



CIRNAC Comments to NIRB Re: Comment Request for Agnico Eagle Mines Limited's Meadowbank Gold Mine and Whale Tail Pit Project's 2020 Annual Report



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Your file - Votre référence
03MN107 and 16MN056
Our file - Notre référence
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June 7, 2021

Emily Koide
Technical Advisor I
Nunavut Impact Review Board
P.O. Box 1360
Cambridge Bay, NU, X0B 0C0
Via electronic mail to: info@nirb.ca

Dear Emily Koide,

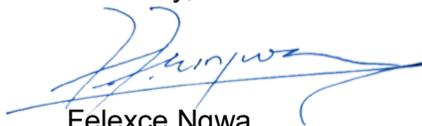
Re: Comment Request for Agnico Eagle Mines Limited's Meadowbank Gold Mine Project and Whale Tail Pit Project's 2020 Annual Report

On April 22, 2021, as per Section 12.7.3 of the *Agreement between the Inuit of the Nunavut Settlement Area and Her Majesty The Queen in Right of Canada (Nunavut Agreement)*, s. 135(4) of the *Nunavut Planning and Project Assessment Act*, S.C. 2013, c. 14 (*NuPPAA*) and the amended Meadowbank Gold Mine Project Certificate No. 004 and the amended Whale Tail Pit Project Certificate No. 008, the Nunavut Impact Review Board (NIRB) requested parties to review Agnico Eagle Mines Limited's (AEM's) 2020 Annual Report with respect to effects and compliance monitoring.

Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) has conducted a review of the 2020 Annual Report and related documents in areas under its mandate pertaining to effects and compliance monitoring. On this basis, CIRNAC would like to provide the comments attached for the NIRB's consideration.

CIRNAC appreciates the opportunity to review AEM's Meadowbank Gold Mine Project and Whale Tail Pit Project 2020 Annual Report and looks forward to working with the NIRB and AEM throughout future reviews for these projects. Should you have any questions, please do not hesitate to contact Elena Petre by email at elena.petre@canada.ca.

Sincerely,



Felexce Ngwa
Manager, Impact Assessment



1. Effects Monitoring

The 2020 Annual Report has been reviewed to assess the measurable changes to the valued components/indicators under CIRNAC mandate and areas of interest, compared to the potential effects that were predicted to result from a proposed development of Meadowbank Gold Mine and Whale Tail Pit projects, taking into account the Final Environmental Impact Statement (FEIS), monitoring reports from previous years and the requirements included in the Projects Certificates (as amended). The assessment considered the following:

- a. Whether the conclusions reached by Agnico Eagle in the 2020 Annual Report are valid; and**
- b. Any areas of significance requiring further supporting information or any changes to the monitoring program which may be required**

AEM's 2020 Annual Report for the Meadowbank Gold Mine and Whale Tail Pit Projects presents an extensive and comprehensive summary of activities completed and data gathered from on-going operations, inspections, management plans and monitoring programs implementation, special studies and modelling exercises in 2020.

Within the areas under its mandate, CIRNAC did not identify any information that would invalidate the conclusions reached by AEM in the 2020 Annual Report. However, CIRNAC is providing 11 Technical Review Comments (TRCs) for the NIRB's consideration, with the following notes:

- The first TRC incorporates 11 recommendations from the 2019 Annual Report which, in the opinion of CIRNAC, have yet to be addressed. This conclusion is based on our review of the 2020 Annual Report and its associated appendices as well as AEM's responses to review comments from CIRNAC and other parties on the 2019 Annual Report (as presented in a two-part submission from AEM to NIRB: Part 1: 7 August 2020; and Part 2: 21 August 2020). The status of the prior recommendations has been classified as: "Ongoing" if AEM is in the process of collecting the information requested by CIRNAC; or "Unresolved" if AEM has not committed to providing the requested information.
- In addition to unresolved recommendations from prior years, CIRNAC has identified a further 10 TRCs (#2 to #11) that are new for the 2020 reporting year.



Technical Review Comment Number	CIRNAC #1
Subject	Outstanding issues from CIRNAC's Review of the 2019 Annual Report
Issue/Rationale	CIRNAC's review of the 2019 Annual Report identified multiple unresolved comments from prior years that required follow-up action by AEM. During CIRNAC's review of the 2020 Annual Report, the status of previously unresolved comments was assessed. In some instances, sufficient information was provided in the 2020 Annual Report to re-classify prior comments as resolved. However, multiple comments from CIRNAC's review of the 2019 Annual Report have yet to be addressed or require ongoing efforts to complete. Those unresolved comments are summarized below.
CIRNAC 1.1 (previously CIRNAC 1.1): Freeze back and Capping Thickness	
References	<ul style="list-style-type: none"> • 2020 Annual Report: Section 5.4.1 for Meadowbank and Section 5.4.2 for Whale Tail; Appendix 24; Appendix 25 • AEM Responses to Review Comments on the 2019 Annual Report (Part 1: 7 August 2020 and Part 2: 21 August 2020)
Prior Recommendation	CIRNAC recommended that AEM include a meaningful discussion of the results from the thermal monitoring in the Annual Report. FEIS predictions should be compared with monitoring results and be clearly presented. AEM should present the updated modeling supporting their conclusions that the conceptual plans for thermal encapsulation of the Tailings Storage Facility (TSF) and the Waste Rock Storage Facility (WRSF) remain effective to prevent and control deleterious seepage over long term. Finally, if results show discrepancies from the predicted values, AEM should discuss the management actions that should be implemented to address the risk.
AEM Response	<i>"Agnico Eagle is monitoring freeze back in tailings and the waste rock and will continue to do so and expand the monitoring program as required. The data gathered will continue to be analysed and compared to the FEIS prediction to ensure that the closure strategy and concept still meet the closure prediction. The closure strategy for the WRSF and TSF are documented in the interim closure plan. Detailed Engineering closure design will be updated to reflect the current condition of the TSF and WRSF but no significant change to the closure concepts are planned based on the available information. As such progressively reclaimed areas should be considered reclaimed and will only be modified if data show that the previously accepted closure criteria would not be met".</i>
CIRNAC Assessment of Recommendation Status	<u>Ongoing:</u> CIRNAC acknowledges that AEM continues to assess the existing and predicted long-term thermal performance of mine wastes and cover systems. However, the 2020 Annual Report provided limited new information in this regard. The topic remains a work in progress therefore the status will be re-assessed by



Technical Review Comment Number	CIRNAC #1
	<p>CIRNAC during its review of the 2021 Annual Report and subsequent Interim Closure and Reclamation Plan (ICRP) iterations.</p> <p>With regard to AEM's position that progressively reclaimed areas "should be considered reclaimed and will only be modified if data show that the previously accepted closure criteria would not be met"; that determination will be made by CIRNAC once all required documentation is provided. Such documentation must include at the minimum, updated modelling demonstrating that the covers are able to meet their design intent. All relevant construction records would also need to be provided (e.g., "as-built" drawings). No such documentation has been provided to date, therefore, the covers are not classified as reclaimed.</p> <p>CIRNAC also emphasizes that the criteria presented in an ICRP are not final criteria: they are subject to change as a project advances towards closure and additional information becomes available to inform the final closure requirements.</p>
CIRNAC 1.2 (previously CIRNAC 1.2): Freeze back and Capping Thickness	
References	<ul style="list-style-type: none"> • 2020 Annual Report: Section 5.4.1 for Meadowbank and Section 5.4.2 for Whale Tail; Appendix 24; Appendix 25 • AEM Responses to Review Comments on the 2019 Annual Report (Part 1: 7 August 2020 and Part 2: 21 August 2020)
Prior Recommendation	CIRNAC recommended that AEM provide more information on the nature and extent of research efforts, results of the research and a discussion of how the proposed cover design has been influenced by these results.
AEM Response	Refer to AEM Response for CIRNAC 1.1 above.
CIRNAC Assessment of Recommendation Status	Ongoing: CIRNAC acknowledges that AEM, their consultants and research partners continue to assess the existing and predicted long-term thermal performance of mine wastes and cover systems. However, the 2020 Annual Report provided limited new information in this regard. The topic remains a work in progress therefore the status will be re-assessed by CIRNAC during its review of the 2021 Annual Report and subsequent ICRP documents.
CIRNAC 1.3 (previously CIRNAC 1.3): Progressive Reclamation	
References	<ul style="list-style-type: none"> • 2020 Annual Report: Section 9.1.1 for Meadowbank; Appendix 55 • AEM Responses to Review Comments on the 2019 Annual Report (Part 1: 7 August 2020 and Part 2: 21 August 2020) • NIRB 2019-2020 Annual Monitoring Report Meadowbank Gold Mine and Whale Tail Pit Projects (December 2020)



