



March 16th, 2017

Kofi Boa-Antwi
Technical Advisor II
Nunavut Impact Review Board
29 Mitik Street P.O Box 1360
Cambridge Bay, NU, X0B 0C0

Re: Agnico Eagle Mines – Meliadine Division - Responses to Comments Received for Agnico Eagle's "Itivia Quarry" Project Proposal

Dear Mr. Boa Antwi,

As requested, the following information and comments are intended to address the information request outlined in the below letter:

- DFO – February 17, 2017, *Screening – Itivia Quarry Project*.

Should you have any questions or require further information, do not hesitate to contact me.

Regards,

A handwritten signature in blue ink, appearing to be "Manon Turmel". The signature is stylized with a large, sweeping loop and a horizontal line extending to the right.

Manon Turmel
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819-759-3700 x 8025
Environmental Compliance Counselor



DFO has reviewed the Project proposal and requests that the Proponent provide more information as follows:

- a) AEM references keeping a standard 31m buffer between quarry activities and the shoreline. DFO requests AEM provide rationale for this distance and why it is sufficient in preventing harm to fish, fish habitat and marine mammals? As referenced above, DFO has guidelines outlining acceptable setback distances based on the amount of explosive used and pressure exerted.

Agnico Eagle Mines response:

While conducting blasting activities at the Itivia Quarry, Agnico Eagle will comply with its Explosives Management Plan (April 2015) and the "Guidelines for the Use of Explosives In or Near Canadian Fisheries Waters (1998). No explosive that can produce an instantaneous pressure change greater than 50 kpa in the swim bladder of a fish will be detonated. Moreover, no explosive that can produce a peak particle velocity greater than 13 mm/s in a spawning bed during the period of egg incubation (i.e. August 15 to June 30) will be detonated. Blasts will be monitored using a vibration and overpressure monitoring system. Finally, no explosives will be detonated within 500m of any marine mammal.

- b) AEM references using ammonium nitrate in blasting activities. While the ammonium nitrate will not be stored at the quarry site, it is understood that it will be used in blasting activities at the quarry. Can AEM provide the specific plans for detonation and blasting activities including the following:
 - a. The maximum amount of holes drilled and used for blasting at any given time
 - b. The maximum total weight of explosive charge to be used at any given time
 - c. Will the explosive will be confined or unconfined?

Agnico Eagle Mines response:

ANFO is not an issue if manufacturers specifications are followed and care is used to limit spillage on blasting bench. Moreover, by ensuring holes where ANFO is to be used are dry, Agnico Eagle will ensure all ANFO will be consumed by the blast.

- o No explosive that can produce an instantaneous pressure change greater than 50 kpa in the swim bladder of a fish will be detonated. Moreover, no explosive that can produce a peak particle velocity greater than 13 mm/s in a spawning bed during the period of egg incubation (i.e. August 15 to June 30) will be detonated. All blast plans will have to be pre-approved by Explotech (Blasting expert hired as a third party).*



o The worst case scenario is 66kg. Blast design will be adjusted accordingly during spawning season.

o Confined, and always further than 30m from the water. Outside of 31m there is no possibility of causing an over pressure event capable of harming fish.

- c) Currently in the NIRB Main Document Itivia Quarry, section 3.3 Marine Environment, the Environmental Setting is described as follows: "The quarry site is located nearby Melvin Bay which is connected to the Hudson Bay." Can AEM provide further information regarding the marine environment in Melvin Bay? This would include fish species, marine mammals and habitat in the bay.

Agnico Eagle Mines response:

In August 2011, a field program was conducted at 2 sites within Melvin Bay near the proposed spud barge area located in very close proximity with the Itivia Quarry (Agnico Eagle or Golder, 2014). These were completed as part of the Final Environmental Impact Statement document application part of the Nunavut Impact Review Board Process. The field program investigated bathymetry, water and sediment chemistry, aquatic lower-trophic organisms and fish and fish habitat. Six species of marine fish were identified including Greenland cod (52%), slender eelblenny (27%), fourhorn sculpin (15%), unidentified sculpin (3%), Arctic staghorn sculpin (2%) and Arctic sculpin (1%). Arctic char were not observed during the baseline field study but were reported to be in the area at the time of the field study (west of Melvin Bay near the Barrier Islands). No marine mammals were observed in the LSA during the baseline field program.

Water depths in Melvin Bay in the Itivia were determined to be shallow, with maximum depths of 6.6 metres. A large rocky reef is present approximately 125 m of the high water mark near the proposed Itivia Quarry. Cobble and gravel were the dominant substrates in the nearshore environment of the Itivia Quarry. Mean surface water temperature was 8.86 degrees Celsius with a salinity of 29.32, and a pH of 8.08. Bottom water was slightly colder than surface water with similar salinity and pH values. Dissolved oxygen ranged from 114.5 at the surface to 114.1 at the bottom.

- d) Regarding the proposal, mitigation measures for the marine environment include promoting drainage, while also controlling run-off at the quarry site to avoid Melvin Bay. Can AEM please provide clarification on drainage plans at the quarry site in order to ensure no deleterious substances reach Melvin Bay?



Agnico Eagle Mines response:

As specified in Agnico Eagle's Borrow Pits and Quarries Management Plan (April 2015), a buffer of at least 31 m will be maintained between quarries/borrow pits and water bodies, and best management practices will prevent direct drainage. However, any significant seeps originating from the borrow pits or rock quarries likely to reach receiving waters will be sampled and analyzed for a full suite of water quality parameters and compared to Effluent Quality Limits set in Water License 2AM-MEL1631. Any problematic water will be directed away from waterbodies, or held if possible. If necessary, sediment control logs will be used to control suspended sediments in water seeping from the quarries/borrow pits. Although erosion is not expected to originate from water flow from the quarries/borrow pits, any evidence of erosion will be repaired by placing rip-rap over the affected area, and measures will be taken to reduce the velocity of the water with sediment control logs. Furthermore, Acid Rock Drainage and Metal Leaching (ARD/ML) testing will be carried out along with water quality monitoring in support of mitigation measures.

In terms of explosives management, proper handling and use of explosives, as specified by the manufacturer, will be observed. This will ensure that explosives are completely consumed and will reduce the risks of presence of ammonium nitrate in water.

References:

Agnico Eagle. 2014. Volume 8.0 Marine environment and impact assessment. Final Environmental Impact Statement (FEIS) – Meliadine Gold Project, Nunavut