Crown-Indigenous Relations and Northern Affairs Canada
Relations Couronne-Autochtones et Affaires du Nord Canada

Water Resources Division
Resource Management Directorate
Nunavut Regional Office
P.O. Box 100
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Your file - Votre référence
2AM-MEL1631
Our file - Notre référence
CIDM#1286625

July 6, 2020

Mr. 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 Review Comments on Agnico Eagle Mines Limited 2019 Meliadine Gold Project Water Licence No. 2AM-MEL1631 Annual Report

Dear Mr. Dwyer,

Thank you for your April 15, 2020 email invitation to review the above-noted annual report.

Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) reviewed the annual report documents and comments are provided 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*.

CIRNAC appreciates the opportunity to participate in this review. If there is any question, please contact me at (867) 975-4555 or david.zhong@canada.ca or Sarah Forte at (867) 975-3876 or sarah.forte@canada.ca.

Sincerely,

David Zhong
Regulatory and Science Advisor

Crown-Indigenous Relations and Northern Affairs Canada | Relations Couronne-Autochtones et Affaires du Nord Canada

Memorandum

To: Richard Dwyer, Manager of Licensing, NWB

From: David Zhong, Regulatory & Science Advisor, Water Resources, Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC), Nunavut Regional Office.

Date: July 6, 2020

Re: Crown-Indigenous Relations and Northern Affairs Canada Review Comments on Agnico Eagle Mines Limited 2019 Meliadine Gold Project Water Licence No. 2AM-MEL1631 Annual Report

Applicant:	Agnico Eagle Mines Limited
Project:	Meliadine Mine Project
Region:	Kivalliq

Technical Review Comments and Recommendations

1. High Water Levels in CP1, CP3 and CP4 and Potential Risk to Stability of D-CP1

Reference:

Section 4.1 of the 2019 Annual Report;
Appendix B1;
Appendix B2;
Appendix B3;
Appendix B4;
Appendix I-1;
Appendix I-2;
Appendix I-3;
Appendix I-4.

Comment:

In August 2019, a geotechnical inspection conducted by Tetra Tech Canada Inc. identified the high water levels in the containment ponds (i.e., CP1, CP3 and CP4) and the stability of D-CP1 (i.e., CP1 dike) as important concerns to be addressed. The inspection report stated: *"(A) water management strategy must be developed to deal with the current high water levels in CP1. The higher water levels may have an impact on the ground temperatures in the dike. It is understood that snow clearing on the downstream crest will be done to mitigate the thermal impact of the high-water levels. The temperatures should be monitored to determine the impact of the high-water level on the ground temperatures*" and *"(A) water management strategy should be developed to deal with the high pond levels in spring 2020*" for CP3 and CP4.

CIRNAC notes that in August 2019, the stability of the D-CP1 dike was determined to be potentially at risk if no measures were taken, yet no information was provided in the annual report on the measures that the licensee took in 2019 to mitigate this potential risk.

Recommendation:

The licensee provides a summary of the measures taken in 2019 to address the issues related to the high water levels of CP-1, CP3 and CP4 and the potential stability risk of D-CP1.

2. Higher-Than-Expected Total Dissolved Solids (TDS) in CP1

Reference:

Section 7.3 of the 2019 Annual Report;
Appendix H-1;
Appendix H-2;
Appendix H-3;
Appendix I-1;
Appendix I-2;
Appendix I-3;
Appendix I-4.

Comment:

The quality of water in CP1 was sampled and monitored at MEL-12. Although no water chemistry is mentioned or summarized in the report, data in Appendix H-3 indicated that the total dissolved solids (TDS) in CP1 increased significantly from an average value of 1,152.5 mg/L in 2018 to 2,131.43 mg/L in 2019, with a maximum value of 2,600 mg/L observed on September 3, 2019, exceed the TDS concentration limit prescribed under Part F, Item 3 of the Water Licence (i.e., 1,400 mg/L) for discharge to Meliadine Lake.

CIRNAC notes the absence of any discussion of this issue in the annual report, particularly the steps or measures that the licensee took in 2019 to identify the sources and to reduce the TDS loads to CP1.

Recommendation:

The licensee provides a summary of the measures been taken in 2019 to identify the sources and to reduce the TDS loads to CP1.

3. Reclaiming Water in CP1 for Ore Processing

Reference:

Sections 3 and 4.1 of the 2019 Annual Report;
Appendix A-1;

Appendix A-2;
Appendix A-3;
Appendix B1;
Appendix B2;
Appendix B3;
Appendix B4;
Appendix I-1;
Appendix I-3.

