



Water Resources Division
Resource Management Directorate
Nunavut Regional Office
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Your file - Votre référence
2AM-MRY1635
Our file - Notre référence
CIDM# 1286885

July 16, 2020

Robin Ikkutisluk
Licensing Administrator
Nunavut Water Board
P.O. Box 119
Gjoa Haven, NU, X0B 1J0
E-mail: licensing@nwb-oen.ca

Re: Crown-Indigenous Relations and Northern Affairs Canada Review of Revision 3 of the Phase I Waste Rock Management Plan for the Mary River Project, Water Licence No. 2AM-MRY1325 – Amendment No. 1, submitted by Baffinland Iron Mines Corporation

Dear Ms. Ikkutisluk,

Thank you for your April 20, 2020 email invitation to review and comment on the above-noted Revision 3 of the Phase I Waste Rock Management Plan for the Mary River Project. The submission includes a cover letter and proponent responses to intervenor comments on Revision 2, demonstrating how they've been addressed in Revision 3.

Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) reviewed the submission pursuant to its mandated responsibilities under the *Nunavut Waters and Nunavut Surface Rights Tribunal Act* and the *Department of Crown-Indigenous Relations and Northern Affairs Act*, and would like to provide the following comments to the Nunavut Water Board for consideration.

If you have any questions or require further information with respect to this matter, please contact me at (867) 975-4282 or email bridget.campbell@canada.ca.

Regards,

Bridget Campbell
Water Resources Coordinator, Nunavut Regional Office



Technical Review Memorandum

Date: July 16, 2020

To: Robin Ikkutisluik – Licensing Administrator, Nunavut Water Board

From: Bridget Campbell – Water Resources Coordinator, CIRNAC

Subject: **Crown-Indigenous Relations and Northern Affairs Canada Review of Revision 3 of the Phase I Waste Rock Management Plan for the Mary River Project, Water Licence No. 2AM-MRY1325 – Amendment No. 1, submitted by Baffinland Iron Mines Corporation**

Region: ☐ Kitikmeot ☐ Kivalliq ☒ Qikiqtani

A. BACKGROUND

Baffinland Iron Mines Corporation (BIMC) currently operates the Mary River iron ore mine in Nunavut, Canada. The current approved project allows a total iron ore production rate of 22.2 million tonnes per annum (Mtpa) through open pit mining. Waste Rock is stored near the open pit at the Waste Rock Facility (WRF) and is currently managed by the Interim Waste Rock Management Plan (WRMP).

BIMC submitted an application to the Nunavut Water Board (NWB) to amend NWB Water Licence No. 2AM-MRY1325 - Amendment No. 1 for Phase 2 of the Mary River Project which proposes to increase the total mine production to 30 Mtpa, among other changes. As part of the application, BIMC submitted the Phase 1 WRMP. Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) conducted a review of the application and identified waste rock management as an issue remaining unresolved, pending the results of ongoing studies meant to inform the management strategy in the Phase 1 WRMP.

Unexpected water quality issues associated with the WRF have been observed since mid-2017, indicating that waste rock characterization, acid rock drainage/metal leaching (ARD/ML) predictions and management plans generated in support of Phase 1 were inadequate. While the runoff water quality issue is being addressed as part of current operations and the Interim WRMP, BIMC has provided significant modifications to the site waste rock management strategy in the Phase 1 WRMP and ongoing research were recommended to resolve the issue.

BIMC submitted Revision 2 of the Phase 1 WRMP for review in December 2019, along with a number of appendices. CIRNAC reviewed Revision 2 of the Phase 1 WRMP and supporting documents.

CIRNAC provided comments and recommendations to further improve the Phase 1 Waste Rock Management Plan in a submission (Crown-Indigenous Relations and Northern Affairs Canada, 2020a) to the NWB on February 5, 2020, in parallel with the technical comments (Crown-Indigenous Relations and Northern Affairs Canada, 2020b) submitted by CIRNAC to the NIRB on February 6, 2020. BIMC responded to intervener comments on March 13, 2020 (Baffinland Iron Mines Corporation, 2020). A reply to BIMC responses to CIRNAC technical review comments was provided by CIRNAC on March 30, 2020 (Crown-Indigenous Relations and Northern Affairs Canada, 2020c) recommending further improvements.

