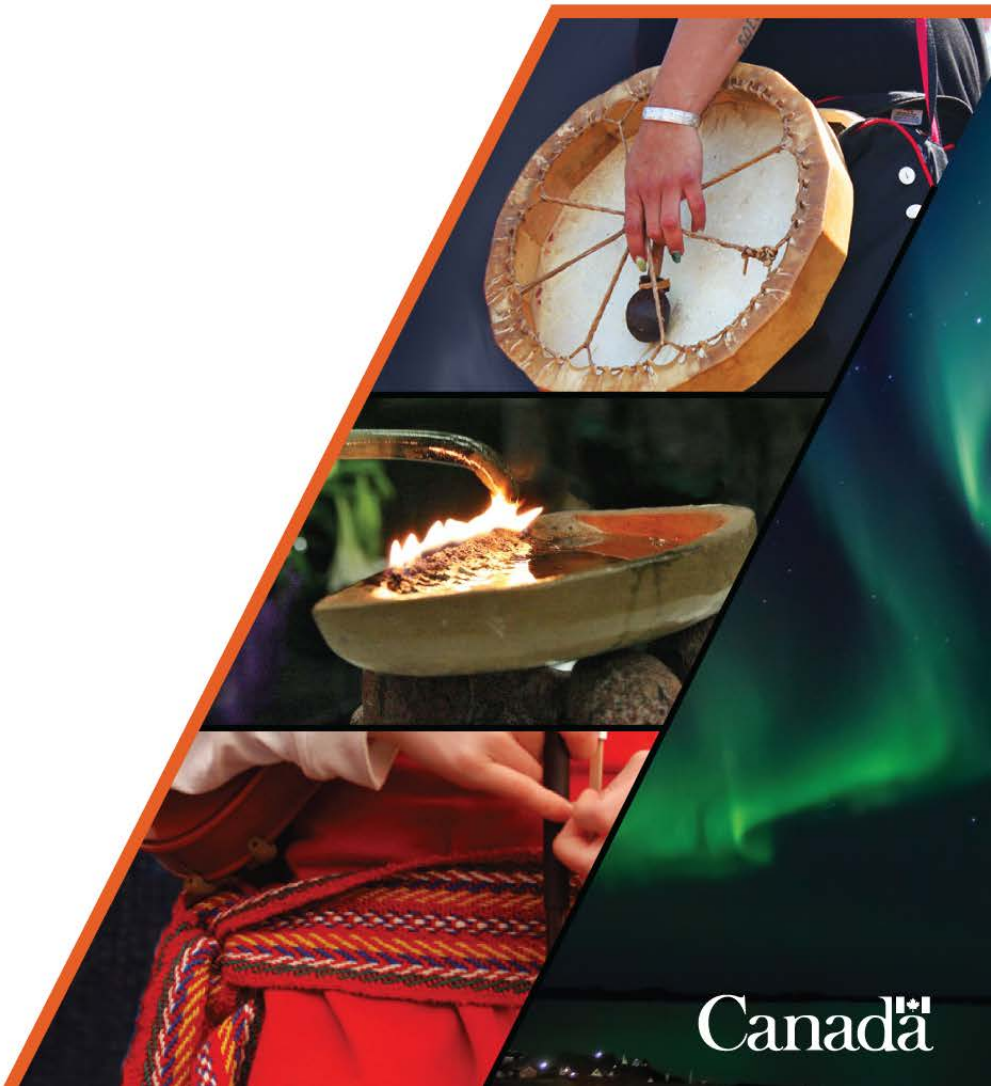
Crown-Indigenous Relations and Northern Affairs Canada
Relations Couronne-Autochtones et Affaires du Nord Canada

# CIRNAC Comments to NIRB Re: Agnico Eagle Mines Limited's Meliadine Gold Mine Project 2019 Annual Monitoring Report



Canada

Nunavut Regional Office
P.O. Box 100
Iqaluit, NU, X0A 0H0

Your file - Votre référence
11MN034
Our file - Notre référence
CIDMS # 1286089

July 02, 2020

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 2019 Annual Monitoring Report***

On May 6, 2020, 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 2019 Annual Monitoring Report with respect to effects and compliance monitoring.

Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) has conducted a review of the 2019 Annual Monitoring Report and related documents in areas under its mandate pertaining to effects and compliance monitoring. On this basis, CIRNAC would like to provide the comments below for NIRB's consideration.

CIRNAC appreciates the opportunity to review AEM's Meliadine Gold Mine Project 2019 Annual Monitoring 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 at 867-975-4741 or by email at amal.roy@canada.ca.

Sincerely,

Felexce Ngwa
Manager, Impact Assessment

## 1. ***Effects Monitoring***

The Meliadine Gold Project 2019 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 Projects Certificate. The assessment considered the following:

***a. Whether the conclusions reached by Agnico Eagle Mines Limited (AEM) in the Meliadine Gold Mine Project 2019 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** |
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| **Subject:** | Resolution of Comments on 2018 Annual Report |
| **Reference:** | • AEM's Responses to CIRNAC Comments on 2018 Annual Report (June 11, 2019)<br>• Meliadine Gold Project 2019 Annual Report |
| **Issue/Rationale:** | CIRNAC's Review of the 2018 Annual Report resulted in the generation of six comments for AEM's consideration. AEM has provided appropriate responses and completely addressed two of these comments. Outstanding items are listed below in sequence. |
| **Issue #1.1** | **Geochemical Monitoring, Acid Rock Drainage/Metal Leaching (ARD/ML) Testing**<br>CIRNAC recommended that AEM provide an estimate of 2018 waste rock volume with ARD potential falling within the uncertain range [i.e., Neutralizing Potential Ratio (NPR) 1-3].<br><br>In its response, AEM indicated that "*Only one sample collected over the past two years of sampling [2017 & 2018] has been in the uncertain category, which is consistent with the lack of ARD risk found in the project development studies for Tiriganiac (Golder 2014)*" and that "*no volume of uncertain material is provided as the one sample is considered anomalous and of very low risk for ARD."*<br><br>As reported in the 2019 Annual Report, another sedimentary rock sample was found to have an NPR in the uncertain range with a value of 1.8. Again, no volume of uncertain waste rock material was provided as the sample was not considered a risk by AEM. As in 2018, the material was crushed and used as roadbed material underground.<br><br>The identification of waste rock with uncertain NPR was not an isolated occurrence in 2018 as another sample tested in uncertain NPR range in 2019. Although, only one sample each year was classified as uncertain, it is recommended that the volume of waste rock with ARD potential, including uncertain waste rock, be tracked. |
| **Recommendation:** | CIRNAC recommends that moving forward AEM track volumes of Waste Rock classified as uncertain in the NPR range. |

