MELIADINE GOLD MINE – EMERGENCY AMENDMENT

NWB Technical Meeting

April 16, 2020

PRESENTATION SUMMARY

- Review of Emergency Amendment
- Summary of Key Technical Items
- Questions and Discussion

RATIONALE FOR AMENDMENT

EMERGENCY AMENDMENT – RATIONALE

- Agnico Eagle is seeking approval for an expedited amendment to the Meliadine Water License 2AM-MEL1631 for the ability to release waters from Containment Pond 1 (CP1) commencing in May 2020
- To support release of these waters, approval is requested for:
  - A time-limited amendment of the total dissolved solid (TDS) discharge criteria set out at Part F, Item 3 of Water Licence 2AM-MEL1631 to permit discharge at levels of an average of 3,500 mg/L, only to be in effect for 2020 CP1 discharge season
  - Approval of the Water Quality Management and Optimization Plan (WQ-MOP)

- NWB advised that their standard applicable timelines for amendment of the Water Licence cannot be completed by May 1, 2020 unless the application is declared an emergency amendment
  - No emergency at the Meliadine Mine currently exists, and no emergency will occur if Agnico Eagle is permitted to release the CP1 waters in a timely way
  - While the current situation at the Meliadine Mine is not an emergency in the near term – to ensure that infrastructure remains protected and to ensure protection of the environment it is essential to dewater CP1 starting in May 2020

EMERGENCY AMENDMENT - RATIONALE

- Current accumulation of contact water in CP1 located at the Meliadine Mine, which meets all discharge criteria under the MDMER and the Water Licence, except for the TDS
- The current TDS discharge criteria in the Water Licence of 1,400 mg/L (i.e., maximum average concentration) referenced at Part F, Item 3 is lower than necessary to remain protective of the receiving environment (i.e., required to minimize adverse effects on aquatic ecosystems), and thereby limits the management of waters at site in an appropriate manner
- Forecasted TDS concentration in CP1 for freshet 2020 is 2,500 mg/L and stored water volume is 716,326 m^3
- Accumulation of the contact water in CP1 is primarily related to the high volume of precipitation during the 2019 season and the stringent Water Licence TDS discharge criteria
- Without complete dewatering of CP1 during the 2020 discharge season, the integrity of the infrastructure (i.e., DCP1) will be at significant risk
- The sequence of action is essential for ongoing operations and for protection of the environment

