AGNICO EAGLE

Meliadine Extension

Response to Completeness Check Review

Submitted to:

Nunavut Water Board

Submitted by:

Agnico Eagle Mines Limited – Meliadine Division

March 6, 2023

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KIVALLIQ INUIT ASSOCIATION

Interested Party:	**KivIA**	**Rec No.:**	**KivIA-CC**
Re:	**Completeness Check Review**		

Request Made by Interested Party:

Thank you for the invitation to review for completeness, the Licence amendment application submitted by Agnico Eagle Mines Ltd. (Agnico Eagle) for the Type A Water Licence No. 2AM-MEL1631. The Kivalliq Inuit Association (KivlA) has conducted an initial review of Agnico Eagle's application package and has considered Agnico Eagle's request for a modified concurrent review process with the Nunavut Impact Review Board {NIRB). As background, the KivlA has outstanding concerns related to the ongoing NIRB process in regards to Agnico Eagle providing insufficient information with respect to (i) in-pit deposition of waste rock and tailings, and (ii) quantities of contact water discharged to Meliadine Lake. Such information is necessary in order to gain a full understanding of the environmental impact of the proposed extension, and to inform the NWB licensing amendment process.

Specifically:

i) The Proponent has identified the In-Pit Deposition of waste rock and tailings as an alternative to the currently approved Drystack Tailings and Waste Rock surface storage facilities. A more robust assessment strategy of this alternative is required in order to identify the information gaps that may exist for the in-pit disposal alternative. A work plan and tentative time line is required in order to evaluate any missing information. In particular, thermal and hydrogeological studies which are required to:

- *Assess the degradation of permafrost,*
- *Assess the groundwater contaminant transport,*
- *Update the water balance and water quality forecasts*
- *Update the Water Management Plan, and*
- *Update the Mine Waste Management Plan.*

ii) It is a priority of the KivlA and the community of Rankin Inlet to divert contact water of the Meliadine site to ltivia Harbour for discharge, and prevent further discharge into Meliadine Lake. Thus, a strategy to minimize or eliminate contact water discharge to Meliadine Lake is required. This priority informed discussions around the installation of the dual waterline, and gave rise to the modified Term and Condition 25 of the NIRB Project Certificate 006, Amendment 002, which requires the Proponent to use the dual waterline to minimize or eliminate surface contact water discharge to Meliadine Lake.

Under the current operational parameters of the Meliadine site, the dual waterlines as designed would be able to meet these criteria, and eliminate discharge to Meliadine Lake. However, according to the updated water balance modelling provided by the Proponent to the NWB, the proposed extension would result in an increase in contact water to manage on site. Discharge to Meliadine Lake would increase

from a current annual average of 475,000 cubic metres to an average of 1.3 million m3, with a peak discharge of ~2.s million m3 (Agnico Eagle, Water Management Plan V12_NWB, Jan 2023). These volumes do not include additional surface contact water discharged to Itivia Harbour. As designed, the capacity of the dual waterline is insufficient to meet the requirements of the NIRB project certificate, and further information from the Proponent on how the waterline capacity will be increased must be provided to complete the environmental assessment.

The KivIA recommends that the NWB Licence amendment review be placed on hold and that a concurrent NWB-NIRB review process not proceed at this time. Agnico Eagle has provided insufficient information to permit the KivIA to conduct a complete review and provide meaningful comments and recommendations with respect to the proposed extension. The KivIA must have a clear understanding of all environmental impacts with respect to Agnico Eagle's proposed extension activities prior to commencing the water licensing process. The KivIA looks forward to continuing to work with Agnico Eagle to gather the necessary information to assess the full impacts of the proposed extension.

Agnico Eagle's Response to Request:
Part i)

In response to technical comments received from intervenors on the in-pit deposition alternative, Agnico Eagle submitted to the NIRB (December 16, 2022) a technical document (Commitment 42) summarizing the effects assessment of this alternative. Agnico Eagle has provided Commitment 42 to Parties, including the KivIA, on December 16, 2022 and the KivIA was part of an in-person meeting in Ottawa in February 6, 2023. Agnico Eagle has appended the documents submitted as part of the Commitment 42 package, which includes the following documents:

- Meliadine Extension FEIS Addendum – Environmental Assessment of In-pit Deposition Alternative (Appendix CC-1 of the response package; Agnico Eagle 2022c)
- Meliadine Extension In-pit tailings Thermal and Groundwater Analysis report (Appendix CC-2 of the response package; Lorax 2022a)
- Meliadine Extension Water Balance and Water Quality Model report (Appendix CC-3 of the response package; Lorax 2022b)

Based on the comments provided by KivIA, it is not sure they have had opportunity to review these materials. We believe that many of the issues raised have been addressed by the December 16, 2022 package.

On January 16, 2023, CIRNAC issued a letter to Agnico Eagle outlining topics of interest resulting from their review of Commitment 42 plus the request for an in-person workshop. The objective of the workshop was to discuss eight topics of interest that were documented in the "2023-01-16_IANU_CIRNAC Memo to Agnico Eagle – Meliadine Extension Commitment #42". An in-person workshop was proposed by Agnico Eagle on January 18, 2023 to CIRNAC and all parties including the KivIA; and was subsequently held on February 6, 2023, with CIRNAC, ECCC, NRCan, KivIA, and the NWB.

As per the NWB process, for the alternative of in-pit deposition, Agnico Eagle has noted previously that various studies would be provided prior to initiating in-pit deposition, and with enough time for intervenors to review. Subject to the additional direction and requirements of the NWB, at this time Agnico Eagle proposes the following studies would be submitted for review:

a) Conduct an evaluation of the potential environmental effects due to in-pit deposition. The evaluation will include:
   - Thermal study to assess the degradation of permafrost within the pit lakes.
   - A hydrogeological study to assess the groundwater contaminant transport to the receiving environment.
   - Update the water balance and water quality forecast (WBWQM).
   - Update the Water Management Plan, and the Mine Waste Management Plan.

The above studies would be an update to the information provided on December 16, 2022 as Commitment 42 and would be updated with the most recent monitoring data and mine plan. The studies would be provided at least 90 days prior to any decision to perform in-pit deposition. Agnico Eagle will submit the requested studies to the NWB, and relevant regulatory authorities, for approval to proceed with in-pit deposition. NIRB would be copied on these documents. If the alternative in-pit deposition is approved to proceed, Agnico Eagle will submit the results of its monitoring annually to the NIRB.

Agnico Eagle would like to clarify that in response to technical comments received from intervenors on the alternative to store water in the open pits, Agnico Eagle committed through Commitment 19 to provide a thermal analysis for TIRI02. This analysis was provided through the NIRB on January 30, 2023 and was further discussed with the KivIA on the above-mentioned in-person meeting that took place on February 6, 2023 as it was part of one topic of interest from CIRNAC (Topic 8) submitted through the "2023-01-16_IANU_CIRNAC Memo to Agnico Eagle – Meliadine Extension Commitment #42" document. This topic was resolved throughout this workshop and was documented in the "2023-02-22-In-pit Workshop Meeting Notes".

Part ii)

Agnico Eagle would like to reiterate that the 2022 FEIS Addendum WBWQM (Agnico Eagle 2022a) was refined to integrate the comments from KivIA following an in-person meeting with the KivIA on October 5, 2022, and following technical comments from the KivIA provided on October 24, 2022. These comments were related to opportunities to reduce operational discharges to Meliadine Lake and optimizing the discharges to Itivia Harbour via the waterline. The refined WBWQM (Lorax 2023b) was submitted to the NWB (January 2023) and included the following optimizations:

- Sewage Treatment Plant (STP) discharges and surface contact water collected in CP3, CP4, and CP5 routed to TIRI02 until SP6 (referred to as SP B7 under the NIRB process) is online in 2025, then routed to SP6.

