

Environmental Protection Operations Division
Prairie & Northern Region
5019 52nd Street, 4th Floor
P.O. Box 2310
Yellowknife, NT X1A 2P7



ECCC Files: 6100 000 008/019 /015 /017
NWB Files: 2AM-MEA1526, 2AM-WTP1826
& 2BB-MEA1828

September 16, 2019

via email at: licensing@nwb-oen.ca

Richard Dwyer
Manager of Licensing
Nunavut Water Board
P.O. Box 119
Gjoa Haven, NU X0B 1J0

Dear Richard Dwyer:

RE: 2AM-MEA1526, 2AM-WTP1826, 2BB-MEA1828 – Agnico Eagle Mines Limited – Whale Tail Pit Expansion Project – Type A and B Water Licence Amendments Application Technical Review

Environment and Climate Change Canada (ECCC) has reviewed the information submitted to the Nunavut Water Board (NWB) regarding the above-mentioned Type A and B Water Licence Amendments Application. This letter and the attached Technical Review Submission provides ECCC's specialist advice based on our mandate, in the context of the *Canadian Environmental Protection Act*, and the pollution prevention provisions of the *Fisheries Act*.

Please contact Melissa Pinto at (780) 951-8731 or Melissa.Pinto@Canada.ca if you need more information.

Sincerely,


Andrea McLandress
Regional Director

Attachment: ECCC Technical Review Submission

cc: Georgina Williston, Head, EA North, EPOD, ECCC
Melissa Pinto, Senior EA Coordinator, EPOD, ECCC
ECCC Review Team





ENVIRONMENT AND CLIMATE CHANGE CANADA'S TECHNICAL REVIEW SUBMISSION TO THE NUNAVUT WATER BOARD

RESPECTING THE TYPE A AND B WATER LICENCE AMMENDMENTS APPLICATION FOR THE WHALE TAIL PIT EXPANSION PROJECT PROPOSED BY AGNICO EAGLE MINES LIMITED

September 16, 2019



**AGNICO EAGLE MINES LIMITED'S
WHALE TAIL PIT EXPANSION PROJECT (2AM-WTP1826, 2AM-MEA1526, 2BB-MEA1828)
Environment and Climate Change Canada
Technical Review Submission to the Nunavut Water Board**

Executive Summary

Agnico Eagle Mines Limited (the Proponent) is proposing an expansion (the proposed Expansion Project) to the existing Whale Tail Pit Project (the Approved Project). The proposed Expansion Project is located approximately 150 km north of Baker Lake and 50 km north of the Meadowbank Gold Mine on the Amaruq Exploration Property in the Kivalliq Region of Nunavut. It will be designed to operate as satellite of the main Meadowbank Gold Mine facilities and will extend operation of the Approved Project by three to four years until 2025 through the extraction of approximately 15.2 million tons of ore. The expansion includes expanding the approved Whale Tail Pit, development of a new pit (the IVR Pit) with an IVR waste rock storage facility and attenuation pond, underground mining operations and widening of the existing approved haul road. Closure of the Approved Project and proposed Expansion Project will include flooding of the mined-out open pits and underground operations.

Environment and Climate Change Canada (ECCC) has participated in all phases of the review process for the proposed Expansion Project thus far and is continuing its participation through this Technical Review Submission. The Technical Review Submission contains ECCC's expert advice on the information provided by the Proponent in the Applications for Amendments (2AM-WTP1826, 2AM-MEA1526, 2BB-MEA1828) and the Proponent's responses to information requests, and identifies ECCC's outstanding concerns and recommendations for consideration by the Nunavut Water Board (NWB).

ECCC's technical comments and recommendations relate to water quality and focus on the following aspects:

- Water quality objectives, monitoring and timing of reconnection for flooded pits.
- Options for closure of groundwater storage ponds.
- Verifying predictions of seepage from the waste rock storage facility through monitoring and using monitoring to inform model inputs and water balance updates.
- Identification of potential water management issues associated with wet climate years and related mitigation measures.
- Management of water discharge from the landfarm and inclusion in the water management schematic flowsheet.
- Use of Federal Guidelines for Landfarming Petroleum Hydrocarbon Contaminated Soils as acceptance criteria for the landfarm.
- Clarification of the actual active layer depth in the Project area and how it compares to the regional active layer depth.

