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Prairie & Northern Region
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ECCC File: 6100 000 012/023
NWB File: 2AM-MEL1631/11MN034



July 6, 2020

via email at: licensing@nwb-oen.ca and info@nirb.ca

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Nunavut Water Board
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Karen Costello
Executive Director
Nunavut Impact Review Board
P.O. Box 1360
Cambridge Bay, NU X0B 0C0

Dear Richard Dwyer and Karen Costello:

RE: 2AM-MEL1631 – Agnico Eagle Mines Limited – Meliadine Mine – 2019 Annual Report

Environment and Climate Change Canada (ECCC) has reviewed the information submitted to the Nunavut Water Board (NWB) and the Nunavut Impact Review Board (NIRB) regarding the above-mentioned annual report for 2AM-MEL1631 Type A Water Licence by Agnico Eagle Mines Ltd. (the proponent). ECCC is submitting one letter to both the NIRB and NWB, because our comments and recommendations are the same for both reviews.

The NIRB requested that parties comment on the validity of the 2019 annual report for Meliadine Mine. The NIRB also requested that parties identify if there were any areas of significance requiring further information or changes to monitoring programs.

Overall, ECCC identified no concerns with the conclusions reached by the proponent. Monitoring was acceptable, although ECCC is requesting clarification related to particulate matter sampling (ECCC Comment 1 below). Requirements for water quality monitoring may change with the proposed increases in Total Dissolved Solids (TDS) limits.

ECCC's specialist advice is based on our mandate pursuant to the *Canadian Environmental Protection Act* and the pollution prevention provisions of the *Fisheries Act*.

ECCC has the following comments:



1. Particulate matter sampling

Reference(s)

- Meliadine Gold Project 2019 Annual Report
- Meliadine Gold Project 2019 Air Quality Monitoring Report
- Appendix E-1 – 2019 Stack Testing Report

Comment

Total Suspended Particulate (TSP) and Particulate Matter 2.5 and 10 (PM2.5/PM10) Partisol sampling occurred at two locations in 2019. As described in the 2019 Air Quality Monitoring Report, the samplers were inoperable for the majority of the year due to equipment failure and other issues. The proponent noted that the equipment was shipped back to the supplier for servicing, with the intention of reinstalling them in 2020. ECCC notes that, as of the release of this Report (April 2020), a full year has elapsed without operation of the Partisol samplers. Term and Condition #1 of the Project Certificate indicates that the Air Quality Monitoring Plan should include year-round sampling of TSP. The resumption of particulate sampling has not occurred in a timely manner. Furthermore, this Term and Condition also requires the proponent to consider the operation of real-time air monitoring. Partisol samplers do not produce real-time data, and the proponent has not indicated how they have considered the operation of real-time air monitoring.

ECCC Recommendation(s)

ECCC recommends that the proponent provide a mid-year update to its Air Quality Monitoring Report in order to provide details on the progress of reinstallation of particulate monitoring at the mine site. ECCC recommends that this update include an analysis on how the proponent has considered real-time air pollutant monitoring in the Meliadine Air Quality Monitoring Plan.

2. Surface Runoff Quality Samples – Monitoring Locations

Reference(s)

- Meliadine Gold Project 2019 Annual Report Section 7.3.1.7 MEL-SR-1-TBD
- Appendix H-3 Water monitoring stations results MEL-SR-1 to MEL-SR-14 pdf pages 10 – 16
- Appendix I-1 2020 Water Management Plan Figure 7.1b

Comment

The proponent is conducting monitoring of surface water runoff, as required by Part D, Item 18 of the Water Licence, at various stations designated MEL-SR1 up to MEL-SR14. The Proponent has provided analytical data for samples MEL-SR1, MEL-SR3, MEL-SR7, MEL-SR-11, MEL-SR-12, MEL-SR13, and MEL-SR14.

The 2019 Water Management Plan includes a figure showing the locations of the Surface Runoff monitoring sites. All of these sites appear to be at Itivia Harbour, except for MEL-SR-12, which is along the Bypass Road. Figure 2 of the 2019 Annual Report does not include any surface runoff sites. The Annual Report states that runoff from some of the facilities is

collected and put into the P-area ponds. However, it is not clear if there is any runoff at the main site that is not captured that would be monitored as surface runoff.

The 2018 Water Management Plan mentioned surface runoff management in Section 7.2. The 2019 Water Management Plan omits mention of surface runoff management. This information is missing altogether in the 2020 version.

