

TECHNICAL REVIEW
MELIADINE GOLD MINE NIRB PROJECT CERTIFICATE NO. 006
FINAL ENVIRONMENTAL IMPACT STATEMENT ADDENDUM
ENVIRONMENTAL ASSESSMENT OF
TREATED GROUNDWATER EFFLUENT DISCHARGE
INTO
MARINE ENVIRONMENT, RANKIN INLET

Prepared By:



KIVALLIQ INUIT ASSOCIATION

November 14, 2020

WITH SUPPORT FROM



Prepared For:
Nunavut Impact Review Board

Executive Summary

The Kivalliq Inuit Association (KIA) has completed a technical review of Agnico Eagle Mines Limited's (Agnico Eagle) "Final Environmental Impact Statement (FEIS) Addendum to Project Certificate No. 006" for the Meliadine Gold Mine submitted to the Nunavut Impact Review Board (NIRB) on August 17, 2020¹. The addendum is for the Environmental Assessment of proposed Treated Groundwater Effluent Discharges into the Marine Environment at Rankin Inlet. Changes to the project proposed under the addendum include:

- ❁ The construction of two buried/covered 16" waterlines along the all-weather access road (AWAR) linking Rankin Inlet with the Meliadine Mine,
- ❁ Conveyance of treated groundwater for discharge to Melvin Bay via the waterlines,
- ❁ Increasing the discharge volume to Melvin Bay, and
- ❁ Modification of the diffuser in Melvin Bay.

Our technical review follows directly from our completeness and initial technical review submitted to the NIRB on September 25, 2020. Agnico Eagle satisfactorily responded to most of those information requests on October 13, 2020 leaving two information requests unresolved.

The KIA is pleased Agnico Eagle highlighted in their responses that, if the proposed waterline is approved, they will be covering 80-90% adjacent to the AWAR.

KIA wishes to clarify our current understanding that Agnico Eagle has now committed to divert all site water from the Meliadine Site to Melvin Bay. KIA requests that Agnico Eagle confirm this understanding and recommend that Agnico Eagle provide all necessary documentation for the NIRB and other stakeholders to fully consider the discharge of blended surface contact water and saline groundwater effluent to Melvin Bay via the waterlines and diffusers.

KIA is disappointed that, to date, Agnico Eagle has not meaningfully considered the discharge of a blended surface contact water with saline ground water within the current application before the NIRB. As KIA understands Agnico Eagle now intends to divert all site water to Melvin Bay, KIA recommends Agnico Eagle expand the application before the NIRB to include the blended effluent discharge, ideally negating the ongoing project requirement to discharge water to Meliadine Lake. Specific recommendations pertaining to the discharge of blended effluent are as follows:

- ❁ We recommend Agnico Eagle update the hydrodynamic model using a combined surface and subsurface water effluent scenario discharged to Melvin Bay. This modelling should include at an assessment of diverting Meliadine Site runoff to Melvin Bay using volumes outlined in Appendix IR-2, and an assessment of diverting all surface contact water from the Meliadine Site (i.e. all water that would be discharged from CP1 to Meliadine Lake) to Melvin Bay.
- ❁ We request Agnico Eagle provide an assessment of the impacts to water levels and the resulting hydrological regime in Meliadine Lake of diverting all contact water from the Meliadine Site to Melvin Bay.

¹ *Agnico Eagle Mines Ltd. August 2020. Final Environmental Impact Statement Addendum – Treated Groundwater Effluent Discharge into Marine Environment, Rankin Inlet. Submitted to the Nunavut Impact Review Board on August 17, 2020.*

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KIA presents two additional recommendations regarding the aquatic environment, specifically pertaining to the spill response plan and monitoring the annual recovery of Melvin Bay:

- ❁ KIA recommends Agnico Eagle update the Ocean Discharge Monitoring Plan to include an additional sampling event following the cessation of discharges to Melvin Bay each year. Specifically, KIA recommends Agnico Eagle collect water quality samples and water column measurements from all 7 stations in the receiving environment and all 3 samples from Reference Area A at least 10 days but ideally 20 days following the conclusion of discharges each year going forward. Samples should be collected as close to the full 20 days following the cessation of discharges to the marine environment given appropriate consideration to the potential formation of ice and the associated safety concerns.
- ❁ We request Agnico Eagle clarify how the decision to cover the waterlines will impact the approach to managing and mitigating spills and include this updated approach in future iterations of the Spill Contingency Plan. We specifically recommend Agnico Eagle commit to suspending discharge from a waterline if a leak has been identified understanding that overall discharge can continue given the presence of the second waterline.

Pertaining to the terrestrial environment, we highlight concern that the predictions of little to no impact on movement by individual caribou is monitored, and sufficient feedback and adaptive mitigation is considered. Specifically, the KIA requests that Agnico Eagle:

- ❁ Provide detailed methodology of the monitoring proposed for the waterline-road complex (Site visits by Elders; GPS collar tracking; camera study; and KHTO road monitoring), and show how this monitoring will feed into adaptive management of caribou movement through the project. Behavioural monitoring data must be presented to support the IS Addendum conclusions. Agnico Eagle should clarify which triggers will result in changes to mitigation, and what that enhanced mitigation might entail. Agnico Eagle should also establish a Terrestrial Advisory Group (TAG) similar to the TAG in place at Meadowbank/Whale Tail, so that regulators and interested parties can collaboratively work with Agnico Eagle to develop sound and systematic TEMMP monitoring and reporting to facilitate Agnico Eagle's adaptive management of wildlife, especially caribou.
- ❁ Ensure that the side slopes on the waterline coverings are at minimum 1:3 slope or preferably 1:5 slope to facilitate caribou passage through the road-waterline corridor. If the design is not changed to accommodate a shallower side slope, then Agnico Eagle should justify why a steeper side slope is warranted against the recommendations of their literature review.

KIA maintains its position that the proposed waterline – its construction, operation, maintenance and reclamation – is not contemplated or authorized in Road Lease KVRW11F02 (the “Road Lease”) between Agnico Eagle and KIA. Agnico Eagle cannot proceed with any part of the waterline on the Road Lease lands unless it renegotiates the Road Lease with KIA. KIA is prepared to engage with Agnico Eagle in discussions pertaining to a lease amendment.

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1. Introduction

The Kivalliq Inuit Association (KIA) has completed a technical review of Agnico Eagle Mines Limited's (Agnico Eagle) "Final Environmental Impact Statement (FEIS) Addendum to Project Certificate No. 006" for the Meliadine Gold Mine submitted to the Nunavut Impact Review Board (NIRB) on August 17, 2020². The addendum is for the Environmental Assessment of proposed Treated Groundwater Effluent Discharges into the Marine Environment at Rankin Inlet. Changes to the project proposed under the addendum include:

- ❖ The construction of two buried/covered 16" waterlines along the all-weather access road (AWAR) linking Rankin Inlet with the Meliadine Mine,
- ❖ Conveyance of treated groundwater for discharge to Melvin Bay via the waterlines,
- ❖ Increasing the discharge volume to Melvin Bay, and
- ❖ Modification of the diffuser in Melvin Bay.

