NUNAVUT WATER BOARD
Date: September 27, 2017
Exhibit No.: 22

Agnico Eagle Mines Ltd.'s Whale Tail Pit Project

Nunavut Impact Review Board and Nunavut Water Board – Coordinated Process

Nunavut Water Board Public Hearing
Baker Lake
September 26-27, 2017

Canada

Outline

Indigenous and Northern Affairs Canada's roles and responsibilities

INAC's mandate and responsibilities stem from the following legislation:

- Department of Indian Affairs and Northern Development Act (DIAND)
- Nunavut Land Claims Agreement Act (NLCAA)
- Nunavut Waters and Nunavut Surface Rights Tribunal Act (NWNSRTA) and the associated Regulations
- Territorial Lands Act (TLA) and the associated Regulations
- Arctic Waters Pollution Prevention Act (AWPPA)

INAC's contributions to the Water Licence Application process

INAC has participated in this Water Licence Application through:

- Scoping
- Information Requests (IRs)
- Technical Review Comments (TRCs)
- Technical Meeting and Pre-Hearing Conference
- Final Submission

Summary of INAC's review of the Whale Tail Pit Water Licence Application

In its review of this Water Licence Application, the Department provided expertise on the following:

- Surface water quality and quantity (including monitoring)
- Groundwater quality and quantity
- Closure costs

The Department's final submission to the Nunavut Water Board (August 14, 2017) included five (5) final comments:

- Three (3) specific to the new Water Licence Application for Whale Tail Pit (2AM-WTP----)
- Two (2) specific to the Water Licence Amendment Application for Meadowbank (2AM-MEA1525)

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Review comments specific to 2AM-WTP----

Arcadis 2016

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Water quality concern 1: Post-closure seepage from the Waste Rock Storage Facility (INAC Final Comment 1)

Issue:

- Seepage from the waste rock encapsulated in the WRSF will occur from the active freeze/thaw zone, with the potential to impact nearby waterbodies.
- AEM based the modelling of this seepage on the assumption that the material used in the WRSF cover would not be arsenic leaching.
- INAC requested that AEM model the water quality of seepage receiving water bodies with 2% and 5% arsenic leaching material included in the WRSF cover to examine impacts related to less than perfect segregation of cover material.
- Modelling predicts periodic exceedance of water quality objectives for arsenic if a low amount of arsenic leaching materials included in the WRSF cover.

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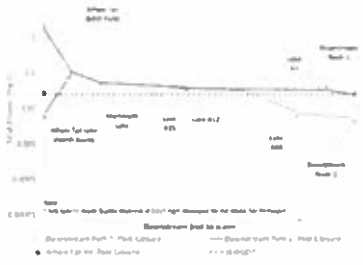
Water quality concern 1: Post-closure seepage from the Waste Rock Storage Facility cont'd



Downstream water quality with 4 m active thaw depth (without treatment) assuming 2% arsenic leaching materials in WRSF cover.

Figure 7b from 'Addendum to Agnico Eagle Mines Whale Tail FEIS Appendix 6-H Sensitivity Analyses on Water Quality Modelling in Support of Responses to Technical Commitments 30, 36, 37 and 42'

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Water quality concern 1: Post-closure seepage from the Waste Rock Storage Facility cont'd

Outstanding concerns:

- It is unlikely that segregation practices for WRSF cover material will be perfect.
- Analyses provided by AEM show the potential for adverse arsenic concentrations in receiving water bodies if even a low amount of arsenic leaching material is included in the WRSF cover.
- Uncertainty around timing of seepage from the WRSF; potential for delayed onset.
- Protection of receiving water bodies requires diligent segregation practices, prolonged and intensive monitoring of seepage and further evaluation of discharges into Mammoth Lake.

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Water quality concern 1: Post-closure seepage from the Waste Rock Storage Facility cont'd

Recommendations:

- Update waste rock management plan to include more waste rock sampling to increase confidence that no contamination is entering WRSF cover.
- Update monitoring plan for WRSF seepage to include criteria that must be met before dike for WRSF attenuation pond is breached.
- Conduct hydrodynamic modelling to evaluate mixing of WRSF seepage in Mammoth Lake.
- Uncertainty around water quality due to seepage be taken into consideration for financial security.

Current status: ✗ ✓

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Water quality concern 2: Water quality affected by maximum thaw depths in the WRSF cover (INAC Final Comment 2)

Issue:

- The WRSF cover must be designed with consideration of the thickness of the active freeze/thaw zone.
- Thaw depth linked to seepage and uncertainty around arsenic concentrations.
- AEM has performed thermal modelling to determine depth of active zone under future climate change scenarios, resulting in a recommended cover thickness of at least 3.8 m (including contingency buffer of 0.5 m).
- Data from AEM's Meadowbank Portage WRSF show a thaw depth of up to 5.5 m in some locations.

