



Technical Memorandum

Date: October 11, 2017

To: Luis Manzo, Jeff Hart (KivIA), Alan Sexton (GeoVector Management Inc.)

From: Richard Nesbitt, Neil Hutchinson (HESL)

Re: J170084 – Whale Tail Project – Monitoring and Security Reduction – Update

1. Update

This memorandum updates that submitted to the Kivalliq Inuit Association (KivIA) on September 16, 2017 titled “J170084 – Whale Tail Project – Monitoring and Security Reduction”. This updated memorandum incorporates the outcomes of a teleconference with Environment and Climate Change Canada (ECCC) on October 11, 2017, and is intended to support a submission to the Nunavut Impact Review Board (NIRB) and the Nunavut Water Board (NWB) prior to October 17, 2017. The submission to the NIRB and NWB was requested on October 10, 2017 in the NWB memo titled “Next Steps in the Nunavut Water Board’s Consideration of Agnico Eagle Mine Ltd.’s Application for Type “A” Water Licence 2AM-WTP---- and Consequential Amendments to Water Licence 2AM-MEA1525”. This updated memorandum specifically addresses the request for intervenor comment on the document filed by Agnico Eagle at the NWB Public Hearing as Exhibit 29, the “Water Monitoring Reduction Framework”.

2. Introduction

The Kivalliq Inuit Association (KivIA) requested that Hutchinson Environmental Sciences Ltd. (HESL) review the memorandum prepared by Golder Associates (Golder) on behalf of Agnico Eagle Mines Ltd. (AEM) titled “Water Monitoring Reduction Framework”, marked as Exhibit 29 in the NWB Public Hearing. The memorandum, dated September 25, 2017, outlines a conceptual framework to reduce monitoring effort and security associated with the Whale Tail Project during post-closure “*if warranted...once multiple years of data have been collected*”. AEM has highlighted that the current water licence application and associated monitoring plans will only cover 2018 through 2026 during construction, operations and the initial 4 years of closure. The water licence will require renewal prior to 2026 and will cover the remaining 3 years of closure throughout post-closure; any plans reflecting a reduction in monitoring and security will therefore undergo an in-depth review as part of the renewal application. Monitoring specifically associated with closure and post-closure will also undergo an in-depth review as early as 2021 as per the requirement that AEM submit a Final Closure Plan at least one year prior to implementation (proposed for 2022).

We therefore approached our review of AEM’s memorandum with the understanding that it may be reasonable and appropriate to reduce monitoring and security if warranted by results and that the rationale for reduced monitoring and security is conceptual and for discussion as part of their joint application to the

NIRB and NWB for a Project Certificate and Water Licence. The plans ultimately applied during post-closure will be reviewed and agreed upon as part of a Water Licence renewal.

We also approached our review from a technical standpoint; to assess the merit of the request and the validity of the criteria and rationale provided. We would expect that any application to the NWB for reduced monitoring frequency would include discussion of what criteria/rationale applied and documentation of the evidence supporting the request. The intent of AEM, we believe, is to avoid a formal hearing if the conditions for reduction were agreed on beforehand, but that NWB or the KIA would still have the option of a hearing, should it be warranted.

2.1 Reduction in Water Quality Monitoring

AEM has provided for *“consideration by the Board [(NWB)] and other interested parties... a framework by which the Licensee [(AEM)] can make application for consideration for a reduction in water quality monitoring”*. AEM has outlined three categories through which monitoring may be reduced: 1) removal of parameters, 2) reduction in frequency, and 3) removal of a water quality monitoring station. AEM has indicated that any reduction in monitoring will be based on *“critical review of the monitoring data”*. We provide AEM's conceptual rationale for each of the three categories and our recommendations regarding how they may be adjusted at this time.

1. ***“Removal of a Monitoring Parameter:***

- 1.1. *If that parameter is not used in the operations process, or if the operations do not influence that parameter then it should not be included as part of the regular laboratory monitoring package and should be removed from general monitoring at selected locations. An example of this could include monitoring of fecal or total coliform at select locations only and not routinely across all stations.*

Recommendation 1: Interpretative parameters, those indicative of environmental changes and toxicity modifying factors should not be candidates for removal despite not being used in operation or directly influenced by operations. Parameters in those categories may be used to infer the presence of unexpected environmental changes resulting from partially or fully reclaimed project features, or may influence project related interactions with the aquatic environment. We recommend parameters be evaluated for these benefits to the monitoring program in addition to whether operations may have directly or indirectly affected them prior to removal from the parameter suite. Examples of these parameters include dissolved organic carbon, total dissolved solids, pH and, total hardness.

