



CIRNAC Comments to NIRB Re: Agnico Eagle Mines Limited's Meliadine Gold Mine Project 2020 Annual Report



GCDOCS # 95531820



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Your file - Votre référence
11MN034
Our file - Notre référence
GCDOC # 95531820

June 22, 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 Ms. Koide,

Re: Comment Request for Agnico Eagle Mines Limited's Meliadine Gold Mine Project 2020 Annual Report

On April 8, 2021, as per Section 12.7 of the *Agreement between the Inuit of the Nunavut Settlement Area and Her Majesty The Queen in Right of Canada* (Nunavut Agreement) and the Amended Meliadine Gold Mine Project Certificate [No. 006], the Nunavut Impact Review Board (NIRB) requested parties to review Agnico Eagle Mines Limited (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 and jurisdictional areas pertaining to effects and compliance monitoring. On this basis, CIRNAC would like to provide the comments below for NIRB's consideration.

CIRNAC appreciates the opportunity to review AEM's Meliadine Gold Mine Project 2020 Annual Report and looks forward to working with NIRB and AEM throughout any future reviews for this project. Should you have any questions, please do not hesitate to contact Amal Roy (Telephone: 867-975-4741 or email: amal.roy@canada.ca) for ecosystemic aspects or David Abernethy (Telephone: 867-975-4510 or e-mail: david.abernethy@canada.ca) for socio-economic aspects.

Sincerely,



Felexce Ngwa
Manager, Impact Assessment



1. Effects Monitoring

The Meliadine Gold Project 2020 Annual Report has been evaluated to assess the measurable changes to the valued components, under CIRNAC areas of interest, compared to the potential effects that were predicted to result from development of the Meliadine Gold Mine Project, taking into account the Final Environmental Impact Statement (FEIS), previous years' Monitoring Reports and the requirements included in the amended Project Certificate. The assessment considered the following:

- a. Whether the conclusions reached by Agnico Eagle Mines Limited (AEM) in the Meliadine Gold Mine Project 2020 Annual Monitoring Report are valid; and,**
- b. Any areas of significance requiring further supporting information or any changes to the monitoring program which may be required**

Comment Number:	CIRNAC #1
Subject:	Outstanding issues from CIRNAC's Review of the 2019 Annual Report
Reference:	<ul style="list-style-type: none"> Meliadine Gold Project 2019 Annual Report AEM's Responses to Comments on 2019 Annual Report (letter provided to NIRB dated August 7, 2020) Meliadine Gold Project 2020 Annual Report
Issue/Rationale:	CIRNAC's review of the 2019 Annual Report generated 16 comments for AEM's consideration. AEM's response satisfactorily resolved six of these comments. Outstanding items are listed below in sequence.
CIRNAC #1.1 (previously CIRNAC #1.1): Geochemical Monitoring, Acid Rock Drainage/Metal Leaching (ARD/ML) Testing	
Issue/Rationale:	<p>CIRNAC recommended that moving forward AEM should track volumes of Waste Rock with Acid Rock Drainage (ARD) potential falling within the uncertain Neutralizing Potential Ratio (NPR) range (1-2).</p> <p>With respect to underground waste rock, one sample collected in 2017-2018 was classified as having uncertain ARD potential ($1 < \text{NPR} < 2$), in 2019 one sample was classified as having uncertain ARD potential, and in 2020 seven samples were classified as having uncertain ARD potential and 13 samples as being potentially ARD generating (PAG) ($\text{NPR} < 1$). In addition, one sample collected in 2020 from the Tiriganiaq open pit #2 was classified as having uncertain ARD potential while one sample from the Saline Pond (SP4) was also classified as having uncertain ARD potential based on a total sulphur content of 1.34%.</p> <p>AEM indicates in the 2020 Annual Report that these findings are consistent with predictions (Golder 2014) that the majority of operational waste rock would be non-PAG and that ARD potential is low. AEM considers the small number of uncertain ARD potential and PAG samples to represent a low ARD risk given the</p>



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	<p>excess neutralization capacity determined in all other waste rock samples that have been tested. AEM also indicates that in 2020, a large quantity of waste rock from underground was used as backfill for stopes and other openings and these waste rocks may have remained underground, but there is no way to confirm this based on the information provided in Section 2.1.3 of the 2020 Annual Report.</p> <p>As the number of waste rock samples classified as having uncertain ARD potential has increased in 2020, with a number of samples also classified as PAG, CIRNAC maintains the need to track volumes of waste rock classified as uncertain ARD potential/PAG. With respect to underground waste rock, approximately 25% of samples tested were classified as having uncertain ARD potential/PAG in 2020 (Appendix 11, Section 4.1).</p> <p>CIRNAC notes that, in 2020, waste rock from the underground was used for construction in addition to placement in the Tailings Management Facility (TSF) while waste rock from the open pits was used for construction. It is unclear if all of the waste rock used for construction in 2020 was non-potentially acid generating (NPAG) or if not, what quantities of waste rock classified as uncertain ARD potential/PAG were also used for construction.</p>
Recommendation:	<p>CIRNAC recommends that moving forward AEM:</p> <ol style="list-style-type: none"> Track volumes of waste rock classified as PAG (NPR<1) and uncertain ARD potential(1<NPR<2) from the underground mine and open pits. Provide information on where waste rock was used for construction, the amount of waste rock used for construction and confirm that the waste rock used was not PAG.
CIRNAC #1.2 (previously CIRNAC #1.2): Water Quantity-Volumes Reporting to Underground Mine and Various Seepage Collection Ponds	
Issue/Rationale:	<p>CIRNAC recommended that in future annual reports AEM present a year-over-year comparison of actual volumes of water reporting to water retaining structures along with FEIS predictions.</p> <p>In Section 3.2 of the 2019 Annual Report, AEM indicated that once the update of the Meliadine Water Balance and Water Quality model was completed for the 2020 Annual Report, year-over-year comparisons of actual volumes of water reporting to water retaining structures versus those predicted in the model would be provided.</p> <p>In Section 3.2 of the 2020 Annual Report, AEM indicates that the Water Balance and Water Quality models were updated to support the August 2020 Water Licence Amendment and to satisfy the Schedule B, Item 5 requirement of the Water Licence. Results of</p>