The KIA represents Inuit beneficiaries of the Nunavut Agreement in the Kivalliq Region. In particular, the KIA manages Inuit Owned Lands (IOL) in the region with the main aim of promoting self-reliance and social well-being of Inuit now and in the future. The KIA manages IOL to support sustainable economic development opportunities for Inuit if it is completed in an environmentally and socially responsible manner.

This review was completed with support from Hutchinson Environmental Sciences Ltd., GeoVector Management Inc. and Aurora Wildlife Research to ensure that the potential impacts and benefits were comprehensively assessed through scientific and socio-economic best practices, and to ensure Inuit Qaujimagatuqangit (IQ) values continue to be incorporated into impact determination, mitigation, project design and monitoring.

This technical review follows directly from our completeness and initial technical review submitted to the NIRB on September 25, 2020. Agnico Eagle responded to those information requests on October 13, 2020. Our assessment of their responses and information requests that have been carried forward to the technical review stage are provided in Section 2.1. New technical comments are provided in Section 2.2. We also provide a summary of our recommendations in Section 3.

The KIA is pleased Agnico Eagle highlighted in their responses that, if the proposed waterline is approved, they will now be covering 80-90% of the waterlines. The updated approach addresses our concerns regarding potential impacts to caribou movement and behaviour due to the waterlines; those concerns were originally highlighted as the Addendum was based on laying the waterlines exposed on the tundra adjacent to the road.

KIA maintains its position that the proposed waterline – its construction, operation, maintenance and reclamation – is not contemplated or authorized in the Road Lease between Agnico Eagle and KIA. Agnico Eagle cannot proceed with any part of the waterline on the Road Lease lands unless it

² *Agnico Eagle Mines Ltd. August 2020. Final Environmental Impact Statement Addendum – Treated Groundwater Effluent Discharge into Marine Environment, Rankin Inlet. Submitted to the Nunavut Impact Review Board on August 17, 2020.*

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renegotiates the Road Lease with KIA. KIA is prepared to engage with Agnico Eagle in discussions pertaining to a lease amendment.

KIA wishes to clarify our current understanding that Agnico Eagle has now committed to divert all site water from the Meliadine Site to Melvin Bay. KIA requests that Agnico Eagle confirm this understanding and recommend that Agnico Eagle provide all necessary documentation for the NIRB and other stakeholders to fully consider the discharge of blended surface contact water and saline groundwater effluent to Melvin Bay via the waterlines and diffusers.

2. Specific Comments

2.1 Status of Information Requests

2.1.1 General

2.1.1.1 Socio-economic benefits to Inuit

IR Source:	Kivalliq Inuit Association
IR Number:	KIA-IR#1.
IR Directed To:	Agnico Eagle
Subject:	Socio-economic benefits to Inuit
Reference:	Table 14 Potential Pathways for Effects for Project Changes not Previously Assessed
Issue/Concern:	Benefits to local Inuit associated with the waterline include hiring “local labour to support diffuser installation” and providing “training applicable to diffuser installation”. It is not clear whether these benefits will still be possible should the COVID-19 pandemic persist into 2021 when construction is expected to occur.
Information Request	Please clarify how the benefits to local workers will be maintained should the COVID-19 pandemic persist.
Agnico Eagle’s Response	The total workforce required for the waterline would be approximately 35 direct/indirect workers during construction. The target for Inuit employment is 10 to 14 (30%) of those workers to be hired from NTI firms to work on the waterline construction. To do so, Agnico Eagle will enforce working procedures that are in place to respect our COVID “No Contact” protocol. The Agnico Eagle Nunavummiut employees, currently on temporary layoff, will be available to be contracted by the NTI firms for construction of the waterlines.
KIA Request/Recommendation	We appreciate the information provided and consider this issue resolved for the purposes of the technical review. We note that this issue will be revisited due to the changing COVID-19 situation in Nunavut.

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2.1.2 Aquatic Environment

2.1.2.1 20,000 m³/day alternative and the discharge of surface contact water

IR Source:	Kivalliq Inuit Association
IR Number:	KIA-IR#2.
IR Directed To:	Agnico Eagle
Subject:	20,000 m ³ /day alternative and the discharge of surface contact water
Reference:	Main Application Document Section 3.2 Rationale Meliadine Type A Water Licence Amendment Application Section 1.6 Consultation; Section 2.4.1 CP1 Water Diversion to Waterline
Issue/Concern:	<p>KIA have expressed concern with the ongoing discharge of surface contact water with elevated TDS to Meliadine Lake. This concern is highlighted in Agnico Eagle's concurrent application to the NWB stating that the <i>"Deposit of surface contact water in Meliadine Lake is a topic of concern for some community members, as members carry out traditional activities in Meliadine Lake."</i></p> <p>However, Agnico Eagle's application to the NIRB notes that <i>"The 6,000 to 12,000 m³/day discharge rates do not include the opportunity to discharge surface contact water from the site to Melvin Bay and limits the discharge period to the open water season."</i> <i>"Agnico Eagle has not completed a full environmental and socio-economic assessment of [the 20,000 m³/day] alternative."</i></p> <p>Agnico Eagle's decision to exclude discharge of surface contact water to Melvin Bay from the addendum seems counter to the stated understanding of both community and KIA concerns, and statements within the NWB amendment application that <i>"An additional future potential adaptive management strategy includes the use of the waterline (if approved by NIRB) as a supplemental option to divert surface contact water transfer from CP1 to Melvin Bay."</i></p>
Information Request	<p>Agnico Eagle should complete a full environmental assessment of the 20,000 m³/day alternative including the discharge of surface contact water from the site to Melvin Bay. This assessment should fully link the NIRB and NWB applications, and include:</p> <ol style="list-style-type: none"> Water quality and hydrodynamic modelling of blended surface and ground water quality discharged to Melvin Bay at rates of up to 20,000 m³/day. Water balance modelling for the Meliadine site, including Meliadine Lake, to determine the influence of diverting all surface contact water to Melvin Bay on both site water management, and water levels in Meliadine Lake. <p>Note that the full environmental and socio-economic assessment should include a freshwater use volume of 741,706 m³/year for Operations at Meliadine as currently proposed within the NWB water licence amendment application.</p>
Agnico Eagle's Response	<p>Part A Agnico Eagle refers KIA to Hydrodynamic modelling presented in the Appendix IR-9 of the response package.</p> <p>Part B Agnico Eagle refers KIA to Meliadine Lake Assessment presented in the Appendix IR-2 of this response package</p>
KIA Request/Recommendation	<p>Part A We appreciate the model provided by Agnico Eagle. The information provided in Appendix IR-9 adequately demonstrates that there is sufficient exchange between Melvin Bay and Hudson Bay to prevent a building up saline groundwater within the embayment. However, the</p>

