

September 20, 2013

Mr. Roger Connelly, Chair
Northwest Territories Water Board
125 Mackenzie Road
Suite 302, Professional Building
P.O. Box 2531
Inuvik, NT
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Dear Mr. Connelly:

**Supplemental Response to Questions Raised at Pre-Hearing Conference
NWTWB Application N7-1-1835**

As indicated during the Pre-Hearing Conference (PHC) held September 20, the Department of Transportation (DOT) is pleased to submit additional information to the NWTWB in response to PHC technical questions #1 - 14 and the NWTWB's letter of September 10 in respect of the water licence application for the construction of the Inuvik to Tuktoyaktuk Highway Project (the "Project") NWTWB Application N7-1-1835.

This submission package includes the following:

- Results of Bathymetric Surveys – Potential Withdrawal Lakes Years 2 and 3
- Updated Construction Atlas
- Draft Framework Aquatic Effects Monitoring Plan
- Consultation Log
- Revised Spill Contingency Plan, Explosives Management Plan and Waste Management Plan (including revised waste transfer agreements)
- Revised Fish and Fish Habitat Protection Plan

Due to the size of the revised plans being submitted and continued anticipated revisions, the management plans are being submitted electronically and can be made available in hardcopy upon request.

The following are specific responses to certain topics of interest raised in PHC technical questions #1-14 and September 10 letter. The DOT thanks the NWTWB for having had the opportunity to provide responses to the PHC technical questions during the PHC September 16.



1. Waste Transfer Agreements (PHC#5)

The DOT has obtained a revised letter of agreement from the Hamlet of Tuktoyaktuk to accept certain waste generated during the construction of the ITH Project at its municipal facility. The letter is included in the revised Waste Management Plan, included in Appendix III of Attachment A. As indicated during the PHC, the DOT is in communication with the Town of Inuvik for a similar revision to the letter previously provided.

2. Supplementary Fish and Fish Habitat Baseline Assessments

Fish and fish habitat assessments to support watercourse crossing designs and applications for authorizations were previously conducted in 2010 and 2012 (Kiggiak-EBA 2010; IMG-Golder 2012). Through the process of completing engineering designs in 2013, certain watercourse crossing locations were relocated outside of the previous assessment areas. Sixteen watercourse crossings have been re-assessed in summer 2013 and results of this assessment will be submitted September 27, 2013 to the NWTWB. Results of the re-assessment were used to complete watercourse designs as presented in the Design Package of September 5.

3. Fish and Fish Habitat Protection Plan

A revised Fish and Fish Habitat Protection Plan (FFHPP) is provided in Attachment B. Changes to the FFHPP take into account comments provided by DFO, and comments heard during the PHC. The plan now includes a table of watercourses, crossing type, fish presence and habitat potential. Changes have been made to the mitigations sections regarding fuel storage, use of explosives and camps. Additional monitoring has been added related to borrow pits and now includes monitoring for oil and grease for snow and waterbodies and sampling of surface water during the summer period in and adjacent to borrow pits.

4. Project Environmental Management Plan (PHC#12, #13, #14)

The Waste Management Plan, Explosives Management Plan and the Spill Contingency Management Plan have been revised to incorporate comments and recommendations from regulators (see Attachments A, C, D, respectively). A summary of the changes include:

- For all plans: the plans are identified as "Final Draft" – recognizing DOT's commitment to working with regulators to improve the plans, as needed
- Waste Management Plan: the table in Appendix II is updated to include the locations for disposal of recyclables and hazardous wastes
- Explosives Management Plan: identifies the Explosives Management Plan as a component of the Project's Environmental Management Plan, and includes reference to other related plans, including the Spill Contingency Management Plan and the Fish and Fish Habitat Protection Plan

- Spill Contingency Management Plan: text regarding sewage/ greywater and explosives as potential hazardous waste materials is included.

5. Consultation (PHC#6)

The NWTWB, in its letter to DOT of September 10, requested documentation and confirmation of consultation dates related to the DOT's commitment #163. Commitment #163 reads:

Commitment by the Developer to conduct consultations (after Public Hearings) with the Inuvik and Tuktoyaktuk Hunter and Trapper Committees, Inuvialuit Game Council, DFO and Transport Canada regarding:

- *Selection criteria for crossings;*
- *Use of waterbodies; and*
- *Types of vessels.*

Consultation dates are to be determined.

