



**Environment and Climate Change  
Office of the Minister**

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File number: 40100-30-315  
10700-400-58939

February 28, 2023

Andrew Taylor  
Atlantic Mining NS Inc.  
Bedford office  
30 Damascus Rd Suite 201  
Bedford, NS B4A 0C1

Dear Andrew Taylor:

**Re: Environmental Assessment – Atlantic Mining NS Incorporated  
Touquoy Gold Project Site Modifications Second Addendum  
Halifax County Nova Scotia**

The environmental assessment (EA) of the proposed Touquoy Gold Project Site Modifications in Halifax County, Nova Scotia has been completed.

This letter is to advise that, upon examination of the information provided in the January 9, 2023, Registration Document as required pursuant to subsection 34(2) of the Act, I have determined that Atlantic Mining NS Inc. (AMNS) did not provide all of the information that I required in the May 12, 2022, EA decision. As a result, in accordance with Section 13 (1)(a) of the *Environmental Assessment Regulations*, I have determined that additional information is required.

I acknowledge the efforts made by AMNS to provide the following information in the January 9, 2023, Registration Document which addressed, in part, elements of the required information from the May 12 EA decision, such as:

- A fish sampling program was completed for Moose River;
- The Waste Rock Storage Area was redesigned to avoid directly infilling Wetland 15;
- Signed, stamped drawings were submitted for the proposed clay liner for the pit; and
- For each of the Minister's requirements, AMNS provided some new information or analysis.

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I note in the Registration Document that a new project component was proposed (i.e., permanent waste rock storage in the pit), and based on the submitted assimilative capacity study for Watercourse 4., environmental impacts to the watercourse have been predicted that were not previously identified. As a result, there are new information requirements beyond what was set out in the May 12, 2022, EA decision.

For ease of reference, information requirements in this letter have been categorized as follows: A) information that remains outstanding to address the May 12, 2022, Minister's decision, and B) information that is required based on the newly-proposed permanent in pit waste rock storage and predicted impacts to Watercourse 4. While there are a number of commonalities between the two categories, they have been separated for clarity. A detailed explanation and clarity on the expectations for the provision of this information is outlined below, under the various relevant categories, to support AMNS's efforts in providing this required information.

In summary, the following information is required in order to evaluate potential environmental effects that may be caused by the undertaking which will inform my examination and allow me to make a decision with respect to the undertaking in accordance with the Act.

**A) Previously Requested Information:**

**Water Modelling**

1. Updated Groundwater Model Flow Conditions between the open pit (pit lake) and Moose River that includes, but not limited to, the following changes:
  - a. Removal of areas of historical groundwater contamination, such as OPM-1 and the HT wells, in the determination of background conditions;
  - b. Modelling of the areas of historical contamination outside of the pit for the effects of groundwater flow and solute transport at post-closure due to re-established flow gradients towards Moose River, as this may increase contaminant flux to Moose River;
  - c. Operating and post-closure conditions based on the proposed operating levels of 106.5 and 108.5 masl;
  - d. Assign constant head conditions to pit lake model cells based on the two scenarios for proposed operating levels (106.5 and 108.0 masl) to understand the post-closure conditions under these two scenarios;
  - e. Assess groundwater flow conditions resulting from the proposed two scenarios for proposed operating levels (106.5 and 108.0 masl) including details of hydraulic gradients, groundwater flow paths, groundwater flow velocities and groundwater-surface water interactions;

- f. An updated model to present the effects of any engineered design features, such as the proposed clay wall liner, on groundwater flow by assigning and evaluating the appropriate cell conditions;
2. Predictions of flow conditions at closure, flow direction and hydraulic gradients in between the post-closure pit lake, spillway, and Moose River (along the length parallel to the open pit). Updated Assimilative Capacity Study for Moose River that includes, but not limited to, the following:
  - a. Removal of any data from 2004-2007 that does not comply with the departments Policy on Acceptable Certification of Laboratories and compare the results to the criteria listed in Appendix K of the Industrial Approval;
  - b. The Pit Lake Water Assessment results of mobility of metals of the saturated waste rock within the pit (see Condition 4 listed below for details);
  - c. Rationale and details to support the use of results from the environmental water balance assessment as the effluent discharge quantity inputs in the Moose River assimilative capacity study, including (but not limited to) the following:
    - i. Provide sufficient details to allow for adequate understanding and assessment of the water balance model and its assumptions;
    - ii. Provide a summary of results of when discharges from the pit lake can be expected using a daily time step and with consideration for a range of expected environmental conditions;
    - iii. Develop an effluent flow value to be used in the updated Moose River Assimilative Capacity Study supported by sufficient rationale and justification, including (but not limited to) considerations for the following:
      1. The results of 2.c.ii);
      2. The level of uncertainty in the results produced;
      3. The difference in watershed characteristics between the pit lake and Moose River;
      4. The ability of the applicant to mitigate scenarios outside of what is predicted (i.e., currently no active spillway controls are proposed); and
      5. The sensitivity of the receiving watercourse.
  - d. An update to the assimilative capacity study analysis and results using the 7Q10 low flow value developed from the SW-2 dataset (i.e., 61 L/s as noted on page 174/298 of the latest EARD) as the Moose River flow conditions, and the updated effluent flow value(s) described in Condition 2.c).

