



October 8th, 2019

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

Re: Agnico Eagle's response to Meadowbank (2AM-MEA1526) Ground Water Monitoring Plan, Meadowbank Interim Closure and Reclamation Plan, Pore Water Quality Monitoring Program and Waste Rock-Tailings Management Plan re-comments

Dear Richard Dwyer,

The following information are intended to address the regulator's comments regarding the Meadowbank (2AM-MEA1526) Ground Water Monitoring Plan, Meadowbank Interim Closure and Reclamation Plan 2019 update, Pore Water Quality Monitoring Program and Waste Rock-Tailings management plan 2019 submitted following the approval for the In-Pit Disposal:

- Crown-Indigenous Relations and Northern Affairs Canada – September 30, 2019: Crown-Indigenous Relations and Northern Affairs Canada's Reply to Agnico Eagle Mines' Response to Comments on 2AM-MEA1526 Pore Water Quality Monitoring Program V1 July 2019
- Crown-Indigenous Relations and Northern Affairs Canada – September 30, 2019: Crown-Indigenous Relations and Northern Affairs Canada Reply to Agnico Eagle Mines' Response to Comments on 2AM-MEA1526 Waste Rock and Tailings Management Report & Plan July 2019
- Crown-Indigenous Relations and Northern Affairs Canada – September 30, 2019: Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) response to Agnico Eagle Mines Limited's (AEM) Ground Water Monitoring Plan and the Interim Closure and Reclamation Plan responses to CIRNAC concerns on Water Licence No. 2AM-MEA1526 – Meadowbank Gold Project
- Environment and Climate Change Canada – September 30, 2019: 2AM-MEA1526 – 2AM-MEA1526 – Agnico Eagle Mines Limited – Meadowbank Gold Mine – Responses to Ground Water Monitoring Plan, Meadowbank Interim Closure and Reclamation Plan, Pore Water Quality Monitoring Program and Waste Rock-Tailings Management Plan Comments



AGNICO EAGLE

Should you have any questions or require further information, please do not hesitate to contact us at the below.

Regards,

Agnico Eagle Mines Limited – Meadowbank Division

Robin Allard
robin.allard@agnicoeagle.com
819-759-3555 x 4606838
Environment General Supervisor

Marie-Pier Marcil
marie-pier.marcil@agnicoeagle.com
819-759-3555 x 4105836
Senior Compliance Technician



AGNICO EAGLE

Table of Contents

1	Pore Water Quality Monitoring Program.....	4
1.1	Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC)	4
2	Waste Rock and Tailings Management Report & Plan.....	5
2.1	Environment and Climate Change Canada (ECCC).....	5
3	Meadowbank Interim Closure and Reclamation Plan – Update 2019	7
3.1	Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC)	7



1 Pore Water Quality Monitoring Program

1.1 Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC)

Comment: CIRNAC would like to point out that Agnico Eagle Mines (AEM) is required to monitor pore water quality, so that early predictions on pore water quality can be validated or updated, and effective and timely measures can be implemented to mitigate the predicted or observed risks to water quality. CIRNAC is concerned that the proposed pore water monitoring program appears to be a prediction exercise rather than a monitoring plan. The pore water would not be sampled and measured directly but obtained indirectly through calculations based on the chemical compositions of the mill effluence and reclaim water. For reasons specified in CIRNAC's original comments, CIRNAC does not consider that such an approach would produce sufficiently accurate pore water quality data.

CIRNAC appreciates AEM's statement: "*Agnico Eagle is committing to pore water sampling at the end of in-pit deposition to confirm predictions*" and would like to remind AEM that this commitment needs to be substantiated with detailed sampling and measurement plans. In addition, CIRNAC does not consider a single post-deposition pore water sampling event be sufficient.

Recommendation: CIRNAC recommends that AEM redesigns its pore water quality monitoring program to lay out its plans on multi-year post-deposition tailings pore water and overlying water quality sampling and measurements.

Agnico Eagle's Response:

As previously noted, the issue with sampling pore water during operations is that it poses a significant safety risk to our people on site and it will not be done. Agnico Eagle is not proposing a prediction program, but instead as noted in our response that we would sample mill effluent water and mill reclaim water on a routine basis during operations. This will provide a range of expected conditions in tailings porewater, with the mill effluent representing the highest concentrations. As the tailings will be underwater, there will be no other geochemical reactions impacting the water quality of the pore water as outlined in our initial response and the above two sample types will provide the spread of potential water quality conditions.

