Water Resources Division
Resource Management Directorate
Nunavut Regional Office
P.O. Box 100
Iqaluit, NU, X0A 0H0

Your file - Votre référence
2AM-MEL1631
Our file - Notre référence
GCDocs#120079590

December 14, 2023

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 (CIRNAC's) Reply to Agnico Eagle's Response on the 2022 Annual Report Review Comments for the Meliadine Gold Mine Project, Type A Water Licence No. 2AM-MEL1631.

Dear Mr. Dwyer,

Thank you for your September 20, 2023, invitation to review Agnico Eagle Mines' response to the 2022 Annual Report Review Comments for the Meliadine Gold Mine Project, Type A Water Licence No. 2AM-MEL1631.

Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) examined the Response and its attachments 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's reply to Agnico Eagle's response in the attached Technical Memorandum for the Nunavut Water Board's (NWB) consideration.

If there are any questions or concerns, please contact me at Aminul.Haque@rcaanc-cirnac.gc.ca or (867) 975-4555 or Andrew Keim at (867) 975-4550 or Andrew.Keim@rcaanc-cirnac.gc.ca.

Sincerely,

আমিনুল

Aminul Haque
Regional Water Management Coordinator

Technical Review Memorandum

Date: December 14, 2023

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

From: Aminul Haque, Regional Water Management Coordinator, CIRNAC

Subject: **Crown-Indigenous Relations and Northern Affairs Canada's (CIRNAC's) Reply to Agnico Eagle's Response on the 2022 Annual Report Review Comments for the Meliadine Gold Mine Project, Type A Water Licence No. 2AM-MEL1631.**

Region: ☐ Kitikmeot ☒ Kivalliq ☐ Qikiqtani

CIRNAC 01: Permafrost Monitoring

Comment:

CIRNAC previously recommended that AEM provide a discussion on the status of permafrost degradation that may be occurring because of AEM's construction and operation activities. To address this request, AEM included Section 4.1.9 in the 2022 Annual Report, which provided the following discussion:

"In general, permafrost aggrades into the fills placed on the natural ground, and Agnico Eagle has not observed permafrost degradation across the industrial pad. Some localized permafrost degradation has been observed within/adjacent to some of the water management structures (downstream collection channel of D-CP1, CP3, CP4, channel 1, channel 3 and access, channel 5, channel 9, and channel 10) as well as the saline water treatment plant. These areas correspond to areas where ice-rich materials are present within the natural ground, where the natural vegetation has been removed, and/or where water is allowed to accumulate. Agnico Eagle monitors these areas and repairs them when required. Additionally, the lessons learned from the performance of older infrastructure are being implemented into new infrastructure to minimize future permafrost degradation.

Further information on the observed localized permafrost degradation (areas of settlement) can be found in the 2022 Annual Geotechnical Inspection Report (Appendix 6)".

From CIRNAC's review of the 2022 Annual Report and the 2022 Geotechnical Report, CIRNAC concurs with the observations and information provided by AEM.

CIRNAC notes that while Section 4.1.9 of the 2022 Annual Report provides general comments on permafrost degradation across the site, there is no detailed discussion of permafrost condition of areas of interest across the site, including areas between critical infrastructure such as dikes, channels, and tailings and waste rock facilities and adjacent to water conveyance features at which permafrost degradation has been noted. Similarly, there needs to be a discussion of permafrost conditions adjacent to the roads (site roads, All Weather Access Road, bypass roads) and borrow areas. This information is important for understanding potential long-term impacts on presently stable infrastructure due to long-term permafrost degradation around, and in the vicinity, of these features (for example, permafrost degradation within water diversion channels as noted in the 2022 Geotechnical Inspection Report).

Further to the comments above, the results of the 2022 Annual Geotechnical Inspection Report also identified concerns regarding the operation and performance of instrumentation being used to record thermal conditions within the subsurface in locations where permafrost is expected to aggregate with time and development of the mine site. Specifically, the horizontal GTC units in WRSF3 and Berm CP6 were reported to be only partially functioning. AEM stated that the equipment supplier had reviewed the instrumentation status and reported that it could not be repaired. It is CIRNAC's opinion that the instrumentation required for thermal monitoring should be operational throughout the life of mine. Any damaged equipment should be replaced if it cannot be repaired.

Recommendation:

(R-01) CIRNAC recommends that AEM:

a) Monitor thermal conditions at the portions of the site in the vicinity of areas where permafrost degradation has been observed, including areas adjacent to channels and ditches close to existing berms and material storage facilities, to ensure that any permafrost degradation does not impact the long-term stability of these infrastructure elements. This should include the installation of horizontal and/or vertical thermistors in critical areas where degradation has already begun,
b) Comment on the monitoring of thermal conditions at ancillary facilities (e.g., roads, borrow areas) where standing water continues to be observed,
c) Expand the discussion in Section 4.1.9 of the Annual Report to include additional permafrost thermal monitoring and discussions as per items 1 and 2 above, and
d) Replace the horizontal GTC units in WRSF3 and Berm CP6 that were reported to be only partially functioning and any other damaged thermal monitoring instrumentation if it cannot be repaired.