BIMC provided Revision 3 of the Phase 1 WRMP on June 16, 2020. CIRNAC reviewed the most recent revision to evaluate the implementation of recommendations, made by CIRNAC in the March 30, 2020 submission, in the latest revision of the plan. Table 1 outlines the subjects of recommendations. Complete comments can be found in Section C. Further references can be found in Section D.

Table 1: Summary of Recommendations

Recommendation	Subject
R-01	Lake Sediment Management at the WRF
R-02, R-03	Recommendations from Supporting Studies

B. DOCUMENTS REVIEWED

The following table (Table 2) provides a summary of the documents reviewed by CIRNAC. Sub-appendices of document attachments are not noted in the table.

Table 2: Documents Reviewed by CIRNAC

Document Title	Author, File No., Date
Letter to the Nunavut Water Board Re: Phase 1 Waste Rock Management Plan - Revision 3	Baffinland Iron Mines Corporation, 2020-06-16
Attachment 1: Baffinland Response to Comments	Baffinland Iron Mines Corporation, 2020-06-16
Attachment 2: Phase 1 Waste Rock Management Plan, Revision 3	Baffinland Iron Mines Corporation, Document #: BAF-PH1-830-P16-0029, 2020-06-16
Appendix A: Waste Rock Management Plan For 2020 through 2021	Golder Associates Ltd., 2019-12-31
Appendix A1: Technical Memorandum: 2019 Geochemistry Waste Rock Investigation Results – Baffinland Iron Mines Mary River Project	Golder Associates Ltd., 2019-12-31
Appendix A2: Technical Memorandum: Assessment Of Freezing Of Waste Rock Materials At Baffinland Iron Mine	Golder Associates Ltd., 2019-12-31
Appendix A3: Technical Memorandum: Baffinland Waste Rock Facility Water Balance	Golder Associates Ltd., 2019-12-31
Appendix A4: Technical Memorandum: 2019 Waste Rock Facility Water Quality Predictions – Baffinland Iron Mines Mary River Project	Golder Associates Ltd., 2019-12-31



C. RESULTS OF REVIEW

Updates to Previous CIRNAC Comments on Revision 2

1. Lake Sediment Management at the WRF

Table 1: Previous Comments

CIRNAC recommended that BIMC provide further details on the anticipated procedures for sediment management at the WRF. Specifically, BIMC was requested to provide details regarding:

- i. an estimate of volume of sediment to be produced;
- ii. an assessment of the need for standby pond capacity;
- iii. details regarding the procedures for sediment handling, transport, and disposal; and
- iv. monitoring and sediment disposal record keeping practices.

BIMC responded to this recommendation with the following:

In-pond treatment is not expected to be utilized going forward with the addition of the WTP and increase in pond capacity. Additional information regarding record keeping and the process of evaluating the use of in-pond treatment has been added to the WRMP (Section 9.2.6). In the event that in-pond treatment is required in the future, Baffinland will complete the evaluation and record keeping required to ensure there is no long-term impact on pond capacity and will ensure that sediment is managed according to the sludge management process outlined in the WRMP.

Comment:

Based on the text provided in Revision 3 of the Phase 1 WRMP, there is no evidence support BIMC's statement that "in-pond water treatment is not expected to be utilized going forward." This statement should be added to the WRMP under Section 9. The majority of the information currently provided in Section 9.2 discusses aspects that are for the most part, unrelated to the present approach, and even state where in-pond treatment is expected to occur.

Section 9.2 of the plan should clearly state that water treatment will be through the use of the High Density Sludge (HDS) plant. It should also provide information on the design, operation, control and monitoring of the pumping systems to the water treatment plant, and provide a meaningful discussion and relevant information with respect to water treatment plant design, operations (normal operating ranges, peak operating range, alarms, emergency response, monitoring, etc.) as appropriate.