Once operation of the pit is complete and it is safe to access the tailings, only then will porewater samples be taken.



2 Waste Rock and Tailings Management Report & Plan

2.1 Environment and Climate Change Canada (ECCC)

ORIGINAL COMMENT

References: Agnico Eagle Mines Limited. 2019. Meadowbank Gold Mine: Updated Mine Waste Rock and Tailings Management Plan - 2019, Section 7: Control Strategies for Acid Rock Drainage – Cover Design and Section 7.1: TSF Cover Design

Comment: The Proponent has set out some design criteria specific to the cover system design that includes:

- In areas where the active layer extends into the tailings material, the thawed layer should be limited to the upper 30 cm of the tailings mass and saturation of the tailings should remain above 85% to limit oxidation of the tailings.
- As an additional method to reduce tailings reactivity, the degree of saturation within the tailings mass should remain above 85%. This will reduce the tailings reactivity should part of the upper region of the tailings mass thaw during a warm year event.

Thermal modelling shows that the tailings material, beneath the minimum 2.0 m thick cover will remain frozen for all year (excluding the warmest years) from the 100-year database, accounting for climate change. The unfrozen tailings are segregated in the upper 0.5 m of the tailings storage facility (TSF) and remain above 85% saturation, thus reducing the risk of oxidation until the material freezes back into the permafrost over time.

ECCC notes that the Proponent indicated that the cover depth in some areas of the TSF would be less than the active layer and that the top 0.5 m of the tailings even when thawed during the warm months, will remain saturated up to 85%. It is understandable that when a tailings zone or layer is saturated, the acid rock drainage (ARD) activity would be reduced or slowed if the saturation remains (i.e., soaked with abundance of water). It is also reasonable to expect that some rock materials may be able to retain moisture or water longer than others may. However, if the warm period continues, it is unclear to ECCC how the Proponent would be able to retain the 85% saturation in the tailings such that ARD/metal leaching (ML) reactivity of the tailings will not occur or will be reduced. Tailings are finely ground rock particles ranging from sand-sized to silt-sized and are not specifically designed or engineered to retain water.



Recommendation: ECCC recommends that the Proponent clarify plans to ensure that the top 0.5 m of the tailings within the active layer under cover will remain saturated.

Agnico Eagle's Response:

The 0.5 m of thawed material referenced above is not expected to occur every year but only in the warmest year. For most year, all tailings are expected to remain entirely frozen. The thawed zone of 0.5 m would be valid for a 2 m cover, however most of the landform is planned to be significantly thicker than 2 m.

Additional monitoring and analysis are required to verify the performance of the cover against the design intent and inform on the final cover design. The final cover design will be subject to modification depending on the results obtained from the site trials as well as from data from the Thermal Monitoring Program. Results of the modelling and the final cover design will be provided in the Final Closure and Reclamation plan for Meadowbank site.

ECCC'S RESPONSE TO AGNICO'S RESPONSE

References: Agnico Eagle Mines Limited. 2019. Meadowbank Gold Mine: Updated Mine Waste Rock and Tailings Management Plan - 2019, Section 7: Control Strategies for Acid Rock Drainage – Cover Design and Section 7.1: TSF Cover Design.

Okane. 2019. Whale Tail Project – Thermal Modelling of Whale Tail WRSF under RCP8.5. Memorandum prepared for Agnico Eagle Mines Limited June 20, 2019

Re-Comment: ECCC notes that Figures 8-10 in the Memorandum show the thermal modelling of the Whale Tail Project Waste Rock Storage Facility (WRSF) under RCP8.5. These figures indicate that the thaw goes deeper than the cover thickness. Yet, it concluded that thaw due to “annual climate cycling” remained constrained to the cover system. In all figures provided in the Memorandum, the temperature close to the proposed cover system interface, shown in a black dashed line, is around 0°C, which may indicate that it is not frozen. Given the thermal modelling results provided in the Okane Memorandum, it is unclear to ECCC whether the Proponent has considered using cover greater than 2 m. A cover thicker than the active layer would constrict or restrict the active layer within the cover material and would not rely on the saturation of the top 0.5 m of tailings.

