Reconnaissance 1:20,000 Fish and Fish Habitat Inventory of No Gold Planning Area

WSC: 440-000000

Prepared for:

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PROJECT REFERENCE INFORMATION

MELP Project Code:	SCI_C172_002_2000
FRBC Activity Number:	100883
FDIS Project Number:	06-ZYMO-000000993-1999
FRBC Region:	Skeena - Bulkley Region
MELP Region:	Skeena (06)
MELP District:	Kalum District
FW Management Unit:	6-09
DFO Sub-District:	4B
Forest Region:	Prince Rupert
Forest District:	Kalum
Forest Licensee and Tenure #:	Skeena Cellulose Inc. TFL 1

WATERSHED INFORMATION

Watershed Group	Zymoetz (Cooper) River
Watershed Name	Zymoetz River
Watershed Codes	Zymoetz (440-000000)
UTM at Mouth	9.5335000.60445000
Project Area (approx.)	47,600 ha
Total of All Stream Lengths	1103 km
Stream Orders	Limonite Creek - 4th Mattock Creek - 4th No Gold Creek - 4th Many Bear Creek - 4th Miligit Creek - 3rd Blackberry Creek - 4th Treasure Creek - 5th
NTS Map	93L/12, 93L/13, 93L/5, 103I/9, 103I/16
TRIM Maps	93L.041, 93L.042, 93L.051, 93L.052, 93L.061, 93L.071, 103I.080, 103I.070, 103I.060, 103I.050
BEC Zone	CWH, MH, AT

Air Photos	(SCI) Roll SRS 5951 - 5435.3: #55-65, 5434.3: 42-54, 5433.3: 15-27, 5432.3: 28-41, 5431.3: 1-14 Roll SRS 5950 - Line 5430.3: 534-550, 5429.2: 516-533, 5428.2: 431-448, 5427.2: 493-515, 5426.2: 449-471, 5425.2: 472-492, 5424.2: 410-430, 5423: 357-370, 5422: 291-300, 5421: 345-356, 5420.2: 221-230, 5419.2: 285-290, 5418.2: 172-182, 5417.2: 210-220, 5416.2: 123-130, 5415.2: 132-171, 5414.2: 112-120, 5413.2: 73-80, 5412: 37-41
Subwatershed Name	Limonite Creek
Watershed Code	440-341700
UTM at Mouth	9.568450.6039600
Watershed Area	7,775 ha
Mainstem Length	19 km
Stream Order	4th
Subwatershed Name	Mattock Creek
Watershed Code	440-389800
UTM at Mouth	9.568470.6045140
Watershed Area	1,080 ha
Mainstem Length	5.8 km
Stream Order	4th
Subwatershed Name	No Gold Creek
Watershed Code	440-410800
UTM at Mouth	9.568120.6047940
Watershed Area	1,685 ha
Mainstem Length	7.6 km
Stream Order	4th
Subwatershed Name	Many Bear Creek
Watershed Code	440-411000
UTM at Mouth	9.568180.6047980
Watershed Area	3,575 ha
Mainstem Length	11.2 km
Stream Order	4th
Subwatershed Name	Miligit Creek
Watershed Code	440-429500
UTM at Mouth	9.568785.6050345
Watershed Area	2,100 ha
Mainstem Length	8.7 km
Stream Order	3rd

Subwatershed Name	Blackberry Creek
Watershed Code	440-439100
UTM at Mouth	9.568150.6051480
Watershed Area	2,410 ha
Mainstem Length	10 km
Stream Order	4th

Subwatershed Name	Treasure Creek
Watershed Code	440-467900
UTM at Mouth	9.567080.6054720
Watershed Area	4,525 ha
Mainstem Length	9.4 km
Stream Order	5th

Total Stream Lengths in the Project Area	1,103 km

SAMPLING DESIGN SUMMARY

Total Number of Reaches	1430
Random Sample Sites	15
Discretionary Sites	60
Total Sample Sites	75
Field Sampling Dates	August 4 - September 2, 1999

CONTRACTOR INFORMATION

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Field crew:	*Names:*	Bryan Williams, Eva Wichmann, Darrel Davis, Stacy Brown
Data Entry by:	*Names:*	Karla Graf, Eamon Miyagi
Report prepared by:	*Name:*	Eva Wichmann
Report reviewed by:	*Name:*	Dave Gordon
Maps prepared by:	*Names:*	Amy Waterhouse, Elizabeth Murphy, Jennifer Link, Edward Lem, Kay Kennes
	Company:	Triton Environmental Consultants Ltd.
	Address:	#120 13511 Commerce Parkway. Richmond. BC V8V 2L1
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DNA Sample Submission:	*Name:*	Susan Pollard Conservation Section, BC Fisheries
	Address:	PO Box 9359 Stn. Provincial Government Victoria, BC., V8W 9M2

DISCLAIMER

This product has been accepted as being in accordance with approved standards within the limits of 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.

ACKNOWLEDGEMENTS

Funding for this inventory was provided by Forest Renewal BC - a partnership of forest companies, workers, environmental groups, First Nations, communities and government.

We would like to thank Kim Haworth, Skeena Cellulose Inc, and Brad Pollard, Acer Resources Consultants Ltd, for their guidance and assistance at various stages of this project. We thank Sam Buchanan and Brad Pollard of Acer Resource Consultants Ltd. for their input while conducting the quality assurance for this project. We would also like to thank Paul Giroux, Inventory Specialist, MELP and Quantum Helicopters.

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Phase 4 and Project Completion Reports
Phases I-III Pre-field Project Planning Report Reconnaissance (1:20,000) Fish and Fish Habitat Stream Inventory in the Kitnayakwa, No Gold, and Williams/Hatchery Working Areas
Triton Environmental Consultants, 1999.

Attachment II - **Field Notes**

Site Cards (75)
Fish Cards (58)

Attachment III - **Photodocumentation**

Binder With Photosummary Report
Index Sheets
Labelled Negatives in Plastic Sleeves
Photo CD #3711

Attachment IV - **Digital Data**

Watershed Report Files (on CD)**:**

Watershed report	NoGold.doc
Figure 1	Overview.apr
Figure 2	Indifish.xls
Figure 3	Indifish.xls
Figure 4	Indifish.xls
Table 1	Watsumm.xls
Table 2	Watsumm2.xls
Table 3	Habitatq.xls
Table 4	Habdescr.xls
Table 5	Features.xls
Table 6	NVC.xls
Table 7	NVC.xls
Table 8	Fishdist.xls
Table 9	Features.xls
Table 10	Minmax.xls
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Table 12	Minmax.xls
Table 13	Fishsum.xls
Table 14	Fishgrad.xls
Table 15	Sitesum.xls

LIST OF ATTACHMENTS AVAILABLE AT MELP OFFICE (CONTINUED)

Table 16	Sitesum.xls
Table 17	Sitesum.xls
Table 18	Efdata2.xls
Table 19	Order.xls
Table 20	Elev2.xls
Table 21	Slope_2.xls
Table 22	Fishbarr.xls
Table 23	Wild.xls
Table 24	Watqual.xls
Photo Form1	Form1.xls
Appendix I Index	Index.xls
Appendix III table	Genetic.xls

FDIS Files (on CD)**:**

FDIS database	Fdisdat.mdb

ARC/INFO (on CD):

Export File	f2199808.e00
containing:	
Data Source	f2199808.prj
Point Coverage	f2199808.pat
Attribute Table	f2199808.att
Metadata Table	f2199808.meta

Attachment V - **Hardcopy FISS Update Forms**

FISS Update Forms

FISS Update Maps 93L/12, 93L/13, 103I/9

LIST OF ABBREVIATIONS

asl	above sea level
BT	bull trout
CH	chinook salmon
CO	coho salmon
CP	cascade pool
EF	electrofishing
FDIS	Field Data Information System
FISS	Fisheries Information Summary System
FRBC	Forest Renewal BC
ILP	interim locational point
LAA	Local Area Agreement
LWD	large woody debris
MELP	Ministry of Environment, Lands and Parks
MT	minnow trap
NCD	non classified drainage
NFC	no fish caught
NID	numeric identifier
NS	not sampled
NTS	National Topographic Series
NVC	no visible channel
RB	rainbow trout
SCI	Skeena Cellulose Inc
ST	steelhead trout
SWD	small woody debris
TECL	Triton Environmental Consultants Ltd.
TRIM	Terrain Resource Inventory Mapping
VO	visual observation

1.0 INTRODUCTION

Triton Environmental Consultants Ltd. (Triton) was contracted by Skeena Cellulose Ltd (SCI) to conduct a fish and fish habitat inventory of the No Gold Planning Area (440-000000). Funding for the project was provided by Forest Renewal BC (FRBC). The project involved Phase 4 (field data collection), Phase 5 (data analysis) and Phase 6 (mapping and reporting). Under a separate contract, Triton conducted the Phase 1 to 3 (pre-field planning)(Triton 1999a) which identified historical data, sample reaches, and the Project Plan for this inventory.

The fish and fish habitat inventory program provides information regarding fish species presence, distribution and relative abundance, as well as stream reach biophysical data, for use in interpretation of habitat sensitivity and capability for fish production. Information required to plan forestry prescriptions under the Forest Practices Code can also be obtained from fish and fish habitat inventories.

1.1 Objectives

Triton's goal was to conduct a Phase 4 to Phase 6 reconnaissance (1:20,000) fish and fish habitat survey of the No Gold Planning Area, with the intention of describing fish distributions and habitat characteristics to aid in future resource planning in the watershed. The project included only stream sample sites.

1.2 Location

The No Gold project area includes tributaries to the Copper River from the confluence of the Limonite Creek to Red Canyon Creek (Figure 1). The project area (totalling 47,600 ha) is slightly different from SCI's No Gold working unit in that it includes Small Business Forest Enterprise Program (SBFEP) chart area located on either side of the Copper River from the Kitnayakwa River to Mattock Creek, including Limonite Creek. The project area is primarily within the coastal western hemlock (CWH) biogeoclimatic zone, with higher elevation areas in the mountain hemlock (MH) and alpine tundra (AT) zones. The area falls within the Bulkley Ranges of the Hazelton Mountains and is characterised by steep terrain with entrenched glacial streams. Peaks are in the 1500-2300 m elevation range.

Major sub-basins include Limonite Creek, Mattock Creek, Many Bear Creek, No Gold Creek, Miligit Creek, Blackberry Creek, and Treasure Creek.

Figure 1. No Gold Stream Inventory Overview Map.

1.2.1 Access

Access into the project area is primarily by helicopter, as road development in the watershed is insufficient to access most sample sites. The lower portion of Limonite Creek is accessible via the Copper River Forest Service Road, which originates at Hwy 16 approximately 8 km east of Terrace. The north west portion of the study area is accessible via the upper portions of the Kleanza Forest Service Road which originates at Hwy 16 approximately 14 km east of Terrace.

2.0 RESOURCE USE

2.1 Historical Fish Species and Distribution

During the Phase 1-3, historical fish distribution data were collected from the FISS database (DFO 1999) and maps (MELP and DFO 1995), as well as existing reports. This review indicated that the following fish species were present in the study area:

- coho salmon (*Oncorhynchus kisutch*)
- chinook salmon (*O. tshawytscha)*
- steelhead / rainbow trout (*O. mykiss*) and cutthroat trout (*O. clarki*),
- Dolly Varden char (*Salvelinus malma*)
- bull trout (*S. confluentus*) - a blue listed species according to the Conservation Data Centre - are known to be present both upstream and downstream of the study area (Triton 1998, 1999b) and are assumed present within the study area.

Other species found within the Copper River watershed include: sculpins (*Cottus* spp.), burbot (*Lota lota*), longnose dace (*Rhinichthys cataractae*), longnose sucker (*Catostomus catostomus*) and peamouth chub (*Mylocheilus caurinus*).

David Bustard and Associates (1995) surveyed 87 tributaries of the Copper River between Treasure Creek and Red Canyon Creek and found that 56 (64%) were non fish bearing due to steep gradient at their confluence with the Copper River. His findings indicated that fish use within this study area is mainly limited to mainstem and valley bottom areas, and that fish are generally not present above barriers on major tributary streams. Triton (1999b) found similar fish distributions during 1:20K Fish and Fish Habitat Inventories in the West Copper and Clore Planning Areas, downstream of the project area.

Juvenile rearing surveys conducted in 1991 (David Bustard and Associates 1992) and 1993 (Beere 1993) found that juvenile steelhead are the dominant species in the mainstem Copper River within the project area. Steelhead fry and parr comprised over 90% of the juvenile captures in sampling efforts between Treasure and Red Canyon creeks, with Dolly Varden, chinook and coho making up the remainder of the catch (David Bustard and Associates 1995).

A Level 1 WRP Fisheries Assessment for the Zymoetz River (Pollard *et. al*., 1996) was completed in 1995. The report includes descriptions of forestry related impacts to fish habitat within the No Gold project area (SBFEP - Mattock Creek, Limonite Creek, No Gold) and provides preliminary restoration options. No fish sampling was conducted as part of this WRP work.

Sample sites and significant features noted from the historical review of the study area are shown on the Project and Interpretive maps.

2.2 Development and Land Use

Forest harvesting in the No Gold Planning Area is carried out primarily by Skeena Cellulose Inc. However, a SBFEP chart area is located on either side of the Copper River from the Kitnayakwa River to Mattock Creek, including Limonite Creek.

There are no formal Forest Service Recreation Sites in the study area. Although no recreational anglers were observed in the project area during the study, it is known that anglers fish the middle Copper River and access this area via the Kleanza Forest Service Road.

2.3 First Nations Uses/Harvest

The Phase 1 to 3 did not identify First Nations issues or interests in the study area. The study area is within the traditional territory of the Kitselsas Band.

3.0 METHODS

The project was carried out following the *1:20,000 Reconnaissance Fish and Fish Habitat Inventory Standards, Version 1.1* (BC Fisheries 1998, errata 1999). Study specific details were identified in the Project Plan (Triton 1999a).

3.1 Phase 4 - Field Survey

The field survey was conducted from August 4th to September 2nd, 1999 by two two-person crews. A total of 73 sites were accessed by helicopter, while 4 sites were accessed by 2 or 4 wheel drive vehicle.

All field data was collected on 1:20,000 fish inventory field cards. In addition, the following information was recorded on the Site Cards in the comments section and will provide information to the fish stream identification portion of the study:

- stream classification
- comments supporting stream classification
- general habitat comments

- habitat restoration comments
- comments relating to best management practices (i.e. areas of concern regarding harvesting practices and road building), such as bank stability.

Fish sampling focused on reaches of <20% gradient. No voucher samples or fish ageing structures were collected, but DNA samples were collected. Char species were often identified to species in the field, however, the results of the DNA analysis will be used to confirm the field identification of Dolly Varden versus bull trout. Throughout the report, references to Dolly Varden includes Dolly Varden as well as bull trout.

Features relevant to fish distribution and fish habitat were recorded, georeferenced, and photographed. The photodocumentation included the following sample reach conditions:

- upstream and downstream photos of sample sites
- riparian conditions
- barriers and obstructions to fish migration
- critical habitats for all life stages of fish
- fisheries sensitive zones
- bank characteristics effecting fish habitat quality (i.e erodsion)
- areas of concern regarding harvesting practices and road building

3.1 Equipment

The following equipment was used to conduct the stream surveys:

- Smith Root 15A and 12 B POW, Backpack Electrofishers and associated equipment
- LaMotte pH PockeTester 1 Waterproof
- LaMotte TDS PockeTester 1 Waterproof
- hip chains at 0.1 m increments
- measure tapes at 0.01 m increments
- meter sticks with 0.01 m increments
- fish boards at 1 mm increments
- dissection kits, slides, DNA vials, voucher bottles,
- Abney levels, clinometers
- 32 mm Cannon Sureshot cameras with 200 ASA film

3.2 Phase 5 - Data Compilation

The data compilation took place both in the field and in the office. Cards were reviewed daily and data were transferred to working maps. Immediately following the field program, data were entered into Ministry of Environment, Lands and Park's (MELP) inventory database (FDIS version 7.0) and the photographs were developed, scanned into digital format, and captioned for inclusion in the final report. Genetic samples were submitted to Susan Pollard, MELP, for analysis but results have not yet been received (submission form included in Appendix III).

A fish density index (fish/100 m^2) was calculated for each site using the data collected in the field. The length and width of areas electrofished were recorded on the fish collection cards. It is important to note that this fish density index is calculated within the context of the Fish and Fish Habitat Inventory Program and its standard fish sampling methods. Therefore, the use of stopnets and multiple removal sampling was not included. In addition, the time spent (seconds) electrofishing each m^2 may vary between sites given variation in site condition such as substrate, cover availability, flow and turbidity. The calculation of the fish density index is an output of the Fish and Fish Habitat Assessment Tool (FHAT20) developed by the Ministry of Fisheries (Ecometric Research Inc 1999).

3.3 Phase 6 - Reports and Maps

This report follows the MELP outline indicated in the Resource Inventory Committee (RIC) 1:20,000 Inventory Standards and includes descriptions of the project objectives, study area, methodology, results, and recommendations for future sampling. Fisheries values, stream classifications and management recommendations have been described for sampled stream reaches. The data supporting the assignment of non-fish bearing status to sampled reaches is provided, as are recommendations for future sampling in reaches where no fish were caught, but where they were classified as fish bearing by default. The database output is included as a set of appendices and includes FDIS reach cards, site cards and fish forms (Appendix I).

A 1:200,000, colour overview map, outlining the location and perimeter of the study area has been provided in Figure 1. Project and Interpretative maps at 1:20,000 scale were generated using Arc Info and Arc View software and have been included in Appendix II. The Project and Interpretative maps overlap somewhat and include the following information:

- watershed codes (or ILP if the watershed code was missing)
- stream names
- stream network
- historical data
- fish and survey site locations
- barriers to fish migration

The Project maps include reach summaries for reaches with <30% gradient. These summaries include reach classification (stream or wetland), confinement, slope and channel pattern data. Fisheries sensitive zones also appear on the Project maps.

The Interpretative maps include channel width and slope data, data relating to fish sampling, and colour coded fish distribution data. Confirmed fish presence is indicated by a solid red line, confirmed fish absence is indicated by a solid blue line. Inferred fish

presence or absence is indicated by dashed lines. Fish absence or presence was identified through background information, fish sampling, field observations, map/field gradient or a combination thereof.

4.0 RESULTS AND DISCUSSION

The data collected in the field, as well as the photographs taken at every site, are presented in order of ascending site number in Appendix I - FDIS Summary and Photographs. The Project Maps and Interpretative Maps showing sample sites, fish distributions and site and reach data have been included in Appendix II.

4.1 Logistics

4.1.1 Field

No major logistical problems were encountered during the field program. In some cases, fish presence/absence could not be confirmed, due to site conditions at the time of the survey (i.e.: dry stream channel, low flow conditions). In these cases, fish presence/absence was inferred based on habitat quality, proximity of fish bearing waters, seasonal habitat availability, gradient, access and professional judgement.

4.1.2 Reporting and Mapping

At the time of report and map preparation the watershed codes for this project had not been received from MELP to replace the existing ILPs in the database and maps. Similarly, the results of the DNA analysis had not been received for inclusion into the report and database.

4.2 Summary of Biophysical Data For Sub-Basins

A number of 3rd order and higher subbasins exist within the study area. For the purposes of this report, seven major subbasins are identified ranging from 3rd to 5th order and a summary of the biophysical information for these drainage's is provided in Table 1. A list of all 3rd order and higher streams found in the study area is presented in Table 2 and indicates there are 38 such subbasins within the study area.

4.3 Habitat and Fish Distribution

Due to the steep nature of the landscape in the No Gold Planning Area, fish habitat is limited by gradient in most first, second and third order streams. A total of 16 of the 38 subbasins listed in Table 2 has reach 1 gradients of >10%. Important fish habitat occurs in the floodplain of the Copper River and in the valley bottom areas of the major subbasins of the study area. The Copper River was not sampled as part of this survey, but is known to provide important spawning, overwintering and rearing habitat for species

Table 1. Summary of watershed information for subbasins within the No Gold Planning Area.

Table 1. Summary of watershed information for subbasins within the No Gold Planning Area.

Local Name	Watershed Code	UTM at Mouth			Watershed Area (ha)	Mainstem Length (km)	Stream Order	NTS Maps	BGC Zone[a]	Lake Names and Individual Areas	Wetlands, Number and Total Area
		Zone	Easting	Northing							
Limonite Cr.	440-341700-00000	9	568450	60396	7,775	19	4	93L/12	CWH, MH, AT	Top Lake (34 ha), Tauw Lake (17.5 ha), unnamed lakes (45.4, 1.9, 1.9,1.9,0.8 ha)	none
Mattock Cr.	440-389800-00000	9	568470	6045140	1,080	5.8	4	93L/12, 103I/9	CWH, MH, AT	none	none
NoGold Cr.	440-410800-00000	9	568120	6047940	1,685	7.6	4	93L/12, 103I/9	CWH, MH, AT	unnamed lake (0.5 ha)	none
Many Bear Cr.	440-411000-00000	9	568180	6047980	3,575	11.2	4	93L/12	CWH, MH, AT	unnamed lakes (1.72,1.3,1.2 ha)	none
Miligit Cr.	440-429500-00000	9	568785	6050345	2,105	8.7	3	93L/12	CWH, MH, AT	unnamed lake (1.9 ha)	6 (27 ha)
Blackberry Cr.	440-439100-00000	9	568150	6051480	2,415	10	4	93L/12	CWH, MH, AT	none	none
Treasure Cr.	440-467900-00000	9	567080	6054720	4,525	9.4	5	93L/12, 103I/9	CWH, MH, AT	unnamed lakes (0.3,0.7,2.56,1.3 ha)	none

a. BGC Zone - Biogeoclimatice Zone, CWH - coastal western hemlock, MH - Mountain Hemlock, AT - Alpine Tundra

Table 2. Summary of 3rd order and higher streams in the No Gold Planning Area, August 1999.

