



CIRNAC Comments to NIRB Re: Agnico Eagle Mines Limited's Meliadine Gold Mine Project 2023 Annual Report



Nunavut Regional Office
918 Federal Rd
Iqaluit, NU, X0A 3H0

Your file - Votre référence
11MN034
Our file - Notre référence
GCDOC # 125473600

June 03, 2024

Leah Klaassen
Impact Assessment Officer
Nunavut Impact Review Board
P.O. Box 1360
Cambridge Bay, NU, X0B 0C0
Via electronic mail to: info@nirb.ca

Dear Leah Klaassen,

Re: Comment Request for AEM Mines Limited's Meliadine Gold Mine Project 2023 Annual Report

On April 19, 2024, as per Section 12.7 of the *Nunavut Agreement* and the *Nunavut Project and Planning Assessment Act* and the *amended Meliadine Gold Mine Project Certificate [No.006]*, the Nunavut Impact Review Board requested parties to review Agnico Eagle Mines Limited's (AEM) Meliadine Gold Mine Project 2023 Annual Report with respect to effects and compliance monitoring.

Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) has conducted a review of the 2023 Annual Report and related documents in areas under its mandate and jurisdiction pertaining to effects and compliance monitoring. On this basis, CIRNAC would like to provide the comments below for Nunavut Impact Review Board's (NIRB) consideration.

CIRNAC appreciates the opportunity to review AEM's Meliadine Gold Mine Project 2023 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 Richard Bingley by email at richard.bingley2@rcaanc-cirnac.gc.ca

Sincerely,



Richard Bingley
A/Manager, Impact Assessment



1. Effects Monitoring

The Meliadine Gold Mine Project 2023 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 the 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 Project Certificate (as amended). The assessment considered the following:

- a. ***Whether the conclusions reached by AEM in the 2023 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.***

Comment Number:	CIRNAC #1														
Subject:	Saline Water Volumes Pumped to Tiriganiaq Open Pit #2 (TIRI02)														
Reference:	<ul style="list-style-type: none">• Meliadine 2018, 2019, 2020, 2021, 2022 Annual Reports• Meliadine 2023 Annual Report; Section 3.1.3 Mine Water Pumped from Underground• Meliadine 2023 Annual Report; Section 3.2.1.4 TIRI02 Water Volume Figure 14• Meliadine 2023 Annual Report; Appendix 28-9 Water Management Plan, Appendix A Groundwater Management Plan, Section 2.1 Predicted Groundwater Volumes• Groundwater Management Plan; Amendment Application, January 2024• NIRB Term and Condition 25, and 26 of Project Certificate No. 006, Amendment 002														
Issue/Rationale:	<p>Section 3.1.3 of the Meliadine Gold Mine Project 2023 Annual Report states that the volume of underground saline water pumped to the surface was 71,971 m³ in 2023, and Table 4 provides the pumping distribution by month over the year.</p> <p>A review of prior annual reports found similar information provided for each of the previous years starting in 2018. The table below summarizes pumped volumes for this review, the reported total volume of underground saline water pumped into the pit is 373,906 m³ by the end of 2023.</p> <table><tr><th>2018</th><th>2019</th><th>2020</th><th>2021</th><th>2022</th><th>2023</th><th>total to date</th></tr><tr><td>37,766</td><td>37,031</td><td>103,486</td><td>54,805</td><td>68,845</td><td>71,973</td><td>373,906</td></tr></table> <p>Meliadine 2023 Annual Report; Section 3.2.1.4 Figure 14 shows the results of modelled and observed volumes of saline water in TIRI02. It notes that saline water pumped from Tiriganiaq will be stored in TIRI02 until 2025, after which the water will be discharged through the waterline to Itivia Harbour. Predicted groundwater inflow rates to the underground mine were updated in 2024 to reflect an updated mine plan scenario. They included a limited calibration based on groundwater inflow monitoring over previous years.</p>	2018	2019	2020	2021	2022	2023	total to date	37,766	37,031	103,486	54,805	68,845	71,973	373,906
2018	2019	2020	2021	2022	2023	total to date									
37,766	37,031	103,486	54,805	68,845	71,973	373,906									



Comment
Number:

