



Water Resources Division
Resource Management Directorate
Nunavut Regional Office
918 Nunavut Drive
Iqaluit, NU, X0A 3H0

Your file - Votre référence
2AM-MRY2540
Our file - Notre référence
GCDocs#148590737

July 14, 2026

Richard Dwyer
Manager of Licensing
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's Review Notice of Construction for Water Treatment Ponds for Baffinland Mary River, Type A Water Licence No. 2AM-MRY2540

Dear Mr. Hunter,

Thank you for the invitation to review the Notice of Construction – Water Treatment Ponds for Type A Water Licence 2AM-MRY2540 for the Mary River Project (the “Water Licence”).

Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) examined the application 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*. Please find CIRNAC comments and recommendations in the attached Technical Memorandum.

If there are any questions or concerns, please contact me Lauren Perrin at lauren.perrin@rcaanc-cirnac.gc.ca or Andrew Keim at andrew.keim@rcaanc-cirnac.gc.ca.

Sincerely,

Lauren Perrin
Water Management Specialist



Technical Review Memorandum

Date: July 14, 2026

To: Robert Hunter– Licensing Administrator, Nunavut Water Board

From: Lauren Perrin– Water Management Specialist, CIRNAC

Subject: Crown-Indigenous Relations and Northern Affairs Canada’s Review of Baffinland Notice of Construction for Water Treatment Ponds under Part D. of Type A Water Licence No: 2AM-MRY2540.

Region: ☐ Kitikmeot ☐ Kivalliq ☒ Qikiqtani

A. BACKGROUND

The Mary River Project is an operating high-grade iron mine located in the Qikiqtani Region of Nunavut, on northern Baffin Island. The mine is owned and operated by Baffinland Iron Mines Corporation (Baffinland) and includes the Mine Site, the Milne Port site, and a 100 km-long Tote Road connecting the two sites. The current approved project allows iron ore production through open pit mining. Part D of Water Licence 2AM-MRY2450 (the “Water Licence”) requires the Proponent to submit notice of construction plans. CIRNAC has reviewed the plans provided by Baffinland, prepared by Pinchin Ltd. on June 25, 2026. CIRNAC provides the following comments and recommendations pertaining to the construction package. A summary of the subjects of recommendations can be found in Table 1. Documents reviewed as part of this submission can be found in Table 2 of Section B. Detailed technical review comments can be found in Section C.

Table 1: Summary of Recommendations

Recommendation Number	Subject
R-01	Permafrost risk
R-02	Protection measures
R-03	Monitoring

B. DOCUMENTS REVIEWED AND REFERENCED

The following table (Table 2) provides a list of the documents reviewed under the submission and reference during the review.

**Table 2: Documents Reviewed and Referenced**

Document Title	Author, File No., Rev., Date
262626 2AM-MRY2540 Type A Notification_Mine Site Water Treatment Pond	Baffinland, June 26, 2026
262626 2AM-MRY2540 Att1. Final BasisDesign WT Ponds M. RiverMineJun25,2026	Pinchin, 369884, June 25, 2026

C. RESULTS OF REVIEW

1. Permafrost Risk

Comment:

The proposed pond design acknowledges the presence of shallow groundwater, ice-rich soils, and permafrost within the project area. However, subsurface characterization within the pond footprint is limited, consisting of only two shallow boreholes completed in 2026 and reliance on historical investigations conducted nearby. The report identifies the potential for seasonal soil movement, settlement, and permafrost degradation, but does not include thermal modelling or a detailed assessment of long-term pond performance under changing ground conditions. Given the importance of maintaining liner integrity and preventing contaminant release, uncertainty regarding subsurface ice conditions and permafrost stability presents a potential risk to the long-term performance of the containment system.

Recommendation:

(R-01) CIRNAC recommends that Baffinland complete additional pre-construction subsurface investigations to confirm the presence or absence of ice-rich soils within the pond footprint. Additionally, expand the permafrost monitoring program that includes thermistors to assess long-term performance of the ponds and associated berms.

2. Protection Measures

Comment:

The proposed ponds will contain impacted water characterized by elevated concentrations of ammonia, hydrocarbons (including BTEX and petroleum hydrocarbon fractions), and oil and grease. The design relies on a geomembrane liner as the primary containment measure; however, no leak detection or seepage monitoring system is proposed. While the Pinchin report recommends groundwater monitoring wells around the ponds, it does not commit to their installation prior to operation. In the event of liner failure or degradation, there is a potential risk of contaminant migration to groundwater and subsequently to surrounding freshwater environments. Baseline groundwater conditions and ongoing



monitoring are necessary to support source water protection objectives and confirm containment performance.

Recommendation:

(R-02) CIRNAC recommends that Baffinland install an appropriate groundwater monitoring network around the proposed ponds prior to commissioning, including upgradient and downgradient monitoring locations, to collect baseline groundwater quality data. Monitoring parameters should include, at a minimum, pH, conductivity, ammonia, major ions, hydrocarbons (PHCs), BTEX, and any other site-specific contaminants of concern. Baffinland should also provide details regarding contingency measures for liner failure and seepage detection. If this is already completed, CIRNAC requests Baffinland share these lab reports.

3. Monitoring**Comment:**

The proposed treatment approach relies on pH adjustment, sedimentation, oil separation, and long-term storage to reduce contaminant concentrations, particularly ammonia. The influent water is expected to contain elevated ammonia concentrations (average approximately 1,024 mg/L), and treatment involves raising pH to approximately 11.5 to promote ammonia volatilization. While the report identifies pH, total ammonia nitrogen (TAN), and oil and grease as key monitoring parameters, it does not clearly describe expected treatment performance, target effluent quality objectives, contingency measures if treatment targets are not achieved, or operational controls for managing high-pH water. Additional information is required to demonstrate that the proposed system will effectively support future treatment and discharge objectives while minimizing environmental risk.

Recommendation:

(R-03) CIRNAC recommends that Baffinland provide additional information regarding the expected treatment performance of the proposed pond system, including anticipated reductions in ammonia, hydrocarbons, and oil and grease, proposed water quality objectives, operational monitoring requirements, and contingency measures should treatment targets not be achieved. CIRNAC also recommends that Baffinland provide a pH management and monitoring plan for water stored within the ponds. Approvals shouldn't be issued until such time as an approved monitoring program for the ponds have been submitted and reviewed.