Table 2. Summary of 3rd order and higher streams in the No Gold Planning Area, August 1999.

Local Name	Watershed Code/ILP	Confluence Map	Reach 1 Gradient (%)[a]	Order
Unnamed Tributary	324	93L.051	13	3
Unnamed Tributary	360	93L.051	10	3
Unnamed Tributary	541	93L.061	51	3
Unnamed Tributary	755	103I.060	44	3
Unnamed Tributary	854	93L.061	10	3
Unnamed Tributary	3000	93L.041	43	3
Unnamed Tributary	3627	93L.071	5	3
Unnamed Tributary	440-341700-79500-00000-0000-	93L.052	2	3
Unnamed Tributary	440-383400-00000-00000-0000-	93L.051	31	3
Unnamed Tributary	440-389800-50900-00000-0000-	93L.051	25	3
Unnamed Tributary	440-411000-32900-00000-0000-	93L.051	15	3
Unnamed Tributary	440-411000-64800-00000-0000-	93L.051	8	3
Miligit Cr.	440-429500-00000-00000-0000-	93L.051	6	3
Unnamed Tributary	440-439100-39300-00000-0000-	93L.061	18	3
Unnamed Tributary	440-439100-48700-00000-0000-	93L.061	10	3
Unnamed Tributary	440-439100-68000-00000-0000-	93L.061	38	3
Unnamed Tributary	440-467900-13300-43500-0000-	103I.070	14	3
Unnamed Tributary	440-467900-28800-00000-0000-	103I.060	21	3
Unnamed Tributary	440-467900-53300-00000-0000-	103I.070	13	3
Unnamed Tributary	440-467900-79000-00000-0000-	103I.070	26	3
Unnamed Tributary	440-512000-22900-00000-0000-	93L.061	7	3
Unnamed Tributary	440-519700-00000-00000-0000-	93L.061	10	3
Unnamed Tributary	440-560100-00000-00000-0000-	93L.071	5	3
Unnamed Tributary	440-578800-45500-00000-0000-	103I.080	11	3
Unnamed Tributary	440-605000-00000-00000-0000-	93L.071	10	3
Unnamed Tributary	440-606400-00000-00000-0000-	93L.071	7	3
Unnamed Tributary	440-606400-13200-00000-0000-	93L.071	4	3
Unnamed Tributary	203	93L.051	14	4
Limonite Cr.	440-341700-00000-00000-0000-	93L.051	9	4
Mattock Cr.	440-389800-00000-00000-0000-	93L.051	11	4
No Gold Cr.	440-410800-00000-00000-0000-	93L.051	8	4
Many Bear Cr.	440-411000-00000-00000-0000-	93L.051	5	4
Blackberry Cr.	440-439100-00000-00000-0000-	93L.061	7	4
Unnamed Tributary	440-467900-13300-00000-0000-	93L.061	15	4
Unnamed Tributary	440-512000-00000-00000-0000-	93L.061	4	4
Unnamed Tributary	440-512000-36700-00000-0000-	93L.061	5	4
Two Falls Cr.	440-578800-00000-00000-0000-	93L.071	6	4
Treasure Cr.	440-467900-00000-00000-0000-	93L.061	3	5

a. from Phase 1-3 map interpretation

such as steelhead trout/rainbow trout, coho, chinook, Dolly Varden, and bull trout. A canyon located on the Copper River downstream of the study area is a velocity barrier for pink and chum salmon. This canyon has been blasted to improve access for steelhead, chinook and coho.

Fish and/or fish habitat data were collected at a total of 77 sites in the No Gold Planning Area. There were 2 samples sites which were only sampled for fish to establish fish absence/presence. Fish habitat data were collected at 75 sites and fish sampling was conducted at 58 sites in the major subbasins, as well as in first and second order tributaries, in the study area.

Table 3 provides an overview of habitat quality at each site, while Table 4 provides habitat and channel characteristics at fish bearing sites. A summary of barriers identified in the study area is presented in Table 5. These tables are organized consecutively by site number or by watershed code/ILP and reach, and allow the user of the maps and report to quickly reference qualitative site information. A discussion of fish habitat and distributions for major subbasins is provided in Section 4.3.1, while a discussion of rearing, spawning and overwintering habitat is found in Section 4.5.1.

The sampling identified a total of 34 fish bearing reaches. A total of 29 sites were non-fish bearing and 13 sites were classified as "No Visible Channel" (Table 6). Fish were caught at 30 of a total of 58 stream reach sites electrofished during Phase 4. One reach was assigned a site number (Site 71) to document impacts from an adjacent cutblock, although the site card was not fully completed and no fish sampling was conducted.

The species sampled were coho, chinook, rainbow trout/steelhead, Dolly Varden and bull trout. No coarse fish species were caught during the surveys. The species presence in each of the major subbasins is summarized in Table 7. Fish distributions within the study area are generally defined by the presence of barriers. Table 8 summarizes the fish distribution limits for the major subbasins within the No Gold Planning Area.

Table 3. Summary of fish habitat quality observed at sample sites in the No Gold Planning Area, August 1999.

Table 3. Summary of fish habitat quality observed at sample sites in the No Gold Planning Area, August 1999

Site	Local Name	Watershed Code/ILP	Reach	Fish Species	Stream Class	Spawning	Overwintering	Rearing	Other Site Comments
1	Limonite Cr.	440-341700-00000	2	DV, RB, CO	S2	Some isolated pockets of spawning habitat, some pool tailouts.	Deep pool cover available along the margins.	Deep pool, cutbank and large boulder cover noted, good habitat	Little evidence of side channel habitat. Abundant clumped LWD, habitat along margins and mid channel, behind large boulders
2	Limonite Cr.	440-341700-00000	4	DV	S2	No spawning habitat, no gravels available, only large cobbles.	Some boulder and deep pool like glide	Moderate rearing habitat, abundant boulder cover, varies velocity, but turbid water.	Thick layer of fine sediment on the rocks, abundant algae growth. Thalweg is 0.6-0.8m deep and fast flowing, few residual pools. Lake and stream are a milky green
3	Limonite Cr.	440-341700-00000	8	DV	S2	Good spawning habitat, gravel and cobble present, though gravels are loose.	Moderate overwintering habitat, beaver pond provides deep pool cover, gravel/cobble cover for fry overwintering also available	Moderate flow, cobble, beaver pond and instream vegetation cover, LWD and pools lacking.	Low habitat diversity, but associated lake is accessible. Beaver activity has resulted in diversion of flow through forest and onto road crossing. A debris catcher was installed 50m upstream of road, as well as some log and boulder bank stabilization
4	Limonite Cr.	440-341700-00000	10	DV	S3	Some good spawning habitat, suitable gravels	No overwintering habitat available	Moderately good rearing habitat, limited cover	
6	Unnamed Tributar	440-341700-22400-00000	1	NFC	S5	Some isolated patches of spawning gravel	No overwintering habitat	Fair rearing habitat, boulder cover predominant, no deep pools, some	The morphology ranges from CP to SP. Adjacent cutblock has a very narrow reserve in some sections.
7	Unnamed Tributar	440-341700-41900-00000	1	NFC	S6	No suitable spawning substrate noted.	No overwintering habitat	There are isolated areas of rearing habitat, interrupted by subsurface flow	The creek is well defined for 25m at the lake outlet, it then loses definition in a marsh and flows underground. The channel becomes defined
8	Unnamed Tributar	440-341700-79500-00000	3	NFC	S5	Small pockets of gravel available, typically bedrock substrate.	Good overwintering habitat, abundant deep pools.	Poor rearing habitat. High energy reach. Cascades throughout reach limit fish migration,	
71	Unnamed Tributar	440-341700-79500-07600-0000	1	NS	N/A	No spawning habitat in the steep section of the sampling area, with moderate to high amounts in the less steep	Poor in the high gradient disturbed area and poor upstream.	poor in the higher gradient section of the reach.	Steep gradient and a rock falls were noted at the mouth, logged to banks. This is a sediment source for ILP 163.

Table 3. Cont'd

Site	Local Name	Watershed Code/ILP	Reach	Fish Species	m Class	Spawning	Overwintering	Rearing	Other Site Comments
11	Unnamed Tributar	440-355000-00000	1	DV	S3	Some good spawning	Overwintering habitat present.	Rearing habitat present	A 150m section of 24% slope noted, but is not a barrier.

14	Mattock Cr.	440-389800-00000	1	RB	S2	Spawning gravel is limited to a few small patch behind boulders	Good overwintering, abundant deep pools.	Moderate rearing values in the lower end of the stream. The stream is steep and rearing values decrease progressively	Slope increases to >20% but fish have access.
72	Mattock Cr.	440-389800-00000	2	DV	S2	Moderate spawning habitat, some patches of gravel.	Some deep pool and boulder overwintering cover.	Some good rearing habitat for DV, fast flow and boulder cover noted.	Abundant deadfall on stream banks, multiple elevated bars, numerous avalanche gullies noted entering the creek. Some cascades occur, but are not
16	No Gold Cr.	440-410800-00000	1	DV	S2	Poor spawning habitat, isolated gravel, high velocity flow.	Moderate overwintering habitat, Some deep pool cover.	Good rearing cover, gradient increases upstream of	High velocity limits fisheries potential
73	No Gold Cr.	440-410800-00000	3	DV	S2	Moderate spawning habitat	Some overwintering habitat present, numerous large pools >50cm in	Moderate rearing habitat. Rearing cover is provided by boulders and	
17	Many Bear Cr.	440-411000-00000	1	DV, RB	S2	Isolated patches of spawning gravel for trout and char, not suited to anadromous	No deep pools, high velocity flows.	Moderate rearing habitat along the stream margins	High velocity stream, boulder cover, deep sections of the channel, few residual pools.
18	Many Bear Cr.	440-411000-00000	4	NFC	S5	Limited spawning habitat	Limited overwintering habitat present	Limited rearing habitat, and cover is	Moderate slope with some cascades. No fish captured upstream of barrier
64	Many Bear Cr.	440-411000-00000	5	NFC	S5	Small isolated pools of gravel.	Limited deep pool cover.	Some boulder and pool cover.	Some good rearing habitat, abundant boulder cover. Iron is leeching into this reach, as evidenced by iron coated substrate.
21	Unnamed Tributar	440-411000-32900-00000-	1	DV	S2	Moderate spawning, small obstructions limit fish passage, abundant gravel in the lower section of the	Poor overwintering habitat, no deep pools	Moderate rearing habitat, small obstructions limit fish passage.	Stream diverts at a log jam, and flows in 5 separate channels, into the mainstem.
23	Unnamed Tributar	440-411000-64800	1	NFC	S5	ited spawning ha	Abundant overwintering habitat	Limited rearing habitat.	Typical high elevation DV habitat.

Table 3. Cont'd

Site	Local Name	Watershed Code/ILP	Reach	Fish Species	Stream Class	Spawning	Overwintering	Rearing	Other Site Comments
26	Unnamed Tributar	440-423900-00000	1	DV, CO	S3	Excellent spawning in lower 50 m of the stream	A moderate amount of overwintering habitat noted.	Excellent rearing habitat in the lower 50 m of the stream, u/s gradient	

29	Miligit Cr.	440-429500-00000	1	CO	S1	Limited spawning gravels.	Overwintering habitat present, with abundant pools >50cm deep	Rearing habitat is limited by cascades in this reach, boulders provide rearing	
30	Miligit Cr.	440-429500-00000	3	DV, CO,	S1	No spawning habitat.	Some overwintering habitat available	Limited fisheries values, turbid water, and poor rearing habitat.	High energy system, cold water.
31	Miligit Cr.	440-429500-00000	5	NS	S5	No spawning substrate	No overwintering habitat	No fish habitat based on year round cold water, downstream barrier, and	
34	Unnamed Tributar	440-429500-29300-00000	1	DV	S4 / S6	Poor spawning habitat, available in isolated patches.	No deep pools, but accessible to mainstem beaver ponds.	Poor rearing habitat	Limited habitat, unstable channel (evidence of channel movement).
38	Blackberry Cr.	440-439100-00000	2	DV	S2	Poor spawning habitat, with some patches of spawning gravel/cobble clogged with sands and fine	Moderate overwintering habitat.	Moderate to good rearing habitat, fast flowing in some areas, but accessible with varied habitat	Moderate flows, occasional deadfall providing LWD cover, fine sediment in back eddies, small side channels
69	Blackberry Cr.	440-439100-00000	3	DV	S2	Some good spawning gravel for resident fish species, associated with tailouts of pools	Some good overwintering habitat with gravels for fry, boulder/pools for juveniles and	Some excellent rearing habitat noted, with cobble/boulders and smaller refuge areas	Boulders are moss covered and the banks are well vegetated.
39	Blackberry Cr.	440-439100-00000	4	NFC	S2	Poor spawning habitat, angular substrate	No overwintering pools.	Moderate rearing habitat with cutbanks and overstream vegetation cover.	High energy stream with very fine sediment in backedddies and landslides. Trees noted in the creek, no measurable pools.
43	Treasure Cr.	440-467900-00000	3	NFC	(S5)	Small pockets of spawning habitat available for trout and char.	Moderate overwintering habitat.	Excellent rearing for DV, some riffle/cascade/pool habitat.	

Table 3. Cont'd

Site	Local Name	Watershed Code/ILP	Reach	Fish Species	Stream Class	Spawning	Overwintering	Rearing	Other Site Comments
44	Unnamed Tributar	440-467900-13300-00000	2	NFC	S5	Moderate to poor spawning habitat due to cascade nature of reach	Overwintering habitat present.	Moderate to poor rearing habitat due to cascade nature of reach. Suitable fish	10 m falls at mouth
46	Unnamed Tributar	440-512000-00000	3	DV	S1	Limited spawning habitat	Good overwintering habitat; abundant pools	Limited rearing habitat, boulders provide rearing cover in the sampling area.	

68	Unnamed Tributar	440-512000-00000	5	NFC	S5	Little suitable spawning habitat with sufficient flow	Moderate overwintering habitat, Some gravel for fry and pools for	Some DV rearing habitat with some pool and boulder cover.	Algae growth on substrate, elevated bars indicate higher flows.
48	Unnamed Tributar	440-512000-12600-00000	1	DV	S2	Poor spawning habitat	Limited deeps pools for overwintering	Poor rearing habitat due to gradient.	Poor fish habitat based on high gradient.
50	Unnamed Tributar	440-512000-22900-00000	2	NFC	S6	No suitable spawning gravel beds.	No overwintering habitat, this reach likely	Poor rearing habitat, with only shallow pools and no riffles.	The channel is intermittent in reach 1, but generally lacks a defined channel.
47	Unnamed Tributar	440-512000-36700-15600-0000	3	NFC	S5	No suitable spawning gravels in areas of appropriate velocities.	Poor, no pools, likely freezes in winter.	Poor rearing habitat, no pools, extensive riffles.	Unstable channel, poor fish habitat.
56	Unnamed Tributar	440-560100-00000	3	NFC	S5	Spawning substrate noted behind boulders.	Good overwintering habitat, abundant	Rearing cover is limited.	Poor fisheries values, moderately steep cascade/pool stream.
57	Two Falls Cr.	440-578800-00000	3	NFC	(S5)	Only a few small patches of spawning gravel available.	Moderate overwintering habitat, with Some gravel/cobble	Some good pool, LWD and boulder cover	Some good DV habitat, fast flowing waters with LWD and boulder cover.
75	Two Falls Cr.	440-578800-00000	1	CO, RB, DV	S2	spawning gravels available in small pockets throughout the	Moderate overwintering provided by deep pools	Moderate rearing cover is provided mainly by boulders	
59	Unnamed Tributar	440-605000-00000	1	DV	S2	Spawning gravel is present in small pockets behind boulders	Overwintering habitat is abundant, with many deep pools over 50cm	Good rearing habitat	
60	Unnamed Tributar	440-606400-00000	1	DV	S3	Moderate spawning	Moderate rearing habitat	Moderate rearing habitat.	

Table 3. Cont'd

Site	Local Name	Watershed Code/ILP	Reach	Fish Species	Stream Class	Spawning	Overwintering	Rearing	Other Site Comments
63	Unnamed Tributar	440-606400-00000	2	DV	S3	Moderate spawning habitat, limited by angular gravels	Some good deep pool cover.	Some good LWD cover	Angular gravels in the sampling area. Upstream the creek is dry, with gravels scattered across the valley floor.
61	Unnamed Tributar	440-613900-00000-	1	DV	S2	Good/excellent spawning habitat	Poor to moderate overwintering habitat, few deep pools.	Good to moderate rearing cover	Few pools to measure. Upstream of site, channel splits into 2 sections, with substrate littering the forest floor. At the mouth the channel divides into >5
62	Unnamed Tributar	440-613900-00000-	2	DV	S2	Moderate spawning habitat, limited in part by	Some good overwintering pools.	Moderate DV rearing habitat.	Some sediment noted in pools. Some good cobble pool habitat, with some boulder, bedrock or LWD cascades.

5	Unnamed Tributar	91	1	NFC	S6	Some isolated pockets of spawning gravel for trout and char, typically angular gravel however.	No overwintering cover	Some rearing cover in instream mosses and roots	Upstream of road crossing gradient reaches 30% and downstream of Copper ML, stream follows old road, is overgrown with alder and flows as cascade. In old cutblock, 15% slope was noted, the cascade at the PNG right
9	Unnamed Tributar	230	2	NFC	S6	Poor spawning habitat; fine substrate	No overwintering habitat	Poor fisheries values, barrier to fish migration at the mouth, 75% slope for 20m.	
10	Unnamed Tributary	230	3	NS	S6	No spawning habitat, fine substrate.	No overwintering habitat.	No rearing habitat.	Fine substrate materials, small organic barriers, limited cover, Very shallow, no
19	Unnamed Tributar	360	1	DV	S4	Some patches of spawning cover, interrupted by sections of fines	no overwintering pools.	Some good rearing cover, including cutbanks and LWD	Small stream flowing over the forest floor. Good fish habitat, fish using LWD and cutbanks for cover.
20	Unnamed Tributary	365	1	NS	S6	No spawning habitat	No overwintering habitat	No rearing habitat	No fish habitat, due to the steep gradient (>30%), cascades with no pools, drops over bedrock and large boulders. No access from
22	Unnamed Tributary	392	1	NS	S6	o spawning habit	No overwintering habitat.	No rearing habitat.	No fish habitat exists in this stream. Stream flows at >40% gradient into the
24	Unnamed Tributar	408	1	NFC	S6	Poor, isolated patches of spawning gravel for trout and char.	No overwintering pools.	Some boulder and cutbank cover.	Sub alpine creek, steep with boulder/cobble dominated substrate, some LWD forms steps and the log step 70m from the mouth is an obstruction. Eroding banks and

Table 3. Cont'd

Site	Local Name	Watershed Code/ILP	Reach	Fish Species	Stream Class	Spawning	Overwintering	Rearing	Other Site Comments
27	Unnamed Tributar	438	1	NFC	S6	Limited spawning habitat	No overwintering habitat	Limited rearing habitat	A 40 m, 68% gradient barrier at the mouth limits fish access into the lower gradient stream
28	Unnamed Tributar	440	1	NFC	S6	No spawning habitat noted.	No overwintering habitat noted.	Some good cutbanks and SWD rearing	Moss covered boulders and cobble, organic matter in substrate.
32	Unnamed Tributar	444	2	DV	S4	No spawning habitat	Overwintering habitat is poor in the upper part of the reach, with few pools.	Rearing habitat is moderate to good.	The upper end of the reach flows as riffle/pool, where DV were captured.
33	Unnamed Tributar	445	1	NFC	S3	No spawning habitat present.	Some good overwintering habitat	Good rearing habitat	
77	Unnamed Tributar	492	1	NFC	S6	No spawning habitat, unsuitable substrate	No overwintering habitat, no deep pools.	Poor to moderate rearing habitat near the downstream end	This reach is connected to the Zymoetz R.