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	<p>both the Surface Contact and Saline Water Balance models are included in Section 3.2, and Table 7 presents the maximum annual water volumes requiring management in each facility under mean precipitation years during mine operation and closure. However, year-over-year comparisons of actual volumes of water reporting to water retaining structures versus those predicted in the model were not presented.</p> <p>CIRNAC notes AEM indicated in one of its previous responses to the NIRB in August 2020 that no predictions were made in the FEIS for retention structures.</p>
Recommendation:	CIRNAC recommends that AEM present, in future annual reports, a year-over-year comparison of actual volumes of water reporting to water retaining structures.
CIRNAC #1.3 (Previously CIRNAC #1.3): Spill Management	
Issue/Rationale:	<p>In previous annual report reviews, CIRNAC recommended that AEM provide a year-over-year comparison of total reportable and non-reportable spills. In its response, AEM provided year-over-year information on reportable and non-reportable spills for years 2017, 2018, and 2019.</p> <p>In Section 6 of the 2020 Annual Report, a year-over-year comparison (including Figure 8) is only provided for reportable spills over the 3-year period 2018, 2019 and 2020. No year-over-year comparison is provided for non-reportable spills.</p>
Recommendation:	CIRNAC recommends that AEM provide, in each annual report, a running table summarizing a year-over-year comparison of total reportable and non-reportable spills to help identify increasing or decreasing trends in the number of spills.
CIRNAC #1.4 (previously CIRNAC #1.4): Mine Site Water Quality	
Issue/Rationale:	<p>In previous annual report reviews, CIRNAC recommended that AEM present water quality data summaries for all mine site monitoring stations.</p> <p>Section 7.3.1 of the 2020 Annual Report Main Document presents summaries and discussions of limited data pertaining to Total Suspended Solids and Total Dissolved Solids (TSS/TDS) and only for stations that are regulated by Metal and Diamond Mining Effluent Regulations (MDMER) and Water Licence criteria.</p> <p>CIRNAC appreciates that AEM presented the complete data set for each licenced sampling station and year-over-year comparisons in Appendix 19, but CIRNAC maintains that the information presented in Section 7.3.1 of 2020 Annual Report Main Document should be augmented to provide data and interpretation for all licenced sampling stations that continue to be monitored.</p>



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Recommendation:	CIRNAC recommends that AEM present water quality data summaries with interpretation for all licenced sampling stations that continue to be monitored.
CIRNAC #1.5 (previously CIRNAC #1.5): Annual Report Structure	
Issue/Rationale:	<p>CIRNAC recommended the following during previous annual report reviews:</p> <ol style="list-style-type: none"> a. Restructure the report to remove information on non-waste rock related aspects of the site (e.g., dikes, basins, tailings, etc.) from Section 4 which describes Waste Rock Management Activities. b. Identify DCP-5 on Figures 1 & 2 presenting Meliadine site plans and add a figure showing facilities at Itivia and the location of MDMER monitoring station MEL-26. c. Develop a tracking table summarizing past and present regulators' comments on the Annual Report and where within the document the comments have been addressed to facilitate tracking the resolution status of comments. <p>In the 2020 Annual Report, Section 4 has been renamed to "Critical Infrastructure Management Activities" to better reflect the type of information presented in this section. While this is a positive improvement to the report, CIRNAC notes that the 2020 Annual Report does not include a section that discusses mill operations and mill-related activities. For instance, information on the total amount of ore milled, the amount of tailings deposited underground, the amount of reagents used, the amount of cyanide used, information on cyanide handling and storage practices is not reported. In addition, CIRNAC makes the following observations:</p> <ul style="list-style-type: none"> • D-CP5 could not be located on either Figure 1 in Section 2.3.1 or Figure 9 in Section 7 (previously Figure 2). In addition, there is no figure showing facilities at Itivia Harbour and station MEL-26 where treated saline effluent is discharged to Melvin Bay. • A table tracking the status of regulators' comments was not included with the 2020 Annual Report. • Information presented in Table 11 is repetitive. The total tailings and waste rock volumes shown in the second line of the table are volumes for 2019. • Appendix 7 & 8 – 2019 & 2020 Geotechnical Reports: the tables are difficult to read as they are broken up by area, while many of the headers are missing. • Sections 7.3.1.10 – 7.3.1.11 of 2020 Annual Report, the formatting is distorted with Figure 12 repeats four times.
Recommendation:	<p>CIRNAC recommends that AEM:</p> <ol style="list-style-type: none"> a. Add a new section discussing mill operations and mill-related activities to subsequent annual reports main document. b. Identify DCP-5 on Figures 1 & 2 presenting Meliadine site



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	<p>plans and add a figure showing facilities at Itivia Harbour and the location of MDMER monitoring station MEL-26.</p> <p>c. Include a tracking table summarizing past and present regulators' comments on the Annual Report and where within the document the comments have been addressed to facilitate tracking the resolution status of comments.</p> <p>d. Reformat Table 11 and Sections 7.3.1.10 – 7.3.1.11 of the 2020 Annual Report where information and figures are respectively repeated.</p> <p>e. Reformat tables in Geotechnical Reports (include relevant year) to include a header for each area.</p>
CIRNAC #1.6 (previously CIRNAC #4): Classification of Ore by Source	
Issue/Rationale:	<p>In previous annual report reviews, CIRNAC recommended that in future annual reports AEM identify excavated ore by source and track the associated quantities (tonnages).</p> <p>CIRNAC acknowledges that in the 2020 Annual Report, AEM has provided ore tonnages by source. Specifically, Section 2.1.3 states that 109,392 tonnes of ore were mined from Tiriganiaq Open Pit #2 and 1,293,507 tonnes from the underground operation.</p> <p>CIRNAC recognizes that mining activities at the Tiriganiaq Open Pit #2 began on May 20, 2020 and recommends that in order to better track the information, a table be included in subsequent annual reports that summarizes the total ore quantities (tonnage) and ore quantities by source for all years of mining (similar to tables 3.3 and 4.1 of the Mine Waste Management Plan, V7).</p>
Recommendation:	CIRNAC recommends that AEM include a table in subsequent annual reports that summarizes the total ore quantities and ore quantities by source for all years of mining.
CIRNAC 1.7 (previously CIRNAC #6): Acid Rock Drainage Potential of Filtered Tailings	
Issue/Rationale:	<p>During the review of previous annual reports, CIRNAC recommended that AEM:</p> <p>a. Review mine ore lithology and geochemistry to update predictions of ARD potential of ores and clarify how the ARD was underestimated.</p> <p>b. Carry out geochemical modelling of the tailings facility to establish a new set of predictions for source term behaviour and potential impacts on water quality.</p> <p>Forty filtered tailings samples tested for ARD in 2020 had a higher neutralization potential (NP-Ca) and lower acid potential (AP) compared to samples tested in 2019. In 2019, all but two samples were classified as uncertain ARD potential with the remaining two classified as PAG compared to approximately 1/3 of the tailings</p>



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	<p>samples classified as non-PAG and approximately 2/3 as uncertain in 2020. These results have also yielded a higher median NPR value of 1.8 for 2020 compared to 1.4 in 2019.</p> <p>In Section 4.2(g) AEM states that <i>“There have been some indications from the commercial laboratory that the method for determining NP-Total Inorganic Carbon (TIC) has been biased low for Meliadine operational samples, and this is a focus of an on-going investigation. The impact would be that the NP/AP ratio has also been biased low; assuming acid potential remains the same, so there is no additional risk to ARD assessment of the tailings having greater ARD potential. In fact, if the bias were found to be proven, this would mean the tailings have lower ARD potential than previously reported. Findings will be reported under a separate cover as soon as they have been resolved”</i>.</p> <p>If the low bias in NPR values can be proven to be the case, it would suggest that the ARD classification of filtered tailings may be more aligned with FEIS predictions than currently shown. Resolution of this potential analytical bias would provide more confidence that there is low ARD risk associated with the filtered tailings.</p> <p>CIRNAC considers this issue to be an ongoing concern until the inferred bias with NPR measurement is resolved and an increasing trend in the NPR value of filtered tailings is clearly demonstrated in subsequent years.</p>
Recommendation:	CIRNAC recommends that AEM provides, as part of the 2021 Annual Report, the report discussing the laboratory’s findings regarding the determination of NPR.
CIRNAC #1.8 (previously CIRNAC #7): Site Water Management	
Issue/Rationale:	<p>During the review of previous annual reports, CIRNAC recommended that in order to better understand the site water management system at the Meliadine Gold Mine, AEM provide a detailed technical report that:</p> <ol style="list-style-type: none"> Identifies and quantifies the factors that contributed to the contact water ponds being operated outside of the design guidelines; Describes potential environmental consequences and operational risks associated with the reduction in surplus pond storage capacity; and Presents and evaluates options being considered by AEM to rectify the situation. <p>AEM carried out a number of studies and updated models to assess the issues related to the geotechnical aspects and the water management considerations and impacts of excess water storage in 2019 and the potential impacts of emergency discharge</p>



