Fish and Fish Habitat Component Study Addendum

Cartwright Junction to Happy Valley - Goose Bay Trans Labrador Highway

JACQUES WHITFORD ENVIRONMENT LIMITED
AND
MINASKUAT LIMITED PARTNERSHIP

JW Project No.: NFS09308-0005
Minaskuat Project No.: M6-0005

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JACQUES WHITFORD PROJECT NO. NFS09308-0005
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FISH AND FISH HABITAT COMPONENT STUDY ADDENDUM: CARTWRIGHT JUNCTION TO HAPPY VALLEY- GOOSE BAY TRANS LABRADOR HIGHWAY

SEPTEMBER 2003

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FISH AND FISH HABITAT COMPONENT STUDY ADDENDUM: CARTWRIGHT JUNCTION TO HAPPY VALLEY- GOOSE BAY TRANS LABRADOR HIGHWAY

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EXECUTIVE SUMMARY

The Department of Works, Services and Transportation (WST) is proposing to construct a two-lane, all-season gravel surface highway from Cartwright Junction to Happy Valley-Goose Bay. This highway section is Phase III of the Trans Labrador Highway (TLH) and will link the existing TLH highway sections to the east (Phase II) and west (Phase I). The TLH - Phase III project is currently undergoing an environmental assessment under both the Newfoundland and Labrador *Environmental Protection Act* and *Canadian Environmental Assessment Act* (CEAA). As part of the environmental assessment, detailed study was required on fish and fish habitat at all watercourse crossings of the proposed route for the highway.

Following submission of the fish and fish habitat component study to the Department of Environment, the document was examined to determine whether it fulfilled the requirements of the guidelines. Before a final decision can be reached on the project, the requirement for further information has been identified. A deficiency statement outlining comments and requirements for further information on fish and fish habitat was provided to WST in April 2003. In addition, WST was advised that any alternative route determined to be viable upon review of the alternative methods for carrying out the project must have a fish and fish habitat component study completed for that alternative route.

This addendum addresses questions and comments as outlined in the deficiency statement, presenting a response to each individual comment and question. Deficiency statement comments were addressed using in-house sources and data and, where necessary, communication/interviews with representatives from DFO and various resource management agencies. The topics covered by the addendum include those related to:

- general comments;
- watersheds;
- methods for ground surveys and water quality sampling;
- background information on stream crossings;
- fish habitat;
- fish species;
- water quality field measurements and laboratory results;
- field data and photographs; and
- missing information.

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The fish and fish habitat component study for the alternative route, which was determined to be a viable alternative to the preferred route, is appended to the addendum. The alternative route, subject to further study, was the route identified by the Newfoundland and Labrador Outfitters Association as the outfitter route. Only a portion of the outfitter route was surveyed for the component study (i.e., the section identified as A13 in the environmental impact statement for the preferred route), as the remainder of the route is the same as parts of the preferred route that were surveyed and assessed in 2002/2003. The appended component study provides details of the study area, methods used and information obtained along the outfitter (A13 section) route.

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TAKUAPEKISHTAKANSHU MISHINAIKAN

Nete stsheutshimat kaut ueuetishutakantshi utapan meshkananua (WST) ui tutamut utapan meshkananu nete tsheut tshitamutakant Nutapineuant (Cartwright Junction) ute tshepet itamutakant Apipani-Kushpe (Happy Valley-Goose Bay). Ume utapan meshkanau (Phase III) ishinikateu eukuan ume Tshitshue Labrador Utapan Meshkanau (TLH) eshinikatet kie eukuan ume utapan meshkanau tshetikuatueshamutakant ne utapan meshkanau nete mamit (East) itetshe tsheutamut (Phase II mak neme Phase I) nete itetshe tshiuetint (West). Ume utapan meshkanau (Phase III) uatutakant miam anutshish nantutshissentakanu nte ut stsheutshimat Kanantutshissentakant tshekuan (CEAA). Ume tshenantutshissentakant tshekuan, nimesh ui nantutshissenimakanu kassinu nenua shipissa kie shipua tsheashukashimutakant ne utapan meshkanau.

Katshi tshishtakant ne enantutshissenimakant ne nimesh kie tshitapatamupan ne stsheutshimau nenu eshimishkakannit, tshetshi nashatikant ne stsheutshimau mishinaikan eshinantutshissentakant tshekuan. Eku eshk eka tshitshue tshishueuetishutakant ne utapan meshkanau, eshk minuat ntuentakanipan tshetshi etitu minu uauitakant ne utapan meshkanau. Neme ntuentakanipan etitu tshetshi minu uauinakant ne nimesh kanantutshissenimakant kie tshishtakanipan ne mishinaikan kie minakanipant ntshent stsheutshimau ukakuesseshima Utapan meshkananu kaueuetishutakau (WST) nene Uinishk-pishumua 2003. Nenu mishinaikannu manakant ne stsheutshimau tshishat uitamuakanipan nenu ui mishkutinaki nemenu tsheitamunt nenu utapan meshkananu nishtam tshika ui tutam tshetshi nantutshissenimakannitshi nimesha nemennu ua itamutakannit utapan meshkananu.

Ume mishinaikan katutakant uauitakanipan eishi kukuetshitshemunanut tshekuanna kie neme eishi tshiuenimuakanitaimunnu ntshent auentshent kakukuetshitshemuht nenu tshekuannu. Stsheutshimau ukakusseshima uinuau utinamupant nenu eimunnu tshauenimuaht nenua auenua kuiekuetshimuntshi tshekuannu, kie katshitimesheht pisse tshiuenimuepan nenua auenua nenu aimunnu. Umenua nashuk kuauitakanui tshekuanna uauitakanipani:

- Kassinu tshekuan kaeissishuanut;
- Shipua;
- eishi tipeikant ne assi mak nipi eishi nantutshissentakant;
- tsheishi nakutakantshi nenua ashukana neta shipissa tsheashumutakant ne utapan meshkanau;
- nimesh eishitat;
- etatuiet eishinakusht nimesh;
- nipi eishi nantutshissentakant mak eishinakuak nipi;
- assi eishi nantutshissentakant mak eakunikant nte nutshimit; mak
- ne tshekuan eshk nutepant eka uiauitakant.

