MELIADINE PROJECT

WATER LICENCE AMENDMENT

NOVEMBER 30, 2020

AGNICO EAGLE

KIA TECHNICAL COMMENTS

KIA-IR1 – FEIS WATER QUALITY PREDICTION

AGNICO EAGLE

Water Licence Amendment

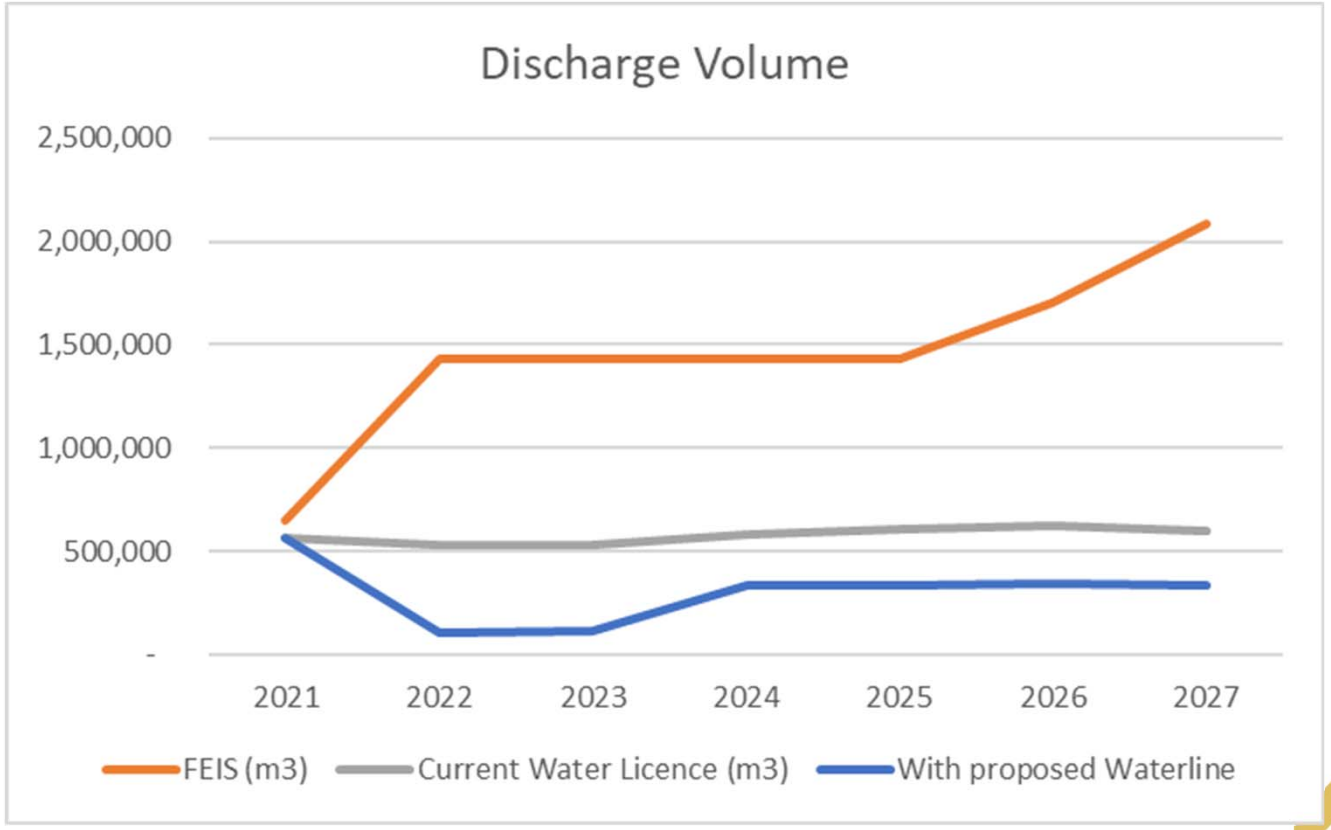
- Propose TDS concentration of 3,500 mg/L

SD2-6 Surface Water Management Plan (FEIS, 2014)

