Operational Fish and Fish Habitat Inventory
of
Tributaries to the Fulton River
Watershed Code: 480-6972

Resampling in the Tanglechain Landsape Unit:
CP 416, CP 439-1, CP 439-2, CP 439-3, CP 439-4

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March 1999

PROJECT SUMMARY SHEET

Project Reference Information

FRBC Multi Year Agreement #	000108
FRBC Activity Code	10447
MELP Contract Number	CSK 3070
FDIS Project Number	06-SEYM-100000001-1998
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
Tenure Number	FLA – 16827
First Nations Claim Area	Lake Babine Nation

Watershed Information

Watershed Group	Babine River
Watershed Name	Fulton River
Watershed Code	480-6972
UTM at Mouth	09.6079110.685874
Watershed Area	3900 km^2
Stream Order	5
NTS Maps (1:250,000)	93L
NTS Maps (1:50,000)	93L16
TRIM Maps	93L.098
BEC Zone	$SBSmc^2$

Sampling Design

Number of Reaches Sampled	21
Number of Reaches Re-Sampled	1
Number of new Reaches Sampled	11
Number of Sites Sampled	26
Number of Sites Re-Sampled	1
Number of new Sites Sampled	11
Field Sampling Dates	Sept. 1996, July 1997,
Re-sampling field Dates	June – July 1998
Fish Species in Watershed	KO, CT, BB, RB, MW, LW, DV, CSU, NSC, LT, CC, PMC

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DISCLAIMER

This product has been accepted as being in accordance with the approved standards within the limits of the Ministry quality assurance procedures. Users are cautioned that interpreted information on this product developed for the purposes of the Forest Practices Code Act and Regulations, for example stream classifications, is subject to review by a statutory decision maker for the purposes of determining whether or not to approve an operational plan.

ACKNOWLEDGMENTS

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1.0 INTRODUCTION

1.1 Project Scope and Objectives

Selected tributaries to the Fulton River, upstream of the falls below Fulton Lake, related to cutting permits CP 416, CP 439-1, CP 439-2, CP 439-3, and CP 439-4 were inventoried for fish and fish habitat assessment, and stream classification under the Forest Practices Code (FPC). Initial sampling was funded by Forest Renewal B.C., and was conducted in 1996 and 1997 by SKR Consultants Ltd. (SKR 1996, 1998). Fish and fish habitat sampling results in some reaches initially sampled in 1996 and 1997 were inconclusive in determining the presence of seasonal fish use, and re-sampling was conducted on reaches near or within proposed harvest areas and road locations. In addition, streams not noted on 1:20,000 scale TRIM maps, but marked on 1:5,000 logging plan maps were inventoried for operational purposes.

The main objectives of this project were:

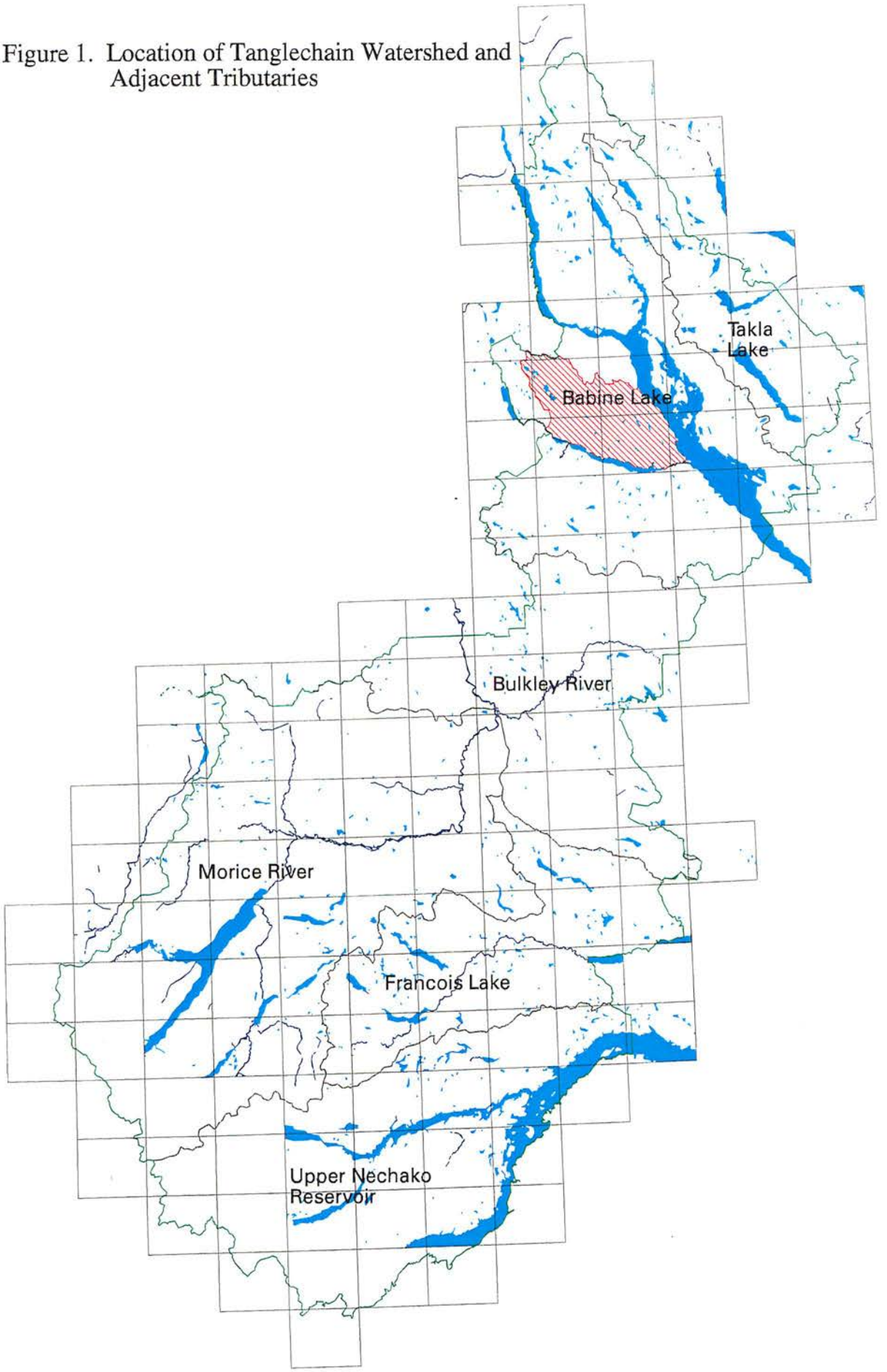
- to complete a detailed literature review of historical fisheries information for related areas,
- to conduct field visits and appropriate fish sampling at reaches identified for re-sampling,
- to recommend FPC stream classification for all re-sampled reaches, and selected reaches previously sampled,
- 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 road crossings.

1.2 Location

Fulton River is a major inlet stream to Babine Lake, located in north-central British Columbia. The mouth of the Fulton River is located just north of Topley Landing (figure 1). A falls located below Fulton Lake has been identified as a barrier to fish migration, and no anadromous fish are known to exist in the Fulton River drainage upstream of this fall. All tributaries surveyed in the Fulton River watershed for this project drain sections of the northern half of the watershed into the river upstream of this obstruction to migration.

This project focused on the creeks in and adjacent to CP 416, CP 439-1, CP 439-2, CP 439-3, CP 439-4 and access roads that will be used to access these proposed harvest areas. The proposed blocks are located in the Moist-Cold and Dry Cool Subzones of the Sub-Boreal Spruce Biogeoclimatic Zone (SBS mc^2) (MoF 1988).

Figure 1. Location of Tanglechain Watershed and Adjacent Tributaries



1.2.1 Access

The streams survey sites were accessed using a combination of road, and foot. The area can be accessed from the Granisle Highway (connecting the village of Granisle to Topley), or the Babine Lake Road at 42 km. A road runs along the northern shore of Fulton Lake and joins the Babine Lake Road at 42 km to the Granisle Highway (between Topley Landing and the village of Granisle).

2.0 RESOURCE INFORMATION

The Tanglechain Landscape Unit is public land and as such is utilized by several sectors.

1. First Nations issues and interests in the study area:
    - The Lake Babine Nation has claimed portions of the Tanglechain Landscape unit as part of their traditional territories. The Lake Babine Nation is currently in stage 3 of the treaty process negotiations (B.C. Treaty Commission, pers. comm.)
2. Development and land use: logging, mining, recreation
    - Houston Forest Products Ltd. is the main licencee for the unit.
    - Logging and/or road building is proposed to the year 2000 near the stream survey sites examined in this report (HFP 1998).
    - The study area has some recreational value, including snow mobiling, a B.C. 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 Trial (about 6 km north of the village of Granisle), a BCFS recreation site at Tanglechain Lake, Doris Lake, and Pine Tree Lake (MOF Morice Forest District Recreation Map 1994).
    - The guide outfitter territories in the study area are 608G003 and 608G006, and the two trap line territory is 608T012. CP 439-1 and CP 439-2 are located in the Fulton Range permit (HFP 1998).
    - There are no mineral tenures, placed stakes, or coal licences in the study area (Ministry of Employment and Investment, 1998).
3. Other developments, concerns or points of interest:
    - No Protected Areas Strategy (PAS) study sites are known to exist within the Tanglechain Landscape Unit.
    - Two water licences exist for the Fulton River (table 1). No community watershed are located in the study area (Meredith pers. comm.)
4. Existing water quality data:
    - none available at time of survey
5. Previous presence of fish in systems of interest:
    - Fish presence previously documented in the study area is summarized in table 2.

Table 1. Water licences information for selected areas in the Tangelchain Landscape Unit (B.C. Environment, Water Management Branch, 1998).

Date	File # [1]	Operator	Amount	Comments
1965/02/05	C06026 0260256	Granisle Mine	12,000 GD	Babine Lake (MacLaren Forest Products Camp)
1966/02/14	C033232 0267760	Granisle Village	18,250,000 GY	Babine Lake
1970/05/25	C039262 0296492	Fisheries & Oceans	25.00 CS	Babine Lake (Temperature Control)
1971/10/05	C107981 0309115	Bell Mine	7,500.00 GD	Babine Lake (MacLaren Forest Products Camp)
1972/02/19	C040898 0310575	McNeil, H. & W.	1,500.00 GD	Babine Lake
1972/17/19	C040898 0310575	Village of Granisle	36,500,000 GY	Babine Lake (all lands within village boundary)
1985/06/27	C065492 600265	HFP	2,500 GD	Babine Lake
1986/02/18	C065491 6000295	Lake Babine Band	15,000.00 GD	Babine Lake
1991/11/29	Z103978 600684	Village of Granisle	336,000.00 GY	Babine Lake
1993/07/16	Z106871 6000812	Lake Babine Band	5,000.00	Babine Lake
1965/10/22	C031323 0265862	Fisheries and Oceans	200.00 CS	Fulton River
1965/10/22	C031325 0265860	Fisheries and Oceans	76,000.00 AF	Fulton River

[1] File number preceded by C indicate approved water licences, file number preceded by Z indicate applications for water licences)

Table 2. A summary of fish previously documented present in the study area.

Species	Area	Reference
chinook	downstream of Fulton Lake	FISS
coho	downstream of Fulton Lake	FISS
sockeye	downstream of Fulton Lake	FISS
pink salmon	downstream of Fulton Lake	FISS
rainbow trout/steelhead	Fulton watershed	FISS
Dolly Varden	Fulton watershed	FISS
cutthroat trout	Fulton watershed	FISS
mountain whitefish	Fulton watershed	FISS
lake whitefish	Fulton watershed	FISS
lake trout	Fulton watershed	FISS
largescale sucker	Fulton watershed	FISS
longnose sucker	Fulton watershed	FISS
northern squawfish	Fulton watershed	FISS
white sucker	Fulton watershed	FISS
sculpin	Fulton watershed	FISS
lake chub	Fulton watershed	FISS
burbot	Fulton watershed	FISS

3.0 METHODS

3.1 Sample Site Selection

Sample sites were selected based on initial sampling results in 1996 and 1997. Sites to be re-sampled were identified based on inconclusive initial sampling results, and their proximity to proposed harvest areas and road construction. Sample sites for re-sampling were identified jointly by SKR Consultants Ltd. and Houston Forest Products Ltd. Additional sites at 1:5,000 scale were also identified for operational inventory.

3.2 Stream Assessment

Stream sites were accessed by four wheel drive during re-sampling in June and July 1998. Sections of streams of interest were evaluated on site to determine fish presence and habitat values in or adjacent to planned harvest areas, at proposed road crossings, and in downstream reaches. Fish Data Information System (FDIS) site cards and fish collection cards were completed at sample sites, following Resource Inventory Committee Standards (RIC 1997), and data were entered into the FDIS database. Table 3 summarizes the sampling equipment used during this re-sampling project.

Table 3. Summary of sampling equipment and sampling intensity for the Tanglechain Landscape Unit re-sampling project.

Parameter	Sampling Intensity	Method
date and time	each site	wrist watch
weather conditions	each reach	visual
air temperature	each reach	alcohol thermometer
water temperature	each site	alcohol thermometer
pH	each site	LaMotte pH meter
conductivity	each site	Hanna HI 9033
water clarity	each site	visual
fish presence	as required to determine fish presence	Smith Root Model 15C backpack electroshocker
photography	each site	Canon Sureshot A1
GPS	where available	Garmen GPS 45
gradient	each site	Abney Level or Suunto clinometer

4.0 RESULTS AND DISCUSSION

4.1 Logistics

No logistical problems, in terms of access, inclement weather or field conditions were encountered during stream sampling in 1997 or 1998.

4.2 Habitat and Fish Distribution

The following sections detail fish habitat characteristics, and briefly describe the fish distribution of species captured in the systems sampled. Obstructions to fish migration documented in the field are summarized in table 4.

Table 4. Summary of historic and new barriers to fish migration found in selected inlets to Babine Lake sampled in 1996, 1997 and 1998.

Stream	TRIM map #	Reach	Barrier			
			Type	Height (m)	Verified in field	Description
480-697200-33400-19600	93L098	1	wetland		y	no defined channel in wetland
ILP 01400	93L098	1	wetland		y	seepage section of stream in wetland
ILP 02020	93L098	1	C	3	y	at mouth,14% gradient for 15 meters
ILP 01405	93L098	2	wetland		y	undergroundflow, no defined channel for 25 meter section in wetland
ILP 02015	93L098	1	UGF[1]		y	lower 80 meters consisted of underground seepage and lacked a defined channel
ILP 01402	93L098	1	gradient		y	greater than 21%
ILP 01401	93L098	1	gradient		y	greater than 21%
ILP 01403	93L098	1	gradient		y	greater than 21%
ILP 01404	93L098	1	gradient		y	greater than 21%
ILP 02013	93L098	2	wetland		y	underground flow in wetland
480-697200-33400-35800	93L.098	1	culvert		y	culvert at Granisle road crossing appears to impede fish passage

[1] UGF = underground flow

4.2.1 Tanglechain Creek (480-697200-33400)

Watershed Code:	480-697200-33400
Old Watershed Code:	480-6972-334
Map # / ILP #:	93 L 088 / N.A.
UTM (at mouth):	9.6084147.656184

Tanglechain Creek forms a major tributary to Fulton River, and drains into the Fulton River approximately 6.5 km upstream of Fulton Lake. Tanglechain Creek drains a series of small to moderates sized lakes. The four lower lakes are Tanglechain Lake, Doris Lake, Boomerang Lake, and Pine Lake.

