Environmental Protection Operations Directorate
Prairie & Northern Region
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Yellowknife, NT X1A 2P7

ECCC File: 6100 000 012/012
NWB File: 2AM-MEL1631

July 25, 2024

via email at: licensing@nwb-oen.ca

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

Dear Richard Dwyer:

RE: 2AM-MEL1631 – Agnico Eagle Mines – Meliadine Gold Mine – Type A Water Licence Amendment Application

Environment and Climate Change Canada (ECCC) has reviewed the information submitted to the Nunavut Water Board (NWB) regarding the above-mentioned Type A Water Licence Amendment Application. You will find our Final Written Submission attached.

ECCC provides expert information and knowledge to project assessments on subjects within the department's mandate, including climate change, air quality, water quality, biodiversity, environmental preparedness and emergencies. This work includes reviewing proponent characterization of environmental effects and proposed mitigation measures. We provide advice to decision-makers regarding a proponent's characterization of environmental effects, the efficacy of their proposed mitigation activities, and may suggest additional mitigation measures. Any comments received from ECCC in this context does not relieve the proponent of its obligations to respect all applicable federal legislation.

If you need more information, please contact Russell Wykes at Russell.Wykes@ec.gc.ca.

Sincerely,

olyslager, John

Digitally signed by: olyslager, John
DN: CN = olyslager, John C = CA O = GC OU = EC-EC
Date: 2024.07.25 13:09:09 -06'00'

N. John Olyslager
Acting Regional Director, EPOD-PNR

Attachments: ECCC Final Written Submission

cc: Eva Walker, Head, Environmental Assessment North (NT and NU)
Stephinie Mallon, A/Sr. Environmental Assessment Officer, Environmental Assessment North

Environment and Climate Change Canada | Environnement et Changement climatique Canada

ENVIRONMENT AND CLIMATE CHANGE CANADA'S FINAL WRITTEN SUBMISSION TO THE NUNAVUT WATER BOARD

RESPECTING THE TYPE A WATER LICENSE AMENDMENT APPLICATION FOR THE MELIADINE GOLD MINE

July 25, 2024

Canada

Executive Summary

Agnico Eagle Mines Limited (AEM or Agnico) is proposing to amend their Meliadine Gold Project Type A Water License (WL)(2AM-MEL1631). The scope of the Type A WL Amendment includes mining four additional deposits and adding associated infrastructure for the Project, and seeks to increase the annual freshwater consumption limit set in the WL.

Environment and Climate Change Canada (ECCC) has participated in the WL amendment review process to date, providing a preliminary technical assessment-completeness check and technical comments to the Nunavut Water Board (NWB). ECCC also attended the Technical Meeting and Pre-Hearing Conference held in Rankin Inlet Nunavut on June 5 to 6, 2024. ECCC provides technical, science-based information and knowledge to the NWB pursuant to the Nunavut Agreement.

This submission summarizes the results of ECCC's technical review of information provided in the Proponent's application, as well as information and commitments provided by the Proponent throughout the WL review process thus far. The comments and recommendations provided in the submission relate to ECCC's mandate in the context of the *Canadian Environmental Protection Act,* the pollution prevention provisions of the *Fisheries Act.* They are intended for consideration by the NWB.

ECCC's outstanding concerns are related to which water quality guidelines are used, water quality parameter exceedances noted in Meliadine Lake, and the proposed water withdrawal rate during closure.

List of Acronyms

CEPA	*Canadian Environmental Protection Act*
ECCC	Environment and Climate Change Canada
NWB	Nunavut Water Board
SNP	Surveillance Network Program
WL	Water License
WBWQM	Water Balance and Water Quality Model
FEIS	Final Environmental Impact Statement
ICRP	Interim Closure and Reclamation Plan
AEMP	Aquatic Effect Monitoring Program

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1.0 Introduction

Agnico Eagle Mines Limited (AEM or Agnico) is proposing to amend their Meliadine Gold Project Type A Water License (WL)(2AM-MEL1631). The scope of the amended water licence includes mining four additional deposits and adding associated project infrastructure, and increase the annual freshwater consumption limit set in the WL.

The amendment application was received by the Nunavut Water Board (NWB) in March 2024. Environment and Climate Change Canada (ECCC) has participated in all phases of the WL review thus far and has provided comments on the preliminary technical assessment-completeness check and has undertaken a full technical review of the application. ECCC participated in a Technical Meeting and Pre-Hearing Conference held via teleconference on June 5 to 6, 2024. ECCC provides science-based information and knowledge based on its mandate pursuant to the *Canadian Environmental Protection Act* and the pollution prevention provisions of the *Fisheries Act*.