41	Unnamed Tributar	620	1	NFC	S5	Poor spawning habitat, inadequate flows, no gravels, organic substrate.	Poor overwintering habitat, likely freezes in winter.	Poor to moderate quality habitat, low flows in the sampling area, abundant algae	Poor fish habitat, brown algae present, no visible flow, organic substrate. Farther downstream the flow increases and the channel becomes more defined.
42	Unnamed Tributar	626	1	NS	S6	Poor spawning habitat, no spawning gravel, insufficient velocities fro	No overwintering habitat, likely freezes solid in winter.	Poor , isolated pools, generally limited flow.	Could not fish, insufficient habitat, primarily a mossy gully with ferns and deadfall.
45	Unnamed Tributar	827	1	NS	S3	No spawning habitat.	No overwintering habitat	Poor rearing, limited rearing cover, 50m of off channel	
54	Unnamed Tributar	905	1	NFC	(S6)	No spawning habitat	No overwintering habitat, no deep pools.	Poor rearing habitat.	Poor fish habitat in the S6 section, NFC after 174 s. No fish were observed in the pond upstream and a connection with the Zymoetz was not noted.
55	Unnamed Tributar	3627	1	RB	S2	Poor to moderate spawning habitat, patches of suitable	Some good overwintering pools.	Some good juvenile rearing habitat, the flow is somewhat fast for fry.	
74	Unnamed Tributar	3627	2	NFC	(S5)	Limited spawning habitat	Moderate overwintering habitat	Limited rearing habitat	

Table 3. Cont'd

Site	Local Name	Watershed Code/ILP	Reach	Fish Species	Stream Class	Spawning	Overwintering	Rearing	Other Site Comments
58	Unnamed Tributar	3640	1	NFC	(S4)	Poor spawning habitat, no suitable substrate or flow.	Poor overwintering habitat.	Poor rearing habitat, intermittent stream.	This is an intermittent reach with high gradient, most of the downstream end is vegetated with devil's club and ferns, with no defined channel and only isolated pools.
40	Unnamed Tributar	3800	1	NFC	(S6)	Poor spawning habitat, insufficient flows and no gravels	Poor overwintering, no deep pools.	Poor to moderate rearing habitat, low flows but moderate cover, generally shallow water	The gradient is slightly lower in the bottom of the reach, with subsurface flow noted 70m upstream from the confluence with the Zymoetz. Low gradient channel with abundant organic substrate and
65	Unnamed Tributar	3900	1	NFC	S6	Poor spawning habitat, unsuitable substrate dominated by	No deep overwintering pools.	Cutbank cover available	Few pools, limited fisheries values

a. CH - chinook, CO - coho, DV - Dolly Varden, RB - rainbow trout, NFC - no fish caught, NS - not sampled, LWD - large woody debris

Table 4. Summary of fish features and channel characteristics at fish bearing sites in the No Gold Planning Area, August 1999.

Table 4. Summary of fish features and channel characteristics at fish bearing sites in the No Gold Planning Area, August 1999.

																													Disturbance Indicators										
Site #	Local Name	Watershed Code/ ILP	Reach #	Map	Fish Site #	Capture Method	Species	Average Channel Width (m)	Average Gradient %	Average Pool Depth (m)	Flow Stage	pH	Temp (oC)	Conductivity (umos)	Turbidity	Total Cover	SWD	LWD	Boulders	Cutbanks	Deep Pools	Overstream Vegetation	Instream Vegetation	LWD Amount	Dominant Substrate	Subdominant Substrate	Morphology	Beaver Dams	Abandonned Channel	Eroding Bank	Avulsions	Large Woody Debris	Extensive Riffles or Cascades	Minimal Pool Area	Elevated Mid-channel Bard	Multiple Channel/Braids	Distrubed Stone Lines	Sediment Fingers	Extensive Bars
1	Limonite Cr.	440-341700-00000	2	93L.051	1	EF	DV, RB, CO	12.8	4.5	0.6	M	8	8	80	C	A		S	D	S	D	S		F	C	B	CP						Y						
2	Limonite Cr.	440-341700-00000	4	93L.052	2	EF	DV	13.7	1.2	1.0	M	8	9	40	L	M		T	D			S	T	F	C	B	RP											Y	
3	Limonite Cr.	440-341700-00000	8	93L.052	3	EF	DV	6.2	0.7		M	7.6	10	50	C	M	T					D		F	G	C	RP	Y					Y	Y				Y	
4	Limonite Cr.	440-341700-00000	10	93L.052	4	EF	DV	2.8	3.7	0.1	L	6.8	6	10	C	M	S	D	T	T		S		F	G	C	RPGW												
11	Unnamed Tributary	440-355000-00000	1	93L.051	11	EF	DV	4.2	14.0	1.4	M	7.1	9	50	C	A	S	D	S	T	S	T	T	A	C	B	RPCW												
14	Mattock Cr.	440-389800-00000	1	93L.051	14	EF	RB	14.6	15.3	0.7	M	7.2	8	50	C	M	T	T	D		S			F	B	C	SPB												
16	No Gold Cr.	440-410800-00000	1	93L.051	16	EF	DV	10.9	6.3	0.4	M	7.9	9	50	L	A		S	D	S	S			F	C	B	CP					Y							
17	Many Bear Cr.	440-411000-00000	1	93L.051	17	EF	DV, RB	12.4	3.7		M	7.9	9	40	L	A		S	D	S				F	C	B	CP			Y			Y	Y						
19	Unnamed Tributary	360	1	93L.051	19	EF	DV	1.0	4.0	0.2	M	7.4	7	90	C	A	S	D		D		S		A	G	F	RP												
21	Unnamed Tributary	440-411000-32900	1	93L.051	21	EF	DV	10.6	9.0	0.1	L	7.1	6	30	C	M	T	S	D			T		A	C	G	CPCW		Y							Y			
26	Unnamed Tributary	440-423900-00000	1	93L.051	26	EF	DV, CO	2.3	22.7	0.1	M	8.2	8	40	C	A	S	D	T	S		T	T	F	G	F	RPGW												
29	Miligit Cr.	440-429500-00000	1	93L.051	29	EF	CO	11.4	6.3	0.8	M	7.5	6	20	C	M		T	D	T	S	T	T	F	B	C	SPBW												
30	Miligit Cr.	440-429500-00000	3	93L.061	76	EF	DV, CO	106.7	12.0	0.3	M	6	5	10	M	M			D						B	C	CPB				Y				Y				
32	Unnamed Tributary	444	2	93L.061	32	EF	DV	1.5	1.8	0.2	H	6.1	8	20	C	A		T		D			S	F	F	C	LC	Y											
33	Unnamed Tributary	445	1	93L.061	33	EF	NFC	1.5	0.7	0.0	M	5.9	15	30	L	A				D	S		T	N	F	G	LC												
34	Unnamed Tributary	440-429500-29300	1	93L.061	34	EF	DV	1.4	11.5	0.1	M	7.6	7	40	C	T	D	S	S					F	G	C	CP						Y	Y		Y			
38	Blackberry Cr.	440-439100-00000	2	93L.061	38	EF	DV	11.6	4.3	0.9	M	7.8	6	30	C	T		D	S	T		T		F	C	G	CP							Y		Y		Y	
39	Blackberry Cr.	440-439100-00000	4	93L.061	39	EF	NFC	10.7	3.5	n/a	M	7.1	6	30	L	M		S	D	S		D		F	C	G	CP						T	T	T		T		
45	Unnamed Tributary	827	1	93L.061			NS	1.8	1.0	0.2	L	8.6	6	60	C	T		D	T			T		F	C	G	RPGW							T					
46	Unnamed Tributary	440-512000-00000	3	93L.061	46	EF	DV	32.0	4.3	0.6	L	8.6	6	30	L	M		T	D		S			F	B	C	CPB								Y				
48	Unnamed Tributary	440-512000-12600	1	93L.061	48	EF	DV	6.1	20.3	0.3	L	8.2	8	60	C	T	T	S	S					A	B	C	CPCW				Y								
55	Unnamed Tributary	3627	1	93L.071	55	EF	RB	8.2	2.8	0.4	L	8.2	11	60	C	M		T	D		S				B	C	RP												
58	Unnamed Tributary	3640	1	93L.071	58	EF	NFC	0.9	0.2	0.2	L	7.6	11	70	C	M	S	T		S		D		N	F	G	RP												
59	Unnamed Tributary	440-605000-00000	1	93L.071	59	EF	DV	5.3	7.3	0.6	M	8.6	10	70	L	T	T	S	D		T			A	R	B	CPB												
60	Unnamed Tributary	440-606400-00000	1	93L.071	60	EF	DV	4.3	3.7	0.4	M	8.3	8	30	C	M	S	D	S	S	T	T		F	G	C	CPCW												
61	Unnamed Tributary	440-613900-00000	1	93L.071	61	EF	DV	2.5	2.3	0.4	L	8.2	11	80	C	T	S			T	S	D			G	C	RP									Y			
62	Unnamed Tributary	440-613900-00000	2	93L.071	62	EF	DV	5.7	4.3	0.3	L	8.2	12	80	C	M	T	S	D	T	D			F	G	C	CP										Y	Y	
63	Unnamed Tributary	440-606400-00000	2	93L.071	63	EF	DV	3.0	1.3	0.3	L	8.4	10	30	C	M	S	D		S	T	T		F	G	F	RP		Y										
69	Blackberry Cr.	440-439100-00000	3	93L.061	69	EF	DV	9.1	2.0	0.7	M	7.9	6	20	C	M		T	D	S	D	T		F	C	B	RP			Y			Y						
72	Mattock Cr.	440-389800-00000	2	93L.051	72	EF	DV	13.4	4.2	0.3	M	7.9	8	40	C	A	T	S	D	T	S	T		A	C	B	CP								Y				Y
73	No Gold Cr.	440-410800-00000	3	103I.060	73	EF	DV	10.1	3.3	0.4	L	7.2	6	50	C	M	T	S	D		S			F	B	C	CPCW												
75	Two Falls Cr.	440-578800-00000	1	93L.071	75	EF	DV, CO, RB	13.4	3.3	0.5	M	7.5	6	50	C	M		T	S		T	T		F	B	C	CPB								Y				

Capture method: EF - eletrofishing, VO - visual observation

Fish Species: CH - chinook, CO - coho, SK - sockeye, PK - pink salmon, DV - Dolly Varden, BT - bull trout, RB - rainbow trout, CT - cutthroat trout, TSB - threespined stickleback, CAS - prickly sculpin,

Hydrologic Stage: L - light, M - moderate, H - high

Turbidity: C - clear, L - lightly turbid, M - moderately turbid, T - turbid

LWD: N- none, F - few, A - abundant

Cover Total: N- none, T - trace, M - moderate, A - abundant

LWD Distribution: C - clumped, E - even

Cover Amount: N - none, T - trace, S - sub-dominant, D - dominant

Bed Material: F - fines, G - gravel, C - cobble, B - boulder, R - bedrock

Morphology: RP - riffle pool, CP - cascade pool, SP - step pool, LC - large channel

Note: Sites 66 and 67 were fish bearing but no habitat data was collected. Sampling was carried out at these sites to confirm fish presence downstream of barriers.

Table 5. Summary of barriers identified in the No Gold Planning Area.

Table 5. Summary of barriers identified in the No Gold Planning Area.

Site # / Reach Nid / Historical Data Nid	Local Name	Watershed Code/ILP	Reach #	Map	Feature Type[a]	Height (m)	Length (m)	Descriptive Comment
Site 20	Unnamed Tributary	365	1	93L.051	F	2		casacade barrier to fish migration
Site 24	Unnamed Tributary	408	1	93L.051	C	2		log/step obstruction to fish migration
Site 27	Unnamed Tributary	438	1	93L.051	C	40	15	cascade barrier, 68% slope.
Nid 40006	Unnamed Tributary	819	1.	93L.061	F	1		Bustard cited a 1m high falls at this location
Nid 40058	Unnamed Tributary	3627	2.	93L.071	F	5		Bustard cited 5m falls at this location
Nid 40032	Limonite Cr.	440-341700-00000	2.	93L.051	C		350	FISS annotated cascade in this reach
Site 6	Unnamed Tributary	440-341700-22400-00000	1	93L.051	C	2		large boulder crates a 28% drop at the mouth
Site 7	Unnamed Tributary	440-341700-41900-00000	1	93L.051	F	10		10m of fish bearing water below the falls
Site 8	Unnamed Tributary	440-341700-79500-00000	3	93L.052	F	4	0	falls
Site 18	Many Bear Cr.	440-411000-00000	4	93L.051	F	3		falls barrier to fish
Site 64	ManyBear Cr.	440-411000-00000	5	93L.051	C	3	15	impassable chute.
Site 64	ManyBear Cr.	440-411000-00000	5	93L.051	F	8		
Site 26	Unnamed Tributary	440-423900-00000	1	93L.051	C	40	20	falls barrier, 65% slope.
Nid 40079	Unnamed Tributary	440-429500-00000	4.	93L.061	F	350	0	cited on FISS maps; height confirmed in field
Nid 40002	Treasure Cr.	440-467900-00000	1.	93L.061	X			Bustard cited a log jam of unknown dimensions at this location
Nid 40042	Treasure Cr.	440-467900-00000	2.	103I.070	F	2.5		Bustard cited falls; height confirmed in field
Site 43	Treasure Cr.	440-467900-00000	3	103I.070	F	4		located at the downstream end of the reach.
Nid 40003	Unnamed Tributary	440-467900-13300-00000	1.	93L.061	F	10		Bustard cited falls; height confirmed in field
Reach 6362	Unnamed Tributary	440-467900-13300-00000	2.	93L.061	F	10		noted during field sampling.
Reach 7491	Unnamed Tributary	440-467900-53300-00000	1.	103I.070	F			falls barrier to fish migration.
Reach 7491	Unnamed Tributary	440-467900-53300-00000	1.	103I.070	F			falls barrier to fish migration
Nid 40007	Unnamed Tributary	440-506600-00000	1.	93L.061	C		200	Bustard cited a cascade section of gradient 20-28% with no fish use
Nid 40008	Unnamed Tributary	440-512000-00000	2.	93L.061	C	1		Bustard cited 1m high cascade at this location
Nid 40009	Unnamed Tributary	440-512000-00000	2.	93L.061	C	1		Bustard cited a second 1m high cascade at this location
Site 68	Unnamed Tributary	440-512000-00000	5	93L.061	F	25		falls in canyon at reach break.
Site 48	Unnamed Tributary	440-512000-12600-00000	1	93L.061	X			
Reach 8522	Unnamed Tributary	440-512000-36700-00000	2.	93L.061	C	2.5		barrier to fish migration

Reach 8522	Unnamed Tributary	440-512000-36700-00000	2.	93L.061	C	2		barrier to fish migration

a. F - falls, C - cascade, FLD - dewatering, X - log jam.

Table 5. Cont'd

Site # / Reach Nid / Historical Data Nid	Local Name	Watershed Code/ILP	Reach #	Map	Feature Type[a]	Height (m)	Length (m)	Descriptive Comment
Reach 8522	Unnamed Tributary	440-512000-36700-00000	2.	93L.061	F	30		barrier to fish migration
Nid 40010	Unnamed Tributary	440-519700-00000	1.	93L.061	X			Bustard cited a log jam of unknown dimensions at this location
Nid 40011	Unnamed Tributary	440-519700-00000	1.	93L.061	X			Bustard cited a second log jam of unknown dimensions in this reach
Nid 40056	Unnamed Tributary	440-557100-00000	1.	93L.071	C		400	Bustard cited a 400m long cascade section in this reach
Nid 40057	Unnamed Tributary	440-557100-00000	1.	93L.071	F	5		Bustard cited a 5m falls at this location
Nid 40054	Unnamed Tributary	440-560100-00000	1.	93L.071	X	2		Bustard cited a 2m high log jam at this location
Nid 40055	Unnamed Tributary	440-560100-00000	2.	93L.071	F	5		Bustard cited 5m falls as EFU at this location
Nid 40000	Two Falls Cr.	440-578800-00000	3.	103I.080	F			Bustard cited impassable falls of unknown height at this location
Nid 40001	Two Falls Cr.	440-578800-00000	3.	103I.080	F			Bustard cited impassable falls of unknown height at this location
Site 57	Two Falls Cr.	440-578800-00000	3	103I.080	F	6		falls at the downstream end of the reach.
Reach 35761	Unnamed Tributary	440-578800-45000-00000	1.	103I.080	F			
Reach 35861	Unnamed Tributary	440-578800-45500-00000	1.	103I.080	F			
Nid 40069	Unnamed Tributary	440-589800-00000	1.	93L.071	F	2		Bustard cited 2m falls at this location
Nid 40052	Unnamed Tributary	440-605000-00000	1.	93L.071	X	1		Bustard cited a 1m high log jam at this location
Reach 9881	Unnamed Tributary	440-605000-00000	1.	93L.071	C	15		
Site 59	Unnamed Tributary	440-605000-00000	1	93L.071	C	6.5	15	cascade near mouth.
Nid 40053	Unnamed Tributary	440-605000-00000	2.	93L.071	F	2		Bustard cited a 2m high falls at this location
Nid 40051	Unnamed Tributary	440-606400-00000	1.	93L.071	C			Bustard cited a cascade of unknown height/length at this location
Site 63	Unnamed Tributary	440-606400-00000	2	93L.071	C	2		cascades in reach 3, gradient barriers.
Site 63	Unnamed Tributary	440-606400-00000	2	93L.071	FLD		100	dewatering, no photos taken
Nid 40050	Unnamed Tributary	440-613900-00000	3.	93L.071	F	30		Bustard cited 30m falls at this location

a. F - falls, C - cascade, FLD - dewatering, X - log jam.

Table 6. Summary of no visible channel reaches in the No Gold Planning Area, August 1999.

Table 7. Summary of species caught in major subbasins in the No Gold Planning Area, August 1999.

Table 6. Summary of no visible channel reaches in the No Gold Planning Area, August 1999.

Site #	Local Name	Watershed Code/ILP	Reach #	NID Map
12	Unnamed Tributary	242	1	93L.051
13	Unnamed Tributary	249	1	93L.051
15	Unnamed Tributary	310	2	93L.051
25	Unnamed Tributary	430	1	93L.051
35	Unnamed Tributary	491	1	93L.061
36	Unnamed Tributary	492	1	93L.061
37	Unnamed Tributary	492	2	93L.061
49	Unnamed Tributary	844	1	93L.061
51	Unnamed Tributary	842	1	93L.061
52	Unnamed Tributary	843	1	93L.061
53	Unnamed Tributary	440-512000-22900-00000	1	93L.061
70	Unnamed Tributary	440-341700-79500-07600-0000	3	93L.052
80	Unnamed Tributary	620	1	93L.061

Site #	Local Name	Watershed Code/ILP	Reach #	NID Map

Table 7. Summary of species caught in major subbasins in the No Gold Planning Area, August 1999.

Local Name	Watershed Code	Species Presence[ab]
Limonite Cr.	440-341700-00000	CO, DV, RB/ST, *CH*
Mattock Cr.	440-389800-00000	DV, RB/ST
Nogold Cr.	440-410800-00000	DV,
Many Bear Cr.	440-411000-00000	DV, RB/ST
Miligit Cr.	440-429500-00000	CO, DV, *ST*
Blackberry Cr.	440-439100-00000	DV, RB/ST, *CO*
Treasure Cr.	440-467900-00000	*RB, ST, DV*

a. italics indicate historical species presence not documented during current sampling

b. CH - chinook, CO - coho, DV - Dolly Varden, RB - rainbow trout, ST - steelhead trout

Table 8. Fish distribution limits for selected subbasins within the No Gold Planning Area, August 1999.

Table 8. Fish distribution limits for selected subbasins within the No Gold Planning Area, August 1999.

Local Name	Watershed Code/ILP	Barrier	Reach	Comment	Sites Upstream
Limonite Cr.	440-341700-00000	CN	4	canyon/velocity barrier; EFU for anadromous fish	2, 3, 4,
Limonite Cr.	440-341700-00000	gradient	11	gradient increases to >20% in reach; likely EFU	none
Mattock Cr.	440-389800-00000	gradient	3	gradient increases to >20% in reach; likely EFU	none
No Gold Cr.	440-410800-00000	gradient	4	gradient increases to >20% in reach; likely EFU	none
Many Bear Cr.	440-411000-00000	3 m F	4	EFU	18, 22, 23, 24, 64
Miligit Cr.	440-429500-00000	150 m F	4	EFU	31
Blackberry Cr.	440-439100-00000	gradient	5	gradient increases to >20% in reach; likely EFU	none
Two Falls Cr.	440-578800-00000	6 m F	3	EFU suspected	57
Treasure Cr.	440-467900	4 m F	2	EFU suspected	43
Unnamed Tributary	440-467900-13300	10 m F	1	EFU	44 & Bustard
Unnamed Tributary	440-512000	25 m F	5	EFU suspected	68
Unnamed Tributary	440-512000	30 m F	2	EFU	47
Unnamed Tributary	440-613900	30 m F	2	EFU suspected	none
Unnamed Tributary	440-560100	5 m F	2	EFU	56
Unnamed Tributary	440-341700-79500	4 m F	3	EFU suspected	8
Unnamed Tributary	3627	5 m F	2	EFU suspected	74

EFU - extent of fish use, CN canyon, F - falls

4.3.1 Major Subbasins

4.3.1.1 Limonite Creek

Limonite Creek is a 4th order stream that drains west into the Copper River at the south end of the study area. Fish habitat is concentrated within the valley bottom and the majority of suitable fish habitat in this subbasin is located in the mainstem. The gradient of the mainstem is <10% from the mouth to reach 10. In reach 11 the gradient increases to 45% and likely becomes a barrier to fish.

Coho, chinook, rainbow trout/steelhead, and Dolly Varden/bull trout have been documented in this subbasin. A 300 m long cascade occurs in reach 2, however, coho, chinook and rainbow trout/steelhead have been documented upstream into reach 4. In reach 4, a canyon section with associated cascades appears to be a velocity barrier to anadromous fish. There has been no documentation of chinook, coho, or rainbow trout/steelhead upstream of this point. Dolly Varden/bull trout were captured as far upstream as reach 10 on the mainstem, in the lower reaches of some tributaries, and in the lakes on the mainstem.