Technical Review Comment Number	CIRNAC #1
Prior Recommendation	CIRNAC recommended that future updates to the ICRP include more details on progressive reclamation at Meadowbank such as areas of Tailings Storage Facility (TSF) and Waste Rock Storage Facility (WRSF) facilities covered in the prior year, total areas covered to date, along with the volumes associated with these areas.
AEM Response	<i>“Agnico Eagle will continue to provide more details on progressive reclamation in future updates to the ICRP. Completed and scheduled work can be found in the closure schedule presented in Appendix P of the ICRP”.</i>
CIRNAC Assessment of Recommendation Status	<p>Ongoing: CIRNAC requested that the missing information be incorporated into an updated ICRP. In their review of AEM’s 2019 Annual Report (December 2020, Table 11) NIRB indicated that AEM was to provide an updated Meadowbank ICRP with the requested progressive reclamation information in the 2020 Annual Report.</p> <p>An updated Meadowbank ICRP was not submitted with the 2020 Annual Report.</p> <p>CIRNAC maintains that the missing information is relevant and recommends that the information be provided in the 2021 Annual Report.</p>
CIRNAC 1.4 (previously CIRNAC 1.4): Results of Thermistor Measurements for Tailings and Waste Rock Storage Facilities	
References	<ul style="list-style-type: none"> • 2020 Annual Report: Section 5.4.1 for Meadowbank and Section 5.4.2 for Whale Tail • AEM Responses to Review Comments on the 2019 Annual Report (Part 1: 7 August 2020 and Part 2: 21 August 2020)
Prior Recommendation	CIRNAC recommended that AEM analyze the thermistor monitoring results against early thermal modelling predictions and update its Waste Rock and Tailings Management Plans if large discrepancies are observed between the monitoring results and model predictions.
AEM Response	<i>“Agnico Eagle is monitoring freeze back in tailings and the waste rock and will continue to do so and expand the monitoring program as required. The data gathered will continue to be analyzed and compared to the FEIS prediction as more data becomes available to ensure that the closure strategy and concept still meet the closure prediction”.</i>
CIRNAC Assessment of Recommendation Status	<p>Ongoing: CIRNAC acknowledges that AEM continues to assess the existing and predicted long-term thermal performance of mine wastes and cover systems at the Meadowbank and Whale Tail sites.</p> <p>While the 2020 Annual Report presents a high-level summary of the topic, the document contains insufficient detail to understand the status of thermal monitoring/modelling as it relates to final closure. CIRNAC expects that the next iteration of the Meadowbank ICRP</p>



Technical Review Comment Number	CIRNAC #1
	will include a comprehensive analysis of all thermal monitoring data and modelling.
CIRNAC 1.5 (previously CIRNAC #2): Geotechnical Design Processes	
References	<ul style="list-style-type: none"> • 2020 Annual Report: Section 3.1 to 3.3 • AEM Responses to Review Comments on the 2019 Annual Report (Part 1: 7 August 2020 and Part 2: 21 August 2020)
Prior Recommendation	CIRNAC recommended that AEM perform a “lessons learned” assessment of its design processes for the Whale Tail Pit Project water retention structures. The goal of this assessment is to identify and address any systemic design, construction, or operational process deficiencies that may have contributed to the sub-standard performance of the Whale Tail dikes. AEM should also indicate how it will incorporate the lessons learned into its design and environmental management processes.
AEM Response	<p><i>“Mammoth, NE and the WRSF Dike now have normal operating conditions and data suggests that the mitigation measures and Whale Tail Dike positively impacted the seepage rate.</i></p> <p><i>Agnico Eagle performed a lessons learned exercise on water management in winter 2020 to improve operational procedure. For the design on the expansion project infrastructure will take advantage of the first year of operations and work with multiple parties to ensure the structures meet design intent”.</i></p>
CIRNAC Assessment of Recommendation Status	<p>Unresolved: AEM indicates they performed a lessons learned exercise on water management (as opposed to geotechnical design processes). A copy of the lessons learned exercise was not provided in the 2020 Annual Report.</p> <p>While CIRNAC acknowledges that several of the design issues that occurred in 2019 have since been addressed, the underlying factors that led to dams failing to meet their design intent warrants a rigorous review. Further, the findings of such a review should be placed on the public record.</p>
CIRNAC 1.6 (previously CIRNAC #4): Meadowbank Water Treatment Requirements	
References	<ul style="list-style-type: none"> • 2020 Annual Report: Appendix 50 • AEM Responses to Review Comments on the 2019 Annual Report (Part 1: 7 August 2020 and Part 2: 21 August 2020)
Prior Recommendation	CIRNAC recommended that the next iteration of the Meadowbank ICRP identify and examine potential water treatment scenarios based on current and future water quality projections during the closure phase. Although final decisions are not required at this time, costs associated with implementing the most likely water treatment scenario should also be incorporated into security estimates.
AEM Response	<i>“Agnico Eagle intends to start water treatment bench scale testing using reclaim water stored in the pits, to assess the most suitable</i>



Technical Review Comment Number	CIRNAC #1
	<p><i>water treatment processes that can be used at closure prior to pit flooding.</i></p> <p><i>The 2020 Annual Report will include a plan describing the general timeline to perform bench scale lab testing, on-site testing, and development of design of the water treatment process for closure. The ICRP currently provides for water treatment. Following results of bench scale testing, cost associated with water treatment scenario could be adjusted”.</i></p>
<p>CIRNAC Assessment of Recommendation Status</p>	<p>Ongoing: CIRNAC acknowledges that AEM continues to assess the requirements for treatment of reclaim water stored in the Goose and Portage pits at the Meadowbank Gold Mine. The approach is summarized in a preliminary water treatment strategy, as presented in Appendix 50 of the 2020 Annual Report. While the strategy lays out an appropriate framework for determining treatment requirements for reclaim water in the pits, CIRNAC notes that the strategy does not address whether on-going treatment of water in the re-flooded pits will be necessary after the reclaim water has been treated and discharged to the receiving environment.</p> <p>Despite the progress on the treatment strategy for reclaim water, the topic remains a work in progress. Therefore, the status will be re-assessed by CIRNAC during its review of the 2021 Annual Report and subsequent ICRP documents.</p>
<p>CIRNAC 1.7 (previously CIRNAC #5): Meadowbank WRSF Seepage Quality</p>	
<p>References</p>	<ul style="list-style-type: none"> • 2020 Annual Report: Appendix 11 • AEM Responses to Review Comments on the 2019 Annual Report (Part 1: 7 August 2020 and Part 2: 21 August 2020)
<p>Prior Recommendation</p>	<p>CIRNAC recommended that AEM confirm whether long-term modelling of seepage from the Meadowbank Waste Rock Storage Facilities (WRSFs) is of sufficient duration to characterize seepage after breakthrough. If not, CIRNAC recommends that AEM extend the temporal scope of its WRSF seepage modelling to ensure that potential seepage impacts after breakthrough are accurately characterized.</p>
<p>AEM Response</p>	<p><i>“The closure strategy for the Meadowbank WRSF is in the ICRP and based on documentation showing the water quality objective will be met at closure. The cover system is designed to keep the active layer in the non-acid generating (NAG) material to ensure there is no acid-rock drainage (ARD) generation. There is no data to suggest that release of water from the Meadowbank WRSF would impact water quality”.</i></p>
<p>CIRNAC Assessment of Recommendation Status</p>	<p>Unresolved: AEM’s response does not address CIRNAC’s request. Specifically, the response does not clarify whether long-term modelling of seepage from the Meadowbank WRSFs is of sufficient duration to characterize seepage after breakthrough. CIRNAC notes that the water quality forecast modelling presented in</p>



Technical Review Comment Number	CIRNAC #1
	<p>Appendix 11 to the 2020 Annual Report only extends up to 2027. For comparison and context, the Whale Tail WRSFs are predicted to achieve breakthrough after approximately 100 years.</p> <p>CIRNAC maintains that AEM confirm whether long-term modelling of seepage from the Meadowbank WRSFs is of sufficient duration to characterize seepage after breakthrough. If not, CIRNAC recommends that AEM extend the temporal scope of its WRSF seepage modelling to ensure that potential seepage impacts after breakthrough are accurately characterized.</p>
<p>CIRNAC 1.8 (previously CIRNAC #7): Chromium in Meadowbank Third Portage Lake (TPL) Sediments</p>	
<p>References</p>	<ul style="list-style-type: none"> • 2020 Annual Report: Section 8.12.3.1.1 • AEM Responses to Review Comments on the 2019 Annual Report (Part 1: 7 August 2020 and Part 2: 21 August 2020)
<p>Prior Recommendation</p>	<p>In the 2019 Annual Report, AEM concluded that further assessment of chromium in Third Portage Lake (TPL) sediments is not justified and that no supplemental mitigations are necessary. CIRNAC recommended that AEM provide additional analyses to support their conclusion that additional mitigation for chromium is not required.</p> <p>The elevated chromium concentrations measured in TPL sediments were caused by the use of ultramafic waste rock with elevated metal leaching potential as a construction material. As a result, CIRNAC recommended that AEM indicate why rock with elevated metal leaching potential was used as a construction material. Further, AEM should describe any changes made to its waste rock management practices to ensure similar materials do not result in similar adverse impacts in the future.</p>
<p>AEM Response</p>	<p><i>“Although ultramafic rock generally known to contain elevated concentrations of chromium, it was considered best dike capping material to reduce potential for metal leaching/acid rock drainage (ML/ARD) and is likely sources of chromium in Third Portage Lake East Basin (TPE) sediment. Waste rock management practices will continue to follow the Operational ARD-Metal Leaching Sampling and Testing Plan including quarterly waste rock sampling. Sampling data, benthic invertebrate community abundance, targeted sediment metals bioavailability testing support that follow-up mitigation not necessary. Another year of sediment coring and benthic invertebrate community monitoring is planned for 2020, and the data will help determine if sediment chromium concentrations are stable or increasing and verify the health of the benthic invertebrate community”.</i></p>
<p>CIRNAC Assessment of Recommendation Status</p>	<p>Unresolved: AEM’s response does not address the recommendations. Specifically, it does not:</p> <p>a) Provide additional analyses to support their conclusion that additional mitigation for chromium in TPL sediments is not required;</p>



