Northwest Territories Transportation

November 9, 2011

Mr. Eli Nasogaluak
Environmental Assessment Coordinator
Environmental Impact Review Board
PO BOX 2120
INUVIK NT X0E 0T0

Dear Mr. Nasogaluak:

Elimination of Alternative 2 (Upland Route) from Consideration in the EIRB Review for the Construction of the Inuvik to Tuktoyaktuk Highway [02/10-05]

As requested by the Environmental Impact Review Board (EIRB) on October 25, 2011, the Developer is pleased to provide further clarification for the elimination of Alternative 2 (Upland Route) from further consideration in the EIRB review process.

As previously discussed in Section 2.1.2.4 of the EIS, Alternative 2 (Upland Route) was considered by the Developer in response to requests from a few Tuktoyaktuk community members to find a suitable alignment that maintained and increased a 1 km setback from the Husky Lakes. The proposed Upland Route diverts northwest from the Primary 2009 Route at KM 71 and re-joins the Primary 2009 Route at KM 118, near Source 177 as shown in the attached Figure 1.

The initial inclusion of the Upland Route was based on input from community members who frequently travelled the route by snowmachine for recreational and harvesting purposes. As a result of the consultations, Alternative 2 (Upland Route) was developed to the same conceptual design level of detail as the Primary 2009 Route even though it was recognized that this alternative traversed more rugged terrain than the other alignments considered.

Section 2.2 of the EIS provided a comparison of the alignment options and presented the results of the evaluation process (Multiple Accounts Analysis) that was carried out for each of the route alignments considered in the conceptual design for the Inuvik to Tuktoyaktuk Highway.

As indicated in this section, the initial alignments considered in the evaluation included:

- Primary 2009 Route (with encroachment on Husky Lakes setback);
- Alternative 1 (2009 Minor Realignment) to the Primary 2009 Route (to meet Husky Lakes setback); and
- Alternative 2 (Upland Route).

At that time, Alternative 3 (2010 Minor Realignment), recommended by Inuvialuit interests, was considered a viable route option, but had not yet been assessed in the field; therefore, modeling to identify accurate geometric design factors was not yet available. However, it was noted that Alternative 3 (2010 Minor Realignment) was similar to Alternative 1 (2009 Minor Realignment), in that it did not encroach on the Husky Lakes setback, and was shorter in length than the Primary 2009 Route, at approximately 135 km. The Developer also indicated that subject to Project approval, Alternative 3 would be further considered and likely adopted in the detailed design stage based on the additional field information that needs to be gathered.

Subsequent sections of Section 2.2 of the EIS described the evaluation process for the three route alignment alternatives initially considered.

Each option was evaluated for environmental, economic, social, and technical factors that were further divided into a number of sub-indicators. In some cases (i.e., cost) these factors were specifically quantified; in other cases, where the quantified differences between options were small (i.e., within 5 to 6%), then the two options were considered of equal merit.

It was also noted that scientific and economic factors were also part of the development decision. The technical teams who assessed the options maintained an awareness of the values held by the communities, particularly for the Husky Lakes area. These values and interests were discussed in the October 2009 and January 2010 consultation meetings, and were also provided during the initial EISC assessment process. The intent was to integrate those values, while delivering key technical information to decision makers and stakeholders to review and to draw their own conclusions about the acceptability of the proposed Highway.

The results of the evaluation were summarized in several tables that were presented in the EIS. These tables are re-presented in this letter as follows, with relevant text drawn from the EIS as appropriate.

Table 2.2-1 presents a summary of the quantity and cost estimates for each of the three alignments initially considered. The summaries were based on the full length of the highway alignment (including common segments) from Inuvik to Tuktoyaktuk. As noted in the EIS, the three options evaluated share a common alignment from KM 0

(North end of Navy Road, near Inuvik) to KM 71, and again from KM 118 to KM 137 (near Granular Source 177, by Tuktoyaktuk).

TABLE 2.2-1: COMPARISON OF ESTIMATED QUANTITY OF GRANULAR MATERIALS AND COSTS PER ROUTE OPTION

Element	Primary 2009 Route	Alternative 1 (2009 Minor Realignment)	Alternative 2 (Upland Route)
Estimated Highway Length	137 km	142 km	134 km
Estimated Embankment Quantity	4.5 million m^3	4.8 million m^3	5.4 million m^3
Estimated Surfacing Gravel Quantity	250,000 m^3	259,000 m^3	242,000 m^3
Estimated Capital Construction Cost	$221,000,000	$233,000,000	$258,000,000

As reflected in this table, Alternative 2 (Upland Route), although a bit shorter in length, traverses more rugged terrain than the other alignments considered. This poses challenges for constructability, resulting in an increase in material quantities to meet the minimum design parameters, and requiring higher fills that could result in maintenance and operational issues.

The net result is that the overall cost estimate for constructing Alternative 2 (Upland Route), at $258 million, is about $25 million more than Alternative 1 (2009 Minor Realignment) and about $37 million more than the Primary 2009 Route.

