

October 28, 2022

Robert Hunter  
License Administrator  
Nunavut Water Board  
P.O. Box 119  
Gjoa Haven, NU,  
X0B 1J0

*Sent via Email:* [ali.shaikh@nwb-oen.ca](mailto:ali.shaikh@nwb-oen.ca), [robert.hunter@nwb-oen.ca](mailto:robert.hunter@nwb-oen.ca)

**Re: Agnico Response to KIA Comments regarding Water License 2AM-DOH1335 – Conditions Applying to Construction and Operation – Construction of 2022 Interim Dike**

Agnico Eagle Mines Ltd. (Agnico) is providing this letter in response to comments received from Kitikmeot Inuit Association (KIA) on October 19<sup>th</sup>, 2022. Agnico's response is detailed below:

**1. KIA-NWB-1**

**Subject:** Need for separation of mine contact water streams in the TIA

**Reference:** Doris Tailings Impoundment Area – 2022 Interim Dike (SRK Consulting Canada Inc.), Section 1.1.

**Summary:** The document notes the purpose of the existing aqua dam and proposed interim dike is to help segregate different streams of contact water on site (such as water in the existing TIA and underground water stream).

**Detailed Review Comment:** The need for segregation of different mine contact waters is not clearly stated in the document. As such, the need for the dike is also unclear.

**Recommendation/Request:** Can AEM provide more context on the need for segregating different streams of mine contact water and thus the need for the interim dike.

**Response to KIA-NWB-1:**

Due to the updated MDMER toxicity testing requirements that came into effect in December 2021, AEM identified the need to segregate underground mine water from the surface contact water in order to effectively meet the updated discharge criteria. Context is provided below.

The underground mine water is highly saline compared to surface contact water. Prior to the segregation of the two water streams, the underground mine water was affecting the salinity in the TIA such that the threshold for a toxicity test on a new invertebrate species was triggered. It was identified that the underground mine water could pass the required toxicity tests. However,



## AGNICO EAGLE HOPE BAY

when the underground water was deposited into the TIA, the combined water would fail, thus prohibiting the discharge of water from the entire TIA.

The construction of the interim dike within the TIA is required to create a temporary storage cell for saline underground mine water, separate from the rest of the TIA. With this configuration, water can be “batch discharged” from either the TIA or the temporary saline storage cell, providing each source meets the required discharge criteria independently.

### 2. KIA-NWB-2

Subject: Potential post construction settlement and deformation of the interim dike

Reference: Doris Tailings Impoundment Area – 2022 Interim Dike (SRK Consulting Canada Inc.), Section 3.5 Stability Considerations.

Summary: A significant length of the dike will be constructed on a foundation of tailings, some of which will be several metres thick. The tailings may be saturated and frozen or thawed. The document details the results of various stability analyses completed on the proposed dike design. The document also describes the construction method of slow placement of construction materials using small scale equipment to limit deformation of the dike during construction.

Detailed Review Comment: The document does not discuss the potential for post-construction settlement of the dike or potential consequences or mitigative activities should settlement occur.

Recommendation/Request: Can AEM comment on the potential for post-construction settlement of the dike and potential consequences and mitigative activities should settlement occur.

#### Response to KIA-NWB-2

AEM acknowledges the potential for post-construction settlement, particularly during the months immediately following the end of construction. Excessive settlement could compromise the GCL liner or compacted tailings elevation, and consequently affect the storage capacity of the Interim Dike. It should be noted that the GCL is a secondary (redundant) seepage barrier, with the primary seepage barrier being the compacted tailings material.

AEM will address the potential issue through active monthly survey monitoring and visual inspections, and respond with remedial work, including additional fill placement, when required.

### 3. KIA-NWB-3

Subject: Potential permafrost degradation in water elevation control channel

Reference: Doris Tailings Impoundment Area – 2022 Interim Dike (SRK Consulting Canada Inc.), Section 3.4.7. Water Elevation Control Channel.



## AGNICO EAGLE HOPE BAY

**Summary:** A water elevation control channel will be constructed at east abutment of the interim dike to provide water level control upstream of the interim dike. The channel will be excavated into natural ground at a depth of 1.5 to 2 m. The channel width will be 5 m and the design grades of the channel will range between 0 and 0.5%.