SUMMARY OF KEY TECHNICAL ITEMS

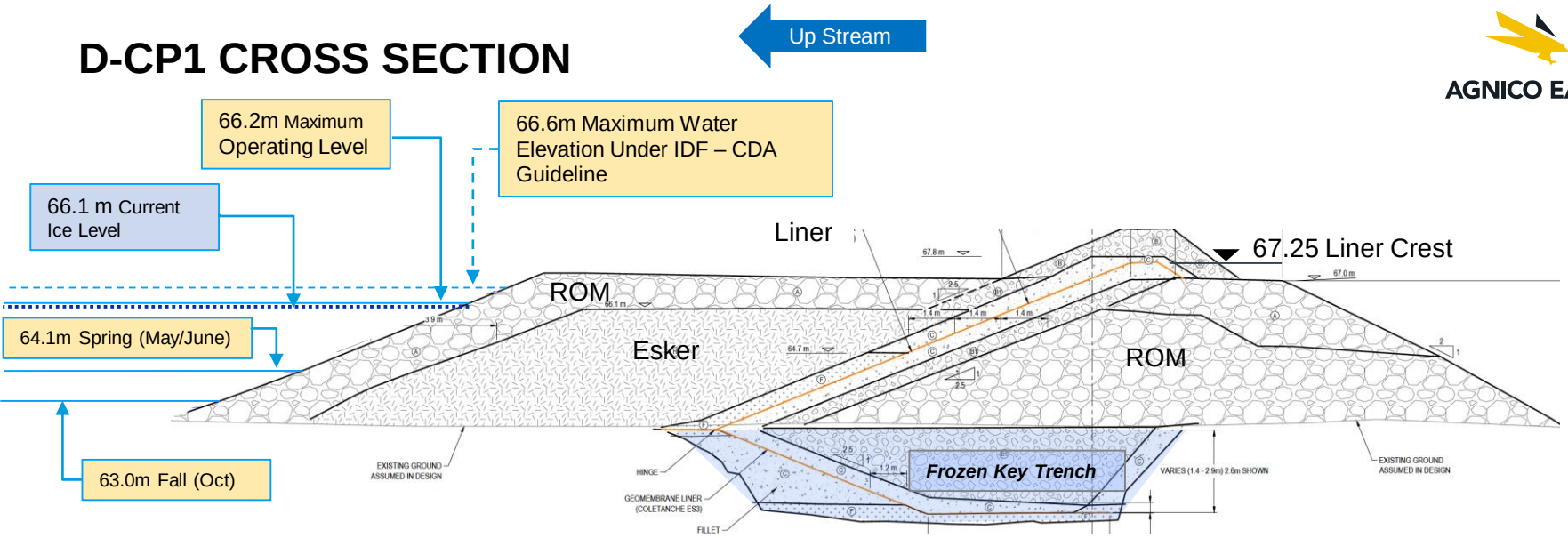
CP1 DETAILS / INTEGRITY

- D-CP1
  - Maximum Operating Level non-inflow design flood (IDF) is 66.2 m, which represents a volume of 742,075 m^3. This is the maximum operating volume during a non-IDF spring freshet or short-term after each spring freshet
  - D-CP1 Maximum Operating Level under IDF is 66.6 m, which represent a volume of 855,245 m^3. This is the maximum short-term water volume under the IDF
  - The current water volume in CP1 is 716,326 m^3
- Predicted volume of water from the 2020 freshet event, based on mean precipitation, and the summer 2020 CP1 water management strategy

	MAY	JUNE	JULY	AUGUST	SEPT	OCT
STARTING VOLUME in CP1	716,326	716,326	784,513	433,292	109,696	24,455
WATER REPORTING TO CP1	0	518,187	98779	126404	114759	41667
PUMP DOWN VIA TREATMENT PLANT	0	450,000	450,000	450,000	200,000	66,122
NET BALANCE OF WATER IN CP1	716,326	784,513	433,292	109,696	24,455	0

