Agnico Eagle Mines Limited – Meadowbank Division

WHALE TAIL PIT
FINAL TECHNICAL COMMENT RESPONSES

April 2017

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ENVIRONMENT AND CLIMATE CHANGE CANADA

Interested Party:	**Environment and Climate Change Canada (ECCC)**	**NIRB Ref No.:**	**ECCC #1**
		NWB Ref No.	**n/a**
Re:	**Mitigation of Greenhouse Gas (GHG) Emissions**		

Technical Comment / Recommendation Made By Interested Party:

ECCC recommends the Proponent provide mitigation measures that will reduce the Project's GHG emissions.

Agnico Eagle's Response to Technical Comment / Recommendation:

Greenhouse gas (GHG) emissions from the Project are dominated by emissions from off-road vehicles operating at the Whale Tail pit. Table 4.2-1 from the FEIS has been updated in response to a request from ECCC to include methane (CH_4) and nitrous oxide (N_2O) emissions in the GHG emissions estimates. The CH_4 and N_2O carbon dioxide equivalents (CO_2e) were calculated using global warming potentials of 28 and 298, respectively. The updated GHG emissions table is provided below and represents the predicted emissions profile for the year of peak production at the Whale Tail Pit.

Table 4.2-1: Greenhouse Gas Emissions Summary for the Project

Emissions Source	Greenhouse Gas Emissions (kt CO_{2e})	Project Emission as a Proportion of Nunavut and Canadian Emissions (%)
Off-road exhaust	58.1	—
On-road exhaust	4.4	—
Power plant	8.4	—
Camp heater	3.1	—
Project Total[a]	**74.0**	**—**
Nunavut Total[b]	**434**	**17.0**
Canadian Total[b]	**714,000**	**0.01**

There are no direct emissions of GHG's for the Project other than those produced via the consumption of fossil fuels. The cost of fossil fuel and its transport to the Whale Tail Pit are an important driver of overall Project costs. Thus, it is in Agnico Eagle's interest to minimize the consumption of fossil fuels and therefore indirectly minimize GHG emissions.

The following policies and procedures are designed to ensure fuel-burning equipment (e.g. haul truck fleet and power plant/ generators) are operating efficiently and helps to reduce the consumption of fuel and emissions of GHG's:

- Enforcing on-site and haul road speed limits ;
- Regular maintenance and repair of on-road and off-road vehicle fleets; and

- Regular maintenance and repair of the Meadowbank and Whale Tail power plant and camp heater.

Beyond these efforts there is limited scope for Agnico Eagle to further reduce fuel consumption and GHG emissions from the Project; however, Agnico Eagle looks forward to discussions with ECCC to ensure GHG emissions are reduced to the greatest extent possible.

Interested Party:	**Environment and Climate Change Canada (ECCC)**	**NIRB Ref No.:**	**ECCC #2**
		NWB Ref No.	**n/a**
Re:	**Air and Dustfall Monitoring Locations**		

Technical Comment / Recommendation Made By Interested Party:

a) ECCC recommends that the Proponent provide more information regarding the dustfall monitoring locations near the haul roads and how the results of this sampling will be incorporated into the annual air quality report.

b) ECCC recommends that the Proponent provide more information regarding potential relocation of sampling locations from Meadowbank to Whale Tail (DF-1 to DF-4), or the addition of more sampling locations for Whale Tail. This information should consider including the addition of active particulate matter sampling.

Agnico Eagle's Response to Technical Comment / Recommendation:

Response a)

Figure 2 from FEIS Appendix 8-E.1 (Air Quality Monitoring Plan) illustrated a proposed dustfall monitoring location between km 36 and 37 along the proposed haul road. Based on recent discussions with the KivIA and ECCC, this figure has been updated to include two additional dustfall monitoring locations. These are planned for installation between kilometer 18 and 19, and between kilometer 54 and 55. This places each monitoring location roughly 1/3 of the length along the proposed haul road. However, actual monitoring locations may need to be adjusted +/- 2 km based on local site conditions.

The dustfall monitoring proposed for the three locations along the Whale Tail Haul Road (kilometers 18, 36, and 54) will employ the same methods as used to assess dustfall along the existing All-Weather Access Road between the Meadowbank Mine and Baker Lake (kilometers 18, 76, and 78) (Agnico Eagle 2017a). Results of the dustfall monitoring along the haul road (and at the Whale Tail Pit) will be summarized in the annual report under the Air Quality and Dustfall Monitoring section of the annual report (e.g., Agnico Eagle 2017b).

Briefly, at each haul road location (18, 36, and 54), transects of five dustfall monitoring locations will be established at the following distances perpendicular to the haul road:

- 30 m (upwind);
- 30 m (downwind);
- 100 m (downwind);
- 300 m (downwind); and
- 1000 m (downwind).

To the extent possible the three haul road transects will be oriented along either a north-to-south or northwest-to-southeast axis, with the northern transect stations being considered the "upwind" locations. This reflects the climatological average wind directions of northwest (October to April) to north (May to September) in the region.

Dustfall samples will be collected in open vessels in the month of August and analyzed by an accredited laboratory according to ASTM standards. Total and fixed dust deposition rates will be normalized to a 30-day time interval (i.e., mg/cm^2/30-day) for comparison to the province of Alberta's environmental guideline values.

The FEIS predicts dustfall adjacent to the haul road below the Alberta Environment guidelines at approximately 300 m from the haul road. These predictions are consistent with the results presented in the 2016 All-Weather Access Road Dust Monitoring Report (Agnico Eagle 2017a), which state: *"Cumulative results to date indicate that without dust suppressant application, average rates of dustfall decline below Alberta Environment's guideline for recreational areas within 100 m of the AWAR and meet the range of background rates within 200 m."*

Response b)
FEIS Appendix 8-E.1 (Air Quality Monitoring Plan) discusses a new proposed air quality monitoring location (i.e., DF-5) to be established with the communications tower on the eastern boundary of the proposed Whale Tale Pit. This location is predicted to experience elevated ambient concentration of particulate matter due to mining activities at the Whale Tail Pit. The DF-5 air quality monitoring location will include the following:

- active measurements of TSP, PM_{10} and $PM_{2.5}$ using Partisol Samplers whose exposed filters are sent for off-site laboratory analysis by Maxxam Analytics;
- passive NO_2 measurements using PASS samplers supplied by Maxxam Analytics; and
- passive dustfall measurements sent for off-site laboratory analysis by Maxxam Analytics.

Thus, Station DF-5 will be equipped with a suite of air quality measurements identical to those currently being collected at locations DF-1 and DF-2 at the Meadowbank Mine (Agnico Eagle 2017b).

References:

Agnico Eagle (Agnico Eagle Mines Limited). 2017a. Meadowbank Gold Project: 2016 All-Weather Access Road Dust Monitoring Report. March 2017.

Agnico Eagle. 2017b. Meadowbank Gold Project: 2016 Air Quality and Dustfall Monitoring Report. March 2017.

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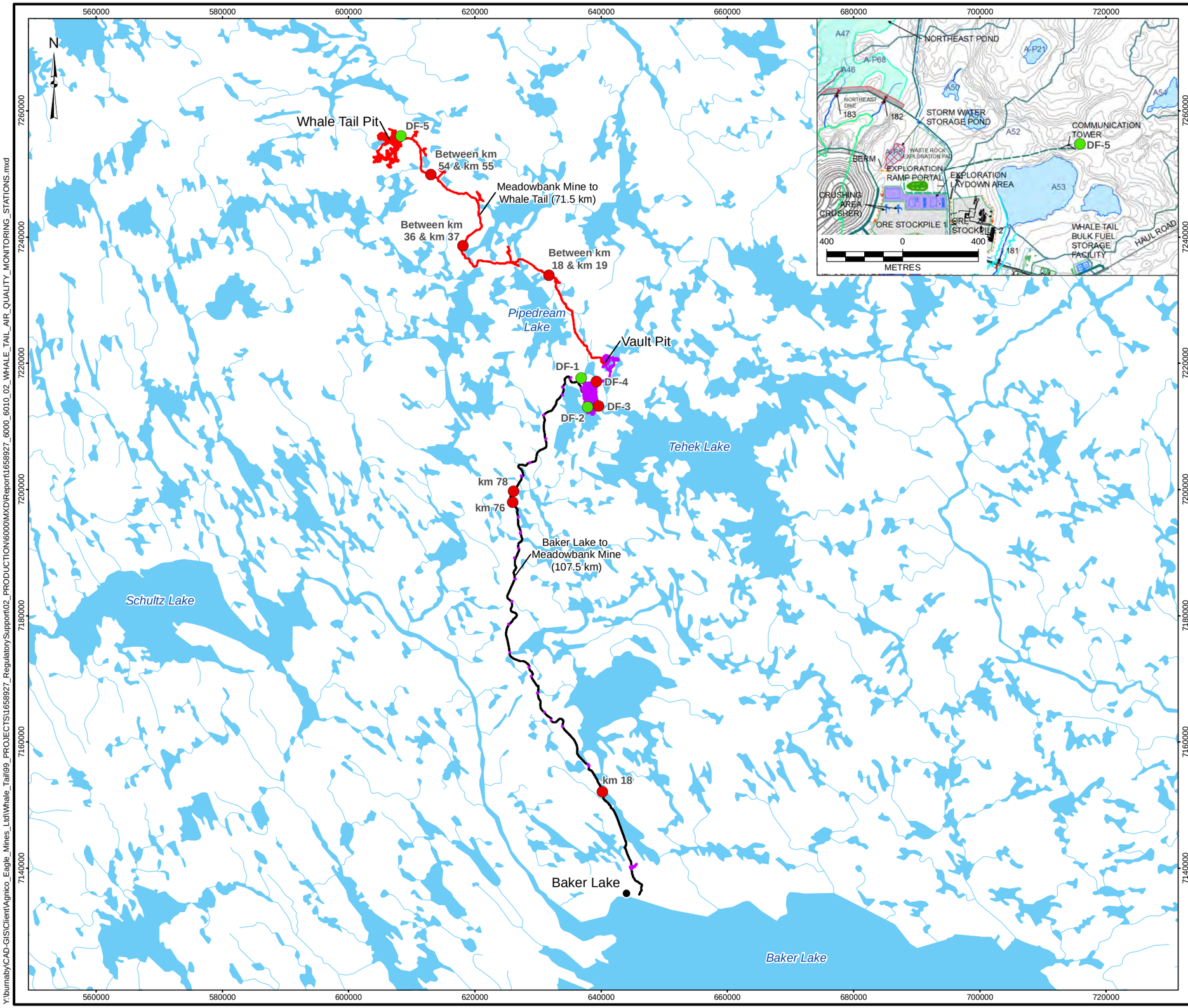

LEGEND

AIR QUALITY MONITORING STATION

- MEASURED PARAMETER = DUSTFALL
- MEASURED PARAMETER = TSP, PM_{10}, $PM_{2.5}$, NO_2, DUSTFALL
- COMMUNITY
- PROPOSED HAUL ROAD
- ALL WEATHER ROAD
- WHALE TAIL PIT
- MEADOWBANK OPERATION AND INFRASTRUCTURE
- WATERCOURSE
- WATERBODY

REFERENCE

1. HAUL ROAD OBTAINED FROM AGNICO EAGLE MINES LIMITED. 2015-10-14 FROM 6103-117-230-200_R0.dwg
2. CLAIM BOUNDARIES OBTAINED FROM AGNICO EAGLE MINES LIMITED.
3. WATERCOURSE AND WATERBODY DATA OBTAINED FROM CANVEC © DEPARTMENT OF NATURAL RESOURCES CANADA. ALL RIGHTS RESERVED.
4. INSET MAP DATA OBTAINED FROM ESRI.

DATUM: NAD 83 CSRS PROJECTION: UTM ZONE 14

12 0 12
KILOMETRES

PROJECT

AGNICO EAGLE MINES LIMITED:
MEADOWBANK DIVISION
WHALE TAIL PIT PROJECT

TITLE

MEADOWBANK MINE, AWAR, AND WHALE TAIL AIR QUALITY AND DUSTFALL MONITORING LOCATIONS

Golder Associates

PROJECT		1658927	FILE No.	
DESIGN	CM	03 Apr. 2017	SCALE AS SHOWN	REV. 0
GIS	CDB	03 Apr. 2017		
CHECK	JR	03 Apr. 2017		
REVIEW	LY	03 Apr. 2017		

FIGURE 2

Interested Party:	**Environment and Climate Change Canada (ECCC)**	**NIRB Ref No.:**	**ECCC #3**
		NWB Ref No.	**n/a**
Re:	**Nitrogen Dioxide (NO2) Concentrations**		

Technical Comment / Recommendation Made By Interested Party:

ECCC recommends that the Proponent correct any potential errors in the summary statistics for criteria air contaminants, noting the error in the 1-hour maximum value for NO_2.

Agnico Eagle's Response to Technical Comment / Recommendation:

Agnico Eagle thanks ECCC for noting the error in the 1-hour maximum value of NO_2. Agnico Eagle has reviewed the summary statistics and air quality modelling results for 1-hr CO, NO_2, and SO_2 have been updated to include "worst case" 1-hr emissions as a result of updated assumptions for blasting emissions. Results of the updated modelling are included in Table ECCC3-1 below. These air quality model results are considered conservative as they assume that emissions from blasting (i.e., a near instantaneous release of contaminants), occur over a full hour.

Table ECCC3-1: Updated Summary of Maximum 1-hr Average Concentrations of CO, NO_2, and SO_2 for the Whale Tail Pit

Compounds	Project Hourly Emissions (kg/hour)		Maximum 1-hour model predictions outside the Project boundary (µg/m³)	Worst-case 1-hr pre-dictions outside the Project boundary (µg /m³)	1-hr Background Concen-trations µg/m³)	1-hr max-imum plus back-ground concen-trations (µg /m³)	1-hour Ambient Air Quality Standards (µg/m³)
	Modelled	Worst Case					
CO	61	396	714	6172	389	6561	15,000
NO_2	130	208	137	266	12.6	278	400 (300[a])
SO_2	1.3	11.1	15.1	169[b]	2.7	172	450 (183[c], 170[d])

(a) The AB and SK ambient air quality standard is 300 µg/m³.

(b) Value is the 99.9th percentile from the year with the highest 1-hr average concentration among the 5-year simulation.

(c) 2020 Canadian Ambient Air Quality Standard (CAAQS); 3-year average of the annual 99th percentile of daily maximum 1-hr average concentrations.

(d) 2025 Canadian Ambient Air Quality Standard (CAAQS); 3-year average of the annual 99th percentile of daily maximum 1-hr average concentrations.

As indicated, worst case 1-hr maximum plus background concentrations of NO_2 remain below the Nunavut ambient air quality standard (400 µg/m³) and below the more stringent AB and SK standards (300 µg/m³).

For SO_2, the "worst case" maximum 1-hr SO_2 concentration is predicted to be 172 μg/m^3. This value represents the 9th highest, or 99.9th percentile, prediction for the year with the highest concentration predicted among the 5-year simulation. This prediction remains below the current Nunavut AAQS (450 μg/m^3) and the pending 2020 Canadian AAQS of 183 μg/m^3.

The 3-year average of the 99th percentile values are all predicted to be below the 2025 1-hr SO2 CAAQS of 170 μg/m^3. While, the model-predicted value appears to exceed the pending 2025 1-hr SO_2 standard (i.e., 170 μg/m^3; CCME 2016), the model predictions are considered conservative. The maximum plus background 1-hr SO_2 concentrations (i.e., 9th highest of the year, or 99.9th percentile) for the remaining four years of the FEIS air quality model simulation are all less than or equal to 148 μg/m^3. The Facility remains compliant with all existing and potential future Nunavut ambient air quality standards.

Given that the predicted 1-hour concentrations of CO, NO_2, and SO_2 continue to be less than their respective air quality standards, the conclusions of the HHRA did not change and no human health risks due to short-term release of these substances are expected.

References:

Canadian Council of Ministers of the Environment (CCME), 2016:
http://www.ccme.ca/en/resources/air/air/sulphur-dioxide.html (accessed March 31, 2017)

Interested Party:	Environment and Climate Change Canada (ECCC)	NIRB Ref No.:	ECCC #4
		NWB Ref No.	n/a
Re:	Estimate of Road Silt Content		

Technical Comment / Recommendation Made By Interested Party:

ECCC recommends that the Proponent provide a rationale for the 6.1% silt content value employed in the haul road dust emission estimation, and whether the silt content will be representative of the material that would be used for constructing the haul road between Meadowbank and Whale Tail. If silt content is estimated to be higher, the Proponent should discuss the potential air impacts of particulate matter under the revised estimate and discuss mitigation measures to be employed.

Agnico Eagle's Response to Technical Comment / Recommendation:

Eleven eskers were sampled for use as road surface material and the size distribution of their granular material analyzed (Table ECCC4-1). The arithmetic mean silt content is 6.1% and was the value used in the assessment. Three samples had very high silt contents (27.3%, 17%, and 10.6%). The two highest silt contents were from material classified as "natural sands", rather than "natural gravels", and are considered unsuitable for use as road surface material (i.e., they would need to be blended with other material to meet the required road surface specifications). The geometric average and median silt contents are 2.7% and 2.0% (all other silt contents are <3.2%). Therefore, the use of a 6.1% silt content is considered sufficiently conservative.

Table ECCC4-1: Summary of Esker Silt Content

Assay Location	Sample No.	Material type	Silt&Clay
Esker 5B-2	1	Natural Gravel	2.00%
Esker 5D	2	Natural Gravel	**10.60%**
Esker 3A	3	Natural Gravel	3.10%
Esker 2C	4	Natural Sand	0.90%
Esker 2A-1	5	Natural Sand	**27.30%**
Esker 2C-2	6	Natural Sand	**17.00%**
Esker 2A-3	7	Natural Gravel	1.00%
Esker 4C	8	Natural Gravel	1.20%
Esker 1	9	Natural Gravel	0.6%
Esker 6-D	10	not indicated	0.9%
Esker 5A	11	Natural Gravel	2.6%
Arithmetic Average			**6.1%**
Geometric Average			**2.7%**
Median			**2.0%**

Interested Party:	**Environment and Climate Change Canada (ECCC)**	**NIRB Ref No.:**	**ECCC #5**
		NWB Ref No.	**n/a**
Re:	**Migratory Birds: Waterbird Entanglement**		

Technical Comment / Recommendation Made By Interested Party:

ECCC recommends that a detailed waterbird mitigation plan be developed for the Whale Tail fish-out describing existing mitigation measures used by the Proponent and be included in the TEMP. The waterbird mitigation plan should describe additional measures that could be implemented through adaptive management should an incident occur, outline a plan to collect information surrounding the cause of death that could inform adaptive management, and outline how incidents will be reported to ECCC.

Agnico Eagle's Response to Technical Comment / Recommendation:

Agnico Eagle refers ECCC to the findings of the 2008, 2010, and 2013 Meadowbank Annual Reports that present the results of the fishouts conducted in the Northwest Arm of Second Portage Lake, Bay-Goose Basin of Third Portage Lake, and Vault Lake fishouts, respectively, and site specific details on the conditions and/or factors that did not result in any incidental mortalities of waterbirds. Although Agnico Eagle is aware that fish-out operations can lead to mortality of diving waterbirds if they are caught in gill nets, based on past experience and given the low frequency of waterbird observations presented in Section 4.3.3.3, Figure 11.1, Appendix 5-C, Agnico Eagle does not expect this to be a significant issue. Nevertheless, as discussed with ECCC, Agnico Eagle will prepare a stand-alone mitigation and monitoring plan for diving waterbirds, specific to the Whale Tail fish-out operations. The document will include a summary of the lessons learned and the mitigation and monitoring employed at other fish-out operations, the proposed mitigation used to reduce waterbird mortality at Whale Tail, and reporting of the effectiveness of the mitigation and reporting procedures for any mortalities that may occur. The plan will be included as an appendix to the Fish-out work plan, and will be reviewed with ECCC prior to initiating the fish-out.

Interested Party:	**Environment and Climate Change Canada (ECCC)**	**NIRB Ref No.:**	**ECCC #6**
		NWB Ref No.	**n/a**
Re:	**Migratory Birds: Use of Tailings Storage Facility (TSF)**		

Technical Comment / Recommendation Made By Interested Party:

a) ECCC recommends that shorebirds be added as a focal bird group in daily monitoring surveys of infrastructure and Project facilities at water management areas.

b) ECCC recommends that Semipalmated Sandpiper be added as a wildlife receptor of concern to the WSLRAP.

c) ECCC recommends that the WSLRAP be revised to include risk assessments for all wildlife receptors of concern potentially ingesting water or sediment at the TSF.

Agnico Eagle's Response to Technical Comment / Recommendation:

Response a)

Agnico Eagle does not currently include upland birds in the current pit and mine site surveys, but will discuss this or other means of monitoring upland birds with ECCC.

Responses b), c)

Semipalmated sandpipers were identified as a VEC in the Terrestrial Environment Impact Assessment, and were assessed as a representative species in the HHERA, but were not included in the WSLRAP. Rather, the WSLRA includes a waterfowl (Canada goose), as they are consumed as a country food, and Lapland longspur, as the most common upland bird. Current monitoring at Meadowbank indicates that migratory birds are found in low densities near the mine, and are seldom seen on the mine facilities (e.g., Gebauer et al. 2016; Gebauer et at. 2015).

References:

Gebauer, M., A. Crampton, J. Shaw, and I. Laing. 2015. Meadowbank Mine: 2014 Wildlife Monitoring Summary Report. Prepared for Agnico Eagle Mines Ltd.

Gebauer, M., A. Crampton, J. Shaw, and I. Laing. 2016. Meadowbank Mine: 2015 Wildlife Monitoring Summary Report. Prepared for Agnico Eagle Mines Ltd.

Interested Party:	**Environment and Climate Change Canada (ECCC)**	**NIRB Ref No.:**	**ECCC #7**
		NWB Ref No.	**n/a**
Re:	**Migratory Birds: Shipping Impacts**		

Technical Comment / Recommendation Made By Interested Party:

a) ECCC recommends the Proponent provide shipping contractors with a map of identified resources at risk along the shipping route, including key marine habitat sites for migratory birds.

b) ECCC recommends that the Proponent encourage shipping contractors to establish what steps would be taken to protect wildlife (including migratory birds) in the event of a pollution incident and have the equipment to do so.
The information should include specific measures to keep wildlife out of a contaminated area, location and specifics of equipment available to do this, what measures would be taken if animals do come in contact with the pollutant and when such procedures should be used. This information should be incorporated into their SOPEP.

c) ECCC recommends that the Proponent determine the feasibility of proposed mitigation measures to prevent bird collisions.

d) ECCC recommends that the Marine Mammal and Seabird monitoring program in the Shipping Management Plan follow the ECSAS standardized protocols developed for moving and stationary platforms.

Agnico Eagle's Response to Technical Comment / Recommendation:

Response a)
Agnico Eagle agrees with the recommendation and will provide the shipping contractors with a map of identified resources at risk along the shipping route, including key marine habitat sites for migratory birds. This will be incorporated into the Shipping Management Plan prior to the start of the Project.

Response b)
Agnico Eagle agrees with these recommendations, which are standard best practices and will be formalized in the SOPEP will be drafted by the shipping contractor prior to commence of the shipping season. Agnico Eagle will require the shipping contractor to provide the following information within the SOPEP:

- Protocols to protect wildlife (including migratory birds) in the event of a pollution incident and what equipment will be available to achieve these protocols, including specific measures to keep wildlife out of a contaminated areas; and

- Procedures to be implemented if animals do come in contact with the pollutant and when such procedures should be used.

Response c)
The mitigation measures outlined in the response to Information Request ECCC #14 including their feasibility are summarized below:

> Vessel-mounted lights will be shielded and directed downward and away from the water to minimize the amount of light radiating from the ship. Any vessel-mounted spotlights used to illuminate the aft and foredeck will be designed with top- and side-shielding as birds are primarily attracted to the light sources rather than the areas they illuminate (Reed et al. 1985). Vessel operators / crew will be made aware of the necessity to reduce and/or cover light sources on the vessel, particularly on dark nights or when visibility is reduced due to fog or snow. Crew members will be encouraged to search the vessel after a bird strike event, to release birds found still alive and to keep records of all bird strike events (incl. number of birds, location and weather conditions). All mitigation measure related to ship lighting must first consider the safety of vessel crew and comply with lighting requirements as mandated by Transport Canada for safe navigation. Due to adherence to regulations and safety requirements, in certain circumstances (e.g., shoulder season when the potential for ice exists) the ship may need to use searchlights in a manner that could cause birds to be attracted to the vessel. However, for the majority of the shipping season, the recommended mitigation techniques are considered feasible as they require minimal adjustments to shipboard lighting and educating the shipping contractors and crew regarding the linkage between lighting and marine bird collisions. In addition, in the event of multiple bird collisions, the regional ECCC Wildlife Enforcement Officer will be contacted to provide advice on the implementation of adaptive management techniques (see Merkel and Johansen 2011) to attempt to reduce the likelihood of future collisions. The feasibility of these adaptive management techniques will be discussed with the shipping contractor and ECCC if additional adaptive management techniques are required.

Response d)
The Shipping Management Plan will be updated prior to commencement of the shipping season to incorporate ECCC's Eastern Canada Seabirds at Sea (ECSAS) standardized protocols developed for moving and stationary platforms into the MMSO program (Gjerdrum et al. 2012).

References:

Gjerdrum, C., D.A. Fifield, and S.I. Wilhelm. 2012. Eastern Canada Seabirds at Sea (ECSAS) standardized protocol for pelagic seabird surveys from moving and stationary platforms. Canadian Wildlife Service Technical Report Series No. 515. Atlantic Region. vi + 37 pp.

Merkel, F.R., Johansen, K.L., 2011. Light-induced bird strikes on vessels in Southwest Greenland. Mar. Pollut. Bull. 62 (11), 2330–2336.

Interested Party:	**Environment and Climate Change Canada (ECCC)**	**NIRB Ref No.:**	**ECCC #8**
		NWB Ref No.	**n/a**
Re:	**Species at Risk**		

Technical Comment / Recommendation Made By Interested Party:

a) ECCC recommends that if species at risk are encountered or affected by the Project, the primary mitigation measure should be avoidance. The Proponent should avoid contact with or disturbance to each species, its habitat and/or its residence. The Proponent should update the list of species at risk included in the TEMP and create one for species potentially interacting with shipping activities in the Shipping Management Plan.

b) As new species are assessed by COSEWIC or added to Schedule 1 of SARA on a regular basis, ECCC recommends that the Proponent consult the Species at Risk registry to obtain the most current information when revising management plans and reporting annual monitoring results.

c) ECCC recommends that the Government of Nunavut be consulted to identify other appropriate mitigation and/or monitoring measures to minimize Project effects to species under their management responsibility.

Agnico Eagle's Response to Technical Comment / Recommendation:

Response a)

ECCC concerns will be addressed by existing mitigation in the next iteration of the TEMP which will be submitted to NIRB prior to the Final Hearing. The TEMP will include global mitigation of restriction activities to the mine footprint, prohibiting harassment of wildlife, providing wildlife with the right-of-way and providing environmental awareness training to site staff. Other mitigation specific to VECs is also relevant to species at risk, including the prohibition of harvesting by site staff, creating buffers around nests. In cases where wildlife may be in areas where hazards are present (such as birds nesting on mine infrastructure), deterrent will be used instead of avoidance. The list of species at risk in the Project area will be updated in the next version of the TEMP, and Agnico Eagle will include a summary of species at risk the in the Shipping Management Plan, when it is revised prior to commencement of the shipping season.

Response b)

Changes to species at risk for the Project will be reviewed in the annual Wildlife Monitoring Summary Report, and in any updated versions of the TEMP, when relevant.

Response c)

The GN will continue to be engaged in the review of the TEMP and the annual Wildlife Monitoring Summary Report.

Interested Party:	**Environment and Climate Change Canada (ECCC)**	**NIRB Ref No.:**	**ECCC #9**
		NWB Ref No.	**n/a**
Re:	**Migratory Birds: Mitigation and Monitoring**		

Technical Comment / Recommendation Made By Interested Party:

a) ECCC recommends that the Proponent take into account ECCC's Guidelines on migratory birds so that all phases of the Project are carried out in a manner that protects migratory birds and avoids harming, killing or disturbing migratory birds or destroying, disturbing or taking their nests or eggs. These guidelines can be found at http://www.ec.gc.ca/paom-itmb/.

b) ECCC recommends that options such as avoiding, adapting, rescheduling or relocating activities, be considered and implemented if there are indications of migratory bird nests where activities having the potential to disturb or destroy nests are proposed.

c) ECCC recommends that a scientifically sound approach to determine the likelihood of nesting birds should be used in the event that clearing or disturbance cannot be scheduled outside of the nesting season. If necessary, the use of non-intrusive search methods (e.g. point counts) should be undertaken to conduct an area search for evidence of nesting prior to the commencement of clearing.

d) ECCC recommends that results from surveys conducted prior to clearing be summarized in the annual wildlife monitoring summary report.

e) ECCC recommends that all disruptive activities in the nesting area be halted if migratory bird nests containing eggs or young are discovered.

f) ECCC recommends that an appropriate buffer zone (i.e. setback distance) be determined and observed until the young have naturally and permanently left the vicinity of the nest. Buffer zones should be appropriate for the species and take into consideration the intensity of the disturbance and the surrounding habitat (see Table 1 on setback distance starting points for tundra-nesting birds above). Buffer zones should alson be adjusted after assessing their effectiveness.

g) ECCC recommends that the general nesting period for migratory birds be updated to mid-May to mid-August.

h) ECCC recommends that if marking is necessary, the Proponent mark the limit of the buffer zone and not the nest.

i) ECCC recommends that all of the above recommendations be incorporated into the next revision of the TEMP.

Agnico Eagle's Response to Technical Comment / Recommendation:

Response a)

The TEMP will be updated to include the mitigation recommended by ECCC that can be practically implemented. To adhere with the *Migratory Birds Convention Act*, Agnico Eagle has committed to preparing a mitigation plan for the protection of diving waterbirds prior to any fish-out (refer to ECCC #5). Agnico Eagle will make efforts to avoid clearing vegetation during the migratory bird nesting period (mid-May to mid-August), and will consult with ECCC prior to any clearing of vegetation during this season.

Responses b), c), d), e), f), g), h), i)

Agnico Eagle will continue making efforts to avoid disturbance to migratory bird nests. Clearing vegetation during the migratory bird nesting period (mid-May to mid-August) will be used as a last resort, and will only be initiated after consultation with ECCC. Agnico Eagle agrees and will incorporate the recommendations into the next revision of the TEMP. Results of the surveys will be summarized in the annual wildlife monitoring summary report.

Interested Party:	**Environment and Climate Change Canada (ECCC)**	**NIRB Ref No.:**	**ECCC #10**
		NWB Ref No.	**n/a**
Re:	**Migratory Birds: Flooding**		

Technical Comment / Recommendation Made By Interested Party:

a) At this time, given the available information, ECCC is of the view that the proposed mitigation measures under consideration may be insufficient to avoid the destruction of nests and eggs of migratory birds during the planned flooding. As such, ECCC recommends that the NIRB conduct a thorough review of the Multiple Accounts Analysis (Appendix 1-E) to validate the Proponent's conclusions and selection of preferred option for this Project.

b) ECCC also recommends that the Proponent provide ECCC and interested parties planned flooding mitigation and monitoring measures prior to the conclusion of the EA so that an effective assessment of impacts can be completed and parties can advise the NIRB appropriately.

Agnico Eagle's Response to Technical Comment / Recommendation:

Response a)

Agnico Eagle believes the Multiple Accounts Analysis accurately reflects the various advantaged and disadvantages involved in assessing the feasibility and preferred option for the Project based on consideration of community, environmental, economic, and viability indicators. On March 24, 2017 Agnico Eagle submitted to NIRB/NWB a supplemental technical memo that further discusses the Multiple Accounts Analysis and rationale for selecting the preferred option. Given the scarcity of migratory bird observations during baseline studies and the available measures of deterrence, Agnico Eagle believes this risk is mitigable.

Response b)

The FEIS considered the potential loss of migratory bird nests due to flooding (Volume 5, Sections 5.5.3 and 5.5.4), so Agnico Eagle believes that NIRB already has the required information to make an assessment of impacts. Agnico Eagle will describe mitigation to reduce impacts to migratory bird nests during flooding as an appendix to the TEMP.

Interested Party:	**Environment and Climate Change Canada (ECCC)**	**NIRB Ref No.:**	**ECCC #11**
		NWB Ref No.	**ECCC #1**
Re:	**Baseline Monitoring**		

Technical Comment / Recommendation Made By Interested Party:

a) ECCC recommends that the Proponent provide details of the additional baseline monitoring that was conducted in 2016 including the methods, locations and raw data. Summary statistics and relevant comparisons (including against baseline levels, appropriate guidelines/objectives and Meadowbank triggers and thresholds) should be tabulated for the entire dataset. In addition, an update should be provided regarding planned baseline monitoring.

b) ECCC also recommends that the Proponent demonstrate whether and how the baseline dataset sufficiently characterizes the baseline conditions, such that potential Project effects on the aquatic receiving environment (water quality, sediment quality, aquatic biota) will be detectable.

Agnico Eagle's Response to Technical Comment / Recommendation:

Response a)

To support the FEIS for the Whale Tail Project, baseline water quality data were collected in 2014 and 2015 (FEIS, Volume 6, Section 6.4.2 and Appendix 6-G). The 2014 program was conducted as a reconnaissance program while the 2015 program was conducted as an early version of a Core Receiving Environment Monitoring Program (CREMP) for the Whale Tail Project. The full CREMP monitoring program for the Project was implemented in 2016 to extend the baseline data following the CREMP study design (Azimuth 2016). The program will be conducted again in 2017, with the addition of the sediment coring component, which is conducted on a three-year cycle timed with Agnico Eagles Environmental Effects Monitoring Program. An overview of the 2016 and 2017 programs are provided in Table ECCC-11-1. A comprehensive baseline report, including KivIA and ECCC sampling recommendations will be provided prior to construction and operations of the Whale Tail Pit dike; this will be used to support the CREMP study design required for operations (Azimuth 2016).

Table ECCC-11-1: Summary of Whale Tail 2016 Actual and 2017 Planned Baseline Aquatic Sampling

Component	Number of Samples per Area per Sampling Event	Whale Tail Lake (South Basin)	Mammoth Lake	Nemo Lake	Lake A20	Lake A76	Lake DS1
2016 Baseline CREMP (Actual)							
Water		5 seasonal events: April, July, August, September, November					
Chemistry	2	✓	✓	✓	✓	✓	✓
Phytoplankton	2	✓	✓	✓	✓	✓	✓
Sediment Grabs		1 annual event in August					
Conventionals	5	✓	✓	✓	✓	✓	✓
Metals	5	✓	✓	✓	✓	✓	✓
Organics	1	✓	✓	✓	✓	✓	✓
Benthic Invertebrates	5	✓	✓	✓	✓	✓	✓
2017 Baseline CREMP (Planned)							
Water		5 seasonal events: April, July, August, September, November					
Chemistry	2	✓	✓	✓	✓	✓	✓
Phytoplankton	2	✓	✓	✓	✓	✓	✓
Sediment Grabs		1 annual event in August					
Conventionals	5	✓	✓	✓	✓	✓	✓
Metals	5	✓	✓	✓	✓	✓	✓
Organics	1	✓	✓	✓	✓	✓	✓
Benthic Invertebrates	5	✓	✓	✓	✓	✓	✓
Sediment Coring		1 event every three years in August					
Metals	10	✓	✓	✓	✓	✓	✓

Response b)

Baseline water quality data collected in 2014 and 2015 in support of the FEIS are summarized in the FEIS Volume 6, Section 6.4.2 and Appendix 6-G. Based on the ranges of data values reported for water quality parameters, it was concluded that baseline water quality conditions in lakes in the Project area were similar to water quality conditions in reference lakes used to support the Meadowbank CREMP and the future Whale Tail CREMP. Parameter concentrations measured in tributary streams were similar to those reported for lakes. These findings indicate that the variability among lakes in the region is likely low, and that conditions in one lake are likely to be representative of surrounding lakes. This low rate of regional variability has been observed in datasets compiled for other baseline sampling programs in Nunavut, including baseline water quality monitoring completed in support of the Meliadine Aquatic Effects Monitoring Program (AEMP) in 2015 and 2016 (Golder 2017).

Due to the consistency among the datasets, data collected in support of the Whale Tail CREMP baseline study report and the Meadowbank Mine CREMP reference lakes were used to augment the baseline data for the Whale Tail Pit study area.

The data gathered in 2014 and 2015 were qualitatively compared to additional baseline data collected in 2016 (see part A of the response, above) to identify and evaluate temporal changes. There were no differences among the ranges of data. The baseline data that have been collected and analyzed to date, including data gathered in support of the Whale Tail Pit, Whale Tail CREMP, and the Meadowbank Mine CREMP, effectively characterize the spatial and temporal variability in water quality data for the study area. For purposes of the environmental assessment and water licence, data collected to date are sufficient to characterize variability in the study area and to assess potential effects prior to discharge.

The full baseline dataset representing conditions from 2014 through 2017 will be statistically analyzed to set monitoring triggers and thresholds for CREMP monitoring required during Project operations. These triggers and thresholds, in addition to statistical analyses of baseline and future monitoring data, will be used to determine if changes are occurring in the receiving environment.

References:

Azimuth. 2016. Core Receiving Environment Monitoring Program (CREMP): 2015 Plan Update – Whale Tail Pit Addendum. Prepared by Azimuth Consulting Group Partnership, Vancouver, BC. Prepared for Agnico-Eagle Mines Ltd. Meadowbank Division, Baker Lake, NU.

Golder (Golder Associates Ltd.). 2017. Aquatic Effects Monitoring Program – 2016 Annual Report. Prepared for Agnico-Eagle Mines Ltd.

Interested Party:	**Environment and Climate Change Canada (ECCC)**	**NIRB Ref No.:**	**ECCC #12**
		NWB Ref No.	**ECCC #2**
Re:	**Post-Closure Treatment of Waste Rock Storage Facility**		

Technical Comment / Recommendation Made By Interested Party:

ECCC recommends that any seepage or runoff from the waste rock storage facility be actively treated until source control is demonstrated to have reduced contaminants in line with predictions (i.e. below the Portage Effluent Limits). WL criteria set by the NWB for seepage/runoff from the WRSF are recommended.

Agnico Eagle's Response to Technical Comment / Recommendation:

Agnico Eagle agrees to the treatment of waste rock storage facility (WRSF) seepage / runoff during post-closure, if it is needed, as indicated in Section 3.3 of the Water Management Plan (Agnico Eagle 2017). If treatment is required, treatment will occur until the water quality meets the direct discharge criteria that will be defined in a Water Licence, following which the treatment system will be decommissioned.

References:

Agnico Eagle (Agnico Eagle Mines Limited). 2017. Whale Tail Pit Water Management Plan. Version 1. January 2017

Interested Party:	**Environment and Climate Change Canada (ECCC)**	**NIRB Ref No.:**	**ECCC #13**
		NWB Ref No.	**ECCC #3**
Re:	**Closure Water Quality in Pit Lake and North Whale Tail Lake (Interactions with Groundwater)**		

Technical Comment / Recommendation Made By Interested Party:

ECCC recommends the Proponent clarify predictions for the pit lake and Whale Tail Lake water quality with respect to the influence of interactions with groundwater. The Proponent should provide mitigation measures to address concerns that may arise if water quality predictions are not accurate.

Agnico Eagle's Response to Technical Comment / Recommendation:

Hydrogeological modelling showed a decrease in inflow and an increase in outflow as the open pit was filled during closure, and this was taken into account in the site water quality model. Groundwater flow into, and out of, the pit immediately following pit refilling and throughout post-closure was assumed to be zero, which is a conservative assumption for a non-diffusive scenario as it retains mass within the pit. Further, the modelled diffusion sensitivity analysis within the flooded pit was completed as a highly conservative scenario assuming fully mixed conditions in the pit lake and accounting for diffusion from the pit walls (Figure 4, Appendix 6-H). It should be clarified that although the north portion of the pit will be in permafrost, the southern portion of the pit is predicted to not be in a fully permafrost zone. Additional hydrogeological modelling will be undertaken during operations to inform final closure and post-closure water quality predictions.

There are several mitigation measures and contingency plans in place to address concerns that may arise if water quality predictions are not accurate (Agnico Eagle 2017a,b,c,d). Waste rock and water quality monitoring during operations, closure, and post-closure, will serve to validate modelling assumptions, verify model results, and inform on whether corrective actions or mitigation plans are required. Agnico Eagle commits to use these results to update the model, predictions and to implement adaptive waste rock and/or water management. Mitigation measures consist of water treatment during operations and closure as required, and adaptive management of waste rock in the pit walls or in the stockpile (control or removal of potentially acid-generating or metal leaching rock). The reader is referred to INAC-TRC #7 for further discussion.

References:

Agnico Eagle (Agnico Eagle Mines Limited). 2017a. Whale Tail Pit – Waste Rock Management Plan Version 1. January 2017.

Agnico Eagle. 2017b. Whale Tail Pit – Water Quality Monitoring and Management Plan for Dike Construction and Dewatering Version 1. January 2017.

Agnico Eagle. 2017c. Whale Tail Pit – Whale Tail Pit Water Management Plan Version 1. January 2017.

Agnico Eagle. 2017d. Whale Tail Pit – Water Quality and Flow Monitoring Plan Version 1. January 2017.

Interested Party:	**Environment and Climate Change Canada (ECCC)**	**NIRB Ref No.:**	**ECCC #14**
		NWB Ref No.	**ECCC #4**
Re:	**Water Quality Predictions**		

Technical Comment / Recommendation Made By Interested Party:

a) ECCC recommends that the Proponent amend Appendix 6-I (Water Quality Predictions Summary Tables) to ensure that total fractions of phosphorus and metals are provided for each prediction table (in addition to the current predictions provided).

b) ECCC also recommends that the Proponent review Appendix 6-H (Mine Site and Receiving Environment Water Quality Predictions) to determine whether revisions are required as a result of amendments to Appendix 6-I.

c) The Proponent should evaluate whether conclusions are still valid and whether mitigations will be effective, and provide a summary of this evaluation and revise Appendix 6-H as appropriate.

Agnico Eagle's Response to Technical Comment / Recommendation:

Response a)

Since submission of the FEIS, the site water balance model was updated, additional geochemistry data was collected, and additional receiving environment water quality data was collected. This new information was used to update the site and receiving environment water quality predictions (see results below). In addition, predictions for both the total and dissolved fractions were developed for the receiving environment prediction nodes (Table 1). The constituents of potential concern (COPCs) identified for each location and mining phase based on the updated water quality predictions are summarized in Table 2. Results of the updated water quality predictions for locations within the mine footprint and the downstream receiving environment are provided in Tables 3 to 12.

At this time Agnico Eagle is evaluating options for treatment of arsenic and phosphorus. The treatment options being evaluated are considering discharge quality that will minimize downstream effects (i.e., lower phosphorous concentrations than included in the FEIS), technology for northern environments, and cost. The updated prediction tables (Table 3 to 12) still assume a discharge quality of 0.15 mg/L arsenic; the prediction tables do not include phosphorus as the treatment limit is being evaluated. Information on treatment specifications and predictions (end-of-pipe and receiving environment) will be provided prior to the Final Hearing.

It is important to note that the water quality model developed for the assessment is conservative for the downstream water quality estimates as follows:

- Modelled loads from the waste rock storage facility (WRSF):
  - Anticipated that treatment may not be required at all, but putting in place the ability to treat water should it be necessary.
  - A conservative evaluation of parameter release from the waste rock storage facility (WRSF), largely based on data collected in a laboratory setting rather than site conditions, was applied in perpetuity in post-closure.
  - Seepage from the WRSF was modelled as a constant loading source in perpetuity; however, since the exposed rock is not reactive, and that the management plan is designed to prevent acidification and minimize constituent leaching, it is expected that all chemicals contained in the seepage will be attenuated with time as the stockpile settles and fines become compacted.
- Modelled total predictions:
  - To predict total concentrations in the receiving environment, it was assumed that all suspended material (TSS) remains suspended and does not settle out through the receiving lake chain (i.e., the 15 mg/L TSS that was modelled at end of pipe was carried forward into the receiving environment).
  - The “load” of 15 mg/L TSS from Whale Tail North to Mammoth was continued for post-closure; as such, predictions of total concentrations are higher at post-closure than before for the same period.

Response b), c)
At this time, Agnico Eagle is evaluating various mitigations options (including, but not limited to water treatment design, grouting). Once the mitigations have been determined and evaluated, the model will be rerun and an addendum to Appendix 6-H will be issued presenting updated results. This will be issued prior to the Final Hearing.

Table 1: Water Quality Prediction Approach Summary

Mine or Downstream	Prediction Location	FEIS				Updated Predictions				
		Operations	Closure	Post-Closure		Construction	Operations	Closure	Post-closure	
		2019-2021	2022-2028	2029	2039	2018	2019-2022	2022-2026	2026-2027	2040
Whale Tail Mine Site	Whale Tail Attenuation Pond	T	-	-	-	T, D	T, D	T, D	NP	NP
	Flooded Whale Tail Pit [a]	-	-	D	D	-	-	-	D	D
	Whale Tail Lake (North Basin) [a]	-	-	T	T	-	-	-	T, D	T, D
	Waste Rock Storage Facility Pond [a]	-	-	T	T	-	-	T, D	T, D	T, D
Downstream Receiving Environment	Mammoth Lake (Lake A16)	D	D	D	D	T, D	T, D	T, D	T, D	T, D
	Lake A15	D	D	D	D	T, D	T, D	T, D	T, D	T, D
	Lake A12	D	D	D	D	T, D	T, D	T, D	T, D	T, D
	Downstream Node 1	D	D	D	D	T, D	T, D	T, D	T, D	T, D
	Downstream Node 2	D	D	D	D	T, D	T, D	T, D	T, D	T, D

Notes:

a – no connection to the receiving environment until post-closure so only prediction results for post-closure are provided

FEIS = Final Environmental Impact Statement; - = no predictions; T = total metals predicted; D = dissolved metals predicted.

Table 2: Summary of Constituents of Potential Concern by Mining Phase for the Updated Predictions

Prediction Location	Updated Predictions					
	Construction	Operations	Closure	Post-closure		Summary of Changes[a]
	2018	2019-2022	2022-2026	2026-2027 (First Year)	2040 (Long-term)	
Attenuation Pond[b]	No COPCs	No COPCs	-	-	-	Parameters above aquatic life guidelines in the FEIS but not above discharge limits
				-	-	No other COPCs identified at this time; however refining the treatment design for phosphorus discharge limits
Flooded Whale Tail Pit	-	-	-	-	No COPCs	No COPCs identified at this time; however still confirming the phosphorus predictions
Whale Tail Lake (North Basin)	-	-	-	Total: *aluminum* , *iron*	Total: *aluminum* , *iron*	Early and long-term Post-closure: chromium no longer a COPC
	-	-	-			Refining the treatment design for phosphorus discharge limits
WRSF Pond	water directed to attenuation pond[b]	water directed to attenuation pond[b]	water directed to attenuation pond[b]	**Total dissolved solids**, *fluoride* ; total: *aluminum* , antimony, *cadmium, copper, iron, lead, mercury, molybdenum, nickel, selenium, uranium* ; dissolved: antimony, *cadmium, copper, lead, mercury, molybdenum, nickel, selenium, uranium*	**Total dissolved solids**, *fluoride* ; total: *aluminum* , antimony, *cadmium, copper, iron, lead, mercury, molybdenum, nickel, selenium, uranium* ; dissolved: antimony, *cadmium, copper, lead, mercury, molybdenum, nickel, selenium, uranium*	Total chromium and zinc no longer COPCs
						Refining the treatment design for phosphorus discharge limits
Mammoth Lake (Lake A16)	Total: *aluminum* , *iron* ;	Total: *aluminum* , *iron;*	Total: *aluminum* ;	Total: *aluminum* , *iron* ;	Total: *aluminum* , *iron*	Refining the treatment design for phosphorus discharge limits
Lake A15	Total: *aluminum*	Total:, *aluminum* , *iron;*	Total: *aluminum ;*	Total: *aluminum* , *iron;*	Total: *aluminum* , *iron*	Refining the treatment design for phosphorus discharge limits
Lake A12	No COPCs	Total: *aluminum* , *iron;*	Total: *aluminum ;*	Total: *aluminum ;*	Total: *aluminum*	Refining the treatment design for phosphorus discharge limits
Lake A76	No COPCs	Total: *aluminum* , *iron;*	Total: *aluminum ;*	No COPCs	Total: *aluminum* , *iron*	Refining the treatment design for phosphorus discharge limits
Downstream Node 1	No COPCs	No COPCs	No COPCs	No COPCs	No COPCs	Refining the treatment design for phosphorus discharge limits
Downstream Node 2	No COPCs	No COPCs	No COPCs	No COPCs	Total: *aluminum* , *iron*	Refining the treatment design for phosphorus discharge limits

Notes:
Constituents listed exceed one or more of the applicable guidelines (e.g., CCME [1999], Health Canada [2014]).
Italicized constituents exceed CCME guideline for the protection of aquatic life (CCME 1999).
Underlined constituents exceed of Health Canada guideline for the protection of drinking water (Health Canada 2014).
Bolded constituents exceed the Portage effluent limits
Arsenic was compared only to the SSWQO and doesn't appear in the table.
a - Relative to the predictions presented in the FEIS.
b - COPCs were identified based on a comparison of the updated predicted results to the Portage limits only.
- = No discharge to the receiving environment
COPC = constituent of potential concern; TDS = total dissolved solids; WRSF = waste rock storage facility; CCME = Canadian Council of Ministers of the Environment; SSWQO = Site-Specific Water Quality Objectives; FEIS = Final Environmental Impact Statement.

Table 3: Updated Predicted Treated Water Quality for the Attenuation Pond

Parameter	Unit	Portage Effluent Limits		MMER [(a)]		Predicted Treated Water Quality for the Attenuation Pond			
						Construction		Operations	
		Maximum Concentration in a Grab Sample (MC)	Maximum Average Concentration (MAC)	Maximum Average Concentration	Maximum Concentration in Grab Sample	Maximum	Average	Maximum	Average
Conventional Parameters									
Hardness, as $CaCO_3$	mg/L	-	-	-	-	11	9.2	213	119
Total dissolved solids	mg/L	1,400	1,400	-	-	22	16	519	255
Major Ions									
Calcium	mg/L	-	-	-	-	2.7	2.4	55	30
Magnesium	mg/L	-	-	-	-	0.93	0.81	18	11
Potassium	mg/L	-	-	-	-	1	0.66	36	10
Sodium	mg/L	-	-	-	-	2.1	1.2	49	24
Chloride	mg/L	2,000	1,000	-	-	2.7	2.6	151	73
Fluoride	mg/L	-	-	-	-	0.038	0.031	0.76	0.24
Sulphate	mg/L	-	-	-	-	3.6	2.3	136	44
Nutrients and Biological Indicators									
Nitrate	mg-N/L	-	-	-	-	0.0033	0.0031	9.2	5.6
Total ammonia	mg-N/L	32	16	-	-	0	-	0.23	0.16
Total Metals									
Aluminum	mg/L	1.5	1.5	-	-	0.32	0.32	0.32	0.32
Antimony	mg/L	-	-	-	-	0.0003	0.0002	0.026	0.006
Arsenic	mg/L	0.6	0.3	0.5	1	0.008	0.007	0.160	0.120
Barium	mg/L	-	-	-	-	0.01	0.0085	0.096	0.057
Beryllium	mg/L	-	-	-	-	0.000019	0.000019	0.00014	0.000056
Bismuth	mg/L	-	-	-	-	0.000028	0.000028	0.00011	0.000056
Boron	mg/L	-	-	-	-	0.048	0.023	0.9	0.29
Cadmium	mg/L	0.004	0.002	-	-	0.0000073	0.0000054	9.10E-05	5.40E-05
Chromium	mg/L	-	-	-	-	0.0094	0.0092	0.019	0.012
Cobalt	mg/L	-	-	-	-	0.00081	0.00068	0.0062	0.0023
Copper	mg/L	0.2	0.1	0.3	0.6	0.0014	0.0012	1.40E-02	4.10E-03
Iron	mg/L	-	-	-	-	0.85	0.8	1.1	0.94
Lead	mg/L	0.2	0.1	0.2	0.4	0.0003	0.00021	3.70E-03	1.10E-03
Lithium	mg/L	-	-	-	-	0.0011	0.00091	0.013	0.0075
Manganese	mg/L	-	-	-	-	0.058	0.035	0.86	0.37
Mercury	mg/L	0.0008	0.0004	-	-	0.0000039	0.0000032	0.000069	0.000013
Molybdenum	mg/L	-	-	-	-	0.00031	0.00015	0.018	0.0098
Nickel	mg/L	0.4	0.2	0.5	1	0.0071	0.0061	5.90E-02	0.022
Selenium	mg/L	-	-	-	-	0.00018	0.000088	4.20E-03	1.10E-03
Silver	mg/L	-	-	-	-	0.000013	0.0000099	0.00019	0.000044
Strontium	mg/L	-	-	-	-	0.018	0.016	0.38	0.22
Thallium	mg/L	-	-	-	-	0.000013	0.000011	0.00032	0.000061
Tin	mg/L	-	-	-	-	0.000072	0.000062	0.00062	0.00019
Uranium	mg/L	-	-	-	-	0.00025	0.00014	0.0062	0.0033
Vanadium	mg/L	-	-	-	-	0.0013	0.0011	0.02	0.0037
Zinc	mg/L	0.8	0.4	0.5	1	0.0018	0.0014	0.017	0.0067
Dissolved Metals									
Aluminum	mg/L	-	-	-	-	0.0001	0.0001	0.0001	0.0001
Antimony	mg/L	-	-	-	-	0.00023	0.00012	0.025	0.0062
Arsenic	mg/L	1	0.5	-	-	0.0032	0.0015	0.15	0.12
Barium	mg/L	-	-	-	-	0.0071	0.0054	0.092	0.053
Beryllium	mg/L	-	-	-	-	0.000013	0.000012	0.00013	0.000049
Bismuth	mg/L	-	-	-	-	0.000026	0.000026	0.00012	0.000053
Boron	mg/L	-	-	-	-	0.048	0.023	0.9	0.29
Cadmium	mg/L	-	-	-	-	0.0000057	0.0000038	0.00009	5.10E-05
Chromium	mg/L	-	-	-	-	0.00048	0.00022	0.01	2.10E-03
Cobalt	mg/L	-	-	-	-	0.00029	0.00015	0.0057	0.0019
Copper	mg/L	0.6	0.3	-	-	0.00095	0.00068	0.013	3.70E-03
Iron	mg/L	-	-	-	-	0.099	0.049	0.3	0.18
Lead	mg/L	0.4	0.2	-	-	0.00018	0.000096	0.0035	0.00096
Lithium	mg/L	-	-	-	-	0.00078	0.00062	0.014	0.0071
Manganese	mg/L	-	-	-	-	0.047	0.022	0.84	0.36
Mercury	mg/L	-	-	-	-	0.0000039	0.0000032	0.000069	0.000013
Molybdenum	mg/L	-	-	-	-	0.00029	0.00014	0.018	0.0097
Nickel	mg/L	1	0.5	-	-	0.0025	0.0015	0.054	0.016
Selenium	mg/L	-	-	-	-	0.00017	0.000083	0.0042	1.10E-03
Silver	mg/L	-	-	-	-	0.0000095	0.0000068	0.00018	0.000041
Strontium	mg/L	-	-	-	-	0.017	0.015	0.38	0.22
Thallium	mg/L	-	-	-	-	0.000007	0.0000058	0.00032	0.000057
Tin	mg/L	-	-	-	-	0.000066	0.000057	0.00061	0.00018
Uranium	mg/L	-	-	-	-	0.00024	0.00013	0.0062	0.0032
Vanadium	mg/L	-	-	-	-	0.00044	0.00032	0.019	0.003
Zinc	mg/L	1	0.5	-	-	0.0011	0.00084	0.016	0.0061

Notes:

(a) MMER. Government of Canada 2012. Metal Mining Effluent Regulation . Sor 2002-222.

Bolded concentrations are higher than relevant water quality guidelines.

Water quality data and guidelines shown in this table were rounded to reflect laboratory or field instrument precision *after* comparisons to guidelines. Therefore, values slightly above guidelines may be displayed as being equal to the guidelines and identified as exceedances. Measured concentrations equal to the guideline values were not identified as exceedances.

MC = Maximum Concentration; MAC = Maximum Allowable Concentration; MMER = Metal Mining Effluent Regulations; $CaCO_3$ = calcium carbonate; mg/L = milligrams per litre; - = no guideline or data; mg-N/L = milligrams of nitrogen per litre; mg-P/L = milligrams of phosphorus per litre.

Table 4: Updated Predicted Water Quality for the Flooded Whale Tail Pit

Parameter	Unit	Guidelines for the protection of:			Predicted Water Quality	
		Aquatic Life (CCME)		Drinking Water (D)	Post-Closure (Long Term)	
		Acute (A)	Chronic (C)		Maximum	Average
Conventional Parameters						
Hardness, as $CaCO_3$	mg/L	-	-	-	15	15
Total dissolved solids	mg/L	-	-	-	27	27
Major Ions						
Calcium	mg/L	-	-	-	3.8	3.8
Magnesium	mg/L	-	-	-	1.3	1.3
Potassium	mg/L	-	-	-	1.6	1.6
Sodium	mg/L	-	-	-	1.8	1.8
Chloride	mg/L	640	120	-	4.6	4.6
Fluoride	mg/L	-	0.12	1.5	0.047	0.047
Sulphate	mg/L	-	-	-	6	6
Nutrients and Biological Indicators						
Nitrate	mg-N/L	124	2.9	10	0.035	0.035
Total ammonia	mg-N/L	-	4	-	0.0029	0.0029
Dissolved Metals						
Aluminum	mg/L	-	0.1	0.1	0.0002	0.0002
Antimony	mg/L	-	-	0.006	0.00051	0.00051
Arsenic	mg/L	-	0.005	0.01	0.023[(C, D)]	0.023[(C, D)]
Barium	mg/L	-	-	1	0.0082	0.0082
Beryllium	mg/L	-	-	-	0.000012	0.000012
Bismuth	mg/L	-	-	-	0.000025	0.000025
Boron	mg/L	29	1.5	5	0.019	0.019
Cadmium	mg/L	0.00034	0.00004	0.005	0.0000064	0.0000064
Chromium	mg/L	-	0.001	0.05	0.00015	0.00015
Cobalt	mg/L	-	-	-	0.00025	0.00025
Copper	mg/L	-	0.002	-	0.00075	0.00075
Iron	mg/L	-	0.3	-	0.041	0.041
Lead	mg/L	-	0.001	0.01	0.00011	0.00011
Lithium	mg/L	-	-	-	0.00098	0.00098
Manganese	mg/L	-	-	-	0.053	0.053
Mercury	mg/L	-	0.000026	0.001	0.0000033	0.0000033
Molybdenum	mg/L	-	0.073	-	0.00065	0.00065
Nickel	mg/L	-	0.025	-	0.0028	0.0028
Selenium	mg/L	-	0.001	0.05	0.00013	0.00013
Silver	mg/L	-	0.00025	-	0.0000063	0.0000063
Strontium	mg/L	-	-	-	0.025	0.025
Thallium	mg/L	-	0.0008	-	0.0000069	0.0000069
Tin	mg/L	-	-	-	0.000069	0.000069
Uranium	mg/L	0.033	0.015	0.02	0.00049	0.00049
Vanadium	mg/L	-	-	-	0.0004	0.0004
Zinc	mg/L	-	0.03	-	0.00097	0.00097

Notes:

Bolded concentrations are higher than relevant water quality guidelines.

[(A)] = concentration higher than the relevant acute aquatic life guideline or beyond the recommended pH or DO concentration range.

[(C)] = concentration higher than the relevant chronic aquatic life guideline or beyond the recommended pH, DO or total alkalinity concentration range.

[(D)] = concentration higher than the relevant drinking water guideline or beyond the recommended pH or DO concentration range.

Water quality data and guidelines shown in this table were rounded to reflect laboratory or field instrument precision *after* comparisons to guidelines. Therefore, values sligh above guidelines may be displayed as being equal to the guidelines and identified as exceedances. Measured concentrations equal to the guideline values were not identified exceedances.

CCME = Canadian Council of Ministers of the Environment; $CaCO_3$ = calcium carbonate; mg/L = milligrams per litre; - = no guideline or data mg-N/L = milligrams of nitrogen per mg-P/L = milligrams of phosphorus per litre.