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	<p>of waters into Meliadine Lake in 2020. These studies have been presented as part of the NIRB Reconsideration of Project Certificate No. 006, of AEM's "Saline Effluent Discharge to Marine Environment, Rankin Inlet, Meliadine Gold Mine process as well as the Nunavut Water Board (NWB) review of AEM's amendment of their existing Type "A" Water Licence 2AM-MEL1631 amendment application.</p> <p>During the NWB Water Licence amendment process, AEM provided a TDS loading model illustrating TDS loads into Containment Pond (CP-1) from CP-3, CP-4, CP-5, CP-6 ponds plus TDS loading contributions from non-pond collected waters draining directly to CP-1, referred to as "rest of site". CIRNAC had requested additional information on the nature and make-up of "rest of site" areas/facilities that contributed so significantly to the TDS loadings to CP-1 (as per the SNC upper bound model report). CIRNAC of the view that this information would be useful for ongoing management and mitigation of potential impacts of these site areas to future water quality in CP-1 and ultimately offsite.</p>
Recommendation:	CIRNAC recommends that AEM provide information on the nature and make-up of "rest of site" areas/facilities that contributed significantly to the TDS loadings to CP-1.

CIRNAC 1.9 (previously CIRNAC #9): Saline Effluent Treatment

Issue/Rationale:	<p>During review of previous annual reports, CIRNAC recommended that AEM provide its review of the Saline Effluent Treatment Plant (SETP) monitoring and reporting practices that AEM expected to have completed prior to the 2020 open water season.</p> <p>Information regarding SETP monitoring and reporting practices that were expected to be completed prior to the 2020 open water season was not provided by AEM. Furthermore, as noted in Section 7.3.1.24 of the 2020 Annual Report, two exceedances of the MDMER's TSS discharge limit of 30 mg/L for any given grab sample occurred at MEL-26 in 2020 (August 23 and September 16), although all acute lethality and sublethal toxicity testing was compliant.</p> <p>Potential causes identified for the first exceedance included algal growth in SP3, the presence of sediments in the trucks transporting water from the Meliadine site to the Itivia Harbour site, and possible overestimation of TSS levels by the laboratory due to interference from high TDS levels in the saline water (under investigation). In response to the August 23 exceedance, AEM conducted a detailed audit of the saline effluent management infrastructure and developed an action plan to mitigate potential sources of TSS. A number of actions outlined in the 2020 Annual Report were implemented as part of the TSS Action Plan. Despite this, another TSS exceedance occurred on September 16 that was</p>
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	<p>attributed to inadequate cleaning of the transport truck, and a procedure was subsequently implemented for truck inspection to confirm truck cleanliness prior to filling up with water for transport to Itivia Harbour and discharge in the marine environment at Melvin Bay.</p> <p>AEM indicated that lessons learned from these incidents were incorporated into the water management practices to prevent re-occurrence and improve the TSS management process for the 2021 open water season. AEM also indicated that additional resources have been allocated to water management to achieve increased follow-up and improve the redundancy and robustness of the process.</p> <p>CIRNAC commends the efforts taken by AEM to help ensure that TSS discharge limits are met at MEL-26.</p>
Recommendation:	CIRNAC recommends that AEM submit the TSS Action Plan and improved water management procedures for review by interested intervenors.
CIRNAC 1.10 (previously CIRNAC #12): CIRNAC Inspections	
Issue/Rationale:	<p>During review of previous Annual Reports, CIRNAC recommended that AEM:</p> <ol style="list-style-type: none"> Modify the content of the Feedback/Outcome section to provide more specific/meaningful notes on the inspection summary. For any inspections where Action Required or Non-Compliance items are noted, include a summary description of AEM's actions to address the issues. <p>In the 2020 Annual Report, AEM stated that <i>“Due to the COVID-19 pandemic, in-person site inspections or site visits were limited in 2020. Agnico Eagle worked with regulators throughout the year to develop virtual site visits as well as in conducting non-contact site visits. During these non-contact site visits, Agnico Eagle’s Detached Operation Protocol was strictly enforced, as well as all applicable public health guidelines. Table 24 summarizes inspections and site visits that took place in 2020.conduct non-contact site visits”</i>.</p> <p>Reporting in Table 24 (previously Table 23) notes three CIRNAC non-contact inspections in 2020 (August 13, 27 and September 25).</p> <p>The September 2020 inspection notes that <i>“The area of focus was around the diesel spill location reported the previous day”</i> but does not provide a reference to the Appendix 15, 2020 Reportable Spills and the actual spill report.</p>



Comment Number:	CIRNAC #1
Recommendation:	<p>While improvements have been made, based on the above comments, CIRNAC recommends that AEM:</p> <ol style="list-style-type: none"> Consider modifying the content of the Feedback/Outcome section of the Table 24 to add specific notes on the inspection summary. Include a summary description of its actions to address the issues identified during any inspections where Action Required or Non-Compliance items are noted.

Comment Number:	CIRNAC #2
Subject:	Reporting on Milling Operations
Reference:	<ul style="list-style-type: none"> Meliadine Gold Project 2020 Annual Report
Issue/Rationale:	<p>The Meliadine Gold Mine project includes an on-site milling operation to process ore at a rate of 8,500 tonnes per day. Milling operations at Meliadine were initiated in 2019. In reviewing the 2020 Annual Report it is noted that there is no discussion in the report regarding mill operations (e.g., days of milling, quantities of ore processed, tailings generated, water used, and related activities on cyanide management and utilization and tailings detoxification).</p> <p>CIRNAC is of the opinion that a discussion of the milling operations during the year would provide a more fulsome perspective of the Meliadine Gold Mine operations and would be a useful addition to the annual report.</p>
Recommendation:	<p>CIRNAC recommends that AEM:</p> <ol style="list-style-type: none"> Add a section to the annual report describing mill operations at the Meliadine site (e.g., days of milling, amount of ore processed, tailings generated, water used, and related activities on cyanide management and utilization and tailings detoxification). Provide information regarding 2020 milling operations and activities at the Meliadine Gold Mine for review and include such information going forward.