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| **Issue #1.2** | **Water Quantity-Volumes Reporting to Underground Mine and Various Seepage Collection Ponds**<br>CIRNAC recommended that AEM present, in future annual reports a year-over-year comparison of actual volumes of water reporting to water retaining structures with FEIS predictions.<br><br>In its response, AEM indicated that it "*will present in future annual reports a year-over-year comparison of actual volumes of water reporting to water retaining structures with the estimated maximum annual volumes from mine site water balance as no predictions were made for retaining structures in the FEIS*".<br><br>Review of the 2019 Annual Report indicates the following:<br>Table 3.4 (S3.1.3) from the 2018 Annual Report summarizing Monthly and Annual Flow Volumes of Underground Mine Water Pumped to surface is replaced by Table 5 in the 2019 Annual Report, which, as before only provides volumes for a single year, 2019.<br>Table 4.3 (S4.1; licence item (i)) from the 2018 Annual Report summarizing Volumes of Seepage, Pumped from the Trenches Downstream from DCP1, DCP5, DP-1 and DP-3 is not included in the 2019 Annual Report.<br><br>It appears that both items 1(h) and 1(i) of Schedule B of licence 2AM-MEA1631 on the reporting of daily, monthly and annual flow volumes of any watercourse diverted during construction activities and of seepage from dikes, dams and other structures in cubic meters, respectively, are not included/discussed in the 2019 Annual Report. In addition, the associated appendices A-1, A-2 and A-3 present volumes from only 2018 and 2019 volumes are not reported. No explanation is provided for the omitted 2019 data. |
| **Recommendation:** | CIRNAC recommends that AEM:<br>1. Present in future annual reports a year-over-year comparison of actual volumes of water reporting to water retaining structures with FEIS predictions.<br>2. Provide the necessary information to address items 1(h) and 1(i) of Schedule B of the water licence 2AM-MEA1631 pertaining to the reporting of daily, monthly and annual flow volumes of any watercourse diverted during construction activities, and of seepage from dikes, dams and other structures in cubic meters, respectively.<br>3. Update Appendices A-1, A-2 and A-3 of the 2019 Annual Report to include data collected in 2019. |
| **Issue #1.3** | **Spill Management**<br>CIRNAC recommended that AEM (1) Clearly describe, in future annual reports, how all spills were cleaned up, including a description of approach used to dispose of any resulting contaminated materials; and (2) Present a year-over-year comparison of total reportable and non-reportable spills, including a comparison to FEIS predictions. |

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| | In the 2019 Annual Report, all reportable spills/exceedances are summarized in Table 15 and complete spill reports and follow up reports are provided in Appendix F-3. Non-reportable spills are summarized in Table 16. While more detailed and informative descriptions of corrective actions are generally provided for non-reportable spills compared to the 2018 Annual Report, many descriptions remain vague and generic. For example, *"Contaminated snow picked up and disposed properly"; "Area cleaned"; "Spill cleaned and material disposed of adequately"; "Area cleaned adequately".*<br><br>AEM has not provided a year-over-year comparison of total reportable and non-reportable spills as recommended by CIRNAC. FEIS predictions for spills are not available for comparison. |
| **Recommendation:** | CIRNAC recommends that AEM:<br>1. Provide a year-over-year comparison of total reportable and non-reportable spills.<br>2. Provide more details when describing spill response actions taken. |
| **Issue #1.4** | **Mine Site Water Quality**<br>CIRNAC recommended that AEM (1) Clarify if water quality parameters other than total suspended solids (TSS), total aluminium (Al), and total dissolved solids (TDS) are being monitored at the 23 mine site sample stations referenced in the 2018 Annual Monitoring Report, and if yes, present data summaries for these parameters for all sampling locations in the main report; and (2) Present (preferably in tabular format) year-over-year comparison of the measured concentrations for the various water quality parameters to FEIS predictions.<br><br>In its response, AEM indicated that "*All monitoring station results with multiple parameters are presented in Appendix H-3. Agnico Eagle is of the opinion that tabular results for all the sampling stations is suited better in the Appendix than it would in the main report. Most of these sampling stations don't have FEIS predictions. Agnico Eagle will present year-over-year comparison for critical parameters."*<br><br>Review of the 2019 Annual Report indicated that the presentation of data on Mine Site Water Quality in Section 7.3 is unaltered from the previous years. Other than a few graphs summarizing TSS or TDS data at select stations, no data are included in the main report in either figures or tables. Instead, data summaries for all stations are included in Appendix H-3, but without any associated discussion or interpretation. While many of the listed stations are not monitored for water quality (i.e., decommissioned, monitored for volume only), many stations such as aquatic monitoring stations (e.g., MEL-11, MEL-12) have data, but the data are neither presented nor discussed. It is clear from Appendix H-3, that the number of parameters monitored varies between stations and is not limited to |