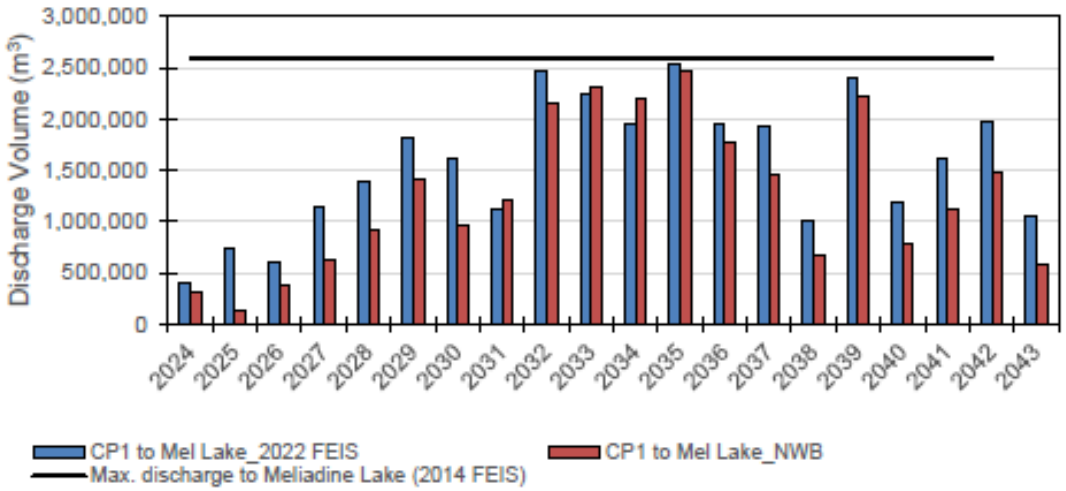
- The SP6 Maximum Operational Water Level was increased from 62.7 m to 63.1 m, resulting in an increase in total storage volume from 0.867 Mm^3 (assumed in the 2022 FEIS Addendum WBWQM and pond design) to 1.09 Mm^3.
- Modelled underground inflows predicted in the hydrogeological model (Agnico Eagle 2022b) were adjusted to reflect moisture entrained in ore and drilling brine re-circulation, based on operational monitoring data (Agnico Eagle 2023a). This resulted in reduced underground mine dewatering rates compared to the 2022 FEIS WBWQM (Agnico Eagle 2022a) which assumed dewatering rates would be equal to predicted groundwater inflow to the underground mines. Thus, less saline water flows resulted in increased capacity of the waterline to discharge contact water to Itivia Harbour.

The mine plan adjustments and water management optimization undertaken during the WBWQM updates resulted in a 19% reduction in total discharge volumes to Meliadine Lake relative to the 2022 FEIS Addendum WBWQM submitted to NIRB (Figure KivIA-CC-1), and a 49% reduction in the average annual discharge to Meliadine Lake relative to the 2014 FEIS maximum annual discharge. The predicted peak discharge volume to Meliadine Lake under the current WBWQM occurs in 2035 (2.46 Mm^3), and notably, is below the maximum predicted in both the 2014 FEIS (2.6 Mm^3) and 2022 FEIS Addendum (2.53 Mm^3).

This reduction in discharges to Meliadine Lake is the result of several factors, listed in order of importance:

- Optimization of waterline management;
- Reduction in predicted underground dewatering rates, based on site monitoring data;
- Increase in storage capacity of SP6; and
- Reduction in pit wall runoff coefficients.

Figure KivIA-CC-1: Annual Discharges to Meliadine Lake for the 2022 FEIS Addendum WBWQM, and the Current NWB Model



Source: Agnico Eagle 2023b

The updated WBWQM report (Agnico Eagle 2023b) shows that the Meliadine Extension Operations period (2025-2043) can be separated into three periods, based on the mining sequence, associated dewatering requirements and predicted discharges to Meliadine Lake.

Table KivIA-CC-1 presents the predicted annual discharge volumes, and total discharge volumes (during Early, Mid and Late Operations phase), to Itivia Harbour and Meliadine Lake, based on the model optimization as presented in the updated WBWQM (Agnico Eagle 2023b).

Table KivIA-CC-1: Annual Discharge Volumes to Itivia Harbour and Meliadine Lake during Early, Mid and Late Operations Phase

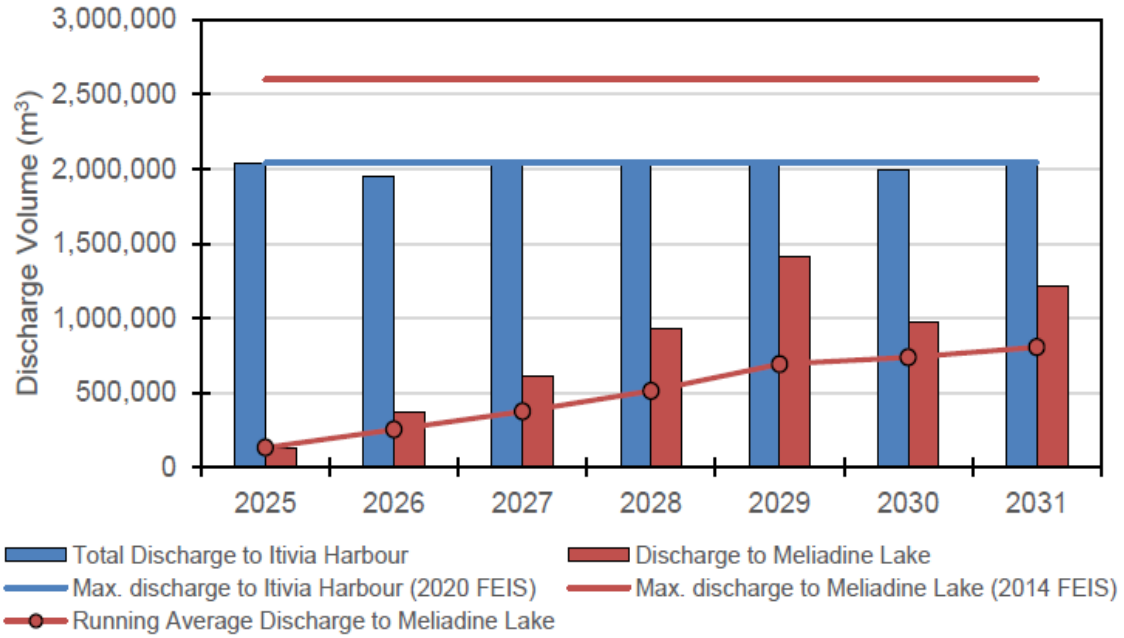
Year	SP6 to Itivia Harbour	CP1 to Itivia Harbour	Total Discharge to Itivia Harbour	Discharge to Meliadine Lake
	m^3	m^3	m^3	m^3
Early Meliadine Extension Operations Phase				
2025	110,000	310,000	2,040,000	132,000
2026	908,000	1,043,126	1,951,126	374,000
2027	928,000	1,112,000	2,040,000	616,000
2028	1,074,000	966,000	2,040,000	924,000
2029	1,050,000	990,000	2,040,000	1,408,000
2030	936,000	1,059,920	1,995,920	968,000
2031	1,140,000	900,000	2,040,000	1,210,000
Total	**6,146,000**	**6,381,046**	**14,147,046**	**5,632,001**
Average	**878,000**	**911,578**	**2,021,007**	**804,572**
Mid Meliadine Extension Operations Phase				
2032	1,192,000	848,000	2,040,000	2,156,000
2033	1,398,000	642,000	2,040,000	2,310,000
2034	1,332,000	708,000	2,040,000	2,200,000
2035	1,333,000	707,000	2,040,000	2,464,000
2036	1,252,000	788,000	2,040,000	1,782,000
2037	1,190,000	850,000	2,040,000	1,452,000
2038	782,000	1,208,723	1,990,723	660,000
Total	**8,479,000**	**5,751,723**	**14,230,723**	**13,024,001**
Average	**1,211,286**	**821,675**	**2,032,960**	**1,860,572**
Late Meliadine Extension Operations Phase				
2039	950,000	1,090,000	2,040,000	2,222,000
2040	801,000	1,209,044	2,010,044	770,000
2041	822,000	1,218,000	2,040,000	1,122,000
2042	877,000	1,163,000	2,040,000	1,474,000
2043	744,000	1,198,948	1,942,948	572,000
Total	**4,194,000**	**5,878,992**	**10,072,993**	**6,160,001**
Average	**838,800**	**1,175,798**	**2,014,599**	**1,232,000**