Abbreviations

ARD/ML	Acid Rock Drainage/Metal Leaching
CCME	Canadian Council of Ministers of the Environment
CEPA	<i>Canadian Environmental Protection Act</i>
CEQG-AL	Canadian Environmental Quality Guidelines for Aquatic Life
EC	Electrical Conductivity
ECCC	Environment and Climate Change Canada
GSPs	Groundwater Storage Ponds
IRs	Information Requests
MBCA	<i>Migratory Birds Convention Act</i>
MDMER	<i>Metal and Diamond Mining Effluent Regulations</i>
MMER	<i>Metal Mining Effluent Regulations</i>
NIRB	Nunavut Impact Review Board
NWB	Nunavut Water Board
PAG	Potentially Acid Generating
SAR	Sodium Absorption Ratio
SARA	<i>Species at Risk Act</i>
SSWQO	Site-Specific Water Quality Objective
TEH	Total Extractable Hydrocarbons
TDS	Total Dissolved Solids
TPH	Total Petroleum Hydrocarbons
TSS	Total Suspended Solids
WRSF	Waste Rock Storage Facility

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1.0 Introduction

Agnico Eagle Mines Limited (the Proponent) is proposing an expansion (the proposed Expansion Project) to the existing Whale Tail Pit Project (the Approved Project). The proposed Expansion Project is located approximately 150 km north of Baker Lake and 50 km north of the Meadowbank Gold Mine on the Amaruq Exploration Property in the Kivalliq Region of Nunavut. It will be designed to operate as a satellite of the main Meadowbank Gold Mine facilities and will extend operation of the Approved Project by three to four years until 2025 through the extraction of approximately 15.2 million tonnes of ore. The expansion includes expanding the approved Whale Tail Pit, development of a new pit (the IVR Pit) with an IVR waste rock storage facility and attenuation pond, underground mining operations and widening of the existing approved haul road. Closure of the Approved Project and proposed Expansion Project will include flooding of the mined-out open pits and underground.

On August 14, 2019, the Nunavut Water Board (NWB) initiated the technical review of the Applications for Amendments (2AM-WTP1826, 2AM-MEA1526, 2BB-MEA1828) for the proposed Expansion Project. Environment and Climate Change Canada (ECCC) has participated in the review process for both the Approved Project and the proposed Expansion Project. In regards to the proposed Expansion Project, ECCC submitted Information Requests (IRs) to the NWB on July 4, 2019. On August 1, 2019, the Proponent provided responses to ECCC's and other parties' IRs. ECCC has reviewed the Proponent's responses and is providing its Technical Review Submission to the NWB for consideration.

2.0 Environment Climate Change Canada's Mandate, Roles and Responsibilities

The mandate of ECCC is determined by the statutes and regulations under the responsibility of the Minister of Environment and Climate Change. ECCC's mandate covers matters such as the preservation and enhancement of the quality of the natural environment (including water, air and soil quality and the coordination of the relevant policies and programs of the Government of Canada), renewable resources (including migratory birds and other non-domestic flora and fauna), meteorology and the enforcement of rules and regulations. ECCC's specialist advice is provided in the context of the *Canadian Environmental Protection Act* (CEPA), the pollution prevention provisions of the *Fisheries Act*, *Species at Risk Act* (SARA) and the *Migratory Bird Convention Act* (MBCA).

ECCC administers the pollution prevention provisions of the *Fisheries Act*, which prohibits the deposit of a deleterious substance into fish-bearing waters. ECCC also participates in the regulation of toxic chemicals and the development and implementation of environmental quality guidelines pursuant to CEPA.

ECCC is responsible for protecting and conserving migratory bird populations and individuals under the MBCA. ECCC also administers SARA in cooperation with Fisheries and Oceans Canada and the Parks Canada Agency to prevent wildlife species from becoming extirpated or extinct, provide for the recovery of wildlife species that are extirpated, endangered or threatened as a result of human activity and to manage species of special concern to prevent them from becoming threatened, endangered or extirpated. Additional information on ECCC's mandate can be found at: <https://www.canada.ca/en/environment-climate-change/corporate/transparency/acts-regulations/acts-administered.html>.