- 1.2. *If a parameter result is consistently (e.g., in four or more consecutive samples [Northwest Territories Water Board 1992¹] or in 12 or more consecutive samples [Government of Canada 2002]) less than the analytical detection limit (using appropriate detection limit), the parameter may be removed from general monitoring.*

Recommendation 2: Conceptually this approach is acceptable. However, we recommend greater clarity in the definition used for *“consistently... or in 12 or more consecutive samples”*. We recommend the

¹ Northwest Territories Water Board. 1992. *Guidelines for the Discharge of Treated Municipal Wastewater in the Northwest Territories*.



following criteria for discontinuing a parameter from the monitoring program: A parameter may be removed from general monitoring if:

- ❖ it meets the criteria outlined in Recommendation 1, and
- ❖ the result is less than an appropriate analytical detection limit (as agreed to by the Board and KivIA and as outlined in pertinent regulations (e.g.: MMER)) in 12 consecutive samples spanning no less than 3 years with samples collected at least once under ice and once in the open water season each year.

This recommendation is intended to ensure any parameter slated for removal is nonessential to assessing project interactions with the aquatic environment and it is stable under varied environmental conditions.

1.3. Following approval of a Licence, if a monitoring and/or management plan has been approved by the Board, and the plan has predefined triggers for the removal or reduction of a parameter, the monitoring/management plan triggers apply.”

We note that AEM has indicated if the Board and interested parties are in agreement, *“the next step for Agnico Eagle would be to develop a detailed plan related to trending, interpretation and associated triggers related to when a reduction in monitoring may occur.”*

Recommendation 3: We agree with the development of predefined triggers for the removal or reduction of a parameter from monitoring and management plans and request that the KivIA be identified as an “interested party” as per AEM’s memorandum.

We note that these triggers are not required as part of the joint application to the NIRB and NWB.

2. “Removal of a Monitoring Station:

2.1. If all results from the station are consistently less than the analytical detection limits (using detection limits appropriate for the station), and it has been determined that the station is appropriately placed for the designated purpose, the station should may be removed from regular monitoring.

Recommendation 4: We agree that not all stations may be required if results at appropriately placed stations are consistently (see Recommendation 2) less than the analytical detection limit. However, we recommend that there be a mechanism to periodically check these sites for unanticipated changes, especially those downstream of source areas such as the Waste Rock Storage Facility and the flooded pit lake. This is intended to ensure unanticipated and unmodeled influences associated with these project features in post-closure are detected and adaptively managed.

2.2. If results collected are consistently at less than 10% of predictions, and it has been determined that the station is appropriately placed for the purpose, and monitoring of the station is not required under other regulations (e.g., Metal Mining Effluent Regulations) the station may be removed from regular monitoring.”

Recommendation 5: These proposed criteria for the discontinuation of an appropriately placed station is acceptable with the stipulation that Recommendations 2 and 4 are accounted for, and analytical results do not indicate a trend of increasing concentrations of any parameter.

3. “Reduction in Frequency of Monitoring a Station:



- 3.1. *If analysis of all data collected to date from the particular station show no increasing or decreasing trend, and the station is considered appropriately placed for the designated purpose, the monitoring frequency may be reduced.*
- 3.2. *If analysis of all data collected to date from the particular station are as predicted (or consistently less than predicted), and the station is considered appropriately placed for the designated purpose, the monitoring frequency may be reduced.*
- 3.3. *If analysis of all data collected to date from the particular station show that results are consistently less than the guidelines, and the station is considered appropriately placed for the designated purpose, the monitoring frequency may be reduced. “*

Recommendation 6: We agree with AEM's conceptual approach to reducing the monitoring frequency at a particular station. We could seek a condition that a return to baseline conditions be a criterion for removal, in regard to Article 20 of the NLCA. We recognize, however, that changes from baseline conditions agreed to by the NIRB and key stakeholders as part of the permitting process are an anticipated consequence of the Whale Tail project such that a return to baseline conditions in post-closure is not required at all locations throughout the project area.

We do however recommend a fourth criterion for reducing the monitoring frequency at a monitoring station: If analysis of all data collected to date from the particular station do not indicate the presence of an increasing trend in any parameter. That is, water chemistry at the particular station is stable.

