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March 19, 2019

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**Re: TMAC Response to Doris Project 2018 Annual Geotechnical Inspection Letter Recommendations.**

Dear Mr. Donald,

TMAC Resources Inc. (TMAC) is pleased to present the Doris Project 2018 Annual Geotechnical Inspection letter. This letter is being provided in fulfillment of Part J, Item 16 of the Type A Water Licence 2AM-DOH1323. TMAC is providing responses to recommendations made in the report found in Table 1 below.

A hardcopy of this letter and TMAC responses to recommendations will be sent to you separately.

Should you have any further questions please feel free to contact me at [oliver.curran@tmacresources.com](mailto:oliver.curran@tmacresources.com).

Sincerely,

A handwritten signature in blue ink, appearing to read "Oliver Curran".

Oliver Curran  
Vice President, Environmental Affairs, TMAC

Cc:  
Ida Porter (NWB)  
Kyle Conway (TMAC)  
Sarah Warnock (TMAC)

Jerome Girard (TMAC)  
Dan Gagnon (TMAC)

**Table 1** Doris Project 2018 Geotechnical Inspection Recommendations and TMAC Response

<b>Observation</b>	<b>Recommendation</b>	<b>TMAC Response</b>
TMAC did not conduct surveys of survey monuments on Pad B. Carried over since 2015 AGI report.	Complete at least four surveys annually of the two survey monuments on Pad B. These are to be done in May, June, August and September, which corresponds to the periods when thaw starts, and up to the time when the active layer thickness is at its greatest.	TMAC will ensure that Surveys are scheduled during the recommended periods going forward.
During the 2016 inspection a small depression was observed along the south-east abutment of the Doris bridge.	Continue to monitor if there is any indication of the depression increasing in size. Should any change be noted a geotechnical engineer should be consulted to further investigate the cause, and appropriate remedial measures need to be implemented.	TMAC will continue to monitor the depression and will report any increase to the EOR.
Repairs and upgrades for Sump #1 and Sump #2, first reported in the 2016 inspection report have not been completed.	This work needs to be addressed as a matter of priority as the extent of permafrost degradation is increasing rapidly.	TMAC will conduct the recommended repairs during the summer season of 2019. Water quality sampling was conducted in 2018. An additional sump will be installed in 2019 prior to freshet to improve water management in this area.
Pollution Control Pond (PCP) ground temperature cable (GTC) not working.	SRK-12-GTC-DH02 has no data recorded since March 2018 and TMAC staff has noted that the GTC is not functional. The cause for this instrument failure needs to be investigated.	TMAC has investigated the damage thermistor and suspects the connections between the cable head and body have severed. The connections will be repaired in 2019.
As noted during the 2017 AGI, the PCP base is very undulated because of surficial permafrost melt, and as a result there are multiple small ponded areas that prevent complete drainage of the pond.	These depressions should be carefully filled in using unfrozen overburden salvaged from the overburden pile. In doing so, ongoing permafrost degradation will be minimized prolonging the life of the PCP.	TMAC filled the larger depressions that could be reached by equipment in 2018 with unfrozen overburden as directed by SRK. The remaining depressions will be filled prior to freshet in 2019 to prevent damage to the tundra and permafrost.

Rocks and gravel observed on the Sedimentation Pond liner.	A general cleanup of the Sedimentation Pond is required to remove rocks and gravel on the liner as the liner may be damaged. Specifically, the excavation in the surface gravel along the south-west corner of the Sedimentation Pond must be filled, and the transition with the pond liner be reinstated in accordance with the original design.	TMAC will conduct the cleanup of the sedimentation pond, and reinstate the surface gravel and transition with the pond liner in accordance with the original design. This work will be conducted in summer 2019.
Rock spalling on the vent raise and 7.5 ML tank farm high walls has previously been raised as a concern for personnel safety. SRK noted during the 2017 and 2018 inspection that a substantial number of rocks have fallen from these walls. This poses a safety hazard to personnel working in these areas.	Since limited access prohibits construction of a simple catch-berm to retain falling rocks, consider a permanent solution such as covering these high walls with mesh or imposing an annual preventative scaling campaign. However, until such time, post signage warning people to avoid these areas, or if they must enter the danger zone, they should be made aware of the nature of the hazard.	TMAC has ordered signs to identify the hazard in this area to its employees. Although this area is only accessed by authorized personnel, TMAC will investigate a more permanent solution as recommended by SRK.
Damage to the gravel layer (over-liner) protecting the liner in the 7.5 ML tank farm secondary containment.	Damaged areas need to be filled in and compacted to prevent progressive failures from occurring, possibly exposing the liner. Limit vehicle travel in the tank farm secondary containment, and when vehicle travel is required operators should be instructed to take special precautions to prevent over-liner damage. When damage is observed it needs to be repaired.	TMAC conducts routine maintenance of the berms and will continue to do so. The areas noted will be repaired in 2019.
Large tension crack about 15 m long along the upstream slope of the Doris Camp Diversion, extending approximately 2 m onto the diversion thermal protection berm.	Monitor this area and if localized ponding develops some remedial action may be required.	This area will continue to be monitored during weekly inspections and if required will conduct remedial actions as advised by SRK.
Loose bolts on the safety railings and the arch culvert of the Windy All-Weather Road bridges.	Implement an annual maintenance procedure to inspect the bridges and arch culvert, including the integrity of all bolts.	The loose bolts identified in both the culvert and the double bridge along the Windy All-Weather Road have been tightened.

Extensive ponding at the south abutment of the double bridge along the Windy All-Weather Road. Become more significant compared to 2017.	Fill in this depression as soon as practical with clean unfrozen overburden material. The material needs to be placed in thin (0.15 m) lifts and compacted. Equipment access in this area will be limited and therefore manual labour using walk-behind tampers may be the only practical way to complete this work.	The depression will be filled with unfrozen overburden in 2019 as directed by SRK. The area will continue to be monitored to ensure no ponding continues in this area.
Snow removal equipment has resulted in undercutting and over-steepening of the northern internal slope of the Roberts Bay 20 ML secondary containment.	This slope needs to be repaired by reinstating the original design slope. Develop and implement improved operating practices for snow removal in this facility to prevent this type of damage from occurring.	TMAC conducts routine maintenance of the berms and will continue to do so. The areas noted will be repaired in 2019.
A large tension crack on the Windy All-Weather road immediately adjacent to the exploration trench near old Windy Camp.	Place a warning sign and inspect the area at least monthly during the summer and again spring onwards, to look for signs that the tension crack may widen potentially endangering traffic.	Delineators have been placed in the area to warn drivers of the tension crack. The area will continue to be monitored and remedial actions will be taken if required.
Many small to medium sized sinkholes on the pad, as well as significant instability and sloughing failures along the pad shoulder at the core storage area on Quarry D.	Make people working in the area aware of the risks and ensure that appropriate reconnaissance is carried out ahead of time to develop a safe work plan.	TMAC will conduct appropriate reconnaissance and task hazard assessment prior to any work beginning in Quarry D.
The waste rock pile on Pad T is over-steepened and appears to exceed its maximum design height.	Assume the original waste rock pile design criteria by reshaping the existing waste rock pile, or complete new stability analysis to ensure that the waste rock dump as constructed meets the required stability factors of safety.	TMAC intends on using a portion of this waste rock as back fill in 2019, during which time, TMAC will reshape the waste rock pile as per the design criteria.