Technical Review Comment Number	CIRNAC #1
	b) Provide an adequate explanation of why rock with elevated metal leaching potential was used as a construction material; nor, c) Describe any changes made to its waste rock management practices to ensure similar materials do not result in similar adverse impacts in the future.
CIRNAC 1.9 (previously CIRNAC # 8): Whale Tail Pit Project Nutrient Sources	
References	<ul style="list-style-type: none"> • 2020 Annual Report: Section 8.5.3.2 • AEM Responses to Review Comments on the 2019 Annual Report (Part 1: 7 August 2020 and Part 2: 21 August 2020)
Prior Recommendation	CIRNAC recommended that future monitoring reports include a section that describes and quantifies AEM's use of explosives relative to assumptions used in the Final Environmental Impact Statement (FEIS) modelling. In addition, in light of 2019 monitoring results, CIRNAC recommended that AEM revisit its prior conclusion that a change in trophic status in Mammoth Lake will not impact fish productivity.
AEM Response	<p><i>“Primary sources of residual explosives are from the Whale Tail Pit and WRSF. Concentrations in operating pits at Meadowbank were used to model water quality and chemical loading, which determined that similar nitrogen contents would occur in the waste rock and open pit drainages. Results of monitoring explosive quantity used, and water monitoring is used to assess blasting performance according to the Ammonia Management Plan and used to adjust blasting practices as needed.</i></p> <p><i>Although the increase in biomass at Whale Tail South (WTS) and Mammoth Lake (MAM) was likely related to increased nutrient concentrations, the observed increase in biomass downstream is consistent with changes predicted in the FEIS. The ecological significance of increased primary productivity at WTS and MAM will depend on how long the trends continue and how far they extend, but difficult to isolate the cause with one year of data (i.e., 2019). Ongoing monitoring will help determine whether the conclusion that the Project is not expected to have significant adverse effects on fish and fish habitat needs revisiting. Additional field studies are planned in summer 2020 led by the University of Waterloo.”</i></p>
CIRNAC Assessment of Recommendation Status	<p>Unresolved: AEM's response does not address the recommendations. Specifically, it does not describe and quantify AEM's use of explosives relative to assumptions used in the FEIS modelling.</p>
CIRNAC 1.10 (previously CIRNAC #9): Whale Tail Pit Project Mercury Monitoring	
References	<ul style="list-style-type: none"> • 2020 Annual Report: Section 8.2 • AEM Responses to Review Comments on the 2019 Annual Report (Part 1: 7 August 2020 and Part 2: 21 August 2020)



Technical Review Comment Number	CIRNAC #1
	<ul style="list-style-type: none"> Project Certificate 008 (Amendment 001) Term and Condition 63
Prior Recommendation	<p>CIRNAC recommended that AEM report back to NIRB on a priority basis to determine how it intends to address the significant (40×) spike in mercury concentrations observed in 2019. If the measured mercury concentrations are deemed accurate, AEM should indicate whether the elevated results have the potential to result in significant ecological and/or human impacts.</p>
AEM Response	<p><i>“Dr. Heidi Swanson’s research group at the University of Waterloo is coordinating with the laboratory at the University of Western Ontario (Biotron) regarding the accuracy of the 2019 water chemistry results for low level mercury and methylmercury. It should be noted that the apparent increases seen in the 2019 data were also seen at the reference lake (Lake 8), which would suggest a regional climatic-driven change. However, until data quality is verified for 2019 there is no point in trying to understand the observed patterns.</i></p> <p><i>An expanded scope of work is planned for 2020 that includes monitoring Hg concentrations in water, sediment and lake trout within the project study area, including the Impoundment area (Whale Tail Lake south basin, Lake A65, and Lake A20), Mammoth Lake, and regional reference areas (Lake D1 and Lake 8). Data generated from the 2020 Mercury Monitoring Program will help determine the validity of the 2019 water quality data and determine the ecological and human health”.</i></p>
CIRNAC Assessment of Recommendation Status	<p>Ongoing: Project Certificate 008 (Amendment 001) Term and Condition 63 requires that AEM:</p> <p><i>“Conduct additional studies as part of its freshwater aquatic effects analyses to ensure that methylmercury concentrations anticipated to increase during operations in the aquatic environment (including in fish tissue) do not exceed regulatory requirements. In addition, the Proponent shall consider assessing potential risks from consumption of fish containing methylmercury by using Health Canada’s hazard quotients as a descriptive tool.”</i></p> <p>Due to logistical challenges related to COVID 19, components of the mercury assessment and reporting could not be completed prior to issuance of the 2020 Annual Report (e.g., fish tissue analysis). However, based on the available data, mercury concentrations in water in 2020 were similar to those measured in 2019. While the concentrations are elevated relative to baseline, they remain below the Final Environmental Impact Statement (FEIS) predictions. Concentrations in reference lakes are also elevated, suggesting a regional change (as opposed to project impacts).</p>



Technical Review Comment Number	CIRNAC #1
	The topic remains a work in progress, therefore the status will be re-assessed by CIRNAC during its review of the 2021 Annual Report.
CIRNAC 1.11 (previously CIRNAC #10): Reporting of Mean Data	
References	<ul style="list-style-type: none"> • 2020 Annual Report: Appendix 33 • AEM Responses to Review Comments on the 2019 Annual Report (Part 1: 7 August 2020 and Part 2: 21 August 2020)
Prior Recommendation	CIRNAC recommended that AEM modify its reporting approach to ensure that comparisons between monitoring data and applicable criteria reflect the temporal and spatial variability inherent in these natural systems.
AEM Response	<i>“Comparison of the annual mean concentration to the early-warning triggers, combined with visual examination of the chemistry plots has been an effective approach for identifying parameters that have increased in concentration due to mine-related activities”.</i>
CIRNAC Assessment of Recommendation Status	Unresolved: AEM’s response does not address the recommendation. Using annual mean monitoring results for entire lakes has the potential to mask spatial and temporal variability in the monitoring data and, by extension, could result in a failure to detect elevated results in localized areas and/or periods. CIRNAC maintains that reporting should be modified to ensure that comparisons between monitoring data and applicable criteria reflect the temporal and spatial variability inherent in these natural systems.

Technical Review Comment Number	CIRNAC #2
Subject	Meadowbank Post-Closure In-Pit Water Quality
References	<ul style="list-style-type: none"> • 2020 Annual Report: Section 9.1.1.1; Appendix 11; Appendix 50
	<p>Water quality predictions presented in the 2020 Annual Report indicate that elevated concentrations of multiple contaminants in the reclaim water from Goose and Portage pits are likely to require treatment prior to closure of the site. The contaminants requiring treatment may include, but are not necessarily limited to: aluminum, arsenic, cadmium, chromium, copper, iron, lead, nickel, selenium, thallium, chloride, fluoride, sulphate, and total ammonia/total nitrogen equivalent (Appendix 11: Section 4).</p> <p>Appendix 50 of the 2020 Annual Report presents a preliminary “Meadowbank Closure Water Treatment Strategy” for the reclaim water. The strategy identifies reclaim water treatment concepts and maps out a process for finalizing reclaim water treatment requirements and methods. CIRNAC concludes that the strategy establishes a logical framework for determining treatment needs for reclaim water.</p>



Technical Review Comment Number	CIRNAC #2
Issue/Rationale	<p>However, CIRNAC notes that the water treatment strategy focuses only on reclaim water prior to closure and does not extend to the post-closure phase when the pits have been re-flooded (i.e., after the reclaim water has been treated and discharged). Instead, the strategy states that: <i>“Water quality forecast will be performed during the flooding period”</i> (Appendix 50: Section 2.2). Similarly, the predictive modelling presented in Appendix 11 of the 2020 Annual Report does not predict long-term water quality in the re-flooded pits during the post-closure phase.</p> <p>Lack of an up-to-date post-closure water quality prediction for the re-flooded pits creates uncertainty regarding the long-term environmental quality of the site after closure has occurred. CIRNAC recognizes that several unknowns (e.g., placement of an in-pit cover, flux of metals from the flooded tailings into the pit lakes, etc.) complicate efforts to predict water quality in the re-flooded pits. Nonetheless, estimates should be developed to better inform closure planning processes.</p>
Recommendation to Address Issues	<p>CIRNAC recommends that AEM:</p> <ol style="list-style-type: none"> Conduct a modelling exercise to predict post-closure water quality in the re-flooded Goose and Portage mine pits at the Meadowbank Gold Mine site. Incorporate the findings of the modelling into the next iteration of the Meadowbank ICRP. Use the modelling results to inform the design of various other closure components, including but not limited to capping of the in-pit tailings and post-closure water management, water treatment facility designs, sludge generation and disposal, requirements as well expected treatment duration all of which should be included in the next iteration of the ICRP.