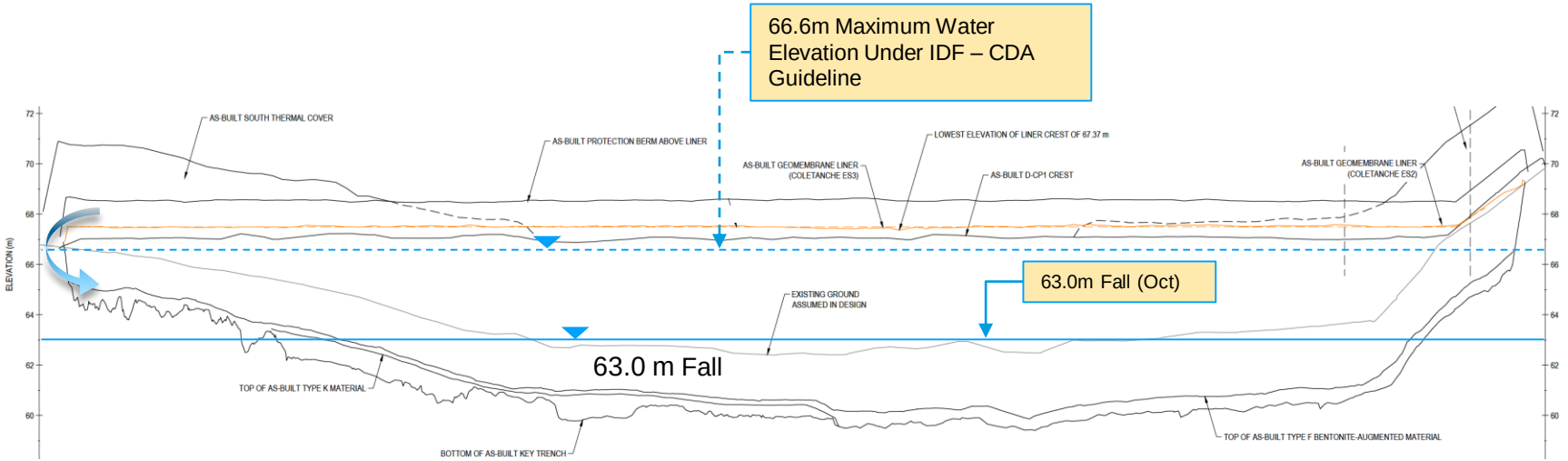
CP1 SATELLITE IMAGE

D-CP1 CROSS SECTION



- Designed on basis of Maximum Water Level 66.6 m for a Short Term Inflow Design Flood (IDF) event as per the Canadian Dam Association Guideline
- Normal Maximum Operating Level 66.2 m to have capacity for a 1/1000 Storm Event
- Designed on the basis that CP1 is emptied in the fall to provide enough capacity for SWTP winter inflows, sewage winter inflows and IDF event Spring level 64.1 m prior to freshet IDF (661,500 m^3)

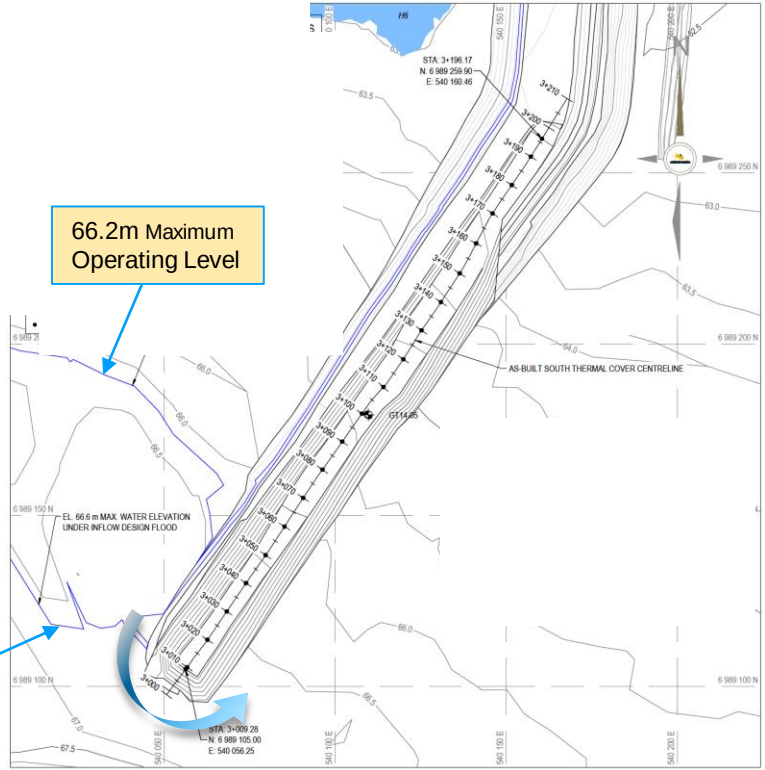
D-CP1 PROFILE



- As the water level rises above 66.6 m water will flow into lowland southwest of CP-1, and risk of flow around the southern end of the dike

D-CP1 PLAN VIEW

- The reservoir extents and the maximum operating level and maximum water level during IDF
- The contours are original ground, and do not include site infrastructure roads, etc



D-CP1 RISKS

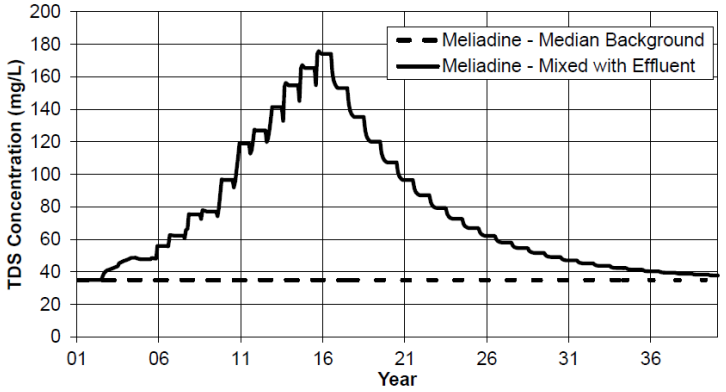
- CP1 does not have sufficient capacity to contain the freshet Inflow Design Flood along with current volume of water
- If CP1 is not discharged, the CP1 water would rise well above dike D-CP1 maximum water level with Inflow Design Flood, and risk of overflow over the dike or around the dike to the south end (downstream side)
- As water flows over or around the dike it would flow into the downstream shell and key trench of the dike D-CP1
- Warm water entering the key trench has the potential to thaw the key trench base
- A thawed key trench would result in the loss of the primary seepage control mechanism of the dike
- This would have major consequences of increased seepage, thaw settlement and associated cracking, differential settlement, and damage to the liner. If this occurred, the dike may not be able hold water. It could result in an uncontrolled local failure of the dike
- The dike was designed from a thermal and stability point to have the water drained in the fall to a level of 63.0 m

