Fish and Fish Habitat Inventory
for
Operational Areas
Fulton River Watershed

in the Tanglechain IRM Unit:
CP 453-1 and CP 453-2

Prepared by

SKR Consultants Ltd.
Smithers, B.C.

for

Houston Forest Products Ltd.
Houston, BC

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Disclaimer

The Province has not accepted the contents of this product for the purposes of the Forest Practices Code, and reserves the right to dispute the validity of summarized results. The province does not necessarily agree with the classification assigned to any individual stream reach, for use in logging plans, silviculture prescriptions or any other application.

Project Summary Sheet

Project Reference Information

MELP Contract Number	CSK 3070
FDIS Project Number	none
MELP Region	Skeena Region (06)
FW Management Unit	06-08
DFO Subdistrict	Prince Rupert (8)
Forest Region	Prince Rupert
Forest District	Morice
Forest Licensee	Houston Forest Products
First Nations Claim Area	Lake Babine Nation

Watershed Information

Watershed Group	Babine River
Watershed Name	Fulton River
Watershed Code	480-6972
UTM at Mouth	9.6079110.685874
Watershed Area	3900 km^2
Stream Order	5
NTS Maps (1:250,000)	93L
TRIM Maps	93L098
BEC Zone	SBS mc^2

Sampling Design

Number of Reaches Sampled	5
Total Sample Sites	5
Field Sampling Dates	Sept. 17,1996; June 26, 1997; July 3-4 & 12-13, 1997
Fish Species in Watershed	CH, CO, SK, KO, CT, PK, RB, MW, LW, DV, BB, CSU, NSC, LT, CC, PMC

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Acknowledgments

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1.0 INTRODUCTION

The study area is located in the Babine River drainage of north-central British Columbia (Figure 1). Selected streams in the area were inventoried for Forest Practice Code (FPC) stream classification and evaluation of requirements for appropriate management of stream/wetland riparian zones related to cutting permit CP 453-1 and CP 453-2. Streams in the area were previously inventoried in the summer and fall of 1996 (SKR 1996, 1997), but sampling results were inconclusive in documenting fish presence or absence of streams adjacent to or in CP 453-1 and CP 453-2. Consequently, stream classification could not be conclusively assigned until re-sampling precluded the seasonal use of fish habitat by fish species identified in the Forest Practices Code (FPC).

The main objectives of this project were:

- to conduct re-sampling at three reaches to confirm fish absence, or identify seasonal use of fish habitat,
- to conduct fish inventory at three reaches that were not previously inventoried,
- to describe management concerns for stream/wetland and lake riparian zones that are not adequately protected by the minimum standards of the FPC, and
- to provide recommendations for appropriate structures, designs, and installation of planned road/stream crossings with regard to concerns for fish, fish migration, and fish habitat.

2.0 STUDY AREA

2.1 Location

The Tanglechain Integrated Resource Management (IRM) Unit is located in north-central British Columbia (Figure 1), and forms part of the Morice Forest District (Prince Rupert Forest Region). The main drainage in the Tanglechain IRM Unit is the Fulton River, which drains into Babine Lake. The study area for this project focused around proposed harvest in CP 453-1 and CP 453-2. Streams potentially impacted by harvest in the area drain into the western shore of Babine Lake, and are located in the moist-cold subzone of the sub-boreal spruce biogeoclimatic zone (SBS mc^2) (MOF 1988).

2.2 Access

All of the stream survey sites were accessed by road and on foot. The area can be accessed from the Granisle Highway (connecting the village of Granisle to Topley), or the Babine Lake Road to 42 km. A road runs along the northern shore of Fulton Lake and

Figure 1. 1:250,000 NTS map (93L) showing the general location of the study area.

joins the Babine Lake Road at 42 km. This road can also be accessed from the Granisle Highway between Topley Landing and the village of Granisle.