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| | TDS/TSS/Al.<br><br>Furthermore, comparisons to available FEIS predictions and year-over-year comparisons are not provided in either the main report or Appendix H-3. |
| **Recommendation:** | CIRNAC recommends that AEM:<br>1. Present water quality data summaries for all mine site monitoring stations; and,<br>2. Present (preferably in tabular format) year-over-year comparison of the measured concentrations for the various water quality parameters to FEIS predictions, where available. |

| Comment Number: | CIRNAC #2 |
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| **Subject:** | Annual Report Structure & Content |
| **Reference:** | • Meliadine Gold Project 2019 Annual Report |
| **Issue/Rationale:** | In reviewing the 2019 Annual Report (main report), CIRNAC notes that the report structure while generally appropriate as provided, could be improved to better align with the Operational Phase that the project entered in 2019. At present, Section 4 entitled *"Waste Rock Management Activities"* contains, in addition to information relevant to waste rock management, information on other important aspects of the operation such as geotechnical performance monitoring of all mine and related facilities, geochemical monitoring for ponds, basins, tailings, and information on the tailings storage facility. It is suggested that either the Section 4 title be changed to reflect this broader context or perhaps create a new section and header that reports information on non-waste rock related aspects of the site (dikes, basins, tailings, etc.), going forward. Some additional observations with respect to the main report content include:<br><br>a. S2.1.3: Neither Figure 1 nor Figure 2 Meliadine Site Plan identify the location of D-CP5 and there is no figure identifying the Itivia fuel storage facility and Metal and Diamond Mining Effluent Regulations (MDMER) monitoring station MEL-26 where treated saline water is discharged to Melvin Bay. While these facilities are shown in appendix documents they should also be included in the main document.<br>b. Tables 19 & 20 are supposed to summarize monthly mean concentrations, pH range and volume of effluent for final discharge points MEL-14 and MEL-26, respectively, but neither table includes pH range or volume.<br>c. In most appendix documents, year 2019 is noted on their schedules as "Year -1" and 2020 as Year 1, but other documents, e.g. Production Lease KVPL11D01 document, year 2020 is referred to as Year 2. This may be confusing |

| Comment Number: | CIRNAC #2 |
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| | when reviewing and comparing information based on planned Phases and planned years and thus consistent nomenclature should be used with year 2019 as Year -1 and year 2020 as Year 1.<br>d. Similar to other annual reports prepared for other AEM projects (e.g., Meadowbank/Whale Tail), it would be helpful to have an appended table that tracks the status of all regulators' comments on past annual reports and that indicates where within the current Annual Report the comments have been addressed by AEM. This would help determine whether comments have been adequately addressed or not. |
| **Recommendation:** | CIRNAC recommends that AEM make the following changes/additions to the Annual Report structure/content to help improve the utility of the document:<br>1. 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.<br>2. 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.<br>3. As per the table titles, expand Tables 19 & 20 to include monthly pH ranges and effluent volumes for monitoring stations MEL-14 and MEL-26.<br>4. Use consistent nomenclature in the main report and supporting documents to describe the mining schedule; for example, consistent with most documentation, denote calendar year 2019 as Year -1 and 2020 as Year 1.<br>5. 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. |

| Comment Number: | CIRNAC #3 |
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| **Subject:** | Quality Assurance/Quality Control (QA/QC) Sampling Program |
| **Reference:** | • Meliadine Gold Project 2019 Annual Report S7.3.3 |
| **Issue/Rationale:** | Section 7.3.3 outlines the results of the Meliadine QA/QC program applied to the collection of field samples, specifically Metal and Diamond and Mining Effluent Regulations (MDMER)/Environmental Effect Monitoring (EEM) samples, Sewage Treatment Plant (STP) samples, and surface water samples. Duplicate field water quality samples are collected as part of the QA/QC program, which are collected simultaneously in the field at the same sampling location using identical sampling procedures to assess sampling variability and sample homogeneity. The QA/QC program objective for duplicate samples is 10%, meaning that duplicate samples must represent 10% of the total number of samples collected for each sample group. |

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| | In 2019, the following QA/QC samples were reportedly collected:<br>a. MDMER and EEM monitoring programs: Eight duplicate samples and six field blanks collected from a total of 39 samples, representing 20.5% and 15.4% of samples taken, respectively;<br>b. STP monitoring program: One duplicate sample which was collected from a total of 48 sampling events, representing 2.1% of the total number of samples; and,<br>c. Surface water monitoring program: 12 duplicate samples and 12 field blanks collected from a total of 63 samples, representing 19.0 % of samples taken.<br><br>AEM concluded that, overall, collected and analyzed duplicate samples represent 14% of the field samples collected throughout 2019, which is higher than the QA/QC duplicate program objective of 10%.<br><br>CIRNAC notes that this conclusion is incorrect as the QA/QC program objective for duplicate samples of 10% was not met for STP samples where duplicate samples represented only 2.1% of the total number of samples collected. The objective needs to be applied separately to each sample type as the sample matrix varies between sample types. |
| **Recommendation:** | CIRNAC recommends that AEM ensure that all responsible personnel are trained in regard to QA/QC sampling requirements. The proper implementation of the QA/QC program is necessary to ensure that program objectives are met for each type of sample/matrix collected. |

| Comment Number: | CIRNAC #4 |
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| **Subject:** | Classification of Ore by Source |
| **Reference:** | • Meliadine Gold Project 2019 Annual Report S2.3.1 |
| **Issue/Rationale:** | Under Section 2.3.1 describing Mining Activities, AEM presents the following information: "*In 2019, the Meliadine Gold Mine began commercial gold production on May 14, 2019. A total of 482,735 tonnes of waste was excavated, 4,331 tonnes was used as underground rockfill and the rest was used for construction purposes. A total of 143,634 tonnes of marginal and 925,537 tonnes of ore was excavated, with 144,088 tonnes stockpiled.*"<br><br>In describing the excavated ore, the source(s) of the ore (e.g., U/G, OP1, OP2) is not identified. Tracking the ore by source and associated tonnage will become more important as the project progresses and should be documented in future reports. |
| **Recommendation:** | CIRNAC recommends that in future annual reports AEM identify excavated ore by source and track the associated tonnages. |

