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Richard Dwyer
Manager of Licensing
Nunavut Water Board
P.O. Box 119
Gjoa Haven, Nunavut
X0B 1J0

Sent by e-mail:

June 12th, 2024

RE: Review of update Water Management Plan for Back River Project

Dear Richard Dwyer, the KIA has completed it review of the updated Water Management Plan for the Back River Project. In our discussions with B2Gold Nunavut it was brought to our attention by B2Gold Nunavut that the update was done at the request of the NWB to incorporate water testing and discharge from Echo pit surface water that had accumulated during freshet and rainfall.

Since the primary pond and dam is under construction, surface water accumulated in Echo pit needs to be tested in accordance with Nunavut water quality standards prior to discharge to tundra, this needs to be included in the Water Management Plan.

The KIA has noted this on page viii of the Revision Log where it states that *"Version 4 updated to include clarifying language supporting management of specific runoff and snowmelt water at freshet associated with Open Pits and interim water management strategy."*

Management of runoff or snowmelt water in Open Pits at freshet is noted as an additional bullet point in **Table 5.2-3 Mine Development Sequence** of page 5-8 and in **Table 8.1-1 Summary of Water Management Activities during Phase 1** of page 8-2.

On page 6-1 of the **Water Management Plan,** it states that *"During construction the emergency dump pond (Sabina 2021) may also be used to manage contact water, runoff or snowmelt. Effluent from the Emergency Discharge Pond, runoff water of snowmelt at freshet may be discharged to land if effluent discharge criteria defined in the Type A Water Licence are met."*

On page 8-3, it states that *"In accordance with Part D, item 9, runoff water or snowmelt collected in the Open Pits may be discharged to land, Part D, item 9*

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requires the Licensee to conduct daily visual inspection for runoff/seepage, and conduct sampling, where turbidity is observed, for all construction activity during spring freshet. In addition, all surface runoff and/or discharge where flow may directly or indirectly enter a waterbody, shall be sampled weekly and not exceed criteria set by the NWB in Part D, item 21."

The KIA considers it to be inappropriate to use surface water runoff criteria Part D items 9 and 21. Water accumulating in open pits, even during freshet should be considered to be contact water.

Water discharged from the Echo Pit prior to being directed to the Primary Pond would be considered a final discharge point and subject to MDMER. This is necessary given our understanding that the composition of the ore body (i.e., what will be in the pit and pit walls) contains arsenic, copper and other contaminants of concern that we can expect to leach into water within the pit. The KIA would also expect the presence of various nitrogen species associated with blasting. As such, discharges from the Echo Pit directed to tundra prior to the completion of the Primary Pond should be monitored to confirm compliance with criteria outlined in Part F item 21 of the licence (i.e., MDMER effluent quality criteria and a few others for good measure) as well as Part F Item 22 (confirmation that the effluent is not acutely lethal). Part F Item 16 of the licence is likely also triggered based on the wording of the licence (though the requirement to submit an Effluent Discharge Plan 120 days prior to commencing said discharge may be more than is necessary for this discharge to tundra).

Therefore, the KIA recommends usage of MDMER criteria as the basis for testing and discharge contact water from Echo Pit.

The detailed explanation is provided as follows along with some other recommendations provided by KIA's consultants.

Review Comment Number	KIA-NWB-01.
Subject/Topic	Discharge criteria
References	Water Management Plan Version 5. Section 8.1.3, Open Pits. p. 55/87
Summary	B2Gold's updated water management plan applies a monitoring approach and effluent quality criteria (EQC) to the final discharge of contact water to the receiving environment that are intended

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	for the management of runoff and snowmelt that are not expected to contain contaminants of potential concern. The water management plan must be updated to regulate discharges of contact water from the open pits to tundra as a final discharge location under the MDMER and apply the appropriate monitoring protocols and effluent quality criteria in the licence.
Detailed Review Comment	B2Gold indicates that water collected in the Echo and Umwelt open pits will be discharged to tundra prior to the completion of the Primary Pond. *"In accordance with Part D, Item 9, runoff water or snowmelt collected in the Open Pits may be discharged to land. Part D, Item 9 requires the Licensee to conduct daily visual inspection for runoff/seepage, and conduct sampling, where turbidity is observed, for all construction activity during spring freshet. In addition, all surface runoff and/or discharge where flow may directly or indirectly enter a waterbody, shall be sampled weekly and not exceed criteria set by the NWB in Part D, Item 21."* Water accumulating in the open pits, even during freshet, would be considered contact water. B2Gold's referenced criteria (Part D Items 9 and 21) are inappropriate for application to contact water as they pertain to surface runoff and the drainage management systems. Water discharged from the Echo Pit prior to being directed to the Primary Pond would be considered a final discharge point and subject to MDMER. This is necessary given our understanding (substantiated by water and load balance models developed for the project) that the composition of the ore body at the Back River site (i.e., what will be in the pit and pit walls) contains arsenic, copper and other contaminants of concern that can be reasonably expected to leach into water within the pit. The presence of various nitrogen species associated with blasting may also be expected within waters collecting in the open pits. As such, discharges from the open pits directed to tundra prior to the completion of the Primary Pond should be monitored to confirm compliance with criteria outlined in Part F item 21 of the licence (i.e., MDMER effluent quality criteria and other relevant contaminants of concern at the site) as well as Part F Item 22 (confirmation that the effluent is not acutely lethal). Part F Item