Source: Agnico Eagle 2023b

Early Meliadine Extension (2025-2031)

The predicted average discharge to Meliadine Lake during the Early Meliadine Period is 804,572 m^3/year. This would equate to a 69% reduction from the 2014 FEIS maximum discharge to Meliadine lake (2.6 Mm^3), and 33% reduction from the 2022 FEIS Addendum (1.2 Mm^3) during the same period of time. During the Early Meliadine Extension period, the mine area footprint is still limited relative to the full Extension area, but underground dewatering activities are near their predicted maxima. As shown in Figure KivIA-CC-2, a greater proportion of surface contact water is discharged to Itivia Harbour than to Meliadine Lake. During this period, approximately equal amounts of surface contact water and saline water are discharged to Itivia Harbour, with approximately a 50/50 split in surface contact water routed to Itivia Harbour and Meliadine Lake. The Early Meliadine Extension will allow further refinement of water balance predictions based on monitoring data, and optimization of water management practices, for a period of 7 years, at site prior to the 2032 to 2038 period.

Figure KivIA-CC-2:- Annual Discharges to Itivia Harbour and Meliadine Lake for the Early Meliadine Extension Operations Phase (2025-2031)

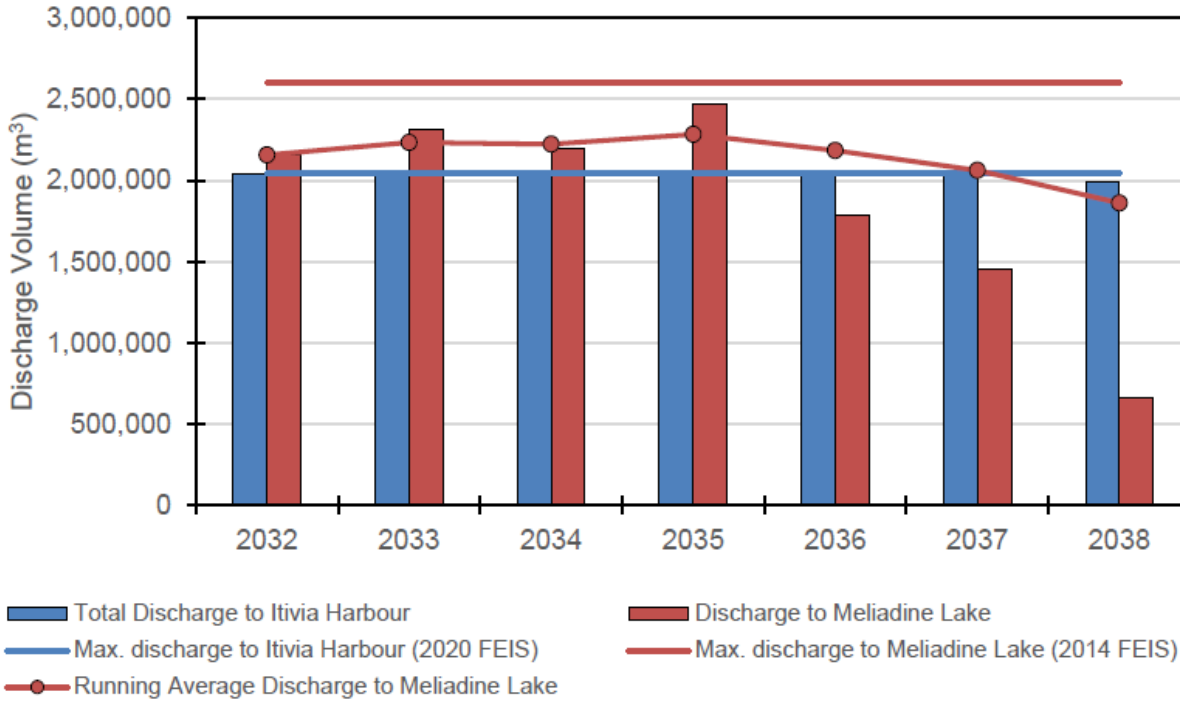


Source: Agnico Eagle 2023b

Mid-Meliadine Extension (2032-2038)

The average discharge to Meliadine Lake during this period is predicted at 1.86 Mm^3/year. This would equate to a 29% reduction from the 2014 FEIS maximum discharge to Meliadine lake (2.6 Mm^3), and 8% reduction from the 2022 FEIS Addendum (2.01 Mm^3) during the same period of time. In this period underground dewatering rates are reduced slightly while the mine footprint has expanded to its full extent (both underground and open-pit footprint). As shown in Figure KivIA-CC-3, during this period, approximately 60% of the waterline discharge is comprised of saline water from SP6, and discharge of contact water from CP1 is a 70/30 split between Meliadine Lake and the waterline, respectively. As noted in the Early Meliadine Extension period, the predictions will be refined based on the site monitoring.

Figure KivIA-CC-3: Annual discharges to Itivia and Meliadine Lake for the Mid-Meliadine Extension Operations Phase (2032-2038)

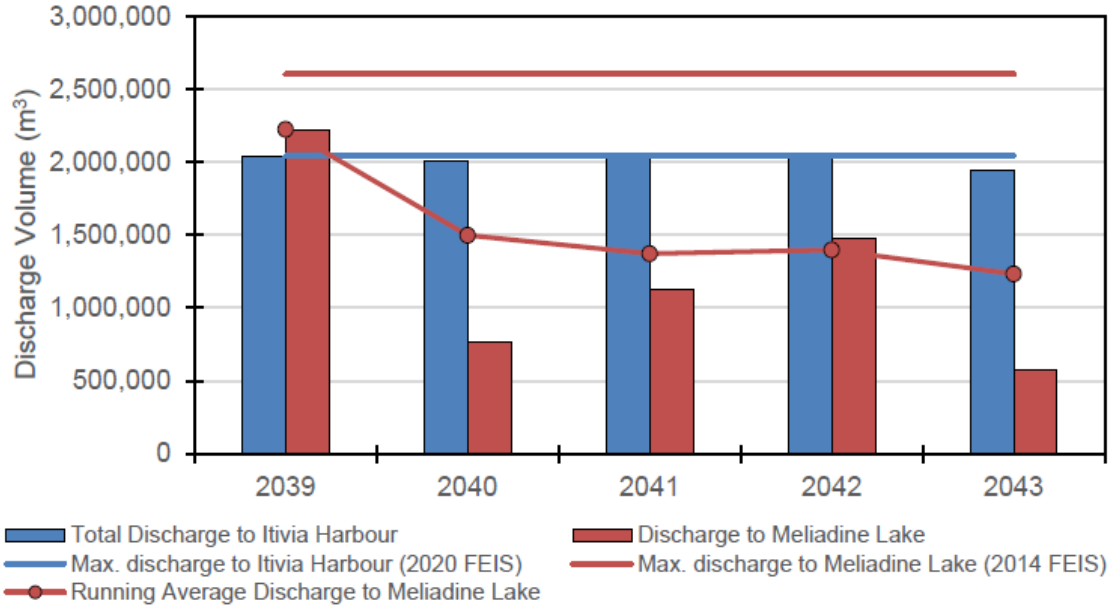


Source: Agnico Eagle 2023b

Late Meliadine Extension (2039-2043)

