Fisheries & Oceans Canada

INTERVENTION COMMENTS

Meadowbank Gold Mine Project

Nunavut Water Board Final Public Hearing
March 31, 2008

Table of Contents

Executive Summary

Fisheries and Oceans Canada (DFO) has reviewed the application, supporting documents and technical hearing information supplement, submitted to the Nunavut Water Board (NWB) by Agnico-Eagle Mines Limited (AEM) for a Type A Water Licence for the Meadowbank Gold Mine Project. DFO has considered the outstanding items from the environmental assessment review process that were to be addressed during this regulatory process. Therefore, the purpose of these comments is to provide expert advice to the NWB as well as to inform the Board of DFO's regulatory role in relation to the proposal. The comments are generally classified under the categories listed in NWB's pre-hearing decision report dated March 5, 2008.

Type B Water License Applications
AEM has applied for the renewal and amendment of Type B Water License Applications. For the Type B exploration license, DFO acknowledges that this application will not be consolidated into the Type A water license. Therefore, DFO has not included comment regarding the amendment within this intervention.

AEM has also applied to incorporate the renewal of the Type B Water License Application for the Meadowbank Gold Project Access Road into the Type A Water License. The Type B license amendment application include the following activities: new camp, operation of a sewage treatment plant, operation of Tear Drop Lake as a stormwater management pond; operation of a batch concrete plant; and the pre-development of the north and south starter pits.

DFO's interest in the Type B water license concerns the use of Tear Drop Lake as a stormwater management pond and the westernmost channel crossing to accommodate an access road to the south starter pit. AEM has indicated that Tear Drop Lake is a non-fish bearing waterbody and will provide the baseline information for this lake in the updated Aquatic Effects Management Program (AEMP). AEM has committed to providing detailed design and construction drawings for the westernmost channel crossing for DFO and NWB review and approval.

Type and Amount of Security
Financial securities in the form of irrevocable letters of credit will be required from the proponent, specifically for the completion and monitoring of the fish habitat features within Second and Third Portage Lakes, prior to the issuance of a *Fisheries Act* subsection 35(2) authorization. Two separate letters of credit would be required; one under the *Metal Mining Effluent Regulations* section 27.1(4) to cover the implementation of the No Net Loss (Compensation) plan for northwest arm of Second Portage Lake as a tailings impoundment area (TIA) and the other; for the completion and monitoring of the habitat features compensating for the harmful alteration, disruption or destruction (HADD) under *Fisheries Act* subsection 35(2) resulting from other components of the development proposal. DFO has requested AEM to provide cost estimates for review which must account for inflation rates. Estimates associated with the No Net Loss Plan are a requirement under section 27.1 (3)(h) of the *Metal Mining Effluent Regulations*.

Construction

Easternmost channel: Three channels connect Second Portage Lake with Third Portage Lake. The construction of the Portage Pit will require that the westernmost channel be eliminated. The hydraulic assessment model for the easternmost channel indicates that the rise in water level is predicted to be within the natural annual spring lake level variability for Third Portage Lake as a result of the elimination of the westernmost channel. Vegetation removal and boulder placement are proposed in areas that would experience flooding to minimize effects from sediment disturbance.

DFO recommends that vegetation removal be minimized since vegetation would provide stability for the banks.

Vault Lake Road Crossing: AEM has committed to submitting the final detailed design and construction drawings to the NWB and DFO for review prior to commencing construction.

No Net Loss Plan

Dike construction and dewatering: AEM has provided detailed design of the central and dewatering dikes within Second and Third Portage Lakes. The exterior and interior dike faces have been proposed as fish habitat to offset the loss of habitat from the use of the northwest arm of Second Portage Lake as a TIA. As the dike design will be finalized for the NWB water license, criteria for the effectiveness and success of the dike faces as fish habitat is required for No Net Loss considerations.

Fish habitat features: The proposed fish habitat features include the finger dikes, habitat mounts, reefs, boulder gardens, and shoals within Second Portage and Third Portage Lakes. The detailed designs and construction drawings as well as the criteria to determine the success and effectiveness of the fish habitat features will be provided by AEM for review and approval.

Water Use

Freshwater intake pipe: AEM has provided the detailed design drawings on the proposed dewatering pipe in Second Portage Lake. DFO recommends that the detailed design drawings for the intake pipe and fish screen used to obtain water for the explosives mixing facility be provided for review and approval. DFO recommends that the DFO Freshwater Intake End-of-Pipe Guidelines be followed to avoid entrainment and impingement of fish.

Water Management

Pit Lake Flooding: DFO is of the opinion that the preliminary assessment of the potential effects of pit flooding on Third Portage and Wally Lakes indicates that the impacts to fish and fish habitat can be mitigated through the combined use of seepage, precipitation, and partial re-direction of annual freshet flows in a controlled action over several years.

Tailings Impoundment Area

As it relates to water quality objectives and legal requirements under MMER, DFO defaults to EC's recommendations for the tailings impoundment area (TIA) in the northwest arm of Second Portage Lake and other general water quality parameters as they relate to the Meadowbank Gold Project.

According to section 27.1 (5) of the MMER, the final No-Net-Loss Plan for the TIA, including all detailed plans must be submitted and approved by DFO before depositing deleterious substances into a tailings impoundment area that is added to Schedule 2.

Fish-Out Program: The dike construction and mining activities in Second and Third Portage Lakes and Vault Lake will destroy fish and therefore DFO requires a program to salvage and allocate fish as appropriate prior to construction. DFO is of the opinion that AEM has substantially completed the fish-out proposal for the northwest arm of Second Portage Lake. AEM has committed to providing the final fish-out program incorporating community consultation and scheduling of the fish-out programs in the other basins to DFO.

Contingency Planning
Due to the uncertainty in the water quality of the re-flooded pits and the effectiveness of the fish habitat features, contingency plans are required to ensure that a no net loss of fish habitat results from the Meadowbank Gold Mine Project. The contingency plan should include alternative fish habitat features to offset the loss of habitat resulting from the TIA and mine site construction.

Monitoring
Effectiveness monitoring of the fish habitat features has been proposed in the form of targeted studies outlined in the Aquatic Effects Management Program (AEMP). DFO recommends that these studies as well as the core monitoring programs within the AEMP be provided in greater detail for review and approval.

Conclusion

The environmental assessment review and the regulatory phases have identified potential impacts to fish and fish habitat. DFO is of the opinion that the incorporation and implementation of the proposed mitigation measures presented in the NWB submission, in addition to our recommendations, will address the identified concerns. Furthermore, DFO is confident the No Net Loss Plan will address residual losses to fish habitat through the development of enhancements that demonstrate no net loss of fish habitat productive capacity within the affected watersheds. DFO looks forward to participating in the NWB Final Hearings and recommends that the NWB consider our comments in minimizing the impacts to fish and fish habitat.