The AEM memo states: “Agnico Eagle believes the Water Licence terms and condition provides for the Board and Licensee the framework to modify monitoring requirements without the need for a public hearing in relation to a Type A Water Licence. “

Recommendation 7: While we agree in principle we recognize that the Board should reserve the right to have a hearing based on the scope of the request.

2.2 Reduction in Security

Reduction in security associated with the Project following a reduction in monitoring intensity (parameters, frequency, stations) is an acceptable approach if supported by monitoring data. Reductions in monitoring intensity following AEM's proposed rationale and our recommendations would reflect an increasingly stable and acceptable (as per the Project Certificate) post-closure aquatic environment as well as a decrease in outstanding environmental liabilities associated with the Project. We therefore agree that a staged reduction in security held by the federal government and KivIA (as agreed to in the Security Management Agreement and to the satisfaction of the NWB) commensurate with the measured decrease in project liabilities is appropriate.

Recommendation 8: Any reduction in security held by the federal government and KivIA should be justified by a review of all monitoring data to date and be calculated using the most recent version of RECLAIM (or equivalent) software.

AEM has quoted text from the Mary River Water Licence (2AM-MRY-1325) related to security reduction. We note that the text includes “*The licensee may, at any time, submit to the board for consideration and approval, a request to change the amount of security...*”

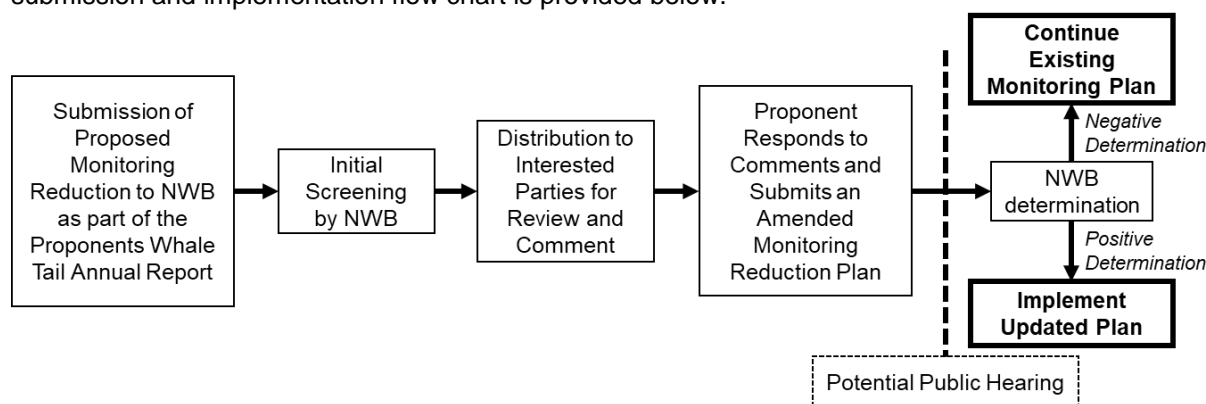


Recommendation 9: AEM should limit their submissions to the Board requesting a change in security to once annually as part of their Annual Report. This is intended to limit the financial and human resources required to review these requests by the Board and other interested parties.

2.3 Application of the Reduction Framework

During the conference call on October 11, 2017, ECCC raised concern that a monitoring reduction framework may be applied by AEM during closure or post closure without sufficient oversight by interested parties from the federal government and KivIA. We highlight that the technical criteria proposed are sound but understand this concern to be reasonable and propose the following recommendation in response:

Recommendation 10: AEM should, as part of any application to the NWB for a reduction in closure or post closure monitoring, clearly outline which conditions of their proposed reduction framework are met according to the criteria above, including any forthcoming reduction triggers. Monitoring will not be reduced until the updated plan is approved by the NWB with appropriate input from interested parties. A conceptual submission and implementation flow chart is provided below.



3. Closing

HESL agrees with AEM's conceptual framework to reduce monitoring intensity and security in principle so long as our recommendations have been addressed, the rationale for proposed reductions are scientifically defensible and the KivIA have been consulted as an interested party.

We hope this memo meets your current needs. Should you have any questions, please do not hesitate to contact Richard Nesbitt of Hutchinson Environmental Sciences Ltd. (richard.nesbitt@environmentalsciences.ca or at 519-576-1711). We would be happy to answer any questions you may have.

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