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NUNAVUT WATER BOARD
NUNAVUT IMALIRIYIN KATIMAYINGI
OFFICE DES EAUX DU NUNAVUT

File No. 2AM-MEA1525 / TR/ B2, B14

October 5, 2016

Stéphane Robert
Manager Regulatory Affairs Nunavut
Agnico-Eagle Mines Limited
145 King Street East, Suite 400,
Toronto, ON M5C 2Y7

Email: stephane.robert@agnicoeagle.com

Marie-Pier Marcil,
Senior Environmental Compliance Technician
Agnico-Eagle Mines Limited
145 King Street East, Suite 400,
Toronto, ON M5C 2Y7

Email: marie-pier.marcil@agnicoeagle.com

Subject: 2015 Annual Report and Updated Management Plans: Part B, Items 2 & 14, Licence No. 2AM-MEA1525; Meadowbank Gold Mine Project, Agnico-Eagle Mines Limited.

Dear Mr. Robert and Ms. Marcil:

On April 7, 2016, the Nunavut Water Board (NWB or Board) received from Agnico-Eagle Mines Limited (AEM or Licensee) the 2015 Annual Report as a requirement of Part B, Item 2 of the Water Licence 2AM-MEA1525 (Licence) issued for the development/operation/closure of Meadowbank Gold Mine. As a requirement of Part B, Item 2 (Schedule B) revisions as Addendums / Updated Plans and Reports have been included within the Annual Report. Along with other plans, the following Plans have been included within the Annual Report as a requirement of Part B, Item 14 of the Licence:

- 2015 Water Management Report and Plan, Version 1, March 2016, including
  - Freshet Action and Incident Response Plan, and
  - Ammonia Management Plan;
- Spill Contingency Plan, Version 6, March 2016

On June 2, 2016, the NWB gave interested parties an opportunity to review the submission and make representations to the NWB by July 4, 2016 extended to August 4, 2016, as requested by Indigenous and Northern Affairs Canada (INAC). On August 4, 2016, the NWB received comments from INAC and Environment and Climate Change Canada (ECCC). On September 13, 2016, AEM provided its responses to intervener comments. These submissions have been made available at the NWB's FTP site at the following address:

ftp://ftp.nwb-oen.ca/registry/2%20MINING%20MILLING/2A/2AM%20-%20Mining/2AM-MEA1525%20Agnico/3%20TECH/1%20GENERAL%20(B)/2%20ANNUAL%20RPT/2015/

INAC's comments were with respect to the following items:

- Geotechnical Engineer's Inspection Report's recommendations and the implementation plan to address the recommendations;
- Reporting of on-site seepages, including where there is an indication of potential seepage;
- Groundwater monitoring and reporting of data gaps generated by frozen or malfunctioning piezometers, and mechanisms to be proposed to replace faulty equipment or prevent future damage to these instruments;
- Reporting of repairs made to drainage infrastructure more specifically to damaged culverts; and
- Comparisons of originally predicted water quality and quantity values and year over year water quality and quantity values, providing more robust analysis in identifying trends.

AEM provided the following responses to INAC comments:

- *Responses to the recommendations and comments from the Annual Geotechnical Inspection and the Meadowbank Dike Review Board Report are available in the 2015 Annual Report (Appendixes B1 and B4). These responses from address all recommendations outlined in the reports, and explain how Agnico Eagle intends to address or implement the recommendations;*
- *All on-site seepages are reported in Section 8.3.7 of the 2015 Annual Report...;*
- *If deemed necessary, a broken piezometers or any other geotechnical instrumentation is replaced when possible, if, for example, no other geotechnical instrument provide information for the given area or if the information provided by the broken instrument is judged critical to the proper interpretation of the geotechnical data;*
- *As part of the Freshet Action Plan, inspections are undertaken at all culverts along the All Whether Access Road (AWAR) to ensure that water during freshet is flowing freely and no erosion is occurring;*
- *The comparison between the predicted water quantity and quality within the pits will be compared to the measured water quantity and quality done for 2012 to 2015. The appendix C4 of the 2015 Meadowbank Annual Report provides a comparison between predicted (originally predicted in support of the NWB license) and measured water quality and quantity within Portage, Goose and Vault Pit… As required by the Water License 2AM-MEA1525, the Water Quality Forecast model is completed yearly with the measured data from site, as well as the water balance used on site. This model is calibrated yearly with updated data from site and includes the current water management practices. Review of the water quality predictions for pit reflooding is completed in this forecast.*

ECCC's provided comments regarding the following:

- Water Management Plan: Meadowbank Water Quality Forecasting Update
  - Using of dissolved parameters for comparison to water licence limits and guideline values instead of total parameters to be compared;
  - Profiles of the water chemistry should be completed to confirm whether samples taken from the surface of the North and South Ponds are representative of the pond water quality;
  - Contributions from saline mine water inflows were not explicitly considered in the model, and this should be estimated for inclusion in the next model update. Groundwater contributions should be estimated and used as a model input;
  - Potential for the generation of acidity from the exposed Portage and Goose Pits walls;
  - Clarification on the source of the Total N equivalent guideline shown as a Canadian Council of Ministers of the Environment (CCME) guideline;
  - Clarification on the form of predictions for ammonia (total ammonia NH_3 or ionized form NH_4); and
  - Clarifying whether pH changes can be modeled for the pit water, or if pH adjustment will be done for any treated water prior to release or reconnection to surface waters associated with the treatment of metals proposed to be done upstream of discharge to the pit.