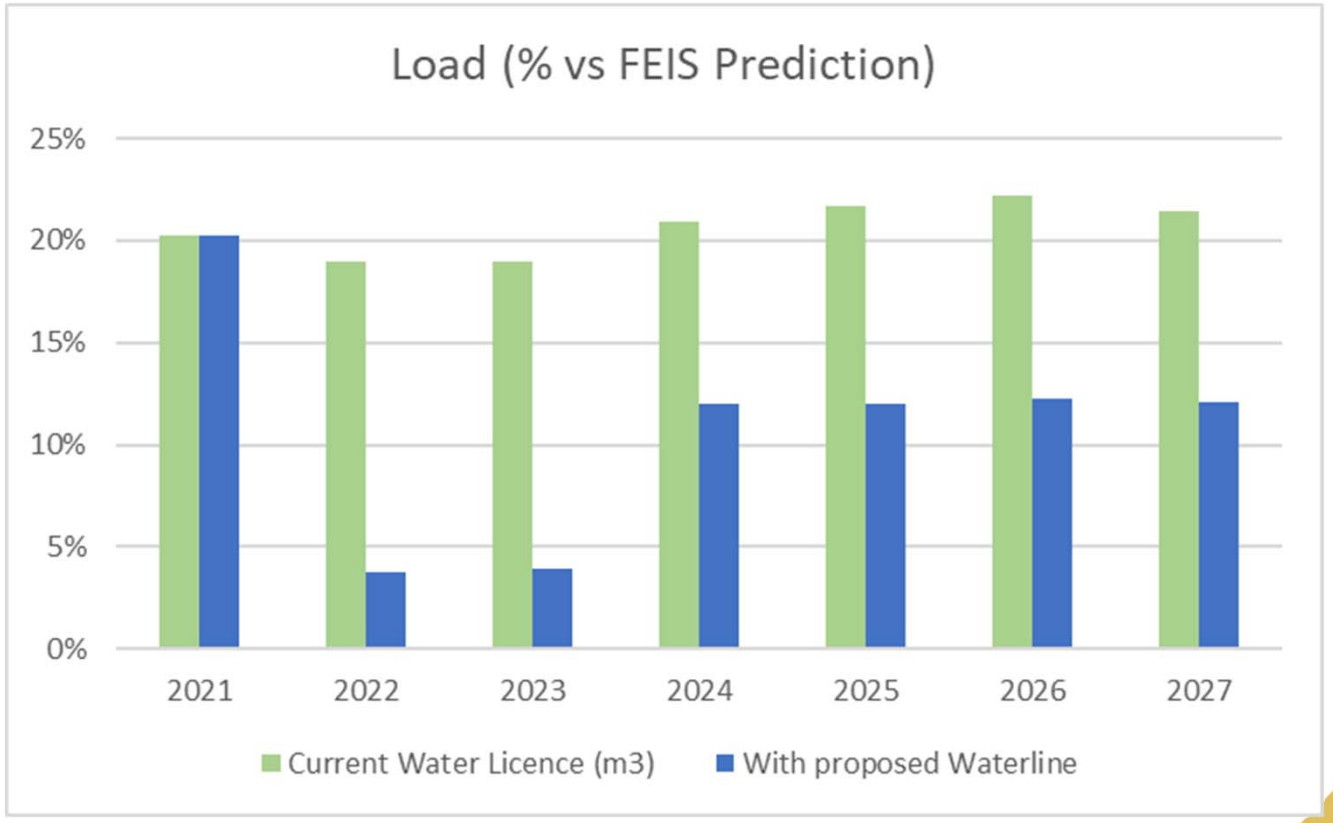
- Effluent TDS concentration of 4,685 mg/L