| Comment Number: | CIRNAC #5 |
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| **Subject:** | Water Balance & Water Quality Reporting |
| **Reference:** | • Meliadine Gold Project 2019 Annual Report S3.2<br>• Appendix I-1 Water Management Report |
| **Issue/Rationale:** | In Section 3.2 of the 2019 Annual Report, it is noted that the Meliadine water balance and water quality reports were updated in January 2019 prior to receiving ministerial approval for saline effluent discharge to sea at Melvin Bay and as such, neither model accounted for discharge to Melvin Bay. AEM stated that once the models are updated to incorporate this and other changes to the water management strategies and to cover the life of mine duration, year-over-year comparisons of actual volumes of water reporting to water retaining structures versus those predicted in the model will be provided in future reports.<br><br>The 2019 Annual Report documentation did not include any version of the water balance or water quality model for reference, which represents a significant gap in the documentation.<br><br>AEM stated that both models will be updated and included with the 2020 Annual Report that will be provided at the end of Q1 in 2021. Given issues identified with water management onsite and predictions of high TDS levels in containment ponds and potential arsenic exceedances at CP3 at closure that could require treatment, and the recent change in tailings ARD classification, it is vital that these models are updated annually and that year-over-year trends in both water volume and quality are documented and analyzed to help inform management practices. Inclusion of an updated water balance with the 2019 Annual Report would have helped reviewers understand current water management issues identified for the Meliadine site. |
| **Recommendation:** | CIRNAC requests that AEM:<br>1. Immediately update the water balance and water quality models for the Meliadine site to incorporate effluent discharge to Melvin Bay and any other changes to the site's water management strategies, and to cover the life of mine duration and provide to CIRNAC for review by September 30, 2020.<br>2. Update the models annually moving forward and include with each subsequent Annual Report along with year-over-year comparisons of actual volumes and measured contaminant concentrations versus those predicted with the models. |

| Comment Number: | CIRNAC #6 |
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| **Subject:** | Acid Rock Drainage Potential of Filtered Tailings |
| **Reference:** | • Meliadine Gold Project 2019 Annual Report S4.2.3<br>• Appendix C-1 Geochemical Report |
| **Issue/Rationale:** | The baseline geochemical findings for the site (Golder 2014) found that there was low potential for ARD generation in all of the deposits except the Discovery Zone, the mining of which has not been initiated yet. Based on geochemical characterization, AEM considered the tailings to be non-potentially acid generating (NPAG). Potential for |

| Comment Number: | CIRNAC #6 |
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| | ARD from containment/sedimentation ponds and filtered tailings was also expected to be low based on characterization studies performed by Golder (2010).<br><br>Section 4.2.3 of the 2019 Annual Report which discusses the geochemical monitoring of filtered tailings, states that, based on the more conservative NP-Ca and total sulphur, all of the samples collected to date, are primarily classified as potentially acid generating (PAG) or uncertain with regards to ARD potential as they all had a neutralizing potential ratio (NPR) below 2, and two of the samples had an NPR less than 1. Using the less conservative modified Sobek method, the median NPR value was 1.8 (uncertain) compared to an NPR value of 2.7 predicted in the FEIS study based on which the tailings were predicted to be Non-Potentially Acid Generating (NPAG).<br><br>The 2019 operational results indicate that ARD predictions for the tailings were incorrect. Furthermore, since AEM's FEIS predicted all waste and tailings as NPAG, AEM stated that no engineering and management considerations to mitigate potential ARD issues were needed (such as freezing and freezeback, etc.) in design, operating, and closure of the Tailings Storage Facility (TSF).<br><br>In light of this change in tailings classification, it would seem prudent to assess why there was such a difference between predictions and actual observations in the first year of operation and what the likelihood and extent of this variance will be going forward. Based on such an analysis, AEM should also 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. Subject to the findings of the revised modelling, AEM should determine whether changes are required to the approved operational and engineering controls for PAG tailings. This is particularly important in respect to tailings placement within the facility. |
| **Recommendation:** | CIRNAC recommends that AEM:<br>1. Review mine ore lithology and geochemistry to update predictions of ARD potential of ores and clarify how the ARD was underestimated.<br>2. 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.<br>3. Perform a comprehensive assessment to identify what if any changes are necessary to the tailing management and closure strategies. |

