

July 7, 2020

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**Re: Response to Comments on the Mine Site Waste Rock Facility Pond Expansion and Drainage System Construction Summary Report, and the Waste Rock Water Treatment Plant Construction Summary Report
Mary River Project, Type 'A' Water Licence - 2AM-MRY1325 - Amendment No. 1**

Baffinland Iron Mines Corporation (Baffinland) provides the attached responses to comments received from Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC)¹ and Environment and Climate Change Canada (ECCC)² regarding the Waste Rock Facility Pond Expansion and Drainage System Construction Summary Report (CSR), and the Waste Rock Water Treatment CSR submitted to the Nunavut Water Board on May 21, 2020. Baffinland has addressed the comments provided as detailed in Attachment 1. It is noted that the comments received from ECCC relate to the Phase 1 Waste Rock Management Plan in Appendix D of the Waste Rock Water Treatment CSR, and are unrelated to the construction engineering, documentation or oversight contained in the CSR.

We trust that the attached responses provide additional clarification on the Construction Summary Reports. Please do not hesitate to contact the undersigned should you have any remaining questions or comments.

Regards,

A handwritten signature in black ink, appearing to read "Chris Murray", with a large, stylized loop at the end.

Christopher Murray
Environmental & Regulatory Compliance Manager

Cc: Karén Kharatyan (NWB)
Chris Spencer, Jared Ottenhof (QIA)
Bridget Campbell, Godwin Okonkwo (CIRNAC)
Eva Walker, John Olyslager (ECCC)
Megan Lord-Hoyle, Lou Kamermans, Timothy Sewell, Shawn Stevens, Connor Devereaux, Arron MacDonell,
Simon Fleury, Daniel Janusauskas, Allan Knowlton, Lenny Tokar (Baffinland)

Attachments

Attachment 1: Baffinland Response to Comments

¹ CIRNAC (2020) Re: Crown-Indigenous Relations and Northern Affairs Canada Review Comments for the Construction Summary Reports for the Mine Site Waste Rock Facility Pond Expansion and Drainage System for the Mary River Project, Water Licence No2AM-MRY1325 – Amendment No. 1 Letter dated June 22, 2020.

² ECCC (2020) RE: 2AM-MRY1325 – Baffinland Iron Mines Corp. – Mary River Project – Submission of Construction Details for the Waste Rock Pond Water Treatment Plant. Letter dated June 29, 2020.

ATTACHMENT 1

Baffinland Response to Comments

Table 1 - Response to Comments on Waste Rock Facility Construction Summary Reports