Technical Review Comment Number	CIRNAC #3
Subject	Meadowbank In-Pit Tailings Covers
References	<ul style="list-style-type: none"> 2020 Annual Report: Section 5.1.1; Appendix 50: Section 2.2; Appendix 11; Appendix 22 Project Certificate 004 (Amendment 003) Term and Condition 19
	<p>New Commentary provided for Project Certificate 004 (Amendment 003) Term and Condition 19 states:</p> <p><i>“The cover associated with the In-Pit Tailings Disposal Modification Proposal is a minimum of eight (8) metres of water placed over an appropriate thickness of waste rock cover as conditions warrant.”</i></p> <p>There is currently uncertainty regarding what conditions might warrant the placement of a waste rock cover over the in-pit tailings. CIRNAC presumes that the final decision will be based on a range of site-specific risk assessment and considerations including but not</p>



Technical Review Comment Number	CIRNAC #3
Issue/Rationale	<p>limited to aquatic habitat, sediment resuspension, contaminant flux into the water column and constructability.</p> <p>AEM indicates they will be reviewing potential closure concepts during the development of the Final Closure and Reclamation Plan and they have initiated several studies to inform the decision-making process (e.g., tailings pore water assessments).</p> <p>In CIRNAC's view, selection of a preferred cover concept will require extensive study and should be integrated with decisions regarding other closure components (e.g., management of re-flooded pit water). On this basis, the planning process for the selection of a preferred cover concept for the in-pit tailings is likely to require multiple years and should begin as soon as possible.</p> <p>There is currently insufficient clarity regarding how AEM will make final decisions on the placement of covers over the in-pit tailings at the Meadowbank Gold Mine.</p>
Recommendation to Address Issues	<p>CIRNAC recommends that AEM:</p> <ol style="list-style-type: none"> a) Describe the strategy they will use to evaluate cover requirements and methods for the in-pit tailings (e.g., water covers, coarse/fine granular covers, construction/leave a submerged berm at the connection to the pit). b) Provide the strategy and an update on progress towards the selection of a preferred closure concept in the next update to the Meadowbank Interim Closure and Reclamation Plan (ICRP). <p>CIRNAC requests that this information be provided to assist in satisfying the New Commentary of Project Certificate 004 (Amendment 003) Term and Condition 19.</p>

Technical Review Comment Number	CIRNAC #4
Subject	Thermal Performance of Meadowbank WRSF Covers
References	<ul style="list-style-type: none"> • 2020 Annual Report: Section 5.4; Section 9.1; Appendix 23; Appendix 25 • Project Certificate 004 (Amendment 003) Term and Condition 15 • Project Certificate 008 (Amendment 001) Term and Condition 8, 9 and 10
	<p>The WRSF cover design for the Meadowbank Gold Mine consists of a 4 m thick layer of non-acid generating (NAG) rockfill to contain the active freeze/thaw layer within the cover. The depth of cover was selected based on thermal modelling and instrumentation to assess the probable thickness of the active layer at closure, including potential effects of climate change. As of 2020, approximately 90% of the WRSF has been progressively reclaimed. Additional thermal monitoring and analysis is being performed by AEM to verify the performance of the cover system against the design intent.</p>



Technical Review Comment Number	CIRNAC #4
Issue/Rationale	<p>CIRNAC notes that the WRSF cover concept for the Whale Tail Pit Project is generally similar to the concept used at the Meadowbank Gold Mine. The only notable difference is that thermal modelling for the Whale Tail Pit site determined that WRSF covers should have a total thickness of 4.7 m (4.2 m active freeze/thaw zone and a 0.5 m buffer). Modelling for the Whale Tail site also predicted that the freeze/thaw zone may penetrate deeper than the 4.7 m design thickness of the WRSF covers under the most conservative climate change scenario.</p> <p>Given the similarities between the Meadowbank Gold Mine and Whale Tail Pit sites (climate, topography, mine wastes, etc.), it is unclear to CIRNAC why the WRSF cover thicknesses between the two sites are different.</p> <p>The Project Certificates for the Meadowbank Gold Mine and Whale Tail Pit Projects include multiple Terms and Conditions related to the long-term geochemical stability of the WRSFs. Those terms and conditions include, but are not necessarily limited to:</p> <ul style="list-style-type: none"> • Project Certificate 004 (Amendment 003) Term and Condition 15; and • Project Certificate 008 (Amendment 001) Term and Condition 8, 9 and 10. <p>Collectively, these Terms and Conditions require that AEM demonstrate that the WRSF closure strategies will be capable of preventing the seepage of potential contaminants from the rock piles during the post-closure phase.</p>
Recommendation to Address Issues	<p>CIRNAC recommends that AEM describe the technical rationale for using different WRSF cover thicknesses at the Meadowbank Gold Mine and Whale Tail Pit sites. Any notable differences in the design assumptions for the two sites should be provided in the rationale.</p>

Technical Review Comment Number	CIRNAC #5
Subject	Fuel Management
References	<ul style="list-style-type: none"> • 2020 Annual Report: Table 7-2 and Section 9.1; Appendix 9: Table 2; Appendix 28 (Meadowbank 2020 Government of Nunavut spill report for September 22, 2020) • Project Certificate 004 (Amendment 003) Term and Condition 75
	<p>Table 7-2 of the 2020 Annual Report indicates that fuel was observed in the secondary containment of fuel tanks 5 & 6 during a routine inspection of the Baker Lake Fuel Farm and a “small leak” was subsequently identified (Spill Number 2020-351). The total volume of fuel released from the tanks was estimated to be 100,000 L, which was mixed within the secondary containment area with an additional 403,000 L of water. AEM identified no evidence suggesting that the fuel/water mixture breached the</p>



Technical Review Comment Number	CIRNAC #5
Issue/Rationale	<p>secondary containment of the fuel tanks. Further, according to AEM's spill report, both the fuel and water were retrieved from containment and managed as appropriate; there were no releases to the environment and no off-site impacts to receiving watercourses.</p> <p>CIRNAC also notes there have been several instances where tank farm inspections have identified deficiencies that have not been mitigated between inspections. To illustrate, the Meadowbank Gold Mine and Whale Tail Pit 2020 Annual Geotechnical Inspection (Appendix 9: Table 2) noted the ongoing presence of standing water within secondary containment, as well as evidence of animal burrows that may be impacting the integrity of liner systems. These deficiencies were identified during prior inspections but have yet to be addressed by AEM.</p> <p>Based on the volume of fuel noted above, there was a potential for environmentally significant impacts if there was a breach in secondary containment of the fuel tanks. In this regard, CIRNAC notes that the 2020 Annual Report (Appendix 9: Section 9.1) indicates that several holes have been identified in tank farm liner materials during recent geotechnical inspections. While the 100,000 L fuel leak was not released to the environment in the current case, the presence of liner holes elsewhere in the tank farm suggests there is a credible risk of releases in the future.</p>
Recommendation to Address Issues	<p>Consistent with Project Certificate 004 (Amendment 003) Term and Condition 75, CIRNAC recommends that AEM:</p> <ol style="list-style-type: none"> a) Perform a comprehensive review of its tank farm facilities to identify and mitigate all potential failure modes (including accidents and malfunctions). The findings of the review should be provided in the 2021 Annual Report. b) Consider increasing the frequency of tank farm facilities inspections and implementation of mitigative actions within a reasonable timeframe if/as recommended.

Technical Review Comment Number	CIRNAC #6
Subject	Employee origin
References	<ul style="list-style-type: none"> • Project Certificate 004 (Amendment 003) Term and Condition 65 • Meliadine Gold Mine's Project Certificate 006 (Amendment 001) Term and Condition 101 • 2020 Annual Report: Section 11.10.3; Appendix 52: Section 1.3
	CIRNAC recognizes that AEM has made efforts to fulfill the reporting requirements for Term and Condition 65 of Project Certificate 004 (Amendment 003) which requires it to "include in its socio-economic monitoring program for the Meadowbank Gold



<p>Issue/Rationale</p>	<p>Mine Project the collection and reporting of data of community of origin of hired Nunavummiut.”</p> <p>Currently AEM is reporting on the community of origin of Inuit employees by Kivalliq community. To better understand the socio-economic impacts of the approved Meadowbank Gold Mine and Whale Tail Pit Projects, as well as consistency in reporting, AEM should report the origins of both Inuit and non-Inuit employees in a manner consistent with the requirements of its Meliadine Gold Mine’s Project Certificate. Term and Condition 101 of Project Certificate 006 (Amendment 001) is comprehensive, requiring AEM to:</p> <p>“...include with its annual reporting to the NIRB a summary of employee origin information as follows:</p> <ul style="list-style-type: none"> a) The number of Inuit and non-Inuit employees hired from each of the Kivalliq communities, specifying the number from each. b) The number of Inuit and non-Inuit employees hired from each of the Kitikmeot and Qikiqtani regions, specifying the number from each. c) The number of Inuit and non-Inuit employees hired from a southern location or other province/territory outside of Nunavut, specifying the locations and the number from each; and d) The number of non-Canadian foreign employees hired, specifying the locations and number from each foreign point of hire.”
<p>Recommendation to Address Issues</p>	<p>CIRNAC recommends that AEM’s future Annual Report submissions include details of employee origin in a manner consistent with the requirements for the Meliadine Gold Mine’s Project Certificate 006 (Amendment 001), Term and Condition 101. This would allow for an improved understanding of the origins of Inuit and non-Inuit employees. It would also ensure consistent reporting practices for all of AEM’s Kivalliq projects.</p>

<p>Technical Review Comment Number</p>	<p>CIRNAC #7</p>
<p>Subject</p>	<p>Inuit Advisory Group</p>
<p>References</p>	<ul style="list-style-type: none"> • Project Certificate 004 (Amendment 003) Term and Condition 68 • 2020 Annual Report: Section 11.9.4
<p>Issue/Rationale</p>	<p>Pursuant to Project Certificate 004 (Amendment 003) Term and Condition 68 for the Meadowbank Mine</p> <p><i>“The Proponent shall, in consultation with Elders, local HTOs and the Meadowbank Gold Mine SEMC, demonstrate that they are working toward incorporating Inuit societal values into mine operation policies.”</i></p> <p>Section 11.9.4 of the 2020 Annual Report makes reference to the planned formation of an Inuit Advisory Committee to review</p>



	traditional knowledge in relation to ongoing and planned project activities. It is understood that this committee will allow for improved integration of traditional knowledge and Inuit Qaujimagatuqangit into project operations. AEM has indicated that Elders will participate in this committee. It is not clear if additional efforts will be made to ensure the committee is representative of the communities most impacted by project activities.
Recommendation to Address Issues	CIRNAC recommends that AEM work toward having an Inuit Advisory Committee that is as much as possible, a representative cross section of the community members from Baker Lake and Chesterfield Inlet, the two communities most directly affected by project operations. Representatives of Elders, women, youth, and Hunters and Trappers Organizations should be considered.

