

## Review Comment Table

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| <b>Board:</b>                          | WLWB  |
| <b>Review Item:</b>                    | GNWT-INF - Tlichó All-Season Road (TASR) - Permafrost Management Plan - Version 2.0 (W2016E0004/W2016L8-0001)   |
| <b>File(s):</b>                        | <a href="#">W2016E0004</a><br><a href="#">W2016L8-0001</a>  |
| <b>Proponent:</b>                      | GNWT - INF (Infrastructure)   |
| <b>Document(s):</b>                    | <a href="#">Permafrost Management Plan Version 2.0</a> (3 MB)   |
| <b>Item For Review Distributed On:</b> | Feb 26 at 16:40 <a href="#">Distribution List</a>   |
| <b>Reviewer Comments Due By:</b>       | Mar 25, 2020  |
| <b>Proponent Responses Due By:</b>     | Apr 8, 2020   |
| <b>Item Description:</b>               | <p>The Government of the Northwest Territories Department of Infrastructure (GNWT-INF) submitted Version 2.0 of its Permafrost Management Plan (PMP) on February 26, 2020. This Plan is required by Part C, Condition 25 of Permit W2016E0004 and Part B, Condition 19 of Licence W2016L8-0001. Changes to the PMP include:</p> <ul style="list-style-type: none"> <li>• Updated and clarified the thermistor reading schedule;</li> <li>• Minor text edits; and</li> <li>• Updated Appendix A (Thermistor Readings along the TASR Alignment Crossings 2017-2019).</li> </ul> <p><b>Reviewers are invited to submit comments, and recommendations using the Online Review System (ORS) by the review comment deadline specified below. If reviewers seek clarification on the submission, they are encouraged to correspond directly with the Licensee prior to submitting comments and recommendations.</b></p> <p><b>Reviewers may also wish to consider providing an overarching recommendation regarding whether the Board should approve the submission, to provide context for the comments and recommendations and assist the Board with its decision.</b></p> <p>All documents that have been uploaded to this review are also available on our public Registry. If you have any questions or comments about the ORS or this review, please contact Board staff identified below.</p> |

**Contact Information:**

Jessica Pacunayen 867-765-4591  
 Ryan Fequet 867-765-4589

## Comment Summary

| Fisheries and Oceans Canada: Olivia Sroka             |   |  |   |                      |
|---|---|--|---|----------------------|
| ID  | Topic   | Reviewer Comment/Recommendation  | Proponent Response  | Board Staff Response |
| 1   | General File  | <b>Comment</b> <a href="#">(doc)</a> DFO Cover Letter<br><b>Recommendation</b>   |   |                      |
| Wek' eezhii Renewable Resources Board: Randi Jennings |   |  |   |                      |
| ID  | Topic   | Reviewer Comment/Recommendation  | Proponent Response  | Board Staff Response |
| 1   | GNWT-INF - Tlicho All-Season Road (TASR) - Permafrost Management Plan - Version 2.0 (W2016E0004/W2016L8-0001) | <b>Comment</b> The WRRB have no comments at this time.<br><b>Recommendation</b> The WRRB have no recommendations at this time.   |   |                      |
| WLWB: Jessica Pacunayen                               |   |  |   |                      |
| ID  | Topic   | Reviewer Comment/Recommendation  | Proponent Response  | Board Staff Response |
| 1   | Continued Monitoring  | <b>Comment</b> On page 11 of the Plan, GNWT-INF plans to collect thermistor readings post construction at least twice a year and then reduce frequency to once a year once permafrost readings stabilize.<br><b>Recommendation</b> Can GNWT-INF clarify how many readings are required to determine premafrost temperature stabilization? Provide any additional information and rationale to support GNWT-INF's conclusion. | <b>Mar 30:</b> Stabilization could occur over one year's time, as the only disturbance was the drilling and the installation of the thermistors themselves (a relatively small localized thermal change). However, a minimum of two annual readings is recommended to confirm stabilization. The heat that impacts the frost and permafrost active layer comes from above the permafrost, the sun. Hence, if there has been no mass change to the surface conditions (i.e. thermal properties) due to organic layer stripping, loss of vegetative shade, forest fires, drainage patterns, etc. then there is a strong confidence in the |                      |