The predicted average discharge to Meliadine Lake during this period is 1.23 Mm^3/year. This would equate to a 53% reduction from the 2014 FEIS maximum discharge to Meliadine lake (2.6 Mm^3), and 25% reduction from the 2022 FEIS Addendum (1.64 Mm^3) during the same period of time. In the Late Meliadine Extension period, underground dewatering flows are predicted to be substantially reduced, averaging 140 m^3/day. Dewatering volumes from actively mined pits are also reduced. As a result, discharges to Meliadine Lake are reduced by approximately 30% relative to the 2032-2038 period. Approximately 42% of the waterline discharge is comprised of saline water from SP6, and discharge of contact water from CP1 is a 50/50 split between Meliadine Lake and the waterline, respectively.

Figure KivIA-CC-4: Annual discharges to Itivia Harbour and Meliadine Lake for the Late Meliadine Extension Operations Phase (2039-2043)



Source: Agnico Eagle 2023b

Meliadine Lake

Extensive monitoring of Meliadine Lake is conducted annually through the Aquatic Effects Monitoring Program (AEMP). The AEMP is a requirement of the Water Licence (2AM-MEL1631) and is the primary monitoring program used to evaluate short-term and long-term effects of the mine on the aquatic environment. The AEMP was developed through consultation with communities, stakeholders (HTO), and regulatory authorities, and includes incorporation of Inuit Qaujimajatuqangit (IQ), plus scientific knowledge of aquatic ecosystems (Golder 2016).

Monitoring for water quality is conducted in Meliadine Lake each year to verify that the mine is operating as planned and not causing changes in water quality that has the potential to impact the health of fish

and other aquatic life, or affect people's ability to use Meliadine Lake for drinking water or fishing. Water quality monitoring has confirmed that concentrations of some parameters have changed, and changes were more pronounced in areas of lake nearest the mine as compared to further from the mine. These changes are in alignment with predictions from the 2014 FEIS, and more importantly, concentrations of water quality parameters were measured at levels well below guidelines associated with adverse effects to aquatic life or health-based guidelines to protect drinking water quality. In addition, the timing of lake-wide changes for some parameters coincides with high rainfall totals in each of these years and provides plausible evidence that climate change is contributing to some of the changes in water quality observed in Meliadine Lake.

Monitoring for fish food (i.e., phytoplankton) is also conducted each year. The area of the lake nearest the mine has been and continues to be more productive than other areas of the lake, and lake-wide, species richness increased (i.e., no difference in areas of the lake near the mine and further from the mine). There is no evidence of increased primary productivity related to mine activities.

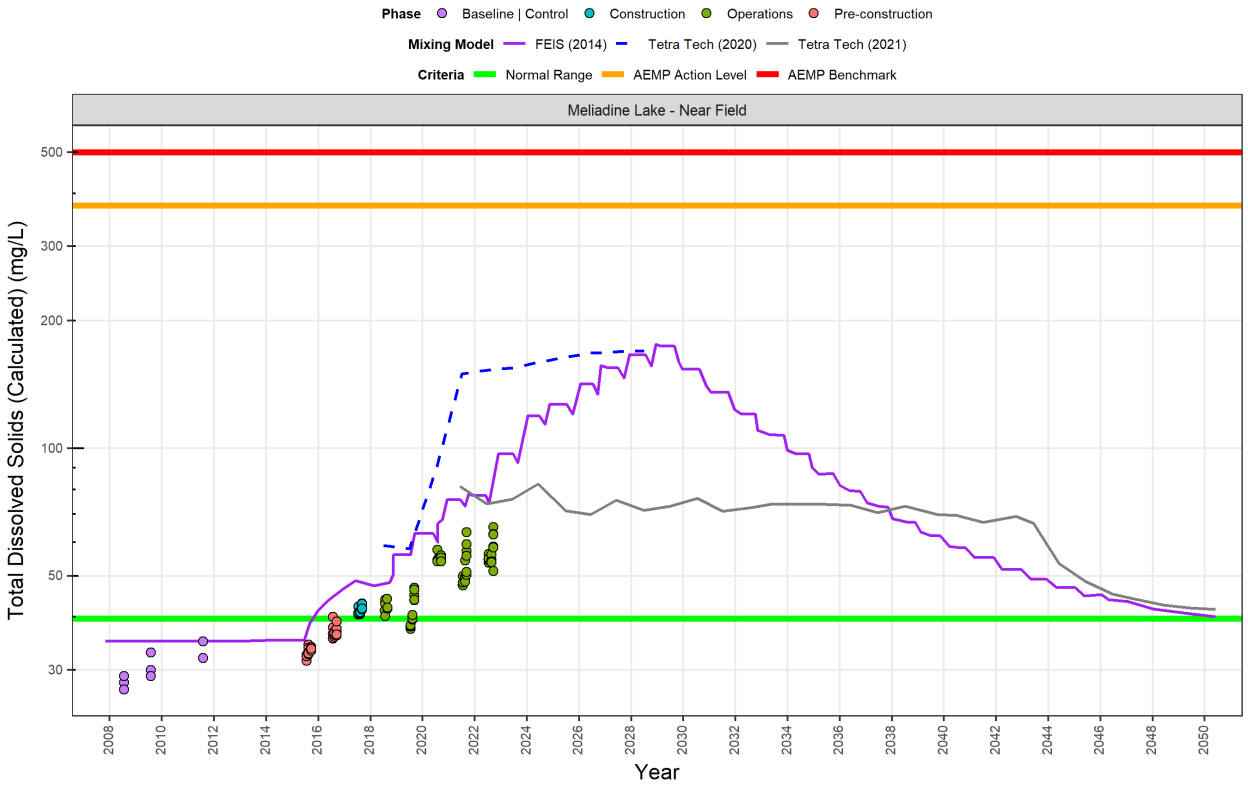
Fish habitat (i.e., sediment and benthic invertebrates) is sampled approximately every three years. Sediment quality continues to be variable across the lake, and concentrations of parameters in the sediment do not pose a risk to the benthic invertebrate community. The density of benthic invertebrates was observed to increase in both areas of the lake near to the mine and further from the mine, the structure of the community was similar across the lake and typical of northern lakes, and the community is diverse and healthy.

Fish health (large bodied fish [Lake Trout] and small bodied fish [Threespine Stickleback]) is sampled approximately every three years. Threespine Stickleback show no evidence of effects to survival, growth, or energy use, and effluent discharge is not affecting the health of these fish. Lake Trout in Meliadine Lake were larger in the most recent fishing survey (as compared to the baseline survey) suggesting greater energy storage and greater availability and/or quality of food. In comparison to reference lakes (Peter Lake or Atulik Lake), effluent discharge is not affecting fish health, fish habitat, or the usability of fisheries in Meliadine Lake.

In summary, through multiple years of monitoring, and since operation of the mine, it has been observed that Meliadine Lake continues to be healthy, ecological function is maintained, water is safe, and fish are safe to eat.

For the Meliadine Extension, predictions to changes in water quality in Meliadine Lake were completed. It was predicted that water quality changes in Meliadine Lake for the Meliadine Extension will remain within the predictions from the 2014 FEIS; an example is shown in Figure KivIA-CC-5 for the parameter of TDS. Based on the updated predictions for the Meliadine Extension, and monitoring to date, it is expected that Meliadine Lake will continue to be healthy, ecological function will be maintained, water will be safe, and fish will be safe to eat. The extensive monitoring through AEMP will continue with results reported annually to the NWB.