Technical Review Comment Number	CIRNAC #8
Subject	Semi-annual Calls with Government of Nunavut Career Development Personnel
References	<ul style="list-style-type: none"> • Project Certificate 008 (Amendment 001) Term and Condition 49 • 2020 Annual Report: Section 11.11.1.2 • CIRNAC Review of the AEM's 2019 Annual Report (July 6, 2020) • AEM's Response to Comments Received on its 2019 Annual Report (August 7, 2020)
Issue/Rationale	<p>Pursuant to Project Certificate 008 (Amendment 001) Term and Condition 49 which was issued for the Whale Tail Pit Project:</p> <p><i>“The Proponent shall make best efforts to collaborate with the Government of Nunavut’s Career Development Officer, Regional Manager of Career Development, and Director of Career Development. Semi-annual calls, at a minimum, should be initiated by the Proponent to address:</i></p> <ul style="list-style-type: none"> • <i>Hiring procedures and policies.</i> • <i>Issues regarding employee recruitment and retention.</i> • <i>AEM policies regarding career pathways and opportunities for advancement.</i> • <i>Internal and/or partnered training and development of employees.</i> • <i>Long-term labour market plans to facilitate training in communities.”</i> <p>According to the 2020 Annual Report (Section 11.11.1.2), in February 2020, AEM met with the Government of Nunavut's Career Development Officer and three Department of Family Services staff members to satisfy this term and condition. A follow-up meeting was planned to occur in November 2020 but was cancelled due to scheduling conflicts associated with the</p>



	implementation of measures designed to prevent the spread of COVID-19. Similarly, CIRNAC's review of AEM's 2019 Annual Report noted that one meeting was held in 2019 with respect to this Project Certificate Term and Condition (CIRNAC #15).
Recommendation to Address Issues	CIRNAC recommends that AEM strive to maintain semi-annual calls with appropriate Government of Nunavut personnel to review the discussion points presented in Project Certificate 008 (Amendment 001) Term and Condition 49 as well as any other relevant areas of interest. Maintaining communications will assist efforts to maximize Inuit hiring and capacity development within the region.

Technical Review Comment Number	CIRNAC #9
Subject	Full-time road safety, search and rescue position
References	<ul style="list-style-type: none"> • Project Certificate 004 (Amendment 003) Term and Condition 34 • CIRNAC Review of AEM's 2019 Annual Report (July 6, 2020) • AEM's Response to Comments Received on its 2019 Annual Report (August 7, 2020)
Issue/Rationale	<p>Pursuant to Project Certificate 004 (Amendment 003) Term and Condition 34 for the Meadowbank Gold Mine, AEM is required to:</p> <p><i>"...in consultation with the Hamlet of Baker Lake, KivIA, and the Royal Canadian Mounted Police, facilitate the hiring of a full-time road safety, search and rescue position to respond to safety matters arising from mine and unauthorized non-mine use of the all-weather private access road, including consulting with Baker Lake and Chesterfield Inlet Elders to incorporate Traditional Knowledge into search and rescue operations."</i></p> <p>AEM has not provided an update on this Term and Condition's implementation status. Furthermore, CIRNAC identified this reporting discrepancy in its July 6, 2020 review of AEM's 2019 Annual Report (CIRNAC #14). AEM did not address this comment in its written response to 2019 Annual Report review submissions.</p>
Recommendation to Address Issues	CIRNAC recommends that AEM confirm whether they have facilitated the hiring of a full-time road safety, search, and rescue position pursuant to Project Certificate 004 (Amendment 003) Term and Condition 34.



Technical Review Comment Number	CIRNAC #10
Subject	Review of Socio-Economic Monitoring Program Results with Community Liaison Committee
References	<ul style="list-style-type: none"> • Project Certificate 008 (Amendment 001) Term and Condition 46 • Appendix 61 – Baker Lake Community Liaison Committee Report 2020 • Appendix 62 – Agnico Eagle Kivalliq Projects Socio-Economic Monitoring Program, January 2021 Update
Issue/Rationale	<p>Pursuant to Project Certificate 008 (Amendment 001) Term and Condition 46 for the Whale Tail Pit Project, AEM has developed a Kivalliq Projects Socio-Economic Monitoring Program. This Term and Condition requires AEM to:</p> <p><i>“Work in collaboration with all other socio-economic stakeholders such as the Kivalliq Inuit Association, the Government of Nunavut, and Indigenous and Northern Affairs Canada, and the communities of the Kivalliq region to develop the program.”</i></p> <p>The Adaptive Management and Mitigation section included in AEM’s Kivalliq Projects Socio-Economic Monitoring Program (page 4) makes reference to the need to be responsive to the priorities of Community Liaison Committees. Upon further review, the 2020 Baker Lake Community Liaison Committee Report makes no reference to a review of the Socio-Economic Monitoring Program, its 2020 Report, or planned activities for 2021. This committee is a valuable forum for AEM to seek input from community members and organizations on socio-economic topics associated with the Meadowbank Gold Mine and Whale Tail Pit Projects.</p>
Recommendation to Address Issues	CIRNAC recommends that AEM provide the Baker Lake Community Liaison Committee opportunities to review the implementation of its Kivalliq Projects Socio-Economic Monitoring Program and discuss observations during committee meetings. Summaries of discussions and any associated follow-up actions should be included in annual Committee Reports.

Technical Review Comment Number	CIRNAC #11
Subject	Application of Inuit Qaujimaningit to monitoring plans
References	<ul style="list-style-type: none"> • Project Certificate 008 (Amendment 001) Term and Condition 54 • 2020 Annual Report: Section 11.10.1 • CIRNAC Review of AEM’s 2019 Annual Report (July 6, 2020) • AEM’s Response to Comments Received on its 2019 Annual Report (August 7, 2020)



<p>Issue/Rationale</p>	<p>Pursuant to Project Certificate 008 (Amendment 001) Term and Condition 54 for the Whale Tail Pit Project AEM:</p> <p><i>“...should ensure that the development of all project monitoring plans and associated reporting and updates are undertaken with active engagement of Kivalliq communities, land users, and harvesters. The Proponent should work with the Kivalliq Inuit Association, the local Hunters and Trappers Organizations and the Kivalliq Socio-Economic Monitoring Committee to report on the collection and integration of Inuit Qaujimaningit through its monitoring programs for the Project.”</i></p> <p>Through their 2020 Annual Report submission, AEM makes reference to its interactions with the Kivalliq Socio-Economic Monitoring Committee as an important means of engaging with Kivalliq communities, land users, and harvesters to inform the development of its annual Socio-Economic Monitoring Reports. No reference is made to a systematic process of ensuring the active engagement of these stakeholders in the development of <u>all project monitoring plans</u> and the integration of collected Inuit Qaujimaningit.</p> <p>CIRNAC also identified this reporting discrepancy in its July 6, 2020 review of AEM’s 2019 Annual Report (CIRNAC #16). AEM did not address this comment in its written response to 2019 Annual Report review submissions.</p>
<p>Recommendation to Address Issues</p>	<p>CIRNAC recommends that AEM describe how it has engaged with Kivalliq communities, land users, and harvesters in its development of project monitoring plans and associated reporting and updates pursuant to the requirements of Project Certificate 008 (Amendment 001) Term and Condition 54. Furthermore, AEM should summarize how Inuit Qaujimaningit is being integrated into its monitoring programs.</p>

2. Compliance Monitoring

a. Provide a summary of any compliance monitoring and/or site inspections undertaken in association with the project, including specifically:

- i. Identify the terms and conditions from the Project Certificate which have been incorporated into any permits, certificates, licenses or other approvals issued for the Project, where applicable;**

CIRNAC has a broad mandate for the co-management of water resources and the management of Crown land in Nunavut under the following applicable acts and regulations:

- *The Department of Crown-Indigenous Relations and Northern Affairs Act;*
- *The Nunavut Agreement;*
- *The Arctic Waters Pollution Prevention Act and Regulations;*
- *The Nunavut Waters and Nunavut Surface Rights Tribunal Act and Regulations; and*



- The *Territorial Lands Act and Regulations*.

In terms of water management in Nunavut, CIRNAC has a number of different responsibilities. The Minister of Northern Affairs has a decision-making role with regards to the Nunavut Water Board's (NWB) issuance of any Water Licences associated with a project. Furthermore, CIRNAC participates as an intervenor in the water licensing process, providing advice and expertise.

When a proposed project is approved to proceed, CIRNAC is responsible for inspecting and enforcing any Terms and Conditions contained within any Water Licence associated with the project. The NWB ensures that Project Certificate Terms and Conditions (T&Cs) are incorporated in Water Licences.