The Alternative 2 (Upland Route) is also about $39 million more than an initial estimate that was subsequently generated by the Developer for the Alternative 3 (2010 Minor Realignment) recommended by Inuvialuit interests. As indicated in response to recent information requests, the Developer has clarified to the EIRB that the Alternative 3 (2010 Minor Realignment) is now the preferred alignment for the Inuvik to Tuktoyaktuk Highway in the Husky Lakes area.

Table 2.2.4-1 in the EIS compares the specific geometric features for each alignment option initially evaluated in the Husky Lakes area between KM 71 to KM 118, to identify which alignment might have a higher potential for accidents (collision) and therefore a higher potential for negative or adverse effects on public safety.

TABLE 2.2.4-1: COMPARISON OF GEOMETRIC FEATURES PER ROUTE OPTION

Geometric Feature	Primary 2009 Route	Alternative 1 (2009 Minor Realignment)	Alternative 2 (Upland Route)
Number of horizontal curves with radius less than 350 m	27	32	89
Number of segments with vertical grades greater than 4%	39	44	55
Total length of segments with vertical grades greater than 4%	5.39 km	5.95 km	7.59 km
Maximum Grade	8%	8%	8%

For each geometric feature presented, a lower number represents a highway alignment that exceeds the minimum safety requirements more often and by a greater degree, and therefore, presents a lower risk of collision. A higher number for each feature represents a highway alignment that just meets the minimum requirements, and therefore, has a higher risk of collision. A lower risk of collision is more favourable when it comes to public safety.

As can be noted in this table, the Alternative 2 (Upland Route) is projected to have about three (3) times as many curves as either of the other alternative alignments considered. In addition, the Alternative 2 (Upland Route) is projected to have considerably more and longer sections of road with steeper grades than either of the other alternative alignments considered.

Although not evaluated at the time, the Alternative 3 (2010 Minor Realignment) recommended by Inuvialuit interests, traverses similar terrain to that followed by the other two routes considered in the initial evaluation. Each of these options has more favourable geometric design characteristics than the Alternative 2 (Upland Route) option.

Table 2.2.6-1 of the EIS provides a summary of the complete evaluation based on all of the factors and sub-indicators, including Environmental, Economic, Social and Technical considerations as discussed in Section 2.2 of the EIS. Of the 16 sub-indicators evaluated for the three alignment options initially considered, four (4) of the sub-indicators were considered to be equal.

TABLE 2.2.6-1: SUMMARY OF EVALUATION

Factor	Sub-indicator	Primary 2009 Route	Alternative 1 (2009 Minor Realignment)	Alternative 2 (Upland Route)
Environment	Footprint Area	Most favourable	Most favourable	Least favourable
	Wildlife and vegetation effects	Most favourable	Most favourable	Least favourable
	Fish and fish habitat effects	Least favourable	Favourable	Most favourable
	Potential for dust generation during operation	Equal	Equal	Equal
Economic	Estimated cost of design and construction	Most favourable	Most favourable	Least favourable
	Estimated cost of maintenance and operations	Most favourable	Most favourable	Least favourable
Social	Public Safety	Most favourable	Favourable	Least favourable
	Economic Advantages to the Local Communities	Equal	Equal	Equal
	Local Job Creation and Diversity	Equal	Equal	Equal
	Quality of Life	Favourable	Favourable	Least Favourable
	Cultural Heritage	Favourable	Most Favourable	Favourable
Technical	Footprint Area	Most favourable	Most favourable	Least favourable
	Geometric Design Requirements	Most favourable	Favourable	Least favourable
	Potential for geotechnical hazards	Equal	Equal	Equal
	Permitting Risk	Least favourable	Favourable	Favourable
	Construction Risk	Most favourable	Favourable	Least favourable

As noted in the EIS, the evaluation presented a simplified multiple accounts analysis where all sub-indicators were considered with equal weight or importance.

The summary of favourability for each of the three alignment options initially considered in the EIS is presented in Table 2.2.6-2.

TABLE 2.2.6-2: SUMMARY OF FAVOURABILITY

	Primary 2009 Route	Alternative 1 (2009 Minor Realignment)	Alternative 2 (Upland Route)
Most Favourable	8	6	1
Favourable	2	6	2
Least Favourable	2	0	9
Equal	4	4	4

As noted in this summary table, the Alternative 2 (Upland Route) was determined to be least favourable for nine (9) of the sub-indicators considered.

Due to the greater potential risks to public safety, the considerably higher estimated cost of project construction, the greater constructability challenges, and the greater projected operation and maintenance costs, the Developer is no longer considering Alternative 2 (Upland Route) as a viable option. As such, the Developer requests that the EIRB eliminate this route option from further consideration in the review process for the proposed Inuvik to Tuktoyaktuk Highway.

On behalf of the Hamlet of Tuktoyaktuk, Town of Inuvik and the Government of the Northwest Territories, Department of Transportation, the Developers would like to thank the EIRB for considering the response provided.

