



P.O. Box 360  
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Kugluktuk

Phyllis Beaulieu  
Manager of Licencing  
Nunavut Water Board  
P.O. Box 119  
Gjoa Haven, NU, X0B1J0

Bathurst Inlet  
Kingaok

September 21<sup>st</sup>, 2015

Bay Chimo  
Umingmaktok

**Re: TMAC Resources Inc. Comments on Responses to Madrid Advanced Exploration Program, 150908 2BB-MAE.**

Dear Phyllis Beaulieu, KIA has reviewed TMAC Resources Inc. comments to prior responses to its submission of the Madrid Advanced Exploration Program.

Cambridge Bay  
Ikaluktutiak

KIA has compiled some additional responses to TMAC's comments which are presented as follows:

Gjoa Haven  
Okhoktok

**K1:** If waste rock is to be moved in the future, then 2:1 slope is fine. If the waste rock slopes are to be regraded in the future to 2.5 to 3:1, then that shifts reclamation costs to the future. There is less liability to the KIA if final reclamation slopes were placed during operations.

Taloyoak

**K2:** TMAC's response still does not provide rational or explanation for 25% allowance of snowfall. As such, it remains an uncalibrated assumption only and subject to uncertainty. It may be a reasonable assumption but no explanation has been provided.

Kugaaruk

**K4:** TMAC's explanation talks of other specifications and such but does not provide specific engineering details to actually assess effectiveness. So for example, a liner tied into bedrock would like require some form of key trench or bentonite/sand cutoff to actually limit seepage under the liner, if thawed. As such, they have not provided proposed details other than to trust some other specification.

**K5:** TMAC's response assumes that chilled brine drilling will be carried out to assess the overburden and frost affected bedrock depth.

**K6:** TMAC's response does not state expected water depth, duration or extent of ponding expected during "filled" periods. Without this detail, one cannot assess the risk of thawing occurring.

**K7:** It would be better to just commit to angle of repose and noted bench widths to prevent future grading liability for the KIA.



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**K8:** The conceptual closure plan of 60 mil HDPE covered with 30 cm of gravel may cause puncture risks, depending upon size of gravel fragments and equipment used to place. A less risky but costlier assumption would be HDPE covered by a heavy weight geotextile covered by sand and gravel layer. The KIA would be assuming risks regarding puncture of this cover layer.

**K10:** TMAC has committed to providing updated closure cost estimates, but has not specifically committed to addressing the perceived limitations noted to the left in earlier review.

**K11:** A basic map showing locations of areas surveyed and key wildlife features associated with the Madrid project area still not provided. It is not clear whether site specific data have not been collected for all wildlife VECs, or if the area has been surveyed and nothing (site specific) has been found.

**K12:** KIA finds TMAC's comment acceptable. However, as a note: TMAC states they will provide information on the approximate numbers of people to be housed in each camp when Windy camp is expected to open and the number of vehicles expected to travel along the Doris North to Windy road. This will occur after the evaluation of the project and so avoids the full consideration of this aspect of the project in the screening (see response to K17).

**K13:** This response is acceptable. If used in the future, the flocculants type proposed should be distributed for reviewed to the KIA and other interested parties prior to permitting its use.

**K14:** We suggest that updates to the Wildlife Mitigation and Monitoring Plan, including monitoring camera locations (and controls), and other mitigation strategies relevant to Madrid should be submitted by TMAC for review and input by the KIA and other interested parties at least 90 days prior to project construction.

**K17:** The collective effect of cumulative traffic, mining, and exploration activities from Roberts Bay down to Madrid will push the spatial extent of auditory and visual disturbances southward. Pages 48 - 49, include a short, qualitative cumulative impact assessment that fails to fully consider whether this additional traffic, noise, and visual stimuli expanded to the southern Madrid area will affect wildlife VECs differently than predicted in the original Doris FEIS.

The WMMP (2014) for the Doris project is already showing patterns of seasonal attraction and avoidance of the project by wildlife VECs, which would likely continue to the south in association with the Madrid project. As the N-S linear infrastructure will approach ca. 20 linear km for combined projects, the timing of vehicle use and activity at site, and the potential for effects on wildlife movement, avoidance, and attraction should therefore be considered for the corridor as a whole at some stage in the permitting process.



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This is particularly true as caribou seen in this area during March, April, May and December may belong to the SARA-listed Dolphin and Union herd. Although the Madrid advanced exploration project will add a relatively small road, the 24% increase in the footprint for the Doris North project (from the 57.0 ha predicted in the FEIS to the 72.9 ha measured in 2014), and the southward expansion of activity into the Madrid project area, may benefit from a detailed cumulative effects assessment over the N-S corridor.

Such analyses would capture a spatial scale relevant to mammals with large annual ranges, and would help determine whether additional contributions to cumulative effects monitoring and mitigation efforts are required. The KIA would like to know whether there is a step in the regulatory process wherein TMAC will undertake such a holistic, cumulative effects analysis.