CIRNAC issued the following Crown Land Leases for AEM's Meadowbank Gold Mine and Whale Tail Pit projects, respectively:

- 66A/8-71-2 (AWAR) and 66A/8-72-5 (AWAR Quarries); and
- 66H/8-02-2 (Whale Tail Haul Road) and 66H/8-01-4 (Whale Tail Haul Road Quarries).

CIRNAC has reviewed the Type A Water Licences associated with the Meadowbank Gold Mine and Whale Tail Pit Projects with respect to Project Certificate 004 (Amendment 003) and Project Certificate 008 (Amendment 001) and have included concordance tables (Appendices A and B) that outline how Project Certificates T&Cs have been incorporated in the Water Licences and Crown Land Leases.

In 2020, the projects activities and monitoring were conducted under the following NWB Water Licences:

- Type A Water Licence 2AM-MEA1530 (Meadowbank Gold Mine Project); and
- Type A Water Licence 2AM-WTP1830 (Whale Tail Pit Project).

ii. A summary of any inspections conducted during the 2020 reporting period, and the results of these inspections;

CIRNAC's Resource Management Officers (Inspectors) conducted inspections at Meadowbank Gold Mine and Whale Tail Pit Projects sites on October 1, 2020. Due to COVID-19 restrictions at the time of the inspections, the inspections were conducted without an AEM representative. Summaries of the concerns identified in the inspection reports are presented below for NIRB's consideration.

Meadowbank Gold Mine

On October 1, 2020, an inspection was conducted to ensure compliance with the NWB Type A Water Licence 2AM-MEA1530. As per the inspection report, erosion and deposition of sediments into water course were observed at five bridges (at km 17; km 23; km 69, km 74 and km 83) along the all-weather access road (AWAR). The Inspectors recommended AEM to implement erosion prevention measures and maintenance at these water crossings to prevent further erosion and deposition of sediments into watercourse. AEM will provide Inspectors with a summary report of the maintenance works that were to be completed in 2020. The report is due to Inspectors on July 1, 2021.



On October 1, 2020, an inspection was conducted to ensure compliance with the applicable terms and conditions of the CIRNAC Land Lease authorization no. 66A/8-72-5 (Quarries # 2; 6; 8; 9; 10; 11; 12; 13; 14; 15 and 16). As per the inspection report, garbage/debris/waste was observed inside of some of the Quarries (e.g., Quarry #6; 8; 9; 11; 16 and 18). In addition, it was noted that Quarries # 12 and 18 will need to be resurfaced to match the natural contour allowing minimal water accumulation. Quarries #13; 14 and 15 were filled with water at the time of inspection. The Inspectors recommended AEM to begin the cleanup of garbage/debris/waste deposited in the Quarries and complete it prior to the next inspection. AEM will provide Inspectors with a summary report of the cleanup activities before July 1, 2021.

Whale Tail Pit

On October 1, 2020, an inspection was conducted to ensure compliance with the NWB Type A Water Licence 2AM-WTP1830. As per the inspection report, erosion and deposition of sediments into water course were observed at five bridges (at km 160; km 148; km 141; km 138; km 135, and km 131) along the Whale Tail Haul Road. The Inspectors recommended AEM to implement erosion prevention measures and maintenance at these water crossings to prevent further erosion and deposition of sediments into watercourse. AEM will provide Inspectors with a summary report of the maintenance works that were to be completed in 2020. The report is due to Inspectors on July 1, 2021.

On October 1, 2020, an inspection was conducted to ensure compliance with the applicable terms and conditions of the CIRNAC Land Lease authorization no. 66H/8-01-2 (Quarries at km 145.5; km 159.9 and km 167). As per the inspection report, garbage/debris/waste was observed inside Quarries at km 167 and km 145.5. The Inspectors recommended AEM to begin the cleanup of garbage/debris/waste deposited in the Quarries and complete it prior to the next inspection. AEM will provide Inspectors with a summary report of the cleanup activities before July 1, 2021

Detailed Water Licence inspection reports can be accessed through the NWB Public Registry:

Meadowbank Gold Mine:

<ftp://ftp.nwb-oen.ca/registry/2%20MINING%20MILLING/2A/2AM%20-%20Mining/2AM-MEA1530%20Agnico/3%20TECH/A%20SCOPE%20ENFORCE/1%20INSPECTION/>

Whale Tail Pit:

<ftp://ftp.nwb-oen.ca/registry/2%20MINING%20MILLING/2A/2AM%20-%20Mining/2AM-WTP1830%20Agnico/3%20TECH/A%20SCOPE%20ENFORCE/1%20INSPECTION/>

iii. A summary of AEM's compliance status with regard to authorizations that have been issued for the project.

Although some issues have been identified in 2020, CIRNAC is generally satisfied with AEM response to the concerns raised by the inspectors in 2020, and CIRNAC will continue to work with AEM to ensure compliance with all water licence requirements associated with Meadowbank Gold Mine and Whale Tail Pit Projects.

3. Other

CIRNAC is a member of the AEM's Kivalliq Projects Socio-Economic Working Group along with the Kivalliq Inuit Association and the Government of Nunavut's Department of Economic



Development and Transportation (GN-EDT). As stated in Section 12.1 of the 2020 Annual Report, the working group met by teleconference on various occasions during the year to discuss topics which include the 2019 Socio-Economic Monitoring Program Report, planning for a Kivalliq Regional Socio-Economic Monitoring Committee meeting, and the Government of Nunavut's Territorial Monitoring Program.

CIRNAC is also a member of the Kivalliq Socio-Economic Monitoring Committee chaired by the GN-EDT. Fellow members include the Government of Nunavut (including specific organizational representation), the Kivalliq Inuit Association, community representatives, community organizations and mining proponents. Due to the implementation of measures to limit the spread of COVID-19, no committee meeting occurred in 2020. AEM's Kivalliq Projects Socio-Economic Working Group considered alternative solutions to allow for a meeting to be held but logistical and technological issues ultimately prevented its successful delivery.



Appendix A: Meadowbank Gold Mine Project Certificate Terms and Conditions (T&C) incorporated into any permits, certificates, licenses or other approvals issued for the Project¹

T&C #	NIRB Project Certificate No. 004 Term & Condition	Implemented in Licences or Permits?
5	Cumberland shall meet with respective licensing authorities prior to the commencement of construction to discuss the posting of adequate performance bonding. Licensing authorities are encouraged to take every measure to require that sufficient security is posted before construction begins. This bonding should not duplicate other amounts of security required (e.g. the NWB).	All of Part C of NWB Water Licence (2AM-MEA1530). Parts 16 -19 of Lease No. 66A/8-71-2 (covers the sections of the all-weather access road (AWAR) located on Crown land). Part 34-37 of Lease No. 66A/8-72-5 (covers the quarries located on Crown land).
9	Cumberland shall provide detailed plans for water treatment for the tailings (reclaim pond) discharge, and on a contingency basis for the attenuation pond discharge(s) and for the pits, including estimates of treatment efficiency for each parameter of concern and the description of pH adjustments in the water license application to the NWB.	Part B, Item 13 of NWB Water Licence (2AM-MEA1530).
13	Cumberland shall not permit the water discharged into Wally Lake and Third Portage Lake to exceed receiving environment discharge criteria established by the NWB or as otherwise required by law.	Partially, the portion referring to criteria established by the NWB is found in Part F, Items 3 and 4 within the NWB Water Licence (2AM-MEA1530).
14	Cumberland shall not remove dewatering dikes until the quality of water contained within them is of sufficient quality to meet receiving environment discharge criteria established by the NWB or as otherwise required by law.	Part E, Item 7 of NWB Water Licence (2AM-MEA1530).

¹ It is to note that the following Meadowbank Gold Mine Project Certificate 004 (Amendment 003) T&Cs continue to apply also to the Whale Tail Pit Project: 9, 13, 14, 18, 19, 23, 25-27, 35 and 79.



T&C #	NIRB Project Certificate No. 004 Term & Condition	Implemented in Licences or Permits?
15	Cumberland shall within two (2) years of commencing operations re-evaluate the characterization of mine waste materials, including the Vault area, for acid generating potential, metal leaching and non-metal constituents to confirm FEIS predictions, and re-evaluate rock disposal practices by conducting systematic sampling of the waste rock and tailings in order to incorporate preventive and control measures into the Waste Management Plan to enhance tailing management during operations and closure. The results of the re-evaluations shall be provided to the NWB and NIRB's Monitoring Officer.	Part B, Item 13 of NWB Water Licence (2AM-MEA1530).
18	Cumberland shall commit to a pro-active tailings management strategy through active monitoring, inspection, and mitigation. The tailings management strategy will include the review and evaluation of any future changes to the rate of global warming, compliance with regulatory changes, and the ongoing review and evaluation of relevant technology developments, and will respond to studies conducted during the mine operation.	Part B, Item 13 of NWB Water Licence (2AM-MEA1530).
19	Cumberland shall provide for a minimum of two (2) metres cover of tailings at closure, and shall install thermistor cables, temperature loggers, and core sampling technology as required to monitor tailing freezeback efficiency. Cumberland shall report to NIRB's Monitoring Officer for the annual reporting of freezeback effectiveness.	Schedule B, Item 18 and Part B, Item 13 of NWB Water Licence (2AM-MEA1530).
20	Prior to construction, Cumberland shall identify mitigation measures that can be taken if groundwater monitoring around the tailings facility demonstrates that contamination from tailings has occurred through the fault. Upon drawdown of the North arm of Second Portage Lake, Cumberland shall conduct further tests to assess the permeability of any faults and provide the results to regulators. If doubt remains Cumberland shall seal the fault and conduct further permeability testing and monitoring.	Part B, Item 13 of NWB Water Licence (2AM-MEA1530).