In the Updated Mine Waste Rock and Tailings Management Plan, the Proponent acknowledged that the active layer extends into the tailings material. If this is the case, it is not clear to ECCC why a cover that is thicker than the active layer is not being considered for the entire landform rather than in limited areas (especially given the thermal modelling results for the Whale Tail Project under RCP8.5)



Recommendation: ECCC recommends that the Proponent:

- Clarify the statement that thaw due to “annual climate cycling” remained constrained to the cover system, in the *Thermal Modelling of Whale Tail WRSF Under RCP8.5*, when Figures 8-10 show otherwise.
- Consider using a cover thickness greater than 2 m for the entire landform.

Agnico Eagle’s Response:

The tailings cover is currently planned for a minimum of 2m thickness but will ultimately be thicker over the majority of the landform. Tailings does not lay perfectly flat so the highest points within the tailings will be of minimum thickness, but the majority of areas will be thicker reaching a maximum of 8m. Closure requirements for the tailings need either the temperature to be below 0°C or maintain a degree of saturation greater than 85% to prevent oxidation. On warmer years this saturation of tailings will protect against acid generation. Although the 2m thermal cap has had thermal modelling, the climate change scenario RCP8.5 has not yet been utilized. Modelling with the latest agreed upon climate scenario will serve as the input into the Final Closure Plan for the Tailings Storage Facility.

3 Meadowbank Interim Closure and Reclamation Plan – Update 2019

3.1 Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC)

ORIGINAL COMMENT

Comment: With respect to the Interim Closure Reclamation Plan (ICRP), CIRNAC’s comment is unresolved. On January 31, 2019, CIRNAC requested the updated ICRP specify that an assessment of the material deposited to date and pore water monitoring be completed to inform mitigative measures, such as the depth of water cover and details of aggregate cover required, to comply with flooded pit water quality objectives - and that those mitigative measures are carried out in the event the ICRP is implemented. CIRNAC reviewed Sections 1.3.4, 5.2.4, and 6.2.4 on open pits in the Meadowbank ICRP update 2019 and did not locate the aforementioned commitment.

Recommendation: CIRNAC requests the location of the aforementioned commitment within the ICRP is provided for CIRNAC to review. Alternatively, CIRNAC requests the ICRP specify that an assessment of the material deposited to date and pore water monitoring will be completed to inform mitigative measures, such as the depth of water cover and details of aggregate cover required, to comply with flooded pit water quality objectives. In the event the ICRP is implemented, CIRNAC requests the timeline by which the assessment would be completed, and the mitigative measures submitted to the NWB for review.



AGNICO EAGLE

Agnico Eagle's Response:

Agnico Eagle would like to clarify that the updated ICRP was submitted to CIRNAC on June 7, 2019. Following the reception of the documentation, CIRNAC did not provide any comment related to the ICRP and agreed with the updated total global security amount.

Agnico Eagle is of the opinion that this process is already an existing condition of the water licence and the proposed update to the ICRP should not be considered as an additional commitment. Also, Agnico Eagle considers that the ICRP is not a plan to be implemented. In the situation of the closure of the site, Agnico Eagle had to provide a final closure plan to the NWB which will integrate the proposed commitment.

Agnico Eagle will include the following statement in the updated version of the ICRP

"The assessment of the material deposited to date and pore water monitoring completed during operation, as presented in the Pore water quality monitoring plan and the Water Management Plan and reported as part of the Annual Report, will be used to inform potential mitigative measures, such as an adjustment of the depth of water cover, the implementation of an aggregate cover if deemed required, to comply with flooded pit water quality objectives - and that those mitigative measures are carried out once the Final Closure Plan is implemented."

CIRNAC'S RESPONSE TO AGNICO'S RESPONSE

Comment: CIRNAC initially raised three outstanding concerns with AEM's Ground Water Monitoring Plan (2) and Interim Closure and Reclamation Plan (1). CIRNAC is satisfied with most of the responses provided by AEM except CIRNAC's number one comment/recommendation in the letter dated September 5, 2019, which states, "CIRNAC requests the location of the aforementioned commitment within the ICRP is provided for CIRNAC to review. Alternatively, CIRNAC requests the ICRP specify that an assessment of the material deposited to date and pore water monitoring will be completed to inform mitigative measures, such as the depth of water cover and details of aggregate cover required, to comply with flooded pit water quality objectives".

Recommendation: CIRNAC would like to remind the parties concerned, including the Nunavut Water Board (NWB), that the concerns raised are associated to the time of closure. CIRNAC recommends that the NWB keeps track of the list of commitments made by AEM to enable effective review at the time of mine closure.

Agnico Eagle's Response:

Agnico Eagle acknowledges CIRNAC's comment.