Water Resources Division
Resource Management Directorate
Nunavut Regional Office
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Your file - Votre référence
2AM-MEL1631
Our file - Notre référence
GCDocs#139562857

August 14, 2025

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 Agnico Eagle's 2025 Modification Request for the Meliadine Mine Project, Type A Water Licence No 2AM-MEL1631.

Dear Robert,

Thank you for your July 15, 2025, invitation to review Agnico Eagle Mines's 2025 Modification Request for the Meliadine Mine Project, Type A Water Licence No 2AM-MEL1631.

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 for the Nunavut Water Board's consideration.

If there are any questions or concerns, please contact me at (867) 975-4282 or Aminul.Haque@rcaanc-cirnac.gc.ca or Andrew Keim at (867) 975-4550 or Andrew.Keim@rcaanc-cirnac.gc.ca.

Sincerely,

Andrew Keim , for

Aminul Haque
Senior Environmental Assessment Specialist

Technical Review Memorandum

Date: August 14, 2025

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

From: Aminul Haque, Senior Environmental Assessment Specialist, CIRNAC

Subject: **Crown-Indigenous Relations and Northern Affairs Canada's Review of Agnico Eagle's 2025 Modification Request for the Meliadine Mine Project, Type A Water Licence No 2AM-MEL1631.**

Region: ☐ Kitikmeot ☒ Kivalliq ☐ Qikiqtani

A. BACKGROUND

Agnico Eagle Mines Limited's (Agnico Eagle) Meliadine Gold Mine is located on Inuit-owned land near the western shore of Hudson Bay in Nunavut's Kivalliq Region. The site sits on a peninsula among the east, south, and west basins of Meliadine Lake (63°1'23.8''N, 92°13'6.42''W), approximately 25 km north of Rankin Inlet, 80 km southwest of Chesterfield Inlet, and 290 km southeast of the Meadowbank Mine. The 111,358-hectare property covers an ~80-km-long greenstone belt and is connected to Rankin Inlet by a 24-km all-weather gravel road constructed in October 2013.

The Nunavut Impact Review Board (NIRB) issued Project Certificate No. 006 on February 26, 2015. The Nunavut Water Board (NWB) issued the Project's Type A Water Licence on April 15, 2016, and the mine achieved commercial production on May 14, 2019. Meliadine comprises seven deposits—Tiriganiaq, Normeg, Wesmeg, Pump, F-Zone, Wolf, and Discovery. The approved Project authorizes mining at five deposits (Tiriganiaq, Wesmeg, Pump, F-Zone, and Discovery) with on-site processing at up to 8,500 t/d and shipment of gold bullion south for final refining and sale.

In 2023, the NWB considered a further Type A Water Licence amendment associated with the Meliadine Extension Proposal. Following NIRB's recommendation that the Extension not proceed at that time due to potential significant adverse ecosystemic and socio-economic effects, Agnico Eagle withdrew the application on December 19, 2023. To support completion of mining at the deposits already permitted under Project Certificate No. 006 and the 2014 FEIS, Agnico Eagle pursued a focused Water Licence amendment. The NWB circulated the amendment application for Water Licence 2AM-MEL1631 on January 29, 2024, and the Minister of Northern Affairs approved the amended licence on November 22, 2024.

In June 2025, Agnico Eagle submitted a modification request to NWB for Water Licence 2AM-MEL1631. The request proposes: (i) use of mined-out pits (TIRI02, WES02, WES03, and PUMP02) for storage of saline and surface contact water; (ii) updates to the Water

Management Plan, Groundwater Management Plan, Water Balance & Water Quality Model, Ore Storage Management Plan, and Mine Waste Management Plan; and (iii) development of an underground portal at the Pump deposit. The modifications aim to optimize water management during operations and plan for closure water handling consistent with existing regulatory frameworks.

CIRNAC's Water Resource Division provides the following technical comments and recommendations addressing specific aspects of environmental management, closure planning, and monitoring to mitigate identified risks and ensure long-term environmental protection. A summary of the subjects of the 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	Modifications Requirements – PUMP02 Underground Portal
R-02	Modifications Requirements – Use of Mined-Out Pits
R-03	Mixing Saline Groundwater and Contact Water
R-04	Missing Details for PUMP04
R-05	Pumping out saline water before reflooding
R-06	Uncertainty in Groundwater Model Predictions

B. DOCUMENTS REVIEWED AND REFERENCED

The following table (Table 2) lists the documents reviewed under the submission and references during the review.