The mainstem of Limonite Creek provided poor spawning habitat in reaches 2 and 4 but good spawning habitat in reaches 8 and 10, although fry were caught in reaches 2, 4 and 8. The mainstem provides suitable overwintering habitat for adult and juvenile fish to reach 9. Rearing habitat was moderately good throughout the mainstem and both stream and lake reaches provide good habitat for adults. The three lakes in the upper watershed provide rearing habitat but have high turbidity due to the glacial water inflows.

The tributary reaches sampled in this watershed had high gradients, often had downstream barriers, and generally did not contain fish. Tributaries also provide fish habitat within the valley bottom, but the extent of fish habitat is generally quite short due to high gradients of the adjacent slopes. The extent of fish use in tributaries is therefore usually restricted to the lower 100-300 m of stream, but is often less due to barriers at their confluence's.

On September 11, 1999 a rock and mud slide occurred on the south side of the Telkwa Pass, 2 km downstream of Tauw Lake in the Limonite Creek valley. The slide originated from high elevations on the south side of Limonite Creek and entered the creek in reach 4, upstream of the canyon and downstream of sample site 2. The slide filled the valley, damming Limonite Creek and creating a small lake approximately 500 m long. Limonite Creek has filled the lake and is presently spilling over the slide to rejoin its original channel downstream of the slide. The slide damaged a gas pipeline owned by PNG Ltd and Triton (1999c) was retained to conduct a fisheries assessment of the proposed pipeline realignment to the northern side of Limonite Creek.

4.3.1.2 Mattock Creek

Mattock Creek is a 4th order stream that drains east into the Copper River, upstream of the Limonite Creek confluence. Fish habitat is concentrated within the valley bottom and

the majority of suitable fish habitat is in the mainstem. The gradient of the mainstem is <15% in reaches 1 and 2, but increases to 28% in reach 3. The end of fish use in Mattock Creek occurs in reach 3 where the gradient increases steadily and exceeds 20%.

Rainbow trout/steelhead and Dolly Varden/bull trout were caught in this subbasin. Dolly Varden/bull trout were caught to reach 2. Gradient was a barrier to rainbow trout upstream of the sample site in reach 1 and this species has only been caught in reach 1.

Reach 1 provided limited spawning habitat while reach 2 provided moderately suitable spawning habitat for Dolly Varden. No fry were caught during the survey, however, Dolly Varden/bull trout juveniles were caught in reach 2. The mainstem provided suitable overwintering habitat for adult and juvenile fish in reaches 1 and 2. Rearing habitat was moderately good for Dolly Varden/bull trout in reaches 1 and 2, but was poor for rainbow trout/steelhead due to high gradient.

The tributaries to Mattock Creek provide limited fish habitat within the valley bottom due to high gradients of the adjacent slopes. The extent of fish use in tributaries is generally restricted to the lower 100 m of stream, but is often less due to gradient barriers at their confluence's.

4.3.1.3 No Gold Creek

No Gold Creek is a 4th order stream that drains east into the Copper River upstream of the Mattock Creek confluence. Fish habitat is concentrated within the valley bottom and the majority of suitable fish habitat is located in the mainstem. The gradient of the mainstem is <10% in reaches 1 to 3, but increases to 32% in reach 4. The end of fish use in No Gold Creek likely occurs in reach 4 where the gradient increases steadily.

Dolly Varden/bull trout was the only species captured in this watershed and fish were documented to reach 3. Reach 1 provided poor spawning habitat while reach 3 provided moderately suitable spawning habitat for Dolly Varden/bull trout. The mainstem provided moderate overwintering habitat for adult and juvenile fish in reaches 1 and 3. Rearing habitat was good for Dolly Varden/bull trout in reach 1 and moderate in reach 3.

The tributaries to No Gold Creek also provide fish habitat within the valley bottom, but the extent is generally limited by the high gradients of the adjacent slopes. The extent of fish use in tributaries is therefore restricted to the lower 100-200 m, but is often less due to gradient barriers at their confluence's.

4.3.1.4 Many Bear Creek

Many Bear Creek is a 4th order stream which drains west into the Copper River across from the No Gold Creek confluence. Fish habitat is concentrated within the valley bottom and the majority of suitable fish habitat is located in the mainstem. The gradient of the mainstem is <10% in reaches 1 to 4, but increases to 19% in reach 5.

Dolly Varden/bull trout and rainbow trout/steelhead have been documented in this subbasin. Dolly Varden/bull trout were caught to reach 3 in this watershed and a 3 m falls at the downstream end of reach 4 limited the extent of fish use. A total of 5 sample sites surveyed upstream of the falls failed to document fish.

Reach 1 provided isolated spawning habitat, poor overwintering habitat, and moderate rearing habitat for trout and char species. Although no habitat data were collected in reach 2 or 3, it was noted that reach 2 provided moderately suitable overwintering and rearing habitat. The capture of Dolly Varden/bull trout fry and juveniles in reach 3 suggests spawning occurs in reach 3 and its tributaries.

The tributaries to Many Bear Creek provide fish habitat within the valley bottom, but the extent of fish habitat is generally limited to the lower 100-200 m of streams due to the high gradients of the adjacent slopes. Sampling was carried out in several tributaries to Many Bear Creek and Dolly Varden/bull trout were captured in low and moderate gradient reaches that were accessible from the mainstem.

4.3.1.5 *Miligit Creek*

Miligit Creek is a 3rd order stream that drains west into the Copper River upstream of the Many Bear Creek confluence. Fish habitat is concentrated within the valley bottom and the majority of suitable fish habitat is located in the mainstem. The gradient of the mainstem is <11% in reaches 1 to 3, but reaches 4 and 6 have gradients of in excess of 30%. A 150 m falls in reach 4 is the limit of fish use.

Dolly Varden, coho, and rainbow trout/steelhead have been documented in this subbasin. Dolly Varden/bull trout and coho were caught to reach 3 on the mainstem. Rainbow trout have been historically documented in the watershed (location unspecified) but were not captured during the current sampling.

Reach 1 provided limited spawning habitat while reach 3 contained no spawning habitat at the sample site. The water in this subbasin is of glacial origin and is heavily silted with fines that are deposited throughout the mainstem. This layer of fines likely effects spawning success. However, coho fry and Dolly Varden/bull trout juveniles were captured in reach 3 suggesting suitable spawning habitat does exist in the mainstem and possibly the tributaries. Suitable overwintering habitat was available in both reaches 1 and 3. Rearing habitat was present in reach 1 but was limited in reach 3. Wetlands and beaver ponds provide good off-channel rearing habitat for coho in reach 2. One site was surveyed upstream of the falls in reach 4 and the fish habitat was found to be poor.

The tributaries to Miligit Creek provide fish habitat within the valley bottom, but the extent is generally limited to the lower 100-200 m of streams due to the high gradients of the adjacent slopes. Sampling at one tributary found Dolly Varden/bull trout in the lower section of reach 1.

4.3.1.6 Blackberry Creek

Blackberry Creek is a 4th order stream that drains west into the Copper River upstream of the Miligit Creek confluence. Fish habitat is concentrated within the valley bottom and the majority of suitable fish habitat is located in the mainstem. The gradient of the mainstem is <10% in reaches 1 to 4, but increases to 20% in reach 5. The upstream extent of fish use occurs in reach 5 where gradient becomes a barrier to fish.

Dolly Varden, coho, rainbow trout/steelhead trout have been documented in this subbasin. Rainbow trout/steelhead trout have been documented to reach 4 on the mainstem, although the current sampling did not capture fish in this reach. The current sampling captured only Dolly Varden/bull trout which were found to reach 3.

Good spawning habitat occurs in reach 3, where fry and juvenile fish were captured. Poor spawning habitat was noted in reaches 2 and 4, and no fry were caught in these reaches. Suitable overwintering habitat was available in both reaches 2 and 3, but no overwintering habitat was available in reach 4. Moderate rearing habitat was present in reaches 2 and 4, while reach 3 provided excellent rearing habitat.

Tributaries provide fish habitat within the valley bottom, but the extent is generally limited to the lower 100-300 m of stream due to the high gradients of the adjacent slopes.

4.3.1.7 Treasure Creek

Treasure Creek is a 5th order stream that drains west into the Copper River upstream of the Blackberry Creek confluence. Fish habitat is concentrated within the valley bottom and the majority of suitable fish habitat is located in the mainstem. The gradient of the mainstem is <10% in reaches 1 to 3, but increases to 36% in reach 4. A 2 m falls occurs at the upstream end of reach 2 which is likely the upstream extent of fish use.

Dolly Varden, rainbow trout and steelhead have been previously documented in this subbasin. The current sampling included one site upstream of the falls in reach 2 and found no fish. Rainbow trout/steelhead and Dolly Varden/bull trout have been documented in reaches 1 and 2 on the mainstem, although the current sampling did not include these reaches. David Bustard and Associates (1995) identify the presence of isolated spawning gravel in these reaches and captured fry and juvenile fish. Rearing habitat was described as good for par.

A major unnamed tributary (440-467900-13300) to Treasure Creek, was also sampled during the current field survey. In reach 1 of this tributary, a 10 m falls is a barrier to fish and is the upstream extent of fish use. Sampling upstream of the falls was conducted by David Bustard and Associates (1995), as well as during the current field survey, and failed to document fish, despite suitable fish habitat.

The other tributaries to Treasure Creek provide very limited fish habitat within the valley bottom and the extent is generally restricted to the lower 100 m of streams due to the high gradients of the adjacent slopes.

4.3.1.8 Other Subbasins

The fish habitat and fish distributions within other subbasins in the No Gold Planning Area are similar to that of the basins described above. In general, suitable fish habitat occurs within the low gradient valley bottom areas and the majority of the useable habitat is concentrated in the mainstems of 3rd order and higher streams. First and second order tributaries provide varying amounts of fish habitat within the valley bottom and the extent of fish habitat is generally limited to the lower 100 - 400 m of streams due to the high gradients of the surrounding slopes.

Except where a waterfall was present in a subbasin, fish use generally occurred to the upper third of the subbasin at which point increasing gradient became a barrier. Except in the case of Limonite Creek, which had significant lakes, sampling upstream of barriers failed to document resident fish populations. The first major barrier generally defined the upstream extent of fish use. When accessible and of gradients <10%, the habitat in these streams generally provided suitable rearing, spawning, and overwintering habitat for Dolly Varden/bull trout and rainbow trout/steelhead trout.

However, gradients of >20% limit fish use in many of the streams in this study area. The Phase 1-3 planning identified 1,094 reaches with >20% gradients, of which 930 reaches had >30% gradients (1,430 reaches total). These high gradient reaches are highly unlikely to support fish unless they are accessible from adjacent fish bearing waters.

4.3.2 Features

Table 9 summarizes the features identified in the Phase 1-3 and recorded during the field survey. The features include barriers to fish, such as waterfalls, and also other notable items such as eroding banks, landslides and culverts or bridges. All features are included on the Project and Interpretative maps.

4.4 Fish Age, Size, and Life History

The species recorded during the sampling were rainbow trout/steelhead, coho, chinook, Dolly Varden and bull trout. Summaries of fish lengths and estimated life stage for fish caught at each site in the study are provided in Table 10 - Table 12. The total number of fish, as well as the minimum and maximum fork lengths for each species by stream, are provided in Table 13.

Table 9. Summary of features identified in the No Gold Planning Area.

Table 9. Summary of features identified in the No Gold Planning Area.

Site # / Reach Nid / Historical Nid	Local Name	Watershed Code/ILP	Reach #	Map	Feature Type	Height (m)	Length (m)	Descriptive Comment
Site 5	Unnamed Tributary	91	1	93L.051	CV	0.4		CMP culvert
Reach 2481	Unnamed Tributary	248	1	93L.051	BD			beaver dam impounds stream.
Reach 2482	Unnamed Tributary	248	2	93L.051	BG			air photo identification of a stream crossing
Reach 2481	Unnamed Tributary	248	1	93L.051	BR			Collapsed bridge
Reach 2531	Unnamed Tributary	253	1	93L.051	BG			air photo identification of a stream crossing
Reach 2942	Unnamed Tributary	294	2	93L.051	BG			air photo identification of a stream crossing
Reach 3031	Unnamed Tributary	303	1	93L.051	BG			air photo identification of a stream crossing
Reach 3071	Unnamed Tributary	307	1	93L.051	BR			air photo identification of a stream crossing
Reach 3241	Unnamed Tributary	324	1	93L.051	BG			air photo identification of a stream crossing
Site 20	Unnamed Tributary	365	1	93L.051	C	2		casacade barrier to fish migration
Site 24	Unnamed Tributary	408	1	93L.051	C	2		log/step obstruction to fish migration
Site 27	Unnamed Tributary	438	1	93L.051	C	40	15	cascade barrier, 68% slope.
Site 32	Unnamed Tributary	444	2	93L.061	BD	1.5	2	beaver dam
Reach 6271	Unnamed Tributary	627	1	93L.061	BG			air photo identification of a stream crossing
Reach 8001	Unnamed Tributary	800	1	93L.061	BG			air photo identification of a stream crossing
Reach 8021	Unnamed Tributary	802	1	93L.061	BG			air photo identification of a stream crossing
Reach 8031	Unnamed Tributary	803	1	93L.061	BG			air photo identification of a stream crossing
Reach 8192	Unnamed Tributary	819	2	93L.061	BG			air photo identification of a stream crossing
Nid 40006	Unnamed Tributary	819	1	93L.061	F	1		Bustard cited a 1m high falls at this location
Reach 8242	Unnamed Tributary	824	2	93L.061	BG			air photo identification of a stream crossing
Reach 8251	Unnamed Tributary	825	1	93L.061	BR			air photo identification of a bridge crossing
Reach 8262	Unnamed Tributary	826	2	93L.061	BG			air photo identification of a stream crossing
Reach 8281	Unnamed Tributary	828	1	93L.061	BG			air photo identification of a stream crossing
Reach 8291	Unnamed Tributary	829	1	93L.061	BG			air photo identification of a stream crossing
Reach 8301	Unnamed Tributary	830	1	93L.061	BG			air photo identification of a stream crossing
Reach 8333	Unnamed Tributary	833	3	93L.061	BG			air photo identification of a stream crossing
Reach 8342	Unnamed Tributary	834	2	93L.061	BG			air photo identification of a stream crossing
Reach 9081	Unnamed Tributary	908	1	93L.061	BG			air photo identification of a stream crossing
Reach 9271	Unnamed Tributary	927	1	93L.061	BG			air photo identification of a stream crossing

Nid 40058	Unnamed Tributary	3627	2	93L.071	F	5		Bustard cited 5m falls at this location

a. F - falls, C - cascade, FLD - dewatering, X - log jam, CV - culvert, BG - general stream crossing, BR - bridge, LS - landslide, BD - beaver dam, FD - ford

Table 9. Cont'd

Site # / Reach Nid / Historical Nid	Local Name	Watershed Code/ILP	Reach #	Map	Feature Type	Height (m)	Length (m)	Descriptive Comment
Reach 36291	Unnamed Tributary	3629	1	93L.071	BG			air photo identification of a stream crossing
Reach 36361	Unnamed Tributary	3636	1	93L.071	BG			air photo identification of a stream crossing
Reach 36371	Unnamed Tributary	3637	1	93L.071	BG			air photo identification of a stream crossing
Reach 36392	Unnamed Tributary	3639	2	93L.071	BG			air photo identification of a stream crossing
Reach 888	Limonite Cr.	440-341700-00000	8	93L.052	BD			
Reach 881	Limonite Cr.	440-341700-00000	1	93L.051	BR			air photo identification of a bridge
Reach 882	Limonite Cr.	440-341700-00000	2	93L.051	C			
Site 3	Limonite Cr.	440-341700-00000	8	93L.052	BD	1.5		active beaver dam, creates rearing habitat
Nid 40032	Limonite Cr.	440-341700-00000	2	93L.051	C		350	FISS annotated cascade in this reach
Site 3	Limonite Cr.	440-341700-00000	8	93L.052	FD		8	ford at lake outlet
Site 6	Unnamed Tributary	440-341700-22400-00000	1	93L.051	C	2		large boulder crates a 28% drop at the mouth
Site 7	Unnamed Tributary	440-341700-41900-00000	1	93L.051	F	10		10m of fish bearing water below the falls
Site 8	Unnamed Tributary	440-341700-79500-00000	3	93L.052	F	4	0	falls
Reach 2511	Unnamed Tributary	440-383400-00000	1	93L.051	BG			air photo identification of a stream crossing
Reach 2521	Unnamed Tributary	440-383400-07300-00000	1	93L.051	BG			air photo identification of a stream crossing
Reach 3051	Unnamed Tributary	440-402800-00000	1	93L.051	BG			air photo identification of a stream crossing
Site 64	ManyBear Cr.	440-411000-00000	5	93L.051	C	3	15	impassable chute.
Site 18	Many Bear Cr.	440-411000-00000	4	93L.051	F	3		falls barrier to fish
Site 64	ManyBear Cr.	440-411000-00000	5	93L.051	F	8		
Site 26	Unnamed Tributary	440-423900-00000	1	93L.051	C	40	20	falls barrier, 65% slope.
Nid 40079	Miligit Creek	440-429500-00000	4	93L.061	F	150	0	cited on FISS maps
Reach 4481	Unnamed Tributary	440-429500-29300-00000	1	93L.061	BD			
Site 34	Unnamed Tributary	440-429500-29300-00000	1	93L.061	BD	2		beaver dam and large pond
Reach 6351	Treasure Cr.	440-467900-00000	1	93L.061	BR			air photo identification of a bridge crossing
Nid 40042	Treasure Cr.	440-467900-00000	2	103I.070	F			Bustard cited falls of unknown height at this location
Site 43	Treasure Cr.	440-467900-00000	3	103I.070	F	4		located at the downstream end of the reach.

Site 43	Treasure Cr.	440-467900-00000	3	103I.070	LS	80	25	landslide directly into the creek, is now revegetating.
Nid 40002	Treasure Cr.	440-467900-00000	1	93L.061	X			Bustard cited a log jam of unknown dimensions at this location
Reach 6362	Unnamed Tributary	440-467900-13300-00000	2	93L.061	F	10		noted during field sampling.

a. F - falls, C - cascade, FLD - dewatering, X - log jam, CV - culvert, BG - general stream crossing, BR - bridge, LS - landslide, BD - beaver dam, FD - ford

Table 9. Cont'd

Site # / Reach Nid / Historical Nid	Local Name	Watershed Code/ILP	Reach #	Map	Feature Type	Height (m)	Length (m)	Descriptive Comment
Nid 40003	Unnamed Tributary	440-467900-13300-00000	1	93L.061	F			Bustard cited falls of unknown height at this location
Reach 7491	Unnamed Tributary	440-467900-53300-00000	1	103I.070	F			falls barrier to fish migration.
Reach 7491	Unnamed Tributary	440-467900-53300-00000	1	103I.070	F			falls barrier to fish migration
Nid 40004	Unnamed Tributary	440-471400-00000	1	93L.061	LS			Bustard cited landslide of unknown dimensions at this location
Reach 8322	Unnamed Tributary	440-506600-00000	3	93L.061	BG			air photo identification of a stream crossing
Nid 40007	Unnamed Tributary	440-506600-00000	1	93L.061	C		200	Bustard cited a cascade section of gradient 20-28% with no fish use
Nid 40008	Unnamed Tributary	440-512000-00000	2	93L.061	C	1		Bustard cited 1m high cascade at this location
Nid 40009	Unnamed Tributary	440-512000-00000	2	93L.061	C	1		Bustard cited a second 1m high cascade at this location
Site 68	Unnamed Tributary	440-512000-00000	5	93L.061	F	25		falls in canyon at reach break.
Site 48	Unnamed Tributary	440-512000-12600-00000	1	93L.061	LS			
Site 48	Unnamed Tributary	440-512000-12600-00000	1	93L.061	X			
Reach 8522	Unnamed Tributary	440-512000-36700-00000	2	93L.061	C	2.5		barrier to fish migration
Reach 8522	Unnamed Tributary	440-512000-36700-00000	2	93L.061	C	2		barrier to fish migration
Reach 8522	Unnamed Tributary	440-512000-36700-00000	2	93L.061	F	30		barrier to fish migration
Nid 40010	Unnamed Tributary	440-519700-00000	1	93L.061	X			Bustard cited a log jam of unknown dimensions at this location
Nid 40011	Unnamed Tributary	440-519700-00000	1	93L.061	X			Bustard cited a second log jam of unknown dimensions in this reach
Reach 9071	Unnamed Tributary	440-519700-16000-00000	1	93L.061	BG			air photo identification of a stream crossing
Reach 36332	Unnamed Tributary	440-557100-00000	2	93L.071	BG			air photo identification of a stream crossing
Nid 40056	Unnamed Tributary	440-557100-00000	1	93L.071	C		400	Bustard cited a 400m long cascade section in this reach
Nid 40057	Unnamed Tributary	440-557100-00000	1	93L.071	F	5		Bustard cited a 5m falls at this location
Nid 40055	Unnamed Tributary	440-560100-00000	2	93L.071	F	5		Bustard cited 5m falls as EFU at this location
Reach 9353	Unnamed Tributary	440-560100-00000	3	93L.071	NS			EFU
Nid 40054	Unnamed Tributary	440-560100-00000	1	93L.071	X	2		Bustard cited a 2m high log jam at this location
Reach 36342	Unnamed Tributary	440-561400-00000	2	93L.071	BG			air photo identification of a stream crossing

Reach 36351	Unnamed Tributary	440-561400-15800-00000	1	93L.071	BG			air photo identification of a stream crossing
Reach 36381	Two Falls Cr.	440-578800-00000	1	93L.071	BG			air photo identification of a stream crossing
Nid 40000	Two Falls Cr.	440-578800-00000	3	103I.080	F			Bustard cited impassable falls of unknown height at this location
Nid 40001	Two Falls Cr.	440-578800-00000	3	103I.080	F			Bustard cited impassable falls of unknown height at this location
Site 57	Two Falls Cr.	440-578800-00000	3	103I.080	F	6		falls at the downstream end of the reach.
Reach 35761	Unnamed Tributary	440-578800-45000-00000	1	103I.080	F			

a. F - falls, C - cascade, FLD - dewatering, X - log jam, CV - culvert, BG - general stream crossing, BR - bridge, LS - landslide, BD - beaver dam, FD - ford

Table 9. Cont'd

Site # / Reach Nid / Historical Nid	Local Name	Watershed Code/ILP	Reach #	Map	Feature Type	Height (m)	Length (m)	Descriptive Comment
Reach 35861	Unnamed Tributary	440-578800-45500-00000	1	103I.080	F			
Reach 36432	Unnamed Tributary	440-589800-00000	2	93L.071	BG			air photo identification of a stream crossing
Nid 40069	Unnamed Tributary	440-589800-00000	1	93L.071	F	2		Bustard cited 2m falls at this location
Reach 9881	Unnamed Tributary	440-605000-00000	1	93L.071	C	15		
Site 59	Unnamed Tributary	440-605000-00000	1	93L.071	C	6.5	15	cascade near mouth.
Nid 40053	Unnamed Tributary	440-605000-00000	2	93L.071	F	2		Bustard cited a 2m high falls at this location
Nid 40052	Unnamed Tributary	440-605000-00000	1	93L.071	X	1		Bustard cited a 1m high log jam at this location
Nid 40051	Unnamed Tributary	440-606400-00000	1	93L.071	C			Bustard cited a cascade of unknown height/length at this location
Site 63	Unnamed Tributary	440-606400-00000	2	93L.071	C	2		cascades in reach 3, gradient barriers
Site 63	Unnamed Tributary	440-606400-00000	2	93L.071	FLD		100	dewatering, no photos taken
Nid 40050	Unnamed Tributary	440-613900-00000	3	93L.071	F	30		Bustard cited 30m falls at this location

a. F - falls, C - cascade, FLD - dewatering, X - log jam, CV - culvert, BG - general stream crossing, BR - bridge, LS - landslide, BD - beaver dam, FD - ford

Table 10. Summary of rainbow trout data collected in the No Gold Planning Area, August 1999.