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	<p>effects of a combined effluent discharge were not modeled. Without this modelling, there is still uncertainty around the environmental effects and viability of a combined surface and subsurface effluent discharge.</p> <p>We recommend Agnico Eagle update the hydrodynamic model using a combined surface and subsurface water effluent scenario discharged to Melvin Bay. This modelling should include at an assessment of diverting Meliadine Site runoff to Melvin Bay using volumes outlined in Appendix IR-2, and an assessment of diverting all surface contact water from the Meliadine Site (i.e. all water that would be discharged from CP1 to Meliadine Lake) to Melvin Bay.</p> <p>Part B</p> <p>The assessment of water levels provided in Appendix IR-2 adequately demonstrates that the effect of diverting surface runoff from the from Meliadine Lake on water levels in that waterbody will not be significant. However, Agnico Eagle has neglected to assess the impacts of diverting all surface contact water from the Meliadine Site to Melvin Bay such that discharges to Meliadine Lake are no longer required.</p> <p>We request Agnico Eagle provide an assessment of the impacts to water levels and the resulting hydrological regime in Meliadine Lake of diverting all contact water from the Meliadine Site to Melvin Bay.</p> <p>Summary</p> <p>KIA recommends that Agnico Eagle provide all necessary documentation for the NIRB and other stakeholders to fully consider the discharge of blended surface contact water and saline groundwater effluent to Melvin Bay via the pipeline and diffusers. KIA further recommends Agnico Eagle expand their application before the NIRB to include permitting of the blended effluent discharge.</p>
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2.1.2.2 HDPE pipe capacity

IR Source:	Kivalliq Inuit Association
IR Number:	KIA-IR#3.
IR Directed To:	Agnico Eagle
Subject:	HDPE pipe capacity
Reference:	Appendix A • Meliadine Mine Bay Diffuser Conceptual Design – Effluent Near Field Modelling Section 3.4.2 Discharge Configuration
Issue/Concern:	<i>“The higher exit velocity with the 20,000 m³/d flow rate is 5.67 m/s, which is getting close to the recommended maximum velocity for a high-density polyethylene (HDPE) system.”</i> It is unclear whether there may be any implications or concerns with sustained discharge at 20,000 m ³ /d. KIA is concerned with the 20,000 m ³ /d scenario as it appears to be required to divert surface contact water from CP1 to the marine environment.
Information Request	Please identify the maximum velocity for a high-density polyethylene (HDPE) pipe and clarify whether there are any concerns to pipeline integrity if a sustained discharge at 20,000 m ³ /d is required.
Agnico Eagle’s Response	Please refer to response provided in CIRNAC-IR-3b; and Appendix IR-1 of this response package.
	CIRNAC-IR-3b Response:

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	Agnico Eagle elected to use 16-inch diameter pipe based on preliminary calculation indicating that may need to convey flow up to design flow of 20,000 m ³ /day in the future. A detailed engineering calculation table found in the Appendix IR-1 show that each line can convey up to 11,500 m ³ /day and stay within the rated pressure of 16-inches HDPE DR17 PE4710 pipe which is 125 psi. The first table in the Appendix IR-1 also shows that the combined flow can reach up to 20,000 m ³ /day and stay within the max rated pressure of 125 psi.
KIA Request/Recommendation	This information request is resolved.

2.1.2.3 Mid and far field water quality in Melvin Bay

IR Source:	Kivalliq Inuit Association
IR Number:	KIA-IR#4.
IR Directed To:	Agnico Eagle
Subject:	Mid and far field water quality in Melvin Bay
Reference:	Appendix A Meliadine Mine Bay Diffuser Conceptual Design – Effluent Near Field Modelling
Issue/Concern:	Water quality modelling submitted with the application only includes nearfield results. While we understand that water quality will meet CCME benchmarks well within the 100 m radius (i.e. less than 1 m from the diffuser) in all scenarios modelled, it is unclear whether the hydrodynamics of Melvin Bay are sufficient to ensure broader changes to water quality in that area will not occur over time.
Information Request	Agnico Eagle to provide mid and far field model water quality and hydrodynamic modelling for Melvin Bay using 6,000 m ³ /day, 12,000 m ³ /day and 20,000 m ³ /day discharge scenarios. Model scenarios should include both the discharge of groundwater alone, and the blended discharge of surface contact water from the Meliadine Site with groundwater.
Agnico Eagle's Response	<p>Agnico Eagle has undertaken three-dimensional (3D) hydrodynamic modelling describing the fate of discharge to Melvin Bay, which evaluates mid and far field conditions in the bay as a result of the discharge. Please refer to Appendix IR-9 of this response package for the Melvin Bay hydrodynamic model report.</p> <p>As part of the proposed diffuser design in Melvin Bay conducted in April (Appendix A of the August 2020 FEIS Addendum), modelling using the US-EPA Visual Plumes assessed mixing potential of the discharge in the near-field for nominal flows of 6000 m³/day to 12,000 m³/day, as well as the 20,000 m³/day contingency discharge scenario. The modelling concluded that effective dilutions were achieved in the near-field (i.e., within a 100 m mixing zone).</p>

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	<p>The 3D modelling investigated the fate and behaviour of the discharged effluent over the entire Melvin Bay for the 6,000 m³/day and 12,000 m³/day discharge scenarios, including the 20,000 m³/day contingency discharge scenario, with constant TDS concentrations in the discharge at 39,400 mg/L. This hydrodynamic modelling also evaluated potential accumulation of the discharge in the bay on an annual basis accounting for spatially- and temporally-varying ocean currents (and ocean conditions; i.e. temperature and salinity) in the vicinity of the diffuser and within the bay. Discharge will be timed for June through October for each year of operations. Modelling results, including the 20,000 m³/day contingency discharge scenario, indicate a flushing efficiency within the bay, resulting in no residual accumulation of effluent on a year-by-year basis.</p>
KIA Request/Recommendation	<p>We appreciate the hydrodynamic model provided by Agnico Eagle. The information provided in Appendix IR-9 adequately demonstrates that there is sufficient exchange between Melvin Bay and Hudson Bay to prevent a building up saline groundwater within the embayment. The model also demonstrates acceptable water quality in the mid and far field areas during periods of discharge.</p> <p>However, the effects of a combined effluent discharge were not modeled. Without this modelling, there is still uncertainty around the environmental effects and viability of a combined surface and subsurface effluent discharge.</p> <p>As per KIA-IR#2, we recommend Agnico Eagle update the hydrodynamic model using a combined surface and subsurface water effluent scenario discharged to Melvin Bay. This modelling should include at an assessment of diverting Meliadine Site runoff to Melvin Bay using volumes outlined in Appendix IR-2, and an assessment of diverting all surface contact water from the Meliadine Site (i.e. all water that would be discharged from CP1 to Meliadine Lake) to Melvin Bay.</p>

2.1.2.4 Divergence from SWTP design criteria

IR Source:	Kivalliq Inuit Association
IR Number:	KIA-IR#5.
IR Directed To:	Agnico Eagle
Subject:	Divergence from SWTP design criteria
Reference:	Appendix B: Groundwater Management Plan Section 3.4.2.1 Saltwater Treatment Plant (SWTP) – Desalination
Issue/Concern:	<i>“Over Q3 and Q4 of 2019, the combined treatment rate of the two Saltmaker units (120 m³/day design total) was reported at 46.5 m³/day. Furthermore, availability has been much lower than expected</i>

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	<i>over this same period. As a result, over Q3 and Q4 over 2019, the SWTP treated a calculated total of 6,045 m³ (compared to a design calculated total of 20,862 m³)." The cause of this departure from design criteria has not been provided. It is unclear whether failures to meet design criteria may impede Agnico Eagle's capacity to meet discharge criteria for the diffuser.</i>
Information Request	Agnico Eagle to clarify why the SWTP was unable to achieve design criteria. Agnico Eagle to also provide a discussion as to whether problems meeting SWTP design criteria may compromise the capacity to meet discharge criteria at the diffuser in Melvin Bay. This discussion should consider both the discharge of groundwater alone as well as blended surface and subsurface contact water.
Agnico Eagle's Response	The status of the SWTP (i.e., status, challenges, and mitigations measures) is presented in response to CIRNAC-IR-2.
KIA Request/Recommendation	We appreciate the response provided to CIRNAC and KIA. We also appreciate Agnico Eagle's commitment to upgrade the treatment capabilities of the SWTP controlling effluent chemistry in the discharges to Melvin Bay from the current maximum capacity of 1,600 m ³ /day to 20,000 m ³ /day as per Agnico Eagle's response to NIRB-IR-2. We consider this information request resolved.