ᓇᓗᓇᐃᖅᑐᖓᓕᒫᑦ

ᐃᓕᖅᑎᐅᑕᓪᓗᒃᑯᑦᑕ ᑲᓇᑕᒥ (DFO) ᖃᒥᑭᓯᒪᔪᑦ ᐱᔪᒪᓴᔪᒥᑦ ᐃᑲᔪᓯᖕᒍᑦ ᕿᐃᑦᕼᓕ ᐊᑦᓯᓂᖅ ᑐᖓᔾᔭ ᑐᑭᓯᐊᕐᑎᓂᑦ, ᑐᓂᔭᐅᔪᖕᒪ ᓄᓇᕗᖅᒥ ᐃᒥᓕᓪᓚᑦ ᑲᑎᒪᔨᖓᑦ (NWB) Agnico-Eagle Mines Limited (AEM) ᖃᓄᐃᑦᑐᓂᖓ A ᐃᒥᖅᓯᑦ ᓕᐃᕐᓂᓯ Meadowbank Gold Mine Project. DFO ᐃᓯᒪᓯᒪᔪᑦ ᐅᐊᓴᑎᓕᓪᓂᖅᓯᑦ ᖃᐅᔨᕐᖅᓂᐅᔪᖕᒪ ᐱᓴᓕᓚᐊᓂᖓ ᑲᒪᒋᐅᐅᔭᓪᓚᐊᖃᓕᐅᖕᒍᑦ ᐱᓴᓕᓚᐊᑎᓪᓗᒍ. ᑕᐃᒪᐃᓐᓂᖓᓄᓕ, ᐱᔪᔪᑎᖓ ᑭᒃᑯᐊ ᐅᖃᐅᓯᕐᓴᐃᓕᑦ ᐅᖃᐅᔨᒋᐊᖓᑦ NWB. ᐅᖃᐅᓯᕐᓴᐃᓕᑦ ᓇᓗᓇᐃᖃᓯᒪᔭᓂᑦ ᑎᑎᕋᓯᒪᔪᐊᒥᓂᑦ NWB's ᓯᕗᓂᐊᔪᓕᑦ ᐅᓂᒃᑲᒥᑦ ᐅᓪᓗᖓ ᒪᑦᓯ 5, 2008.

ᖃᓄᐃᑦᑐᓂᖓ B ᐃᒥᖅᓯᑦ ᓕᐃᕐᓂᓯ ᐃᓗᓕᔪᓗ

AEM ᐱᓇᓯᐊᖃᓯᒪᔪᑦ ᓄᑕᐅᔭᕐᕕᑎᓪᓗᓂ ᐊᑦᓚ ᐁᖃᑭᒋᐊᖃᑕᐅᓗᓂᒃ ᖃᓄᐃᑦᑐᑐᓂᖓ B ᐃᕐᒥᖅᓯᑦ ᓇᐃᓕᔪᓂᓯᓕᔪᐊᑭᑦ, ᖃᓄᐃᑦᑐᑐᓂᖓ B ᖃᓄᖅᓱᖅᓯᑦ ᓕᐃᕐᓂᓯ, ᐃᓕᖅᑎᐅᑕᓪᓗᒃᑯᑦᑕ ᓇᓗᓇᐃᖃᓯᒪᔪᑦ ᒎᓐᓇ ᐱᓇᓯᐊᖅᑲᑎᑦᑎᑕᐅᐃᓱᓐᓂᖅᓀᑦᑐᑦ ᖃᓄᐃᑦᑐᑐᓂᖓ A ᐃᒥᖅᓯᑦ ᓕᐃᕐᓂᓯ. ᑕᐃᒪᐃᓐᓂᖓᓄᓕᑦ, ᐃᓕᖅᑎᐅᑕᓪᓗᒃᑯᑦᑕ ᐱᖃᓯᐅᔨᓴᓐᓂᑐᑦᑐᑦ ᐅᖃᐅᓯᒋᐊᖃᑦ ᐊᖃᑭᒋᐊᖅ ᑕᕐᕐᓂ.

AEM ᐱᓇᓯᐊᖃᓯᒪᔪᑦ ᑲᑎᑦᑎᑕᐅᓗᓂ ᖃᓄᐃᑦᑐᑐᓂᖓ B ᐃᒥᖅᓯᑦ ᓕᐃᕐᓂᓯᓕᔪᐊᑭᑦ Meadowbank Gold ᐱᓪᓚᓪᓕᐊᖃᓄᖅ ᐊᑐᓪᓕᐊᓕᑦ ᖃᓄᐃᑦᑐᑐᓂᖓ A ᐃᒥᖅᓯᑦ ᓕᐃᕐᓂᓯ. ᖃᓄᐃᑦᑐᑐᓂᖓ B ᓕᐃᕐᓂᓯᐋᖅᑭᒋᐊᖅᑕᐅᔪᑦ ᐱᖃᓯᐅᔨᔭᓗᓂ ᖃᓄᐃᓗᓴᖅᑕᐅᔪᓂᑦ: ᓄᑦᖃᖅ ᑐᐱᕐᕕᒃ, ᐊᐅᓚᑕᐅᓂᖓ ᑭᓇᓗᓴᐃᕕᒃ, ᐊᐅᓚᓂᖓ Tear Drop Lake ᐃᒥᓪᓴᐅᓗᓂ ᑕᓯᖅ; ᐊᐅᓚᑕᐅᓂᖓ ᖁᐊᖅᑕᑐᖅ; ᐱᓕᕐᓚᐊᑎᑕᐅᓂᖓ ᐅᐊᓱᓇᖓᓂ ᐊᑦᓚ ᓂᑭᖓᓂᑦ ᓇᖅᓴᐃᑦ.

ᐃᓕᖅᑎᐅᑕᓪᓗᒃᑯᑦᑕ ᖃᓄᐃᑦᑐᑐᓂᖓ B ᐃᒥᖅᓯᑦ ᓕᐃᕐᓂᓯ ᐃᓯᒪᓕᓗᑕᐅᔪᑦ ᐊᑐᖅᑕᐅᓂᖓ Tear Drop Lake ᐃᒥᖅᑯᐱᐅᓗᓂ ᐊᐅᓇᑕᐅᒥᖓ ᑕᓯᖅ ᐊᑦᓚ ᐱᖓᓱᓇᖓᓂ ᐊᑐᓕᐊᓕᐅᖅᑐᖅ ᓂᑭᖅᕿᓯᐊᓂ. AEM ᓇᓗᓇᐃᖅᑭᓯᒪᔪᑦ ᒎᓐᓇ Tear Drop Lake ᐃᖃᓗᓐᖅᓱᓂ ᑕᓯᐅᓴᒪᑦ ᐊᒡᒪᒪ ᑐᓱᖓ/ᑎᕐᖓ ᑐᑭᓯᒪᔨᖓᓄᓂᑦ ᒎᓕᓯᒪᔪᖓ ᑕᓯᖅᕿᓂᕐᓗᒍᓐᓇᖅᑐᓂᑦ ᐃᓕᓴᒥᑦ ᐊᑐᖅᑕᐅᔪᓂᑦ ᐊᐅᓚᑕᐅᓂᖓ ᐱᓕᕐᓚᐊᖃᑦ (AEMP). AEM ᑲᔪᓯᖃᖅᑭᓯᒪᔪᑦ ᓇᓗᓇᐃᕐᓂᖅᑭᓯᓂ ᓴᓇᓯᒪᓂᖓ ᐊᒥᓚ ᓴᓇᕐᐅᓂᖓ ᓴᓇᙵᐊᖃᖅᑭᓯᒪᔪᑦ ᐱᖓᓱᓇᖓᓂ ᐃᓕᓴᒥᑦ ᐅᖃᐅᓯᕐᓴᐃᓕᑦ DFO ᐊᒥᓚ NWB ᖃᒥᑭᓗᓂᑦ ᐊᖏᖃᕐᓯᓗᓂᑎᓗ.