Table 10. Summary of rainbow trout/steelhead data collected in the No Gold Planning Area, August 1999.

Site #	Local Name	Watershede Code/ILP	Reach #	Site Map	Life Stage[a]	Total Fish	Minimum Length (mm)	Maximum Length (mm)	Average Length (mm)	Fish Species Comment
1	Limonite Cr.	440-341700-00000	2	93L.051	J	2	90	90	90	
14	Mattock Cr.	440-389800-00000	1	93L.051	J	2	180	200	190	
17	Many Bear Cr.	440-411000-00000	1	93L.051	J	1	164	164	164	
55	Unnamed Tributary	3627	1	93L.071	J	1	76	76	76	
55	Unnamed Tributary	3627	1	93L.071	J	2	112	165	138.5	one other fish escaped.
75	Two Falls Cr.	440-578800-00000	1	93L.071	J	6	81	120	100.5	

a. J - juvenile

Table 11. Summary of Dolly Varden/bull trout data collected in the No Gold Planning Area, August 1999.

Table 11. Summary of Dolly Varden/bull trout data collected in the No Gold Planning Area, August 1999.

Site #	Local Name	Watershede Code/ILP	Reach #	Site Map	Life Stage[a]	Total Fish	Minimum Length (mm)	Maximum Length (mm)	Average Length (mm)	Fish Species Comment
1	Limonite Cr.	440-341700-00000	2	93L.051	F	8	29	42	35.5	
1	Limonite Cr.	440-341700-00000	2	93L.051	A	1	140	140	140	
2	Limonite Cr.	440-341700-00000	4	93L.052	J	3	73	78	75.5	
3	Limonite Cr.	440-341700-00000	8	93L.052	F	14	29	42	35.5	
4	Limonite Cr.	440-341700-00000	10	93L.052	J	1	125	125	125	
11	Unnamed Tributary	440-355000-00000	1	93L.051	F	1	69	69	69	
11	Unnamed Tributary	440-355000-00000	1	93L.051	J	3	100	120	110	
16	Nogold Cr.	440-410800-00000	1	93L.051	J	1	78	78	78	
16	Nogold Cr.	440-410800-00000	1	93L.051	J	4	82	103	92.5	
17	Many Bear Cr.	440-411000-00000	1	93L.051	J	5	72	82	77	
19	Unnamed Tributary	360	1	93L.051	F	1	31	31	31	
19	Unnamed Tributary	360	1	93L.051	F	5	56	69	62.5	
19	Unnamed Tributary	360	1	93L.051	A	1	124	124	124	spawning colouration
21	Unnamed Tributary	440-411000-32900-00000	1	93L.051	J	2	104	106	105	
21	Unnamed Tributary	440-411000-32900-00000	1	93L.051	A	1	180	180	180	
26	Unnamed Tributary	440-423900-00000	1	93L.051	F	1	65	65	65	
26	Unnamed Tributary	440-423900-00000	1	93L.051	J	3	70	120	95	
32	Unnamed Tributary	444	2	93L.061	F	1	55	55	55	
32	Unnamed Tributary	444	2	93L.061	J	1	113	113	113	
34	Unnamed Tributary	440-429500-29300-00000	1	93L.061	J	2	82	124	103	
38	Blackberry Cr.	440-439100-00000	2	93L.061	J	2	97	107	102	
38	Blackberry Cr.	440-439100-00000	2	93L.061	A	1	150	150	150	
46	Unnamed Tributary	440-512000-00000	3	93L.061	A	3	120	170	145	
48	Unnamed Tributary	440-512000-12600-00000	1	93L.061	J	1	118	118	118	
59	Unnamed Tributary	440-605000-00000	1	93L.071	J	1	85	85	85	
60	Unnamed Tributary	440-606400-00000	1	93L.071	J	7	68	114	91	
61	Unnamed Tributary	440-613900-00000	1	93L.071	J	1	84	84	84	
62	Unnamed Tributary	440-613900-00000	2	93L.071	F	2	61	65	63	4 additional DV shocked
62	Unnamed Tributary	440-613900-00000	2	93L.071	J	2	84	84	84	
63	Unnamed Tributary	440-606400-00000	3	93L.071	J	2	82	118	100	
66	Many Bear Cr.	440-411000-00000	3	93L.051	F	10	50	68	59	
66	Many Bear Cr.	440-411000-00000	3	93L.051	J	4	73	104	88.5	
66	Many Bear Cr.	440-411000-00000	3	93L.051	A	2	180	200	190	
69	Blackberry Cr.	440-439100-00000	3	93L.061	F	1	45	45	45	
69	Blackberry Cr.	440-439100-00000	3	93L.061	J	3	76	105	90.5	

a. F- fry, J - juvenile, A - adult

Table 11. Cont'd

Site #	Local Name	Watershede Code/ILP	Reach #	Site Map	Life Stage[a]	Total Fish	Minimum Length (mm)	Maximum Length (mm)	Average Length (mm)	Fish Species Comment
69	Blackberry Cr.	440-439100-00000	3	93L.061	A	1	165	165	165	
72	Mattock Cr.	440-389800-00000	3	93L.051	J	3	88	104	96	
72	Mattock Cr.	440-389800-00000	3	93L.051	A	1	172	172	172	
73	Nogold Cr.	440-410800-0000000	3	103I.060	F	1	39	39	39	
73	Nogold Cr.	440-410800-0000000	3	103I.060	J	2	80	84	82	
73	Nogold Cr.	440-410800-0000000	3	103I.060	A	4	118	140	129	
75	Two Falls Cr.	440-578800-00000	1	93L.071	J	2	110	122	116	
76	Miligit Cr.	440-429500-00000	3	93L.061	J	3	82	120	101	

a. F- fry, J - juvenile, A - adult

Table 12. Summary of coho and chinook data collected in the No Gold Planning Area, August 1999.

Table 12. Summary of coho and chinook data collected in the No Gold Planning Area, August 1999.

Site #	Local Name	Watershede Code /ILP	Reach #	Site Map	Fish Species	Life Stage[a]	Total Fish	Minimum Length (mm)	Maximum Length (mm)	Average Length (mm)	Fish Species Comment
1	Limonite Cr.	440-341700-00000	2	93L.051	CO	F	14	35	60	47.5	sickle shaped anal fin
26	Unnamed Tributary	440-423900-00000	1	93L.051	CO	F	3	35	50	42.5	
29	Miligit Cr.	440-429500-00000	1	93L.051	CO	F	8	40	72	56	
67	Unnamed Tributary	9901	1	93L.061	CH	F	12	45	61	53	
75	Two Falls Cr.	440-578800-00000	1	93L.071	CO	F	2	40	44	42	
76	Miligit Cr.	440-429500-00000	3	93L.061	CO	F	4	52	84	68	

a. F- fry

Table 13. Total catch and range of fork length for fish species caught the No Gold Planning Area, August 1999.

Table 13. Total catch and range of fork length for fish species caught in the No Gold Planning Area, Unit 1999.

Local Name	Species[a]	Estimated Age	Number of Fish	Min of Fish Length (mm)	Max of Fish Length (mm)	Average of Fish Length (mm)
Blackberry Cr.	DV	0+	1	45	45	45.0
		1+	5	76	107	93.4
		2+/3+	1	165	165	165.0
	RB	3+	1	150	150	150.0
Limonite Cr.	CO	0+	14	30	61	43.1
	DV	0+	22	29	46	35.9
		1+	5	73	140	98.4
	RB	1+	1	90	90	90.0
		2+	1	120	120	120.0
Many Bear Cr.	DV	0+	9	50	64	57.3
		1+	10	68	104	80.9
		2+/3+	2	180	200	190.0
	RB	3+	1	164	164	164.0
Mattock Cr.	DV	1+	3	88	104	97.0
		2+/3+	1	172	172	172.0
	RB	4+	2	190	200	195.0
Miligit Cr.	CO	0+	9	40	58	50.7
		0+/1+	3	70	84	75.3
	DV	1+	3	82	120	95.7
No Gold Cr.	DV	0+	1	39	39	39.0
		1+	11	78	140	104.2
Two Falls Cr.	CO	0+	2	40	44	42.0
	RB	1+	5	81	104	88.0
		2+	3	110	122	117.3
Unnamed Tributary	CH	0+	12	45	61	53.3
	CO	0+	3	35	50	43.3
	DV	0+	10	31	65	57.9
		1+	29	68	138	98.2
		2+/3+	2	170	180	175.0
	RB	1+	1	76	76	76.0
		2+	1	112	112	112.0
		3+	1	165	165	165.0
		Total	175			

a. CH - chinook, CO - coho, DV - Dolly Varden, BT - bull trout, RB - rainbow trout

Rainbow trout/steelhead trout have been documented in every major subbasin except No Gold Creek. The rainbow trout captured are assumed to be steelhead trout and ranged in fork length from 76 - 200 mm (n = 17). Although length-frequency histograms were generated for rainbow trout (Figure 2), the capture was insufficient to identify age classes. However, David Bustard and Associates (1992) report the following rainbow trout length-at-age data based on sampling conducted in August:

0+ to 63 mm
1+ 64 - 97 mm
2+ 98 - 137 mm
3+ 142 - 173 mm

Lewis and Buchanan (1998) report the average smolt age for Copper River steelhead is 3.6 years. The data collected suggests that only juvenile rainbow trout/steelhead trout (1+ to 4+) were captured during the sampling.

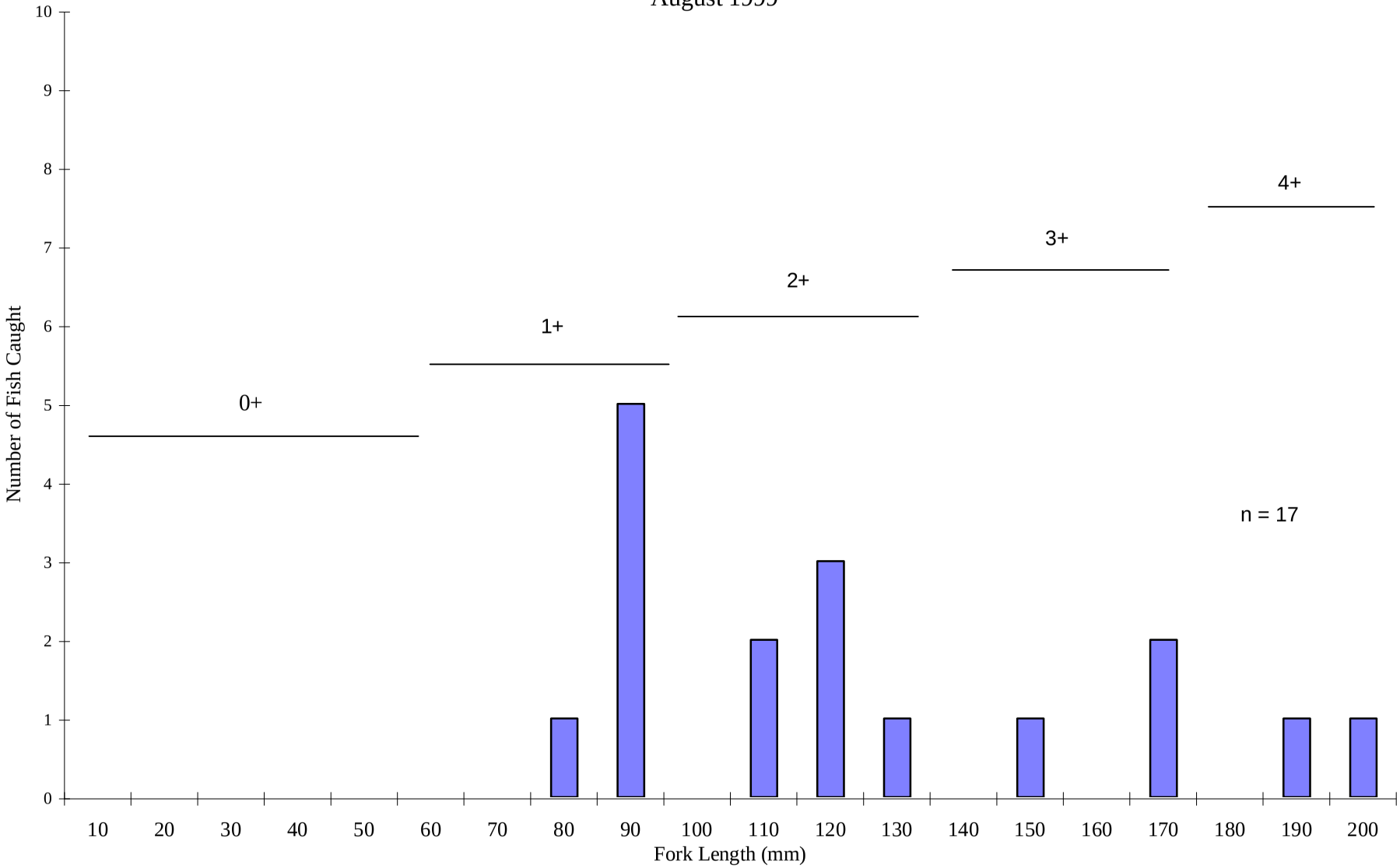
Dolly Varden/bull have been documented in every major subbasin within the study area. Both fry and juvenile Dolly Varden/bull trout were captured in this inventory and ranged in fork length from 29 - 200 mm (n = 115). A length-frequency histogram was generated for Dolly Varden/bull trout and is provided in Figure 3. The estimated age classes were based on McPhail and Baxter (1996).

A total of 31 coho were captured ranging in size from 30 - 84 mm (n = 31). A length-frequency histogram was generated for coho and is provided in Figure 4. A total of 12 chinook were caught with fork lengths of 45 - 61 mm (n = 12). It is evident from the length range that chinook catch consisted of 0+ fish and that a length-frequency histogram would not be meaningful.

A fish sampling summary is included in Table 14 and provides a fish density index (fish/100m^2) for each fish bearing sample site. The higher fish density indexes where documented at sites in Many Bear Creek (Reaches 1 and 3), Limonite Creek (Reaches 2 and 8) and in 4 unnamed tributaries including ILP 3888 where high densities of chinook were captured.

Figure 2. Length-frequency histogram for rainbow trout captured in the No Gold Planning Area, August 1999

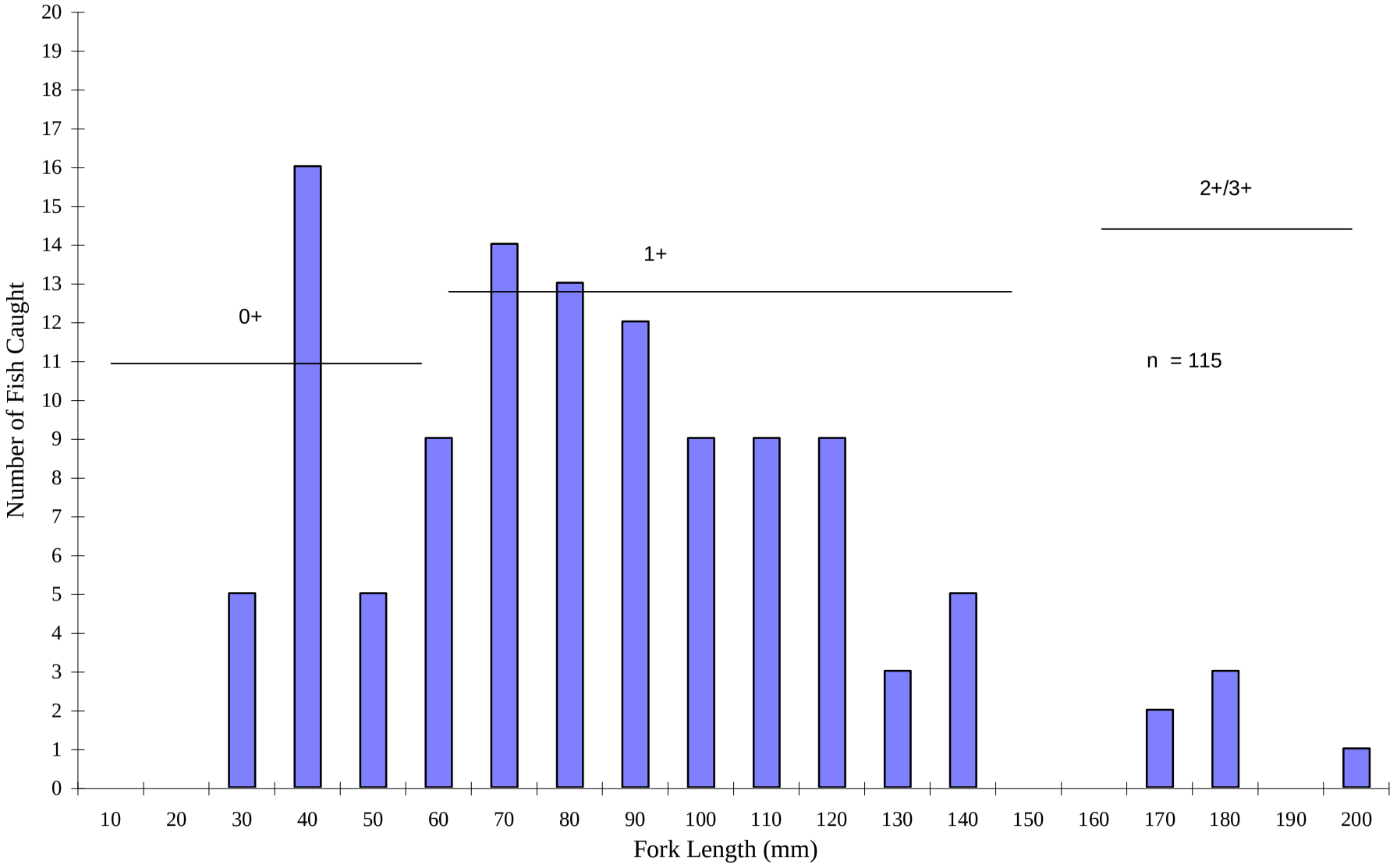
Figure 2. Length-frequency histogram for rainbow trout captured in the No Gold Planning Unit, August 1999



Note: estimated length-at-age taken from David Bustard and Associates, 1992

Figure 3. Length-frequency histogram for Dolly Varden/bull trout captured in the No Gold Planning Area, August 1999.

Figure 3. Length-frequency histogram for Dolly Varden/bull trout captured in the No Gold Planning Unit, August 1999.



Note: age estimates were based on Mc Phail and Baxter 1996

Figure 4. Length-frequency histogram for coho captured in the No Gold Planning Area, August 1999.

