95 Wellington Street West
Suite 1010, P.O. Box 44
Toronto Dominion Centre
Toronto, Ontario M5J 2N7
416-628-0216

January 25, 2016

Dave Hohnstein, Director Technical Services
Nunavut Water Board (NWB)
P.O. Box 119
Gjoa Haven, NU X0B 1J0
(867) 360-6338

Dear Mr. Hohnstein;

Re. TMAC Resources Inc.'s *Revisions to Amendment Application No. 1 of Project Certificate No. 003 and Water Licence No. 2AM-DOH1323*: Proponent's Response to ECCC Letter (January 8, 2016)

As requested in the Nunavut Water Board's (NWB) letter of January 19, 2016, TMAC Resources Inc. (TMAC) is pleased to provide the following response to Environment and Climate Change Canada (ECCC)'s letter of January 8, 2016.

TMAC has developed an interim strategy to manage excess groundwater until the toxicity testing protocol amendments under the *Metal Mining Effluent Regulation* (MMER) are complete. While TMAC's preferred water management is as described in the *Revisions to Amendment Application No. 1 of Project Certificate No. 003 and Water Licence No. 2AM-DOH1323* (the Revised Application), TMAC is confident that the alternative mine water management strategy described below will also provide protection of the environment. This interim water management strategy will be presented in more detail at the upcoming technical meetings in Cambridge Bay on January 28 and 29, 2016.

Background

For a period of time early in the mine life (duration of approximately 7 months, starting in late Q2 of Year 1, 2017), TMAC will encounter saline groundwater, roughly of the same salinity as seawater. The rate of groundwater inflow is expected to increase as the mined out volume beneath Doris Lake increases. An initial "first flush" of high salt concentration, but a relatively low volume of water is expected in the first twelve to fifteen months. Following this first flush (Q1 Year 2, 2018), the salt concentration is expected to decrease but relatively higher volumes of water will be encountered.

As the NWB is aware, discharge of saline groundwater from the Doris North mine site to Roberts Bay has been a key feature of the Doris North amendment application since it was initiated by Hope Bay Mining Ltd. in 2011. In the Revised Application, TMAC presented its refined strategy to manage saline groundwater inflows by discharging this water directly into Roberts Bay.

Toxicity Testing

While the saline groundwater will meet the constituent substance limits set out in Schedule 4 of the MMER and is not anticipated to be deleterious to fish frequenting the marine environment, if acute lethality testing is carried out using rainbow trout (a freshwater species) the salinity of the effluent would exceed levels that are tolerable. Rainbow trout do not acclimate well to saline water and as such, test results would not differentiate whether the effluent or the salinity of the water used for the test caused the death of the fish.

Reference Method EPS/1/RM-13 (the Reference Method) incorporated in the MMER explicitly states that tests involving saline water to be discharged to marine environments should be conducted with alternative species authorized by ECCC, and provides ECCC with the authority to approve substituted species in such circumstances:

> This test is to be used with effluents containing fresh water or having a salinity of <10%, defined as conductivity 1400 mS/m at a temperature of 15C. Saline (>10%) effluents discharging into fresh water should also be tested with rainbow trout acclimated to fresh water. Saline (>10%) effluents discharging directly to estuarine or marine receiving waters should be tested with a species authorized by the regional Environment Canada laboratory (see Appendix) and acclimated to seawater of similar salinity to that of the effluent.

The salinity, expressed as the sodium chloride (NaCl) concentration in the groundwater, is predicted to exceed the Reference Method threshold value 10,000 mg/L NaCl. As such, TMAC has been actively engaging with ECCC on the matter of toxicity testing with saline tolerant species (Note that TMAC has carried out its investigation of this matter using computer models that calculate salinity in terms of chloride concentration; 6,000 mg/l chloride is approximately equal to 10,000 mg/l sodium chloride (NaCl).

ECCC informed TMAC on December 23, 2015 of its interpretation that the MMER requires that effluent not be acutely lethal to rainbow trout when tested in accordance with the Reference Method and that ECCC will not authorize the use of an alternative species acclimated to salt water. ECCC also advised that efforts are underway to amend the MMER to address this issue and TMAC understands that these amendments are scheduled to be in place sometime in 2017.

Temporary Water Management Strategy

As a result of the clarification provided by ECCC on December 23, 2015, TMAC is proposing an alternate temporary water management strategy to manage saline groundwater with NaCl concentrations greater than 10,000 mg/L:

- Groundwater will be collected in sumps in the underground mine;
- Mine water (including saline groundwater encountered during mining) is pumped from the sumps to the tailings impoundment area (TIA) until the incoming groundwater salt concentration declines to less than 10,000 mg/L NaCl;
- Once the water in the sumps reaches this concentration, modelling indicates that chloride concentrations in mine water will remain relatively consistent through the remaining life of mine.
- TIA discharge to Roberts Bay would proceed in accordance with that proposed in the Revised Application wherein water from the Reclaim Pond is discharged to Roberts Bay during the open water season.

- The maximum discharge of the combined mine water and TIA Reclaim Pond water is predicted to be in the range of 3,500 mg/L NaCl which is within the range of tolerance of rainbow trout and so effluent is expected to be compliant with the MMER.

Once permitted by ECCC to carry out toxicity testing on saline tolerant species, TMAC would revert to the water management plans outlined in the Revised Application. It should be noted that the Temporary Water Management Strategy TMAC is proposing is not dissimilar to that included in the previous iteration o the Amendment Application (2011) and as such has been publicly consulted on by both the proponent as well as the NIRB.

TMAC looks forward to discussing this alternative further with the NWB, ECCC, KIA and other interested parties at the upcoming technical meeting in Cambridge Bay.

Regards,

M John Roberts
Vice President, Environmental Affairs

cc: Ryan Barry, Nunavut Impact Review Board