Table 5: Updated Predicted Untreated Water Quality for the Whale Tail Lake

Parameter	Unit	Guidelines for the protection of:						Predicted Water Quality for the Whale Tail Lake			
		Aquatic Life (CCME)		Drinking Water (D)	Meadowbank Trigger (T)	Meadowbank Threshold (E)	Whale Tail (Baseline Maximum) (B)	First Year Post-Closure		Post-Closure (Long Term)	
		Acute (A)	Chronic (C)					Maximum	Average	Maximum	Average
Conventional Parameters											
Hardness, as $CaCO_3$	mg/L	-	-	-	-	-	10	29$^{(B)}$	26$^{(B)}$	8.2	8.2
Total dissolved solids	mg/L	-	-	-	18	-	28	53$^{(T, B)}$	48$^{(T, B)}$	12	12
Major Ions											
Calcium	mg/L	-	-	-	-	-	2.9	7.6$^{(B)}$	7.0$^{(B)}$	2.0	2.0
Magnesium	mg/L	-	-	-	0.83	-	0.8	2.3$^{(T, B)}$	2.2$^{(T, B)}$	0.74	0.74
Potassium	mg/L	-	-	-	0.5	-	0.48	5.5$^{(T, B)}$	5.0$^{(T, B)}$	0.42	0.42
Sodium	mg/L	-	-	-	0.98	-	0.61	1.8$^{(T, B)}$	1.7$^{(T, B)}$	0.57	0.57
Chloride	mg/L	640	120	-	60	120	4.7	3.9	3.8	2.5	2.5
Fluoride	mg/L	-	0.12	1.5	-	-	0.034	0.09$^{(B)}$	0.084$^{(B)}$	0.027	0.027
Sulphate	mg/L	-	-	-	65	128	2.6	18$^{(B)}$	16$^{(B)}$	1.4	1.4
Nutrients and Biological Indicators											
Nitrate	mg-N/L	124	2.9	10	1.5	3	0.005	0.011$^{(B)}$	0.01$^{(B)}$	0.0035	0.0035
Total ammonia	mg-N/L	-	3.8	-	0.065	0.13	0.1	0.00079	0.0007	0.0000012	0.00000095
Total Metals											
Aluminum	mg/L	-	0.1	0.1	0.026	0.05	0.022	**0.32$^{(C, D, T, E, B)}$**	**0.32$^{(C, D, T, E, B)}$**	**0.32$^{(C, D, T, E, B)}$**	**0.32$^{(C, D, T, E, B)}$**
Antimony	mg/L	-	-	0.006	0.01	0.02	0.00022	0.001$^{(B)}$	0.00093$^{(B)}$	0.000087	0.000086
Arsenic	mg/L	-	0.005	0.01	0.0026	0.005	0.00029	0.012$^{(C, D, T, E, B)}$	0.012$^{(C, D, T, E, B)}$	0.0067$^{(C, T, E, B)}$	0.0067$^{(C, T, E, B)}$
Barium	mg/L	-	-	1	0.5	1	0.0053	0.014$^{(B)}$	0.014$^{(B)}$	0.0074$^{(B)}$	0.0073$^{(B)}$
Beryllium	mg/L	-	-	-	0.0027	0.0053	0.0001	0.000019	0.00002	0.000017	0.000018
Bismuth	mg/L	-	-	-	-	-	0.0005	0.000028	0.000028	0.000027	0.000028
Boron	mg/L	29	1.5	5	0.76	1.5	0.01	0.013$^{(B)}$	0.013$^{(B)}$	0.0051	0.0051
Cadmium	mg/L	0.00034	0.00004	0.005	0.000025	0.00004	0.00001	0.0000093	0.0000088	0.0000041	0.0000041
Chromium	mg/L	-	0.001	0.05	0.00056	0.001	0.00014	0.009$^{(T, E, B)}$	0.009$^{(T, E, B)}$	0.0091$^{(T, E, B)}$	0.0091$^{(T, E, B)}$
Cobalt	mg/L	-	-	-	-	-	0.0001	6.80E-04$^{(B)}$	6.80E-04$^{(B)}$	5.70E-04$^{(B)}$	5.70E-04$^{(B)}$
Copper	mg/L	-	0.002	-	0.0012	0.002	0.00064	1.20E-03$^{(T, B)}$	1.30E-03$^{(T, B)}$	1.10E-03$^{(B)}$	1.10E-03$^{(B)}$
Iron	mg/L	-	0.3	-	0.16	0.3	0.037	**0.78$^{(C, T, E, B)}$**	**0.78$^{(C, T, E, B)}$**	**0.77$^{(C, T, E, B)}$**	**0.77$^{(C, T, E, B)}$**
Lead	mg/L	-	0.001	0.01	0.00053	0.001	0.0069	0.00023	0.00022	0.00015	0.00016
Lithium	mg/L	-	-	-	0.048	0.096	0.001	2.20E-03$^{(B)}$	2.20E-03$^{(B)}$	0.00081	0.00081
Manganese	mg/L	-	-	-	0.32	0.68	0.0064	2.30E-02$^{(B)}$	2.30E-02$^{(B)}$	1.40E-02$^{(B)}$	1.50E-02$^{(B)}$
Mercury	mg/L	-	0.000026	0.001	0.000018	0.000026	0.00001	0.0000057	0.0000054	0.0000026	0.0000026
Molybdenum	mg/L	-	0.073	-	0.037	0.073	0.00022	0.0022$^{(B)}$	2.00E-03$^{(B)}$	0.000051	0.00005
Nickel	mg/L	-	0.025	-	0.013	0.025	0.0012	6.00E-03$^{(B)}$	6.00E-03$^{(B)}$	5.20E-03$^{(B)}$	5.30E-03$^{(B)}$
Selenium	mg/L	-	0.001	0.05	0.00055	0.001	0.0001	0.00038$^{(B)}$	0.00034$^{(B)}$	0.00003	0.000031
Silver	mg/L	-	0.00025	-	-	-	0.00001	0.0000096	0.0000094	0.0000081	0.0000081
Strontium	mg/L	-	-	-	0.028	0.049	0.022	0.048$^{(T, B)}$	0.045$^{(T, B)}$	0.015	0.014
Thallium	mg/L	-	0.0008	-	0.00041	0.0008	0.00001	0.000019$^{(B)}$	0.000017$^{(B)}$	0.000011$^{(B)}$	0.000011$^{(B)}$
Tin	mg/L	-	-	-	0.0002	-	0.0001	0.00012$^{(B)}$	0.00012$^{(B)}$	0.00006	0.000059
Uranium	mg/L	0.033	0.015	0.02	0.0075	0.015	0.000047	0.0021$^{(B)}$	0.0018$^{(B)}$	0.000057$^{(B)}$	0.000057$^{(B)}$
Vanadium	mg/L	-	-	-	0.0035	0.006	0.001	0.0016$^{(B)}$	0.0015$^{(B)}$	0.0011$^{(B)}$	0.001$^{(B)}$
Zinc	mg/L	-	0.03	-	0.0063	0.024	0.003	0.002	0.0018	0.0014	0.0013

Table 5: Updated Predicted Untreated Water Quality for the Whale Tail Lake

Parameter	Unit	Guidelines for the protection of:						Predicted Water Quality for the Whale Tail Lake			
		Aquatic Life (CCME)		Drinking Water (D)	Meadowbank Trigger (T)	Meadowbank Threshold (E)	Whale Tail (Baseline Maximum) (B)	First Year Post-Closure		Post-Closure (Long Term)	
		Acute (A)	Chronic (C)					Maximum	Average	Maximum	Average
Dissolved Metals											
Aluminum	mg/L	-	0.1	0.1	0.026	0.05	0.012	0.0001	0.0001	0.0001	0.0001
Antimony	mg/L	-	-	0.006	0.01	0.02	0.0001	0.001$^{(B)}$	0.00091$^{(B)}$	0.000068	0.000068
Arsenic	mg/L	-	0.005	0.01	0.0026	0.005	0.0003	0.0065$^{(C, T, E, B)}$	0.006$^{(C, T, E, B)}$	0.0016$^{(B)}$	0.0015$^{(B)}$
Barium	mg/L	-	-	1	0.5	1	0.0053	0.011$^{(B)}$	0.01$^{(B)}$	0.0042	0.0042
Beryllium	mg/L	-	-	-	0.0027	0.0053	0.0001	0.000012	0.000013	0.00001	0.00001
Bismuth	mg/L	-	-	-	-	-	0.0005	0.000026	0.000026	0.000025	0.000025
Boron	mg/L	29	1.5	5	0.76	1.5	0.01	0.013$^{(B)}$	0.013$^{(B)}$	0.005	0.0049
Cadmium	mg/L	0.00034	0.00004	0.005	0.000025	0.00004	0.00001	0.0000077	0.0000073	0.0000025	0.0000025
Chromium	mg/L	-	0.001	0.05	0.00056	0.001	0.0001	0.000097	0.000095	0.000077	0.000077
Cobalt	mg/L	-	-	-	-	-	0.0001	0.00016$^{(B)}$	0.00015$^{(B)}$	0.00005	0.00005
Copper	mg/L	-	0.002	-	0.0012	0.002	0.0017	0.00073	0.00071	0.00052	0.00052
Iron	mg/L	-	0.3	-	0.16	0.3	0.096	0.023	0.022	0.021	0.021
Lead	mg/L	-	0.001	0.01	0.00053	0.001	0.0001	0.00011$^{(B)}$	0.0001	0.000039	0.000039
Lithium	mg/L	-	-	-	0.048	0.096	0.001	0.002$^{(B)}$	0.0018$^{(B)}$	0.00053	0.00053
Manganese	mg/L	-	-	-	0.32	0.68	0.0045	0.011$^{(B)}$	0.011$^{(B)}$	0.0017	0.0016
Mercury	mg/L	-	0.000026	0.001	0.000018	0.000026	0.00001	0.0000057	0.0000054	0.0000026	0.0000026
Molybdenum	mg/L	-	0.073	-	0.037	0.073	0.00005	0.0022$^{(B)}$	0.002$^{(B)}$	0.000032	0.000032
Nickel	mg/L	-	0.025	-	0.013	0.025	0.001	0.0014$^{(B)}$	0.0014$^{(B)}$	0.00066	0.00066
Selenium	mg/L	-	0.001	0.05	0.00055	0.001	0.0001	0.00038$^{(B)}$	0.00035$^{(B)}$	0.000026	0.000026
Silver	mg/L	-	0.00025	-	-	-	0.00001	0.0000065	0.0000063	0.000005	0.0000049
Strontium	mg/L	-	-	-	0.028	0.049	0.022	0.046$^{(T, B)}$	0.043$^{(T, B)}$	0.014	0.014
Thallium	mg/L	-	0.0008	-	0.00041	0.0008	0.00001	0.000013$^{(B)}$	0.000012$^{(B)}$	0.000005	0.000005
Tin	mg/L	-	-	-	0.0002	-	0.0001	0.00012$^{(B)}$	0.00011$^{(B)}$	0.000054	0.000054
Uranium	mg/L	0.033	0.015	0.02	0.0075	0.015	0.000042	0.002$^{(B)}$	0.0018$^{(B)}$	0.000044$^{(B)}$	0.000044$^{(B)}$
Vanadium	mg/L	-	-	-	0.0035	0.006	0.001	0.00083	0.00078	0.00025	0.00025
Zinc	mg/L	-	0.03	-	0.0063	0.024	0.0027	0.0013	0.0012	0.0007	0.00069

Notes:

Bolded concentrations are higher than relevant water quality guidelines; results not bolded if above baseline or Meadowbank Trigger Level

$^{(A)}$ = concentration higher than the relevant acute aquatic life guideline or beyond the recommended pH or DO concentration range.

$^{(C)}$ = concentration higher than the relevant chronic aquatic life guideline or beyond the recommended pH, DO or total alkalinity concentration range.

$^{(D)}$ = concentration higher than the relevant drinking water guideline or beyond the recommended pH or DO concentration range.

$^{(T)}$ = concentration higher than the relevant meadowbank trigger or beyond the recommended pH or DO concentration range.

$^{(E)}$ = concentration higher than the relevant meadowbank threshold or beyond the recommended pH or DO concentration range.

$^{(B)}$ = concentration higher than the relevant whale tail (baseline maximum) or beyond the recommended pH or DO concentration range.

Water quality data and guidelines shown in this table were rounded to reflect laboratory or field instrument precision *after* comparisons to guidelines. Therefore, values slightly above guidelines may be displayed as being equal to the guidelines and identified as exceedances.

Measured concentrations equal to the guideline values were not identified as exceedances.

CCME = Canadian Council of Ministers of the Environment; $CaCO_3$ = calcium carbonate; mg/L = milligrams per litre; - = no guideline or data mg-N/L = milligrams of nitrogen per litre; mg-P/L = milligrams of phosphorus per litre.

Table 6: Updated Predicted Treated Water Quality for the Waste Rock Storage Facility (WRSF)

Parameter	Unit	Guidelines for the protection of:					Post-Closure	
		Aquatic Life (CCME)		Drinking Water (D)	PEL - Maximum Concentration in a Grab Sample (MC) (P)	PEL - Maximum Average Concentration (MAC) (E)		
		Acute (A)	Chronic (C)				Maximum	Average
Conventional Parameters								
Hardness, as $CaCO_3$	mg/L	-	-	-	-	-	876	463
Total dissolved solids	mg/L	-	-	-	1,400	1,400	**1,718**$^{(P, E)}$	907
Major Ions								
Calcium	mg/L	-	-	-	-	-	238	126
Magnesium	mg/L	-	-	-	-	-	69	36
Potassium	mg/L	-	-	-	-	-	220	116
Sodium	mg/L	-	-	-	-	-	48	25
Chloride	mg/L	640	120	-	2,000	1,000	46	24
Fluoride	mg/L	-	0.12	1.5	-	-	**2.7**$^{(C, D)}$	**1.4**$^{(C)}$
Sulphate	mg/L	-	-	-	-	-	702	370
Nutrients and Biological Indicators								
Nitrate	mg-N/L	124	2.9	10	-	-	0.018	0.017
Total ammonia	mg-N/L	-	3.8	-	32	16	0.0085	0.008
Total Metals								
Aluminum	mg/L	-	0.1	0.1	1.5	1.5	**0.32**$^{(C, D)}$	**0.32**$^{(C, D)}$
Antimony	mg/L	-	-	0.006	-	-	**0.04**$^{(D)}$	**0.022**$^{(D)}$
Arsenic	mg/L	-	0.005	0.01	0.6	0.3	0.21$^{(C, D)}$	0.11$^{(C, D)}$
Barium	mg/L	-	-	1	-	-	0.3	0.16
Beryllium	mg/L	-	-	-	-	-	0.0001	0.000058
Bismuth	mg/L	-	-	-	-	-	0.0001	0.000061
Boron	mg/L	29	1.5	5	-	-	0.32	0.17
Cadmium	mg/L	0.00034	0.00004	0.005	0.004	0.002	**0.00022**$^{(C)}$	**0.00012**$^{(C)}$
Chromium	mg/L	-	0.001	0.05	-	-	0.0098	0.0094
Cobalt	mg/L	-	-	-	-	-	0.0049	0.0028
Copper	mg/L	-	0.002	-	0.2	0.1	**9.80E-03**$^{(C)}$	**5.50E-03**$^{(C)}$
Iron	mg/L	-	0.3	-	-	-	**0.81**$^{(C)}$	**0.81**$^{(C)}$
Lead	mg/L	-	0.001	0.01	0.2	0.1	**3.10E-03**$^{(C)}$	**1.60E-03**$^{(C)}$
Lithium	mg/L	-	-	-	-	-	0.062	0.033
Manganese	mg/L	-	-	-	-	-	0.31	0.17
Mercury	mg/L	-	0.000026	0.001	0.0008	0.0004	**0.00014**$^{(C)}$	**7.30E-05**$^{(C)}$
Molybdenum	mg/L	-	0.073	-	-	-	**0.093**$^{(C)}$	0.05
Nickel	mg/L	-	0.025	-	0.4	0.2	**3.30E-02**$^{(C)}$	0.02
Selenium	mg/L	-	0.001	0.05	-	-	**1.50E-02**$^{(C)}$	**8.10E-03**$^{(C)}$
Silver	mg/L	-	0.00025	-	-	-	0.000073	0.000041
Strontium	mg/L	-	-	-	-	-	1.4	0.74
Thallium	mg/L	-	0.0008	-	-	-	0.00037	0.0002
Tin	mg/L	-	-	-	-	-	0.0029	0.0016
Uranium	mg/L	0.033	0.015	0.02	-	-	**8.70E-02**$^{(A, C, D)}$	**4.50E-02**$^{(A, C, D)}$
Vanadium	mg/L	-	-	-	-	-	0.027	0.014
Zinc	mg/L	-	0.03	-	0.8	0.4	0.026	0.015

Table 6: Updated Predicted Treated Water Quality for the Waste Rock Storage Facility (WRSF)

Parameter	Unit	Guidelines for the protection of:					Post-Closure	
		Aquatic Life (CCME)		Drinking Water (D)	PEL - Maximum Concentration in a Grab Sample (MC) (P)	PEL - Maximum Average Concentration (MAC) (E)		
		Acute (A)	Chronic (C)				Maximum	Average
Dissolved Metals								
Aluminum	mg/L	-	0.1	0.1	-	-	0.0003	0.0003
Antimony	mg/L	-	-	0.006	-	-	**0.04**$^{(D)}$	**2.20E-02**$^{(D)}$
Arsenic	mg/L	-	0.005	0.01	1	0.5	0.21$^{(C, D)}$	0.11$^{(C, D)}$
Barium	mg/L	-	-	1	-	-	0.3	0.16
Beryllium	mg/L	-	-	-	-	-	0.000093	0.000051
Bismuth	mg/L	-	-	-	-	-	0.00011	0.000058
Boron	mg/L	29	1.5	5	-	-	0.32	0.17
Cadmium	mg/L	0.00034	0.00004	0.005	-	-	**0.00022**$^{(C)}$	**1.10E-04**$^{(C)}$
Chromium	mg/L	-	0.001	0.05	-	-	0.00078	0.00042
Cobalt	mg/L	-	-	-	-	-	0.0045	0.0024
Copper	mg/L	-	0.002	-	0.6	0.3	**0.0093**$^{(C)}$	**5.00E-03**$^{(C)}$
Iron	mg/L	-	0.3	-	-	-	0.06	0.058
Lead	mg/L	-	0.001	0.01	0.4	0.2	**0.0029**$^{(C)}$	**1.50E-03**$^{(C)}$
Lithium	mg/L	-	-	-	-	-	0.062	0.033
Manganese	mg/L	-	-	-	-	-	0.3	0.16
Mercury	mg/L	-	0.000026	0.001	-	-	**0.00014**$^{(C)}$	**0.000073**$^{(C)}$
Molybdenum	mg/L	-	0.073	-	-	-	**0.093**$^{(C)}$	0.05
Nickel	mg/L	-	0.025	-	1	0.5	**0.028**$^{(C)}$	0.015
Selenium	mg/L	-	0.001	0.05	-	-	**0.015**$^{(C)}$	**0.0082**$^{(C)}$
Silver	mg/L	-	0.00025	-	-	-	0.00007	0.000038
Strontium	mg/L	-	-	-	-	-	1.4	0.74
Thallium	mg/L	-	0.0008	-	-	-	0.00037	0.0002
Tin	mg/L	-	-	-	-	-	0.0028	0.0014
Uranium	mg/L	0.033	0.015	0.02	-	-	**0.086**$^{(A, C, D)}$	**0.046**$^{(A, C, D)}$
Vanadium	mg/L	-	-	-	-	-	0.025	0.013
Zinc	mg/L	-	0.03	-	1	0.5	0.026	0.013

Notes:

Bolded concentrations are higher than relevant water quality guidelines.

$^{(A)}$ = concentration higher than the relevant acute aquatic life guideline or beyond the recommended pH or DO concentration range.

$^{(C)}$ = concentration higher than the relevant chronic aquatic life guideline or beyond the recommended pH, DO or total alkalinity concentration range.

$^{(D)}$ = concentration higher than the relevant drinking water guideline or beyond the recommended pH or DO concentration range.

$^{(P)}$ = concentration higher than the relevant pel - maximum concentration in a grab sample (mc) or beyond the recommended pH or DO concentration range.

$^{(E)}$ = concentration higher than the relevant pel - maximum average concentration (mac) or beyond the recommended pH or DO concentration range.

Water quality data and guidelines shown in this table were rounded to reflect laboratory or field instrument precision*after* comparisons to guidelines. Therefore, values slightly above guidelines may be displayed as be to the guidelines and identified as exceedances. Measured concentrations equal to the guideline values were not identified as exceedances.

CCME = Canadian Council of Ministers of the Environment; PEL = Portage Effluent Limit; MC = Maximum Concentration; MAC = Maximum Allowable Concentration; WRSF = Waste Rock Storage Facility; CaCO= calcium c mg/L = milligrams per litre; - = no guideline or data mg-N/L = milligrams of nitrogen per litre; mg-P/L = milligrams of phosphorus per litre.

Table 7: Updated Predicted Water Quality for Mammoth Lake

Parameter	Unit	Guidelines for the protection of:						
		Aquatic Life (CCME)		Drinking Water (D)	Meadowbank Trigger (T)	Meadowbank Threshold (E)	Mammoth (Baseline Maximum) (B)	SSWQO
		Acute (A)	Chronic (C)					
Conventional Parameters								
Hardness, as $CaCO_3$	mg/L	-	-	-	-	-	13	-
Total dissolved solids	mg/L	-	-	-	18	-	39	-
Major Ions								
Calcium	mg/L	-	-	-	-	-	3.6	-
Magnesium	mg/L	-	-	-	0.83	-	0.97	-
Potassium	mg/L	-	-	-	0.5	-	0.68	-
Sodium	mg/L	-	-	-	0.98	-	0.73	-
Chloride	mg/L	640	120	-	60	120	5.6	-
Fluoride	mg/L	-	0.12	1.5	-	-	0.033	-
Sulphate	mg/L	-	-	-	65	128	2.9	-
Nutrients and Biological Indicators								
Nitrate	mg-N/L	124	2.9	10	1.5	3	0.005	-
Total ammonia	mg-N/L	-	2	-	0.065	0.13	0.035	-
Total Metals								
Aluminum	mg/L	-	0.1	0.1	0.026	0.05	0.016	-
Antimony	mg/L	-	-	0.006	0.01	0.02	0.0001	-
Arsenic	mg/L	-	0.005	0.01	0.0026	0.005	0.00047	0.028
Barium	mg/L	-	-	1	0.5	1	0.007	-
Beryllium	mg/L	-	-	-	0.0027	0.0053	0.0001	-
Bismuth	mg/L	-	-	-	-	-	0.0005	-
Boron	mg/L	29	1.5	5	0.76	1.5	0.01	-
Cadmium	mg/L	0.00034	0.00004	0.005	0.000025	0.00004	0.00001	-
Chromium	mg/L	-	0.001	0.05	0.00056	0.001	0.00025	-
Cobalt	mg/L	-	-	-	-	-	0.0001	-
Copper	mg/L	-	0.002	-	0.0012	0.002	0.0006	-
Iron	mg/L	-	0.3	-	0.16	0.3	0.031	-
Lead	mg/L	-	0.001	0.01	0.00053	0.001	0.00022	-
Lithium	mg/L	-	-	-	0.048	0.096	0.001	-
Manganese	mg/L	-	-	-	0.32	0.68	0.0043	-
Mercury	mg/L	-	0.000026	0.001	0.000018	0.000026	0.00001	-
Molybdenum	mg/L	-	0.073	-	0.037	0.073	0.000093	-
Nickel	mg/L	-	0.025	-	0.013	0.025	0.001	-
Selenium	mg/L	-	0.001	0.05	0.00055	0.001	0.0001	-
Silver	mg/L	-	0.00025	-	-	-	0.00001	-
Strontium	mg/L	-	-	-	0.028	0.049	0.026	-
Thallium	mg/L	-	0.0008	-	0.00041	0.0008	0.00001	-
Tin	mg/L	-	-	-	0.0002	-	0.0001	-
Uranium	mg/L	0.033	0.015	0.02	0.0075	0.015	0.000034	-
Vanadium	mg/L	-	-	-	0.0035	0.006	0.001	-
Zinc	mg/L	-	0.03	-	0.0063	0.024	0.003	-
Dissolved Metals								
Aluminum	mg/L	-	0.1	0.1	0.026	0.05	0.01	-
Antimony	mg/L	-	-	0.006	0.01	0.02	0.0001	-
Arsenic	mg/L	-	0.005	0.01	0.0026	0.005	0.00047	-
Barium	mg/L	-	-	1	0.5	1	0.0072	-
Beryllium	mg/L	-	-	-	0.0027	0.0053	0.0001	-
Bismuth	mg/L	-	-	-	-	-	0.0005	-
Boron	mg/L	29	1.5	5	0.76	1.5	0.01	-
Cadmium	mg/L	0.00034	0.00004	0.005	0.000025	0.00004	0.00001	-
Chromium	mg/L	-	0.001	0.05	0.00056	0.001	0.0001	-
Cobalt	mg/L	-	-	-	-	-	0.0001	-
Copper	mg/L	-	0.002	-	0.0012	0.002	0.00054	-
Iron	mg/L	-	0.3	-	0.16	0.3	0.015	-
Lead	mg/L	-	0.001	0.01	0.00053	0.001	0.00027	-
Lithium	mg/L	-	-	-	0.048	0.096	0.0013	-
Manganese	mg/L	-	-	-	0.32	0.68	0.0032	-
Mercury	mg/L	-	0.000026	0.001	0.000018	0.000026	0.00001	-
Molybdenum	mg/L	-	0.073	-	0.037	0.073	0.000063	-
Nickel	mg/L	-	0.025	-	0.013	0.025	0.00089	-
Selenium	mg/L	-	0.001	0.05	0.00055	0.001	0.0001	-
Silver	mg/L	-	0.00025	-	-	-	0.00001	-
Strontium	mg/L	-	-	-	0.028	0.049	0.027	-
Thallium	mg/L	-	0.0008	-	0.00041	0.0008	0.00001	-
Tin	mg/L	-	-	-	0.0002	-	0.0001	-
Uranium	mg/L	0.033	0.015	0.02	0.0075	0.015	0.00003	-
Vanadium	mg/L	-	-	-	0.0035	0.006	0.001	-
Zinc	mg/L	-	0.03	-	0.0063	0.024	0.0013	-

Table 7: Updated Predicted Water Quality for Mammoth Lake

Parameter	Unit	Predicted Water Quality for Mammoth Lake									
		Construction		Operations		Closure		First Year Post-Closure		Post-Closure (Long Term)	
		Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average
Conventional Parameters											
Hardness, as $CaCO_3$	mg/L	13$^{(B)}$	12	26$^{(B)}$	20$^{(B)}$	26$^{(B)}$	22$^{(B)}$	28$^{(B)}$	27$^{(B)}$	22$^{(B)}$	21$^{(B)}$
Total dissolved solids	mg/L	22$^{(T)}$	18$^{(T)}$	55$^{(T, B)}$	41$^{(T, B)}$	55$^{(T, B)}$	43$^{(T, B)}$	52$^{(T, B)}$	50$^{(T, B)}$	38$^{(T)}$	37$^{(T)}$
Major Ions											
Calcium	mg/L	3.4	3.2	7.0$^{(B)}$	5.3$^{(B)}$	7.0$^{(B)}$	5.8$^{(B)}$	7.5$^{(B)}$	7.2$^{(B)}$	5.8$^{(B)}$	5.6$^{(B)}$
Magnesium	mg/L	1.0$^{(T, B)}$	0.96$^{(T)}$	2.2$^{(T, B)}$	1.6$^{(T, B)}$	2.2$^{(T, B)}$	1.8$^{(T, B)}$	2.3$^{(T, B)}$	2.2$^{(T, B)}$	1.8$^{(T, B)}$	1.7$^{(T, B)}$
Potassium	mg/L	0.98$^{(T, B)}$	0.71$^{(T, B)}$	3.1$^{(T, B)}$	2.1$^{(T, B)}$	3.1$^{(T, B)}$	2.3$^{(T, B)}$	4.6$^{(T, B)}$	4.2$^{(T, B)}$	3.7$^{(T, B)}$	3.5$^{(T, B)}$
Sodium	mg/L	1.1$^{(T, B)}$	0.78$^{(B)}$	4.5$^{(T, B)}$	3.2$^{(T, B)}$	4.5$^{(T, B)}$	3.2$^{(T, B)}$	2.4$^{(T, B)}$	2.3$^{(T, B)}$	1.3$^{(T, B)}$	1.2$^{(T, B)}$
Chloride	mg/L	4.2	4.0	9.9$^{(B)}$	7.1$^{(B)}$	9.7$^{(B)}$	7.9$^{(B)}$	6.1$^{(B)}$	5.9$^{(B)}$	3.6	3.6
Fluoride	mg/L	0.033	0.029	0.07$^{(B)}$	0.057$^{(B)}$	0.07$^{(B)}$	0.056$^{(B)}$	0.079$^{(B)}$	0.075$^{(B)}$	0.066$^{(B)}$	0.065$^{(B)}$
Sulphate	mg/L	3.7$^{(B)}$	2.7	12$^{(B)}$	8.2$^{(B)}$	12$^{(B)}$	9.1$^{(B)}$	15$^{(B)}$	14$^{(B)}$	12$^{(B)}$	11$^{(B)}$
Nutrients and Biological Indicators											
Nitrate	mg-N/L	0.045$^{(B)}$	0.021$^{(B)}$	0.72$^{(B)}$	0.42$^{(B)}$	0.71$^{(B)}$	0.47$^{(B)}$	0.23$^{(B)}$	0.19$^{(B)}$	0.0038	0.0038
Total ammonia	mg-N/L	0.00029	0.00015	0.017	0.0092	0.017	0.012	0.0058	0.0048	0.00027	0.00026
Total Metals											
Aluminum	mg/L	**0.16**$^{(C, D, T, E, B)}$	8.10E-02$^{(T, E, B)}$	**0.18**$^{(C, D, T, E, B)}$	**0.15**$^{(C, D, T, E, B)}$	**0.11**$^{(C, D, T, E, B)}$	7.50E-02$^{(T, E, B)}$	**0.16**$^{(C, D, T, E, B)}$	**0.13**$^{(C, D, T, E, B)}$	**0.25**$^{(C, D, T, E, B)}$	**0.25**$^{(C, D, T, E, B)}$
Antimony	mg/L	0.00026$^{(B)}$	0.00016$^{(B)}$	0.0018$^{(B)}$	9.40E-04$^{(B)}$	0.0018$^{(B)}$	1.30E-03$^{(B)}$	0.0012$^{(B)}$	1.20E-03$^{(B)}$	0.00071$^{(B)}$	6.70E-04$^{(B)}$
Arsenic	mg/L	0.0032$^{(T, B)}$	0.0017$^{(B)}$	0.025$^{(C, D, T, E, B)}$	1.50E-02$^{(C, D, T, E, B)}$	0.024$^{(C, D, T, E, B)}$	1.70E-02$^{(C, D, T, E, B)}$	0.012$^{(C, D, T, E, B)}$	1.10E-02$^{(C, D, T, E, B)}$	0.0077$^{(C, T, E, B)}$	0.0076$^{(C, T, E, B)}$
Barium	mg/L	0.0075$^{(B)}$	0.0066	0.015$^{(B)}$	1.10E-02$^{(B)}$	0.014$^{(B)}$	1.20E-02$^{(B)}$	0.013$^{(B)}$	1.30E-02$^{(B)}$	0.011$^{(B)}$	0.011$^{(B)}$
Beryllium	mg/L	0.000024	0.000021	0.00003	0.000028	0.000028	0.000026	0.000026	0.000025	0.000027	0.000027
Bismuth	mg/L	0.000054	0.000051	0.000056	0.000054	0.000055	0.000054	0.000054	0.000055	0.000053	0.000052
Boron	mg/L	0.029$^{(B)}$	1.70E-02$^{(B)}$	0.081$^{(B)}$	6.20E-02$^{(B)}$	0.079$^{(B)}$	5.50E-02$^{(B)}$	0.035$^{(B)}$	3.30E-02$^{(B)}$	0.015$^{(B)}$	1.40E-02$^{(B)}$
Cadmium	mg/L	0.0000068	0.0000058	0.000014$^{(B)}$	1.20E-05$^{(B)}$	0.000014$^{(B)}$	1.10E-05$^{(B)}$	0.000011$^{(B)}$	1.10E-05$^{(B)}$	0.0000093	0.0000092
Chromium	mg/L	0.0035$^{(T, E, B)}$	1.90E-03$^{(T, E, B)}$	0.0043$^{(T, E, B)}$	3.90E-03$^{(T, E, B)}$	0.0032$^{(T, E, B)}$	2.20E-03$^{(T, E, B)}$	0.0045$^{(T, E, B)}$	3.70E-03$^{(T, E, B)}$	0.007$^{(T, E, B)}$	7.00E-03$^{(T, E, B)}$
Cobalt	mg/L	0.00037$^{(B)}$	0.00023$^{(B)}$	0.00079$^{(B)}$	0.00065$^{(B)}$	0.00075$^{(B)}$	5.40E-04$^{(B)}$	0.00053$^{(B)}$	0.0005$^{(B)}$	0.00057$^{(B)}$	0.00056$^{(B)}$
Copper	mg/L	0.00088$^{(B)}$	6.80E-04$^{(B)}$	0.0016$^{(T, B)}$	1.40E-03$^{(T, B)}$	0.0015$^{(T, B)}$	1.10E-03$^{(B)}$	0.0011$^{(B)}$	1.10E-03$^{(B)}$	0.001$^{(B)}$	1.10E-03$^{(B)}$
Iron	mg/L	**0.32**$^{(C, T, E, B)}$	0.17$^{(T, B)}$	**0.4**$^{(C, T, E, B)}$	**0.35**$^{(C, T, E, B)}$	0.29$^{(T, B)}$	0.2$^{(T, B)}$	**0.39**$^{(C, T, E, B)}$	**0.32**$^{(C, T, E, B)}$	**0.6**$^{(C, T, E, B)}$	**0.6**$^{(C, T, E, B)}$
Lead	mg/L	0.00017	0.00011	0.00038$^{(B)}$	3.10E-04$^{(B)}$	0.00035$^{(B)}$	2.70E-04$^{(B)}$	0.00022$^{(B)}$	2.30E-04$^{(B)}$	0.00019	0.00019
Lithium	mg/L	0.0013$^{(B)}$	1.10E-03$^{(B)}$	0.0021$^{(B)}$	1.70E-03$^{(B)}$	0.0021$^{(B)}$	1.90E-03$^{(B)}$	0.0024$^{(B)}$	0.0023$^{(B)}$	0.0021$^{(B)}$	0.0021$^{(B)}$
Manganese	mg/L	0.019$^{(B)}$	9.60E-03$^{(B)}$	0.11$^{(B)}$	7.60E-02$^{(B)}$	0.11$^{(B)}$	7.60E-02$^{(B)}$	0.044$^{(B)}$	4.20E-02$^{(B)}$	0.016$^{(B)}$	1.60E-02$^{(B)}$
Mercury	mg/L	0.0000062	0.0000054	0.0000086	0.0000078	0.0000083	0.0000073	0.000008	0.0000079	0.000007	0.0000069
Molybdenum	mg/L	0.00031$^{(B)}$	1.50E-04$^{(B)}$	0.0015$^{(B)}$	9.70E-04$^{(B)}$	0.0015$^{(B)}$	1.00E-03$^{(B)}$	0.0019$^{(B)}$	1.80E-03$^{(B)}$	0.0014$^{(B)}$	1.40E-03$^{(B)}$
Nickel	mg/L	0.0032$^{(B)}$	1.90E-03$^{(B)}$	0.0074$^{(B)}$	6.00E-03$^{(B)}$	0.0074$^{(B)}$	5.20E-03$^{(B)}$	0.0045$^{(B)}$	0.0044$^{(B)}$	0.0047$^{(B)}$	4.60E-03$^{(B)}$
Selenium	mg/L	0.00012$^{(B)}$	0.000075	0.00034$^{(B)}$	2.70E-04$^{(B)}$	0.00034$^{(B)}$	2.50E-04$^{(B)}$	0.00036$^{(B)}$	3.40E-04$^{(B)}$	0.00028$^{(B)}$	2.60E-04$^{(B)}$
Silver	mg/L	0.000015$^{(B)}$	1.20E-05$^{(B)}$	0.000023$^{(B)}$	0.00002$^{(B)}$	0.000022$^{(B)}$	1.90E-05$^{(B)}$	0.000015$^{(B)}$	1.60E-05$^{(B)}$	0.000013$^{(B)}$	1.40E-05$^{(B)}$
Strontium	mg/L	0.021	0.02	0.043$^{(T, B)}$	3.40E-02$^{(T, B)}$	0.043$^{(T, B)}$	0.036$^{(T, B)}$	0.046$^{(T, B)}$	4.50E-02$^{(T, B)}$	0.036$^{(T, B)}$	3.60E-02$^{(T, B)}$
Thallium	mg/L	0.000019$^{(B)}$	1.40E-05$^{(B)}$	0.00003$^{(B)}$	2.70E-05$^{(B)}$	0.00003$^{(B)}$	2.40E-05$^{(B)}$	0.000023$^{(B)}$	2.30E-05$^{(B)}$	0.000019$^{(B)}$	1.80E-05$^{(B)}$
Tin	mg/L	0.00011$^{(B)}$	0.0001$^{(B)}$	0.00014$^{(B)}$	1.30E-04$^{(B)}$	0.00014$^{(B)}$	1.20E-04$^{(B)}$	0.00016$^{(B)}$	0.00015$^{(B)}$	0.00014$^{(B)}$	1.40E-04$^{(B)}$
Uranium	mg/L	0.000055$^{(B)}$	3.60E-05$^{(B)}$	0.00054$^{(B)}$	3.10E-04$^{(B)}$	0.00054$^{(B)}$	3.70E-04$^{(B)}$	0.0015$^{(B)}$	1.30E-03$^{(B)}$	0.0013$^{(B)}$	1.30E-03$^{(B)}$
Vanadium	mg/L	0.00088	0.00069	0.0015$^{(B)}$	1.30E-03$^{(B)}$	0.0013$^{(B)}$	1.00E-03$^{(B)}$	0.0014$^{(B)}$	1.40E-03$^{(B)}$	0.0015$^{(B)}$	1.40E-03$^{(B)}$
Zinc	mg/L	0.003	0.0028	0.0038$^{(B)}$	0.0034$^{(B)}$	0.0038$^{(B)}$	3.70E-03$^{(B)}$	0.0033$^{(B)}$	0.0033$^{(B)}$	0.0025	0.0024
Dissolved Metals											
Aluminum	mg/L	0.039$^{(T, B)}$	0.015$^{(B)}$	0.043$^{(T, B)}$	3.20E-02$^{(T, B)}$	0.016$^{(B)}$	1.20E-02$^{(B)}$	0.0066	0.0055	0.00097	0.00097
Antimony	mg/L	0.0002$^{(B)}$	1.00E-04$^{(B)}$	0.0017$^{(B)}$	0.00088$^{(B)}$	0.0017$^{(B)}$	1.10E-03$^{(B)}$	0.0012$^{(B)}$	1.20E-03$^{(B)}$	0.00064$^{(B)}$	6.10E-04$^{(B)}$
Arsenic	mg/L	0.0014$^{(B)}$	7.10E-04$^{(B)}$	0.023$^{(C, D, T, E, B)}$	1.20E-02$^{(C, D, T, E, B)}$	0.023$^{(C, D, T, E, B)}$	1.60E-02$^{(C, D, T, E, B)}$	0.0098$^{(C, T, E, B)}$	9.60E-03$^{(C, T, E, B)}$	0.0038$^{(T, B)}$	0.0037$^{(T, B)}$
Barium	mg/L	0.0064	0.006	0.014$^{(B)}$	1.10E-02$^{(B)}$	0.014$^{(B)}$	1.20E-02$^{(B)}$	0.012$^{(B)}$	0.012$^{(B)}$	0.009$^{(B)}$	8.70E-03$^{(B)}$
Beryllium	mg/L	0.000012	0.00001	0.000017	0.000015	0.000017	0.000014	0.000013	0.000013	0.000011	0.000012
Bismuth	mg/L	0.000027	0.000026	0.000031	0.00003	0.000031	0.000029	0.000028	0.000029	0.000026	0.000027
Boron	mg/L	0.023$^{(B)}$	1.10E-02$^{(B)}$	0.076$^{(B)}$	5.80E-02$^{(B)}$	0.074$^{(B)}$	5.00E-02$^{(B)}$	0.03$^{(B)}$	2.90E-02$^{(B)}$	0.0096	0.0094
Cadmium	mg/L	0.0000037	0.000003	0.000011$^{(B)}$	0.0000083	0.000011$^{(B)}$	0.0000084	0.0000082	0.000008	0.0000057	0.0000054
Chromium	mg/L	0.00023$^{(B)}$	0.00011$^{(B)}$	0.00072$^{(T, B)}$	5.50E-04$^{(B)}$	0.00065$^{(T, B)}$	4.50E-04$^{(B)}$	0.00026$^{(B)}$	0.00023$^{(B)}$	0.000081	0.00008
Cobalt	mg/L	0.00013$^{(B)}$	0.000081	0.00056$^{(B)}$	4.00E-04$^{(B)}$	0.00056$^{(B)}$	4.00E-04$^{(B)}$	0.00026$^{(B)}$	2.60E-04$^{(B)}$	0.00011$^{(B)}$	0.00011$^{(B)}$
Copper	mg/L	0.00061$^{(B)}$	0.00048	0.0013$^{(T, B)}$	1.00E-03$^{(B)}$	0.0013$^{(T, B)}$	1.00E-03$^{(B)}$	0.00082$^{(B)}$	8.10E-04$^{(B)}$	0.00062$^{(B)}$	6.20E-04$^{(B)}$
Iron	mg/L	0.04$^{(B)}$	0.018$^{(B)}$	0.081$^{(B)}$	6.90E-02$^{(B)}$	0.07$^{(B)}$	4.70E-02$^{(B)}$	0.03$^{(B)}$	2.80E-02$^{(B)}$	0.018$^{(B)}$	0.018$^{(B)}$
Lead	mg/L	0.000097	0.000061	0.0003$^{(B)}$	0.00023	0.00029$^{(B)}$	0.0002	0.00015	0.00016	0.000083	0.000081
Lithium	mg/L	0.00083	0.00076	0.0017$^{(B)}$	1.30E-03$^{(B)}$	0.0017$^{(B)}$	1.30E-03$^{(B)}$	0.0019$^{(B)}$	1.80E-03$^{(B)}$	0.0015$^{(B)}$	1.50E-03$^{(B)}$
Manganese	mg/L	0.014$^{(B)}$	0.0062$^{(B)}$	0.11$^{(B)}$	7.10E-02$^{(B)}$	0.11$^{(B)}$	7.30E-02$^{(B)}$	0.04$^{(B)}$	0.036$^{(B)}$	0.0058$^{(B)}$	5.60E-03$^{(B)}$
Mercury	mg/L	0.000004	0.0000033	0.0000065	0.0000056	0.0000062	0.0000052	0.0000058	0.0000057	0.0000047	0.0000045
Molybdenum	mg/L	0.00028$^{(B)}$	1.10E-04$^{(B)}$	0.0015$^{(B)}$	0.00094$^{(B)}$	0.0015$^{(B)}$	1.00E-03$^{(B)}$	0.0018$^{(B)}$	1.60E-03$^{(B)}$	0.0014$^{(B)}$	0.0013$^{(B)}$
Nickel	mg/L	0.0015$^{(B)}$	1.00E-03$^{(B)}$	0.006$^{(B)}$	4.20E-03$^{(B)}$	0.006$^{(B)}$	4.30E-03$^{(B)}$	0.0028$^{(B)}$	2.60E-03$^{(B)}$	0.0011$^{(B)}$	1.10E-03$^{(B)}$
Selenium	mg/L	0.000097	0.000049	0.00032$^{(B)}$	2.30E-04$^{(B)}$	0.00032$^{(B)}$	2.30E-04$^{(B)}$	0.00033$^{(B)}$	0.00032$^{(B)}$	0.00025$^{(B)}$	0.00024$^{(B)}$
Silver	mg/L	0.000009	0.0000063	0.000017$^{(B)}$	1.40E-05$^{(B)}$	0.000017$^{(B)}$	1.20E-05$^{(B)}$	0.0000095	0.0000092	0.000006	0.0000059
Strontium	mg/L	0.02	0.02	0.042$^{(T, B)}$	3.20E-02$^{(T, B)}$	0.042$^{(T, B)}$	3.60E-02$^{(T, B)}$	0.045$^{(T, B)}$	4.30E-02$^{(T, B)}$	0.035$^{(T, B)}$	3.50E-02$^{(T, B)}$
Thallium	mg/L	0.000012$^{(B)}$	0.0000075	0.000024$^{(B)}$	2.00E-05$^{(B)}$	0.000024$^{(B)}$	1.80E-05$^{(B)}$	0.000016$^{(B)}$	1.60E-05$^{(B)}$	0.00001$^{(B)}$	1.00E-05$^{(B)}$
Tin	mg/L	0.00006	0.000053	0.000091	0.000079	0.000091	0.00008	0.00011$^{(B)}$	1.10E-04$^{(B)}$	0.000093	0.000091
Uranium	mg/L	0.000047$^{(B)}$	0.000031$^{(B)}$	0.00053$^{(B)}$	0.00031$^{(B)}$	0.00053$^{(B)}$	0.00037$^{(B)}$	0.0015$^{(B)}$	0.0013$^{(B)}$	0.0013$^{(B)}$	0.0012$^{(B)}$
Vanadium	mg/L	0.00034	0.00027	0.00099	0.00075	0.00085	0.00066	0.00079	0.00077	0.00062	0.00059
Zinc	mg/L	0.00087	0.00067	0.0017$^{(B)}$	0.0015$^{(B)}$	0.0017$^{(B)}$	0.0014$^{(B)}$	0.0013	0.0013	0.001	0.001

Notes:

Bolded concentrations are higher than relevant water quality guidelines.

$^{(A)}$ = concentration higher than the relevant acute aquatic life guideline or beyond the recommended pH or DO concentration range.

$^{(C)}$ = concentration higher than the relevant chronic aquatic life guideline or beyond the recommended pH, DO or total alkalinity concentration range.

$^{(D)}$ = concentration higher than the relevant drinking water guideline or beyond the recommended pH or DO concentration range.

$^{(T)}$ = concentration higher than the relevant meadowbank trigger or beyond the recommended pH or DO concentration range.

$^{(E)}$ = concentration higher than the relevant meadowbank threshold or beyond the recommended pH or DO concentration range.

$^{(B)}$ = concentration higher than the relevant mammoth (baseline maximum) or beyond the recommended pH or DO concentration range.

Water quality data and guidelines shown in this table were rounded to reflect laboratory or field instrument precision *after* comparisons to guidelines. Therefore, values slightly above guidelines may be displayed as being equal to the guidelines and identified as exceedances. Measured concentrations equal to the guideline values were not identified as exceedances.

CCME = Canadian Council of Ministers of the Environment; SSWQO = Site Specific Water Quality Objectives; $CaCO_3$ = calcium carbonate; mg/L = milligrams per litre; - = no guideline or data; mg-N/L = milligrams of nitrogen per litre; mg-P/L = milligrams of phosphorus per litre.

Table 8: Updated Predicted Treated Water Quality for Lake A15

Parameter	Unit	Guidelines for the protection of:						
		Aquatic Life (CCME)		Drinking Water (D)	Meadowbank Trigger (T)	Meadowbank Threshold (E)	A15-A14,A14-A13 (Baseline Maximum) (B)	SSWQO
		Acute (A)	Chronic (C)					
Conventional Parameters								
Hardness, as $CaCO_3$	mg/L	-	-	-	-	-	10	-
Total dissolved solids	mg/L	-	-	-	18	-	18	-
Major Ions								
Calcium	mg/L	-	-	-	-	-	2.5	-
Magnesium	mg/L	-	-	-	0.83	-	0.89	-
Potassium	mg/L	-	-	-	0.5	-	0.58	-
Sodium	mg/L	-	-	-	0.98	-	0.68	-
Chloride	mg/L	640	120	-	60	120	2.1	-
Fluoride	mg/L	-	0.12	1.5	-	-	0.025	-
Sulphate	mg/L	-	-	-	65	128	3.3	-
Nutrients and Biological Indicators								
Nitrate	mg-N/L	124	2.9	10	1.5	3	0.014	-
Total ammonia	mg-N/L	-	4.8	-	0.065	0.13	0.0073	-
Total Metals								
Aluminum	mg/L	-	0.1	0.1	0.026	0.05	0.0086	-
Antimony	mg/L	-	-	0.006	0.01	0.02	0.0001	-
Arsenic	mg/L	-	0.005	0.01	0.0026	0.005	0.00035	0.028
Barium	mg/L	-	-	1	0.5	1	0.0049	-
Beryllium	mg/L	-	-	-	0.0027	0.0053	0.00002	-
Bismuth	mg/L	-	-	-	-	-	0.00005	-
Boron	mg/L	29	1.5	5	0.76	1.5	0.01	-
Cadmium	mg/L	0.00034	0.00004	0.005	0.000025	0.00004	0.000011	-
Chromium	mg/L	-	0.001	0.05	0.00056	0.001	0.00015	-
Cobalt	mg/L	-	-	-	-	-	0.0001	-
Copper	mg/L	-	0.002	-	0.0012	0.002	0.00063	-
Iron	mg/L	-	0.3	-	0.16	0.3	0.022	-
Lead	mg/L	-	0.001	0.01	0.00053	0.001	0.00026	-
Lithium	mg/L	-	-	-	0.048	0.096	0.001	-
Manganese	mg/L	-	-	-	0.32	0.68	0.00081	-
Mercury	mg/L	-	0.000026	0.001	0.000018	0.000026	0.000005	-
Molybdenum	mg/L	-	0.073	-	0.037	0.073	0.00005	-
Nickel	mg/L	-	0.025	-	0.013	0.025	0.00072	-
Selenium	mg/L	-	0.001	0.05	0.00055	0.001	0.00005	-
Silver	mg/L	-	0.00025	-	-	-	0.00001	-
Strontium	mg/L	-	-	-	0.028	0.049	0.012	-
Thallium	mg/L	-	0.0008	-	0.00041	0.0008	0.00001	-
Tin	mg/L	-	-	-	0.0002	-	0.0001	-
Uranium	mg/L	0.033	0.015	0.02	0.0075	0.015	0.000028	-
Vanadium	mg/L	-	-	-	0.0035	0.006	0.0005	-
Zinc	mg/L	-	0.03	-	0.0063	0.024	0.003	-
Dissolved Metals								
Aluminum	mg/L	-	0.1	0.1	0.026	0.05	0.0032	-
Antimony	mg/L	-	-	0.006	0.01	0.02	0.0001	-
Arsenic	mg/L	-	0.005	0.01	0.0026	0.005	0.00032	-
Barium	mg/L	-	-	1	0.5	1	0.0061	-
Beryllium	mg/L	-	-	-	0.0027	0.0053	0.00002	-
Bismuth	mg/L	-	-	-	-	-	0.00005	-
Boron	mg/L	29	1.5	5	0.76	1.5	0.01	-
Cadmium	mg/L	0.00034	0.00004	0.005	0.000025	0.00004	0.000005	-
Chromium	mg/L	-	0.001	0.05	0.00056	0.001	0.0001	-
Cobalt	mg/L	-	-	-	-	-	0.0001	-
Copper	mg/L	-	0.002	-	0.0012	0.002	0.0008	-
Iron	mg/L	-	0.3	-	0.16	0.3	0.01	-
Lead	mg/L	-	0.001	0.01	0.00053	0.001	0.00005	-
Lithium	mg/L	-	-	-	0.048	0.096	0.001	-
Manganese	mg/L	-	-	-	0.32	0.68	0.00059	-
Mercury	mg/L	-	0.000026	0.001	0.000018	0.000026	0.000005	-
Molybdenum	mg/L	-	0.073	-	0.037	0.073	0.00005	-
Nickel	mg/L	-	0.025	-	0.013	0.025	0.00065	-
Selenium	mg/L	-	0.001	0.05	0.00055	0.001	0.00005	-
Silver	mg/L	-	0.00025	-	-	-	0.00001	-
Strontium	mg/L	-	-	-	0.028	0.049	0.011	-
Thallium	mg/L	-	0.0008	-	0.00041	0.0008	0.00001	-
Tin	mg/L	-	-	-	0.0002	-	0.00012	-
Uranium	mg/L	0.033	0.015	0.02	0.0075	0.015	0.000023	-
Vanadium	mg/L	-	-	-	0.0035	0.006	0.0005	-
Zinc	mg/L	-	0.03	-	0.0063	0.024	0.0012	-

Table 8: Updated Predicted Treated Water Quality for Lake A15

Parameter	Unit	Predicted Water Quality for Lake A15									
		Construction		Operations		Closure		First Year Post-Closure		Post-Closure (Long Term)	
		Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average
Conventional Parameters											
Hardness, as $CaCO_3$	mg/L	11$^{(B)}$	9.4	24$^{(B)}$	17$^{(B)}$	24$^{(B)}$	20$^{(B)}$	26$^{(B)}$	24$^{(B)}$	20$^{(B)}$	20$^{(B)}$
Total dissolved solids	mg/L	18$^{(B)}$	15	49$^{(T, B)}$	33$^{(T, B)}$	49$^{(T, B)}$	40$^{(T, B)}$	48$^{(T, B)}$	44$^{(T, B)}$	35$^{(T, B)}$	34$^{(T, B)}$
Major Ions											
Calcium	mg/L	3.0$^{(B)}$	2.5	6.3$^{(B)}$	4.5$^{(B)}$	6.3$^{(B)}$	5.3$^{(B)}$	7.0$^{(B)}$	6.3$^{(B)}$	5.3$^{(B)}$	5.2$^{(B)}$
Magnesium	mg/L	0.92$^{(T, B)}$	0.79	2.0$^{(T, B)}$	1.4$^{(T, B)}$	2.0$^{(T, B)}$	1.7$^{(T, B)}$	2.1$^{(T, B)}$	1.9$^{(T, B)}$	1.6$^{(T, B)}$	1.6$^{(T, B)}$
Potassium	mg/L	0.69$^{(T, B)}$	0.56$^{(T)}$	2.5$^{(T, B)}$	1.6$^{(T, B)}$	2.5$^{(T, B)}$	2.1$^{(T, B)}$	4.2$^{(T, B)}$	3.4$^{(T, B)}$	3.2$^{(T, B)}$	3.1$^{(T, B)}$
Sodium	mg/L	0.8$^{(B)}$	0.69$^{(B)}$	4.0$^{(T, B)}$	2.5$^{(T, B)}$	4.0$^{(T, B)}$	3.0$^{(T, B)}$	2.3$^{(T, B)}$	2.2$^{(T, B)}$	1.2$^{(T, B)}$	1.2$^{(T, B)}$
Chloride	mg/L	3.6$^{(B)}$	2.6$^{(B)}$	8.9$^{(B)}$	5.9$^{(B)}$	8.9$^{(B)}$	7.1$^{(B)}$	6.0$^{(B)}$	5.8$^{(B)}$	3.4$^{(B)}$	3.4$^{(B)}$
Fluoride	mg/L	0.029$^{(B)}$	2.70E-02$^{(B)}$	0.064$^{(B)}$	4.90E-02$^{(B)}$	0.064$^{(B)}$	5.30E-02$^{(B)}$	0.075$^{(B)}$	6.50E-02$^{(B)}$	0.061$^{(B)}$	0.06$^{(B)}$
Sulphate	mg/L	2.6	2.3	10$^{(B)}$	6.4$^{(B)}$	10$^{(B)}$	8.3$^{(B)}$	14$^{(B)}$	12$^{(B)}$	11$^{(B)}$	10$^{(B)}$
Nutrients and Biological Indicators											
Nitrate	mg-N/L	0.028$^{(B)}$	0.017$^{(B)}$	0.61$^{(B)}$	0.31$^{(B)}$	0.61$^{(B)}$	0.43$^{(B)}$	0.25$^{(B)}$	0.21$^{(B)}$	0.0041	0.0041
Total ammonia	mg-N/L	0.00012	0.000074	0.014$^{(B)}$	0.0067	0.014$^{(B)}$	1.10E-02$^{(B)}$	0.006	0.0053	0.00025	0.00026
Total Metals											
Aluminum	mg/L	**0.11$^{(C, D, T, E, B)}$**	6.00E-02$^{(T, E, B)}$	**0.15$^{(C, D, T, E, B)}$**	**0.14$^{(C, D, T, E, B)}$**	**0.11$^{(C, D, T, E, B)}$**	7.10E-02$^{(T, E, B)}$	**0.14$^{(C, D, T, E, B)}$**	**0.1$^{(C, D, T, E, B)}$**	**0.23$^{(C, D, T, E, B)}$**	**0.23$^{(C, D, T, E, B)}$**
Antimony	mg/L	0.00016$^{(B)}$	1.20E-04$^{(B)}$	0.0013$^{(B)}$	6.60E-04$^{(B)}$	0.0014$^{(B)}$	1.10E-03$^{(B)}$	0.0011$^{(B)}$	0.001$^{(B)}$	0.00063$^{(B)}$	6.20E-04$^{(B)}$
Arsenic	mg/L	0.0022$^{(B)}$	1.10E-03$^{(B)}$	0.021$^{(C, D, T, E, B)}$	1.00E-02$^{(C, D, T, E, B)}$	0.021$^{(C, D, T, E, B)}$	1.40E-02$^{(C, D, T, E, B)}$	0.011$^{(C, D, T, E, B)}$	1.10E-02$^{(C, D, T, E, B)}$	0.0071$^{(C, T, E, B)}$	0.007$^{(C, T, E, B)}$
Barium	mg/L	0.0066$^{(B)}$	5.40E-03$^{(B)}$	0.013$^{(B)}$	1.10E-02$^{(B)}$	0.013$^{(B)}$	1.00E-02$^{(B)}$	0.013$^{(B)}$	1.10E-02$^{(B)}$	0.011$^{(B)}$	0.01$^{(B)}$
Beryllium	mg/L	0.000023$^{(B)}$	0.000021$^{(B)}$	0.000028$^{(B)}$	2.70E-05$^{(B)}$	0.000027$^{(B)}$	2.50E-05$^{(B)}$	0.000026$^{(B)}$	2.50E-05$^{(B)}$	0.000026$^{(B)}$	2.70E-05$^{(B)}$
Bismuth	mg/L	0.000052$^{(B)}$	0.000051$^{(B)}$	0.000056$^{(B)}$	5.40E-05$^{(B)}$	0.000055$^{(B)}$	5.50E-05$^{(B)}$	0.000055$^{(B)}$	5.40E-05$^{(B)}$	0.000053$^{(B)}$	0.000053$^{(B)}$
Boron	mg/L	0.017$^{(B)}$	0.012$^{(B)}$	0.069$^{(B)}$	4.90E-02$^{(B)}$	0.069$^{(B)}$	5.10E-02$^{(B)}$	0.036$^{(B)}$	3.30E-02$^{(B)}$	0.014$^{(B)}$	1.30E-02$^{(B)}$
Cadmium	mg/L	0.0000061	0.0000059	0.000013$^{(B)}$	0.0000098	0.000013$^{(B)}$	1.00E-05$^{(B)}$	0.000011$^{(B)}$	0.00001	0.0000089	0.0000088
Chromium	mg/L	0.0028$^{(T, E, B)}$	1.50E-03$^{(T, E, B)}$	0.0038$^{(T, E, B)}$	3.40E-03$^{(T, E, B)}$	0.003$^{(T, E, B)}$	1.90E-03$^{(T, E, B)}$	0.0039$^{(T, E, B)}$	2.90E-03$^{(T, E, B)}$	0.0066$^{(T, E, B)}$	6.70E-03$^{(T, E, B)}$
Cobalt	mg/L	0.00029$^{(B)}$	1.90E-04$^{(B)}$	0.00068$^{(B)}$	5.30E-04$^{(B)}$	0.00067$^{(B)}$	4.90E-04$^{(B)}$	0.00049$^{(B)}$	4.60E-04$^{(B)}$	0.00054$^{(B)}$	0.00053$^{(B)}$
Copper	mg/L	0.00073$^{(B)}$	0.00061	0.0014$^{(T, B)}$	1.10E-03$^{(B)}$	0.0014$^{(T, B)}$	1.10E-03$^{(B)}$	0.001$^{(B)}$	1.00E-03$^{(B)}$	0.001$^{(B)}$	1.00E-03$^{(B)}$
Iron	mg/L	0.25$^{(T, B)}$	0.14$^{(B)}$	**0.35$^{(C, T, E, B)}$**	**0.31$^{(C, T, E, B)}$**	0.27$^{(T, B)}$	0.19$^{(T, B)}$	**0.34$^{(C, T, E, B)}$**	0.26$^{(T, B)}$	**0.57$^{(C, T, E, B)}$**	**0.57$^{(C, T, E, B)}$**
Lead	mg/L	0.00012	0.0001	0.00032$^{(B)}$	0.00024	0.00032$^{(B)}$	0.00025	0.00021	0.0002	0.00018	0.00019
Lithium	mg/L	0.0012$^{(B)}$	1.10E-03$^{(B)}$	0.002$^{(B)}$	1.70E-03$^{(B)}$	0.002$^{(B)}$	1.70E-03$^{(B)}$	0.0023$^{(B)}$	2.00E-03$^{(B)}$	0.002$^{(B)}$	0.002$^{(B)}$
Manganese	mg/L	0.012$^{(B)}$	6.20E-03$^{(B)}$	0.095$^{(B)}$	0.056$^{(B)}$	0.095$^{(B)}$	6.80E-02$^{(B)}$	0.045$^{(B)}$	4.20E-02$^{(B)}$	0.014$^{(B)}$	1.50E-02$^{(B)}$
Mercury	mg/L	0.0000055$^{(B)}$	0.0000052$^{(B)}$	0.000008$^{(B)}$	7.00E-06$^{(B)}$	0.0000079$^{(B)}$	0.0000071$^{(B)}$	0.0000077$^{(B)}$	7.30E-06$^{(B)}$	0.0000067$^{(B)}$	0.0000067$^{(B)}$
Molybdenum	mg/L	0.00014$^{(B)}$	8.10E-05$^{(B)}$	0.0013$^{(B)}$	7.10E-04$^{(B)}$	0.0013$^{(B)}$	9.30E-04$^{(B)}$	0.0017$^{(B)}$	1.40E-03$^{(B)}$	0.0012$^{(B)}$	1.20E-03$^{(B)}$
Nickel	mg/L	0.0024$^{(B)}$	0.0015$^{(B)}$	0.0064$^{(B)}$	4.80E-03$^{(B)}$	0.0064$^{(B)}$	4.70E-03$^{(B)}$	0.0043$^{(B)}$	4.10E-03$^{(B)}$	0.0044$^{(B)}$	4.30E-03$^{(B)}$
Selenium	mg/L	0.000077$^{(B)}$	5.90E-05$^{(B)}$	0.0003$^{(B)}$	2.10E-04$^{(B)}$	0.0003$^{(B)}$	2.20E-04$^{(B)}$	0.00034$^{(B)}$	2.90E-04$^{(B)}$	0.00025$^{(B)}$	0.00024$^{(B)}$
Silver	mg/L	0.000012$^{(B)}$	0.000011$^{(B)}$	0.000021$^{(B)}$	1.70E-05$^{(B)}$	0.00002$^{(B)}$	1.80E-05$^{(B)}$	0.000015$^{(B)}$	1.60E-05$^{(B)}$	0.000013$^{(B)}$	0.000013$^{(B)}$
Strontium	mg/L	0.019$^{(B)}$	1.40E-02$^{(B)}$	0.039$^{(T, B)}$	2.80E-02$^{(T, B)}$	0.039$^{(T, B)}$	3.30E-02$^{(T, B)}$	0.043$^{(T, B)}$	3.90E-02$^{(T, B)}$	0.033$^{(T, B)}$	0.033$^{(T, B)}$
Thallium	mg/L	0.000014$^{(B)}$	1.10E-05$^{(B)}$	0.000027$^{(B)}$	2.20E-05$^{(B)}$	0.000027$^{(B)}$	2.20E-05$^{(B)}$	0.000021$^{(B)}$	2.00E-05$^{(B)}$	0.000018$^{(B)}$	0.000018$^{(B)}$
Tin	mg/L	0.00011$^{(B)}$	1.00E-04$^{(B)}$	0.00013$^{(B)}$	1.20E-04$^{(B)}$	0.00013$^{(B)}$	1.20E-04$^{(B)}$	0.00015$^{(B)}$	1.40E-04$^{(B)}$	0.00014$^{(B)}$	0.00014$^{(B)}$
Uranium	mg/L	0.000041$^{(B)}$	0.000034$^{(B)}$	0.00045$^{(B)}$	2.20E-04$^{(B)}$	0.00045$^{(B)}$	0.00033$^{(B)}$	0.0014$^{(B)}$	9.80E-04$^{(B)}$	0.0011$^{(B)}$	1.10E-03$^{(B)}$
Vanadium	mg/L	0.00077$^{(B)}$	6.40E-04$^{(B)}$	0.0014$^{(B)}$	1.20E-03$^{(B)}$	0.0012$^{(B)}$	1.00E-03$^{(B)}$	0.0013$^{(B)}$	1.20E-03$^{(B)}$	0.0014$^{(B)}$	1.40E-03$^{(B)}$
Zinc	mg/L	0.003	0.0029	0.0037$^{(B)}$	3.30E-03$^{(B)}$	0.0037$^{(B)}$	3.60E-03$^{(B)}$	0.0034$^{(B)}$	3.40E-03$^{(B)}$	0.0025	0.0025
Dissolved Metals											
Aluminum	mg/L	0.015$^{(B)}$	0.0066$^{(B)}$	0.036$^{(T, B)}$	2.80E-02$^{(T, B)}$	0.017$^{(B)}$	1.20E-02$^{(B)}$	0.0072$^{(B)}$	6.30E-03$^{(B)}$	0.0012	0.0011
Antimony	mg/L	0.0001$^{(B)}$	0.000066	0.0013$^{(B)}$	6.10E-04$^{(B)}$	0.0013$^{(B)}$	1.00E-03$^{(B)}$	0.001$^{(B)}$	9.90E-04$^{(B)}$	0.00057$^{(B)}$	0.00055$^{(B)}$
Arsenic	mg/L	0.00071$^{(B)}$	0.0004$^{(B)}$	0.019$^{(C, D, T, E, B)}$	0.0092$^{(C, T, E, B)}$	0.019$^{(C, D, T, E, B)}$	0.014$^{(C, D, T, E, B)}$	0.0093$^{(C, T, E, B)}$	0.0092$^{(C, T, E, B)}$	0.0034$^{(T, B)}$	0.0033$^{(T, B)}$
Barium	mg/L	0.0059	0.0056	0.012$^{(B)}$	9.30E-03$^{(B)}$	0.012$^{(B)}$	1.00E-02$^{(B)}$	0.011$^{(B)}$	0.011$^{(B)}$	0.0085$^{(B)}$	8.30E-03$^{(B)}$
Beryllium	mg/L	0.000011	0.00001	0.000016	0.000013	0.000016	0.000015	0.000013	0.000013	0.000011	0.000011
Bismuth	mg/L	0.000026	0.000025	0.00003	0.000028	0.00003	0.000029	0.000028	0.000028	0.000026	0.000027
Boron	mg/L	0.011$^{(B)}$	0.0071	0.064$^{(B)}$	0.043$^{(B)}$	0.064$^{(B)}$	4.70E-02$^{(B)}$	0.031$^{(B)}$	2.80E-02$^{(B)}$	0.009	0.0088
Cadmium	mg/L	0.0000031	0.000003	0.00001$^{(B)}$	6.70E-06$^{(B)}$	0.00001$^{(B)}$	8.10E-06$^{(B)}$	0.0000076$^{(B)}$	7.40E-06$^{(B)}$	0.0000053$^{(B)}$	5.10E-06$^{(B)}$
Chromium	mg/L	0.00011$^{(B)}$	0.000071	0.00061$^{(T, B)}$	4.30E-04$^{(B)}$	0.00058$^{(T, B)}$	4.20E-04$^{(B)}$	0.00027$^{(B)}$	2.50E-04$^{(B)}$	0.000079	0.000078
Cobalt	mg/L	0.000085	0.000064	0.00049$^{(B)}$	3.10E-04$^{(B)}$	0.00049$^{(B)}$	3.70E-04$^{(B)}$	0.00025$^{(B)}$	0.00025$^{(B)}$	0.00011$^{(B)}$	1.10E-04$^{(B)}$
Copper	mg/L	0.0006	0.00054	0.0012$^{(B)}$	9.20E-04$^{(B)}$	0.0012$^{(B)}$	9.80E-04$^{(B)}$	0.0008$^{(B)}$	0.00079	0.00061	0.0006
Iron	mg/L	0.02$^{(B)}$	1.20E-02$^{(B)}$	0.071$^{(B)}$	5.50E-02$^{(B)}$	0.064$^{(B)}$	4.50E-02$^{(B)}$	0.03$^{(B)}$	2.90E-02$^{(B)}$	0.017$^{(B)}$	1.70E-02$^{(B)}$
Lead	mg/L	0.000062$^{(B)}$	0.000048	0.00026$^{(B)}$	1.80E-04$^{(B)}$	0.00026$^{(B)}$	2.00E-04$^{(B)}$	0.00015$^{(B)}$	0.00015$^{(B)}$	0.000077$^{(B)}$	7.50E-05$^{(B)}$
Lithium	mg/L	0.00072	0.00061	0.0015$^{(B)}$	1.20E-03$^{(B)}$	0.0015$^{(B)}$	1.20E-03$^{(B)}$	0.0017$^{(B)}$	1.50E-03$^{(B)}$	0.0014$^{(B)}$	0.0013$^{(B)}$
Manganese	mg/L	0.0074$^{(B)}$	0.0035$^{(B)}$	0.091$^{(B)}$	0.051$^{(B)}$	0.091$^{(B)}$	6.60E-02$^{(B)}$	0.041$^{(B)}$	3.70E-02$^{(B)}$	0.0052$^{(B)}$	5.00E-03$^{(B)}$
Mercury	mg/L	0.0000033	0.0000029	0.0000059$^{(B)}$	0.0000049	0.0000057$^{(B)}$	0.000005	0.0000055$^{(B)}$	5.20E-06$^{(B)}$	0.0000044	0.0000044
Molybdenum	mg/L	0.00011$^{(B)}$	0.000053$^{(B)}$	0.0013$^{(B)}$	6.80E-04$^{(B)}$	0.0013$^{(B)}$	9.00E-04$^{(B)}$	0.0017$^{(B)}$	1.30E-03$^{(B)}$	0.0012$^{(B)}$	0.0012$^{(B)}$
Nickel	mg/L	0.001$^{(B)}$	6.90E-04$^{(B)}$	0.0051$^{(B)}$	3.20E-03$^{(B)}$	0.0051$^{(B)}$	3.90E-03$^{(B)}$	0.0028$^{(B)}$	0.0026$^{(B)}$	0.001$^{(B)}$	0.001$^{(B)}$
Selenium	mg/L	0.00005$^{(B)}$	0.000032	0.00027$^{(B)}$	1.70E-04$^{(B)}$	0.00027$^{(B)}$	2.00E-04$^{(B)}$	0.00031$^{(B)}$	2.60E-04$^{(B)}$	0.00022$^{(B)}$	2.20E-04$^{(B)}$
Silver	mg/L	0.0000064	0.0000054	0.000015$^{(B)}$	1.10E-05$^{(B)}$	0.000015$^{(B)}$	1.30E-05$^{(B)}$	0.0000096	0.0000093	0.0000059	0.0000058
Strontium	mg/L	0.018$^{(B)}$	0.014$^{(B)}$	0.038$^{(T, B)}$	2.80E-02$^{(B)}$	0.038$^{(T, B)}$	3.10E-02$^{(T, B)}$	0.042$^{(T, B)}$	3.90E-02$^{(T, B)}$	0.032$^{(T, B)}$	0.032$^{(T, B)}$
Thallium	mg/L	0.0000075	0.0000058	0.000021$^{(B)}$	1.50E-05$^{(B)}$	0.000021$^{(B)}$	1.70E-05$^{(B)}$	0.000014$^{(B)}$	0.000014$^{(B)}$	0.0000097	0.0000096
Tin	mg/L	0.00011	0.000083	0.000089	0.000078	0.000094	0.000089	0.0001	0.000095	0.000092	0.00009
Uranium	mg/L	0.000034$^{(B)}$	2.90E-05$^{(B)}$	0.00044$^{(B)}$	2.30E-04$^{(B)}$	0.00044$^{(B)}$	3.20E-04$^{(B)}$	0.0014$^{(B)}$	9.80E-04$^{(B)}$	0.0011$^{(B)}$	1.10E-03$^{(B)}$
Vanadium	mg/L	0.00028	0.00026	0.00087$^{(B)}$	6.10E-04$^{(B)}$	0.00079$^{(B)}$	6.20E-04$^{(B)}$	0.00074$^{(B)}$	6.80E-04$^{(B)}$	0.00057$^{(B)}$	5.60E-04$^{(B)}$
Zinc	mg/L	0.00071	0.00068	0.0016$^{(B)}$	0.0012$^{(B)}$	0.0016$^{(B)}$	0.0014$^{(B)}$	0.0012$^{(B)}$	0.0011	0.00099	0.00097

Notes:

Bolded concentrations are higher than relevant water quality guidelines.