2.3 Resource Use

The study area within the Tanglechain IRM unit is utilized for forestry purposes, with active logging being proposed for the next 3 years in the immediate study area. No range use plans or range permits were noted for the study area, and a Land Use Planning Document was not available at the time of writing. The Tanglechain IRM unit has some recreational value, including snow mobiling, a BC Forest Service (BCFS) recreation trail and cross country skiing near the village of Granisle, a BCFS Recreation Site located at the Bear Island View Point Trail (about 6 km north of the village of Granisle), a BCFS Recreation Site located approximately 15 km north of the village of Granisle, and BCFS Recreation Sites at Tanglechain Lake, Doris Lake, and Pine Tree Lake (MOF Morice Forest District Recreation Maps 1994). No Protected Areas Strategy (PAS) sites have been identified in the Tanglechain IRM unit. The Lake Babine Nation has "claimed" parts of the Tanglechain IRM unit, but no settlements were in process at the time of writing. There are no mineral tenures, placer stakes or coal licences in the study area, however, a mineral tenure was noted adjacent to the Tanglechain area inventoried. The Mineral Tenure is located on NTS map 93L/16W, Mineral Tenure "Cart 1" (240207 or old # 10006), and is located on the west side of CP 435-1 (Files at Ministry of Energy, Mines and Petroleum Resources, updated Feb. 6, 1996). Guide and outfitter territories in the study area is 608G003 and 604G006. Trapline territories relevant to the study is 608T008.

The B.C. Environment Water Management Branch was contacted to document water licences and water rights for the study area. Two water licences exist for the Fulton River (both for Department of Fisheries and Oceans, SKR 1997). No community watersheds are located in the Tanglechain IRM unit (Meredith pers.com.).

3.0 METHODS

3.1 Literature Review

All pertinent literature on the streams inventoried in this project were collected and summarized. Existing data pertaining to stream classification in the Fisheries Information Summary System (FISS), and rivers and lakes files at the B.C. Environment Office (Skeena Region) were summarized and mapped. The information of concern pertained primarily to fish distribution. Existing watershed codes were assigned to streams. For streams where no watershed codes exist, codes were generated following guidelines in "A guide to the hierarchical watershed coding system for British Columbia". UTMs at the mouth of each stream were determined from the watershed code dictionary or from 1:50,000 or 1:20,000 maps. Stream order was determined from 1:20,000 NTS map sheets.

3.2 Reach break identification

Reach breaks were tentatively identified and mapped by examining 1:20,000 TRIM map sheets, and air photographs (approx. 1:16,000). The identification of reach breaks followed RIC standards (RIC 1997). Reach breaks were confirmed in the field, when feasible. Reaches are numbered from the mouth of the stream in ascending order. Where the number of reaches from the mouth was not determined, reaches were identified alphabetically in ascending order up the stream.

3.3 Stream assessment

All sites were accessible by road and on foot. Sections of streams identified as requiring re-sampling in the summer and fall of 1996 (SKR 1996, 1997) were re-visited. Additional sites not previously inventoried were established, where necessary. At new sites, physical stream characteristics were recorded on DFO/MOE stream survey forms, and data were entered into an MsAccess database. Fish sampling was conducted at these sites to determine seasonal presence of fish. All fish sampling was conducted with a Smith Root Model 15C backpack electroshocker. An area of approximately 100 m^2 was sampled by electroshocking, and fish captured were identified to species, measured (fork length) and released. Potential or known barriers to fish migration, sensitive sites, and critical fish habitat were identified and mapped, when possible. A photographic record was taken for sample locations, barriers to fish migration, and other points of interest. Photographs were compiled in a photodocumentation document.

3.4 Map production

All sample sites, fish distribution and reach breaks were hand drawn onto existing 1:20,000 maps for future digital mapping by Western Geographic Ltd. The following is indicated on all maps: watershed codes, reach breaks and reach numbers, sample sites, stream classifications, and fish distribution. Codes for fish species present follow those outlined in FISS, and are indicated on applicable maps.