3.0 Environment Climate Change Canada's Technical Review Comments

ECCC has conducted a technical review of the information provided by the Proponent in the Applications for Amendments (2AM-WTP1826, 2AM-MEA1526, 2BB-MEA1828) and in the Information Requests Responses Whale Tail Pit – Expansion Project Document provided to the NWB on August 1, 2019. The following are ECCC's comments and recommendations related to water quality aspects of the Proponent's Application material.

3.1 ECCC-TC1: Flooded Pit Reconnection

Reference(s):

- Agnico Eagle Mines Limited. 2019. NWB Water Licence 2AM-WTP1826 Amendment, Appendix H.2: Water Quality Model Update Mine Site and Downstream Receiving Water Quality Predictions.
- Agnico Eagle Mines Limited. 2019. NWB Water Licence 2AM-WTP1826 Amendment, Appendix G.19: Interim Closure and Reclamation Plan, Version 2.

Proponent's Conclusion(s):

The pit reflooding strategy will be adapted during closure based on water quality predictions, which will be validated with site data. The objective will be for pit lake water to meet water quality objectives concurrently with flooding completion, such that reconnection to the receiving environment can happen as soon as possible thereafter. It is anticipated that flooding will be completed by 2042, 16 years after closure starts, and that reconnection would happen at the same time.

ECCC's Conclusion(s):

Breaching of the dikes to connect the pit lakes with surface waters will be contingent on water quality being acceptable, (i.e., pit water quality must be reflective of lake background water quality or approved site-specific or national water quality objectives). The main parameter of concern is predicted to be arsenic, which has a site-specific water quality objective (SSWQO) of 0.025 mg/L.

Flooding completion and proposed reconnection are planned for 2042. However, ECCC notes that Appendix C in the Water Quality Model Update shows that in 2042 arsenic concentrations in the Whale Tail pit are predicted to be 0.021 mg/L, which is very close to the SSWQO of 0.025 mg/L. Given that predictions are for dissolved constituents, total concentrations may be 5-10% higher (or more). Water quality must be demonstrated to be stable (or decreasing well below objectives) over a sufficiently long time frame to demonstrate that there would be no risk to aquatic life in reconnecting the flooded pits to the receiving environment.

The pit lakes are predicted to be stratified and overturn twice a year; the water quality objectives for reconnection would apply to the fully mixed condition. The pit lake behaviour (thermal and/or density stratification, water clarity) may not be established immediately at the cessation of flooding. Monitoring the pit chemistry and limnology (in profile) over a subsequent time frame that is sufficient to track seasonal conditions, will be necessary to confirm the prediction of full mixing and validate the water quality predictions.

When total metals were incorporated into water quality predictions by adding the fraction of the parameters that are associated with particulate matter (Section 4.4 Effect of Total Suspended Solids on Total Constituent Concentrations, Appendix H.2), modelled particulate aluminum, chromium and iron exceeded Canadian Environmental Quality Guidelines for Aquatic Life (CEQG-AL) regardless of dissolved concentrations in the flooded pit lakes. The Proponent noted that total concentrations of these metals could be lower than predicted if total suspended solids (TSS) is lower than 15 mg/L or if the TSS has a different chemical composition, but there is also the potential for the concentrations to be higher depending on the actual composition of the TSS. ECCC concurs with this uncertainty and notes that monitoring of total metals will be needed.

Active pumping will introduce turbulence into the pit lakes and potentially redistribute suspended solids and delay settling. A full characterisation of the water quality and limnological conditions at the conclusion of flooding will be needed to inform timing for reconnection.

The specific criteria that will be used to determine whether the water in the pit lakes is suitable for release have not been specified. The Water Model Update references use of the Canadian Council of Ministers of the Environment (CCME) guidelines or site-specific water quality objectives. The Interim Closure and Reclamation Plan submitted with the water licence application (Version 2, May 2019) outlines the objectives for reconnection in Table 5.2-2, *“ensure outflow from the flooded area meets water licence criteria. Prior to breaching the Mammoth Dike and the Whale Tail Dike, the water quality will be profiled to confirm it is suitable for release. Treatment options will be investigated, if necessary (e.g., in-situ treatment or through the O-WTP)”* (Page 64).