Figure 4. Length-frequency histogram for coho captured in the No Gold Planning Unit, August 1999

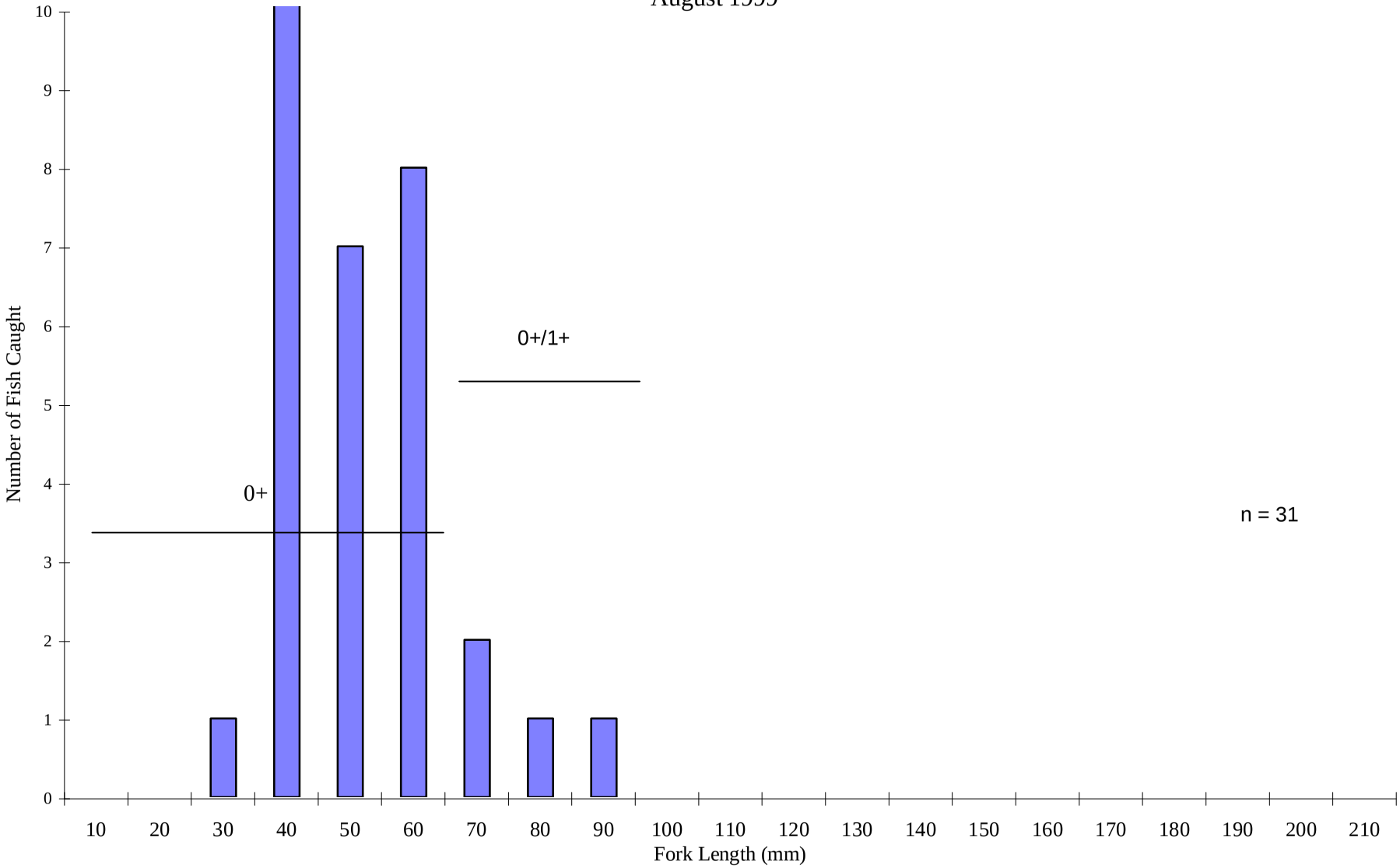


Table 14. Fish Sampling Summary at Fish Bearing Sites in the No Gold Planning Area, August 1999.

Table 14. Fish sampling summary at fish bearing sites in the No Gold Planning Area, August 1999.

Site #	Local Name	Watershed Code/ILP	Reach #	Map	Temp (oC)	Conductivity (umos)	Turbidity (GE)	Capture Method	Effort (Sec.)	Stream Length Fished (m)	Stream Width Fished (m)	Area Sampled (m2)	Voltage	Frequency (Hz)	Pulse (ms)	EF Make	Model	Species	Total Fish Caught	Fish Density Index (fish/100m^2)
1	Limonite Cr.	440-341700-00000	2	93L.051	8.	80	C	EF	802	200	2	400	300	60	5	SR	12BPOW	DV, RB, CO	25	6.3
2	Limonite Cr.	440-341700-00000	4	93L.052	9.	40	C	EF	956	120	20	2400	500	70	6	SR	12BPOW	DV	3	0.1
3	Limonite Cr.	440-341700-00000	8	93L.052	10.	50	C	EF	927	200	2	400	500	70	6	SR	12BPOW	DV	14	3.5
4	Limonite Cr.	440-341700-00000	10	93L.052	6.	10	C	EF	757	200	2	400	600	60	6	SR	12BPOW	DV	1	0.3
11	Unnamed Tributary	440-355000-00000	1	93L.051	9.	50	C	EF	331	100	2	200	600	50	6	SR	15A	DV	4	2.0
14	Mattock Cr.	440-389800-00000	1	93L.051	8.	50	C	EF	468	100	5	500	500	50	6	SR	15A	RB	2	0.4
16	No Gold Cr.	440-410800-00000	1	93L.051	9.	50	L	EF	168	80	6	480	500	70	6	SR	12BPOW	DV	5	1.0
17	Many Bear Cr.	440-411000-00000	1	93L.051	9.	40	L	EF	483	100	2	200	400	70	6	SR	12BPOW	DV, RB	6	3.0
19	Unnamed Tributary	360	1	93L.051	7.	80	C	EF	398	80	1.5	120	400	70	6	SR	12BPOW	DV	7	5.8
21	Unnamed Tributary	440-411000-32900	1	93L.051	6.	30	C	EF	189	120	2	240	500	50	6	SR	15A	DV	3	1.3
26	Unnamed Tributary	440-423900-00000	1	93L.051	8.	40	C	EF	1099	200	2	400	500	50	5	SR	15A	DV, CO	7	1.8
29	Miligit Cr.	440-429500-00000	1	93L.051	6.	20	C	EF	254	80	10	800	500	50	5	SR	15A	CO	8	1.0
32	Unnamed Tributary	444	2	93L.061	8.	20	L	EF	191	60	1	60	500	60	6	SR	12BPOW	DV	2	3.3
33	Unnamed Tributary	445	1	93L.061	15	30	L	EF	288	100	2	200	500	60	5	SR	12BPOW	NFC	0	0.0
34	Unnamed Tributary	440-429500-29300	1	93L.061	7.	40	C	EF	200	150	2	300	500	70	6	SR	12BPOW	DV	2	0.7
38	Blackberry Cr.	440-439100-00000	2	93L.061	6.	30	C	EF	960	200	1.5	300	400	70	6	SR	12BPOW	DV	3	1.0
39	Blackberry Cr.	440-439100-00000	4	93L.061	6.	30	L	EF	1029	113	2	226	600	70	7	SR	12BPOW	NFC	0	0.0
45	Unnamed Tributary	827	1	93L.061	6.	60	C	NS											n/a	n/a
46	Unnamed Tributary	440-512000-00000	3	93L.061	6.	30	L	EF	494	220	5	1100	500	70	6	SR	12BPOW	DV	3	0.3
48	Unnamed Tributary	440-512000-12600	1	93L.061	8.	60	C	EF	175	80	2.5	200	500	70	6	SR	12BPOW	DV	1	0.5
55	Unnamed Tributary	3627	1	93L.071	11.	60	C	EF	407	130	2	260	500	60	8	SR	12BPOW	RB	3	1.2
58	Unnamed Tributary	3640	1	93L.071	11.	70	C	EF	250	50	1	50	400	60	8	SR	12BPOW	NFC	0	0.0
59	Unnamed Tributary	440-605000-00000	1	93L.071	10.	70	L	EF	651	200	5	1000	500	70	6	SR	12BPOW	DV	1	0.1
60	Unnamed Tributary	440-606400-00000	1	93L.071	8.	30	C	EF	626	115	4	460	500	70	6	SR	12BPOW	DV	7	1.5
61	Unnamed Tributary	440-613900-00000	1	93L.071	11.	80	C	EF	357	130	2	260	600	60	8	SR	12BPOW	DV	1	0.4
62	Unnamed Tributary	440-613900-00000	2	93L.071	12.	80	C	EF	373	120	3	360	600	60	8	SR	12BPOW	DV	4	1.1
63	Unnamed Tributary	440-606400-00000	3	93L.071	10.	30	C	EF	175	100	2	200	500	70	6	SR	12BPOW	DV	2	1.0
66	Many Bear Cr.	440-411000-00000	3	93L.051	4.	20	L	EF	200	30	6	180	500	50	6	SR	15A	DV	16	8.9
67	Unnamed Tributary	38888	1	93L.061	6.	60	C	EF	60	20	1	20	400	70	6	SR	12BPOW	CH	12	60.0
69	Blackberry Cr.	440-439100-00000	3	93L.061	6.	20	C	EF	647	150	2	300	800	70	6	SR	12BPOW	DV	5	1.7
72	Mattock Cr.	440-389800-00000	3	93L.051	8.	40	C	EF	859	155	2	310	500	70	6	SR	12BPOW	DV	4	1.3
73	No Gold Cr.	440-410800-00000	3	103I.060	6.	50	C	EF	511	200	4	800	700	70	6	SR	12BPOW	DV	7	0.9
75	Two Falls Cr.	440-578800-00000	1	93L.071	6.	50	C	EF	477	200	6	1200	400	60	7	SR	12BPOW	CO, RB, DV	10	0.8
76	Miligit Cr.	440-429500-00000	3	93L.061	5.	10	M	EF	450	300	4	1200	500	70	6	SR	12BPOW	DV, CO	7	0.6

EF - electrofishing, NCF - no fish caught, SR - Smith Root, NVC - no visible channel, NS - not sampled, F- Falls, C- cascade, CH - chinook, CO - coho, DV - Dolly Varden, RB - rainbow trout

4.5 Significant Features and Fisheries Observations

4.5.1 Fish and Fish Habitat

Fish habitat within the study area is limited to low gradient sections of major subbasins and tributaries. No critical habitats such as staging areas or large spawning grounds were identified during the surveys, although the availability of spawning habitat was noted at each site. No significant sport fishing opportunities were identified during the field survey, however, it is known that the Copper River provides high value sport fish opportunities.

4.51.1. Rearing Habitat

The presence of juvenile fish in each of the major subbasins sampled indicates rearing habitat is available throughout the study area. Good or excellent rearing habitat was noted in a total of 14 reaches (23% of reaches) found in Treasure Creek, Limonite Creek, No Gold Creek, Mattock Creek, Blackberry Creek and 8 unnamed tributaries (Table 3). Moderate rearing habitat was noted in 21 reaches (34%) and poor or no rearing habitat was noted in 26 reaches (43%).

The mainstem Copper River is a major rearing area for juvenile steelhead (David Bustard and Associates 1995). Important steelhead rearing tributaries include Treasure Creek (Lewis and Buchanan 1998) and Two Falls Creek.

Dolly Varden/bull trout rearing habitat was documented in each major subbasin except Two Falls Creek. Many Bear Creek, Limonite Creek, Blackberry Creek, Mattock Creek, and several unnamed tributaries provide rearing habitat for Dolly Varden/bull trout and had higher fish densities than other sites sampled during the survey (Table 14).

The sampling documented coho rearing in Limonite Creek, Miligit Creek, Two Falls Creek and an unnamed tributary (440-423900). Coho have also been historically documented in Blackberry Creek (Department of Fisheries and Oceans 1999). Chinook rearing was documented at one site within the Cooper River floodplain.

4.5.1.2 Spawning Habitat

Good or excellent spawning habitat was noted in a total of 6 reaches (10% of reaches) located in Blackberry Creek, Limonite Creek, and 3 unnamed tributaries (440-423900, 440-613900, 440-355000) (Table 3). Moderate spawning habitat was noted in 11 reaches (18%) and poor or no spawning habitat was noted in 44 reaches (72%). The presence of fry and juvenile fish in each of the major subbasins sampled indicates spawning habitat is available throughout the study area. Fry or juvenile Dolly Varden/bull trout and coho were documented in each major subbasin except Two Falls Creek, which contained juvenile rainbow trout/steelhead trout.

Within the study area, the Copper River mainstem provides minimal steelhead spawning value and tributaries have little potential for steelhead spawning except in the lower ends (Lough 1983 as cited in Lewis and Buchanan 1998). Subbasins such as Treasure Creek and Blackberry Creek provide steelhead spawning (Lewis and Buchanan 1998). Current sampling also documented juvenile rainbow trout/steelhead in Two Falls Creek (440-578800) which indicates this subbasin provides steelhead spawning opportunities.

4.5.1.3 Overwintering Habitat

Good or excellent overwintering habitat was noted in a total of 13 reaches (21% of reaches) found in Mattock Creek, Blackberry Creek and a number of unnamed tributaries (Table 3). Moderate overwintering habitat was noted in 15 reaches (25%) and poor or no overwintering habitat was noted in 33 reaches (54%). The mainstem of the major subbasins generally provides moderate to good overwintering habitat for juvenile and adult fish.

4.5.2 Habitat Protection Concerns

4.5.2.1 Fisheries Sensitive Zones

The Copper River floodplain has significant side and off channel habitat that provide important rearing and high-water refuge habitat for salmonids. Although more significant side and off-channel habitat is found downstream of the study area, fisheries sensitive zones occur within the floodplain as seasonally wetted back-channels and sloughs. These generally occur within the riparian management zone for the mainstem and would be protected through the riparian management area guidelines under the Forest Practices Code. No fisheries sensitive zones were identified at sample sites during the survey.

4.5.2.2 Fish Caught Above 20% Gradient

The field sampling included data collection at 5 sites that had field measured average gradients of over 20%. Fish sampling was conducted at 3 of these sites (average 20%, 23% and 25% gradients). Sampling was not conducted at the sites that had 34% and 46% gradients. Fish were caught at two sites that had average gradients of ≥20%; Site 26 and Site 48. However, fish capture at Site 26 (23% gradient) occurred in the lower 40 m of the site which had an average gradient of 2%. An average gradient of 20% was recorded at Site 48 but fish capture occurred in the lower 40 m of the reach.

The average gradient of confirmed fish bearing reaches in the project area ranged from 1% to 20% (Table 15). Rainbow trout were documented at sites with average gradients of 3% to 15% and Dolly Varden/bull trout were documented at sites with average gradients of 1% to 20%. Coho were documented at gradients of 3% to 5%.

Table 15. Average gradient of reaches where fish were captured in the No Gold Planning Area, August 1999.

Table 15. Average gradient of reaches where fish were captured in the No Gold Planning Area, August 19

Site #	Local Name	Watershed Code/ILP	Reach #	Average Sample Site Gradient %	Species[a]
1	Limonite Cr.	440-341700-00000	2	5	DV, RB, CO
2	Limonite Cr.	440-341700-00000	4	1	DV
3	Limonite Cr.	440-341700-00000	8	1	DV
4	Limonite Cr.	440-341700-00000	10	4	DV
11	Unnamed Tributary	440-355000-00000	1	14	DV
14	Mattock Creek	440-389800-00000	1	15	RB
16	No Gold Cr.	440-410800-00000	1	6	DV
17	Many Bear Cr.	440-411000-00000	1	4	DV, RB
19	Unnamed Tributary	360	1	4	DV
21	Unnamed Tributary	440-411000-32900-00000	1	9	DV
26[b]	Unnamed Tributary	440-423900-00000	1	2	CO, DV
29	Miligit Cr.	440-429500-00000	1	6	CO
32	Unnamed Tributary	444	2	2	DV
34	Unnamed Tributary	440-429500-29300-00000	1	12	DV
38	Blackberry Cr.	440-439100-00000	2	4	DV
46	Unnamed Tributary	440-512000-00000	3	4	DV
48	Unnamed Tributary	440-512000-12600-00000	1	20	DV
55	Unnamed Tributary	3627	1	3	RB
59	Unnamed Tributary	440-605000-00000	1	7	DV
60	Unnamed Tributary	440-606400-00000	1	4	DV
61	Unnamed Tributary	440-613900-00000	1	2	DV
62	Unnamed Tributary	440-613900-00000	2	4	DV
63	Unnamed Tributary	440-606400-00000	2	1	DV
69	Blackberry Cr.	440-439100-00000	3	2	DV
72	Mattock Cr.	440-389800-00000	2	4	DV
73	No Gold Cr.	440-410800-00000	3	3	DV
75	Two Falls Cr.	440-578800-00000	1	3	DV, CO, RB

a. CH - chinook, CO - coho, DV - Dolly Varden, RB - rainbow trout

b. gradient reading of 65% was taken at site but not included here because reading was outside of fish capture area.

4.5.2.3 Restoration and Rehabilitation Opportunities

Sampling in the No Gold Planning Area generally took place at reaches removed from road or forestry activities. Therefore, restoration and rehabilitation opportunities were identified at only one site. Reach 1 (Site 71) of a small tributary (440-341700-79500-07600) in the Limonite Creek watershed has been logged to both banks. The creek has downcut substantially and the adjacent slopes are eroding and failing. Several landslides have entered the creek and are sources of silt and sediment to downstream fish bearing streams. Photos of the site are included with the data for Site 71 in Appendix I. It is recommended that slope stabilisation be investigated to control further sediment inputs to stream 440-341700-79500.

A Level 1 WRP Fisheries Assessment for the Zymoetz River (Pollard *et. al*., 1996) was completed in 1995. The report includes descriptions of forestry related impacts to fish habitat within the No Gold project area (SBFEP - Mattock Creek, Limonite Creek, No Gold) and provides preliminary restoration options.

4.6 Fish Bearing Status

4.6.1 Fish Bearing Reaches

A total of 34 of the 75 sample sites in this inventory have been classified as fish bearing based either on the presence of fish or suitable fish habitat in the sampling areas. Fish were caught at 30 of the sites classified as fish bearing. Four sites are classified fish bearing despite no capture of fish, based on a lack of barriers and the possibility that fish may access the reaches. One site (Site 58) is inferred fish bearing despite poor habitat because fish access is questionable. This site is recommended for resampling at high water to assess fish access from the Copper River. If, during the follow-up sampling, no fish are captured and higher flows do not provide access, the classification would be changed to S6. All fish bearing reaches are shown in solid red on the 1:20,000 Interpretative Maps (Appendix II).

Table 16 summarizes data collected at fish bearing reaches in the No Gold Planning Area. Resampling recommendations for sites classified as fish bearing by default are included in Table 17.

4.6.2 Non Fish Bearing Reaches

Sites classified as non fish bearing in this inventory are characterized by an absence of fish, poor fish habitat, and/or no fish access due to downstream barriers. A total of 24 reaches have been classified as non fish bearing S5 and S6. An additional 5 reaches are inferred non-fish bearing, pending resample results. Resampling during a different season is recommended at these sites to satisfy requirements under FPC and/or the current Local Area Agreement (LAA). A total of 13 reaches were classified as “No Visible

Channel", based on the absence of bed scour and a lack of alluvium. These reaches have been included in the non fish bearing reaches tables.

Table 18 summarizes sampling data collected from the non fish bearing reaches identified in this field sampling program. Table 19 provides additional fish sampling data for each of the non fish bearing sites.

4.6.3 Local Area Agreement Analysis

A Local Area Agreement (LAA) has been developed for the No Gold area to streamline the stream classification process within the Planning Area. The data collected during this project may used in an analysis of the effectiveness of the LAA. A number of parameters were queried from the FDIS database and examined in relation to fish capture.

Table 20 presents fish capture in relation to stream order at the upstream reach break and indicated that fish were caught in 1st, 2nd, 3rd and 4th order streams. Only 2 of the 29 1st order streams produced fish, 4 were not sampled for fish, and 10 were found to be no visible channels. Table 21 presents fish capture in relation to the elevation of the downstream reach break and indicates that fish were only caught in reaches with downstream elevations of ≤864 m. Table 22 presents ascending average site gradients with fish capture and indicates that fish were captured at sites with average gradients of ≤20%. Fish capture at sites and associated downstream barriers to fish migration are presented in Table 23 and demonstrates that fish capture is strongly linked to the occurrence of downstream barriers. In general fish were not caught upstream of barriers in this study area. However, although there is a barrier to anadromous fish in Limonite Creek, a resident population of Dolly Varden/bull trout were found upstream.

Given the relatively small sample size, statistical analysis of the data collected may indicate that additional sampling is required in order to achieve a satisfactory level of statistical significance between fish absence and parameters such as order, elevation and gradient. Such analysis is beyond the scope of this reconnaissance fish and fish habitat inventory project, but would certainly be useful in the LAA process.

4.6.4 Follow Up Sampling Required

Re-sampling recommendations are provided in Table 17, for reaches which were classified inferred. The requirement of two fish sampling sessions to establish non fish bearing classifications has resulted in the application of inferred status to a number of reaches. Resampling recommendations listed in the summary table are based on flow stage and habitat type present in the stream.