**Detailed Review Comment:** Given the channel will be excavated into natural ground, permafrost conditions may be encountered. Limited fill materials are proposed to be placed in the base of the channel (0.2 m of compacted tailings overlain by non-woven geotextile overlain by 0.3 m of riprap), providing minimal thermal protection for any permafrost that may be encountered. If permafrost conditions are encountered along the channel profile, postconstruction permafrost degradation may occur. Given the shallow grade of the channel profile, permafrost degradation may impact the hydraulic performance of the channel and the water level of the upstream pond.

**Recommendation/Request:** Can AEM comment on the potential for permafrost degradation of the channel and any potential consequences of this or possible mitigative actions should it occur.

### Response to KIA-NWB-3

AEM expects some permafrost degradation to occur in the area of the overflow channel. The channel will be inspected monthly, and mitigation work including additional fill/riprap placement will be carried out to in order to ensure the hydraulic performance of the channel. The intent of the compacted tailings layer below the geotextile is to accommodate small movements without compromising the performance of the channel. It is acknowledged that the condition of the channel is especially important at the inlet, and mitigation work is expected to be required over the life of the structure.

In the longer term, the entire structure, including the overflow channel, will be covered by tailings as it lies within the footprint of future tailings deposition.

### 4. KIA-NWB-4

**Subject:** Water level upstream of interim dike, length of tailings beach at toe of South Dam

**Reference:** Doris Tailings Impoundment Area – 2022 Interim Dike (SRK Consulting Canada Inc.), Section 3.3. Dam Design.

**Summary:** The maximum elevation of the water level upstream of the interim dike will be 34.5 m. This will submerge much of the existing tailings beach at the toe of the South Dam.

**Detailed Review Comment:** As documented in previous project documentation, there is a minimum beach length requirement upstream of the South Dam. It is unclear if the proposed maximum water level upstream of the interim dike will result in a beach length that still complies with the operational requirements.

**Recommendation/Request:** Can AEM comment on how the maximum water level of the pond



## AGNICO EAGLE HOPE BAY

upstream of the interim dike will impact the beach length upstream of the South Dam and if this will comply with existing minimum beach length requirements for the TIA.

### Response to KIA-NWB-1

The maximum water elevation for the interim dike is controlled by an overflow channel with an inlet elevation of 34.5 masl. During the design process for the Interim Dike, the elevation for the channel inlet was selected such that the operation beach length requirement (100 m) is maintained at the South Dam (see figures below).

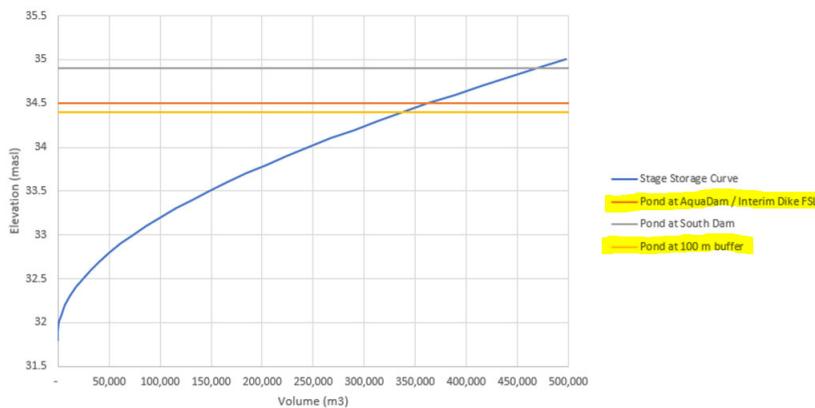


Fig 1. – Interim Dike FSL Graph (100m buffer actually reached at water El. ~34.4 masl)

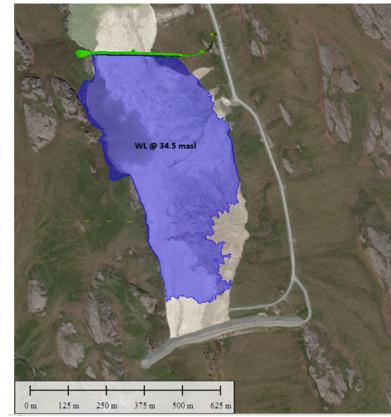


Fig 2. – Satellite image with pond elevation at FSL

In the long term after the restart of operations, the Interim Dam will no longer impound water and the water in this area will be removed and replaced with tailings.