CIRNAC #1

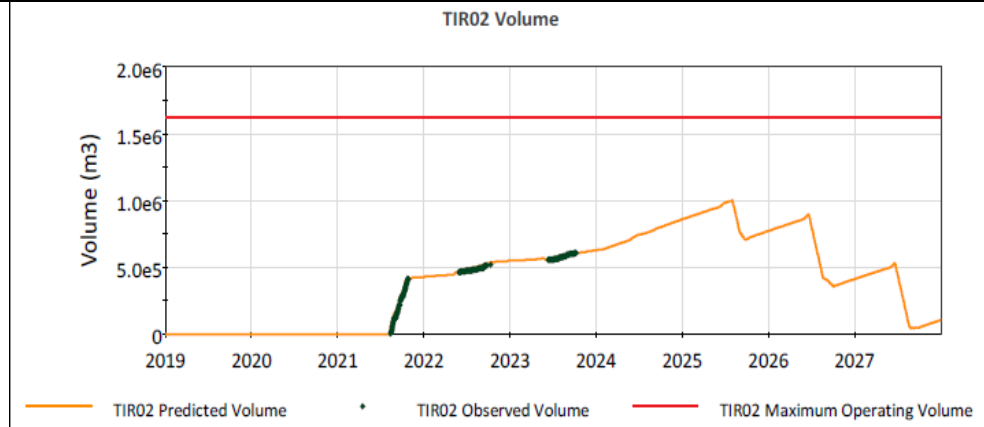


Figure 14: Forecasted saline water volume in TIR02 against observed volumes.

As seen in Figure 14, the predicted and actual volume of saline water stored in the pits was approximately 500,000 m³ in 2023. This figure shows a substantial discrepancy from the total of 373,906 m³ previously reported at Meliadine in the 2018 to 2023 Annual Reports. It is important to note that these volumes don't account for any decrease in pit volumes due to the discharge of saline water pit volumes that took place between 2019 to 2021.

Table 1 in Section 2.1 Predicted Groundwater Volumes of the Groundwater Management Plan, Appendix A to the Water Management Plan, provides Predicted Groundwater Inflow for the years 2023 to 2031, as seen below.

Table 1: Predicted Groundwater Inflow and TDS to the Underground Mine (2017 to 2033)

Year	Predicted Groundwater Inflow (m ³ /day)	Predicted TDS (mg/L)
2023	300	57,500
2024	450	57,000
2025	450	57,000
2026	475	56,500
2027	475	56,500
2028	450	56,500
2029	475	54,000
2030	475	53,500
2031	475	53,500
2032	450	53,500
2033	450	53,500

Based on this table, the pit is expected to receive an additional groundwater inflow of 328,500 m³ between 2024 and 2025. This would bring the total to 702,406 m³ considering the groundwater inflow previously reported in the Annual Report. This estimate deviates significantly from the 1,000,000 m³ depicted in Figure 14.



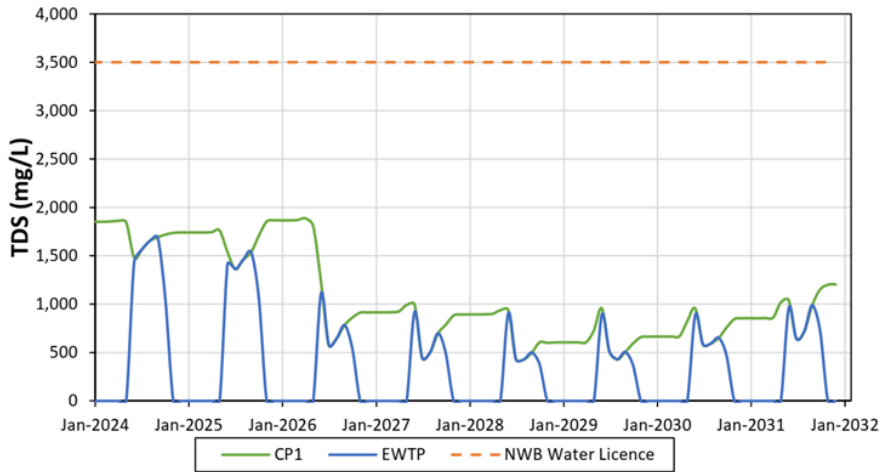
Comment Number:	CIRNAC #1
	<p>CIRNAC notes that the inflow predictions in Table 1 above vary from those provided by AEM in support of the Amendment Application to the Nunavut Water Board dated January 2024, which included Table 16 of the Water Management Plan and Table 6 of the Updated Hydrogeology Modelling Report. These two tables also varied from each other.</p> <p>In light of the variances between actual volumes reported to date and predictions to date and the provision of three different predicted rate tables for inflow for future years, it is difficult to determine if the projections of saline water inflows will vary substantially from, or have impact predictions outside of the Project FEIS targets.</p>
Recommendation to Address Issues:	<p>CIRNAC recommends that AEM:</p> <ol style="list-style-type: none"> Provide clarification concerning the various discrepancies between the total volume of saline water from underground that was pumped to the surface, as detailed in Section 3.1.3 of the Meliadine 2023 Annual Report for the period from 2018 to 2023, and the corresponding volumes illustrated in Figure 14. Reconcile any disparities in the projected groundwater inflow rates from 2024 onward against the updated predictions provided in the FEIS. Verification of these expected inflows against the FEIS will enhance transparency and ensure alignment with regulatory expectations.