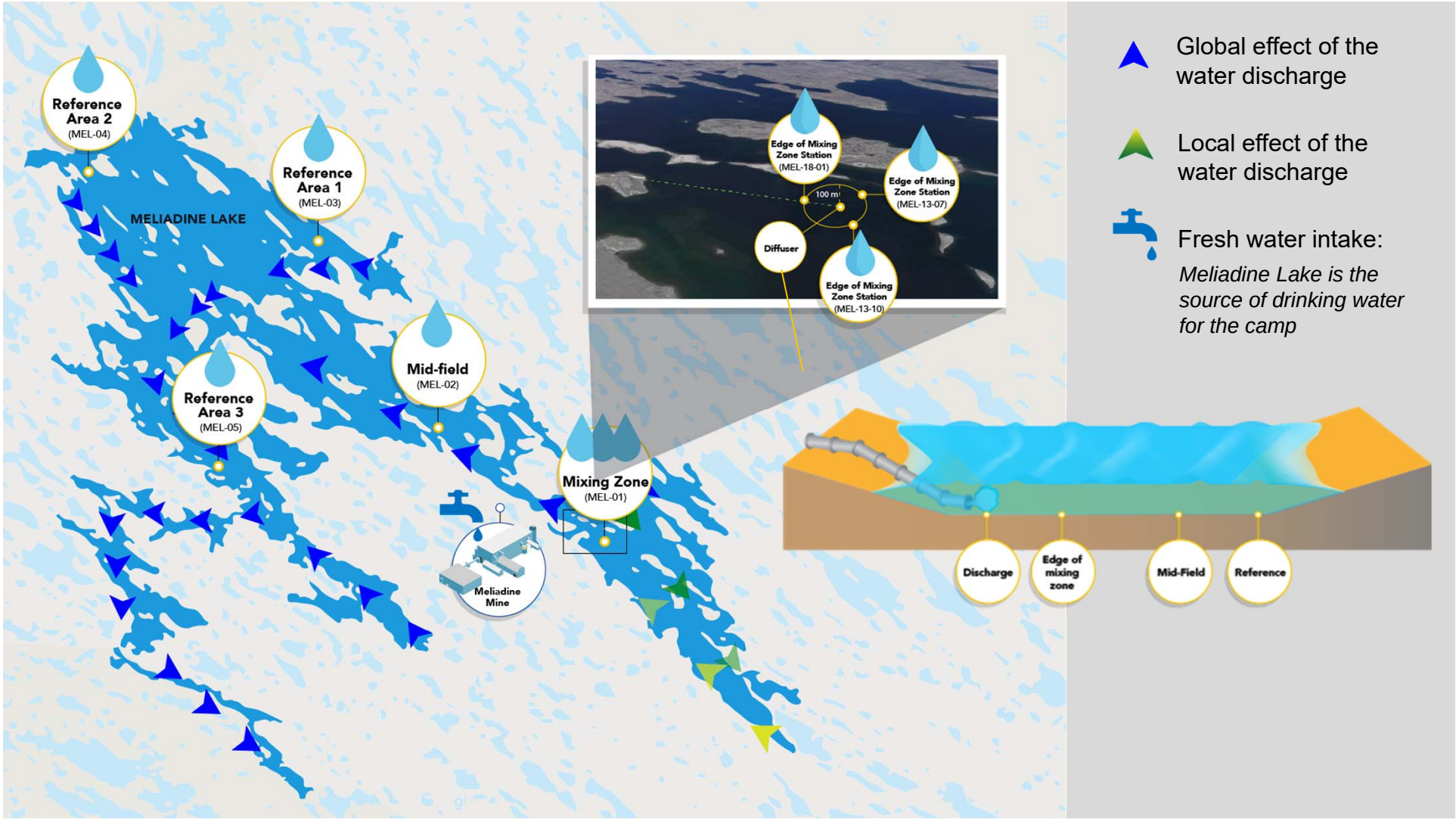
Year	Current Water Licence	Estimated Annual Volumes from Water Balance (FEIS, SD 2-6, Table 16)
2021	566,507	650,813
2022	530,209	1,431,190
2023	531,536	1,431,190
2024	585,135	1,431,190
2025	606,411	1,431,190
2026	621,621	1,706,600
2027	598,985	2,088,900

KIA-IR1 – FEIS WATER QUALITY PREDICTION



KIA-IR1 – FEIS WATER QUALITY PREDICTION




Reference Area 2 (MEL-04)
Reference Area 1 (MEL-03)
MELIADINE LAKE
Reference Area 3 (MEL-05)
Mid-field (MEL-02)
Mixing Zone (MEL-01)
Meliadine Mine
Edge of Mixing Zone Station (MEL-18-01)
Edge of Mixing Zone Station (MEL-13-07)
100 m
Diffuser
Edge of Mixing Zone Station (MEL-13-10)
Discharge
Edge of mixing zone
Mid-Field
Reference
Global effect of the water discharge
Local effect of the water discharge
Fresh water intake:
Meliadine Lake is the source of drinking water for the camp