The Proponent has deferred defining the water quality objectives for the pit lakes. ECCC advises that the water quality objectives for the pit lakes should be identified well in advance of closure in order to plan for any treatment requirements and estimate timing for reconnection of the pit lakes to surface waters. Objectives will need to be identified for those parameters that do not have CCME Aquatic Life guidelines (or appropriate guidelines from other jurisdictions).

ECCC Recommendation(s):

ECCC recommends that:

- The Proponent base the timing of reconnection of the flooded pits to surface waters on monitoring done post-flooding over a sufficient time frame to demonstrate conditions in the pits (e.g., mixing behaviour, water clarity, chemistry) will meet water quality objectives for discharge.
- The NWB include a condition in the Water Licence that water quality objectives for the pit waters be identified prior to the end of operations (i.e., 2026) and include thresholds for implementing treatment.

3.2 ECCC-TC2: Closure of the Groundwater Storage Ponds

Reference(s):

- Agnico Eagle Mines Limited. 2019. NWB Water Licence 2AM-WTP1826 Amendment, Appendix H.2: Water Quality Model Update Mine Site and Downstream Receiving Water Quality Predictions.

Proponent's Conclusion(s):

The Proponent states that, "...current ongoing modeling of A53 suggests that the hydrological updates to the WRSF piles improves water quality in A53 in post-closure, and the necessity of backfilling will be evaluated based on observed water quality" (Table 1, Page 9, Appendix H.2).

ECCC's Conclusion(s):

The Water Quality Model Update predictions are based on the residual water in the groundwater storage ponds (GSPs) being pumped to the underground and the GSPs being backfilled. The GSPs will contain residual water and saturated sediments that are high in major ions (total dissolved solids [TDS]) and in several metals (i.e., Section 4.1.2 Underground Operations states that there will be high TDS, aluminum, ammonia, arsenic, chromium, mercury, nickel, zinc and phosphorus) which would be mitigated by isolating the saturated pond area with a rock cover. If the rock cover is not installed, it should be identified whether there would be mitigation options to sufficiently "flush" the ponds with fresh water and what the final pond water quality and connectivity to other surface waters would be.

ECCC Recommendation(s):

ECCC recommends that the Proponent:

- Clarify the options for closure of the GSPs.
- Identify what would constitute appropriate water quality to change from backfilling the GSPs.
- Identify impacts to post-closure pond water quality if the GSPs are not covered.

3.3 ECCC-TC3: Removal of Seepage from Model Inputs

Reference(s):

- Agnico Eagle Mines Limited. 2019. NWB Water Licence 2AM-WTP1826 Amendment, Appendix H.2: Water Quality Model Update Mine Site and Downstream Receiving Water Quality Predictions.
- Agnico Eagle Mines Limited. 2019. NWB Water Licence 2AM-WTP1826 Amendment, Appendix H.1: 2019 Mean Annual Water Balance Update, Appendix E: O'Kane Landform Water Balance Modelling of Whale Tail and IVR WRSF.

Proponent's Conclusion(s):

Based on the O'Kane model update, seepage will be negligible and can be disregarded as a model input term. The 2019 Mean Annual Water Balance Update (Appendix H.1) states that, *"the primary difference in this update is the calculation of runoff and seepage from the WRSF. As explained in Section 4.0, the updated calculation method significantly reduces the generated runoff from the stockpile and sets the seepage to zero"* (Page 47). This has been carried through into the Water Quality Model Update results and predictions.

ECCC's Conclusion(s):

ECCC notes that it will be important to validate removal of this term (seepage) from the model inputs and water balance through monitoring of seepage and runoff conditions. Modeling was done on the basis of average climactic conditions and that may under-represent the potential for seepage contributions in wet years.

ECCC Recommendation(s):

ECCC recommends that the Proponent:

- Identify monitoring that will be done to ground-truth the prediction of negligible seepage from the waste rock storage facility (WRSF).
- Use monitoring results to inform ongoing water quality model and water balance updates.