The presence of cutthroat trout (*Oncorhynchus clarki*), rainbow trout (*Oncorhynchus mykiss*), mountain whitefish (*Prosopium williamsoni*), and lake whitefish (*Coregonus clupeaformis*) in Tanglechain Creek has been documented (FISS). In addition to these species, Tanglechain

Lake is known to contain Dolly Varden (*Salvelinus malma*; could be bull trout (*S. confluentus*)), peamouth chub (*Mylocheilus caurinus*), largescale suckers (*Catastomus macrocheilus*), longnose suckers (*Catastomus catastomus*), and northern squawfish (*Ptychocheilus oregonensis*). Doris Lake is known to have lake whitefish, peamouth chub, rainbow trout, lake trout (*Salvelinus namyacush*), mountain whitefish, cutthroat trout, largescale suckers, longnose suckers, redside shiners (*Richardsonius balteatus*), burbot (*Lota lota*) and northern squawfish. Longnose suckers, peamouth chub, redside shiners and cutthroat trout have also been documented in Boomerang Lake. Prickly sculpin (*Cottus asper*), peamouth chub, redside shiners, northern squawfish, cutthroat trout, rainbow trout and longnose suckers have been found in Pine Lake.

Populations of trout and char are likely either stream resident or lacustrine-adfluvial. Since the barrier at the mouth of the Fulton River prevents fish access to the river, fluvial-adfluvial populations are likely not present in the system. The number of lakes present throughout the system indicates that most of the populations are likely lacustrine-adfluvial.

The mainstem of Tanglechain Creek forms the western boundary of CP 439-1. The creek was surveyed at the north-western tip of CP 439-1.

Reach 3 (CP 439-1)

NID # / NID Map #:	02038 / 93L098	Site #:	1
Length of Reach:		Stream Order:	3
Length Surveyed:	300 m	Channel Width:	6.8 m
		Gradient:	1.5 %
Initial Sampling:	July 17, 1997		
Fish Presence:	rainbow trout, northern squawfish		

Reach Classification: **S2**

This reach was surveyed along the west side of CP 439-1, approximately 3000 m downstream of Tanglechain Lake. Electroshocking for 519 seconds in 200 m^2 habitat resulted in the capture of nine rainbow trout (38-118 mm fork length) and one northern squawfish (142 mm fork length). Two other fish were observed, but not identified. The reach offered some excellent potential spawning and excellent fish rearing habitat.

4.2.1.1 Unnamed Creek (ILP 02014)

Watershed Code:	480-6972-334-BB1
ILP# / Map #:	02014 / 93L.098
UTM (at mouth):	9.657945.6086460

This stream is not shown on the 1:50,000 NTS map sheet. Consequently, no watershed code exists for this stream, and one was generated for it. This stream forms the southern boundary of CP 439-1. One reach was identified by air photo interpretation.

Reach 1 (CP 439-1)

NID # / NID Map #:	02040 / 93L098	Site #:	2
Length of Reach:		Stream Order:	1
Length Surveyed:	300 m	Channel Width:	0.8 m
		Gradient:	16%
Initial Sampling:	July 17, 1997		
Fish Presence:	none captured		

Reach Classification: **S6 (see comments)**

This very poorly defined stream consists of small step pools separated by sections of underground flow. The channel is undefined at the confluence with Tanglechain Creek. Electroshocking of all available habitat from Tanglechain Creek to 200 m upstream did not result in the capture of any fish. Limited potential fish habitat was identified in the reach.

This reach can be classified as non-fish bearing since no fish were captured in one season of sampling. No defined channel is present at the confluence with Tanglechain Creek. The lack of a defined channel is a barrier to fish migration. In addition, the intermittent nature and high gradient of this stream indicate that it is likely not fish bearing. Some potential for downstream impacts exist due to the steep gradient in the stream, and the fisheries values in Tanglechain Creek.

4.2.1.2 Unnamed Creek (480-697200-33400-19600)

Watershed Code:	480-697200-33400-19600
Old Watershed Code:	480-6972-334-196
Map # / ILP #:	93 L 098 / N.A.
UTM (at mouth):	9.6086550.685033

This stream is located within CP 439-1. Two reaches were identified in the system during field observations.

Reach 1 (CP 439-1)

NID # / NID Map #:	02039 / 93L098	Site #:	3
Length of Reach:	180 m	Stream Order:	1
Length Surveyed:	180 m	Channel Width:	1.2 m
		Gradient:	1.5 %
Initial Sampling:	July 17, 1997		
Fish Presence:	none captured		

Reach Classification: **S4 (see comments)**

The entire reach was sampled, and appeared to offer limited potential spawning habitat. Some fish rearing habitat was noted. However, a 15 meter long section of undefined channel at the confluence with Tanglechain Creek likely restricts fish access to this small stream. Onehundredeighty seconds of electroshocking in 100 m^2 of habitat did not result in the capture or observation of any fish.

This stream is likely not fish bearing due to the presence of only limited suitable fish habitat, and the limited access to fish. Some potential for downstream impacts on fisheries values in Tanglechain Creek were identified.

Reach 2 (CP 439-1)

NID # / NID Map #:	02057 / 93L098	Site #:	4
Length of Reach:		Stream Order:	1
Length Surveyed:	200 m	Channel Width:	no defined channel
		Gradient:	< 0.5 %
Initial Sampling:	July 17, 1997		
Fish Presence:	unlikely, no defined channel		

Reach Classification: **S6**

This reach is located in a wetland, and no defined channel could be located. Only very limited and inaccessible fish habitat was identified in this reach.

The potential for downstream impacts on fish and fish habitat is limited.

4.2.1.3 Unnamed Creek (ILP 01400)

Watershed Code:	not available
Map # . ILP #:	93 L 098 / 01400

This unnamed tributary to Unnamed Creek (480-6972-334-223) does not appear on the 1:50,000 NTS map sheet. An old mining road crosses this stream, and the mining road crossing is proposed to be upgraded for access to CP 416.

Reach 1 (CP 416)

NID # / NID Map #:	1404 / 93L098	Site #:	100
Length of Reach:	320 m	Stream Order:	1
Length Surveyed:	250 m	Channel Width:	0.78
		Gradient:	3.5-4.0 %
Date of Sampling:	June 18, 1998		
Fish Presence:	none captured in one season, barrier downstream		

Recommended Reach Classification: **S6**

This reach was walked from the mining road to the lake located downstream (480-6972-334-223-01). A site was surveyed approximately 100 meters downstream of the mining road, and fish sampling was conducted in the only shockable habitat located upstream and downstream of the mining road crossing. Limited fish habitat was identified in the reach, but the beaver pond located upstream of the mining road appear to offer some potential rearing habitat. No fish were captured or seen in 318 seconds of electroshocking (100 m^2). The stream becomes intermittent in the lower 100 meters, then seeps into the wetland of the small lake at its confluence.

Fish access to the limited fish habitat in this reach is unlikely, and no fish were captured in one season of sampling upstream of the seepage section of stream in the wetland, which has been identified as a barrier to fish migration. The potential for downstream impacts on fish and fish habitat in Unnamed Creek 480-6972-334-223 is limited due to the wetland surrounding the lake. Fish passage is not a concern at the proposed road crossing, but adequate drainage should be ensured.

4.2.1.4 Unnamed Creek (ILP 02020)

Watershed Code:	480-6972-334-AA1
ILP# / Map #:	02020/ 93 L 098
UTM (at mouth):	9.6087270.657930

This unnamed tributary to Tanglechain Creek was surveyed in 1996 to establish potential impacts from CP 435-1 (SKR 1997 a). The system was re-sampled in 1997 (SKR 1997 b). This system forms the northern boundary of CP 439-1 and CP 439-2. Results pertinent to CP 439-1 and CP 439-2 are summarized below.

Reach 1 (CP 439-1 & 2)

NID # / NID Map #:	02058 / 93L098	Site #:	6
Length of Reach:	1350 m	Stream Order:	1
Length Surveyed:	125 m	Channel Width:	1.2 m
		Gradient:	0.5 %

Initial Sampling:	Sept. 19, 1996
Re-sampling:	July 13, 1997
Fish Presence:	none captured in two seasons

Reach Classification: **S6**

This reach was surveyed just above its confluence with Tanglechain Creek. A 3 meter high cascade was located at the mouth of the stream. The cascade exhibited a gradient of 14% for 15 meters, and was identified as a potential barrier to fish migration. Upstream of the cascade, the gradient leveled quickly, and the area surrounding the reach was characteristic of a wetland. The stream was dry at the time of the fall survey (Sept. 19, 1996). No fish habitat was noted in the section surveyed. The reach appeared to consist of a series of large ponds, which would allow for settling of sediments resulting from freshets and potential impacts of proposed harvesting upstream. Spring re-sampling confirmed that the stream is intermittent, with some sub-surface flow even at high run off periods. No fish were captured in 700 seconds of electroshocking, confirming that the cascade is a barrier to fish migration.

This reach can be classified as non-fish bearing due to the lack of fish in two seasons of sampling, and the presence of a barrier to fish migration near the mouth of the stream. Some potential for downstream impacts on fisheries resources in Tanglechain Creek were identified.

Reach 2 (CP 439-1 & 2)

NID # / NID Map #:	02061 / 93L098	Site #:	3
Length of Reach:	1900 m	Stream Order:	1
Length Surveyed:	80 m	Channel Width:	0.87 m
		Gradient:	8 %
Initial Sampling:	Sept. 19, 1996		
Fish Presence:	none		

Reach Classification: **S6**

The second reach of this stream was considerably steeper in nature than the first reach. This section of stream was dry at the time of survey (Sept. 19, 1996), and no potential fish spawning habitat was identified at the site examined.

The potential for downstream impacts on fish and fish habitat is limited due to the low gradient and intermittent nature of reach 1. This reach is likely not fish bearing due to its intermittent nature, the lack of fish in two seasons in reach 1, and the barrier present at the mouth of the stream.

4.2.1.5 Unnamed Creek (ILP 02022)

Watershed Code:	480-6972-334-BB3
ILP # / Map #:	02022 / 93 L 098

This unnamed tributary to Tanglechain Creek does not appear on the 1:50,000 NTS map sheet. The stream is not directly impacted by proposed harvest in CP 439-1 or CP 439-2, but a road to access the two cutting permits crosses this stream. The stream was not surveyed in the 1997 field season, but was sampled in June 1998. The actual confluence of this stream was found to be located to the south of the confluence indicated on the 1:20,000 TRIM map, as the drainage pattern of reach 1 of this stream deviates slightly from that depicted on the TRIM map. The drainage pattern, as deduced from field observations, is indicated on the attached map.

Reach 1 (CP 439-1 & 2)

NID # / NID Map #:	01403 / 93L098	Site #:	2
Length of Reach:	400 m	Stream Order:	1
Length Surveyed:	400 m	Channel Width:	1.4 m
		Gradient:	1.0 %
Initial Sampling:	June 23, 1998		
Fish Presence:	cutthroat trout		

Reach Classification: **S4**

The entire length of this reach was walked, and a site was surveyed approximately 50 meters upstream of Tanglechain Creek (480-6972-334). This reach offered good trout rearing habitat, and some potential spawning habitat. Substrate consisted of primarily coarse particles with some fines. Three juvenile cuttroat trout (*Oncorhynchus clarki*) were captured in 390 seconds of electroshocking (100 m^2 of habitat). The fork length of cutthroat trout ranged between 58 and 64 mm.

Reach 2 (CP 439-1 & 2)

NID # / NID Map #:	01402 / 93L098	Site #:	1
Length of Reach:	1180 m	Stream Order:	1
Length Surveyed:	300 m	Channel Width:	1.0 m
		Gradient:	2 - 3 %
Initial Sampling:	June 23, 1998		
Fish Presence:	none captured in one season		

Reach Classification: **S4 (see comments)**

This reach was sampled at the proposed road crossing, approximately 900 meters upstream of Tanglechain Creek (480-6972-336). Some fair potential fish rearing habitat and poor

spawning habitat was identified in this reach. The lower extent of this reach is not well defined in several sections, and exhibits extensive sections of underground flow, which are potential barriers to fish migration. No fish were captured or observed in 350 seconds of electroshocking (100 m^2 habitat).

This reach should be considered to be fish bearing until re-sampling in a second season confirms the lack of fish use of this reach. However, habitat in this reach is minimal, and fish presence is doubtful. Fish passage at the proposed road crossing is therefore not of concern. The poorly defined nature of the stream in the low gradient section at the lower end of the reach limit the potential for downstream impacts on fish and fish habitat during stream crossing construction. Sedimentation may be a concern during high discharge periods.

4.2.1.6 Unnamed Creek (ILP 01405)

Watershed Code:	not available
Map # / ILP #:	93 L 098 / 01405

This unnamed tributary to Tanglechain Creek does not appear on the 1:50,000 NTS map, or the 1:20,000 TRIM map. This stream was indicated to be present by HFP prior to spring 1998 re-sampling, and was surveyed in June 1998. A planned road crossing has been proposed for reach 2.

Reach 2 (CP 439-1 & 2)

NID # / NID Map #:	01401 / 93L098	Site #:	1
Length of Reach:		Stream Order:	1
Length Surveyed:	200 m	Channel Width:	not well defined
		Gradient:	1.5 - 2.0%
Initial Sampling:	June 18, 1998		
Fish Presence:	no well defined channel, no fish habitat		

Reach Classification: **S6**

This reach was sampled at the proposed road crossing. The "stream" was found to consist of some surface flow in what appeared to be an unnatural channel formed by skid tracks. Some discharge was noted at the time of survey, but most drainage appeared to be via underground seepage. The stream disappears approximately 25 meters downstream of the road crossing into a narrow wetland opening through the forest. No electroshocking was conducted due to the lack of shockable habitat.

This stream does not offer any suitable fish rearing or spawning habitat, and the reach is not accessible to fish from Tanglechain Creek (480-6972-336). Fish passage at the proposed crossing is not of concern. However, adequate drainage should be ensured.

4.2.1.7 Unnamed Creek (ILP 02015)

Watershed Code:	480-6972-334-BB2
Map # / ILP #:	93 L 098 / 02015
UTM (at mouth):	9.658185.6088313

This unnamed tributary to Tanglechain Creek does not appear on the 1:50,000 NTS map sheet. The stream is not directly impacted by proposed harvest in CP 439-1 or CP 439-2, but a road to access the two cutting permits crosses this stream. A portion of this stream is located within CP 402-1.

Reach 1 (CP 439-1 & 2)

NID # / NID Map #:	01400 / 93L098	Site #:	100
Length of Reach:	360 m	Stream Order:	1
Length Surveyed:	250 m	Channel Width:	0.78 m
		Gradient:	1.5 - 2.5 %
Initial Sampling:	June 18, 1998		
Fish Presence:	sections of ill defined channel, fish presence unlikely		

Reach Classification: **S6**

Reach 1 of ILP 2015 was surveyed from approximately 110 meters upstream of Tanglechain Creek (480-6972-334) to the upper extent of the reach. Sections of poorly defined channel were interspersed with sections of defined channel. Despite moderate flows in reach 2, reach 1 was dry at the time of survey, indicating extensive underground flow. No fish habitat was identified at the time of survey.

The lower 80 meters of the reach consisted of underground seepage, and lacked a defined channel. This section, along with other poorly defined sections, form barriers to fish migration.