4.0 RESULTS AND DISCUSSION

The results section describes the streams surveyed to the reach level. General information for relevant mainstems and tributaries are summarized, followed by a more detailed description for each reach inventoried. Reach descriptions include recommended stream, wetland and/or lake classifications (identified following the FPC standards), comments describing fish habitat types and fish captured at the sites sampled, and recommendations for proposed stream/road crossings and riparian management. Recommendations for riparian management generally fall into one of three types:

1. No additional recommendations are made in cases when FPC standards for riparian management are expected to provide adequate protection to fish and fish habitat.

2. Recommendations for riparian management are provided in cases where FPC standards appear to provide insufficient protection of fish habitat based on
    - reach characteristics, including stream gradient, stream substrate, bank material, and surrounding topography (e.g. wetland, sideslope, valley:channel ratio),
    - fisheries resources in immediate and downstream reaches and/or mainstems,
    - influences of riparian vegetation on fish habitat (e.g. nutrients, LOD, stream temperature, bank stability),
    - potential flood conditions, and
    - forest type and values within riparian reserve and management zones.

3. Recommendations with explanations for S6 classification of streams with S4 default classification under FPC standards. This is exemplified at reaches where:
    - a definite barrier to fish migration exists with no available habitat for resident fish populations upstream (e.g. no potential spawning habitat above barrier or channel width of less than 1.5 m in the Central Interior Region), or
    - a single season's sampling in good fish habitats, and good sampling conditions confirms fish absence above definite barriers to fish migration, or
    - a single season's sampling in available habitat confirms fish absence above a potential barrier in a reach that contains limited fish habitat, or
    - no potential fish habitat was identified in the reach, and no valuable fish habitat is present upstream (e.g. no well defined channel).

Note: various levels of forest retention in riparian management zones are commonly recommended for these S6 streams to protect downstream fisheries values,

Completed stream survey cards (1996 and 1997 sites) and sample site photographs (1997 sites only) are located in Appendix 1. Stream classification maps with study site/NID numbers are included in Appendix 2.

Note: Only fisheries values are taken into consideration when recommending special riparian reserve management zones. Other ecological contexts or wildlife values were not considered in this study, and are thus not reflected on in the results, discussions, or recommendations.

4.1 Babine Lake Inlet Streams

Watershed code: 480-02
Date surveyed: Sept. 17, 1996
June 26, July 3-4 and July 12-13, 1997

Two small tributary system to Babine Lake were inventoried for this project. The streams drain into Babine Lake approximately 6 km and 5.5 km north of the village of Granisle. Very little specific fisheries information was available for these systems at the time of the survey. A cursory summary of known fisheries information for the Babine River is presented in this section to place the new information for the tributary streams examined into context.

Babine Lake is a large lake at the headwaters of the Babine River. Chinook (*Oncorhynchus tsawytscha*), coho (*O. kisutch*), cutthroat trout (*O. clarki*), pink salmon (*O. gorbusha*), sockeye (*O. nerka*), rainbow trout (*O. mykiss*), mountain whitefish (*Prosopium williamsoni*), lake whitefish (*Coregonus clupeaformis*), largescale suckers (*Catastomus macrocheilus*), northern squawfish (*Ptychocheilus oregonensis*), lake trout (*Salvelinus namyacush*), and sculpin (*Cottus sp.*) are known to utilize Babine Lake (FISS). Two spawning channels were installed on Babine Lake in 1969 (SISS), one on the Fulton River, and one on the Pinkut River, in an effort to enhance sockeye salmon stocks. Annual enumeration of adults salmon at the Department of Fisheries and Oceans Babine River fish weir are being conducted. B.C. Environment has estimated the number of steelhead spawners (*O. mykiss*) at the weir since the spring of 1994. Available escapement data from the Department of Fisheries and Oceans is summarized in SKR (1997). Extensive studies have been conducted to evaluate the effectiveness of the sockeye enhancement projects at Babine Lake.