$^{(A)}$ = concentration higher than the relevant acute aquatic life guideline or beyond the recommended pH or DO concentration range.

$^{(C)}$ = concentration higher than the relevant chronic aquatic life guideline or beyond the recommended pH, DO or total alkalinity concentration range.

$^{(D)}$ = concentration higher than the relevant drinking water guideline or beyond the recommended pH or DO concentration range.

$^{(T)}$ = concentration higher than the relevant meadowbank trigger or beyond the recommended pH or DO concentration range.

$^{(E)}$ = concentration higher than the relevant meadowbank threshold or beyond the recommended pH or DO concentration range.

$^{(B)}$ = concentration higher than the relevant a15-a14,a14-a13 (baseline maximum) or beyond the recommended pH or DO concentration range.

Water quality data and guidelines shown in this table were rounded to reflect laboratory or field instrument precision*after* comparisons to guidelines. Therefore, values slightly above guidelines may be displayed as being equal to the guidelines and identified as exceedances. Measured concentrations equal to the guideline values were not identified as exceedances.

CCME = Canadian Council of Ministers of the Environment; SSWQO = Site Specific Water Quality Objectives; $CaCO_3$ = calcium carbonate; mg/L = milligrams per litre; - = no guideline or data; mg-N/L = milligrams of nitrogen per litre; mg-P/L = milligrams of phosphorus per litre.

Table 9: Updated Predicted Treated Water Quality for Lake A12

Parameter	Unit	Guidelines for the protection of:						
		Aquatic Life (CCME)		Drinking Water (D)	Meadowbank Trigger (T)	Meadowbank Threshold (E)	A15-A14,A14-A13 (Baseline Maximum) (B)	SSWQO
		Acute (A)	Chronic (C)					
Conventional Parameters								
Hardness, as $CaCO_3$	mg/L	-	-	-	-	-	10	-
Total dissolved solids	mg/L	-	-	-	18	-	18	-
Major Ions								
Calcium	mg/L	-	-	-	-	-	2.5	-
Magnesium	mg/L	-	-	-	0.83	-	0.89	-
Potassium	mg/L	-	-	-	0.5	-	0.58	-
Sodium	mg/L	-	-	-	0.98	-	0.68	-
Chloride	mg/L	640	120	-	60	120	2.1	-
Fluoride	mg/L	-	0.12	1.5	-	-	0.025	-
Sulphate	mg/L	-	-	-	65	128	3.3	-
Nutrients and Biological Indicators								
Nitrate	mg-N/L	124	2.9	10	1.5	3	0.014	-
Total ammonia	mg-N/L	-	4.8	-	0.065	0.13	0.0073	-
Total Metals								
Aluminum	mg/L	-	0.1	0.1	0.026	0.05	0.0086	-
Antimony	mg/L	-	-	0.006	0.01	0.02	0.0001	-
Arsenic	mg/L	-	0.005	0.01	0.0026	0.005	0.00035	0.028
Barium	mg/L	-	-	1	0.5	1	0.0049	-
Beryllium	mg/L	-	-	-	0.0027	0.0053	0.00002	-
Bismuth	mg/L	-	-	-	-	-	0.00005	-
Boron	mg/L	29	1.5	5	0.76	1.5	0.01	-
Cadmium	mg/L	0.00034	0.00004	0.005	0.000025	0.00004	0.000011	-
Chromium	mg/L	-	0.001	0.05	0.00056	0.001	0.00015	-
Cobalt	mg/L	-	-	-	-	-	0.0001	-
Copper	mg/L	-	0.002	-	0.0012	0.002	0.00063	-
Iron	mg/L	-	0.3	-	0.16	0.3	0.022	-
Lead	mg/L	-	0.001	0.01	0.00053	0.001	0.00026	-
Lithium	mg/L	-	-	-	0.048	0.096	0.001	-
Manganese	mg/L	-	-	-	0.32	0.68	0.00081	-
Mercury	mg/L	-	0.000026	0.001	0.000018	0.000026	0.000005	-
Molybdenum	mg/L	-	0.073	-	0.037	0.073	0.00005	-
Nickel	mg/L	-	0.025	-	0.013	0.025	0.00072	-
Selenium	mg/L	-	0.001	0.05	0.00055	0.001	0.00005	-
Silver	mg/L	-	0.00025	-	-	-	0.00001	-
Strontium	mg/L	-	-	-	0.028	0.049	0.012	-
Thallium	mg/L	-	0.0008	-	0.00041	0.0008	0.00001	-
Tin	mg/L	-	-	-	0.0002	-	0.0001	-
Uranium	mg/L	0.033	0.015	0.02	0.0075	0.015	0.000028	-
Vanadium	mg/L	-	-	-	0.0035	0.006	0.0005	-
Zinc	mg/L	-	0.03	-	0.0063	0.024	0.003	-
Dissolved Metals								
Aluminum	mg/L	-	0.1	0.1	0.026	0.05	0.0032	-
Antimony	mg/L	-	-	0.006	0.01	0.02	0.0001	-
Arsenic	mg/L	-	0.005	0.01	0.0026	0.005	0.00032	-
Barium	mg/L	-	-	1	0.5	1	0.0061	-
Beryllium	mg/L	-	-	-	0.0027	0.0053	0.00002	-
Bismuth	mg/L	-	-	-	-	-	0.00005	-
Boron	mg/L	29	1.5	5	0.76	1.5	0.01	-
Cadmium	mg/L	0.00034	0.00004	0.005	0.000025	0.00004	0.000005	-
Chromium	mg/L	-	0.001	0.05	0.00056	0.001	0.0001	-
Cobalt	mg/L	-	-	-	-	-	0.0001	-
Copper	mg/L	-	0.002	-	0.0012	0.002	0.0008	-
Iron	mg/L	-	0.3	-	0.16	0.3	0.01	-
Lead	mg/L	-	0.001	0.01	0.00053	0.001	0.00005	-
Lithium	mg/L	-	-	-	0.048	0.096	0.001	-
Manganese	mg/L	-	-	-	0.32	0.68	0.00059	-
Mercury	mg/L	-	0.000026	0.001	0.000018	0.000026	0.000005	-
Molybdenum	mg/L	-	0.073	-	0.037	0.073	0.00005	-
Nickel	mg/L	-	0.025	-	0.013	0.025	0.00065	-
Selenium	mg/L	-	0.001	0.05	0.00055	0.001	0.00005	-
Silver	mg/L	-	0.00025	-	-	-	0.00001	-
Strontium	mg/L	-	-	-	0.028	0.049	0.011	-
Thallium	mg/L	-	0.0008	-	0.00041	0.0008	0.00001	-
Tin	mg/L	-	-	-	0.0002	-	0.00012	-
Uranium	mg/L	0.033	0.015	0.02	0.0075	0.015	0.000023	-
Vanadium	mg/L	-	-	-	0.0035	0.006	0.0005	-
Zinc	mg/L	-	0.03	-	0.0063	0.024	0.0012	-

Table 9: Updated Predicted Treated Water Quality for Lake A12

Parameter	Unit	Predicted Water Quality for Lake A12									
		Construction		Operations		Closure		First Year Post-Closure		Post-Closure (Long Term)	
		Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average
Conventional Parameters											
Hardness, as $CaCO_3$	mg/L	11$^{(B)}$	9.3	22$^{(B)}$	16$^{(B)}$	22$^{(B)}$	20$^{(B)}$	25$^{(B)}$	22$^{(B)}$	19$^{(B)}$	19$^{(B)}$
Total dissolved solids	mg/L	17	15	45$^{(T, B)}$	30$^{(T, B)}$	45$^{(T, B)}$	39$^{(T, B)}$	46$^{(T, B)}$	40$^{(T, B)}$	34$^{(T, B)}$	33$^{(T, B)}$
Major Ions											
Calcium	mg/L	2.9$^{(B)}$	2.4	5.8$^{(B)}$	4.1$^{(B)}$	5.8$^{(B)}$	5.2$^{(B)}$	6.6$^{(B)}$	5.7$^{(B)}$	5.1$^{(B)}$	5.0$^{(B)}$
Magnesium	mg/L	0.89$^{(T, B)}$	0.77	1.8$^{(T, B)}$	1.3$^{(T, B)}$	1.8$^{(T, B)}$	1.6$^{(T, B)}$	2.0$^{(T, B)}$	1.7$^{(T, B)}$	1.6$^{(T, B)}$	1.6$^{(T, B)}$
Potassium	mg/L	0.6$^{(T, B)}$	0.54$^{(T)}$	2.3$^{(T, B)}$	1.4$^{(T, B)}$	2.3$^{(T, B)}$	2.0$^{(T, B)}$	3.8$^{(T, B)}$	2.8$^{(T, B)}$	3.1$^{(T, B)}$	2.9$^{(T, B)}$
Sodium	mg/L	0.7$^{(B)}$	0.66	3.6$^{(T, B)}$	2.1$^{(T, B)}$	3.6$^{(T, B)}$	2.9$^{(T, B)}$	2.2$^{(T, B)}$	2.2$^{(T, B)}$	1.2$^{(T, B)}$	1.1$^{(T, B)}$
Chloride	mg/L	3.5$^{(B)}$	2.4$^{(B)}$	8.3$^{(B)}$	5.2$^{(B)}$	8.3$^{(B)}$	6.7$^{(B)}$	5.9$^{(B)}$	5.8$^{(B)}$	3.3$^{(B)}$	3.3$^{(B)}$
Fluoride	mg/L	0.028$^{(B)}$	2.70E-02$^{(B)}$	0.061$^{(B)}$	4.40E-02$^{(B)}$	0.061$^{(B)}$	0.053$^{(B)}$	0.07$^{(B)}$	5.90E-02$^{(B)}$	0.059$^{(B)}$	0.058$^{(B)}$
Sulphate	mg/L	2.4	2.2	9.2$^{(B)}$	5.5$^{(B)}$	9.3$^{(B)}$	8.0$^{(B)}$	13$^{(B)}$	10$^{(B)}$	10$^{(B)}$	9.6$^{(B)}$
Nutrients and Biological Indicators											
Nitrate	mg-N/L	0.024$^{(B)}$	1.50E-02$^{(B)}$	0.54$^{(B)}$	0.24$^{(B)}$	0.54$^{(B)}$	0.41$^{(B)}$	0.26$^{(B)}$	0.22$^{(B)}$	0.0043	0.0042
Total ammonia	mg-N/L	0.000067	0.000046	0.013$^{(B)}$	0.0051	0.013$^{(B)}$	9.50E-03$^{(B)}$	0.0061	0.0054	0.00024	0.00024
Total Metals											
Aluminum	mg/L	0.086$^{(T, E, B)}$	0.048$^{(T, B)}$	**0.14$^{(C, D, T, E, B)}$**	**0.12$^{(C, D, T, E, B)}$**	**0.11$^{(C, D, T, E, B)}$**	7.10E-02$^{(T, E, B)}$	**0.12$^{(C, D, T, E, B)}$**	0.085$^{(T, E, B)}$	**0.23$^{(C, D, T, E, B)}$**	**0.23$^{(C, D, T, E, B)}$**
Antimony	mg/L	0.00013$^{(B)}$	0.00011$^{(B)}$	0.0011$^{(B)}$	5.40E-04$^{(B)}$	0.0012$^{(B)}$	1.10E-03$^{(B)}$	0.001$^{(B)}$	9.50E-04$^{(B)}$	0.0006$^{(B)}$	5.70E-04$^{(B)}$
Arsenic	mg/L	0.0017$^{(B)}$	0.00095$^{(B)}$	0.018$^{(C, D, T, E, B)}$	8.60E-03$^{(C, T, E, B)}$	0.018$^{(C, D, T, E, B)}$	1.50E-02$^{(C, D, T, E, B)}$	0.01$^{(C, D, T, E, B)}$	1.00E-02$^{(C, D, T, E, B)}$	0.0068$^{(C, T, E, B)}$	6.60E-03$^{(C, T, E, B)}$
Barium	mg/L	0.0064$^{(B)}$	5.10E-03$^{(B)}$	0.012$^{(B)}$	9.20E-03$^{(B)}$	0.012$^{(B)}$	1.10E-02$^{(B)}$	0.012$^{(B)}$	1.00E-02$^{(B)}$	0.01$^{(B)}$	1.00E-02$^{(B)}$
Beryllium	mg/L	0.000023$^{(B)}$	2.10E-05$^{(B)}$	0.000028$^{(B)}$	2.50E-05$^{(B)}$	0.000028$^{(B)}$	2.70E-05$^{(B)}$	0.000025$^{(B)}$	0.000025$^{(B)}$	0.000027$^{(B)}$	2.60E-05$^{(B)}$
Bismuth	mg/L	0.000053$^{(B)}$	5.10E-05$^{(B)}$	0.000057$^{(B)}$	5.50E-05$^{(B)}$	0.000057$^{(B)}$	5.60E-05$^{(B)}$	0.000056$^{(B)}$	0.000055$^{(B)}$	0.000054$^{(B)}$	0.000054$^{(B)}$
Boron	mg/L	0.013$^{(B)}$	0.011$^{(B)}$	0.063$^{(B)}$	4.10E-02$^{(B)}$	0.063$^{(B)}$	5.00E-02$^{(B)}$	0.036$^{(B)}$	3.50E-02$^{(B)}$	0.014$^{(B)}$	0.014$^{(B)}$
Cadmium	mg/L	0.000006	0.0000058	0.000012$^{(B)}$	0.000009	0.000012$^{(B)}$	1.00E-05$^{(B)}$	0.00001	0.0000099	0.0000087	0.0000087
Chromium	mg/L	0.0022$^{(T, E, B)}$	1.20E-03$^{(T, E, B)}$	0.0035$^{(T, E, B)}$	0.0031$^{(T, E, B)}$	0.0029$^{(T, E, B)}$	1.90E-03$^{(T, E, B)}$	0.0034$^{(T, E, B)}$	2.30E-03$^{(T, E, B)}$	0.0064$^{(T, E, B)}$	6.30E-03$^{(T, E, B)}$
Cobalt	mg/L	0.00024$^{(B)}$	1.60E-04$^{(B)}$	0.00063$^{(B)}$	4.50E-04$^{(B)}$	0.00062$^{(B)}$	4.80E-04$^{(B)}$	0.00046$^{(B)}$	4.20E-04$^{(B)}$	0.00052$^{(B)}$	0.00052$^{(B)}$
Copper	mg/L	0.00069$^{(B)}$	0.0006	0.0014$^{(T, B)}$	1.00E-03$^{(B)}$	0.0013$^{(T, B)}$	1.20E-03$^{(B)}$	0.001$^{(B)}$	9.90E-04$^{(B)}$	0.001$^{(B)}$	0.00099$^{(B)}$
Iron	mg/L	0.2$^{(T, B)}$	0.12$^{(B)}$	**0.32$^{(C, T, E, B)}$**	0.28$^{(T, B)}$	0.27$^{(T, B)}$	0.19$^{(T, B)}$	0.3$^{(T, B)}$	0.21$^{(T, B)}$	**0.55$^{(C, T, E, B)}$**	**0.55$^{(C, T, E, B)}$**
Lead	mg/L	0.00011	0.000093	0.0003$^{(B)}$	0.00022	0.0003$^{(B)}$	0.00025	0.00021	0.0002	0.00018	0.00018
Lithium	mg/L	0.0012$^{(B)}$	0.0011$^{(B)}$	0.0019$^{(B)}$	0.0015$^{(B)}$	0.0019$^{(B)}$	1.70E-03$^{(B)}$	0.0021$^{(B)}$	1.90E-03$^{(B)}$	0.0019$^{(B)}$	0.0019$^{(B)}$
Manganese	mg/L	0.0085$^{(B)}$	4.90E-03$^{(B)}$	0.084$^{(B)}$	4.50E-02$^{(B)}$	0.084$^{(B)}$	6.50E-02$^{(B)}$	0.044$^{(B)}$	4.20E-02$^{(B)}$	0.014$^{(B)}$	0.014$^{(B)}$
Mercury	mg/L	0.0000054$^{(B)}$	0.0000051$^{(B)}$	0.0000078$^{(B)}$	6.90E-06$^{(B)}$	0.0000077$^{(B)}$	7.20E-06$^{(B)}$	0.0000075$^{(B)}$	7.10E-06$^{(B)}$	0.0000067$^{(B)}$	6.60E-06$^{(B)}$
Molybdenum	mg/L	0.000085$^{(B)}$	0.000064$^{(B)}$	0.0012$^{(B)}$	5.60E-04$^{(B)}$	0.0012$^{(B)}$	8.90E-04$^{(B)}$	0.0015$^{(B)}$	0.0011$^{(B)}$	0.0012$^{(B)}$	0.0011$^{(B)}$
Nickel	mg/L	0.002$^{(B)}$	1.30E-03$^{(B)}$	0.0058$^{(B)}$	4.00E-03$^{(B)}$	0.0058$^{(B)}$	0.0045$^{(B)}$	0.0041$^{(B)}$	3.70E-03$^{(B)}$	0.0043$^{(B)}$	0.0043$^{(B)}$
Selenium	mg/L	0.000061$^{(B)}$	5.50E-05$^{(B)}$	0.00027$^{(B)}$	1.70E-04$^{(B)}$	0.00027$^{(B)}$	2.20E-04$^{(B)}$	0.00031$^{(B)}$	2.40E-04$^{(B)}$	0.00024$^{(B)}$	0.00023$^{(B)}$
Silver	mg/L	0.000012$^{(B)}$	1.10E-05$^{(B)}$	0.00002$^{(B)}$	0.000017$^{(B)}$	0.00002$^{(B)}$	1.70E-05$^{(B)}$	0.000015$^{(B)}$	1.60E-05$^{(B)}$	0.000013$^{(B)}$	1.30E-05$^{(B)}$
Strontium	mg/L	0.018$^{(B)}$	1.30E-02$^{(B)}$	0.036$^{(T, B)}$	2.50E-02$^{(B)}$	0.036$^{(T, B)}$	3.00E-02$^{(T, B)}$	0.04$^{(T, B)}$	3.40E-02$^{(T, B)}$	0.032$^{(T, B)}$	3.20E-02$^{(T, B)}$
Thallium	mg/L	0.000012$^{(B)}$	1.10E-05$^{(B)}$	0.000026$^{(B)}$	2.00E-05$^{(B)}$	0.000025$^{(B)}$	2.20E-05$^{(B)}$	0.000021$^{(B)}$	1.90E-05$^{(B)}$	0.000018$^{(B)}$	0.000018$^{(B)}$
Tin	mg/L	0.00011$^{(B)}$	0.0001$^{(B)}$	0.00013$^{(B)}$	1.30E-04$^{(B)}$	0.00013$^{(B)}$	1.30E-04$^{(B)}$	0.00015$^{(B)}$	0.00014$^{(B)}$	0.00014$^{(B)}$	1.30E-04$^{(B)}$
Uranium	mg/L	0.000036$^{(B)}$	0.000033$^{(B)}$	0.0004$^{(B)}$	1.90E-04$^{(B)}$	0.0004$^{(B)}$	3.20E-04$^{(B)}$	0.0012$^{(B)}$	7.30E-04$^{(B)}$	0.0011$^{(B)}$	0.001$^{(B)}$
Vanadium	mg/L	0.00072$^{(B)}$	6.10E-04$^{(B)}$	0.0013$^{(B)}$	1.10E-03$^{(B)}$	0.0012$^{(B)}$	1.10E-03$^{(B)}$	0.0012$^{(B)}$	1.00E-03$^{(B)}$	0.0014$^{(B)}$	0.0014$^{(B)}$
Zinc	mg/L	0.003	0.0029	0.0037$^{(B)}$	3.20E-03$^{(B)}$	0.0038$^{(B)}$	3.60E-03$^{(B)}$	0.0035$^{(B)}$	0.0034$^{(B)}$	0.0026	0.0026
Dissolved Metals											
Aluminum	mg/L	0.0062$^{(B)}$	4.20E-03$^{(B)}$	0.031$^{(T, B)}$	2.50E-02$^{(B)}$	0.019$^{(B)}$	1.30E-02$^{(B)}$	0.0077$^{(B)}$	6.80E-03$^{(B)}$	0.0014	0.0014
Antimony	mg/L	0.000069	0.000057	0.0011$^{(B)}$	4.70E-04$^{(B)}$	0.0011$^{(B)}$	9.70E-04$^{(B)}$	0.00099$^{(B)}$	0.0009$^{(B)}$	0.00054$^{(B)}$	5.10E-04$^{(B)}$
Arsenic	mg/L	0.0005$^{(B)}$	0.00032$^{(B)}$	0.017$^{(C, D, T, E, B)}$	7.00E-03$^{(C, T, E, B)}$	0.017$^{(C, D, T, E, B)}$	1.30E-02$^{(C, D, T, E, B)}$	0.0091$^{(C, T, E, B)}$	0.009$^{(C, T, E, B)}$	0.0033$^{(T, B)}$	0.0032$^{(T, B)}$
Barium	mg/L	0.0059	0.0057	0.012$^{(B)}$	8.50E-03$^{(B)}$	0.012$^{(B)}$	0.011$^{(B)}$	0.011$^{(B)}$	0.01$^{(B)}$	0.0083$^{(B)}$	8.20E-03$^{(B)}$
Beryllium	mg/L	0.000011	0.000011	0.000016	0.000014	0.000016	0.000014	0.000013	0.000013	0.000012	0.000012
Bismuth	mg/L	0.000026	0.000026	0.000031	0.000028	0.000031	0.000031	0.000029	0.000029	0.000027	0.000027
Boron	mg/L	0.0073	0.0058	0.058$^{(B)}$	3.60E-02$^{(B)}$	0.058$^{(B)}$	4.40E-02$^{(B)}$	0.031$^{(B)}$	2.90E-02$^{(B)}$	0.0088	0.0086
Cadmium	mg/L	0.000003	0.000003	0.0000094$^{(B)}$	5.90E-06$^{(B)}$	0.0000094$^{(B)}$	8.00E-06$^{(B)}$	0.0000074$^{(B)}$	6.90E-06$^{(B)}$	0.0000051$^{(B)}$	0.0000051$^{(B)}$
Chromium	mg/L	0.000073	0.000058	0.00056$^{(B)}$	3.40E-04$^{(B)}$	0.00053$^{(B)}$	4.00E-04$^{(B)}$	0.00027$^{(B)}$	2.60E-04$^{(B)}$	0.000078	0.000078
Cobalt	mg/L	0.000068	0.000058	0.00044$^{(B)}$	2.60E-04$^{(B)}$	0.00044$^{(B)}$	3.40E-04$^{(B)}$	0.00025$^{(B)}$	0.00025$^{(B)}$	0.0001$^{(B)}$	1.00E-04$^{(B)}$
Copper	mg/L	0.0006	0.00054	0.0011$^{(B)}$	8.50E-04$^{(B)}$	0.0011$^{(B)}$	1.00E-03$^{(B)}$	0.00081$^{(B)}$	0.0008$^{(B)}$	0.00062	0.00061
Iron	mg/L	0.012$^{(B)}$	1.10E-02$^{(B)}$	0.065$^{(B)}$	4.80E-02$^{(B)}$	0.061$^{(B)}$	4.50E-02$^{(B)}$	0.03$^{(B)}$	2.80E-02$^{(B)}$	0.018$^{(B)}$	1.80E-02$^{(B)}$
Lead	mg/L	0.00005$^{(B)}$	0.000044	0.00024$^{(B)}$	1.50E-04$^{(B)}$	0.00024$^{(B)}$	1.80E-04$^{(B)}$	0.00014$^{(B)}$	1.50E-04$^{(B)}$	0.000075$^{(B)}$	7.40E-05$^{(B)}$
Lithium	mg/L	0.0007	0.0006	0.0014$^{(B)}$	0.001$^{(B)}$	0.0014$^{(B)}$	1.30E-03$^{(B)}$	0.0016$^{(B)}$	1.50E-03$^{(B)}$	0.0013$^{(B)}$	0.0013$^{(B)}$
Manganese	mg/L	0.0047$^{(B)}$	2.50E-03$^{(B)}$	0.08$^{(B)}$	3.90E-02$^{(B)}$	0.08$^{(B)}$	6.20E-02$^{(B)}$	0.041$^{(B)}$	3.80E-02$^{(B)}$	0.0049$^{(B)}$	0.0048$^{(B)}$
Mercury	mg/L	0.0000031	0.0000028	0.0000056$^{(B)}$	0.0000045	0.0000055$^{(B)}$	0.000005	0.0000053$^{(B)}$	0.000005	0.0000043	0.0000042
Molybdenum	mg/L	0.000054$^{(B)}$	0.000036	0.0011$^{(B)}$	5.30E-04$^{(B)}$	0.0011$^{(B)}$	8.60E-04$^{(B)}$	0.0015$^{(B)}$	1.00E-03$^{(B)}$	0.0011$^{(B)}$	0.0011$^{(B)}$
Nickel	mg/L	0.00084$^{(B)}$	0.00062	0.0045$^{(B)}$	2.70E-03$^{(B)}$	0.0045$^{(B)}$	3.60E-03$^{(B)}$	0.0027$^{(B)}$	2.70E-03$^{(B)}$	0.00098$^{(B)}$	0.00097$^{(B)}$
Selenium	mg/L	0.000034	0.000027	0.00024$^{(B)}$	1.40E-04$^{(B)}$	0.00024$^{(B)}$	1.90E-04$^{(B)}$	0.00028$^{(B)}$	2.10E-04$^{(B)}$	0.00021$^{(B)}$	2.00E-04$^{(B)}$
Silver	mg/L	0.0000056	0.0000052	0.000014$^{(B)}$	1.10E-05$^{(B)}$	0.000014$^{(B)}$	1.10E-05$^{(B)}$	0.0000097	0.0000094	0.0000059	0.0000059
Strontium	mg/L	0.017$^{(B)}$	0.013$^{(B)}$	0.036$^{(T, B)}$	2.40E-02$^{(B)}$	0.036$^{(T, B)}$	3.00E-02$^{(T, B)}$	0.04$^{(T, B)}$	3.50E-02$^{(T, B)}$	0.031$^{(T, B)}$	0.03$^{(T, B)}$
Thallium	mg/L	0.0000059	0.0000053	0.000019$^{(B)}$	0.000014$^{(B)}$	0.000019$^{(B)}$	1.60E-05$^{(B)}$	0.000014$^{(B)}$	1.30E-05$^{(B)}$	0.0000094	0.0000093
Tin	mg/L	0.00011	0.000086	0.000091	0.000081	0.0001	0.000098	0.0001	0.000094	0.000093	0.000093
Uranium	mg/L	0.00003$^{(B)}$	0.000027$^{(B)}$	0.00039$^{(B)}$	1.70E-04$^{(B)}$	0.00039$^{(B)}$	3.20E-04$^{(B)}$	0.0012$^{(B)}$	0.00073$^{(B)}$	0.0011$^{(B)}$	1.10E-03$^{(B)}$
Vanadium	mg/L	0.00027	0.00026	0.0008$^{(B)}$	5.40E-04$^{(B)}$	0.00076$^{(B)}$	6.30E-04$^{(B)}$	0.0007$^{(B)}$	0.00062$^{(B)}$	0.00055$^{(B)}$	5.40E-04$^{(B)}$
Zinc	mg/L	0.0007	0.00067	0.0015$^{(B)}$	0.0011	0.0015$^{(B)}$	0.0013$^{(B)}$	0.0012$^{(B)}$	0.0012	0.00097	0.00097

Notes:

Bolded concentrations are higher than relevant water quality guidelines.

$^{(A)}$ = concentration higher than the relevant acute aquatic life guideline or beyond the recommended pH or DO concentration range.

$^{(C)}$ = concentration higher than the relevant chronic aquatic life guideline or beyond the recommended pH, DO or total alkalinity concentration range.

$^{(D)}$ = concentration higher than the relevant drinking water guideline or beyond the recommended pH or DO concentration range.

$^{(T)}$ = concentration higher than the relevant meadowbank trigger or beyond the recommended pH or DO concentration range.

$^{(E)}$ = concentration higher than the relevant meadowbank threshold or beyond the recommended pH or DO concentration range.

$^{(B)}$ = concentration higher than the relevant a15-a14,a14-a13 (baseline maximum) or beyond the recommended pH or DO concentration range.

Water quality data and guidelines shown in this table were rounded to reflect laboratory or field instrument precision *after* comparisons to guidelines. Therefore, values slightly above guidelines may be displayed as being equal to the guidelines and identified as exceedances. Measured concentrations equal to the guideline values were not identified as exceedances.

CCME = Canadian Council of Ministers of the Environment; SSWQO = Site Specific Water Quality Objectives; $CaCO_3$ = calcium carbonate; mg/L = milligrams per litre; - = no guideline or data; mg-N/L = milligrams of nitrogen per litre; mg-P/L = milligrams of phosphorus per litre.

Table 10: Updated Predicted Treated Water Quality for Lake A76

Parameter	Unit	Guidelines for the protection of:						
		Aquatic Life (CCME)		Drinking Water (D)	Meadowbank Trigger (T)	Meadowbank Threshold (E)	A76 (Baseline Maximum) (B)	SSWQO
		Acute (A)	Chronic (C)					
Conventional Parameters								
Hardness, as $CaCO_3$	mg/L	-	-	-	-	-	10	-
Total dissolved solids	mg/L	-	-	-	18	-	29	-
Major Ions								
Calcium	mg/L	-	-	-	-	-	2.5	-
Magnesium	mg/L	-	-	-	0.83	-	0.91	-
Potassium	mg/L	-	-	-	0.5	-	0.62	-
Sodium	mg/L	-	-	-	0.98	-	0.59	-
Chloride	mg/L	640	120	-	60	120	2.5	-
Fluoride	mg/L	-	0.12	1.5	-	-	0.025	-
Sulphate	mg/L	-	-	-	65	128	2.6	-
Nutrients and Biological Indicators								
Nitrate	mg-N/L	124	2.9	10	1.5	3	0.005	-
Total ammonia	mg-N/L	-	5.6	-	0.065	0.13	0.005	-
Total Metals								
Aluminum	mg/L	-	0.1	0.1	0.026	0.05	0.0061	-
Antimony	mg/L	-	-	0.006	0.01	0.02	0.0001	-
Arsenic	mg/L	-	0.005	0.01	0.0026	0.005	0.00045	0.028
Barium	mg/L	-	-	1	0.5	1	0.0056	-
Beryllium	mg/L	-	-	-	0.0027	0.0053	0.00002	-
Bismuth	mg/L	-	-	-	-	-	0.00005	-
Boron	mg/L	29	1.5	5	0.76	1.5	0.01	-
Cadmium	mg/L	0.00034	0.00004	0.005	0.000025	0.00004	0.000005	-
Chromium	mg/L	-	0.001	0.05	0.00056	0.001	0.0001	-
Cobalt	mg/L	-	-	-	-	-	0.0001	-
Copper	mg/L	-	0.002	-	0.0012	0.002	0.0005	-
Iron	mg/L	-	0.3	-	0.16	0.3	0.015	-
Lead	mg/L	-	0.001	0.01	0.00053	0.001	0.00005	-
Lithium	mg/L	-	-	-	0.048	0.096	0.001	-
Manganese	mg/L	-	-	-	0.32	0.68	0.0026	-
Mercury	mg/L	-	0.000026	0.001	0.000018	0.000026	0.000005	-
Molybdenum	mg/L	-	0.073	-	0.037	0.073	0.00005	-
Nickel	mg/L	-	0.025	-	0.013	0.025	0.00067	-
Selenium	mg/L	-	0.001	0.05	0.00055	0.001	0.000052	-
Silver	mg/L	-	0.00025	-	-	-	0.00001	-
Strontium	mg/L	-	-	-	0.028	0.049	0.013	-
Thallium	mg/L	-	0.0008	-	0.00041	0.0008	0.00001	-
Tin	mg/L	-	-	-	0.0002	-	0.0001	-
Uranium	mg/L	0.033	0.015	0.02	0.0075	0.015	0.000021	-
Vanadium	mg/L	-	-	-	0.0035	0.006	0.0005	-
Zinc	mg/L	-	0.03	-	0.0063	0.024	0.003	-
Dissolved Metals								
Aluminum	mg/L	-	0.1	0.1	0.026	0.05	0.0027	-
Antimony	mg/L	-	-	0.006	0.01	0.02	0.0001	-
Arsenic	mg/L	-	0.005	0.01	0.0026	0.005	0.00021	-
Barium	mg/L	-	-	1	0.5	1	0.0056	-
Beryllium	mg/L	-	-	-	0.0027	0.0053	0.00002	-
Bismuth	mg/L	-	-	-	-	-	0.00005	-
Boron	mg/L	29	1.5	5	0.76	1.5	0.01	-
Cadmium	mg/L	0.00034	0.00004	0.005	0.000025	0.00004	0.000005	-
Chromium	mg/L	-	0.001	0.05	0.00056	0.001	0.0001	-
Cobalt	mg/L	-	-	-	-	-	0.0001	-
Copper	mg/L	-	0.002	-	0.0012	0.002	0.00033	-
Iron	mg/L	-	0.3	-	0.16	0.3	0.01	-
Lead	mg/L	-	0.001	0.01	0.00053	0.001	0.00008	-
Lithium	mg/L	-	-	-	0.048	0.096	0.001	-
Manganese	mg/L	-	-	-	0.32	0.68	0.0012	-
Mercury	mg/L	-	0.000026	0.001	0.000018	0.000026	0.000005	-
Molybdenum	mg/L	-	0.073	-	0.037	0.073	0.00005	-
Nickel	mg/L	-	0.025	-	0.013	0.025	0.00061	-
Selenium	mg/L	-	0.001	0.05	0.00055	0.001	0.00005	-
Silver	mg/L	-	0.00025	-	-	-	0.00001	-
Strontium	mg/L	-	-	-	0.028	0.049	0.012	-
Thallium	mg/L	-	0.0008	-	0.00041	0.0008	0.00001	-
Tin	mg/L	-	-	-	0.0002	-	0.0001	-
Uranium	mg/L	0.033	0.015	0.02	0.0075	0.015	0.00002	-
Vanadium	mg/L	-	-	-	0.0035	0.006	0.0005	-
Zinc	mg/L	-	0.03	-	0.0063	0.024	0.0014	-

Table 10: Updated Predicted Treated Water Quality for Lake A76

Parameter	Unit	Predicted Water Quality for Lake A76									
		Construction		Operations		Closure		First Year Post-Closure		Post-Closure (Long Term)	
		Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average
Conventional Parameters											
Hardness, as $CaCO_3$	mg/L	9.5	8.4	17$^{(B)}$	12$^{(B)}$	18$^{(B)}$	17$^{(B)}$	19$^{(B)}$	17$^{(B)}$	18$^{(B)}$	18$^{(B)}$
Total dissolved solids	mg/L	15	14	34$^{(T, B)}$	21$^{(T)}$	35$^{(T, B)}$	33$^{(T, B)}$	35$^{(T, B)}$	32$^{(T, B)}$	32$^{(T, B)}$	32$^{(T, B)}$
Major Ions											
Calcium	mg/L	2.5	2.2	4.6$^{(B)}$	3.2$^{(B)}$	4.7$^{(B)}$	4.5$^{(B)}$	5.0$^{(B)}$	4.6$^{(B)}$	4.8$^{(B)}$	4.8$^{(B)}$
Magnesium	mg/L	0.79	0.71	1.4$^{(T, B)}$	1.0$^{(T, B)}$	1.5$^{(T, B)}$	1.4$^{(T, B)}$	1.5$^{(T, B)}$	1.4$^{(T, B)}$	1.5$^{(T, B)}$	1.5$^{(T, B)}$
Potassium	mg/L	0.55$^{(T)}$	0.51$^{(T)}$	1.6$^{(T, B)}$	0.91$^{(T, B)}$	1.7$^{(T, B)}$	1.6$^{(T, B)}$	2.2$^{(T, B)}$	1.7$^{(T, B)}$	2.7$^{(T, B)}$	2.7$^{(T, B)}$
Sodium	mg/L	0.69$^{(B)}$	0.66$^{(B)}$	2.5$^{(T, B)}$	1.3$^{(T, B)}$	2.6$^{(T, B)}$	2.4$^{(T, B)}$	2.1$^{(T, B)}$	2.0$^{(T, B)}$	1.1$^{(T, B)}$	1.1$^{(T, B)}$
Chloride	mg/L	2.3	1.7	5.7$^{(B)}$	3.4$^{(B)}$	5.8$^{(B)}$	5.4$^{(B)}$	5.1$^{(B)}$	5.1$^{(B)}$	3.1$^{(B)}$	3.1$^{(B)}$
Fluoride	mg/L	0.029$^{(B)}$	2.80E-02$^{(B)}$	0.051$^{(B)}$	3.60E-02$^{(B)}$	0.052$^{(B)}$	5.00E-02$^{(B)}$	0.054$^{(B)}$	0.049$^{(B)}$	0.057$^{(B)}$	0.056$^{(B)}$
Sulphate	mg/L	2.3	2.2	6.5$^{(B)}$	3.7$^{(B)}$	6.9$^{(B)}$	6.6$^{(B)}$	8.3$^{(B)}$	6.7$^{(B)}$	9.0$^{(B)}$	8.9$^{(B)}$
Nutrients and Biological Indicators											
Nitrate	mg-N/L	0.014$^{(B)}$	0.01$^{(B)}$	0.31$^{(B)}$	0.1$^{(B)}$	0.33$^{(B)}$	0.3$^{(B)}$	0.24$^{(B)}$	0.23$^{(B)}$	0.005$^{(B)}$	0.0049
Total ammonia	mg-N/L	0.000019	0.000013	0.0069$^{(B)}$	0.0018	0.0074$^{(B)}$	6.80E-03$^{(B)}$	0.0056$^{(B)}$	5.30E-03$^{(B)}$	0.00021	0.0002
Total Metals											
Aluminum	mg/L	0.033$^{(T, B)}$	2.10E-02$^{(B)}$	**0.1$^{(C, D, T, E, B)}$**	7.50E-02$^{(T, E, B)}$	**0.1$^{(C, D, T, E, B)}$**	7.40E-02$^{(T, E, B)}$	0.07$^{(T, E, B)}$	5.60E-02$^{(T, E, B)}$	**0.2$^{(C, D, T, E, B)}$**	**0.2$^{(C, D, T, E, B)}$**
Antimony	mg/L	0.00011$^{(B)}$	1.00E-04$^{(B)}$	0.00068$^{(B)}$	2.70E-04$^{(B)}$	0.00077$^{(B)}$	0.00073$^{(B)}$	0.00079$^{(B)}$	0.00072$^{(B)}$	0.00053$^{(B)}$	0.00053$^{(B)}$
Arsenic	mg/L	0.00067$^{(B)}$	0.00041	0.011$^{(C, D, T, E, B)}$	3.60E-03$^{(T, B)}$	0.011$^{(C, D, T, E, B)}$	1.10E-02$^{(C, D, T, E, B)}$	0.0086$^{(C, T, E, B)}$	0.0085$^{(C, T, E, B)}$	0.0059$^{(C, T, E, B)}$	0.0059$^{(C, T, E, B)}$
Barium	mg/L	0.0052	0.0045	0.0099$^{(B)}$	7.00E-03$^{(B)}$	0.01$^{(B)}$	9.60E-03$^{(B)}$	0.0096$^{(B)}$	0.0091$^{(B)}$	0.0098$^{(B)}$	0.0097$^{(B)}$
Beryllium	mg/L	0.000022$^{(B)}$	2.10E-05$^{(B)}$	0.000028$^{(B)}$	2.40E-05$^{(B)}$	0.000028$^{(B)}$	2.70E-05$^{(B)}$	0.000027$^{(B)}$	2.60E-05$^{(B)}$	0.000027$^{(B)}$	2.70E-05$^{(B)}$
Bismuth	mg/L	0.000054$^{(B)}$	0.000052$^{(B)}$	0.00006$^{(B)}$	0.000057$^{(B)}$	0.000063$^{(B)}$	6.10E-05$^{(B)}$	0.000061$^{(B)}$	0.000061$^{(B)}$	0.000057$^{(B)}$	5.60E-05$^{(B)}$
Boron	mg/L	0.011$^{(B)}$	1.10E-02$^{(B)}$	0.046$^{(B)}$	2.30E-02$^{(B)}$	0.046$^{(B)}$	4.30E-02$^{(B)}$	0.035$^{(B)}$	3.40E-02$^{(B)}$	0.014$^{(B)}$	0.014$^{(B)}$
Cadmium	mg/L	0.0000061$^{(B)}$	6.00E-06$^{(B)}$	0.00001$^{(B)}$	7.50E-06$^{(B)}$	0.000011$^{(B)}$	1.10E-05$^{(B)}$	0.0000097$^{(B)}$	9.50E-06$^{(B)}$	0.0000089$^{(B)}$	8.90E-06$^{(B)}$
Chromium	mg/L	0.00076$^{(T, B)}$	0.00041$^{(B)}$	0.0025$^{(T, E, B)}$	1.70E-03$^{(T, E, B)}$	0.0025$^{(T, E, B)}$	1.80E-03$^{(T, E, B)}$	0.0019$^{(T, E, B)}$	1.40E-03$^{(T, E, B)}$	0.0056$^{(T, E, B)}$	5.50E-03$^{(T, E, B)}$
Cobalt	mg/L	0.00015$^{(B)}$	1.30E-04$^{(B)}$	0.00047$^{(B)}$	2.80E-04$^{(B)}$	0.00047$^{(B)}$	4.30E-04$^{(B)}$	0.00037$^{(B)}$	3.60E-04$^{(B)}$	0.00047$^{(B)}$	4.80E-04$^{(B)}$
Copper	mg/L	0.0006$^{(B)}$	5.50E-04$^{(B)}$	0.0011$^{(B)}$	8.10E-04$^{(B)}$	0.0011$^{(B)}$	1.10E-03$^{(B)}$	0.00096$^{(B)}$	9.60E-04$^{(B)}$	0.00098$^{(B)}$	9.70E-04$^{(B)}$
Iron	mg/L	0.084$^{(B)}$	0.057$^{(B)}$	0.24$^{(T, B)}$	0.17$^{(T, B)}$	0.24$^{(T, B)}$	0.18$^{(T, B)}$	0.18$^{(T, B)}$	0.14$^{(B)}$	**0.48$^{(C, T, E, B)}$**	**0.48$^{(C, T, E, B)}$**
Lead	mg/L	0.000092$^{(B)}$	8.50E-05$^{(B)}$	0.00024$^{(B)}$	1.40E-04$^{(B)}$	0.00024$^{(B)}$	2.20E-04$^{(B)}$	0.00019$^{(B)}$	0.00019$^{(B)}$	0.00017$^{(B)}$	1.70E-04$^{(B)}$
Lithium	mg/L	0.0011$^{(B)}$	1.00E-03$^{(B)}$	0.0017$^{(B)}$	1.30E-03$^{(B)}$	0.0017$^{(B)}$	1.70E-03$^{(B)}$	0.0018$^{(B)}$	0.0016$^{(B)}$	0.0019$^{(B)}$	1.90E-03$^{(B)}$
Manganese	mg/L	0.0035$^{(B)}$	0.0024	0.052$^{(B)}$	1.90E-02$^{(B)}$	0.053$^{(B)}$	4.90E-02$^{(B)}$	0.039$^{(B)}$	3.80E-02$^{(B)}$	0.012$^{(B)}$	1.30E-02$^{(B)}$
Mercury	mg/L	0.0000054$^{(B)}$	0.0000052$^{(B)}$	0.0000074$^{(B)}$	6.30E-06$^{(B)}$	0.0000076$^{(B)}$	7.40E-06$^{(B)}$	0.0000072$^{(B)}$	7.20E-06$^{(B)}$	0.0000069$^{(B)}$	6.80E-06$^{(B)}$
Molybdenum	mg/L	0.00006$^{(B)}$	5.50E-05$^{(B)}$	0.00071$^{(B)}$	2.70E-04$^{(B)}$	0.00073$^{(B)}$	6.70E-04$^{(B)}$	0.00086$^{(B)}$	6.40E-04$^{(B)}$	0.001$^{(B)}$	0.001$^{(B)}$
Nickel	mg/L	0.0011$^{(B)}$	0.00079$^{(B)}$	0.0042$^{(B)}$	2.30E-03$^{(B)}$	0.0042$^{(B)}$	3.70E-03$^{(B)}$	0.0033$^{(B)}$	3.10E-03$^{(B)}$	0.0038$^{(B)}$	0.0038$^{(B)}$
Selenium	mg/L	0.000055$^{(B)}$	0.000052$^{(B)}$	0.0002$^{(B)}$	1.10E-04$^{(B)}$	0.0002$^{(B)}$	1.90E-04$^{(B)}$	0.00021$^{(B)}$	1.70E-04$^{(B)}$	0.00021$^{(B)}$	2.20E-04$^{(B)}$
Silver	mg/L	0.000011$^{(B)}$	1.10E-05$^{(B)}$	0.000018$^{(B)}$	1.30E-05$^{(B)}$	0.000018$^{(B)}$	1.70E-05$^{(B)}$	0.000016$^{(B)}$	1.50E-05$^{(B)}$	0.000014$^{(B)}$	0.000013$^{(B)}$
Strontium	mg/L	0.013$^{(B)}$	0.012	0.027$^{(B)}$	1.80E-02$^{(B)}$	0.028$^{(B)}$	2.70E-02$^{(B)}$	0.03$^{(T, B)}$	2.70E-02$^{(B)}$	0.029$^{(T, B)}$	2.90E-02$^{(T, B)}$
Thallium	mg/L	0.000011$^{(B)}$	1.10E-05$^{(B)}$	0.000022$^{(B)}$	1.60E-05$^{(B)}$	0.000022$^{(B)}$	2.10E-05$^{(B)}$	0.000019$^{(B)}$	1.80E-05$^{(B)}$	0.000018$^{(B)}$	1.70E-05$^{(B)}$
Tin	mg/L	0.00011$^{(B)}$	1.00E-04$^{(B)}$	0.00013$^{(B)}$	1.10E-04$^{(B)}$	0.00014$^{(B)}$	1.40E-04$^{(B)}$	0.00014$^{(B)}$	1.30E-04$^{(B)}$	0.00014$^{(B)}$	0.00014$^{(B)}$
Uranium	mg/L	0.000033$^{(B)}$	0.000031$^{(B)}$	0.00024$^{(B)}$	8.90E-05$^{(B)}$	0.00025$^{(B)}$	2.30E-04$^{(B)}$	0.00054$^{(B)}$	3.00E-04$^{(B)}$	0.00092$^{(B)}$	0.0009$^{(B)}$
Vanadium	mg/L	0.0006$^{(B)}$	5.40E-04$^{(B)}$	0.0011$^{(B)}$	8.00E-04$^{(B)}$	0.0011$^{(B)}$	1.10E-03$^{(B)}$	0.00098$^{(B)}$	0.00092$^{(B)}$	0.0013$^{(B)}$	1.30E-03$^{(B)}$
Zinc	mg/L	0.0032$^{(B)}$	3.00E-03$^{(B)}$	0.0037$^{(B)}$	3.30E-03$^{(B)}$	0.004$^{(B)}$	3.80E-03$^{(B)}$	0.0038$^{(B)}$	3.70E-03$^{(B)}$	0.0029	0.0029
Dissolved Metals											
Aluminum	mg/L	0.0038$^{(B)}$	3.70E-03$^{(B)}$	0.021$^{(B)}$	1.50E-02$^{(B)}$	0.02$^{(B)}$	1.50E-02$^{(B)}$	0.0091$^{(B)}$	8.60E-03$^{(B)}$	0.0019	0.002
Antimony	mg/L	0.000055	0.000052	0.00062$^{(B)}$	2.20E-04$^{(B)}$	0.00071$^{(B)}$	6.60E-04$^{(B)}$	0.00073$^{(B)}$	6.50E-04$^{(B)}$	0.00047$^{(B)}$	4.70E-04$^{(B)}$
Arsenic	mg/L	0.00028$^{(B)}$	0.00021$^{(B)}$	0.0093$^{(C, T, E, B)}$	2.80E-03$^{(T, B)}$	0.01$^{(C, D, T, E, B)}$	9.40E-03$^{(C, T, E, B)}$	0.0079$^{(C, T, E, B)}$	0.0078$^{(C, T, E, B)}$	0.0028$^{(T, B)}$	0.0028$^{(T, B)}$
Barium	mg/L	0.006$^{(B)}$	5.70E-03$^{(B)}$	0.0099$^{(B)}$	7.30E-03$^{(B)}$	0.01$^{(B)}$	9.90E-03$^{(B)}$	0.0098$^{(B)}$	0.0095$^{(B)}$	0.0084$^{(B)}$	8.40E-03$^{(B)}$
Beryllium	mg/L	0.000011	0.00001	0.000015	0.000012	0.000015	0.000015	0.000014	0.000014	0.000012	0.000013
Bismuth	mg/L	0.000027	0.000025	0.000031	0.00003	0.000033	0.000033	0.000032	0.000032	0.000028	0.000029
Boron	mg/L	0.0056	0.0052	0.04$^{(B)}$	1.80E-02$^{(B)}$	0.04$^{(B)}$	3.60E-02$^{(B)}$	0.029$^{(B)}$	0.029$^{(B)}$	0.0087	0.0086
Cadmium	mg/L	0.0000031	0.000003	0.0000071$^{(B)}$	0.0000044	0.0000073$^{(B)}$	7.00E-06$^{(B)}$	0.0000065$^{(B)}$	6.30E-06$^{(B)}$	0.0000051$^{(B)}$	5.00E-06$^{(B)}$
Chromium	mg/L	0.000056	0.000052	0.00039$^{(B)}$	1.80E-04$^{(B)}$	0.00039$^{(B)}$	3.50E-04$^{(B)}$	0.00027$^{(B)}$	0.00026$^{(B)}$	0.000079	0.000078
Cobalt	mg/L	0.000057	0.000052	0.0003$^{(B)}$	1.40E-04$^{(B)}$	0.0003$^{(B)}$	2.70E-04$^{(B)}$	0.00023$^{(B)}$	0.00023$^{(B)}$	0.0001	0.000098
Copper	mg/L	0.0006$^{(B)}$	5.80E-04$^{(B)}$	0.001$^{(B)}$	0.00073$^{(B)}$	0.001$^{(B)}$	9.90E-04$^{(B)}$	0.0009$^{(B)}$	8.90E-04$^{(B)}$	0.00067$^{(B)}$	0.00066$^{(B)}$
Iron	mg/L	0.0096	0.0095	0.048$^{(B)}$	2.70E-02$^{(B)}$	0.048$^{(B)}$	4.10E-02$^{(B)}$	0.031$^{(B)}$	3.10E-02$^{(B)}$	0.017$^{(B)}$	1.70E-02$^{(B)}$
Lead	mg/L	0.000045	0.000043	0.00017$^{(B)}$	9.00E-05$^{(B)}$	0.00017$^{(B)}$	1.60E-04$^{(B)}$	0.00013$^{(B)}$	1.40E-04$^{(B)}$	0.000074	0.000073
Lithium	mg/L	0.00062	0.00056	0.0011$^{(B)}$	0.00079	0.0012$^{(B)}$	1.20E-03$^{(B)}$	0.0012$^{(B)}$	1.10E-03$^{(B)}$	0.0012$^{(B)}$	1.30E-03$^{(B)}$
Manganese	mg/L	0.0016$^{(B)}$	0.0011	0.048$^{(B)}$	1.70E-02$^{(B)}$	0.05$^{(B)}$	4.50E-02$^{(B)}$	0.037$^{(B)}$	0.036$^{(B)}$	0.0044$^{(B)}$	4.40E-03$^{(B)}$
Mercury	mg/L	0.0000029	0.0000027	0.0000049	0.0000036	0.0000049	0.0000048	0.0000046	0.0000045	0.0000043	0.0000043
Molybdenum	mg/L	0.000032	0.00003	0.00068$^{(B)}$	2.40E-04$^{(B)}$	0.0007$^{(B)}$	6.50E-04$^{(B)}$	0.00083$^{(B)}$	6.10E-04$^{(B)}$	0.00097$^{(B)}$	9.70E-04$^{(B)}$
Nickel	mg/L	0.00058	0.00048	0.003$^{(B)}$	1.30E-03$^{(B)}$	0.0031$^{(B)}$	2.90E-03$^{(B)}$	0.0025$^{(B)}$	0.0024$^{(B)}$	0.00094$^{(B)}$	9.40E-04$^{(B)}$
Selenium	mg/L	0.000028	0.000026	0.00017$^{(B)}$	7.70E-05$^{(B)}$	0.00017$^{(B)}$	1.60E-04$^{(B)}$	0.00018$^{(B)}$	1.50E-04$^{(B)}$	0.00018$^{(B)}$	0.00018$^{(B)}$
Silver	mg/L	0.0000054	0.0000051	0.000011$^{(B)}$	0.0000078	0.000012$^{(B)}$	1.10E-05$^{(B)}$	0.0000098	0.0000097	0.0000062	0.0000061
Strontium	mg/L	0.013$^{(B)}$	0.01	0.027$^{(B)}$	1.70E-02$^{(B)}$	0.027$^{(B)}$	2.60E-02$^{(B)}$	0.029$^{(T, B)}$	2.60E-02$^{(B)}$	0.029$^{(T, B)}$	2.90E-02$^{(T, B)}$
Thallium	mg/L	0.0000054	0.0000051	0.000015$^{(B)}$	0.0000091	0.000015$^{(B)}$	1.50E-05$^{(B)}$	0.000013$^{(B)}$	0.000012$^{(B)}$	0.0000092	0.0000092
Tin	mg/L	0.00011$^{(B)}$	1.10E-04$^{(B)}$	0.0001$^{(B)}$	0.000099	0.00012$^{(B)}$	1.10E-04$^{(B)}$	0.00011$^{(B)}$	1.10E-04$^{(B)}$	0.00011$^{(B)}$	1.00E-04$^{(B)}$
Uranium	mg/L	0.000027$^{(B)}$	2.60E-05$^{(B)}$	0.00023$^{(B)}$	8.20E-05$^{(B)}$	0.00025$^{(B)}$	2.30E-04$^{(B)}$	0.00053$^{(B)}$	0.0003$^{(B)}$	0.00091$^{(B)}$	0.00089$^{(B)}$
Vanadium	mg/L	0.00027	0.00026	0.00063$^{(B)}$	0.0004	0.00063$^{(B)}$	5.90E-04$^{(B)}$	0.00056$^{(B)}$	0.00053$^{(B)}$	0.00053$^{(B)}$	5.20E-04$^{(B)}$
Zinc	mg/L	0.00071	0.0007	0.0013	0.00091	0.0013	0.0012	0.0012	0.0011	0.001	0.00099

Notes:

Bolded concentrations are higher than relevant water quality guidelines.