Agnico Eagle's Answer

a) As per 2022 Annual Report Answers provided to the NIRB on August 4th, 2023 (CIRNAC-1), Agnico Eagle has installed thermistors within the infrastructure per the designs to monitor the performance. Additional thermistors are planned to be installed as the infrastructure under construction (WRSF1, WRSF3, and TSF) are completed, per the design. The permafrost degradation observed so far has been localized and hasn't negatively impacted surrounding infrastructure. These areas have either been repaired or are planned to be repaired. Agnico Eagle will continue monitoring and will repair areas of degradation that may negatively impact the performance of the structure itself, or surrounding structures if not repaired. No new thermistors are currently planned outside of those specified within the designs.

b) Agnico Eagle thanks CIRNAC for their recommendation and will request the design engineer to comment on areas where no permafrost degradation has been observed along with where it has been in future Annual Geotechnical Reports. Currently, only the areas mentioned within the Annual Geotechnical Report or Annual Report have had observable permafrost degradation, areas not mentioned, have not.

c) See responses above.

d) Additional thermistors will be installed as WRSF3 is completed per the design. Based on discussions with the Design Engineer and Engineer of Record, the current instrumentation is sufficient, and no replacement instrumentation have been requested to date.

CIRNAC Reply to Agnico Eagle's Answer

In regards to R-01 (d), CIRNAC reiterates its comments that the instrumentation required and installed for thermal monitoring should be operational throughout the life of mine. Any damaged equipment should be replaced if it cannot be repaired. CIRNAC stands by its recommendation that AEM replace the horizontal GTC units in WRSF3 and Berm CP6 that were reported to be only partially functioning and any other damaged thermal monitoring instrumentation if it cannot be repaired.

CIRNAC 02: Improvements to Annual Report

Comment:

The Annual Report is a comprehensive document responding to both NIRB and NWB terms and conditions. Review of this document and its numerous appendices requires extensive time and effort, and CIRNAC would like to see additional improvements to ease

the review and understanding of a) items referenced, b) information on site conditions, and c) information on Milling operations. These aspects are expanded on below.

a) Although AEM included references to supporting documents in discussions within the main body of the Annual Report (e.g., Golder 2014; OKC 2022a; 2022b), the report lacks a reference section where the full citation of each document is included, so the reader can verify the document being referred to.

b) AEM's geotechnical report provided photographs of site conditions during annual inspections. While all photographs are labelled, it is often difficult for interested parties to specifically identify the location of the item/area being photographed (e.g., regarding the site photograph of the north side toe of the tailings storage facility and associated channel, it is unclear where this specific location occurs along the north side (east, west or center?). This makes it particularly challenging to assess AEM comments regarding a location condition and potential impacts/statements as the reviewer may not be sure what area they are actually looking at in a photograph.

c) Several activities planned for 2023, as listed in Section 2.2 of the Annual Report, are listed as "pending regulatory approval". These include widening of the AWAR from km 6 to 19.6, construction of the waterlines for discharge to sea, and construction of the haul road pump. It is not clear why regulatory approval to complete these activities is needed, as CIRNAC is of the understanding that such regulatory approvals have already been received.

d) The Meliadine Gold Mine project includes an on-site milling operation to process ore at a rate of 8,500 tonnes per day. Milling operations at Meliadine were initiated in 2019. In the 2022 Annual Report, as noted in previous reviews, there is no discussion regarding mill operations (e.g., days of milling, tons of ore processed, tailings generated, water used, and related activities on cyanide management and consumption and tailings detoxification). This is important with respect to understanding total ore storage volumes on the surface during the year and assessing ore storage management and the potential impacts of ore storage on water quality. CIRNAC is confident that a discussion of the milling operations during the year would provide reviewers and stakeholders with a more fulsome perspective of the Meliadine operations and would be a useful addition to the Annual Report.

e) Appendix 13 provides actual plans and sections of 2021 and 2022 TSF conditions. CIRNAC notes that a single cross-section (A-A generally east-west) is

provided for each year. An additional, perpendicular cross-section (north-south) would be helpful to understand the development of the TSF fully.

Furthermore, providing hyperlinks in the pdf to the table of contents and lists of tables and figures, as well as to table and figure references within the text, would lend functionality to the document making it easier to navigate and scroll through it and would ultimately facilitate the review of the report. This, in turn, would help track information that responds to specific NWB terms and conditions.

Recommendation:

(R-02) CIRNAC recommends that AEM include:

a) A reference section in future Annual Reports providing full citations to documents referenced in the main body of the report,
b) Hyperlinks in the pdf to the table of contents, list of tables and figures and references to tables and figures in the text,
c) A site plan that clearly indicates the location and view direction of each photograph in future reporting that provides site-specific photographs, especially in the Geotechnical Report, and
d) In addition to the section A-A (east-west), a section B-B (north-south) of the tailings facility should be added to Appendix 13,
e) A section in future Annual Reports describing mill operations at the Meliadine site (e.g., days of milling, tons of ore processed, tailings generated, water used, and related activities on cyanide management and consumption and tailings detoxification).

Agnico Eagle's Answer

Agnico Eagle thanks CIRNAC for their comment.

a. Agnico Eagle will include a reference section in future Annual Reports, providing full citations to documents referenced in the main body of the report. To clarify, the full citations of the documents were included in footnote in the 2022 Annual Report.

b. Agnico Eagle will assess additional improvements to improve navigation in the main Annual Report document in future submissions.

c. Agnico Eagle will request the design engineer to include a photograph location plan in the 2024 Annual Geotechnical Report.

d. Agnico Eagle believes the cross sections provided comply with the requirements from the Water Licence and that they are sufficient to understand the development of the TSF.

e. Agnico Eagle wishes to clarify that mill operations do not fall under critical infrastructures. Licenced and regulatory mill-related reporting requirements are addressed in the annual report, operational management plans and other sectoral reports submitted to regulators throughout the year.