ᖃᓄᐃᑦᑐᑐᓂᖓ ᐊᒥᓚ ᐊᑦᑕᓇᐃᖃᓯᒪᔪᖓ

ᕿᓇᐅᕐᓴᓕᓪᓂᖅᓯᑦ ᐊᑦᑕᓇᐃᕕᑎᑦ ᑎᑎᖃᑲᐅᓗᓂᑦ ᐱᕐᐅᕐᓴᓕᐊᖃᖅᑐᑦ ᐃᓕᓚᕐᖓᓂ, ᐱᓗᐊᖃᖅᑐᒥᑦ ᐱᕐᐅᔪᓕᐊᖃᖅᑐᖓ ᐃᖃᓗᓐᖅᓱᓂ ᐊᐅᓚᑕᐅᓂᖓ ᐊᒥᓚ ᖃᐅᔨᒋᐊᖃᖅᑐᖓ ᐃᖃᓗᓐᖅᓱᓂ ᐊᐅᓚᑕᐅᓂᖓ ᐅᐊᓱᓇᖓᓂ ᐱᖓᓱᓇᖓᓂ ᐊᐃᑦᑐᖓ ᑕᓯᖅ, ᐱᓗᐊᖃᖅᑐᒥᑦ ᐃᓕᓴᒥᑦ ᐅᖃᐅᓯᕐᓴᐃᓕᑦ ᐊᑐᖅᑕᐅᔪᓂᑦ ᐱᕐᐅᕐᓴᓕᐊᖃᖅᑐᑦ ᐃᖃᓗᓐᖅᓱᓂ ᐊᐅᓚᑕᐅᓂᖓ ᐊᒥᓚ ᖃᐅᔨᒋᐊᖃᖅᑐᖓ ᐃᖃᓗᓐᖅᓱᓂ ᐊᐅᓚᑕᐅᓂᖓ ᐅᐊᓱᓇᖓᓂ ᐱᖓᓱᓇᖓᓂ ᐊᐃᑦᑐᖓ ᑕᓯᖅ ᐃᒥᖅᓯᑦ ᐊᑐᖅᑕᐅᔪᓂᑦ ᐊᑦᑕᓇᐃᕕᑎᑦ ᐊᐃᑦᑐᖓ ᑕᓯᖅ (TIA) ᐊᒥᓚ ᐊᐃᑦᑐᖓ ᑎᑎᖃᑲᐅᓗᓂᑦ ᐱᕐᐅᕐᓴᓕᐊᖃᖅᑐᑦ ᐃᖃᓗᓐᖅᓱᓂ ᐊᐅᓚᑕᐅᓂᖓ ᐊᒥᓚ ᖃᐅᔨᒋᐊᖃᖅᑐᖓ ᐃᖃᓗᓐᖅᓱᓂ ᐊᐅᓚᑕᐅᓂᖓ ᐃᓕᓴᒥᑦ ᐅᖃᐅᓯᕐᓴᐃᓕᑦ ᐊᓇᖏᓕᔪᖕᒍᑦ ᐊᑦᑕᓇᐃᖕᒍᒥ ᐊᒧᔨᓕᓪᓂᖓᓄᓕ, ᐸᕐᓴᓕᑦᑕᐅᓂᖓᓄᓕ ᐅᐸᓪᓕᐊᓂᑦ ᓯᕿᖑᑎᖕᒍᑦᑕᐅᓂᖓᓄᓕᑦ (HADD) ᐊᑭᓂ ᐃᖃᓗᓐᖅᓱᓂ ᐊᐅᓚᑕᐅᓂᖓ ᐃᓕᖅᑎᐅᑕᓪᓗᒃᑯᑦᑕ ᐱᔪᒪᓴᔪᒥᑦ AEM ᐱᑕᖃᖅᑎᑎᓗᓂ ᐊᑭᖏᑦ ᓇᓕᐅᑦᑭᑕᐅᔪᑦ ᖃᒥᑭᔾᔭᐅᓂᖓᓄᓕ ᐱᖓᓱᐅᑎᓯᓗᓂ ᐊᑭᑦᑐᓕᑦᑕᐅᓂᖓᓄᓕᑦ.

ᓴᓇᔭᐅᓂᖓ

ᑲᓇᓐᓇᖅᐸᓯᐊᓂ: ᐱᖓᓱᑦ ᑰᕕᑦ ᐊᐃᑉᐸᖓᓄ ᑕᓯᕐᒧᑦ ᐱᖓᔪᖃᖅᑐᓂ. ᓴᓇᔭᐅᓂᖓ ᓇᖅᓴᖅ ᐱᑕᖃᕆᐊᖃᓂᐊᖅᑐᖅ ᐱᖓᓐᓇᖅᐸᓯᐊᓃᑦᒃᑐᑦ ᐲᖅᑕᐅᓗᑎᑦ. ᐳᓚᒎᖅᑐᓂ ᖃᐅᔨᓴᕐᓂᖅ ᑲᓇᓐᓇᖅᐸᓯᐊᓂ ᓇᓗᓇᐃᖅᓯᔪᑦ ᐃᒪᐅᑉ ᖁᕙᓯᓐᓂᖓ ᖁᕙᕆᐊᓂᐊᖅᑐᖅ ᐅᐱᕐᖓᒃᓵᖑᓕᕐᐃᒻᒪᑦ ᐊᔾᔩᒋᖃᑦᑕᖏᑦᑐᑦ ᐱᖓᔪᖓᓄᑦ ᑕᓯᖓᓄᑦ, ᐱᕈᖅᑐᐃᑦ ᐲᖅᑕᐅᓂᖏᑦ ᐊᒻᒪ ᐅᔭᕋᐃᑦ ᐃᓕᔭᐅᓗᑎᑦ ᐃᒪᑎᖅᑦᑕᖅᑐᒥᑦ ᐸᕕᓴᐃᓗᐊᕐᓂᐊᖏᒻᒪᑦ ᒪᕋᒥᑦ. ᐃᒪᕐᒥᐅᑕᓕᕆᔨᒃᑯᑦ ᐱᖁᔨᔪᑦ ᐱᕈᖅᑐᓂᑦ ᐲᔭᐅᓗᐊᖏᓪᓗᑎᑦ ᐱᕈᖅᑐᐃᑦ ᑎᓯᑎᑦᑎᒻᒪᑕ

Vault Lake Road Crossing: AEM ᑲᔪᖏᖅᓯᒪᔪᑦ ᑐᓂᓯᓗᑎᑦ ᑭᖑᓪᓕᕐᐹᒥᑦ ᓇᓗᓇᐃᔭᖅᓯᒪᔪᓂᑦ ᓴᓇᓯᒪᓂᖓ ᐊᒻᒪ ᓴᓇᖑᐊᖅᓯᒪᔪᑦ NWB ᐊᒻᒪ DFO-ᓄᑦ ᕿᒥᕈᓂᐊᕐᒪᑕ ᓴᓇᒋᐊᓚᐅᖅᑎᓐᓇᒋᑦ.