4.1.1 Unnamed Creek (480-6386)

Watershed Code:	480-6386
Map # / ILP #:	93 L 099 / N.A.
UTM (at mouth):	9.6091328.676715
Length surveyed:	360 m
Estimated number of reaches:	not determined
Number of reaches examined:	2

This stream is a first order tributary to Babine Lake, and drains into the western shore of Babine Lake at a point located approximately 6 km north of the village of Granisle. No fisheries information could be located for this stream at the Fisheries Branch, B.C. Environment, Smithers, B.C. prior to the initial survey of the system in 1996. Reaches of this stream and one of its tributaries near the proposed harvest in CP 453-1 were inventoried. The lower two reaches of the mainstem were assessed to document the presence of fisheries values and evaluate the potential for downstream impacts of harvesting in CP 453-1.

Reach 1

NID # / NID Map #:	02042 / 93L099	Site #:	1
Length of Reach:	1900 m	Stream Order:	2
Length surveyed:	300 m	Channel Width:	4.1 m
		Gradient:	6%

Initial sampling:	Sept. 17, 1996
Re-sampling:	June 26, 1997; July 13, 1997
Fish presence:	slimy sculpins (*Cottus cognatus*)

Reach Classification:	S5
Recommended Reach Classification	**S3**

This reach was examined from the Granisle Highway road crossing to Babine Lake. The culvert at the Granisle Highway road crossing was identified as a barrier to fish migration during the initial sampling (Sept. 17, 1996). No fish were captured during the initial sampling, despite the presence of good rearing and potential spawning habitat. Four sculpins (*Cottus cognatus.*) were captured in 610 s. of electroshocking (130 m^2 of habitat) approximately 80 m upstream of Babine Lake on July 13, 1997. No fish were captured in ten minnow traps set downstream of the Granisle Highway crossing on June 26, 1997.

Although no FPC listed species were captured in two seasons, this reach should be classified as S3 due to the presence of fish habitat, its proximity to Babine Lake, and the lack of natural barriers to fish migration from the lake to the reach break.

A three meter water fall was identified as a natural barrier to fish migration, approximately 120 m downstream of the Granisle Connector, on June 26, 1997. The waterfall was identified as a barrier to fish migration, and reaches upstream of the waterfall can be considered non-fish bearing.

Reach 2

NID # / NID Map #:	02043 / 93L099	Site #:	2
Length of Reach:		Stream Order:	2
Length surveyed:	60 m	Channel Width:	2.1 m
		Gradient:	1.5%

Initial sampling: Sept. 17, 1996
Re-sampling: June 26, 1997; July 12, 1997
Fish presence: no fish captured above 3 meter high falls

Reach Classification: S6
Recommended Reach Classification **S6**

Initial sampling of this reach was conducted at a location approximately 50 m upstream of the confluence with an Unnamed tributary stream (ILP 02026). No fish sampling was conducted during the initial survey due to the identification of an unnatural barrier to fish migration, located downstream. Sampling of this reach was conducted at the Granisle connector road crossing on June 26 and July 12, 1997. No fish were captured in overnight settings of 7 minnow traps downstream and 3 minnow traps upstream of the crossing on June 26, 1997. The reach was sampled by electroshocking for a distance of 60 m downstream of the Granisle Connector road crossing, but no fish were captured. A three meter waterfall located 120 m downstream of the Granisle Connector was identified as a natural barrier to fish migration on June 26, 1997.

This reach can be classified S6 due to the presence of a natural barrier to fish migration at the downstream extent of the reach.

4.1.1.1 Unnamed Creek (ILP 02026)

Watershed Code: 480-6386-AA1
Map # / ILP #: 93 L 099 / 02026
UTM (at mouth): 9.6084450.673300
Length surveyed: 820 m
Estimated number of reaches: 1
Number of reaches examined: 1

This stream is a small tributary to Unnamed Creek 480-6386, and does not appear on the 1:50,000 NTS map sheet. Only one reach was identified for this stream from air photo and topographic map interpretation. This stream is referred to as stream "A" on the SP map.