Reach 2 (CP 439-1 & 2)

NID # / NID Map #:	02041 / 93L098	Site #:	6
Length of Reach:		Stream Order:	1
Length Surveyed:	200 m	Channel Width:	0.9 m
		Gradient:	8.0 %
Initial Sampling:	July 17, 1997		
Fish Presence:	stream dry		

Reach Classification: **S6**

This reach was sampled approximately 100 m downstream of the road crossing. There was no evidence of surface flow approximately 200 m downstream of the road crossing on July

17, 1997. However, the channel was found to be wetted on June 18, 1998. Some potential fish rearing and spawning habitatwas identified in the reach. The culvert at the current road crossing is a potential barrier to fish migration, due to a 1 meter drop on the downstream side.

The lower 80 meters of reach 1 of ILP (02015) consisted of underground flow and lacked a defined channel. This section of stream forms a barrier to fish migration. Reach 2 was dry during the initial sampling (July 17,1997), indicating a lack of resident fish. Fish passage is not a concern at the road crossing.

4.2.1.8 Unnamed Creek (480-697200-33400-35800)

Watershed Code:	480-697200-33400-35800
Old Watershed Code:	480-6972-334-358
Map # / ILP #:	93L098 / N.A.

This stream is an unnamed tributary to Tanglechain Creek. The stream drains through the south eastern portion of CP 439-3 near its origin, and forms the western boundary of CP 439-4. Two reaches were surveyed in this system. A culvert, located in reach1, is a barrier to fish migration. Cutthroat trout captured downstream of the culvert are likely lacustrine-adfulvial, and utilize the lake (480-6972-334-358-01). Cutthroat trout captured upstream of the culvert appear to be stream resident.

Reach 1

NID # / NID Map #:	02030 / 93L098	Site #:	1
Length of Reach:	480 m	Stream Order:	2
Length Surveyed:	150 m	Channel Width:	3.4 m
		Gradient:	6.0 %
Initial Sampling:	July 17, 1997		
Fish Presence:	cutthroat trout		

Reach Classification: **S3**

This reach offered some excellent fish rearing habitat, and good potential spawning habitat. Two cutthroat trout (122-134 mm) were captured in 22 hours of minnow trapping (5 traps).

The culvert at the Granisle Road crossing appears to impede fish passage, and replacement with a bridge or baffled culvert is recommended.

Reach 2 (CP 439-3)

NID # / NID Map #:	02031 / 93L098	Site #:	2
NID # / NID Map #:	02032 / 93L098	Site #:	3
NID # / NID Map #:	02033 / 93L098	Site #:	4
NID # / NID Map #:	02034 / 93L098	Site #:	5
Length of Reach:		Stream Order:	2
Length Surveyed:	2200 m	Channel Width:	1.7 - 2.0 m
		Gradient:	3.0 - 9.0 %
Initial Sampling:	July 18, 1997		
Fish Presence:	cutthroat trout		

Reach Classification: **S3**

Four sites were established in this reach, to document fish presence and fish habitat at four different road crossings. Cutthroat trout were captured at the lower three sites (sites 2, 3, and 4), but no cutthroat trout were captured at the upper site (Site 5). A total of four cutthroat trout were captured in this reach, and fork length ranged between 104 mm and 153 mm. No barriers to fish migration were identified in this reach.

The entire reach should be classified as S3 due to known fish presence, the presence of fish spawning and rearing habitat, and the lack of barriers to fish migration.

4.2.1.8.1 UNNAMED CREEK (ILP 01402)

Watershed Code:	not available
Map # / ILP #:	93L098 / 01402
UTM (at mouth):	to be provided by Western GIS

This stream is not shown on the 1:50,000 NTS map sheet or the 1:20,000 TRIM maps. The stream is located within CP 439-4, and is identified as stream "B" on the 1:5,000 silviculture prescription map for CP 439-4.

Reach 1 (CP 439-4)

NID # / NID Map #:	01406 / 93L098	Site #:	1
Length of Reach:		Stream Order:	1
Length Surveyed:	100 m	Channel Width:	0.43 m
		Gradient:	12 - 27%
Initial Sampling:	June 18, 1998		
Fish Presence:	high gradient (>21%)		

Reach Classification: **S6**

This reach was sampled at the proposed road crossing with CP 439-4, and the entire length of stream from the road crossing downstream to Unnamed Creek (480-697200-33400-35800) was examined. The gradient at the road crossing was 12%, but the majority of the reach from the road crossing downstream exhibited an average gradient of 27 %. A western toad was observed near the stream. No fish sampling was conducted due to the steep nature of the stream, and the limited fish habitat present.

This reach can be considered non-fish bearing since the majority of the reach exceeds gradient of 21%. The steep nature of the stream indicates some potential for downstream impacts on the mainstem (Unnamed Creek 480-697200-33400-35800) which is fish bearing. However, the small size of the stream limits potential impacts on downstream fish habitat. Unnamed Creek (ILP 1402) may be important in maintaining water quality of the mainstem.

4.2.1.8.2 UNNAMED CREEK (ILP 01401)

Watershed Code:	not available
Map # / ILP #:	93L098 / 01401

This stream is not shown on the 1:50,000 NTS map sheet or the 1:20,000 TRIM map. The stream is identified as stream "C" on the 1:5,000 silviculture prescription map for CP 439-4. This stream is located to the north of Unnamed Creek (ILP 01402) and drains parallel to Unnamed Creek (ILP 01402).

Reach 1 (CP 439-4)

NID # / NID Map #:	01405 / 93L098	Site #:	2
Length of Reach:		Stream Order:	1
Length Surveyed:	100 m	Channel Width:	0.58
		Gradient:	18 - 25%
Initial Sampling:	June 19, 1998		
Fish Presence:	high gradient (> 21%)		

Reach Classification: **S6**

This reach was sampled at the proposed road crossing with CP 439-4, and the entire length of stream from the road crossing downstream to Unnamed Creek (480-697200-33400-35800) was examined. The gradient at the road crossing was 18%, but the majority of the reach from the road crossing downstream exhibited an average gradient of 25 %. No fish sampling was conducted due to the steep nature of the stream, and the limited fish habitat present.

This reach can be considered non-fish bearing since the majority of the reach exceeds gradient of 21%. The steep nature of the stream indicates some potential for downstream impacts on the mainstem (Unnamed Creek 480-697200-33400-35800) which is fish bearing.

However, the small size of the stream limits potential impacts on downstream fish habitat. Unnamed Creek (ILP 1401) may be important in maintaining water quality of the mainstem.

4.2.1.8.3 UNNAMED CREEK (ILP 01403)

Watershed Code:	not available
Map # / ILP #:	93L098 / 01403

This stream is not shown on the 1:50,000 NTS map sheet or the 1:20,000 TRIM map. The stream is identified as stream "F" on the 1:5,000 silviculture prescription map for CP 439-3.

Reach 1 (CP 439-3)

NID # / NID Map #:	01409 / 93L098	Site #:	1
Length of Reach:		Stream Order:	1
Length Surveyed:	100 m	Channel Width:	0.75 m
		Gradient:	2% downstream, 31% upstream
Initial Sampling:	June 18, 1998		
Fish Presence:	high gradient for majority of reach		

Reach Classification: **S6**

This reach was sampled approximately 30 meters upstream of Unnamed Creek (480-697200-33400-35800). The lower 30 meters of the stream was heavily braided, and no well defined channel was noted in this section of the reach which is located on an old skid trail. Upstream of 30 meters, the gradient increased sharply to 31%. No fish sampling was conducted due to the high gradient nature of the stream.

This reach can be classified as non-fish bearing upstream of 30 meters upstream of the mainstem. Currently, the lower 30 meters of the stream offers limited habitat due to the braided nature, and low ratio of pools. Re-defining the channel in the lower thirty meters, and increasing the pool frequency may increase the habitat value of this stretch of stream to rearing cutthroat trout. Some potential for downstream impacts has been identified due to the high gradient nature of the majority of the reach.

4.2.1.8.4 UNNAMED CREEK (ILP 01404)

Watershed Code:	not available
Map # / ILP #:	93L098 / 01404

This stream is not shown on the 1:50,000 NTS map sheet or the 1:20,000 TRIM map. The stream is identified as stream "C" on the 1:5,000 silviculture prescription map for CP 439-3.

Reach 1 (CP 439-3)

NID # / NID Map #:	01410 / 93L098	Site #:	1
Length of Reach:		Stream Order:	1
Length Surveyed:	100 m	Channel Width:	0.8 m
		Gradient:	22 - 23 %
Initial Sampling:	June 18, 1998		
Fish Presence:	high gradient (> 21%)		

Reach Classification: **S6**

This reach was sampled approximately 50 meters upstream of Unnamed Creek (480-697200-33400-35800). Fish habitat was rated poor to nil due to the steep gradient of the stream (> 21%). The stream had a step pool morphology, and substrate consisted primarily of cobbles with some gravel.

This reach can be considered non-fish bearing since the gradient exceeds 21%. The steep nature of the stream indicates some potential for downstream impacts on the mainstem (Unnamed Creek 480-697200-33400-35800) which is fish bearing.

4.2.1.8.5 UNNAMED CREEK (ILP 02013)

Watershed Code:	not available
Map # / ILP #:	93L098 / 02013

This stream is not shown on the 1:50,000 NTS map sheet or the 1:20,000 TRIM map. The stream is identified as stream "E" on the 1:5,000 silviculture prescription map for CP 439-3.

Reach 1 (CP 439-3)

NID # / NID Map #:	02037 / 93L098	Site #:	6
Length of Reach:	160 m	Stream Order:	1
Length Surveyed:	160 m	Channel Width:	0.9 m
		Gradient:	0.9 %
Initial Sampling:	July 18, 1997		
Re-Sampling Date:	June 23, 1998		
Fish Presence:	cutthroat trout		

Reach Classification: **S4**

Some good potential fish rearing habitat, and limited potential spawning habitat was identified in this reach. Electroshocking for 250 seconds in 150 m^2 of suitable habitat did not

result in the capture of any fish during the initial sampling. However, one cutthroat trout (fork length = 162 mm) was captured in 260 seconds of electroshocking (100 m^2 habitat).

This reach is located in a gully. Some potential impacts of harvesting on bank stability were noted, and these impacts should be minimized.

Reach 2 (CP 439-3)

NID # / NID Map #:	01407 / 93L098	Site #:	2
Length of Reach:		Stream Order:	1
Length Surveyed:	150 m	Channel Width:	1.2 m
		Gradient:	0.5 %
Initial Sampling:	July 18, 1997		
Re-sampling:	June 23, 1998		
Fish Presence:	poor fish habitat, intermittent channel		

Reach Classification: **S6**

This reach is located in a wetland within CP 439-3. No defined channel could be located upstream of the reach break. The stream consisted of a few isolated puddles which may be connected during high flows.

This reach can be classified as non-fish bearing due to the lack of a well defined, continuos channel in this wetland. Fish habitat was rated as poor to nil.

4.2.1.8.5.1 UNNAMED CREEK (ILP 01406)

Watershed Code:	not available
Map # / ILP #:	93L098 / 01406

This stream is not shown on the 1:50,000 NTS map sheet. The stream is identified as stream "D" on the 1:5,000 silviculture prescription map for CP 439-3, and it drains into Unnamed Creek (ILP 02013) in the wetland reach 2 of the mainstem.

Reach 1 (CP 439-3)

NID # / NID Map #:	01408 / 93L098	Site #:	1
Length of Reach:		Stream Order:	1
Length Surveyed:	150 m	Channel Width:	0.90
		Gradient:	6-8%
Initial Sampling:	June 18. 1998		
Fish Presence:	none in one season, wetland and underground flow downstream are potential barriers		

Reach Classification: **S6**

This reach was sampled approximately 150 meters upstream of the wetland reach 2 of Unnamed Creek (ILP 02013). Fish habitat was limited by underground sections of flow. The creek exhibited a step pool morphology and substrate consisted predominantly of fines with some cobbles. No fish were captured or observed in 460 seconds of electroshocking (100 m^2).

The wetland reach 2 of the mainstem (ILP 02013) has been identified as a potential barrier to fish migration. This reach is likely not fish bearing, as indicated by the poor fish habitat, the lack of fish in one season, and the presence of downstream barriers to fish migration. Fish passage at the proposed road crossing is not a concern, but the crossing should ensure adequate drainage.

4.3 Fish Size and Life History

Rainbow trout (*Oncorhynchus mykiss*), cutthroat trout (*Oncorhynchus clarki)* and northern squawfish (*Ptycholeilus oregonensis*) were captured in Tanglechain Creek and tributaries sampled in 1997 and 1998. Length frequency information for cutthroat trout and rainbow trout captured in these streams is summarized in Table 5. Figures 2 and 3 illustrate the length frequency distribution of rainbow trout and cutthroat trout captured in these systems. Only one northern squawfish was captured in Tanglechain Creek. This fish measured 142 mm in fork length.

Table 5. Summary of fork length (mm) data collected for rainbow trout and coho captured in inlet streams to Babine Lake.

	rainbow trout				cutthroat trout			
year	N	Range	Mean	SD	N	Range	Mean	SD
1997	9	38-118	75.3	34.69	6	104-153	134.0	18.341
1998					4	58-162	86.5	50.40
combined	9	38-118	75.3	34.69	10	58-162	115.0	40.44

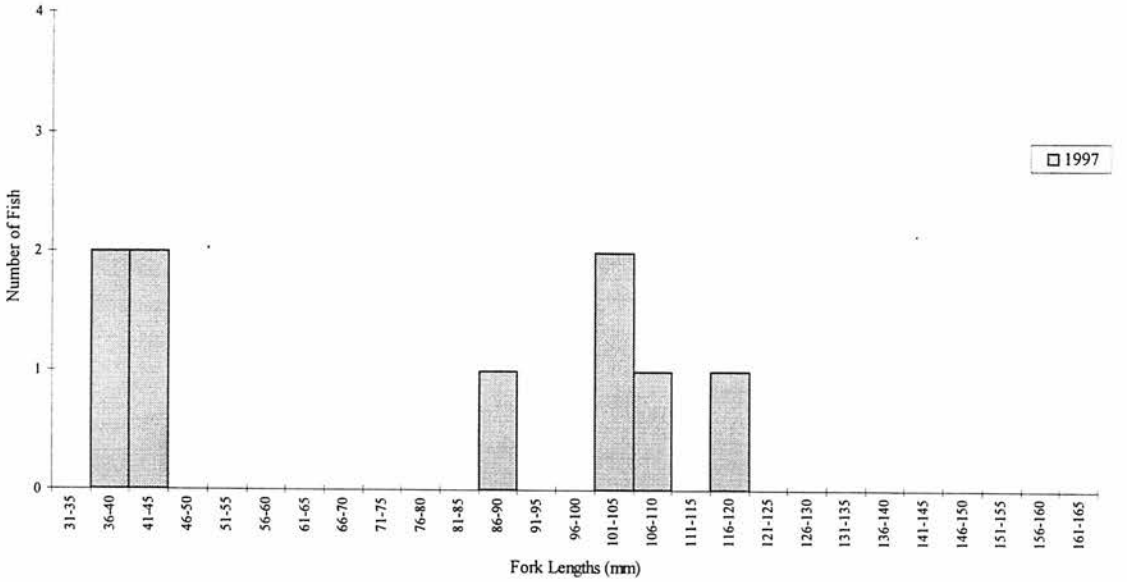


Figure 2. Length frequency graph of rainbow trout in Tanglechain Creek and tributaries sampled in 1997 and 1998.