ECCC is continuing its participation in this WL process by way of this final written submission to the NWB, which summarizes ECCC's technical review of the information provided in the WL review process. ECCC has identified outstanding concerns, and provides recommendations for consideration by the NWB. These outstanding concerns are related to which water quality guidelines are used, water quality parameter exceedances noted in Meliadine Lake, and the proposed water withdrawal rate during closure.

2.0 ECCC's Mandate, Roles, and Responsibilities

The mandate of Environment and Climate Change Canada is determined by the statutes and regulations under the responsibility of the Minister of Environment and Climate Change. In delivering this mandate, ECCC is responsible for the development and implementation of policies, guidelines, codes of practice, inter-jurisdictional and international agreements, and related programs.

ECCC's specialist advice for this review has been provided pursuant to the *Canadian Environmental Protection Act* (CEPA) and the pollution prevention provisions of the *Fisheries Act*. ECCC regulates the use of toxic chemicals, develops and implements environmental quality guidelines pursuant to CEPA. ECCC also administers the pollution prevention provisions of the *Fisheries Act*, which prohibits the deposit of a deleterious substance into fish-bearing waters. Additional information on ECCC's mandate may be found at: https://www.canada.ca/en/environment-climate-change/corporate/mandate.html.

3.0 ECCC's Technical Review Comments

Prior to the Technical Meeting and Pre-Hearing Conference, ECCC had 31 recommendations regarding waste rock management, water quality, air quality, emergency management plans and migratory birds. The Proponent's response to 28 of 31 of these recommendations were addressed to the satisfaction of ECCC and are considered resolved.

This final written submission summarizes ECCC's outstanding comments from the department's technical review of documents pertaining to this WL, as well as additional information provided during a Technical Meeting and Pre-Hearing Conference held In Rankin Inlet June 5to 6 2024.

The comments and recommendations provided are based on ECCC's mandate in the context of the *CEPA,* and the pollution prevention provisions of the *Fisheries Act*.

3.1 ECCC# 11 – Mitigating predicted post closure water quality exceedances: Part B

References

- Meliadine Mine Water Balance and Water Quality Model – Technical Report (Lorax Environmental Services; January 25, 2024) Appendix E of Appendix F21 – Water Management Plan
    - Section 6.3: Post Closure
    - Table 6-5: SP6 Post Closure Predictions Compared to Aquatic and Terrestrial Guidelines
    - Appendix D: Water Quality Model Results

- Interim Closure and Reclamation Plan – Update 2024 (Agnico Eagle; January 2024) Appendix F12
    - Section 1.3: Goal of the Closure and Reclamation Plan
    - Section 4.2.4.5: Engineering Work Associated with Selected Closure Activity

ECCC's Conclusion:

The Water Balance and Water Quality Model (WBWQM) predicts concentrations above water quality screening criteria for certain parameters during post-closure, including:

- ammonia, nitrate, chloride, arsenic, selenium and cobalt in Pond SP6;
- chloride and cobalt in Pit WES04; and,
- ammonia in Lake J1.

ECCC requested a discussion of management actions that could be taken to prevent water quality impacts to aquatic life in SP6, WES04 and Laked J1 in post-closure.

The measure proposed by Agnico in their technical comment written response was to "*manage and monitor runoff from waste rock storage facilities and the tailings storage facility*" during operations. Agnico's proposed management does not prevent water quality exceedances in closure or post closure,

as demonstrated by the model. To attain the closure goal of "*no long-term active care requirements*", further actions would be necessary. It is expected that model predictions will change as more site data are collected. However, the predicted concentrations will not necessarily be reduced. By way of example, when comparing 2014 Final Environmental Impact Statement (FEIS) concentration estimates for water quality with the current WBWQM, ECCC notes that predicted concentrations for the majority of parameters increased by one order of magnitude or greater for at least two prediction nodes. This demonstrates that conservative estimates in 2014 were not always sufficiently conservative to match current site conditions. Waste should be managed such that predicted concentrations at post-closure will not potentially impact water quality.

Proponent's Response:

During the technical meeting (June 5, 2024), the Proponent proposed different mitigation measures that could potentially be implemented to reduce contaminant sources which would lead to lower parameter concentrations in Pond SP6, Pit WES04 and Lake J1 during post-closure. All proposed measures could be implemented during closure.