$^{(A)}$ = concentration higher than the relevant acute aquatic life guideline or beyond the recommended pH or DO concentration range.

$^{(C)}$ = concentration higher than the relevant chronic aquatic life guideline or beyond the recommended pH, DO or total alkalinity concentration range.

$^{(D)}$ = concentration higher than the relevant drinking water guideline or beyond the recommended pH or DO concentration range.

$^{(T)}$ = concentration higher than the relevant meadowbank trigger or beyond the recommended pH or DO concentration range.

$^{(E)}$ = concentration higher than the relevant meadowbank threshold or beyond the recommended pH or DO concentration range.

$^{(B)}$ = concentration higher than the relevant a76 (baseline maximum) or beyond the recommended pH or DO concentration range.

Water quality data and guidelines shown in this table were rounded to reflect laboratory or field instrument precision *after* comparisons to guidelines. Therefore, values slightly above guidelines may be displayed as being equal to the guidelines and identified as exceedances. Measured concentrations equal to the guideline values were not identified as exceedances.

CCME = Canadian Council of Ministers of the Environment; SSWQO = Site Specific Water Quality Objectives; $CaCO_3$ = calcium carbonate; mg/L = milligrams per litre; - = no guideline or data; mg-N/L = milligrams of nitrogen per litre; mg-P/L = milligrams of phosphorus per litre.

Table 11: Updated Predicted Treated Water Quality for Downstream Node 1

Parameter	Unit	Guidelines for the protection of:						
		Aquatic Life (CCME)		Drinking Water (D)	Meadowbank Trigger (T)	Meadowbank Threshold (E)	DS1, A5-A4 (Baseline Maximum) (B)	SSWQO
		Acute (A)	Chronic (C)					
Conventional Parameters								
Hardness, as $CaCO_3$	mg/L	-	-	-	-	-	8.4	-
Total dissolved solids	mg/L	-	-	-	18	-	20	-
Major Ions								
Calcium	mg/L	-	-	-	-	-	2	-
Magnesium	mg/L	-	-	-	0.83	-	0.85	-
Potassium	mg/L	-	-	-	0.5	-	0.6	-
Sodium	mg/L	-	-	-	0.98	-	0.82	-
Chloride	mg/L	640	120	-	60	120	1.1	-
Fluoride	mg/L	-	0.12	1.5	-	-	0.038	-
Sulphate	mg/L	-	-	-	65	128	2.4	-
Nutrients and Biological Indicators								
Nitrate	mg-N/L	124	2.9	10	1.5	3	0.005	-
Total ammonia	mg-N/L	-	5.5	-	0.065	0.13	0.0057	-
Total Metals								
Aluminum	mg/L	-	0.1	0.1	0.026	0.05	0.014	-
Antimony	mg/L	-	-	0.006	0.01	0.02	0.0001	-
Arsenic	mg/L	-	0.005	0.01	0.0026	0.005	0.0002	0.028
Barium	mg/L	-	-	1	0.5	1	0.0046	-
Beryllium	mg/L	-	-	-	0.0027	0.0053	0.00002	-
Bismuth	mg/L	-	-	-	-	-	0.00005	-
Boron	mg/L	29	1.5	5	0.76	1.5	0.01	-
Cadmium	mg/L	0.00034	0.00004	0.005	0.000025	0.00004	0.000005	-
Chromium	mg/L	-	0.001	0.05	0.00056	0.001	0.0001	-
Cobalt	mg/L	-	-	-	-	-	0.0001	-
Copper	mg/L	-	0.002	-	0.0012	0.002	0.0005	-
Iron	mg/L	-	0.3	-	0.16	0.3	0.035	-
Lead	mg/L	-	0.001	0.01	0.00053	0.001	0.00005	-
Lithium	mg/L	-	-	-	0.048	0.096	0.001	-
Manganese	mg/L	-	-	-	0.32	0.68	0.0024	-
Mercury	mg/L	-	0.000026	0.001	0.000018	0.000026	0.000005	-
Molybdenum	mg/L	-	0.073	-	0.037	0.073	0.00005	-
Nickel	mg/L	-	0.025	-	0.013	0.025	0.0005	-
Selenium	mg/L	-	0.001	0.05	0.00055	0.001	0.00005	-
Silver	mg/L	-	0.00025	-	-	-	0.00001	-
Strontium	mg/L	-	-	-	0.028	0.049	0.0083	-
Thallium	mg/L	-	0.0008	-	0.00041	0.0008	0.00001	-
Tin	mg/L	-	-	-	0.0002	-	0.0001	-
Uranium	mg/L	0.033	0.015	0.02	0.0075	0.015	0.000045	-
Vanadium	mg/L	-	-	-	0.0035	0.006	0.0005	-
Zinc	mg/L	-	0.03	-	0.0063	0.024	0.003	-
Dissolved Metals								
Aluminum	mg/L	-	0.1	0.1	0.026	0.05	0.0054	-
Antimony	mg/L	-	-	0.006	0.01	0.02	0.0001	-
Arsenic	mg/L	-	0.005	0.01	0.0026	0.005	0.00016	-
Barium	mg/L	-	-	1	0.5	1	0.0074	-
Beryllium	mg/L	-	-	-	0.0027	0.0053	0.00002	-
Bismuth	mg/L	-	-	-	-	-	0.00005	-
Boron	mg/L	29	1.5	5	0.76	1.5	0.01	-
Cadmium	mg/L	0.00034	0.00004	0.005	0.000025	0.00004	0.0000063	-
Chromium	mg/L	-	0.001	0.05	0.00056	0.001	0.0001	-
Cobalt	mg/L	-	-	-	-	-	0.0001	-
Copper	mg/L	-	0.002	-	0.0012	0.002	0.00082	-
Iron	mg/L	-	0.3	-	0.16	0.3	0.012	-
Lead	mg/L	-	0.001	0.01	0.00053	0.001	0.00014	-
Lithium	mg/L	-	-	-	0.048	0.096	0.001	-
Manganese	mg/L	-	-	-	0.32	0.68	0.00068	-
Mercury	mg/L	-	0.000026	0.001	0.000018	0.000026	0.000005	-
Molybdenum	mg/L	-	0.073	-	0.037	0.073	0.00005	-
Nickel	mg/L	-	0.025	-	0.013	0.025	0.0005	-
Selenium	mg/L	-	0.001	0.05	0.00055	0.001	0.00005	-
Silver	mg/L	-	0.00025	-	-	-	0.00001	-
Strontium	mg/L	-	-	-	0.028	0.049	0.0082	-
Thallium	mg/L	-	0.0008	-	0.00041	0.0008	0.00001	-
Tin	mg/L	-	-	-	0.0002	-	0.00027	-
Uranium	mg/L	0.033	0.015	0.02	0.0075	0.015	0.000043	-
Vanadium	mg/L	-	-	-	0.0035	0.006	0.0005	-
Zinc	mg/L	-	0.03	-	0.0063	0.024	0.001	-

Table 11: Updated Predicted Treated Water Quality for Downstream Node 1

Parameter	Unit	Predicted Water Quality for Downstream Node 1									
		Construction		Operations		Closure		First Year Post-Closure		Post-Closure (Long Term)	
		Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average
Conventional Parameters											
Hardness, as $CaCO_3$	mg/L	7.7	7.6	8.5[(B)]	7.9	8.2	8.2	8.8[(B)]	8.6[(B)]	9.2[(B)]	9.0[(B)]
Total dissolved solids	mg/L	13	13	15	13	14	14	15	15	16	15
Major Ions											
Calcium	mg/L	2.0[(B)]	2.0	2.2[(B)]	2.0[(B)]	2.1[(B)]	2.1[(B)]	2.3[(B)]	2.2[(B)]	2.4[(B)]	2.3[(B)]
Magnesium	mg/L	0.66	0.65	0.72	0.67	0.7	0.7	0.75	0.73	0.78	0.76
Potassium	mg/L	0.49	0.49	0.58[(T)]	0.51[(T)]	0.57[(T)]	0.56[(T)]	0.65[(T, B)]	0.61[(T, B)]	0.82[(T, B)]	0.78[(T, B)]
Sodium	mg/L	0.66	0.65	0.8	0.68	0.78	0.76	0.85[(B)]	0.82[(B)]	0.73	0.72
Chloride	mg/L	1.3[(B)]	1.2[(B)]	1.6[(B)]	1.3[(B)]	1.5[(B)]	1.4[(B)]	1.7[(B)]	1.6[(B)]	1.5[(B)]	1.4[(B)]
Fluoride	mg/L	0.027	0.027	0.029	0.028	0.029	0.028	0.03	0.029	0.031	0.031
Sulphate	mg/L	2.2	2.2	2.5[(B)]	2.2	2.5[(B)]	2.4[(B)]	2.8[(B)]	2.6[(B)]	3.2[(B)]	3.1[(B)]
Nutrients and Biological Indicators											
Nitrate	mg-N/L	0.0069[(B)]	6.50E-03[(B)]	0.028[(B)]	1.10E-02[(B)]	0.027[(B)]	2.40E-02[(B)]	0.037[(B)]	0.034[(B)]	0.0063[(B)]	0.0062[(B)]
Total ammonia	mg-N/L	0.00000093	0.00000051	0.00047	0.000086	0.00047	0.00041	0.00074	0.00065	0.00003	0.000028
Total Metals											
Aluminum	mg/L	0.013	0.012	0.022[(B)]	0.016[(B)]	0.019[(B)]	1.60E-02[(B)]	0.018[(B)]	0.017[(B)]	0.039[(T, B)]	0.036[(T, B)]
Antimony	mg/L	0.0001[(B)]	1.10E-04[(B)]	0.00014[(B)]	1.10E-04[(B)]	0.00015[(B)]	1.30E-04[(B)]	0.00018[(B)]	0.00017[(B)]	0.00016[(B)]	0.00016[(B)]
Arsenic	mg/L	0.00022[(B)]	2.00E-04[(B)]	0.00097[(B)]	3.80E-04[(B)]	0.00092[(B)]	8.00E-04[(B)]	0.0013[(B)]	0.0012[(B)]	0.001[(B)]	0.00095[(B)]
Barium	mg/L	0.004	0.004	0.0045	0.0042	0.0044	0.0043	0.0046[(B)]	0.0045	0.0048[(B)]	0.0047[(B)]
Beryllium	mg/L	0.00002[(B)]	0.00002[(B)]	0.000021[(B)]	2.00E-05[(B)]	0.000021[(B)]	2.00E-05[(B)]	0.000021[(B)]	0.000021[(B)]	0.000021[(B)]	0.000021[(B)]
Bismuth	mg/L	0.000051[(B)]	0.00005[(B)]	0.000052[(B)]	5.10E-05[(B)]	0.000052[(B)]	5.10E-05[(B)]	0.000053[(B)]	0.000052[(B)]	0.000052[(B)]	0.000051[(B)]
Boron	mg/L	0.01[(B)]	1.00E-02[(B)]	0.013[(B)]	1.00E-02[(B)]	0.013[(B)]	1.30E-02[(B)]	0.014[(B)]	0.013[(B)]	0.011[(B)]	0.011[(B)]
Cadmium	mg/L	0.0000059[(B)]	5.90E-06[(B)]	0.0000063[(B)]	5.90E-06[(B)]	0.0000062[(B)]	6.20E-06[(B)]	0.0000064[(B)]	0.0000063[(B)]	0.0000064[(B)]	0.0000063[(B)]
Chromium	mg/L	0.00014[(B)]	1.20E-04[(B)]	0.00038[(B)]	2.10E-04[(B)]	0.00032[(B)]	2.30E-04[(B)]	0.0003[(B)]	0.00026[(B)]	0.0009[(T, B)]	0.00083[(T, B)]
Cobalt	mg/L	0.0001[(B)]	1.00E-04[(B)]	0.00014[(B)]	1.10E-04[(B)]	0.00013[(B)]	1.20E-04[(B)]	0.00014[(B)]	0.00013[(B)]	0.00016[(B)]	0.00015[(B)]
Copper	mg/L	0.00053[(B)]	0.00052[(B)]	0.00058[(B)]	5.40E-04[(B)]	0.00057[(B)]	5.60E-04[(B)]	0.00059[(B)]	0.00058[(B)]	0.00059[(B)]	0.00058[(B)]
Iron	mg/L	0.037[(B)]	3.50E-02[(B)]	0.058[(B)]	4.40E-02[(B)]	0.052[(B)]	4.50E-02[(B)]	0.05[(B)]	0.047[(B)]	0.1[(B)]	0.094[(B)]
Lead	mg/L	0.000082[(B)]	8.10E-05[(B)]	0.000096[(B)]	8.60E-05[(B)]	0.000093[(B)]	9.00E-05[(B)]	0.000097[(B)]	0.000094[(B)]	0.000095[(B)]	0.000094[(B)]
Lithium	mg/L	0.001[(B)]	0.001[(B)]	0.0011[(B)]	1.00E-03[(B)]	0.0011[(B)]	1.10E-03[(B)]	0.0011[(B)]	0.0011[(B)]	0.0011[(B)]	0.0011[(B)]
Manganese	mg/L	0.0016	0.0016	0.0055[(B)]	2.40E-03[(B)]	0.0051[(B)]	4.30E-03[(B)]	0.0066[(B)]	0.0059[(B)]	0.0031[(B)]	0.0029[(B)]
Mercury	mg/L	0.0000051[(B)]	5.00E-06[(B)]	0.0000053[(B)]	5.20E-06[(B)]	0.0000052[(B)]	5.20E-06[(B)]	0.0000054[(B)]	0.0000053[(B)]	0.0000054[(B)]	0.0000053[(B)]
Molybdenum	mg/L	0.000053[(B)]	0.000052[(B)]	0.0001[(B)]	6.30E-05[(B)]	0.000098[(B)]	0.00009[(B)]	0.00013[(B)]	0.00011[(B)]	0.00019[(B)]	0.00018[(B)]
Nickel	mg/L	0.00059[(B)]	5.70E-04[(B)]	0.0009[(B)]	6.80E-04[(B)]	0.00084[(B)]	7.70E-04[(B)]	0.00092[(B)]	0.00087[(B)]	0.001[(B)]	0.001[(B)]
Selenium	mg/L	0.000051[(B)]	5.10E-05[(B)]	0.000063[(B)]	5.40E-05[(B)]	0.000061[(B)]	5.90E-05[(B)]	0.000067[(B)]	0.000064[(B)]	0.000074[(B)]	0.000072[(B)]
Silver	mg/L	0.00001[(B)]	1.10E-05[(B)]	0.000011[(B)]	1.10E-05[(B)]	0.000011[(B)]	1.00E-05[(B)]	0.000011[(B)]	0.000011[(B)]	0.000011[(B)]	0.000011[(B)]
Strontium	mg/L	0.0091[(B)]	8.90E-03[(B)]	0.01[(B)]	9.40E-03[(B)]	0.01[(B)]	9.90E-03[(B)]	0.011[(B)]	0.011[(B)]	0.012[(B)]	0.012[(B)]
Thallium	mg/L	0.00001[(B)]	0.00001[(B)]	0.000011[(B)]	1.00E-05[(B)]	0.000011[(B)]	1.10E-05[(B)]	0.000011[(B)]	0.000011[(B)]	0.000011[(B)]	0.000011[(B)]
Tin	mg/L	0.0001[(B)]	0.0001[(B)]	0.0001[(B)]	0.0001[(B)]	0.0001[(B)]	1.00E-04[(B)]	0.00011[(B)]	0.00011[(B)]	0.00011[(B)]	0.00011[(B)]
Uranium	mg/L	0.000031	0.00003	0.000045[(B)]	0.000033	0.000045	0.000043	0.000067[(B)]	0.000055[(B)]	0.00016[(B)]	0.00015[(B)]
Vanadium	mg/L	0.00051[(B)]	5.10E-04[(B)]	0.00057[(B)]	5.30E-04[(B)]	0.00055[(B)]	5.40E-04[(B)]	0.00056[(B)]	0.00055[(B)]	0.00062[(B)]	0.00061[(B)]
Zinc	mg/L	0.0031[(B)]	3.00E-03[(B)]	0.0031[(B)]	0.0031[(B)]	0.0031[(B)]	3.00E-03[(B)]	0.0032[(B)]	0.0031[(B)]	0.003[(B)]	0.003[(B)]
Dissolved Metals											
Aluminum	mg/L	0.0038	0.0037	0.0057[(B)]	0.0044	0.0052	0.0046	0.0046	0.0045	0.0036	0.0035
Antimony	mg/L	0.000051	0.000051	0.000091	0.000059	0.000094	0.000087	0.00013[(B)]	0.00012[(B)]	0.00011[(B)]	0.00011[(B)]
Arsenic	mg/L	0.00017[(B)]	1.60E-04[(B)]	0.0008[(B)]	2.80E-04[(B)]	0.00078[(B)]	7.10E-04[(B)]	0.0012[(B)]	0.0011[(B)]	0.00055[(B)]	0.00052[(B)]
Barium	mg/L	0.0056	0.0055	0.0059	0.0056	0.0059	0.0059	0.0061	0.006	0.006	0.0059
Beryllium	mg/L	0.00001	0.00001	0.000011	0.00001	0.000011	0.00001	0.000011	0.000011	0.00001	0.00001
Bismuth	mg/L	0.000026	0.000025	0.000026	0.000026	0.000026	0.000026	0.000026	0.000026	0.000026	0.000026
Boron	mg/L	0.0051	0.0051	0.008	0.0057	0.0076	0.0071	0.0083	0.0079	0.0056	0.0055
Cadmium	mg/L	0.0000031	0.0000031	0.0000034	0.0000031	0.0000034	0.0000034	0.0000035	0.0000035	0.0000034	0.0000034
Chromium	mg/L	0.000051	0.00005	0.00008	0.000058	0.000075	0.000068	0.00008	0.000076	0.000055	0.000054
Cobalt	mg/L	0.000051	0.000051	0.00007	0.000056	0.000068	0.000064	0.000075	0.000072	0.000058	0.000057
Copper	mg/L	0.00061	0.0006	0.00064	0.00062	0.00064	0.00063	0.00066	0.00065	0.00062	0.00062
Iron	mg/L	0.0097	0.0096	0.013[(B)]	0.011	0.013[(B)]	0.012	0.013[(B)]	0.012[(B)]	0.011	0.011
Lead	mg/L	0.000042	0.000042	0.000053	0.000045	0.000051	0.000048	0.000054	0.000053	0.000046	0.000046
Lithium	mg/L	0.00051	0.00051	0.00056	0.00052	0.00055	0.00054	0.00058	0.00057	0.00062	0.0006
Manganese	mg/L	0.00071[(B)]	0.00068	0.0043[(B)]	1.40E-03[(B)]	0.004[(B)]	3.50E-03[(B)]	0.0055[(B)]	0.0049[(B)]	0.0012[(B)]	0.0012[(B)]
Mercury	mg/L	0.0000026	0.0000025	0.0000028	0.0000026	0.0000027	0.0000027	0.0000028	0.0000028	0.0000028	0.0000028
Molybdenum	mg/L	0.00003	0.000029	0.000077[(B)]	0.00004	0.000074[(B)]	6.60E-05[(B)]	0.00011[(B)]	0.000091[(B)]	0.00017[(B)]	0.00015[(B)]
Nickel	mg/L	0.00041	0.0004	0.00062[(B)]	0.00045	0.00059[(B)]	5.50E-04[(B)]	0.00068[(B)]	0.00064[(B)]	0.00048	0.00047
Selenium	mg/L	0.000026	0.000025	0.000037	0.000028	0.000035	0.000034	0.000041	0.000038	0.000048	0.000046
Silver	mg/L	0.0000051	0.000005	0.0000057	0.0000053	0.0000055	0.0000054	0.0000058	0.0000056	0.0000053	0.0000052
Strontium	mg/L	0.0088[(B)]	0.0086[(B)]	0.01[(B)]	9.10E-03[(B)]	0.0099[(B)]	9.70E-03[(B)]	0.011[(B)]	0.01[(B)]	0.012[(B)]	0.011[(B)]
Thallium	mg/L	0.0000051	0.000005	0.000006	0.0000052	0.0000058	0.0000056	0.0000061	0.0000059	0.0000057	0.0000056
Tin	mg/L	0.00011	0.00012	0.00011	0.00012	0.00012	0.00012	0.00012	0.00011	0.00011	0.00011
Uranium	mg/L	0.000026	0.000025	0.00004	0.000028	0.000039	0.000038	0.000062[(B)]	0.000049[(B)]	0.00015[(B)]	0.00014[(B)]
Vanadium	mg/L	0.00026	0.00025	0.00029	0.00026	0.00028	0.00028	0.00029	0.00029	0.0003	0.00029
Zinc	mg/L	0.00071	0.0007	0.00076	0.00073	0.00075	0.00074	0.00078	0.00076	0.00076	0.00075

Notes:

Bolded concentrations are higher than relevant water quality guidelines.

[(A)] = concentration higher than the relevant acute aquatic life guideline or beyond the recommended pH or DO concentration range.

[(C)] = concentration higher than the relevant chronic aquatic life guideline or beyond the recommended pH, DO or total alkalinity concentration range.

[(D)] = concentration higher than the relevant drinking water guideline or beyond the recommended pH or DO concentration range.

[(T)] = concentration higher than the relevant meadowbank trigger or beyond the recommended pH or DO concentration range.

[(E)] = concentration higher than the relevant meadowbank threshold or beyond the recommended pH or DO concentration range.

[(B)] = concentration higher than the relevant ds1, a5-a4 (baseline maximum) or beyond the recommended pH or DO concentration range.

Water quality data and guidelines shown in this table were rounded to reflect laboratory or field instrument precision *after* comparisons to guidelines. Therefore, values slightly above guidelines may be displayed as being equal to the guidelines and identified as exceedances. Measured concentrations equal to the guideline values were not identified as exceedances.

CCME = Canadian Council of Ministers of the Environment; SSWQO = Site Specific Water Quality Objectives; $CaCO_3$ = calcium carbonate; mg/L = milligrams per litre; - = no guideline or data; mg-N/L = milligrams of nitrogen per litre; mg-P/L = milligrams of phosphorus per litre.

Table 12: Updated Predicted Treated Water Quality for Downstream Node 2

Parameter	Unit	Guidelines for the protection of:						
		Aquatic Life (CCME)		Drinking Water (D)	Meadowbank Trigger (T)	Meadowbank Threshold (E)	DS1, A5-A4 (Baseline Maximum) (B)	SSWQO
		Acute (A)	Chronic (C)					
Conventional Parameters								
Hardness, as $CaCO_3$	mg/L	-	-	-	-	-	8.4	-
Total dissolved solids	mg/L	-	-	-	18	-	20	-
Major Ions								
Calcium	mg/L	-	-	-	-	-	2	-
Magnesium	mg/L	-	-	-	0.83	-	0.85	-
Potassium	mg/L	-	-	-	0.5	-	0.6	-
Sodium	mg/L	-	-	-	0.98	-	0.82	-
Chloride	mg/L	640	120	-	60	120	1.1	-
Fluoride	mg/L	-	0.12	1.5	-	-	0.038	-
Sulphate	mg/L	-	-	-	65	128	2.4	-
Nutrients and Biological Indicators								
Nitrate	mg-N/L	124	2.9	10	1.5	3	0.005	-
Total ammonia	mg-N/L	-	5.5	-	0.065	0.13	0.0057	-
Total Metals								
Aluminum	mg/L	-	0.1	0.1	0.026	0.05	0.014	-
Antimony	mg/L	-	-	0.006	0.01	0.02	0.0001	-
Arsenic	mg/L	-	0.005	0.01	0.0026	0.005	0.0002	0.028
Barium	mg/L	-	-	1	0.5	1	0.0046	-
Beryllium	mg/L	-	-	-	0.0027	0.0053	0.00002	-
Bismuth	mg/L	-	-	-	-	-	0.00005	-
Boron	mg/L	29	1.5	5	0.76	1.5	0.01	-
Cadmium	mg/L	0.00034	0.00004	0.005	0.000025	0.00004	0.000005	-
Chromium	mg/L	-	0.001	0.05	0.00056	0.001	0.0001	-
Cobalt	mg/L	-	-	-	-	-	0.0001	-
Copper	mg/L	-	0.002	-	0.0012	0.002	0.0005	-
Iron	mg/L	-	0.3	-	0.16	0.3	0.035	-
Lead	mg/L	-	0.001	0.01	0.00053	0.001	0.00005	-
Lithium	mg/L	-	-	-	0.048	0.096	0.001	-
Manganese	mg/L	-	-	-	0.32	0.68	0.0024	-
Mercury	mg/L	-	0.000026	0.001	0.000018	0.000026	0.000005	-
Molybdenum	mg/L	-	0.073	-	0.037	0.073	0.00005	-
Nickel	mg/L	-	0.025	-	0.013	0.025	0.0005	-
Selenium	mg/L	-	0.001	0.05	0.00055	0.001	0.00005	-
Silver	mg/L	-	0.00025	-	-	-	0.00001	-
Strontium	mg/L	-	-	-	0.028	0.049	0.0083	-
Thallium	mg/L	-	0.0008	-	0.00041	0.0008	0.00001	-
Tin	mg/L	-	-	-	0.0002	-	0.0001	-
Uranium	mg/L	0.033	0.015	0.02	0.0075	0.015	0.000045	-
Vanadium	mg/L	-	-	-	0.0035	0.006	0.0005	-
Zinc	mg/L	-	0.03	-	0.0063	0.024	0.003	-
Dissolved Metals								
Aluminum	mg/L	-	0.1	0.1	0.026	0.05	0.0054	-
Antimony	mg/L	-	-	0.006	0.01	0.02	0.0001	-
Arsenic	mg/L	-	0.005	0.01	0.0026	0.005	0.00016	-
Barium	mg/L	-	-	1	0.5	1	0.0074	-
Beryllium	mg/L	-	-	-	0.0027	0.0053	0.00002	-
Bismuth	mg/L	-	-	-	-	-	0.00005	-
Boron	mg/L	29	1.5	5	0.76	1.5	0.01	-
Cadmium	mg/L	0.00034	0.00004	0.005	0.000025	0.00004	0.0000063	-
Chromium	mg/L	-	0.001	0.05	0.00056	0.001	0.0001	-
Cobalt	mg/L	-	-	-	-	-	0.0001	-
Copper	mg/L	-	0.002	-	0.0012	0.002	0.00082	-
Iron	mg/L	-	0.3	-	0.16	0.3	0.012	-
Lead	mg/L	-	0.001	0.01	0.00053	0.001	0.00014	-
Lithium	mg/L	-	-	-	0.048	0.096	0.001	-
Manganese	mg/L	-	-	-	0.32	0.68	0.00068	-
Mercury	mg/L	-	0.000026	0.001	0.000018	0.000026	0.000005	-
Molybdenum	mg/L	-	0.073	-	0.037	0.073	0.00005	-
Nickel	mg/L	-	0.025	-	0.013	0.025	0.0005	-
Selenium	mg/L	-	0.001	0.05	0.00055	0.001	0.00005	-
Silver	mg/L	-	0.00025	-	-	-	0.00001	-
Strontium	mg/L	-	-	-	0.028	0.049	0.0082	-
Thallium	mg/L	-	0.0008	-	0.00041	0.0008	0.00001	-
Tin	mg/L	-	-	-	0.0002	-	0.00027	-
Uranium	mg/L	0.033	0.015	0.02	0.0075	0.015	0.000043	-
Vanadium	mg/L	-	-	-	0.0035	0.006	0.0005	-
Zinc	mg/L	-	0.03	-	0.0063	0.024	0.001	-

Table 12: Updated Predicted Treated Water Quality for Downstream Node 2

Parameter	Unit	Predicted Water Quality for Downstream Node 2									
		Construction		Operations		Closure		First Year Post-Closure		Post-Closure (Long Term)	
		Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average
Conventional Parameters											
Hardness, as $CaCO_3$	mg/L	8.9 (B)	8.1	13 (B)	9.9 (B)	13 (B)	12 (B)	14 (B)	13 (B)	15 (B)	14 (B)
Total dissolved solids	mg/L	14	13	24 (T, B)	17	25 (T, B)	22 (T, B)	26 (T, B)	23 (T, B)	26 (T, B)	24 (T, B)
Major Ions											
Calcium	mg/L	2.3 (B)	2.1 (B)	3.4 (B)	2.6 (B)	3.4 (B)	3.1 (B)	3.8 (B)	3.3 (B)	3.9 (B)	3.6 (B)
Magnesium	mg/L	0.75	0.69	1.1 (T, B)	0.83	1.1 (T, B)	0.99 (T, B)	1.2 (T, B)	1.0 (T, B)	1.2 (T, B)	1.2 (T, B)
Potassium	mg/L	0.54 (T)	0.51 (T)	1.1 (T, B)	0.67 (T, B)	1.1 (T, B)	0.96 (T, B)	1.4 (T, B)	1.1 (T, B)	2.0 (T, B)	1.8 (T, B)
Sodium	mg/L	0.7	0.67	1.6 (T, B)	0.9 (B)	1.7 (T, B)	1.4 (T, B)	1.6 (T, B)	1.4 (T, B)	0.99 (T, B)	0.94 (B)
Chloride	mg/L	1.9 (B)	1.4 (B)	3.6 (B)	2.3 (B)	3.7 (B)	2.9 (B)	3.8 (B)	3.2 (B)	2.5 (B)	2.3 (B)
Fluoride	mg/L	0.029	0.028	0.04 (B)	0.031	0.04 (B)	0.038	0.042 (B)	0.038 (B)	0.047 (B)	0.045 (B)
Sulphate	mg/L	2.3	2.2	4.5 (B)	2.8 (B)	4.6 (B)	4.0 (B)	5.6 (B)	4.4 (B)	6.8 (B)	6.1 (B)
Nutrients and Biological Indicators											
Nitrate	mg-N/L	0.011 (B)	8.20E-03 (B)	0.16 (B)	4.20E-02 (B)	0.18 (B)	0.13 (B)	0.15 (B)	0.12 (B)	0.0062 (B)	0.0057 (B)
Total ammonia	mg-N/L	0.0000081	0.0000043	0.0034	0.00067	0.004	0.0029	0.0034	0.0028	0.00014	0.00012
Total Metals											
Aluminum	mg/L	0.02 (B)	1.50E-02 (B)	0.07 (T, E, B)	3.90E-02 (T, B)	0.062 (T, E, B)	3.70E-02 (T, B)	0.043 (T, B)	0.033 (T, B)	**0.14 (C, D, T, E, B)**	**0.12 (C, D, T, E, B)**
Antimony	mg/L	0.00011 (B)	1.10E-04 (B)	0.00039 (B)	1.70E-04 (B)	0.00043 (B)	3.60E-04 (B)	0.00053 (B)	0.00042 (B)	0.0004 (B)	0.00035 (B)
Arsenic	mg/L	0.00039 (B)	0.00027 (B)	0.0055 (C, T, E, B)	1.60E-03 (B)	0.006 (C, T, E, B)	4.30E-03 (T, B)	0.0057 (C, T, E, B)	0.0045 (T, B)	0.0041 (T, B)	0.0035 (T, B)
Barium	mg/L	0.0047 (B)	0.0043	0.0073 (B)	5.40E-03 (B)	0.0073 (B)	6.40E-03 (B)	0.0075 (B)	0.0066 (B)	0.0079 (B)	0.0073 (B)
Beryllium	mg/L	0.000022 (B)	2.00E-05 (B)	0.000025 (B)	2.20E-05 (B)	0.000025 (B)	2.30E-05 (B)	0.000024 (B)	0.000024 (B)	0.000025 (B)	0.000025 (B)
Bismuth	mg/L	0.000054 (B)	5.20E-05 (B)	0.000057 (B)	5.50E-05 (B)	0.000057 (B)	5.60E-05 (B)	0.000058 (B)	0.000057 (B)	0.000056 (B)	0.000055 (B)
Boron	mg/L	0.011 (B)	1.00E-02 (B)	0.03 (B)	1.60E-02 (B)	0.031 (B)	2.30E-02 (B)	0.026 (B)	0.023 (B)	0.013 (B)	0.013 (B)
Cadmium	mg/L	0.0000063 (B)	6.00E-06 (B)	0.0000084 (B)	6.60E-06 (B)	0.0000084 (B)	7.90E-06 (B)	0.0000083 (B)	0.000008 (B)	0.0000079 (B)	0.0000077 (B)
Chromium	mg/L	0.00036 (B)	1.90E-04 (B)	0.0016 (T, E, B)	8.50E-04 (T, B)	0.0015 (T, E, B)	8.30E-04 (T, B)	0.0011 (T, E, B)	0.00074 (T, B)	0.0038 (T, E, B)	0.0032 (T, E, B)
Cobalt	mg/L	0.00012 (B)	1.00E-04 (B)	0.00032 (B)	1.70E-04 (B)	0.00031 (B)	2.30E-04 (B)	0.00027 (B)	0.00023 (B)	0.00035 (B)	0.00031 (B)
Copper	mg/L	0.00057 (B)	0.00054 (B)	0.00089 (B)	6.50E-04 (B)	0.00087 (B)	7.70E-04 (B)	0.0008 (B)	0.00076 (B)	0.00083 (B)	0.00079 (B)
Iron	mg/L	0.053 (B)	4.10E-02 (B)	0.17 (T, B)	9.50E-02 (B)	0.15 (B)	9.60E-02 (B)	0.11 (B)	0.088 (B)	**0.34 (C, T, E, B)**	0.29 (T, B)
Lead	mg/L	0.000088 (B)	8.30E-05 (B)	0.00017 (B)	1.20E-04 (B)	0.00017 (B)	1.50E-04 (B)	0.00015 (B)	0.00014 (B)	0.00014 (B)	0.00014 (B)
Lithium	mg/L	0.0011 (B)	1.00E-03 (B)	0.0014 (B)	1.20E-03 (B)	0.0014 (B)	0.0013 (B)	0.0014 (B)	0.0014 (B)	0.0016 (B)	0.0015 (B)
Manganese	mg/L	0.0023	0.0017	0.029 (B)	8.50E-03 (B)	0.03 (B)	2.10E-02 (B)	0.026 (B)	0.021 (B)	0.0089 (B)	0.0077 (B)
Mercury	mg/L	0.0000054 (B)	5.20E-06 (B)	0.0000065 (B)	0.0000057 (B)	0.0000064 (B)	6.10E-06 (B)	0.0000064 (B)	0.0000062 (B)	0.0000063 (B)	0.0000062 (B)
Molybdenum	mg/L	0.000057 (B)	0.000054 (B)	0.00039 (B)	1.30E-04 (B)	0.00042 (B)	3.10E-04 (B)	0.0005 (B)	0.00034 (B)	0.0007 (B)	0.0006 (B)
Nickel	mg/L	0.00079 (B)	6.40E-04 (B)	0.0027 (B)	1.40E-03 (B)	0.0026 (B)	1.90E-03 (B)	0.0023 (B)	0.0019 (B)	0.0028 (B)	0.0024 (B)
Selenium	mg/L	0.000054 (B)	5.20E-05 (B)	0.00013 (B)	7.30E-05 (B)	0.00013 (B)	1.10E-04 (B)	0.00014 (B)	0.00011 (B)	0.00016 (B)	0.00014 (B)
Silver	mg/L	0.000011 (B)	0.00001 (B)	0.000015 (B)	0.000012 (B)	0.000014 (B)	0.000013 (B)	0.000014 (B)	0.000013 (B)	0.000012 (B)	0.000012 (B)
Strontium	mg/L	0.012 (B)	0.0099 (B)	0.019 (B)	1.40E-02 (B)	0.019 (B)	1.70E-02 (B)	0.021 (B)	0.018 (B)	0.023 (B)	0.021 (B)
Thallium	mg/L	0.000011 (B)	1.00E-05 (B)	0.000017 (B)	1.20E-05 (B)	0.000017 (B)	1.40E-05 (B)	0.000016 (B)	0.000015 (B)	0.000015 (B)	0.000015 (B)
Tin	mg/L	0.00011 (B)	1.10E-04 (B)	0.00012 (B)	1.20E-04 (B)	0.00012 (B)	1.20E-04 (B)	0.00012 (B)	0.00012 (B)	0.00013 (B)	0.00013 (B)
Uranium	mg/L	0.000033	0.000032	0.00014 (B)	5.40E-05 (B)	0.00015 (B)	1.20E-04 (B)	0.00027 (B)	0.00015 (B)	0.00063 (B)	0.00054 (B)
Vanadium	mg/L	0.00056 (B)	0.00053 (B)	0.00087 (B)	6.40E-04 (B)	0.00084 (B)	7.30E-04 (B)	0.00078 (B)	0.00072 (B)	0.001 (B)	0.00097 (B)
Zinc	mg/L	0.0033 (B)	0.0031 (B)	0.0034 (B)	3.20E-03 (B)	0.0035 (B)	3.40E-03 (B)	0.0036 (B)	0.0035 (B)	0.0031 (B)	0.003
Dissolved Metals											
Aluminum	mg/L	0.004	0.0038	0.015 (B)	7.90E-03 (B)	0.013 (B)	8.20E-03 (B)	0.0068 (B)	0.0064 (B)	0.0033	0.0028
Antimony	mg/L	0.000054	0.000051	0.00034 (B)	1.10E-04 (B)	0.00038 (B)	3.00E-04 (B)	0.00048 (B)	0.00036 (B)	0.00033 (B)	0.00029 (B)
Arsenic	mg/L	0.00022 (B)	1.90E-04 (B)	0.0047 (T, B)	1.10E-03 (B)	0.0054 (C, T, E, B)	4.00E-03 (T, B)	0.0052 (C, T, E, B)	0.0042 (T, B)	0.002 (B)	0.0017 (B)
Barium	mg/L	0.006	0.0057	0.0079 (B)	0.0064	0.008 (B)	7.60E-03 (B)	0.0082 (B)	0.0077 (B)	0.0075 (B)	0.0073
Beryllium	mg/L	0.000011	0.00001	0.000013	0.000012	0.000013	0.000013	0.000013	0.000012	0.000012	0.000011
Bismuth	mg/L	0.000027	0.000025	0.000029	0.000027	0.000029	0.000028	0.00003	0.000029	0.000028	0.000027
Boron	mg/L	0.0054	0.0052	0.025 (B)	1.00E-02 (B)	0.025 (B)	1.80E-02 (B)	0.02 (B)	0.017 (B)	0.0075	0.0072
Cadmium	mg/L	0.0000033	0.0000031	0.0000052	0.0000037	0.0000053	0.0000048	0.0000052	0.0000048	0.0000045	0.0000043
Chromium	mg/L	0.000054	0.000051	0.00025 (B)	1.00E-04 (B)	0.00024 (B)	1.70E-04 (B)	0.00018 (B)	0.00016 (B)	0.00007	0.000067
Cobalt	mg/L	0.000055	0.000052	0.00018 (B)	0.000084	0.00019 (B)	1.50E-04 (B)	0.00017 (B)	0.00015 (B)	0.000084	0.00008
Copper	mg/L	0.00064	0.00061	0.00084 (B)	0.00067	0.00084 (B)	0.00079	0.0008	0.00077	0.00066	0.00065
Iron	mg/L	0.01	0.0097	0.033 (B)	1.60E-02 (B)	0.032 (B)	2.20E-02 (B)	0.022 (B)	0.021 (B)	0.015 (B)	0.014 (B)
Lead	mg/L	0.000045	0.000043	0.00012	0.000062	0.00012	0.000092	0.0001	0.00009	0.000064	0.000061
Lithium	mg/L	0.00059	0.00053	0.00086	0.00066	0.00086	0.00078	0.00094	0.00082	0.001	0.00093
Manganese	mg/L	0.001 (B)	7.80E-04 (B)	0.026 (B)	6.70E-03 (B)	0.028 (B)	1.90E-02 (B)	0.023 (B)	0.019 (B)	0.0032 (B)	0.0028 (B)
Mercury	mg/L	0.0000028	0.0000026	0.0000039	0.0000031	0.0000038	0.0000034	0.0000038	0.0000036	0.0000037	0.0000036
Molybdenum	mg/L	0.000032	0.00003	0.00036 (B)	1.00E-04 (B)	0.00039 (B)	2.80E-04 (B)	0.00047 (B)	0.00031 (B)	0.00067 (B)	0.00057 (B)
Nickel	mg/L	0.00051 (B)	0.00045	0.0018 (B)	8.20E-04 (B)	0.0019 (B)	0.0014 (B)	0.0017 (B)	0.0015 (B)	0.00076 (B)	0.00072 (B)
Selenium	mg/L	0.000027	0.000025	0.0001 (B)	0.000046	0.00011 (B)	7.90E-05 (B)	0.00011 (B)	0.000085 (B)	0.00013 (B)	0.00012 (B)
Silver	mg/L	0.0000054	0.0000052	0.0000088	0.0000063	0.0000087	0.0000076	0.000008	0.0000076	0.0000059	0.0000058
Strontium	mg/L	0.011 (B)	9.70E-03 (B)	0.019 (B)	1.30E-02 (B)	0.019 (B)	1.60E-02 (B)	0.021 (B)	0.017 (B)	0.022 (B)	0.02 (B)
Thallium	mg/L	0.0000054	0.0000052	0.000011 (B)	0.0000067	0.000011 (B)	0.0000089	0.0000099	0.000009	0.0000079	0.0000075
Tin	mg/L	0.00012	0.00011	0.00011	0.0001	0.00012	0.00011	0.00012	0.00012	0.00012	0.00011
Uranium	mg/L	0.000027	0.000026	0.00013 (B)	4.80E-05 (B)	0.00014 (B)	0.00011 (B)	0.00026 (B)	0.00015 (B)	0.00063 (B)	0.00053 (B)
Vanadium	mg/L	0.00027	0.00026	0.00047	0.00032	0.00047	0.00039	0.00044	0.0004	0.00044	0.00042
Zinc	mg/L	0.00075	0.00072	0.001 (B)	0.0008	0.001 (B)	0.00096	0.00098	0.00095	0.00091	0.00089

Notes:

Bolded concentrations are higher than relevant water quality guidelines.

(A) = concentration higher than the relevant acute aquatic life guideline or beyond the recommended pH or DO concentration range.

(C) = concentration higher than the relevant chronic aquatic life guideline or beyond the recommended pH, DO or total alkalinity concentration range.

(D) = concentration higher than the relevant drinking water guideline or beyond the recommended pH or DO concentration range.

(T) = concentration higher than the relevant meadowbank trigger or beyond the recommended pH or DO concentration range.

(E) = concentration higher than the relevant meadowbank threshold or beyond the recommended pH or DO concentration range.

(B) = concentration higher than the relevant ds1, a5-a4 (baseline maximum) or beyond the recommended pH or DO concentration range.

Water quality data and guidelines shown in this table were rounded to reflect laboratory or field instrument precision *after* comparisons to guidelines. Therefore, values slightly above guidelines may be displayed as being equal to the guidelines and identified as exceedances. Measured concentrations equal to the guideline values were not identified as exceedances.

CCME = Canadian Council of Ministers of the Environment; SSWQO = Site Specific Water Quality Objectives; $CaCO_3$ = calcium carbonate; mg/L = milligrams per litre; - = no guideline or data; mg-N/L = milligrams of nitrogen per litre; mg-P/L = milligrams of phosphorus per litre.

Interested Party:	**Environment and Climate Change Canada (ECCC)**	**NIRB Ref No.:**	**ECCC #15**
		NWB Ref No.	**ECCC #5**
Re:	**Trophic Status of Mammoth Lake and Downstream Receiving Waters**		

Technical Comment / Recommendation Made By Interested Party:

ECCC recommends the Proponent identify means to reduce phosphorus loadings at source.

Agnico Eagle's Response to Technical Comment / Recommendation:

Agnico Eagle is investing options for treatment of phosphorus on-site. Modelling scenarios are being used to identify the preferred discharge effluent quality from the Attenuation Pond to minimize trophic changes in the downstream environment. At this time, Agnico Eagle is committed to treating phosphorus from the sewage treatment plant through a process of coagulation and precipitation, or coagulation and filtration. Treated water will be discharged to the Attenuation Pond for further treatment, if needed, when combined with other contact water, prior to discharge to the receiving environment.

Details on the treatment design and treatment quality will be provided prior to the Final Hearing.

Interested Party:	**Environment and Climate Change Canada (ECCC)**	**NIRB Ref No.:**	**ECCC #16**
		NWB Ref No.	**ECCC #6**
Re:	**Site-Specific Guideline for Arsenic**		

Technical Comment / Recommendation Made By Interested Party:

a) ECCC recommends the Proponent clarify whether using total arsenic concentrations in the modeled water quality of the receiving environment would materially change the predicted maximum arsenic concentrations.

b) ECCC recommends the Proponent discuss feasibility of using a lower SSWQO for total arsenic, which reflects achievable levels.

Agnico Eagle's Response to Technical Comment / Recommendation:

Response a)

Updated water quality predictions are available for the Project which are based on an updated water balance, additional geochemistry data, and additional receiving environment data; updated predictions were developed for both the dissolved and total fraction (see response to ECCC-14). At this time, Agnico Eagle is evaluating options for treatment of arsenic, however, based on a discharge of 0.15 mg/L from the Attenuation Pond, maximum predicted total arsenic concentration in Mammoth Lake during operations is 0.025 mg/L (25 µg/L). The maximum prediction dissolved arsenic concentration in Mammoth Lake during operations is 0.023 mg/L (23 µg/L).

The United States Environmental Protection Agency (US EPA) Ambient Water Quality Guideline for the protection of freshwater aquatic life for arsenic is expressed in terms of the dissolved concentration in the water column (US EPA 2017). The US EPA provides a conversion factor of one for converting from total arsenic to dissolved arsenic concentrations for application of the guideline. The US EPA indicates that available data suggest that the percent dissolved is approximately 100 percent (US 1993). A conversion factor of one is consistent with the predicted total and dissolved arsenic concentrations for Mammoth Lake during operations.

Response b)

The current Canadian Council of Ministers of the Environment (CCME) Canadian water quality guideline for the protection of freshwater aquatic life (CWQG-PFAL) for arsenic is 5 µg/L. The guideline was derived by multiplying a 14-day EC_{50} of 50 µg/L for growth in the green algae *Scenedesmus obliquus* by a safety factor of 0.1 (CCME 2001). The current guideline was derived using the CCME (1991) protocol for the derivation of water quality guidelines for the protection of aquatic life. The CCME (1991) protocol has since been revised by the CCME. The revised protocol is outlined in the guidance document "*A Protocol for the Derivation of Water Quality Guidelines for the Protection of Aquatic Life 2007*" (CCME 2007). The SSWQO for arsenic (28 µg/L) was developed in general accordance with the protocol

provided for the development of a long-term guideline for freshwater aquatic life in CCME (2007), taking into consideration species resident in Mammoth Lake and downstream lakes as well as in the Project area and Nunavut (as per CCME [2003] guidance on site-specific application of water quality guidelines in Canada). Therefore, the SSWQO is considered to afford a sufficient and likely similar level of protection to aquatic life in Mammoth Lake and downstream lakes as would be afforded if the CCME updated the current CWQG-PFAL using the CCME (2007) protocol and in consideration of site-specific information. Therefore, using a lower SSWQO for arsenic is not considered to be warranted.

References:

CCME (Canadian Council of Ministers of the Environment). 1991. Appendix IX—A protocol for the derivation of water quality guidelines for the protection of aquatic life (April 1991). In: Canadian water quality guidelines, Canadian Council of Resource and Environment Ministers. 1987. Prepared by the Task Force on Water Quality Guidelines. [Updated and reprinted with minor revisions and editorial changes in Canadian environmental quality guidelines, Chapter 4, Canadian Council of Ministers of the Environment, 1999, Winnipeg.]

CCME (Canadian Council of Ministers of the Environment). 2001. Canadian water quality guidelines for the protection of aquatic life: Arsenic. Updated. In: Canadian environmental quality guidelines, 1999, Canadian Council of Ministers of the Environment, Winnipeg.

CCME (Canadian Council of Ministers of the Environment). 2003. Canadian water quality guidelines for the protection of aquatic life: Guidance on the Site-Specific Application of Water Quality Guidelines in Canada: Procedures for Deriving Numerical Water Quality Objectives. In: Canadian environmental quality guidelines, 1999, Canadian Council of Ministers of the Environment, Winnipeg.

CCME (Canadian Council of Ministers of the Environment). 2007. A protocol for the derivation of water quality guidelines for the protection of aquatic life 2007. In: Canadian environmental quality guidelines, 1999, Canadian Council of Ministers of the Environment, 1999, Winnipeg.

US EPA (United States Environmental Protection Agency). 1993. Office of Water Policy and Technical Guidance on Interpretation and Implementation of Aquatic Life Metals Criteria.

US EPA (United States Environmental Protection Agency). 2017. National Recommended Water Quality Criteria – Aquatic Life Criteria Table. Available online at: https://www.epa.gov/wqc/national-recommended-water-quality-criteria-aquatic-life-criteria-table.

Interested Party:	**Environment and Climate Change Canada (ECCC)**	**NIRB Ref No.:**	**ECCC #17**
		NWB Ref No.	**ECCC #7**
Re:	**Climate Change and Timing of Predictions**		

Technical Comment / Recommendation Made By Interested Party:

a) ECCC recommends the Proponent provide clarification of the statement regarding the duration of climate change effects and whether or not it includes the post-closure period of the Project.

b) ECCC recommends the Proponent provide a contingency plan to mitigate long term effects of climate change on the Project during the post-closure phase

Agnico Eagle's Response to Technical Comment / Recommendation:

Response a)

The proposed Life of Mine is expected to be 4-years. The post-closure assessment period was assumed to be 2029 to 2035.

The effects of climate change on the Project are uncertain because the effectiveness of proposed greenhouse gas emissions mitigation (i.e., the 2015 Paris Agreement) is unknown. IPCC AR5 predictions indicate a year 2100 increase in ambient air temperatures of +13°C in late fall and +5°C in late spring for the "business as usual" socio-economic scenario (i.e., RCP8.5). Predicted changes in annual average air temperatures by 2035 are predicted to be a few degrees.

Response b)

The effects of climate change on the Project are likely greatest for permafrost. Sensitivity of the Project to both the development of permafrost and permafrost degradation were discussed in FEIS Volume 5.

The FEIS analysis indicates that the gradual increase in the active layer due to climate change could impact Project infrastructure remaining after closure and decommissioning (e.g., the waste rock pile). The foundations of the waste rock pile are expected to remain frozen under a long-term warming trend. However, potential deepening of the active layer will be considered in the design and closure planning for the waste rock pile and other mine infrastructure. Agnico Eagle refers ECCC to technical comment response INAC TRC#1 and ECCC #18. In summary, Agnico Eagle will follow the ARD/ ML Management and update the Waste Rock Storage Facility Management Plan to include additional storage of NPAG and NML material in the East WRSF as a contingency for closure and will use adaptive management to ensure long-term success in post-closure.

Experience and knowledge gained through operations and closure of Meadowbank facilities will continue to inform final closure planning for the Project.

Interested Party:	**Environment and Climate Change Canada (ECCC)**	**NIRB Ref No.:**	**ECCC #18**
		NWB Ref No.	**ECCC #8**
Re:	**Acid Rock Drainage (ARD)**		

Technical Comment / Recommendation Made By Interested Party:
ECCC recommends that the Proponent develop a contingency plan to mitigate or control ARD should the onset of ARD occur earlier than projected.

Agnico Eagle's Response to Technical Comment / Recommendation:
Monitoring plans of waste rock geochemistry and mine contact water quality will be in place and will be followed during construction and operations to verify that site conditions are as currently projected. The monitoring plans will allow early detection and implementation of corrective actions if necessary, should significant differences be observed that may have negative effects, environmentally or otherwise.

Should ARD occur earlier than projected, the contingency plan follows a tiered approach, as follows:

1. Follow the ARD Management Plan (Agnico Eagle 2017a).
2. Adapt the ARD Management Plan during operations, as required (Agnico Eagle 2017a).
3. Collect and treat contact water prior to discharge, if necessary (Agnico Eagle 2017b).
4. Adjust closure plans for the WRSF appropriately, based on observed performance during operations (e.g., cover thickness, materials used, etc.).

Monitoring, adaptive management, and contingencies will be used during operations to adapt the closure plan to ensure that post-closure is successful. These are discussed in the ARD Management Plan (Agnico Eagle 2017a) and the Water Quality and Flow Monitoring Plan (Agnico Eagle 2017b).

References:
Agnico Eagle (Agnico Eagle Mines Limited). 2017a. Whale Tail Pit – Waste Rock Management Plan Version 1. January 2017.

Agnico Eagle. 2017b. Whale Tail Pit – Water Quality and Flow Monitoring Plan Version 1. January 2017.

Interested Party:	**Environment and Climate Change Canada (ECCC)**	**NIRB Ref No.:**	**ECCC #19**
		NWB Ref No.	**ECCC #9**
Re:	**Waste Rock Storage and Ore Stockpile Facilities**		

Technical Comment / Recommendation Made By Interested Party:

ECCC recommends that the Proponent correct the typographical errors to read section showed 2.5V:1V, instead of 2.5H: 1V; also 3V:1V instead of 3H: 1V.

Agnico Eagle's Response to Technical Comment / Recommendation:

ECCC's recommendations are correct and should have read:

> *"…The current design and overall sideslope angle of the Whale Tail WRSF will be 2.5H:1V, an angle generally considered stable for such a facility. …" (Volume 8, Appendix 8-A.1, Section 6.3, pg. 16)*

and

> *"The sideslope angle of these ore stockpiles will be 3H:1V, an angle generally considered stable for such facility. Slope stability analyses will be performed during the next engineering phases and a final design will be presented prior to construction." (Volume 8, Appendix 8-A.1, Section 7.3, pg. 18)*

Revisions will be made to future iterations for the Mine Waste Rock and Tailings Management Plan.

Interested Party:	**Environment and Climate Change Canada (ECCC)**	**NIRB Ref No.:**	**ECCC #20**
		NWB Ref No.	**ECCC #10**
Re:	**Dike Construction and Dewatering Management Plan**		

Technical Comment / Recommendation Made By Interested Party:

a) ECCC recommends that the Proponent clarify what criteria would be used to trigger pumping during dike construction and dewatering in regards to Table 4.1 construction of rock platform advances and in the trench.

b) ECCC recommends that the Proponent confirm that the collection of baseline measurements at the dike construction monitoring locations in Whale Tail and Mammoth Lakes will happen prior to construction.

c) ECCC recommends that the Standard Operating Procedure in Section 4.3 be updated to reference Whale Tail winter and open water work.

Agnico Eagle's Response to Technical Comment / Recommendation:

Response a)

To protect the receiving environment, use of pumps in the trenches is proposed as a mitigation if routine monitoring at respective stations exceeds a TSS-turbidity trigger level (e.g., concentrations as outlined in the Water Quality Monitoring and Management Plan for Dike Construction Dewatering [FEIS, Volume 8, Appendix 8-A.2, Table 3.1).

Based on past experience of constructing the Bay Goose Dike, there are many construction adaptations (one of which is pumping in the trench) that Agnico Eagle will consider and implement during construction of the Whale Tail Dike (these are presented in Agnico Eagle 2011, Appendix A4). If alternative construction practices do not reduce TSS-turbidity levels at receiving water monitoring stations, pumping in the trench will begin. Regular routine monitoring of turbidity at receiving water monitoring stations will continue to determine when a management response is required and the general steps to follow (FEIS Volume 8, Appendix 8-A.2, Section 3; re-stated in response to ECCC-25). As described in the FEIS Appendix 8-A.2, this concept of pumping in the trench is intended to minimize the outflow of turbid water from the construction area to the receiving environment; pumping creates a net influx of water through the dike, however it requires the pumping of water to a contained area where water can be treated before discharge (Agnico Eagle 2011, Appendix A4).

Response b)
Agnico Eagle agrees and will collect baseline measurements (i.e., TSS and turbidity) according to the locations identified in the Water Quality and Flow Monitoring Plan (FEIS, Volume 8, Appendix 8-B.3, Figure 2-6 and Table 3-1) and in the CREMP prior to construction.

Response c)
Agnico Eagle agrees with the ECCC recommendation. Section 4.3 of the Water Quality Monitoring and Management Plan for Dike Construction Dewatering will be updated prior to construction as follows:

4.3 Standard Operating Procedures for Monitoring and Management
(new text to add): Construction of the Whale Tail dike will start in summer (2018) and be completed in winter (2019); winter and summer SOPs will apply.

SOP for Winter Construction of the Causeway of the Bay-Goose Dike (Phase 2) and Whale Tail Dike
No additional text required as it all applies to Whale Tail dike.

SOP for Open Water Construction of the Bay-Goose Dike (Phase 2) and Whale Tail Dike
No additional text required as it all applies to Whale Tail dike.

References:

Agnico Eagle (Agnico Eagle Mines Ltd.). 2011. 2010 Annual Report, Meadowbank Gold Project. Prepared by Agnico Eagle Mines Limited, Meadowbank Division. May 2011

Interested Party:	**Environment and Climate Change Canada (ECCC)**	**NIRB Ref No.:**	**ECCC #21**
		NWB Ref No.	**ECCC #11**
Re:	**Use of Attenuation Pond Water for Dust Control Operations**		

Technical Comment / Recommendation Made By Interested Party:

ECCC recommends that consideration be given to establishing water quality limits on the water that is used for dust control

Agnico Eagle's Response to Technical Comment / Recommendation:

Mitigation and monitoring opportunities at the Whale Tail Pit Project are similar to those at the existing Meadowbank Mine. Best practices used at the Meadowbank Mine (Agnico Eagle 2008) will continue to be implemented which requires that the quality of the water to be used for dust suppression will be confirmed during monthly monitoring to ensure the application to roadways to minimize the potential introduction of deleterious substances into the environment. Agnico Eagle will continue to use contact water to water roads within the site footprint (i.e., in areas where all runoff can be captured) and to use non-contact water (from approved sources) to water roads outside of the site footprint (i.e., in areas where runoff cannot be captured).

References:

Agnico Eagle (Agnico-Eagle Mines Ltd.). 2008. Dust Suppression Protocol for the Meadowbank Gold Mine Site Roads and for the All Weather Access Road to Baker Lake. AEM – Meadowbank Division. July 2008.

Azimuth (Azimuth Consulting Group Partnership). 2016. Core Receiving Environment Monitoring Program (CREMP) 2015, Meadowbank Mine. Report prepared by Azimuth Consulting Group, Vancouver, BC for Agnico-Eagle Mines Ltd., Baker Lake, NU. March 2016.

Interested Party:	**Environment and Climate Change Canada (ECCC)**	**NIRB Ref No.:**	**ECCC #22**
		NWB Ref No.	**ECCC #12**
Re:	**Monitoring of North Whale Tail Lake**		

Technical Comment / Recommendation Made By Interested Party:

ECCC recommends that the Proponent conduct monthly monitoring of the pit lake as it develops, when safe to do so. Once filled, monitoring should continue on a monthly basis to characterize mixing behaviour of the pit and North Whale Tail Lake

Agnico Eagle's Response to Technical Comment / Recommendation:

Agnico Eagle agrees to ECCCs recommendation and will adapt closure monitoring to align with annual CREMP monitoring. While being filled, the pit lake will be monitored monthly during the open-water period and when safe to do so. While being filled, Whale Tail Lake (North Basin) will be monitored monthly during the open-water period and when safe to do so. If possible, samples will be collected at various depths through the water column to confirm establishment of a chemocline between the top of the pit and the bottom of Whale Tail Lake (North Basin).

Interested Party:	**Environment and Climate Change Canada (ECCC)**	**NIRB Ref No.:**	**ECCC #23**
		NWB Ref No.	**ECCC #13**
Re:	**Discharge from Mammoth Lake**		

Technical Comment / Recommendation Made By Interested Party:

ECCC seeks confirmation from the Proponent that this is a typographical error, and that the license limits referenced would apply to effluent going into Mammoth Lake from discharge station ST-WT-2.

Agnico Eagle's Response to Technical Comment / Recommendation:

Agnico Eagle confirms that the correct statement (Volume 8, Appendix 8-B.3, Section 3.1.2.2, pg.23) should read:

> Effluent discharged from the Whale Tail Pit Attenuation Pond at CM station ST-WT-2 is directed to Mammoth Lake through the Whale Tail Pit diffuser. Agnico Eagle proposes that discharge to ~~from~~ Mammoth Lake shall not exceed the effluent quality limits stipulated in Part F, Item 3 of the Type A Water Licence.

Interested Party:	**Environment and Climate Change Canada (ECCC)**	**NIRB Ref No.:**	**ECCC #24**
		NWB Ref No.	**ECCC #14**
Re:	**Proximity of References Lakes to Haul Road**		

Technical Comment / Recommendation Made By Interested Party:

a) ECCC recommends that the Proponent describe how road-related trends in the reference lakes will be tracked and if detected, how they will be managed.

b) ECCC recommends that the Proponent monitor dust downwind of the access/haul road during construction and operation of the road, and use this information to estimate deposition rates to the reference lakes.

Agnico Eagle's Response to Technical Comment / Recommendation:

Response a)

The Core Receiving Environment Monitoring Program (CREMP) study design is in the "before-after-control-impact" (BACI) family, which relies on measuring the proportional changes between reference (control) and target (impact) areas in relation to a potential disturbance (before vs after the onset of mining). Innugugayualik Lake (INUG) has been the core reference area since formal monitoring began in 2006 and is used as the main "control" comparator for all Meadowbank "impact" sampling areas in the statistical analyses, due to the paired "before" baseline data collected in 2006 and 2007 prior to mine development. Pipedream Lake (PDL) was added in 2009; while it is not used in the statistical analyses due to the absence of paired data during the "before" period, the results are used qualitatively to provide context to the interpretation of the BACI statistical results. Thus, from a CREMP perspective, INUG has a higher importance to the program than PDL. It is also important to note that the spatial scale of inference for the CREMP is at the basin scale for larger lakes, which applies to both reference lakes (i.e., the CREMP uses the specific basins, rather than the whole lakes). Thus, Agnico Eagle use "lake" to refer to the lake in general and "sampling area" to refer to the specific basin used in the CREMP.