- Freshet Action and Incident Response Plan
  - ECCC should be notified for TSS-related issues in waterbodies.

- Groundwater Monitoring Report
  - The groundwater monitoring program design should be revisited to improve the information for water quality model updates.

- Mine Waste Rock and Tailings Management Plan
  - Mitigation plan to mitigate a possible effect on the ability of permafrost to encapsulate potentially acid generating (PAG) rock, if warming in the north increases as projected as the possible increase of the thickness of the active layer could mean increased flow through the active layer and perhaps water contact with PAG material; and
  - Effluent is defined under the Metal Mining Effluent Regulations (MMER) to include runoff and seepage, and therefore it is recommended that the Proponent continue to monitor and develop an adaptive management plan in order to mitigate any issues that may arise.

- Incinerator Waste Management Plan
  - If sewage is incinerated at the mine site, it should be indicated under what waste type category sewage is captured, in both the Incinerator Waste Management Plan and the Incinerator Daily Report Log Book. Clarification is needed on whether sewage was incinerated during the stack tests;
  - The Incinerator Daily Report Log Book should clarify what is included in "solid hydrocarbon waste";
  - The Incinerator Stack Tests should be conducted with the maximum waste capacity of the incineration and with a typical waste composition. Wastes should be collected prior to the tests to ensure that there is enough for full burn.

The following responses were provided by **AEM** regarding ECCC comments:

- *In the next water quality forecast report, a summary table or graph will be presented comparing total vs dissolved concentrations for key parameters in the mill effluent and at ST-21, and total suspended concentrations, to demonstrate that most of the suspended particles do settle out readily in the TSF;*
- *AEM has taken samples at different depth in the Reclaim Pond, and this data will be presented in next year's water quality forecast report;*
- *For next year's water quality forecast, a more detailed analysis of the changes in TDS in the mine-water from Portage Pit and Goose Pit will be undertaken with the objective to assess a mass loading that will account for the changes in TDS. The updated water quality forecast model will evaluate the mine-water from Portage and Goose pit on a monthly time step basis based on this loading…;*
- *In next year's water quality forecast model, the mine-water from Portage and Goose pit will be evaluated on a monthly time step basis. The potential loading from the leaching of contaminants from the exposed pit walls will also be evaluated and included in the model…;*
- *Total N equivalent guideline listed under CCME column does not come from CCME. It is based on the threshold concentration for classification of an Oligotrophic lake in terms of nutrient concentrations (i.e Nurnberg 1996).*
- *The evaluation is based on total ammonia concentration (NH3) and not specifically on ionized ammonia;*
- *A pH adjustment will be required for any treated water prior to its release or reconnection to the surface water. If the selected water treatment involves precipitation of metals at an elevated pH in the Reclaim Pond, the treated water will have to undergo pH adjustment to lower the pH prior to its transfer to Portage Pit;*
- *Next revision of the Freshet Action and Incident Response Plan shall include ECCC to be notified in the event of TSS discharge;*
- *Agnico Eagle will continue to work on the groundwater monitoring program to focus on improving the information for water quality model updates;*
- *A thermal monitoring plan was developed to observe the freeze-back of the tailings storage facility (TSF) and Portage Rock Storage Facility (PRSF) in order to comply with the NWB water license 2AM-MEA1525… Results to date from the thermistors indicate that freeze back is occurring in the PRSF structures. Thermal monitoring will continue during operations and closure… Additional modelling work will be completed as part of the PRSF cover performance assessment, taking into consideration climate change…;*
- *The contact water collected on site in the Portage area is managed via Water management structures such as sumps WEP1 and WEP2 and pumped to the South Cell Reclaim Pond. WEP1 and WEP2 sumps were built to ensure proper management of the contact water;*
- *Organic matter" doesn't include sewage. No sewage is incinerated;*
- *Solid hydrocarbon waste includes absorbent pads or rags containing hydrocarbon and that were used to contain and clean up spills…;*
- *Agnico Eagle will ensure that future stack tests are conducted with the maximum waste capacity of the incineration and with a typical waste composition.*

Upon review of the submitted documents, terms and conditions in the Licence No. 2AM-MEA1525 and submissions from interested parties, the NWB hereby accepts and approves the

following Updated Management Plans submitted as per Part B, Item 14 under Motion No. 2016 A1-006, dated October 5, 2016:

- 2015 Water Management Report and Plan, Version 1, dated March 2016, including
  - Freshet Action and Incident Response Plan, and
  - Ammonia Management Plan;
- Spill Contingency Plan, Version 6, 2016

Although the NWB is generally satisfied with the updated documents provided by AEM, however, the NWB notes that there are a number of questions identified by Parties more specifically with respect to the Water Management Report and Plan. The Board recognizes that the Applicant generally updates the management plans as a means of best management practice, and acknowledges that minor issues identified regarding this and other Plans would be addressed within the next annual updates.

Should you have any questions or require any clarification with respect to the above, please contact the undersigned at (867) 360-6338 ext. 35 or by email at karen.kharatyan@nwb-oen.ca.

Sincerely,

Karen Kharatyan
Senior Technical Advisor

Cc: Distribution list - Meadowbank