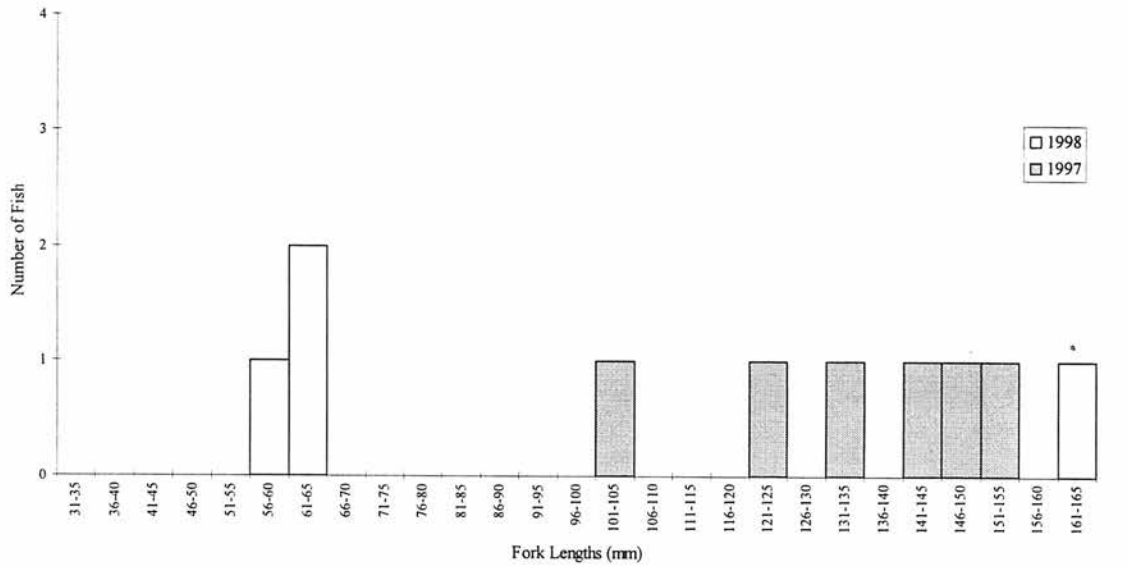


Figure 3. Length frequency graph of cutthroat trout in Tanglechain Creek and tributaries sampled in 1997 and 1998.

Rainbow trout were captured in 1997, but not in 1998. All rainbow trout captured in the study area were captured in July in reach 3 of Tanglechain Creek. Two age classes (0+ and 1+ years) appear to be present in this sample. These fish are likely stream resident or lacustrine-adfluvial. Fish access from Babine Lake to the Fulton (and Tanglechain) watershed is restricted by a barrier downstream of Fulton Lake.

Cutthroat trout were captured in 1997 and 1998. The majority of cutthroat trout were captured in a relatively large tributary to Tanglechain Creek (Unnamed Creek 480-697200-33400-35800). Based on fork length distribution two age classes of cutthroat trout appear to be present in the 1998 sample. All of these fish were captured in Unnamed Creek (480-697200-33400-35800). Cutthroat trout were captured in July 1997. The timing of sampling, and the length of fish captured indicate that cutthroat trout captured in 1997 consisted of 1+ and 2+ age classes. Sampling in 1998 resulted in the capture of three cutthroat trout near Tanglechain Creek (ILP 02022), and one cutthroat trout in the headwaters of Unnamed Creek (480-697200-33400-35800). The three cutthroat trout captured in ILP 02022 appear to consist of one age class (0+). The remaining cutthroat trout captured in the headwaters of Unnamed Creek (480-697200-33400-35800) was likely a 1+ or 2+ cutthroat trout.

Cutthroat trout captured near Tanglechain Creek (in ILP 02022) likley utilize fish habitat in ILP 02022 and in Tanglechain Creek. Cutthroat trout captured in Unnamed Creek (480-697200-33400-35800) appear to consist of a combination of stream resident fish, and lacustrine-adfluvial fish. A culvert on the Granisle road crossing, located 480 meters upstream of Unnamed Lake 480-697200-33400-35800-01 has been identified as a barrier to fish migration. Cutthroat trout captured downstream of this culvert likely utilize lake habitat present downstream. Cutthroat trout captured upstream of culvert are likely stream resident, as indicated by the lack of access through the culvert, and the presence of older age classes of cutthroat trout in the system.

4.4 Significant Features and Fisheries Observations

4.4.1 Fish and Fish Habitat

The best fish spawning and rearing habitat was identified in the mainstem of Tanglechain Creek, and in Unnamed Creek (480-697200-33400-35800). Sampline results indicate that this habitat is being utilized by both cutthroat trout and rainbow trout. The majority of streams inventoried at 1:5,000 scale did not appear to offer much useable or accessible habitat. Due to the small size of these drainages, much of the flow is underground, and extensive sections of channel are ill defined and present barriers to fish migration.

In addition to rainbow trout and cutthroat trout, burbot and whitefish have also been documented in the Tanglechain watershed (FISS). These species were not encountered during sampling. For burbot, this is not surprising since burbot are primarily lacustrine in life history (Scott and Crossman 1973, McPhail 1997). Burbot may utilize streams for spawning, but spawning occurs in winter or early spring (Scott and Crossman 1973, McPhail 1997), and burbot would therefore not likely be encountered during stream inventory in late spring, summer and fall. Reaches in the Tanglechain watershed surveyed in 1998 are located considerable distances from lakes. Since burbot are primarily lacustrine, they would likely not utilze this habitat.

4.4.2 Habitat Protection Concerns

No fisheries sensitive zones were identified during this study, and no fish were captured above 20% gradients. No fish were captured upstream of natural barriers in the streams sampled for this survey.

Two restoration possibilities were encountered during sampling in the Tanglechain watershed, both located in the sub-drainage of Unnamed Creek (480-697200-33400-35800). The culvert crossing of the Granilse road at Unnamed Creek (480-697200-33400-35800) presents a barrier to upstream fish migration. Resident cutthroat trout were captured upstream of this road crossing. Replacement of this crossing to allow fish passage should be considered, since it presents an unnatural barrier to fish migration. In addition, ILP 01403 drains along an old skid trail. The lower 30 meters of this stream currently offer limited habitat due to extensive brainding and low pool frequency. Re-defining the lower 30 meter section of stream, and increasing the pool frequency would add to cutthroat trout habitat in this system. However, the gradient of the stream increases sharply upstream of the lower 30 meters.

Tributaries to Unnamed Creek (480-697200-33400-35800) within CP 439-3 and CP 439-4 exhibit steep gradients (e.g. ILPs 1402, 1401, 1403, 1404). These streams have a high debris and sediment transport capability, and are likely important in the maintainance of water quality of Unnamed Creek (480-697200-33400-35800) which is known to support resident cutthroat trout.

4.5 Fish Bearing Reaches

Fish distribution in the study area is limited by a combination of underground flow and intermittent channels. Few gradient barriers to fish migration were identified. Fish bearing reaches are summarized in Table 6, while proposed non-fish bearing reaches are summarized in Table 7. Reaches upstream of barriers to fish migration where no fish were captured are classified as non-fish bearing based on one season of sampling as the concern in such reaches is for resident populations, which would be present in these reaches in all seasons. Some areas require further sampling to conclusively establish if they are not fish bearing by Forest Practices Code Standards (Table 8).

4.5.1 Fish Bearing Reaches

Fish bearing status was assigned to all reaches in which species listed in the Forest Practices Code Fish Stream Identification guidebook were captured (FPC 1995). Table 6 summarizes reaches that were documented to be fish bearing during fish and fish habitat sampling conducted in June 1998.

4.5.2 Non - Fish Bearing Reaches

Non-fish bearing status (Table 7) was assigned to reaches sampled upstream of barriers to fish migration in which no fish were captured in one season of sampling. This indicates a lack of resident fish upstream of these barriers. In addition, non-fish bearing status was determined at reaches where no fish were captured during sampling in June 1998, and where previous sampling (July, September, October 1997) indicated a lack of fish.

4.5.3 Follow – Up Sampling Required

Several reaches sampled in the study area during this resampling project conducted in June 1998 could not be classified conclusively (Table 8). These reaches require re-sampling to indicate if seasonal fish use is present. In some of these streams, barriers to upstream fish migration were not identified, and efforts should be made during re-sampling to identify potential barriers to fish migration.

Table 6. Summary of data from surveyed fish bearing reaches in the Tanglechain watershed, September 1996, July 1997, and June - July 1998.

				Channel				
Stream name	Watershed Code	Reach	Species	Width (m)	Site gradient (%)	Proposed Riparian Class	Follow-up sampling	Comments
Tangelchain	480-697200-33400	3	RB, NSC	6.8	1.5	S2	N	
Unnamed	ILP 02022	1	CT	1.4	1.0	S4	N	
Unnamed	480-67200-33400-35800	1	CT	3.4	6.0	S3	N	culvert at Granisle Road crossing appears to impede fish passage
Unnamed	480-697200-33400-35800	2	CT	1.7 - 2.0	3.0 - 9.0	S3	N	likely stream resident CT upstream of culvert
Unnamed	ILP 02013	1	CT	0.9	0.9	S4	N	

Table 7. Summary of data from surveyed Non-fish Bearing reaches in the Tangelchain watershed, September 1996, July 1997, and June - July 1998.

				Electrofishing Specifications					Other Methods		
Stream Name	Watershed Code	Reach	Gradient (%)	Dist. (m)	Time (s)	Cond. (µS)	Temp.	Date	Type	Effort	Comments
Unnamed	480-697200-33400-19600	2	<0.5	-	-	-	-	97/07/17			no defined channel, wetland reach
Unnamed	ILP 01400	1	3.5-4.0	100	318	116	11	98/06/18	-	-	no fish captured in one season upstream of an extensive seepage section in wetland.
Unnamed	ILP 02020	1	0.5	100	350			97/07/13	-	-	none captured upstream of cascade, stream dry during initial sampling (Sept. 19, 1996)
Unnamed	ILP 02020	2	8	-	-	-	-	96/09/19			none captured upstream of barrier in reach 1, reach dry at time of survey
Unnamed	ILP 01405	2	1.5 - 2.0	-	-	-	-	98/06/18			most drainage is by underground flow, stream disappears about 25 meters downstream of road crossing into a narrow wetland; no fish habitat
Unnamed	ILP 02015	1	1.5 - 2.5	-	-	-	-	98/06/18			reach dry at time of survey; lower 80 meters consisted of underground flow and lacked a defined channel
Unnamed	ILP 02015	2	8.0	-	-	-	-	97/07/17			reach dry at time of survey; lower 80 meters of reach 1 consisted of underground flow and lacked a defined channel
Unnamed	ILP 01402	1	12 - 27	-	-	-	-	98/06/18			gradient barrier
Unnamed	ILP 01401	1	18 - 25	-	-	-	-	98/06/18			gradient barrier

Table 7 (cont). Summary of data from surveyed Non-fish Bearing reaches in the Tangelchain watershed, September 1996, July 1997, and June - July 1998.

				Electrofishing Specifications					Other Methods		
Stream Name	Watershed Code	Reach	Gradient (%)	Dist. (m)	Time (s)	Cond. (µS)	Temp.	Date	Type	Effort	Comments
Unnamed	ILP 01403	1	31	-	-	-	-	98/06/18			lower 30 meters have 2% gradient, then gradient increases to 31%
Unnamed	ILP 01404	1	22 - 23	-	-	-	-	98/06/18			gradient barrier
Unnamed	ILP 02013	2	0.5	-	-	-	-	97/06/23 98/07/18			no well defined channel in wetland; stream consisted of isolated puddles; no fish habitat
Unnamed	ILP 01406	1	6 - 8	100	460	50	6	98/06/18			none captured in one season upstraem of wetland barrier in mainstem (reach 2, ILP 02013)

Table 8. Follow - up sampling requirements for classification of non-fish bearing reaches in the Tanglechain Creek watershed, September 1996, July 1997, and June - July 1998.

Stream Name	Watershed Code	Reach	Timing	Methods	Comments
Unnamed	ILP 02014	1	September	EF	potential barriers to fish migration identified, re-sampling in fall is recommended. No fish captured in one season.
Unnamed	480-697200-33400-19600	1	September	EF	15 meter section of underground flow near mouth likely restricts fish access. No fish captured in one season.
Unnamed	ILP 02022	2	September	EF	no fish captured in one season; sections of underground flow and ill defined channel in lower extent of reach may be barriers to fish migration

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APPENDIX 1. Sample Site Information Including FDIS Reach Cards, Site Cards, Fish Cards, and Site Photographs.

List and Sorting Order of Information

Stream Name	Watershed Code/ILP	Reach #	Site #	TRIM Map #
Unnamed	ILP 1400	1	100	93L.098
Unnamed	ILP 2022	1	2	93L.098
Unnamed	ILP 2022	2	1	93L.098
Unnamed	ILP 1405	2	1	93L.098
Unnamed	ILP 2015	1	100	93L.098
Unnamed	ILP 1402	1	1	93L.098
Unnamed	ILP 1401	1	2	93L.098
Unnamed	ILP 1403	1	1	93L.098
Unnamed	ILP 1404	1	1	93L.098
Unnamed	ILP 2013	1	6	93L.098
Unnamed	ILP 2013	2	2	93L.098
Unnamed	ILP 1406	1	1	93L.098

Note: Digital versions of all forms are available on the Field Data Information System (FDIS) databases delivered to B.C. Environment, Skeena Region and Houston Forest Products, Houston, B.C..