### 5. KIA-NWB-5

Subject: Trigger conditions for construction of the contingency buttress for the Interim Dike

Reference: Doris Tailings Impoundment Area – 2022 Interim Dike (SRK Consulting Canada Inc.), Section 3.4.8. ROQ or Waste Rock Contingency Buttress.

Summary: A rockfill buttress is proposed to be built at the downstream toe of the Interim Dike should poor foundation conditions be encountered during construction or during preconstruction investigative activities.

Detailed Review Comment: No information is provided in the project document that indicates what constitutes poor foundation conditions or construction observations that would trigger the construction of the buttress.

Recommendation/Request: Can AEM comment what ground conditions or construction observations would be required to trigger the construction of the buttress.

### Response to KIA-NWB-5



## AGNICO EAGLE HOPE BAY

The submission document indicated that pre-construction investigative activities would be carried out to verify the foundation conditions. Following the submission of the document, a ground temperature cable sensor was installed into the tailings foundation on the upstream alignment of the Interim Dike. Data from the ground temperature cable indicates that the tailings that form the foundation for the Interim Dike are below 0°C (frozen) and that temperatures are holding stable going into the winter months. Based on the preconstruction instrumentation readings, the construction of the buttress is not expected to be required. The buttress may be required if:

- Instrumentation indicates a thawing of the tailings foundation, accompanied deformation observed in the Interim Dike structure.
- Observations during construction indicate excessive losses of fill material are occurring (material sinking into the tailings foundation). Construction monitoring will include tracking of material placement in order to identify such losses as they are occurring. Observations and material quantities will be recorded in the as-built report.

### 6. CIRNAC-R-01

Subject: Temporary Water Filled Portable Dam Removal

Comment:

CIRNAC noted in section 3.7 of the report, that AEM did not provide any information with regards to the Temporary Water filled portable Dam (AquaDam) currently in place at the site of the proposed “interim” dike construction. No information as whether the AquaDam system will be removed or remain in place after the construction of the interim dike.

Recommendation:

CIRNAC recommends that AEM provide further clarification as whether the AquaDam will remain in place or be removed after the construction of the “interim” dike.

Response to CIRNAC-R-01

A plan is in place to remove the Aquadam in summer 2023, after the construction of the Interim Dike is complete and the Aquadam is no longer needed.

### 7. CIRNAC-R-02

Subject: Interim Dike or Permanent Dike

Comment:

NWB email dated June 6, 2022: Modification – Water filled portable dam with TIA, states that:

“The Notice of Modification outlined Agnico Eagle’s plans to install a temporary water filled portable dam within the approved Tailings Impoundment Area (TIA). The



## AGNICO EAGLE HOPE BAY

“permanent TIA dike” is proposed to be built in the next 12 months. Agnico Eagle states that the final design and for-construction drawings for the “permanent TIA dike” infrastructure will be provided to the NWB at least 60 days prior to commencement of construction as per Water Licence Part D Items 1 & 2”.

Also, on the notification letter of the AquaDam installation, AEM stated that: “The rationale for installing a temporary water filled portable dam prior to the installation of the “permanent dike” is to segregate underground water that is already in the TIA and to isolate the construction area for the “permanent dike” that will be built in the next 12 months”.

CIRNAC note that AEM has consistently referred to the structure as a “Permanent Dike” but in the recent notice of construction of the dike, tagged it an “Interim Dike” where as in section 3.7 of the dam construction report, AEM stated that the dike would be planned to be used during the care and maintenance period on site only and there will be a re-evaluation of the need when the site resumes operation.

It is uncertain to reviewers as to whether AEM has decided if the dike will remain beyond care and maintenance or not.

### Recommendation:

CIRNAC recommends that AEM clarify if the dike will remain in place or be removed when the site resumes operation post care and maintenance.

### Response to CIRNAC-R-02

The Interim Dike is expected to be used throughout the care and maintenance period, and will remain in place when the site resumes operation.

The Interim Dike is considered to be a temporary structure. Plans for a permanent saline water storage facility are being included in future mine planning activities. The permanent facility is expected to be constructed shortly after the site resumes operation. At this time, the Interim Dike will no longer be used to segregate water within the TIA, however the structure will remain in place, to be covered by future tailings deposition.

Should you have any questions please feel free to contact me at [Brennan.jay@agnicoeagle.com](mailto:Brennan.jay@agnicoeagle.com)

Sincerely,

Brennan Jay,

Cc:  
Licencing (NWB)