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Nemenu kanantutshissenimakant ne nimesh nte eishitat neta tshet eitamutakant ne utapan meshkanau, neme etitu keminuaua etentakant tshetshi itamutakant ne utapan meshkanau. Neme kutak tshatapatakant tshipa itamutakanu issishueut ntshent kapempantaht kakusheutshuapa nte nutshimit. Muk tetaut muk ishpish nantutshissentakanipant nemenu essishuet ntshent kakusheutshuapa kapampantaht (A13) ishinikateu nta stsheutshimau mishinaikant kannatutshissentakant tshekuan mishinaikant njeme tshipa itamutakanu ne utapan meshkananu.Shash neme tshi nantutshissentakanipan ne utapan meshkanau tsheitamutakant kie shash tshi tipeikanipan neme pupun etishtet 2002/2003. Kassinu nta mishinaikant uauitakanipan eishi nantutshissentakant ne assi neme tsheitamutakant ne utapan meshkanau kie nenu kaissishueht kakusseutshimaut (A13) nemenu tshipa itamutakannu nenu utapan meshkananu.

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1.0 INTRODUCTION

The Department of Works, Services and Transportation (WST) is proposing to construct a two-lane, all-season, gravel surface highway from Happy Valley-Goose Bay to Cartwright Junction. This highway is Phase III of the Trans Labrador Highway (TLH) and will link the existing TLH highway sections to the east (Phase II) and west (Phase I). The TLH - Phase III project is currently undergoing an environmental assessment under both the Newfoundland and Labrador *Environmental Protection Act* and *Canadian Environmental Assessment Act* (CEAA). As part of the environmental assessment, detailed study was required on fish and fish habitat in the vicinity of the proposed route for the highway.

1.1 Regulatory Framework

The proposed TLH - Phase III is subject to a cooperative environmental assessment that meets the requirements of the provincial environmental assessment process as outlined under the *Environmental Protection Act*, and the federal environmental assessment process as outlined by the CEAA. Following release from the environmental process, the project will be subject to various environmental approvals.

The TLH - Phase III project was registered pursuant to the *Environmental Assessment Act, 2000* on April 3, 2002. This act was later repealed and its contents were incorporated into the *Environmental Protection Act,* which received royal assent on May 22, 2002. Following both government and public review, the Minister of Environment determined on June 19, 2002 that further environmental assessment (an Environmental Impact Statement (EIS)) was required for the proposed project. Consistent with subsection 52(1) of the *Environmental Protection Act*, the Minister appointed an Environmental Assessment Committee with representation from all relevant provincial and federal government departments and agencies to provide advice on scientific and technical matters related to the proposed undertaking.

The TLH - Phase III project is also subject to CEAA, the federal environmental assessment legislation. DFO is the lead Responsible Authority (RA) for the federal assessment, as there is a requirement for approvals under the *Navigable Waters Protection Act* (NWPA) and potential for issuance of authorizations under the *Fisheries Act*. Representatives from DFO, Environment Canada and Parks Canada have been included in the joint provincial/federal Environmental Assessment Committee appointed for the environmental assessment. DFO determined that the TLH - Phase III was subject to a comprehensive study under CEAA and required a comprehensive study report (CSR) to be prepared.

At the provincial level, the environmental assessment is also subject to a Memorandum of Understanding (MOU) between Innu Nation and the Departments of Environment, and Labrador and Aboriginal Affairs. As per Section 53 of the *Environmental Protection Act*, the Environmental Assessment Committee prepared guidelines for preparing the EIS/CSR for the TLH - Phase III project. Following public review and approval

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from the Minister of Environment, the final guidelines were provided to the project proponent in December 2002. The guidelines established the framework for preparing the EIS/CSR by outlining the format and information requirements, including requirements for component studies.

With respect to a component study on fish and fish habitat, the guidelines outlined the following requirements:

Component studies shall be prepared for the following VECs (where new information becomes available as a result of baseline studies, additional component studies may be required):

> *In consultation with Fisheries and Oceans Canada (DFO), and in compliance with the guidance document "Standard Methods Guide for Freshwater Fish and Fish Habitat Surveys in Newfoundland and Labrador: Rivers and Streams" (1998), field survey information using the Beak Classification System (e.g., qualitative assessment of fish habitat types, approximate stream width and length, area, bank material and backslope, vegetation, presence of potential barriers, etc.) shall be required upstream and downstream (250 m each way depending upon stream morphology) of all proposed watercourse crossings identified from 1:50,000 mapping, aerial photography and aerial reconnaissance. Any additional fish habitat information requirements (e.g., quantitative assessment, ground survey, etc.) for purposes of assessment identified during consultation with DFO shall also be provided. In addition to describing the quality and quantity of fish habitat, the proponent should also discuss existing fish species and fisheries (e.g., recreational, commercial, subsistence, etc.). DFO will require such information in order to fully assess the potential impacts of the proposed undertaking and ensure the protection of fish and fish habitat.*
>
> *Qualitative descriptions of fish populations, including abundance and life history parameters, in each of the four watersheds that the highway will traverse shall be provided.*
>
> *Fish population sampling is to be conducted in accordance with the sampling protocol developed by Inland Fish and Wildlife Division. Sampling may occur as construction proceeds.*

Following submission of the EIS/CSR and related studies to the Department of Environment, the EIS/CSR and related documentation was examined to determine whether it fulfilled the requirements of the guidelines. Before a final decision can be reached on the project, the requirement for further information has been identified. A deficiency statement outlining comments and requirements for further information on fish and fish habitat was provided to WST in April 2003. The deficiency statement is provided in Appendix A.

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1.2 Component Study Overview

The Fish and Fish Habitat Component Study for the TLH - Phase III (preferred route) environmental assessment was conducted between August 2002 and January 2003. The preferred route had 95 possible stream crossings in five major watersheds: Churchill River; Traverspine River; Kenamu River; Eagle River; and Paradise River. The objective of the study was to review existing information on the distribution of fish species in the study area and conduct field surveys at all of the proposed stream crossing locations.

Aerial surveys by helicopter were conducted at all crossing locations and ground surveys were conducted at all ground-accessible crossing sites where the upstream area was greater than 2 km^2, and the habitat was classed as spawning and rearing habitat (Type I and Type II). In total, 35 ground surveys were completed.

The fish habitat was characterized at each crossing location, using standard terminology and classifications. Stream width, water depth, substrate, habitat type, riparian vegetation, and apparent obstructions to fish migration or navigation were recorded for all crossings. The same was recorded in more detail during ground surveys, along with water velocity, stream gradient and selected water quality parameters (temperature, pH, conductivity, dissolved oxygen, turbidity - and a sample to determine total dissolved solids, alkalinity and dissolved metals). Field reports, photographs and water quality data were included in Appendices 2, 3 and 4 respectively.