Table 2: Documents Reviewed and Referenced

Document Title	Author, File No., Rev., Date
Amendment Water Licence No: 2AM-MEL1631	Nunavut Water Board, Nov 22, 2024
Water Licence 2AM-MEL1631 Modification	Agnico Eagle, June 27, 2025
Notice of Modification and Invitation to Comment	Nunavut Water Board, July 15, 2025
Legal Opinion	Lawson Lundell Llp (Christine Kowbel), July 08, 2025
Groundwater Management Plan (Version 13)	Agnico Eagle, June 2025
Ore Storage Management Plan (Version 8)	Agnico Eagle, June 2025
Mine Waste Management Plan (Version 13)	Agnico Eagle, June 2025
Water Management Plan (Version 16)	Agnico Eagle, June 2025
Meliadine Mine Modification Water Balance and Water Quality Model Technical Report	Lorax Environmental Services, June 26, 2025
NIRB PROJECT CERTIFICATE [NO.: 006]	Nunavut Impact Review Board, March 02, 2022

C. RESULTS OF REVIEW

1. Modifications Requirements – PUMP02 Underground Portal

Comment:

The modification proposes the development of a portal in Pump Open Pit 2 (PUMP02) to extend access to deposits within permafrost. However, the "Project description" section of the current project certificate states:

"The Project includes the extended exploration, construction, operation, closure, and reclamation of both underground and open-pit mines and associated infrastructure for extraction, processing and transportation of gold. The mining of gold ore would occur at the five deposits through a phased approach, Tiriganiaq, Wesmeg, Pump, F Zone and Discovery, with Tiriganiaq being the only deposit where gold would be mined through both above ground and underground methods, with the other deposits being mined using open pit methods."

Moreover, the project descriptions and the Final Environmental Impact Assessment of the project indicated that underground work has only been considered for the Tiriganiaq deposit, and all other deposits will be mined using the open-pit method. Therefore, underground development is only permitted for Tiriganiaq, and any underground options such as portal development were not assessed during the Nunavut Impact Review Board (NIRB) approval process and are out of scope under the current project certificate. As such, it is unclear to CIRNAC how this modification request is possible without NIRB amending the current project certificate.

This was brought to the attention of the proponent in discussions leading up to this submission, along with the suggestion that they contact NIRB for an opinion or approval by NIRB on if this proposal meets the current conditions included within the project certificate.

Recommendation:

(R-01) CIRNAC recommends that NWB in consultation with NIRB provide guidance and clarification on whether the proposed underground portal is within the scope of the current project certificate and can be authorized through a water licence modification. If NWB decides to proceed with the modification request, CIRNAC recommends that Agnico Eagle provide a security estimate for this undertaking as it has not been included within the current security estimate.

2. Modifications Requirements – Use of Mined-Out Pits

Comment:

The modification proposes storing saline groundwater or contact water in mined-out pits (e.g., TIRI02, WES02, WES03, PUMP02). Procedurally, the modification notice satisfies

the Part G requirements of the water licence to describe the activity, location, potential effects, monitoring, schedule, and the commitment to submit stamped design drawings before construction. CIRNAC notes that the modification request to store surface contact water in mined-out pits is consistent with the existing terms and conditions of the water licence. CIRNAC also agrees that storage of saline water in mined-out pits can be approved through NWB procedures for plan approvals and modifications. However, CIRNAC differs from Agnico's assumption that contact water and saline groundwater fall under the same category and that saline water does not impact the nature or amount of security held under Part C, Item 1 of the Water Licence.

The water licence has clearly defined those two categories, and Part E condition 10 requires explicitly that the "Saline Groundwater shall be managed separately from surface contact water and not directed to the contact water management system,…" Surface contact water and saline groundwater are fundamentally different sources with different risks and regulatory pathways. Storing saline water in pit lakes carries higher, longer-lasting risks than storing contact water. Saline water also accelerates permafrost thaw and density-driven seepage, increasing the chance of groundwater and nearby freshwater salinization. These factors complicate treatment and closure, so saline storage should only be approved pit-by-pit with thermal, hydrogeological, and updated water balance/quality assessments in hand. Any use of mined-out pits for saline water storage should be supported by appropriately detailed information and assessed on a pit-specific basis.