ECCC Recommendation(s):

ECCC recommends the Proponent update the Interim Closure and Reclamation Plan to incorporate the measures that were proposed at the technical meeting for preventing potential impacts to aquatic life from water quality during post closure. This includes the timing of their implementation. Presently, the plan incorrectly states "*The water quality model results indicated that water in the flooded pits will meet the discharge criteria and post closure treatment will not be required.*" ECCC recommends that the Nunavut Water Board outline a timeline for the update of the Interim Closure and Reclamation Plan in their decision.

3.2 ECCC# 17 – Parameter concentration normal ranges in Meliadine Lake

References

- Aquatic Effects Monitoring Program 2019 Annual Report, Meliadine Gold Project (Azimuth Consulting Group Partnership; March 2020)
    - Section 5.3.5 Normal Range Assessment
    - Appendix F: Normal Range Review
- Aquatic Effects Monitoring Program 2020 Annual Report, Meliadine Gold Project (Azimuth Consulting Group Inc.; March 2021)
    - Section 5.3.4 Normal Range Assessment
- Aquatic Effects Monitoring Program 2021 Annual Report, Meliadine Gold Project (Azimuth Consulting Group Inc.; March 2022)
    - Section 4.5.3: Spatial and Temporal Trends
- Aquatic Effects Monitoring Program 2022 Annual Report, Meliadine Gold Project (Azimuth Consulting Group Inc.; March 29, 2023)
    - Section 3.4.3: Spatial and Temporal Trends
- Aquatic Effects Monitoring Program 2023 Annual Report, Meliadine Gold Project (Azimuth Consulting Group Inc.; March 24, 2024)
    - Section 3.4.3: Spatial and Temporal Trends

ECCC's Conclusion:

Normal ranges for parameter concentrations are used to identify whether water quality in the lake is changing more than baseline variability. Therefore, it is important that the normal ranges are representative of baseline. This is particularly important in the East Basin of Meliadine Lake, in order to understand the effects of treated effluent discharge into that basin.

ECCC questioned how the normal ranges were calculated. In response, the Proponent referred to various reports and clarified the timing of when changes were made. In 2019 normal ranges were recalculated and replaced with a single value for each parameter, which they called the 'normal' for that specific parameter, which was defined by the Proponent as the 90th percentile of the available concentration data.

In each Aquatic Environment Monitoring Program (AEMP) annual report since 2019, concentrations of certain metals measured at the near field station MEL-1 exceed calculated Meliadine Lake 'normals'. When interpreting the exceedances, the Proponent indicates that the East Basin of Meliadine Lake, where MEL-1 is situated, is different than the rest of the lake and that the calculated lake 'normals' are not representative of this basin. The 2019 and 2020 AEMP annual reports describe how the currently used 'normal' values were calculated, and specifies that no baseline data from the East Basin was incorporated in the calculated 'normals' for certain metals (including arsenic, chromium, copper and iron) and nitrogen compounds because those data had higher detection limits.

If water quality in the East Basin of Meliadine Lake is distinct from the rest of the lake, then 'normals' for this region should be calculated using baseline data collected from the East Basin. ECCC acknowledges that detection limits in water quality analyses were higher a decade ago when baseline data was collected. However, it should be possible to characterize the baseline data, for at least some of the metals and nitrogen compounds, in order to avoid repeating each year that Meliadine Lake 'normals' are not representative of the East Basin.

Proponent's Response:

During a follow-up discussion (July 10, 2024), the Proponent stated that the same 'normals' were used since 2019 to 2020, and they stated that for that reason it made sense to continue using them. They did not propose to incorporate any new data into the calculated 'normals' for Meliadine Lake. ECCC had understood they would explore what could be done with the baseline data in order to better characterize the East Basin. But no response has been provided as of this submission.

ECCC Recommendation(s):

ECCC recommends the Proponent evaluate existing water quality baseline data from the East Basin of Meliadine Lake in order to better establish East Basin specific 'normals'. East Basin specific 'normals' are required in order to evaluate project effects in the Aquatic Effects Monitoring Program.

3.3 ECCC #19: Closure Criteria for surface water quality

References

- Interim Closure and Reclamation Plan – Update 2024 (Agnico Eagle; January 2024) Appendix F12
    - Section 1.3: Goal of the Closure and Reclamation Plan
    - Section 4.2.4.5: Engineering Work Associated with Selected Closure Activity

- Meliadine Mine Water Balance and Water Quality Model – Technical Report (Lorax Environmental Services; January 25, 2024) Appendix E of Appendix F21 – Water Management Plan
    - Section 4.2: Parameter List and Screening Criteria
    - Table 4-2: Water quality guidelines applied for comparison with model predictions during Operations, Active Closure, and post-Closure.