The below figure shows the Whale Tail Pit road alignment in relation to the INUG and PDL lakes and sampling area and the existing Meadowbank Project. The continental divide is situated between the existing Meadowbank Mine (around which the lakes drain through Tehek Lake then SE and eventually to Hudson Bay) and INUG and PDL lakes (which both drain to the north, eventually to the Arctic Ocean). The road is situated along the eastern and northern side of PDL lake. While it is possible that road dust could be blown into the lake under certain conditions, the prevailing winds are from the NW (i.e., blowing dust away from the lake). During prevailing wind conditions it is possible that road dust could be deposited in the small upstream lakes situated along the eastern side of the lakes and transported into PDL lake. However, air quality model predictions, and results of the dustfall monitoring program, indicate that dust deposition is below recreational guideline values within approximately 300 meters of

the road. Thus, dust deposition to the lakes is likely very low, since the PDL sampling area is approximately 2 km from the road at the nearest point. The CREMP program has already demonstrated that it can be used to detect small changes in water quality. Thus, while road-related changes to water quality at the PDL sampling area appear unlikely, monitoring results will be reviewed each year to verify that no abnormal changes have occurred. For the INUG sampling area, exposure to the road is limited to the extreme end of INUG lake where less than 1 km of the road is situated on the western side of a very small basin. Any road-related sediment inputs into this basin would likely either settle or be exported out of the lake to the north. Consequently, it is inconceivable that road-related inputs could affect the INUG sampling area situated approximately 10 km away to the south via the main axis of the lake. However, similar to the PDL sampling area, temporal trends will be followed closely as a precautionary measure.

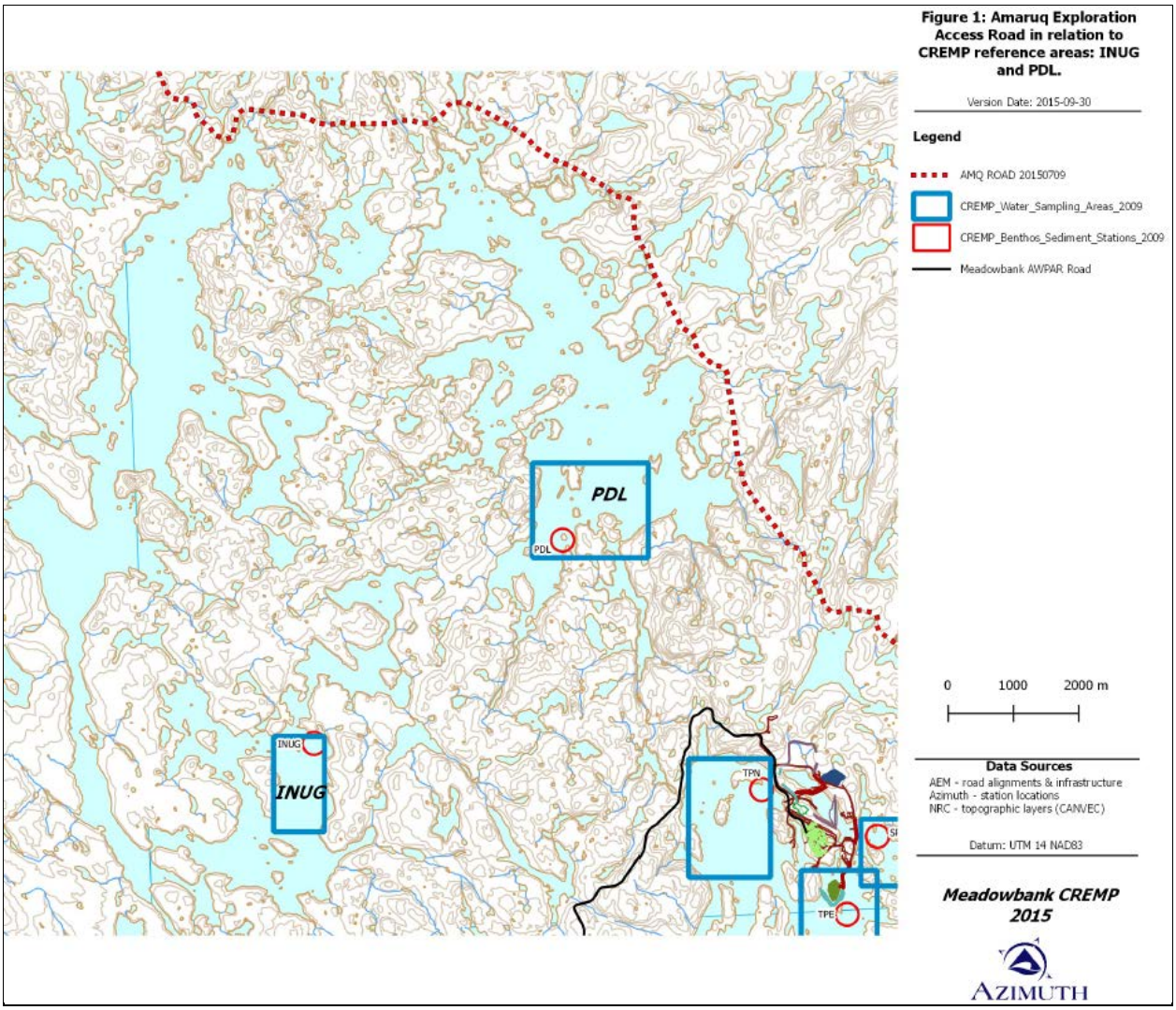

Figure 1: Amaruq Exploration Access Road in relation to CREMP reference areas: INUG and PDL.

Version Date: 2015-09-30

In summary, the Whale Tail Pit road is not expected to jeopardize the CREMP reference sampling areas PDL or INUG but year-over-year trends will be monitored to determine any changes during or post-

construction. Furthermore, best practices will be followed during the construction and operations of the road, thus minimizing the potential for road-related affects to water quality and are outlined in the Road Management Plan and Emergency Response and Spill Contingency Plan. Water quality monitoring will be conducted at these CREMP stations during both construction and operations of the road to verify the situation.

Response b)
Dustfall monitoring is proposed along three transects proposed for implementation at approximately kilometre 18, 36, and 54 along the haul road (see response to TC ECCC #2). The results of the dustfall monitoring program will be used as complementary information along with water quality data from the reference areas to ensure that this concern is not overlooked.

Interested Party:	**Environment and Climate Change Canada (ECCC)**	**NIRB Ref No.:**	**ECCC #25**
		NWB Ref No.	**ECCC #15**
Re:	**Water Quality Monitoring During In-Water Construction**		

Technical Comment / Recommendation Made By Interested Party:

a) ECCC recommends that updated site-specific TSS-turbidity regression curves be established by the Proponent prior to in-water construction and used in conjunction with water quality monitoring during in-water (i.e. dike and bridge) construction.

b) ECCC recommends that updated site-specific TSS-turbidity regression curves be validated by the Proponent and updated (if necessary) with field measurements during construction.

c) ECCC recommends that action levels are established by the Proponent to trigger specific management actions, including halting construction.

Agnico Eagle's Response to Technical Comment / Recommendation:

Plans for monitoring water quality during in-water construction are included in the Dike Construction and Monitoring Plan (FEIS Volume 8, Section 8.3.1 and Appendix 8-A.2). The Water Quality Monitoring and Management Plan for Dike Construction and Dewatering was developed in accordance with the Type A Water Licence for the Meadowbank Gold Project (Water Licence 2AM-MEA0815 Part D, Item 11.) and amended for the Whale Tail Project.

Response a)

As described in the Dike Construction and Monitoring Plan (FEIS Volume 8, Appendix 8-A.2 Section 4.2.2), TSS in the environment will be estimated from measured turbidity and the TSS-turbidity regression. Prior to commencement of construction activities, water samples will be collected from areas representing a range of baseline TSS concentrations and analyzed for both TSS and turbidity. Paired concentration data will be used to either update the existing Meadowbank TSS-Turbidity regression or a Whale Tail specific regression equation will be developed. Once the regression equation has been confirmed, real-time TSS concentrations during construction can be estimated from in situ turbidity measurements.

Sampling and data analysis steps will follow the approach described in FEIS Volume 8, Appendix 8-A.2, Section 4.

Response b)

During in-water construction, weekly water samples will be collected concurrently with in situ turbidity measurements and submitted for laboratory determination of TSS concentrations. Comparisons of measured TSS and estimated TSS (based on turbidity) will be completed to confirm the turbidity data are

representative of TSS concentrations. The regression equation will be updated accordingly as construction progresses to reflect potential changes in the site-specific relationship between turbidity and TSS.

Response c)
The triggers for managing TSS concentrations during in-water construction will be the same as those described in Section 3, Table 3.1 of FEIS Volume 8, Appendix 8-A.2 and are based on allowable maximum monthly mean concentrations and short term maximum TSS concentrations.

Each trigger value has a corresponding management action plan that describe the steps that should be undertaken in the event that the trigger value is exceeded (FEIS Volume 8, Appendix 8-A.2, Section 3). Each management action plan is comprised of the following basic steps:

- halt construction activities until the source of the TSS release can be identified and corrective actions applied;
- notify DFO of the release;
- evaluate potential corrective actions and select the action or actions most appropriate for site conditions;
- implement corrective actions;
- resume construction activities only when TSS concentrations fall below the relevant trigger values and further exceedances are no longer considered likely to occur; and
- continue to monitor TSS concentrations.

Corrective actions may include reducing the frequency or intensity (e.g., reduce the number of hours of in-water work completed per day) of in-water activities, adjusting construction methods, changing the type of construction equipment used, and/or installing additional turbidity barriers.

Interested Party:	**Environment and Climate Change Canada (ECCC)**	**NIRB Ref No.:**	**ECCC #26**
		NWB Ref No.	**ECCC #16**
Re:	**Sediment Core Sampling as Part of the Core Receiving Environment Monitoring Program (CREMP)**		

Technical Comment / Recommendation Made By Interested Party:

ECCC recommends that the Proponent collect sediment cores in 2017 as per its CREMP sampling design and Standard Operating Procedures, before construction and mining activities begin at Whale Tail Pit, for all future-exposure and reference lakes listed in Table 2-2.

Agnico Eagle's Response to Technical Comment / Recommendation:

Sediment coring under the Meadowbank CREMP is conducted on a three-year cycle, timed to match EEM monitoring. An event is scheduled for 2017, including the expansion of the program to include the Whale Tail Pit CREMP sampling areas. Refer to Volume 8, Appendix 8.E-2.

FISHERIES AND OCEANS CANADA

Interested Party:	**Fisheries and Oceans Canada (DFO)**	**NIRB Ref No.:**	**DFO 1**
		NWB Ref No.	**n/a**
Re:	**Freshwater Environment – Habitat Losses**		

Technical Comment / Recommendation Made By Interested Party:

1) DFO requests AEM include the bottom dwelling species in their calculations of losses.

2) DFO requests AEM provide better illustrations to demonstrate the proposed increased surface area of Whale Tail Lake and its viability as newly created littoral habitat.

3) DFO requests AEM provide additional details outlining how they intend to evaluate the potential mixing or non-mixing situation in the pit portion of Whale Tail Lake as the information adopted from Meadowbank's CREMP and Water Quality Monitoring Plan would seem insufficient to do so. If AEM is unable to demonstrate sustainable water quality and habitat suitable for fish in the post-closure scenario, AEM should provide DFO with contingency offsetting options located outside the Whale Tail Lake basin.

4) DFO requests AEM provide additional and updated information on the evaluation of end pit lake scenarios, with references, to address the above listed concerns regarding the end pit lake scenario. AEM has noted Gammons et al 2009 which does evaluate the Colomac Gold Mine in NWT. There have been several documents written since including monitoring reports that would provide a beneficial overview with lessons learned. This information would aid DFO in subsequent reviews of the conceptual offsetting plan and monitoring reports. In addition to the monitoring data available for the Colomac Gold Mine (e.g. Colomac Mine site surveillance network program and enhanced natural removal program annual reports), DFO is providing AEM with the following documents to aid in their evaluation: Pieters, R., Coedy, W., Ashley K.I., and Lawrence, G.A. 2015. Artificial circulation of a mine pit lake. Can. J. Civ. Eng. 42:33-43 and Pieters, R. and Lawrence, G.A. 2014. Physical processes and meromixis in pit lakes subject to ice cover. Can. J. Civ. Eng. 41: 569-578

5) DFO requests AEM clarify and correct any discrepancies regarding depth criteria.

6) Critical to the assumption that fish will recolonize areas dewatered by the dikes in the north basin of Whale Tail Lake is that appropriate habitat is available to support all life history stages in the south basin. No studies were conducted to determine where specifically fish were spawning; rather, it is assumed that fish spawn on any suitable combination of substrate and water depth. As noted for the water quality assessment, the potential for flooding to release organic material and nutrients to Whale Tail Lake and its tributaries should be more carefully considered. A reduction in spawning habitat quality could put the recovery of the fish population post closure at risk. The predicted rapid population recovery in the north basin of Whale Tail Lake assumes that population growth is density dependent. In the Arctic

environment density independent factors may be more important and recovery may take longer. DFO requests AEM fully evaluate these losses in revisions to the conceptual offsetting plan.

Agnico Eagle's Response to Technical Comment / Recommendation:

Response 1)

Agnico Eagle agrees and included bottom dwellers (i.e., burbot) in the conceptual fisheries offsetting calculations and will do so in the Final Offsetting Plan.

Response 2)

Three illustrations of the water surface of Whale Tail Lake (South Basin) are provided below, at 156.00 metres above sea level (i.e., baseline conditions; Figure DFO1-1), at 154.50 masl (i.e., 2 metres above baseline conditions; Figure DFO1-2), and at 156.00 masl (i.e., 3.5 m above baseline conditions, or at the maximum flooding elevation; Figure DFO1-3).

Water surface statistics are summarized in the table below corresponding to water surface elevations noted above. At 154.50 masl, the water surface elevation of Whale Tail Lake (South Basin) will have increased by 546,262 m^2 from baseline conditions. At 156.00 masl, the water surface elevation of the Whale Tail Lake (South Basin) will have increased by 3,008,450 m^2, from baseline conditions. The sequence of surface water changes overtime is depicted in Figure DFO 1-4.

Additional information and illustrations related to flooding activities of the Project, including construction of the dikes, monthly water surface elevation, and total and terrestrial flooded area, is provided as part of the response to the Information Request DFO 5 (Technical Recommendation #3), sourced primarily from Appendix 6-F (Volume 6) of the FEIS.

Table DFO1-1: Water Surface Statistics for the Flooding of Whale Tail Lake (South Basin)

Elevation (masl)	Flooded Depth (m)	Depth Category	Surface Area (m^2)	Change in Surface Area (m^2)	Figure
152.50	0	n/a	843,448	0	DFO1-1
154.50	2.00	0 – 2.0	1,389,710	546,262	DFO1-2
156.00	3.50	2.0 – 3.5	3,851,450	3,008,002	DFO1-3

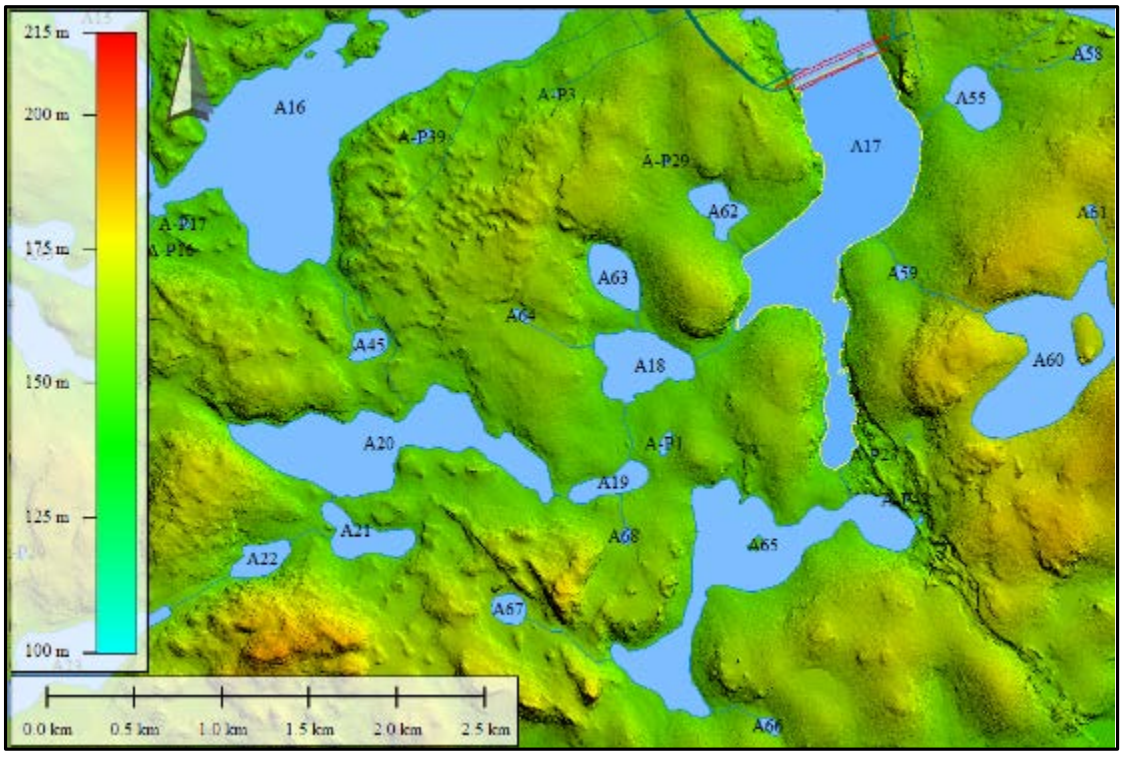

Figure DFO1-1: Whale Tail Lake (South Basin) at 152.50 masl

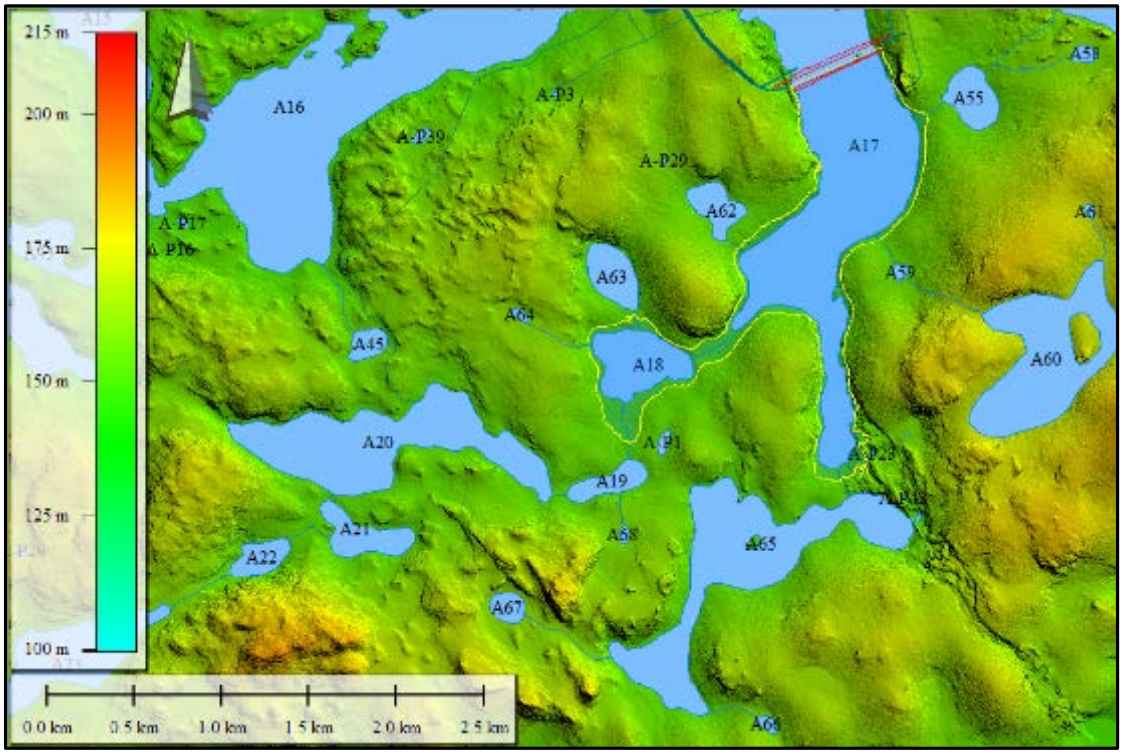

Figure DFO1-2: Whale Tail Lake (South Basin) at 154.50 masl

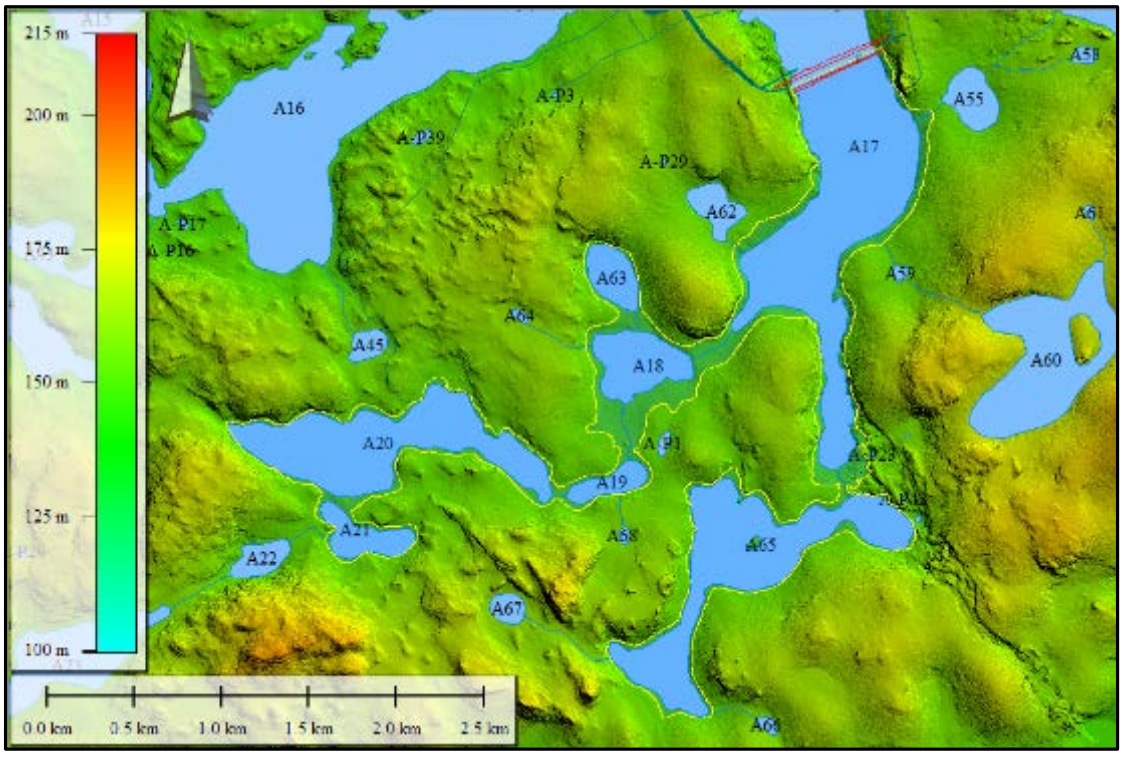

Figure DFO1-3: Whale Tail Lake (South Basin) at 156.00 masl

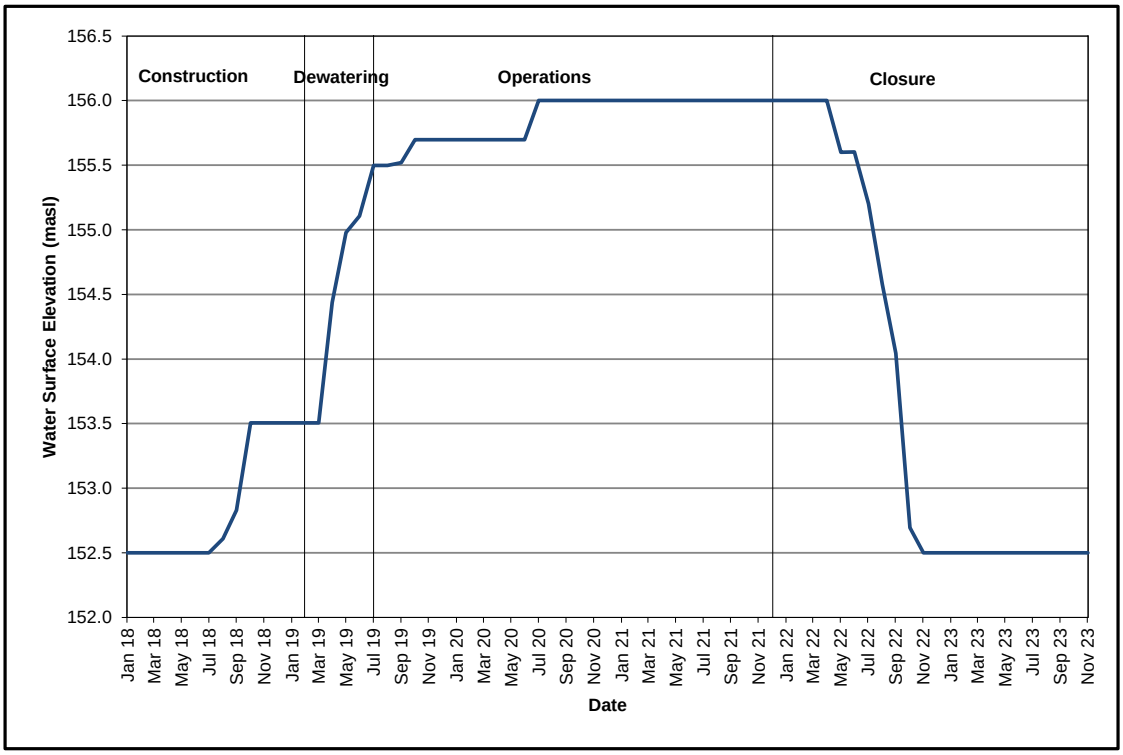

Figure DFO 1- 4: Derived Water Surface Elevation of the Whale Tail Lake (South Basin) Diversion

Response 3)
Agnico Eagle agrees with DFOs recommendation and will adapt CREMP closure monitoring and fisheries and offsetting monitoring of the pit portion of Whale Tail Lake to ensure the ability to demonstrate suitable water quality in closure. If deemed unsuitable, Agnico Eagle will consider contingency fisheries offsetting options located outside the Whale Tail Lake basin that are acceptable to DFO, KivIA, and local stakeholders.

Response 4)
As stated in the reply to Information Request (IR) DFO-1, submitted January 20, 2017, Agnico Eagle is confident that the evaluation of the end pit scenario in Whale Tail Lake in the FEIS was appropriate for the purposes of the environmental assessment.

The environmental assessment assumed that the Whale Tail Pit results in a permanent loss of habitat. Potential negative effects from the Whale Tail Pit are presented, including a discussion of permanent losses of lake-bottom substrate habitat for benthic feeding or bottom dwelling species such as Round Whitefish (*Prosopium cylindraceum*) and forage species such as Slimy Sculpin (*Cottus cognatus*) (Volume 6, Section 6.4.3 and 6.4.4). Similarly, the conceptual loss of habitat resulting from the pit is equivalent to assigning fish habitat a zero value to the deep area that is created when the pit is reflooded, as per the approach in the Conceptual Offsetting Plan (Volume 8, Appendix 8.E-4).

The assessment of changes to water quality also assumed a fully mixed scenario in the Whale Tail Pit (Appendix 6-I). Although the pit will not provide fish habitat under a fully mixed scenario, waters overlying the pit in Whale Tail Lake will provide conditions for aquatic biota. As stated in Section 5.2.1 in Appendix 6-H, the fully mixed pit scenario showed that for modelled parameters there will be no exceedances of the CCME Canadian Environmental Quality Guidelines for the Protection of Aquatic (CCME 1999; CEQG-AL) or the Site-specific Water Quality Objective (SSWQO) for arsenic (Volume 6, Appendix 6-N). Further discussion on the stability of the pit and overlying water of Whale Tail Lake (North Basin) is provided in response to INAC-2.

If meromictic conditions prevail at post-closure, the top mixolimnion layer of the flooded pit is expected to provide water quality conditions similar to shallow waters of unaltered areas of Whale Tail Lake, and provide additional depth for overwintering and refugia habitat for adult, large-bodied fish species (e.g., salmonids). This is consistent with other studies that have demonstrated that populations of fish can persist within end pit lakes (Tones 1982; reviewed in Gammons et al. 2009; reviewed in Sonnenberg 2011).

Agnico Eagle is committed to work with DFO, KivIA, and relevant stakeholders to submit a Fisheries and Offsetting Monitoring Plan prior to the Final Hearing. Within that plan, Agnico Eagle will commit to conducting research, in partnership with academic institutions, KivIA, and DFO, to evaluate conditions in the re-flooded area and Whale Tail Pit at closure and post-closure. This research will consider the findings in Pieters and Lawrence (2014), who describe six meromictic pit lakes in Northern BC, the Yukon Territories, and the Northwest Territories. They also discuss factors that affect meromixis in northern

mine pit lakes, such as high depth, steep walls, and brackish water. Research will also consider the findings in Pieters et al. (2015), as appropriate.

Response 5)
Agnico Eagle will work with the DFO and clarify any discrepancies regarding depth criteria in the Final Offsetting Plan.

Response 6)
Agnico Eagle will work with the DFO and KivIA to evaluate the gains and appropriate losses due to flooding in the Final Offsetting Plan prior to the Final Hearing. Furthermore, in the Fisheries and Offsetting Monitoring Plan, Agnico Eagle will commit to conducting research, in partnership with academic institutions, KivIA, and DFO, to evaluate the effects of flooding on the fish community.

References:

CCME (Canadian Council of Ministers of the Environment). 1999 (with updates to 2015). Canadian Environmental Quality Guidelines for the Protection of Aquatic Life – Summary Table. Available at: http://st-ts.ccme.ca/. Accessed: February 2016.

Gammons CH, Harris LN, Castro JM, Cott PA, Hanna BW. 2009. Creating lakes from open pit mines: processes and considerations, with emphasis on northern environments. Canadian Technical Report of fisheries and Aquatic Sciences 2826:ix + 106p.

Pieters R, Lawrence GA. 2014. Physical processes and meromixis in pit lakes subject to ice cover. Canadian Journal of Civil Engineering 41: 569-578.

Pieters R, Coedy W, Ashley KI, Lawrence GA. 2015. Artificial circulation of a mine pit lake. Canadian Journal of Civil Engineering 42:33-43.

Sonnenberg R. 2011. Development of aquatic communities in high-altitude mine pit lake systems of westcentral Alberta. Master of Science Thesis. University of Lethbridge. 240 pp.

Tones PI. 1982. Limnological and fisheries investigation of the flooded open pit at the Gunnar Uranium Mine. Saskatchewan Research Council. Publication No. C-805-10-E-82. 78 pp.

Interested Party:	**Fisheries and Oceans Canada (DFO)**	**NIRB Ref No.:**	**DFO 2**
		NWB Ref No.	**n/a**
Re:	**Freshwater Environment – Fish Out**		

Technical Comment / Recommendation Made By Interested Party:

1) DFO requests AEM utilize the form (excel sheet) provided to AEM for Phaser Lake and ensure that all the required metrics are provided.

2) DFO requests that AEM correct the error(s) referencing Wally Lake as this Fish Out Plan is for Whale Tail Project, not Meadowbank.

3) DFO requests AEM provide an estimate of fish to be removed from Whale Tail Lake's North basin.

Agnico Eagle's Response to Technical Comment / Recommendation:

Response 1)

Agnico Eagle will utilize the Excel form provided by DFO for the Phaser Lake fish-out to report results of the Whale Tail Lake (North Basin) fish-out program, and has indicated this in Section 10 of the Fishout Work Plan.

Response 2)

The reference to Wally Lake in Section 6.2 of the Fishout Work Plan has been corrected to "Whale Tail Lake (South Basin)".

Response 3)

As described in Volume 6, Section 6.5.3.2.1 of the FEIS, the abundance of fish to be removed from the dewatered areas of Whale Tail and Mammoth lakes was estimated. First, the amount of fish biomass in Lake A17 (Whale Tail Lake) and Lake A16 (Mammoth Lake) was calculated using the relationship between lake area (ha), species richness (i.e., number of species in lake), and mean annual air temperature (°C) using the following equation (Samarasin et al. 2014):

$$\log_{10}(\text{biomass}) = 1.08 + 1.04\ [\log_{10}(\text{lake area})] + 0.05 * (\text{species in lake}) + 0.03 * (\text{mean annual air temperature})$$

Using the biomass result, and an overall mean weight of 0.26 kg derived from the calculated mean weights of three fish-outs at the Meadowbank Mine (Agnico Eagle 2014c; FEIS Appendix G14), the total number of fish in the drawdown area was estimated. Species abundances were generated by multiplying the expected number of fish to be removed from the dewatered area by the species relative abundances reported in FEIS Volume 6, Section 6.5.2.2.2.2.

Based on the equation provided in Samarasin et al. (2014), total fish biomass in Mammoth Lake (total area of 148 ha) was estimated to be 1,604 kg. The fish biomass in the dewatered area (1.00 ha, including

0.067 ha for the dike footprint) was estimated to be 9.5 kg or 0.59% of Mammoth Lake's total fish biomass. Total fish biomass in Whale Tail Lake (total area of 166 ha) was estimated to be approximately 2,028 kg. The fish biomass in the dewatered area (68.56 ha, including 3.98 ha for the dike footprint) was estimated to be 857 kg or 42.27% of Whale Tail Lake's total fish biomass.

For the two lakes combined, the total fish biomass was estimated to be approximately 3,936 kg using a total area of 314 ha in the Samarasin et al. (2014) equation. Fish biomass in the dewatered area was estimated using the combined dewatered area of both lakes and the presence of five species in that area into the biomass calculation equation. The fish biomass in the dewatered area (including the dike footprints) was estimated to be 870 kg or 22.1% the total fish biomass in both lakes combined. Assuming a mean overall fish weight of 0.26 kg (Agnico Eagle 2014c) and the baseline species composition in Whale Tail and Mammoth lakes, the fish-out would capture 1,168 Lake Trout, 57 Arctic Char, 375 Round Whitefish, 401 Slimy Sculpin, and 1,345 Ninespine Stickleback (3,346 total). Small numbers of Burbot may also be captured during the fish-out of the diked area.

Population estimates will also be made during the CPUE phase of the fish-out using both the Leslie and DeLury methods, and this information will be communicated with DFO.

References:

Agnico Eagle. 2014c. Meadowbank Gold Project. 2013 Annual Report. 153 pp + 43 app.

Samarasin, P., C.K. Minns, B.J. Shuter, W.M. Tonn and M.D. Rennie. 2014. Fish diversity and biomass in northern Canadian lakes: northern lakes are more diverse and have greater biomass than expected based on species-energy theory. Can. J. Fish. Aquat. Sci. 72: 226-237.

Interested Party:	**Fisheries and Oceans Canada (DFO)**	**NIRB Ref No.:**	**DFO 3**
		NWB Ref No.	**n/a**
Re:	**Freshwater Environment – Valued Components**		

Technical Comment / Recommendation Made By Interested Party:

DFO reiterates our initial request, that AEM re-evaluate assumptions of valued fishery components to include all the fish species listed as likely occurring in the area of the project.

Agnico Eagle's Response to Technical Comment / Recommendation:

Agnico Eagle has re-evaluated the assumptions of the valued components (VCs) for fish and fish habitat. Agnico Eagle is confident that the environmental assessment includes all fish species in the Local Study Area (LSA), as stated in the reply to Information Request (IR) DFO-3.

There are two key places in the FEIS where this demonstrated. Volume 6, Table 6.1-2 of the FEIS lists the common and scientific names of all fish species captured in the LSA, including those that are commercial, recreational or aboriginal fishery species and those that support the local fishery. Secondly, due to the nature of the selection of VCs, which considers all species in a system commensurate to their importance within both the aquatic food web and to local fishers, the VCs provide a surrogate measure of all fish species in the LSA, as per Volume 6, Section 6.1.2 of the FEIS. Although forage species occurring in the LSA did not meet the criteria used to select VCs, they were considered as a measurement endpoint (e.g., as fish habitat) (see Volume 6, Section 6.1.2.2, and Volume 3, Table 3.2-1). Use of alternate criteria for the selection of VCs would not change the outcome of the environmental assessment. Furthermore, all species and their habitats are considered in the calculation of losses in the Conceptual Offsetting Plan (Volume 8, Appendix 8.E-4).

Interested Party:	**Fisheries and Oceans Canada (DFO)**	**NIRB Ref No.:**	**DFO 4**
		NWB Ref No.	**n/a**
Re:	**Freshwater Environment – Habitat Alteration**		

Technical Comment / Recommendation Made By Interested Party:

DFO requests AEM provide information outlining the losses described above as well as address the mobilization of sediments and potentially mercury, in the next version of the conceptual offsetting plan. AEM agreed in their IR response to provide "the requested information related to stream habitat losses in the final offsetting plan" however, AEM did not acknowledge the 24 hectares of loss associated with impacted waterbodies, nor mobilization and persistence of mercury impacting the fishery in the post-closure scenario.

Agnico Eagle's Response to Technical Comment / Recommendation:

Agnico Eagle will provide information outlining all habitat gains and losses in the next version of the Final Offsetting Plan. The 24 hectares that is referred to was taken into account in the Conceptual Offsetting Plan. It is not an actual loss of habitat. Rather it is the theoretical or conceptual loss of habitat that is equivalent to assigning zero fish habitat value to the deep area that is created when the pit is reflooded.

Agnico Eagle will work with the DFO, KivIA, and relevant stakeholders to submit a Fisheries and Offsetting Monitoring Plan prior to the Final Hearing. Within that plan, Agnico Eagle will commit to conducting research, in partnership with academic institutions, KivIA, and DFO, to evaluate the effects of flooding on the fish community, including the effect on tissue mercury concentrations.

Interested Party:	**Fisheries and Oceans Canada (DFO)**	**NIRB Ref No.:**	**DFO 5**
		NWB Ref No.	**n/a**
Re:	**Freshwater Environment – Changes to Lake Ecosystem Productivity**		

Technical Comment / Recommendation Made By Interested Party:

1) DFO requests AEM include a detailed research study in its monitoring plan that allows AEM to evaluate fisheries productivity when altering lake condition from an oligotrophic lake to a eutrophic lake and back again.

2) DFO requests AEM provide further information discussing the trophic lake changes, what levels of nutrients are expected to increase and how this will result in an increase in fishery productivity based on modeling for the Whale Tail project specifically.

3) DFO requests AEM clarify the duration of flooding as it is not clear whether it starts at dike construction (2019) and continues to closure (2022) or will be limited to 2 years; and what number of years a stable eutrophic condition is expected, when dewatering is to commence thus transitioning back to oligotrophic condition.

4) DFO requests AEM re-evaluate the conceptual offsetting plan to remove potential gains associated with flooding activities.

5) DFO requests AEM review and reference DFO. 2016. Review of Habitat Evaluation Procedure (HEP) input parametres and model results for the Meadowbank Gold Mine Project. DFO Can. Sci. Advis. Sec. Sci. Resp. 2016/038 when re-evaluating the conceptual offsetting plan to ensure it is consistent with the most recent DFO advice.

Agnico Eagle's Response to Technical Comment / Recommendation:

Response 1)

Agnico Eagle refers DFO to technical comment response to ECCC #15, which discusses that Agnico Eagle is investigating options for treatment of phosphorus on-site. Nevertheless, Agnico Eagle will include the outline of a study to investigate the effects on productivity that may occur when altering downstream lake conditions in the forthcoming Fisheries and Offsetting Monitoring Plan. Agnico Eagle will work with DFO, academic researchers, and consultants to design an effective program. Agnico Eagle is pleased that a significant portion of the offsetting for the Whale Tail project can be directed toward answering important scientific questions that are relevant to northern resources and northern communities.

Response 2)

From the FEIS, an increase in trophic status in the downstream environment was predicted. The predictions were developed from a quantitative water quality model that incorporated conservative

assumptions, professional judgement, experience, and real data from Meadowbank. The model and approach was appropriate for evaluation potential effects associated with the Project.

Elevated concentrations of phosphorus and potential change in trophic status in the receiving environment has been raised as a concern by various parties (e.g., Technical Comments ECCC#14, ECCC#15, KIA-3).

Agnico Eagle is investigating options for treatment of phosphorus on-site (see response to technical comment ECCC#15).

Response 3)
Detailed information related to flooding activities of the Project, including construction of the dikes, monthly water surface elevation, and total and terrestrial flooded area, was provided in the FEIS in Volume 6, Appendix 6-F, to support impact assessments of aquatic and terrestrial disciplines, in tabular, graphical and figure form.

In summary, the Whale Tail Lake (South Basin) diversion consists of construction of the Whale Tail Dike, from June 2018 to February 2019, to divert Whale Tail Lake (South Basin) and tributary lakes through Lake A45, just south of Lake A16 (Mammoth Lake), once a water surface elevation of 156.00 metres above sea level (masl) is reached. Flooding of the south basin will occur mainly beginning during freshet 2019 and 2020. By July 2020, the Whale Tail Lake (South Basin) and flooded tributary lakes within the Whale Tail Lake subwatershed will reach elevation 156.00 masl, shown below and presented in the FEIS in Figure 6-F-1 of Appendix 6-F). The Whale Tail Lake (South Basin) will remain flooded for a minimum of two years.

A summary of the water management activities relevant to the Whale Tail Lake (South Basin) diversion are listed below:

- Construction of the Whale Tail dike from June 2018 to February 2019: construction of the dike will result in backwatering upstream of the dike during runoff. The water surface elevation of Whale Tail Lake (South Basin) will increase until the spilling elevation of 156.00 masl is reached, and the flooded Whale Tail Lake (South Basin) can discharge through Lake A45, just upstream of Mammoth Lake.
- Dewatering of Whale Tail Lake, downstream of the Whale Tail dike (i.e., North Whale Tail Lake) from February to September 2019: dewatering is planned from February to May 2019 through Whale Tail Lake (South Basin) to expedite the filling period. Dewatering is also planned from June to September 2019 through Mammoth Lake, and discussed further in Volume 6, Appendix 6-E.
- Active refilling of the Whale Tail Pit from May to November 2022: active refilling of the Whale Tail Pit will include pumping of the elevated Whale Tail Lake (South Basin) sector, starting in May 2022, until the baseline water surface elevation of Whale Tail Lake (South Basin) (i.e., 152.50 masl) is restored. Active refilling will also include pumping of the Northeast sector, discussed in

Section 6.F-2.2. Once the baseline water surface elevation of Whale Tail Lake (South Basin) is restored, the Whale Tail Pit will continue to fill passively.

Depending on Whale Tail Pit operations, underground exploration at Amaruq and based on a mean annual water balance, the Whale Tail Lake (South Basin) diversion is expected to reach the spilling water surface water elevation of 156.00 masl by the end of June 2020, remain at 156.00 masl until the end of April 2022, and return to the baseline water surface elevation of 152.50 masl by the end of November 2022 (see Table 6-F-1 below). Depending on operations, water quality predictions, and to ensure the protection of the fish population transferred to the Whale Tail Lake (South Basin), Agnico Eagle will refine the closure reflooding sequence accordingly.

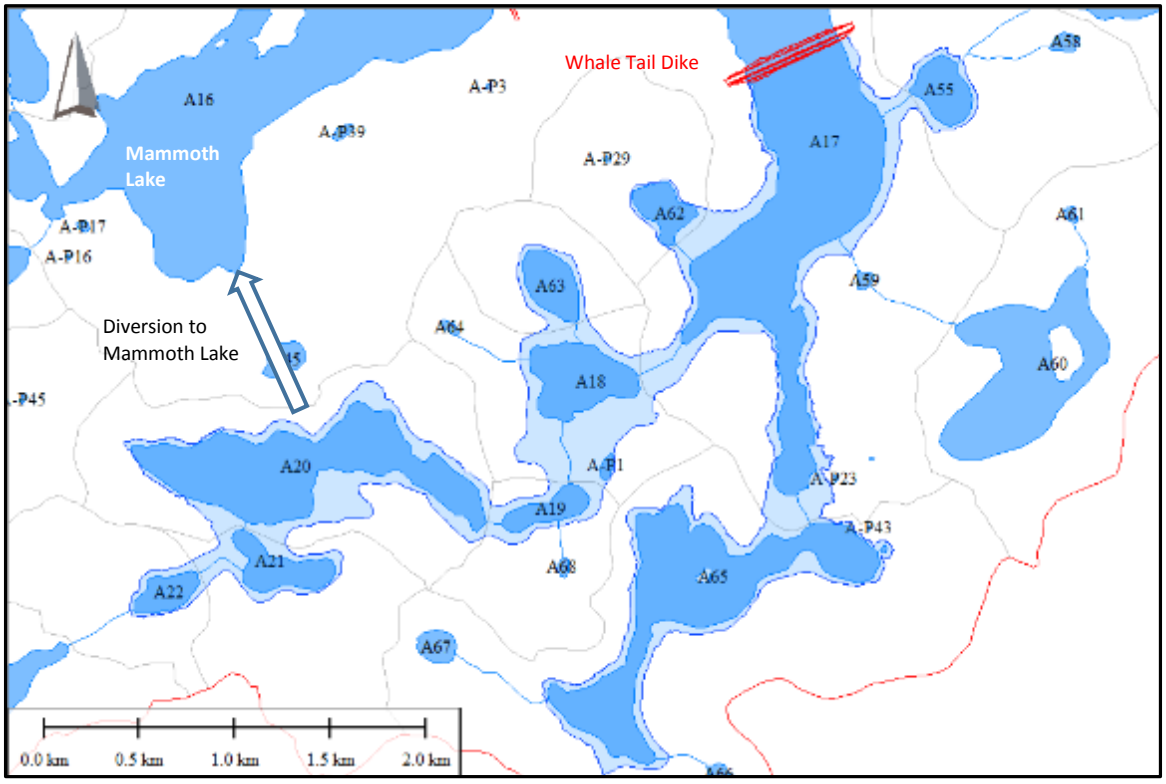

Figure 6-F-1: Whale Tail Lake (South Basin) Diversion

Table 6-F-1: Total Flooded and Flooded Terrestrial Area during the Whale Tail Lake (South Basin) Diversion

Date	Water Surface Elevation (masl)	Total Flooded Area (m^2)	Flooded Terrestrial Area (m^2)	Change in Flooded Terrestrial Area (m^2)
May 2018	152.50	893,448	0	0
June 2018	152.50	893,448	0	0
July 2018	152.50	893,448	0	0
August 2018	152.61	903,582	2,060	2,060
May 2019	154.85	1,437,026	628,385	626,325
June 2019	155.11	1,755,701	849,873	221,488
July 2019	155.50	2,672,890	1,161,693	311,820
August 2019	155.50	2,672,890	1,161,693	0
May 2020	155.70	3,139,815	1,322,012	160,319
June 2020	155.70	3,139,815	1,322,012	0
July 2020	156.00	3,851,450	1,575,487	253,475
August 2020	156.00	3,851,450	1,575,487	0
May 2021	156.00	3,851,450	1,575,487	0
June 2021	156.00	3,851,450	1,575,487	0
July 2021	156.00	3,851,450	1,575,487	0
August 2021	156.00	3,851,450	1,575,487	0
May 2022	156.00	3,851,450	1,575,487	0
June 2022	155.60	2,912,668	1,242,689	-332,798
July 2022	155.60	2,916,686	1,244,047	1,358
August 2022	155.20	1,977,904	926,073	-317,974
September 2022	154.58	1,331,858	501,913	-424,160
October 2022	154.04	1,128,039	256,807	-245,106
November 2022	152.69	911,435	7,765	-249,042
December 2022	152.50	893,488	0	-7,765

Response 4)
Agnico Eagle is of the opinion that there are potential gains associated with flooding activities. Flooding meets the definition of aquatic habitat creation provided in DFO (2014), which states:

> "Aquatic habitat creation is the creation or expansion of aquatic habitat into a previously dry area or terrestrial area. This offset activity is generally intended to replace productivity that was destroyed or degraded by a project and cannot be restored by manipulation of the original or surrounding aquatic habitat."

Agnico Eagle fully expects that fish will use the flooded area that is created due to the backflooding of Whale Tail Lake (South basin) and during post closure in Whale Tail Lake (North Basin (after operation and reflooding of Whale Tail pit). Agnico Eagle supports investigating fish use of the flooded area as a component of the studies of productivity changes that will be undertaken as part of the offsetting for the project and will seek opportunities to do so.

Response 5)
Agnico Eagle agrees to review and reference *DFO. 2016. Review of Habitat Evaluation Procedure (HEP) input parameters and model results for the Meadowbank Gold Mine Project. DFO Can. Sci. Advis. Sec. Sci. Resp. 2016/038 (DFO 2016/038*) when preparing the next iteration of the Final Offsetting Plan. Commitments have already been made to comply with some of the recommendations. For example, in an October 14, 2016, technical memorandum (R. Vanengen, Agnico Eagle. and C. Portt, C. Portt and Associates, to E. Patreau, DFO), Agnico Eagle indicated that it will use equal weightings for all species in the HEP model on a site specific moving forward. Agnico Eagle will consider DFO 2016/038 during the development of the research program to evaluate the effects of flooding on the fish community (refer to response to DFO 4) and seek opportunities to address questions that have arisen as part of the review.

References:

DFO. 2014. Science Advice on Offsetting Techniques for Managing the Productivity of Freshwater Fisheries. DFO Can. Sci. Advis. Sec. Sci. Advis. Rep. 2013/074.

Interested Party:	**Fisheries and Oceans Canada (DFO)**	**NIRB Ref No.:**	**DFO 6**
		NWB Ref No.	**n/a**
Re:	**Freshwater Environment – Monitoring and Follow-up**		

Technical Comment / Recommendation Made By Interested Party:

1) DFO requests that AEM provide a separate Fisheries Offsetting Monitoring Plan for the Whale Tail Pit project. The Meadowbank HCMP will not be accepted for the Whale Tail Project.

2) DFO requests AEM ensure they are adhering to the most recent advice regarding blasting in further revisions to the Blast Management Plans (e.g. Cott and Hanna 2005).

Agnico Eagle's Response to Technical Comment / Recommendation:

Response 1)

Agnico Eagle agrees to provide a separate Fisheries and Offsetting Monitoring Plan for the Whale Tail Pit project.

Response 2)

Agnico Eagle will ensure that they are adhering to the most recent advice regarding blasting in further revisions to the Blast Management Plans (e.g., Cott and Hanna 2005).

Interested Party:	**Fisheries and Oceans Canada (DFO)**	**NIRB Ref No.:**	**DFO 7**
		NWB Ref No.	**n/a**
Re:	**Monitoring, Mitigation and Management Plans – Conceptual Offsetting Plan**		

Technical Comment / Recommendation Made By Interested Party:

1) DFO requests AEM provide imagery from June to understand the high water levels and connections between waterbodies

2) DFO requests AEM provide imagery from 2007 as an average year in the last decade.

3) DFO reiterates our requests for imagery from Mammoth Lake from the same month and year.

Agnico Eagle's Response to Technical Comment / Recommendation:

Response 1), 2)

To assess the suitability of the July 21, 2011, imagery for use in habitat area calculations, water levels estimated from that imagery using GIS and the digital elevation model were compared to average daily water levels for three lakes (Whale Tail Lake, Nemo Lake, and Lake A18) where water levels were continuously monitored from the beginning of freshet to prior to freeze-up in 2015 and 2016. These results were presented to DFO and KivIA at a meeting in Winnipeg on March 23, 2017, and are summarized in the table below. They show that the measured water level was only higher than the estimated water level briefly (maximum of 11 days) each year during the spring freshet. As discussed in the meeting, based on these results, Agnico Eagle is confident that the water levels determined from the July 21, 2011, imagery are appropriate to use in habitat area calculations.

	Lake					
	Whale Tail Lake (A17)		**Lake A18**		**Nemo Lake (C38)**	
Year	2015	2016	2015	2016	2015	2016
Number of days that the measured water elevation was higher than the estimated July 21, 2011, water elevation	10	5	11	5	0	11

Response 3)

Imagery is available for Mammoth Lake for July 21, 2011, and will be used to estimate the elevation of Mammoth Lake for the habitat area calculations.

Interested Party:	**Fisheries and Oceans Canada (DFO)**	**NIRB Ref No.:**	**DFO 8**
		NWB Ref No.	**n/a**
Re:	**Monitoring, Mitigation and Management Plans – Shipping Management Plan**		

Technical Comment / Recommendation Made By Interested Party:

DFO disagrees that the proposed mitigation measures are consistent with the most recent scientific advice. Therefore, DFO recommends the following mitigation measures as per Lawson and Lesage 2013:

- *creating a 500m (rather than 300m) buffer zone and reducing vessel speed to 10-14 knots.*
- *aircraft should maintain a minimum altitude of 500m over marine mammals.*
- *watercraft should keep a lookout for marine mammals, and avoid them. If marine mammals are encountered, and remain in the area, effort should be made to avoid them and slowly navigate around their location at a reduced speed and maintain a distance. Do not accelerate within 400m (rather than 100m) of them.*
- *consider reducing shipping rates during periods when interactions with marine mammals may be the most problematic*
- *submit clearly-defined monitoring and mitigation plans to collect baseline information necessary to later determine if there have been project-related changes in marine mammal behaviour or residence*
- *ensure that data produced by surveillance monitoring programmes are analysed rigorously by experienced analysts to maximize their effectiveness in providing baseline information and for detecting potential effects of shipping activities on marine mammals; and,*
- *impact assessment methodology must be more comprehensive by being extended to cumulative effects as there is a critical need to address those in a more formal and systematic way.*
- *Other guidance is available regarding reducing vessel noise International Maritime Organization. 2014. Guidelines for the Reduction of Underwater Noise from Commercial Shipping to Address Adverse Impacts on Marine Life.*

DFO requests AEM incorporate the above listed mitigation measures into their plans regarding marine mammals and shipping activities.

Agnico Eagle's Response to Technical Comment / Recommendation:

The following mitigation measures will be incorporated into Agnico Eagle's relevant management plans prior to the start of the Project:

- Create a 500 metre (m) (rather than 300 m) buffer zone and reduce vessel speed to 10-14 knots.
- Aircraft will maintain a minimum altitude of 500 m over marine mammals.
- Watercrafts will keep a lookout for marine mammals, and avoid them. If marine mammals are encountered, and remain in the area, effort will be made to avoid them and slowly

navigate around their location at a reduced speed and maintain a distance. Project vessels will not accelerate within 400 m (rather than 100 m) of a marine mammal.

- International Maritime Organization (2014) guidance document "*Guidelines for the Reduction of Underwater Noise from Commercial Shipping to Address Adverse Impacts on Marine Life*" will be reviewed and referenced as applicable into Agnico Eagle's relevant management plans.

The annual shipping requirements for the Whale Tail Project are six dry cargo vessels during July through October and fuel deliveries limited to the months of July (13 trips) and October (5 trips). The proposed frequency of shipping for the extension of the Meadowbank Mine through development of the Whale Tail Pit will remain the same as that for Meadowbank (no net increase in shipping activity). To date, no vessel strikes on marine mammals have been recorded since the start of the Meadowbank Mine (monitored through the current MMSO program since 2010). To further minimize the potential for a vessel strike, Agnico Eagle has developed a Shipping Management Plan (Volume 8, Appendix 8-D.5) that includes specific mitigation measures for interactions with marine wildlife, including vessel speed restrictions (<14 knots), and minimum approach distances from any observed marine mammals. Given application of the proposed mitigation, the likelihood of a vessel strike is considered low. Therefore, Agnico Eagle is not proposing to revise the current shipping rates.

Since 2010, the Meadowbank Division has implemented a vessel-based MMSO program which will continue to be implemented during all routine Whale Tail Project shipping activities in the Regional Study Area. This program will be executed by trained local observers stationed on-board Project vessel(s). The intent of the MMSO program is to collect data on the location, behaviour, relative abundance, and species observed, as well as any interactions with Project vessels during shipping activities in the Regional Study Area and report on the compliance of the shipping contractor with the mitigation measures. Agnico Eagle will continue to report the observations annually to the NIRB. Additional details regarding the MMSO data collection protocols will be provided in the Shipping Management Plan as requested by ECCC (ECCC TC #7).

The cumulative effects assessment is presented in Volume 3, Appendix 3-D and includes an assessment of effects related to marine wildlife along the shipping routes (e.g., Chesterfield Inlet, Hudson Bay, and the Hudson Strait).

References:

IMO (International Maritime Organization). 2014. Guidelines for the Reduction of Underwater Noise from Commercial Shipping to Address Adverse Impacts on Marine Life. MEPC.1/Circ.833. IMO Conventions, Effective Implementation. 7 April 2014.

Interested Party:	**Fisheries and Oceans Canada (DFO)**	**NIRB Ref No.:**	**DFO 9**
		NWB Ref No.	**n/a**
Re:	**Monitoring, Mitigation and Management Plans – Water Quality and Flow Monitoring Plan**		

Technical Comment / Recommendation Made By Interested Party:

1) DFO requests AEM re-evaluate their annual reporting requirements with DFO to ensure that all AEM staff are aware that occurrences affecting fish and fish habitat are to be reported immediately and directly to DFO.

2) DFO requests AEM place a monitoring station in Mammoth Lake, add a station in the pit portion of Whale Tail's North Basin as well as the South Basin, and have a least 2 control lake monitoring stations identified.

Agnico Eagle's Response to Technical Comment / Recommendation:

Response 1)

Agnico Eagle agrees with this recommendation and will ensure that all Agnico Eagle staff are aware that occurrences affecting fish and fish habitat are to be reported immediately and directly to DFO.

Response 2)

Agnico Eagle agrees with DFO and has designed water quality monitoring programs accordingly. For the Whale Tail Project, there are three main surface water quality monitoring programs designed for the monitoring and protection of the receiving environment:

- Water Quality Monitoring and Management Plan for Dike Construction Dewatering (Appendix 8-A.2)
- Water Quality and Flow Monitoring Plan (Appendix 8-B.3)
- Core Receiving Environment Monitoring Program (Appendix 8-E.2)

Through these combined programs, water quality will be monitored at various locations (including two reference lakes), annually, and during all phases of the Project (Table DFO 9-1). During closure, pit portions of the Whale Tail (North Basin) will be monitored as well as the South Basin. In addition, as part of the annual report, monitored data will be compared to the water quality predictions and water quality criteria (see response to INAC-TRC-6).

Table DFO 9-1: Summary of Water Quality Monitoring Stations

Station	Description	Phase	Frequency
Water Quality Monitoring and Management Plan for Dike Construction Dewatering (Appendix 8-A.2)			
Water Quality and Flow Monitoring Plan (Appendix 8-B.3)			
ST-DC-1 to TBD	Monitoring stations during dike construction	Construction	As defined in plan
ST-DD-1 to TBD	Monitoring stations during dike construction	Construction	As defined in plan
ST-WT-6	Lake A47	Construction	Monthly during open-water
		Operations	
		Closure	
ST-WT-7	East diversion channel	Operations	Three times (freshet, summer, fall) per calendar year
ST-WT-9	North Whale Tail Lake (as the basin fills and when it is connected to the south basin and prior to or when connected to the downstream environment)	Closure	Four times per calendar year
		Post-closure	Four times per calendar year, when water is present
ST-WT-10	Pit Lake (as the pit fills)	Closure	Four times per calendar year
ST-WT-13	Lake A45	Operations	Flow, Monthly during open-water
		Closure	Flow, Monthly during open-water until water levels have returned to baseline levels
ST-WT-14	Lake A16 outlet	Construction	Monthly during open-water
		Operations	
		Closure	
ST-WT-15	Lake A15	Construction	
		Operations	
		Closure	
Core Receiving Environment Monitoring Program (Appendix 8-E.2)			
INUG	Innuggugayualik Lake (Reference)	Construction	5 seasonal events: April, July, August, September, November; 2 random stations per event
		Operations	
		Closure	
PDL	Pipedream Lake (Reference)	Construction	
		Operations	
		Closure	
WTS	Whale Tail Lake (South Basin)	Construction	
		Operations	
		Closure	
MAM	Mammoth Lake	Construction	
		Operations	
		Closure	
NEM	Nemo Lake	Construction	
		Operations	
		Closure	
A20	Lake A20	Construction	
		Operations	
		Closure	
A76	Lake A76	Construction	
		Operations	
		Closure	
DS1	Lake DS1	Construction	
		Operations	
		Closure	

GOVERNMENT OF NUNAVUT

Interested Party:	**Government of Nunavut (GN)**	**NIRB Ref No.:**	**GN-01**
		NWB Ref No.	**n/a**
Re:	**Haul road safety and management**		

Technical Comment / Recommendation Made By Interested Party:

The GN recommends that, in addition to any other actions considered appropriate by the Proponent or the NIRB on the operation and maintenance of the Whale Tail Haul Road, the Proponent extend its obligations under Condition #32 (amended) in the Meadowbank Project Certificate to the Whale Tail Haul Road.

Specifically, the GN requests that the Proponent post signs along the Haul Road to warn of unauthorized use (similar to (c) of Condition #32); advertise and hold meetings regarding the private nature of the Haul Road (similar to (e) and (f) of Condition #32); and collect and report on any unauthorized use of the Haul Road (similar to (g) of Condition #32).

Agnico Eagle's Response to Technical Comment / Recommendation:

Agnico Eagle agrees with the GN recommendations and will post the above mentioned signs on the Whale Tail Haul Road.

Interested Party:	**Government of Nunavut (GN)**	**NIRB Ref No.:**	**GN-02**
		NWB Ref No.	**n/a**
Re:	**Traditional land use access**		

Technical Comment / Recommendation Made By Interested Party:

The GN recommends that the Proponent consider potential responses if traditional land users are found to routinely use the road to either better access harvesting sites in the area north of the Project or to travel to currently used traditional areas.

Agnico Eagle's Response to Technical Comment / Recommendation:

Changes in Access to Traditional Land Use Areas/Harvesting Sites

Agnico Eagle agrees with this recommendation. The Project area was identified primarily as a travel corridor that was used opportunistically by people in the past between Baker Lake and the Back River to access traditional land use sites. The Project area is still used opportunistically today by people for traditional activities, but it is not considered a preferred area, and Baker Lake residents indicated that preferred harvesting areas are within approximately 64 km of the community, south of the Meadowbank project and approximately 100 km south of Whale Tail Pit (Appendix 7-A Section 3.2.1).

For people who do use the area for traditional activities, access is not expected to change because of Project activities. The Whale Tail Pit Haul Road is not expected to enhance access to the area because it will be closed to the public, and will have controlled access at the mine site and will only be available to Agnico Eagle staff and contractors. As a result, the Whale Tail Pit Haul Road does not connect with any communities in Kivalliq or beyond. Access to the area for traditional land use is currently via existing trails used by ATVs in the summer and snowmobiles in the winter, some of which intersect with the Whale Tail Pit Haul Road.

Access via these existing trails that intersect the Whale Tail Haul Road will not be negatively impacted by the Project because these travel routes will be maintained with the installation of safe Traditional Land Use crossing areas (for use by ATV or snowmobiles) along the Whale Tail Pit Haul Road, and will include signage for operations vehicles to ensure safety for traditional land users. Agnico Eagle will continue to consult and work collaboratively with the HTO and KivIA, to identify trails or safe crossing locations that intersect the Haul Road, and to ensure that safe crossing structures are installed where operationally feasible.