- Tons of ore processed are provided in Monthly Monitoring Reports to the NWB.
- Tailings generated in the year and placed within the TSF are presented in section 4.4.1 of the Annual Report, and in the Mine Waste Management Plan (section 5.1), which is updated and submitted yearly with the Annual Report.
- Water usage under the Type A NWB Licence is reported in section 3.1.1 of the Annual Report, and in Monthly Monitoring Reports to the NWB.16
- As for Cyanide management, Agnico Eagle would like to refer CIRNAC to the Meliadine Cyanide Management Plan, submitted as Appendix 31-4 of the 2022 Annual Report, and to the Summary Audit Reports for Mine Operations and Transportation available publicly on the International Cyanide Management Code (ICMC) website (https://cyanidecode.org/). As presented in Section 10.5 of the 2022 Annual Report, the Meliadine Mine was audited for the first time for the ICMC Certification for both Transportation and Mine Operations protocols in 2022, and Agnico Eagle received confirmation of certification early 2023.

CIRNAC Reply to Agnico Eagle's Answer

In regards to R-02 (d), CIRNAC reiterates its comment to add a B-B (north-south) cross-section of the TSF in Appendix 13 along with the east-west cross-section. TSF is a major structure and it is continuously evolving. A single unidirectional cross-section is not sufficient to properly assess the development of the TSF of that scale.

In regards to R-02 (e), CIRNAC is of the opinion that the Annual Report should contain a section to describe annual itemized water use as per major categories (e.g., milling use, camp use etc.) instead of reporting a single value for the total water use. This information will be critical in accessing any future request to increase water use.

CIRNAC 03: Marine Discharges to Melvin Bay

Comment:

Sections 3.1.6 and 7.3.1.24 of the Annual Report noted that 2022 there was no saline effluent discharge to sea at Melvin Bay through MEL-26 at Itivia Harbour.

In the 2022 Annual Report, Section 3.2.2.2 describing the water balance model setup stated that "currently, saline water from the underground mine is stored in Tiriganiaq Open Pit 2 (Tiri 02) and as such no actual discharge quantities were applied in the 2022 model

year update. Previous discharges applied to the WBWQM [Water Balance Water Quality Model] include using trucks to discharge saline water from SP4 to Itivia Harbour. The proposed Waterline (i.e., the installation of an effluent waterline discharging to Itivia Harbour) will deliver treated effluent to Itivia Harbour via a diffuser. This model assumes the waterline will be operational beginning in 2025 with a seasonal discharge from June 20th to September 29th at 20,000 m3/day".

Section 3.11 of Appendix 31-10 Water Management Plan of the 2022 Annual Report stated, "Currently due to sufficient forecasted storage capacity until 2026, saline water on site is managed through storage and treatment of marginally saline water. Punctual operations of hauling of saline water treated by the SETP to Melvin Bay are only conducted if necessary. The suspension of continuous hauling operation followed the approval of the waterline to discharge to sea (section 3.3.3) under the Amendment 002 of the NIRB Project Certificate No. 006 issued on March 2nd. The waterline is currently under construction and is expected to be commissioned in 2025, once in operation, the waterline will be used in combination with the SETP-WTC to discharge treated saline water to Melvin Bay."

When describing the water balance model set up in the 2021 Annual Report, Section 3.2.3 stated that "Discharge of saline water to Melvin Bay is assumed to continue by trucks for the operation years 2022 and 2023 and to change to waterline discharge in 2024" and that "Based on the discharge to sea schedule in the model and considering TIRI02 as a major saline water surface storage with a capacity of 1,616,554 m3, a maximum of 46% of TIRI02 storage capacity will be utilized in future years (2022 - 2027). In 2022, a maximum of 500,000 m3 saline water is expected to be stored in TIRI02, which accounts for 30% of the TIRI02 capacity."

While there is the capacity for the temporary storage of saline water in TIRI02 to manage saline water in the short-term, it is not clear from the 2022 Annual Report why the approved discharge of 1,600 m3/day to the marine environment, as planned in the 2021 Annual Report, was stopped completely in 2022.

Recommendation:

(R-03) CIRNAC recommends that AEM provide:

a) Justification for no saline water discharge in 2022 and why no saline water discharge is planned to occur until 2025,
b) Justification for the rescheduling of the waterline construction completion to 2025,
c) Potential consequences of any schedule delays in saline water discharge via the waterline.

Agnico Eagle's Answer

Agnico Eagle would like to refer CIRNAC to the 2022 Annual Report Answers provided to the NIRB on August 4th, 2023 (CIRNAC-5).

Following the approval of the waterline for discharge to sea, Agnico Eagle made the decision to utilize onsite saline water storage capacity and to suspend the discharge to Melvin Bay via trucking, thereby reducing traffic and potential dust emissions on the All-Weather Access Road (AWAR) until the waterline is commissioned. The available storage capacity in TIRI02 in relation to groundwater inflow rates allowed this optimization to be made. This decision was supported by the magnitude of saline water storage capacity in TIRI02 relative to the discharge volumes that were achieved via trucking in 2020 and 2021.

The remote and northern nature of the Meliadine Gold Mine led to waterline construction constraints, which, in conjunction with permitting delays and caribou migration constraints resulted in the waterline construction schedule to be revised and the commissioning of the waterline being forecasted for 2025.

The main consequence of schedule delays in saline water discharge is the requirement to store water in TIRI02 for an additional year, however, as shown in Figure 14 of Section 3.2.4.4 of the 2022 Annual Report, TIRI02 provides sufficient capacity for saline water storage in order to accommodate for this delay in waterline operation. At the rates of discharge to sea achieved in 2020 and 2021, the impact of operating this discharge through 2023 and 2024 would be negligible on the long-term water balance outlook. Thus, in order to continue to mitigate traffic and dust generation on the AWAR, discharge to sea via trucking remains to be suspended in 2023 and 2024.