Comment Number:	CIRNAC #3
Subject:	Changes to Saline Water Management and Storage
Reference:	<ul style="list-style-type: none"> Meliadine Gold Project 2020 Annual Report, Section 3.2.3 NIRB Project Certificate 006, Amendment 001, Terms and Conditions 25
Issue/Rationale:	<p>The Saline Water Balance model was built around the inflows and outflows of Saline Pond 1 (SP1), Saline Pond 4 (SP4), and Tiriganiaq Pit #2 from 2021 to 2028. The model applies mean</p>



Comment Number:	CIRNAC #3
	<p>climate precipitation data to each saline pond catchment between the months of June and October each year. The resulting forecast shows a steady increase in saline water accumulation on site over the life of mine. Based on these assumptions and assuming Tiriganiaq Pit #2 saline water storage starts in June 2021, the model shows that there would be adequate saline storage capacity for the life of mine. Saline water quality forecasts based on average input concentrations of 55,000 mg/L result in forecasted storage water TDS concentrations ranging from 43,500 mg/L to 47,500 mg/L based on lower starting concentrations from pre-existing runoff present in the ponds from past years and the effect of future precipitation runoff inflows to saline ponds.</p> <p>The model assumes that the Tiriganiaq Pit #2 will be used for saline water storage in 2021 and was thus effectively removed from the surface contact water model (incorporated into saline water balance, Section 3.2.3).</p> <p>During the 2020 NIRB Reconsideration of Project Certificate No. 006, of AEM's "Saline Effluent Discharge to Marine Environment, Rankin Inlet, Meliadine Gold Mine" and the Nunavut Water Board (NWB) review of AEM's amendment of their existing Type "A" Water Licence 2AM-MEL1631 processes, AEM stated its position that the use of the Tiriganiaq Open Pit #2 for water storage (saline or contact surface) was not a sustainable practice.</p> <p>In correspondence of September 9, 2020, as part of the NWB water licence amendment for the expansion of the SETP capacity from 800 to 1,600 m³ per day, AEM provided clarifications noting that the underground and surface water are combined at times, and TDS "attenuation" (by mixing site waters) will be the primary process for TDS management. In other words, AEM intends, when necessary, to reduce TDS of saline ground water with surface contact water from CP-1.</p> <p>In the context of the above statements, it is unclear as to how, and to what degree, saline and surface contact water will be mixed and what role the Tiriganiaq Pit #2 will play in regard to on-site storage.</p>
Recommendation:	<p>CIRNAC recommends that AEM:</p> <ol style="list-style-type: none"> a. Clarify why the use of the Tiriganiaq Pit #2 for saline water is now considered to be not sustainable. b. Clarify how in the absence of long term storage, AEM intends to use the Tiriganiaq Pit #2 in the short term for storage and discharge of water either under normal or under emergency water management conditions.



Comment Number:	CIRNAC #3
	c. Provide specific information on saline and contact water mixing and discharge in 2020, including quantities of mixed water discharged, timelines for initial mixed water discharge, and subsequent discharges throughout the year.

Comment Number:	CIRNAC #4
Subject:	Mill Use of CP-1 (Containment Pond 1) Water
Reference:	<ul style="list-style-type: none"> Meliadine Gold Project 2020 Annual Report, Section 4.2.4
Issue/Rationale:	<p>In Section 4.2.4 of the 2020 Annual Report, Filtered Tailings Supernatant, AEM states that <i>“in 2020 as the Process Plant stabilized, the metals and other parameters were in general more consistent throughout the year but in general, higher than in 2019. The higher values for metals in 2020 may also be affected that a large portion of the mill feed water came from CP1 in 2020 while all feed water in 2019 came from Meliadine Lake which, in general, has lower metals than CP1”</i>.</p> <p>CIRNAC is pleased to note in the 2020 Annual Report that AEM used a large portion of mill feedwater from CP1. This is particularly noteworthy as during 2020 NIRB Reconsideration of Project Certificate No. 006 (amendment 001), of AEM’s “Saline Effluent Discharge to Marine Environment, Rankin Inlet, Meliadine Gold Mine” and the Nunavut Water Board (NWB) review of AEM’s amendment of their existing Type “A” Water Licence 2AM-MEL1631 Technical Meetings processes CIRNAC, Kivalliq Inuit Association, and community members expressed opinions that AEM recycle mill water to minimize fresh water taken from Meliadine Lake and to reduce or eliminate effluent discharges to Meliadine Lake.</p> <p>During these discussions AEM indicated that there were technical limitations and constraints to the use of CP1 water as mill feedwater and that further work would be necessary in order to assess the viability of CP1 water use for milling purposes as part of normal operations or as an emergency management option for drawing down high water levels as part of adaptive management to manage extreme wet year water volumes.</p> <p>CIRNAC is hopeful that AEM can provide additional information on the use of CP1 water in the mill (time period(s), quantity, quality, etc.) in 2020. CIRNAC would also appreciate AEM commenting on the experience it has gained in 2020 when using a large portion of the mill feedwater from CP1 in order to assess how the use of this practice may provide positive contribution to AEM’s water use and management practices going forward.</p>



Comment Number:	CIRNAC #4
Recommendation:	<p>CIRNAC recommends that AEM:</p> <ol style="list-style-type: none"> Provide details related to when and how much CP-1 water was used in the mill in 2020. Clarify AEM's current position on the mill's use of CP-1 water under normal operating conditions to maintain CP-1 water level at the low end of operating water levels. Provide information on potential use of CP-1 water by the mill for adaptive management drawdown of the CP-1 water level.

Comment Number:	CIRNAC #5
Subject:	Cyanide Management and Use Handling
Reference:	<ul style="list-style-type: none"> Meliadine Gold Project 2020 Annual Report
Issue/Rationale:	<p>For all practical purposes, the 2020 Annual Report lacks detailed information on the nature and extent of cyanide use, transportation, handling and storage. Brief mentions of cyanide are made within Sections 4.2 Geochemical Monitoring, 4.2.4 Filtered Tailings Supernatant, 11.2 Community Meetings in Rankin Inlet (teleconference re cyanide transport), Appendix 6: 2020 Annual Geotechnical Inspection Report (temporary cyanide storage pad & former cyanide storage pad currently used as a burn pad), Appendix 37 - 2020 Communication Engagement Table (communications re ICMC & Cyanide Transport); Appendix 39 2020 Socio Economic Monitoring Program Report (cultural). These discussions do not include technical and management aspects of cyanide use as part of the gold recovery process.</p> <p>While the modern gold mining industry generally has a strong environmental and safety record in the use of cyanide, its use is still a concern. Establishment of proper management practices and adherence to internationally accepted best practices such as those articulated in the Cyanide Code go far to eliminate and mitigate potential issues and impacts during normal conditions and to ensure that prompt and appropriate actions are able to be undertaken in the event of upsets, accidents, and potential unforeseen incidents during offsite and onsite transport, handling, storage and process use.</p>
Recommendation:	CIRNAC recommends that AEM include a discussion of its cyanide management practices and use in future Annual Reports and complete with appropriate appendix details, as needed, with respect to cyanide source, transportation to site, on site handling and storage, and emergency procedures.

