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

Your file - Votre référence
2AM-BRP1831
Our file - Notre référence
GCDOCS #123538488

March 15, 2024

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 of the Back River Project 2AM-BRP1831 Llama and Umwelt Lake Dewatering Plan

Dear Richard,

Thank you for the opportunity to review the Llama and Umwelt Lake Dewatering Plan, submitted by B2Gold Nunavut, for Type A Water Licence No. 2AM-BRP1831.

Crown-Indigenous Relations and Northern Affairs Canada examined the Plan 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 comments and recommendations in the attached Technical Review Memorandum.

If there are any questions or concerns, please contact Joyce Demers at (867) 975-3877 or Joyce.Demers@rcaanc-cirnac.gc.ca.

Sincerely,

John MacInnis
A/Senior Environmental Assessment Specialist
Impact Assessment, Nunavut Regional Office
Crown-Indigenous Relations and Northern Affairs Canada

Technical Review Memorandum

Date: March 15, 2024

To: Richard Dwyer, Manager of Licensing, Nunavut Water Board

From: Joyce Demers, A/Regional Manager, Crown-Indigenous Relations and Northern Affairs Canada

Subject: Crown-Indigenous Relations and Northern Affairs Canada's Review of the Back River Project 2AM-BRP1831 Llama and Umwelt Lake Dewatering Plan

Region: ☒ Kitikmeot ☐ Kivalliq ☐ Qikiqtani

A. Summary

B2Gold Nunavut provided the Nunavut Water Board with its Llama and Umwelt Lake Dewatering Plan, in accordance with the Type A Water Licence No. 2AM-BRP1831, on February 23, 2024. Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) has reviewed the Llama and Umwelt Lake Dewatering Plan and provided comments and recommendations. Documents reviewed as part of this submission can be found in Table 1, and detailed comments and recommendations can be found in Section B.

Table 1. Documents Reviewed and Referenced

Document Title	Author
Llama and Umwelt Lake Dewatering Plan	B2Gold Corp., Version 1.0, February 2024
Back River Project Water and Load Balance Report	WSP Golder, August 2022
Back River Project Hydrodynamic and Water Quality Modelling of Goose Lake	WSP Golder, August 2022
Site Water Monitoring and Management Plan	Sabina Gold & Silver Corp., November 2015
Water Licence No. 2AM-BRP1831 (Amendment No. 1)	Nunavut Water Board, October 15, 2021
Back River Project 2022 Annual Report for Water Licence 2AM-BRP1831	Sabina Gold & Silver Corp., March 2023
Sabina Gold & Silver Corp. Back River Project – Aquatic Baseline Synthesis Report: *Appendix A to the Aquatic Effects Management Plan*	Golder Associates Ltd., July 2019
Back River Project Water Management Plan	Sabina Gold & Silver Corp., April 2022

B. Results of Review

1. CIRNAC-#R-01: Water Quality Action Levels

The Licensee is required to monitor effluent discharge from the dewatering of Llama and Umwelt Lakes into Goose Lake. Effluent discharge quality limits are established for total suspended solids (TSS), turbidity, aluminum, and pH, as per Part D, Item 26 of the Type A Water Licence.

In the Llama and Umwelt Lake Dewatering Plan, the Licensee indicated that TSS concentrations will be used to guide water treatment and dewatering activities to Goose Lake. In Section 6.2, the Licensee described measures that would be taken if TSS concentrations approach or exceed discharge quality limits, but other parameters, such as pH, are not discussed.

CIRNAC notes that using TSS as the only indicator for water treatment and dewatering activities may not be sufficient for ensuring compliance with water quality discharge limits to Goose Lake (station BRP-01). For instance, TSS concentrations in Llama Lake outflows in 2018 were reported as <3.0 mg/L, but field-measured pH were less than 6.0 on June 11, July 14, and August 11 (Aquatic Baseline Synthesis Report, Appendix 2C – 2018 Raw Water Quality Data – Lakes and Streams, pg. 1219/1676). These field measurements demonstrate that TSS concentrations can be less than the effluent quality limits (15 mg/L maximum average or 30 mg/L maximum in a grab sample), while pH can be below the acceptable limit (i.e., between 6.0 and 9.5).

CIRNAC recommends that the Licensee update the Llama and Umwelt Lake Dewatering Plan to reflect how it will respond if water sampling indicates other parameters, such as pH, exceed water quality discharge limits to Goose Lake, as outlined in the Type A Water Licence.

2. CIRNAC-#R-02: Peak Freshet Discharge Rate

The Licensee indicated that it intends to discharge water at a rate no greater than 10% of the average peak freshet discharge rate of Goose Lake, which was reported to be 231,000 m^3/day, to ensure pumping impacts on flow are within system tolerances and natural variability. CIRNAC notes that the Licensee did not provide supporting information to validate this statement in the Llama and Umwelt Lake Dewatering Plan.

CIRNAC identified the following passage in the Site Water Monitoring and Management Plan, which was submitted to the Nunavut Impact Review Board (Section 8.1 - Construction Phase, pg. 47/53):

> "*If released volumes of water change stream base flows or water levels by greater than 10% of baseline, then water transfer rates will be adjusted as required"*.

However, CIRNAC reviewed other documents listed in Table 1 and did not identify any explicit references to the reported average peak freshet discharge of 231,000 m^3/day for Goose Lake.

Applicable management plans and/or analysis should be referenced to support statements in the Llama and Umwelt Lake Dewatering Plan. Without this information, CIRNAC is unable to assess the adequacy and accuracy of the Licensee's statement. CIRNAC recommends that the Licensee reference applicable management plans and/or analysis that supports any statements (e.g., average peak freshet discharge rate for Goose Lake) outlined in the Llama and Umwelt Lake Dewatering Plan.

3. CIRNAC-#R-03: Dewatering Schedule

The Licensee indicated that Llama Lake will be dewatered to facilitate the construction of an open pit and mining operations, and Umwelt Lake will be dewatered to facilitate construction of the Saline Water Pond. It is expected that water from Llama Lake and the tributary ponds will likely be discharged to Goose Lake via Umwelt Lake, which is the natural downstream waterbody from Llama Lake and upstream waterbody from Goose Lake.

After reviewing the Llama and Umwelt Lake Dewatering Plan, it is unclear to CIRNAC if the Licensee intends to dewater both lakes at the same time. The timing of dewatering activities should be clarified because the anticipated volume of water discharged from Llama Lake is large compared to the current volume of water in Umwelt Lake. For example, the volume of water in Umwelt Lake would increase by approximately 10% after a continuous day of pumping at the maximum rate of 23,100 m^3/day, if dewatering does not proceed concurrently at Umwelt Lake. Excess water that is not contained within Umwelt Lake may contribute to enhanced overland flow and erosion, impacting water quality in recipient environments.

CIRNAC recommends that the Licensee update the Llama and Umwelt Lake Dewatering Plan to reflect the timing of its dewatering activities.