Figure KivIA-CC-5: 2014 FEIS, Emergency Amendment and Meliadine Extension Predictions with Monitoring Data to 2022



Conclusion

Agnico Eagle considers that the level of information appropriate for an environmental assessment has been provided to the KivIA and NIRB, and there should no delay to the Water Licence Amendment process.

References

Agnico Eagle (Agnico Eagle Mines Limited). 2022a. Meliadine Extension Water Balance and Water Quality Model – Technical Report. Meliadine Extension Application-Appendix H-07_Water Balance Water Quality Model. Prepared by Lorax Environmental Services Ltd. for Agnico Eagle Mines Ltd. February 2022. 1471 pp.

Agnico Eagle. 2022b. Excel V2103, AEM-calculated GW pumped to SP6 for NWB WBWQM_jm.xlsx. Prepared by Agnico Eagle Mines Limited - Meliadine Division. November 2022.

Agnico Eagle. 2022c. Meliadine Mine – Meliadine Extension FEIS Addendum – In-pit Deposition Alternative. December 2022.

Agnico Eagle. 2023a. Meliadine Extension Water Licence Amendment – Appendix E4- Updated Hydrogeology Modelling Report Operations - WSP Golder. (2022). Updated Hydrogeology Modelling Meliadine Extension. Reference No. 22513890-941-R-Rev02000. Prepared for Agnico Eagle Mines Ltd. By Golder Associates Ltd. December 2022.

Agnico Eagle. 2023b. Meliadine Extension Water Licence Amendment – Appendix F21 Water Management Plan-v12_NWB. January 2023.

Golder (Golder Associates Limited). 2016. Meliadine Gold Project, Nunavut. Aquatic Effects Monitoring Program (AEMP) Design Plan 6513-REP-03 Version 1. Submitted to Agnico Eagle Mines Limited Rouyn-Noranda, QC.

Lorax (Lorax Environmental Services Ltd.). 2022a. In-pit Tailings Disposal Study for the Meliadine Extension. Prepared for Agnico Eagle Mines Limited. December 16, 2022.

Lorax. 2022b. Meliadine Extension In-pit Deposition Alternative WBWQM. December 16, 2022.

Tetra Tech. 2020. Meliadine Lake – Updated 3-D Modelling of the Discharge Assessment. November 12, 2020.

Tetra Tech. 2021. Meliadine Extension 3-D Hydrodynamics Modelling of Meliadine Lake. Prepared for Agnico Eagle Mines. December 2021.

Interested Party:	**KivIA**	**Rec No.:**	**KivIA-IR-1**
Re:	**Minimizing or Eliminating Discharge of Contact Water to Meliadine Lake**		

Request Made by Interested Party:
What measures will the Proponent take to minimize or eliminate the discharge of contact water to Meliadine Lake? Specifically, will Agnico Eagle be able to reduce the flows of contact water below the current annual average of 475,000 cubic metres or eliminate discharge to Meliadine Lake completely?

Agnico Eagle's Response to Request:
Agnico Eagle refers KivIA to the response provided in part ii of KivIA-CC.

Agnico Eagle would like to clarify that based on monitoring data provided in the Annual Reports (2018-2021), the current annual average discharge to Meliadine Lake is actually 735,215 m^3. However, by including site data for 2022, the annual average discharge from 2018-2022 is 675,498 m^3. It should also be noted in the information provided above that in years 2025 and 2026, it is predicted the annual volume of water discharged to Meliadine Lake is 132,000 and 374,000 cubic metres, respectively. This highlighted the early reduction in minimizing discharge volumes to Meliadine Lake. This is based on the waterline being operational in 2025, which has been delayed for 2 years for reasons outside of Agnico Eagle's control.

Interested Party:	**KivIA**	**Rec No.:**	**KivIA-IR-2**
Re:	**Water Levels in Meliadine Lake**		

Request Made by Interested Party:
Will the proposed extension impact the levels in Meliadine Lake relative to the 2014 FEIS? How are the water levels of Meliadine Lake incorporated into the Water Management Plan?

Agnico Eagle's Response to Request:
The proposed activities for the Meliadine Extension will not impact levels in Meliadine Lake relative to what was predicted in the 2014 FEIS. As described in Section 7.3 Meliadine Extension FEIS Addendum submitted to the NIRB, the previous assessments and the Meliadine Extension FEIS Addendum included predicted quantities of water that would be withdrawn from Meliadine Lake for process or potable use, and quantities of water that would be managed and discharged to Meliadine Lake. In addition, as part of the 2020 FEIS, an assessment on the flow and water level in Meliadine Lake was completed (Golder 2020). The total diverted quantity was assumed to be approximately 6,410,000 m^3/yr. This total diverted quantity corresponds to approximately 7% of the annual water yield of Meliadine Lake (i.e., 91,700,000 m^3/yr). Based on the conservative assumptions in this model and assessment, it was concluded that the diversion will result in overall small reduction in flows, and negligible effects on the water levels in Meliadine Lake (Golder 2020). The total water diverted from Meliadine Lake and the total water discharged to Meliadine Lake through the diffuser will be within the ranges already assessed (Meliadine Extension FEIS Addendum Table 7.3-3). As a result, the Meliadine Extension will have an overall small reduction in flows, and negligible effects on the water levels in Meliadine Lake, and within the predictions from the 2014 FEIS and the 2020 FEIS Addendum.

As identified in the Water Management Plan (Appendix F-21 from the Water Licence amendment application), and as required in the Water Licence (2AM-MEL1631), withdrawal rates and quantities from Meliadine Lake, and discharge rates and quantities to Meliadine Lake are monitored and reported in the annual report. The allowable withdrawal rates take into account the quantities included in the previous assessments for Meliadine.

References:
Golder (Golder Associates Ltd.) 2020. Impact Assessment of the Diversion of Site Runoff to Melvin Bay on the Flow and Water Level Regimes of Meliadine Lake. Prepared for Agnico Eagle Mines Limited. Submitted as Appendix IR-2 for the Waterline Application. October 2020.

Interested Party:	**KivIA**	**Rec No.:**	**KivIA-IR-3**
Re:	**Nipissar Lake Water Levels**		

Request Made by Interested Party:
Is Agnico Eagle still considering the reflooding of Nipissar Lake? Is it feasible for Agnico Eagle to divert water from the dewatering of lakes B4 and B7, scheduled in 2025, to Nipissar Lake?

Agnico Eagle's Response to Request:
At this time, Agnico Eagle is not considering increasing water levels to Nipissar Lake.

As outlined in the Fish Offsetting Plan (Appendix F-22 of the Water Licence Amendment), while there was some interest from the community in this option, additional community concerns were also raised regarding building of infrastructure outside of the already impacted footprint.

Interested Party:	**KivIA**	**Rec No.:**	**KivIA-IR-4**
Re:	**Geotechnical investigations and thermal site assessments for the main portion of the Meliadine mine site.**		

Request Made by Interested Party:

Is there any hard data on the geotechnical and thermal attributes of this area? If not, what is the schedule for collecting this data given the on-going expansion of the underground workings at the Tiriganiaq mine site.

Agnico Eagle's Response to Request:

Agnico Eagle confirms that there are geotechnical and thermal data for the Meliadine Extension underground mining areas. Agnico Eagle refers the KivIA to Appendix E-6 (from the Water Licence Amendment application), Updated Existing Conditions Report, section 3.2 Structural Geology review which states that in support of Meliadine Extension, a review of the structures near the proposed underground developments has been completed through examination of more recent drilling data, magnetic surveys breaks and interpretation of surficial lineaments. This review led to the identification of 17 faults that have been incorporated into the conceptual hydostratigraphy, in addition to the 3 regional faults (Lower Fault, Pyke Fault and North Fault) that were previously considered in the 2014 FEIS. The structures of enhanced permeability are presented on Figure 2 and their estimated hydraulic properties on Table 16 of the same report.