| Comment Number: | CIRNAC #7 |
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| **Subject:** | Site Water Management |
| **Reference:** | • Meliadine Gold Project 2019 Annual Report S3.1.4, S4.1<br>• Appendix I-1 Water Management Plan |
| **Issue/Rationale:** | All site contact water, including water from containment ponds CP3, CP4, CP5 and CP6 (once constructed), is directed to CP1 where water is treated for total suspended solids (TSS) at the Effluent Water Treatment Plant (EWTP) prior to discharge through the diffuser to Meliadine Lake.<br><br>In 2019, the containment ponds were not drawn down as required before freeze-up. CP3, CP4 and CP5 were at 48%, 41% and 35% respectively of their capacity. Of particular importance, CP1 contained a volume of 642,514 $m^3$ or 86.5% of total capacity at freeze-up. Water levels in CP1 at the end of October were significantly higher than design specified guidelines (65.84 m on October 29, 2019 versus the Operation, Maintenance and Surveillance (OMS) guideline of 63.0 m for end of October) and dike D-CP1 was consequently placed into a High Risk operational situation due to elevated risks to the structure. AEM stated that the basins were not drawn down due to elevated levels of total dissolved solids (TDS) above the discharge limit of 1400 mg/L which prevented effluent discharge to Meliadine Lake.<br><br>CIRNAC notes that proper water management is a critical requirement for the Meliadine operation. The site has a complex water management system including multiple ponds, multiple pumps and ditches conveying water from one location to another, multiple treatment plants, and multiple discharge locations. This clearly entails that the effective water management at the site is a complex issue.<br><br>Within this context, AEM's Annual Report has not provided information on how and why the unexpected situation arose and was not mitigated before freeze-up. Given the complexity of the system, it is not clear to CIRNAC what the root causes were, and to what degree and when mitigative measures were attempted. The absence of a water balance also hampers understanding of the issue.<br><br>No information was provided as to what efforts were made to treat or manage this situation. |
| **Recommendation:** | To better understand the site water management system at the Meliadine Mine, CIRNAC recommends that AEM provide:<br>1. A detailed technical report that: a) identifies and quantifies the factors that contributed to the contact water ponds being operated outside of the design guidelines; b) describes potential environmental consequences and operational risks associated with the reduction in surplus pond storage capacity; and c) presents and evaluates options being considered by AEM to rectify the situation.<br>2. A more comprehensive process flow-diagram providing predicted flows, flow management controls, water treatment inflow and outflow and offsite discharges. |

| Comment Number: | CIRNAC #8 |
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| **Subject:** | Geotechnical Inspection Concerns/Issues |
| **Reference:** | • Tetra Tech 2019 Annual Geotechnical Inspection of Meliadine Gold Project, Rankin Inlet, Nunavut<br>• Appendix B.2 2018 Annual Geotechnical Agnico Eagle Responses and Actions Table<br>• Appendix B-3 2018 Annual Geotechnical Agnico Eagle Responses and Actions Table<br>• Meliadine Gold Project 2019 Annual Report |
| **Issue/Rationale:** | In 2019, a comprehensive geotechnical inspection was carried out by Tetra Tech for all of the project facilities. Observations and recommendations were provided to AEM for consideration. AEM provided response and CIRNAC had no issues with the inspection findings and recommendations.<br><br>Of note, no information was found in the Annual Report that addressed the inspection concerns raised with respect to the water levels in CP-1 and CP-5 containment ponds, and the capacity for these ponds to hold the modelled freshet in 2020, and in particular the concern that the stability of the D-CP1 and D-CP5 dikes may have been impacted if measures were not taken to reduce the water levels in the respective ponds in advance of the freshet in 2020. These concerns are high priority items for the continued safe and effective operation of the project. |
| **Recommendation:** | Based on CIRNAC's review of the Geotechnical Inspection report CIRNAC offers the following recommendations:<br>1. AEM provide information on the current status of the CP-1 and CP-5 containment ponds and dikes D-CP1 and D-CP5 to ensure that they are performing in accordance with environmental and geotechnical requirements.<br>2. AEM conduct logging and tracking of issues identified as part of the geotechnical inspection work in the same format used at the Meadowbank/Whale Tail (log and track issues with unique identifiers, location, date, concern and AEM response along with proposed mitigation status).<br>3. AEM establish a Trigger Action Response Plan similar to that currently being implemented at the Meadowbank/Whale Tail project. |

| Comment Number: | CIRNAC #9 |
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| **Subject:** | Saline Water Treatment |
| **Reference:** | • Meliadine Gold Project 2019 Annual Report, S9.3<br>• Appendix I-2 Groundwater Management Report, S3.2.4 |
| **Issue/Rationale:** | AEM operates two plants at the Meliadine site for the treatment of saline water accumulated underground: Salt Water Treatment Plant (SWTP) and Saline Effluent Treatment Plant (SETP). Significant issues with the operation of both plants were noted in 2019 Annual Report. |

| Comment Number: | CIRNAC #9 |
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| | Over 2019, the performance of the SWTP used for desalination treatment of underground water and discharge to Meliadine Lake (MEL-14) via CP5 and CP1, did not achieve design criteria, and availability was less than expected due to mandatory corrective maintenance of the boiler system in October and November. As a result, over Q3 and Q4 of 2019, the SWTP treated a calculated total of 6,045 $m^3$ (compared to a design calculated total of 20,862 $m^3$). This resulted in a greater than predicted accumulation of saline water inventory on site. While the Groundwater Management Report notes that the actual operational rate has been less than design, no explanation is provided as to why the SWTP is underperforming and what the plan is to rectify this.<br><br>Effluent discharge from the SETP to Melvin Bay was approved in 2019 and the final discharge point (MEL-26) was in operation between August 1 and October 11. During this period, MDMER limits were exceeded for total suspended solids (TSS) for one grab sample and one monthly mean concentration and there were also two failed acute lethality tests. The acute toxicity failures were attributed to residual chlorine from ammonia removal treatment, which occurred as a result of saturated Granular Activated Carbon (GAC) filters. The cause was immediately rectified once identified and all subsequent acute toxicity tests were non-lethal. AEM has initiated upgrades to the SETP to improve the treatment performance and the process reliability, as follows:<br>a. Regarding TSS, a more rigorous turbidity monitoring system will be implemented in combination with a turbidity-TSS correlation in order to evaluate in real-time whether the effluent meets the TSS requirements prior to discharge.<br>b. Regarding residual chlorine, additional (back-up) GAC filters and more rigorous chlorine monitoring and logging will be implemented.<br>c. For the system as a whole, a review of the water treatment plant monitoring and reporting practices is underway and will be completed prior to commencement of the 2020 open water season.<br>d. Lastly, organizational changes have been implemented at the site and additional resources have been allocated to the water management team. |
| **Recommendation:** | CIRNAC recommends that AEM:<br>1. Conduct a detailed analysis to determine why the SWTP is underperforming and provide a road map of steps that will be taken to improve its performance.<br>2. Provide CIRNAC with AEM's review of the SETP monitoring and reporting practices that AEM expects to have completed prior to the 2020 open water season. |