Comment:

In Section 4.2.3 of Appendix I-1, the licensee stated: *"(P)rocess water is required in the mill for ore processing and is primarily sourced from Meliadine Lake through the freshwater intake system. However, contact water from CP1 is currently being evaluated for reclaim purposes in order to minimize the amount of freshwater use at the mill. The permitted freshwater usage value of 318,000 m^3/d will be in sufficient to provide make-up water at the mill over life of mine. Agnico Eagle is currently investigating strategies to reclaim water (i.e., from CP1) and assessing mill water usage over life of mine. A Licence amendment to accommodate required mill water usage will be requested accordingly.*"

CIRNAC notes that as early as August 2020, a geotechnical inspection conducted by Tetra Tech Canada Inc. identified the high water level in CP1 and the stability of D-CP1 as critical concerns and recommended that a water management strategy be developed to deal with the high water level in CP1. Prior to freeze-up in 2019, about 0.64 million cubic meters of water was stored in CP1, representing approximately 86.5% of its total capacity (i.e., 742,075 cubic meters). Water level in CP1 on the 29th of October reached to 65.84 meters above sea level (masl), significantly higher than the design specified guideline of 63.0 masl for the end of October for CP1 and D-CP1. Water in CP1 exceeded the discharge criterion for TDS (i.e., 1,400 mg/L) and could not be discharged to Meliadine Lake without treatment.

CIRNAC also notes that about 0.166 million cubic meters of freshwater was draw from Meliadine Lake, mainly for ore processing, between August and December 2019. It is not clear if this volume of processing water ended up in CP1, although all mine site surface contact water, including water from containment ponds CP3, CP4, and CP5, was directed to CP1.

Given the above observations, CIRNAC strongly encourages the licensee to take any initiatives or efforts to reclaiming contact water from CP1 for ore processing and other suitable purposes.

Recommendation:

The licensee evaluates the options of reclaiming contact water from CP1 for ore processing and other purposes in order to better manage mine site water and minimize freshwater usage from Meliadine Lake.

4. Higher-Than-Predicted ARD Potential of Filtered Tailings

Reference:

Section 4.2 of the 2019 Annual Report;
Appendix C-1;
Appendix C-2.

Comment:

A total of about 0.508 million cubic meters of tailings was produced in 2019. The filtered tailings were previous predicted as to be *Not Potentially Acid Generating* (Non-PAG), with a *Neutralization Potential Ratio* (NPR) of 2.7. However, test results of the filtered tailings samples collected in 2019 indicated that they were *Potentially Acid Generating* (PAG) or uncertain instead (i.e., NPR less than 2, with a median of 1.4).

This discrepancy has important implications, as the current geochemical monitoring and the tailings management plans have been designed based on the assumption that the filtered tailings were Non-PAG, instead of PAG. It is therefore critical that the water quality model and all plans associated with the monitoring and management of the filtered tailings be re-evaluated and updates so that the potential impact of the filtered tailings on water quality can be assessed, monitored, and mitigated accordingly and proactively.

Recommendation:

The licensee re-evaluates and updates the water quality model and all plans associated with the monitoring and management of the filtered tailings for review.

5. No 2019 Updates of Water Balance and Water Quality Models and Modelling Results

Reference:

Section 3.2 of the 2019 Annual Report;
Appendix I-1;
Appendix I-2;
Appendix I-3;
Appendix I-4.

Comment:

The water balance model and the water quality model were not updated for the monitoring period of 2019.

Given the concerns identified and CIRNAC Comments 1 to 4 above, it is important that these models be updated on a timely manner so that the issues and the causes of the issues could be fully understood and appropriate mitigation measures identified.

Recommendation:

The licensee updates the water balance and quality models and provides modelling results for review before September 2020.

6. Insufficient Details in the Main Report

Reference:

The Complete 2019 Annual Report package.

Comment:

The 2019 Annual Report package contains 5,038 pages of documents, comprising of a 97-page main report and forty-two (42) appendices. The report is to address all the annual reporting requirements of the project under the following authorizations:

- NWB Type A water license 2AM-MEL1631;
- NWB Type B Water License 2BB-MEL1424;
- NIRB Project Certificate No. 6;
- KIA Permit KVCA07Q08;
- KIA Permit KVCA11Q01;
- KIA Production Lease KVPL11D01; and
- The Meliadine IIBA.

It is expected that the main report would address all the annual reporting requirements with sufficient details, analyses, discussions, and summaries of the observed data and information documented in the appendices for a proper review. However, CIRNAC does not find that the 97-page main report provides sufficient details or substances to address adequately some of the reporting requirements of NWB Type A water license 2AM-MEL1631 and Type B Water License 2BB-MEL1424.

For example, in addressing the reporting requirement of Water License 2AM-MEL1631 Schedule B, Item 6e (i.e., *Any geochemical outcomes or observations that could imply or lead to environmental impact*;", the main report simply stated: *"(N)o environmental impact implied, as all test are NPAG with the exception of one sample and this sample was crushed and used as roadbed material underground. The results are within project predictions for no metal leaching impact*." This statement was not substantiated by any meaningful or adequate data, analysis, or discussion in the main report. Furthermore, the monitoring results of the ARD potential of the filtered tailings in 2019, as discussed in CIRNAC Comment #4 above, could imply or lead to environmental impact.

This general lack of the appropriate details in the main report has made the review difficult, as some of the critical data and information were buried in the various thick-volume appendices.

Recommendation:

The licensee produces a main report document that would adequately address all the annual reporting requirements of NWB Type A water license 2AM-MEL1631 and Type B Water License 2BB-MEL1424 with sufficient details, analysis, discussions, and summaries in future years.