In the area of the existing Tiriganiaq underground, and in comparison, to other underground developments, there is a higher confidence in the structural interpretation and their presence as enhanced permeability features. Since less testing has been done at the other underground developments the collection of data in these areas were the priority for the 2021 field programs, which are presented in Section 3.3.5 to 3.3.8 of this report (Appendix E-6 from the Water Licence Amendment application). It should be noted that the hydrogeological testing has been focused near the underground workings and the lakes with an interpreted open talik.

Agnico Eagle also refers the KivIA to Appendix D-1 (from the Water Licence Amendment application), Prefeasibility study of water management infrastructures, Figure 3 where all the geotechnical investigation done for Meliadine Extension is presented.

interested Party:	**KivIA**	**Rec No.:**	**KivIA-IR-5**
Re:	**Structural investigations in the area of the Discovery underground and open pit mining area.**		

Request Made by Interested Party:
Any structural studies for the Discovery mine area.

Agnico Eagle's Response to Request:
Agnico Eagle confirms that hydrogeological testing and geotechnical drilling has been done in the Discovery area. Agnico Eagle refers the KivIA to Appendix E-4 (from the Water Licence Amendment application), Figure 11 where Pyke Fault as well as 3 know faults have been identified (Fault 1, 2 and 3), following a review of the structures near the proposed underground developments through examination of more recent drilling data, magnetic surveys breaks and interpretation of surficial lineaments. Agnico Eagle refers the KivIA to Appendix E-6 (from the Water Licence Amendment application), Updated Existing Conditions Report, Table 16 for the estimated hydraulic properties of these faults.

CROWN-INDIGENOUS RELATIONS AND NORTHERN AFFAIRS CANADA (CIRNAC)

Interested Party:	**CIRNAC**	**Rec No.:**	**CIRNAC-CC**
Re:	**Completeness Check Review**		

Request Made by Interested Party:

Based on the above, CIRNAC could conclude that AEM's 13 January 2023 NWB Licence Amendment Application information has provided sufficient information to allow for an assessment of the Meliadine Extension Application for all specific additional activities as listed the Description of the Undertaking (Items 1 to 8) and as outlined in the main application documents and supporting documents.

However, as no information has been provided in the application with respect to the alternative of in-pit disposal, the application documents are incomplete in that regard. As a consequence, approval of this alternative component of the application would need to be conditional on the review and approval of additional information as required to allow for an appropriate review. As that is not possible in the current circumstances CIRNAC provides the following recommendations;

- *AEM withdraws the alternative for in-pit filling from the current application allowing the rest of the amendment to proceed. Or,*
- *The Nunavut Water Board clarify that the in-pit filling alternative referred to in the amendment application is not being reviewed or being considered for approval until sufficient information has been provided by AEM.*

Agnico Eagle's Response to Request:

As outlined in the Water Licence Amendment Main Application Document (Section 2.5.1), Agnico Eagle feels that should Operations decide to move forward with the alternative method for in-pit deposition of tailings or waste rock, a notification (and supporting rationale) would be provided to the NWB prior to in-pit deposition. The decision by Operations to move to in-pit deposition could be in a few years, later in mine life, or not at all. Therefore, Agnico Eagle agrees with CIRNAC that the NWB should add a condition to the Water Licence that will require Agnico Eagle to submit specific studies and updated Management Plans prior to initiating in-pit deposition. Evaluation could include connectivity of the mined pits with respect to the underground mine, water quality in the pits, volume required of tailings or waste to dispose, and economics.

Agnico Eagle is of the opinion that adding a new condition to the Water Licence is the more appropriate approach given in-pit deposition is an alternative that may never come to fruition. A similar approach was taken by the NWB with the Whale Tail Water Licence, where the alternative to discharge to D1/D5 was presented as an alternative to the NWB and the NIRB, and conditions were added to the Project Certificate (i.e., T&C 67) and Water Licence (i.e., Part E Item 7) should Agnico Eagle choose to implement the alternative.

The Whale Tail Water Licence is as follows:

> *"7. The Licensee shall, at least ninety (90) days prior to any decision to use the Effluent discharge alternative Lakes D1 and/or D5, referred to in Part F, Items 5 and 6, provide the Board with an adequate rationale for the need to use the Effluent discharge alternative lakes and submit to the Board for approval updated Water Management Plan, Water Quality and Flow Monitoring Plan, and Core-Receiving Environment Monitoring Plan. The updated Plans shall respectively include additional water quality and phytoplankton baseline data in Lakes D1 and D5, updated Project Water Balance and Water Quality Model; updated near field and far field Effluent discharge modelling."*

ENVIRONMENT AND CLIMATE CHANGE CANADA (ECCC)

Interested Party:	**ECCC**	**Rec No.:**	**ECCC-CC**
Re:	**Completeness Check Review**		

Request Made by Interested Party:
ECCC has no IRs to provide for the Completeness Check and looks forward to participating in the Technical Review of the amendment application for Meliadine Mine water licence 2AM-MEL1631.

Agnico Eagle's Response to Request:
Agnico Eagle thanks ECCC for their review of the Meliadine Extension Water Licence Amendment and looks forward to working with ECCC through the technical review process.

FISHERIES AND OCEANS CANADA (DFO)

Interested Party:	**DFO**	**Rec No.:**	**DFO-1**
Re:	**Completeness Check Review**		

Request Made by Interested Party:

DFO does not view the application complete based on the information provided. The Nunavut Impact Review Board reconsideration process is ongoing and DFO has outstanding concerns that require information not yet provided by AEM in order to fully understand the impact to fish and fish habitat from the project. Furthermore, the project is still subject to important modifications while it goes through the Reconsideration process which will likely affect the AEM's amendment Application.

DFO recommends that the NWB place the project on hold until such time as Agnico provides sufficient information to complete a thorough review of the proposed activities requested to be incorporated under this amendment process.

Agnico Eagle's Response to Request:

Agnico Eagle appreciates the DFO's knowledge of the permitting process and the various stages through an environmental assessment and post-approval regulatory process; however, Agnico Eagle wishes to emphasize that not all detailed analyses and data are a requirement during the environmental assessment. Effects must be assessed through the NIRB process. Agnico Eagle confirms this was done through the 2014 FEIS, and for the changes associated with Meliadine Extension FEIS Addendum which is the scope of a reconsideration process. The next step in the process is water licencing where more data and information is required to support the activities covered under the Water Licence (e.g., construction of roads). The final step (with respect to DFO) is to obtain approvals under the protections of the *Fisheries Act*. This step starts with a Request for Review, and depending on the activity would conclude with a *Fisheries Act* Authorization, approved offsetting plan, and approved monitoring and reporting. At this stage, the Request for Review application summarizes information on potential effects of the activity on fish and fish habitat, and also includes protection measures that Agnico Eagle has incorporated into activity design and management.

Through the NIRB process for the Meliadine Extension, DFO has issued information requests (IR) and technical comments (TC) on topics including:

1. A comparison of the 2014 FEIS and the Meliadine Extension with respect to changes of the footprint in the various watersheds (e.g., A, B, Discovery)
2. Assessment of changes to hydrology, connections between watercourses, and losses in fish habitat, with a specific focus on the A watershed and the B watershed
3. Baseline data and the collection of additional data
4. Specific details on quarry locations and interaction with watercourses/waterbodies

5. Specific details on alignment of new roads with specifics on the exact watercourse crossing location and crossing design

Full information on the following topics have been previously provided to NIRB in response to these requests (see document references below).