Comment ID	Comment	Baffinland Response
CIRNAC-1	<p>Section 6.0 (pg. 38) of the Construction Summary Report for the Waste Rock Facility Pond lists the as-built drawings which are provided in Appendix C. A number of the stamped asbuilt drawings in this list appear to have had no modifications from the issued for construction drawings. Although it is possible to build infrastructure exactly as it was drawn in the issued for construction drawings, changes are often made on site. It is unclear whether the infrastructure has been built exactly to the design, or if the changes have not been reflected in the as-built drawings.</p> <p>Recommendation: CIRNAC recommends that BIMC confirm whether all of the as-built drawings listed in Section 6.0 reflect the changes on site, and whether they include all of the surveyed information.</p>	<p>Appendix C reflects the as-built condition, as certified by the Engineer of Record, and include all changes to the design drawings. All structures were surveyed in the field after construction, and where actual coordinates matched design coordinates the original drawing was used for the as-built. All other changes to the design are noted in Section 6.0</p>
CIRNAC-2	<p>Issues with pond leakage have been observed from the Waste Rock Facility Pond in 2017, rendering the impermeability of the pond liner a concern to CIRNAC. Destructive and nondestructive testing on the membrane seams has been reported by Golder in Sections 4.5 to 4.8 of the Construction Summary Report for the Waste Rock Facility Pond. On page 5, Golder states that "... Layfield had not completed all non-destructive testing at the time of Golder demobilizing from site on November 27, 2019." It is not clear whether the remainder of these tests have been completed, or if this report includes results from tests carried out after Golder demobilized.</p> <p>Further, based on the photos provided in Section 5 of the Construction Summary Report for the Waste Rock Facility Pond, portions of the geotextile and the membrane appear to have been installed in snow conditions. It is unclear whether the snow was cleared prior to installing the geotextile and the membrane to ensure that the installation is in compliance with the attached specifications.</p> <p>Recommendations: CIRNAC recommends that BIMC clarify whether all tests on membrane seams have been completed and reported. CIRNAC recommends that BIMC clarify what measures were taken to ensure installation was in compliance with the specifications given there was snow on site.</p>	<p>All test seams have been completed and reported. 3rd party representation by Golder departed site on November 27, 2019, however Layfield continued to perform and document all seam tests per specification noted in Appendix F.2 (Layfield QA-QC) for the entire project. Seam and Test Logs for all seams completed are provided in the Layfield Project Completion QA/QC Package contained in Appendix D of the CSR.</p> <p>The areas of geotextile and membrane which were installed in winter had the snow accumulation removed to the bedding material prior to installation of the geotextile and membrane by both equipment and hand. A thin (1-3mm thick) hard packed residual layer of snow occasionally remained which would not affect the performance of the membrane system as determined by onsite Engineer (See picture figure 45 in CSR report). Note that the intermediate bedding was placed and compacted prior to snowfall (Figure 30 - Sept. 15, 2019), and was inspected by Golder at the time of placement.</p>
CIRNAC-3	<p>From Section 3.0 Construction Quality Control (pg. 7) of the Construction Summary Report for the Waste Rock Water Treatment Plant, it is not clear how the material was determined to be suitable for construction and whether a third party geotechnical firm was involved in the onsite quality control. CIRNAC would consider it prudent to include discussions regarding the compaction testing on the granular base in the Construction Summary Report.</p> <p>Recommendation: CIRNAC recommends that BIMC clarify how the granular base material was determined to be suitable for construction, and whether a third party geotechnical firm was involved in the onsite quality control.</p>	<p>Granular material was reviewed for construction suitability and inspected by the on site Engineer and Geologist visually. Compaction was performed using heavy duty Equipment and visually verified. Compaction effort and number of passes was achieved, and surveyed to ensure thickness layer was below maximum thickness. The on site Baffinland Engineer of Record and geologist were involved in on site quality control.</p>
ECCC-1	<p>The geotubes being used for filtration of the treated effluent are very large, and are contained in a bermed area (see photos in Figures 17 and 18). The report states in Section 12 - Required Maintenance that when the geotubes are full, they must be replaced. The report recommends constructing a second geotube pond for this. There is no information on how geotubes will be decommissioned and disposed of.</p> <p>Recommendation ECCC recommends that the proponent describe and include geotube decommissioning and disposal in the mine's interim closure and reclamation plan (ICRP).</p>	<p>Baffinland notes that this comment is not related to the engineering, construction activity or quality control of the construction of the Water Treatment Plant (WTP), rather it is related to the operation and maintenance of the WTP, which was addressed in both Modification No. 7 to the Type A Water Licence, and the revised Phase 1 Waste Rock Management Plan.</p> <p>Baffinland considers any pond sediment and sludge captured to be PAG. Once the geotube bags utilized at the WRF treatment plant reach capacity, they are to be drained, removed and encapsulated within the WRF in a PAG deposition area, with immediate coverage with non-AG material to promote freezing within the frozen core of the WRF. Geotubes will be placed at a designated area within the WRF and their location surveyed. As the quantity of sludge and sediment is minimum as compared to the overall pile tonnage, no issues are expected with the management of this material of the life-of-mine. A second geotube pond was included in Baffinland's 2020 Work Plan, such that the existing geotubes could be replaced by new geotubes in the new pond when they have been exhausted and removed for disposal. As this is part of the ongoing operation and maintenance of the WTP, it is not clear how this would be incorporated into the ICRP as recommended by ECCC. As the geotubes will be disposed of as PAG material, the closure objectives of the WRF are sufficient to capture the closure objectives and criteria relative to the geotubes.</p>

Table 1 - Response to Comments on Waste Rock Facility Construction Summary Reports

Comment ID	Comment	Baffinland Response
ECCC-2	<p>The Golder report titled “Waste Rock Management Plan For 2020 through 2021”, and dated Dec. 31, 2019, attached to the Waste Rock Management Plan V2 includes predictions for water quality that are based on 2019 data for the pond, and states that ongoing water treatment will be required through 2021. This report includes updated water quality predictions, which are compared to Metal and Diamond Mining Effluent Regulations (MDMER) criteria, and so did not include comparisons for sulphate. The report’s predictions for sulphate were 3429 mg/L in 19/20 and 3073 in 20/21 for an average runoff year. Sulphate data collected in 2018 and 2019 were significantly higher than predictions, and the levels would be of concern at end-of-pipe. For example, in August 2018, Baffinland reported concentrations of 2700 – 4930 mg/L SO4; in August 2019, >5400 mg/L SO4.</p> <p>Recommendation ECCC recommends that the proponent identify the reason for the discrepancy in sulphate levels and predictions, and determine if reductions in sulphate concentrations can be achieved.</p>	<p>Baffinland notes that this comment is not related to the engineering, construction activity or quality control of the construction of the Water Treatment Plant (WTP) contained in the Construction Summary Report, rather it is related to the revised Phase 1 Waste Rock Management Plan.</p> <p>Appendix E prediction are pre-treatment and not indicative of the final post-treatment results. Baffinland conducted monthly acute lethality testing from the Waste Rock Facility WTP effluent with compliant results in 2019. Baffinland will continue to monitor the sulphate levels in the WTP effluent and will evaluate the need for potential treatment following the results of the update water balance and quality modeling in 2021. Water quality monitoring will continue in 2020 as per Baffinland’s Water Licence and MDMER sampling requirements.</p>