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Richard Dwyer

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

September 2nd, 2020

Re: Review of TMAC's Annual Geotechnical Inspection Report for the Tailings Impoundment Area, Hope Bay Project.

Dear Richard Dwyer, the KIA had reviewed TMAC's Annual Geotechnical Inspection Report for the TIA and the Doris and Madrid sites and included comments as part our response to NIRB on TMAC's 2019 Annual Report for the Hope Bay project to the NIRB on July 27, 2020.

The enclosed are excerpts of our comments to NIRB on TMAC's Annual Geotechnical Inspection reports. TMAC is expected to respond to KIA's comments provided to them in our review of their 2019 Annual Report for the Hope Bay Project.

The NWB is free to re-provide these comments again to TMAC Resource Inc.

Thank you

John Roesch

John Roesch, P.Eng.

Senior Hope Bay Project Officer
Kitikmeot Inuit Association, Department of Lands and Environment

Cc Geoff Clark, Director, KIA, Department of Lands and E

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2019 Annual Geotechnical Inspection TIA

KIA-NIRB-37

Review Comment Number	KIA-NIRB-37
Subject/Topic	Ice entrainment in tailings
References	2019 Annual Geotechnical Inspection TIA – Section 2.4.6
Summary	Further information regarding monitoring for ice entrainment
Detailed Review Comment	The report notes storage capacity assessments for the TIA include an allowance for 25% ice entrainment. The report also notes that there is no evidence to suggest that there is any significant entrained ice within the deposited tailings. No information is provided on methods used to assess ice entrainment.
Recommendation/Request	Provide information on how ice entrainment within the TIA will be monitored going forward.
Importance	Low

KIA-NIRB-38

Review Comment Number	KIA-NIRB-38
Subject/Topic	North Dam Thermosyphon - North 2
References	2019 Annual Geotechnical Inspection TIA – Section 4.2.2
Summary	Further information regarding modelling impacts of non-functioning thermosyphon
Detailed Review Comment	The report notes thermosyphon North 2 has not functioned appropriately since 2012. The report further notes that, following an inspection and potential mitigation actions undertaken by Arctic Foundations of Canada Inc. in 2019, TMAC has exhausted the practical repair options for the thermosyphon. It is also stated that additional thermal modelling of the North Dam was previously undertaken considering the non-functioning North 2 thermosyphon which shows the North Dam performance will not be

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	adversely impacted, but that design redundancy is slightly reduced. This modelling is not included in the report nor is a reference provided.
Recommendation/Request	Provide the results of the additional thermal modelling or if it was included in previous project documentation, provide the reference in which the results were included.
Importance	Moderate

KIA-NIRB-39

Review Comment Number	KIA-NIRB-39
Subject/Topic	South Dam Ground Temperature Monitoring
References	2019 Annual Geotechnical Inspection TIA – Section 4.3, Appendix L – South Dam Thermal Performance Review
Summary	Plan for replacement of inactive ground temperature monitoring cables
Detailed Review Comment	The report notes several ground temperature monitoring cables installed within and beneath the South Dam to monitor thermal performance of the structure are inactive and some are considered irreparable. Given the performance of the structure relies on maintaining a frozen foundation, thermal monitoring of the structure is essential. The report recommends replacement of some temperature cables, but not all due to the practical limitations of placement within the dam post-construction.
Recommendation/Request	Provide a plan and schedule for which cables will be replaced and any other measures (monitoring, modelling or otherwise) being undertaken in consideration of the fact that some cables will not be able to be replaced.
Importance	High

KIA-NIRB-40

Review Comment Number	KIA-NIRB-40
Subject/Topic	South Dam Tailings Beach Monitoring

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References	2019 Annual Geotechnical Inspection TIA, Appendix I – TIA Water Levels, Section 3
Summary	Monitoring of length of beach at South Dam in TIA
Detailed Review Comment	The report notes the South Dam is designed to have a tailings beach with a minimum length of 100 m. While information is provided in the tailings deposition plan, monitoring data demonstrating the beach length with time showing compliance with the design criteria is not explicitly provided.
Recommendation/Request	Provide a summary of beach length with time for 2019 demonstrating compliance with the minimum beach length criteria.
Importance	Moderate

KIA-NIRB-41

Review Comment Number	KIA-NIRB-41
Subject/Topic	Tailings Deposition Planning – Tailings density assessment
References	2019 Annual Geotechnical Inspection TIA, Appendix N – Tailings Deposition Update, Section 5
Summary	Assessment of placed tailings density
Detailed Review Comment	The report notes tailings deposition modelling was completed for an overall density of 1.3 t/m3. The report goes on to note that the capacity of the TIA could be significantly impacted by tailings density and recommends that as-placed density be checked throughout to ensure the density assumption remains valid.
Recommendation/Request	Provide methods that will be used to assess the as-placed density of the tailings and an assessment of what this value currently is, including calibration method for the results. If the in-situ density appears significantly different from the assumed value of 1.3 t/m3, then the deposition modelling should be updated.
Importance	Moderate

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2019 Annual Geotechnical Inspection for the Doris and Madrid Sites

KIA-NIRB-42

Review Comment Number	KIA-NIRB-42
Subject/Topic	Waste Rock Pile Pad T – Oversteepening of Slopes
References	2019 Annual Geotechnical Inspection for the Doris and Madrid Sites, Attachment 2
Summary	Over-steepened slopes of waste rock pile on Pad T
Detailed Review Comment	Based on SRK's inspection of the waste rock pipe on Pad T, the pile was noted to be both over-steepened and to exceed its maximum design height. TMAC's response was that the waste rock pile has been re-worked to reduce the height and slope angles and will continue to work with SRK to achieve the design parameters and safety factors. No details on the observed height or slope angles were provided.
Recommendation/Request	Provide the current (regraded) geometry of the waste rock pile and if not within the design criteria, an assessment of current safety factors and a plan to comply with the design criteria.
Importance	High