Comment Number:	CIRNAC #6
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Comment Number:	CIRNAC #6
Subject:	Geotechnical Inspection Concerns/Issues
Reference:	<ul style="list-style-type: none"> • Meliadine Gold Project 2020 Annual Report, Sections 4.1, 5.1 and Appendices (Geotechnical Report)”; Appendix 6: 2020 Annual Geotechnical Inspection Report • Tetra Tech 2020 Geotechnical Report • AEM’s 2019 and 2020 Responses and Actions Tables, and • NIRB Project Certificate 006, Amendment 001, Terms and Conditions 17, 21, 29
Issue # 6.1:	<p>Permafrost Degradation: In both 2019 and 2020, comprehensive geotechnical inspections were carried out by Tetra Tech for all of the project facilities. Observations and recommendations were provided to AEM for consideration. AEM provided responses. CIRNAC had no issues with the inspection findings and recommendations, and responses.</p> <p>Based on the annual report and inspection records, it appears that the water levels in CP1 and CP5 were within the normal range of operating levels after the freshet and at or below operating pond levels before freeze-up.</p> <p>The geotechnical condition of the dams are stable, but ongoing monitoring in accordance with AEM’s Operation, Maintenance and Surveillance (OMS) Manual is required. It is understood that AEM has updated the OMS Manual for the monitoring of both the D-CP1 and D-CP5 dikes and operations of the respective containment ponds.</p> <p>While information was provided on freeze back of tailings, waste rock dams and dikes, no information was provided on permafrost degradation of other aspects of the operation.</p>
Recommendation:	CIRNAC recommends that AEM add a section to the Geotechnical Inspection Report that provides detailed information on the status of any permafrost degradation that may be occurring on site per T&C 17 and T&C 21 of the NIRB Project Certificate 006 (Amendment 001)for this mine development.
Issue # 6.2:	<p>Diversion Channels and Berms: In the “Executive Summary” of Appendix 6, under the title “<i>Diversion Channels and Berms</i>”, AEM stated that “<i>The diversion channels and berms are performing well. It is recommended to continue to monitor the slumping and cracking adjacent to Channel 5 to determine if sediment from the area is blocking the channel. Cracking and subsidence in the native ground above Channels 3 and 4 should be monitored to determine if they are impacting the channels’ performance. Berm 2 cover materials are susceptible to erosion and some minor erosion was observed during the inspection. Erosion of the slopes should be monitored</i>”.</p>



Comment Number:	CIRNAC #6
	CIRNAC could not find any geotechnical narratives describing corrective actions that have been undertaken to address the indicated defects. Cracking, subsidence and erosion will compromise the overall performance of the above-mentioned geotechnical features to effectively meet their original purpose and function.
Recommendation:	CIRNAC recommends that AEM provide the list of corrective measures including investigation, monitoring and repairs that have been undertaken to address the performance issues as indicated above.
Issue # 6.3:	Landfills: In the “Executive Summary” of Appendix 6, under the title – “Landfill”, AEM stated that <i>“The landfill is nearing its current design capacity. It is understood a plan has been developed to raise the landfill berms to provide additional capacity.”</i> As this is an environmental concern, it is unclear why AEM has not provided a schedule to confirm how they plan to increase the landfill capacity.
Recommendation:	CIRNAC recommends that AEM: <ul style="list-style-type: none"> a. Provide additional information (technical memo, preliminary study) about the measures that have been put in place temporarily to address the landfill capacity issue. b. Provide timeline and methodology for the construction of the new landfill.
Issue # 6.4:	Scope and Limitations of Inspection: In the “Introduction” of Appendix 6, under the title –“ <i>Scope Limitations</i> ”, AEM indicated that <i>“The scope of the inspection is limited to the observation of geotechnical aspects of each of the facilities listed above and review of the associated instrumentation data. The inspection did not include other assessments such as structural, mechanical, or environmental.”</i> CIRNAC is of the view that structural and civil engineering disciplines could be included in this scope to avoid missing critical aspects from these disciplines.
	CIRNAC recommends that AEM consider conducting a multi-disciplinary inspection in order to cover structural, mechanical and environmental critical aspects omitted in the inspection.

Comment Number:	CIRNAC #7
Subject:	Employee schedule
Reference:	<ul style="list-style-type: none"> • Project Certificate 006, Amendment 001, Term and Condition 92
Issue/Rationale:	Pursuant to Project Certificate 006, Amendment 001, Term and Condition 92: <i>“The Proponent shall submit a detailed staff schedule to the NIRB and to the Government of Nunavut in the first 6 months following the issuance of a Project Certificate. The schedule should, at a minimum, provide a description of:</i>



Comment Number:	CIRNAC #7
	<p>a. Title of positions required by department and division;</p> <p>b. Quantity of positions available by Project phase and year;</p> <p>c. Transferable skills, both certified and uncertified which may be required for, or gained during, employment within each position; and,</p> <p>d. The National Occupational Classification (NOC) code for each individual position.</p> <p><i>The Proponent is encouraged to consult the Government of Nunavut during development of the schedule. A new schedule should be submitted following any significant deviation from original predictions.”</i></p> <p>The 2020 Annual Report does not provide any details on when the latest detailed staff schedule was submitted to the NIRB or anticipated upcoming submissions.</p>
Recommendation:	<p>CIRNAC recommends that AEM:</p> <p>a. Specify when the latest detailed staff schedule was submitted to the NIRB.</p> <p>b. Confirm when an updated submission will be provided to the NIRB based on its measurement of reporting results against predictions and/or a defined reporting frequency.</p>

Comment Number:	CIRNAC #8
Subject:	Transferable skills and training (listing of formal certificates and licences)
Reference:	<ul style="list-style-type: none"> • Project Certificate 006, Amendment 001, Term and Condition 96 • Appendix 40 - 2020 Training
Issue/Rationale:	<p>Pursuant to Project Certificate 006, Amendment 001, Term and Condition 96: <i>“Prior to construction, the Proponent shall develop an easily referenced listing of formal certificates and licences that may be acquired via on-site training or training during project employment. The listing shall indicate which of these certifications and licences would be transferable to a similar job site within Nunavut, and should be updated on an annual basis, and is to be provided to the NIRB upon completion and as may be revised.”</i></p> <p>While AEM provides a listing of training that it delivered in 2020 (Appendix 40) by course, it does not specify whether any formal certificates or licences may be acquired through on-site training or training during project employment. Also, there is no indication on whether any certifications and licences that may be acquired are transferable to other jobs within Nunavut.</p>



Comment Number:	CIRNAC #8
Recommendation:	CIRNAC recommends that AEM provide an easily referenced listing of formal certificates and licences that may be acquired through on-site training or training during project employment on an annual basis as required by Project Certificate 006, Amendment 001, Term and Condition 96. This listing should indicate which of these certifications and licences would be transferable to a similar job site within Nunavut.