FDIS Reach Card

01-Feb-99

Reach # 1 — ILP Number 1400

Watershed Code: 000-000000-00000-00000-0000-0000-000-000-000-000-000-000

PROJECT

Project Name Fulton River Fish Inventory **Project Code** 06-BABL-000000794-1999

Stream Name (gaz.) FULTON LAKE

Project Watershed Code 480-697200-00000-00000-0000-0000-000-000-000-000-000-000

WATERSHED

Reach Watershed Code 000-000000-00000-00000-0000-0000-000-000-000-000-000-000

ILP	ILP Map	Reach #		NID	NID Map	UTM(Zone/East/North/Method)			
1400	93L.098	1		11400	93L.098				

Gazetted Name **Local Name** **Sample Type** **Wetland**

SURVEY INFO

Date 1998-06-18 **Agency** C141 **Crew**

ATTRIBUTES

Length (km) **US Elev.** 920

DS Elev. 900 **Magnitude**

Gradient 3.45 **Order** 1 **BGC Zone**

DISTURBANCE INDICATORS O1 B1 B2 B3 D1 D2 D3

C1 C2 C3 C4 C5 S1 S2 S3 S4 S5

Setting **Islands**

Open water **Bars** N D P C J M D W N T

Confinement OC **Mass Movement**

Coupling **Riparian Veg.**

Valley Flat **C/D** **Exposed/Eroded**

Channel Pattern SI **Landuse**

MAPS

AIR PHOTOS

FEATURES

PHOTOS

COMMENTS

Site Card

29-Jan-99

PROJECT

Project Name	Fulton River Fish Inventory	**Project Code**	06-BABL-000000794-1999
Stream Name (gaz.)	FULTON LAKE		
Project Watershed Code	480-697200-00000-00000-0000-0000-000-000-000-000-000-000		

WATERSHED

Gazetted Name		**Local Name**	
Watershed Code	000-000000-00000-00000-0000-0000-000-000-000-000-000-000		

ILP 1400 **Map** 93L.098 **Reach #** 1

Site #	NID	Map	UTM(Zone/East/North/Method)	Site Lg	Method	Access	Fish Crd?
100	1404	93L.098		250	HC	V2	☒

Date 1998-06-18 **Time** 11:30 **Agency** C141 **Crew** RS / RS

CHANNEL

	method	width	width	width	width	width	width	width	width
Channel Width (m)	T	1.0	0.8	0.6	0.4	1.1			
Wetted Width (m)	T	0.8	0.3	0.6	0.3	0.8			
Pool Depth (m)	MS	0.5	0.1	0.5					

	grad	grad	method
Method I	4.0	3.5	C
Method II			

Wb Depth 0.1 0.15 0.2

Stage ☐ L ☒ M ☐ H

No Vis.Ch. ☐ **Intermittent** ☐

Dw ☐ **Tribs.** ☐

WATER

FLOOD SIGNS NONE **Method:** GE

Temp. 11 **Method:** T3

pH 7.1 **Method:** P2

Req #

EMS

Cond. 116 **Method:** S4

Turb. ☐ T ☐ M ☐ L ☒ C **Method:** GE

COVER

COVER **Total** 80 %

SWD	LWD	B	C	DP	OV	IV
5	20	0	5	0	70	0

CROWN CLOSURE 2 21-40%

LWD F

DIST E

INTREAM VEG ☒ N ☐ A ☐ M ☐ V

LB SHP S

Texture ☒ F ☐ G ☐ C ☐ B ☐ R ☐ A

RIP M

STG MF

RB SHP S

Texture ☒ F ☐ G ☐ C ☐ B ☐ R ☐ A

RIP M

STG MF

Site Card

29-Jan-99

MORPHOLOGY

BED MATERIAL Dominant: F Subdom: NA

D95: 0.1 D (cm): 0.1 Morph: SP

DISTURBANCE INDICATORS O1 B1 B2 B3 D1 D2 D3 ☐ ☐ ☐ ☐ ☐ ☐ ☐

C1 C2 C3 C4 C5 S1 S2 S3 S4 S5 ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

Pattern	SI
Islands	N
Bars	☒ N ☐ D ☐ P ☐ M ☐ T ☐ L
Coupling	PC
Confinement	OC

FEATURE

FSZ **TRIB** ☐ **SC** ☐ **FC** ☐ **SWP/SLG** ☐ **FL/BV** ☐

PHOTO DOCUMENTATION

Photo			Foc Lg	Dir	Comments
R 102	F	10	ST	U	View at sample site
R 102	F	11	ST	D	View at sample site

HABITAT QUALITY

Name	Zone	Quality	Species	Comments
Rearing Habitat	P	P	CT/LT/LW/RB/MW/DV	Limited fish habitat
Spawining Habitat	P	P	CT/LT/LW/RB/MW/DV	
OverWinter Habitat	P	P	CT/LT/LW/RB/MW/DV	
Cover	P	P	CT/LT/LW/RB/MW/DV	
Other				

WILDLIFE

Group	Observations
MAM	squirrel midden
MAM	den (Marten?)

COMMENT

Section	Comments
SITE CARD	Site located at 100m d/s of wooden mining bridge near 416-5
SITE CARD	Limited potential for d/s impacts on fish and fish habitat
SITE CARD	Stream becomes intermittent in the lower 100m then seeps into the wetland
SITE CARD	Electroshocked, no fish caught or seen
SITE CARD	Apparent hunters trail adjacent to stream with some fallen trees

Fish Data Collection Form

A. Location Referencing

Gazetted Name Unnamed Creek **Alias**
Watershed Code 000-000000-00000-00000-0000-0000-000-000-000-000- **WBID #**
Reach # 1 **Interim Locational ID:** **Project ID** 06-BABL-000000794-1999
(BCGS/NTS) Map # 93L.098 **Locational Point** 1404

B. Survey Information

Survey Date 1998/06/18 **to** 1998/06/18 **Agenc** C141
Crew RS -RS- **Fish Collection Permit** 671619H
General Comments

C. Station Identification and Conditions

Site	Method	#	UTM Coordinates	Temp	Con	Vis	Turb
100	EF	6		11	116		C

D. Fish Summary

Site	Meth	#	H/P	Species	Stage	Age	Tot #	Min Lgth	Max Lgth	Fish Act
100	EF	6	1	NFC			0			

E. Gear Specifications

Site	Meth	#	H/P	D In	T In	D Out	T Out	EF Sec	EF Lgth	EF Wdth	Encl	Nt Typ	Lgth	Dpth	Mesh	IN Sz	Set	Hab	Volt	Freq	Pul	Make	Model
100	EF	6	1	06/18	1130	06/18	1130	318	100	1	O								700	70	4	Smith-Root	15C

F. Individual Fish Data

Site	Meth	#	H/P	Species	Lgth	Wgt	Sex	Mat	Age Str	Age Smp #	Age	Vouch #	Gen Str	Gen Smp #	Comments	Roll	Fr
100	EF	6	1														

Unnamed Creek (ILP 1400) - Reach 1

Plate 1. Reach 1 - sample site 100. Upstream view (above) and downstream view (below).

FDIS Reach Card

01-Feb-99

Reach # 1 — ILP Number 2022

Watershed Code: 000-000000-00000-00000-0000-0000-000-000-000-000-000-000

PROJECT

Project Name Fulton River Fish Inventory **Project Code** 06-BABL-000000794-1999

Stream Name (gaz.) FULTON LAKE

Project Watershed Code 480-697200-00000-00000-0000-0000-000-000-000-000-000-000

WATERSHED

Reach Watershed Code 000-000000-00000-00000-0000-0000-000-000-000-000-000-000

ILP	ILP Map	Reach #		NID	NID Map	UTM(Zone/East/North/Method)			
2022	93L.098	1		12022	93L.098				

Gazetted Name **Local Name** **Sample Type** **Wetland**

SURVEY INFO

Date 1998-06-23 **Agency** C141 **Crew**

ATTRIBUTES

Length (km) **US Elev.** 860

DS Elev. 860 **Magnitude**

Gradient 5 **Order** 1 **BGC Zone**

DISTURBANCE INDICATORS O1 B1 B2 B3 D1 D2 D3 C1 C2 C3 C4 C5 S1 S2 S3 S4 S5

Setting **Islands**

Open water **Bars** N D P C J M D W N T

Confinement OC **Mass Movement**

Coupling **Riparian Veg.**

Valley Flat **C/D** **Exposed/Eroded**

Channel Pattern SI **Landuse**

MAPS

AIR PHOTOS

FEATURES

PHOTOS

COMMENTS

Site Card

29-Jan-99

PROJECT

Project Name Fulton River Fish Inventory **Project Code** 06-BABL-000000794-1999

Stream Name (gaz.) FULTON LAKE

Project Watershed Code 480-697200-00000-00000-0000-0000-000-000-000-000-000-000

WATERSHED

Gazetted Name **Local Name**

Watershed Code 000-000000-00000-00000-0000-0000-000-000-000-000-000-000

ILP 2022 **Map** 93L.098 **Reach #** 1

Site #	NID	Map	UTM(Zone/East/North/Method)	Site Lg	Method	Access	Fish Crd?
2	1403	93L.098		400	HC	FT	☒

Date 1998-06-23 **Time** 15:00 **Agency** C141 **Crew** RS / MJ

CHANNEL

	method	width	width	width	width	width	width	width	width
Channel Width (m)	T	1.3	1.7	1.1	0.9	1.4	1.6		
Wetted Width (m)	T	1.2	1.5	1.0	0.9	1.2	1.2		
Pool Depth (m)	MS	0.2							

	grad	grad	method
Method I	1.0	1.0	C
Method II			

Wb Depth **Stage** ☐ L ☒ M ☐ H

No Vis.Ch. ☐ **Intermittent** ☐

Dw ☐ **Tribs.** ☐

WATER

FLOOD SIGNS NONE **Method:** GE

Temp. 11 **Method:** T3

pH 7.4 **Method:** P2

Req #

EMS

Cond. 94 **Method:** S4

Turb. ☐ T ☐ M ☐ L ☒ C **Method:** GE

COVER

COVER **Total** 25 %

SWD	LWD	B	C	DP	OV	IV
5	5	10	60	5	15	

CROWN CLOSURE 1 1-20%

LWD F

DIST E

INTREAM VEG ☐ N ☐ A ☒ M ☐ V

LB SHP S

Texture ☒ F ☐ G ☐ C ☐ B ☐ R ☐ A

RIP M

STG MF

RB SHP S

Texture ☒ F ☐ G ☐ C ☐ B ☐ R ☐ A

RIP M

STG MF

Site Card

29-Jan-99

MORPHOLOGY

BED MATERIAL Dominant: C Subdom: F

D95: 22 D (cm): 3 Morph: RP

DISTURBANCE INDICATORS

O1	B1	B2	B3	D1	D2	D3
☐	☐	☐	☐	☐	☐	☐

C1	C2	C3	C4	C5	S1	S2	S3	S4	S5
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Pattern SI

Islands N

Bars ☒ N ☐ D ☐ P ☐ M ☐ T ☐ L

Coupling PC

Confinement FC

FEATURE

FSZ TRIB ☐ SC ☐ FC ☐ SWP/SLG ☐ FL/BV ☐

PHOTO DOCUMENTATION

Photo			Foc Lg	Dir	Comments
R 204	F	5	ST	U	View at sample site
R 204	F	6	ST	D	View at sample site

HABITAT QUALITY

Name	Zone	Quality	Species	Comments
Rearing Habitat	P	G	CT/LT/LW/RB/MW/CC	
Spawining Habitat	P	M	CT/LT/LW/RB/MW/CC	
OverWinter Habitat	P	P	CT/LT/LW/RB/MW/CC	
Cover	P	P	CT/LT/LW/RB/MW/CC	
Other				

WILDLIFE

COMMENT

Section	Comments
SITE CARD	Site located ~50m u/s of confluence with Tanglechain Creek
SITE CARD	LRV: 3-8m ; alder, spruce
SITE CARD	RRV: 2-6m ; alder, spruce
SITE CARD	Electroshocked and caught 3 CT

Fish Data Collection Form

A. Location Referencing

Gazetted Name Unnamed Creek **Alias**
Watershed Code 000-000000-00000-00000-0000-0000-000-000-000-000- **WBID #**
Reach # 1 **Interim Locational ID:** **Project ID** 06-BABL-000000794-1999
(BCGS/NTS) Map # 93L.098 **Locational Point** 1403

B. Survey Information

Survey Date 1998/06/23 **to** 1998/06/23 **Agenc** C141
Crew RS -MJ- **Fish Collection Permit** 671619H
General Comments

C. Station Identification and Conditions

Site	Method	#	UTM Coordinates	Temp	Con	Vis	Turb
2	EF	6		10.5	94		C

D. Fish Summary

Site	Meth	#	H/P	Species	Stage	Age	Tot #	Min Lgth	Max Lgth	Fish Act
2	EF	6	1	CT	J		3	58	64	R

E. Gear Specifications

Site	Meth	#	H/P	D In	T In	D Out	T Out	EF Sec	EF Lgth	EF Wdth	Encl	Nt Typ	Lgth	Dpth	Mesh	IN Sz	Set	Hab	Volt	Freq	Pul	Make	Model
2	EF	6	1	06/23	1500	06/23	1500	390	100	1	O								600	70	4	Smith-Root	15C

F. Individual Fish Data

Site	Meth	#	H/P	Species	Lgth	Wgt	Sex	Mat	Age Str	Age Smp #	Age	Vouch #	Gen Str	Gen Smp #	Comments	Roll	Fr
2	EF	6	1	CT	58			IM									
2	EF	6	1	CT	62			IM									
2	EF	6	1	CT	64			IM									

Unnamed Creek (ILP 2022) - Reach 1

Plate 2. Reach 1 - sample site 2. Upstream view (above) and downstream view (below).

FDIS Reach Card

01-Feb-99

Reach # 2 — ILP Number 2022

Watershed Code: 000-000000-00000-00000-0000-0000-000-000-000-000-000-000

PROJECT

Project Name: Fulton River Fish Inventory
Project Code: 06-BABL-000000794-1999
Stream Name (gaz.): FULTON LAKE
Project Watershed Code: 480-697200-00000-00000-0000-0000-000-000-000-000-000-000

WATERSHED

Reach Watershed Code: 000-000000-00000-00000-0000-0000-000-000-000-000-000-000

ILP	ILP Map	Reach #	NID	NID Map	UTM(Zone/East/North/Method)
2022	93L.098	2	22022	93L.098	

Gazetted Name:
Local Name:
Sample Type:
Wetland:

SURVEY INFO

Date: 1998-06-23
Agency: C141
Crew:

ATTRIBUTES

Length (km):
US Elev.: 920
DS Elev.: 880
Magnitude:
Gradient: 4.08
Order: 1
BGC Zone:

DISTURBANCE INDICATORS: O1 B1 B2 B3 D1 D2 D3 C1 C2 C3 C4 C5 S1 S2 S3 S4 S5

Setting:
Open water:
Confinement: OC
Coupling:
Valley Flat:
C/D:
Channel Pattern: SI

Islands:
Bars: N D P C J M D W N T
Mass Movement:
Riparian Veg.:
Exposed/Eroded:
Landuse:

MAPS

AIR PHOTOS

FEATURES

PHOTOS

COMMENTS

Site Card

29-Jan-99

PROJECT

Project Name	Fulton River Fish Inventory	**Project Code**	06-BABL-000000794-1999
Stream Name (gaz.)	FULTON LAKE		
Project Watershed Code	480-697200-00000-00000-0000-0000-000-000-000-000-000-000		

WATERSHED

Gazetted Name		**Local Name**	
Watershed Code	000-000000-00000-00000-0000-0000-000-000-000-000-000-000		

ILP 2022 **Map** 93L.098 **Reach #** 2

Site #	NID	Map	UTM(Zone/East/North/Method)	Site Lg	Method	Access	Fish Crd?
1	1402	93L.098		300	HC	FT	☒

Date 1998-06-23 **Time** 13:30 **Agency** C141 **Crew** RS / MJ

CHANNEL

	method	width	width	width	width	width	width	width	width
Channel Width (m)	T	1.1	0.6	0.9	1.3	1.0	0.8	1.2	
Wetted Width (m)	T	1.0	0.6	0.9	0.8	1.0	0.8	1.1	
Pool Depth (m)	MS	0.2	0.3	0.1					

	grad	grad	method
Method I	2.0	3.0	C
Method II			

Wb Depth	0.3	0.3	0.4

Stage ☒ L ☐ M ☐ H

No Vis.Ch. ☐ **Intermittent** ☐

Dw ☐ **Tribs.** ☐

WATER

FLOOD SIGNS NONE **Method:** GE

Temp. 11 **Method:** T3

pH 7.3 **Method:** P2

Req #

EMS

Cond. 94 **Method:** S4

Turb. ☐ T ☐ M ☐ L ☒ C **Method:** GE

COVER

COVER **Total** 45 %

SWD	LWD	B	C	DP	OV	IV
20	25	5	5		40	5

CROWN CLOSURE 2 21-40%

LWD A

DIST E

INTREAM VEG ☐ N ☐ A ☒ M ☐ V

LB SHP S

Texture ☒ F ☐ G ☐ C ☐ B ☐ R ☐ A

RIP M

STG MF

RB SHP S

Texture ☒ F ☐ G ☐ C ☐ B ☐ R ☐ A

RIP M

STG MF

Site Card

29-Jan-99

MORPHOLOGY

BED MATERIAL Dominant: C Subdom: F
D95: 41 D (cm): 1 Morph: RP

DISTURBANCE INDICATORS

O1	B1	B2	B3	D1	D2	D3
☐	☐	☐	☐	☐	☐	☐

C1	C2	C3	C4	C5	S1	S2	S3	S4	S5
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Pattern SI
Islands N
Bars ☒ N ☐ D ☐ P ☐ M ☐ T ☐ L
Coupling PC
Confinement OC