The results of the field surveys indicated that 50 of the proposed crossing locations were small streams with a width of less than 2 m. The details of several of the crossings could not be determined due to the small size of the stream and the dense overhead canopy of the forest. At least 44 of the crossings comprised productive fish habitat (Type I and II).

Twenty fish species were reported in the five watersheds that the highway will transect. No fish sampling was conducted. WST committed to completing detailed fish surveys along the proposed route in 2003.

Water quality data were compiled for 35 of the proposed stream crossing locations. Most of the water quality values were typical for the region. Parameters, such as aluminum and iron, were found at levels above the Canadian Council of Ministers of the Environment (CCME) Guideline for the Protection of Aquatic Life at some locations, a situation that is quite common in Newfoundland and Labrador waterbodies. Other parameters, such as cadmium, selenium and silver, had values that were either above the CCME guidelines or at levels that could not be compared to the guidelines, due to the level of quantification attained by the analytical laboratory.

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The results of the component study were used to support the environmental assessment being carried out for the project. The component study (JW and LMSS 2003) was submitted to the provincial Department of Environment on January 29, 2003.

1.3 Component Study Addendum

On April 24, 2003, the Minister of Environment issued a statement regarding the EIS/CSR and related documentation prepared for the TLH - Phase III environmental assessment. The Fish and Fish Habitat Component Study was determined to require additional work. The additional work requirements related to providing clarification on various aspects of the component study, specific requirements are outlined in the deficiency statement presented in Appendix A. In addition, WST was advised that any alternative route determined to be viable upon review of the alternative methods for carrying out the project (as outlined in the EIS/CSR) must have a fish and fish habitat component study completed for that alternative route.

This addendum addresses the questions and comments as outlined in the deficiency statement (Appendix A), presenting a response to each individual comment and question. The comments are presented exactly as they were provided. Deficiency statement comments were addressed using in-house sources and data and, where necessary, communication/interviews with representatives from various resource management agencies.

The fish and fish habitat component study for the outfitter (A13 section) route, which was determined to be the only viable alternative to the preferred route, is presented as Appendix B to the addendum. This appendix provides details on the field surveys carried out along the outfitter (A13 section) route and the results of those surveys.

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2.0 RESPONSE TO COMMENTS

2.1 General Comments

Comment 1: The Component Study was found to be poorly organized for quick and easy review (e.g., latitudes and longitudes in one table, field data in another, photos elsewhere and a summary in a fourth; photos are out of order and would have been preferable adjacent to corresponding aerial photos). Evaluation would have been more easily done if all information for one site was in one place. Some information on field data sheets should have been included in a table (i.e., depth, surface velocity, substrate type, bank material, back slope, bank vegetation, cover, potential obstructions, gradient). A table containing habitat characteristics would be useful in determining the size and type of water transfer structure appropriate for each stream crossing.

Response 1: The organization has been modified somewhat to conform to the review comment. Latitudes and longitudes (i.e., GPS coordinates) remain in a separate table as they provide little meaning to the reader, who has the map figures for orientation. Copies of the field data sheets are included for reference and these cannot readily be edited or re-organized. The photos are re-arranged by watershed, and crossing number. Each crossing is portrayed by aerial view upstream, aerial view downstream, and views on the ground where ground surveys were conducted. Stream crossing descriptors are arranged by general description, habitat detail and water quality detail. For comparative purpose, the habitat descriptions and water quality are grouped together rather than interspersed throughout the report.

In regard to the selection of water transfer structures, it should be recognized that the route alignment and precise location of stream crossings were not finalized when the field surveys were conducted. The route was laid out by WST on the basis of information portrayed on 1:50,000 topographic maps (and other information) and the field surveys were conducted to provide a site characterization, by which further refinement of the planning would be conducted. All sizes and types of water conveyance structures listed in the project description are the minimum required, based on hydrologic modelling of the upstream basins. The final route alignment will be determined by the terrain and relief of the approach to stream crossings as well as the habitat features of the crossing itself. The design and selection of water transport structures will be determined when the final route alignment is determined.

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2.2 Introduction (Component Study Section 1.0)

Comment 2: Figure 1.1 should have the Churchill River, Traverspine River and Otter Brook labelled. Watershed boundaries for each of the five watersheds should be shown to the extent possible.

Response 2: These features are now indicated on Figure 1.1.

2.2.1 Watersheds (Component Study Section 1.2)

Comment 3: Churchill River is identified as only a single crossing near its mouth. The first 12 stream crossings are identified elsewhere as in the Churchill River watershed. Clarification should be presented and Table 1.1 Physical Characteristics of Four Rivers may need to be revisited.

Response 3: The reference to the Churchill River "as only a single crossing near its mouth" refers to a single crossing of the main stem. Highway construction will result in stream crossings of 12 small tributaries to the Churchill River and the Traverspine River, which is included in the table. The smaller tributaries are very small and enter the Churchill River near its mouth and comprise only a fraction of the drainage area of the Churchill River watershed. Given the small area of potential effects compared to the massive drainage area of the Churchill River watershed, it seemed inappropriate to include the physical characteristics of the Churchill River watershed, as most of it is upstream of the project and therefore not subject to potential effects of the proposed road.

2.3 Methodology (Component Study Section 2.0)

2.3.1 Ground Surveys (Component Study Section 2.2.2)

Comment 4: Ground surveys are identified as conducted for a 50 m section of stream only. Provide the rationale for the 50 m section of ground survey. Provide advice as to whether it should be assumed that the crossing would occur in the middle of the surveyed section.

Response 4: The crossing locations should be assumed to be located in the centre of the area that was ground surveyed. That location was based on coordinates provided by WST and the judgement of the field team. However, it is not inconceivable that the final alignment may be shifted as a result of a re-alignment of the approaches to the crossing, or for other

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reasons relevant to road design and construction. Stream habitat will also be an important factor in making the final decision on the crossing location, and WST have committed to consulting with DFO on the protection of stream and riparian habitat.

The rationale for conducting a detailed ground survey on 50 m was a practical one. It would take considerable time to survey 500 m and the amount of details recorded would be large, particularly where there is a lot of variability within the 500 m distance. Having that information in the absence of an exact stream crossing location would not enhance the ability to assess the potential effects at all. In fact, the temptation would be to 'move' the crossing location to the 'preferred location' based on habitat and streambank characteristics.