Comment Number:	CIRNAC #9
Subject:	Employee origin
Reference:	<ul style="list-style-type: none"> • Project Certificate 006, Amendment 001, Term and Condition 101 • Meliadine Gold project 2020 Annual Report, Section 12.2 • Appendix 39 - 2020 Socio-Economic Monitoring Program Report, Section 1.3
Issue/Rationale:	<p>The 2020 Annual Report and 2020 Socio-Economic Monitoring Program Report partially addresses the information requirements specified in Project Certificate 006, Amendment 001, Term and Condition 101 which concern documenting employee origins (i.e., principle residence locations). Section 12.2 of the 2020 Annual Report identifies the origins of Inuit employees by Kivalliq community, Kitikmeot and Qikiqtani region, and "outside of Kivalliq." Section 1.3 of the 2020 Socio-Economic Monitoring Program Report identifies the number of Inuit employees by Kivalliq community. No information is provided for the origins of non-Inuit employees, the number of employees hired from other provinces and territories, and the number of employees hired outside of Canada.</p> <p>The outstanding information requirements from this Term and Condition are underlined below:</p> <ol style="list-style-type: none"> <u>The number of Inuit and non-Inuit employees hired from each of the Kivalliq communities, specifying the number from each;</u> <u>The number of Inuit and non-Inuit employees hired from each of the Kitikmeot and Qikiqtani regions, specifying the number from each;</u> <u>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</u> <u>The number of non-Canadian foreign employees hired, specifying the locations and number from each foreign point of hire.</u>
Recommendation:	CIRNAC recommends that AEM provide the employee origin information required under Project Certificate 006, Amendment 001, Term and Condition 101 in its response to comments on this



Comment Number:	CIRNAC #9
	2020 Annual Report and future Annual Report submissions.

Comment Number:	CIRNAC #10
Subject:	Consultation with outfitters and guides
Reference:	<ul style="list-style-type: none"> • Project Certificate 006, Amendment 001, Term and Condition 104 • Meliadine Gold Project 2020 Annual Report, Section 7.9 • Appendix 26 - 2020 Terrestrial Environment Management and Monitoring Plan Report
Issue/Rationale:	<p>Pursuant to Project Certificate 006, Amendment 001, Term and Condition 104: <i>“The Proponent is encouraged to consult with outfitting and guiding businesses that operate in the LSA and RSA regarding use of the area, specifically as it relates to hunting, fishing and guiding within proximity of the AWAR. Results of this consultation should be incorporated into updated plans where applicable.”</i></p> <p>The 2020 Annual Report does not reference any consultation activities with outfitting and guiding companies that operate in the Local Study Area and Regional Study Area regarding use of the area, specifically in relation to hunting, fishing and guiding within proximity of the All Weather Access Road.</p> <p>While separate from consulting with outfitting and guiding businesses, CIRNAC recognizes AEM’s ongoing efforts to collaborate with the Kangiqliniq Hunters and Trappers Organization to monitor wildlife. This is evidenced through the establishment of a Hunter Harvest Study through a Memorandum of Understanding as communicated in section 13 of the 2020 Terrestrial Management and Monitoring Plan Report (Appendix 26).</p>
Recommendation:	<p>CIRNAC recommends that AEM:</p> <ol style="list-style-type: none"> Provide an update on the outcomes of any consultation efforts undertaken with outfitting and guiding companies that operate in the Local Study Area and Regional Study Area regarding use of the area, specifically as it relates to hunting, fishing and guiding within proximity of the AWAR. Report any updates to management plans based on consultation efforts.

Comment Number:	CIRNAC #11
Subject:	Hunter Harvest Survey
Reference:	<ul style="list-style-type: none"> • Project Certificate 006, Amendment 001, Term and Condition 105 • Meliadine Gold Project 2020 Annual Report, Section 7.9



Comment Number:	CIRNAC #11
	<ul style="list-style-type: none"> Appendix 26 - 2020 Terrestrial Environment Management and Monitoring Plan Report, Section 13
Issue/Rationale:	<p>Pursuant to Project Certificate 006, Amendment 001, Term and Condition 105: <i>“The Proponent is strongly encouraged to consider incorporating information obtained from local outfitting and guiding businesses into its Hunter Harvest Survey where possible, and to include these organizations as potential respondents to surveys undertaken.”</i></p> <p>The 2020 Annual Report and 2020 Terrestrial Environment Management and Monitoring Report do not reference any communications with local outfitting and guiding businesses in the development and administration of a Hunter Harvest Survey.</p> <p>CIRNAC acknowledges that AEM is collaborating with the Kangiqliniq Hunters and Trappers Organization to develop and implement a Hunter Harvest Study through a Memorandum of Understanding as communicated in section 13 of the 2020 Terrestrial Management and Monitoring Plan Report (Appendix 26).</p>
Recommendation:	<p>CIRNAC recommends that AEM:</p> <ol style="list-style-type: none"> Incorporate information obtained from local outfitting and guiding businesses into the development of its Hunter Harvest Survey where possible. Updates on carrying out this activity should be communicated in Annual Report submissions. Provide updates on interactions with local outfitting and guiding businesses with respect to the Hunter Harvest Survey’s administration through Annual Report submissions.

2. Compliance Monitoring

- Provide a summary of any compliance monitoring and/or site inspections undertaken in association with the project, including specifically:***
 - Identify the terms and conditions from the Project Certificate which have been incorporated into any permits, certificates, licences 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 Land Claims Agreement Act* and 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 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 (T&Cs) 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 has issued the surface lease (55K/16-42-2) for the marine discharge pipe for the Meliadine Gold Mine Project in 2019.

In 2020, AEM's Meliadine Gold Mine Project activities and monitoring were conducted under the following Water Licences:

- Type B Water Licence 2BB-MEL1424, and
- Type A Water Licence 2AM-MEL1631

CIRNAC has reviewed the Type 'A' Water Licence associated with the Meliadine Gold Mine Project with respect to Project Certificate [No. 006] and has included a concordance table (Appendix A) that outlines how these T&Cs have been incorporated in the Water Licence.

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

Due to restrictions imposed by COVID-19 pandemic, CIRNAC's Water Resource Officer (WRO) conducted three non-contact site inspection in 2020, with accompanying AEM personnel in a separate vehicle. As some of the licence requirements would involve on-site inspection where close contact with other staff of the site is necessary, not all of the licence terms and conditions were verified for compliance.

Summaries of the concerns identified in the inspection reports are presented below for NIRB's consideration.

August 17, 2020

During a no-contact flyover inspection of the site, a drillers' fuel tank was sighted in Meliadine Lake and AEM was alerted. AEM reported the incident to the spill line, removed the tank and conducted a sampling of the site. A follow up inspection will be conducted in summer 2021.

August 27, 2020

Facilities inspected during this inspection included old the tank farm, tank farm, CP1, emulsion plant, dry stack tailings, tailings storage warehouse, water intake, all weather road and drillers fuel tank. No concerns were noted during this visual observation/inspection.

September 25, 2020

A follow-up inspection of a fuel spill that happened on September 22, 2020, was conducted during this inspection. AEM is currently monitoring the spill site by collecting contaminants and water samples from the trench dug at the contaminated site.



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

No non-compliances to Water Licence conditions and *Nunavut Waters and Nunavut Surface Rights Tribunal Act S.C 2002, c. 10* were noted during the restricted visual 2020 inspections. CIRNAC will continue to work with AEM to ensure continued compliance with all water licence requirements associated with this project.

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 s. 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. No committee meeting occurred in 2020 due to the implementation of measures designed to limit the spread of COVID-19. AEM's Kivalliq Projects Socio-Economic Monitoring Working Group considered alternative solutions to allow for a meeting to proceed but logistical and technological issues ultimately prevented its successful delivery.