Since the workshop held in-person in Yellowknife from January 15 to 17, 2023 with DFO, KivIA, and Agnico Eagle, Agnico Eagle has provided further information and analysis to address all topics from the list above. This document was submitted to DFO in draft on January 30, 2023 and in final on February 27, 2023. A copy of this document is included as Appendix CC-4 of this submission.

There are no modifications proposed or planned for Meliadine Extension while it goes through the Reconsideration process. This is a misunderstanding.

Agnico Eagle has stated previously that the Meliadine Extension is not a new project but is a reconsideration of Project Certificate (PC) No.006. The scope of the reconsideration is primarily focused on the addition of saline water management infrastructures to support underground mining at Pump, F Zone, and Discovery deposits, and associated infrastructure in the Tiriganiaq-Wolf mining area. The same activities that were considered and assessed under PC No.006 will be conducted as part of the Meliadine Extension. The activities for the Meliadine Mine will occur in the same watersheds considered and assessed under PC No.006.

Agnico Eagle has stated in many of the responses that the specific details being requested by DFO are not required for the environmental assessment phase, but rather for the water licensing or *Fisheries Act* Authorization phase. This is because these requests were already part of the 2014 EA process, and so additional assessment would be duplicative. In particular, topics three through five from the above list covers detailed information that is required for the licensing and authorization phase. Information on the first two topics is appropriate for the NIRB phase and as such has been the focus of information provided to DFO through the IR and TC stages. In addition, since the technical meeting in November 2022, Agnico Eagle and DFO have held a few conference call meetings (December 2022, and January and February 2023) and one in-person workshop (January 2023). It was during these meetings and the workshop where further details to address topics one and two from above were provided, and where further data collection needs were discussed.

With the additional information provided in this submission, Agnico Eagle considers that the level of information appropriate for an environmental assessment has been provided to DFO and NIRB, and there should no delay to the Water Licence Amendment process.

Interested Party:	**DFO**	**Rec No.:**	**DFO-IR-2a**
Re:	**Completeness Check IR**		

Request Made by Interested Party:
DFO-FFHPP requires information on all potential impacts to fish and fish habitat, including those within the footprint of the original project (2014), downstream and any potentially impacted water system.

Agnico Eagle's Response to Request:
Assessment of fish and fish habitat related to the footprint of the original project was provided in Section 7.5 (Fish and Fish Habitat of the 2014 FEIS), with supporting information found in Section 7.4 (Surface Water and Sediment Quality) and Section 7.3 (Hydrology including Water Quantity), as well as Appendices 7.3A to 7.3-C, and 7.5A to 7.5-H. As the activities of the Meliadine Extension are proposed to occur within the same watersheds assessed in the 2014 FEIS, only minor updates to hydrology, water quality, and fisheries were required for the Meliadine Extension FEIS Addendum.

Fish and fish habitat potentially impacted in downstream areas has been identified through numerous conference call meetings (December 2022, and January and February 2023) as well as an in-person workshop (January 2023) with DFO. Since the workshop, Agnico Eagle has provided further information and analysis to address downstream impacts to fish and fish habitat as well the proposed locations of additional field studies. A copy of this document is included as Appendix CC-4 of this submission; refer to Section 3, and appendices A and B.

Interested Party:	**DFO**	**Rec No.:**	**DFO-IR-2b**
Re:	**Completeness Check IR**		

Request Made by Interested Party:
DFO-FFHPP requests that additional baseline information on fish use and habitat, as well as revised impact assessments based on the increased duration of the project are required to conduct a thorough review of the potential impacts and determine what Harmful Alteration, Disruption, or Destruction of Fish Habitat is likely to occur.

Agnico Eagle's Response to Request:
Agnico Eagle considers that the level of information appropriate for an environmental assessment has been provided to DFO and NIRB and a revised assessment is not required. Agnico Eagle strongly feels that we can continue in the NWB process.

Additional fish and fish habitat baseline information needs have been identified through numerous conference call meetings with DFO (December 2022, and January and February 2023) as well as an in-person workshop (January 2023). Agnico Eagle has committed to collect additional data in support of the Fish and Fish Habitat Offsetting Plan and *Fisheries Act* Authorization Application. The proposed locations of additional field studies are included in Section 4.3 and Tables 4-2 and 4-3 in Appendix CC-4 of this submission.

Interested Party:	**DFO**	**Rec No.:**	**DFO-IR-2c**
Re:	**Completeness Check IR**		

Request Made by Interested Party:
DFO-FFHPP requests justification for the dewatering of B6 and B5, and an assessment of alternatives including a water management strategy and management plan that would avoid dewatering the lakes, maintain connection to the watershed and allow for fish passage.

Agnico Eagle's Response to Request:
Various alternatives were considered to determine the base case that was used in the Meliadine Extension Final Environmental Impact Statement (FEIS) Addendum and assessed by all Valued Ecosystem Components (VECs) and Valued Socio-Economic Components (VSECs). The alternative assessment was conducted by performing a Multiple Accounts Analysis (MAA) according to the Guidelines for the Assessment of Alternatives for Mine Waste Disposal (Guidelines) provided by Environment Canada (2013).

Dewatering of lakes was considered within the context of the mining activities – both open pit and underground. As part of the application to the NIRB, the thermal assessment model for the Meliadine Mine was updated (Appendix H-04). Through this modelling lakes with open taliks (i.e., formation that penetrates through the permafrost and connects a lake waterbody with the sub-permafrost regime) were identified. Open taliks were identified for Lakes B4, B5, B7, A6, and A8.

As part of the application to the NIRB, and to the NWB, the hydrogeological model for the Meliadine Mine was updated (Appendix H-06 in the NIRB application, and Appendices E-4 and E-5 in the NWB application). The underground mine and open pits in connection with open taliks will act as a sink for groundwater flow (i.e., inducing water to flow through the bedrock to the mine workings). If Lake B5 is not dewatered, substantial inflows to the underground workings are predicted. This would mean much more saline water to manage, requiring more saline storage facilities on surface. Lake B6 (downstream of B7 and the future saline water contact pond) will be dewatered to allow for collection of seepage from the dike and as a means to prevent saline water from potentially entering a freshwater body.

References:
Environment Canada. 2013. Guidelines for the Assessment of Alternatives for Mine Waste Disposal.

Interested Party:	**DFO**	**Rec No.:**	**DFO-IR-2d**
Re:	**Completeness Check IR**		

Request Made by Interested Party:
DFO-FFHPP requests justification for the dewatering of A6, and an assessment of alternatives including a water management strategy and management plan that would avoid dewatering the lake, maintain connection to the watershed and allow for fish passage.

Agnico Eagle's Response to Request:
As described in response to DFO-IR-2c, an assessment of alternatives was completed, and Lake A6 was identified through studies to present-open talik conditions. Lake A6 is in the F Zone mining area: in the 2014 FEIS, there was no underground mine in this area, but for the Meliadine Extension, there is an underground mining area in the F Zone. The mine plan includes dewatering of Lake A6 to minimize inflows to the underground but to also prevent water from entering the F Zone pits. The F Zone pits will be located within the eastern portion of Lake A6 and extend to the east of Lake A6. To prevent water from entering the F Zone pits, and to allow for safe working conditions in the pits, a dike within Lake A6 is required. As the dike is planned to be very close to the pits, a good seal between the dike and the foundation is required. The optimal construction conditions for such a dike is to dewater the lake, remove the sediments and construct the dike. Otherwise, this can create a liability to the structure.