| Comment Number: | CIRNAC #10 |
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| **Subject:** | Freshwater Usage |
| **Reference:** | • Meliadine Gold Project 2019 Annual Report Appendix I-1 Water Management Plan, S4.2.3 |
| **Issue/Rationale:** | In the Water Management Plan, AEM states that the permitted freshwater usage limit of 318,000 $m^3$/d (Type A Water Licence 2AM-MEL1631) will not be sufficient to provide mill make-up water over life of mine. Process water is required in the mill for ore processing and is primarily sourced from Meliadine Lake through the freshwater intake system. Consequently, contact water from CP1 is currently being evaluated for reclaim purposes in order to minimize the amount of freshwater use at the mill. This would both reduce the amount of freshwater from Meliadine Lake used in the mill and lower water levels in CP1.<br><br>CIRNAC considers the potential re-use of pond water and the associated reduction of freshwater for mill processing a progressive and positive initiative.<br><br>It is not clear to CIRNAC how AEM's freshwater requirements from Meliadine Lake have been underestimated resulting in the currently approved usage limit as not being sufficient to meet usage requirements in the mill. Furthermore, it could be inferred that if more mill water is required, then more effluent than predicted will be produced by the mill with an increased usage of process water and the implications of increased effluent loads beyond those considered in the FEIS. |
| **Recommendation:** | CIRNAC recommends that AEM:<br>1. Clarify reasons for anticipated increased mill freshwater requirements beyond the permitted usage limit from Meliadine Lake.<br>2. Provide information on the water balance quantity and quality implications associated with increased effluent loading resulting from the increased use of process water in the mill. |

| Comment Number: | CIRNAC #11 |
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| **Subject:** | Elevated Total Dissolved Solids (TDS) Levels at CP1 |
| **Reference:** | • Meliadine Gold Project 2019 Annual Report, S3.1.4<br>• Appendix I-1 Water Management Plan, S3.9 |
| **Issue/Rationale:** | In Section 3.1.4 of the main report AEM states that: *"Agnico Eagle was not able to complete the drawdown of CP1 in 2019. The current accumulation of contact water in CP1 meets all discharge criteria under the Metal and Diamond Mining Effluent Regulations (MDMER) and the Water Licence, with the exception of the TDS discharge criteria set out at Part F, Item 3 of the Water Licence. The current TDS discharge criteria in the Water Licence of 1,400 mg/L (i.e., maximum average concentration) referenced at Part F, Item 3 is lower than necessary to remain protective of the receiving environment (i.e., required to minimize adverse effects on aquatic* |

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| | *ecosystems), and thereby limits the management of waters at site in an appropriate manner.*<br><br>*The accumulation of the contact water in CP1 is primarily contributed to the high volume of precipitation during the 2019 season and the discharge constraint related to the current TDS water licence."* AEM does not indicate the source of the elevated TDS.<br><br>CIRNAC notes that in the 2018 Annual Report, AEM had indicated that a reverse osmosis (RO) treatment system was commissioned at CP5 in June 2018 to manage increasing TDS levels in water being transferred from CP5 to CP1, and eventually to Meliadine Lake and committed to using the RO system at CP5 for as long as TDS levels require treatment prior to transferring to CP1. In reviewing the 2019 Annual Report and the Water Management Plan, no information was presented on the operation/performance of the RO plant despite the apparent issues with TDS levels and the consequent concerns related to CP volumes and water levels. It is not clear from the documentation whether the RO plant was operated in 2019 to treat TDS levels in CP5/CP1 and lower TDS levels in CP1 to acceptable levels for discharge to Meliadine Lake. |
| **Recommendation:** | CIRNAC recommends that AEM provide information on the operation/performance of the RO plant in 2019 and clarify why the RO plant was not used to lower TDS levels in CP1 to meet the discharge limit to allow for the pond to be properly drawn down as required. |

| **Comment Number:** | **CIRNAC #12** |
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| **Subject:** | CIRNAC Inspections |
| **Reference:** | • Meliadine Gold Project Annual Report Section 10.2 Inspections – Table 23 |
| **Issue/Rationale:** | As noted in Section 10.2, CIRNAC carried out four inspections during 2019. Table 23 provides information on the Inspection Dates, Topic and Feedback/Outcome.<br><br>It was noted that in general, the Feedback/Outcome section for the most part provides very generic comments. In addition, the Feedback/Outcome section for the June inspection did not note the Non-Compliance issues related to food waste in the landfill and unsecured sludge at the landfarm. |
| **Recommendation:** | CIRNAC recommends that in future annual reports, AEM:<br>1. Modify the content of the Feedback/Outcome section to provide more specific / meaningful notes on the inspection summary;<br>2. For any inspections where Action Required or Non-Compliance items are noted, include a summary description of AEM's actions to address the issues. |

| Comment Number: | CIRNAC #13 |
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| **Subject:** | Registration of Trades Workers |
| **Reference:** | • T&C #93, NIRB Project Certificate No. 006<br>• 2019 Annual Report, s. 12.4.4<br>• 2019 Annual Report, App. K |
| **Issue/Rationale:** | Pursuant to T&C #93, AEM is encouraged to:"…*register all trades occupations, journeypersons and apprentices working with the Project and to register any trades occupations listed in its forecast, as well as to provide the Government of Nunavut with information regarding the number of registered apprentices and journeypersons from other jurisdictions employed at the Project during each year of the Project's life."*<br><br>AEM has not confirmed their fulfillment of this Term and Condition. |
| **Recommendation:** | CIRNAC recommends that AEM confirm whether it provides information on the registration of all trades occupations, journeypersons and apprentices employed at the project to the Government of Nunavut on an annual basis pursuant to T&C #93. |