FEATURE

FSZ TRIB ☐ SC ☐ FC ☐ SWP/SLG ☐ FL/BV ☐

PHOTO DOCUMENTATION

Photo			Foc Lg	Dir	Comments
R 204	F	1	ST	U	View at sample site at road crossing to CP 439
R 204	F	2	ST	D	View at sample site at road crossing to CP 439
R 204	F	3	ST	U	View 300 m d/s of sample site
R 204	F	4	ST	D	View 300 m d/s of sample site

HABITAT QUALITY

Name	Zone	Quality	Species	Comments
Rearing Habitat	P	F	CT/LT/LW/RB/MW	
Spawining Habitat	P	P	CT/LT/LW/RB/MW	
OverWinter Habitat	P	P	CT/LT/LW/RB/MW	
Cover	P	P	CT/LT/LW/RB/MW	
Other				

WILDLIFE

COMMENT

Section	Comments
SITE CARD	Site located at access road crossing to CP 439-1
SITE CARD	At bottom end of reach stream becomes not well defined
SITE CARD	Stream has several sections of u/g seepage at bottom end of reach
SITE CARD	These dewatered sections are potential barriers to fish migration
SITE CARD	Electroshocked, caught no fish and saw no fish
SITE CARD	LRV: 2-5m ; alders, highbush cranberry
SITE CARD	RRV: 3-6m ; alders, highbush cranberry
SITE CARD	Ac=0.81

Fish Data Collection Form

A. Location Referencing

Gazetted Name Unnamed Creek **Alias**
Watershed Code 000-000000-00000-00000-0000-0000-000-000-000-000- **WBID #**
Reach # 2 **Interim Locational ID:** **Project ID** 06-BABL-000000794-1999
(BCGS/NTS) Map # 93L.098 **Locational Point** 1403

B. Survey Information

Survey Date 1998/06/23 **to** 1998/06/23 **Agenc** C141
Crew RS -MJ- **Fish Collection Permit** 671619H
General Comments

C. Station Identification and Conditions

Site	Method	#	UTM Coordinates	Temp	Con	Vis	Turb
1	EF	6		10.5	94		C

D. Fish Summary

Site	Meth	#	H/P	Species	Stage	Age	Tot #	Min Lgth	Max Lgth	Fish Act
1	EF	6	1	NFC			0			

E. Gear Specifications

Site	Meth	#	H/P	D In	T In	D Out	T Out	EF Sec	EF Lgth	EF Wdth	Encl	Nt Typ	Lgth	Dpth	Mesh	IN Sz	Set	Hab	Volt	Freq	Pul	Make	Model
1	EF	6	1	06/23	1330	06/23	1330	350	100	1	O								700	70	4	Smith-Root	15C

F. Individual Fish Data

Site	Meth	#	H/P	Species	Lgth	Wgt	Sex	Mat	Age Str	Age Smp #	Age	Vouch #	Gen Str	Gen Smp #	Comments	Roll	Fr
1	EF	6	1														

Unnamed Creek (ILP 2022) - Reach 2

Plate 3. Reach 2 - sample site 1. Upstream view (above) and downstream view (below).

Site Card

29-Jan-99

PROJECT

Project Name Fulton River Fish Inventory **Project Code** 06-BABL-000000794-1999

Stream Name (gaz.) FULTON LAKE

Project Watershed Code 480-697200-00000-00000-0000-0000-000-000-000-000-000-000

WATERSHED

Gazetted Name **Local Name**

Watershed Code 000-000000-00000-00000-0000-0000-000-000-000-000-000-000

ILP 1405 **Map** 93L.098 **Reach #** 2

Site #	NID	Map	UTM(Zone/East/North/Method)	Site Lg	Method	Access	Fish Crd?
1	1401	93L.098		200	HC	V4	☐

Date 1998-06-18 **Time** 10:00 **Agency** C141 **Crew** RS / RS

CHANNEL

	method	width	width	width	width	width	width	width	width
Channel Width (m)									
Wetted Width (m)									
Pool Depth (m)									

	grad	grad	method
Method I	2.0	1.5	C
Method II			

Wb Depth **Stage** ☐ L ☐ M ☐ H

No Vis.Ch. ☒ **Intermittent** ☐

Dw ☐ **Tribs.** ☐

WATER

FLOOD SIGNS Method:

Temp. Method:

pH Method:

Req #

EMS

Cond. Method:

Turb. ☐ T ☐ M ☐ L ☐ C Method: GE

COVER

COVER Total %

SWD	LWD	B	C	DP	OV	IV

CROWN CLOSURE

LWD

DIST

INTREAM VEG ☐ N ☐ A ☐ M ☐ V

LB SHP

Texture ☐ F ☐ G ☐ C ☐ B ☐ R ☐ A

RIP

STG

RB SHP

Texture ☐ F ☐ G ☐ C ☐ B ☐ R ☐ A

RIP

STG

Site Card

29-Jan-99

MORPHOLOGY

BED MATERIAL Dominant: ☐ Subdom: ☐
D95: ☐ D (cm): ☐ Morph: ☐

DISTURBANCE INDICATORS

O1	B1	B2	B3	D1	D2	D3
☐	☐	☐	☐	☐	☐	☐

C1	C2	C3	C4	C5	S1	S2	S3	S4	S5
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Pattern ☐
Islands ☐
Bars ☐ N ☐ D ☐ P ☐ M ☐ T ☐ L
Coupling ☐
Confinement ☐

FEATURE

FSZ TRIB ☐ SC ☐ FC ☐ SWP/SLG ☐ FL/BV ☐

PHOTO DOCUMENTATION

Photo			Foc Lg	Dir	Comments
R 102	F	3	ST	U	View at sample site
R 102	F	4	ST	D	View at sample site

HABITAT QUALITY

Name	Zone	Quality	Species	Comments
Rearing Habitat				
Spawining Habitat				
OverWinter Habitat				
Cover				
Other				

WILDLIFE

COMMENT

Section	Comments
SITE CARD	Site located 100m north of block boundary
SITE CARD	No fish habitat
SITE CARD	Some surface flow at planned road crossing
SITE CARD	Unnatural channel was formed at road crossing in skid tracks
SITE CARD	Some minor dishcarge; underground seepage
SITE CARD	Stream goes underground 25m d/s from planned road crossing

Unnamed Creek (ILP 1405) - Reach 2

Plate 4. Reach 2 - sample site 1. Upstream view (above) and downstream view (below).

FDIS Reach Card

01-Feb-99

Reach # 1 — ILP Number 2015

Watershed Code: 000-000000-00000-00000-0000-0000-000-000-000-000-000-000

PROJECT

Project Name Fulton River Fish Inventory **Project Code** 06-BABL-000000794-1999

Stream Name (gaz.) FULTON LAKE

Project Watershed Code 480-697200-00000-00000-0000-0000-000-000-000-000-000-000

WATERSHED

Reach Watershed Code 000-000000-00000-00000-0000-0000-000-000-000-000-000-000

ILP	ILP Map	Reach #		NID	NID Map	UTM(Zone/East/North/Method)			
2015	93L.098	1		12015	93L.095				

Gazetted Name **Local Name** **Sample Type** **Wetland**

SURVEY INFO

Date 1988-06-18 **Agency** C141 **Crew**

ATTRIBUTES

Length (km) **US Elev.** 880

DS Elev. 880 **Magnitude**

Gradient 0.01 **Order** 1 **BGC Zone**

DISTURBANCE INDICATORS O1 B1 B2 B3 D1 D2 D3 C1 C2 C3 C4 C5 S1 S2 S3 S4 S5

Setting **Islands**

Open water **Bars** N D P C J M D W N T

Confinement OC **Mass Movement**

Coupling **Riparian Veg.**

Valley Flat **C/D** **Exposed/Eroded**

Channel Pattern SI **Landuse**

MAPS

AIR PHOTOS

FEATURES

PHOTOS

COMMENTS

Site Card

29-Jan-99

PROJECT

Project Name	Fulton River Fish Inventory	**Project Code**	06-BABL-000000794-1999
Stream Name (gaz.)	FULTON LAKE		
Project Watershed Code	480-697200-00000-00000-0000-0000-000-000-000-000-000-000		

WATERSHED

Gazetted Name		**Local Name**	
Watershed Code	000-000000-00000-00000-0000-0000-000-000-000-000-000-000		

ILP 2015 **Map** 93L.098 **Reach #** 1

Site #	NID	Map	UTM(Zone/East/North/Method)				Site Lg	Method	Access	Fish Crd?
100	1400	93L.098					250	HC	V4	☐

Date 1998-06-18 **Time** 08:50 **Agency** C141 **Crew** RS / RS

CHANNEL

	method	width	width	width	width	width	width	width	width
Channel Width (m)	T	1.0	0.9	0.8	0.7	0.9	1.1		
Wetted Width (m)	T	0.1							
Pool Depth (m)									

	grad	grad	method
Method I	2.5	1.5	C
Method II			

Wb Depth

Stage ☒ L ☐ M ☐ H

No Vis.Ch. ☐ **Intermittent** ☐

Dw ☐ **Tribs.** ☐

WATER

FLOOD SIGNS Method:

Temp. Method:

pH Method:

Req #

EMS

Cond. Method:

Turb. ☐ T ☐ M ☐ L ☒ C Method: GE

COVER

COVER Total %

SWD	LWD	B	C	DP	OV	IV

CROWN CLOSURE 1 1-20%

LWD F

DIST E

INTREAM VEG ☒ N ☐ A ☐ M ☐ V

LB SHP S

Texture ☒ F ☐ G ☐ C ☐ B ☐ R ☐ A

RIP M

STG PS

RB SHP S

Texture ☒ F ☐ G ☐ C ☐ B ☐ R ☐ A

RIP M

STG PS

Site Card

29-Jan-99

MORPHOLOGY

BED MATERIAL Dominant: F Subdom: G
D95: 0.1 D (cm): 0.1 Morph: RP

DISTURBANCE INDICATORS

O1	B1	B2	B3	D1	D2	D3
☐	☐	☐	☐	☐	☐	☐

C1	C2	C3	C4	C5	S1	S2	S3	S4	S5
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Pattern SI
Islands N
Bars ☒ N ☐ D ☐ P ☐ M ☐ T ☐ L
Coupling DC
Confinement OC

FEATURE

FSZ TRIB ☐ SC ☐ FC ☐ SWP/SLG ☐ FL/BV ☐

PHOTO DOCUMENTATION

Photo			Foc Lg	Dir	Comments
R 102	F	1	ST	U	View at sample site
R 102	F	2	ST	D	View at sample site

HABITAT QUALITY

Name	Zone	Quality	Species	Comments
Rearing Habitat	P	P	CT/LT/LW/RB/MW/CC	No fish habitat
Spawining Habitat	P	P	CT/LT/LW/RB/MW/CC	
OverWinter Habitat	P	P	CT/LT/LW/RB/MW/CC	
Cover	P	P	CT/LT/LW/RB/MW/CC	
Other				

WILDLIFE

COMMENT

Section	Comments
SITE CARD	Channel not well defined in this reach
SITE CARD	Despite moderate flow in reach 2, channel was dry
SITE CARD	No defined channel in upper 80m of this reach
SITE CARD	Limited potential for d/s impacts on f&fh from road crossing in reach 2
SITE CARD	Some potential for minor impacts from sediment loading into Tanglechain C
SITE CARD	Disturbance impacts only occur during flood conditions
SITE CARD	No fish habitat

Unnamed Creek (ILP 2015) - Reach 1

Plate 5. Reach 1 - sample site 100. Upstream view (above) and downstream view (below).

Site Card

29-Jan-99

PROJECT

Project Name	Fulton River Fish Inventory	**Project Code**	06-BABL-000000794-1999
Stream Name (gaz.)	FULTON LAKE		
Project Watershed Code	480-697200-00000-00000-0000-0000-000-000-000-000-000-000		

WATERSHED

Gazetted Name		**Local Name**	
Watershed Code	000-000000-00000-00000-0000-0000-000-000-000-000-000-000		
ILP	1402	**Map**	93L.098
Reach #	1		

Site #	NID	Map	UTM(Zone/East/North/Method)	Site Lg	Method	Access	Fish Crd?
1	1406	93L.098		100	HC	V4	☐

Date	1998-06-18	**Time**	14:30	**Agency**	C141
Crew	RS / RS				

CHANNEL

	method	width	width	width	width	width	width	width	width
Channel Width (m)	T	0.5	0.4	0.5	0.6	0.3	0.3		
Wetted Width (m)	T	0.4	0.4	0.5	0.6	0.3	0.3		
Pool Depth (m)	MS	0.1	0.1	0.1					

	grad	grad	method
Method I	12.0	27.0	C
Method II			

Wb Depth	0.15	0.1	0.1

Stage ☐ L ☒ M ☐ H

No Vis.Ch. ☐ **Intermittent** ☐

Dw ☐ **Tribs.** ☐

WATER

FLOOD SIGNS

NONE **Method:** GE

Temp. 9 **Method:** T3

pH 7.7 **Method:** P2

Req #

EMS

Cond. 112 **Method:** S4

Turb. ☐ T ☐ M ☐ L ☒ C **Method:** GE

COVER

COVER **Total** 70 %

SWD	LWD	B	C	DP	OV	IV
10	20	20			50	

CROWN CLOSURE 1 1-20%

LWD U

DIST E

INTREAM VEG ☒ N ☐ A ☐ M ☐ V

LB SHP S

Texture ☒ F ☐ G ☐ C ☐ B ☐ R ☐ A

RIP M

STG MF

RB SHP S

Texture ☒ F ☐ G ☐ C ☐ B ☐ R ☐ A

RIP M

STG MF

Site Card

29-Jan-99

MORPHOLOGY

BED MATERIAL Dominant: F Subdom: NA
D95: 0.1 D (cm): 0.01 Morph: SP

DISTURBANCE INDICATORS

O1	B1	B2	B3	D1	D2	D3
☐	☐	☐	☐	☐	☐	☐

C1	C2	C3	C4	C5	S1	S2	S3	S4	S5
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Pattern SI
Islands N
Bars ☒ N ☐ D ☐ P ☐ M ☐ T ☐ L
Coupling PC
Confinement FC

FEATURE

FSZ TRIB ☐ SC ☐ FC ☐ SWP/SLG ☐ FL/BV ☐

PHOTO DOCUMENTATION

Photo			Foc Lg	Dir	Comments
R 102	F	15	ST	U	View at sample site
R 102	F	16	ST	D	View at sample site

HABITAT QUALITY

Name	Zone	Quality	Species	Comments
Rearing Habitat	P	P	CT/LT/LW/RB/MW	Poor fish habitat; too steep
Spawining Habitat	P	P	CT/LT/LW/RB/MW	
OverWinter Habitat	P	P	CT/LT/LW/RB/MW	
Cover	P	P	CT/LT/LW/RB/MW	
Other				

WILDLIFE

Group	Observations
AMPH	Western toad

COMMENT

Section	Comments
SITE CARD	Site located at proposed road crossing in CP 439-4
SITE CARD	Some potential for d/s impacts due to populations of resident CT in mainste
SITE CARD	Potential sediment loading into fish bearing mainstem due to steep gradient
SITE CARD	Impacts are limited due to small stream size and discharge
SITE CARD	May be important in terms of maintenance of water quality in mainstem

Unnamed Creek (ILP 1402) - Reach 1

Plate 6. Reach 1 - sample site 1. Upstream view (above) and downstream view (below).