2.1.2.5 Water balance model scenarios

IR Source:	Kivalliq Inuit Association
IR Number:	KIA-IR#6.
IR Directed To:	Agnico Eagle
Subject:	Water balance model scenarios
Reference:	Appendix H Water Balance Section 2.2., Section 3.2.
Issue/Concern:	Agnico Eagle's water balance considers two assessment scenarios: average precipitation and wet year precipitation. Given the waterline application is for the discharge of saline groundwater, a more useful assessment scenario would be additional groundwater inflows within the project area. Specifically, if enhanced permeability zones (EPZs) are encountered and mitigations prove challenging resulting in additional groundwater discharge. Table 1 in Appendix H indicates that much of the 12,000 m ³ /day discharge capacity will be used in 2022 and 2023 respectively under the average year scenario. The total predicted discharges to Melvin Bay in 2022 and 2023 are 11,630 m ³ /day and 11,515 m ³ /day respectively. This leaves little capacity to accommodate additional groundwater under the current maximum discharge of 12,000 m ³ /day.

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	<p>Agnico Eagle notes that <i>“A discharge rate of 12,000 m³/day will prevent the accumulation of saline water on site under the assessed conditions. The discharge rate of 20,000 m³/day proposed by Agnico Eagle is part of Meliadine Mine’s adaptive water management strategy, which will allow for contingency in the event of higher than predicted groundwater inflows to the Underground Mine or an adaptive management strategy to discharge surface contact water, including CP1, into the waterline.”</i></p> <p>We are concerned that Agnico Eagle has proposed a discharge rate of 20,000 m³/day as a component of adaptive water management without fully evaluating the effects of that discharge volume within the current waterline application. This appears to significantly limit Agnico Eagle’s operational flexibility to manage groundwater inflows that diverge from the modeled assessment scenario. This concern is particularly salient given groundwater inflows have already deviated from the rates predicted within the 2018 FEIS addendum to discharge treated groundwater effluent into Melvin Bay.</p>
Information Request	<p>Please update the water balance model with an additional assessment scenario accounting for increased groundwater inflows (i.e. a sensitivity analysis) or provide clarification as to why the current groundwater predictions presented in the 2020 addendum are considered sufficiently conservative.</p> <p>Please clarify whether 12,000 m³/day is a sufficient maximum discharge volume for the current application or whether 20,000 m³/day should be included in the waterline application to manage saline groundwater regardless of whether discharges to Melvin Bay include surface contact water from the Meliadine Site.</p>
Agnico Eagle’s Response	<p>The water balance model already assumes an upper bound estimate from sensitivity analysis completed on groundwater inflows to the Tiriganiaq Underground (refer to Appendix IR-10 of this response package). Since the original FEIS was completed in 2014 supplemental hydraulic testing has been conducted that includes 24 additional packer tests, two pumping tests and two injection tests to further characterize and refine the hydraulic conductivity of the bedrock. These field measurements have also been supplemented by hydraulic head monitoring data measured at piezometers during mining and underground inflow measurements to support calibration/verification of model predictions. The larger data set and model calibration provide increased confidence in the base case predictions.</p> <p>Despite the increased confidence and to be conservative, the water balance does not use the base case predictions and instead uses the higher predicted flows from the sensitivity scenario assuming the bedrock hydraulic conductivity is a factor of 3 higher than the values</p>

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	used in the base case model predictions. Considering the larger data set and supporting model calibration, this scenario is considered to be a reasonable upper bound estimate of groundwater inflows to be managed underground and additional sensitivity analysis is not required. The predictions also do not account for the effects of grouting which is being utilized effectively in the underground to reduce inflows from what is predicted by the numerical model.
KIA Request/Recommendation	We consider this information request resolved.

2.1.2.6 Saline water and surface water storage facilities on the Meliadine mine site.

IR Source:	Kivalliq Inuit Association
IR Number:	KIA-IR#7.
IR Directed To:	Agnico Eagle
Subject:	Saline water and surface water storage facilities on the Meliadine mine site.
Reference:	Groundwater Management Plan, Appendix C, Section 3.2, pages 19-20.
Issue/Concern:	<p>The saline water storage capacity (Table 2, page 20) is currently 265,808 m³ and will be at capacity by mid-May 2021, almost 2 months prior to open water discharge.</p> <p>The KIA would like to eliminate any chance of an additional “emergency discharge” to Meliadine Lake in 2021 because there is a lack of storage capacity for the saline and surface water on the mine site.</p>
Information Request	The KIA would like demonstration that there is sufficient storage capacity on site to avoid the need for another “emergency discharge”. Please provide a table that contains the total amount for each of saline and surface water that will require storage on the Meliadine mine site prior to the 2021 open water season. The KIA also would like a table stating the capacity of all current storage ponds and a diagram showing the location of these storage ponds. The KIA would also like a table stating the capacity of all storage ponds (saline and fresh water) and a diagram showing the location of these storage ponds in each year / phase of the life of the mine.
Agnico Eagle’s Response	As per Figure 1 of the Meliadine Saline Water Balance and Water Quality Model – Saline Water Management (Appendix H of the August 2020 FEIS Addendum) and presented in Figure KIA-IR-7a below, a peak storage volume of 556,396 m ³ of saline water is predicted to be stored at the Meliadine Mine by May 2022. The combined saline water storage capacity available in SP1, SP4, and Tiriganiaq 2 Pit from 2021 to 2027 is 1,184,852 m ³ . Table KIA-IR-7a below shows the available saline storage capacity over the mine life.