Comment Number:	CIRNAC #2
Subject:	Water Quality Predictions
Reference:	<ul style="list-style-type: none"> Meliadine 2023 Annual Report; Appendix 4, Water Balance and Water Quality Modelling Tabular Data Meliadine 2023 Annual Report; Appendix 5 Meliadine Water License No. 2AM-MEL1631, Amendment Application; Lorax Environmental Service, Memorandum dated 23 February 2024 NIRB Term and Condition 32 of Project Certificate No. 006, Amendment 002
Issue/Rationale:	<p>As shown in the figures below, the predicted Total Dissolved Solids (TDS) concentrations in CP1 as presented in Appendix 4 of the Meliadine 2023 Annual Report are much higher than the TDS predictions presented Meliadine Water License No. 2AM-MEL1631, Amendment Application, 23 February 2024).</p> <p>As in previous years, the Water Balance and Water Quality Model (WBWQM) overpredicted ammonia-nitrogen concentrations and total</p>



Comment Number:	CIRNAC #2
	<p>phosphorous in CP1. As recommended by CIRNAC in its 2022 Annual Report Comments, AEM conducted a study, whose results are reported in Meliadine 2023 Annual Report; Appendix 5. The study reaffirmed previous findings that nutrient dynamics in CP1 are linked to algae in aquatic ecosystems. Although the ammonia removal mechanism remains unclear in CO1, data indicate that natural attenuation through algal growth significantly influences this process.</p> <p>From the 2023 Annual report (Appendix 4, page 492):</p> <div> <p style="text-align: center;">Figure 9 CP1 Observed and forecasted TDS concentrations</p> </div> <p>From the 2024 Nunavut Water Board Amendment Application (Appendix B_WBWQM Figures, Lorax-memo: February 23, 2024):</p>



Comment Number:	CIRNAC #2
	 <p>Figure E-1: Projected concentrations of total dissolved solids (TDS) at CP1 and EWTP during Operations (2024-2031) as compared to the NWB Water Licence limit.</p> <p>In addition, water quality predictions included in the 2023 Annual Report and Appendix 4 for CP1 and TIRI02 are only forecasted until the end of 2027, as a result, it is not possible for CIRNAC to confirm conformance through the life of the mine and closure and post-closure periods. These longer-term figures are required for assessing long-term trends and comparing these trends to those predicted in the FEIS.</p>
Recommendation to Address Issues:	<p>CIRNAC recommends that AEM:</p> <ol style="list-style-type: none"> Enhance the accuracy in predicted CP1 TDS concentrations from 2024 to 2028. Enhance the accuracy of ammonia-nitrogen and total phosphorous concentration predictions in the WBWQM by incorporating CP-specific nutrient attenuation processes. Provide WBWQM figures that verify expected concentration results during operations, closure and post closure.