Effects of the dewatering and diversion of the A watershed lakes due to mining activities were assessed within the 2014 FEIS using a water balance model, primarily to assess effects to the outflows, water levels and channel stability. A difference between the 2014 FEIS and the Meliadine Extension FEIS Addendum is the water management around Lake A6. The 2014 FEIS considered initial lowering of the water level in Lake A6 by 1 to 1.5 m, and then annual pumping during the operations phase. Lowering and maintaining the water levels in Lake A6 by 1 to 1.5 m will result in small and shallow isolated pockets of available habitat during the ice off periods. During the winter, when ice depth can reach 2 m, all fish would be concentrated in a few small areas with a maximum available unfrozen water depth of 1-1.5 m. The short photoperiod and snow cover on the lake ice will limit the ability of waterborne phytoplankton to produce supplemental oxygen. This could consequently lead to hypoxic conditions, for which salmonids (e.g., Arctic char) are known to be sensitive and frequently lethal. The plan to dewater Lake A6 as outlined in the Meliadine Extension FEIS Addendum is a proactive measure to avoid the occurrence of adverse effects (death) of fish per the DFO "hierarchy of measures".

Interested Party:	**DFO**	**Rec No.:**	**DFO-IR-2e**
Re:	**Completeness Check IR**		

Request Made by Interested Party:

DFO-FFHPP requires a list of locations and types of proposed watercourse crossings including roads to Discovery, and the proposed windfarms. The information should be presented in a table and include but not limited to: locations where road infrastructure interacts with waterbodies and watercourses, including seasonally wet drainages, type of crossing proposed (bridges and culverts), fish species present, and life stage as well as whether there are fish bearing waterbodies downstream and/or upstream of the crossing and known important habitat. The seasonal channels between fish bearing waterbodies should be considered fish habitat.

Agnico Eagle's Response to Request:

There are no changes proposed to the access roads to Discovery, Pump, F Zone, and Wesmeg deposits. The Minister approved these roads through the Water Licence Amendment in 2020. As part of Meliadine Extension, new access roads to the Tiriganiaq-Wolf mining area and to wind turbine locations will be constructed. The preliminary list of watercourse crossings are provided in Table DFO-IR-2e.

The information provided in this response is appropriate for the Water Licence Amendment process; however, Agnico Eagle will collect additional information to support a Request for Review submission (which will occur once the amended water licence is approved).

Table DFO-IR-2e: Preliminary List of Watercourse Crossings

A Watershed	D Watershed	E Watershed	CH Watershed
A52	D5-D6	E3-E12	CH5-CH6 (and associated features)
A30-A33	D6-D22	E3-E4	
A51-52 (included in A5-A6)	D4-D31		
A7-A8	D31-D33		
A8 (west-east)	D28-D29		

Interested Party:	**DFO**	**Rec No.:**	**DFO-IR-2f**
Re:	**Completeness Check IR**		

Request Made by Interested Party:
DFO-FFHPP requests that the Road Management Plan include provisions for fish movement through watercourse crossing structures, specifically it should include measures to protect fish and fish habitat, and to preserve fish passage as well as consideration of the Fisheries Act in the list of relevant licences and regulations applicable to roads (Sec 2.2 Permitting Regime).

Agnico Eagle's Response to Request:
The construction methods for Meliadine Extension access roads are not anticipated to change flow characteristics or the general hydrology of the area. A Request for Review will be submitted to DFO prior to construction of the Meliadine Extension access roads and will include crossing locations, description of proposed works, description of fish and fish habitat in the area of the crossings, and detailed designs of the engineered road and associated crossing structures (e.g., culverts) to preserve fish passage. At this time, Agnico Eagle does not anticipate the installation of bridges will be required for crossings along access roads.

Culvert design considerations could include:

- Designing culverts with sufficient depth of flow and appropriate water velocities for fish passage.
- Sizing culverts based on the capacity to handle peak flows.
- The type of culvert will be selected and installed to minimize potential impacts on fish habitat, maintain fish passage, and sufficiently accommodate watercourse flows.
- A culvert will extend beyond the upstream and downstream toe of the fill (e.g., a minimum of 300 mm).
- Culverts will be aligned parallel to the existing natural channel and located on a straight stream section of uniform gradient. The culvert slope will generally follow the existing streambed slope where possible.

Mitigations for minimizing impacts to fish will be considered in the final design, including the following:

- Applying DFO recommended Measures to Protect Fish and Fish Habitat, including incorporating in-water timing restrictions, fish removal (if required), and implementing appropriate sediment and erosion control measures.
- Industry Best Management Practices and Standard Project Considerations.
- Culvert Installation, Maintenance or Removal specific Best Management Practices.

Agnico Eagle will collect additional information to support a Request for Review submission that will include road infrastructure; however, the information provided in this response is appropriate for the Water Licence Amendment process.

Interested Party:	**DFO**	**Rec No.:**	**DFO-IR-2g**
Re:	**Completeness Check IR**		

Request Made by Interested Party:

DFO-FFHPP requires AEM to provide a detailed analysis of the impact from changes in flow in all the watersheds on the proposed mine site due to the actions of changing surface flow from entering the mine footprint and the diversion of contact and wastewater from natural flow paths. Specifically, DFO-FFHPP requests that AEM provide an analysis of habitat changes due to changes in flow from proposed mine associated works, undertakings, and activities over the various operational phases of the mine, including changes to depth and timing of flow in seasonal/ephemeral channels.

Agnico Eagle's Response to Request:

Agnico Eagle has provided the baseline flow conditions and anticipated changes in flow to impacted sub-watersheds by mine phase (including mean monthly flows), predicted changes by year of operation, and graphics comparing those changes by year of operation in Section 7.3 of the 2014 FEIS (starting at page 7-52). Baseline lake outlet flow regimes (including mean monthly flows) starts at page 7-62 (2014 FEIS). Effects Analysis for sub watersheds begins in Section 7.3.3.3.1.3 on page 7-97 (2014 FEIS). Residual Impacts are discussed in Section 7.3.4 (Page 7-217 of the 2014 FEIS). Additional information to address this topic has been provided to the DFO through conference calls, an in-person workshop, and a supplemental technical document (issued to DFO in draft on January 30, 2023 and in final on February 27, 2023; the final document is included as Appendix CC-4). This provides adequate level of information to support the NIRB process.

DFO has indicated that more detailed information will be required for the water licence amendment process and the *Fisheries Act* Authorization process. Commitments have been made to conduct additional field work in 2023 (see Section 4.3 of Appendix CC-4). The results of these additional field studies and analysis will be provided in the *Fisheries Act* Authorization Application package (anticipated and typically to be submitted after the amended water licence is approved).

Agnico Eagle will collect additional information to support a *Fisheries Act* Authorization submission, including analysis of habitat changes due to changes in flow; however, the information provided to date is appropriate for the Water Licence Amendment process.

Interested Party:	**DFO**	**Rec No.:**	**DFO-IR-2h**
Re:	**Completeness Check IR**		

Request Made by Interested Party:
DFO-FFHPP requires AEM to provide an updated Fish Offsetting Plan (Appendix F-22) that accounts for Harmful Alteration, Disruption, and Destruction of fish habitat, including alterations to flows downstream of the proposed mine site that may limit fish use of habitat.

Agnico Eagle's Response to Request:
A Fish and Fish Habitat Offsetting Plan was submitted with the NWB application. Consultation with the DFO, KivIA, and communities is ongoing with respect to proposed offsetting measures. Agnico Eagle will collect additional information, including analysis of habitat changes due to changes in flow, to support the Fish and Fish Habitat Offsetting Plan and a *Fisheries Act* Authorization submission.

Agnico Eagle has provided information that is appropriate for the Water Licence Amendment process. The anticipated submission of the updated offsetting plan and *Fisheries Act* Authorization submission is expected to be completed after receipt of approval for the amended Water Licence.