The NWTWB, in its letter of September 10, further clarifies that it is specifically requesting information from DOT about whether there are any other persons who may be affected by use of water or deposition of waste by the ITH (Construction) Project and as such be entitled to compensation pursuant to the section 14(4)(b) of the Northwest Territories Waters Act.

Section 14(4)(b) requires compensation be paid to users, depositors, owners, occupiers or holders in or out of the water management area, if these persons or entities would be adversely affected by the use of waters or deposit of waste proposed by the DOT, if these persons or entities notify the NWTWB in response to the public notice.

The DOT has conducted over 20 pre-regulatory consultation meetings since October 2012 on the ITH Project with Inuvialuit organizations, regulators and co-management boards. The DOT has also interacted with members of the public during the public review of the project conducted by the Environmental Impact Review Board. During the EIRB review and during certain consultations, the DOT has heard concerns about the potential effects to muskrat from lake water withdrawals. The EIRB, in its review of the matter, concluded that:

"The Developer did not complete field surveys for muskrat and did not quantify impacts to muskrat in the EIS. This issue was not assessed in the Review, and remains relatively unexamined.

If pre-disturbance surveys for muskrat push-ups are implemented for lakes that are subject to snow removal and/or water withdrawal, and proposed wildlife mitigation measures are followed (e.g., Wildlife Act), it is likely that impacts to muskrat can be avoided."

The Panel then recommended:

“Based on this analysis of issues and to ensure that mitigation successfully protects muskrats from significant effects, in addition to the Panel’s recommendations in section 7 of this Report, the Panel recommends the following:

R25: The Developer shall complete pre-construction surveys for muskrat push-ups on lakes where winter snow removal and/or winter water withdrawal will take place.

R26: The Developer shall follow mitigation measures set out in permits issued under the Wildlife Act and monitor mitigation success, if muskrats are present.”

Both of these recommendations were accepted by Canada. The DOT notes that it has committed to implementing these measures to protect muskrat from significant effects due to water withdrawal in the Wildlife and Wildlife Habitat Protection Plan, and that recently (August and September 2013), it has met with HTC’s to discuss the proposed plan for conducting these surveys. The DOT is of the view that since these mitigations are intended to prevent significant impacts to muskrat, and since HTC’s in particular will have input in the design of the program, its undertaking and results, no compensation should be required pursuant to 14(4)(b) of the Act.

Earlier in the summer, while consulting with HTC’s on the potential navigability and impacts to navigability from the construction of watercourse crossings, the HTC’s noted, as they did during the EIRB review, that the construction of the highway would create access to areas that otherwise were not accessible for recreational or traditional purposes. The result being that watercraft may be used in watercourses in waterbodies where they would not have otherwise been used before. Transport Canada is currently reviewing the package submitted to them to assess whether any applications for authorizations pursuant to the *Navigable Waters Protection Act* will be required. Impacts to fisheries resulting from increased access to watercourses and waterbodies is being addressed in the Fisheries Management Plan

Consultations and meetings were held with named organizations on the topics indicated in Table 1. A consultation log and records of meetings are provided in Attachment E.

Table 1: Summary of consultation topics and participants

Consultation / Meeting Topics	Participants
Sediment and Erosion Control Plan, including monitoring	IHTC, THTC, FJMC, DFO
Fish and Fish Habitat Protection Plan	DFO
Fisheries Plan	IHTC, THTC, FJMC, DFO
Pit Development Plans	IHTC, THTC, ILA, AANDC

Consultation / Meeting Topics	Participants
Wildlife and Wildlife Habitat Protection Plan	IHTC, THTC, WMAC, ENR, EC
Wildlife Effects Monitoring Program	IHTC, THTC, WMAC, ENR
Construction Plan, including water withdrawal locations, camp locations, winter roads, storage and maintenance areas	IHTC, THTC
Navigable watercourses	IHTC, THTC
Crossing locations and designs, impacts to fisheries	IHTC, THTC, FJMC, DFO
Pre-construction bathymetric surveys, wildlife surveys, fisheries assessments	IHTC, THTC, ENR, DFO