Comment Number:	CIRNAC #3
Subject:	Improving Effects Monitoring in Meliadine Lake
Reference:	<ul style="list-style-type: none"> Meliadine 2023 Annual Report; Section 7.1 Meliadine 2023 Annual Report; Appendix 17, Aquatic Effects Monitoring Report NIRB Term and Condition 30 of Project Certificate No. 006,



Comment Number:	CIRNAC #3
	Amendment 002
Issue/Rationale:	<p>As noted in Meliadine's 2023 Annual Report; Appendix 17, the objective of the Aquatic Effects Monitoring Program (AEMP) for the Meliadine Mine is to verify that the mine is operating as planned and not causing changes in water quality that could adversely impact aquatic life or traditional uses of Meliadine Lake.</p> <p>The 2023 AEMP notes that water quality in Meliadine Lake has changed in recent years with increasing concentrations of some parameters, including major ions (chloride, sodium, sulphate), organic carbon, and a few metals (arsenic, molybdenum, strontium, and uranium). These concentration increases were observed throughout the lake. Treating effluent discharge into Meliadine Lake has, among other factors, contributed to these changes, most obviously within the East Basin.</p> <p>Despite these observations, which are similar to previous years, the AEMP did not identify any mining-related exceedances of the AEMP Action Levels for water quality or phytoplankton that have been developed for toxicological impairment and nutrient enrichment. However, these elements and chemicals may contribute to increasing primary productivity via separate pathways. The current monitoring frequency (i.e., collecting water samples three times a year) is inadequate to accurately discern potential correlations necessary for a comprehensive assessment of the impacts of mine effluent on Meliadine Lake.</p>
Recommendation to Address Issues:	<p>CIRNAC recommends a more detailed study in the AEMP to minimize uncertainty in water quality in Meliadine Lake through expanded data collection and assessment. This may include, but is not limited to:</p> <ul style="list-style-type: none"> a) Extending the current AEMP monitoring period (i.e., June to October instead of July to September) and increasing the frequency of water chemistry monitoring (i.e., once a week instead of once a month) to help define the factors influencing the system's productivity. b) Collecting oxygen profiles, turbidity data and water chemistry measurements (including dissolved organic and inorganic carbon) at depth to determine if the elevation of organic material in surface water and at depth indicates the early stages of eutrophication and the accumulation of organic material. c) Collecting and analyzing lake bottom sediment samples annually for trend analysis.

Comment Number:	CIRNAC #4
Subject:	Employment schedule
Reference:	<ul style="list-style-type: none"> • Meliadine 2023 Annual Report; Appendix 36 • Meliadine 2022 Annual Report; Appendix 37



Comment Number:	CIRNAC #4
	<ul style="list-style-type: none"> NIRB Term and Condition 92 of Project Certificate No. 006, Amendment 002
Issue/Rationale:	<p>Pursuant to Term and Condition 92 of Project Certificate 006, Amendment 2, AEM is required to “submit a detailed staff schedule to the NIRB and 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:</p> <ol style="list-style-type: none"> Title of positions required by department and division; Quantity of positions available by Project phase and year; Transferable skills, both certified and uncertified, which may be required for, or gained during, employment within each position; and, The National Occupational Classification (NOC) code for each individual position.” <p>AEM is also “encouraged to consult the Government of Nunavut during development of the schedule. A new schedule should be submitted following any significant deviation from original predications.”</p> <p>The NIRB Project Certificate Tracking Table included in AEM’s Appendix 36 of the Meliadine 2023 Annual Report makes reference to section 12.2 of the 2022 Annual Report and related appendices for information relating to the compliance status of this Term and Condition. Section 12.2 of the Meliadine 2022 Annual Report and its Appendix 37, Socio-Economic Monitoring Program Report do not present the detailed staff schedule required under Term and Condition 92. A copy of this schedule should be provided, along with information as to whether or not it has been updated in recent years to reflect workforce changes following the Ministerial written approval, of the NIRB’s recommendation for AEM’s Saline Effluent Discharge to Marine Environment Proposal, including the new and revised Project Certificate Terms and Conditions on January 31, 2022.</p>
Recommendation to Address Issues:	<p>CIRNAC recommends that AEM:</p> <ol style="list-style-type: none"> Confirm whether any changes were made to its detailed staff schedule following the approval of its Saline Effluent Discharge to the Marine Environment Proposal. Provide a reference as to where the most recent copy of its detailed staff schedule can be found on the NIRB public registry; as well as providing a reference as to where the most recent copy of its detailed staff schedule can be found on the NIRB public registry. Specify where its detailed staff schedule can be found on the NIRB public registry in all future Annual Report submissions.