ECCC's Conclusion:

The Interim Closure and Reclamation Plan states that Canadian Council of Ministers of the Environment or site-specific guidelines will be used as criteria for surface water quality for pits, ponds and lakes at closure, without specifying whether the guidelines to be used were those for the protection of aquatic life or those for terrestrial life. ECCC acknowledges water quality objectives can be refined as the mine gets closer to closure and post-closure. However, preliminary objectives provide an understanding of expected conditions, and help the Proponent manage contaminant sources on site to meet those objectives. Such objectives are already in use in the Water Balance and Water Quality Model, which is referred to in the Interim Closure and Reclamation Plan.

The Interim Closure and Reclamation Plan also shows that at closure all pits and ponds will be reconnected to the regional surface water network. Given local conditions, it will only be a matter of time before all water bodies become fish bearing. Therefore, criteria for the protection of aquatic life are the most appropriate for closure, especially given that one of the goals of the Plan is "*no long-term active care requirements*", for which "*any post-closure monitoring can only continue for a defined period of time.*"

Proponent's Response:

As raised during the technical meeting (June 5, 2024) and in follow-up discussion (July 10, 2024), the Proponent considers that waterbodies listed as tailings impoundment areas under Schedule 2 of the *Metal and Diamond Mining Effluent Regulations* (MDMER) should have distinct criteria. The Proponent is requesting certain lakes on site be added as tailings impoundment areas under Schedule 2, including the Lake B4 (future CP8) and Lake B7 (future SP6). If successful, they argue that since those lakes will not be removed from Schedule 2, less stringent water quality criteria for the protection of terrestrial life could be appropriate.

ECCC Recommendation(s):

ECCC recommends that the Interim Closure and Reclamation Plan be updated to specify preliminary water quality criteria for closure that will be protective of aquatic life for all waterbodies, since, at closure, waterbodies will all be reconnected to the fish bearing regional surface water system regardless of their Schedule 2 status as tailings impoundment areas.

3.4 ECCC #29: Deficiencies in original estimation of water availability (In support of DFO #2)

References

- Meliadine Water Licence Main Application Document
- 2014 FEIS

ECCC's Conclusion:

ECCC highlighted deficiencies in the original 2014 FEIS estimation of water availability from Meliadine Lake. Agnico responded that they would begin collecting more data in 2024 and this comment was considered resolved.

The status of resolved was based on ECCC's understanding from a meeting with the Proponent (March 4, 2024) that the amended water licence would not request a water withdrawal rate at closure. The 2014 FEIS predicts a 17 million m^3/year abstraction rate from Meliadine Lake will cause low flows at the lake outlets to decrease by 24% to 35% compared to baseline conditions. Such a reduction in flows would exceed Fisheries and Oceans guidelines on limiting changes to instantaneous discharge to less than 10% for ecological flow requirements. Though the Proponent is not requesting the full 17 million m^3/year assessed in the FEIS, the deficiencies in the original estimation of water availability make it unfeasible to assess the effects on the quality of the aquatic environment of the proposed withdrawal of 8.7 million m^3/year.

Proponent's Response:

At the technical meeting (June 5, 2024) discussion about the Department of Fisheries and Oceans technical comment #2 regarding abstraction rates for pit flooding at closure, ECCC understood that a water withdrawal rate of 8.7 million m^3/year was still being considered in the water licence amendment. The Proponent explained that their 2014 assessment of impacts for proposed water withdrawal from

Meliadine Lake was still valid, and that for the purposes of operational certainty they wanted an increased withdrawal rate for closure in an amended licence.

ECCC Recommendation(s):

ECCC recommends that the Nunavut Water Board not include an authorized water withdrawal rate from Meliadine Lake during closure in an amended licence, because there is uncertainty on what rate the lake can support without impacts occurring to the quality of the aquatic environment. Moreover, the proposed licence term does not cover the closure period. As such, there is time to revisit this topic closer to closure, , once further data are collected and analyzed.

4.0 Acknowledgements

ECCC acknowledges and appreciates the effort that the Proponent has taken to provide information and to address concerns brought forward by parties throughout the Type A Water License amendment process. ECCC would like to thank the Nunavut Water Board for this opportunity to provide input to the Meliadine Gold Mine – Type A Water License Amendment Application. We look forward to continuing our participation in this process.

ECCC's technical review comments and recommendations are not to be interpreted as any type of acknowledgement, compliance, permission, approval, authorization, or release of liability related to any requirements to comply with federal or territorial statutes and regulations.