Site Card

29-Jan-99

PROJECT

Project Name	Fulton River Fish Inventory	**Project Code**	06-BABL-000000794-1999
Stream Name (gaz.)	FULTON LAKE		
Project Watershed Code	480-697200-00000-00000-0000-0000-000-000-000-000-000-000		

WATERSHED

Gazetted Name		**Local Name**	
Watershed Code	000-000000-00000-00000-0000-0000-000-000-000-000-000-000		
ILP	1401	**Map**	93L.098
Reach #	1		

Site #	NID	Map	UTM(Zone/East/North/Method)	Site Lg	Method	Access	Fish Crd?
2	1405	93L.098		100	HC	V4	☐

Date	1998-06-18	**Time**	14:00	**Agency**	C141
Crew	RS / RS				

CHANNEL

	method	width	width	width	width	width	width	width	width
Channel Width (m)	T	0.6	0.8	0.7	0.5	0.5	0.4		
Wetted Width (m)	T	0.6	0.6	0.7	0.5	0.5	0.4		
Pool Depth (m)	MS	0.1	0.1	0.1					

	grad	grad	method
Method I	25.0	18.0	C
Method II			

Wb Depth	0.05	0.1	0.1

Stage ☐ L ☒ M ☐ H

No Vis.Ch. ☐ **Intermittent** ☐

Dw ☐ **Tribs.** ☐

WATER

FLOOD SIGNS NONE **Method:** GE

Temp. 8 **Method:** T3

pH 7.9 **Method:** P2

Req #

EMS

Cond. 98 **Method:** S4

Turb. ☐ T ☐ M ☐ L ☒ C **Method:** GE

COVER

COVER **Total** 70 %

SWD	LWD	B	C	DP	OV	IV
15	15	30			40	

CROWN CLOSURE 1 1-20%

LWD U

DIST E

INTREAM VEG ☒ N ☐ A ☐ M ☐ V

LB SHP S

Texture ☒ F ☐ G ☐ C ☐ B ☐ R ☐ A

RIP M

STG MF

RB SHP S

Texture ☒ F ☐ G ☐ C ☐ B ☐ R ☐ A

RIP M

STG MF

Site Card

29-Jan-99

MORPHOLOGY

BED MATERIAL Dominant: F Subdom: G
D95: 2 D (cm): 0.01 Morph: SP

DISTURBANCE INDICATORS

O1	B1	B2	B3	D1	D2	D3
☐	☐	☐	☐	☐	☐	☐

C1	C2	C3	C4	C5	S1	S2	S3	S4	S5
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Pattern ST
Islands N
Bars ☒ N ☐ D ☐ P ☐ M ☐ T ☐ L
Coupling PC
Confinement FC

FEATURE

FSZ TRIB ☐ SC ☐ FC ☐ SWP/SLG ☐ FL/BV ☐

PHOTO DOCUMENTATION

Photo			Foc Lg	Dir	Comments
R 102	F	13	ST	U	View at sample site
R 102	F	14	ST	D	View at sample site

HABITAT QUALITY

Name	Zone	Quality	Species	Comments
Rearing Habitat	P	P	CT/LT/LW/RB/MW/CC	No fish habitat; too steep
Spawining Habitat	P	P	CT/LT/LW/RB/MW/CC	
OverWinter Habitat	P	P	CT/LT/LW/RB/MW/CC	
Cover	P	P	CT/LT/LW/RB/MW/CC	
Other				

WILDLIFE

COMMENT

Section	Comments
SITE CARD	Site located at proposed road crossing in CP 439-4
SITE CARD	Some potential for d/s impacts due to resident CT in mainstem of this trib.
SITE CARD	Potential for sediment loading into fish bearing stream due to steep gradient
SITE CARD	Sediment impacts will be limited due to small stream size and discharge
SITE CARD	May be important in terms of maintaining water quality in mainstem

Unnamed Creek (ILP 1401) - Reach 1

Plate 7. Reach 1 - sample site 2. Upstream view (above) and downstream view (below).

Site Card

29-Jan-99

PROJECT

Project Name	Fulton River Fish Inventory	**Project Code**	06-BABL-000000794-1999
Stream Name (gaz.)	FULTON LAKE		
Project Watershed Code	480-697200-00000-00000-0000-0000-000-000-000-000-000-000		

WATERSHED

Gazetted Name		**Local Name**	
Watershed Code	000-000000-00000-00000-0000-0000-000-000-000-000-000-000		
ILP	1403	**Map**	93L.098
Reach #	1		

Site #	NID	Map	UTM(Zone/East/North/Method)	Site Lg	Method	Access	Fish Crd?
1	1409	93L.098		100	HC	V4	☐

Date	1998-06-18	**Time**	14:38	**Agency**	C141
Crew	RS / RS				

CHANNEL

	method	width	width	width	width	width	width	width	width
Channel Width (m)	T	1.0	0.8	0.9	0.8	1.0			
Wetted Width (m)	T	0.8	0.6	0.9	0.6	0.6			
Pool Depth (m)	MS	0.2	0.2	0.2					

	grad	grad	method
Method I	31.0	2.0	C
Method II			

Wb Depth	0.1	0.1	0.1

Stage ☐ L ☒ M ☐ H

No Vis.Ch. ☐ **Intermittent** ☐

Dw ☐ **Tribs.** ☐

WATER

FLOOD SIGNS

NONE — Method: GE

Temp. 12 — Method: T3

pH 7.9 — Method: P2

Req #

EMS

Cond. 50 — Method: S4

Turb. ☐ T ☐ M ☐ L ☒ C — Method: GE

COVER

COVER Total %

SWD	LWD	B	C	DP	OV	IV

CROWN CLOSURE 0 — 0%

LWD U

DIST E

INTREAM VEG ☒ N ☐ A ☐ M ☐ V

LB SHP S

Texture ☒ F ☒ G ☐ C ☐ B ☐ R ☐ A

RIP S

STG SHR

RB SHP S

Texture ☒ F ☐ G ☐ C ☐ B ☐ R ☐ A

RIP S

STG SHR

Site Card

29-Jan-99

MORPHOLOGY

BED MATERIAL Dominant: C Subdom: G
D95: 20 D (cm): 4 Morph: SP

DISTURBANCE INDICATORS

O1	B1	B2	B3	D1	D2	D3
☐	☐	☐	☐	☐	☐	☐

C1	C2	C3	C4	C5	S1	S2	S3	S4	S5
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Pattern ST
Islands N
Bars ☒ N ☐ D ☐ P ☐ M ☐ T ☐ L
Coupling PC
Confinement OC

FEATURE

FSZ TRIB ☐ SC ☐ FC ☐ SWP/SLG ☐ FL/BV ☐

PHOTO DOCUMENTATION

Photo			Foc Lg	Dir	Comments
R 102	F	17	ST	U	View at sample site
R 102	F	18	ST	D	View at sample site

HABITAT QUALITY

Name	Zone	Quality	Species	Comments
Rearing Habitat	P	P	CT/LT/LW/RB/MW	No fish habitat due to no well defined channel
Spawining Habitat	P	P	CT/LT/LW/RB/MW	No fish habitat due to steep gradient
OverWinter Habitat	P	P	CT/LT/LW/RB/MW	
Cover	P	P	CT/LT/LW/RB/MW	
Other				

WILDLIFE

COMMENT

Section	Comments
SITE CARD	Stream heavily braided with no well defined channel in lower 30m of reach
SITE CARD	Stream gradient >20%, 30m u/s from confluence
SITE CARD	Some potential for d/s impacts on fish and fish habitat
SITE CARD	Redefining channel in lower section of this reach may assist CT in mainstem

Unnamed Creek (ILP 1403) - Reach 1

Plate 8. Reach 1 - sample site 1. Upstream view (above) and downstream view (below).

Site Card

29-Jan-99

PROJECT

Project Name	Fulton River Fish Inventory	**Project Code**	06-BABL-000000794-1999
Stream Name (gaz.)	FULTON LAKE		
Project Watershed Code	480-697200-00000-00000-0000-0000-000-000-000-000-000-000		

WATERSHED

Gazetted Name		**Local Name**	
Watershed Code	000-000000-00000-00000-0000-0000-000-000-000-000-000-000		

ILP 1404 **Map** 93L.098 **Reach #** 1

Site #	NID	Map	UTM(Zone/East/North/Method)	Site Lg	Method	Access	Fish Crd?
1	1410	93L.098		100	HC	FT	☐

Date 1998-06-18 **Time** 15:00 **Agency** C141 **Crew** RS / RS

CHANNEL

	method	width	width	width	width	width	width	width	width
Channel Width (m)	T	0.8	0.9	0.6	0.8	1.0	0.7		
Wetted Width (m)	T	0.8	0.6	0.6	0.8	0.8	0.7		
Pool Depth (m)	MS	0.1	0.1	0.1					

	grad	grad	method
Method I	23.0	22.0	C
Method II			

Wb Depth 0.05 0.1 0.1

Stage ☐ L ☒ M ☐ H

No Vis.Ch. ☐ **Intermittent** ☐

Dw ☐ **Tribs.** ☐

WATER

FLOOD SIGNS NONE **Method:** GE

Temp. 6 **Method:** T3

pH 7.7 **Method:** P2

Req #

EMS

Cond. 61 **Method:** S4

Turb. ☐ T ☐ M ☐ L ☒ C **Method:** GE

COVER

COVER **Total** %

SWD	LWD	B	C	DP	OV	IV

CROWN CLOSURE 1 1-20%

LWD U

DIST E

INTREAM VEG ☒ N ☐ A ☐ M ☐ V

LB SHP U

Texture ☒ F ☐ G ☐ C ☐ B ☐ R ☐ A

RIP M

STG MF

RB SHP U

Texture ☒ F ☐ G ☐ C ☐ B ☐ R ☐ A

RIP M

STG MF

Site Card

29-Jan-99

MORPHOLOGY

BED MATERIAL Dominant: C Subdom: G
D95: 20 D (cm): 10 Morph: SP

DISTURBANCE INDICATORS O1 ☐ B1 ☐ B2 ☐ B3 ☐ D1 ☐ D2 ☐ D3 ☐
C1 ☐ C2 ☐ C3 ☐ C4 ☐ C5 ☐ S1 ☐ S2 ☐ S3 ☐ S4 ☐ S5 ☐

Pattern ST
Islands N
Bars ☒ N ☐ D ☐ P ☐ M ☐ T ☐ L
Coupling PC
Confinement FC

FEATURE

FSZ TRIB ☐ SC ☐ FC ☐ SWP/SLG ☐ FL/BV ☐

PHOTO DOCUMENTATION

Photo			Foc Lg	Dir	Comments
R 102	F	19	ST	U	View at sample site
R 102	F	20	ST	D	View at sample site

HABITAT QUALITY

Name	Zone	Quality	Species	Comments
Rearing Habitat	P	P	CT/LT/LW/RB/MW	Poor habitat; too steep
Spawining Habitat	P	P	CT/LT/LW/RB/MW	
OverWinter Habitat	P	P	CT/LT/LW/RB/MW	
Cover	P	P	CT/LT/LW/RB/MW	
Other				

WILDLIFE

COMMENT

Section	Comments
SITE CARD	Poor fish habitat; too steep
SITE CARD	LRV: 3-5 ; alder, ferns
SITE CARD	RRV: 2-5 ; alder, ferns

Unnamed Creek (ILP 1404) - Reach 1

Plate 9. Reach 1 - sample site 1. Upstream view (above) and downstream view (below).

Site Card

29-Jan-99

PROJECT

Project Name	Fulton River Fish Inventory	**Project Code**	06-BABL-000000794-1999
Stream Name (gaz.)	FULTON LAKE		
Project Watershed Code	480-697200-00000-00000-0000-0000-000-000-000-000-000-000		

WATERSHED

Gazetted Name		**Local Name**	
Watershed Code	000-000000-00000-00000-0000-0000-000-000-000-000-000-000		
ILP	2013	**Map**	93L.098
Reach #	1		

Site #	NID	Map	UTM(Zone/East/North/Method)	Site Lg	Method	Access	Fish Crd?
6	2037	93L.098		160	HC	FT	☒

Date	1998-07-18	**Time**	15:15	**Agency**	C141
Crew	MJ / TJ				

CHANNEL

	method	width	width	width	width	width	width	width	width
Channel Width (m)	T	0.7	0.7	0.8	1.6	0.9	0.5		
Wetted Width (m)	T	0.7	0.7	0.8	0.9	0.9	0.5		
Pool Depth (m)	MS	0.5	0.4	0.4					

	grad	grad	method
Method I	2.5		C
Method II			

Wb Depth | **Stage** ☐ L ☒ M ☐ H | **No Vis.Ch.** ☐ | **Intermittent** ☐ | **Dw** ☐ | **Tribs.** ☐

WATER

FLOOD SIGNS: NONE — Method: GE

Temp. 11 — Method: T3

pH 7.1 — Method: P2

Req #

EMS

Cond. 13 — Method: S4

Turb. ☐ T ☐ M ☐ L ☒ C — Method: GE

COVER

COVER — Total 40 %

SWD	LWD	B	C	DP	OV	IV
	25		20	5	50	

CROWN CLOSURE: 2 — 21-40%

LWD F

DIST E

INTREAM VEG ☒ N ☐ A ☐ M ☐ V

LB SHP S

Texture ☒ F ☐ G ☐ C ☐ B ☐ R ☐ A

RIP M

STG MF

RB SHP S

Texture ☒ F ☐ G ☐ C ☐ B ☐ R ☐ A

RIP M

STG MF

Site Card

29-Jan-99

MORPHOLOGY

BED MATERIAL Dominant: F Subdom: G
D95: 0.1 D (cm): 0.01 Morph: RP

DISTURBANCE INDICATORS

O1	B1	B2	B3	D1	D2	D3
☐	☐	☐	☐	☐	☐	☐

C1	C2	C3	C4	C5	S1	S2	S3	S4	S5
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Pattern SI
Islands N
Bars ☒ N ☐ D ☐ P ☐ M ☐ T ☐ L
Coupling DC
Confinement OC

FEATURE

FSZ TRIB ☐ SC ☐ FC ☐ SWP/SLG ☐ FL/BV ☐

PHOTO DOCUMENTATION

HABITAT QUALITY

Name	Zone	Quality	Species	Comments
Rearing Habitat	P	G	CT/LT/LW/RB/MW	
Spawining Habitat	P	M	CT/LT/LW/RB/MW	
OverWinter Habitat	P	F	CT/LT/LW/RB/MW	
Cover	P	F	CT/LT/LW/RB/MW	
Other				

