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December 21, 2011

Our File: 4703 001 062
NWB File: 2BW-MEL---

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Via email: licensing@nunavutwaterboard.org

Re: Comments related to Agnico-Eagle Mines Limited's (AEM) Meliadine All Weather Access Road

The new Type B water licence application before the Nunavut Water Board (NWB) relates to the construction of an all-weather access road (AWAR) between Rankin Inlet and AEM's Meliadine West exploration site. A similar proposal was initially submitted by AEM to NWB in February 2011 as an amendment to their exploration water licence associated with the Meliadine Project (i.e., 2BB-MEL0914). Since filing their amendment request, AEM has revamped their AWAR proposal into a 2-phase approach and has withdrawn its amendment request application.

The current water licence application applies to Phase 1 of AEM's Meliadine AWAR. To that end, AEM is proposing to construct a 23.8-km-long, single-lane, private AWAR between the Char River Bridge (~ 4 km north of Rankin Inlet) and their Meliadine West exploration site to support the underground exploration and bulk sample at the Tiriganiaq deposit. Construction is expected to occur between March-August 2012 and AEM aims to have the majority of the road constructed during the first half of 2012. Project activities will include replacement of an existing bridge across the Char River, construction of clear span bridges across the Meliadine River and an unnamed ephemeral stream (M5.0) and installation of stacked culverts at eight ephemeral streams. In contrast to the original application, the current proposal has dropped the development of a spur road to Meliadine Lake and the construction of an emergency airstrip.

Environment Canada (EC) previously provided comments to NWB regarding the Meliadine AWAR in May 2011. These comments are still relevant to the current licence application and EC has included this letter for NWB's records.

EC has reviewed the environmental assessment (EA) for the Meliadine AWAR along with the supporting management plans, Borrow Pit and Quarry Management Plan, Transportation Spill Contingency Plan, Monitoring Plan and Reclamation and Closure Plan and offers the following comments for NWB's consideration.

Acid Rock Drainage/ Metal Leaching (ARD/ML) of Road Construction Materials
As per our previously submitted comments in relation to the AWAR proposal, EC noted a limited number of samples (on average, 3 samples/site) were taken per quarry/borrow area for determining its ARD and ML potential. Page 116 of the environmental assessment indicates AEM plans to conduct visual examinations of the quarry material for sulphur species and additional testing for ARD/ML from each quarry and borrow source before and during construction. To ensure adequate sample sizes are taken for geochemical characterization of borrow and quarry materials, EC recommends the Proponent refer to the most recent version of

the *Mine Environment Neutral Drainage Prediction Manual* (MEND Report 1.20.1; Price, 2009), which provides useful guidance on the prediction and mitigation of drainage chemistry from sulphidic geologic materials. The proponent is advised to adhere to the recommended practices for sampling, monitoring and testing during and following the excavations. The reference is cited below:

Price, W.A. 2009. Prediction Manual for Drainage Chemistry from Sulphidic Geologic Materials. MEND Report 1.20.1 for the Canadian Mine Environment Neutral Drainage Program, Natural Resources Canada.

Borrow Pit and Quarry Management Plan
Section 6 of the Plan indicates that rock fill will undergo confirmatory testing during road construction to ensure no material used in the road is acid-generating. Specifically, for every 10,000 m^3 of material removed from a borrow pit or rock quarry, a sample will be collected for static testing-ARD and metal leaching. As per the MEND Manual (Price, 2009), EC recommends the Proponent increase their sample collection from 1 to 3 samples per 10,000 m^3 of material.

Road and Bridge Materials
EC could not find any reference to the type of material that will be used for the decking on the bridges to be constructed. EC seeks clarification on what materials are planned for use in deck construction. If wood is being considered for bridge decking, EC does not support the use of creosote or CCA-treated wood for this purpose. In addition, EC advises against the use of grating in bridge design as this provides a pathway for road bed material entry into streams and can negatively impact the aquatic ecosystem.

The proponent also mentions that geo-textile material will be optional at the base of the road bed material over thaw susceptible soils. EC recommends best practices be used, such as routine installation of geo-textile material in thaw- susceptible soils, or other methods as recommended by the geotechnical engineer to provide greater structural integrity to the road base.