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	16 of the licence is also triggered based on our interpretation of the wording of the licence.
Recommendation/ Request	Update the Water Management Plan to indicate that water collected in the open pits once development for mining has commenced is considered contact water. Discharges from the open pits to tundra must be monitored to confirm compliance with criteria outlined in Part F item 21 of the licence as well as Part F Item 22. Discharges from the open pits to tundra must also be identified as a final discharge point under the MDMER. B2Gold should also provide a discussion as to the applicability of Part F Item 16 of the licence to discharges of contact water from the open pits to tundra.
Importance	High – failure to regulate discharges of contact water from the open pits directly to the receiving environment would be considered noncompliance with the MDMER.

Review Comment Number	KIA-NWB-02
Subject/Topic	Culverts
References	Water Management Plan - Section 6.5 Culvert Sizing; Table 6.5-1
Summary	Five culvert crossing locations are proposed at the Goose Property: one crossing through the airstrip and four crossings through the all-weather roads. The culverts on fish bearing stream will be embedded at depth and a thin layer of streambed material will be placed to promote fish passage and habitat suitability.
Detailed Review Comment	It is not clear which of the five crossings are fish bearing. The standard crossing structures for fish bearing streams are either clear span bridges or open-bottom culverts, to protect fish habitat. Only circular culverts (assumed to be closed bottom) are proposed, with a thin layer of streambed material. The reason closed culverts are not used for fish-bearing streams is the high incidence of scouring of the streambed materials out of the culvert during high flows.

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Recommendation/ Request	Identify the fish bearing stream crossings. Change the type of culvert for the fish bearing streams to open bottom.
Importance	High

Review Comment Number	KIA- NWB-03
Subject/Topic	Fish Salvage
References	Water Management Plan - Section 7.3 Water Supply, Section 8.1.1 Lake Dewatering, Section 9.3 Conservation Measures
Summary	Llama Lake will be dewatered to Goose Lake in the open water season of Year -1 in advance of open pit mining. Umwelt Lake will also be dewatered to Goose Lake in Year -1.
Detailed Review Comment	There is no mention of a fish salvage plan for dewatering of two entire lakes, or if the lakes are even fish bearing.
Recommendation/ Request	Add the same sentence from Section 8.1.1, "In advance of dewatering, a fish-out program will be completed. For additional information related to conservation and mitigation measures to be implemented, refer to Section 9.3."
Importance	Low

Review Comment Number	KIA- NWB-04
Subject/Topic	Treated Sewage Effluent
References	Water Management Plan - Section 7.4.3.1 Goose Property Sewage Treatment and Disposal
Summary	During the Construction Phase and Closure Phase, treated sewage effluent will be discharged to the tundra west of the Goose Plant Site. It will be land discharged to maximize attenuation distance prior to entering an outflow watercourse from Fox Lake and entering Goose Lake.
Detailed Review	The WMP does not mention use of any erosion and sedimentation

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Comment	mitigation measures to prevent deposited treated sewage effluent particulates from spreading directly to the nearest outflow watercourse during open water season storm events. Increased levels of sediments to a stream, even if treated, can be detrimental to fish health.
Recommendation/ Request	Include a reference to an erosion and sedimentation plan or mitigation measures (see Section 9.4.1 Sediment and Erosion Control Measures).
Importance	Low

Review Comment Number	KIA- NWB-05
Subject/Topic	Open Pit Closure – Fish access
References	Water Management Plan - Section 8.3.3 Open Pit Closure
Summary	The Llama, Umwelt, and Goose Main open pits will be allowed to fill, and barriers breached to allow flows to Umwelt and Goose lakes, or from Goose Lake. The freshwater cap above the saline water in Goose Main will promote formation of a meromictic lake.
Detailed Review Comment	No mention is made of whether fish will have access to these pit lakes, once formed, or if they will contain viable fish habitat.
Recommendation/ Request	Include some details on what will happen regarding fish access and a reference to a fish habitat management plan or offsetting plan for the closure phase.
Importance	Moderate

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Thank you.

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Senior Hope Bay Project Officer
Kitikmeot Inuit Association, Department of Lands and Environment

Cc Wynter Kuliktana, Director, KIA, Department of Lands and Environment