Finally, in CIRNAC's opinion, the use of mined-out pits as saline water storage triggers Part C, Item 6 ("material changes to the Undertaking or the risk of environmental damage associated with the Undertaking that could result in a material change to the reclamation liability associated with the Undertaking"). Therefore, CIRNAC suggest that a fixed calculation per pit could be used with a staged approach to avoid having to redo security discussions each time a new pit is opened.

Recommendation:

(R-02) CIRNAC recommends that Angico Eagle:

a) Apply for approval to use any mined-out pit for saline water storage on a pit-by-pit basis, and the request for approval shall be accompanied by:
   - a thermal study evaluating permafrost degradation in the in-pit lake and proposed mitigations;
   - a hydrogeological study of groundwater flow and contaminant transport to receiving environments; and
   - an updated water balance and water quality model (with current source terms) that evaluates compliance with environmental quality criteria in-pit (water and sediment).

b) Provide a security estimate, considering the financial and environmental liability, for storing saline water in each pit.
c) Further the eventual disposal of said Saline Ground water placed in Pits , if approved, should be included in a revised Closure Plan that details how this saline water will be removed form site or treated to prevent or mitigate any long term environmental damage that may occur.

3. Mixing Saline Groundwater and Contact Water

Comment:
The modification request is to store contact water or saline water in the mined-out pits (Tiri 02, WES02, WES03, PUMP02). Water management plan (Section 3.1, page 15) stated, "The WES03 pit serves as an intermediate reservoir, storing water from CP2.5, CP3, CP4, CP5 and STP for eventual discharge to Itivia Harbour via the waterline or to CP1."

Therefore, as per the modification request, if any mined-out pits such as WES03 are allowed to store "contact water OR saline water" before discharge to CP 1 (which drains to Meliadine Lake), in direct conflict with Part E, Item 10 of the Licence:

"The Licensee shall not discharge Saline Groundwater to Meliadine Lake. Saline Groundwater shall be managed separately from surface contact water…"

This "OR" language in the modification request creates a loophole allowing routing of saline water into CP1 and onward to Lake Meliadine. Moreover, Scattered "OR" language and textual descriptions across the Water management plan lead to confusion over which ponds handle which water types and where each discharges, hampering compliance verification.

Recommendation:
(R-03) CIRNAC recommends, in the event that the NWB approves this request that Agnico Eagle revise relevant management plans to remove any "OR" linkage and include a consolidated "Pond Functions" table defining the type of water storage, sources and discharge pathways for each of the storage ponds for approval prior to any discharge taking place. A process for the verification of these new plans should also be implemented by the proponent so that accidental discharges can be avoided.

4. Missing Details for PUMP04

Comment:
Water Management Plan (Section 4, page) stated that "CP9 constructed within the footprint of PUMP01 will be used to capture the runoff from the PUMP area including WRSF6, future Pits from the PUMP area (i.e. PUMP04 and PUMP02 prior to being used

for excess saline storage) will also be pumped to PUMP01 prior to transfer to CP1." The Modification request did not include PUMP04 as saline water storage.

Recommendation:
(R-04) CIRNAC recommends that Agnico Eagle either remove PUMP04 references from the Water management plan or supplement the modification request with PUMP04 details matching those provided for PUMP02.

5. Pumping out saline water before reflooding

Comment:
CIRNAC believes that any mined-out pit used for saline water storage must be emptied entirely to remove all residual saline groundwater from pits before their final reflooding at closure to avoid long-term saline contamination of pit lakes.

Recommendation:
(R-05) CIRNAC recommends that Agnico Eagle update relevant management plans to reflect that saline water storage ponds will be emptied entirely before their final reflooding at closure.

6. Uncertainty in Groundwater Model Predictions

Comment:
The Groundwater Management Plan acknowledges that doubling bedrock hydraulic conductivity could increase saline inflows by ~54 %, but model calibration is based on limited borehole tests. This high uncertainty could result in under-designed storage or pumping systems if actual conductivities exceed assumptions.

Recommendation:
(R-06) CIRNAC recommends that Agnico Eagle perform additional hydraulic-test campaigns and update the groundwater model calibration. Include uncertainty bounds (e.g., ± 25 % on inflow rates) and design storage/pumping capacity to accommodate worst-case scenarios.