T&C #	NIRB Project Certificate No. 004 Term & Condition	Implemented in Licences or Permits?
22	<p>Prior to the commencement of the Project, Cumberland shall fund and install an onsite lab that has the capability to monitor parameters at a type and at a frequency acceptable to the NWB and EC at all site discharge points. The results of these analyses, as well as any other water quality monitoring required by regulatory authorities shall be used in the submission of a receiving water assimilative capacity water quality assessment study of concern to regulators. The lab shall be certified for environmental water quality analysis purposes with standards to include the calibration of water quality monitoring instruments. Cumberland shall file proof of application to become accredited upon the request of the NWB.</p>	<p>Partially, Part I, Items 16, 17, 18, 19 and 20 of NWB Water Licence (2AM-MEA1530) relate to this condition, but not to the installation of an onsite lab prior to construction.</p>
23	<p>For the purposes of monitoring quality assurance and quality control ("QA/QC"), Cumberland shall ensure that water quality monitoring performed at locations within receiving waters that allow for an assimilative capacity assessment of concern to regulators, be carried out by an independent contractor and submitted to an independent accredited lab for analysis, on a type and frequency basis as determined by the NWB. Results of analysis shall be provided to the NWB and NIRB's Monitoring Officer.</p>	<p>Part I, Item 16 of NWB Water Licence (2AM-MEA1530).</p>
24	<p>Cumberland shall identify an area and design for a landfill for disposal of operational and closure non-salvageable materials, including a list of any non-salvageable materials, and a procedural manual for preparation of location and placements of these materials, and incorporate the design into the final Waste Management Plan as instructed by the NWB.</p>	<p>Part B, Item 13 of NWB Water Licence (2AM- MEA1530).</p>
25	<p>Cumberland shall manage and control waste in a manner that reduces or eliminates the attraction to carnivores and/or raptors. Cumberland shall employ legal deterrents to carnivores and/or raptors at all landfill and waste storage areas. The deterrents are to be developed taking into consideration Traditional Knowledge and in consultation with the HTO, EC and CIRNAC and incorporated into the final Waste Management Plan prior to filing the Plan with the NWB.</p>	<p>Partially, this was not captured within the NWB Water Licence as it was already completed prior to licence approval. AEM's NWB Water Licence (2AM-MEA1530) does however require adherence to the Waste Management Plan under Part B, Item 13.</p>



T&C #	NIRB Project Certificate No. 004 Term & Condition	Implemented in Licences or Permits?
26	Cumberland shall ensure that spills, if any, are cleaned up immediately and that the site is kept clean of debris, including wind-blown debris.	<p>Part H, Items 1 and 2 of NWB Water Licence (2AM- MEA1530).</p> <p>Partially, Conditions 45-47 of Lease No. 66A/8-71-2 (covers the sections of the AWAR located on Crown land).</p> <p>Partially, Conditions 47, 52- 56 and 55 of Lease No. 66A/8- 72-5 (covers the quarries located on Crown land).</p>
27	Cumberland shall ensure that the areas used to store fuel or hazardous materials are contained using safe, environmentally protective methods based on practical, best engineering practices.	<p>Part H, Item 3 of NWB Water Licence (2AM-MEA1530).</p> <p>Partially, Conditions 45-47 of Lease No. 66A/8-71-2 (covers the sections of the AWAR located on Crown land).</p> <p>Partially, Conditions 52-56 of Lease No. 66A/8-72-5 (covers the quarries located on Crown land).</p>
33	<p>Cumberland shall update the Access and Air Traffic Management Plan to:</p> <ol style="list-style-type: none"> 1. include an All-weather Private Access Road Management Plan, including a right-of-way policy developed in consultation with the KivIA, GN, CIRNAC and the Hamlet of Baker Lake, for the safe operation of the all-weather private access road; and 2. to facilitate monitoring of the environmental and socio-economic impacts of the private road and undertake adaptive management practices as required, including responding to any concerns regarding the locked gates. 	Partially, item 1 is addressed under Condition 54 of Lease No. 66A/8-71-2 (covers the sections of the AWAR located on Crown land).
35	Cumberland shall reclaim the all-weather private access road at the end of the mine life to prevent any future use of the road, including scarification of the road and restoration of the natural hydrology, topography, and vegetation, subject only to Cumberland and/or its successor seeking NIRB Article 12 approval for the road to be maintained and operated beyond the life of the mine.	Partially, Conditions 12 and 15 of Lease No. 66A/8-71-2 (covers the sections of the AWAR located on Crown land).



T&C #	NIRB Project Certificate No. 004 Term & Condition	Implemented in Licences or Permits?
78	Cumberland shall file a complete Closure and Reclamation Plan developed to comply with CIRNAC's policy of full cost of restoration and any related NWB requirements such that the Inuit and taxpayers are not liable for any cost associated with the cleanup, modification, decommission, or abandonment.	Partially, Part B, Item 13 of NWB Water Licence (2AM- MEA1530). Partially, Conditions 12, 15, 16-19, 26 of Lease No. 66A/8-71- 2 (covers the sections of the AWAR located on Crown land). Partially, Conditions 14, 17, 26, 34-38 of Lease No. 66A/8-72-5 (covers the quarries located on Crown land).
79	In addition to the NWB's requirements, the final Closure and Reclamation Plan shall require Cumberland to: a. Ensure that mine facilities and infrastructure are abandoned in such a manner that: i. The Project site is physically stable and any requirements for long term maintenance and monitoring are minimized; ii. Threats to public safety and wildlife are eliminated; and iii. Affected areas are returned to the original undisturbed conditions to the fullest extent possible. b. Prevent continuing impacts from contaminants and wastes on the environment including those associated with acid rock drainage; c. Remove all hazardous materials and waste and as much salvageable waste as practicable from the Project area; and d. Enter into written arrangements with its abandonment and reclamation contractors to ensure all site debris is cleaned up off the lands, including wind-blown debris.	Partially, Part B, Item 13 of NWB Water Licence (2AM- MEA1530). Partially, Conditions 12, 15, 16-19, 26 of Lease No. 66A/8-71- 2 (covers the sections of the AWAR located on Crown land). Partially, Conditions 14, 17, 26, 34-38 of Lease No. 66A/8-72-5 (covers the quarries located on Crown land).
80	Cumberland shall file annually with NIRB's Monitoring Officer an updated report on progressive reclamation and the amount of security posted, as required by KivIA, CIRNAC, and/or the NWB.	Does not incorporate filing to the NIRB's Monitoring Officer, but does refer to reporting on progressive reclamation and security: Partially, Conditions 19 (bi-annual reporting requirement), 20, and 33 of Lease No. 66A/8-71-5 (covers the sections of the AWAR located on Crown land). Partially, Conditions 24 and 38 of Lease No. 66A/8-72-5 (covers the quarries located on Crown land).



Appendix B: Whale Tail Pit Project Certificate Terms and Conditions (T&C) incorporated into any permits, certificates, licenses or other approvals issued for the Project

T&C #	NIRB Project Certificate No. 008 Term & Condition	Implemented in Licences or Permits?
2	<p>Prior to commencing construction activities the Proponent shall update the existing Dust Management and Monitoring Plan for the Meadowbank Mine site to address and/or include the following additional items:</p> <ul style="list-style-type: none"> • Align plan requirements with commitments made in the Final Environmental Impact Statement and during the Final Hearing to monitor dust along the existing all-weather access road, the Amaruq haul road and any other roads and trails associated with the Project. • Verify commitments to the utilization of dust suppressants along the all-weather access road, the Amaruq haul road and any other roads and trails associated with the Project, including a description of the type of suppressant to be utilized and the frequency and timing of applications to be made throughout the various seasons of road use. <p>Outline the specific triggers, thresholds, and adaptive management measures that will apply if monitoring indicates that dust deposition is higher than predicted.</p>	Part F, Item 12 of NWB Water Licence (2AM-WTP1830)
6	The Proponent shall conduct detailed hydrodynamic modelling during operations and closure to evaluate the mixing of the Waste Rock Storage Facility seepage into Mammoth Lake post-closure; and Based on the results of the modelling implement monitoring programs and adaptive management strategies that minimize the need for active intervention, including long-term treatment of mine contact water.	Part E, Item 8 of NWB Water Licence (2AM-WTP1830)
9	The Proponent shall undertake the additional site-specific geotechnical investigations required to identify sensitive land features and to inform final engineering design prior to the construction of project components such as the waste rock storage facility and quarries.	Part D, Item 2 of NWB Water Licence (2AM-WTP 1830)
11	The Proponent shall develop and implement an Erosion Management Plan to prevent or minimize erosion and its resulting effects from project-related land disturbance.	Lease 66H/8-02-2 Whale Tail Haul Road (lease clauses 32 and 33) Lease 66H/8-01-4 Whale Tail Haul Road Quarries (lease clause 41)