Table 16. Summary of data collected at surveyed fish bearing reaches in the No Gold Planning Area, August 1999.

Table 16. Summary of data collected at surveyed fish bearing reaches in the No Gold Planning Area, August 199

Site #	Local Name	Watershed Code/ILP	Reach #	Site Map	Average Channel Width (m)	Average Gradient %	Proposed Stream Class	Fish Species
1	Limonite Cr.	440-341700-00000	2	93L.051	12.8	4.5	S2	DV, RB, CO
2	Limonite Cr.	440-341700-00000	4	93L.052	13.7	1.2	S2	DV
3	Limonite Cr.	440-341700-00000	8	93L.052	6.2	0.7	S2	DV
4	Limonite Cr.	440-341700-00000	10	93L.052	2.8	3.7	S3	DV
11	Unnamed Tributary	440-355000-00000	1	93L.051	4.2	14.0	S3	DV
14	Mattock Cr.	440-389800-00000	1	93L.051	14.6	15.3	S2	RB
16	Nogold Cr.	440-410800-00000	1	93L.051	10.9	6.3	S2	DV
17	Many Bear Cr.	440-411000-00000	1	93L.051	12.4	3.7	S2	DV, RB
19	Unnamed Tributary	360	1	93L.051	1.0	4.0	S4	DV
21	Unnamed Tributary	440-411000-32900	1	93L.051	10.6	9.0	S2	DV
26[b]	Unnamed Tributary	440-423900-00000	1	93L.051	2.3	1.5	S3	DV, CO
29	Miligit Cr.	440-429500-00000	1	93L.051	11.4	6.3	S1*	CO
30	Miligit Cr.	440-429500-00000	3	93L.061	106.7	12.0	S1	DV,CO at Site 76
32	Unnamed Tributary	444	2	93L.061	1.5	1.8	S4	DV
33	Unnamed Tributary	445	1	93L.061	1.6	0.7	S3	NFC
34	Unnamed Tributary	440-429500-29300-00000	1	93L.061	1.4	11.5	S4 / S6	DV
38	Blackberry Cr.	440-439100-00000	2	93L.061	11.6	4.3	S2	DV
39	Blackberry Cr.	440-439100-00000	4	93L.061	10.5	3.5	S2	NFC
45	Unnamed Tributary	827	1	93L.061	1.7	1.0	(S3)	NS
46	Unnamed Tributary	440-512000-00000	3	93L.061	32.0	4.3	S1	DV
48	Unnamed Tributary	440-512000-12600-00000	1	93L.061	6.1	20.3	S2	DV
55	Unnamed Tributary	3627	1	93L.071	8.2	2.8	S2	RB
58	Unnamed Tributary	3640	1	93l.071	1.2	0.2	S4	NFC
59	Unnamed Tributary	440-605000-00000	1	93L.071	5.3	7.3	S2	DV
60	Unnamed Tributary	440-606400-00000	1	93L.071	4.3	3.7	S3	DV
61	Unnamed Tributary	440-613900-00000	1	93L.071	2.5	2.3	S2*	DV
62	Unnamed Tributary	440-613900-00000	2	93L.071	5.7	4.3	S2	DV
63	Unnamed Tributary	440-606400-00000	2	93L.071	3.0	1.3	S3	DV
66	Many Bear Cr.	440-411000-00000	3	93L.051	ns	ns	S3	DV
67	Unnamed Tributary	9901	1	93L.061	ns	ns	S4	CH
69	Blackberry Cr.	440-439100-00000	3	93L.061	9.1	2.0	S2	DV
71	Unnamed Tributary	440-341700-79500-07600-0000	1	93L.052	1.5	18.5	N/A	NS
72	Mattock Cr.	440-389800-00000	2	93L.051	13.4	4.2	S2	DV
73	Nogold Cr.	440-410800-00000	3	103I.060	10.1	3.3	S2	DV
75	Two Falls Cr.	440-578800-00000	1	93L.071	13.4	3.3	S2	CO, RB, DV

a. CH - chinook, CO - coho, DV - Dolly Varden, RB - rainbow trout

b. gradient reading of 65% was taken at site but not included here because reading was outside of fish capture area.

( ) inferred stream class, resampling suggested

* Stream class based on u/s stream class, not reach channel width

Table 17. Summary of resample recommendations in the No Gold Planning Area, August 1999.

Table 17. Summary of follow-up sampling recommendations in the No Gold Planning Unit, August 1999.

Site #	Local Name	Watershed Code/ILP	Reach #	Map	Average Channel Width (m)	Average Gradient %	Proposed Stream Class	Initial Survey Date	Electrofishing Effort (sec.)	Fish Species	Resample Timing	Resample Method	Rationale
40	Unnamed Tributary	9901	2	93L.061	1.3	1.0	(S6)	8/26/99	444	NFC	late spring	EF/MT	resample required to assess access at high flows from Copper River for fry rearing
43	Treasure Cr.	440-467900-00000	3	103I.070	7.2	4.5	(S5)	8/23/99	958	NFC	late spring	EF/MT	resample required to confirm non fish bearing status in accordance with FPC and LAA
54	Unnamed Tributary	905	1	93L.061	0.8	2.3	(S6)	8/23/99	174	NFC	late spring	EF/MT	resample required to assess fry/juvenile access at high flows
57	Two Falls Creek	440-578800-00000	3	103I.080	12.3	2.9	(S5)	9/2/99	1018	NFC	late spring	EF/MT	resample required to confirm non fish bearing status in accordance with FPC and LAA
58	Unnamed Tributary	3640	1	93L.071	1.20	0.17	(S4)	8/20/99	250	NFC	late spring	EF/MT	resample in late spring, poor fish habitat, site located in the Zymoetz floodplain, assess access at high flows. If no access is confirmed, S6.
74	Unnamed Tributary	3627	2	103I.070	15.4	4.3	(S5)	9/2/99	550	NFC	late spring	EF/MT	resample required to confirm non fish bearing status in accordance with FPC and LAA

a. EF - electrofishing, MT - minoow trapping, NFC - no fish caught, NS not sampled, ( ) inferred stream class; requires resampling

Table 18. Summary of data collected at confirmed and inferred non fish bearing sites identified in the No Gold Planning Area, August 1999.

Table 18. Summary of data collected at confirmed and inferred non fish bearing sites in the No Gold Planning Area, August

Site #	Local Name	Watershed Code/ILP	Reach #	Site Map	Average Channel Width (m)	Average Gradient %	Proposed Stream Class[a]	Fish Species[a]	Resample
5	Unnamed Tributary	91	1	93L.051	0.7	9.5	S6	NFC	
6	Unnamed Tributary	440-341700-22400-00000	1	93L.051	4.4	11.5	S5	NFC	
7	Unnamed Tributary	440-341700-41900-00000	1	93L.051	1.1	8.0	S6	NFC	
8	Unnamed Tributary	440-341700-79500-00000	3	93L.052	14.8	11.3	S5	NFC	
9	Unnamed Tributary	230	2	93L.051	1.1	2.7	S6	NFC	
10	Unnamed Tributary	230	3	93L.051	0.4	9.7	S6	NS	
12	Unnamed Tributary	242	1	93L.051			NVC	NS	
13	Unnamed Tributary	249	1	93L.051			NVC	NS	
15	Unnamed Tributary	310	2	93L.051			NVC	NS	
18	Many Bear Cr.	440-411000-00000	4	93L.051	11.3	6.7	S5	NFC	
20	Unnamed Tributary	365	1	93L.051	2.6	34.0	S6	NS	
22	Unnamed Tributary	392	1	93L.051	0.4	46.3	S6	NS	
23	Unnamed Tributary	440-411000-64800	1	93L.051	18.0	6.7	S5	NFC	
24	Unnamed Tributary	408	1	93L.051	1.9	17.5	S6	NFC	
25	Unnamed Tributary	430	1	93L.051			NVC	NS	
27	Unnamed Tributary	438	1	93L.051	0.6	24.7	S6	NFC	
28	Unnamed Tributary	440	1	93L.051	1.1	7.0	S6	NFC	
31	Miligit Cr.	440-429500-00000	5	93L.061	8.4	1.3	S5	NS	
35	Unnamed Tributary	491	1	93L.061			NVC	NS	
36	Unnamed Tributary	492	1	93L.061			NVC	NS	
37	Unnamed Tributary	492	2	93L.061			NVC	NS	
40	Unnamed Tributary	9901	2	93L.061	1.3	1.0	(S6)	NFC	X
41	Unnamed Tributary	9901	3	93L.061	4.1	2.4	S5	NFC	
42	Unnamed Tributary	626	1	93L.061	1.0	5.3	S6	NS	
43	Treasure Cr.	440-467900-00000	3	103I.070	7.2	4.5	(S5)	NFC	X
44	Unnamed Tributary	440-467900-13300-00000	2	93L.061	18.7	4.3	S5	NFC	
47	Unnamed Tributary	440-512000-36700-15600-0000	3	93L.061	53.8	7.8	S5	NFC	
49	Unnamed Tributary	844	1	93L.061			NVC	NS	
50	Unnamed Tributary	440-512000-22900-00000	2	93L.061	1.8	14.7	S6	NFC	
51	Unnamed Tributary	842	1	93L.061			NVC	NS	
52	Unnamed Tributary	843	1	93L.061			NVC	NS	
53	Unnamed Tributary	440-512000-22900-00000	1	93L.061			NVC	NS	
54	Unnamed Tributary	905	1	93L.061	0.8	2.3	(S6)	NFC	X
56	Unnamed Tributary	440-560100-00000	3	93L.071	17.9	5.3	S5	NFC	

a. ( ) indicates inferred; resample required, NVC - no visible channel, NFC - no fish caught, NS - not sampled

Table 18 cont'.

Site #	Local Name	Watershed Code/ILP	Reach #	Site Map	Average Channel Width (m)	Average Gradient %	Proposed Stream Class[a]	Fish Species[a]	Resample
57	Two Falls Creek	440-578800-00000	3	103I.080	12.3	3.8	(S5)	NFC	X
64	Many Bear Cr.	440-411000-00000	5	93L.051	3.9	4.5	S5	NFC	
65	Unnamed Tributary	3900	1	93L.051	0.4	5.0	S6	NFC	
68	Unnamed Tributary	440-512000-00000	5	93L.061	18.7	5.0	S5	NFC	
70	Unnamed Tributary	440-341700-79500-07600-0000	3	93L.052			NVC	NFC	
74	Unnamed Tributary	3627	2	103I.070	15.4	4.3	(S5)	NFC	X
77	Unnamed Tributary	492	1	93L.061	0.9	1.0	S6	NFC	
80	Unnamed Tributary	620	1	93L.061			NVC	NS	

a. ( ) indicates inferred; resample required, NVC - no visible channel, NFC - no fish caught, NS - not sampled

Table 19. Non fish bearing status report, No Gold Planning Area, August 1999.

Table 19. Non fish bearing status report, No Gold Planning Area, August 1999.

Site #	Local Name	Watershed Code/ILP	Reach #	Map	Temp (oC)	Conductivity (umos)	Turbidity (GE)	Capture Method	Effort (Sec.)	Area Sampled (m2)	Voltage	Frequency (Hz)	Pulse (ms)	EF Make	Model	Species[a]	Barriers/ Obstructions	Habitat Comment	Stream Class
5	Unnamed Tributary	91	1	93L.051	9.	80	C	EF	235	150	600	60	6	SR	12B POW	NFC	cascades near mouth	Poor spawning, no overwintering habitat	S6
6	Unnamed Tributary	440-341700-22400	1	93L.051	8.	160	C	EF	365	200	400	60	6	SR	12B POW	NFC	cascade at mouth	Poor spawning, no overwintering habitat	S5
7	Unnamed Tributary	440-341700-41900	1	93L.051	12.	240	L	EF	196	100	200	60	6	SR	12B POW	NFC	10 m F in reach 1	Poor spawning, no overwintering habitat	S6
8	Unnamed Tributary	440-341700-79500	3	93L.052	7.	30	C	EF	780	1000	700	70	6	SR	12B POW	NFC	4 m F in reach 3	Poor spawning, no overwintering habitat	S5
9	Unnamed Tributary	230	2	93L.051	5.	20	C	EF	66	100	600	60	7	SR	12B POW	NFC	none	No spawning, no overwintering habitat	S6
10	Unnamed Tributary	230	3	93L.051	5.	20	C	NS	Not sufficient habitat to sample; poor fish habitat.									Poor spawning, no overwintering habitat	S6
12	Unnamed Tributary	242	1	93L.051	NVC														NVC
13	Unnamed Tributary	249	1	93L.051	NS														NVC
15	Unnamed Tributary	310	2	93L.051	NS														NVC
18	Many Bear Cr.	440-411000-00000	4	93L.051	4.	20	L	EF	400	500	500	50	6	SR	15A	NFC	3 m F in reach 4	No spawning, no overwintering habitat	S5
20	Unnamed Tributary	365	1	93L.051	7.	110	C	NS	Not sufficient habitat to sample; poor fish habitat.								2 m F in reach 1	Poor spawning, poor overwintering habitat	S6
22	Unnamed Tributary	392	1	93L.051	7.	60	C	NS	Not sufficient habitat to sample; poor fish habitat.								3 m F in reach 4 Many Bear	No spawning, no overwintering habitat	S6
23	Unnamed Tributary	440-411000-64800	1	93L.051	4.	20	L	EF	490	1000	600	50	6	SR	15 A	NFC	3 m F in reach 4	Poor spawning, poor rearing habitat	S5
24	Unnamed Tributary	408	1	93L.051	6.	10	C	EF	506	220	500	70	6	SR	12B POW	NFC	3 m F in reach 4	Poor spawning, no overwintering habitat	S6
25	Unnamed Tributary	430	1	93L.051	NS														NVC
27	Unnamed Tributary	438	1	93L.051	8.	30	C	EF	130	30	500	50	5	SR	15A	NFC	40 m C in reach 1	Poor spawning, no overwintering habitat	S6
28	Unnamed Tributary	440	1	93L.051	10.	30	C	EF	548	64	500	70	6	SR	12B POW	NFC	40 m C d/s	No spawning, no overwintering habitat	S6
31	Miligit Cr.	440-429500-00000	5	93L.061	3.	10	M	NS	No sampling due to poor fish habitat. Downstream barrier and extreme conditions for fish. Low water temperature.								350 m F in reach 4	Poor spawning, no overwintering habitat	S5
35	Unnamed Tributary	491	1	93L.061	NS														NVC
36	Unnamed Tributary	492	1	93L.061	NS														NVC
37	Unnamed Tributary	492	2	93L.061	NS														NVC

40	Unnamed Tributary	3800	1	93L.061	6.	60	C	EF	444	180	400	70	6	SR	12B POW	NFC	5 m subterrain section	Poor spawning, no overwintering habitat	(S6)
41	Unnamed Tributary	620	1	93L.061	5.	80	C	EF	563	165	400	70	6	SR	12B POW	NFC	5 m subterrain section d/s	Poor spawning, poor overwintering habitat	S5

a. EF - electrofishing, NCF - no fish caught, SR - Smith Root, NVC - no visible channel, NS - not sampled, F- Falls, C- cascade

Table 19. Cont'.

Site #	Local Name	Watershed Code/ILP	Reach #	Map	Temp (oC)	Conductivity (umos)	Turbidity (GE)	Capture Method	Effort (Sec.)	Area Sampled (m2)	Voltage	Frequency (Hz)	Pulse (ms)	EF Make	Model	Species[a]	Barriers/ Obstructions	Habitat Comment	Stream Class
42	Unnamed Tributary	626	1	93L.061	6.5	20	C	NS	Not sufficient habitat to sample; poor fish habitat.								no connection to Copper River	Poor spawning, no overwintering habitat	S6
43	Treasure Cr.	440-467900-00000	3	103I.070	10.	40	C	EF	958	510	500	60	8	SR	12B POW	NFC	2 m F in reach 2	Poor spawning, moderate overwintering habitat	(S5)
44	Unnamed Tributary	440-467900-13300	2	93L.061	8.	60	C	EF	615	750	500	70	6	SR	12B POW	NFC	10 m falls at mouth	Poor to moderate spawning and rearing habitat	S5
47	Unnamed Tributary	440-512000-36700-00000	3	93L.061	6.	10	T	EF	1013	320	600	60	8	SR	12B POW	NFC	30 m F in reach 2	Poor spawning, no overwintering habitat	S5
49	Unnamed Tributary	844	1	93L.061	NS														NVC
50	Unnamed Tributary	440-512000-22900	2	93L.061	7.	120	C	EF	284	58	400	60	8	SR	12B POW	NFC	reach 1 is NVC	No spawning, no overwintering habitat	S6
51	Unnamed Tributary	842	1	93L.061	NS														NVC
52	Unnamed Tributary	843	1	93L.061	NS														NVC
53	Unnamed Tributary	40-512000-22900-0000	1	93L.061	NS														NVC
54	Unnamed Tributary	905	1	93L.061	11.	20	C	EF	174	75	500	70	6	SR	12B POW	NFC	no connection to Copper River	No spawning, no overwintering habitat	(S6)
56	Unnamed Tributary	440-560100-00000	3	93L.071	7.	70	C	EF	986	7500	500	70	6	SR	12B POW	NFC	5 m F in reach 2	Poor fisheries values, moderately steep cascade/pool stream.	S5
57	Two Falls Cr.	440-578800-00000	3	103I.080	6.	30	C	EF	1018	270	800	70	6	SR	12B POW	NFC	6 m F in reach 3	Poor spawning, moderate overwintering habitat	(S5)
64	Many Bear Cr.	440-411000-00000	5	93L.051	6.	70	C	EF	1005	240	400	70	6	SR	12B POW	NFC	3 m F in reach 4	Poor spawning, no overwintering habitat	S5
65	Unnamed Tributary	365	1	93L.051	7.	110	C	EF	130	40	500	70	6	SR	12B POW	NFC	intermittently subterrain	Poor spawning, poor overwintering habitat	S6
68	Unnamed Tributary	440-512000-00000	5	93L.061	6.	60	C	EF	1081	218	500	70	6	SR	12B POW	NFC	25 m F in reach 5	Poor spawning, moderate overwintering habitat	S5
70	Unnamed Tributary	-341700-79500-07600-0	3	93L.052	7	20	C	EF	100	30	500	70	6	SR	12B POW	NFC	gradient barrier in reach 1, no connection/channel to nearby lakes	Non-classified drainage; poor fish habitat	NVC

74	Unnamed Tributary	3627	2	103I.070	6.	40	C	EF	550	510	400	70	6	SR	12B POW	NFC	5 m F in reach 2	Poor spawning, poor rearing habitat	(S5)
77	Unnamed Tributary	492	1	93L.061	9.	30	C	EF	210	100	500	70	6	SR	12B POW	NFC	no connection to Copper River, NVC for 100 m+	No spawning, no overwintering habitat	S6
80	Unnamed Tributary	620	1	93L.061	NS														NVC

a. EF - electrofishing, NCF - no fish caught, SR - Smith Root, NVC - no visible channel, NS - not sampled, F- Falls, C- cascade

Table 20. Summary of stream order and fish capture in the No Gold Planning Area, August 1999.

Table 20. Summary of stream order and fish capture in the No Gold Planning Area, August 1999.

Site Number	Local Name	Watershed Code/ILP	Reach #	Map	Stream Order	Fish Species[a]
32	Unnamed Tributary	444	2	93L.061	1	DV
34	Unnamed Tributary	440-429500-29300-00000	1	93L.061	1	DV
5	Unnamed Tributary	91	1	93L.051	1	NFC
6	Unnamed Tributary	440-341700-22400-00000	1	93L.051	1	NFC
7	Unnamed Tributary	440-341700-41900-00000	1	93L.051	1	NFC
24	Unnamed Tributary	408	1	93L.051	1	NFC
27	Unnamed Tributary	438	1	93L.051	1	NFC
28	Unnamed Tributary	440	1	93L.051	1	NFC
33	Unnamed Tributary	445	1	93L.061	1	NFC
41	Unnamed Tributary	9901	3	93L.061	1	NFC
47	Unnamed Tributary	440-512000-36700-00000	3	93L.061	1	NFC
54	Unnamed Tributary	905	1	93L.061	1	NFC
65	Unnamed Tributary	3900	1	93L.051	1	NFC
77	Unnamed Tributary	492	1	93L.061	1	NFC
20	Unnamed Tributary	365	1	93L.051	1	NS
22	Unnamed Tributary	392	1	93L.051	1	NS
42	Unnamed Tributary	626	1	93L.061	1	NS
45	Unnamed Tributary	827	1	93L.061	1	NS
71	Unnamed Tributary	440-341700-79500-07600	1	93L.052	1	NS
12	Unnamed Tributary	242	1	93L.051	1	NVC
13	Unnamed Tributary	249	1	93L.051	1	NVC
15	Unnamed Tributary	310	2	93L.051	1	NVC
25	Unnamed Tributary	430	1	93L.051	1	NVC
35	Unnamed Tributary	491	1	93L.061	1	NVC
36	Unnamed Tributary	492	1	93L.061	1	NVC
37	Unnamed Tributary	492	2	93L.061	1	NVC
52	Unnamed Tributary	843	1	93L.061	1	NVC
70	Unnamed Tributary	440-341700-79500-07600	3	93L.052	1	NVC
80	Unnamed Tributary	620	1	93L.061	1	NVC
4	Limonite Cr.	440-341700-00000	10	93L.052	2	DV
11	Unnamed Tributary	440-355000-00000	1	93L.051	2	DV
48	Unnamed Tributary	440-512000-12600-00000	1	93L.061	2	DV
61	Unnamed Tributary	440-613900-00000	1	93L.071	2	DV
62	Unnamed Tributary	440-613900-00000	2	93L.071	2	DV
26	Unnamed Tributary	440-423900-00000	1	93L.051	2	DV, CO
9	Unnamed Tributary	230	2	93L.051	2	NFC
40	Unnamed Tributary	9901	2	93L.061	2	NFC
58	Unnamed Tributary	3640	1	93l.071	2	NFC
10	Unnamed Tributary	230	3	93L.051	2	NS
49	Unnamed Tributary	844	1	93L.061	2	NVC
51	Unnamed Tributary	842	1	93L.061	2	NVC
55	Unnamed Tributary	3627	1	93L.071	2	RB
29	Miligit Cr.	440-429500-00000	1	93L.051	3	CO

a. CH - chinook, CO - coho, DV - Dolly Varden, RB - rainbow trout, NFC - no fish caught, NS - not sampled NVC - no visible channel

Table 20. Cont'.