AEM will provide updated predicted groundwater inflow rates in the 2023 Annual Report, which will consequently be reflected in the updated WBWQM.

CIRNAC Reply to Agnico Eagle's Answer

In regards to R-03 (a) and (b), Agnico Eagle should provide a schedule of construction from now on and include updated details on progress and schedule in the 2023 Annual Report.

In regards to R-03 (c), Agnico Eagle should confirm that saline water from Tiriganiaq Pit 2 or any other saline water storage would never be mixed with surface water and/or discharged into Meliadine Lake. If saline water needs to be stored in any pit or pits during the operation, Agnico Eagle should evaluate the activities and ask for NWB approval. If approved, Agnico Eagle would update the corresponding management plans, continuously

monitor the activity (i.e., water volume, elevation and quality, etc.), and provide updates to the NWB in the Annual Report.

CIRNAC 04: Sludge Disposal in Tiriganiaq Open Pit 2

Comment:

Sludge production from the Effluent Water Treatment Plant-Water Treatment Complex (EWTP-WTC) treatment process during 2022 totalled 3,350 m3, which was pumped to Tiriganiaq Open Pit 2.

As noted in Section 3.9.4.3 of Appendix 31-10 Water Management Plan, sludge produced as part of the total suspended solids (TSS) removal process at the WTC is discharged into the saline water storage and is sampled monthly for metal content, hydrocarbons (C10-C50) and organic carbon to determine the potential impact on the receiving saline ponds.

AEM state that they may also explore other alternatives for sludge disposition in future years, such as dewatering using geotextile bags (e.g., Geotubes™) or mechanical dewatering, which could include technology such as filter press, centrifuge, or belt filters. The dewatered sludge could then be disposed of as a solid.

CIRNAC is concerned that the disposal of sludge in the open pit as practiced now has not been properly assessed nor approved.

Recommendation:

(R-04) CIRNAC recommends that AEM provide:

a) Additional details of past studies supporting in-pit sludge disposal,
b) Interpretation of monthly sludge sampling results,
c) Clarify what AEM means by “may also explore other alternatives for sludge disposition in future years”, and provide clear commitments on studies and timelines, and
d) Evidence of approval of its current practice of sludge disposal into the saline water being stored in the Tiriganiaq 2 Open Pit.

Agnico Eagle’s Answer

Agnico Eagle is operating as per the most recent reviewed and approved Water Management Plan (WMP) and as per Design and As-Built reports for the EWTP-WTC Modifications.

Agnico Eagle refers CIRNAC to the Nunavut Water Board Type A Water Licence No. 2AMMEL1631 – Amendment No. 2, Reasons for Decision, Including Record of Proceedings (May 2021). During the Water Licence Amendment process, in their final

written submissions, ECCC identified concerns and provided recommendations with regards to proposed treatment sludge disposal, and recommended options for sludge disposal should be identified and incorporated into the Water Management Plan for 2022 disposal. In response to ECCC's final submission, Agnico Eagle confirmed that sludge will not be deposited in CP1 in 2021 and will be placed within the saline ponds (Agnico Eagle 2AM-MEL1631 Water Licence Amendment Additional Information Technical Comment Responses, March 8, 2021). Agnico Eagle further committed to provide identification of the primary sludge disposal option for 2022 disposal in the Water Management Plan, as well as discussion of alternative options, which may be explored in future years.

As per Part B, Item 13 of the Amended Water Licence, the WMP was updated (V11, August 2021) and submitted to the NWB and section 3.9.4.3 of the WMP was added to discuss current and possible future sludge management options as per the above commitment. The updated WMP, as per the usual review and approval process, was distributed to Parties. Since August 2021, two (2) updates of the WMP were conducted and the updated Plans were submitted to the NIRB and NWB through the 2021 and 2022 Annual Reports as per usual process, for Parties' review. Design and As-built Reports for the Effluent Water Treatment Plant (EWTP-WTC) Modifications submitted to the NWB in March 2021 and October 2021, respectively, also distributed to Parties for review, stated the sludge would be directed to the saline storage ponds.

Agnico Eagle will provide additional details supporting in-pit disposal and interpretation of monthly sludge sampling results in the 2023 annual report.

CIRNAC Reply to Agnico Eagle's Answer

CIRNAC would like to see studies supporting in-pit sludge disposal. CIRNAC reiterates that, in the next annual report, Agnico Eagle should provide:

- Study details and rationale supporting sludge disposal in the Tiriganiaq 2 Open Pit (or any other water body) and evidence that the practice of disposing of sludge waste will not result in significant environmental impacts.
- Clarify what Agnico Eagle means by "may also explore other alternatives for sludge disposition in future years" and provide clear commitments on studies and timelines.
- Interpretation of monthly sludge sampling results.

CIRNAC 05: Saline Water Storage in Tiriganiaq Open Pit 2 (Tiri 02)

Comment:

In the 2022 Annual Report, Section 3.2.2.2 describing the water balance model setup stated that:

"The proposed Waterline (i.e., the installation of an effluent waterline discharging to Itivia Harbour) will deliver treated effluent to Itivia Harbour via a diffuser. This model assumes the waterline will be operational beginning in 2025 with a seasonal discharge from June 20th to September 29th at 20,000 m3/day".