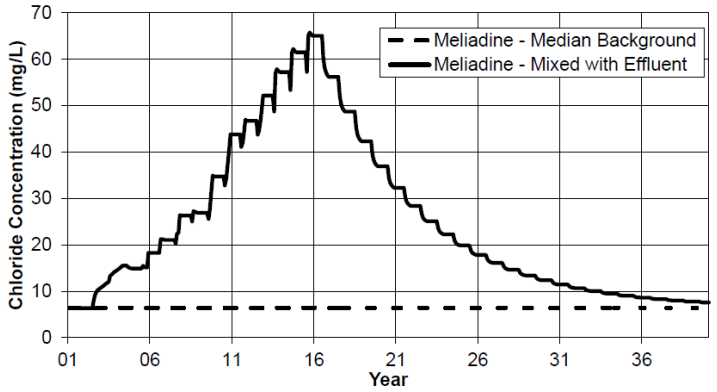
RECEIVING ENVIRONMENT ASSESSMENT

- Near-field assessment (Final Environmental Impact Statement (FEIS) and Operations)
  - preliminary estimates of Maximum Effluent Average Concentration (MAEC) that would result in meeting the edge of mixing zone guideline of 500 mg/L TDS based on a mixing ratio of 1:10 estimate resulted in a MAEC of 4,685 mg/L TDS
- CORMIX modelling completed to determine mixing ratio at 100 m End of Mixing Zone (EoMZ):
  - Maximum effluent TDS concentration of 2,400 mg/L
  - 2014 conceptual design resulted in an initial mixing ratio estimated at 1:145
  - 2015 update based on modified effluent discharge rate and chemistry resulted in a minimum mixing ratio of 1:65
- Operational Validation
  - Field surveys show the diffuser actively disperses water from CP1 and meets expectations
    - 2018 plume delineation as part of the Aquatics Effects Monitoring Program/Environmental Effects Monitoring (AEMP/EEM) showed a minimum mixing ratio of 1:56 at 100 m EoMZ
    - Performance assessment work by Tetra Tech showed a minimum mixing ratio of 1:72 at 100 m EoMZ, with a long-term mixing ratio at end of operations of 1:23
  - Agnico Eagle propose similar validation monitoring during this discharge

RECEIVING ENVIRONMENT ASSESSMENT

- Far field assessment (FEIS)
  - Mass balance model
  - Provided estimates of TDS and chloride concentrations in a bounded section of Meliadine Lake
  - Effluent TDS concentrations during operations up to 2,400 mg/L most years, but were predicted to reach a maximum of approximately 5,600 mg/L
  - Maximum concentrations occur in the last year of the operations
  - Maximum concentrations of chloride do not exceed CCME chronic guideline