Reach 1

NID # / NID Map #:	02107 / 93L099	Site #:	3
Length of Reach:	1900 m	Stream Order:	1
Length surveyed:	820 m	Channel Width:	1.1 m
		Gradient:	3%

Initial sampling: Sept. 17, 1996
Re-sampling: N.A.
Fish presence: no fish above 3 m falls in mainstem

Reach Classification: S6
Recommended Reach Classification: **S6**

This stream drains through the northwestern portion of CP 453-1. This reach was not re-sampled due to the identification of a barrier to fish migration downstream of this site.

One road crossing has been proposed for this reach. The stream classification can be reduced from S4 to S6 due to the presence of a natural barrier to fish migration in the mainstem downstream. Installation of the road crossing will have limited downstream impacts on fish and fish habitat.

4.1.1.1.1 Unnamed Creek (ILP 02016)

Watershed Code: 480-6386-AA1-cc1
Map # / ILP #: 93 L 099 / 02016
UTM (at mouth): 9.673640.6088520
Length surveyed: 100
Estimated number of reaches:
Number of reaches examined: 1

This stream does not appear on the 1:50,000 or 1:20,000 maps, and was not surveyed in the fall of 1996. The stream is located in CP 453-1, and is referred to as stream "C" on the SP map.

Reach 1

NID # / NID Map #	02044 / 93L099	Site #:	1
Length of Reach:		Stream Order:	1
Length surveyed:	100	Channel Width:	1.1 m
		Gradient:	9%

Initial sampling: July 4, 1997
Fish presence: no fish above 3 m falls in mainstem

Reach Classification: S6
Recommended Reach Classification **S6**

The stream was surveyed at a deactivated road crossing in CP 453-1, approximately 70 m upstream of the mainstem. Flow consisted of seepage approximately 30 m below the road crossing, and appears to be intermittent.

The natural barrier located in the mainstem downstream allows for S6 classification of this stream.

4.1.2 Unnamed Creek (ILP 02024)

Watershed Code:	480-6476-AA1
Map # / ILP #:	93 L 089 / 02024
UTM (at mouth):	9.675500.6086820
Length surveyed:	150 m
Estimated number of reaches:	1
Number of reaches examined:	1

This stream drains Nicole Lake to Olivia Lake, which in turn drains to Skinhead Lake, and then into Babine Lake. The stream is referred to as stream "D" on the SP maps. Skinhead Lake is known to have both rainbow trout (*Oncorhynchus mykiss*) and Dolly Varden (*Salvelinus malma*). The location of the outlet of this lake from Olivia Lake is uncertain, and was not verified in the field.

Reach A

NID # / NID Map #:	02063 / 93L089	Site #:	1
Length of Reach:	300 m	Stream Order:	1
Length surveyed:	150 m	Channel Width:	0.8 m
		Gradient:	2%

Initial sampling:	July 3, 1997
Fish presence:	no fish habitat

Reach Classification:	S4 default
Recommended Reach Classification:	**S6**

This stream was not sampled in 1996. No fish habitat was identified in this reach, and no electroshocking was conducted. The lower 20 m of the stream is located in a wetland, and lacks a defined channel.

Due to the lack of fish habitat in this reach, and the lack of a defined channel in the wetland, this reach can be classified S6.

4.1.2.1 Unnamed Creek (ILP 02025)

Watershed Code:	480-6476-AA1-aa1
Map # / ILP #:	93 L 089 / 02025
UTM (at mouth):	9.674280.6086500
Length surveyed:	200 m
Estimated number of reaches:	1
Number of reaches examined:	1

This stream is a tributary to a first order stream draining Olivia Lake and Nicole Lake to Skinhead Lake, and then into Babine Lake. The stream is referred to as Stream "C" on the SP map.