Furthermore, it notes that:

"The model assumes the waterline discharge will be sourced as 60% saline water from Tiri 02 and 40% surface contact water from CP1 until the volume of saline water in Tiri 02 is drawn below 25,000 m^3. After this, the waterline discharge will be sourced as 100% surface contact water from CP1 to minimize discharge to Meliadine Lake. During this period, saline water from the underground mine will continue to fill Tiriganiaq Open Pit 2 (Tiri 02). If the volume in Tiri 02 reaches 50,000 m^3, the source water will revert to 60% saline water and 40% surface contact water until the Tiri 02 drawdown target is met again."

Section 3.11 of Appendix 31-10 Water Management Plan of the 2022 Annual Report states that:

"Currently due to sufficient forecasted storage capacity until 2026, saline water on site is managed through storage and treatment of marginally saline water. Punctual operations of hauling of saline water treated by the SETP to Melvin Bay are only conducted if necessary. The suspension of continuous hauling operation followed the approval of the waterline to discharge to sea (section 3.3.3) under the Amendment 002 of the NIRB Project Certificate No. 006 issued on March 2nd. The waterline is currently under construction and is expected to be commissioned in 2025. Once in operation, the waterline will be used in combination with the SETP-WTC to discharge treated saline water to Melvin Bay."

When describing the water balance model set up in the 2021 Annual Report, Section 3.2.3 stated that:

"Based on the discharge to sea schedule in the model and considering TIRI02 as a major saline water surface storage with a capacity of 1,616,554 m3, a maximum of 46% of TIRI02 storage capacity will be utilized in future years (2022 - 2027). In 2022, a maximum of 500,000 m3 saline water is expected to be stored in TIRI02, which accounts for 30% of the TIRI02 capacity."

Given the above, it is apparent that AEM has planned for the continuous use of the TIRI02 pit for the storage of saline ground waters.

Recommendation:

(R-05) CIRNAC recommends that AEM:

a) Confirm how long it intends to use the TIRI02 pit for storage of saline groundwater,
b) Provide evidence that the use of the TIRI02 pit, or any other open pits, for more than emergency temporary storage has been reviewed and approved by regulatory authorities.

Agnico Eagle's Answer

Agnico Eagle would like to clarify the referenced text from Section 3.2.2.2 of the 2022 Annual Report, "Discharge to Itivia Harbour", outlines the logic used in the model for prioritizing saline versus runoff discharge through the waterline as it pertains to adaptive management of CP1 water. The use of 25,000 m3 and 50,000 m3 as lower and upper triggers for ceasing and initiation discharge, respectively, from Tiriganiaq Open Pit 2 (TIRI02), is simply a deadband limit for the model to toggle discharge of saline water as a priority in the waterline. It does not necessarily reflect the operational reality of TIRI02, as once the majority of water from the pit is discharged, mining in the pit is expected to resume.

When forecasting the storage of saline water in TIRI02 in the 2021 Annual Report, one of the key inputs was the utilization of the waterline in 2024 which limited the maximum volume of saline water expected to be stored in the pit to 46% over the life of mine. However, due to the remote and northern nature of the Meliadine Gold Mine led to waterline construction constraints, which, in conjunction with permitting delays and caribou migration constraints resulted in the waterline construction schedule to be revised and the commissioning of the waterline being forecasted for 2025. In addition, Agnico Eagle made the decision to utilize onsite saline water storage capacity and to suspend the discharge to Melvin Bay via trucking, thereby reducing traffic and potential dust emissions on the All-Weather Access Road (AWAR) until the waterline is commissioned. The available storage capacity in TIRI02 in relation to groundwater inflow rates allowed this optimization to be made. This decision was supported by the magnitude of saline water storage capacity in TIRI02 relative to the discharge volumes that were achieved via trucking in 2020 and 2021.

In general, Agnico Eagle anticipates utilizing TIRI02 for storage of saline water until it can be completely emptied via discharge through the waterline.

Agnico Eagle would like to clarify that saline water storage in Tiriganiaq Open Pit 2 was incorporated into Agnico Eagle's following Management Plans since 2021, which were submitted to the NWB and NIRB and distributed to Parties as per the usual review and approval process:

- Groundwater Management Plan V7, August 2021 and subsequent updated versions (V8, 2022 and V9, 2023);

- Water Management Plan V11, August 2021 and subsequent updated versions (V12, 2022 and V13, 2023);
- Adaptive Management Plan V2, May 2022. The latter was updated to comply with T&C 25 of the NIRB Project Certificate 006 Amendment 002, issued on March 2022.

Therefore, Agnico Eagle is operating as per current and approved Management Plans.

CIRNAC Reply to Agnico Eagle's Answer

CIRNAC understands that Agnico Eagle intends to discharge Tiriganiaq Pit 2 water to Itivia Harbour via the waterline in 2025. Agnico Eagle should seek NWB's approval if saline water is stored in Tiriganiaq Pit 2 or any other pit/pond beyond 2025. Also, Agnico Eagle should commit to ensuring that saline water from Tiriganiaq Pit 2 or any other saline/contact water storage will never be mixed with surface water and/or discharged into Meliadine Lake.

CIRNAC 06: Impacts of Effluent Discharge on Phytoplankton in Meliadine Lake

Comment:

In the review of the 2021 Annual Report, CIRNAC noted the observation of algal blooms in Meliadine Lake as a clear indication that something was affecting the phytoplankton community in Meliadine Lake. CIRNAC had recommended that AEM conduct additional studies to determine the root cause of the algal blooms and determine whether the impact directly results from effluent discharge to Meliadine Lake.