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

NIRB Project Certificate No. 006 Term & Condition	Implemented in NWB Water Licence NO: 2AM-MEL1631
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NIRB Project Certificate No. 006 Term & Condition		Implemented in NWB Water Licence NO: 2AM-MEL1631
3	<p>Prior to commencing construction activities the Proponent shall update its dust management and monitoring plan to address and/or include the following additional items:</p> <ol style="list-style-type: none"> Align plan requirements with commitments made in the FEIS and during the Final Hearing to monitor dust along the all-weather access road and associated roads and trails. Verify commitments to the utilization of dust suppressants along the all-weather access road including and associated roads and trails, including a description of the type of suppressant to be utilized, the frequency and timing of applications to be made throughout the various seasons of road use. Outline the specific adaptive management measures to be considered should monitoring indicate that dust deposition is higher than predicted, specifically where traffic along the all-weather access road is greater than initially predicted. 	<ul style="list-style-type: none"> ▪ Part B: Item 12f ▪ Part E: Item 17 ▪ Part I: Item 9c ▪ Schedule B: Item 4 ▪ Schedule D: Item 1j
4	The Proponent shall develop and implement an Incineration Management Plan that takes into consideration the recommendations provided in Environment Canada's Technical Document for Batch Waste Incineration (2010).	<ul style="list-style-type: none"> ▪ Part B: Item 12f
6	The Proponent shall employ appropriate dust suppression measures when conducting activities in the landfill such as topping or capping.	<ul style="list-style-type: none"> ▪ Part B: Item 12o
13	The Proponent shall undertake additional geotechnical investigations as required to identify sensitive landforms, modify engineering design for Project infrastructure (i.e., dikes, tailings storage facility, waste rock pile and landfill), and develop and implement preventative and/or mitigation and monitoring measures to minimize the impacts of the Project's activities and infrastructure on sensitive landforms. Plans for the investigations, mitigative and monitoring measures are to be included within an updated Environmental Protection Plan.	<ul style="list-style-type: none"> ▪ Part B: Item 12c ▪ Part I: Item 14 ▪ Part I: Item 15
14	The Proponent is encouraged to conduct more detailed thermal analysis to support detailed design of the dikes and the tailings storage facility, including seepage and stability analysis, and shall incorporate the results of the analysis into Project design. Details of the thermal analyses undertaken are to be provided to the NIRB.	<ul style="list-style-type: none"> ▪ Part D: Items 1b and 2 ▪ Part I: Item 13



NIRB Project Certificate No. 006 Term & Condition		Implemented in NWB Water Licence NO: 2AM-MEL1631
15	<p>The Proponent shall assess the potential environmental effects of a post-closure failure of the geomembrane of the Tailings Storage Facility while tailings are in a thawed state. This assessment shall include, at a minimum:</p> <ol style="list-style-type: none"> A description of the potential environmental effects of such a failure; Identification of the monitoring measures employed to detect environmental changes that could result; Identification of proposed mitigation measures to address any changes identified during monitoring; and Updated Risk Management Plan and Closure and Reclamation Plan reflecting changes which result from the post-closure failure assessment. <p>A summary of the results from this assessment and implications to project infrastructure and operational plans shall be provided to the NIRB.</p>	<ul style="list-style-type: none"> ▪ Part B: Item 12L ▪ Part J: Item 5
16	<p>The Proponent shall finalize and implement a comprehensive erosion management plan to prevent or minimize the effects of destabilization and erosion resulting from Project activities.</p>	<ul style="list-style-type: none"> ▪ Part B: Item 12o ▪ Part D: Items 2e, 8 and 21 ▪ Part E: Item 9
17	<p>The Proponent shall monitor the effects of the Project on permafrost conditions relative to Project infrastructure, including along the all-weather access road and associated roads, waste rock stockpile, trails and quarries. Through its monitoring the Proponent must demonstrate that permafrost integrity is maintained with implementation of appropriate preventative measures should permafrost degradation be observed.</p>	<ul style="list-style-type: none"> ▪ Part J: Item 5



NIRB Project Certificate No. 006 Term & Condition		Implemented in NWB Water Licence NO: 2AM-MEL1631
19	<p>The Proponent shall develop and implement a monitoring program for its Tailings Storage Facility and Waste Rock Storage Facility (including dikes). The monitoring program is to include, but shall not be limited to:</p> <ol style="list-style-type: none"> Plans for monitoring the thermal condition and stability of storage facilities (including deformation of the cover) and dikes, including the use of thermistor cables, temperature loggers, and core sampling technology as required to monitor dike stability and tailings freeze back efficiency, including for example, factors such as ice content and stability; and, Measures proposed to ensure the safe containment and structural integrity of Project infrastructure, and to prevent contamination of waterbodies. <p>Details of the monitoring program shall be provided to the NIRB.</p>	<ul style="list-style-type: none"> ▪ Part B: Item 12j ▪ Part F: Item 20
20	<p>The Proponent shall explore the feasibility and practicality of topsoil/organic matter salvage as part of phased approach to Project development, with updates to its Closure and Reclamation Plan to reflect any changes based on this investigation. The Closure and Reclamation Plan should be updated on an on-going basis as more information becomes available from similar reclamation projects, including experience with implementing closure and reclamation plans at the Meadowbank mine site, as applicable.</p>	<ul style="list-style-type: none"> ▪ Part B: Item 12l
21	<p>The Proponent shall update its Waste Management Plan to include details which explain how the design employed for Project landfills is expected to protect the integrity of the local environment, including permafrost integrity, and water quality for adjacent waterbodies. The Proponent shall demonstrate its consideration for the use of liners at waste management facilities, where feasible.</p>	<ul style="list-style-type: none"> ▪ Part B: Item 12h
22	<p>The Proponent shall report annually to the NIRB on the adaptations it has had made to the Mine Waste Management Plan and practices based on results obtained through monitoring.</p>	<ul style="list-style-type: none"> ▪ Part B: Item 12j
23	<p>Prior to the commencement of excavation at the Discovery deposit, the Proponent, in consultation with Natural Resources Canada, shall update its Mine Waste Management Plan to assess the potential for acid rock drainage and to identify any monitoring and mitigation measures that may be required in this development area.</p>	<ul style="list-style-type: none"> ▪ Part B: Item 12j