ECCC Recommendation(s)

ECCC recommends the proponent provide clarification as to whether there is any surface runoff monitoring at the main mine site, and if so, provide locations and how it is reported. If the proponent is not currently conducting surface water runoff monitoring, then we recommend that it commence.

3. Runoff/drainage from explosive storage locations

Reference(s)

- Ammonia Management Plan version 2 (March 2020), Section 2.1.1 (Explosive Storage) and Table 1 (Water Monitoring Stations)

Comment

Section 2.1.1 (Explosive Storage) of the Ammonia Management Plan indicates that explosives are stored in the designated surface and underground magazines, and that raw materials are transported to the emulsion plant storage area. As the plan does not indicate where runoff/drainage from storage locations would report, it is unclear whether or how any runoff or drainage from these areas is captured and monitored.

ECCC Recommendation(s)

ECCC recommends expanding Section 2.1.1 (Explosive Storage) of the Ammonia Management Plan to clarify where runoff/drainage from storage locations (i.e., surface storage area, underground storage areas, and emulsion plant storage area) **would report**, and updating Table 1 (Water Monitoring Stations) to include monitoring details for runoff/drainage from all storage locations.

4. Preventative Measures

Reference(s)

- Ammonia Management Plan version 2 (March 2020), Section 2.3.2 (Procedures and Practices)

Comment

Section 2.3.2 (Procedures and Practices) of the Ammonia Management Plan states that spillage control protocols, procedures and handling of spilled material, and explosive management for storage and transport, are in place at the Meliadine site. However, the proponent does not provide details of these protocols and procedures. Thus, it is unclear what measures are in place to protect the aquatic environment.

ECCC Recommendation(s)

ECCC recommends that the Ammonia Management Plan describe what measures are in place to prevent ammonia-based explosives and raw materials from directly and indirectly entering the aquatic receiving environment.

5. Cyanide Data Error

Reference(s)

- Appendix H-3 Water Monitoring Station Results MEL-14 pdf page 33

Comment

The Water Monitoring Station results in Appendix H-3 of the Results shows the Total Cyanide Annual Average as 1121.24 mg/L

ECCC Recommendation(s)

ECCC recommends that the proponent verify and correct the Total Cyanide annual average, and that they provide the correct value to all parties.

6. Reporting

Reference(s)

- Ground Water Management Plan, version 5 (April 2020)

Comment

The Groundwater Management Plan describes the groundwater management strategy and monitoring program, but does not address reporting. Thus, it is unclear whether or how the proponent will report management actions and monitoring results.

ECCC Recommendation(s)

ECCC recommends that the Groundwater Management Plan include a reporting section that describes how the proponent will report management actions and monitoring results. The proponent should outline any additional information requirements, and specify the reporting frequency. ECCC recommends that the reports provide raw and summarized monitoring data, highlight any exceedances, describe management actions and outcomes, and include any updated predictions or other relevant information collected in the reporting year.

7. Toxicity Testing of the Collection Pond (CP) 1 Effluent

Reference(s)

- Appendix H-3 Water Monitoring Station Results MEL-12 pdf page 22
- AEMP Section 1.2.3 Response Framework and Action Levels; and Section 4.3.2 Sublethal Toxicity Test Results

Comment

Lemna (duckweed) growth and frond number bioassays were done on effluent from MEL-14 (end-of-pipe), while the table for effluent from MEL-12 (the untreated effluent from CP1) includes sublethal toxicity test results for algal growth, *Ceriodaphnia dubia* 7 day mortality, and Fathead Minnow 7 day mortality.

Treated effluent is monitored at MEL-14 (end-of-pipe) for acute toxicity in accordance with the water licence and the *Metal and Diamond Mining Effluent Regulations* (MDMER) requirements. The *Lemna minor* sublethal test was done at the MEL-14 (end of pipe) station. It is not clear why the proponent did not also perform the other sublethal tests for MEL-14 effluent rather than MEL-12.

The AEMP report (Section 5.4.1) only discusses the *Lemna minor* results in terms of toxicological impairment.

ECCC Recommendation(s)

ECCC recommends the proponent provide clarification of the rationale for conducting sublethal testing on untreated rather than treated effluent.