WILDLIFE

COMMENT

Section	Comments
SITE CARD	Site located 100m u/s of confluence with stream #4 inside CP 439-3
SITE CARD	Some potential rearing habitat, limited potential spawning habitat
SITE CARD	Recommend partial retention
SITE CARD	Electroshocked 150 sq. metres for 250 sec.; no fish caught or seen
SITE CARD	Resample - 1998/06/23, caught 1 CT
SITE CARD	Recommend retention to top of gully to maintain bank stability

Fish Data Collection Form

A. Location Referencing

Gazetted Name Unnamed Creek **Alias**
Watershed Code 000-000000-00000-00000-0000-0000-000-000-000-000- **WBID #**
Reach # 1 **Interim Locational ID:** **Project ID** 06-BABL-000000794-1999
(BCGS/NTS) Map # 93L.098 **Locational Point** 2037

B. Survey Information

Survey Date 1998/06/23 **to** 1998/06/23 **Agenc** C141
Crew RS -MJ- **Fish Collection Permit** 671619H
General Comments

C. Station Identification and Conditions

Site	Method	#	UTM Coordinates	Temp	Con	Vis	Turb
6	EF	6		10	18		C

D. Fish Summary

Site	Meth	#	H/P	Species	Stage	Age	Tot #	Min Lgth	Max Lgth	Fish Act
6	EF	6	1	CT	A		1	162	162	R

E. Gear Specifications

Site	Meth	#	H/P	D In	T In	D Out	T Out	EF Sec	EF Lgth	EF Wdth	Encl	Nt Typ	Lgth	Dpth	Mesh	IN Sz	Set	Hab	Volt	Freq	Pul	Make	Model
6	EF	6	1	06/23	1000	06/23	1000	260	100	1	O								700	70	4	Smith-Root	15C

F. Individual Fish Data

Site	Meth	#	H/P	Species	Lgth	Wgt	Sex	Mat	Age Str	Age Smp #	Age	Vouch #	Gen Str	Gen Smp #	Comments	Roll	Fr
6	EF	6	1	CT	162		U	MT									

Site Card

29-Jan-99

PROJECT

Project Name	Fulton River Fish Inventory	**Project Code**	06-BABL-000000794-1999
Stream Name (gaz.)	FULTON LAKE		
Project Watershed Code	480-697200-00000-00000-0000-0000-000-000-000-000-000-000		

WATERSHED

Gazetted Name		**Local Name**	
Watershed Code	000-000000-00000-00000-0000-0000-000-000-000-000-000-000		

ILP 2013 **Map** 93L.098 **Reach #** 2

Site #	NID	Map	UTM(Zone/East/North/Method)	Site Lg	Method	Access	Fish Crd?
2	1407	93L.098		150	HC	V4	☐

Date 1998-06-23 **Time** 11:00 **Agency** C141 **Crew** RS / MJ

CHANNEL

	method	width	width	width	width	width	width	width	width
Channel Width (m)	T	1.4	1.6	1.3	0.9	1.2	1.0		
Wetted Width (m)	T	1.0	1.2	0.9	0.7	1.0	0.8		
Pool Depth (m)									

	grad	grad	method
Method I	0.5	0.5	C
Method II			

Wb Depth 0.2 0.2 0.2

Stage ☐ L ☒ M ☐ H

No Vis.Ch. ☐ **Intermittent** ☒

Dw ☐ **Tribs.** ☐

WATER

FLOOD SIGNS NONE **Method:** GE

Temp. 12 **Method:** T3

pH 7.7 **Method:** P2

Req #

EMS

Cond. 64 **Method:** S4

Turb. ☐ T ☐ M ☐ L ☒ C **Method:** GE

COVER

COVER **Total** 40 %

SWD	LWD	B	C	DP	OV	IV
5				5	90	

CROWN CLOSURE 2 21-40%

LWD F

DIST E

INTREAM VEG ☒ N ☐ A ☐ M ☐ V

LB SHP S

Texture ☒ F ☐ G ☐ C ☐ B ☐ R ☐ A

RIP D

STG SHR

RB SHP S

Texture ☒ F ☐ G ☐ C ☐ B ☐ R ☐ A

RIP D

STG SHR

Site Card

29-Jan-99

MORPHOLOGY

BED MATERIAL Dominant: F Subdom: NA
D95: 0.01 D (cm): 0.01 Morph: RP

DISTURBANCE INDICATORS

O1	B1	B2	B3	D1	D2	D3
☐	☐	☐	☐	☐	☐	☐

C1	C2	C3	C4	C5	S1	S2	S3	S4	S5
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Pattern SI
Islands N
Bars ☒ N ☐ D ☐ P ☐ M ☐ T ☐ L
Coupling DC
Confinement UN

FEATURE

FSZ TRIB ☐ SC ☐ FC ☐ SWP/SLG ☐ FL/BV ☐

PHOTO DOCUMENTATION

Photo			Foc Lg	Dir	Comments
R 102	F	23	ST	U	View of sample site in alder patch
R 102	F	24	ST	D	View of sample site in alder patch

HABITAT QUALITY

Name	Zone	Quality	Species	Comments
Rearing Habitat	P	P	CT/LT/LW/RB/MW	
Spawining Habitat	P	P	CT/LT/LW/RB/MW	
OverWinter Habitat	P	P	CT/LT/LW/RB/MW	
Cover	P	P	CT/LT/LW/RB/MW	
Other				

WILDLIFE

COMMENT

Section	Comments
SITE CARD	Site located in wetland
SITE CARD	Poor fish habitat
SITE CARD	This wetland has an intermittent channel

Unnamed Creek (ILP 2013) - Reach 2

Plate 10. Reach 2 - sample site 2. Upstream view (above) and downstream view (below).

Site Card

29-Jan-99

PROJECT

Project Name	Fulton River Fish Inventory	**Project Code**	06-BABL-000000794-1999
Stream Name (gaz.)	FULTON LAKE		
Project Watershed Code	480-697200-00000-00000-0000-0000-000-000-000-000-000-000		

WATERSHED

Gazetted Name		**Local Name**	
Watershed Code	000-000000-00000-00000-0000-0000-000-000-000-000-000-000		
ILP	1406	**Map**	93L.098
Reach #	1		

Site #	NID	Map	UTM(Zone/East/North/Method)	Site Lg	Method	Access	Fish Crd?
2	1408	93L.098		150	HC	FT	☒

Date	1998-06-18	**Time**	15:30	**Agency**	C141
Crew	RS / RS				

CHANNEL

	method	width	width	width	width	width	width	width	width
Channel Width (m)	T	0.9	1.1	0.8	1.0	0.9	0.9		
Wetted Width (m)	T	0.8	0.6	0.7	0.8	0.7	0.8		
Pool Depth (m)	MS	0.1	0.1	0.1					

	grad	grad	method
Method I	6.0	8.0	C
Method II			

Wb Depth	0.15	0.15	0.15
Stage	☐ L	☒ M	☐ H
No Vis.Ch.	☐	**Intermittent**	☐
Dw	☐	**Tribs.**	☐

WATER

FLOOD SIGNS

NONE — Method: GE

Temp.	6	Method:	T3
pH	7.7	Method:	P2

Req #					
EMS					
Cond.	50	Method:	S4		
Turb.	☐ T	☐ M	☐ L	☒ C	Method: GE

COVER

COVER — Total 80 %

SWD	LWD	B	C	DP	OV	IV
20	10	30			40	

CROWN CLOSURE: 1 — 1-20%

LWD	U	**INTREAM VEG**	☒ N ☐ A ☐ M ☐ V
DIST	E		
LB SHP	S	**RIP**	M
Texture	☒ F ☐ G ☐ C ☐ B ☐ R ☐ A	**STG**	MF
RB SHP	S	**RIP**	M
Texture	☒ F ☐ G ☐ C ☐ B ☐ R ☐ A	**STG**	MF

Site Card

29-Jan-99

MORPHOLOGY

BED MATERIAL Dominant: F Subdom: C
D95: 20 D (cm): 2 Morph: SP

DISTURBANCE INDICATORS

O1	B1	B2	B3	D1	D2	D3
☐	☐	☐	☐	☐	☐	☐

C1	C2	C3	C4	C5	S1	S2	S3	S4	S5
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Pattern SI
Islands N
Bars ☒ N ☐ D ☐ P ☐ M ☐ T ☐ L
Coupling DC
Confinement FC

FEATURE

FSZ TRIB ☐ SC ☐ FC ☐ SWP/SLG ☐ FL/BV ☐

PHOTO DOCUMENTATION

Photo			Foc Lg	Dir	Comments
R 102	F	21	ST	U	View at sample site
R 102	F	22	ST	U	View at sample site

HABITAT QUALITY

Name	Zone	Quality	Species	Comments
Rearing Habitat	P	P	CT/LT/LW/RB/MW	dewatered sections
Spawining Habitat	P	P	CT/LT/LW/RB/MW	
OverWinter Habitat	P	P	CT/LT/LW/RB/MW	
Cover	P	P	CT/LT/LW/RB/MW	
Other				

WILDLIFE

COMMENT

Section	Comments
SITE CARD	Site located ~150 m u/s of wetland
SITE CARD	Caught no fish and saw no fish
SITE CARD	Small sections of underground flow in d/s 50m of channel
SITE CARD	Ac=0.60

Fish Data Collection Form

A. Location Referencing

Gazetted Name Unnamed Creek **Alias**
Watershed Code 000-000000-00000-00000-0000-0000-000-000-000-000- **WBID #**
Reach # 1 **Interim Locational ID:** **Project ID** 06-BABL-000000794-1999
(BCGS/NTS) Map # 93L.098 **Locational Point** 1408

B. Survey Information

Survey Date 1998/06/18 **to** 1998/06/18 **Agenc** C141
Crew RS -RS- **Fish Collection Permit** 671619H
General Comments

C. Station Identification and Conditions

Site	Method	#	UTM Coordinates	Temp	Con	Vis	Turb
1	EF	6		6	50		C

D. Fish Summary

Site	Meth	#	H/P	Species	Stage	Age	Tot #	Min Lgth	Max Lgth	Fish Act
1	EF	6	1	NFC			0			

E. Gear Specifications

Site	Meth	#	H/P	D In	T In	D Out	T Out	EF Sec	EF Lgth	EF Wdth	Encl	Nt Typ	Lgth	Dpth	Mesh	IN Sz	Set	Hab	Volt	Freq	Pul	Make	Model
1	EF	6	1	06/18	1530	06/18	1530	460	100	1	O								900	70	4	Smith-Root	15C

F. Individual Fish Data

Site	Meth	#	H/P	Species	Lgth	Wgt	Sex	Mat	Age Str	Age Smp #	Age	Vouch #	Gen Str	Gen Smp #	Comments	Roll	Fr
1	EF	6	1														

Unnamed Creek (ILP 1406) - Reach 1

Plate 11. Reach 1 - sample site 1. Upstream view (above) and downstream view (below).

APPENDIX 2. Photodocumentation Forms 1 and 2. Negatives and digital images of photos (2 copies) were submitted to B.C. Environment.

Photo Survey Form 1 – Equipment Details

Survey Start Date:	1998/06/18	Survey End Date:	1998/06/23
Agency:	C141		
Crew:	RS/ RS/ MJ		

Camera:

Make and Model:	Canon Sureshot A1
Lense:	35 mm
Format:	135 mm, Kodak CD Rom

Roll and or Batches Detail:

Roll #	CD #	Output Medium	Film Type	ISO
102	2	negative/CD Rom	colour print	200
204	2	negative/CD Rom	colour print	200

Photo Documentation Report

1999-01-29

Roll	Frame	Neg	CD #	Image #	Owner	Project WS Code / WS Code	Reach	Site	ILP MAP #	ILP #	Comment
102	1	1	6	1	SITE	480-697200-00000-00000-0000-0000-000-000-000-	1.0	100	93L.098	2015	View at sample site
102	2	2	6	2	SITE	480-697200-00000-00000-0000-0000-000-000-000-	1.0	100	93L.098	2015	View at sample site
102	3	3	6	3	SITE	480-697200-00000-00000-0000-0000-000-000-000-	2.0	1	93L.098	1405	View at sample site
102	4	4	6	4	SITE	480-697200-00000-00000-0000-0000-000-000-000-	2.0	1	93L.098	1405	View at sample site
102	10	10	6	5	SITE	480-697200-00000-00000-0000-0000-000-000-000-	1.0	100	93L.098	1400	View at sample site
102	11	11	6	6	SITE	480-697200-00000-00000-0000-0000-000-000-000-	1.0	100	93L.098	1400	View at sample site
102	13	13	6	7	SITE	480-697200-00000-00000-0000-0000-000-000-000-	1.0	2	93L.098	1401	View at sample site
102	14	14	6	8	SITE	480-697200-00000-00000-0000-0000-000-000-000-	1.0	2	93L.098	1401	View at sample site
102	15	15	6	9	SITE	480-697200-00000-00000-0000-0000-000-000-000-	1.0	1	93L.098	1402	View at sample site
102	16	16	6	10	SITE	480-697200-00000-00000-0000-0000-000-000-000-	1.0	1	93L.098	1402	View at sample site
102	17	17	6	11	SITE	480-697200-00000-00000-0000-0000-000-000-000-	1.0	1	93L.098	1403	View at sample site
102	18	18	6	12	SITE	480-697200-00000-00000-0000-0000-000-000-000-	1.0	1	93L.098	1403	View at sample site

Roll	Frame	Neg	CD #	Image #	Owner	Project WS Code / WS Code	Reach	Site	ILP MAP #	ILP #	Comment
102	19	19	6	13	SITE	480-697200-00000-00000-0000-0000-000-000-000-	1.0-	1	93L.098	1404	View at sample site
102	20	20	6	14	SITE	480-697200-00000-00000-0000-0000-000-000-000-	1.0-	1	93L.098	1404	View at sample site
102	21	21	6	15	SITE	480-697200-00000-00000-0000-0000-000-000-000-	1.0-	2	93L.098	1406	View at sample site
102	22	22	6	16	SITE	480-697200-00000-00000-0000-0000-000-000-000-	1.0-	2	93L.098	1406	View at sample site
102	23	23	6	17	SITE	480-697200-00000-00000-0000-0000-000-000-000-	2.0-	2	93L.098	2013	View of sample site in alder patch
102	24	24	6	18	SITE	480-697200-00000-00000-0000-0000-000-000-000-	2.0-	2	93L.098	2013	View of sample site in alder patch
204	1	1	6	19	SITE	480-697200-00000-00000-0000-0000-000-000-000-	2.0-	1	93L.098	2022	View at sample site at road crossing to CP 439
204	2	2	6	20	SITE	480-697200-00000-00000-0000-0000-000-000-000-	2.0-	1	93L.098	2022	View at sample site at road crossing to CP 439
204	3	3	6	21	SITE	480-697200-00000-00000-0000-0000-000-000-000-	2.0-	1	93L.098	2022	View 300 m d/s of sample site
204	4	4	6	22	SITE	480-697200-00000-00000-0000-0000-000-000-000-	2.0-	1	93L.098	2022	View 300 m d/s of sample site
204	5	5	6	23	SITE	480-697200-00000-00000-0000-0000-000-000-000-	1.0-	2	93L.098	2022	View at sample site
204	6	6	6	24	SITE	480-697200-00000-00000-0000-0000-000-000-000-	1.0-	2	93L.098	2022	View at sample site

END OF REPORT