Sincerely,

Jim Stevens
Director
Mackenzie Valley Highway

Attachment

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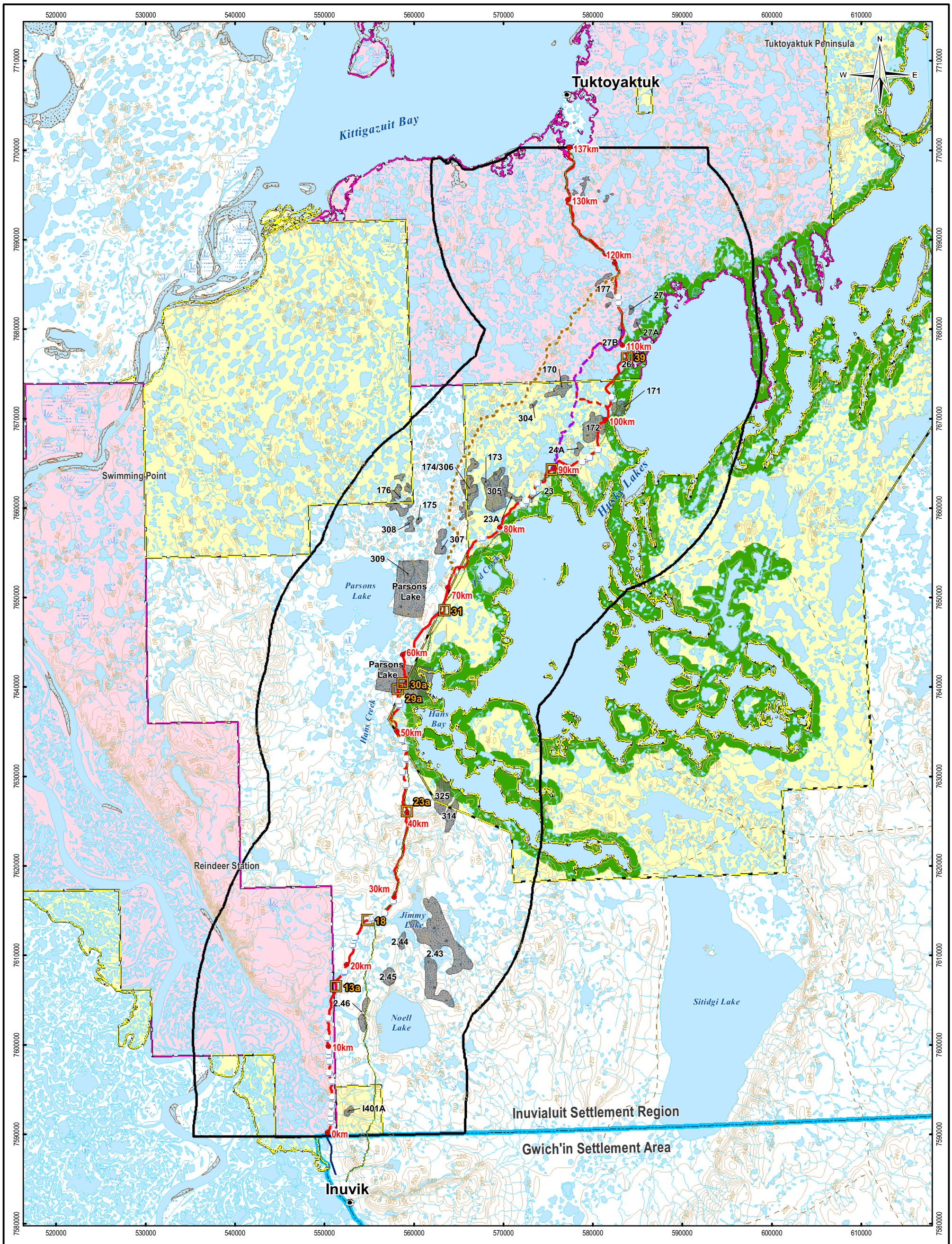

LEGEND

- Stream Crossing
- Stream Crossing - Potential Bridge
- Regional Study Area (15 km buffer)
- Primary 2009 Route
- Alternative 1 (2009 Minor Realignment)
- Alternative 2 (Upland Route)
- Alternative 3 (2010 Minor Realignment)
- PWC 1977
- Navy Road
- Inuvialuit 7(1)(a) Lands
- Inuvialuit 7(1)(b) Lands
- Gwich'in / Inuvialuit Boundary
- Borrow Sources
- Husky Lakes 1000m Setback
- Trail
- Contour
- Watercourse
- Waterbody
- Wetland
- Sand

NOTES

Base data source: NTS 1:250,000

Borrow Sources, ILA Lands, Husky Lakes 1000m Setback: Inuvialuit Land Administration

ISSUED FOR USE

PROPOSED INUVIK-TUKTOYAKTUK HIGHWAY ENVIRONMENTAL IMPACT STATEMENT

Primary 2009 Route and Other Alternative Alignments Considered

PROJECTION	UTM Zone 8
DATUM	NAD83
Scale:	1:400,000
	5 2.5 0 5 10
	Kilometres
FILE NO.	V23201322_EIS_Map033_ExecutiveSummary.mxd
PROJECT NO.	V23201322
DWN	SL
CKD	TS
REV	0
OFFICE	EBA-VANC
DATE	May 2, 2011

Figure 1