ᐸᕐᓇᐃᓯᒪᖏᑦᑐ ᔭᒐᐃᓂᕐᒧᑦ

ᓯᒥᕕᓕᐅᕐᓂᖅ ᐊᒻᒪ ᐃᒪᐃᔭᐃᓂᓐ: AEM-ᑯᑦ ᑐᓂᓯᓯᒪᔪᑦ ᓇᓗᓇᐃᔭᖅᓯᒪᔪᓂᑦ ᓴᓇᓯᒪᓂᖓ ᕿᑎᐊᓂ ᐊᒻᒪ ᐃᒪᐃᔭᐃᓂᖅ ᐊᐃᑉᐸᖓᓂ ᐊᒻᒪ ᐱᖓᔪᐊᑦ ᑕᓰᑦ. ᓯᓚᑎᖏᑦ ᐃᓗᓕᖏᓪᓗ ᓯᒥᑦᑐᐃᔪ ᐱᔪᒪᔭᐅᓯᒪᔪᖅ ᐃᖃᓗᓐᓄᑦ ᓇᔪᖅᑕᐅᔪᑦ ᔭᒐᑦᑐᐃᑦ ᐊᑐᖅᑕᐅᓂᖓᓄ ᐅᐊᓐᓇᖓᓂ ᐱᖓᓐᓇᖓᓂ ᐊᐃᑉᐸᖓᓂ ᑕᓯᕐᒥᑦ TIA. ᓴᓇᓯᒪᓂᖓ ᑭᖑᓪᓕᖅᐋᒥ NWB ᐃᒥᕐᒧᑦ ᓚᐃᓴᓐᓯ, ᐊᑐᖅᑕᐅᓂᐊᖅᑐᑦ ᐊᑐᑦᑎᐊᓂᕐᒥᑦ ᐊᒻᒪ ᑲᔪᓯᑦᑎᐊᕐᓂᖓᓄ ᓯᒥᑦᑐᐃᕕ ᐃᖃᓗᐃᑦ ᓇᔪᖅᑕᖏᑦ ᐃᕼᕋᕿᐸᓕ ᔭᖓᐱᒋᑦᑕᓚ ᐱᑐᓚᖏᔭᐳᓗ+ᑦ.

ᐃᖃᓗᐃᑦ ᓇᔪᖅᑕᖏᑦ ᖃᓄᐃᓕᖓᓂᖏᑦ: ᐱᔪᒪᔭᐅᓯᒪᔪᖅ ᐃᖃᓗᓐᓄᑦ ᓇᔪᖅᑕᐅᔪᖅ ᐱᖃᓯᐅᔾᔨᔪᑦ ᓯᒥᑦᑐᖅᑕᐅᓯᒪᔪᖅ, ᓇᔪᖅᑕᐅᔪᑦ, ᐃᖅᑲᖓᓂ, ᐅᔭᕋᐃᑦ ᐊᒻᒪ ᐊᐃᑉᐸᖓᓂ ᑕᓯᕐᒥᑦ ᐊᒻᒪ ᐱᖓᔪᐊᓐᓂ. ᓇᓗᓇᐃᔭᖅᓯᒪᔪᑦ ᓴᓇᓯᒪᓂᖏᑦ ᐊᒻᒪ ᓴᓇᔭᐅᓂᖓ ᓴᓇᖑᐊᖅᑕᐅᓯᒪᔪᑦ ᐊᒻᒪᓗᑦᑕᐅᖅ ᐊᑐᖅᑕᐅᓂᐊᖅᑐᑦ ᓇᓗᓇᐃᖅᑕᐅᓂᐊᕐᒪᑦ ᑲᔪᓯᑦᑎᐊᕐᓂᖓ ᐊᒻᒪ ᐊᑐᑎᖅᑦᑎᐊᕐᓂᖓ ᐃᖃᓗᐃᑦ ᓇᔪᖅᑕᖏᑦ ᑐᓂᔭᐅᓂᐊᖅᑐᑦ AEM ᓇᓗᓇᐃᖅᓯᒪᔪᒥᑦ ᐊᑯᓂᐅᓂᖓ ᐅᖃᖃᑎᖃᖅᓗᑎᑦ ᐃᒪᖅᒥᐅᖁᑕᓕᕆᔨᒃᑯᓐᓂ.

ᐃᒥᖅ ᐊᑐᖅᑕᐅᓂᖓ

ᐃᒥᑦᑎᐊᕙ ᐱᔭᐅᔪᖅ ᓱᓪᓗᓕᒃᑯᑦ: AEM-ᑯᑦ ᑐᓂᓯᓯᒪᔪᑦ ᓇᓗᓇᐃᔭᖅᓯᒪᔪᓂ ᓴᓇᓯᒪᓂᖓᓂ ᐃᒪᐃᔭᐃᔪᖅ ᓱᓪᓗᓕᒃ ᐊᐃᑉᐸᖓᓂ ᑕᓯᕐᒥᑦ ᐊᒻᒪ ᖄᖅᑕᒨᑯᕕᒃ. ᐃᒪᕐᒥᐅᑕᓕᕆᔨᒃᑯᑦ ᐱᖁᔨᔪᑦ ᑖᒃᑯᐊ DFO ᐃᒥᑦᑎᐊᕙᒻᒥᑦ ᓱᓪᓗᓕ ᐊᑐᐊᒐᐃᑦ ᒪᓕᑦᑕᐅᓗᑎᑦ ᒥᓪᓗᐊᖅᑕᐅᓂᐊᖏᒻᒪᑕ ᐃᖃᓗᐃᑦ.

ᐃᒥᕐᒥᑦ ᐊᐅᓚᑦᑎᓂᖅ

ᑕᓯᖅ ᐃᒪᖅᑲᓗᐊᓕᖅᑎᓪᓗᒍ: ᐃᒪᕐᒥᐅᑕᓕᕆᔨᒃᑯᑦ ᐃᓱᒪᔪᑦ ᖃᐅᔨᓴᕆᐊᖓᕐᓗᑎᑦ ᐊᑦᑐᖅᑕᐅᓂᕆᔭᓐᓇᖅᑕᖏᑦ ᐃᒪᖅᑲᓗᐊᓕᖅᑎᓪᓗᒍ ᐱᖓᔪᖓᓐᓂ ᐊᒻᒪ Wally Lakes ᓇᓗᓇᐃᖅᓯᔪᑦ ᐊᑦᑐᖅᑕᐅᓂᖏᑦ ᐃᖃᓗᐃᑦ ᐊᒻᒪ ᓇᔪᖅᑕᖏᑦ ᐅᕿᓪᓕᑎᑕᐅᔭᓐᓇᖅᑐ ᕿᓪᓖᓂᒃᑯᑦ, ᓯᓚᓗᖅᑦᑕᓂᒃᑯᑦ ᐊᒻᒪ ᓴᖑᑎᑕᐅᓂᖓᓄᑦ ᑰᖓ ᐊᐅᓚᑕᐅᔪᓂ ᐊᕐᕋᒍᒐᒪᐅᓕᖅᑐᓂᑦ.