	<p>The locations of the ponds and Pit are shown in response to NIRB-IR-002.</p> <div style="text-align: center;"> </div> <p>Table KivIA-IR-7a: Saline Storage Requirements and Capacity</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th rowspan="2">Year</th> <th rowspan="2">Saline Storage Requirement (m³)</th> <th colspan="4">Saline Pond / Open Pit Capacity (m³)</th> <th rowspan="2">Total ⁴</th> </tr> <tr> <th>SP1</th> <th>SP2¹</th> <th>SP4^{2,3}</th> <th>Tiri2</th> </tr> </thead> <tbody> <tr> <td>2020</td> <td>288,769</td> <td>32,000</td> <td>-</td> <td>272,122</td> <td>-</td> <td>304,122</td> </tr> <tr> <td>2021</td> <td>453,238</td> <td>32,000</td> <td>-</td> <td>272,122</td> <td>1,152,852</td> <td>1,184,852</td> </tr> <tr> <td>2022</td> <td>556,396</td> <td>32,000</td> <td>-</td> <td>272,122</td> <td>1,152,852</td> <td>1,184,852</td> </tr> <tr> <td>2023</td> <td>225,414</td> <td>32,000</td> <td>-</td> <td>272,122</td> <td>1,152,852</td> <td>1,184,852</td> </tr> <tr> <td>2024</td> <td>200,666</td> <td>32,000</td> <td>-</td> <td>272,122</td> <td>1,152,852</td> <td>1,184,852</td> </tr> <tr> <td>2025</td> <td>214,107</td> <td>32,000</td> <td>-</td> <td></td> <td>1,152,852</td> <td>1,184,852</td> </tr> <tr> <td>2026</td> <td>228,669</td> <td>32,000</td> <td>-</td> <td></td> <td>1,152,852</td> <td>1,184,852</td> </tr> <tr> <td>2027</td> <td>219,771</td> <td>32,000</td> <td>-</td> <td></td> <td>1,152,852</td> <td>1,184,852</td> </tr> </tbody> </table> <p><small>Notes:</small></p> <ol style="list-style-type: none"> 1. SP2 was decommissioned in April 2020 and is not included in storage calculations 2. The capacity of SP4 has been updated based on the as-built capacity (previous design value presented in the 2020 Water Management Plan was 233,133 m³) 3. <i>Italicized, gray</i> values are contingency storage only 4. Excludes contingency storage 	Year	Saline Storage Requirement (m ³)	Saline Pond / Open Pit Capacity (m ³)				Total ⁴	SP1	SP2 ¹	SP4 ^{2,3}	Tiri2	2020	288,769	32,000	-	272,122	-	304,122	2021	453,238	32,000	-	272,122	1,152,852	1,184,852	2022	556,396	32,000	-	272,122	1,152,852	1,184,852	2023	225,414	32,000	-	272,122	1,152,852	1,184,852	2024	200,666	32,000	-	272,122	1,152,852	1,184,852	2025	214,107	32,000	-		1,152,852	1,184,852	2026	228,669	32,000	-		1,152,852	1,184,852	2027	219,771	32,000	-		1,152,852	1,184,852
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KIA Request/Recommendation	This issue is resolved.																																																																			

2.1.3 Terrestrial Environment

2.1.3.1 *Unsubstantiated justification that the proposed 16" waterline will not prevent caribou passage.*

IR Source:	Kivalliq Inuit Association
IR Number:	KIA-IR#8.
IR Directed To:	Agnico Eagle
Subject:	Unsubstantiated justification that the proposed twin 16" waterlines will not prevent caribou passage.
Reference:	FEIS Addendum S 3.4.2, 5, 8.1.6; Agnico Eagle scope clarification, 16 Sep. 2020

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<p>Issue/Concern:</p>	<p>The Proponent states that two waterlines were chosen over a single waterline, in part because “<i>Two lines will also facilitate crossings by ATV/snowmobile and caribou</i>” (pg 22). The volume of two 16” waterlines would be contained within a single 22.6” diameter pipe. No justification is provided to support the statement that two 16” waterlines (separated by 60 cm) would facilitate crossing by caribou any better than a single 22.6” (or 20”) diameter pipe. The Proponent also states that “<i>The diameter selected [16”] is smaller than has been identified in available literature as preventing caribou passage (as reported in ERM 2020)</i>” (pg 38). The ERM (2020) 1-page summary report of waterline and caribou interactions contains no references or summary of evidence to support the claim that a (single) 16” waterline will not prevent (as opposed to delay or deflect) caribou passage. It also does not reference the implication to caribou movement of two parallel 16” lines spaced 60 cm apart, as opposed to a single slightly larger waterline. The FEIS addendum further states that “<i>Much of the research conducted on pipes has been on larger diameter pipes used in oil and gas production</i>” (pg 95), thus it is unclear where the <20” criterion for ease of passage originates. In addition, there is evidence (summarized in Russell and Gunn 2019:pgs 46, 85) that separating pipelines from roads is an effective mitigation to reduce crossing deflections but this is not addressed.</p> <p>Although Agnico Eagle has recently proposed to bury (or cover?) 80-90% of the waterlines (Agnico Eagle scope clarification, 16 Sep. 2020), the waterline design and details of which sections will not be buried/covered have not been presented. Therefore, the concerns outlined above remain.</p> <p>Russell, D, and A. Gunn. 2019. Vulnerability analysis of the Porcupine Caribou Herd to potential development of the 1002 lands in the Arctic National Wildlife Refuge, Alaska. Submitted to: Environment Yukon, Environment and Climate Change Canada, and NWT Environment and Natural Resources. Shadow Lake Environmental Inc, Whitehorse, YT. 3 February 2019.</p>
<p>Information Request</p>	<p>The Proponent should provide:</p> <ul style="list-style-type: none"> A) A review of the literature regarding caribou and pipeline/waterline crossings; B) Summaries with references to support claims that a twinned 16” waterline will not delay or deflect caribou passage; C) Justification with references that two waterlines spaced 60 cm apart will affect caribou the same as a single waterline (as the Proponent seems to imply); and D) Justification why placing the waterlines away from the road will not be better mitigation to reduce delay and deflection of caribou passage.

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Agnico Eagle's Response	Agnico Eagle presented the history of how it arrived at the commitment to cover 80-90% of the waterline, which removed many of the original concerns and uncertainty with the FEIS Addendum. A helpful review of the literature regarding caribou and pipeline/waterline crossings was also provided. Caribou will not have to cross an un-covered waterline or use crossing structures. Agnico Eagle provided rationale for not placing the waterlines away from the road.
KIA Request/Recommendation	This issue is resolved.

2.1.3.2 Caribou collar and sighting data

IR Source:	Kivalliq Inuit Association
IR Number:	KIA-IR#9.
IR Directed To:	Agnico Eagle
Subject:	Caribou collar and sighting data
Reference:	FEIS Addendum S 8.1.3; Agnico Eagle scope clarification, 16 Sep. 2020
Issue/Concern:	The FEIS Addendum refers to the 2014 FEIS – which present data that are 6-8 years dated – and the 2018 FEIS Addendum – which does not contain collar or sighting data – when describing caribou movements through the study area. Caribou use of the regional study area has been comparatively high in the past 6-8 years, thus an updated summary of caribou sightings along AWAR from systematic driving surveys and caribou collar movements through the study area would help reviewers understand recent caribou movement patterns to better assess the project. This is especially important as burying/covering the waterlines will not occur for the complete length of the waterlines (Agnico Eagle scope clarification, 16 Sep. 2020).
Information Request	The Proponent should provide: <ul style="list-style-type: none"> A) Summary figures of collared caribou movements through the study, specifically along AWAR. These should include a temporal aspect to the records to look at annual variation in the timing of movement through the area; B) Summary figures of caribou sightings from AWAR road surveys, again with a temporal component; and C) Clarify on these figures where the waterline will not be buried/covered.
Agnico Eagle's Response	Agnico Eagle provided a figure of frequency of collared caribou crossing within each 1 km segment of the AWAR and an indication of overall variation (though not annual variation, but we can let that go). Agnico Eagle also provided a figure summarizing where the waterline will be covered, and summary results from the June-July 2020

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	camera study. A summary figures of caribou sightings from AWAR road surveys was not provided as data analysis are not yet complete; these data will be included in the 2020 TEMMP report.
KIA Request/Recommendation	This issue is resolved.