Use of Dust Suppressants
Section 5.1.4.5 of the EA and p.15 of the *Transportation Management Plan* indicates that chemical dust suppressants will be used to control road dust as a last resort and only in accordance with the Government of Nunavut's *Environmental Guideline for Dust Suppression*. This Guideline endorses the use of Bunker C, calcium chloride and DL 10. If AEM considers use of DL 10, EC recommends the product not be applied within 30 m of either side of all water bodies intersected or adjacent to the Meliadine AWAR. EC does not recommend the use of Bunker C or calcium chloride unless the Proponent can demonstrate the products can be applied and used effectively without migration into surface waters adjacent to the road.

Water Quality and Monitoring Plan
To confirm assumptions made in the EA regarding ARD and ML potential of quarry and borrow materials used in road construction, p. 120 of the EA indicates AEM is planning to conduct periodic water quality monitoring at crossing M3.0, M5.0, M11.5 and M23.7 in the open water season following road construction. Site selection was based on the assumption crossings with the largest drainage basins have the highest likelihood of metal leaching due to the size of the watershed and quantity of water moving through the water crossing. On that basis, it's unclear why the Char R. and Meliadine R. crossings weren't selected for monitoring. In spite of the foregoing, given that clear span bridges involve less stream channel disturbance than culverts, EC seeks clarification on why M5.0 was selected as a crossing to be monitored as it will be a clear span bridge. As a best practice, EC recommends all crossings be monitored in the first open water season following road construction. However, should the Proponent choose to monitor selected crossings, in place of choosing sites that have the largest drainage basin and therefore the greatest potential for dilution, EC recommends AEM monitor the crossings that will require the most borrow and quarry material and that are in closest proximity to borrow/quarry sources, laydown areas and/or areas that otherwise have the highest potential for runoff or other

inputs to the stream.

As a point of clarification, EC noted that there is inconsistency among the EA, the *Transportation Management Plan* (Appendix A of the EA) and the *Monitoring Plan* with respect to the locations and number of sites proposed to be monitored post-road construction. Page 120 of the EA indicates 4 crossings will be monitored (i.e., M3.0, M5.0, M11.5 and M23.7), p. 28 of the *Transportation Management Plan* indicates 3 crossings will be monitored f (i.e., M3.0, M5.0, M23.6) and p. 3 of the *Monitoring Plan* suggests there will be 4 crossings monitored (i.e., M2.1, M3.0, M5.0, M23.6). As a result, EC seeks clarification on how many crossings AEM plans to monitor and recommends the Plans be revised to reflect the location and number of crossings to be monitored.

As another point of clarification, p. 28 of the EA indicates 10 borrow sources will be used for road construction while the *Monitoring Plan* indicates 8 will be used. The Monitoring Plan should be revised to reflect the number of borrow sources that will be used for road construction.

Transportation Spill Contingency Plan
Pages 13 and 24 of the Plan make reference to a 24-hour contact number for EC. In the next revision of this Plan, this number should be removed at it is no longer in service. In addition, the EC contact numbers on p. 24 (867-920-6060, 867-669-4729) should also be removed as these numbers are no longer in service. Lastly, the contact number on p. 24 for Environment Canada, Iqaluit should be revised to (867) 975-4639.

The Plan makes reference to containing spilled contaminants and materials used to clean up spills in containers and/or sea cans. Prior to shipment south for final disposal, EC recommends any containers housing contaminants or spent materials used to contain a spill be stored within secondary containment.

EC Codes and Guidelines
Environment Canada recommends that the proponent refer to the *Environmental Code of Practice for Metal Mines* (Code) (Environment Canada, 2009) for the development of Phase 1 of the AWAR.

The Code applies to the complete life cycle of mining, from exploration to mine closure, and environmental management practices are recommended to mitigate the identified environmental concerns. The Code also includes recommendations on the environmental management practices for the planning and construction phase for on-site roads and access roads for mining projects. The Code can be viewed at:

http://www.ec.gc.ca/CEPARegistry/documents/code/metal/tdm-toc.cfm.