8. Wildlife Seabird Monitoring

Reference(s)

- Marine Mammal and Seabird Observer (MMSO) Report for the 2019 Shipping Season, Appendix H-8
- Gjerdrum, C., D.A. Fifield, and S.I. Wilhelm. 2012. Eastern Canada Seabirds at Sea (ECSAS) standardized protocol for pelagic seabird surveys from moving and stationary platforms. Canadian Wildlife Service Technical Report Series No. 515. Atlantic Region. vi + 37 pp. Appendix H-3 Water Monitoring Station Results MEL-12 pdf page 22

Comment

Section 2.3 of the Marine Mammal and Seabird Observer (MMSO) Report indicates that “surveys from moving and stationary platforms are completed in 5-minute intervals”. However, section 3.3.2.1 states that “...stationary platform survey datasheets lacked survey end times”.

It is unclear if the stationary seabird surveys conducted in 2019, as part of the MMSO program, followed established ECCC seabird survey protocols (Gjerdrum et al. 2012). The instantaneous stationary surveys should usually only last a few seconds (i.e. using instantaneous counts or snapshots of birds within the area), or else you cannot obtain accurate abundance estimates.

ECCC noted unusual observations of species outside their range (e.g. Manx shearwater and Wilson’s storm-petrel). Photographs should accompany these types of observations, wherever possible.

ECCC also notes observer training records in the 2019 report. ECCC encourages the proponent to continue these efforts to improve the quality of information collected.

ECCC welcomes any discussion with the proponent related to the seabird monitoring program.

ECCC Recommendation(s)

ECCC recommends

ECCC recommends that the proponent confirm that the MMSO program followed established ECCC seabird survey protocols (Gjerdrum et al. 2012), and include a reference to the protocols in future annual monitoring reports.

9. Wildlife – Upland Bird Point Counts

Reference(s)

- 2019 Terrestrial Effects Monitoring and Mitigation Program Annual Report, Section 10.2 Point Counts

Comment

Section 10.2.1 states that “*Surveys did not target specific habitat and occurred in eight habitat types assessed in the field and in the office using site photos.*”

It is important to understand how the habitat sampled during point counts in 2018 and 2019 is representative of the habitat in the local study area (LSA) and regional study area (RSA).

Also, weather conditions can influence bird activity levels and the results of a given survey. A brief qualitative assessment of weather conditions during the surveys would be useful in annual reports. The proponent can provide a quantitative assessment during a comprehensive analysis of the data.

ECCC Recommendation(s)

ECCC recommends that the proponent compare the habitat types sampled during point count surveys to habitat available within the LSA and/or RSA.

ECCC recommends that the proponent briefly describe the weather conditions during bird surveys in annual reports.

10. Wildlife – PRISM surveys

Reference(s)

- 2019 Terrestrial Effects Monitoring and Mitigation Program Annual Report, Section 10.3 PRISM

Comment

Section 10.3 states that “...*plot locations were randomly chosen a priori by ECCC with 50 km of the Project footprint*”.

ECCC’s process to randomly select plots for PRISM also takes into account habitat. It is important that the proponent consider PRISM-specific habitat classes and the spatial coverage when selecting which plots to survey in a given year.

Figure 10 provides a good visual representation of the spatial coverage of the annual PRISM surveys. However, it is important that the PRISM-specific habitat classes are also summarized each year to ensure that sampling conditions related to habitat class ratios are being met over the sampling period.

ECCC Recommendation(s)

ECCC recommends that the proponent also summarize PRISM-specific habitat classes of plots surveyed in future annual reports to ensure habitat class ratio sampling conditions are being met.

11. Data Sharing

Reference(s)

- Marine Mammal and Seabird Observer (MMSO) Report for the 2019 Shipping Season, Appendix H-8
- 2019 Terrestrial Effects Monitoring and Mitigation Program Annual Report, Section 10.3 PRISM

Comment

The data collected during seabird monitoring under the MMSO, and PRISM are important contributions to ECCC’s regional and national monitoring databases.

ECCC would like to request a copy of these datasets. The Proponent should contact ECCC at ec.eenordrpnnu-eanorthpnrnu.ec@canada.ca to share these datasets.

ECCC Recommendation(s)

ECCC recommends the proponent provide a copy of the seabird and PRISM datasets for inclusion in ECCC’s regional and national monitoring databases

If you need more information, please contact Eva Walker at (867) 669-4744 or Eva.Walker@Canada.ca.

Sincerely,

[Original signed by]

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