2.3.2 Water Quality and Flow (Component Study Section 2.2.3)

Comment 5: Indicate the standard operating procedures for collection of water samples and compare the protocol employed with the standard operating procedures. Describe all units of measurements and conversions completely, i.e., for surface velocity, revolutions per minute is converted to m per sec.

Response 5: As with all of the field survey components, the water sampling followed methods of JW standard operating procedures (SOPs). These water samples were surface grab samples collected in a manner similar to that described by Environment Canada (1995).

The units of measurement are provided in the tables of water quality results. Surface velocity was recorded as revolutions per minute on the data sheets and converted to metres per second on the water quality result tables in Appendix 4 of the component study. The conversion is based on the calibration formula:

Velocity in metres/sec. = 0.2922 x revolutions/sec. + 0.0147

This is often truncated to: Velocity in metres/sec. = 0.3 x revolutions/sec.

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2.4 Results (Component Study Section 3.0)

2.4.1 Background Summary of Surveyed Stream Crossings (Component Study Section 3.1)

Comment 6: The Component Study states that the proposed route will result in 95 stream crossings. Appendix 3 contains photographs of a stream crossing identified as #96. Clarify why crossing #96 is not included in the way point list or field notes.

Response 6: Stream Crossing #96 was inadvertently included in the photos. There is no Crossing #96 and the photo has been deleted.

Comment 7: Expand on the contents of the Comment column in Tables 3.1 to 3.5, e.g., site not accessible, ground surveyed, Type of habitat, intermittent stream, etc.

Response 7: Tables 2.1 to 2.5 have been expanded to include comments on accessibility and whether ground surveys were conducted. The habitat type is shown on other tables.

Table 2.1 Summary of Stream Crossings on Churchill River and Minor Tributaries

				Upstream		Downstream		
Stream Crossing #	Distance from Churchill River (km)	Stream Order	Watershed Area (km^2)	Pond or Lake	Distance to crossing (km)	Lake or Main Stem	Distance to crossing (km)	Comment
1	0	3+	90,000+					Churchill River no ground survey (Type IV)
2	0.8	1	0.5	N	-	M	1	no ground survey (< 2 km^2)
3	1.3	1	1	N	-	M	1.5	no ground survey (< 2 km^2)
4	2	2	2.6	N	-	M	4.5	not safely accessible
5	4	1	0.6	N	-	M	5	no ground survey (< 2 km^2)
6	4.6	1	0.5	N	-	M	7	no ground survey (< 2 km^2)
7	5.2	1	0.6	N	-	M	8	no ground survey (< 2 km^2)
8	6.5	2	4	H	2.3	M	15	ground survey completed
9	6.9	3	3.7	H	4	M	15	ground survey completed
10	7.4	2	1.8	N	-	M	15	no ground survey (< 2 km^2)
11	8.3	1	0.7	N	-	M	15	no ground survey (< 2 km^2)
12	8.7	2	4.7	N	-	M	15	not safely accessible

Notes: Upstream of crossings have headwater pond (H), a lake(s) with tributaries (L), or none (N).
Downstream of crossings have lake (L), steady (S), large tributary (T), or the main stem of the river (M).

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Table 2.2 Background Summary of Stream Crossings on Traverspine River and Tributaries

				Upstream		Downstream		
Stream Crossing #	**Distance from Churchill River (km)**	**Stream Order**	**Watershed Area (km^2)**	**Pond or Lake**	**Distance to crossing (km)**	**Lake or Main Stem**	**Distance to crossing (km)**	**Comment**
13	11.6	1	2.4	N	-	M	3.0	ground survey completed
14	14.3	1	3.1	N	-	M	4.5	not safely accessible
15	16.3	3	26.5	L	3.0	M	6	not safely accessible
16	16.9	3	56.8	L	6.5	M	6.5	ground survey completed
17	18.2	1	1.15	N	-	M	7.5	no ground survey (< 2 km^2)
18	18.5	1	0.5	N	-	M	7.8	no ground survey (< 2 km^2)
19	21.4	2	1.7	N	-	M	3.0	no ground survey (< 2 km^2)
20	22.5	2	2.1	N	-	M	2.5	not safely accessible
21	23.3	1	0.7	N	-	M	2.5	no ground survey (< 2 km^2)
22	24.6	3+	77	L	10	M	2.5	ground survey completed
23	26.7	3+	191	-	-	-	-	Traverspine River ground survey completed
24	27	3	29	L	4	M	0.4	ground survey completed
25	29.5	1	0.4	N	-	M	3.0	no ground survey (< 2 km^2)
26	30.9	1	0.15	N	-	L	3.5	no ground survey (< 2 km^2)
27	31.1	1	0.25	N	-	L	3.5	no ground survey (< 2 km^2)

Notes: Upstream of crossings have headwater pond (H), a lake(s) with tributaries (L), or none (N).
Downstream of crossings have lake (L), steady (S), large tributary (T), or the main stem of the river (M).

Table 2.3 Background Summary of Stream Crossings on Kenamu River and Tributaries

				Upstream		Downstream		
Stream Crossing #	**Distance from Churchill River (km)**	**Stream Order**	**Watershed Area (km^2)**	**Pond or Lake**	**Distance to crossing (km)**	**Lake or Main Stem**	**Distance to crossing (km)**	**Comment**
28	40.2	3+	72.3	L	1.5	L	3	ground survey completed
29	41.3	1	0.78	N	-	L	3	no ground survey (< 2 km^2)
30	45.6	2	11.9	L	2	L	0.5	no ground survey (Type IV)
31	48.2	1	2.7	N	-	T	1	landing not possible (osprey)
32	49.2	2	6.3	N	-	T	0.5	not safely accessible
33	53.7	1	1.5	N	-	M	5	no ground survey (< 2 km^2)
34	54.6	1	6.95	N	-	M	4	not safely accessible
35	56.7	1	1	N	-	M	3	no ground survey (< 2 km^2)
36	58.8	3+	2, 026	-	-	-	-	Kenamu River ground survey completed
37	60.9	1	4.75	N	-	M	3.5	ground survey completed
38	69.4	3+	41.6	S	0.5	M	11	ground survey completed
39	70.3	1	1.3	N	-	M	12	no ground survey (< 2 km^2)
40	73.3	3	14.3	H	3	M	15	ground survey completed
41	78	2	7.8	N	-	L	0.3	ground survey completed
42	82.2	1	2.9	L	1	L	4	ground survey completed

Notes: Upstream of crossings have headwater pond (H), a lake(s) with tributaries (L), STEADY (s) or none (N).
Downstream of crossings have lake (L), steady (S), large tributary (T), or the main stem of the river (M).