NIRB Project Certificate No. 006 Term & Condition		Implemented in NWB Water Licence NO: 2AM-MEL1631
24	The Proponent shall, reflecting any direction from the Nunavut Water Board during water licensing, collect new hydraulic data (e.g., from new monitoring wells) in key areas during the pre-development, construction and operation phases to better define vertical and horizontal ground flow in the project development area.	<ul style="list-style-type: none"> ▪ Part B: Item 12q ▪ Part E: Item 14
25	The Proponent shall provide to the NIRB, a saline water management plan which includes, but is not limited to, mitigation measures designed to address the potential for higher-than-predicted volumes of saline water inflows into the underground mine, treatment and disposal methods, and details of its plan to monitor saline water at site.	<ul style="list-style-type: none"> ▪ Part B: Item 12q ▪ Part B: Item 13d
26	The Proponent shall carry out continued analyses over time to confirm and update, accordingly, the approximate fill time for the mine pits as identified in the FEIS.	<ul style="list-style-type: none"> ▪ Part J: Item 1 and 5
27	<p>The Proponent shall update its Aquatic Effects Monitoring Plan (AEMP) to include, at a minimum:</p> <ol style="list-style-type: none"> a. Details regarding the monitoring of non-point sources of discharge, selection of appropriate reference sites, measures to ensure the collection of adequate baseline data at Meliadine Lake prior to and during construction activities, including information on chemical loading in the snowpack, and the mechanisms proposed to monitor for and treat runoff and sediment; b. A description of measures to be undertaken as relate to dustfall monitoring, designed in accordance with the following: <ol style="list-style-type: none"> i. To establish Phase 1 all-weather access road baseline data and a description of plans for data collection during Project operations for comparison; ii. To facilitate comparison with existing guidelines; iii. To assess the seasonal deposition (rates, quantities) and chemical composition of dust entering aquatic systems along representative distance transects of the all-weather access road and Rankin Inlet by-pass road; c. A description of water quality monitoring to be conducted at Little Meliadine Lake; and d. Details regarding comparisons of results to be run against predicted values and the analysis of data to be undertaken on an annual basis, or as may be required. 	<ul style="list-style-type: none"> ▪ Part B: Item 12a ▪ Part B: Item 13 ▪ Part I: Item 3



NIRB Project Certificate No. 006 Term & Condition		Implemented in NWB Water Licence NO: 2AM-MEL1631
28	The Proponent shall develop and implement a sediment and erosion management plan to prevent or minimize the effects of destabilization and erosion that may occur due to Project activities. The plan should also detail sediment control plans to prevent and/or mitigate sediment loading into surface water within the Project area.	<ul style="list-style-type: none"> ▪ Part B: Item 12q
29	The Proponent shall develop and implement adequate monitoring and maintenance procedures to ensure that the culverts and other conduits that may be prone to blockage do not significantly hinder or alter the natural flow of water from areas associated with the proposed mine. In addition, the Proponent shall monitor, document and report the withdrawal rates for water removed and utilized for all domestic and industrial purposes.	<ul style="list-style-type: none"> ▪ Part D: Item 1a and 24 ▪ Part E: Item 15
30	The Proponent shall update its Aquatic Effects Monitoring Plan (AEMP) to include, at a minimum: <ul style="list-style-type: none"> a. Provide details for additional reference lakes to be included within its sampling and monitoring programs; b. Updates to include sedimentation within relevant monitoring programs; and c. Results from additional testing for mercury in fish tissue, and include test results in updated baseline data. 	<ul style="list-style-type: none"> ▪ Part B: Item 12a ▪ Part B: Item 13 ▪ Part I: Item 3
31	The Proponent shall maintain an appropriate setback distance between project quarries and fish-bearing or permanent water bodies as required to prevent acid rock drainage or metal leaching into such water bodies.	<ul style="list-style-type: none"> ▪ Part B: Item 12q
32	Prior to the commencement of construction, the Proponent shall submit to the NIRB, a Site Drainage and Silt Control Plan.	<ul style="list-style-type: none"> ▪ Part B: Item 12q
33	The Proponent shall meet or exceed the guidelines set by Fisheries and Oceans Canada for blasting thresholds and implement practical and effective measures to ensure that residue and by-products of blasting do not negatively affect fish and fish habitat.	<ul style="list-style-type: none"> ▪ Part B: Item 12d and 12q
34	Unless otherwise approved by regulatory authorities, the Proponent shall ensure that all Project infrastructure in watercourses is designed and constructed in such a manner that it does not obstruct unduly prevent or limit the natural movement of water in fish bearing streams and rivers.	<ul style="list-style-type: none"> ▪ Part B: Item 12q



NIRB Project Certificate No. 006 Term & Condition		Implemented in NWB Water Licence NO: 2AM-MEL1631
41	Prior to the commencement of operations, the Proponent shall develop a progressive re-vegetation program for disturbed areas that are no longer required for operations, such program to incorporate measures for the use of test plots, reseeding and replanting of native plants as necessary. It is further recommended that this program be directly associated with the management plans for erosion control established for the Project and incorporate lessons learned at Meadowbank.	<ul style="list-style-type: none"> ▪ Part B: Item 12l ▪ Part J: Item 8
42	The Proponent shall include re-vegetation strategies in its Closure and Reclamation Plan that support progressive reclamation and that promote natural revegetation and recovery of disturbed areas compatible with the surrounding natural environment and incorporate lessons learned at Meadowbank.	<ul style="list-style-type: none"> ▪ Part B: Item 12l ▪ Part J: Item 8
67	The Proponent shall submit an updated Oil Pollution Prevention Plan including measures to avoid adverse effects to species at risk and migratory birds from spills, as well as details regarding monitoring of effects of a spill on species at risk and migratory birds.	<ul style="list-style-type: none"> ▪ Part B: Item 12p
77	The Proponent shall ensure that it maintains the necessary equipment and trained personnel to respond to all sizes of potential spills associated with the Project in a self-sufficient manner.	<ul style="list-style-type: none"> ▪ Part B: Item 12p
78	<p>Prior to the shipping of Project supplies, the Proponent shall conduct fuel spill dispersion modeling that will, at a minimum, consider:</p> <ol style="list-style-type: none"> a. Modeling of oil spills in the following areas: <ol style="list-style-type: none"> i. Pinch points, including: Hudson Strait, Melvin Bay area including Itivia Harbour and Panorama Island; ii. Shallow water and shorelines; and, iii. Areas that have been identified as having high flows and/or high concentrations of marine mammals, marine fish or seabirds; b. Open water and ice-covered conditions; c. Spill volumes up to and including loss of a full tanker cargo; and, d. Differences in the quantity and properties of each type of bulk fuel transported by vessels when they are at, or in transit to, the port of Rankin Inlet. 	<ul style="list-style-type: none"> ▪ Part B: Item 12p



NIRB Project Certificate No. 006 Term & Condition		Implemented in NWB Water Licence NO: 2AM-MEL1631
117	Prior to construction Phase 2 of the all-weather access road and the Rankin Inlet bypass road, the Proponent shall consult applicable laws in Canada and Nunavut as well as meet with all regulatory agencies and the public as it finalizes its road operations plans.	▪ Part B: Item 12o
120	The Proponent shall contract only Transport Canada certified shippers to carry cargo for the Project, and will ensure shippers are aware of the requirements of the Shipping Management Plan, the Risk Management and Emergency Response Plan and the Oil Pollution Emergency Plan (OPEP).	▪ Part B: Item 12n
121	The Proponent shall monitor the ingress/egress of Project related ships at Rankin Inlet and report any accidents or spills immediately to the regulatory agencies as required by law and to NIRB's Monitoring Officer.	▪ Part B: Item 12n
122	The Proponent shall ensure that best practices are used at all times during ship to shore and other marine-based fuel transfer events, including implementing measures specifically designed to prevent leaks and spills resulting from ice forming on the hoses during fuel transfers.	▪ Part B: Item 12n
124	Prior to construction, the Proponent shall update its Spill Contingency Plan specific to a major spill event occurring on the bypass road and within proximity to (and including potential spills into) Nipissar Lake.	▪ Part B: Item 12n