ᐃᒥᖅ ᐊᑐᓇᖅᓯᒪᔪᑦ ᐃᓂᖓ

ᐊᑦᑐᐊᓂᖅᖃᒪᑦ ᐃᒥᐅᐸ ᐱᐅᓂᖓᓂᑦ ᑐᖅᓴᑕᐅᔪᑦ ᐊᒪᒪ ᒪᓕᑲᖅᑎᒍᑦ ᐱᑕᖅᓇᐊᓕᓕᑦ ᐊᑦᑕᓂ MMER, DFO ᒪᓕᑦᑐᑦ EC's ᐱᖃᓯᖏᓐᓂ ᐃᒥᖃᒍᒪ ᐊᑐᐊᖅᓯᒪᔪᒪ (TIA) ᐅᐊᓐᓇᖓᓂ ᐱᖓᓐᓇᖓᓂ ᐊᐃᐸᐸᖓᓂ ᑕᓯᖏᑦ ᐊᒪᒪᒍ ᐊᓯᖏᑦᑕᐃᒥᐅᐸ ᐱᐅᓂᖓᓂ ᐊᑦᑐᐊᓂᖅᖃᒪᑕ Meadowbank Gold Project.

ᒪᓕᑦᑐᒍ ᐃᓕᖓ 27.1 MMER-ᒧᑦ, ᕿᒪᐃᓐᓇᑎ ᐸᖃᓇᐅᓯᒪᔪᖅ TIA-ᒧᑦ ᑐᓂᕿᐅᕿᓇᐊᓕᐹ ᐊᒪᒪ ᐊᖏᖅᑕᐅᓗᓂ ᐃᒪᖃᐅᑕᓕᓚᐅᐸᑉᓂᑦ ᑎᑭᓕᐅᖅᑎᓐᓇᒍ ᐃᒥᑦᑕ ᐊᑐᐊᖅᓯᒪᔪᑦ ᐃᓕᓴᐅᔪᑦ ᐊᑐᖅᑕᐅᓂᐊᖅᑐᓂᑦ 2.

ᐃᖅᓗᐃᓴᐃᓂᖅ ᐱᓕᓇᐊᖅ: ᓯᒥᑦᑐᖅᑕᐅᓂᖓ ᐊᒪᒪ ᐅᓴᖃᓐᓂᐊᓂᖅ ᐊᐃᐸᐸᖓᓯᓗ ᐊᒪᒪ ᐱᖓᓓᖓᓂ ᑕᓯᖏᑦ Vault Lake ᓯᖃᓐᓂᐊᖅᑐᑦ ᐊᒪᒪ ᑕᐃᒪᐃᓐᓂᖓᓄᑦ, ᐱᑕᖅᓇᐊᖅᖄᓂᑎᑎᔪ ᐱᓕᓇᐊᒥ ᓯᖃᖅᑎᑕᐅᖏᓪᓗᑎ ᐊᒪᒪ ᓄᖅᑕᐅᓗᑎᑦ ᐃᖅᓗᐃᑦ ᓴᓇᑭᐊᓕᐅᖅᑎᓐᓇᒥᑦ. ᐃᒪᖏᑎᐅᑕᓕᓚᐅᐸᑉᑯᑦ ᐃᓯᒪᑭᓴᖅᖄᖅᑐᑦ ᐅᐊᓐᓇᖓᓂ ᐱᖓᓐᓇᖓᓂ ᐊᐃᐸᐸᖓᓂ ᑕᓯᖏᑦ. AEM-ᑯᑦ ᑐᓂᓯᓯᒪᔪᑦ ᑭᖓᓪᓕᖅᕿᒥᑦ ᐃᖅᓗᐃᓴᐃᓂᖅᖏᑦ ᐱᓕᓇᐊᒥᑦ ᐅᖅᖅᑎᖅᓴᓗᑎᑦ ᓄᓇᓕᒥ ᐊᒪᒪ ᐃᓂᓕᐅᖅᑕᐅᓂᖓ ᐃᖅᓗᐃᓴᐃᓂᖅᓴᒥᑦ ᐱᓕᓇᐊᖅ ᓴᓇᑭᐊᓕᐅᖅᑎᓐᓇᒥᑦ. ᐃᒪᖏᑎᐅᑕᓕᓚᐅᐸᑉᑯᑦ.

ᑐᐊᕐᓇᖅᑐᓄᑦ ᐸᖃᐃᓂᖅ

ᓇᓗᓇᖃᓂᖓᓄᑦ ᐃᒥᐅᐸ ᐱᐅᓂᖓ ᐃᒪᒪᑦᑕᐅᓯᒪᔪᒥᑦ ᐊᒪᒪ ᐊᑐᑎᖅᑎᐊᖅᓂᖓ ᐃᖅᓗᐃᑦ ᓇᔪᑕᖅᑕᖏᑦ, ᑐᐊᐃᖅᓴᓇᑭᐊᓕᐅᖅᑎᓐᓇᒥᑦ ᕿᒪᐃᓐᓂᑦᑐᑦ Meadowbank Gold Mine Project-ᒥᑦ. ᑐᐊᐃᖃᓇᖅᑐᒍᒪᑦ ᐸᖃᑕᐅᓯᒪᔪᖅ ᐱᖅᓯᐅᓴᐅᓚᐅᐸᑉ ᐊᓯᖏᑦᑕᓂᐊᖅ ᐃᖅᓗᐃᑦ ᓇᔪᐅᓇᖅᑕᖏᓐᓂᖅ ᓴᓇᑭᐊᓕᐅᖅᑐᑦ TIA ᐊᒪᒪ ᐅᕿᖃᓐᓂᐊᓂᖅᐳᑦ ᓴᓇᕿᐅᓂᖓ.