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Table 2.4 Background Summary of Stream Crossings on Eagle River and Tributaries

				Upstream		Downstream		
Stream Crossing #	**Distance from Churchill River (km)**	**Stream Order**	**Watershed Area (km^2)**	**Pond or Lake**	**Distance to crossing (km)**	**Lake or Main Stem**	**Distance to crossing (km)**	**Comment**
43	85.1	1	0.5	H	.05	L	0.2	no ground survey (< 2 km^2)
44	85.8	-	na	N	-	L	1	Crossing is on a pond
45	87.4	2	5	L	.05	L	2.5	No ground survey (Type IV)
46	90.1	3+	71.8	L	3	L	6	Crossing is on a pond
47	91.8	1	1.75	N	-	L	0.4	no ground survey (< 2 km^2)
48	94.7	3	36.7	L	0.3	L	3.2	ground survey completed
49	99.3	1	2.6	N	-	L	1	no ground survey (Type IV)
50	100.2	1	1.6	N	-	L	0.5	no ground survey (< 2 km^2)
51	101.3	3	11.8	N	0.1	L	0.4	ground survey completed
52	102.9	3+	140	S	0.03	S	2	ground survey completed
53	106.5	2	2.7	N	-	T	2.5	ground survey completed
54	107.2	1	0.3	N	-	T	3	no ground survey (< 2 km^2)
55	109.9	3+	70.8	L	3.5	T	3.5	ground survey completed
56	111.3	1	2	N	-	T	4	ground survey completed
57	111.6	1	1.5	N	-	T	4	no ground survey (< 2 km^2)
58	113.7	1	1	N	-	L	1.5	no ground survey (< 2 km^2)
59	116.7	2	9.4	L	1.5	L	3.5	not safely accessible
60	117.9	1	1.5	N	-	L	3	no ground survey (< 2 km^2)
61	118.6	2	13.1	H	2.5	L	4	ground survey completed
62	125.3	1	1.5	N	-	L	5.5	no ground survey (< 2 km^2)
63	126.8	1	1	N	-	L	4	no ground survey (< 2 km^2)
64	127.2	2	3.8	N	-	L	3.5	ground survey completed
65	130.8	2	4.1	H	3	L	0.5	ground survey completed
66	131.1	1	0.7	H	0.5	L	0.7	no ground survey (< 2 km^2)
67	134.5	2	5.6	N	-	L	0.05	ground survey completed
68	137.7	1	2.05	N	-	L	1	ground survey completed
69	142.9	1	1.725	N	-	S	0.6	no ground survey (< 2 km^2)
70	148.7	1	4.6	N	-	L	2	no ground survey (Type IV)
71	154.9	3	55.3	S	2.5	T	3	no ground survey (Type IV)
72	157.5	1	3.1	N	-	L	.15	no ground survey (Type IV)
73	162.6	3+	3, 644	-		-		Eagle River - South Branch ground survey completed
74	165.1	1	0.9	N	-	M	2.5	no ground survey (< 2 km^2)
75	165.4	1	1.9	N	-	M	2.5	no ground survey (< 2 km^2)
76	170.6	1	4.2	N	-	L	.5	no ground survey (Type IV)
77	171.2	2	17.3	L	3.5	L	0.1	no ground survey (Type IV)
78	172.7	1	1.2	H	0.15	L	3	no ground survey (< 2 km^2)
79	184.8	3+	376	L	2	S	2	Otter Brook ground survey completed
80	187.6	1	1.2	N	-	T	1	no ground survey (< 2 km^2)
81	187.9	1	1.1	N	-	T	1.1	no ground survey (< 2 km^2)
82	189.9	3	25	L	3	T	1.5	ground survey completed

Notes: Upstream of crossings have headwater pond (H), a lake(s) with tributaries (L), or none (N).
Downstream of crossings have lake (L), steady (S), large tributary (T), or the main stem of the river (M).

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Table 2.5 Background Summary of Stream Crossings on Paradise River and Tributaries

				Upstream		Downstream		
Stream Crossing #	Distance from Churchill River (km)	Stream Order	Watershed Area (km^2)	Pond or Lake	Distance to crossing (km)	Lake or Main Stem	Distance to crossing (km)	Comment
83	206.7	2	11.4	L	0.6	L	0.5	no ground survey (Type IV)
84	211.9	1	1.9	N	-	l	0.5	no ground survey (< 2 km^2)
85	213.8	1	0.8	N	-	T	7	no ground survey (< 2 km^2)
86	218.9	3	78	L	1.2	T	9	no ground survey (Type IV)
87	221.8	3	24	L	5	L	1	ground survey completed
88	224.8	3+	35	S	0.1	L	0.15	ground survey completed
89	225.3	1	6.55	S	0.3	L	0.1	ground survey completed
90	228.9	1	2.55	H	1.5	L	2	ground survey completed
91	230.6	2	16.6	L	2	L	1.2	ground survey completed
92	231.7	1	2.5	H	1.4	L	0.4	no ground survey (intermittent)
93	235.5	1	2.74	H	0.7	L	3	no ground survey (Type IV)
94	241.2	3+	3, 339	-	-	-	-	Paradise River ground survey completed
95	242.6	1	6.8	N	-	M	1.5	ground survey completed

Notes: Upstream of crossings have headwater pond (H), a lake(s) with tributaries (L), or none (N).
Downstream of crossings have lake (L), steady (S), large tributary (T), or the main stem of the river (M).

2.4.2 Fish Habitat (Component Study Section 3.2)

Comment 8: The Churchill River was not ground surveyed. The field data sheet states that no ground survey is required for the Churchill River, which is not correct. However, there is considerable information on the Churchill River available from other sources (e.g., Churchill River Power Project) which should be reviewed and relevant information on habitat and species presented. Given that a causeway is proposed for the Churchill River site-specific information is required.

Response 8: The methods used for the ground surveys would provide little information on a river the size of the Churchill River. The information derived from the aerial survey is recorded and little more would be obtained on the ground, or from a boat, if one were used. The precise location for the crossing was not known at the time and, as with all of the crossing sites, a generalized description is provided.

Data collected from sources such as the Churchill River Power Project are not likely to provide any more habitat details specific to the crossing location. Furthermore, the

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Churchill River Power Project reports are not available for public review or use, so they have not been used to describe habitat or fish species present.