**K22:** It does seem as though this area conveys surface water only and likely does not support fish passage. However, it is noted that no fish sampling seems to have been completed during peak flows when connection between the two lakes is most likely to occur.

If TMAC commits to following DFO's Measures to Avoid Harm, particularly construction in the dry, appropriate sediment and erosion control measures, and ensuring that the culvert does not impede fish passage during periods of connecting flows, that no impacts to fish would be expected. To support the assertion that fish passage will not be affected, TMAC may also choose to consider post-construction monitoring of the culvert during the high flow period.

**KitIA-5:** Please provide a comparison between the Suluk groundwater sample and groundwater quality from the Doris and Boston sites. This can be included in section 6.3.2 of the SIR and will satisfy our original technical request until further groundwater samples are collected.

Additionally, please clarify when and where groundwater samples will be collected and what the samples will be analyzed for to confirm the site groundwater chemistry.

**KitIA-7:** We appreciate that section 6.1.1 of the SIR states that daily peak water use comprising of industrial and domestic needs will total 295 m<sup>3</sup>/day. However, MAC's response does not supplant the need for a detailed water balance. We wish to clarify our initial request – please provide a detailed water balance for the project. This water balance should be accompanied with a discussion of uncertainty demonstrating that 295 m<sup>3</sup>/day is the upper limit to expected daily freshwater requirements.

**KitIA-9:** TMAC has not provided a discussion on how laboratory response times will influence correct disposal of the fate of drill brines as requested – we reiterate our



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request to TMAC to provide this discussion. We also note that Table 4 in Appendix B as referenced by TMAC provides an evaluation of truck traffic under varying hydraulic conditions but not with respect to transportation needs under varying water quality conditions in the PCP. This discussion would be facilitated by detailed modeling of water quality conditions in the PCPs as per KitIA-15.

**KitIA-10:** The proposed water quality criteria in Table 7.4-1 of the SIR references concentrations applicable for surface water (Doris Creek) discharges. TMAC's proposed chloride concentrations presented in Table 7.4-1 are of concern. We note the proposed concentrations are in line with the BC water quality guidelines for the protection freshwater aquatic life (150 mg/L chronic, 600 mg/L acute) which are not directly applicable to discharges to land.

We therefore look to the BC Ministry of the Environment and CCME water quality irrigation guidelines for the protection of agriculture for guidance. CCME water quality guidelines for irrigation range from 100 mg/L to 710 mg/L for foliar damage and 180 mg/L to 900 mg/L for rootstock damage, and the BC irrigation guideline is set at 100 mg/L.

Both guidelines can be applied with greater stringency than those for discharges to surface water. We therefore question TMAC's selection of 150 mg/L for maximum average chloride concentrations and 600 mg/L maximum chloride concentration in a grab sample for discharges to the tundra. Lower precipitation at the project site as compared with most of BC and southern Canada represents a decreased capacity to dilute effluent containing this conservative ion.

The relative sensitivity of tundra vegetation compared to agricultural crops is also uncertain and calls for caution. We therefore recommend that the NWB impose a more stringent water quality criterion for discharges to tundra; we recommend a maximum average chloride concentration of 100 mg/L.

**KitIA-11:** TMAC has repeatedly referred to intended updates to management plans and the AEMP, in its responses to technical comments as indicated in our supporting rationale. We therefore propose that the NWB extend the review period to "90 days prior to the commencement of construction" and require it as a licence condition.

**KitIA-13:** See KitIA-7 response.

**KitIA-14:** See KitIA-6 and KitIA-10 responses.

**KitIA-15:** We reassert our request for modeled monthly PCP results given a) Concerns regarding chloride water quality criteria for discharges to the tundra presented in Table 7.4-1 as outlined in KitIA-10, and b) The final water management plan has not yet been submitted as per TMAC's response to KitIA-14.



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Modelled estimates will inform the feasibility of the proposed discharge scheme, assist in setting achievable and protective discharge compliance limits in the Water Licence and provide increased assurance that TMAC will not need to seek an amendment to the Water Licence in the future.

**KitIA-16:** Conductivity is a useful surrogate for total dissolved solids. Given TMAC's indication that they will consider real time parameter monitoring of some water quality constituents, measured changes in conductivity can be used as a first component in their PCP mitigation response framework.

Trigger values associated with conductivity will decrease TMAC's response time to changes in PCP water quality necessitating a change in discharge location. For example, should chloride concentrations (from excess brine) increase faster than anticipated in the PCP perhaps due to cryoconcentration, TMAC may need to discontinue discharge to the tundra and commence discharge to the TIA in a timely fashion to avoid noncompliance.

We therefore request that the NWB require TMAC to develop trigger values associated with conductivity and other parameters of concern, and use real time monitoring capability with appropriate notifications to alert operators that trigger values are being approached. We further request that TMAC outline a response framework for when the trigger values are reached.

**KitIA-17:** See KitIA-7 response.

Yours Truly

John Roesch, P.Eng.  
Senior Hope Bay Project Officer  
Department of Lands and Environment  
Kitikmeot Inuit Association