Reach 1

NID # / NID Map #:	02064 / 93L089	Site #:	1
Length of Reach:		Stream Order:	1
Length surveyed:	200 m	Channel Width:	0.86m ;1.13 m
		Gradient:	1.5%; 2.5%

Initial sampling:	June 28, 1996
Re-sampling:	July 3, 1997
Fish presence:	no fish captured

Reach Classification:	S4 default
Recommended Reach Classification:	**S6**

Some potential fish habitat was identified in this reach. The initial 20 m of stream upstream from the lake consists of an undefined channel. No fish were captured on July 3, 1997 during 250 s. of electroshocking. Only limited fish habitat was identified in this reach.

The stream can be classified as S6 due to the lack of fish presence downstream, and the lack of a defined channel at the mouth of the stream. The potential of downstream impacts from future harvest in contact with this stream is limited.

5.0 SUMMARY OF RECOMMENDATIONS FOR STREAM RESAMPLING

No re-sampling is recommended for stream surveyed near CP 453-1 and CP 453-2.

6.0 REFERENCES

B.C. Environment. Fish and Wildlife Branch. November 1996. pers. com. Guide outfitters, trap line operators, stream and lake files.

B.C. Environment. Environmental Protection Branch. January 1997. pers. com. Water quality information.

Department of Fisheries and Oceans. November 1996. pers. com. Salmon Escapement data for streams in the Babine watershed.

Fisheries Inventory Summary System. 1996. Maps located at BC Environment office, Skeena Region, Smithers, B.C.. (cited as FISS).

Meredith, D. November 1996. pers. com. Water licence and community watershed information. Water management branch of B.C. Environment.

Ministry of Energy, Mines and Petroleum Resources. 1996. Coal licence, placer stakes and mineral tenure files.

Ministry of Forests. 1994. Morice Forest District Recreation Map.

Ministry of Forests. 1988. Biogeoclimatic and ecoregion units of the Prince Rupert Forest Region.

Resource Inventory Committee. 1997. Reconnaissance fish and fish habitat inventory.

SKR Consultants Ltd. 1996. Stream Classification at Selected Planned Harvest areas in the Morice Forest District, 1996. unpubl. mscrpt. prepared for Houston Forest Products Ltd.

SKR Consultants Ltd. 1997. Aquatic Stream Inventory: Operational Stream Inventory in the Tanglechain IRM Unit. unpubl. mscrpt. prepared for Houston Forest Products Ltd.

Water Survey of Canada. 1989. Historical streamflow summary: British Columbia to 1988. Inland Waters Directorate, Water Resources Branch, Ottawa.

APPENDIX 1 - SITE CARDS

Site cards for all streams inventoried and/or re-sampled in 1996 or 1997 relevant to cutting permits CP 453-1 and CP 453-2.

Unnamed Creek #1 (480-6386) - Reach 1

Plate 1. Reach 1 - sample site 1. Upstream view (above - left), downstream view (above - right) and view of barrier to fish migration at reach break (120 m downstream of road).

Unnamed Creek #1 (480-6386) - Reach 1

Plate 2. Bank failure 5 m (above - left) and 15 m (above - right) below culvert at Granisle Highway crossing. Eroding road banks at road crossing (below - right).

Unnamed Creek #1a (480-6386-AA1) - Reach 1

Unnamed Creek #1a1 (480-6386-AA1-cc1; ILP02016) - Reach 1

Plate 3. Reach 1 - sample site 1. Upstream view (above) and downstream view (below).

Unnamed Creek #2 (480-6476-aa1; ILP 02024) - Reach A

Plate 4. Reach A - sample site 1. Upstream view (above) and downstream view (below).

Unnamed Creek #2a (480-6476-AA1-aa1; ILP02025) - Reach 1

Plate 4. Reach 1 - sample site 1. Upstream view (above - left), downstream view (above - right) and the wetland where the stream lacks a defined channel (right).

APPENDIX 2 - 1:20,000 TRIM MAPS

2 maps (93L089 and 93L099) illustrating the reach breaks, sampling sites with NID's, ILP's and stream classification for applicable watersheds