Upon review of the classification of Type II habitat in the area of the Churchill River crossing, that classification was based more on the apparent midstream water velocity (i.e., riffle) and less on the substrate character. Conservatively, Type II was assigned on the basis of flow. However, the substrate is not typically Type II at all. In fact, the geotechnical evaluations of the proposed crossing location determined that the substrate is sand across the entire wetted width of the Churchill River (P. Deering, pers. comm.). Based on the substrate, the area at the crossing is Type IV habitat, with depths varying from 1 to nearly 4 m.

The area of the Churchill River crossing is a migration route for three salmonid species reported in the Lower Churchill River; Atlantic salmon, brook trout and Arctic charr. Beak Type IV habitat is not suitable for spawning for these species.

Comment 9: Provide an explanation for the inconsistencies between the information contained in Tables 3.7 to 3.11 and the information in the field data sheets, e.g., crossings #22 and #24 are characterized as rapids and Type III Habitat in Table 3.8 yet the field data sheets describe both crossings are 50% Type II and 50% Type III Habitat (crossing #22 is 40% rapids and crossing #24 is 50% rapids on front of sheet but 70% Type III and 30% Type II on back of sheet; similarly crossings #90 and #91 need to be rechecked.

Response 9: The first (front) page of the field data sheet lists aerial survey information on a 500-m section of river (250 m below and 250 m above the crossing location). The second (back) page of the field data sheet provides ground survey information on a 50-m section of river (25 m above and 25 m below crossing location). The two surveys are independent and will not necessarily agree with regard to the percentage of "habitat type" present. Crossing 22 is classified as being 50% Type II and 50% Type III based on the 500-m aerial survey. However, based on the ground survey that was conducted on the 50-m section, the habitat is 70% Type III and 30% Type II. Both surveys give an accurate depiction of the relative amount of each habitat type within the surveyed area (50-m ground and 500-m aerial). Tables 3.7 to 3.11 present information for the specified crossing location based on coordinates provided by WST. In the case of crossing 22, the habitat is Type III at the specified crossing location, as is indicated in Table 3.8. Similarly, information presented for crossings 24, 90 and 91 are also correct.

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Comment 10: Indicate whether both crossings #43 and #44 are over ponds. Given the potential for infilling, habitat data (substrate, depth, vegetative cover, etc) is required for these crossing locations.

Response 10: The coordinates provided for stream crossing #43 and #44 put both crossings over ponds. However, in both cases, the crossing was judged in the field to actually be located over streams that are in close proximity to the coordinates that were provided. Crossing #43 will occur on a stream that is 0 to 2m wide, has a drainage area of less than 2 km^2 and appears to be intermittent. Crossing #44 may be located at the end of a pond, in which case, WST will consult with DFO to determine the best alignment and location to provide habitat protection and conservation.

2.4.3 Fish Species (Component Study Section 3.3)

Comment 11: It is stated "DFO made a preliminary determination that the planned road construction methods are not likely to result in a harmful alteration, disturbance or destruction (HADD) of productive fish habitat...." This statement could be interpreted as DFO having already made a decision on HADD, which is not the case. Such a decision can only be made when the exact crossing locations are determined and DFO has reviewed site-specific habitat information and the detailed designs of the crossing structures.

Response 11: Agreed. The statement in the text was not intended to imply that DFO had completed a HADD determination.

Comment 12: Table 3.12 has been compiled from only one source (Anderson, 1985), and as a result is incomplete. More current information sources are available and should be consulted (e.g., studies conducted for the Churchill River Power Project, DFO scientists, outfitters, etc.) For example Arctic charr and rainbow smelt are now known to inhabit the Paradise river. Updated species information needs to be added to the table.

Response 12: Studies conducted for the Churchill River Power Project have not been released to the public and are not available for public review or use. Contact with DFO scientists have identified a few additional published sources since Anderson (1985). Reddin et al. (2000) provides a list of species in Paradise River that is taken from Anderson (1985). The Reddin et al. (2000) report lists catches in lower estuary traps in Paradise River that include 349 smelt, one charr, and one pike, along with salmon parr, brook trout and several marine species. This report does not confirm these species to be present in the freshwater

environment; however, other sources have confirmed smelt catches upstream in Paradise River (G. Bird pers. comm.). A revised list of species is provided in the appended fish and fish habitat component study (Appendix B).

2.4.4 Water Quality (Component Study Section 3.4)

2.4.4.1 Field Measurements (Component Study Section 3.4.1)

Comment 13: There is no discussion provided relating to water quality field measurements contained in Table 3.13, as was done for the water chemistry results. Provide any general comments which can be made about what the field measurements mean and whether there are any anomalies. The word "narrative" under the column titled "CCME Guidelines" needs to be explained.

Response 13: The field measurements are what would be expected for the region. Water temperatures were seasonably cool. The pH was variable from fairly acidic (minimum value) to fairly basic (maximum value). The water samples were collected over a fairly wide area, included within four major watersheds. Conductivity was low, indicating low levels of dissolved solids. Dissolved oxygen was medium to high.

The narrative on both water temperature and turbidity mainly describes effects to natural conditions that should be avoided. This includes not causing a large enough change in temperature to shift any natural seasonal processes, and limiting any increase in turbidity to a percent of baseline. There are no criteria provided for natural baseline conditions.

2.4.4.2 Laboratory Results (Component Study Section 3.4.2)

Comment 14: Provide any reasons which can be put forward for high values obtained, and in particular of aluminum and iron excedences.

Response 14: As noted, aluminum levels in water are typically high in Newfoundland and Labrador. The same has been found for iron in several areas. Although these two metals often exceed the freshwater life guidelines, there is little evidence that toxic effects have occurred in these same waters. The source of these elevated levels is assumed to be natural mineralization of the surficial bedrock and soils in combination with low pH and poorly buffered water.

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2.5 Appendix 2 - Fish Habitat Study GPS Way Points for Stream Crossings and Field Data Sheets

Comment 15: What are the units for surface velocity?

Response 15: Surface water velocity is expressed in metres per second, as indicated in the water quality summary data in Appendix 4. The units of measure (revolutions per minute) were inadvertently omitted on the field data sheets.

Comment 16: Inconsistencies in the field data sheets require clarification, e.g., for both crossings #1 and #9 the substrate is described as fines whereas habitat is classified as Type II yet velocity present in Type II would preclude the presence of fines, perhaps they should be classified as Type IV; Crossing #3 could not be seen yet the width is stated as 0-2 m, how can that be known; the sketch for crossing #9 states "170 m from crossing" without stating what it is referring to.