2.1.3.3 Clarification of recent caribou behaviour and experience in Alberta

IR Source:	Kivalliq Inuit Association
IR Number:	KIA-IR#10.
IR Directed To:	Agnico Eagle
Subject:	Clarification of recent caribou behaviour and experience in Alberta
Reference:	FEIS Addendum S 8.1.3
Issue/Concern:	In presenting primary pathway evidence on potential impacts of sensory disturbance and disruption of migration to caribou, the Proponent stated “ <i>Based on recent behaviour monitoring (July 2020) and experience in Alberta with above-ground pipelines, it is anticipated that the caribou may be delayed in their movements when the waterlines are constructed. It is expected that the waterlines would act as a temporary barrier to movement. Crossing structures over similar structures are used by caribou in other jurisdictions and it is expected they would use them if established at locations along the length of the water line to cross the waterline as well</i> ” (pg 87). These statements are not backed up by references, data, or analysis, thus making the statements of little to no use for reviewers assessing the project.
Information Request	The Proponent should provide: <ul style="list-style-type: none"> A) Details of the study design and a summary of the July 2020 behaviour monitoring; B) Details and reference to the “<i>experience in Alberta</i>”; C) The analysis that resulted in the conclusion that caribou may be delayed in their movements and that the waterlines would act as a temporary barrier to movement; and D) A summary of the crossing structure use by caribou in other jurisdictions, including diameter and spacing of pipes/waterlines.
Agnico Eagle’s Response	Agnico Eagle revised their methods used for behaviour monitoring in 2020, and has committed to provide these data in the Meliadine 2020 TEMMP Report to the NIRB in March 2021. Requests B) to D) were largely addressed in the change to a covered waterline and a review of the literature regarding caribou and pipeline/waterline crossings.
KIA Request/Recommendation	This issue is resolved.

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2.1.3.4 Mitigation of the potential impact of the waterlines on caribou

IR Source:	Kivalliq Inuit Association
IR Number:	KIA-IR#11.
IR Directed To:	Agnico Eagle
Subject:	Mitigation of the potential impact of the waterlines on caribou
Reference:	FEIS Addendum S 5.1, 8.1.1, 8.1.6; Waterline consultations report Appendix I; Agnico Eagle scope clarification, 16 Sep. 2020
Issue/Concern:	The FEIS Addendum states that, to mitigate potential impacts to caribou movement and travel by community members, they will construct 70 caribou crossings over the waterlines with sand and gravel from eskers (pgs 45, 77, 95). However, the Waterline consultations report (pg 9) and the Agnico Eagle scoping clarification (16 Sep. 2020) stated that " <i>Agnico Eagle will bury/cover between 80-90% of the waterline and will continue to work with the HTO, KIA, Elders, and the community on site specific locations. This will replace commitment 1 to build crossings if this is the preferred mitigation method</i> " (emphasis added; Waterline consultations report Appendix I, pg 9). Agnico Eagle explained some of their preliminary ideas on the buried/covered waterlines during their 16 Sep. 2020 presentation to the KIA, but firm details were lacking or unclear. The presentation also referred to a camera study from this summer involving 30 cameras to examine the influence on caribou crossings of cover materials and slopes of the existing road, but no study results were presented.
Information Request	The Proponent should provide: <ul style="list-style-type: none"> A) Confirmation and commitment whether burying/covering most of the length of the waterlines is indeed the mitigation that will be used; B) Details of the design to bury or cover 80-90% of the waterline; and C) The locations where the waterlines will not be buried/covered, how they align with caribou crossing data, and what mitigation will be in place to facilitate caribou movement through these areas.
Agnico Eagle's Response	Agnico Eagle has committed to covering 80-90% of the waterline, and provided details of which portions of the waterline will be covered in Appendix IR-6 and in Figure KIA-IR-9b.
KIA Request/Recommendation	This issue is resolved.

2.1.3.5 Length of AWAR

IR Source:	Kivalliq Inuit Association
IR Number:	KIA-IR#12.
IR Directed To:	Agnico Eagle

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Subject:	AWAR length varies from 25 km to 30 km to 34 km.
Reference:	Plain Language Summary Page i), Executive Summary (page v) and Roads Management Plan, Appendix D (page i).
Issue/Concern:	Confusion related to the actual length of the AWAR impacts on the ability of the KIA to assess the impacts of the AWAR.
Information Request	The KIA requests that the actual length of the AWAR be clearly stated and a figure clearly outlining the actual location of the AWAR be provided.
Agnico Eagle's Response	Agnico Eagle provided Appendix IR-6 to address this request.
KIA Request/Recommendation	This issue is resolved.

2.1.3.6 *Width of the AWAR and the water pipeline cover.*

IR Source:	Kivalliq Inuit Association
IR Number:	KIA-IR#13.
IR Directed To:	Agnico Eagle
Subject:	Width of the AWAR and the water pipeline cover.
Reference:	Roads Management Plan, Appendix D, Section 1.2, page 4.
Issue/Concern:	The maximum width allowed for the AWAR is 8.0 metres while the width of the AWAR plus the water pipeline is unclear. This information is required for the KIA to assess the potential impacts of the AWAR.
Information Request	The KIA requires the accurate width of the AWAR plus the water pipeline.
Agnico Eagle's Response	Agnico Eagle clarified that the maximum width of the AWAR is 11 m (including pullouts), minimum width is 6 m and average width of 7 m for the AWAR. The waterlines require 3.2 m to be buried alongside the AWAR. Additional information was provided Appendix IR-7.
KIA Request/Recommendation	This information request is resolved.