In their response, AEM maintained that data from the multi-year phytoplankton study conducted annually in August has not shown evidence of "algal blooms" in Meliadine Lake. Cyanobacteria, which are commonly associated with algal blooms related to nutrient enrichment, comprise less than 1% of the phytoplankton biomass in Meliadine Lake. Furthermore, AEM indicated that the results from the 2021 phytoplankton study demonstrate that effluent is not causing a shift in the phytoplankton community in the near-field or mid-field areas of Meliadine Lake, consistent with FEIS predictions.

CIRNAC was not satisfied with AEM's response because while AEM confirmed evidence of abundant increases in both the phytoplankton biomass and chlorophyll-a in the east basin of Meliadine Lake, they did not attribute these increases to mining activities.

Pursuant to AEM's response, CIRNAC reiterated its recommendation requesting AEM to conduct additional studies to determine the root cause of the algal blooms in Meliadine Lake and whether the impact is a direct result of effluent and/or sewage discharges to Meliadine Lake.

Some additional analyses were included in the 2022 AEMP report (Appendix 19) examining the effect of high rainfall events on water quality and phytoplankton indicators in

Meliadine Lake. The analysis suggests that differences in the phytoplankton community composition among the different areas of Meliadine Lake and between years may be partly related to changes in water quality associated with high rainfall in the preceding years.

Recommendation:

(R-06) CIRNAC recommends that AEM:

a) Design a study to investigate and identify the root cause of the algal blooms for review with CIRNAC and other interested parties,
b) Based on review and feedback, conduct agreed studies to determine the root cause of the algal blooms, and
c) If the studies indicate effluent and/or sewage discharges are a potential contributor, develop action plans to mitigate impacts to Meliadine Lake.

Agnico Eagle's Answer

CIRNAC claims there are algal blooms in Meliadine Lake without referencing the data that they used to draw this conclusion. They also claim that "AEM confirmed evidence of abundant increases in both the phytoplankton biomass and chlorophyll-a in the East Basin of Meliadine Lake". CIRNAC is correct that chlorophyll-a, which is an indirect measure of primary productivity, has increased year-over-year in the East Basin (Figure 5-2), but phytoplankton biomass, which is a direct measure of productivity, has not shown the same yearly increase (Figure 5-3). In 2022, mean phytoplankton biomass was 248 mg/m3 and the 3rd lowest since 2013. Only 2013 (153 mg/m3) and 2020 (211 mg/m3) were lower than 2022. The relatively low biomass in 2020 coincided with the largest volume of water and loadings to Meliadine Lake. If effluent was causing "algal blooms" in the East Basin, we would have expected to see the biggest change in productivity in the August 2020 study given the larger volume of water that was released in June and July 2020.

Nutrient-productivity relationships for dissolved organic carbon, nitrate, and phosphorus were explored in Section 5.5.5. There was no evidence that the concentrations of these key nutrients were strongly positively correlated with phytoplankton biomass or chlorophyll-a (Figure 5-10). The absence of a clear relationship between nutrient concentrations and primary productivity endpoints suggests factors other than nutrients in the effluent are responsible for a) interannual variability in phytoplankton biomass within each area, and b) differences in phytoplankton biomass among the near-field, mid-field, and reference areas.

The mandate of the AEMP is focused on assessing whether mining activities are causing changes to water quality and the health of freshwater communities in Meliadine Lake. Broader concerns about the impact of climate change and increased human activity on water quality, quantity, and the health of freshwater ecosystems near Rankin Inlet are

being investigated as part of the One Voice Monitoring Program led by Prairie Scientific in partnership with the KivIA.

CIRNAC Reply to Agnico Eagle's Answer

Data provided through the AEMP and the Kivalliq Inuit Association's One Voice program suggest that phosphorus in the mining effluent is impacting the productivity of the southeast basin of Meliadine Lake. As part of the AEMP in 2020, 2021 and 2022, approximately 50% of Total Phosphorus measurements in the Near Field area exceeded the threshold.

AEMP data, notes the increasing concentration of some chemicals in the surface waters of Meliadine Lake after releasing treated effluent. These elements and chemicals might contribute to increasing primary productivity by separate pathways. In CIRNAC's opinion, the present monitoring frequency (i.e., collecting water samples three times a year) is not high enough. The uncertainty in this assessment is too high to assess the cumulative impact and make definitive statements on whether treated and untreated effluent results in "algal blooms."

CIRNAC reiterates its recommendation to study the water quality issues in Lake Meliadine. For example, extending the current AEMP (i.e., June to October instead of July to September), and increasing the frequency of water chemistry monitoring (i.e., once a week instead of once a month) to help define the factors influencing the system's productivity. Specifically, oxygen profiles, turbidity and water chemistry measurements (including dissolved organic and inorganic carbon) at depth need to be conducted to determine if the elevation of organic material in surface water and at depth indicates the early stages of eutrophication and the accumulation of organic material. Similarly, collecting and analyzing lake bottom sediment samples should be done annually for trend analysis.

CIRNAC 07: Adaptive Management

Comment:

The 2022 Annual Report states that "Schedule B, Item 6 of the Amended Water Licence 2AM-MEL1631 will come into effect following the commissioning of the Waterline (approved by the Minister of Northern Affairs on January 31st, 2022).

Operation of the waterline for discharge to Melvin Bay is anticipated to significantly minimize or eliminate discharges to Meliadine Lake throughout the open water season each year. A summary of the Adaptive Management procedures implemented following the commissioning of the Waterline will be available in future annual reports once the Waterline is operational.