NOTE: Year 1 corresponds to Mine Year -3

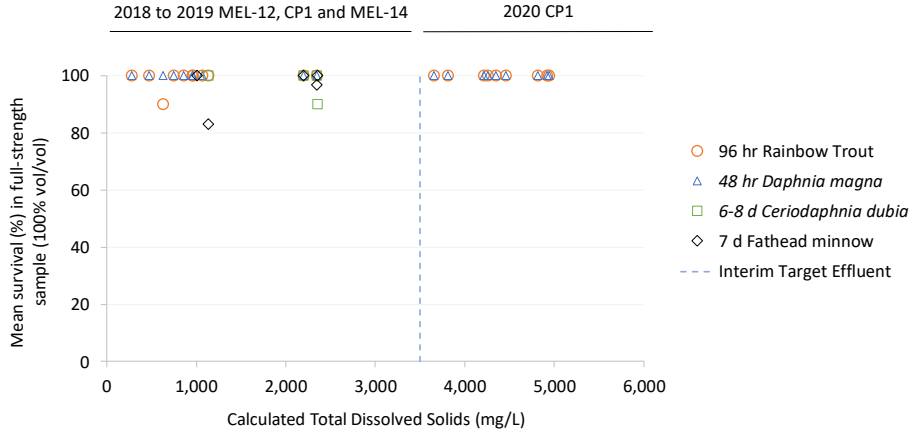
WATER QUALITY THRESHOLDS

- When Water Licence 2AM-MEL1631 was issued by the NWB, regulators had increased comfort with the application of existing water quality thresholds, such as an Effluent Quality Criteria (EQC) of 1,400 mg/L TDS or a mixing zone chloride benchmark from the CCME generic long-term water quality guideline
    - Such numbers were developed prior to the completion of site-specific toxicity evaluations for the Meliadine project, and those numbers do not reflect the state of the science regarding the potential for toxicity in the site-specific water mixtures applicable to the site (e.g., customization to toxicity modifying factors pertinent to the Site)
    - Agnico Eagle have presented science-based procedures for development of interim triggers for water quality during the 2020 discharge season that are consistent with technical derivations for other northern mining sites, and consistent with the results of acute and chronic toxicity tests already completed with Meliadine site waters

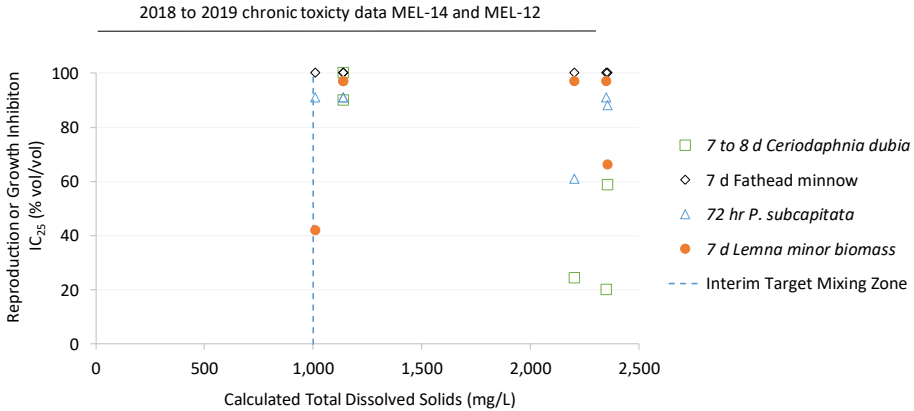
EFFLUENT TDS TARGET

- Agnico Eagle has proposed an interim target for effluent of 3,500 mg/L TDS as a MAEC
- In late 2019, Golder completed a study to understand the potential effect of mine effluent TDS loading on the Meliadine Lake
  - Results showed that the 1,400 mg/L is over conservative, and a temporary effluent discharge threshold of 3,500 mg/L would allow the site to manage CP1 water effectively and without any environmental effect in Lake Meliadine
- Dilution factors at 100 m distance from the diffuser (representing the edge of the mixing zone) ranged from 23:1 to 101:1 (plume delineation survey 2018 near-field region of Meliadine Lake)
- At a MAEC of 3,500 mg/L TDS, and assuming a background concentration of 35 mg/L TDS, the TDS concentration at the edge of the mixing zone is predicted to range from 48 to 185 mg/L

ACUTE AND CHRONIC TOXICITY TESTS



- No acute toxicity (LC_{50} <100% v/v) has been observed with TDS concentrations >3,500 mg/L
- Mean survival in full-strength sample (100% v/v) has been 100% for 2020 CP1 samples
- No indication that TDS concentrations are approaching acute toxicity threshold



- No reliable indications of sublethal toxicity at TDS of 1,000 mg/L
- Interim TDS target of 1,000 mg/L at edge of mixing zone is protective

