result in instantaneous flows < 30% of the mean annual discharge (MAD) have a heightened risk of impacts to fisheries.

Also of note is that for cumulative water use >10% of instantaneous discharge or that results in flows < 30% of the mean annual discharge (MAD), a more rigorous level of assessment is recommended to evaluate potential impacts on ecosystem functions which support fisheries. The science advice recommends, as a basis to assess the impacts of flow alteration on fisheries, a minimum of 20 years of river flow data is to establish the "natural flow regime".

2. DFO requests that Baffinland provide the rationale for selecting the 10-year-dry discharge as the low flow criteria to avoid negative impacts to fish and fish

habitat. Additionally, DFO requests that Baffinland confirm that adequate baseline data on fish and fish habitat in the Mary River has been collected, to support these conclusions.

Based on the information provided there is uncertainty regarding the location and corresponding baseline hydrological data used in the calculations provided in Table 9.1 for the proposed Mary River water withdrawal location.

3. DFO requests that Baffinland provide the baseline hydrological data on which their calculations were based as well as methodology used to derive the volumes.

Aquatic Effects Monitoring Plan (AEMP):

Section 4.3.3 Initial Stream Diversion Barrier Study; Appendix H

DFO acknowledges that BIMC has proposed an initial stream diversion barrier study that "*will focus on obtaining a better understanding for existing flow conditions, and in particular, the frequency and duration of the occurrence of fish barriers and fish stranding that was identified in five (5) mine site streams*." As a part of the study, BIMC states that the five streams of interest will be monitored in spring and fall during initial years of operation, and that all five streams will be "*visually assessed to monitor for potential barrier and obstruction to upstream passage*". DFO notes that the explanation of "visually assessed" is unclear. As such, DFO requests clarification on the visual assessment methodology to determine water levels and barriers in the stream diversion barrier study proposed by BIMC. Additionally, will future surveys include only visual surveys or will electrofishing surveys also be considered to confirm fish presence/absence when there is uncertainty regarding fish passage at potential barriers?

Appendix F Lake Sedimentation Monitoring Program

In section 4.0 '*Monitoring Area and Sampling sites'*, BIMC proposes to monitor sediment deposition at sampling sites that will "*include a suspected Arctic Char spawning area*". However, BIMC states that "*specific spawning sites have not been identified within Sheardown Lake NW and the FEIS conservatively assumed that areas of hard substrate at water depths ranging from 2-12m in the lakes could potentially provide spawning habitat*". Since the deposition of sediment on Arctic Char eggs can adversely affect egg survival, the monitoring of sediment deposition should target actual spawning locations. Therefore DFO requests clarification on BIMC's future plans to identify Arctic Char spawning shoals for the sedimentation monitoring program.

DFO will continue to work cooperatively with the NWB and BIMC regarding the development of the Interim Closure and Reclamation Plan and the Aquatic Effects Monitoring Plan as they relate to the mandate of the Fisheries Protection Program.

If you have any questions concerning the above, please contact Georgina Williston at our Yellowknife office by telephone at (867) 669-4927 or by email at Georgina.Williston@dfo-mpo.gc.ca.

Yours sincerely,

Original Signed by

Julie Dahl
Regional Manager, Regulatory Reviews
Fisheries Protection Program

CC. Georgina Williston - DFO