More information regarding applicable Adaptive Management strategies can be found in the most up-to-date version of the Adaptive Management Plan (Agnico Eagle, 2022)."

In regard to these statements, CIRNAC notes that:

1. The 2022 Annual Report did not provide the Adaptive Management Plan as referenced above,
2. No details were provided on timelines and actual expected reductions of discharge to Meliadine Lake, and
3. While a summary of procedures implemented following commissioning will be provided, no information was provided as to the "planned" Adaptive Management Procedures expected to be carried out with the commissioning of the waterline.

Recommendation:

(R-07) CIRNAC recommends that AEM provide:

a) The Adaptive Management Plan (Agnico Eagle, 2022),
b) History of discharge to Meliadine Lake to date and details and timelines of expected discharge reductions to Meliadine Lake, and
c) Information on planned Adaptive Management Procedures expected to be carried out with the commissioning of the waterline.

Agnico Eagle's Answer

a) Agnico Eagle would like to clarify that the most recent Adaptive Management Plan (V2, May 2022) was submitted to the NIRB in June 2022 as per Term & Condition No. 25 of the NIRB Project Certificate 006 Amendment 002, issued on March 2022. It is also provided in Appendix to this document.

b) Agnico Eagle would like to refer CIRNAC to section 3.1.4 of the 2022 Annual Report and similar section for previous annual reports, where monthly effluent discharge to Meliadine Lake data is presented. Discharge to Meliadine Lake history (2018-2022) is also summarized in section 2.2.1 of the AEMP Report (Appendix 19 of 2022 Annual Report).
As for expected discharge reductions to Meliadine Lake, please refer to Appendix 5 (Water Balance and Water Quality Modeling Tabular Data and Figures) of the 2022 Annual Report, forecasting no discharge to Meliadine Lake would take place from 2025 onward.

c) Agnico Eagle would like to refer CIRNAC to Section 2.1 of the Adaptive Management Plan (Agnico Eagle, 2022) provided in Appendix to the present document, which describes planned adaptive management procedures expected to be carried out with the operation of the waterline.

CIRNAC Reply to Agnico Eagle's Answer

The "Adaptive Management Plan" was submitted to the Nunavut Impact Review Board as part of the Saline Effluent Disposal to the Marine Environment Proposal in February 2021. CIRNAC would like to point out that as per Part B, item 12 of the current license and the

reason for decision document, an “Adaptive Management Plan” is not part of the license and the NWB did not approve any version of it. Implementation of any activities related to the Adaptive Management Plan is not valid as those are not approved by NWB. As such, Agnico Eagle needs NWB’s formal evaluation and approval to implement any activities referred to as part of the “Adaptive Management Plan”.

CIRNAC 08: Aquatic Ecosystem Monitoring Program (AEMP)

Comment:

The 2022 AEMP involved water quality monitoring, a phytoplankton community study in Meliadine Lake, and water quality monitoring in three smaller lakes near the mine: Lake B7, Lake D7, and Lake A8. The results are summarized in Section 7.1 and Appendix 19 of the 2022 Annual Report.

The Annual Report notes that monitoring for the AEMP in 2022 was completed according to the approved AEMP Design Plan, and no exceedances of AEMP Action Levels were observed.

However, the emergence of a couple of concerning trends was noted in the AEMP with respect to accumulating levels of arsenic and iron in the snowpack south of the open pits near the shore of Lake A8 and the increasing trend in arsenic concentrations in Lake B7, which are on track to exceed the AEMP Action Level in 2023 should this trend continue.

Recommendation:

(R-08) CIRNAC recommends that AEM identify what, if any actions have been undertaken to assess these trends further and identify actions that could be taken to reduce the levels while they are still below the threshold.

Agnico Eagle’s Answer

There were increases of arsenic and iron in Lake B7 and Lake A8 between 2021 and 2022. The Tailings Storage Facility is the probable source of metals to Lake B7 and A8.

The concentrations of arsenic and iron in snow samples from SNOCOR4 near Lake A8 are considerably higher than other locations near the mine, including north of the main camp (SNOCOR BOUNDARY), south of the mine near Waste Rock Storage Facility 3 (SNOCOR5), and north of the mine near the emulsion plant (SNOCOR7). Dust from the site is the plausible source of metals in the snow samples at SNOCOR4. Concentrations of arsenic and iron were well below the peak measured in snow samples in April 2020. These results demonstrate that efforts to control off-site migration of dust have been effective at reducing the concentrations of metals in the snowpack.

A Dust Management Working Group was put in place in 2021 involving several departments from the Meliadine Mine to develop and support initiatives for dust management. Agnico Eagle is committed to continuously improve the environmental performance of the TSF and will continue to explore potential additional improvements through the Dust Management Working Group.

Arsenic and iron concentrations measured in surface water samples from Lake A8 and Lake B7 collected in the July sampling events in 2022 and 2023 are provided below along with the AEMP Benchmarks and corresponding Action Levels.

Arsenic and iron concentrations in unfiltered water collected from Lake B7 and Lake A8 in July 2022 and 2023

Month & Year	Total Arsenic (ug/L) AEMP Benchmark = 25 ug/L AEMP Action Level = 18.75 ug/L			Total Iron (ug/L) AEMP Benchmark = 1,060 ug/L AEMP Action Level = 795 ug/L		
Lake B7						
	B7-1	**B7-2**	**B7-3**	**B7-1**	**B7-2**	**B7-3**
July 2022	17.7	12.9	12.2	102	100	96.3
July 2023	15.6	15.6	13.8	78.2	66.6	61.0
Lake A8						
	A8-1	**A8-2**	**A8-3**	**A8-1**	**A8-2**	**A8-3**
July 2022	11.6	11.6	4.83	58.7	54.1	73.1
July 2023	8.83	8.67	4.74	41.9	45.3	59.5

Arsenic concentrations measured in Lake A8 and Lake B7 in July 2023 are in the range of concentrations measured in samples collected last year and below the AEMP Action Level of 18.75 ug/L (75% of the site-specific water quality objective). These results are encouraging and suggest the increase in the concentration of arsenic in Lake A8 and Lake B7 between 2021 and 2022 has stabilized.