KIA-IR1 – MELIADINE LAKE TDS PREDICTION

AGNICO EAGLE

Station	Baseline	1,400 mg/L Forecast	2020 Monitoring Results	3,500 mg/L Forecast
Reference Stations	21 – 91 mg/L (mean = 37 mg/L)	-	23 – 70 mg/L	-
		-		-
		-		-
Mid-field		49 mg/L	32 – 80 mg/L	Max. ~180 mg/L
Mixing Zone Boundary			32 – 115 mg/L	

KIA-IR1 – COMMUNITY CONSULTATION

AGNICO EAGLE

Aquatic Effects Monitoring Program 2019 Annual Report

Meliadine Gold Project

2019 AEMP | March 2020

Prepared for:

EXECUTIVE SUMMARY

This document summarizes results of the 2019 Aquatic Effects Monitoring Program (AEMP) for Agnico Eagle's Meliadine Gold mine in the Kivalliq region of Nunavut. The AEMP was developed through consultation with communities, stakeholders, and regulators and serves as an integrated monitoring program for the aquatic receiving environment that encompasses all phases of mine development. The AEMP is designed to assess whether activities at the mine are causing changes in water quality that could affect aquatic life or human use of surface water resources.

KIA-IR1 – COMMUNITY CONSULTATION

AGNICO EAGLE

Main Application Document – Type A Water Licence Application – April 2015

1.5.1.1 Fish Resources and Water Quality

Fishing for Arctic char and Arctic grayling continues to be important to Inuit, and the rivers and Meliadine Lake are considered good fishing sites. Inuit Qaujimajatuqangit confirms that Arctic char migrate from the lakes down to the sea via rivers in spring and summer, and travel back upstream to the lakes in the early fall. In addition, IQ confirms that Arctic char prefer very clean waters, and any contamination to water could have adverse effects on this species. Community concerns raised include potential negative effects of the Project on water quality from contamination in the event of a disaster or bad practice, or by dust or spills along the AWAR. Public concern is that this contamination could jeopardise fish populations in Meliadine River, Meliadine Lake, and other waterbodies in the Meliadine watershed.

KIA-IR1 – COMMUNITY CONSULTATION

Project Certificate T&C

TC 27 : Hydrology and Sediment Quality – Aquatics Effects Monitoring Plan

Objective: To mitigate potential impacts to surface waters

Term and Condition:

The Proponent shall update its Aquatic Effects Monitoring Plan (AEMP) to include, at a minimum:

Details regarding the monitoring of non-point sources of discharge, selection of appropriate reference sites, measures to ensure the collection of adequate baseline data at Meliadine Lake prior to and during construction activities, including information on chemical loading in the snowpack, and the mechanisms proposed to monitor for and treat runoff and sediment;

A description of measures to be undertaken as relate to dustfall monitoring, designed in accordance with the following:

a. To establish Phase 1 all-weather access road baseline data and a description of plans for data collection during Project operations for comparison;
b. To facilitate comparison with existing guidelines;
c. To assess the seasonal deposition (rates, quantities) and chemical composition of dust entering aquatic systems along representative distance transects of the all-weather access road and Rankin Inlet by-pass road;
d. A description of water quality monitoring to be conducted at Little Meliadine Lake; and
e. Details regarding comparisons of results to be run against predicted values and the analysis of data to be undertaken on an annual basis, or as may be required.

•

KIA-IR1 – COMMUNITY CONSULTATION

Project Certificate T&C

TC 30 : Freshwater Aquatic Environment – Aquatic Effects Monitoring Plan

Objective: To monitor and mitigate potential effects to the freshwater aquatic environment

Term and Condition:

The Proponent shall update its Aquatic Effects Monitoring Plan (AEMP) to include, at a minimum:

Provide details for additional reference lakes to be included within its sampling and monitoring programs;

a. Updates to include sedimentation within relevant monitoring programs; and
b. Results from additional testing for mercury in fish tissue, and include test results in updated baseline data.