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|   |         |  | <p>recorded data. Conversely, any mass new exposure to sunshine and changes in the overall thermal properties of the ground layers will definitely change the thermal dynamics of heat transfer within the ground structures, and may take several years to normalize. Ground temperature data collected during this time period would be 'point in time' data (i.e. it could be different next year), could be erratic and confidence level in their meaning would be low.</p> |  |
| 2 | Table 1 | <p><b>Comment</b> One of the changes in Version 2.0 is that the low temperature range for Borehole BH-33B changed from -5.0 to -0.5.</p> <p><b>Recommendation</b> Can GNWT-INF please clarify whether or not this was an administrative error? If this was not an error, can the GNWT-INF please provide an explanation and indicate whether this is a cause for concern? If not, why not?&amp;nbsp;</p> | <p><b>Mar 30:</b> The original recorded Borehole, BH-33B, temperature data was an administrative error (typo).</p>  |  |



Suite 301, 5204 50<sup>th</sup> Avenue  
Yellowknife, NT  
X1A 1E2

March 25, 2020

Your files      Votre référence  
W2016E0004/W2016L8-0001

Our file      Notre référence  
16-HCAA-00272

Wek'eezhii Land and Water Board  
Attention: Ryan Fequet  
4905 48<sup>th</sup> St.  
Yellowknife, NT X1A 3S3

Dear Ryan Fequet,

**Subject: GWNT-INF - Tlicho All Season Road – Permafrost Management Plan  
Version 2.0 (W2016E0004/W2016L8-0001)**

The Fish and Fish Habitat Protection Program of Fisheries and Oceans Canada (DFO-FFHPP) would like to thank the Wek'eezhii Land and Water Board for the opportunity to provide comments on GWNT-INF (the Proponent) Tlicho All Season Road – Permafrost Management Plan Version 2.0.

As outlined in your request, reviewers are invited to submit comments and recommendations to the WLWB by March 25, 2020.

DFO-FFHPP has reviewed the Tlicho All Season Road – Permafrost Management Plan Version 2.0 in regards to its mandate, i.e. the management, protection and conservation of fish and their habitats. DFO-FFHPP's is satisfied with the proposed plan and has no further recommendations at this time.

If you or any other parties have any questions, please contact Olivia Sroka at 867-445-3782, or by email at [Olivia.Sroka@dfo-mpo.gc.ca](mailto:Olivia.Sroka@dfo-mpo.gc.ca). Please refer to the file number referenced above when corresponding with the Program.

Yours sincerely,

Daniel Coombs  
Senior Fisheries Protection Biologist  
Fish and Fish Habitat Protection Program

Copy: Olivia Sroka, DFO

## Jessica Pacunayen

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**From:** Benjamin Bey <Benjamin\_Bey@gov.nt.ca>  
**Sent:** April 20, 2020 5:35 PM  
**To:** Jessica Pacunayen  
**Cc:** Ryan Fequet  
**Subject:** RE: Permafrost Management Plan - Version 2.0 - Follow up Question

**Follow Up Flag:** Follow up  
**Flag Status:** Flagged

Hi Jessica,

Thanks for your email.

To confirm stabilization, we need one reading per year in the same annual period for two years (i.e. two winter readings), so that we are comparing the temperature readings under the same thermal conditions.

I hope that explains things further but please let me know if you need further clarification.

Thanks,  
Benjamin

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**From:** Jessica Pacunayen [mailto:jpacunayen@wlwb.ca]  
**Sent:** Monday, April 20, 2020 3:31 PM  
**To:** Benjamin Bey  
**Cc:** Ryan Fequet  
**Subject:** Permafrost Management Plan - Version 2.0 - Follow up Question

Hi Ben,

During the public review of Version 2.0 of the Permafrost Management Plan, Board staff asked GNWT-INF to clarify how many readings were required to determine permafrost temperature stabilization. GNWT-INF responded to Board staff stating that while stabilization could occur over one year's time, "a minimum of two annual readings is recommended to confirm stabilization."

Board staff would like further clarification on whether GNWT-INF meant 2 readings/year or 1 reading/year for two years.

If GNWT-INF could please get back to Board staff by the end of Wednesday, that would be greatly appreciated.

Masi,

**Jessica Pacunayen, M.Sc.**

Regulatory Specialist

**Wek'èezhìi Land and Water Board**

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