2.2 Detailed Technical Comments

2.2.1 Aquatic Environment

2.2.1.1 Annual confirmatory ocean discharge monitoring

Review Comment Number	KIA-TC#14.
Subject/Topic	Annual confirmatory ocean discharge monitoring
References	Appendix F. Ocean Discharge Monitoring Plan, Table 3 Appendix 9 - Meliadine Mine Waterline Addendum: Melvin Bay Hydrodynamic Modelling and Characterization of the Fate and Behaviour of the Discharged Saline Effluent. Section 5.2.2 Effluent Concentration
Summary	The ocean discharge monitoring plan submitted with the waterline application is insufficient to determine whether water quality in the marine environment returns to pre-discharge conditions each year as predicted by the new hydrodynamic model. KIA recommends an additional sampling event approximately 20 days after marine discharges have ceased to confirm that annual flushing of effluent from Melvin Bay has occurred as predicted.
Importance of Issue to Impact Assessment	Failure to characterize post discharge conditions precludes an assessment of whether water quality in Melvin Bay returns to pre-discharge each year conditions prior to the formation of ice cover. This assessment is required to determine whether unanticipated impacts to aquatic life may be occurring.
Detailed Review Comment	<p>1. Gap/Issue</p> <p>The ocean discharge monitoring plan submitted with the waterline application is insufficient to determine whether water quality in the marine environment returns to pre-discharge conditions each year as predicted by the new hydrodynamic model.</p> <p>2. Disagreement with IS Addendum conclusion</p> <p>Hydrodynamic modelling provided in Appendix 9 of the IR response package indicates that <i>"The [effluent] concentration value reaches near 0 about 20 days after the effluent discharge stops on October 30."</i> However, the monitoring approach presented in the Ocean Discharge Monitoring Plan suggests that monitoring will conclude within the same month discharges conclude for the year.</p> <p>The approach to monitoring neglects include the period following the conclusion of discharges to Melvin Bay to assess whether water quality has recovered to pre-discharge conditions.</p> <p>3. Reasons for disagreement with IS Addendum conclusion</p> <p>Given the assertion outlined in the new hydrodynamic model that effluent will be flushed by the end of each season, an additional sampling event is required within Melvin Bay to determine whether water quality has returned to pre-discharge conditions prior to the formation of ice cover. Exchange of water between Melvin Bay and the wider marine environment decreases following the formation of ice cover; residual impacts to water quality resulting from discharging effluent from the Meliadine Site are more likely to negatively impact aquatic life once ice forms over Melvin Bay.</p>
Recommendation/Request	KIA recommends Agnico Eagle update the Ocean Discharge Monitoring Plan to include an additional sampling event following the cessation of discharges to Melvin Bay each year. Specifically, KIA

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	<p>recommends Agnico Eagle collect water quality samples and water column measurements from all 7 stations in the receiving environment and all 3 samples from Reference Area A at least 10 days but ideally 20 days following the conclusion of discharges each year going forward. Samples should be collected as close to the full 20 days following the cessation of discharges to the marine environment given appropriate consideration to the potential formation of ice and the associated safety concerns.</p> <p>This recommended sampling is intended to confirm that annual flushing of the effluent from Melvin Bay has occurred as predicted.</p>
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2.2.1.2 Spill management for covered waterline

Review Comment Number	KIA-TC#15.
Subject/Topic	Spill management for covered waterline
References	Appendix C Spill Contingency Plan Waterline FEIS Addendum – Meliadine Mine Information Request Responses
Summary	It is unclear how the cleanup of spills and unintended discharges will proceed now that the pipeline will be covered. Specifically, KIA is concerned how spills, leaks and other unintended discharges will be managed in a timely manner. We recommend Agnico Eagle commit to suspending discharge from a waterline if a leak has been identified understanding that overall discharge can continue given the presence of a second undamaged waterline.
Importance of Issue to Impact Assessment	Unmitigated leaks and discharges along the waterline may result in deleterious effects to the terrestrial, freshwater and marine environments.
Detailed Review Comment	<p>1. Gap/Issue</p> <p>It is unclear how the cleanup of spills and unintended discharges will proceed now that the pipeline will be covered.</p> <p>2. Disagreement with IS Addendum conclusion</p> <p>We are please that Agnico Eagle has chosen to install “a fiber optic leak detection system... for the waterline”. This will allow Agnico Eagle to identify spills and leaks along the waterline in a timely manner. The updated decision to cover 80-90% of the waterline will also decrease the likelihood of damage and associated malfunction. It is unclear however how the decision to cover the waterline will impact Agnico Eagle’s capacity to repair leaks in timely manner should they occur.</p> <p>3. Reasons for disagreement with IS Addendum conclusion</p> <p>While a covered waterline is more resilient to damage and associated malfunction, it is unclear how spills, leaks and other unintended discharges will be managed in a timely manner. We are specifically concerned Agnico Eagle has not clarified whether discharges from a leaking waterline will be suspended once it has been identified acknowledging that overall discharge to the marine environment can continue using the second undamaged waterline.</p> <p>Leaks and discharges along the waterline may result in deleterious effects to the terrestrial, freshwater and marine environments if they are not mitigated in a timely manner.</p>

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Recommendation/Request	We request Agnico Eagle clarify how the decision to cover the waterlines will impact the approach to managing and mitigating spills and include this updated approach in future iterations of the Spill Contingency Plan. We recommend Agnico Eagle commit to suspending discharge from a waterline if a leak has been identified understanding that overall discharge can continue given the presence of a second undamaged waterline.
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2.2.2 Terrestrial Environment

2.2.2.1 Monitoring of effects of AWAR and waterlines on caribou movement

Review Comment Number	KIA-TC-1
Subject/Topic	Monitoring of effects of AWAR and waterlines on caribou movement
References	Appendix IR-8 Anticipated Ecosystem and Socio-economic Impacts Associated with Covering the Waterline; Appendix IR-11 Literature review of caribou, waterlines, and roads Revision 2; Waterline FEIS Addendum IR Responses, Waterline consultation report, August 2020.
Summary	Agnico Eagle concludes that outside of the construction period that sensory disturbance and altered movements to wildlife (including caribou) “are expected to result in only minor changes to individual animals and negligible residual effects” (Appendix IR-8, S 3.2, pg 18). There is uncertainty with this conclusion that must be verified through rigorous monitoring and adaptive management.
Importance of Issue to Impact Assessment	How caribou react to the AWAR and associated covered waterlines has some associated uncertainty. Covering the waterlines is a large positive step over leaving the waterlines exposed on the tundra, but the reaction to the expanded physical structure of the road is not fully predictable, thus adding uncertainty to the impact assessment conclusions.
Detailed Review Comment	<p>1. Gap/Issue</p> <p>There is limited evidence on the impact to caribou movement of covered waterlines placed adjacent to the existing AWAR. Smith and Cameron (1985) showed that selection for crossing of buried pipes was strongest if the buried pipe was isolated from road traffic (Appendix IR-11, Golder section, pg 1). Agnico Eagle acknowledges that “<i>there is some uncertainty and potential for delays, caused by a behavioural response and not a physical limitation, on movement over such structures</i>” (Appendix IR-8, S 3.0, pg 6).</p> <p>2. Disagreement with IS Addendum conclusion</p>

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	<p>The KIA suggests that there is uncertainty to what extent the “minor changes” to movements of individual caribou will be. The combined road and covered waterline may have greater impact on individual animals than anticipated. Behavioural data are not provided that support the IS Addendum conclusions as evidence of no effect.</p> <p>3. Reasons for disagreement with IS Addendum conclusion</p> <p>The extent of deflections or delays in crossing of the AWAR by caribou have not been clearly documented, and the addition of the covered waterline adds an extra degree of uncertainty to the conclusions. A commitment to rigorous monitoring is required to verify that Agnico Eagle’s conclusions are supported. Agnico Eagle has committed to long-term monitoring studies that will inform adaptive management, including (Waterline consultation report, Appendix 1, commitment 4; Waterline FEIS Addendum IR Responses KIA-IR-8):</p> <ul style="list-style-type: none"> a) Site Visits for Elders b) Tracking Caribou with GPS collars c) Camera study d) KHTO road surveys <p>However, the details and design of these programs have not been provided and are needed to ensure that adaptive management of caribou migration will occur.</p>
<p>Recommendation/Request</p>	<p>Agnico Eagle should:</p> <ul style="list-style-type: none"> a) Provide detailed methodology of the monitoring proposed for the waterline-road complex (Site visits by Elders; GPS collar tracking; camera study; and KHTO road monitoring), and show how this monitoring will feed into adaptive management of caribou movement through the project. Behavioural monitoring data must be presented to support the IS Addendum conclusions. Agnico Eagle should clarify which triggers will result in changes to mitigation, and what that enhanced mitigation might entail. b) The KIA also recommends that Agnico Eagle establish a Terrestrial Advisory Group (TAG) similar to the TAG in place at Meadowbank/Whale Tail, so that regulators and interested parties can collaboratively work with Agnico Eagle to develop sound and systematic TEMMP monitoring and reporting to facilitate Agnico Eagle’s adaptive management of wildlife, especially caribou.