ᖃᐅᔨᓴᖃᓂᖅ

ᖃᐅᔨᓴᖃᑎᒌᖃᓂᖅ ᐃᖅᓗᐃᑦ ᓇᔪᖅᑕᖏᓐᓂᒥ ᐱᔪᒪᕿᐅᓯᒪᔪᖅ ᓇᓗᓇᐃᖅᑕᐅᓯᒪᔪᑦ ᖃᐅᔨᓴᖃᓂᐅᔪᓂᒥ ᓇᓗᓇᐃᖅᑕᐅᓯᒪᔪᑦ ᐃᒪᖏᑦ ᐊᐅᓪᓚᑎᑕᐅᑐᖅ ᐱᓕᓇᐊᒥ (AEMP). ᐃᒪᖏᑎᐅᑕᓕᓚᐅᐸᑉᑯᑦ ᐱᓯᔨᔪᑦ ᑭᒃᑯᐊ ᖃᐅᔨᓴᖃᓂᐅᔪᑦ ᐊᒪᒪᓗᑕᑕᐅᑐᖅ ᐱᖅᓯᐅᓴᐅᓚᐅᐸᑉᑯᖅ ᐱᓕᓇᐊᖅ ᐃᓗᐊᓂ AEMP ᐱᑕᖅᖃᑎᒌᐅᓗᑎᑦ ᓇᓗᓇᐃᓴᑦᓯᒪᓕᑎᒌᓂᖅᓴᖅᑎᑦ ᕿᑎᕐᕕᐅᓂᐊᓕᑦ ᐊᖏᖅᑕᐅᓗᓂᓗ.

ᓄᖅᖃᓂᖓ

ᐊᔪᑎᓕᓵᓂᓪᓗᑦ ᖃᐅᔨᓴᓂᓪᓗᑦ ᕿᑎᕐᓂᖅ ᐊᒪᒪ ᒪᓕᒪᐃᑦ ᒪᓕᑦᑕᐅᑭᐸᑦ ᓇᓗᓇᐃᖅᑕᐅᓯᒪᔪᑦ ᐃᖅᓗᐃᑦ ᐊᑐᖅᑕᐅᓂᓕᓐᓇᖅᑕᖏᓐᓂᖅ ᐃᓕᓴᐅᔪᑦ ᐊᑐᖅᑕᐅᓂᐊᖅᑐᓂᑦ ᑐᓂᓯᓯᒪᔪᑦ NWB-ᑯᓐᓄ, ᐱᖃᓯᐅᑎᓗᑦᑕᐅᖅ ᐱᓯᑯᓪᓕᖅᑐᖅᑦ, ᑲᒪᒋᐅᐅᓂᐊᖅᑐᑦ ᐃᓯᒪᓂᑕᐅᔪᑦ. ᐃᓕᒋᐊᖅᓗᒍ, ᐃᒪᖏᑎᐅᑕᓕᓚᐅᐸᑉᑯᑦ ᖃᐅᔨᓴᖃᓂᖅᓴᖅᑎᑦᑐᑦ ᕿᑎᕐᕕᐅᓂᐊᓕᐅᖅᑐᑦ ᑲᒪᒋᐅᖃᑎᒌᖅᑐᑦ ᐃᖃᓗᐃᑦ ᐃᓕᓴᐅᔪᑦ NWB ᓄᖅᑲᓪᓕᖅᕿᒥᑦ ᐃᓕᓐᓂᐊᓕᒫᑦ ᐃᓕᓴᐅᔪᑦ ᐊᑐᖅᑕᐅᓂᐊᖅᑐᓂᑦ ᐃᓯᒪᓂᑕᐅᔪᑦ NWB ᓄᖅᑲᓪᓕᖅᕿᒥᑦ ᐃᓕᓐᓂᐊᓕᒫᑦ ᐊᑐᖅᑕᐅᓂᐊᖅᑐᓂᑦ ᐃᖅᓗᐃᑦ ᓇᔪᖅᑕᖏᓐᓂᖅ.

Introduction

The *Constitution Act* (1982) provides the federal government with authority for sea, coastal and inland fisheries within Canada's territorial boundaries. DFO exercises this authority under the *Fisheries Act*. Specifically, DFO is responsible for the management and protection of fish and marine mammals and their habitats. There are two fundamental provisions in the *Fisheries Act* that pertain to the conservation and protection of fish habitat. One is section 35 of the Act that prohibits the harmful alteration, disruption or destruction of fish habitat without an authorization from the Minister of Fisheries and Oceans or through a regulation under the *Fisheries Act*. The other is section 36 that prohibits the deposit of deleterious substance into fish bearing waters unless authorized by a regulation under the Act or by another law of Parliament. Environment Canada, on behalf of the Minister of Fisheries and Oceans, administers section 36 of the *Fisheries Act.* DFO relies upon advice provided by Environment Canada regarding issues pertaining to the control of pollutants affecting fish and fish habitat. There are other sections of the *Fisheries Act* that pertain to the conservation and protection of fish and fish habitat and these include sections 20 (fishways), 30 (fish guards) and 32 (destruction of fish) among others.

DFO's Policy for the Management of Fish Habitat ("the Habitat Policy"), introduced in 1986, provides general guidance on the application of the habitat protection provisions of the *Fisheries Act* and applies to all projects that have the potential to harm fish habitat. The long-term objective of DFO is to achieve a net gain in the productive capacity of fish habitat for Canadian fisheries resources. A fundamental strategy for achieving this is to prevent the further loss of productive capacity of existing habitats. Productive capacity is defined in the Habitat Policy to mean the maximum natural capacity of habitats to produce healthy fish, safe for human consumption, or to support or produce aquatic organisms upon which fish depend. DFO will apply the No Net Loss principle by avoiding impacts, applying mitigation and, failing that, balance unavoidable habitat losses through habitat compensation on a project-by-project basis. The Habitat Policy also places emphasis on integrated resource planning and review of project proposals on an ecosystem basis taking into account Fish Habitat Management plans and/or Fisheries Management Plans where they exist.

Under the Nunavut Land Claims Agreement, DFO participates in the regulatory review process led by the NWB. In this context, DFO has reviewed the Water Licence application, supporting documents and technical meeting information supplement, as submitted by AEM for impacts to fish and fish habitat. DFO respectfully submits the following comments as expert advice to the NWB to assist in their review of this project. Should new information be obtained, any changes in DFO's recommendations will be brought to the attention of NWB.

Type B Water License Application

Type B Water License 8BC-TEH0708 Meadowbank Gold Project Access Road

Tear Drop Lake

In the Type B water license amendment for the Meadowbank Gold Project Access Road, a sewage treatment plant for the pre-development work is proposed. The sewage treatment plant involves a lift station and pump to transfer treated overflow effluent from the final settling tank to Tear Drop Lake. AEM has stated that this waterbody is non-fish bearing according to the technical memorandum dated March 17, 2008. The water depth is 2.5 metres and the outlet channel is poorly defined. The baseline data for Tear Drop Lake was obtained in 2006 and will be included in the updated AEMP.

Resolution
AEM has committed to providing the baseline data for Tear Drop Lake in the 2006 AEMP report for DFO review. If as a result of the review, DFO does not concur that Tear Drop Lake is not frequented by fish, then Section 36(3) of the *Fisheries Act* will apply and therefore, no deposit of deleterious substances into the water body will be permissible.

Westernmost Channel Culvert

Pre-development work involves the installation of four corrugated steel pipe culverts (36 inches in diameter) each placed beside each other and embedded to allow for fish passage. The crossing is part of the access road to the south zone starter pit and connects the plant site area to the zone of predevelopment. As the temporary culvert will be installed prior to the proposed construction of the east dike, this infilling of fish habitat in the westernmost channel will result in the harmful alteration, disruption, and destruction of fish habitat. Therefore, compensation measures will be required to offset the loss of habitat at this crossing. AEM has committed to providing DFO with an addendum to the No Net Loss Plan to include fish habitat compensation for the loss of habitat resulting from the culvert installation.