Comment Number:	CIRNAC #5
Subject:	Non-Traditional Land Use and Resource Use – Consultation with



Comment Number:	CIRNAC #5
	Outfitters and Guides
Reference:	<ul style="list-style-type: none"> • Meliadine 2023 Annual Report • NIRB Term and Condition 104 of Project Certificate No. 006, Amendment 002
Issue/Rationale:	<p>Pursuant to Term and Condition 104 of the Amended Meliadine NIRB Project Certificate, AEM “is encouraged to consult with outfitting and guiding businesses 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 All-Weather Access Road. Results of this consultation should be incorporated into updated plans where applicable.”</p> <p>Furthermore, the Reporting Requirements for this Term and Condition state that, AEM “shall provide a summary discussion of its implementation of this term and condition (including results of monitoring, adaptive management strategies, consultation, and contribution efforts) to the NIRB through the Proponent’s annual monitoring report.”</p> <p>The NIRB Project Certificate Tracking Table included in AEM’s 2023 Annual Report (Appendix 36) makes reference to section 7.9.1, 11.7 and a related appendix (i.e., the 2023 TEMMP Report included as Appendix 25, which includes the 2023 Hunter Harvest Study Report) for information pertaining to this Term and Condition’s compliance status. Upon review of this material it is not known if AEM regularly engages with outfitting and guiding businesses that operate in the Local and Regional Study Areas to satisfy the requirements of this Term and Condition . Granted this, Section 11.7 of the 2023 Annual Report mentions that in addition to the Kangiqliniq Hunter Trapping Organization, other community hunters and outfitting and guiding businesses participated in the 2023 Hunter Harvest Study.</p>
Recommendation to Address Issues:	CIRNAC recommends that AEM provide an update on its practice of consulting with outfitting and guiding businesses 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 All-Weather Access Road. This update should include results from consultation activities and how they are incorporated into updated plans where applicable.

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, 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 regard to the Nunavut Water Board (NWB)'s issuance of 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 Term and Condition contained within any Water Licence associated with the project.

Although CIRNAC is not responsible for implementing water-related Term and Condition's, the Department has reviewed the Type 'A' Water Licence associated with the Meliadine Gold Mine Project with respect to the amended Project Certificate [No. 006] and has included a concordance table (Appendix A) that outlines how these Term and Condition's have been incorporated in the Water Licence by the NWB.

In 2023, 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

Regarding land authorizations, CIRNAC issued the surface lease (#055K16042) for the marine discharge pipe for the Meliadine Gold Mine Project in 2019. The surface lease was amended (#55K/16-42-3) on January 23, 2023.

ii. A summary of any inspections conducted during the 2023 reporting period and the results of these inspections; and,

CIRNAC's Water Resource Officer conducted four inspections during the 2023 reporting period. A summary of the inspection reports is presented below for NIRB's consideration.

Inspection 1	Water Licence No. 2AM-MEL1631
Area:	Meliadine Camp
Inspection Date:	March 23, 2023
Observations:	The primary focus of inspection was snow management on site and adherence to Part J of the Water Licence No. 2AM-MEL1631. The Water Resource Officer identified several issues in that regard.
Result:	There were no items of non-compliance noted. The Water Resource Officer requested the Licensee present a plan for using, reusing, or removing the equipment found unused near the exploration camp.



	AEM provided a response with a plan outlining items that are in use, being assessed for reuse or determined to be disposed of or removed from the site during the annual sealift to the satisfaction of the Inspector.
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Inspection 2	Water Licence No. 2AM-MEL1631
Area:	Meliadine Camp
Inspection Date:	May 31, 2023
Observations:	The primary focus of this inspection was water management during freshet. In 2023, Spring came early to the area, so during the Inspection, very little snow was present, and most of the site was already dry.
Result:	There were no items of non-compliance noted, and no actions were required.