6. Water Sources and Bathymetric Data (PHC#7)

Additional bathymetric surveys of lakes proposed for water withdrawal beginning in Year 2 were completed in August 2013 (IMG-Golder 2013b; Attachment F), and are additional to those previously submitted to support water withdrawals beginning in Year 1 (see submission September 5). Revised proposed volumes to be withdrawn for summer and winter construction along southern and northern spreads beginning in Year 2 are indicated in Tables 2a, 2b and 2c. The volumes proposed to be withdrawn meet the requirements of the *DFO Protocol for Winter Water Withdrawal from Ice Covered Bodies in the Northwest Territories* where it applies. The protocol does not apply for water withdrawals during ice-free periods. In certain cases where the lake is shown to likely be frozen to bottom or mostly frozen to bottom, withdrawal from the lake is being proposed, as it these have been deemed unlikely to support overwintering fish. Revised water withdrawal locations are shown in the updated Construction Atlas (Attachment G). Lakes marked as “contingency only” are not included in withdrawal totals, but are part of the application. They may be used if other sources are deemed unsuitable.

Table 2a: Proposed Water Sources Year 2 (revised) – Southern Spread

Water Source Name	Available Under Ice Volume (m ³)	10% of Available Volume (m ³)	Maximum Volume to be Withdrawn per year (m ³)	Years to be Used	Bathymetric Data
<i>Lake KP23 has been withdrawn from application</i>					Kiggiak-EBA 2013
Lake KP24	2,927	292	250	2	IMG-Golder 2013b
<i>Lake KP25 has been withdrawn from application</i>					IMG-Golder 2013b
Jimmy Lake	23,249,708	2,324,970	30,000	2 - 4	IMG-Golder 2013b
Lake 37 (KP 29)	142,313 to 0 (winter)	N/A ¹	5,000	(contingency only)	IMG-Golder 2013b
Lake 29A	190,407 to 0 (winter)	N/A ¹	5,000	(contingency only)	
Lake KP29B	109,949 (summer)	N/A	1,000	2 - 4	IMG-Golder 2013b
	109,949 to 0 (winter)	N/A ¹	10,000	2 - 3	
<i>Lake KP33 has been withdrawn from application</i>					IMG-Golder 2013b
Lake 35	2,303,599	230,360	30,000	2 - 3	IMG-Golder 2013b
TOTAL MAXIMUM TO BE WITHDRAWN PER YEAR			71,000		
NOTES:					
¹ N/A indicates that <i>DFO Protocol for Winter Water Withdrawal From Ice Covered Bodies in the Northwest Territories</i> is "not applicable" since lake is assumed frozen to ground at end of winter (2 m ice thickness)					

Table 2b: Proposed Water Sources Year 2 (revised) – Northern Spread

Water Source Name	Available Under Ice Volume (m ³)	10% of Available Volume (m ³)	Maximum Volume to be Withdrawn per year (m ³)	Years to be Used	Bathymetric Data
Lake KP82A	12,121,813	1,212,181	20,000	2 - 3	IMG-Golder 2013b
Lake KP82B	7,636,055	763,605	20,000	2 - 4	IMG-Golder 2013b
Lake KP85	1,367,343	136,734	10,000	(contingency only)	IMG-Golder 2013b
Lake KP86	13,349,427	1,384,942	10,000	2 - 3	IMG-Golder 2013b
Lake KP91	8,795,655	879,565	20,000	2 - 4	IMG-Golder 2013b
Lake KP100	341,636	34,163	2,000	2	IMG-Golder 2013b
Lake KP101	489,938	48,993	2,000	2	IMG-Golder 2013b
TOTAL MAXIMUM TO BE WITHDRAWN PER YEAR			74,000		

Table 2c: Proposed Water Sources Year 3 and 4 (revised)