Interested Party:	**Government of Nunavut (GN)**	**NIRB Ref No.:**	**GN-03**
		NWB Ref No.	**n/a**
Re:	**Socio-economic monitoring**		

Technical Comment / Recommendation Made By Interested Party:

In addition to collaboration with external monitoring partners and programs, and ongoing efforts to streamline the socio-economic monitoring regime in which AEM works, the GN recommends that the Proponent commit to:

- *Continued work with the Kiv-SEMC to contribute to government-lead monitoring processes and programs;*
- *Expansion of the scope of the Meadowbank Socio-Economic Monitoring Working Group (SEMWG) to include the activities proposed as part of the Whale Tail Pit Project in partnership with the GN, the Government of Canada, and the Kivalliq Inuit Association; and*
- *Expansion of the scope of the Meadowbank Socio-Economic Monitoring Program to apply to the activities proposed as part of the Whale Tail Pit Project, including the generation of an annual report on a set of agreeable socio-economic monitoring indicators as identified through the SEMWG.*

Agnico Eagle's Response to Technical Comment / Recommendation:

Agnico Eagle, through their Meadowbank Mine operation and the construction of the Meliadine Mine, has developed relationships with Kivalliq communities, and is an active member of the Kivalliq Socio-Economic Monitoring Committee (SEMC). In accordance with Project Certificate No.004 December 30, 2006 condition 63 the GN and INAC shall form a Meadowbank Gold Mine Socio-Economic Monitoring Committee ("Meadowbank SEMC") to monitor the socio-economic impacts of the Project and the effectiveness of the Project's mitigation strategies. Agnico Eagle will continue to work and consult with communities throughout Project development and operations, and will continue their involvement with the SEMC in the collaborative monitoring of socio-economic conditions in communities, and in the region. As part of Agnico Eagle's Nunavut operations, the Whale Tail Pit Project will be included in ongoing monitoring associated with the SEMC and the Meadowbank Socio-Economic Monitoring Program.

Agnico Eagle considers GN's reference to Meadowbank Socio-Economic Monitoring Working Group (SEMWG) to be the SEMC referred to in the response.

Interested Party:	**Government of Nunavut (GN)**	**NIRB Ref No.:**	**GN-04**
		NWB Ref No.	**n/a**
Re:	**Fiscal impacts to government**		

Technical Comment / Recommendation Made By Interested Party:

The GN requests that AEM expand on Table 7.4-3 in the EIS as well as their response to GN Information Request #48 to include:

- *Project-driven revenue to the GN, separate from taxes and royalties paid to each of NTI and KIvIA; and*
- *Forecasts for the GN's fuel tax and payroll tax, separate from revenue to territorial and regional Inuit organizations or taxes paid to the federal government.*

Agnico Eagle's Response to Technical Comment / Recommendation:

Agnico Eagle will further investigate Project-driven revenue to the GN, and the forecasting of fuel and payroll tax. An updated response will be provided prior to the Final Hearing.

Interested Party:	**Government of Nunavut (GN)**	**NIRB Ref No.:**	**GN-05**
		NWB Ref No.	**n/a**
Re:	**Disruption of Caribou Movements**		

Technical Comment / Recommendation Made By Interested Party:

Given deficiencies in the current EIS, noted above and also in GN IR#8, the GN is of the view that the assessment of impacts on caribou migration is incomplete and that the associated conclusions are of low confidence and high uncertainty. The inadequacy of the current assessment was surprising given the Proponent's recent acknowledgement that "the AWAR [All-Weather-Access-Road for the Meadowbank project] appears to be altering natural movement patterns by collared Caribou" (AEM 2015, p.141). Potential disruption of caribou movements was also identified as a key concern amongst members of the public during consultations conducted by the Proponent on the Project.

The Project appears to interact with a relatively high proportion of some caribou herds during key migratory periods and will have a level of traffic along its 65km haul road several times greater than that associated with studies where significant disruption of caribou movements has been found. Given this context, it is critical that a more complete assessment of the Project's potential impacts on caribou movements, and comprehensive plans to mitigate those impacts, be submitted for review before any decisions about the development of new roads are made. In doing so, all available sources of data should be utilized to the fullest extent. This revised assessment will not only inform the review of the Whale Tail Project but also represents necessary due diligence in the on-going monitoring of the Meadowbank project and its impacts. Accordingly the GN recommends that:

- *The EIS be revised to incorporate additional analyses of caribou movements including those described above and outlined in GN-IR#8. Of particular importance is completion of an analysis of the movements of collared caribou in relation to the existing Meadowbank AWAR which examines the speed and direction of caribou movements in relation to the road at an appropriate spatial scale corresponding to the potential zone-of-influence of the road.*
- *The Project's Terrestrial Ecosystem Monitoring Plan be revised to address caribou related concerns outlined in GN TC #6, #7 and #8.*

Agnico Eagle's Response to Technical Comment / Recommendation:

Agnico Eagle would like to correct the GN's statement "that the project appears to interact with a relatively high proportion of some caribou herds during key migratory periods". Although the Project location overlaps with the periphery of the annual ranges of three caribou herds, the Project location does not interact with a relatively high proportion of caribou herds during key migratory periods (see Figures 7.1 through 7.8 in the Terrestrial Baseline Report, Volume 5, Appendix 5-C). Agnico Eagle's experience to date at the Meadowbank Mine, knowledge from the Baker Lake HTO, and the distribution of collared caribou indicate that caribou presence near the Project is predictable, and occurs primarily

during the fall and late winter. Caribou ranges provided by the GN (see Figures 7.1 to 7.7 in the Terrestrial Baseline Characterization Report, Volume 5, Appendix 5-C) indicate that the Project is not located near a calving ground (confirmed by IQ, FEIS Appendix 7-A), and is on the periphery of the range of three caribou herds (the Lorillard, Wager Bay and Ahiak herds). While Figures 7.9 and 7.10 indicate that the Project in or near a high-utilization area for the spring and fall migrations, collard caribou from the five herds investigated spent 0.37% of their total time in the RSA (including total percent of time recorded of 0.7%, 0.9%, and 2.1% spent in the RSA for the Ahiak, Lorillard, and Wager Bay herds, respectively). Collared caribou were most commonly recorded in the Project RSA during the late winter (i.e., 8.0% of the collar time) and fall rut (i.e., 5.1% of the collar time). In addition, Agnico Eagle has been recording caribou observations along the Meadowbank All Weather Access Road (AWAR) since 2007 and understands the general patterns of caribou occurrence within the RSA.

Agnico Eagle believes that the assessment of impacts to caribou in the FEIS is adequate, sufficient, and applied best practices, using conservative assumptions to ensure impacts to caribou were not under-estimated. Based on the available literature, Agnico Eagle is confident that the RSA (a 25 km buffer applied to the Project footprint) encompasses the Zone of Influence (ZOI) for the Project (most commonly estimated at 14 km, Boulanger et al. 2012), accounting for altering or disrupting caribou movements. Agnico Eagle also used the available GN caribou herd distribution data to evaluate the temporal and spatial impact to respective herds. As a result, the caribou effects pathways of barriers to migration and sensory disturbance were assessed as being of moderate magnitude, with regional geographic extent, and continuous (despite the fact that caribou are not continually in the study area), and is thus reflective of the conservatism of the impacts assessed. In addition, preliminary investigations into potential caribou movement areas along the Whale Tail haul road have been identified, and will be further investigated in 2017, and the height-of-land survey locations have been placed in close proximity to these movement areas. This information will be contained within the TEMP to determine monitoring locations and monitoring frequency.

Agnico Eagle agrees that an analysis of the movements of collared caribou in relation to the existing Meadowbank AWAR to examine the speed and direction of caribou movements in relation to the road would be of added value, and will continue to work with the GN prior to the operation of Whale Tail Pit to ensure monitoring and mitigation continue to protect caribou. Furthermore, Agnico Eagle agrees with the GN and will provide an updated TEMP that considers the recommendations in GN #8 and outcomes of collaborative discussions between the GN, KivIA, HTO, and Agnico Eagle during the last two TEMP Workshops where the GN has provided significant contributions. Agnico Eagle looks forward to further collaboration with the GN, KivIA, and Baker Lake HTO to build the foundation of the Terms of Reference for a Terrestrial Advisory Group.

References:

Boulanger, J., Poole, K. G., Gunn, A., & Wierzchowski, J. (2012). Estimating the zone of influence of industrial developments on wildlife: a migratory caribou Rangifer tarandus groenlandicus and diamond mine case study. Wildlife Biology, 18(2), 164-179.

Interested Party:	**Government of Nunavut (GN)**	**NIRB Ref No.:**	**GN-06**
		NWB Ref No.	**n/a**
Re:	**Caribou group sizes for triggering adaptive management**		

Technical Comment / Recommendation Made By Interested Party:

The GN maintains that the information requested in GN-IR #29 must be provided by the Proponent as part of the review process in order for all parties to properly evaluate the accuracy of the EIS and the environmental management needs of the proposed Project. In the absence of this information, the Proponent's conclusion that the Project will have no significant impacts on caribou movements should be regarded as highly uncertain, potentially incorrect and of low confidence.

Accordingly, the GN recommends that:

- *The Proponent provide the information requested in GN IR #29 so that this material can be utilized during the current review process.*
- *The Proponent conduct additional assessment work to estimate the proportion of caribou that, having been detected by monitoring efforts, will be the subject to the differing levels of caribou protection outlined in the TEMP.*
- *Based on this additional assessment work, group size thresholds be revised to ensure that appropriate levels of protection are provided to caribou that interact with the Project.*
- *The additional assessment work and revisions to the caribou protection measures in the TEMP be completed prior to final review of the EIS.*

Agnico Eagle's Response to Technical Comment / Recommendation:

Meadowbank AWAR Road observation data was compiled and summarized from March 1, 2007 through to September 30, 2016. During this time frame, there were 3,960 individually recorded observations of caribou from the road comprising approximately 98,192 observations of caribou. Figure GN06-1 shows the frequency distribution of caribou group size observations during this time frame. In addition, as part of the annual reporting for the Amaruq (Whale Tail) exploration access road, 458 caribou were observed with the largest group consisting of 50 animals that were observed in April and May. The majority of caribou were observed in April (141), August (104), May (79), and October (66) (Agnico Eagle 2017).

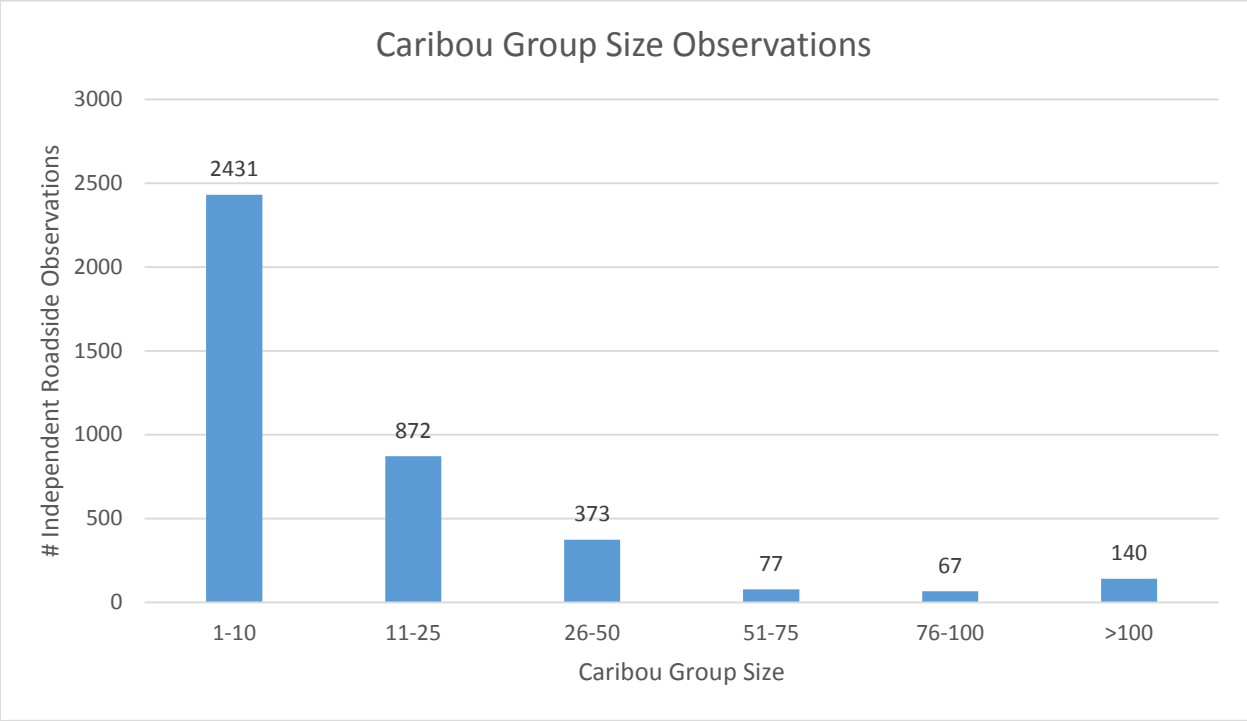

Figure GN06-1: Frequency distribution of caribou group size observations from the Meadowbank All Weather Access Road between March 1, 2007 and September 30, 2016

The information presented in GN06-1 will, in part, be used to determine the best site-specific information regarding caribou number thresholds and how to calculate that information. However, based on the available data and operational experience, a group size threshold of 50 caribou seems to be an appropriate trigger for adaptive management; however, Agnico Eagle will work with the GN, KivIA, and HTO to finalize thresholds in the final TEMP.

References:

Agnico Eagle (Agnico Eagle Mines Limited). 2017. Amaruq Exploration Access Road – 2016 Annual Report. Prepared for Nunavut Water Board, indigenous and Northern Affairs Canada, Department of Fisheries and Oceans Canada, and Kivalliq Inuit Association. Prepared by Agnico Eagle Mines Ltd.

Interested Party:	**Government of Nunavut (GN)**	**NIRB Ref No.:**	**GN-07**
		NWB Ref No.	**n/a**
Re:	**Monitoring to support adaptive management**		

Technical Comment / Recommendation Made By Interested Party:

The GN maintains that the information requested in GN IR #31 must be provided by the Proponent as part of the review process in order for all parties to properly evaluate the accuracy of the EIS and the environmental management needs of the proposed Project. In the absence of this information, the EIS conclusion that the Project will have no significant impacts on caribou movements should be regarded as highly uncertain, potentially incorrect and of low confidence.

Accordingly, the GN recommends that:

- *The Proponent provide the information requested in GN IR #31 so that this material can be utilized during the current review process.*
- *Taking into account the effective range, spatial extent, duration and frequency of the proposed caribou monitoring methods outlined in the TEMP, the Proponent conduct additional assessment work to estimate the likelihood that a caribou approaching the Project will be detected at each of the distance thresholds established for the different levels of adaptive management.*
- *Based on this additional assessment work, the methods, frequency and duration of caribou monitoring be revised to ensure that the probability of detection is sufficient to provide protection for caribou that interact with the Project.*
- *The additional assessment work and revisions to the caribou protection measures in the TEMP be completed prior to final review of the EIS.*

Agnico Eagle's Response to Technical Comment / Recommendation:

GN IR#31 requested detailed methods by which the various surveys (including the height-of-land [HOL] surveys, road surveys and other means of detecting caribou) are completed, and methods for detecting caribou that may not be detected by these methods.

Some information on the methods used to conduct road surveys including the number of observers involved, methods of observation and data collection, duration of each survey and the anticipated effective detection range is currently available in the active TEMP (Cumberland 2006, see Appendices C and D), and further detail will be provided in future revisions of the TEMP. For the purposes of the Environmental Assessment and to provide interested parties with opportunity to help shape the revised TEMP, detailed methods have not yet been updated.

The ability of these methods to detect caribou will be assessed through on-going monitoring, and augmented through adaptive management if it is found that the approach of caribou to the Project is not being adequately detected. However, it should be noted that following the eight years of operations

of the Meadowbank Mine, and the IQ of Baker Lake residents working at Meadowbank, the arrival of caribou is predictable. Further, the continual operational-level mitigation provides protection to caribou without the need for forewarning (including minimum flight altitudes, speed limits, road closures, prohibition on hunting or harassment and providing the right-of-way, as described in the TEMP).

A viewshed analysis of the height of land survey locations and the Whale Tail haul road is currently being completed. This will illustrate and confirm the area(s) over which surveillance for caribou is expected to cover for both HOL survey locations and road-based surveys. This analysis will confirm information on average distance of survey coverage, the minimum and maximum distance and an area (i.e., the spatial extent of coverage provided by these methods).

While Agnico Eagle is confident that the currently proposed HOL locations along the Whale Tail haul road (i.e., n=5) are sufficient to provide indication that caribou are within sight of the Project, an invitation is extended to the GN-DOE, KivIA, and HTO to visit the locations and provide feedback.

The revised TEMP will include provision for more frequent ground surveys, road surveys and height-of-land surveys to increase the surveillance effort during seasons when caribou are anticipated. Further, all mine employees are encouraged to report wildlife observations at all times, effectively providing continual surveillance for caribou presence.

References:

Cumberland. 2006. Meadowbank Gold Project Terrestrial Ecosystem Management Report. Cumberland Resources Ltd. Vancouver, British Columbia.

Interested Party:	**Government of Nunavut (GN)**	**NIRB Ref No.:**	**GN-08**
		NWB Ref No.	**n/a**
Re:	**Adaptive management for caribou**		

Technical Comment / Recommendation Made By Interested Party:

The GN has attempted to clarify the numerous information gaps, uncertainties and deficiencies in the Project's adaptive management plan for caribou through a series of information requests (e.g. GN IRs #10, #13, #24, #29, #31). A majority of these information requests were not fulfilled. Instead the Proponent has indicated the intent to conduct a general revision of the TEMP, in consultation with the GN and other parties, and submit a revised version prior to the final stages of the Project review process (see responses to GN IR#10 and #13). The GN appreciates the Proponent's willingness and cooperative approach to revising the TEMP. However, pending review of revised version, the GN maintains the view that caribou management measures as presented in the EIS are inadequate and that confidence in impact-predictions concerning sensory disturbance and disruption of migratory movements is consequently low.

Accordingly, the GN recommends that the caribou management measures presented in the TEMP be revised to address the concerns discussed above. Amongst the recommended revisions, the following should be considered:

- *Distance-thresholds at which management actions are triggered should be increased to begin reducing disturbance of caribou at greater distances from the Project.*
- *The spectrum of adaptive management measures for reducing sensory disturbance should be increased to provide a clear progression in intensity of mitigation in response to the number of caribou and their distance from the Project. This should range from provisions for localized adjustments in activities up to possible site-wide shutdowns of certain activities.*
- *Group-size thresholds for triggering management actions should be revised to reflect the distribution of caribou group sizes that are predicted to interact with the Project. In doing so a more appropriate balance between protection of caribou and Project operations should be achieved.*
- *Group-size and distance thresholds should vary according to season to reflect seasonal differences in the vulnerability of caribou to sensory disturbance and the periods of peak interaction between caribou and the Project.*
- *Reliance on the use of discretionary management measures should be greatly reduced by including clear thresholds, criteria and procedures governing all primary adaptive management measures for caribou.*
- *Specific provisions should be added for managing each aspect of the Project operations that has the greatest potential to disturb caribou including haul road vehicle traffic, operation of heavy mining equipment, blasting and aircraft. It is recommended that these sources of disturbance be presented separately in adaptive management decision trees or tables, along with activity specific distance and group size thresholds and full descriptions of the range of management responses associated with*

each. Organizing the adaptive management plan in this way will not only permit reviewers of the Project to accurately assess the effectiveness of these measures but will presumably also facilitate implementation by Project personnel through development of standard operating procedures.

Agnico Eagle's Response to Technical Comment / Recommendation:

Agnico Eagle believes that the assessment of impacts to caribou in the FEIS is complete and applied best practices, using conservative assumptions to provide a conservative impact assessment for caribou and did not under estimate impacts to caribou. See Agnico Eagle's response to GN-05 regarding the interaction of the Project with caribou ranges and seasons for further context. As per the previous response, Agnico Eagle appreciates KivIA's contributions to improving the TEMP and will provide an updated TEMP that considers the recommendations in GN #8 and outcomes of collaborative discussions between the GN, KivIA, HTO, and Agnico Eagle during the last two TEMP Workshops where the GN has provided significant contributions and moving forward Agnico Eagle supports the development of the Terrestrial Advisory Group refer to KivIA-TC-Terrestrial 04.

However, Agnico Eagle does not entirely agree with the GN recommendations. The request assumes that caribou responses to the Project will be determined by group size, composition or distance from the Project. However, based on available literature and experience at Meadowbank, there is little evidence to suggest that this is the case. While there is a clear link showing individual caribou responses to stressor events (such as the passage of vehicles or aircraft, ERM Rescan 2014), it does not necessarily follow that caribou group behaviour responds to proximity from development. The available information regarding caribou group behaviour suggests a high degree of variability, linked to year, season and environmental variables such as rainfall and biting insect abundance, but not to proximity to development. For example, Wilson et al. (2016) found that caribou road crossing effects in Alaska varied from year to year, and between herds. Behavioural studies of Bathurst caribou at other developments found large differences in behaviour of both nursery and non-nursery caribou groups linked to habitat, year, precipitation, and biting insect abundance. There was some evidence that cows with calves spent less time feeding near the mine, but annual differences in behaviour were greater than changes with distance from the mine (BHPB 2004). Similarly, Golder (2011) found that behaviour was largely related to temperature, precipitation and biting insect abundance, but the proportion of time spent feeding and feeding/resting did increase with distance when the environmental variables were removed. More recent analysis of caribou behaviour at Ekati found that group behaviour was not significantly influenced by distance from mine but was influenced by season. Caribou group behaviour did not appear to be dependent upon the group size (ERM Rescan 2014).

Furthermore, Agnico Eagle agrees with the GN and will provide an updated TEMP that considers the recommendations in GN #8 and outcomes of collaborative discussions between the GN, KivIA, HTO, and Agnico Eagle during the last two TEMP Workshops where the GN has provided significant contributions. Agnico Eagle looks forward to further collaboration with the GN, KivIA, and Baker Lake HTO to build the foundation of the Terms of Reference for a Terrestrial Advisory Group.

Agnico Eagle is relying on their past experience from operating the Meadowbank Mine and input from the GN to develop clear and effective mitigation options based on caribou presence in the RSA. Agnico Eagle has integrated distance-thresholds in the TEMP, which initiates additional mitigation (beyond the normal operational mitigation) when there is at least one collared caribou within 25 km, which, at this distance, provides several days' notice that caribou may be approaching the Project. Considering that collars do not provide real-time data, collars are likely unreliable for smaller threshold distances, however, collar data will be requested based on the most frequent availability from the GN. Concomitantly with collaring data, Agnico Eagle will use height of land surveys to evaluate "adjustments in activities up to possible site-wide shutdowns of certain activities". Finally, Agnico Eagle is completing viewshed analysis of the height-of-land survey locations and for the haul road to confirm survey extent. Collectively, these data will initiate the next threshold of protection, which is when caribou are within sight of the Project based on height-of-land surveys, or haul road surveys or information provided from the Baker Lake HTO or GN conservation officer.

During recent workshops with the GN, KivIA, and HTO, Agnico Eagle revised the TEMP to include additional monitoring and enhanced mitigation options when caribou trigger the thresholds, including site-wide notifications, communication with GN, KivIA and HTO, road closures, lowered speed limits, pilot vehicles, closing roads and stopping work. The revised TEMP will also consider group size (as discussed in GN-06), and will extend the mitigation thresholds to last for one week minimum regardless of subsequent caribou observations after the threshold is triggered; this will be adjusted based on seasonality to ensure maximum protection of caribou. The experience to date at the Meadowbank mine and analysis of collared caribou indicate that caribou presence near the Project is predictable, mostly during the fall and late winter.

References:

BHPB (BHP Billiton Diamonds Inc.). 2004. EKATI Diamond Mine 2003 Wildlife Effects Monitoring Program. Prepared by Golder Associates Ltd.

ERM Rescan. 2014. Caribou Behaviour Direct Monitoring Program. Appendix 5.1 to the Ekati Diamond Mine 2013 Wildlife Effects Monitoring Program. Prepared for the Dominion Diamond Ekati Corporation.

Golder Associates Ltd. 2011. Analysis of Environmental Effects from the Diavik Diamond Mine on Wildlife in the Lac de Gras Region. Prepared for Diavik Diamond Mines Inc.

Wilson, RR; LS Parret, K Jolly and JR Dau. 2016. Effects of roads on individual caribou movements during migration. Biological Conservation 195, p. 2-8.

Interested Party:	**Government of Nunavut (GN)**	**NIRB Ref No.:**	**GN-09**
		NWB Ref No.	**n/a**
Re:	**Air traffic**		

Technical Comment / Recommendation Made By Interested Party:

The TEMP should be revised to include a range of adaptive management provisions for minimizing wildlife disturbance by aircraft based on consideration of species, group size, proximity to the Project and season. Adaptive management should include provisions for potential stoppage/suspension of aircraft operations under specified conditions when large aggregations of wildlife are in close proximity to the Project. Strict criteria governing use the of deterrents to move animals away from the Project's airstrips and helipads are also required to ensure that this activity is not exploited as tool to maintain Project operations at unacceptable cost to the well-being of wildlife in the region.

Agnico Eagle's Response to Technical Comment / Recommendation:

The TEMP includes mitigation that is anticipated to be protective of all caribou, regardless of group size and season and activities (including aircraft). Although the flight safety of employees and the aircraft will be paramount, the updated TEMP will suggest that aircraft pilots will receive the site-wide notifications of caribou movements, and include a recommended minimum distance from all caribou of 300 m vertically and 1 km horizontally. Further, the Environmental Supervisor may enact other mitigation as required to reduce impacts to caribou. Deterrents will only be used as a last resort when there is immediate risk to humans or wildlife.

Interested Party:	**Government of Nunavut (GN)**	**NIRB Ref No.:**	**GN-10**
		NWB Ref No.	**n/a**
Re:	**Blasting and wildlife**		

Technical Comment / Recommendation Made By Interested Party:

As currently propose in the EIS, there is very little mitigation or adaptive management proposed for the twice daily, (presumably year-round) open pit blasting activities of the Project. Given this lack of mitigation/management and the concerns outlined above, the EIS conclusion that there will be no significant effects on wildlife is highly uncertain and of low confidence.

Accordingly the GN recommends:

- *The TEMP (and related plans) be revised to include a comprehensive set of mitigation and adaptive management measures for minimizing effects of blasting on caribou and other wildlife (see also GN TC# 8).*
- *Given the predicted spatial extent of blasting noise, literature on the impacts of noise on wildlife and blasting management measures for recent mine projects in Nunavut, a minimum no blasting buffer of 5km is recommended. This should be increase to more than 5km during sensitive caribou periods (calving and post-calving) and during periods when the Project interacts most with migrating caribou.*
- *Group size thresholds for caribou should be based on a review of empirical data for caribou in the region to ensure they provide triggers that are sufficient to protect caribou (see GN TC #6).*

Agnico Eagle's Response to Technical Comment / Recommendation:

During the last 8+ years of operations at the Meadowbank Mine, there have been no records of injury or mortality of caribou to date, and blasting procedures will continue to apply the same standards to caribou that are applied to humans. As a result, Agnico Eagle believes that the FEIS conclusion of no significant impacts to caribou from blasting is accurate and this prediction has a high level of certainty.

Regarding updates to the TEMP, Agnico Eagle agrees with the GN's recommendations and will update the procedures to reduce sensory disturbance to caribou as a result of blasting. Consistent with other mine site activities, Agnico Eagle has developed trigger levels to account for blasting noise and have selected HOL locations that will allow caribou detection 3 to 5 km away. Agnico Eagle is investigating the viewshed from nearby height-of-land (see GN-07) and will work with the GN to define a "minimum no blasting buffer".

Interested Party:	**Government of Nunavut (GN)**	**NIRB Ref No.:**	**GN-11**
		NWB Ref No.	**n/a**
Re:	**Problem carnivores**		

Technical Comment / Recommendation Made By Interested Party:

The TEMP and the associated Wildlife Protection and Response Plan should be revised to include provisions for the adjustment/management of Project operations in response to the presence of bears.

This should include measures such as:

- *Temporary area-closures to prevent bears that are not an immediate threat to human safety from coming into contact with Project personnel.*
- *No-blasting buffers that prevent physical and reduce disturbance of bears must be established and specified.*
- *A zone-based approach for bear management that incorporates a range of prescribed responses increasing in intensity based on factors such as distance from humans, direction of movement and behavior. An example of this may be found in the bear response plans for the Doris North Project.*
- *Use of deterrents is reserved for circumstances where it is necessary to protect the immediate safety of people but not as a means of moving bears away from the Project so that operations can continue.*

Agnico Eagle's Response to Technical Comment / Recommendation:

It should be noted that grizzly bears presence at Meadowbank has been highly infrequent, with fewer than 5 sightings in the past 10 years. That said, the TEMP and specifically Appendix A: Wildlife Protection and Response Plan includes consideration of these suggestions. In addition, in 2011 Agnico Eagle brought in an independent Wildlife Safety Site Auditor (Bearwise) for a site wide audit including mitigation and protection recommendations and training (Agnico Eagle 2012). This continues to be implemented at Meadowbank and will be transferable to Whale Tail Pit.

References:

Agnico Eagle (Agnico Eagle Mines Limited). 2012. Meadowbank Gold Project 2011 Annual Report. April 2012.

Interested Party:	**Government of Nunavut (GN)**	**NIRB Ref No.:**	**GN-12**
		NWB Ref No.	**n/a**
Re:	**Wildlife harvesting**		

Technical Comment / Recommendation Made By Interested Party:

The potential for the Project to induce an increase in wildlife harvesting has not been adequately addressed in the EIS. In this regard, the general conclusion that the Project will have no significant adverse effects on wildlife is not support by the evidence presented and should be regarded as having low confidence and associated risk.

Project-induced changes in wildlife harvesting should be considered a primary effects pathway, carried through the assessment and retained as a residual impact. Given limitations of the HHS data and a lack of evidence demonstrating the effectiveness of proposed public access and no-hunting controls, the available information for assessing this pathway is currently very sparse. Consequently, it is recommended that the significance of this effect should be classified as "unknown". This serves as a flag for the need to conduct further research and ensure that stringent monitoring associated with the Project's current roads (AWAR) and any future roads is in place.

Accordingly, the GN also recommends the following:

- *That the EIS be revised to include an analyses of available data for the ANWAR to demonstrate whether the no-shooting zone and road access restrictions have been effective in preventing wildlife harvest in the vicinity of the road (per GN IR #33).*
- *That the EIS be revised to include a detailed description of the methods that will be used to implement a no-shooting zone and control public access along the Whale Tail haul road (per GN IR #33)*
- *That the EIS be revised to include a detailed description of the methods by which public use of the haul road will be monitored and reported in-order to verify the prediction that survival rates of caribou will be unaffected by the road (per GN IR #33).*
- *That the Terrestrial Ecosystem Monitoring Plan be revised to include a design for a harvest study capable of monitoring trends in the total level and distribution of caribou harvesting (or indices of) by residents of Baker Lake for the purpose of assessing potential Project-induced changes in these metrics.*

Agnico Eagle's Response to Technical Comment / Recommendation:

Agnico Eagle would like to remind the GN that the Meadowbank AWAR was originally a private road when the Meadowbank Mine was approved. Subsequent to this approval, it was requested by Baker Lake that the road be available for public use. Consequently, as a result of a NIRB public hearing and subsequent decision in July 2009, the road was made public from KM 0 – KM 85. Although Agnico Eagle

ensures safety of the road for its operators through its security department, enforcement of a no shooting zone is the responsibility of the GN.

Nevertheless, Agnico Eagle will continue to have conversations with the Baker Lake HTO about the no shooting zone, will continue to implement a check-in/check-out procedure that discusses the no shooting zone at the security gate at KM 0. Furthermore, Agnico Eagle agrees with the GN recommendation and will post 1 km markers out on the land for spatial reference to hunters. Finally, as discussed at the two TEMP related workshops with the GN, Agnico Eagle is looking to collaborate and partner with the GN, KivIA, and Baker Lake HTO on the Hunter Harvest Survey with consideration of collecting information on the distribution and frequency of hunting effort and hunting success, among other parameters decided by the HHS partners.

Interested Party:	**Government of Nunavut (GN)**	**NIRB Ref No.:**	**GN-13**
		NWB Ref No.	**n/a**
Re:	**Traffic monitoring and management**		

Technical Comment / Recommendation Made By Interested Party:

With respect to impact of the Project on caribou movements (including migration) it appears that the conclusion of non-significance is in part premised on the assumption that mitigation and management measures for caribou protection will be effective in reducing impacts. Information gaps in the EIS relating to road management impede the reviewer's ability to critically evaluate this conclusion. Accordingly the GN recommends that the EIS be revised to address the information gaps and deficiencies noted above.

Agnico Eagle's Response to Technical Comment / Recommendation:

Agnico Eagle believes that the assessment of impacts to caribou in the FEIS is complete and applied best practices, using conservative assumptions to provide a conservative impact assessment for caribou and did not under estimate impacts to caribou. The conclusion regarding the impact of the Project on caribou movements used a weight-of-evidence approach, using both science and IQ from the Meadowbank AWAR and other developments in the range of the overlapping herds. As per Agnico Eagle response to GN#5, although the project interacts with caribou, it does not interact with a relatively high proportion of caribou herds during key migratory periods and the experience to date at the Meadowbank mine and analysis of collared caribou indicate that caribou presence near the Project is predictable, mostly during the fall and late winter.

The assessment acknowledges that roads can cause a barrier to migratory movements, as has been observed along the AWAR through the observations of Elders (FEIS Appendix 7-A), monitoring (i.e., Gebauer et al. 2016) and possibly also through collar movements (i.e., see Figure 9.7 in Gebauer et al. 2016). These sources indicate that most caribou will cross the road, but are either delayed in crossing or selective in the crossing point in some cases. However, examination of all historic movements of collared caribou in the Meadowbank LSA indicated that approximately 83% eventually crossed the road (FEIS Appendix 5-D). Similarly at Ekati, less than 1% of caribou photographed near the Misery road were deflected (ERM Rescan 2014). More recent analysis of photograph information from the Misery road indicated that there was no significant relationship between the number of caribou crossing roads and the number of deflection events and road features (including slope, height, hypotenuse, and rock grain size, ERM Rescan 2016). Mitigation is in place to reduce impacts to caribou migratory movements, including road closures. For example, the AWAR was closed for a total of 10 days in 2015.

Agnico Eagle is confident that the assessment of no significant impacts in the FEIS is accurate, and expects to further refine the TEMP to incorporate the best available information for the protection of caribou and caribou movement.

References:

ERM Rescan. 2016. Ekati Diamond Mine: Caribou Crossing Photo and Road Features Analysis, 2011 to 2015. Prepared for Dominion Diamond Ekati Corporation.

ERM Rescan. 2014. Ekati Diamond Mine: 2013 WEMP Addendum — Wildlife Camera Monitoring Summary Report. Prepared for Dominion Diamond Ekati Corporation by ERM Rescan: Yellowknife, Northwest Territories.

Gebauer, M., A. Crampton, J. Shaw, and I. Laing. 2016. Meadowbank Mine: 2015 Wildlife Monitoring Summary Report. Prepared for Agnico Eagle Mines Ltd.

Interested Party:	**Government of Nunavut (GN)**	**NIRB Ref No.:**	**GN-14**
		NWB Ref No.	**n/a**
Re:	**Muskox mitigation and management**		

Technical Comment / Recommendation Made By Interested Party:

Although muskoxen are currently present at low densities, specific mitigation and adaptive management measures for muskox should be integrated into the Project's TEMP in order to minimize sensory disturbance and the potential to impede the species current expansion in range and abundance.

Accordingly the GN recommends the following:

- *Revision of the TEMP to include specific adaptive management measures to minimize sensory disturbance of muskox, similar in structure (i.e. groups-size and distance thresholds, seasonal variations, etc.) to those recommended for caribou (see GN TC #7). This should include measures to manage key Project activities most likely to disturb including blasting, road traffic, operations of heavy equipment at mine sites and air traffic.*

Agnico Eagle's Response to Technical Comment / Recommendation:

Considering that muskox are infrequently observed near the Meadowbank Mine, the small group size of the herds observed with no groups of greater than 20 individuals observed in 2014 or 2015 (Gebauer et al. 2015, Gebauer et al. 2016), the apparent lack of reaction of muskox to mine activities given all observations of muskox near the Meadowbank Mine where behaviour was documented were either standing, grazing or walking, and that the Impact Prediction Thresholds for muskox have not been exceeded (Gebauer et al. 2016), the existing mitigation in the TEMP for both ungulates and general wildlife is considered sufficient to encompass muskox. Agnico Eagle agrees with the GN and will continue to monitor muskox presence as part of the TEMP (consistent with Meadowbank operations).

References:

Gebauer, M., A. Crampton, J. Shaw, and I. Laing. 2015. Meadowbank Mine: 2014 Wildlife Monitoring Summary Report. Prepared for Agnico Eagle Mines Ltd.

Gebauer, M., A. Crampton, J. Shaw, and I. Laing. 2016. Meadowbank Mine: 2015 Wildlife Monitoring Summary Report. Prepared for Agnico Eagle Mines Ltd.

Interested Party:	**Government of Nunavut (GN)**	**NIRB Ref No.:**	**GN-15**
		NWB Ref No.	**n/a**
Re:	**Road design to facilitate caribou movement**		

Technical Comment / Recommendation Made By Interested Party:

With respect to impact of the Project on caribou movements (including migration), the conclusion of non-significance appears in part to be premised on the assumption that mitigation and management measures for caribou protection will be effective in reducing impacts. Information gaps in the EIS relating to the haul road design and its management impede the reviewer's ability to critically evaluate this conclusion. Accordingly the GN recommends that the EIS be revised to address the noted information gaps.

Agnico Eagle's Response to Technical Comment / Recommendation:

The monitoring at the Meadowbank Mine to date, and experience from other developments in the range of barren-ground caribou, described in the FEIS, confirm that the proposed mitigation is effective at reducing caribou mortalities and limiting effects to caribou behaviour. The specifics of the haul road design will be provided in the next version of the TEMP and corresponding monitoring and mitigation will also be provided in this revision as per the outcome of discussions between Agnico Eagle, the KivIA and the GN at our last two workshops.

However, recent analysis of caribou road crossings at the Ekati mine Misery road, using data collected between 2011 and 2015 (and including 69 road interactions), did not indicate any significant relationship between the number of caribou road crossing/deflection events, and the road features that were examined (including slope, height, hypotenuse, and rock grain size [ERM Rescan 2016]).

References:

ERM Rescan. 2016. Ekati Diamond Mine: Caribou Crossing Photo and Road Features Analysis, 2011 to 2015. Prepared for Dominion Diamond Ekati Corporation.

Interested Party:	**Government of Nunavut (GN)**	**NIRB Ref No.:**	**GN-16**
		NWB Ref No.	**n/a**
Re:	**Scope of assessment and size of the wildlife effects study areas**		

Technical Comment / Recommendation Made By Interested Party:

Given the above noted concerns, confidence is low in the accuracy of the assessment and the conclusion that Project impacts on terrestrial wildlife will be none significant. Confidence may be improved by expanding the assessment study area to encompass all physical elements of the Project and delineating the study area using distance buffers that reflect uncertainty in the Project's ZOI.

Accordingly the GN recommends the following:

- *Expand the terrestrial wildlife effects study areas (LSA and RSA) to include the existing Meadowbank Mine and AWAR, both of which are integral a parts of the Project and its environmental effects. Revise the wildlife effects assessment accordingly.*
- *Revise the assessment for sensory disturbance of caribou to reflect uncertainty about the size of the Project's potential ZOI. This can be achieved by using a range of ZOI sizes which capture the worst and best case scenarios for disturbance, thereby providing a more balanced and precautionary assessment. These different ZOIs should be used as study areas for the purpose of calculating or recalculating disturbance related metrics including:*
    1) *The caribou residency time analyses (Vol. 5, Appendix 5-D) (see also GN TC #17);*
    2) *The caribou road crossing analysis (Vol. 5, Appendix 5-D) (see also GN TC #15);*
    3) *The proportion of collared individuals (from each herd) that enter the ZOI in a given season (a proxy for estimating herd-level exposure rates)(see also GN TC #7); and*
    4) *The Total area of indirect caribou habitat loss (see GN TC #17) and area of preferred habitat loss expressed in hectares (Vol 5., Table 5.5-10) and as a proportion of herd seasonal ranges (see also GN TC #17).*
- *Similar revisions with respect to the use of a range of ZOIs should be carried through into the cumulative effects assessment for caribou, whereby these ZOIs are applied to all sites within the cumulative effects study area(s).*

Agnico Eagle's Response to Technical Comment / Recommendation:

The LSA and RSA (illustrated in Figure 5.5-1) are considered sufficient to capture the Project effects. Cumulative effects from past, present and reasonably foreseeable future development are considered separately. The LSA includes Vault Pit, while the RSA includes Vault Pit, the Meadowbank Mine, and the northern sections of the AWAR. These disturbances were included in the habitat loss calculations.

Rather than presenting a range of estimates based on different zone of influence (ZOI) estimates, the FEIS addressed uncertainty by using conservative assumptions (i.e., worst-case scenarios), as is appropriate for environmental assessment. The FEIS presents the available estimates of ZOI for barren-

ground caribou (Page 5-56), and all are encompassed within the RSA. These estimates are considered conservative, as the available evidence does not suggest that caribou behaviour (i.e., time spent displaying various activities such as walking, running, foraging, bedding) changes with proximity to the Ekati and Diavik mines (or is at least a much weaker response than to environmental variables, BHPB 2004, Golder 2011, ERM Rescan 2014), and the area of reduced lichen cover due to dust is likely within the LSA boundaries (measured at approximately 1 km at Ekati) (Chen et al. 2016).

There is little value to estimating habitat loss in the larger cumulative effects study areas. As indicated in Appendix 3-D, there is very little other development in the range of the overlapping caribou herds. Review of existing land use permits identified eight active developments in the Ahiak caribou range, eight in the Lorillard range, and four in the Wager Bay range (including communities, exploration camps, research projects, and tourism camps) in as of 2016. The RSA includes the Project, Vault Pit, Meadowbank Mine, and part of the AWAR (i.e., the most developed area of the Kivalliq), but total disturbance from all these developments makes up less than 0.4% of the RSA, far below a significance threshold (cumulative habitat loss in the LSA is approximately 3.4%). Using a larger cumulative effects study area would further dilute habitat disturbance numbers.

References:

BHPB (BHP Billiton Diamonds Inc.). 2004. EKATI Diamond Mine 2003 Wildlife Effects Monitoring Program. Prepared by Golder Associates Ltd.

Chen, W., Leblanc, S. G., White, H. P., Prevost, C., Milakovic, B., Rock, C., & Gunn, A. (2017). Does Dust from Arctic Mines Affect Caribou Forage? Journal of Environmental Protection, 8(03), 258.

ERM Rescan. 2014. Ekati Diamond Mine: 2013 Wildlife Effects Monitoring Program. Prepared for Dominion Diamond Ekati Corporation by ERM Rescan: Yellowknife, Northwest Territories.

Golder Associates Ltd. 2011. Analysis of Environmental Effects from the Diavik Diamond Mine on Wildlife in the Lac de Gras Region. Prepared for Diavik Diamond Mines Inc.

Interested Party:	**Government of Nunavut (GN)**	**NIRB Ref No.:**	**GN-17**
		NWB Ref No.	**n/a**
Re:	**Sensory disturbance of caribou, indirect habitat loss and cumulative effects**		

Technical Comment / Recommendation Made By Interested Party:

Given the above noted concerns, confidence in the accuracy of the assessment for Project and cumulative disturbance effects on caribou is low. The assessment may be strengthened and confidence improved by revising the EIS to include additional or recalculated metrics of disturbance.

Accordingly the GN recommends the following:

- *Calculating estimates of Project-related indirect habitat loss as a proportion of the seasonal ranges of the herds interacting with the Project.*
- *Calculating metrics for the proportion of each herd exposed to potential disturbance and the duration of individual exposure as described above (and also taking into account recommendations in GN TC #10).*
- *Calculating similar metrics (percentage of range disturbed, rates of exposure and duration of exposure) for cumulative disturbance effects, as described above (and also taking into account recommendations in GN TC #10).*

Agnico Eagle's Response to Technical Comment / Recommendation:

As discussed in the response to GN TC#16, there is likely little value to estimating habitat loss in the larger cumulative effects study areas. The RSA includes the Project, Vault Pit, Meadowbank Mine, and part of the AWAR (i.e., some of the most developed areas of the Kivalliq region), but total disturbance from all these developments makes up less than 0.4% of the RSA, far below a significance threshold (cumulative habitat loss in the LSA is approximately 3.4%). Considering the entire range of the overlapping caribou herds, development is rare. As indicated in Appendix 3-D, review of existing land use permits identified eight active developments in the Ahiak caribou range, eight in the Lorillard range, and four in the Wager Bay range (including communities, exploration camps, research projects, and tourism camps) in as of 2016.

As indicated in Volume 3, Appendix 3-D, there are few other development in the range of the overlapping caribou herds (as indicated in Appendix 3-D, review of existing land use permits identified eight active developments in the Ahiak caribou range, eight in the Lorillard range, and four in the Wager Bay range, including communities, exploration camps, research projects, and tourism camps). Using larger cumulative effects study areas or seasonal ranges will provide lower proportional disturbance estimates. The screening-level information provided indicates that the Project is unlikely to trigger significant cumulative effects. The analysis of collared caribou currently underway by the GN-DOE is anticipated to further confirm this. A more detailed analysis of collared caribou residency time near development than provided in Volume 5, Appendix 5-D may be undertaken if the full collar data set is made available to Agnico Eagle.

Interested Party:	**Government of Nunavut (GN)**	**NIRB Ref No.:**	**GN-18**
		NWB Ref No.	**n/a**
Re:	**Food security**		

Technical Comment / Recommendation Made By Interested Party:

It is recommended that Proponent continue their HHS program for continued monitoring and changes in caribou availability. In the HHS, the measures of each catch per unit of effort or cost of hunting per caribou could be a key indicator of food security. Food security is linked to several GN technical comments, such as disruption of caribou movements (GN TC #5), sensory disturbance (GN TC #17), wildlife harvesting (GN TC #12), blasting management (GN TC #10), and caribou adaptive management (GN TC #8).

Recommendations in GN TC #5 (disruption of caribou movements), GN TC #10 (blasting and wildlife) and GN TC #12 (wildlife harvesting) are also advanced with respect to the issue of food security.

Agnico Eagle's Response to Technical Comment / Recommendation:

Agnico Eagle is committed to continuing the HHS, and will consider revising the survey to include a measure of catch per unit effort, recognizing that the HHS is undertaken in partnership with the KivIA, HTO, and GN. Agnico Eagle suggests that this would be reported through the annual meeting of the TAG with a more thorough compilation report every three years.

Interested Party:	**Government of Nunavut (GN)**	**NIRB Ref No.:**	**GN-19**
		NWB Ref No.	**n/a**
Re:	**Skills development**		

Technical Comment / Recommendation Made By Interested Party:

The GN recommends that the proponent continue to work with the Department of Family Services and other relevant stakeholders to explore opportunities for the promotion of skills, training, and career advancement of current and future Inuit employees.

While the proponent has provided opportunities for training and skill development, some other ideas include:

- *Mentorship: increased job-shadowing by appropriate candidates for more advanced positions; however, more than job shadowing, the mentor must be mandated to teach through practical opportunities and feedback.*
- *Internal training: Human Resources should commit to training existing employees to advance to higher skilled positions, thus freeing up more entry-level positions to the general public.*
- *Training programs: communities within the same region of the mine should have focused training opportunities for entry level positions; if other, equivalent training opportunities are not available from third-parties then these training opportunities must be created and targeted for the forecasted available positions.*

Agnico Eagle's Response to Technical Comment / Recommendation:

Agnico Eagle agrees with the GN recommendation. Agnico Eagle will continue to work with the Department of Family Services and other relevant stakeholders to promote skills, training, and career advancement of current and future Inuit employees.

Interested Party:	**Government of Nunavut (GN)**	**NIRB Ref No.:**	**GN-20**
		NWB Ref No.	**n/a**
Re:	**Job forecasting**		

Technical Comment / Recommendation Made By Interested Party:

The GN recommends that the Proponent submit to it a detailed staff schedule a minimum of six (6) months in advance of the commencement of construction activities. The schedule should, at a minimum, provide an understanding of:

- *Title of positions required by department and division;*
- *Quantity of positions available by Project phase and year; and*
- *The National Occupational Classification (NOC) code for each individual position.*
- *The Department of Family Services should be consulted on the development of the exact format of the schedule. A new schedule should be submitted following any significant deviation from original predictions. This procedure is standard for all new projects and will be necessary for occupational modeling and forecasting.*

The GN also oversees the apprenticeship program within Nunavut and is the contact for the proponent to establish apprenticeship initiatives, as well as the Apprenticeship Training Program. The GN will partner with the proponent and regional groups to support the initiatives and adhere to the established processes and regulations set forth by the Department of Family Services and in the Apprenticeship, Trade and Occupations Certification Act & Regulations.

With respect to apprenticeships and the Whale Tail Pit project, GN recommends:
1. That the proponent identify and register all trades occupations, journeypersons, and apprentices working within the project operations, with a commitment to register any trades occupations listed in their forecast; and

2. That the proponent identify how many registered apprentices and journeypersons are from other jurisdictions and report this information to GN.

Agnico Eagle's Response to Technical Comment / Recommendation:

Response 1)

The Department of Family Services will be consulted throughout all phases of the project and Agnico Eagle will submit a detailed staff schedule six months in advance of construction and will include:

- Title of positions required by department and division;
- Quantity of positions available by Project phase and year; and
- The National Occupational Classification (NOC) code for each individual position.

Response 2)

Agnico Eagle agrees with the GN and will continue to extend the Meadowbank apprenticeship program while operating the Whale Tail Pit, which requires apprenticeship registration. Journeypersons that are hired from other jurisdictions are not re-registered in Nunavut, nor are required to be registered in Nunavut.

Interested Party:	**Government of Nunavut (GN)**	**NIRB Ref No.:**	**GN-21**
		NWB Ref No.	**n/a**
Re:	**Sexual health education**		

Technical Comment / Recommendation Made By Interested Party:

The GN recommends that screening for sexually transmitted infections be readily available at the project site. The GN further recommends that the proponent commit to further communication with the GN Department of Health regarding the integration of sexual health and wellbeing information into employee orientation programming, the Work Readiness Program, or the Making it Work program (in partnership with the Kivalliq Mine Training Society) to increase awareness of STIs and safe sexual practices to employees and their sexual partners.

Agnico Eagle's Response to Technical Comment / Recommendation:

Agnico Eagle will continue to work with the GN Department of Health regarding the integration of sexual health. Agnico Eagle does not believe the Work Readiness Program nor the Making it Work program (in the partnership with the Kivalliq Mine Training Society) are the suitable venues to discuss STIs and safe sexual practices to employees. However, Agnico Eagle will continue to work with stakeholders and employees to ensure that wellbeing information is integrated into employee orientation programming to increase awareness of STIs and safe sexual practices to employees and their sexual partners.

Interested Party:	**Government of Nunavut (GN)**	**NIRB Ref No.:**	**GN-22**
		NWB Ref No.	**n/a**
Re:	**Use of community health centres**		

Technical Comment / Recommendation Made By Interested Party:

The GN recommends that the proponent broaden its interpretation of impacts to community health centres beyond simply measuring health centre visits, in recognition of the indirect burden that large mining projects may have on nearby communities with limited health care resources available.

The GN further recommends that the proponent commit to further collaboration with the GN Department of Health to adapt monitoring efforts around the use of community health centres to reflect this revised understanding, including but not limited to the number of sick notes provided to project employees by staff at community health centres, and interactions between staff at site clinics and community health centre staff.

Agnico Eagle's Response to Technical Comment / Recommendation:

Agnico Eagle will cooperate with the GN Department of Health to adapt monitoring efforts around the use of community health centres and interactions between staff at site clinics and community health centre staff.

Interested Party:	**Government of Nunavut (GN)**	**NIRB Ref No.:**	**GN-23**
		NWB Ref No.	**n/a**
Re:	**Absence from work**		

Technical Comment / Recommendation Made By Interested Party:

The GN recommends that the proponent re-evaluate its ability to collect and use information related to the housing situation of its employees. This data would be a simple means to facilitate analysis and understanding of overcrowding in the community.

The GN commends the proponent for developing the Building People Initiative.

The EIS states that "Programs included in this initiative will focus on increasing community-based human resource activities in an effort to reduce absenteeism, increasing career planning, improving students' interest in remaining in school, and increasing the number of Inuit enrolled in trades and professions." (Vol 7 ,3.5 p. 23)

Measuring and tracking the housing situation of employees and the relationship to absenteeism would significantly increase the impact and success of the Building People Initiative.

Measuring overcrowding and ultimately contributing to efforts to deal with the crisis may also have a positive effect on other proponent-led programs such as the School Based Initiatives and training investments. Improved housing will allow the Work Readiness Training Program, Career Path Program, and The Make it Work Program to reach their full potential.

Agnico Eagle's Response to Technical Comment / Recommendation:

Although all factors of employee well-being, including housing, is important to consider in employee turnover and absenteeism, Agnico Eagle does not collect data related to housing overcrowding rates of employees. The FEIS (Volume 7, Section 7.4 Socio Economic Assessment) does not predict changing population or household structures (including crowding) in Baker Lake, or other communities, as a result of the Project. The FEIS used the most up-to-date, publically available data in rent scales in the economic modelling. While respecting the privacy of our employees, Agnico Eagle will work with the GN to ensure appropriate data is made available; however, Agnico Eagle will not collect information that steps into the private lives of our employees.

Interested Party:	**Government of Nunavut (GN)**	**NIRB Ref No.:**	**GN-24**
		NWB Ref No.	**n/a**
Re:	**Migration**		

Technical Comment / Recommendation Made By Interested Party:

The proponent's assessment that the impacts on the demographics of LSA communities are "uncertain" should be revisited.

Based on the proponent's acknowledgement of growth in the community, the GN recommends that a mitigation strategy be developed to deal with the effects of this growth on the social situation in Baker Lake, including housing.

With the likelihood that this project will be extended, recognition of the more long term effects should be part of the proponent's analysis. This will allow the region to develop an adequate long term adaptation strategy

Agnico Eagle's Response to Technical Comment / Recommendation:

It is acknowledged that there are housing constraints in Kivalliq and Baker Lake (please refer to the socio-economic baseline report, FEIS Volume 7, Appendix 7-B for further discussion), however the assessment concludes that the ability of the Project to place direct, additional strain on housing due to Project-driven population influx to Baker Lake is low. This conclusions was made based on the labour requirements of the Project relative to the existing Meadowbank Mine workforce that could transfer over, the available labour force in Kivalliq, and the fact that, where necessary, some portion of the Project's workforce requirements will be met by out of area workers.

Roughly three quarters (approximately 700 workers) of the Project's workforce demand is expected to be met by the existing Meadowbank Mine workforce. The remaining labour demand of the Project is around 200, of which 50% (100 workers) are expected to be drawn from outside of Nunavut. This outside workforce would not be expected to relocate to Kivalliq with their families for employment, instead operating on a rotation schedule that would see them housed at the on-site camp for two weeks at a time. The remaining 100 workers would be drawn from Nunavut and Kivalliq communities where fly-in, fly-out arrangements are already available, removing the need to relocate for employment. Agnico Eagle will continue to work with communities to identify local labour and strategies to remove barriers to employment. Given this approach to meeting the Project's labour force demand, the direct pathway between the Project and increased pressure on housing due to population change was not carried forward for further residual assessment.

In response to this technical comment, it is acknowledged that there is the possibility for indirect, speculative migration between communities in response to the Project. Individuals may choose to

relocate in hopes of obtaining work without having secured an offer of employment from Agnico Eagle. However, it should be recognized that the decisions of individuals in terms of movement between communities are outside the control of the developer, and some may still choose to relocate. Given that the Project does not represent an entirely new development, rather acting to extend the Meadowbank Mine from an employment perspective, and in consideration of early engagement effects on the part of Agnico Eagle, the potential for speculative relocation at a scale meaningfully impacting population dynamics is considered low.

While the development of housing is outside the purview of a mining developer, Agnico Eagle will continue to engage with communities regarding changing socio-economic conditions. Agnico Eagle will continue the socio-economic monitoring program in place for the Meadowbank Mine during Project construction and operations, which includes monitoring of migration, community population, housing stock and condition, and use of physical infrastructure and services. Should adverse changes in these areas arise, Agnico Eagle will continue to collaborate with the GN and communities to develop issue-specific mitigation. The Socio-Economic Management and Monitoring Plan (SEMMP; FEIS Volume 8 Appendix 8-E.6) identifies Agnico Eagle's approach to managing and monitoring potential socio-economic issues associated with their Kivalliq operations. Issue-specific implementation plans are developed as part of Agnico Eagle's adaptive management process. Agnico Eagle is open to further discussion on the perceived potential for Project-driven population changes in Kivalliq communities during the Technical Meeting.

HEALTH CANADA

Interested Party:	**Health Canada (HC)**	**NIRB Ref No.:**	**HC 1**
		NWB Ref No.	**n/a**
Re:	**Country Foods**		

Technical Comment / Recommendation Made By Interested Party:

Health Canada remains concerned about the potential increase of metals in fish that may be consumed (i.e. methylmercury), and is interested to see the Proponent's mercury monitoring plan referenced in the Proponent's response.

Agnico Eagle's Response to Technical Comment / Recommendation:

Health Canada's concern is duly noted and Agnico Eagle is committed to monitoring temporal trends in fish mercury concentrations in relation to the flooding of Whale Tail Lake (South Basin). Mercury-related monitoring will be integrated into the Fisheries and Offsetting Monitoring Plan which will be prepared prior to the Final Hearing.

Agnico Eagle is committed to developing this plan to include collaborations with academics, DFO, DFO Science, and the KivA. The mercury monitoring plan will not only include lake trout (i.e., the top predatory fish in the lake), but will include monitoring temporal trends in methylmercury concentrations key components of the food chain (zooplankton and benthic invertebrates) and water. This approach will provide meaningful data to not only manage the flooding-related changes to fish mercury concentrations, but also to better understand the mercury-issue in a northern context.

Interested Party:	**Health Canada (HC)**	**NIRB Ref No.:**	**HC 2**
		NWB Ref No.	**n/a**
Re:	**Air Quality**		

Technical Comment / Recommendation Made By Interested Party:

There are continuing concerns in regards to dust generation during the operations of the mine, as well as dust emissions due to the use of the haul road. Health Canada is suggesting the Proponent implement dust mitigation and monitoring plan.

Agnico Eagle's Response to Technical Comment / Recommendation:

This response is identical to KivIA-TC-Air-05.

Currently Agnico Eagle has a dust management/mitigation plan that is implemented at the Nunavut mining operations and will be implemented at Whale Tail and for use of the haul road. Agnico Eagle's dust management/mitigation plan for its mining operations in Nunavut continues to improve. Best practices from the Meadowbank Mine, Vault Pit, and All-Weather Access Road will be applied to operations of the proposed Whale Tail Pit and Haul Road.

The Whale Tail Pit and Haul Road FEIS predicts dustfall adjacent to the haul road below the Alberta Environment guidelines at approximately 300 m from the haul road. These predictions are consistent with the results presented in the 2016 All-Weather Access Road Dust Monitoring Report (Agnico Eagle 2017a). The report states: *"Cumulative results to date indicate that without dust suppressant application, average rates of dustfall decline below Alberta Environment's guideline for recreational areas within 100 m of the AWAR and meet the range of background rates within 200 m." These results are consistent with the original Meadowbank FEIS.*

Nevertheless, due to community and stakeholder concerns, in 2016, Agnico Eagle completed a dust suppression study along the Baker Lake to Meadowbank AWAR (Agnico Eagle 2017a). Results of the study indicate that speed reductions designed to reduce dust generation were either too great to be practical, or too small to be effective (Agnico Eagle 2017a). Among competing dust-suppressants, TETRA Flake (a $CaCl_2$ product) was most effective at reducing the generation of road dust. Agnico Eagle historically has applied dust suppressants in the hamlet of Baker Lake and near the Meadowbank site. However in 2015/ 2016, Agnico Eagle met with the community groups including the HTO, which also identified two additional areas of concern between km 50 – 89 (the northern limit for public use), where dust suppressant will also be applied in 2017. This was based on the same principles identified to be of concern to the HTO, generally, proximity to waterbodies. Furthermore, Agnico Eagle will continue to apply suppressants at the locations previously treated. The following table highlights the areas where dust suppressant will be applied:

Table 1. Planned locations for dust suppressant application in 2017.

AWAR Location	Rationale
Agnico Eagle spud barge area	High traffic area near hamlet
Agnico Eagle tank farm to Arctic Fuel site	High traffic area near hamlet
km 0 - 5	High traffic area near hamlet
km 10 - 12	Area of concern to HTO – proximity to lake
km 24 - 26	Area of concern to HTO – proximity to lake
km 48 - 50	Area of concern to HTO – water crossing
km 68 - 70	Location identified by Agnico Eagle – water crossing
km 80 - 84	Location identified by Agnico Eagle – proximity to water & crossing
Emulsion plant turn off to Meadowbank site (km 103 – 110)	High traffic area

Agnico Eagle's adaptive management plan for mitigation of haul road dust along the Whale Tail Pit and Haul Road can be summarized in general as follows:

1) Low silt esker material is the preferred road top-dressing material used in construction.
2) After construction, problem areas will be identified and reported by Agnico Eagle staff (e.g., haul truck drivers), and top dressed with low silt esker material.
3) Initially, road watering will be applied to control problem areas.
4) Where dust problems persist, a chemical suppressant (e.g., TETRA Flake [$CaCl_2$]) will be used.

Consistent with the approach along the AWAR, Whale Tail Pit Haul Road watering and/or the application of chemical suppressants will also be employed in sensitive areas identified by local stakeholders or Agnico Eagle (e.g., adjacent to traditional land use areas). Improvements to best practices are expected over time and will continue to be informed by Agnico Eagle's Air Quality and Dustfall Monitoring Program (e.g., Agnico Eagle 2017b).

References:

Agnico Eagle (Agnico Eagle Mines Limited). 2017a. Meadowbank Gold Project: 2016 All-Weather Access Road Dust Monitoring Report. March 2017.

Agnico Eagle. 2017b. Meadowbank Gold Project: 2016 Air Quality and Dustfall Monitoring Report. March 2017.

Interested Party:	**Health Canada (HC)**	**NIRB Ref No.:**	**HC 3**
		NWB Ref No.	**n/a**
Re:	**Drinking Water Quality**		

Technical Comment / Recommendation Made By Interested Party:

Drinking water should meet parameters in the Guidelines for Canadian Drinking Water Quality. Spill response and mitigation/monitoring plans should be established given the project is in close proximity to multiple water bodies that may be used as sources of drinking water.