Response 16: As stated in the response to Comment #8, Type II habitat was conservatively assigned based on the apparent flow. However, the substrate is characteristic of Type IV habitat. In light of the fact that the Churchill River, at the proposed crossing location, is not suitable spawning habitat for salmonids, the suggestion to use Type IV to classify the habitat is a good one. Therefore, the habitat at Crossing #1 and Crossing #9 are revised to Type IV.

At Crossing #3, trees covered most of the stream and prevented a clear view. However, glimpses of water indicated that at least parts of the stream were as described (less than 2 m wide).

The notation for Crossing #9 is a field note regarding the position where the team first encountered the stream as they hiked to the coordinates of the crossing location. The notation "170 m from crossing" should be disregarded and has been deleted from the data sheet.

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2.6 Appendix 3 - Photographs

Comment 17: The six major river crossings (#1, #23, #36, #73, #79 and #94) should be named, and the watershed name should be indicated beneath the other photographs.

Response 17: The photograph captions are changed to agree with this suggestion.

2.7 Omitted

Comment 18: (4.2 5) of the Guidelines requires that the proponent should also discuss existing fish species and fisheries (e.g., recreational, commercial, subsistence). This was not done.

Response 18: The recreational fisheries were addressed in the resource use section of the EIS. Granted, some readers may not review all available documents and this material can be included in the component study.

There are no commercial freshwater fisheries in the study area. There are no summary statistics on the subsistence fisheries available from DFO or other government sources. Some information on aboriginal fisheries are provided in the land and resource use component study.

Comment 19: (4.2 5) of the Guidelines requires qualitative descriptions of fish populations, including abundance and life history parameters, in each of the four watersheds that the highway will traverse. This was also not done.

Response 19: For the purpose of conducting the assessment, there is one fish population of each species that is distributed in the study area, and the wider region. Therefore the population characteristics and life history parameters will be the same for all four watersheds. These have not been studied in detail in this specific area, but again, they are not expected to be different than for the broader Labrador region.

In the four watersheds of the study area (Traverspine, Kenamu, Eagle and Paradise), there has been little reported work on abundance of fish. The angling data have been summarized in the resource use section of the EIS/CSR.

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Comment 20: The Component Study gives no recognition to the presence of trophy brook trout in the watersheds. The proponent should discuss, as part of the discussion of fisheries and the qualitative descriptions of fish populations, the application of the precautionary principle to those populations or determine the trout carrying capacity of the habitat, the size and composition of the trout population, estimate the sustainable yield and the existing harvest. Neither does the Component Study describe key features of the existing lodge based fishery on the Eagle River and the Eagle River Plateau, and the sensitivity of market demand for lodge packages to the management of these features (i.e., catch rate, crowding, pristineness, stability, and type and quality of tourism services).

Response 20: The term 'trophy brook trout' is not normally used in biological or ecological descriptions of fish populations. In this area of Labrador, as in several areas of the Island, there are lakes that contain large brook trout that would be considered trophy fish for most anglers. The distribution of large brook trout in Southern Labrador is known to extend to several lake systems but their numbers are not known; neither is the carrying capacity, the composition of the populations, or the sustainable yield. These population variables can only be determined when substantial fish data are available. The data are not available as no detailed fish studies have been conducted on populations in the inland areas that the TLH route will cross. Fish sampling that was planned for 2002 was to be limited to within 250 m of stream crossing sites. No amount of effort in such limited areas would provide the information necessary to predict the sustainable yield or carrying capacity of the local brook trout populations.

The Component Study does not describe key features of the existing lodge-based fishery, or the sensitivity of market demand for lodge packages to the management of these features (i.e., catch rate, crowding, pristineness, stability, and type and quality of tourism services). These are economic and business details that are not readily available for analysis and such analysis is certainly beyond the scope of the guidelines, which state "discuss existing fish species and fisheries (e.g., recreational, commercial, subsistence)".

Comment 21: Nine of the potential crossing sites were not ground accessible. Fisheries and Oceans Canada will require the proponent to provide basic design information and precise watercourse crossing locations, and information for any areas where infilling is proposed, as soon as this information becomes available. This will allow Fisheries and Oceans Canada to identify areas of potential concern, address any possibilities for re-design or re-location of crossings if warranted and to initiate discussions concerning special protection measures for these areas. Given the time requirements for these steps to take place, the

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requirement for the proponent to provide the needed information in a timely manner is strongly emphasized. It is also recommended that the proponent meet with Fisheries and Oceans Canada prior to the collection of site-specific information at surveyed stream crossings.

Response 21: Acknowledged. This is the understanding under which the component study was conducted.

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3.0 REFERENCES

3.1 Personal Communications

Bird, G. Fishery Officer, Department of Fisheries and Oceans, Cartwright, NL. November 2002.

Deering, P. Engineer, Newfoundland Geosciences Limited, St. John's. NL. September 2003.

3.2 Literature Cited

Anderson, T.C. 1985. *The Rivers of Labrador*. Canadian Special Publications of Fish and Aquatic Sciences, 81.

Environment Canada. 1995. The Inspector's Field Sampling Manual : A Sampling Manual and Reference Guide for Environment Canada Inspectors. Environmental Protection Service.

JW (Jacques Whitford Environment Limited). 2003. *Land and Resource Use Component Study, Trans Labrador Highway - Phase III (Happy Valley-Goose Bay to Cartwright Junction)*. Prepared for Department of Works Services and Transportation, St. John's, NL.

JW and LMSS (Jacques Whitford and Land Management and Survey Systems). 2003a. *Raptor Component Study Trans Labrador Highway (Happy Valley-Goose Bay to Cartwright Junction).* Prepared for the Department of Works, Services and Transportation, St. John's, NL.

JW and LMSS (Jacques Whitford and Land Management and Survey Systems). 2003b. *Waterfowl Component Study Trans Labrador Highway (Happy Valley-Goose Bay to Cartwright Junction).* Prepared for the Department of Works, Services and Transportation, St. John's, NL.

Reddin, D.G., P.B. Short, R. Johnson and J. Bird. 2000. *The Stock Status of Atlantic Salmon (Salmo salar L.) in Paradise River, Labrador in 1999.* Canadian Stock Assessment Secretariat Research Document 2000/044.