T&C #	NIRB Project Certificate No. 008 Term & Condition	Implemented in Licences or Permits?
12	<p>As part of the Closure and Reclamation Plan, the Proponent shall develop and implement a program to:</p> <p>a) Progressively reclaim disturbed areas within the project footprint, with an emphasis on restoring the natural aesthetics of the area through re-contouring to the extent practicable; and</p> <p>b) In a manner that demonstrates that the Proponent has considered the aesthetic values of local communities (e.g. information regarding the acceptability of the topography and landscape of the project areas following progressive reclamation efforts).</p>	<p>Part J, Item 2 of NWB Water Licence (2AM-WTP 1830)</p> <p>Lease 66H/8-02-2 Whale Tail Haul Road (lease clause 23)</p> <p>Lease 66H/8-01-4 Whale Tail Haul Road Quarries (lease clause 33)</p>
13	<p>The Proponent shall explore the feasibility of topsoil/organic matter salvage as part of project development and provide updates to the Closure and Reclamation Plan based on this investigation.</p>	<p>Part J, Item 3 of NWB Water Licence (2AM-WTP 1830)</p>
15	<p>Subject to the additional direction and requirements of the Nunavut Water Board, the Proponent shall prepare and implement a Groundwater Monitoring Plan that, at a minimum includes:</p> <ul style="list-style-type: none"> • The collection of additional site-specific hydraulic data (e.g., from new monitoring wells) in key areas during the pre-development, Nunavut Impact Review Board Page 23 of 49 Project Certificate No. 008 construction and operation phases; • Definition of vertical and horizontal groundwater flows in the project development areas; • Delineates monitoring plans for both vertical and horizontal ground water; and <p>Thresholds that will trigger the implementation of adaptive management strategies that reflect site- specific conditions encountered at the project site.</p>	<p>Part I, Item 1e of NWB Water Licence (2AM-WTP 1830)</p>



T&C #	NIRB Project Certificate No. 008 Term & Condition	Implemented in Licences or Permits?
16	<p>Within two years of commencing operations, the Proponent shall:</p> <ul style="list-style-type: none"> a) Conduct additional analyses to determine the approximate fill time for the Whale Tail Pit at closure; b) Undertake a hydrogeological characterization study to assess the potential for arsenic and phosphorous diffusion from submerged Whale Tail pit walls; c) If the results of the characterization study indicate a moderate to high potential for arsenic and/or phosphorous diffusion, perform detailed hydrodynamic modelling of the flooded pit lake prior to closure to evaluate meromictic conditions and flooded pit water quality; and <p>Add these required activities to the site Groundwater Monitoring Plan.</p>	Part E, Item 7 of NWB Water Licence (2AM-WTP1830)
17	<p>The Proponent shall:</p> <ul style="list-style-type: none"> a) Monitor the effects of project activities and infrastructure on surface water quality conditions; b) Ensure the monitoring data is sufficient to compare the impact predictions in the Environmental Impact Statement (EIS) for the Project with actual monitoring results; c) Ensure that the sampling locations and frequency of monitoring is consistent with and reflects the requirements of the Water Quality and Flow Plan and the Core Receiving Environmental Monitoring Program; and d) On an annual basis, the Proponent will compare monitoring results with the impact assessment predictions in the EIS and will identify any significant discrepancies between impact predictions and monitoring results. 	Part D, Items 10-14 of NWB Water Licence (2AM-WTP1830)



T&C #	NIRB Project Certificate No. 008 Term & Condition	Implemented in Licences or Permits?
18	<p>The Proponent shall, reflecting any direction from the Nunavut Water Board, maintain a Site Water Monitoring and Management Plan designed to:</p> <ul style="list-style-type: none"> • Minimize the amount of water that contacts mine ore and wastes; • Appropriately manage all contact water and discharges to protect local aquatic resources; and • Implement water conservation and recycling to maximize water reuse and minimize the use of natural waters. <p>The Plan should include monitoring that demonstrates contact water (runoff and shallow groundwater) from the ore storage and waste rock storage areas is captured and managed, as per the Waste Rock Facility Management Plan.</p>	Part E, Items 7-11 of NWB Water Licence (2AM-WTP1830)
19	<p>The Proponent shall, reflecting any direction from responsible authorities such as the Nunavut Water Board, Fisheries and Oceans Canada and Environment and Climate Change Canada, maintain a Core Receiving Environment Monitoring Program (CREMP) designed to:</p> <ul style="list-style-type: none"> • Determine the short and long-term effects in the aquatic environment resulting from the Project; • Evaluate the accuracy of Project effect predictions; • Assess the effectiveness of mitigation and management measures on Project effects; • Identify additional mitigation measures to avert or reduce environmental effects due to Project activities; • Comply with Metal Mining Effluent Regulations requirements, should an Environmental Effects Monitoring program be triggered; • Reflect site-specific water quality conditions; Include details comparing the watershed features in the Whale Tail watershed to those watersheds used as reference lakes; and • Evaluate the mixing and non-mixing portion of the pit. <p>The CREMP should include sufficient sampling and monitoring programs to appropriately characterize the receiving environment to ensure that adequate data is available to assess impact predictions made within the Environmental Impact Statement for the Whale Tail Pit Project.</p>	Part E, Items 7-11 of NWB Water Licence (2AM-WTP1830)



T&C #	NIRB Project Certificate No. 008 Term & Condition	Implemented in Licences or Permits?
20	Unless otherwise authorized, the Proponent shall maintain an appropriate setback distance between project quarries and borrow pits from fish-bearing or permanent waterbodies as required to prevent acid rock drainage or metal leaching into such waterbodies.	Part I, Item 1of NWB Water Licence (2AM-WTP1830) Lease 66H/8-01-4 Whale Tail Haul Road Quarries (lease clause 54)
21	The Proponent shall ensure that all project infrastructures in watercourses are designed and constructed in such a manner that they do not unduly prevent or limit the movement of water or fish species in fish bearing streams and rivers, unless otherwise authorized by Fisheries and Oceans Canada.	Part E, Item 25 of NWB Water Licence (2AM-WTP1830)
22	The Proponent shall engage with Fisheries and Oceans Canada to develop project specific thresholds, mitigation and monitoring for any blasting activities that would exceed the requirements of Fisheries and Oceans Canada's Guidelines for the Use of Explosives In or Near Canadian Fisheries Waters.	Part I, Item 1of NWB Water Licence (2AM-WTP1830)
24	<p>The Proponent shall engage Fisheries and Oceans Canada, and other interested parties to further assess:</p> <ul style="list-style-type: none"> • Whether the increased surface area of Whale Tail Lake is a viable offset to habitat losses resulting from development of the Project; and • Whether Whale Tail end pit would support fish in the post closure scenario. <p>Results of this assessment should be incorporated into the Habitat Compensation Plan and/or the Conceptual Fisheries Offsetting Plan as appropriate.</p>	Part I, Item 1 of NWB Water Licence (2AM-WTP1830)
26	<p>The Proponent shall include revegetation strategies within its Mine Closure and Reclamation Plan that support progressive reclamation, and promote natural revegetation and recovery of disturbed areas compatible with the surrounding natural environment.</p> <p>These strategies should include exploration of the feasibility and practicality of topsoil/organic matter salvage through Project development. Consideration for the results of similar reclamation efforts at other northern projects, including the Meadowbank Gold Mine Project, must be demonstrated.</p>	Part J, Item 8of NWB Water Licence (2AM-WTP1830)



T&C #	NIRB Project Certificate No. 008 Term & Condition	Implemented in Licences or Permits?
31	The Proponent shall develop and implement a Road Access Management Plan and maintain traffic monitoring logs along the haul road between the Whale Tail Pit project and the Meadowbank mine. Where traffic exceeds levels predicted within the Environmental Impact Statement, the Proponent shall develop and implement appropriate modifications to its wildlife protection measures.	Lease 66H/8-02-2 Whale Tail Haul Road (lease clauses 54 and 60)
56	<p>The Proponent shall report any archaeological site discovered during the construction, operation, and closure phases to the Government of Nunavut – Department of Culture and Heritage and the Kivalliq Inuit Association.</p> <p>Upon discovering an archeological site, the Proponent shall:</p> <ol style="list-style-type: none"> Take all reasonable precautions necessary to protect the site until further direction is received from the Government of Nunavut – Department of Culture and Heritage; and If it becomes necessary to disturb an archaeological site, the Proponent shall consult with the Government of Nunavut – Department of Culture and Heritage, the Kivalliq Inuit Association, and potential impacted communities to establish a site specific mitigation plan, and obtain all necessary authorizations and comply with all applicable laws. 	<p>Lease 66H/8-02-2 Whale Tail Haul Road (lease clause 74)</p> <p>Lease 66H/8-01-4 Whale Tail Haul Road Quarries (lease clause 66)</p>
66	<p>The Proponent shall operate the Whale Tail haul road as a private access road, implement any reasonable measures to limit public access to the road, and develop strategies that account for unauthorized use. These measures must include, but are not limited to, the following:</p> <ol style="list-style-type: none"> The posting of signs in English and Inuktitut at the gate, each major bridge crossing, and each 10 kilometres of road, stating that public use of the road is prohibited; Annually advertise and hold at least one community meeting in the Hamlet of Baker Lake to explain to the community that the road is restricted to mine use only; Place local notices (e.g., radio, television, social media) at least quarterly to explain to the community that the road is restricted to mine use only; Record all unauthorized non-mine use of the road, and require all mine personnel using the road to monitor and report unauthorized non-mine use of the road; and, Develop management strategies to ensure public and operator safety in the event of unauthorized public use. 	Lease 66H/8-02-2 Whale Tail Haul Road (lease clauses 61, 62, 63 and 64)