Agnico Eagle's Response to Technical Comment / Recommendation:

As described in the FEIS (Volume 6, Section 6.4.3.3), a quantitative water quality model was developed with predictions compare to aquatic life guidelines (CCME 1999), drinking water quality guidelines (HC 2014), Meadowbank Core Receiving Environment Monitoring Program triggers and thresholds (Azimuth 2015), and background conditions (Volume 6, Appendix 6-I).

It also should be noted that the source of drinking (potable) water will only be from Nemo Lake which is located approximately 2 km northwest of the Whale Tail Pit located in a different watershed.

In the receiving environment (i.e., Mammoth Lake and downstream), concentrations of all constituents are predicted to be less than the drinking water quality guidelines. For closure and post-closure, the model predicted that water quality may exceed the drinking water quality guidelines for aluminum (Whale Tail Lake) and fluoride, aluminum, antimony, and uranium (Waste Rock Storage Facility Pond). It is noted that the quantitative model for the FEIS was a tool developed with conservative assumptions and as such water quality predictions have been over estimated. Uncertainty with respect to the water quality model is related to conservatism around the data inputs such as modelled mine site water flows, geochemical characterization, and assignment of loads from each source term. Collection of water quality data through construction to post-closure, and management response to those data are the best way to reduce uncertainty (see full response to Technical Comment INAC-TRC-7).

A Water Quality and Flow Monitoring Plan and an Operational ARD/ML Testing and Sampling Plan (FEIS Volume 8, Appendices 8-B.3 and 8-E.5) are intended to monitor and will inform adaptive management strategies during operation and closure. Ultimately, Waste Rock Facility and Water Management strategies will be adapted according to the updated monitoring data for protection of receiving water quality. Furthermore, the Spill Contingency Plan was updated for the Project (FEIS Volume 8, Appendix 8-D.6). The purpose of the plan is to minimize impacts from spills through the establishment of response lines and plans of action. The plan applies to the mine site area and haul roads. A requirement of the Water Licence is to report spills in the monthly report along with monitoring results and actions. Agnico Eagle understands the importance of maintaining quality water that could be used as a drinking water source. Agnico Eagle is confident that by continuing to follow the Water Quality and Flow Monitoring Plan, Operational ARD/ML Testing and Sampling Plan, and Spill Contingency Plan, which rapid response

can be made to clean up all spills in a timely manner to reduce potential effects, and to learn from spills to implement additional mitigation.

References:

Azimuth (Azimuth Consulting Group Partnership). 2015. Core Receiving Environment Monitoring Program (CREMP) 2014, Meadowbank Mine. Report prepared by Azimuth Consulting Group, Vancouver, BC for Agnico-Eagle Mines Ltd., Baker Lake, NU. March, 2015.Azimuth. 2015b. Core Receiving Environment Monitoring Program (CREMP): 2015 Plan Update. Report prepared by Azimuth Consulting Group, Vancouver, BC for Agnico-Eagle Mines Ltd., Baker Lake, NU. November, 2015.

CCME (Canadian Council of Ministers of the Environment). 1999 (with updates to 2015). Canadian Environmental Quality Guidelines for the Protection of Aquatic Life – Summary Table. Available at: http://st-ts.ccme.ca/. Accessed: February 2016.

Health Canada. 2014. Guidelines for Canadian Drinking Water. Prepared by the Federal-Provincial-Territorial Committee on Drinking Water. Ottawa, ON, Canada.

INDIGENOUS AND NORTHERN AFFAIRS CANADA

Interested Party:	**Indigenous and Norther Affairs Canada (INAC)**	**NIRB Ref No.:**	**INAC-TRC #1**
		NWB Ref No.	**INAC-TRC #1**
Re:	**Design and Depth of Waste Rock Cover [to Assure Long Term Freezing of Metals Leaching and Potentially Acidic Generating Waste Rock]**		

Technical Comment / Recommendation Made By Interested Party:

Given the limited time to assess the performance of the cover and modify the cover design once constructed, INAC recommends:

1) A defensible cover design that considers the availability of cover material should be submitted for review. This design should include thermal modelling to confirm thaw depths and include the effects of climate change. [INAC's guidance document entitled 'MEND Report 1.61.5c (2012) Cold Regions Cover System Design Technical Guidance Document, MEND, Funded by AANDC and Prepared for MEND, Edited by O'Kane Consultant Inc.' should be used in the design and analysis of the cover system (s).][1]

2) A contingency plan to identify an alternative source of clean cover material(s) should be developed by the Applicant and provided for review.

3) A contingency plan for placement of additional cover, or alternative contingencies, should be developed in the event that future monitoring and assessment indicate the selected design will not prevent thawing below the cover. [Given that the mine life is short, and that cover from the mining activity will no longer be available, it will be important to develop a plan for placement of additional cover material, or otherwise plan for additional contingencies, should monitoring indicate thaw depths are greater than predicted.]

The findings associated with the above-noted recommendations should be provided with sufficient time for review prior to the Final Hearing.

The findings associated with the above-noted recommendations should be provided for review prior to the Public Hearing.

Agnico Eagle's Response to Technical Comment / Recommendation:

Experience and knowledge gained through operations and closure of Meadowbank facilities will continue to inform closure planning for the Project.

[1] Additional text inserted [ ] provided in NWB comments.

Response 1)
Agnico Eagle will perform thermal modelling which will incorporate climate change and acquired information from the Meadowbank Waste Rock Storage Facility (WRSF) monitoring program, and will use the results of the model to support final design of the WRSF. Modelling results, revised design, if any, and proposed locations of thermistors for long-term monitoring will be submitted to interested parties prior to the Final Hearing. MEND Report 1.61.5c (2012) will be used as guidance and qualified experts will review the design and analysis of the cover system.

Response 2)
From the planned 46.1 Mt of waste rock excavated over the Life of Mine, 33.4 Mt are qualified potentially acid generating or metal leachable (PAG/ML) and 12.7 Mt are qualified non-potentially acid generating (NPAG) and non-metal leachable (NML). From this 12.7 Mt, 1.3 Mt are planned to be used as construction material and the remaining (11.4 Mt) would be available for closure purposes. Considering an in place density of 2.0 tons/m^3, the available volume of NPAG and NML waste rock is 5.7 million of m^3 (Mm^3). Based on the current WRSF configuration, a cover made of NPAG and NML waste rock for the West WRSF (Figure INAC-TRC-1-1), where the PAG/ML waste rock is planned to be stored, is requiring between 1.2 Mm^3 (for a cover having a thickness of 2 m) and 2.5 Mm^3 (for a cover having a thickness of 4 m). Accordingly, there is a sufficient volume of cover material as a contingency which will be a source of NPAG and NML waste rock cover material is from the Whale Tail Pit.

Response 3)
As a contingency plan, the East WRSF (Figure INAC-TRC-1-1) will be used to store the NPAG and NML waste rock. This material will be used to complete the top cover of the WRSF after the operation but can also be used to increase the thickness of the cover on the slopes in the eventuality the active layer is deeper than currently expected. With such amount of material (5.7 Mm^3), the cover should achieve to a maximum thickness of 7 to 8 meters, considering the requirement in material to close other project facilities (i.e., pads). This contingency will be outlined in an updated Waste Rock Storage Facility Management Plan due to the NWB prior to construction.

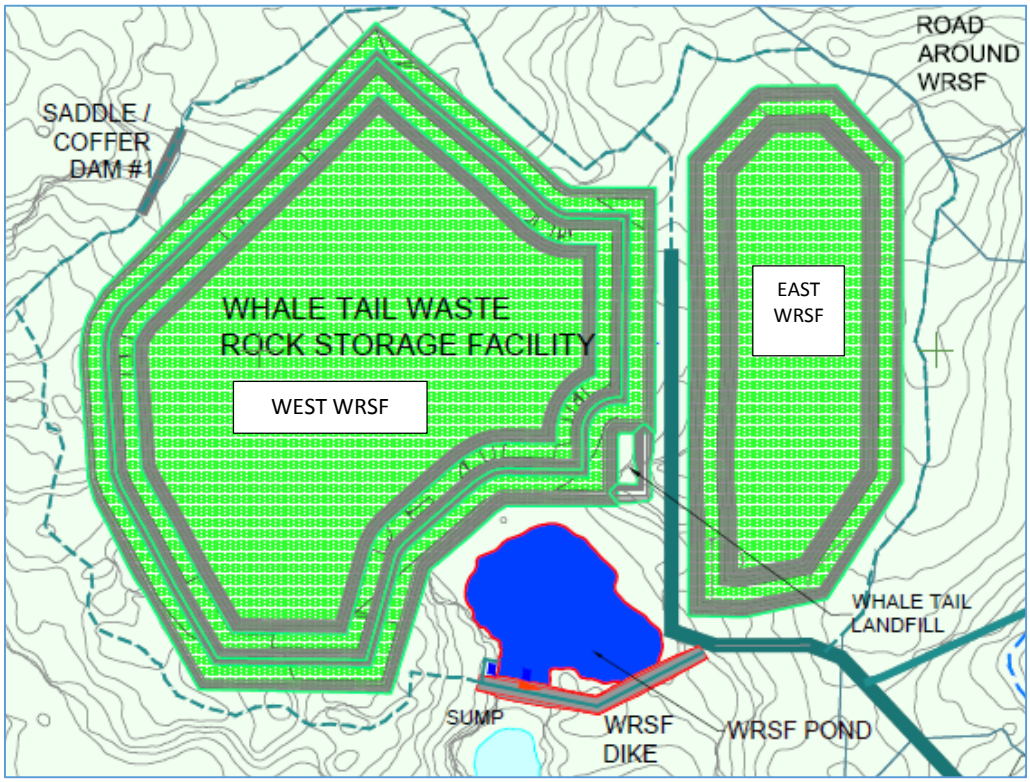

Figure INAC-TRC-1-1: Whale Tail WRSF (screen capture from drawing 6108-600-210-003)

References:

MEND Report 1.61.5c (2012) Cold Regions Cover System Design Technical Guidance Document, MEND, Funded by AANDC and Prepared for MEND, Edited by O'Kane Consultant Inc.

Interested Party:	Indigenous and Norther Affairs Canada (INAC)	NIRB Ref No.:	INAC-TRC #2
		NWB Ref No.	n/a
Re:	Tailings Management		

Technical Comment / Recommendation Made By Interested Party:

INAC recommends that the Proponent conduct a thorough evaluation to demonstrate that the deposition of tailings as a result of the Whale Tail Pit Project will not result in any significant cumulative impacts. The evaluation should include a quantitative assessment of tailings chemistry, seepage potential and the geotechnical stability of the Meadowbank TSF.

The findings associated with the above-noted recommendations should be provided with sufficient time for review prior to the Final Hearing.

Agnico Eagle's Response to Technical Comment / Recommendation:

Tailings generated from the Meadowbank deposits have similar environmental elements of interest as those of the Whale Tail Pit deposit (the combined sample; Golder, 2017) as shown in Table INAC-TRC#2-1 below. The Meadowbank data are taken from the baseline study (whole ore data), from batch treatment of ore similar to the origin of Whale Tail Pit tailings. Ore processing will occur in the same mill and as such, although some natural variability will remain as today, overall material processing, gold recovery, cyanidation, and cyanide destruction will be similar and thus, Agnico Eagle metallurgists expect similar tailings products. Consideration of impacts of additional tailings associated with the Meadowbank tailings storage facility was provided in FEIS Volume 3, Appendix 3-C.

Table INAC-TRC#2-1: Tailings Properties from Meadowbank and Whale Tail Pit

Tailing	Average Sulphur %	Average Neutralization Potential (NP)[a]	Average Net Potential Ratio (NPR)[b]	Average Total Arsenic (mg/kg)	Average Leachable Arsenic (mg/L)
Amaruq	3.5	60	0.6	940	0.86
Meadowbank	2.5	30	0.5	139	0.002

a) NP expressed as kg CaCO3/ton of rock

b) NPR = NP/AP, AP is acid potential calculated from total Sulphur content

Both tailings streams are potentially acid generating and leach arsenic. Although information to date suggests that Whale Tail Pit tailings may have a higher total and leachable arsenic, the Tailings Management Plan and closure concepts designed for Meadowbank remain unchanged; they will continue to be effective in managing leachability and preventing acidification in the long-term. Agnico Eagle is committed to on-going research program with the Université du Québec en Abitibi-Témiscamingue (UQAT), geotechnical and water quality monitoring at the tailings storage facility (TSF)

to validate its performance or implement the necessary corrective actions to meet TSF performance criteria (Agnico Eagle 2017).

This response is considered to fulfill the request of INAC-TRC #2. Unless otherwise directed by NIRB or NWB, no other material will be provided prior to the Final Hearing.

References:

Agnico Eagle (Agnico Eagle Mines Limited). 2017. Appendix WT: Meadowbank Tailings Storage Facility Management Plan for Whale Tail Pit. Version 1. January 2017.

Golder (Golder Associates Ltd.). 2017. Preliminary Tailings Geochemical test Results – Whale Tail Pit Project, Nunavut. Provided to Agnico Eagle Mines Ltd., March 15, 2017.

Interested Party:	**Indigenous and Norther Affairs Canada (INAC)**	**NIRB Ref No.:**	**n/a**
		NWB Ref No.	**INAC-TRC #2**
Re:	**Tailings Management**		

Technical Comment / Recommendation Made By Interested Party:

INAC recommends that the Tailings Management Plan under water licence 2AM-MEA1525 be updated to reflect the additional tailings from Whale Tail.

INAC recommends that the NWB may have to reassess the security held under water licence 2AM-MEA1525 to confirm that is sufficient to manage the incremental tailings associated with the Whale Tail Project.

Agnico Eagle's Response to Technical Comment / Recommendation:

Agnico Eagle refers INAC to Agnico Eagle's letter to the NWB dated January 25, 2017 and the supporting documentation provided, which included an updated Tailings Management Plan entitled "Appendix WT – Meadowbank Tailings Storage Facility Management Plan for Whale Tail Pit" (Agnico Eagle 2017). This plan was specifically developed to address INACs original information request/comment and provides details to reflect the additional tailings storage from Whale Tail within the Meadowbank Tailings Storage Facility, licensed under 2AM-MEA1525.

As the closure concept has not changed, Agnico Eagle does not anticipate a need to increase 2AM-MEA1525 security due to the addition of Whale Tail tailings; however, Agnico Eagle will work with INAC, KivIA, and the NWB to re-assess the security held under 2AM-MEA1525.

References:

Agnico Eagle. 2017. Appendix WT – Meadowbank Tailings Storage Facility Management Plan for Whale Tail Pit. Version 1. Submitted on January 25th, 2017

Interested Party:	**Indigenous and Norther Affairs Canada (INAC)**	**NIRB Ref No.:**	**INAC-TRC #3**
		NWB Ref No.	**INAC-TRC #3**
Re:	**Predicted Post-Closure Arsenic Levels in Waste Rock Seepage/Runoff**		

Technical Comment / Recommendation Made By Interested Party:

Given the uncertainty in both the quality of seepage and potential delay in contaminated seepage release, INAC recommends:

1) The Proponent undertake a sensitivity analysis to assess the impact of including metals leaching and acid generating waste rock in the cover materials. For the analysis, it would be appropriate to rerun the model with 2%, 5% and 10% of the cover containing metals leaching and acid generating rock to assess the implications of residual contamination in the cover. The current water quality model and leaching data collected from the testing programs would be suitable for use in the modelling.

2) If the updated water quality modelling results suggest that long-term treatment may be required, a modified cover design proven to be effective in mitigating potential seepage concerns should be considered and provided for review.

3) Given the potential for delayed onset of drainage from the WRSF (i.e., due to the water retention capacity of the waste rock deposit) INAC recommends that the Proponent justify and, if necessary, extend the duration of the currently proposed post-closure monitoring period. Any extension to the duration of the monitoring period could be limited to seepage monitoring of the waste pile to confirm seepage remains acceptable for discharge without treatment.

The findings associated with the above-noted recommendations should be provided with sufficient time for review prior to the Final / Public Hearing.

Agnico Eagle's Response to Technical Comment / Recommendation:

Response 1)

The exercise of varying the thickness and hydrological parameters of the active layer of the Waste Rock Storage Facility (WRSF) was made early in modeling to guide WRSF design parameters. These early parameter-defining scenarios are part of model set up and those that did not represent the current design were not carried forward nor their results presented. Placement of differing materials such as high ARD or ML waste rock in the active layer and allowing ARD to develop in the WRSF contributes a higher load of constituents to the runoff during operations, closure, and potentially post-closure. This underlines the importance of an appropriate cover. As discussed in the response to INAC-01, the environmental performance of the WRSF will be verified through operational monitoring (see ECCC#18). Monitoring results will be used to validate model input parameters and model results to guide waste

rock and water management practices, implement corrective actions and/or contingency plans to ensure that mitigation and closure activities remain adequate.

Response 2)
Experience and knowledge gained through operations and closure of Meadowbank facilities will continue to inform final closure planning for the Project.

Response 3)
Agnico Eagle will adhere to the ARD/ML Monitoring Plan, Waste Rock Storage Facility Management Plan, and Water Quality and Flow Monitoring Plan during operations to inform adaptive management. Monitoring will continue in post-closure as needed and at the discretion of the Nunavut Water Board. Additional geochemistry data continues to be collected to validate model inputs, and modelled predictions will be updated using new geochemical data and/or operation monitoring data.

Interested Party:	**Indigenous and Norther Affairs Canada (INAC)**	**NIRB Ref No.:**	**INAC-TRC #4**
		NWB Ref No.	**INAC-TRC #4**
Re:	**Long-Term Water Quality in the Flooded Pit**		

Technical Comment / Recommendation Made By Interested Party:

INAC recommends:

1) A detailed sensitivity analysis be performed to assess the potential implications of ground water inputs from mineralized zones around the pit and the implications of additional contributions from the pit walls and the WRSF cover. If this assessment indicates no concerns with long-term water quality, then INAC would be assured this is not a material issue. The existing water quality model is acceptable for use in this analysis.

2) If the assessment suggests that future metals levels are of potential concern, then the importance of establishing a stable stratified pit would be amplified. In that case, the Proponent should provide a detailed analysis confirming that stable meromictic conditions will occur within the flooded pit. The analysis should include modelling that demonstrates meromixis will remain stable under a range of conditions (groundwater discharge, high wind, pit wall failure, etc.).

The findings associated with the above-noted recommendations should be provided with sufficient time for review prior to the Final / Public Hearing.

Agnico Eagle's Response to Technical Comment / Recommendation:

Response 1)

The reader is referred to the response to ECCC#13 for information regarding groundwater inputs and the implications from groundwater and pit wall contributions and mitigation strategies; and to the response to INAC-TRC-#3 for more information regarding inputs from the WRSF cover.

Response 2)

Evaluation of the potential for meromixis in the flooded pit and overlying North Whale Tail Lake was not included as part of the modelling exercise for the FEIS. However, the modelled diffusion sensitivity analysis within the flooded pit was completed as a highly conservative scenario assuming fully mixed conditions in the pit lake. The results presented in Figure 4 of Appendix 6-H illustrates the potential concentrations of arsenic should ongoing diffusion from the pit walls occur in a non-meromictic pit. Geochemistry tests on mine site materials is on-going to obtain more site-specific information. Should this potential be confirmed, adaptive management of waste rock and water will be implemented (see ECCC#13).

This is considered to complete the information requirement; unless otherwise recommended by NIRB/NWB, no additional information will be provided prior to the Final Hearing.

Interested Party:	**Indigenous and Norther Affairs Canada (INAC)**	**NIRB Ref No.:**	**INAC-TRC #5**
		NWB Ref No.	**INAC-TRC #5**
Re:	**Ammonia and Nitrate Levels from Explosive Use**		

Technical Comment / Recommendation Made By Interested Party:

INAC recommends that the Proponent estimate ammonia and nitrate concentrations using loading data from Meadowbank Mine. In this case, the annual losses in mine water and pit water would be reported per tonne of rock blasted and per tonne of rock placed in the pile. These loading data would then be applied to the Whale Tail Project to assess whether or not ammonia and nitrate levels are of potential concern. The analysis should be conducted for each year of operation as explosives use will vary annually with the quantity of rock blasted.

The findings associated with the above-noted recommendations should be provided with sufficient time for review prior to the Final Hearing.

[The analyses should be provided for review prior to any licencing determination; therefore before the Public Hearing with enough time for adequate review.][2]

Agnico Eagle's Response to Technical Comment / Recommendation:

The use of average measured concentrations of ammonia and nitrate in Meadowbank Mine as surrogates to source terms for mine contact water at the Whale Tail Pit Project is considered a reasonable proxy as Agnico Eagle will follow the same explosives management practices for Whale Tail Pit operations that are currently in place for Meadowbank.

Further, Meadowbank monitoring data was reviewed for modelling of Whale Tail Pit water quality, and found that although the annual average concentration of explosives by-products (i.e., ammonia, nitrate, and nitrite) reported in pit sumps varied, no increasing trend was observed over the Life of Mine as pits expanded at Vault, South and North Portage (Table INAC-TRC-05-1). This suggests that the concentration of explosives by-products in the pit sump contact water is not a factor of pit expansion. Given that site, operation, and climate conditions are anticipated to be similar between Whale Tail and the Meadowbank pits, a waste rock quantity loading-based approach to predict the concentrations of explosives by-products at Whale Tail Pit is not considered as reliable or representative of expected conditions as using actual Meadowbank operational data as a proxy.

[2] Additional text inserted [ ] provided in NWB comments.

Table INAC-TRC-05-1: Average Concentrations of Blasting Residues at Meadowbank Pit Sump Monitoring Stations (Agnico Eagle 2010 to 2016)

Pit Sump (Monitoring Station)	Mine Year	Average Ammonia-Nitrogen (mg/L as N)	Average Ammonia (mg NH_3/L as N)	Average Nitrate (mg NO_3/L as N)	Average Nitrite (mg NO_2/L as N)	Total Quantity of Rock Mined from Pit (Tonnage)
North Portage Pit (ST-17)[1]	2010	n.a.	2.9	n.a.	n.a.	15,447,327[4]
	2011	n.a.	0.8	56	1.0	24,356,757[4]
	2015	0.06	2.9	12	0.2	12,385,713[4]
	2016	0.1	3.7	13	0.07	5,509,563[4]
South Portage Pit (ST-19)[2]	2011	61	0.4	16	0.4	[4]
	2012	3.9	0.2	9.1	1.6	25,373,428[4]
	2013	3.6	0.2	1.4	0.03	21,410,699[4]
	2015	2.8	0.05	10	0.2	[4]
	2016	5.3	0.08	4.3	0.2	[4]
Vault Pit (ST-23)[3]	2014	14	0.2	46	1.5	15,205,720
	2015	23	0.3	46	2.1	23,512,058
	2016	5.0	0.1	20	0.3	28,124,314

n.a. data not available

1- samples not collected at North Portage Pit in 2012, 2013 and 2014 (no water available)

2- samples not collected at South Portage Pit in 2014 (no access to sampling location due to safety concerns)

3-sampling commenced in 2014 when mining activities began at Vault Pit

4-combined total for North Portage and South Portage pits

References:

Agnico Eagle (Agnico Eagle Mines Limited). various years (2010-2016). Meadowbank Gold Project Annual Reports 2010, 2011, 2012, 2013, 2014, 2015, 2016 Meadowbank Mine., Baker Lake, NU.

Interested Party:	**Indigenous and Norther Affairs Canada (INAC)**	**NIRB Ref No.:**	**INAC-TRC #6**
		NWB Ref No.	**INAC-TRC #6**
Re:	**Post-Closure Surface Water Impacts**		

Technical Comment / Recommendation Made By Interested Party:

[Ultimately INAC is against any contaminated water (i.e above set criteria) entering the natural receiving environment.][3]

[However, if the water quality entering Mammoth Lake from the WRSF is above recommend criteria (as set by the NWB), and this is deemed unavoidable, then INAC recommends that the Applicant be required to present additional analyses as detailed below.]

INAC recommends that the Applicant clearly indicate the spatial extent within all surface water receivers in which concentrations of potential contaminants may remain above the SSWQO or other applicable criteria during the post-closure phase. Consistent with the Applicant's assertion that current modeling provides "order of magnitude" estimates, the assessment should include a sensitivity analysis that considers a broad range of contaminant loading scenarios for the post-closure phase. The evaluation should identify and characterize potential [water quality of the receiving water body] and ecological impacts in areas where the proposed water quality criteria may be exceeded.

Using the above-noted assessment and sensitivity analysis, INAC recommends that the Applicant clearly indicate the monitoring and compliance points that will be used to assess performance against the SSWQO.

The findings associated with the above-noted recommendations should be provided with sufficient time for review prior to the Final Hearing.

[The analyses should be provided for review prior to the Public Hearing.]

Agnico Eagle's Response to Technical Comment / Recommendation:

Part A: What is the spatial extent where water quality may exceed SSWQO?

Discharge to Mammoth Lake will occur in operations (from the Attenuation Pond, and spill over from Whale Tail Lake [South]) and post-closure (from Whale Tail Lake and potentially from the waste rock storage facility [WRSF] pond). The framework of the water quality model included site water treated for arsenic and total suspended solids but not for other metals (e.g., aluminum and iron) and nutrients (e.g., phosphorus) prior to discharge. Based on this framework, discharge criteria met the Portage discharge

[3] Additional text inserted [ ] provided in NWB comments.

limits (2AM-MEA1525) in all phases; however, for post-closure, Agnico Eagle has committed to treating water from the WRSF pond or implement a long-term passive solution until it meets acceptable direct discharge criteria (FEIS Volume 8, Appendix 8-B.2, Table 3.7).

As described in response to information request INAC-IR_3, an effective mixing zone (EMZ) of 100 m around the diffuser in Mammoth Lake was included in the water quality model. Predictions were developed for the mixing zone and the entirety of Mammoth Lake (FEIS Volume 6, Appendix 6-H, Attachment B, Figures B-1 to B-6). The EMZ and discharge location for the assessment are preliminary; detailed designs on the diffuser and location will be required before construction. The water quality predictions suggest that water within the EMZ will be above the site-specific water quality objective (SSWQO) for arsenic, but water within the basin of Mammoth Lake will be below the SSWQO for arsenic. As described in the FEIS, Agnico Eagle took a conservative approach and assumed treatment to Portage Effluent limits of phosphorus, which resulted in a receiving water quality prediction will cause an exceedence of the meso-eutrophic trigger value in Mammoth Lake, Lake A15, and Lake A12 (FEIS, Volume 6, Section 6.4.3.3.2.3). However, studies are underway to evaluate feasible options to reduce the predicted changes due to phosphorus inputs by active treatment during operations. No other constituents are predicted to exceed the applicable guidelines (i.e., Canadian Aquatic Life [CCME 1999] or Canadian drinking water [HC 2014]). As a result, Agnico Eagle is confident the downstream water quality impact predictions are conservative for the purposes of the FEIS and mitigable.

Part B: What are the contaminant loading scenarios?

Predictions of water quality conditions and potential exceedances of guidelines are based on the loading scenario described in detail in the FEIS (Volume 6, Appendix 6-H). This was considered a conservative yet reasonable scenario. For post-closure modelling, seepage from the WRSF was modelled as a constant loading source in perpetuity. It is expected that all chemicals contained in the seepage will be attenuated in time as the stockpile settles and fines become compacted and thus decreased loadings over time are expected. As described in response to information request INAC-IR_5, theoretical worst case loading scenarios that could generate higher concentrations than predicted which may result in exceedances of the aquatic life guideline and/or the SSWQO prior to treatment are the following:

- Sustained chemical leaching from flooded pit wall and diffusion of these contaminants throughout the pit lake waterbody in closure and post-closure
- Upward transfer and mixing of contaminants from the flooded pit to the overlying Whale Tail Lake in closure and post-closure
- Continual high mass loading, both of dissolved and of the particulate fraction, from the remaining highwall in post-closure
- Sustained elevated leaching from the WRSF

These scenarios were considered unlikely for the reasons described in information request INAC-IR_5.

Part C: What are the potential ecological impacts in areas where water quality criteria may be exceeded?

Agnico Eagle contends that the water quality model scenario included in the assessment was a conservative case. Receiving environment water quality predictions for this conservative case were evaluated for potential effects to receptors in the environment (FEIS Volume 6, Section 6.5.3; Volume 3, Appendix 3-B). Predicted concentrations of metals or carcinogenic substances were low such that health risks are not expected for members of the community that rely upon lakes as their potable water source (FEIS Volume 3, Appendix 3-B, Section 3.B-3), effects to wildlife are not expected (FEIS Volume 3, Appendix 3-B, Section 3.B-4), and effects to aquatic life are not expected to be significant (FEIS Volume 3, Appendix 3-B, Section 3.B-5). Although highly conservative predictions have determined there may be an increase in productivity and short-term shift in community structure due to predicted loadings of nutrients (FEIS, Volume 6, Section 6.5.3), this is mitigable through phosphorus treatment. Based on the conservatism of the water quality prediction model, and the ratings assigned for duration, geographic extent and magnitude for changes in water quality, it was concluded that the Project will not have a significant effect to water quality or the assessment endpoint of a healthy ecosystem and continued use by the Inuit. Additionally, water quality monitoring is proposed (FEIS Volume 8, Appendices 8-B.3 and 8-E.2) to confirm that concentrations of substances remain less than levels of concern for people, wildlife, and aquatic life. Fish tissue monitoring has been proposed to confirm predicted changes to mercury concentrations in fish along with related fisheries compensation monitoring, as submitted to NIRB on February 28, 2017 (Azimuth 2017).

Part D: Where are the monitoring compliance points?
As per the Nunavut Water Board, water monitoring consists of two forms as follows:

- Regulated discharge monitoring occurs at monitoring points specified in licences or regulations. It includes discharge limits that must be achieved to maintain compliance with an authorization (i.e., water licence) or regulation (i.e., Metal Mining Effluent Regulations). Enforcement action may be taken if discharge limits are exceeded for a parameter.
- General and aquatic monitoring is commonly included in a water licence specifying what is to be monitored according to a schedule. It covers all types of monitoring (i.e., geotechnical, lake levels, etc.). This monitoring is subject to compliance assessment to confirm sampling was carried out using established protocols, included QA/QC provisions, and addressed identified issues. General monitoring is subject to change as directed by an Inspector, or by the Licensee, subject to approval by the Nunavut Water Board.

The Compliance Monitoring Program for water quality is described in the Water Quality and Flow Plan (FEIS Volume 8, Appendix 8-B.3). As per the station types identified by the NWB, all stations identified in Table 3-1 of the Water Quality and Flow Plan (FEIS Volume 8, Appendix 8-B.3, Section 3) except two, would be general and aquatic stations; station ST-WT-2 would be a regulated station during operations and station ST-WT-3 would be a regulated station during post-closure. Details for these locations are provided in FEIS Volume 8, Appendix 8-B.3, Section 3.1 and Table 3-1. Timing and frequency of sampling at the various sites will depend on the stage of the mine life (e.g., operations versus closure).

Compliance monitoring will be completed at the locations identified in the water licence of the Project and will rely on multiple monitoring and compliance points located throughout the Project site. Suggested criteria for compliance at the proposed monitoring stations are listed in Table INAC-TRC-6-1.

Table INAC-TRC-6-1: Proposed Compliance Criteria for Water Monitoring Stations

Station	Description	Phase	For Compliance, Compare Monitoring Data to:			
			Water Licence Criteria	SSWQO (FEIS, Appendix 6-N)	Aquatic Life (CCME 1999)	Drinking Water (HC 2014)
ST-DC-1 to TBD	Monitoring stations during dike construction as defined in Final Water Quality Monitoring and Management Plan for Dike Construction and Dewatering referred to in Part D, Item 5	Construction	-	-	TSS only	-
ST-DD-1 to TBD	Monitoring stations during dike construction as defined in Final Water Quality Monitoring and Management Plan for Dike Construction and Dewatering referred to in Part D, Item 5	Construction	-	-	TSS only	-
ST-S-1 to TBD	Seeps (to be determined)	Operations Closure	-	-	-	-
ST-GW-1 to TBD	Groundwater wells (to be determined) as required under Groundwater Monitoring Plan referred to in Part I Item 6	Operations Closure	-	-	-	-
ST-WT-1	Attenuation Pond, pre-treatment	Operations	yes	-	-	-
ST-WT-2	Attenuation Pond, post-treatment; last point of control before discharge	Operations	yes	-	-	-
ST-WT-3	WRSF Pond prior to pumping to Attenuation Pond	Operations Closure	-	-	-	-
	WRSF Pond prior to discharge to Mammoth Lake	Post-closure	yes	yes	yes	yes
ST-WT-4	Whale Tail Pit or pit sump	Operation	-	-	-	-
ST-WT-5	Water intake from Nemo Lake	Construction Operations	-	-	-	-
ST-WT-6	Lake A47	Construction Operations Closure	-	-	yes	-
ST-WT-7	East diversion channel	Operations	-	-	yes	-
ST-WT-8	Water intake from Whale Tail Lake	Closure	-	-		-
ST-WT-9	North Whale Tail Lake (as the basin fills and when it is connected to the south basin and prior to or when connected to the downstream environment)	Closure Post-closure	-	-	yes	-
ST-WT-10	Pit Lake (as the pit fills)	Closure	-	-	yes	-

Table INAC-TRC-6-1: Proposed Compliance Criteria for Water Monitoring Stations

Station	Description	Phase	For Compliance, Compare Monitoring Data to:			
			Water Licence Criteria	SSWQO (FEIS, Appendix 6-N)	Aquatic Life (CCME 1999)	Drinking Water (HC 2014)
ST-WT-11	Sewage treatment plant	Operations	-	-	-	-
		Closure				
ST-WT-12	Secondary containment at Whale Tail Bulk Fuel Storage Facility	Operations	-	-	-	-
		Closure				
ST-WT-13	Lake A45	Operations	yes	yes	yes	yes
		Closure				
ST-WT-14	Lake A16 outlet	Construction	yes	yes	yes	yes
		Operations				
		Closure				
ST-WT-15	Lake A15	Construction	yes	yes	yes	yes
		Operations				
		Closure				

References:

Azimuth (Azimuth Consulting Group Partnership). 2017. Whale Tail Pit project: Predicted changes in Fish Mercury Concentrations in the Flooded Area of Whale Tail Lake (South Basin). Prepared for Agnico Eagle Mines Ltd., Meadowbank Division. February 2017.

CCME (Canadian Council of Ministers of the Environment). 1999 (with updates to 2015). Canadian Environmental Quality Guidelines for the Protection of Aquatic Life – Summary Table. Available at: http://st-ts.ccme.ca/. Accessed: February 2016.

Health Canada. 2014. Guidelines for Canadian Drinking Water. Prepared by the Federal-Provincial-Territorial Committee on Drinking Water. Ottawa, ON, Canada.

Interested Party:	**Indigenous and Norther Affairs Canada (INAC)**	**NIRB Ref No.:**	**INAC-TRC #7**
		NWB Ref No.	**INAC-TRC #7**
Re:	**Post-Closure Water Quality Uncertainty**		

Technical Comment / Recommendation Made By Interested Party:

[In an effort to reduce uncertainties prior to Project initiation][4] INAC recommends that the Proponent provide a detailed assessment of proactive measures it will undertake to confirm and/or enhance the assumed water quality performance of the Project. These measures should include additional scientific studies and/or revised Project designs that reduce water quality uncertainties and risks. By definition, these proactive measures would need to be implemented prior to Project initiation.

The findings associated with the above-noted recommendations should be provided with sufficient time for review prior to the Final Hearing.

[The detailed assessment should be provided for review prior to the Public Hearing.]

Agnico Eagle's Response to Technical Comment / Recommendation:

Agnico Eagle is of the opinion that all possible proactive measures will be identified through a monitoring and the management response approach (as identified in the Meadowbank AEMP; Azimuth 2012) which will be sufficient to reduce future uncertainties and risk around water quality for the Whale Tail Project (Project) during operations and into closure/post-closure.

A quantitative water quality model was developed to assess the effects of Project footprint development, water management, and effluent discharge on receiving environment water quality (FEIS Volume 6, Section 6.4.3.3). The model was developed by incorporating conservative assumptions, professional judgement, experience, and real data collected at the Meadowbank Mine. In the water quality model for Whale Tail, treatment for arsenic and total suspended solids were assumed; phosphorous concentrations from grey water outflow was assumed to be equal to that at Meadowbank and treatment for other metals (e.g., aluminum and iron) was not assumed.

The intent of water management for the site (FEIS Volume 8, Appendix 8-B.2) is to keep contact, non-contact, and freshwater separated (to the extent possible), and to treat collected site water if it does not meet the discharge criteria in the Water Licence. In operations, water will be collected, treated if required, and discharged through a diffuser to Mammoth Lake; water will also spill over to Mammoth Lake from the South Whale Tail Diversion ditch. Discharge to the receiving environment is not expected during closure. In post-closure, water from the Whale Tail waste rock storage facility (WRSF) will be discharged to Mammoth Lake if it meets discharge criteria (FEIS Volume 8, Appendix 8-B.2, Table 3.7),

[4] Additional text inserted [ ] provided in NWB comments.

and Whale Tail Lake will be reconnected to Mammoth Lake through the natural outlet. For purposes of the assessment, predicted water quality from the WRSF during post-closure was treated to meet the Portage Effluent limits for arsenic only. All other constituents were modelled assuming no treatment. The modelling exercise was made using conservative assumptions particularly regarding the quantity of flow from the WRSF. It is expected that through active waste rock storage adaptive management, in reality, WRSF water quality will meet effluent discharge criteria. This will be verified wit operational monitoring of waste rock and water quality, water flow. Should water quality not meet either the assumed effluent discharge criteria or the criteria that will be set by ECCC, corrective actions and adaptive management will be the first contingency. Water treatment which will already be in place for Attenuation Pond water, will also constitute a contingency measure should WRSF or contact water require it. Water discharged to Mammoth Lake will meet the water quality criteria that will be set by ECCC during operation, closure and post-closure.

Uncertainty with respect to the water quality model is related to conservatism around the data inputs such as modelled mine site water flow volumes, actual mass transfer from on-site materials (as opposed to mass loading in a more conservative laboratory setting), and assignment of loads from each source term. Collection of water quality data through construction to post-closure, and management response to those data are the best way to validate input assumptions and to reduce uncertainty on future water quality.

To reduce uncertainty and risk, management response plans (Azimuth 2012) will be implemented. To reduce uncertainty in the water quality predictions (i.e., related to investigating arsenic treatment, phosphorus treatment and updating of models) monitoring data will continue to be collected and either compared to the predictions or used to update the model. Water quality monitoring data will be regularly collected through the Dike Construction Dewatering Plan (Volume 8, Appendix 8-A.2), the Water Quality and Flow Monitoring Plan (8-B.3), the Core Receiving Environment Monitoring Program (Volume 8, Appendix 8-E.2), the Groundwater Monitoring Plan (Volume 8, Appendix 8-E.3), and the Acid Rock Drainage/Metal Leaching Plan (Volume 8, Appendix 8-E.5). Where unusual data, or data of concern, are encountered through any of these monitoring programs, a management response such as re-sampling or increased sampling can be implemented to reduce uncertainty, and mitigations such as divert, capture, and/or treat water can be implemented to reduce risks. Results of the monitoring data, and any follow-up responses, are reported monthly and annually to the Nunavut Water Board. At this time it is not possible to identify all potential proactive measures. If warranted, future measures to consider could include scientific studies or revised Project designs.

Agnico Eagle is continually investigating ways to minimize impacts to the project and that EA is a moment in time that captures a conservative scenario.

For additional information refer to ECCC #11, 15, and 16.

At this time Agnico Eagle considers this technical comment to be addressed; unless otherwise directed by NIRB/ NWB, additional information will be not be provided.

References:

Azimuth. 2012. Aquatic Effects Management Program (AEMP) v2, Meadowbank Mine. Prepared for Agnico-Eagle Mines Ltd., Meadowbank Division. December 2012.

Interested Party:	**Indigenous and Northern Affairs Canada (INAC)**	**NIRB Ref No.:**	**INAC-TRC #8**
		NWB Ref No.	**n/a**
Re:	**Re-Vegetation Research**		

Technical Comment / Recommendation Made By Interested Party:

INAC recommends that the Proponent commit to and initiate the design and implementation of active re-vegetation studies that are applicable to the reclamation of comparable northern developments.

The Proponent's commitment to perform the re-vegetation studies should be provided prior to the Final Hearing.

Agnico Eagle's Response to Technical Comment / Recommendation:

Agnico Eagle is committed to initiate the design and implementation of re-vegetation studies to better define re-vegetation strategies that are applicable to the reclamation of comparable northern developments.

Agnico Eagle is active in region and will continue researching to determine best practices and re-vegetation strategies which may be applicable to Whale Tail Pit Project. Agnico Eagle looks forward to further discussion on this topic at the Technical Meeting.

Interested Party:	**Indigenous and Norther Affairs Canada (INAC)**	**NIRB Ref No.:**	**INAC-TRC #9**
		NWB Ref No.	**INAC-TRC #8**
Re:	**Adaptive Management and Reclamation Research**		

Technical Comment / Recommendation Made By Interested Party:

INAC recommends that:

a. The Applicant provide an Adaptive Management Plan that provides clear evidence of the approach that will be taken to ensure the post-closure performance of each Project component. The evidence should identify specific reclamation research and/or mitigations that will be taken to proactively and reactively address any potential situations where environmental performance is worse than anticipated. Evidence should include: 1) reclamation research that will provide useful information prior to the construction of the Project; 2) potential modifications to the Project designs to further mitigate uncertainties; and [3) clear action plans to address worse than anticipated closure performance.] The Adaptive Management Plan should identify applicable trigger levels and associated actions. It should also be provided prior to the Public Hearing.

[b. Consistent with the precautionary principle, sufficient financial security should be posted to implement future mitigations that may be required to address uncertainties that could result in credible post-closure outcomes that are worse than predicted (e.g., the potential need for long-term water treatment).][5]

The findings associated with the above-noted recommendations should be provided with sufficient time for review prior to the Final Hearing.

Agnico Eagle's Response to Technical Comment / Recommendation:

Experience and knowledge gained through operations and closure of Meadowbank facilities will continue to inform closure planning for the Project.

Response a)

WRSF Cover Thickness

1) Agnico Eagle continues to work with academic institutions and the Meadowbank Dike Review Board to ensure post-closure goals are met.

   Thermal monitoring conducted at Meadowbank is continuing and will be used as source of information to develop a thermal model that will support the cover design thickness of the Whale Tail WRSF and associated closure plans. Thermistors will continue to be monitored at Meadowbank and results will be integrated to a thermal model, which will be used to confirm the

[5] Text inserted [ ] excluded from comment submission to NIRB.

current design or adjust the cover thickness to ensure frozen conditions. Agnico Eagle will review the thermal behavior of the WRSF cover at Meadowbank and perform thermal modelling and reported in Annual Reports. The review will include thermistor records, comparison between the climate of both sites, as well as physical properties of waste rock.

2) Agnico Eagle under general monitoring requirements will continue to undertake thermal monitoring and report annually. Thermistor strings will be installed in the Whale Tail WRSF and the development of the active layer in the NPAG/NML cover will be monitored. If monitoring indicates that the active layer is deeper than designed, then the contingency measures would be to increase the thickness of the NPAG/NML layer. The WRSF will have two piles; West WRSF and East WRSF, the East WRSF will be used to store NPAG/NML material. The East WRSF will serve as the source of NPAG/NML material if it becomes necessary to increase the thickness of the cover on the other pile (see INAC-TRC #1 for additional details).

[3] Agnico Eagle is active in the Region, the Adaptive Management Plans will be based on lessons learned from past performance from other similar Operations.

Water Quality Predictions

There are several mitigation measures and contingency plans in place to address concerns that may arise if water quality predictions are not accurate, see ECCC#13 for details. Mitigation measures consist of ongoing water quality monitoring during operations, closure, and post-closure, water treatment during operations and post-closure as required, and an adaptive management program. Ongoing geochemical testing will confirm water quality model inputs and results, with a commitment by Agnico Eagle to use these results to validate inputs and update the model and predictions, where warranted.

Other Project Components

Adaptive management approaches for project components other than the WRSF are discussed in the "Contingencies" subsections in Section 5.2 of the Closure Plan (Volume 8, Appendix 8-F).

[Response b)

Agnico Eagle has prepared and submitted for review a closure and reclamation financial security cost estimate for the Whale Tail Pit Project (Volume 8, Appendix 8-F, Appendix D). The financial security includes mitigations to address uncertainties identified at this time such as the potential need for long-term water treatment. It also includes a contingency of 20% of the direct costs.

Agnico Eagle is committed to work with INAC and the KivIA to come to an agreement on a reclamation closure cost estimate prior to the Final Hearing as mentioned in INAC-TRC #9.]

References:

Agnico Eagle. 2017. Whale Tail Pit – Waste Rock Management Plan, Version 1, January 2017

NIRB/NWB Ref No.: ECCC#13 and ECCC#3, respectively - Closure Water Quality in Pit Lake and North Whale Tail Lake (Interactions with Groundwater)

NIRB/NWB Ref No.: INAC-TRC #1 - Design and Depth of Waste Rock Cover [to Assure Long Term Freezing of Metals Leaching and Potentially Acidic Generating Waste Rock]

NWB Ref No.: INAC-TRC #9 - Reclamation Cost Estimate

Interested Party:	**Indigenous and Norther Affairs Canada (INAC)**	**NIRB Ref No.:**	**n/a**
		NWB Ref No.	**INAC-TRC #9**
Re:	**Reclamation Cost Estimate**		

Technical Comment / Recommendation Made By Interested Party:

INAC requests further discussions between the Applicant, INAC and the Kivalliq Inuit Association in order to come to an agreement on a reclamation closure cost estimate prior to the Public Hearing.

Agnico Eagle's Response to Technical Comment / Recommendation:

Agnico Eagle is committed to work with INAC and the KivIA to come to an agreement on a reclamation closure cost estimate prior to the Final Hearing.

Interested Party:	**Indigenous and Norther Affairs Canada (INAC)**	**NIRB Ref No.:**	**INAC-TRC #10**
		NWB Ref No.	**n/a**
Re:	**Evaluation of VSECs and Indicators**		

Technical Comment / Recommendation Made By Interested Party:

INAC recommends:

1) The Proponent review and revise the VSECs and associated indicators used in the assessment in order to address the gaps in VSECs and indicators identified above. This review must take into account potential effect on all communities in the Local Study Area as well as potential indirect community and regional impacts.

2) The Proponent provide further analysis and evidence supporting the selection or exclusion of VSECs and indicators chosen for detailed analysis.

3) The study period be extended to address longer-term socioeconomic impacts of closure.

The information and analysis related to revised VSECs and timeline should be provided with sufficient time for review prior to the Final Hearing.

Agnico Eagle's Response to Technical Comment / Recommendation:

Response 1)

Scoping of VSECs:

The Project FEIS was drafted and submitted prior to release of the Final Scope List (NIRB 2016), and so was scoped to reflect the ToR for the Meadowbank Mine FEIS. VCs and VSECs were chosen to generally align with those in the Meadowbank Mine FEIS. Agnico Eagle completed a screening was conducted comparing the VCs and VSECs from the Meadowbank Mine FEIS to those selected for other regulatory applications in the region. The screening found that the VSECs from the Meadowbank Mine FEIS, while in some places using different terminology, conformed to those selected for other regional mining assessments. A summary of the comparison of VSECs is provided in Table INAC-TRC-10 1 below. While Governance and Population were not identified as VSECs in the original Meadowbank Mine FEIS, they were included as topics for discussion in the Whale Tail FEIS in the interest of completeness.

Table INAC-TRC-10 1 Comparison of Valued Socio-Economic Components

Topic Area	Meliadine Mine VSECs	Meadowbank Mine VSECs	Back River Mine VSECs	Whale Tail Pit Project VSECs
Traditional Land Use	• Traditional Activity and Knowledge	• Traditional Ways of Life	• Subsistence • Land use • Country Food	• Traditional way of life (e.g., land and resource use, access to culturally significant sites)
Socio-Economics	• Population demographics • Employment and Business Opportunities • Education and training • Individual, family and community wellbeing • Community infrastructure and Public Services • Worker and Public Health and Safety • Governance and Leadership • Non-Traditional Land and Resource Use	• Employment • Training • Business Opportunities • Community Wellness • Infrastructure and Social Services	• Employment • Education and Training • Economic Development • Business Opportunities • Health and Community Well-being • Subsistence Economy • Non-Traditional Land and Resource Use	• Employment and Training • Economic Activity and Business Development • Individual and Community Wellbeing • Infrastructure and Services While not identified as VSECs for the Meadowbank Mine FEIS, the following topics are also address in the Whale Tail Pit Project FEIS: • Population Demographics • Governance and Leadership • Non-Traditional Land Use

Following submission of the Whale Tail Pit FEIS in July 2016, NIRB prepared a Draft Scope List outlining the VCs and VSECs used in the assessment. This Draft Scope List was distributed on September 9, 2016, with a request that parties provide comments on the scope of the assessment including the appropriateness of VCs and VSECs. NIRB also made a series of community presentations to solicit further input on the scope of the FEIS.

In their October 7, 2016 communication with NIRB, the KIA states the following with regard to the VSECs and assessment approach: “The KIA understand that bypassing submission of a Draft Environmental Impact Statement (DEIS) and proceeding directly to final hearing for the coordinated FEIS and Water Licence application does not afford the proponent a chance to significantly modify their application in response to intervenor technical submissions. Our initial review and meetings with Agnico Eagle concludes that substantial modifications are unlikely and that the KIA can provide a thorough technical review within the accelerated process.” In an October 11, 2016 response from INAC to NIRB regarding the “[c]ommencement of NIRB’s Review of Agnico Eagle Mines Ltd.’s “Whale Tail Pit” Project Proposal”, INAC states “For the scope of the assessment, the valued ecosystemic and socio-economic components outlined in the draft scope list are adequate and appropriate for the review of the Whale Tail Pit”.

Based on our comparison to other regional projects and the responses of parties to the Draft Scope List, NIRB developed a Final Scope List outlining VCs and VSECs appropriate for the Whale Tail FEIS. The Final

Scope List was communicated to parties on November 10, 2016 (Public Registry Identification 305624), and identifies the following VSECs:

- "Socio-economic factors, including:
  - economic development opportunities
  - employment
  - education and training
  - contracting and business opportunities
  - population demographics
  - benefits and revenues (tax, royalties, etc.)
- Traditional activity and knowledge and community knowledge including:
  - land use
  - food security
  - language
  - cultural and commercial harvesting
- Health and well being
  - Individual and community wellness
  - Family and community cohesion
- Community infrastructure and public services"

The Technical Comment specifically identifies the following topics from the Final Scope List as not being considered in the Whale Tail Pit Project FEIS:

- limited availability of **labour and capacity**;
- limitations on **physical infrastructure**;
- **food security**; and
- **cumulative effects**.

Limited availability of labour and capacity:

Labour force characteristics are described in Appendix 7-B, Section 3.3, and are summarized in Section 7.4.2.3 of the FEIS. The ability of the Nunavut labour force to meet employment demand for construction and operations is described in Section 7.4.3.3 of the assessment, including the composition of the labour force for each phase by point of origin (e.g., Baker Lake, Nunavut, Southern Canada) and by skill level. Benefit enhancement measures aimed at ensuring local capture of employment opportunities are also identified in this section, and in the Socio-Economic Management Plan (SEMP; Whale Tail Pit Project FEIS, Volume 8, Appendix 8-E.6). Much of the Project's demand for labour is expected to be met by the existing Meadowbank Mine workforce. As the Meadowbank Mine enters closure during Project construction, workers will be transferred. The Project is expected to require an additional 200 workers on top of the Meadowbank Mine workforce, of which half are expected to be sourced from within Nunavut. Agnico Eagle is committed to continuing to work with communities

through community liaisons to identify potential local labour sources for Project operations, and address barriers to local labour force participation. Where local labour is not available, out-of-area workers will be flown in to site where they will be housed in camps while on rotation.

Limitations of physical infrastructure:

The baseline report relies on publicly available information when describing socio-economic conditions in communities, including description of capacity of physical infrastructure. Publicly available information pertaining to housing conditions in Kivalliq is provided in Appendix 7-B, Section 3.8.4. The constrained capacity of the housing situation in Nunavut, Kivalliq and Baker Lake is identified therein. Information on existing physical infrastructure is provided in Appendix 7-B, Section 3.9.2. (Section 7.4.3.1). This section identifies infrastructure development priorities, as well as the capacity of utilities (e.g., power, water, sewer, waste. Further discussion of current trends related to housing and physical infrastructure, and population dynamics potentially affecting social and physical infrastructure requirements can be found in the Meadowbank Gold Mine 2014 Socio-Economic Monitoring Report (Stratos 2015), from which some socio-economic baseline information was summarized. The potential for Project-driven effects on physical infrastructure was not carried forward for residual effects assessment based on the limited potential for the Project to generate significant population change resulting in increased strain on physical infrastructure relative to their current capacity (as described further in Response 2 below).

Food Security:

The issue of Food Security was addressed indirectly in the FEIS in the discussion of the importance of the traditional economy to wellbeing (Appendix 7-A Section 3.7) and the potential effects on continued opportunities for traditional wildlife harvesting and fishing. Indicators of potential Project effects on traditional wildlife harvesting and fishing included changes in the availability of traditionally harvested wildlife and fish, and social and economic factors affecting participation in traditional land use activities (Volume 7 Table 7.3-2). Baker Lake residents indicated their preference for traditional, or country foods over store bought meat for economic and health reasons, and caribou, lake trout and Arctic char make up a substantial part of their diet (Volume 7 Appendix 7-A Section 3.7). Studies have found a correlation between food security and access to country foods in Nunavut, and the importance of these foods and harvesting activities to community wellbeing and health (Ford and Berrang-Ford 2009, as cited in Peterson 2012) (Volume 7 Appendix 7-A Section 3.7). Having access to and availability of country foods are viewed as critical in combating food insecurity in Nunavut's communities, such that the Nunavut Food Security Coalition has highlighted its promotion as a strategic area for action, including supporting harvesters so they can pursue traditional livelihoods and promoting the continuation of informal country food sharing networks (NFSC 2014). The most current definition of food nutrition security, as proposed by the FAO Committee on World Food Security in 2013, is "food and nutrition security exist when all people at all times have physical, social and economic access to food, which is safe and consumed in sufficient quantity and quality to meet their dietary needs and food preferences, and is supported by an environment of adequate sanitation, health services and care, allowing for a healthy

and active life" (CCA 2014). Food insecurity is described as the converse, as an outcome of inadequate or uncertain access to an acceptable amount and quality of healthy food.

The FEIS determined that Baker Lake community's ability to continue to practice subsistence activities, and to hunt and rely on caribou as a primary food source will not be significantly affected because of the Project (Volume 7, Section 7.3.3.1). This is because preferred harvesting areas will still be available close to the community, the All-Weather-Access Road (up to km 85) will continue to facilitate access to harvesting locations, and the Project will not present barriers in accessing areas further north of the Mine site. Potential adverse effects resulting from barriers to participation in traditional hunting activities will be minimized with rotational employment, and increased access to resources for the purchase of hunting supplies facilitated by wage employment. The community's ability to continue to practice traditional fishing will not be significantly affected by the Project because preferred fishing sites located close to the community will still be available, and Arctic Char and lake trout, identified as preferred fish resources, will remain locally and regionally abundant and therefore will still be available for fishing in preferred harvesting sites (Volume 7, Section 7.3.3.2).

Cumulative Effects:

Regarding cumulative effects: please refer to the response to INAC-TRC-16 for further discussion of the approach to cumulative effects taken in the FEIS.

Community-level Assessment:

Though not identified as a missing VSEC, the full Technical Comment also comments on the topic of community-specific baseline and assessment. Baseline data for each of the Kivalliq communities is presented in the socio-economic baseline report (Volume 7, Appendix 7-B; and Appendix 7-B, Appendix A). The socio-economic assessment is conducted at varying scales depending on the pathway of effect in question. For example, while the discussion of the Project's effects on Gross Domestic Product is conducted at the level of the territory, business and contracting effects are highlighted at the community level. Where community-level effects are anticipated, the assessment is focused on the community where Project effects are most likely to be realized – Baker Lake. When assessing Project effects to the Kivalliq region, the assessment assumes the potential for these effects to occur in any constituent community. For example, where the assessment identifies the potential for increased access to and use of alcohol facilitated by Project incomes, this effect is not quantified or attributed to any specific community. Rather, the FEIS notes the potential for this effect to occur in any of the communities from which Project labour is sourced.

Response 2)
The following topics were not carried forward for residual effects assessment based on the Project's low potential to interact with them in a manner creating a residual effects:

- population demographics;
- infrastructure and services;

- governance and leadership; and
- non-traditional land use.

Population Demographics, Infrastructure, and Services

While it is acknowledged that there are limitations on physical infrastructure in Kivalliq and Baker Lake (please refer to the socio-economic baseline report, FEIS Volume 7, Appendix 7-B), the assessment concluded that the ability of the Project to place significant, additional strain on physical infrastructure or services due to Project-driven population influx to Baker Lake was low. This conclusion was made based on the labour requirements of the Project relative to the existing Meadowbank Mine workforce that could transfer over, the available labour force in Kivalliq, and the fact that, where necessary, some portion of the Project's workforce requirements will be met by out of area workers.

Roughly three quarters (approximately 700 workers) of the Project's workforce demand is expected to be met by the existing Meadowbank Mine workforce. The remaining labour demand of the Project is around 200, of which 50% (100 workers) are expected to be drawn from outside of Nunavut. This outside workforce would not be expected to relocate to Kivalliq with their families for employment, instead operating on a rotation schedule that would see them housed at the on-site camp for two weeks at a time. The remaining 100 workers would be drawn from Nunavut and Kivalliq communities where fly-in, fly-out arrangements are already available, removing the need to relocate for employment. Agnico Eagle will continue to work with communities to identify local labour and strategies to remove barriers to employment. Given this approach to meeting the Project's labour force demand, the direct pathway between the Project and increased pressure on physical infrastructure due to population change was not carried forward for further residual assessment.

It is acknowledged that, as the Technical Comment suggests, there is the possibility for speculative migration between communities in response to the Whale Tail Pit Project, or that some new Project hires may prefer to live in Baker Lake. Individuals may choose to relocate in hopes of obtaining work without having secured an offer of employment from Agnico Eagle. In advance of construction and operations, Agnico Eagle will clearly communicate labour force requirements to community liaisons, and will work with communities and local governments to provide clear information regarding the recruitment process for Project employment opportunities. Through this engagement, Agnico Eagle hopes to limit the potential for speculative migration in hopes of securing employment. It is, however, recognized that the decisions of individuals in terms of movement between communities are outside the control of the developer, and some may still choose to relocate. Given that the Project does not represent an entirely new development, rather acting to extend the Meadowbank Mine from an employment perspective, and in consideration of early engagement effects on the part of Agnico Eagle, the potential for in-migration at a scale meaningfully impacting population dynamics and associated demand for infrastructure and services is considered low.

As described in more detail in the socio-economic baseline report, power, water, sewage and waste infrastructure in Baker Lake has capacity to accommodate some level of population growth in the

community. Power in Baker Lake is provided via three diesel fueled generators. The community's fuel storage tanks were upgraded in 2014, increasing storage capacity by 260% to 3,400 m^3. A new water treatment facility was constructed to service the community in 2011, and water is delivered via truck to houses. Residential water use in Baker Lake is not expected to approach the annual 100,000 m^3 authorized quantity limit until 2030. Agnico Eagle is in discussion with Baker Lake regarding the expansion of water treatment capabilities in in the community via the construction of a passive sewage wetland as part of fish habitat compensation activities. There is a 25,000 m^2 solid waste disposal facility near the community to handle refuse disposal.

Unlike the physical infrastructure in Baker Lake noted above, the availability of housing in many Kivalliq communities is constrained (FEIS Volume 7, Appendix 7-B). In-migration of any scale can exacerbate this pressure. Agnico Eagle will continue to engage with communities regarding changing socio-economic conditions. Agnico Eagle will continue the socio-economic monitoring program in place for the Meadowbank Mine during Project construction and operations, which includes monitoring of migration, community population, housing stock and condition, and use of physical infrastructure and services. Should adverse changes in these areas arise, Agnico Eagle will continue to collaborate with the Government of Nunavut and communities to develop issue-specific mitigation. The Socio-Economic Management and Monitoring Plan (SEMMP; FEIS Volume 8 Appendix 8-E.6) identifies Agnico Eagle's approach to managing and monitoring potential socio-economic issues associated with their Kivalliq operations. Issue-specific implementation plans are developed as part of Agnico Eagle's adaptive management process. Agnico Eagle is open to further discussion on the perceived potential for Project-driven population changes in Kivalliq communities during the Technical Session.

Governance and Leadership:
Agnico Eagle will operate in a manner compliant with all relevant governing bodies, and within the bounds of the Nunavut Land Claims Agreement and applicable regional and municipal development plans. The Project will contribute to government revenue, and will not have an adverse effect on government operations. The pathway between the Project and governance and leadership was, therefore, not carried forward for further residual effects assessment.

Non-Traditional Land Use:
The Project will comply with land use planning in its immediate vicinity. No commercial fishing operations or guiding and outfitting camps are known to exist in the vicinity of the Project. Camping at the Inuujaarvik Territorial Park and canoeing on the Thelon River are not expected to be disrupted by Project construction or operations, given their distance from the proposed mine site. The pathway between the Project and non-traditional land use was, therefore, not carried forward for further residual effects assessment.

Response 3)
Regarding the description of long-term socio-economic effects of closure: Please refer to the response to INAC-TRC-14 for further discussion related to Project closure and socio-economic assessment.

References:

CCA (Council of Canadian Academies). 2014. Aboriginal Food Security in Northern Canada: An Assessment of the State of Knowledge, Ottawa, ON. The Expert Panel on the State of Knowledge of Food Security in Northern Canada, Council of Canadian Academies.

NFSC (Nunavut Food Security Coalition). 2014. Nunavut Food and Security Strategy and Action Plan 2014-16. Available at: http://www.makiliqta.ca/sites/default/files/nunavutfoodsecuritystrategy_english.pdf. Accessed October 13, 2015.

NIRB (Nunavut Impact Review Board). 2016. Final Scope List for the Whale Tail Pit Project. November 10, 2016.

Peterson, K. 2012. Community Experiences of Mining in Baker Lake, Nunavut. Master of Arts Thesis. University of Guelph. Guelph, ON. Available at: http://dspace.lib.uoguelph.ca/xmlui/bitstream/handle/10214/3548/KCRPetersonThesisFinal.pdf?sequence=11. Accessed October 7, 2015.

Stratos. 2015. Meadowbank Gold Mine 2014 Socio-Economic Monitoring Report.