| Comment Number: | CIRNAC #14 |
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| **Subject:** | Employee Origin |
| **Reference:** | • T&C #101, NIRB Project Certificate No. 006<br>• Meliadine Gold Project 2019 Annual Report, s. 12.2<br>• Meliadine Gold Project 2019 Annual Report, App. K |
| **Issue/Rationale:** | Pursuant to T&C #101, AEM is required to:*"…include with its annual reporting to the NIRB a summary of employee origin information as follows:*<br>*a. The number of Inuit and non-Inuit employees hired from each of the Kivalliq communities, specifying the number from each;*<br>*b. The number of Inuit and non-Inuit employees hired from each of the Kitikmeot and Qikiqtani regions, specifying the number from each;*<br>*c. The number of Inuit and non-Inuit employees hired from a southern location or other province/territory outside of Nunavut, specifying the locations and the number from each; and*<br>*d. The number of non-Canadian foreign employees hired, specifying the locations and number from each foreign point of hire."*<br><br>AEM has not provided information for items b.-d. in their 2019 Annual Report. |
| **Recommendation:** | CIRNAC recommends that AEM include employment data by location of hire for all of parameters identified in T&C #101 in future Annual Report submissions. |

| Comment Number:. | CIRNAC #15 |
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| **Subject:** | Consultation with Outfitters and Guides |
| **References:** | • T&C #104, NIRB Project Certificate No. 006<br>• 2019 Annual Report, App. M-1 |
| **Issue/Rationale:** | Pursuant to T&C #104, AEM is required 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."*<br><br>AEM's status update included in Appendix M-1 of the Annual Report does not address how this Term and Condition is being satisfied. Rather, the update states a Memorandum of Understanding was signed with the Kangiqliniq Hunters & Trappers Organization in March 2019 and a Hunter Harvester Calendar program will be initiated this year. No other details are provided on these agreements and their relevance to this T&C. |
| **Recommendation:** | CIRNAC recommends that AEM summarize consultation efforts undertaken with outfitters and guiding business pursuant to T&C #104. |

***2. <u>Compliance Monitoring</u>***

***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;*
- 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 (NWB)'s 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. However, the NWB is responsible for implementing the T&Cs of a Project Certificate related to water management.

Although, CIRNAC is not responsible for implementing water related T&Cs, the Department 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.

CIRNAC has issued the surface lease for the marine discharge pipe for the Meliadine Gold Mine Project in 2019. In 2019, 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

### *ii. A summary of any inspections conducted during the 2019 reporting period, and the results of these inspections*

CIRNAC's Water Resource Officers (WROs) conducted four inspections of the Meliadine Gold Mine Project in April, June, September and December, 2019.

Summaries of those four inspection reports are presented below for NIRB's consideration.

**April 10-11, 2019**

Facilities inspected during this inspection include Itivia fuel farm, landfarms, raw water intake (MEL-II), landfill, saline pond and waste rock stockpile pad. The following concerns were noted in the CIRNAC WRO's inspection report:

a. Food waste (e.g., used coffee cups) were identified in the landfill
b. The landfill does not have the appropriate signage

The above-mentioned concerns represent non-compliance with the terms and conditions of the Water Licence 2AM-MEL1631. Specifically, the list in section 4.4 of the Landfill Waste Management Plan -2015 includes cardboard, food containers and wrapping as unacceptable food waste, while Part B, item 16 of the Water Licence states that "*The Licensee shall post signs in the appropriate areas to inform the public of the location of the Water Supply Facilities and the Waste Disposal Facilities. All signs must be in English, Inuktitut and French and shall be located and maintained to the satisfaction of an Inspector*."

**June 10-11, 2019**

Two CIRNAC WROs completed the inspection of land farms, raw water intake facility, landfill, saline pond, waste rock stockpile pad and sludge holding tanks. The following concerns were noted by inspectors:

a. The exploration land farm facility was poorly maintained – there were rips and punctures visible throughout the berm wall. Its damaged tanks contain unsecured waste, and its ability to contain waste was found to be concerning.
b. Food wastes (e. g., coffee lids, juice containers, absorbent rags etc.) were identified in the landfill

During the inspection, WROs requested AEM to provide a report following the repairs of the berm at the exploration land farm facility. Food wastes identified in the landfill is of non-compliance with the Landfill Waste Management Plan which lists cardboard, food containers and food wrapper as unacceptable food waste.

**September 4, 2019**

Facilities inspected included land farms, water structures and dry stack tailings. The following concerns were identified:

a. As was identified during the June, 2019 inspection, breaches were also identified on the exploration land farm berm wall. However, WROs noted that all contaminated soil from

exploration land farm was being removed and sorted in a contained area adjacent to land farm to allow for repairs to liner.

The WROs further requested the AEM to submit a full report upon successful completion of repair work required for the land farm, as identified during the June, 2019 inspection.

**December 2, 2019**
This unscheduled inspection was conducted by a CIRNAC WRO upon receiving a number of complaints regarding dust blowing around the camp from the Tailing Storage Facility (TSF). At the time of inspection, the WRO was informed by AEM that the issue has been addressed. However, the WRO asked the AEM to perform a number of actions, including the following:

a. The Licensee shall revise the Spill Contingency Plan to include a section on dust releases containing a clear threshold for reporting dust releases. The inspector asked AEM to submit the plan for review to the inspector by January 7, 2020.
b. The Licensee shall submit a map to the inspector that shows the dust fall monitoring stations around site by December 6, 2019.
c. The Licensee will provide a short summary of the corrective actions taken to minimize the dust by December 6, 2019.