3.4 ECCC-TC4: Wet Climate Years – Water Management Plan

Reference(s):

- Agnico Eagle Mines Limited. 2019. NWB Water Licence 2AM-WTP1826 Amendment, Appendix G.5: Whale Tail Pit – Water Management Plan, Version 4.
- Agnico Eagle Mines Limited. 2018. Final Environmental Impact Statement Addendum, Whale Tail Pit – Expansion Project, Volume 6 – Appendix 6-H: Addendum Mine Site and Downstream Receiving Water Quality Predictions, Section 5.2. Submitted to the Nunavut Impact Review Board.

Proponent's Conclusion(s):

Section 5.2 (Page 61) of Volume 6 (Appendix 6-H) from the Final Environmental Impact Statement Addendum (submitted to the Nunavut Impact Review Board [NIRB]), states that wet climate years may pose water management issues.

ECCC's Conclusion(s):

ECCC notes that the Water Management Plan filed with the NWB application does not include this statement on wet climate years. Neither documents discuss potential water management issues associated with wet climate years, which is important in understanding whether the proposed mitigation measures would be adequate in addressing these issues.

ECCC Recommendation(s):

ECCC recommends that the Proponent:

- Identify the type, extent, timing and duration of water management issues associated with wet climate years that could potentially be encountered for the combined Approved Project and the proposed Expansion Projects.
- Clarify how the proposed mitigation measures would address the type, extent, timing and duration of potential water management issues associated with wet climate years for the combined Approved Project and proposed Expansion Projects.
- Update the Water Management Plan to incorporate the information requested above.

3.5 ECCC-TC5: Landfarm Management Plan

Reference(s):

- Agnico Eagle Mines Limited. 2019. NWB Water Licence 2AM-WTP1826 Amendment, Appendix G.7: Whale Tail Pit - Expansion Project – Landfarm Design and Management Plan, Version 1.
- Agnico Eagle Mines Limited. 2019. NWB Water Licence 2AM-WTP1826 Amendment, Appendix G.5: Whale Tail Pit – Water Management Plan, Version 4, Appendix B: Water Management Schematic Flowsheets.

Proponent's Conclusion(s):

Section 3.6.2 of the Landfarm Management Plan states that in the event of water accumulation or seepage, the ponded water will be analyzed for four monitoring parameters listed in Water License 2AM-WTP1826 Schedule 1 Table 1 Group (i.e., Total Arsenic, Total Copper, Total Lead, Total Nickel, TSS, Benzene, Toluene, Ethylbenzene, Xylene, Total Petroleum Hydrocarbons [TPH], pH) prior to discharge to the adjacent IVR Attenuation Pond. Alternatively, ponded water will be sprayed on the windrows to increase moisture content, as required. Water accumulating in the landfarm will not be discharged to the receiving environment.

The water management schematic flowsheets provided in Appendix B of the Whale Tail Pit – Water Management Plan show the IVR Attenuation pond will be in service as of May 2022 to end of operations in 2025 (Figure B.9) after which contents are to be pumped underground.

ECCC's Conclusion(s):

ECCC notes that the Landfarm Management Plan does not indicate if the analytical results of the ponded water are to be used as screening criteria for discharge into the IVR Attenuation Pond. The Water Licence does not place any conditions on the disposal of water from the landfarm.

ECCC notes that the flowsheet (Appendix B, Whale Tail Pit - Water Management Plan) does not appear to include the discharge of contact water from the landfarm to the IVR attenuation pond and therefore this discharge may not be accounted for in the water balance.

ECCC Recommendation(s):

ECCC recommends that the Proponent:

- Clarify whether the quality of water from the landfarm is to be used as screening criteria for discharge to the IVR Attenuation Pond.
- Include the discharge of landfarm contact water to the attenuation pond in the next update of the water management schematic flowsheets (Appendix B of Appendix G.5: Whale Tail Pit – Water Management Plan, Version 4).