Interested Party:	**Indigenous and Norther Affairs Canada (INAC)**	**NIRB Ref No.:**	**INAC-TRC #11**
		NWB Ref No.	**n/a**
Re:	**Methodology and Analysis of Prediction of Impacts and Determination of Significance**		

Technical Comment / Recommendation Made By Interested Party:

INAC recommends that the Proponent provide additional information to justify and to allow for verification of the conclusions presented in the EIS:

1) For the predictions of impacts for each of the VSECs, the specific assumptions, evidence, models and analytical methodologies utilized need to be presented in detail.

2) For the determination of significance, the specific approach and information sources considered in assessing the relevant factors needs to be outlined in detail for each VSEC, including evidence from literature, expert input, community input, and past experience.

The additional information and analysis should be provided with sufficient time for review prior to the Final Hearing.

Agnico Eagle's Response to Technical Comment / Recommendation:

Response 1)

Specific assumptions used in the modelling of the Project's economic and employment effect will be provided prior to the Final Hearing.

Response 2)

The methods that Agnico Eagle applied in completion of the FEIS were consistent with those used in previous EAs in Nunavut. The significance of socio-economic effects must often be determined qualitatively. For example, it may be straightforward to conclude that an effect is not significant if it is very small, is of short duration, and affects almost no one; or to conclude that an effect is significant if it is very large, of long duration, and affects most people. However, determining significance in cases that are less well defined necessarily depends on qualitative data and interpretation, observations of the economic and social reality of a project area, and lessons learned from other experiences. As a result there may appear to be a stronger element of professional judgment, as opposed to the use of quantitative tools (such as decision trees or valued matrices), in reaching conclusions on significance for socio-economic effects.

The FEIS determines significance by considering the residual effects criteria assigned to effect pathways. Magnitude is assigned in consideration of the context in which an effect plays out. For example, in the context of the Kivalliq labour market and the impending closure of the Meadowbank Mine, the

continuation of employment for around 700 workers, and the creation of an estimated 100 new positions accruing to Nunavummiut, is considered high magnitude. This magnitude drives the determination of significance of an effect pathway, but the determination is refined based on the other residual effects criteria. In the same example of employment, in the event that employment extension and new opportunities lasted for only a period of several weeks, while the magnitude may be high, the very short-term duration of the effect might result in a determination that the effect is not significant. In the case of the Project, however, the employment effect is more sustained, continuing for a number of years through construction and operations. Each VSEC is evaluated based on these criteria, and a qualitative determination of significance is reached.

Further description is provided below in Table INAC-TRC-11-1 regarding the description of socio-economic residual effects criteria, in supplement to Section 3.7.1 of the FEIS.

Table INAC-TRC-11-1 Definitions of Criteria Used in the Assessment

Direction	Magnitude	Geographic Extent	Duration
Negative: Adverse effect on a VSEC **Positive:** Beneficial effect on a VSEC	**Negligible:** Indicates no discernible change to a VSEC **Low:** Indicates a discernible effect on a VSEC but the effect is not expected to materially affect people's quality of life **Moderate:** Indicates a noticeable and potentially detrimental or beneficial change to people's quality of life **High:** Indicates that the effect is expected to substantially interfere with or enhance people`s quality of life	**Local:** Effect is within Kivalliq Region and/or within its communities **Regional:** Effect may extend beyond the Kivalliq Region to Nunavut	**Short:** Effect occurs during the two year construction period **Medium:** Effect occurs over both the two year construction period and the three year operational period **Long:** Effect persists beyond operations

Based on these definitions, criteria were assigned and residual effects were determined as described in the FEIS. A summary of residual effects classification and the determination of significance for socio-economic primary pathways is provided in Table 7.4-7 of the FEIS, and has been attached below.

Table 7.4-7: Residual Impacts Classification and Determination of Significance for Socio-Economics

Valued Component	Pathway	Direction	Magnitude	Geographic Extent	Duration	Significance
Economic Activity and Business Development	The Project will continue to contribute to territorial economic activity	Positive	High	Regional	Medium-term	Significant
	The Project will continue government revenues	Positive	High	Regional	Medium-term	Significant
	The Project will sustain local business development and contracting	Positive	High	Local to Regional	Medium-term	Significant
Employment and Education	The Project will create direct, indirect, and induced employment opportunities	Positive	High	Local to Regional	Medium-term	Significant
	The Project will generate direct, indirect, and induced incomes	Positive	High	Local to Regional	Medium-term	Significant
	The Project will provide workforce training and support community education	Positive	Moderate	Local to Regional	Long-term	Significant
Individual and Community Wellbeing	The Project will continue positive fiscal effects in communities	Positive	High	Local to Regional	Medium-term	Significant
	The Project may improve worker and public health and safety	Positive	Moderate	Local to Regional	Long-term	Significant
	The Project has the potential to result in accidents and emergencies	Negative	n/a			Significant
	Project incomes and rotational employment may affect family and community cohesion	Negative	Moderate	Local to Regional	Long-term	Significant

Interested Party:	**Indigenous and Norther Affairs Canada (INAC)**	**NIRB Ref No.:**	**INAC-TRC #12**
		NWB Ref No.	**n/a**
Re:	**Nature and Scope of the Baseline**		

Technical Comment / Recommendation Made By Interested Party:

INAC recommends the Proponent review and expand baseline data to include all critical categories needed to determine and assess community impacts, additional data on community conditions beyond those represented by the operating results of Meadowbank Mine, and specific data on each of the communities in the Local Study Area.

In cases where community level data is not available, the Proponent should consider options such as community survey to obtain the missing information.

The additional baseline data and analysis including a community survey should be provided for review prior to the Final Hearing

Agnico Eagle's Response to Technical Comment / Recommendation:

The baseline report relies on publicly available information and data from socio-economic monitoring for the Meadowbank Mine (Stratos 2015) when characterizing socio-economic conditions in communities. Baseline data regarding VSECs has been presented in Appendix 7-B of the FEIS Volume 7 (socio-economic baseline report; Agnico Eagle 2016). Appendix A of Appendix 7-B contains detailed statistical information, and is broken down by community where appropriate. Topics included in the baseline are considered to be comprehensive of the VSECs identified for the FEIS in the NIRB Final Scope List (NIRB 2016). Agnico Eagle is open to discussing the comprehensiveness of the socio-economic baseline data presented in the FEIS during the Technical Meeting.

A comparison of baseline information presented in the FEIS relative to the Final Scope List VSECs is provided in Table INAC-TRC-12-1 below.

Table INAC-TRC-12-1: Socio-Economic Baseline Information Presented in the FEIS

Final Scope List VSEC	FEIS Section Where Baseline Data is Presented
Employment and Training	• Appendix 7-B, Section 3.3 Employment o Meadowbank employment o Labour force participation o Employment by industry • Appendix 7-B, Section 3.4 Income o Meadowbank incomes o Median income by community • Appendix 7-B, Section 3.6 Education and Training o Educational services o Educational attainment o Agnico Eagle educational investments, training at Meadowbank • Appendix 7-B, Appendix A Detailed Statistics o Table 5 through 12 and 14 through 16
Economic Activity and Business Development	• Appendix 7-B, Section 3.5 Contracting and Business Opportunities; • Appendix 7-B, Section 3.10 Nunavut Economy o Royalties and taxes paid by Agnico Eagle o Territorial GDP • Appendix 7-B, Appendix A Detailed Statistics o Tables 13 and 31
Individual and Community Wellbeing	• Appendix 7-B, Section 3.7 Culture and Traditional Economy o Language o Traditional economic activity • Appendix 7-B, Section 3.8 Individual and Community Health and Wellness o Food security o Sexual health o Crime o Housing o Suicide o Worker health and safety o Baker Lake wellness study • Appendix 7-B, Appendix A Detailed Statistics o Tables 17 through 24
Infrastructure and Services	• Appendix 7-B, Section 3.9 Infrastructure and Services o Transportation o Communication o Water, sanitation and waste disposal o Heat and power o Retail services o Protective services o Social services o Health services • Appendix 7-B, Appendix A Detailed Statistics • Tables 25 through 30
Population Demographics	• Appendix 7-B, Section 3.2 Demographics o Population growth and projections o Migration o Gender, age and ethnicity • Appendix 7-B, Appendix A Detailed Statistics o Tables 1 through 4
Governance and Leadership	• Appendix 7-B, Section 3.9.1 Government
Non-Traditional Land Use	• FEIS Volume 7 Section 7.4.3.1

References:

NIRB (Nunavut Impact Review Board). 2016. Final Scope List for the Whale Tail Pit Project. November 10, 2016.

Stratos. 2015. Meadowbank Gold Mine 2014 Socio-Economic Monitoring Report.

Interested Party:	**Indigenous and Norther Affairs Canada (INAC)**	**NIRB Ref No.:**	**INAC-TRC #13**
		NWB Ref No.	**n/a**
Re:	**Public Consultation and Incorporation of Community Concerns into the EIS**		

Technical Comment / Recommendation Made By Interested Party:

INAC recommends:

1) The Proponent conduct community consultations to validate the revised socio-economic assessment and document the results along with appropriate responses to community concerns in the EIS. Additional information should also be provided which documents how and where socio-economic concerns raised were addressed within the project;

2) The Proponent commit to working with the Community Liaison Committee and other partners to ensure consultation information is passed on to the wider community.

The findings associated with the above-noted recommendations should be provided with sufficient time for review prior to the Final Hearing.

Agnico Eagle's Response to Technical Comment / Recommendation:

Response 1)

Based on the Final Scope List developed by NIRB with input from communities and other parties, including INAC, Agnico Eagle is not, at this time, exploring the option of revising the FEIS. The FEIS corresponds to the scope identified in the Final Scope List, and addresses socio-economic issues raised in recent consultations with the communities potentially impacted. As discussed further in the response to INAC-TRC-10, Agnico Eagle is open to further discussion regarding the Party's comments on Project-induced population change at the Technical Meeting.

Since the time of writing of the FEIS, Agnico Eagle has conducted additional community consultations regarding the Project and its potential effects, soliciting feedback from communities regarding their perceptions of the impacts of the development of the Whale Tail Pit. Table INAC-TRC-13-1 provides a summary of these consultations and the concerns raised in each.

Table INAC-TRC-13-1: Community Consultation Activities Related to the Whale Tail Pit Project

Meeting	Parties	Date	Comments Related to the Socio-Economic Effects of the Project
Pre-Technical Comment Meeting	Agnico Eagle, KIA, Golder Associates	February 21, 2017	• None
Amaruq Caribou Workshop	Agnico Eagle, Golder Associates, Government of Nunavut, KIA, Baker Lake HTO, NTI	December 23, 2016	• None
Whale Tail FEIS Walkthrough	Agnico Eagle, ECCC	October 13, 2016	• Will there be a need for increased shipping traffic? [Agnico Eagle: No]
Update on Whale Tail Project	Agnico Eagle, KIA	October 4, 2016	• Will jobs be lost at Meadowbank before Whale Tail gets going? [Addressed in the FEIS] • Do the employment numbers include ongoing development at the portage? [Agnico Eagle: yes] • Is there a difference between male and female operators? [Agnico Eagle: No, Agnico Eagle is an equal opportunity employer] • The KIA president should be engaged by Agnico Eagle regarding the Inuit Impact Benefit Agreement (IIBA). [Agnico Eagle: We will continue to engage with the KIA] • The KIA would like Agnico Eagle to continue consulting with communities. [Agnico Eagle: We are committed to ongoing consultation with communities]
AEAR Consultation Meeting	Agnico Eagle, CLARC, KIA	March 3, 2016	• Notes taken by KIA
Whale Tail Project Update – Site Visit	Agnico Eagle, ECCC	March 1-3, 2016	• None
Amaruq and Whale Tail Pit Project Traditional Knowledge Consultation	Agnico Eagle, Elders, CLARC, Baker Lake HTO, Women's Focus Group, Youth Focus Group	February 3-5 , 2016	• Concern regarding water treatment as related to dust or effluent. [Agnico Eagle: Suggestion to work with the community to improve water treatment as part of required fish habitat replacement work. This could involve creating a passive wetland treatment system] • Request to involve community and Elders in ongoing consultation. [Agnico Eagle: will continue to engage community and Elders] • Interest in employment opportunities, more information about mining careers – particularly for youth. [Addressed in the FEIS] • Meadowbank has had positive effects regarding work preparedness, careers, better health and safety knowledge, providing employment and associated incomes, better access to the land for hunting, search and rescue, environmental education, and community contributions • Concerns that Meadowbank has also increased dust from truck traffic, use of alcohol, some relationship problems, and challenges associated with rotational employment (being away

Table INAC-TRC-13-1: Community Consultation Activities Related to the Whale Tail Pit Project

Meeting	Parties	Date	Comments Related to the Socio-Economic Effects of the Project
			from home for extended period) • Desire for more Inuktitut interpretation for employees, especially as related to medical issues, and for orientations for new employees
Amaruq Access Road Consultation Meeting Minutes	Agnico Eagle, CLARC, Baker Lake HTO, Kivalliq Wildlife Board, KIA, Golder Associates, Stantec	September 8, 2015	• None
Public Information Meeting	Agnico Eagle, NIRB, Baker Lake Public, Chesterfield Inlet Public	September 9-11, 2015	• Employment helps to reduce poverty in the community • Meadowbank is an important part of the economy in Nunavut, and an important employer – concern raised that a delay in the Project could have an adverse economic effect, and that people could lose their jobs • Comment that a delay could have further adverse knock-on effects to the community of Baker Lake • Desire for increased employment opportunities with the Project • Concern that money from Agnico Eagle does not go to communities, instead going to the KIA • Note that there is a need for proper infrastructure in Baker Lake • Amaruq road could have benefits, but could impact area • Desire for increased opportunities for employment, skills and training, particularly for women • Comment that Baker Lake is the main community affected by the Meadowbank Mine • Concern regarding road safety

This response is considered to fulfill the request of INAC-TRC #13. Unless otherwise directed by NIRB or NWB, no other material will be provided prior to the Final Hearing.

Response 2)
Agnico Eagle, through their Meadowbank Mine operation and the construction of the Meliadine Mine, has developed relationships with Kivalliq communities. Agnico Eagle will continue to work and consult with communities throughout Project development and operations, and will continue their involvement with the Socio-Economic Monitoring Committee and other community liaison initiatives.

This response is considered to fulfill the request of INAC-TRC #13. Unless otherwise directed by NIRB, no other material will be provided prior to the Final Hearing.

References:
Provided in Table INAC-TRC-13-1.

Interested Party:	**Indigenous and Norther Affairs Canada (INAC)**	**NIRB Ref No.:**	**INAC-TRC #14**
		NWB Ref No.	**n/a**
Re:	**Socio-Economic Component of Closure Plan**		

Technical Comment / Recommendation Made By Interested Party:

INAC recommends the Proponent provide an updated closure plan that directly addresses anticipated adverse socio-economic effects of closure to the Kivalliq region and communities related to loss of employment and income.

The revised interim closure plan should be provided before initiation of the Project.

Agnico Eagle's Response to Technical Comment / Recommendation:

Guidelines for the interim closure plan do not require detailed socio-economic assessment at this early, preliminary stage of planning (MVLWB/AANDC 2013). Final closure planning for the Project will include an assessment of the socio-economic effects of closure, relative to conditions present at a time closer to the beginning of the closure phase. Lessons learned from the closure process undertaken for the Meadowbank Mine will inform the final closure planning undertaken for the Project. Agnico Eagle anticipates that these lessons learned will strengthen the efficacy of final socio-economic closure planning.

References:

MVLWB/AANDC (Mackenzie Valley Land and Water Board/Aboriginal Affairs and Northern Development Canada). 2013. Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories. November 2013.

Interested Party:	**Indigenous and Norther Affairs Canada (INAC)**	**NIRB Ref No.:**	**INAC-TRC #15**
		NWB Ref No.	**n/a**
Re:	**Framework for Monitoring of Project Impacts**		

Technical Comment / Recommendation Made By Interested Party:

INAC recommends:

1) The Proponent include in the Management and Monitoring Plan demonstration of how the adaptive management responses identified in the EIS would be implemented and effectively managed within the short time frame of the Project. This should incorporate budget, schedule and reporting considerations.

2) The Proponent develop and implement formal arrangements with the Socio-Economic Monitoring Committee for collaborative monitoring of community and regional socioeconomic impacts. These arrangements should also address capacity development, development and implementation of socio-economic wellness planning, and identify a feedback mechanism for using regional data in planning and managing socio-economic impacts of future AEM development projects.

The information and commitments related to recommendations should be provided for review prior to the Final Hearing. The development of formal arrangements for collaborative monitoring should be part of the Project terms and conditions.

Agnico Eagle's Response to Technical Comment / Recommendation:

Response 1)

The Socio-Economic Management and Monitoring Plan (Volume 8, Appendix 8-E.6) identifies Agnico Eagle's approach to managing and monitoring potential socio-economic issues associated with construction and operation of the Project. Issue-specific implementation plans are developed as part of Agnico Eagle's adaptive management process. In this regard, budgets, schedules, and reporting considerations are developed in response to issues as they arise, and are tailored to meet the needs of the situation at hand.

Response 2)

Agnico Eagle, through their Meadowbank Mine operation and the construction of the Meliadine Mine, has developed relationships with Kivalliq communities, and is an active member of the Socio-Economic Monitoring Committee (SEMC). Agnico Eagle will continue to work and consult with communities throughout Project development and operations, and will continue their involvement with the SEMC in the collaborative monitoring of socio-economic conditions in communities, and in the region.

Interested Party:	**Indigenous and Norther Affairs Canada (INAC)**	**NIRB Ref No.:**	**INAC-TRC #16**
		NWB Ref No.	**n/a**
Re:	**Cumulative Socio-economic Effects**		

Technical Comment / Recommendation Made By Interested Party:
INAC recommends the Proponent provide a combined socioeconomic cumulative effects assessment for all their developments (Whale Tail, Meadowbank and Meliadine) that addresses the deficiencies noted above, highlights the overlaps and synergies between the three projects, aligns their mitigation and monitoring, and, allows for adaptive management and monitoring of impacts between projects where appropriate.

The cumulative effects assessment should be provided for review prior to the Final Hearing.

Agnico Eagle's Response to Technical Comment / Recommendation:
As noted in the full Technical Comment, the socio-economic assessment for the Whale Tail Pit Project was undertaken from a cumulative perspective that considers the timing and workforce requirements of the Meadowbank Mine, the Meliadine Mine, and the Project. Further, the baseline environmental against which Project effects are assessed includes the Meadowbank Mine. The Project's employment effect is discussed relative to the closure of the Meadowbank Mine, and the operational phase of the Meliadine Mine. As a bridge between these two events, the Project is expected to act as a stabilizing force in terms of maintaining employment, incomes, contracting, revenues and community investments. The continuation of employment facilitated by the Project also would have the potential to offset out-migration, particularly from Baker Lake, in the event that workers otherwise left unemployed with the closure of the Meadowbank Mine choose to seek employment in other parts of Nunavut or Canada.

INAC is referred to Volume 3, Appendix 3-D for a complete list of projects considered in the cumulative effects assessment.

It is possible to conduct a cumulative effects assessment that carries forward all Project-specific residual socio-economic pathways of effect; however, in many cases, it is not possible to quantify or rank the outcome of pathway-specific cumulative effects. Such an assessment would note the potential for residual Project effects to become more pronounced with the addition of other developments. For example, where the residual effects assessment identifies the incremental Project effect of requiring rotational workers to be away from home for lengthy periods (e.g., two weeks at a time), a cumulative effects assessment incorporating the Meadowbank and Meliadine Mines would suggest that the combined effect would be more widespread, affecting more households than the Project alone.

The potential for such cumulative effects is identified in Section 7.4.5 of the FEIS, but it is noted that ongoing monitoring and management is required to meaningfully determine the cumulative effect of

Agnico Eagle's operations in Nunavut, and to develop appropriate mitigation and benefit enhancement measures. To this end, Agnico Eagle intends to continue to build on lessons learned through their operation of the Meadowbank Mine, and construction and operation of the Meliadine Mine, with regard to socio-economic monitoring and management.

Agnico Eagle's approach to socio-economic management and monitoring, as outlined in the Socio-Economic Management and Monitoring Plan (SEMMP; FEIS Volume 8 Appendix 8-E.6), is aligned for all their Kivalliq operations, and includes adaptive management strategies that are applied to all three projects. The SEMMP identifies Agnico Eagle's approach to managing and monitoring potential socio-economic issues associated with their cumulative Kivalliq operations. Issue-specific implementation plans are developed as part of Agnico Eagle's adaptive management process. Agnico Eagle will continue to work with the Kivalliq Socio-Economic Monitoring Committee (SEMC) to monitor socio-economic conditions in the region, and to identify areas where its operations are interacting cumulatively to have adverse effects. Agnico Eagle will also continue to engage with communities to determine their perception of cumulative socio-economic effects of development in the region, and to work with the GN, the KiviA, and other relevant parties (e.g., Elders, the Hunter and Trappers Association) in the management of cumulative socio-economic effects.

KIVALLIQ INUIT ASSOCIATION

Interested Party:	Kivalliq Inuit Association (KivIA)	NIRB / NWB Ref No.:	KivIA-TC-Aquatic Ecology 01
Re:	Final fish habitat Offsetting Plan		

Technical Comment / Recommendation Made By Interested Party:

KivIA must remain involved in the plan development process and ensure that concerns of residents are well taken into account in the final plan. KivIA must also continue to be involved in the long-term monitoring of the effectiveness of the offsetting. AEM should continue to see that KIVIA is kept fully informed of all issues related to the offsetting plan. AEM should encourage residents to see the actions related to the offsetting being put into effect and be present during long-term monitoring activities.

Agnico Eagle's Response to Technical Comment / Recommendation:

Agnico Eagle is committed to ensuring that KivIA remains involved in the plan development process and will take concerns of the residents into account in the final plan. Agnico Eagle will encourage KivIA involvement in effectiveness monitoring and will ensure that KivIA is kept fully informed of all issues related to the completion of the Final Offsetting Plan. This commitment was most recently demonstrated by the attendance of a KivIA representatives (Luis Manzo and their consultant) at a meeting between Agnico Eagle and DFO to discuss the offsetting plan, held in Winnipeg on March 23, 2017. Agnico Eagle will encourage residents to see the actions related to the offsetting being put into effect and be present during long-term monitoring activities.

Interested Party:	Kivalliq Inuit Association (KivIA)	NIRB / NWB Ref No.:	KivIA-TC-Freshwater Environment 01
Re:	Increase of arsenic levels during the pit flooding and post closure		

Technical Comment / Recommendation Made By Interested Party:

Study treatment options (end-of-pipe solutions) to reduce the concentration of arsenic being discharged into the environment during operation, and consequently minimizing the concentrations of arsenic in post closure.

It is recommended as well that additional groundwater monitoring wells be installed during operations and closure to monitor the concentration of arsenic.

Agnico Eagle's Response to Technical Comment / Recommendation:

At this time Agnico Eagle is evaluating options for treatment of arsenic through chemical precipitation to achieve an end of pipe concentration of 0.15 mg/L arsenic. Details on the treatment design and treatment quality will be provided prior to the Final Hearing.

A multi-level Westbay well was installed beneath Whale Tail Lake near the pit location in early 2016 and groundwater samples were collected in mid-2016. Agnico Eagle looks forward to discussing the need for additional groundwater monitoring wells at the Technical Meeting.

Interested Party:	Kivalliq Inuit Association (KivIA)	NIRB / NWB Ref No.:	KivIA-TC-Freshwater Environment 02
Re:	The potential for mercury (methylmercury) to increase in the water column and biota as a result of flooding resulting from the planned diversion of Whale Tail (South Basin)		

Technical Comment / Recommendation Made By Interested Party:

Even though the modelling shows that the increase of Hg in fish is low it is still expected to increase from two (2) to three (3) times the baseline. Therefore, temporal monitoring of fish mercury concentrations relative to flooding is recommended as to ensure that increased Hg concentration in fish are low. In addition, it would provide valuable insights into mercury dynamics in flooded northern aquatic environments.

Agnico Eagle's Response to Technical Comment / Recommendation:

Agnico Eagle agrees with this comment and is committed to temporal monitoring fish mercury concentrations in relation to the flooding of Whale Tail Lake (South Basin). Mercury-related monitoring will be integrated into the Fisheries and Offsetting Monitoring Plan prior to the Final Hearing.

Agnico Eagle is committed to developing this plan to include collaborations with academics, DFO, DFO Science, and the KivIA. The mercury monitoring plan will not only include lake trout (i.e., the top predatory fish in the lake), but will also include monitoring temporal trends in methylmercury concentrations key components of the food chain (zooplankton and benthic invertebrates) and water. This approach will provide meaningful data to not only manage the flooding-related changes to fish mercury concentrations, but also to better understand the mercury-issue in a northern context.

Interested Party:	Kivalliq Inuit Association (KivIA)	NIRB / NWB Ref No.:	KivIA-TC-Freshwater Environment 03
Re:	Significant phosphorus enrichment will lead to the predicted average dissolved phosphorus being higher than the meso-eutrophic trigger value in Mammoth Lake		

Technical Comment / Recommendation Made By Interested Party:

It is recommended that additional groundwater monitoring wells be installed during operations and at closure at the following locations 1) close to whale tail pit, 2) downstream of the Mammoth Lake, 3) in proximity to the WRSF, and 4) close to Nemo lake.

Agnico Eagle's Response to Technical Comment / Recommendation:

Thank you for your recommendation regarding monitoring wells during development and closure. Agnico Eagle looks forward to discussing this further at the Technical Meeting and in particular how the installation of these wells are related to the Subject: **Significant phosphorus enrichment will lead to the predicted average dissolved phosphorus being higher than the meso-eutrophic trigger value in Mammoth Lake.**

For your information a multi-level Westbay well was installed beneath Whale Tail Lake near the pit location in early 2016 and groundwater samples were collected in mid-2016. Agnico Eagle has used the results of the water sample analyses to characterize the baseline groundwater chemistry.

Interested Party:	Kivalliq Inuit Association (KivIA)	NIRB / NWB Ref No.:	KivIA-TC-Air-03 (PreTC-Air-3)
Re:	Air concentrations from explosives detonation		

Technical Comment / Recommendation Made By Interested Party:

The revised model results for emissions from explosives detonation should be provided to the human health risk assessment and be used to confirm that the conclusions of the assessment remain valid.

Agnico Eagle's Response to Technical Comment / Recommendation:

The response to this Technical Comment is the same as ECCC #3.

Air quality modelling results for 1-hr CO, NO_2, and SO_2 have been updated to include "worst case" 1-hr emissions as a result of updated assumptions for blasting emissions. Results of the updated modelling are included in Table KivIA-TC-Air-03-1 below. These air quality model results are considered conservative as they assume that emissions from blasting (i.e., a near instantaneous release of contaminants), occur over a full hour.

Table KivIA-TC-Air-03-1: Updated Summary of Maximum 1-hr Average Concentrations of CO, NO_2, and SO_2 for the Whale Tail Pit

Compounds	Project Hourly Emissions (kg/hour)		Maximum 1-hour model predictions outside the Project boundary (µg/m³)	Worst-case 1-hr pre-dictions outside the Project boundary (µg /m³)	1-hr Background Concentrations µg/m³)	1-hr max-imum plus back-ground concen-trations (µg /m³)	1-hour Ambient Air Quality Standards (µg/m³)
	Modelled	Worst Case					
CO	61	396	714	6172	389	6561	15,000
NO_2	130	208	137	266	12.6	278	400 (300[a])
SO_2	1.3	11.1	15.1	169[b]	2.7	172	450 (183[c], 170[d])

(e) The AB and SK ambient air quality standard is 300 µg/m³.

(f) Value is the 99.9th percentile from the year with the highest 1-hr average concentration among the 5-year simulation.

(g) 2020 Canadian Ambient Air Quality Standard (CAAQS); 3-year average of the annual 99th percentile of daily maximum 1-hr average concentrations.

(h) 2025 Canadian Ambient Air Quality Standard (CAAQS); 3-year average of the annual 99th percentile of daily maximum 1-hr average concentrations.

As indicated, worst case 1-hr maximum plus background concentrations of NO_2 remain below the Nunavut ambient air quality standard (400 µg/m³) and below the more stringent AB and SK standards (300 µg/m³).

For SO_2, the "worst case" maximum 1-hr SO_2 concentration is predicted to be 172 µg/m³. This value represents the 9th highest, or 99.9th percentile 1-hr average prediction for the year with the highest

concentration predicted among the 5-year simulation. This prediction remains below the current Nunavut AAQS (450 μg/m^3) and the pending 2020 Canadian AAQS of 183 μg/m^3. The model-predicted value appears to exceed the pending 2025 1-hr SO2 standard (i.e., 170 μg/m^3; CCME 2016), however the values are calculated differently.

The model predictions are considered conservative and the maximum plus background 1-hr SO_2 concentrations (i.e., 9th highest of the year, or 99.9th percentile) for the remaining four years of the FEIS air quality model simulation are all less than or equal to 148 μg/m^3. Thus, the 3-year average of the 99th percentile values are all predicted to be below the 2025 1-hr SO2 CAAQS of 170 μg/m^3.

Given that the predicted 1-hour concentrations of CO, NO_2, and SO_2 continue to be less than their respective air quality standards, the conclusions of the HHRA did not change and no human health risks due to short-term release of these substances are expected.

References:

CCME (Canadian Council of Ministers of the Environment). 2016: http://www.ccme.ca/en/resources/air/air/sulphur-dioxide.html (accessed March 31, 2017)

Interested Party:	Kivalliq Inuit Association (KivIA)	NIRB / NWB Ref No.:	KivIA-TC-Air-04 (PreTC-Air-4)
Re:	Dust deposition		

Technical Comment / Recommendation Made By Interested Party:

1. Additional information about the Vault haul road observations presented in Figure 4.3-3 is requested including traffic counts and/or emission estimates during the observing period.

2. Provide justification for applying AERMOD deposition Method 2 to the haul road modelling.

Agnico Eagle's Response to Technical Comment / Recommendation:

Response 1)

Additional information regarding ongoing efforts by Agnico Eagle to improve the dust management plan can be found in the 2016 All-Weather Access Road (AWAR) Dust monitoring Report (Agnico Eagle 2017a), and the 2016 Air Quality and Dustfall Monitoring Report (Agnico Eagle 2017b). A key finding from the dust monitoring report includes the following: *"Cumulative results to date indicate that without dust suppressant application, average rates of dustfall decline below Alberta Environment's guideline for recreational areas within 100 m of the AWAR and meet the range of background rates within 200 m."*

Further to this, Agnico Eagle refers INAC to the response to Technical Comment KivIA-TC-Air-05.

Response 2)

Method 1 particle deposition is most appropriate when the size distribution is known, or when TSP mass is dominated by large particles. Method 2 particle deposition is most appropriate when the size distribution is unknown and when TSP is dominated by small particles.

For the haul road, the size distribution was unknown, but was known to contain mostly large particles, (i.e., fugitive road dust). Since Method 1 will tend to predict higher deposition near the source, it will predict lower dust concentrations in ambient air. Conversely, Method 2 will tend to predict less deposition near the source, and therefore higher ambient concentrations in air. Since the concern is typically ambient air quality (i.e., risks to human health) use of Method 2 provides a more conservative estimate of these risks.

In this case, concern is highest for deposition and its potential effects on terrestrial and aquatic ecosystems. Notwithstanding, a sensitivity analysis was performed using similar inputs for Method 1 and Method 2. The results indicate the following:

1) Using Method 2 (FEIS Case), deposition rates were predicted to fall below the BC recreational standard of 0.51 mg/cm^2/30-day at distances of between 100 and 300 m from the haul road (i.e., 0.56 mg/cm^2/30-day at 100 m and 0.26 mg/cm^2/30-day at 300 m).

2) Using Method 1 (Sensitivity Test), deposition rates were predicted to fall below the BC recreational standard of 0.51 mg/cm^2/30-day at distances of between 300 and 500 m from the haul road (i.e., 0.60 mg/cm^2/30-day at 300 m and 0.32 mg/cm^2/30-day at 500 m).
3) At 1000 m the predicted deposition rates using the two methods are effectively identical (Method 1 = 0.12 mg/cm^2/30-day; Method 2 = 0.11 mg/cm^2/30-day).

There is always some subjectivity involved in preparing input assumptions for these types of models. In this case, using Method 1 appears to provide a more conservative estimate for dust deposition adjacent to the haul road, whereas Method 2 appears to provide a more conservative estimate for TSP concentrations in ambient air.

However, observations summarized in the 2016 All-Weather Access Road Dust Monitoring Report (Agnico Eagle 2016a) indicate that Method 1 or Method 2 represent sufficiently conservative estimates for dust deposition. The report states: *"Cumulative results to date indicate that without dust suppressant application, average rates of dustfall decline below Alberta Environment's guideline for recreational areas* <0.53 mg/cm^2/30-day> *within 100 m of the AWAR and meet the range of background rates within 200 m."*

As a result, the FEIS assessment conclusions do not change significantly based on the use of either Method 1 or 2 for particle deposition. While dust production during individual 24-hr periods may be high, maximum predicted monthly deposition rates adjacent to the haul road (using either Method), and observations of dustfall adjacent to the existing AWAR, indicate deposition rates fall below the applicable standards within approximately 300 m of the Haul Road.

References:

Agnico Eagle (Agnico Eagle Mines Limited). 2017a. Meadowbank Gold Project: 2016 All-Weather Access Road Dust Monitoring Report. March 2017.

Agnico Eagle. 2017b. Meadowbank Gold Project: 2016 Air Quality and Dustfall Monitoring Report. March 2017.

Interested Party:	Kivalliq Inuit Association (KivIA)	NIRB / NWB Ref No.:	KivIA-TC-Air-05 (PreTC-Air-5)
Re:	Mitigation of dust from the roads		

Technical Comment / Recommendation Made By Interested Party:

Revise the management/mitigation strategy for road dust to reflect an adaptive management approach which considers other types of dust control. Where appropriate, the management plan should consider or incorporate the results of the 2016 Meadowbank test program and the EnviroKleen test results from EKATI.

Agnico Eagle's Response to Technical Comment / Recommendation:

This response is identical to HC 02.

Currently Agnico Eagle has a dust management/mitigation plan that is implemented at the Nunavut mining operations and will be implemented at Whale Tail and for use of the haul road. Agnico Eagle's dust management/mitigation plan for its mining operations in Nunavut continues to improve. Best practices from the Meadowbank Mine, Vault Pit, and All-Weather Access Road will be applied to operations of the proposed Whale Tail Pit and Haul Road.

The Whale Tail Pit and Haul Road FEIS predicts dustfall adjacent to the haul road below the Alberta Environment guidelines at approximately 300 m from the haul road. These predictions are consistent with the results presented in the 2016 All-Weather Access Road Dust Monitoring Report (Agnico Eagle 2017a). The report states: *"Cumulative results to date indicate that without dust suppressant application, average rates of dustfall decline below Alberta Environment's guideline for recreational areas within 100 m of the AWAR and meet the range of background rates within 200 m." These results are consistent with the original Meadowbank FEIS.*

Nevertheless, due to community and stakeholder concerns, in 2016, Agnico Eagle completed a dust suppression study along the Baker Lake to Meadowbank AWAR (Agnico Eagle 2017a). Results of the study indicate that speed reductions designed to reduce dust generation were either too great to be practical, or too small to be effective (Agnico Eagle 2017a). Among competing dust-suppressants, TETRA Flake (a $CaCl_2$ product) was most effective at reducing the generation of road dust. Agnico Eagle historically has applied dust suppressants in the hamlet of Baker Lake and near the Meadowbank site. However in 2015/ 2016, Agnico Eagle met with the community groups including the HTO, which also identified two additional areas of concern between km 50 – 89 (the northern limit for public use), where dust suppressant will also be applied in 2017. This was based on the same principles identified to be of concern to the HTO, generally, proximity to waterbodies. Furthermore, Agnico Eagle will continue to apply suppressants at the locations previously treated. The following table highlights the areas where dust suppressant will be applied:

Table 1. Planned locations for dust suppressant application in 2017.

AWAR Location	Rationale
Agnico Eagle spud barge area	High traffic area near hamlet
Agnico Eagle tank farm to Arctic Fuel site	High traffic area near hamlet
km 0 - 5	High traffic area near hamlet
km 10 - 12	Area of concern to HTO – proximity to lake
km 24 - 26	Area of concern to HTO – proximity to lake
km 48 - 50	Area of concern to HTO – water crossing
km 68 - 70	Location identified by Agnico Eagle – water crossing
km 80 - 84	Location identified by Agnico Eagle – proximity to water & crossing
Emulsion plant turn off to Meadowbank site (km 103 – 110)	High traffic area

Agnico Eagle's adaptive management plan for mitigation of haul road dust along the Whale Tail Pit and Haul Road can be summarized in general as follows:

1) Low silt esker material is the preferred road top-dressing material used in construction.
2) After construction, problem areas will be identified and reported by Agnico Eagle staff (e.g., haul truck drivers), and top dressed with low silt esker material.
3) Initially, road watering will be applied to control problem areas.
4) Where dust problems persist, a chemical suppressant (e.g., TETRA Flake [$CaCl_2$]) will be used.

Consistent with the approach along the AWAR, Whale Tail Pit Haul Road watering and/or the application of chemical suppressants will also be employed in sensitive areas identified by local stakeholders or Agnico Eagle (e.g., adjacent to traditional land use areas). Improvements to best practices are expected over time and will continue to be informed by Agnico Eagle's Air Quality and Dustfall Monitoring Program (e.g., Agnico Eagle 2017b).

References:

Agnico Eagle (Agnico Eagle Mines Limited). 2017a. Meadowbank Gold Project: 2016 All-Weather Access Road Dust Monitoring Report. March 2017.

Agnico Eagle. 2017b. Meadowbank Gold Project: 2016 Air Quality and Dustfall Monitoring Report. March 2017.

Interested Party:	Kivalliq Inuit Association (KivIA)	NIRB / NWB Ref No.:	KivIA-TC-Terrestrial-01
Re:	Uncertainty in caribou responses to Whale Tail haul road		

Technical Comment / Recommendation Made By Interested Party:

The KivIA requests that AEM commit to, or the Nunavut Impact Review Board (NIRB) require AEM to:

1. AEM should conduct (or if conducted by GN, ensure that the analysis uses an appropriate design to address the potential deflection and delay in crossing of the Whale Tail haul road) an analysis of annual collar movements relative to AWAR to describe caribou movement rates including delays and deflections that includes metrics to assess changes in caribou speed, direction, and crossing time upon approach to or movement away from the road. The analysis should include annual traffic levels and hunting trips for AWAR. This analysis should be conducted as soon as possible, but at the latest prior to the final technical meetings in late April 2017.

2. KivIA does not consider it appropriate to see the evidence for EA conclusions be left at this stage in the EA review to an apparent debate between GN and AEM about the availability of data for analyses and permission to conduct the analysis. These data are available for the assessment, but unwillingness on the part of GN DoE to allow proponents to conduct their own analysis continues to hamper environment assessment for caribou in Nunavut. Should AEM and GN not be able to reach an appropriate data share agreement that provides the above analysis, NIRB should request that an independent body conduct these analyses as soon as possible and prior to the final technical meetings in late April.

3. If the above requested analysis is unavailable, then AEM should commit to more stringent conditions in the Terrestrial Ecosystem Management Plan (TEMP) to monitor and mitigate potential impacts to caribou resulting from the Project haul road (see KIVIA-IR-Terrestrial 03). These conditions should be established by the proposed Technical Advisory Group (see KivIA-TC-Terrestrial 04).

Agnico Eagle's Response to Technical Comment / Recommendation:

Response 1)

While Agnico Eagle agrees that the proposed analysis would be useful to guide the development of the TEMP and continues to work in collaboration with the GN (recently through a Memorandum of Understanding [MOU]) and finalized a data sharing agreement), the FEIS included conservative assumptions where there was uncertainty regarding barriers to movement, habitat loss, and sensory disturbance to provide a robust assessment of impacts. Agnico Eagle remains confident in the FEIS conclusion that the Project will not cause significant impacts to caribou.

As stated by the KivIA, to undertake the analysis, raw collaring data that is owned by the GN needs to be made available to Agnico Eagle to conduct an internal review. Although Agnico Eagle is a willing partner,

contributes to and supports the GN's caribou collaring program, raw data for the purposes of evaluating deflection has not been made available to Agnico Eagle to date, as it is currently begin analyzed by the GN, for the purposes outlined by the KivIA. Agnico Eagle looks forward to discussing and participating in the future evaluation of these data and has been encouraged by the recent finalization of the MOU with the GN and by the November and February workshop participants (GN, KivIA, HTO, and Agnico Eagle) that future evaluations and analysis of annual collar movements relative to Meadowbank AWAR and Whale Tail Haul Road will include all available data. Through several workshops and other communications with the GN, Agnico Eagle recognizes the need for the analysis; however, to date, the delivery of the KivIA request is managed by the GN.

Response 2)
Agnico Eagle and the GNDoE have recently finalized an MOU data sharing agreement to acquire the complete collar data set, and further understands that the GNDoE is currently working on the analysis as described by KivIA. Agnico Eagle is aware that initial analysis of the data has been completed by the GN and suggests that if any direction is to be provided by NIRB this undertaking would be best suited with the GN to provide the requested analysis. Agnico Eagle will continue to work with the GN and will provide any support required to undertake the analysis. Agnico Eagle disagrees with the KivIA's suggestion to involve a third party as, the same barriers to obtaining the information from the GN may be encountered if NIRB directs a third party to complete the analysis.

Although these data and analysis are important, Agnico Eagle used conservative assumptions regarding the impact of the Project on caribou barriers to movement, habitat loss and sensory disturbance, and remains confident in the FEIS conclusion of no significant impacts.

Response 3)
Agnico Eagle agrees that there is value to Terrestrial Advisory Group including GNDoE, HTO, KivIA, and Agnico Eagle. Agnico Eagle discussed this idea with workshop participants and it was generally agreed that this group could meet annually to review monitoring results, mitigation implementation, and any other relevant information related to wildlife issues. Agnico Eagle could include Terrestrial Advisory Group recommendations in the TEMP, as part of the annual reporting.

Interested Party:	Kivalliq Inuit Association (KivIA)	NIRB / NWB Ref No.:	KivIA-TC-Terrestrial-02
Re:	Uncertainty in cumulative effects on caribou distribution		

Technical Comment / Recommendation Made By Interested Party:

The KivIA requests that, prior to technical meetings tentatively scheduled for late April 2017, AEM undertake a revised cumulative effects assessment.

Agnico Eagle's Response to Technical Comment / Recommendation:

The cumulative effects summary provided in Volume 3, Appendix 3-D indicated that there are few other active developments in either the Kivalliq region or in the range of the overlapping caribou herds, but some reasonably foreseeable future development near the Project. These past, present and possible future developments were considered in the assessment of effects to caribou in the FEIS. Agnico Eagle is open to discussing the cumulative effects assessment provided in the FEIS, in particular any available information that could enhance the FEIS or Appendix 3-D. With regards to incremental and cumulative effects to caribou distribution in particular, please refer to the response provided to KivIA-TC-Terrestrial-01.

Interested Party:	Kivalliq Inuit Association (KivIA)	NIRB / NWB Ref No.:	KivIA-TC-Terrestrial-03
Re:	Caribou monitoring and mitigations in the Terrestrial Ecosystem Management Plan (TEMP)		

Technical Comment / Recommendation Made By Interested Party:

The KivIA requests that AEM commit to, or NIRB require AEM to:

1. To evaluate residual impacts, prior to technical meetings tentatively scheduled for late April 2017 AEM should:

a) Clarify how monitoring will be effectively conducted to address caribou abundance and distribution at intermediate distances (>300 m to 5 km) from the Project;

b) Provide information showing the relationship for AWAR among the collar pathways, road survey results, and Height of land sightings.

c) Clarify how "unnatural caribou use patterns" will be quantified, and clarify what will be the basis for "natural" caribou use patterns relative to annual variation.

d) Provide details on caribou-specific mitigation that will be applied at Levels 1 through 3 to reduce or eliminate potential sensory disturbance for caribou resulting from the haul road, including on caribou numbers as thresholds for closure of the haul road and for convoying;

e) Clarify how more stringent mitigation will be applied in light of the uncertainty in the apparent deflection of caribou away from the Meadowbank AWAR and to the north where the proposed Whale Tail haul road will be located.

Agnico Eagle's Response to Technical Comment / Recommendation:

Response a)

Based on the baseline data for caribou movements, height-of-land survey locations were selected along the road to address caribou abundance and distribution. Based on recent viewscape analysis, Agnico Eagle is confident the selected height-of-land locations, concomitantly with collaring data, have the ability to detect caribou moving toward the Project from up to 3 to 5 km at these locations. As previously stated, Agnico Eagle encourages the KivIA and GN biologists to visit these locations with Agnico Eagle technicians and biologists, and make suggestions on how best to improve our ability to detect caribou with proven technology. As discussed in the February workshop, the updated TEMP will include monitoring thresholds based on collar movements and the visibility of caribou from the height-of-land survey points. This will result in thresholds being set by the accuracy and frequency of collar locations and by viewsheds, rather than prescribed distances from the Project.

Response b)

The value of any analysis showing the relationship or overlap between height-of-land survey results, road survey results and collared caribou movements is limited with the information currently available to Agnico Eagle (i.e., daily caribou locations only), as caribou move too far in a day to distinguish such

detail in their interactions with the road (e.g., see Figure 9.2 in Gebauer et al. 2016). Agnico Eagle is willing to undertake such multi-year analysis in partnership with the GN and is expecting that the ongoing analysis of collar movements by GNDoE may provide more insight.

Responses c), d), e)
The revised TEMP, which was discussed during a workshop on February 22 and 23 with the GN, KivIA, and HTO and will be provided to NIRB prior to the Final Hearing, will provide updated thresholds for caribou sensory disturbance mitigation, and updated mitigation.

References:

Gebauer, M., A. Crampton, J. Shaw, and I. Laing. 2016. Meadowbank Mine: 2015 Wildlife Monitoring Summary Report. Prepared for Agnico Eagle Mines Ltd.

Interested Party:	**Kivalliq Inuit Association (KivIA)**	**NIRB / NWB Ref No.:**	**KivIA-TC-Terrestrial-04**
Re:	**Terrestrial Advisory Group for wildlife monitoring and mitigation**		

Technical Comment / Recommendation Made By Interested Party:

The KivIA requests that AEM commit to establishing a technical Terrestrial Advisory Group prior to submission of the final draft TEMP that will meet regularly to review and discuss environmental effects monitoring and mitigation measures related to the Whale Tail Project and the Meadowbank mine and AWAR.

Agnico Eagle's Response to Technical Comment / Recommendation:

Agnico Eagle agrees that there is value to forming a Terrestrial Advisory Group with a specific mandate and meeting schedule and would also be based on an agreed to Terms of Reference between Agnico Eagle and key participants.

Interested Party:	Kivalliq Inuit Association (KivIA)	NIRB / NWB Ref No.:	KivIA-TC-Terrestrial-05
Re:	Uncertainty in effects of dust on lichen (caribou forage) from Whale Tail pit and haul road		

Technical Comment / Recommendation Made By Interested Party:
The KivIA requests that AEM commit to, or NIRB require AEM to:

1. AEM to provide evidence to demonstrate that dust, especially fine particle dust from the pit and haul road, will not have an effect on caribou lichen forage.

2. AEM to provide a more rigorous management/mitigation strategy for road dust suppression along the Whale Tail haul road.

Agnico Eagle's Response to Technical Comment / Recommendation:
Response 1)
Dust deposition is currently monitored through the Air Quality and Dustfall Monitoring Plan (Agnico Eagle 2013, 2017a). The monitoring to date has found that most of the dustfall settles within 100 m of the downwind side of the All-Weather Access Road (AWAR), and dustfall levels typically fall within background levels within 300 m of the AWAR. The monitoring results to date indicate that the FEIS predictions are not being exceeded.

The Wildlife Screening Level Risk Assessment (Agnico Eagle 2015) submitted to NIRB in compliance with Project Certificate No.004 considered dust emissions from all major sources at the Project and found that risk to ungulates (caribou), small mammals (northern red-backed vole), and waterfowl (Canada geese) was negligible for all contaminants of potential concern in all locations. Analysis of vegetation communities and metal levels in unwashed lichen surrounding the Diavik Mine found localized changes in vegetation communities and increases in metal levels, but metal levels apparently decreased following cessation of open-pit mining (Golder 2014).

Reduced habitat quality due to dust on vegetation and other sensory disturbance mechanisms (i.e., noise, smells, vibrations, movement, lights) were considered in the assessment of impacts to caribou in the FEIS.

Response 2)
Additional information regarding ongoing efforts by Agnico Eagle to improve the dust management plan can be found in the 2016 AWAR Dust Monitoring Report (Agnico Eagle 2017b) submitted with 2016 Annual Report, and the 2016 Air Quality and Dustfall Monitoring Report (Agnico Eagle 2017a). Furthermore, Agnico Eagle reminds KivIA that there are fewer fines or silt particles in the esker material that will be used to top dress the haul road and therefore expect dust to settle below BC guidelines

within 300 m of the haul road. A key finding from Agnico Eagle (2017) includes the following: *"Cumulative results to date indicate that without dust suppressant application, average rates of dustfall decline below Alberta Environment's guideline for recreational areas within 100 m of the AWAR and meet the range of background rates within 200 m."* The 2016 AWAR Dust Monitoring Report (Agnico Eagle 2017b) also describes trials with three dust suppression methods, including reduced speed limits and two dust suppression products. The trials indicated that TETRA Flake is likely the most effective method of reducing dust; where fugitive dust problems persist, road watering will be applied or if deemed necessary, TETRA Flake will also be applied to control problem areas along the Whale Tail Pit haul road.

Lastly, Agnico Eagle refers KivIA to Technical Comment KivIA-TC-Air-05, which outlines a rigorous management/mitigation strategy for road dust suppression.

References:

Agnico Eagle (Agnico Eagle Mines Limited). 2013. Meadowbank Gold Project 2014 Air Quality and Dustfall Monitoring Plan. In Accordance with NIRB Project Certificate No.004

Agnico Eagle. 2015. Meadowbank Gold Project 2014 Wildlife Screening Level Risk Assessment. In Accordance with NIRB Project Certificate No.004

Agnico Eagle. 2017a. Meadowbank Gold Project: 2016 Air Quality and Dustfall Monitoring Report. March 2017.

Agnico Eagle. 2017b. Meadowbank Gold Project: 2016 All-Weather Access Road Dust Monitoring Report. March 2017.

Golder (Golder Associates Ltd.). 2014. 2013 Comprehensive Vegetation and Lichen Monitoring Program. Prepared for Diavik Diamond Mines Inc.

Interested Party:	**Kivalliq Inuit Association (KivIA)**	**NIRB / NWB Ref No.:**	**KivIA-TC-Terrestrial-06**
Re:	**Uncertainty in effects of Whale Tail pit and haul road activities on caribou distribution (Zone of Influence)**		

Technical Comment / Recommendation Made By Interested Party:

The KivIA requests that AEM include an analysis for the extent of the Zone of Influence around the existing Meadowbank mine and AWAR using the satellite collared caribou.

Agnico Eagle's Response to Technical Comment / Recommendation:

Agnico Eagle agrees to investigate whether there is sufficient data to reliably calculate a Zone of Influence (ZOI) around the existing Meadowbank Mine and AWAR, assuming that the entire collar data set can be made available. This information may guide the development of the TEMP, but the conclusions in the FEIS were sufficiently conservative that they will not be affected by this analysis.

References:

Boulanger, J., K. G. Poole, A. Gunn, and J. Wierzchowski. 2012. Estimating the zone of influence of industrial developments on wildlife: a migratory Caribou and diamond mine case study. Wildlife Biology 18: 164-1

NATURAL RESOURCES CANADA

Interested Party:	**Natural Resources Canada (NRCan)**	**NIRB Ref No.:**	**NRCan 1**
		NWB Ref No.	**n/a**
Re:	**Explosives**		

Technical Comment / Recommendation Made By Interested Party:

NRCan recommends that the Proponent:

- *Refer to the Explosives Regulations, 2013, that are in force and are applicable for this project.*
- *Refer to the Canadian Standard, Explosives–Quantity Distances Standard CAN/BNQ 2910-510/2015*
- *Refer to the Canadian Standard, Explosives – Magazines for Industrial Explosives CAN/BNQ 2910-500/2015.*

Agnico Eagle's Response to Technical Comment / Recommendation:

Agnico Eagle appreciates that NRCan is satisfied with the explosives information provided and acknowledges that any application submitted to NRCan's Explosives Regulatory Division will provide the details requested and take into account the most recent applicable regulations, and referenced standards.

Interested Party:	**Natural Resources Canada (NRCan)**	**NIRB Ref No.:**	**NRCan 2**
		NWB Ref No.	**n/a**
Re:	**Baseline Permafrost and Terrain Conditions in the Project Area**		

Technical Comment / Recommendation Made By Interested Party:

NRCan recommends that the Proponent conduct further site specific investigations (such as geotechnical boreholes indicated in response to NRCan IR 1), to better characterize ground ice conditions and identify sensitive terrain in the project area.

Agnico Eagle's Response to Technical Comment / Recommendation:

The NRCan IR 1, submitted on January 20, 2017, response was:

> *At the time of the Application, the information regarding the overburden thickness was mainly provided from exploration drillholes and based on a dataset of approximately 1100 holes where the average estimated thickness of the overburden is 7.7 m.*
>
> *Planning for 2017 is to add additional geotechnical drillholes dedicated to the investigation of the soils. These drillholes are positioned at planned locations of various infrastructures, such as dikes, ponds, and the waste rock storage facility and some thermistors will be grouted in place. The depth of the active layer can vary based on material type and water content, presence or absence of vegetation, proximity to water, and general topographic aspect (e.g., the direction the slope faces, either north, south, east, or west), but is relatively consistent over regional areas. The active layer is deeper in poorly drained low lying areas, and shallower in well drained areas such as ridge lines. As reported in the baseline report (Volume 5, Appendix 5-A of FEIS), the depth of the active layer for the site is based on observations made at Meadowbank Mine (located approximately 50 km southeast of the property) and ranges from 1.3 m in areas with shallow overburden to about 4 m adjacent to lakes (Cumberland 2005).*

Agnico Eagle is confident in the FEIS characterization of the ground ice conditions and identified sensitive terrain in area where main structures will be built. Additional drilling is ongoing to feed the engineering. More specifically, geotechnical investigations are presently underway in the area of the WRSF (4 holes). Three of them are planned for the investigation of the WRSF Dike and one inside the Whale Tail WRSF footprint for stability analysis purposes. Twenty-two other holes are planned, most of them (16) in the area of the Whale Tail Dike, five in the area of the Whale Tail Attenuation Pond and, one in the area of Whale Tail Camp. Considering the 14 holes performed in 2015 (Agnico Eagle 2015), the sum of geotechnical drillholes that are planned within the Whale Tail Pit area is 40. These additional drillhole data will provide Agnico Eagle a thorough understanding of the ground ice and geotechnical conditions of the site prior to construction and operations of Whale Tail Pit.

References:

Cumberland (Cumberland Resources Ltd.). 2005. Meadowbank Gold Project Baseline Physical Ecosystem Report.

Agnico Eagle Mines Limited. 2015. Amaruq Dikes PFS – Geotechnical Investigation Report, Instrumentation Monitoring and Field Observation Summary, 4 p. + Appendix.

Interested Party:	**Natural Resources Canada (NRCan)**	**NIRB Ref No.:**	**NRCan 3**
		NWB Ref No.	**n/a**
Re:	**Design Cover Thickness for the Waste Rock Storage Facility**		

Technical Comment / Recommendation Made By Interested Party:

NRCan recommends that thermal modelling incorporating climate change be conducted to support final design of the WRSF, including cover thickness at closure required to ensure that frozen conditions are maintained in the PAG material over the long-term. This modelling should incorporate information acquired from the Meadowbank WRSF monitoring program.

NRCan recommends that the Proponent carry out its plans for thermal monitoring in the Whale Tail WRSF to refine closure plans for the WRSF

Agnico Eagle's Response to Technical Comment / Recommendation:

Agnico Eagle will perform thermal modelling of the WRSF, incorporating climate change and acquired information from the Meadowbank WRSF monitoring program, and will use the result of the model to support final design of the WRSF including that of the proposed cover. Modelling results and revised design, if any, will be submitted to interested parties prior to operations. This will be included as part of an updated Whale Tail Pit – Waste Rock Management Plan (Agnico Eagle 2017). This updated document will present the modelling results to support, a site specific cover design, and proposed locations of thermistors for long-term monitoring.

References:

Agnico Eagle (Agnico Eagle Mines Limited). 2017. Whale Tail Pit – Waste Rock Management Plan, Version 1, January 2017.

Interested Party:	**Natural Resources Canada (NRCan)**	**NIRB Ref No.:**	**NRCan 4**
		NWB Ref No.	**n/a**
Re:	**Permafrost and Talik Distribution in the Project Area**		

Technical Comment / Recommendation Made By Interested Party:

To support development of the groundwater model for final design, NRCan recommends the Proponent consider thermal modelling along a transect through the deeper portion of the lake (i.e. following line LS) to be encompassed by the pit to determine configuration of the talik in this area.

Agnico Eagle's Response to Technical Comment / Recommendation:

Additional thermal analyses as recommended by NRCan were undertaken in February 2017. At this time Agnico Eagle reviewed thermistor data collected to date at the site and undertook analyses to re-assess talik conditions under Whale Tail Lake based on the results of numerical thermal modelling from north of the Whale Tail Pit, south through the middle of Whale Tail Lake .

The updated thermal modelling results are consistent with what was presented in the FEIS Volume 6, Appendix 6-A. Results to date have suggested that from north to south cross-section through the middle of Whale Tail Lake, conditions are expected to transition from permafrost conditions (i.e., no talik) north of the lake to closed talik conditions at the Whale Tail Pit and then to open talik conditions south of the open pit.

Interested Party:	**Natural Resources Canada (NRCan)**	**NIRB Ref No.:**	**NRCan 5**
		NWB Ref No.	**n/a**
Re:	**Groundwater Sampling**		

Technical Comment / Recommendation Made By Interested Party:

NRCan is satisfied with the proponent's sampling strategy (Volume 6 Freshwater Environment, Section 6.2.5 Monitoring and Follow-Up).

Agnico Eagle's Response to Technical Comment / Recommendation:

Agnico Eagle acknowledges and thanks NRCan for the comment.

Interested Party:	**Natural Resources Canada (NRCan)**	**NIRB Ref No.:**	**NRCan 6**
		NWB Ref No.	**n/a**
Re:	**Long-term Water Quality in the Flooded Pit**		

Technical Comment / Recommendation Made By Interested Party:

NRCan is in agreement with the proponent's response and recommends that the proponent continue verifying the hypothesis that the pit acts as a recharge area using continuous monitoring throughout the mine's life.

Agnico Eagle's Response to Technical Comment / Recommendation:

Agnico Eagle acknowledges NRCan's comment and will continue verifying the hypothesis that the pit acts as a recharge area using continuous monitoring throughout the mine's life.

Interested Party:	**Natural Resources Canada (NRCan)**	**NIRB Ref No.:**	**NRCan 7**
		NWB Ref No.	**n/a**
Re:	**Groundwater Quality**		

Technical Comment / Recommendation Made By Interested Party:

NRCan recommends, as also suggested by the proponent, to assess the hydrogeological characterization from site specific samples.

Agnico Eagle's Response to Technical Comment / Recommendation:

Agnico Eagle agrees with the recommendation of NRCan and in 2016 installed a multi-level Westbay well beneath Whale Tail Lake near the proposed attenuation pond and near the pit location to collect representative groundwater samples. Agnico Eagle has used the results of the site specific groundwater sample collection analyses to characterize the baseline groundwater chemistry and hydrogeological characterization. Agnico Eagle will continue to monitor the groundwater conditions and hydrogeological characterization of the Whale Tail Pit site according to the FEIS Volume 8, Appendix 8-E.3.

Interested Party:	**Natural Resources Canada (NRCan)**	**NIRB Ref No.:**	**NRCan 8**
		NWB Ref No.	**n/a**
Re:	**Groundwater Modelling**		

Technical Comment / Recommendation Made By Interested Party:

NRCan is satisfied with the proponent's commitment to NRCan's recommendation that the groundwater model be validated and adjusted on the basis of knowledge and additional data acquired during the mining operations.

Agnico Eagle's Response to Technical Comment / Recommendation:

Agnico Eagle acknowledges NRCan's comment.

TRANSPORT CANADA

Interested Party:	**Transport Canada (TC)**	**NIRB Ref No.:**	**TC 1**
		NWB Ref No.	**n/a**
Re:	**Dewatering of Mammoth Lake and Whale Tail Lake**		

Technical Comment / Recommendation Made By Interested Party:

Transport Canada is reviewing the information submitted by Agnico Eagle Mines Ltd. to date and will participate in the Community Roundtable and Pre-Hearing Conference to further engage with surrounding communities and help determine the navigability of Mammoth and Whale Tail Lake.

Agnico Eagle's Response to Technical Comment / Recommendation:

Agnico Eagle looks forward to further discussions with Transport Canada at the Pre-hearing Conference and Community Roundtable to determine the navigability of Mammoth and Whale Tail lakes.

Interested Party:	**Transport Canada (TC)**	**NIRB Ref No.:**	**TC 2**
		NWB Ref No.	**n/a**
Re:	**Dewatering of Mammoth Lake and Whale Tail Lake**		

Technical Comment / Recommendation Made By Interested Party:

Agnico Eagle Mines Ltd. has chosen not to Opt-In for their project related in-water works on non-Scheduled waterways reviewed under the NPA. Transport Canada recommends that Agnico Eagle Mines Ltd. undertake a full assessment on impacts to navigation for the in-water works on non-Scheduled waterways. The responsibility to assess and address potential impacts to navigational access and safety resulting from these works rests with Agnico Eagle Mines Ltd..

Agnico Eagle's Response to Technical Comment / Recommendation:

Section 1.1.10.2 states that Agnico Eagle does not believe that waterways at the Whale Tail site are navigable under the *Navigation Protection Act* (NPA) (i.e., Whale Tail Lake, Nemo Lake, Mammoth Lake). Although these lakes could support a small boat or canoe, specific use of these lakes for navigability was not identified by community members/land users during consultation for the Project and therefore is not presently, nor in the future, expected to be an aqueous route for navigational purposes. While not explicitly assessed in the pathway Table 3-C-5 (Volume 3, Appendix 3-C), potential impacts on navigation and navigation safety of lakes at the Whale Tail site can be evaluated as "no linkage", given that these lakes are not known to have been historically navigated, without previous road access. As stated in Section 1.1.10.2, Agnico Eagle will work with Transport Canada to ensure compliance with the *NPA*, and looks forward to further discussions with Transport Canada at the Pre-hearing Conference and Community Roundtable.