- e. Rationale for the one million dilution factor of concentrations of contaminants within the 100-meter-long spillway;
- f. Maintaining a zone of passage for migrating aquatic organisms as outlined by Canadian Council of Ministers of the Environment (CCME) Guidance on the Site-Specific Application of water quality guidelines in Canada: Procedures for deriving numerical water quality objectives (CCME 2003); and
- g. A plan to treat the water to the Industrial Approval Appendix K criteria prior to releasing into Moose River (i.e. no use of a mixing zone) if the Approval Holder cannot meet the Canadian Council of Ministers of the Environment (CCME) Guidance on the Site-Specific Application of water quality guidelines in Canada: Procedures for deriving numerical water quality objectives (CCME 2003).

**Historic Tailings:**

- 3. Options were provided by AMNS to manage the historic mine tailings of in-pit or disposal offsite. If the plan is in-pit disposal of the historic tailings, provide a design to encapsulate the historic tailings.

**B) Information Related to New Project Component and Predicted Impacts**

As noted above, the Registration Document proposes a new project component (i.e., to permanently store waste rock in the mined out pit) and predicts impacts to Watercourse 4 that were not previously identified. Where insufficient information was provided in relation to these elements, the required information is noted below.

**Proposed permanent storage of waste rock in the mined-out pit:**

- 4. Provide a Pit Lake Water Assessment prepared by a qualified third-party geochemist to report on the mobility of metals of the saturated waste rock within the open pit and how this will affect the water quality. Use this information to update other applicable effects assessments required in this decision.
- 5. Submit an assessment of mitigation options for waste rock encapsulation within the pit to avoid mixing with tailings.

**Impacts to Watercourse 4:**

AMNS has predicted impacts to Watercourse 4 for approximately three kilometers of its length in the second addendum document. To address these impacts please provide the following:

6. A Seepage Control Plan to reduce, as much as possible, the seepage into groundwater and watercourses from the Waste Rock Storage Area (including expansion) and the Tailings Management Facility. This plan shall include options to mitigate deep groundwater flow as well as shallow flow.
7. An assessment of indirect wetland impacts to Wetland 15, a Wetland of Special Significance, as a result of receiving seepage and surface water runoff from the Waste Rock Storage Expansion Area.
8. An updated Assimilative Capacity Study for Watercourse 4 that includes, but not be limited to, the following:
  - a. Removal of any data from 2004-2007 that does not comply with the departments Policy on Acceptable Certification of Laboratories and compare the results to the criteria listed in Appendix K of the Industrial Approval;
  - b. Maintaining a zone of passage for migrating aquatic organisms as outlined by Canadian Council of Ministers of the Environment (CCME) Guidance on the Site-Specific Application of water quality guidelines in Canada: Procedures for deriving numerical water quality objectives (CCME 2003);
  - c. The Seepage Control Plan;
  - d. Details to support the conclusions surrounding the mixing zone extents from the discharge of Watercourse #4 to Moose River, including sufficient description and details to support understanding the modelling that took place, how the meet the Canadian Council of Ministers of the Environment (CCME) Guidance on the Site-Specific Application of water quality guidelines in Canada: Procedures for deriving numerical water quality objectives (CCME 2003) were followed (including the consideration for maintaining zone of passage for migrating aquatic organisms), and the results that are described in the second addendum submission submitted December 2022; and
  - e. A plan to treat the water to the Industrial Approval Appendix K criteria prior to releasing into Watercourse 4 (i.e., no use of a mixing zone) if the Approval Holder cannot meet the Canadian Council of Ministers of the Environment (CCME) Guidance on the Site-Specific Application of water quality guidelines in Canada: Procedures for deriving numerical water quality objectives (CCME 2003).

Andrew Taylor

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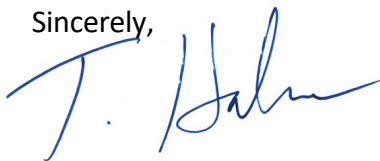
**Reclamation Bonding:**

9. Provide an updated Reclamation Bond Estimate that includes costs associated with restoring potential impacts to Moose River, Watercourse 4 and impacts to groundwater surrounding the open pit, or a flat contingency amount of, at minimum, 75% of the bond estimate.

This information must be submitted by Atlantic Mining NS Inc within one year, as an addendum to the original Registration Document. Upon submission of the information, I will have 50 days to make my decision. Registration of the Addendum will require publication of a Notice to inform the public of the 30-day Addendum public comment period.

If you have any questions regarding this decision, please contact Bridget Tutty, Manager, Environmental Assessment Branch, at (902) 452-7891 or via email at [Bridget.Tutty@novascotia.ca](mailto:Bridget.Tutty@novascotia.ca).

Sincerely,

A handwritten signature in blue ink, appearing to read 'T. Halman', written over the word 'Sincerely,'.

Timothy Halman, MLA

Minister of Environment and Climate Change

c: Lorrie Roberts, Executive Director, Policy, ECC  
Bridget Tutty, Manager, Environmental Assessment Branch, ECC