CIRNAC was unable to locate a reference to the commitment to "...complete the evaluation and record keeping required to ensure there is no long-term impact on pond capacity and will ensure that sediment is managed according to the sludge management process outlined in the WRMP" should in-pond treatment be required in the future, in Revision 3 of the WRMP. Further, Section 9.2.6 regarding sludge management does not outline specific strategies and thus provides little in the way of guidance or commitment to how sludge will actually be managed. This section should be expanded to provide more specific information on sludge management practices to be followed.



Recommendation:

(R-01) CIRNAC recommends that BIMC revise Section 9.2 to reflect the actual site water management issues with regard to the WRF and how BIMC now plans to address and management them, as outlined below:

- I. clearly state that water treatment as needed will be through the use of the HDS plant;
- II. provide information on the design, operation, control and monitoring of the pumping systems to the water treatment plant ;
- III. provide a detailed discussion with specific, relevant information with respect water treatment plant design, operations and monitoring, as appropriate;
- IV. expand the discussion of sludge management to provide more specific information on practices to be followed; and
- V. add the commitment that in the event of in-pond water treatment, BIMC will complete the evaluation and record keeping required to ensure there is no long-term impact on pond capacity, as outlined in CIRNAC comment 1
 - i. an estimate of volume of sediment to be produced;
 - ii. an assessment of the need for standby pond capacity;
 - iii. details regarding the procedures for sediment handling, transport, and disposal; and
 - iv. monitoring and sediment disposal record keeping practices.

2. Recommendations from Supporting Studies

Table 2: Previous Comments

CIRNAC recommended that BIMC follow the Golder recommendations for Water Balance to include relevant data such as mass loading rates based on observed run-off flow, water quality and geochemistry of the WRF, and a continue collection of climate data at the Mary River station.

BIMC responded to this recommendation with the following:

Baffinland intends to follow Golder's recommendations for the 2021 update of the water balance model, and will continue to collect climate data at Project meteorological stations.

Comment:

A Technical Memorandum was prepared by Golder Associates (Appendix A3) on the WRF Water Balance for the period January 2020 to September 2021. This was included as Appendix A of both Revision 2 (31 December, 2019) and Revision 3 (16 June, 2020) of BIMC's Phase 1 WRMP. As such, there were no updates made to the WRF Water Balance, to incorporate recommendations made by Golder in December 2019, presented in the Phase 1 WRMP Revision 3. It is not clear to CIRNAC when the WRF Water Balance Model will be updated with reliable measurements of pond water elevation, surface water flows, and site climate data.



Recommendation:

(R-02) CIRNAC recommends that BIMC update and calibrate the water balance for the Waste Rock Facility, as per the recommendations provided by Golder (2019), with reliable measurements of pond water elevation, surface water flows, and site climate data. Predictions of pond water quality should also be updated using the improved surface water flows.

(R-03) CIRNAC recommends that BIMC provide CIRNAC with an update of progress made to date and a specific timeline for when the earliest update to the model could be expected.

D. REFERENCES

Works Cited

Baffinland Iron Mines Corporation. (2020, March 13). Letter to the Nunavut Water Board Re: Response to Intervenor Comments, Phase 1 Waste Rock Management Plan Revision 2. *BIMC Response to Intervener Comments*.

Crown-Indigenous Relations and Northern Affairs Canada. (2020a, February 5). Letter to the Nunavut Water Board Re: Rock Management Plan (Revision 2) as part of the Phase 2 Amendment Application for the Mary River Project, Water Licence 2AM-MRY1325 - Amendment No. 1.

Crown-Indigenous Relations and Northern Affairs Canada. (2020b, February 6). Technical Comments: Baffinland Iron Mines Corporation Mary River Project Phase 2 Proposal.

Crown-Indigenous Relations and Northern Affairs Canada. (2020c, March 30). Letter to the NWBRe: Crown-Indigenous Relations and Northern Affairs Canada Reply to Baffinland Iron Mines Corporation Response to Comments on the Phase I Waste Rock Management Plan for the Mary River Project, Water Licence No2AM-MRY1325 – Amendment No. 1.