Inspection 3	Project Certificate No.:006
Area:	Meliadine Camp
Inspection Date:	June 21, 2023
Observations:	<p>The primary focus of this inspection was to conduct road monitoring for the Spring Caribou migration through the Rankin Inlet area and ensure compliance with Project Certificate No. 006. The Inspector conducted road monitoring from 0935hrs to 1300hrs. During this time, a herd of approximately 300 Caribou was observed within 100m of the All-Weather Access Road leading to the Proponent's site of operations. During this time, the Caribou were observed crossing the road with their calves.</p> <p>The road remained closed during this time, and no traffic proceeded. At the writing of the inspection report, there were two emergencies which occurred this spring migration and proceeded during road closures.</p>
Result:	There were no items of non-compliance noted, and no actions were required.

Inspection 4	Water Licence No. 2AM-MEL1631
Area:	Meliadine Camp
Inspection Date:	September 27 and 28, 2023
Observations:	The primary focus of this inspection was spills, follow-up items from previous Inspections and dust management on site. The Inspector noticed a variety of methods are used to quantify dust fall and air quality. The major identified dust concerns on-site stem from the dry stack Tailings Storage Facility (TSF). The licensee's representative showed the Inspector several locations where new technologies are being tested by the Licensee on the TSF to reduce airborne dust.



	The 2022 Aquatic Effects Monitoring Program Report identifies that concentrations of Arsenic in Lake B7 and A8 have increased since development, nearing the action levels identified in the Final Environmental Impact Statement. The report identifies the likely cause of the Arsenic levels as the TSF. Several spills were inspected and considered "Closed-Remediated".
Result:	No items of non-compliance were noted, and no actions were required. However, the Inspector is concerned that wastes generated from the TSF in the form of dust are entering freshwater. The Licensee is encouraged to continue the dust mitigation.

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

No items of non-compliances related to Water Licence conditions and the Nunavut Waters and Nunavut Surface Rights Tribunal Act S.C 2002, c. 10 were noted during 2023 inspections.

CIRNAC will continue to work with AEM to ensure continued compliance with all water licence requirements associated with this project.

Appendix A: Project Certificate Terms and Conditions 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
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



NIRB Project Certificate No. 006 Term & Condition		Implemented in NWB Water Licence NO: 2AM-MEL1631
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
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



NIRB Project Certificate No. 006 Term & Condition		Implemented in NWB Water Licence NO: 2AM-MEL1631
16	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.	<ul style="list-style-type: none"> ▪ Part B: Item 12o ▪ Part D: Items 2e, 8 and 21 ▪ Part E: Item 9
17	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.	<ul style="list-style-type: none"> ▪ Part J: Item 5
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"> a. 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 freezeback efficiency, including for example, factors such as ice content and stability; and, b. 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	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.	<ul style="list-style-type: none"> ▪ Part B: Item 12l



NIRB Project Certificate No. 006 Term & Condition		Implemented in NWB Water Licence NO: 2AM-MEL1631
21	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.	<ul style="list-style-type: none"> ▪ Part B: Item 12h
22	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.	<ul style="list-style-type: none"> ▪ Part B: Item 12j
23	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.	<ul style="list-style-type: none"> ▪ Part B: Item 12j
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



NIRB Project Certificate No. 006 Term & Condition		Implemented in NWB Water Licence NO: 2AM-MEL1631
27	<p>The Proponent shall update its Aquatic Effects Monitoring Plan (AEMP) to include, at a minimum:</p> <ol style="list-style-type: none"> 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; A description of measures to be undertaken as relate to dustfall monitoring, designed in accordance with the following: <ol style="list-style-type: none"> To establish Phase 1 all-weather access road baseline data and a description of plans for data collection during Project operations for comparison; To facilitate comparison with existing guidelines; 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; A description of water quality monitoring to be conducted at Little Meliadine Lake; and 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
28	<p>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.</p>	<ul style="list-style-type: none"> ▪ Part B: Item 12q
29	<p>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.</p>	<ul style="list-style-type: none"> ▪ Part D: Item 1a and 24 ▪ Part E: Item 15



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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
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, reseeded 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



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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.	▪ 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.	▪ 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> <ul style="list-style-type: none"> a. Modeling of oil spills in the following areas: <ul 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. 	▪ Part B: Item 12p
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



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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