Recommendation
DFO recommends that AEM provide details of the habitat loss and compensation measures as part of the No Net Loss Plan and provide detailed designs (plan, profile, cross-section) for review and approval prior to construction.

Type and Amount of Security

Fish Habitat Compensation under the *Metal Mining Effluent Regulations*

The northwest arm of Second Portage Lake is a fish bearing waterbody which is proposed to be used as a Tailings Impoundment Area (TIA). This use requires an amendment to the Metal Mining Effluent Regulations (MMER). These Regulations were made under Sub-

Section 36(5) of the *Fisheries Act* and provide conditions under which the deposit of deleterious substances into fish frequented waters are allowed for metal mine tailings. Under the MMER, if a proposed tailings impoundment area is proposed to be constructed in a natural waterbody that is fish frequented, then the water body in question must be added to Schedule II of the regulations prior to tailings deposition and must be approved by the Governor-in-Council (GiC) of Canada.

The regulatory amendments for MMER can only be initiated following the completion of an environmental assessment and after Fisheries and Oceans Canada has determined that impacts to fish habitat are acceptable and can be mitigated and/or compensated. Environment Canada is then responsible for preparing required documents in the form of the Regulatory Impact Assessment Statement (RIAS) so that the amendment can be forwarded to the GiC for consideration.

DFO forwarded a letter to Environment Canada on March 1, 2007 indicating that initiation of the *Fisheries Act* Metal Mining Effluent Regulation (MMER) amendment process may begin. With respect to the water license application for Meadowbank, DFO defaults to EC's recommendations for the tailings impoundment area (TIA) in Second Portage Lake and water quality requirements.

Governor-in-Council has approved the proposal for listing in *Canada Gazette* Part I and it was subsequently posted on February 9, 2008. Public comments on the Gazette I listed were received up to and including March 9, 2008 and are currently be considered in the decision to advance the proposal to *Canada Gazette* Part II.

It is a requirement of the Metal Mining Effluent Regulations (MMER) to obtain financial security, in the form of an irrevocable letter of credit, from the proponent for fish habitat features that are proposed to compensate for the use of the northwest arm of Second Portage Lake as a TIA. DFO will require AEM to provide an estimate regarding the amount of security for the completion and monitoring of the fish habitat compensation works in the following areas:

- East Dike exterior and interior
- West Dike exterior
- Portage Pit – Second Portage Lake
- Portage Pit – Second Portage Land to Lake
- Goose Island Dike exterior and interior
- Finger Dike Habitat off Goose Island Dike
- Goose Pit – Third Portage Lake
- Portage Pit – Third Portage Lake
- Goose Pit – Third Portage Land to Lake
- Vault Pit – Vault Lake
- Vault Pit – Vault Land to Lake

Recommendations

DFO recommends that AEM provide a cost estimate which must account for inflation rates relating to the financial security for the implementation of the No Net Loss (Compensation) Plan in accordance with Section 27.1(3)(h) of the MMER for DFO review and approval.

Fish Habitat Compensation under the *Fisheries Act* subsection 35(2)

The construction of the dikes and dewatering of Second Portage, Third Portage Lake and Vault Lakes will result in the harmful alteration, disruption and destruction of fish habitat under subsection 35(2) of the *Fisheries Act*. Financial security in the form of an irrevocable letter of credit will be required for the completion and monitoring of the fish habitat features in the following areas:

- Second Portage Basin
- Goose Island Dike restored
- Third Portage Lake basin
- Vault Basin
- Vault Dike restored
- Habitat Mounts in Second Portage Lake
- East Dike extension
- Goose Island Dike extension in Third Portage Lake

The letter of credit must account for inflation. DFO recommends that the consumer price index (CPI) be used to calculate the annual inflation rate of the total project costs. As most of the fish habitat features will be constructed subsequent to the operation of the mine, deferred compensation may increase the finances required for completion and monitoring of the works.

Recommendations
DFO recommends that AEM provide a cost estimate for the completion and monitoring of the fish habitat features in the areas listed above for DFO review and approval of the financial security requirement.

Construction

Easternmost Channel

The construction of the east dike will result in the elimination of the westernmost channel connecting Third Portage Lake and Second Portage Lake. Of the three connecting channels, the easternmost and centre channels remain open to convey flows from the lakes. According to the hydraulic assessment, the elimination of the westernmost channel will result in an increase in water levels (about 8 to 15cm) in Third Portage Lake in the absence of dewatering. This potential increase is predicted to be within the natural annual spring lake level variability for Third Portage Lake.

AEM has predicted that the outlets of the centre and easternmost channels will remain stable even with increased water levels due to the large substrate sizes along the bed and banks. Since, the easternmost channel has less defined bed and banks than the centre channel the increase in water level may result in fine sediment release initially. In order to address the potential release of sediment from the banks, AEM has proposed to remove a minimum of 300mm of vegetation and replace the area with large sub-angular rock based on site conditions at time of construction.

Discussion

Riparian vegetation provides cover and stability to the banks. In the event of increased water levels within the easternmost channel, the riparian vegetation should function to provide stability for the banks. Since the model suggests that the increase is within natural variation, DFO questions why vegetation would be removed. Additionally, since the banks are naturally hardened, it is unclear as to the reason for armouring the banks of the centre channel.

Recommendation
DFO recommends that the removal of vegetation and the armouring of the banks be minimized. DFO acknowledges a hydraulic monitoring plan is proposed and agrees that monitoring of hydraulics, fish use and migration should be part of an adaptive management plan in the event of outlet failure and that this is also acknowledged as part of the AEMP.

Vault Lake Road Crossing

The Vault Lake access road will cross a stream channel connecting Drill Trail Lake to Turn Lake. In order to cross the channel, two 75 metre long, 2.5 metre diameter culverts are proposed to be placed instream. The culverts will be embedded 0.8 metres and will be installed in the dry. The existing channel consists of large boulder substrate with a shallow depth thus preventing fish from moving between lakes. The installation of the culverts will allow upstream movement by fish, thus, improving the channel for the existing fish population. AEM has committed to submitting the final detailed design and construction drawings to the NWB and DFO for review prior to commencing construction.

Recommendation
DFO recommends that the construction drawings include sediment and erosion control measures and construction phasing for review and approval.

No Net Loss Plan

Conceptual Design for Fish Habitat Features

Central and Dewatering Dikes

Type A Water License Application Documents 342 and 420 indicate that Intermediate Volcanic (IV) rock will be used to construct the rockfill embankments to the water level of 134masl for the central dike and the dewatering dikes. Above the water level, Ultramafic rock will be used to cover the dike. Since IV rock is to be used to create the slopes of fish habitat and has the potential to be moderately acid generating, it is recommended that the UM rock be placed under the 134 masl to ensure that the potentially acid generating rock does not oxidize during low water level events.