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

Although, a few instances of non-compliances to Water Licence conditions and *Nunavut Waters and Nunavut Surface Rights Tribunal Act S.C 2002, c. 10* were noted during the 2019 inspections, CIRNAC is generally satisfied with AEM's response to the concerns raised by the WROs. 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 AEM's Kivalliq Projects Socio-economic Working Group along with the Government of Nunavut's Department of Economic Development and Transportation. As stated in section 12.1 of the 2019 Annual Report, the working group met on Feb. 26, 2019, by teleconference to:

> *"discuss the 2018 Socio-Economic Monitoring Report, the update of the Terms of Reference of the Working Group to include Whale Tail Project Certificate requirements, to prepare for the 2019 Kivalliq SEMC, and to receive an update on the GN Territorial Monitoring Project."*

CIRNAC is also a member of the Kivalliq Socio-economic Monitoring Committee chaired by the Government of Nunavut's Department of Economic Development and Transportation. Fellow members include various Government of Nunavut Departments and agencies (e.g., Department of Education, Department of Family Services, and Nunavut Bureau of Statistics), the Kivalliq Inuit Association, community representatives, community organizations and project owners. On April 16, 2019, the committee met in Baker Lake, NU, to review data and consider the socio-economic impacts of mining projects in the Kivalliq Region.

## 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 |
|---|---|---|
| 3 | Prior to commencing construction activities the Proponent shall update its dust management and monitoring plan to address and/or include the following additional items:<br>a. 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.<br>b. 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.<br>c. 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. | ▪ Part B: Item 12f<br>▪ Part E: Item 17<br>▪ Part I: Item 9c<br>▪ Schedule B: Item 4<br>▪ 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). | ▪ Part B: Item 12f |
| 6 | The Proponent shall employ appropriate dust suppression measures when conducting activities in the landfill such as topping or capping. | ▪ 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. | ▪ Part B: Item 12c<br>▪ Part I: Item 14<br>▪ 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. | ▪ Part D: Items 1b and 2<br>▪ Part I: Item 13 |
| 15 | 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:<br>a. A description of the potential environmental effects of such a failure;<br>b. Identification of the monitoring measures employed to detect environmental changes that could result;<br>c. Identification of proposed mitigation measures to address any changes identified during monitoring; and<br>d. Updated Risk Management Plan and Closure and Reclamation Plan reflecting changes which result from the post-closure failure assessment.<br>A summary of the results from this assessment and implications to project infrastructure and operational plans shall be provided to the NIRB. | ▪ Part B: Item 12L<br>▪ Part J: Item 5 |

| NIRB Project Certificate No. 006 Term & Condition | | Implemented in NWB Water Licence NO: 2AM-MEL1631 |
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| 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. | ▪ Part B: Item 12o<br>▪ Part D: Items 2e, 8 and 21<br>▪ 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 degredation be observed. | ▪ Part J: Item 5 |
| 19 | The Proponent shall develop and implement a monitoring program for its Tailings Storage Facility and Waste Rock Storage Facility (including dikes). The monitoring progam is to include, but shall not be limited to:<br>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,<br>b. Measures proposed to ensure the safe containment and structural integrity of Project infrastructure, and to prevent contamination of waterbodies.<br>Details of the monitoring program shall be provided to the NIRB. | ▪ Part B: Item 12j<br>▪ 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. | ▪ Part B: Item 12l |
| 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. | ▪ 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. | ▪ 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. | ▪ 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. | ▪ Part B: Item 12q<br>▪ Part E: Item 14 |

| NIRB Project Certificate No. 006 Term & Condition | | Implemented in NWB Water Licence NO: 2AM-MEL1631 |
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| 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. | ▪ Part B: Item 12q<br>▪ 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. | ▪ Part J: Item 1 and 5 |
| 27 | The Proponent shall update its Aquatic Effects Monitoring Plan (AEMP) to include, at a minimum:<br>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;<br>b. A description of measures to be undertaken as relate to dustfall monitoring, designed in accordance with the following:<br>i. To establish Phase 1 all-weather access road baseline data and a description of plans for data collection during Project operations for comparison;<br>ii. To facilitate comparison with existing guidelines;<br>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;<br>c. A description of water quality monitoring to be conducted at Little Meliadine Lake; and<br>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. | ▪ Part B: Item 12a<br>▪ Part B: Item 13<br>▪ Part I: Item 3 |
| 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. | ▪ 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. | ▪ Part D: Item 1a and 24<br>▪ Part E: Item 15 |
| 30 | The Proponent shall update its Aquatic Effects Monitoring Plan (AEMP) to include, at a minimum:<br>a. Provide details for additional reference lakes to be included within its sampling and monitoring programs;<br>b. Updates to include sedimentation within relevant monitoring programs; and<br>c. c. Results from additional testing for mercury in fish tissue, and include test results in updated baseline data. | ▪ Part B: Item 12a<br>▪ Part B: Item 13<br>▪ Part I: Item 3 |

| NIRB Project Certificate No. 006 Term & Condition | | Implemented in NWB Water Licence NO: 2AM-MEL1631 |
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| 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. | ▪ 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. | ▪ 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. | ▪ 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. | ▪ 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, 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. | ▪ Part B: Item 12l<br>▪ 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. | ▪ Part B: Item 12l<br>▪ 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. | ▪ 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 | Prior to the shipping of Project supplies, the Proponent shall conduct fuel spill dispersion modeling that will, at a minimum, consider:<br>a. Modeling of oil spills in the following areas:<br>i. Pinch points, including: Hudson Strait, Melvin Bay area including Itivia Harbour and Panorama Island;<br>ii. Shallow water and shorelines; and,<br>iii. Areas that have been identified as having high flows and/or high concentrations of marine mammals, marine fish or seabirds;<br>b. Open water and ice-covered conditions;<br>c. Spill volumes up to and including loss of a full tanker cargo; and,<br>d. 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 |

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