In addition, EC would like to inform the Proponent that a revised version of *Guidelines for the Assessment of Alternatives for Mine Waste Disposal* was released in September 2011. Environment Canada recommends the proponent refer to this latest version of the Guidelines in preparing the project application for the proposed mine. The document provides guidance to metal mines where a tailings impoundment area is proposed for a natural water body frequented by fish. Part 2 of the Guidelines provides useful guidance for the assessment of all mine waste disposal areas including those developed on land. The overall objective of the alternatives assessment process is to minimize the environmental footprint of the disposal area. The Guideline can be viewed at:

http://www.ec.gc.ca/pollution/C6A98427-6C71-4886-BB37-2B4D09F95D5E/Guidelines%20for%20Alternatives%20Assessments%202011-09-15%20-%20E%20-%20FINAL.pdf

Wildlife
In addition to the wildlife comments provided in our earlier submission, EC submits the following in relation to migratory birds:

Section 6 (a) of the *Migratory Birds Regulations* states that no one shall disturb or destroy the nests or eggs of migratory birds. In the southern Arctic region of the Northwest Territories and Nunavut, migratory birds may be found incubating eggs from May 14 until July 30, and young birds can be present in the nest until September 12.

The Proponent has acknowledged the prohibition against disturbing or destroying the nests of migratory birds and intends to remove vegetation for borrow / quarry sites and prepare the footprint of the AWAR prior to the migratory bird breeding season. It is expected that the base layer of rock for the road will be added prior to May 1 and that this will reduce the chance of destroying bird nests during the remainder of road construction activities that will be completed by mid-summer.

While this approach may help to limit the potential for destruction of nests it may not necessarily completely eliminate the risk. For project activities that are to be conducted during the nesting season, areas should be checked for nests before work begins and all crew members should be trained on how to recognize signs that a bird might be nesting in the area. If an active nest is found, the area should be avoided until nesting is completed (i.e., the young have left the vicinity of the nest).

Birds that nest adjacent to the footprint of the AWAR and borrow / quarry sites may also be subject to disturbance from construction activities conducted during the breeding season. Flushing nesting birds increases the risk of predation of the eggs or young, or may cause the parent bird to abandon its nest. Vehicles, equipment and workers should restrict their movements to within the footprint of the AWAR in order to minimize the risk of disturbing or destroying nests in proximity to the AWAR. If nests are encountered on or adjacent to the AWAR or borrow / quarry sites, EC recommends the following setback distances to minimize disturbance to nests for different bird groups nesting in tundra habitat (see footnotes for adjustments to setbacks for sensitive species and Species at Risk):

Species Group	Pedestrians /ATVs (m)	Roads / Construction / Industrial Activities (m)
Songbirds	30	100
Shorebirds	50[a]	100[a]
Terns/Gulls	200[b]	300[b]
Ducks	100	150
Geese	300	500
Swans/Loons/Cranes	500	750

[a] If project activities are within the breeding ranges of American Golden Plover or Ruddy Turnstone, these setbacks should be increased to 150 m for Pedestrians/ATVs and 300 m for Roads/Construction/Industrial Activities respectively. If project activities are within the breeding range of Black-bellied Plover, Whimbrel or Redknot (a Species at Risk), these setbacks should be increased to 300m for Pedestrians/ATVs and 500m for Roads/Construction/Industrial Activities. If field crew are trained in the identification of these species then these higher setbacks need only apply to these more sensitive species, and lower setbacks can be used for the remaining shorebird species. In areas where several species are nesting in proximity, setbacks for the most sensitive species should be used.

[b] If project activities are in proximity to breeding colonies of Ross's Gull (a Species at Risk) these setbacks should be increased to 500m Pedestrians/ATVs and 750m for Roads/Construction/Industrial Activities. For Ivory Gull (a Species at Risk) a buffer of 2 km around breeding colonies should be used for all activities.

Section 5.1 of the *Migratory Birds Convention Act* prohibits persons from depositing substances harmful to migratory birds in waters or areas frequented by migratory birds or in a place from which the substance may enter such waters or such an area.

EC appreciates the opportunity to comment on AEM's Type B licence application related to Phase 1 of its Meliadine AWAR. Should you require any additional clarification regarding EC's comments related to our review, please feel free to contact me at (867) 975-4639 or via email at allison.dunn@ec.gc.ca.

Sincerely,

Allison Dunn
Sr. Environmental Assessment Coordinator

cc:
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Attachment (1)