MONITORING

- Agnico Eagle is committed to a validation monitoring program that will demonstrate triggers remain appropriately protective, both at the point of discharge and at the edge of the mixing zone, with no threat to the assimilative capacity of the receiver
- Conceptual design for the proposed validation of the interim TDS limits for effluent and the receiving environment:

(a) Plume Delineation Study (Effluent, Edge of Mixing Zone, and Near-field)		
Sampling Media	Effluent	Receiving Environment
Sample Timing	During plume delineation study	During effluent discharge[(a)]
Sampling Locations	End-of-pipe	10 to 20 survey locations set out at progressive intervals from 50 m from the diffuser, including at 100 m (i.e., edge of mixing zone), up to 500 m from the edge of the mixing zone[(a)] A mid-field area (>1 km downstream of the mixing zone) will be included in the survey A further downstream station may be added if the plume is discernible at the mid-field station
Frequency of Program	1 event during freshet and 1 event in post-freshet (summer)	1 event during freshet and 1 event in post-freshet (summer)
Test Parameters	▪ Conventional ▪ Major ions and TDS ▪ Nutrients ▪ Total and dissolved metals	▪ Field physico-chemical water column profile measurements (specifically emperature and specific conductivity) ▪ Water quality samples collected at a subset (5 to 10 stations) alongside profile measurements and analyzed for conventional, major ions and TDS

(a) The maximum extent of plume delineation monitoring may be extended should the proportion of effluent be estimated to consistently comprise >10% of the ambient lake water quality at 500 m (based on field specific conductivity measurements).

MONITORING

(a) Water Quality Monitoring (Effluent and Edge of Mixing Zone)		
Sampling Media	Effluent	Receiving Environment
Sample Timing	During effluent discharge and during collection of effluent samples for toxicity testing	During effluent discharge[(b)]
Sampling Locations	—	At least 3 locations on the edge of the mixing zone; additional locations within the mixing zone may be identified
Number of Samples	Per regulatory and operational requirements	1 sample per station
Frequency of Sampling	Per regulatory and operational requirements	Monthly events during discharge
Test Parameters	▪ Conventional ▪ Major ions and TDS ▪ Nutrients ▪ Total and dissolved metals	▪ Conventional ▪ Major ions and TDS ▪ Nutrients ▪ Total and dissolved metals

(b) Sample timing will be dependent on lake access. The period of anticipated discharge will likely coincide with the transition period between ice covered and open water conditions on Meliadine Lake. Access of the lake will occur as soon as open water conditions permit safe access.

MONITORING

(a) Toxicity (Effluent and Edge of the Mixing Zone)		
Sampling Media	Effluent	Receiving Environment
Sample Timing	During effluent discharge	During effluent discharge[(b)]
Sampling Locations	—	3 locations on the edge of the mixing zone
Number of Samples	Per regulatory and operational requirements	1 sample per station
Frequency of Sampling	Per regulatory and operational requirements; at least 2 sampling events during discharge period	At least 2 events during discharge(c)
Test Parameters	Acute toxicity tests with: ▪ Rainbow trout ▪ Daphnia magna Chronic toxicity tests with: ▪ Ceriodaphnia dubia ▪ Fathead minnow ▪ Alga ▪ Duckweed	Chronic toxicity tests with: ▪ Pelagic crustacean (*Ceriodaphnia dubia* or *Daphnia magna*) ▪ Epibenthic/Benthic Insect *(Hyalella azteca*, mayfly, or chironomid) ▪ Plant or Alga (*Pseudokirchneriella subcapitata* or duckweed) ▪ ELS fish (Fathead minnow or Rainbow Trout)

(b) Sample timing will be dependent on lake access. The period of anticipated discharge will likely coincide with the transition period between ice covered and open water conditions on Meliadine Lake. Access of the lake will occur as soon as open water conditions permit safe access.

(c) Additional sampling events may be required to collect water that will be used to renew test solutions for chronic ELS fish tests. These tests require large volumes of water be collected and may require that fresh sample be collected and used for water renewals during toxicity testing.

MONITORING

- Agnico Eagle would implement a working group with NWB, ECCC, CIRNAC and KIA during the one-time discharge event to evaluate the performance of the system and implement change if required.

AGNICO EAGLE

THANK YOU