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APPENDIX A

Fish and Fish Habitat Component Study
Deficiency Statement

CARTWRIGHT JUNCTION TO HAPPY VALLEY-GOOSE BAY
TRANS LABRADOR HIGHWAY
FISH AND FISH HABITAT COMPONENT STUDY
DEFICIENCY STATEMENT
Issued April 2003

GENERAL COMMENTS

- The Component Study was found to be poorly organized for quick and easy review (e.g., latitudes and longitudes in one table, field data in another, photos elsewhere and a summary in a fourth; photos are out of order and would have been preferable adjacent to corresponding aerial photos). Evaluation would have been more easily done if all information for one site was in one place. Some information on field data sheets should have been included in a table (i.e., depth, surface velocity, substrate type, bank material, back slope, bank vegetation, cover, potential obstructions, gradient). A table containing habitat characteristics would be useful in determining the size and type of water transfer structure appropriate for each stream crossing.

1.0 INTRODUCTION

- Figure 1.1 should have the Churchill River, Traverspine River and Otter Brook labelled. Watershed boundaries for each of the five watersheds should be shown to the extent possible.

1.2 Watersheds

- Churchill River is identified as only a single crossing near its mouth. The first 12 stream crossings are identified elsewhere as in the Churchill River watershed. Clarification should be presented and Table 1.1 Physical Characteristics of Four Rivers may need to be revisited.

2.2.2 Ground Surveys

- Ground surveys are identified as conducted for a 50 m section of stream only. Provide the rationale for the 50 m section of ground survey. Provide advice as to whether it should be assumed that the crossing would occur in the middle of the surveyed section.

2.2.3 Water Quality and Flow

- Indicate the standard operating procedures for collection of water samples and compare the protocol employed with the standard operating procedures. Describe all units of measurements and conversions completely, i.e., for surface velocity, revolutions per minute is converted to m per sec.

3.1 Background Summary of Surveyed Stream Crossings

- The Component Study states that the proposed route will result in 95 stream crossings. Appendix 3 contains photographs of a stream crossing identified as #96. Clarify why crossing #96 is not included in the way point list or field notes.

- Expand on the contents of the Comment column in Tables 3.1 to 3.5, e.g., site not accessible, ground surveyed, Type of habitat, intermittent stream, etc.

3.2 Fish Habitat

- The Churchill River was not ground surveyed. The field data sheet states that no ground survey is required for the Churchill River, which is not correct. However, there is considerable information on the Churchill River available from other sources (e.g., Churchill River Power Project) which should be reviewed and relevant information on habitat and species presented. Given that a causeway is proposed for the Churchill River site-specific information is required.

- Provide an explanation for the inconsistencies between the information contained in Tables 3.7 to 3.11 and the information in the field data sheets, e.g., crossings #22 and #24 are characterized as rapids and Type III Habitat in Table 3.8 yet the field data sheets describe both crossings are 50% Type II and 50% Type III Habitat (crossing #22 is 40% rapids and crossing #24 is 50% rapids on front of sheet but 70% Type III and 30% Type II on back of sheet; similarly crossings #90 and #91 need to be rechecked.

- Indicate whether both crossings #43 and #44 are over ponds. Given the potential for infilling, habitat data (substrate, depth, vegetative cover, etc) is required for these crossing locations.

3.3 Fish Species

- It is stated “DFO made a preliminary determination that the planned road construction methods are not likely to result in a harmful alteration, disturbance or destruction (HADD) of productive fish habitat....” This statement could be interpreted as DFO having already made a decision on HADD, which is not the case. Such a decision can only be made when the exact crossing locations are determined and DFO has reviewed site-specific habitat information and the detailed designs of the crossing structures.

- Table 3.12 has been compiled from only one source (Anderson, 1985), and as a result is incomplete. More current information sources are available and should be consulted (e.g., studies conducted for the Churchill River Power Project, DFO

scientists, outfitters, etc.) For example Arctic charr and rainbow smelt are now known to inhabit the Paradise river. Updated species information needs to be added to the table.

3.4.1 Field Measurements

- There is no discussion provided relating to water quality field measurements contained in Table 3.13, as was done for the water chemistry results. Provide any general comments which can be made about what the field measurements mean and whether there are any anomalies. The word "narrative" under the column titled "CCME Guidelines" needs to be explained.

3.4.2 Laboratory Results

- Provide any reasons which can be put forward for high values obtained, and in particular of aluminum and iron exceedences.

APPENDIX 2 FISH HABITAT STUDY GPS WAY POINTS FOR STREAM CROSSINGS AND FIELD DATA SHEETS

- What are the units for surface velocity?
- Inconsistencies in the field data sheets require clarification, e.g., for both crossings #1 and #9 the substrate is described as fines whereas habitat is classified as Type II yet velocity present in Type II would preclude the presence of fines, perhaps they should be classified as Type IV; Crossing #3 could not be seen yet the width is stated as 0-2 m, how can that be known; the sketch for crossing #9 states "170 m from crossing" without stating what it is referring to.

APPENDIX 3 PHOTOGRAPHS

- The six major river crossings (#1, #23, #36, #73, #79 and #94) should be named, and the watershed name should be indicated beneath the other photographs.

OMITTED

- 4.2 5) of the Guidelines requires that the proponent should also discuss existing fish species and fisheries (e.g., recreational, commercial, subsistence). This was not done.

- 4.2 5) of the Guidelines requires qualitative descriptions of fish populations, including abundance and life history parameters, in each of the four watersheds that the highway will traverse. This was also not done.

- The Component Study gives no recognition to the presence of trophy brook trout in the watersheds. The proponent should discuss, as part of the discussion of fisheries and the qualitative descriptions of fish populations, the application of the precautionary principle to those populations or determine the trout carrying capacity of the habitat, the size and composition of the trout population, estimate the sustainable yield and the existing harvest. Neither does the Component Study describe key features of the existing lodge based fishery on the Eagle River and the Eagle River Plateau, and the sensitivity of market demand for lodge packages to the management of these features (i.e., catch rate, crowding, pristineness, stability, and type and quality of tourism services).

NOTE

- Nine of the potential crossing sites were not ground accessible. Fisheries and Oceans Canada will require the proponent to provide basic design information and precise watercourse crossing locations, and information for any areas where infilling is proposed, as soon as this information becomes available. This will allow Fisheries and Oceans Canada to identify areas of potential concern, address any possibilities for re-design or re-location of crossings if warranted and to initiate discussions concerning special protection measures for these areas. Given the time requirements for these steps to take place, the requirement for the proponent to provide the needed information in a timely manner is strongly emphasized. It is also recommended that the proponent meet with Fisheries and Oceans Canada prior to the collection of site-specific information at surveyed stream crossings.