Recommendation
DFO recommends that AEM ensure that PAG rock is not able to oxidize, thus, minimizing impacts to water quality and aquatic organisms.

AEM has provided detailed design of the dikes within Second and Third Portage Lakes. The exterior and interior dike faces have been proposed as fish habitat to offset the loss of habitat from the use of the northwest arm of Second Portage Lake as a TIA. As the dike design will be finalized for the NWB water license, criteria for the effectiveness and success of the dike faces as fish habitat is required for No Net Loss considerations.

Recommendation
DFO recommends that the final detailed design and success criteria for the East, Tails, Goose Island, and Bayzone dike faces be provided for review and approval no later than May 1, 2008.

Fish Habitat Features

DFO acknowledges that the fish habitat features including the dike fingers, habitat mounts and structures within the basins are presented as conceptual designs. AEM has committed to providing the final detailed designs and construction drawings of these features. Along with the detailed designs, AEM has committed to providing criteria to determine the success and effectiveness of the fish habitat features also in consultation with DFO.

Recommendation
DFO recommends that AEM consult with DFO regarding the success criteria for the fish habitat features prior to finalizing the monitoring programs. DFO also recommends that the final detailed designs and construction plans for the following fish habitat compensation measures be provided for review and approval no later than May 1, 2008.

- East Dike Extension
- Third Portage Finger Dike Extension
- Six Habitat Mounts within Second Portage Lake
- Boulder Gardens, Reefs, and Shoals within Second and Third Portage Lake Basins

Water Use

Freshwater Intake Pump Screens

AEM has provided the detailed design information on the proposed dewatering pipe in Second Portage Lake and the outfall diffuser. DFO acknowledges that AEM has substantially fulfilled the request for the clarification of the dewatering pipe for review and approval. DFO will be reviewing the detailed design for processing of a *Fisheries Act* section 30 approval which provides the requirement that every water intake be provided with a fish guard or screen to prevent the passage of fish into the intake structure.

Freshwater source for the explosives mixing facility

AEM has proposed that water for the emulsion plant will be taken from a small unnamed lake located 250m from the plant. Water is to be taken with the use of a submersible pump placed on the lake bottom with a hose connection to a rigid pipeline that will be placed from the shoreline to the emulsion plant.

Recommendation
DFO recommends that the DFO Freshwater Intake End-of-Pipe Guidelines be followed to determine the appropriate screen size for the end of pipe to avoid entrainment or impingement of fish in the small unnamed lake. DFO recommends that the detailed design drawings and plans of the intake pipe and fish screen be submitted no later than May 1, 2008 for review and approval.

Water Management

Pit Lake Flooding

The assessment of the potential effects of pit lake flooding on Third Portage and Wally Lakes indicates that the drawdown will have minimal decrease in water level. Mitigation measures to ensure that the instantaneous breaching of the dikes does not have an impact on fish and fish habitat include flooding the lakes through seepage, precipitation and partial re-direction of annual freshet flows from Third Portage and Wally Lakes.

The flooding activities occurring in June and September is predicted to lower the water level in Third Portage Lake by approximately 9 cm which equates to a decrease in lake surface area by 0.5% of the overall lake area.

The Vault pit will also be flooded in June and September. The flooding is predicted to result in a water level drop of 10 cm which equates to approximately 1.7% of the overall lake area.

Resolution
DFO is of the opinion that the preliminary assessment of the potential effects of pit flooding on Third Portage and Wally Lakes indicates that the impacts to fish and fish habitat can be mitigated. The water licence should ensure that pit flooding is conducted so that water flow is maintained in downstream locations and outlet streams. DFO

recommends that as updated information on the re-flooding plan is developed, it be submitted to regulators for review and approval prior to implementation.

Tailings Impoundment Area

As it relates to water quality objectives and legal requirements under MMER, DFO defaults to EC's recommendations for the TIA in the northwest arm of Second Portage Lake and other general water quality parameters as they relate to the Meadowbank Gold Project.

Fish-Out Program

The dike construction and mining activities in Second and Third Portage Lakes and Vault Lake will destroy fish and therefore DFO requires a program to salvage and allocate fish as appropriate prior to construction. DFO is of the opinion that AEM has substantially completed the fish-out proposal for the northwest arm of Second Portage Lake. AEM has committed to providing the final fish-out program incorporating community consultation and scheduling of the fish-out programs in the other basins to DFO.

Contingency Planning

No Net Loss Plan

The majority of the fish habitat features to offset the loss of habitat from the mine site construction and the TIA rely heavily on water quality of the basins at mine closure. AEM has proposed to breach the Goose Island and Vault dikes only in the event the water quality within the pit lakes meet CCME Aquatic Life Guidelines, background lake concentrations, or other risk based assessment criteria. In the event that the water quality does not meet any of the above criteria and the dikes cannot be breached, an adaptive management plan with contingencies for alternative fish habitat compensation features is required. A contingency plan would also be required in the event targeted studies reveal that the habitat structures such as the habitat mounts, finger dikes, dike faces, reefs, shoals and boulder gardens are not functioning as intended. Alternative compensation measures should be developed in consultation with the impacted communities.

Recommendation
DFO recommends that contingency plans detailing alternative fish habitat features to offset the loss of habitat from mine construction be developed in consultation with impacted communities and be provided to DFO for review and approval.

Monitoring

Effectiveness Monitoring for Fish Habitat Features

The AEMP contains targeted monitoring programs to address specific concerns related to a project component. Targeted studies are used to measure the effectiveness of fish

habitat features. For example, the effectiveness of the dike faces will be measured through the monitoring of pore water metals release from interstitial spaces of the dikes, periphyton colonization and fish egg survival during incubation. These targeted studies need to be outlined in detail prior to dike construction for review and approval.

Recommendation
DFO recommends that the other core monitoring programs and targeted studies outlined in the AEMP be provided in detail for review and approval. Additional baseline data must be submitted for review and incorporated if appropriate in monitoring programs.

The Aquatic Effects Monitoring Plan should incorporate adequate scientific rigour to distinguish project impacts from natural variation and should be included as a condition of the Water Licence.

Dike Construction and Dewatering Activities

AEM has provided a detailed monitoring plan with contingencies and threshold limits for Total Suspended Solids during dike construction and dewatering activities. It is proposed that the silt curtain will be placed approximately 5 to 10 metres from the base of the dike and will be suspended off the lake floor to avoid re-suspension of sediments. DFO acknowledges that AEM has substantially completed the monitoring plan and presented threshold limits for TSS.

Resolution
DFO acknowledges that AEM has substantially completed a monitoring plan with TSS thresholds and contingencies for the dike construction and dewatering activities.

Conclusion

The environmental assessment review and the regulatory phases have identified potential impacts to fish and fish habitat. DFO is of the opinion that the incorporation and implementation of the proposed mitigation measures presented in the NWB submission, in addition to our recommendations, will address the identified concerns. Furthermore, DFO is confident the No Net Loss Plan will address residual losses to fish habitat through the development of enhancements that demonstrate no net loss of fish habitat productive capacity within the affected watersheds.