KIA-IR1 – MELIADINE LAKE HEALTH ASSESSMENT

Water Quality.

- Concentrations of water quality parameters remain well below levels that raise concern for human health or wildlife health. The development of the mine, and in particular the release of treated water, has resulted in increased concentrations of some parameters relative to the baseline period, but these changes are consistent with changes that were outlined in the Final Environmental Impact Statement.

Fish Consumption.

- No information on the usability of the domestic fishery has been collected since the baseline fish tissue chemistry program in 2015. Studies planned for 2021 will help determine if parameters are accumulating in fish tissue to levels that are cause for concern for human health and for the health of wildlife and bird species that feed on fish.

Ecological Health.

- The aquatic food web in Meliadine Lake, from phytoplankton to benthic invertebrates to fish, appears healthy, diverse, and functionally stable. There is no evidence of wide-spread loss of species diversity, and the abundance of lower trophic level communities continues to support a healthy and stable fish population. In summary, biological communities close to the mine are, in very general terms, similar to communities farther away in Meliadine Lake where the influence of the mine is not detected. Based on the available monitoring data, mine operations and water discharge to Meliadine Lake are not impacting the ecological function of the lake.

KIA-IR1 – REDUCTION AT THE SOURCE

AGNICO EAGLE

Only 28% of the TDS loadings in CP1 are coming from CP3, CP4, CP5 and CP6

Reduction at the source would not have been sufficient to reduce TDS level in CP1 under the 1,400 limit

Table 3-1 Estimated TDS Loads from CP3, CP4, CP5 and CP6 Ponds in 2019 and 2020

Year	Month	TDS Load to CP1 (t)					
		Rest of Site	CP4	CP3	CP5 (Note 1)	CP6	Sub-Total
2019	June	273	12	12	156	0	**453**
	July	408	17	6	0	0	**432**
	August	97	0	39	0	0	**136**
	September	583	59	44	0	0	**685**
	October	47	0	0	31	0	**78**
2019	**Total**	**1 408**	**88**	**101**	**187**	**0**	**1 785**
2020	June	12	10	13	31	2	**68**
	July	19	5	17	100	7	**148**
	August	68	13	30	0	32	**143**
	September	191	42	34	37	31	**335**
	October	84	32	28	0	20	**163**
2020	**Total**	**373**	**101**	**123**	**168**	**92**	**857**

KIA-IR1 – REDUCTION AT THE SOURCE

AGNICO EAGLE

Modification to water management system involving RO under current permitted conditions

a. Unnecessary risk to saline water management via additional brine production – as supporting evidence shows 3,500 mg/L TDS is safe to receiving environment

b. Brine production (waste stream from the RO – 20% of inflow) would be the equivalent of the saline inflows coming from 2-3 additional Underground Mines

c. Based in 2019 and 2020 TDS mass loading, application of RO at CPs would not have reduced CP1 concentration below 1,400 mg/L even with 100% treatment

d. Treatment capacity unable to meeting pond design pumping requirements for freshet and IDF flood events, which may result in inability to apply RO at times

e. Not feasible during heavy rainfall durations

f. Systems are finicky to work with, prone to failure and frequent maintenance

KIA-IR9 – REDUCTION AT THE SOURCE

Out of scope, annual report question

Mine Plan from 2019 waste management plan changed.

- Tiri 2 mining is continuing.
- SP4 is predicted to be at capacity in May 2021. At that time, Tiri 2 mining will stop and used as a storage pond.
- Once waterline is approved and the water in SP4 (Tiri-1) and Tiri-2 is disposed, mining in Tiri 2 will be resumed.

KIA-IR9 – REDUCTION AT THE SOURCE

Groundwater management plan

- Short term:
  - Store water on site
  - SP4 capacity would be reached at May 2021
  - Tiri 2 capacity would be reached in 2024-2027 depending of the groundwater inflows
- Medium term
  - Discharge to Melvin Bay with truck
  - SWTP and discharge to Meliadine Lake
- Long term
  - Discharge to Melvin Bay with the Waterline