Water Source Name	Available Under Ice Volume (m ³)	10% of Available Volume (m ³)	Maximum Volume to be Withdrawn per year (m ³)	Years to be Used	Bathymetric Data
<i>Lake KP40 has been withdrawn from application</i>					IMG-Golder 2013b
Lake KP41	22,511	2,251	2,000	3 - 4	IMG-Golder 2013b
Lake KP42	7,247	724	700	3 - 4	IMG-Golder 2013b
Lake KP45	176,111 (summer)	N/A	2,000	3 - 4	IMG-Golder 2013b
	176,111 to 0 (winter)	N/A ²	10,000	3 - 4	
	732,115 to 0 (winter)	N/A ²	10,000	3 - 4	
<i>Lake KP47 has been withdrawn from application</i>					IMG-Golder 2013b
Lake KP50A	1,826,827 (summer)	N/A	2,000	2 - 4	IMG-Golder 2013b
	1,826,827 to 0 (winter)	N/A ²	20,000	3 - 4	
Lake KP50B	60,356	6,035	5,000	(contingency only)	IMG-Golder 2013b
<i>Lake KP52 has been withdrawn from application</i>					IMG-Golder 2013b
Lake KP54	366,039	36,604	10,000	3 - 4	IMG-Golder 2013b
Lake KP55	53,347	5,334	5,000	3 - 4	IMG-Golder 2013b
Lake KP61	382,652 (summer)	N/A	2,000	3 - 4	IMG-Golder 2013b
	382,652 to 0 (winter)	N/A ²	30,000	3 - 4	
Lake KP70	4,004,262	400,426	20,000	3 - 4	IMG-Golder 2013b
Lake 11BC (KP71)	2,484,503	248,450	10,000	3 - 4	IMG-Golder 2013b
Lake KP77	18,135,581	1,813,558	undetermined	(contingency only)	IMG-Golder 2013b
Lake KP78	163,543	16,354	undetermined	(contingency only)	IMG-Golder 2013b
TOTAL MAXIMUM TO BE WITHDRAWN PER YEAR			123,000		

NOTES:

- 1 N/A indicates that *DFO Protocol for Winter Water Withdrawal From Ice Covered Bodies in the Northwest Territories* is "not applicable" since lake is assumed frozen to ground at end of winter (2 m ice thickness)
- 2 N/A indicates "not applicable" since IMG-Golder 2012b indicates that most of lake is likely to be frozen to ground at end of winter (2m ice thickness) and unlikely to support overwintering fish.

7. Aquatic Effects Monitoring Plan (PHC#3, #9, #10, #11, #13)

A draft framework for an Aquatic Effects Monitoring Plan draft (AEMP) is provided in Attachment H. the framework AEMP is currently a preliminary document which consolidates water quality and quantity related monitoring into one plan. This plan was requested during consultations with staff of the MVLWB and regulators. The plan provides additional information on monitoring requirements. The plan will be further developed in collaboration with regulators to provide a detailed monitoring regime for the construction and operation of the ITH.

8. Permafrost Monitoring Plan (PHC#9)

The Inuvik to Tuktoyaktuk Highway project (including the highway alignment and the borrow sources) is in an area of continuous permafrost. The performance of the highway is, to some extent, reliant on protecting and maintaining the permafrost, particularly under the highway embankment. Monitoring of the permafrost is part of the performance monitoring of the highway both during construction and during the operation of the highway. Monitoring of the permafrost will be done in two ways: visual inspections and temperature readings.

A detailed visual inspection will be done in the spring of each year when thaw has commenced, along the full length of the highway. Observations (if any) of settlement in the driving surface, along the sideslope and in the natural ground adjacent to the highway will provide evidence of potential permafrost degradation. A similar detailed visual inspection will be undertaken in late September of each year. In addition, highway patrols by maintenance staff will include similar observations and will be undertaken at least once per week, with areas showing any evidence of problems being checked daily. Department staff will use this information to understand the performance of the highway, and to plan and undertake maintenance and rehabilitation of the highway as required.

Ground temperature cables were installed at selected locations along the highway alignment during the 2013 Geotechnical Investigation program. The specific location of these ground temperature cables and initial readings are documented in the Design Report – Inuvik to Tuktoyaktuk Highway, Appendix D – Ground Temperature Data and Instrumentation. In general, ground temperature cables are located at each of the 13 bridge crossings, and at six locations along or adjacent to the alignment. Readings of the temperature cables will be taken March or April (the coldest time) and again in mid-October (when the ground temperatures are at or near their warmest and active layers are fully developed for the year). Department staff will use this information to validate the ground temperature parameters that were used in the design, to observe any changes ground temperatures from year to year, and if any changes are observed to forecast if these changes will impact the performance of the highway and plan accordingly.

DOT has committed to developing a terrain, vegetation and permafrost monitoring plan if needed in collaboration with regulators.

The DOT thanks the NWTWB for the opportunity to provide the additional information in this submission, and looks forward to discussing it further during the public hearings.

Sincerely,



Jim Stevens
Director
Inuvik to Tuktoyaktuk
Highway Project

References

IMG-Golder. 2013b. Lake Bathymetry Survey for the Inuvik to Tuktoyaktuk Highway – Year 2 and 3 Withdrawal Lakes. Technical Memorandum. 28pp.