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2.2.2.2 Optimal side slope of the berms on the waterline covering

Review Comment Number	KIA-TC-2
Subject/Topic	Optimal side slope of the berms on the waterline covering
References	Appendix IR-8 Anticipated Ecosystem and Socio-economic Impacts Associated with Covering the Waterline; Appendix IR-11 Literature review of caribou, waterlines, and roads Revision 2; Waterline FEIS Addendum IR Responses, Waterline consultation report, August 2020.
Summary	Agnico Eagle states that the cover over the waterline will be constructed with a planned side slope of 1:2.5 (rise:run) (Waterline FEIS Addendum IR Responses KIA-IR-8). This proposed side slope is steeper than the caribou literature suggests is required to facilitate caribou crossing.
Importance of Issue to Impact Assessment	How caribou perceive the widened road-waterline surface may influence how readily they cross the feature. If caribou do not cross the road-waterline complex as readily as Agnico Eagle expects, then the conclusions of the assessment
Detailed Review Comment	<p>1. Gap/Issue</p> <p>Agnico Eagle states that the cover over the waterline will be constructed with a planned side slope of 1:2.5 (rise:run) (Waterline FEIS Addendum IR Responses KIA-IR-8).</p> <p>2. Disagreement with IS Addendum conclusion</p> <p>KIA suggests that this proposed side slope is not supported by the literature as the optimal slope to reduce potential deflections or delays in caribou crossing.</p> <p>3. Reasons for disagreement with IS Addendum conclusion</p> <p>The literature review of caribou, waterlines and roads provided by Agnico Eagle indicates that side slopes used or recommended elsewhere to facilitate caribou crossing are more gradual (Ekati Jay: 1:5 slope; Alberta 1:6 slope and never exceed a slope of 1:3; Alaska 1:5 slope) than the 1:2.5 slope proposed for the waterline (Appendix IR-11 Literature review of caribou, waterlines, and roads Revision 2). A steeper than optimal side slope on the east side of the road-waterline complex – which is the direction from which most caribou cross in July – may cause greater deflection or delay in caribou passage, thus adding uncertainty to the IS conclusions.</p>
Recommendation/Request	Agnico Eagle should ensure that the side slopes on the waterline coverings are at minimum 1:3 slope or preferably 1:5 slope to facilitate caribou passage through the road-waterline corridor. If the design is not changed to accommodate a shallower side slope, then

	Agnico Eagle should justify why a steeper side slope is warranted against the recommendations of their literature review.
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3. Summary of Recommendations

KIA maintains its position that the proposed waterline – its construction, operation, maintenance and reclamation – is not contemplated or authorized in the Road Lease between Agnico Eagle and KIA. Agnico Eagle cannot proceed with any part of the waterline on the Road Lease lands unless it renegotiates the Road Lease with KIA. KIA is prepared to engage with Agnico Eagle in discussions pertaining to a lease amendment.

KIA wishes to clarify our current understanding that Agnico Eagle has now committed to divert all site water from the Meliadine Site to Melvin Bay. KIA requests that Agnico Eagle confirm this understanding and recommend that Agnico Eagle provide all necessary documentation for the NIRB and other stakeholders to fully consider the discharge of blended surface contact water and saline groundwater effluent to Melvin Bay via the waterlines and diffusers.

3.1 Aquatic

KIA presents two recommendations pertaining to the spill response plan and monitoring the annual recovery of Melvin Bay:

- ❖ KIA recommends Agnico Eagle update the Ocean Discharge Monitoring Plan to include an additional sampling event following the cessation of discharges to Melvin Bay each year. Specifically, KIA recommends Agnico Eagle collect water quality samples and water column measurements from all 7 stations in the receiving environment and all 3 samples from Reference Area A at least 10 days but ideally 20 days following the conclusion of discharges each year going forward. Samples should be collected as close to the full 20 days following the cessation of discharges to the marine environment given appropriate consideration to the potential formation of ice and the associated safety concerns.
- ❖ We request Agnico Eagle clarify how the decision to cover the waterlines will impact the approach to managing and mitigating spills and include this updated approach in future iterations of the Spill Contingency Plan. We specifically recommend Agnico Eagle commit to suspending discharge from a waterline if a leak has been identified understanding that overall discharge can continue given the presence of the second waterline.

KIA expresses disappointment that, to date, Agnico Eagle has not meaningfully considered the discharge of a blended surface contact water with saline ground water within the current application before the NIRB. As KIA understands Agnico Eagle now intends to divert all site water to Melvin Bay, KIA recommends Agnico Eagle expand the application before the NIRB to include the blended effluent discharge, ideally negating the ongoing project requirement to discharge water to Meliadine Lake. Specific recommendations pertaining to the discharge of blended effluent are as follows:

- ❖ We recommend Agnico Eagle update the hydrodynamic model using a combined surface and subsurface water effluent scenario discharged to Melvin Bay. This modelling should include at an assessment of diverting Meliadine Site runoff to Melvin Bay using volumes outlined in Appendix IR-2, and an assessment of diverting all surface contact water from the Meliadine Site (i.e. all water that would be discharged from CP1 to Meliadine Lake) to Melvin Bay.
- ❖ We request Agnico Eagle provide an assessment of the impacts to water levels and the resulting hydrological regime in Meliadine Lake of diverting all contact water from the Meliadine Site to Melvin Bay.

3.2 Terrestrial

The KIA is pleased that Agnico Eagle will be covering a majority of the waterline adjacent to the AWAR. Our concern is that the predictions of little to no impact on movement by individual caribou is monitored, and sufficient feedback and adaptive mitigation is considered. Specifically, the KIA requests that Agnico Eagle:

- ❖ Provide detailed methodology of the monitoring proposed for the waterline-road complex (Site visits by Elders; GPS collar tracking; camera study; and KHTO road monitoring), and show how this monitoring will feed into adaptive management of caribou movement through the project. Behavioural monitoring data must be presented to support the IS Addendum conclusions. Agnico Eagle should clarify which triggers will result in changes to mitigation, and what that enhanced mitigation might entail. Agnico Eagle should also establish a Terrestrial Advisory Group (TAG) similar to the TAG in place at Meadowbank/Whale Tail, so that regulators and interested parties can collaboratively work with Agnico Eagle to develop sound and systematic TEMMP monitoring and reporting to facilitate Agnico Eagle's adaptive management of wildlife, especially caribou.
- ❖ Ensure that the side slopes on the waterline coverings are at minimum 1:3 slope or preferably 1:5 slope to facilitate caribou passage through the road-waterline corridor. If the design is not changed to accommodate a shallower side slope, then Agnico Eagle should justify why a steeper side slope is warranted against the recommendations of their literature review.