Iron concentrations were lower in Lake B7 and Lake A8 in July 2023 compared to the July 2022 sampling event. Compared to the AEMP Action Level, iron concentrations measured in July 2023 are equal to less than 10% of the AEMP Action Level.

Temporal trends will be assessed in more detail in the 2023 AEMP report.

CIRNAC Reply to Agnico Eagle's Answer

CIRNAC is satisfied with the answer and has no further comments.

CIRNAC 09: Geotechnical Inspection Program

Comment:

As required by the licence, third-party Annual Geotechnical Inspections are undertaken annually. A review of AEM 2021 and 2022 inspection recommendations and

implementation plans suggests that some low-priority minor/repetitive recommendations have not been addressed in a timely manner (or at all) and have no timelines. CIRNAC has the following observation based on the review of the 2022 Geotechnical Inspection Report Recommendations:

1. Repair of the crest subsidence along the seepage collection channel downstream of D-CP1 should be undertaken, not just monitored as suggested by AEM.
2. Sediment within Channel 3 should be removed so as to maintain proper drainage within the structure.
3. Tetra Tech recommended extending the Channel 4 Berm. However, AEM did not address this topic in their responses (Appendix 8 2022 Geotechnical Inspection Report).
4. No clear reason was given by AEM as to why the completion of the CP6 access ramp is being extended out to Q4 of 2023 when it should be done during the snow-free period on site.
5. A legacy issue regarding the management of cover material over debris within the landfill should be appropriately addressed, as this topic has been raised since 2020.
6. A legacy issue with respect to supporting pipes within the Itivia Fuel Storage site should be addressed before the liner is damaged.
7. The fuel storage and generator system at the Exploration Camp should be taken out of service and appropriately decommissioned if the camp is not going to be used in the future.
8. Based on the photograph taken at Culvert 25.8 km (along the AWAR) and previous inspection comments, CIRNAC will like to see the culvert repaired during the 2023 Open Water season.
9. Based on the photograph taken at Culvert 26.8 km (along the AWAR) and previous inspection comments, CIRNAC will like to see the culvert repaired during the 2023 Open Water season.
10. Based on the photograph taken at Bridge M-5 and previous inspection comments, CIRNAC will like to see repairs to gabion baskets undertaken and concerns with major erosion addressed promptly.

Recommendation:

(R-09) CIRNAC recommends that AEM:

a) Provide justification for not completing repetitive recommendations raised during geotechnical inspections, and
b) Provide a timeline for the implementation of the 2022 geotechnical inspection recommendations listed above.

Agnico Eagle's Answer

1. Agnico Eagle refers CIRNAC to Appendix 8 (2022 Annual Geotechnical Report Agnico Eagle Responses and Action Table) of the 2022 Annual Report. Agnico Eagle stated, "AEM started maintenance of the channel in 2022 and will continue the maintenance in 2023. The channel functions in its current state."
2. This was completed during the repair of Channel 3 during the 2023 open water season.
3. CIRNAC is referred to Appendix 8 of the 2022 Annual Report. Agnico Eagle stated, "AEM will continue to monitor the area in question and place the fill if it becomes necessary." The channel generally appears dry for most of the year with minimal water observed during freshet.
4. Agnico Eagle is typically dewatering collection ponds into late September or October due to late season rainfall events. In order to extend the ramp into CP6 the pumping and piping infrastructure needs to be removed from CP6. Removing the pumping and piping infrastructure to facilitate ramp construction may or may not have been viable depending on the amount of water within the pond and or rain site receives. Therefore, AEM committed to completing the ramp extension following the final drawdown in Q4 to minimize the impact on water management activities.
5. The waste within the Landfill has not reached its final elevation yet. Once the waste is at the final elevation, it will be capped with waste rock in accordance with the Landfill Management Plan.
6. Agnico Eagle has re-supported the pipeline supports in 2023.
7. As per Agnico Eagle's follow-up answer to CIRNAC's March 23rd, 2023 inspection (dated August 8th, 2023), and "Exploration Camp Inventory 2023" document reviewed with CIRNAC and provided to CIRNAC on August 3rd, 2023, Agnico Eagle has identified Exploration Camp items that are in use, being assessed for reuse or determined to be disposed of or removed from the site during the annual sealift. The generator building will be dismantled or reused, while the generator fuel tank will be inspected/certified for reuse on site. Timeframe for completion of these actions have been provided to CIRNAC in the aforementioned correspondence.
8. Agnico Eagle clears the culverts every year prior to freshet, per the recommendation in the annual geotechnical inspection.
9. As per the answer to the above point, Agnico Eagle clears the culverts every year prior to freshet, per the recommendation in the annual geotechnical inspection.
10. The gabion has been repaired in 2023. Agnico Eagle would like to clarify that there has been no major erosion observed by Agnico Eagle nor by TetraTech in their Annual Geotechnical Inspection Report (Appendix 6 of the 2022 Annual Report).

CIRNAC Reply to Agnico Eagle's Answer

CIRNAC is satisfied with the answer and has no further comments.