3.6 ECCC-TC6: Landfarm Acceptance Criteria

Reference(s):

- Agnico Eagle Mines Limited. 2019. NWB Water Licence 2AM-WTP1826 Amendment, Appendix G.7: Whale Tail Pit - Expansion Project – Landfarm Design and Management Plan, Version 1.
- Government of Canada. 2013. Federal Contaminated Sites Action Plan, Federal Guidelines for Landfarming Petroleum Hydrocarbon Contaminated Soils. Available at: http://publications.gc.ca/collections/collection_2014/ec/En14-19-3-2013-eng.pdf

Proponent's Conclusion(s):

The Proponent states that, *"the following products may be treated in the landfarm if used onsite and spilled on soil:*

- diesel fuel;
- gasoline;
- aviation fuel (Jet A);
- hydraulic oil;
- other light oil (e.g. engine oil, lubricating oil); and
- Ethyl Glycol (antifreeze).

In the event that the contaminant source is unknown, soil samples will be analyzed for PHCs and possibly additional contaminants prior to placement in the landfarm. These additional parameters could include total metals, oil and grease, and volatile organic compounds. Analysis for additional compounds will be determined by the Environment Department on a case-by-case basis" (Section 3.1.1, Page 8).

ECCC's Conclusion(s):

ECCC notes that the Landfarm Design and Management Plan describes what materials will be accepted, but does not set out any guidance regarding contamination levels in materials.

The Federal Guidelines for Landfarming Petroleum Hydrocarbon Contaminated Soils provide recommendations on contaminant levels in soils to be landfarmed:

- TPH or total extractable hydrocarbons (TEH) less than 3%;
- Total heavy metal concentrations less than 2500 ppm;
- Electrical conductivity (EC) less than 4 dS/m; and
- Sodium adsorption ratio (SAR) less than 6.

The federal guidelines recommend that if any of the levels detected exceed these maximums, the contaminated soil should be considered hazardous waste and handled accordingly. Landfarming is not recommended for such contaminated soils.

ECCC Recommendation(s):

ECCC recommends that the Proponent follow soil restrictions in order to avoid microorganism toxicity, as outlined in the Federal Guidelines for Landfarming Petroleum Hydrocarbon Contaminated Soils.

3.7 ECCC-TC7: Active Layer Depth

Reference(s):

- Agnico Eagle Mines Limited. 2019. NWB Water Licence 2AM-WTP1826 Amendment, Appendix G.1: Whale Tail Pit Waste Rock Management Plan, Version 5.
- Environment and Climate Change Canada. 2019. Environment and Climate Change Canada's Information Requests Submission to the Nunavut Water Board Respecting the Type A and B Water Licence Amendments Application for the Whale Tail Pit Expansion Project Proposed by Agnico Eagle Mines Limited.
- Agnico Eagle Mines Limited. 2019. 2AM-WTP1826 Information Request Responses Whale Tail Pit – Expansion Project.

Proponent's Conclusion(s):

Section 2.6 (Permafrost) of the Waste Rock Management Plan indicates that the typical depth of the active layer is 2 m in this region of Canada, but does not specify the exact area represented by "*this region of Canada*" (Page 6). The Proponent noted in their response to ECCC-IR2 that this depth (2 m) was taken into account in the design of the Whale Tail and IVR WRSF.

ECCC's Conclusion(s):

Active layers vary in different locations and have implications for Acid Rock Drainage/Metal Leaching (ARD/ML) activities, including the thickness of cover material. The actual depth of the active layer above the permafrost in the project area is required to be able to assess if the thickness of the cover material on project components, such as the WRSF, are adequate to contain the waste (i.e. tailings or Potentially Acid Generating [PAG] rock) during the warmer months. The thickness of the cover material on these components should be thicker than the active layer in the project area.

ECCC Recommendation(s):

ECCC recommends that the Proponent provide the actual depth of the active layer in the project area and compare it to the regional active layer depth that was used in the modelling. Should there be differences in depth, ECCC recommends that the Proponent clarify why the regional active layer depth was used instead of the actual active layer depth.

3.8 ECCC-TC8: Water Quality Monitoring and Management Plan for Dike Construction and Dewatering (Errata)

Reference(s):

- Agnico Eagle Mines Limited. 2019. NWB Water Licence 2AM-WTP1826 Amendment, Appendix G.3: Water Quality Monitoring and Management Plan for Dike Construction and Dewatering, Version 2.