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Water quality concern 2: Water quality affected by maximum thaw depths in the WRSF cover cont'd

Recommendations:

- The current thermal model for the Whale Tail WRSF cover should be further calibrated with the available observational data (ground temperature monitoring) from the Meadowbank WRSF.
- Continue to update the thermal model as data becomes available to inform final WRSF cover design.
- Uncertainty around water quality due to seepage be taken into consideration for financial security.

Current status: ✗ ✓

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Water quality concern 3: Post-closure water quality in the flooded pit and Whale Tail Lake (INAC Final Comment 3)

Issue:

- There is uncertainty regarding water quality in Whale Tail Pit once it is flooded during closure.
  - It is unknown whether diffusion of arsenic into the pit during post-closure will occur
  - Diffusion of arsenic into the pit would result in arsenic concentrations in receiving environments above the ISWQG (regardless of proposed North Wall Push Back)
- Arsenic leaching into the flooded pit will only occur if the pit is in a groundwater discharge zone
- The Applicant describes the area around the pit as circum-neutral and is confident that any areas of discharge do not coincide with arsenic leaching material.
- There is presently insufficient information to verify groundwater flow in the pit.

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Water quality concern 3: Post-closure water quality in the flooded pit and Whale Tail Lake cont'd

Recommendations:

- Additional hydrogeological studies are needed to verify hydraulic gradients. This could be done during the 2018 field season prior to dewatering of Whale Tail Lake.
- Analyses are needed to confirm that meromixis will occur in the pit, if hydrogeological studies show that diffusion of arsenic from around the pit could occur
- Updated monitoring plan for the flooded pit, with specific criteria that would need to be met prior to breaching of dams/dikes.

Current status: ✗ ✓

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Resolved concerns

Issues resolved since Technical Meeting:

✓ **Availability of cover material (Final Comment #4)**

- INAC supports the conclusion that sufficient non-metal leaching and non-acid generating waste rock is available for cover of the WRSF.

✓ **Ammonia and nitrate concentrations from use of explosives (Final Comment #5)**

- INAC recommended an alternative method for modelling ammonia and nitrate concentrations in effluent from the use of explosives.
- Upon further discussion with the Application, the original calculations are considered acceptable.

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Closure cost estimate (Reclamation security)

- INAC's reclamation closure cost estimate for 2AM-WTP— includes the Whale Tail Pit Project as well as the All-Weather Road connecting the Meadowbank Mine with the Whale Tail Pit.
- INAC's estimate is currently $27.5 million and includes considerations of uncertainty surrounding adverse impacts on post-closure water quality
- Discussions on the reclamation closure cost estimate have occurred between INAC, Agnico Eagle and the Kivalliq Inuit Association.
- Pending agreement between the parties for a Security Management Agreement, INAC recommends that 50% of the reclamation closure cost estimate be held under the Water Licence 2AM-WTP—.

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Review comments specific to 2AM-MEA1525

L. Bachelier 2016

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Amendment concern 1: Meadowbank Tailings Management (INAC Final Comment #6)

Issue:

- South Cell Wall raise to 54 m for Meadowbank Tailings Storage Facility (TSF) to accommodate tailings produced from Whale Tail Pit ore.
- Approval for TSF in 2015 was granted based on activities at Meadowbank.

Recommendations:

- Facility design change should be reviewed by NWB.
- INAC recommends that the Applicant submit an updated tailings management plan for review and approval.

Current status: ✗ ✓

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Amendment concern 2: Term of Meadowbank Water Licence (INAC Final Comment #7)

Issue:

- Amendment Application includes water use to 2026, whereas current 2AM-MEA1525 expires in 2025.

Recommendations:

- The Applicant has not requested a change to current Water Licence term.
- INAC recommends that an amended Water Licence include a term to 2026.

Current status: ✗ ✓

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Conclusions

- In general, the information, analysis and presentation of the documentation was complete.
- Uncertainties remain as to long-term and post-closure water quality based on the models presented.
- INAC has recommended the Applicant undertake additional modeling as information becomes available and a more intensive monitoring program for the site to better understand the remaining uncertainties and provide more confidence to predicted outcomes.
- Up-to-date modelling and monitoring during operations and closure may show that site conditions match predicted outcomes. However, outcomes that deviate from predictions could result in unintended impacts requiring mitigation.

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Thank you
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Maatna
Merci
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