Proponent's Conclusion(s):

Section 2.2.1 (TSS), Table 2.1 (Existing Federal TSS Guidelines) and Section 5.1.2 (Standard Operating Procedure for Monitoring and Management During Dewatering) reference the *Metal Mining Effluent Regulations* (MMER), but do not reference the *Metal and Diamond Mining Effluent Regulations* (MDMER).

ECCC's Conclusion(s):

ECCC notes that the MMER was replaced with the MDMER in 2018 and the Proponent's plans should reflect this change.

ECCC Recommendation(s):

ECCC recommends that in the next plan update the Proponent reference the MDMER in Section 2.2.1 (TSS), Table 2.1 (Existing Federal TSS Guidelines) and Section 5.1.2 (Standard Operating Procedure for Monitoring and Management During Dewatering).

4.0 Summary of Recommendations

4.1 ECCC-TC1: Flooded Pit Reconnection

ECCC recommends that:

- The Proponent base the timing of reconnection of the flooded pits to surface waters on monitoring done post-flooding over a sufficient time frame to demonstrate conditions in the pits (e.g., mixing behaviour, water clarity, chemistry) will meet water quality objectives for discharge.
- The NWB include a condition in the Water Licence that water quality objectives for the pit waters be identified prior to the end of operations (i.e., 2026) and include thresholds for implementing treatment.

4.2 ECCC-TC2: Closure of the Groundwater Storage Ponds

ECCC recommends that the Proponent:

- Clarify the options for closure of the GSPs.
- Identify what would constitute appropriate water quality to change from backfilling the GSPs.
- Identify impacts to post-closure pond water quality if the GSPs are not covered.

4.3 ECCC-TC3: Removal of Seepage from Model Inputs

ECCC recommends that the Proponent:

- Identify monitoring that will be done to ground-truth the prediction of negligible seepage from the waste rock storage facility (WRSF).
- Use monitoring results to inform ongoing water quality model and water balance updates.

4.4 ECCC-TC4: Wet Climate Years – Water Management Plan

ECCC recommends that the Proponent:

- Identify the type, extent, timing and duration of water management issues associated with wet climate years that could potentially be encountered for the combined Approved Project and the proposed Expansion Projects.
- Clarify how the proposed mitigation measures would address the type, extent, timing and duration of potential water management issues associated with wet climate years for the combined Approved Project and proposed Expansion Projects.
- Update the Water Management Plan to incorporate the information requested above.

4.5 ECCC-TC5: Landfarm Management Plan

ECCC recommends that the Proponent:

- Clarify whether the quality of water from the landfarm is to be used as screening criteria for discharge to the IVR Attenuation Pond.
- Include the discharge of landfarm contact water to the attenuation pond in the next update of the water management schematic flowsheets (Appendix B of Appendix G.5: Whale Tail Pit – Water Management Plan, Version 4).

4.6 ECCC-TC6: Landfarm Acceptance Criteria

ECCC recommends that the Proponent follow soil restrictions in order to avoid microorganism toxicity, as outlined in the Federal Guidelines for Landfarming Petroleum Hydrocarbon Contaminated Soils.

4.7 ECCC-TC7: Active Layer Depth

ECCC recommends that the Proponent provide the actual depth of the active layer in the project area and compare it to the regional active layer depth that was used in the modelling. Should there be differences in depth, ECCC recommends that the Proponent clarify why the regional active layer depth was used instead of the actual active layer depth.

4.8 ECCC-TC8: Water Quality Monitoring and Management Plan for Dike Construction and Dewatering (Errata)

ECCC recommends that in the next plan update the Proponent reference the MDMER in Section 2.2.1 (TSS), Table 2.1 (Existing Federal TSS Guidelines) and Section 5.1.2 (Standard Operating Procedure for Monitoring and Management During Dewatering).

5.0 Acknowledgements

ECCC would like to thank the NWB for this opportunity to provide input to the review process for the proposed Whale Tail Pit Expansion Project (2AM-WTP1826, 2AM-MEA1526, 2BB-MEA1828) and looks forward to continuing its participation in this process.

ECCC's technical review comments and recommendations are not to be interpreted as any type of acknowledgement, compliance, permission, approval, authorization, or release of liability related to any requirements to comply with federal or territorial statutes and regulations.