Site Number	Local Name	Watershed Code/ILP	Reach #	Map	Stream Order	Fish Species[a]
2	Limonite Cr.	440-341700-00000	4	93L.052	3	DV
3	Limonite Cr.	440-341700-00000	8	93L.052	3	DV
19	Unnamed Tributary	360	1	93L.051	3	DV
21	Unnamed Tributary	440-411000-32900	1	93L.051	3	DV
59	Unnamed Tributary	440-605000-00000	1	93L.071	3	DV
60	Unnamed Tributary	440-606400-00000	1	93L.071	3	DV
63	Unnamed Tributary	440-606400-00000	2	93L.071	3	DV
30	Miligit Cr.	440-429500-00000	3	93L.061	3	DV, CO,
1	Limonite Cr.	440-341700-00000	2	93L.051	3	DV, RB, CO
8	Unnamed Tributary	440-341700-79500-00000	3	93L.052	3	NFC
18	Many Bear Cr.	440-411000-00000	4	93L.051	3	NFC
23	Unnamed Tributary	440-411000-64800	1	93L.051	3	NFC
50	Unnamed Tributary	440-512000-22900-00000	2	93L.061	3	NFC
56	Unnamed Tributary	440-560100-00000	3	93L.071	3	NFC
68	Unnamed Tributary	440-512000-00000	5	93L.061	3	NFC
74	Unnamed Tributary	3627	2	103I.070	3	NFC
31	Miligit Cr.	440-429500-00000	5	93L.061	3	NS
53	Unnamed Tributary	440-512000-22900-00000	1	93L.061	3	NVC
75	Two Falls Cr.	440-578800-00000	1	93L.071	4	CO, RB, DV
16	No Gold Cr.	440-410800-00000	1	93L.051	4	DV
38	Blackberry Cr.	440-439100-00000	2	93L.061	4	DV
46	Unnamed Tributary	440-512000-00000	3	93L.061	4	DV
69	Blackberry Cr.	440-439100-00000	3	93L.061	4	DV
72	Mattock Cr.	440-389800-00000	2	93L.051	4	DV
73	No Gold Cr.	440-410800-00000	3	103I.060	4	DV
17	Many Bear Cr.	440-411000-00000	1	93L.051	4	DV, RB
43	Treasure Cr.	440-467900-00000	3	103I.070	4	NFC
44	Unnamed Tributary	440-467900-13300-00000	2	93L.061	4	NFC
57	Two Falls Cr.	440-578800-00000	3	103I.080	4	NFC
64	Many Bear Cr.	440-411000-00000	5	93L.051	4	NFC
14	Mattock Cr.	440-389800-00000	1	93L.051	4	RB
39	Blackberry Cr.	440-439100-00000	4	93L.061	4	RB historical

a. CH - chinook, CO - coho, DV - Dolly Varden, RB - rainbow trout, NFC - no fish caught, NS - not sampled NVC - no visible channel

Table 21. Summary of elevation and fish capture in the No Gold Planning Area, August 1999.

Table 21. Summary of elevation and fish capture in the No Gold Planning Area, August 19

Site Number	Local Name	Watershed Code/ILP	Reach #	Map	Downstream Reach Elevation (m)	Fish Species[a]
11	Unnamed Tributary	440-355000-00000	1	93L.051	370	DV
12	Unnamed Tributary	242	1	93L.051	385	NVC
5	Unnamed Tributary	91	1	93L.051	390	NFC
9	Unnamed Tributary	230	2	93L.051	400	NFC
13	Unnamed Tributary	249	1	93L.051	416	NVC
14	Mattock Cr.	440-389800-00000	1	93L.051	420	RB
16	No Gold Cr.	440-410800-00000	1	93L.051	440	DV
17	Many Bear Cr.	440-411000-00000	1	93L.051	440	DV, RB
26	Unnamed Tributary	440-423900-00000	1	93L.051	450	DV, CO
27	Unnamed Tributary	438	1	93L.051	450	NFC
25	Unnamed Tributary	430	1	93L.051	450	NVC
29	Miligit Cr.	440-429500-00000	1	93L.051	460	CO
77	Unnamed Tributary	492	1	93L.061	460	NFC
10	Unnamed Tributary	230	3	93L.051	460	NS
15	Unnamed Tributary	310	2	93L.051	460	NVC
36	Unnamed Tributary	492	1	93L.061	460	NVC
40	Unnamed Tributary	9901	2	93L.061	475	NFC
80	Unnamed Tributary	620	1	93L.061	476	NVC
38	Blackberry Cr.	440-439100-00000	2	93L.061	480	DV
6	Unnamed Tributary	440-341700-22400-00000	1	93L.051	480	NFC
42	Unnamed Tributary	626	1	93L.061	480	NS
1	Limonite Cr.	440-341700-00000	2	93L.051	490	DV, RB, CO
41	Unnamed Tributary	9901	3	93L.061	490	NFC
69	Blackberry Cr.	440-439100-00000	3	93L.061	495	DV
32	Unnamed Tributary	444	2	93L.061	497	DV
33	Unnamed Tributary	445	1	93L.061	497	NFC
35	Unnamed Tributary	491	1	93L.061	497	NVC
37	Unnamed Tributary	492	2	93L.061	518	NVC
34	Unnamed Tributary	440-429500-29300-00000	1	93L.061	520	DV
30	Miligit Cr.	440-429500-00000	3	93L.061	520	DV, CO,
45	Unnamed Tributary	827	1	93L.061	520	NS
54	Unnamed Tributary	905	1	93L.061	540	NFC
19	Unnamed Tributary	360	1	93L.051	550	DV
72	Mattock Cr.	440-389800-00000	2	93L.051	550	DV
39	Blackberry Cr.	440-439100-00000	4	93L.061	550	RB historical
28	Unnamed Tributary	440	1	93L.051	560	NFC
65	Unnamed Tributary	3900	1	93L.051	560	NFC
48	Unnamed Tributary	440-512000-12600-00000	1	93L.061	575	DV
55	Unnamed Tributary	3627	1	93L.071	580	RB
20	Unnamed Tributary	365	1	93L.051	590	NS
75	Two Falls Cr.	440-578800-00000	1	93L.071	600	CO, RB, DV
46	Unnamed Tributary	440-512000-00000	3	93L.061	600	DV
58	Unnamed Tributary	3640	1	93l.071	600	NFC
7	Unnamed Tributary	440-341700-41900-00000	1	93L.051	610	NFC
53	Unnamed Tributary	440-512000-22900-00000	1	93L.061	615	NVC
74	Unnamed Tributary	3627	2	103I.070	620	NFC

a. CH - chinook, CO - coho, DV - Dolly Varden, RB - rainbow trout, NFC - no fish caught, NS - not sampled NVC - no visible channel

Table 21. Cont'd

Site Number	Local Name	Watershed Code/ILP	Reach #	Map	Downstream Reach Elevation (m)	Fish Species[a]
59	Unnamed Tributary	440-605000-00000	1	93L.071	630	DV
60	Unnamed Tributary	440-606400-00000	1	93L.071	630	DV
61	Unnamed Tributary	440-613900-00000	1	93L.071	630	DV
73	No Gold Cr.	440-410800-00000	3	103I.060	630	DV
21	Unnamed Tributary	440-411000-32900	1	93L.051	640	DV
44	Unnamed Tributary	440-467900-13300-00000	2	93L.061	640	NFC
56	Unnamed Tributary	440-560100-00000	3	93L.071	640	NFC
62	Unnamed Tributary	440-613900-00000	2	93L.071	650	DV
63	Unnamed Tributary	440-606400-00000	2	93L.071	650	DV
51	Unnamed Tributary	842	1	93L.061	650	NVC
52	Unnamed Tributary	843	1	93L.061	655	NVC
49	Unnamed Tributary	844	1	93L.061	660	NVC
2	Limonite Cr.	440-341700-00000	4	93L.052	670	DV
43	Treasure Cr.	440-467900-00000	3	103I.070	680	NFC
50	Unnamed Tributary	440-512000-22900-00000	2	93L.061	700	NFC
68	Unnamed Tributary	440-512000-00000	5	93L.061	700	NFC
57	Two Falls Cr.	440-578800-00000	3	103I.080	740	NFC
18	Many Bear Cr.	440-411000-00000	4	93L.051	750	NFC
22	Unnamed Tributary	392	1	93L.051	750	NS
3	Limonite Cr.	440-341700-00000	8	93L.052	863	DV
4	Limonite Cr.	440-341700-00000	10	93L.052	864	DV
23	Unnamed Tributary	440-411000-64800	1	93L.051	870	NFC
64	Many Bear Cr.	440-411000-00000	5	93L.051	870	NFC
71	Unnamed Tributary	440-341700-79500-07600	1	93L.052	900	NS
8	Unnamed Tributary	440-341700-79500-00000	3	93L.052	920	NFC
70	Unnamed Tributary	440-341700-79500-07600	3	93L.052	920	NVC
24	Unnamed Tributary	408	1	93L.051	980	NFC
31	Miligit Cr.	440-429500-00000	5	93L.061	1160	NS
47	Unnamed Tributary	440-512000-36700-00000	3	93L.061	1520	NFC

a. CH - chinook, CO - coho, DV - Dolly Varden, RB - rainbow trout, NFC - no fish caught, NS - not sampled NVC - no visible channel

Table 22. Summary of gradient and fish capture in the No Gold Planning Area, August 1999.

Table 22. Ascending site gradient and fish capture in the No Gold Planning Area, August 1999.

Site #	Local Name	Watershed Code/ILP	Reach #	Average Gradient %	Fish Species[a]
58	Unnamed Tributary	3640	1	0	NFC
3	Limonite Cr.	440-341700-00000	8	1	DV
33	Unnamed Tributary	445	1	1	NFC
40	Unnamed Tributary	9901	3	1	NFC
45	Unnamed Tributary	827	1	1	NS
77	Unnamed Tributary	492	1	1	NFC
2	Limonite Cr.	440-341700-00000	4	1	DV
31	Miligit Cr.	440-429500-00000	5	1	NS
63	Unnamed Tributary	440-606400-00000	2	1	DV
26	Unnamed Tributary	440-423900-00000	1	2	CO, DV
32	Unnamed Tributary	444	2	2	DV
69	Blackberry Cr.	440-439100-00000	3	2	DV
54	Unnamed Tributary	905	1	2	NFC
61	Unnamed Tributary	440-613900-00000	1	2	DV
41	Unnamed Tributary	9901	1	2	NFC
9	Unnamed Tributary	230	2	3	NFC
55	Unnamed Tributary	3627	1	3	RB
73	No Gold Cr.	440-410800-00000	3	3	DV
75	Two Falls Cr.	440-578800-00000	1	3	RB, DV, CO
39	Blackberry Cr.	440-439100-00000	4	4	RB historical
4	Limonite Cr.	440-341700-00000	10	4	DV
17	Many Bear Cr.	440-411000-00000	1	4	RB, DV
60	Unnamed Tributary	440-606400-00000	1	4	DV
57	Two Falls Cr.	440-578800-00000	3	4	NFC
19	Unnamed Tributary	360	1	4	DV
72	Mattock Cr.	440-389800-00000	2	4	DV
38	Blackberry Cr.	440-439100-00000	2	4	DV
44	Unnamed Tributary	440-467900-13300-00000	2	4	NFC
46	Unnamed Tributary	440-512000-00000	3	4	DV
62	Unnamed Tributary	440-613900-00000	2	4	DV
74	Unnamed Tributary	3627	2	4	NFC
1	Limonite Cr.	440-341700-00000	2	5	DV, RB, CO
43	Treasure Cr.	440-467900-00000	3	5	NFC
64	Many Bear Cr.	440-411000-00000	5	5	NFC
12	Unnamed Tributary	242	1	5	NVC
65	Unnamed Tributary	3900	1	5	NFC
68	Unnamed Tributary	440-512000-00000	5	5	NFC
42	Unnamed Tributary	626	1	5	NS
56	Unnamed Tributary	440-560100-00000	3	5	NFC
16	No Gold Cr.	440-410800-00000	1	6	DV
29	Miligit Cr.	440-429500-00000	1	6	CO
18	Many Bear Cr.	440-411000-00000	4	7	NFC
23	Unnamed Tributary	440-411000-64800	1	7	NFC
28	Unnamed Tributary	440	1	7	NFC
59	Unnamed Tributary	440-605000-00000	1	7	DV
47	Unnamed Tributary	440-512000-36700-00000	3	8	NFC
7	Unnamed Tributary	440-341700-41900-00000	1	8	NFC
21	Unnamed Tributary	440-411000-32900	1	9	DV
5	Unnamed Tributary	91	1	10	NFC
10	Unnamed Tributary	230	3	10	NS
8	Unnamed Tributary	440-341700-79500-00000	3	11	NFC

a. CH - chinook, CO - coho, DV - Dolly Varden, RB - rainbow trout, NFC - no fish caught, NS - not sampled
NVC - no visible channel

Table 22. Cont'd

Site #	Local Name	Watershed Code/ILP	Reach #	Average Gradient %	Fish Species[a]
6	Unnamed Tributary	440-341700-22400-00000	1	12	NFC
34	Unnamed Tributary	440-429500-29300-00000	1	12	DV
30	Miligit Cr.	440-429500-00000	3	12	DV,CO
11	Unnamed Tributary	440-355000-00000	1	14	DV
50	Unnamed Tributary	440-512000-22900-00000	2	15	NFC
14	Mattock Cr.	440-389800-00000	1	15	RB
24	Unnamed Tributary	408	1	18	NFC
71	Unnamed Tributary	440-341700-79500-07600	1	19	NS
48	Unnamed Tributary	440-512000-12600-00000	1	20	DV
27	Unnamed Tributary	438	1	25	NFC
20	Unnamed Tributary	365	1	34	NS
22	Unnamed Tributary	392	1	46	NS
13	Unnamed Tributary	249	1	n/a	NVC
15	Unnamed Tributary	310	2	n/a	NVC
25	Unnamed Tributary	430	93L.051	n/a	NVC
35	Unnamed Tributary	491	93L.061	n/a	NVC
36	Unnamed Tributary	492	93L.061	n/a	NVC
37	Unnamed Tributary	492	93L.061	n/a	NVC
49	Unnamed Tributary	844	93L.061	n/a	NVC
51	Unnamed Tributary	842	93L.061	n/a	NVC
52	Unnamed Tributary	843	93L.061	n/a	NVC
53	Unnamed Tributary	440-512000-22900-00000	93L.061	n/a	NVC
70	Unnamed Tributary	440-341700-79500-07600	93L.052	n/a	NVC
80	Unnamed Tributary	620	93L.061	n/a	NVC

a. CH - chinook, CO - coho, DV - Dolly Varden, RB - rainbow trout, NFC - no fish caught, NS - not sampled
NVC - no visible channel

Table 23. Summary of downstream barriers and fish capture in the No Gold Planning Area, August 1999.

Table 23. Summary of downstream barriers and fish capture in the No Gold Planning Area, August 199

Site #	Local Name	Watershed Code/ILP	Reach #	Map	Fish Species[a]	Downstream Barriers/ Obstructions[b]
29	Miligit Cr.	440-429500-00000	1	93L.051	CO	none
75	Two Falls Cr.	440-578800-00000	1	93L.071	CO, RB, DV	none
2	Limonite Cr.	440-341700-00000	4	93L.052	DV	canyon/velocity barrier in reach 4
3	Limonite Cr.	440-341700-00000	8	93L.052	DV	canyon/velocity barrier in reach 4
4	Limonite Cr.	440-341700-00000	10	93L.052	DV	canyon/velocity barrier in reach 4
73	No Gold Cr.	440-410800-00000	3	103I.060	DV	none
11	Unnamed Tributary	440-355000-00000	1	93L.051	DV	none
16	No Gold Cr.	440-410800-00000	1	93L.051	DV	none
19	Unnamed Tributary	360	1	93L.051	DV	none
21	Unnamed Tributary	440-411000-32900	1	93L.051	DV	none
72	Mattock Cr.	440-389800-00000	2	93L.051	DV	none
32	Unnamed Tributary	444	2	93L.061	DV	none
34	Unnamed Tributary	440-429500-29300-00000	1	93L.061	DV	none
38	Blackberry Cr.	440-439100-00000	2	93L.061	DV	none
46	Unnamed Tributary	440-512000-00000	3	93L.061	DV	none
48	Unnamed Tributary	440-512000-12600-00000	1	93L.061	DV	none
69	Blackberry Cr.	440-439100-00000	3	93L.061	DV	none
59	Unnamed Tributary	440-605000-00000	1	93L.071	DV	none
60	Unnamed Tributary	440-606400-00000	1	93L.071	DV	none
61	Unnamed Tributary	440-613900-00000	1	93L.071	DV	none
62	Unnamed Tributary	440-613900-00000	2	93L.071	DV	none
63	Unnamed Tributary	440-606400-00000	2	93L.071	DV	none
26	Unnamed Tributary	440-423900-00000	1	93L.051	DV, CO	none
30	Miligit Cr.	440-429500-00000	3	93L.061	DV, CO,	none
17	Many Bear Cr.	440-411000-00000	1	93L.051	DV, RB	none
1	Limonite Cr.	440-341700-00000	2	93L.051	DV, RB, CO	none
14	Mattock Cr.	440-389800-00000	1	93L.051	RB	none
55	Unnamed Tributary	3627	1	93L.071	RB	none
39	Blackberry Cr.	440-439100-00000	4	93L.061	RB historical	none
7	Unnamed Tributary	440-341700-41900	1	93L.051	NFC	10 m F in reach 1
44	Unnamed Tributary	440-467900-13300	2	93L.061	NFC	10 m falls at mouth
68	Unnamed Tributary	440-512000-00000	5	93L.061	NFC	25 m F in reach 5
18	Many Bear Cr.	440-411000-00000	4	93L.051	NFC	3 m F in reach 4
23	Unnamed Tributary	440-411000-64800	1	93L.051	NFC	3 m F in reach 4
24	Unnamed Tributary	408	1	93L.051	NFC	3 m F in reach 4
64	ManyBear Cr.	440-411000-00000	5	93L.051	NFC	3 m F in reach 4
47	Unnamed Tributary	440-512000-36700-00000	3	93L.061	NFC	30 m F in reach 2
43	Treasure Cr.	440-467900-00000	3	103I.070	NFC	4 m F in reach 2
8	Unnamed Tributary	440-341700-79500	3	93L.052	NFC	4 m F in reach 3
28	Unnamed Tributary	440	1	93L.051	NFC	40 m C d/s

b. CO - coho, DV - Dolly Varden, RB - rainbow trout, NFC - no fish caught,

a. F - falls, C - cascades

Table 23. Cont'd

Site #	Local Name	Watershed Code/ILP	Reach #	Map	Fish Species[a]	Downstream Barriers/ Obstructions[b]
27	Unnamed Tributary	438	1	93L.051	NFC	40 m C in reach 1
74	Unnamed Tributary	3627	2	103I.070	NFC	5 m F in reach 2
56	Unnamed Tributary	440-560100-00000	3	93L.071	NFC	5 m F in reach 2
41	Unnamed Tributary	620	1	93L.061	NFC	5 m subterrain section d/s
57	Two Falls Cr.	440-578800-00000	3	103I.080	NFC	6 m F in reach 3
6	Unnamed Tributary	440-341700-22400	1	93L.051	NFC	cascade at mouth
5	Unnamed Tributary	91	1	93L.051	NFC	cascades near mouth
70	Unnamed Tributary	440-341700-79500-07600	3	93L.052	NFC	gradient barrier in reach 1
65	Unnamed Tributary	365	1	93L.051	NFC	intermittently subterrain
54	Unnamed Tributary	905	1	93L.061	NFC	no connection to Copper River
77	Unnamed Tributary	492	1	93L.061	NFC	no connection to Copper River, NVC for 100 m+
9	Unnamed Tributary	230	2	93L.051	NFC	none
33	Unnamed Tributary	445	1	93L.061	NFC	none
58	Unnamed Tributary	3640	1	93L.071	NFC	none
50	Unnamed Tributary	440-512000-22900	2	93L.061	NFC	reach 1 is NVC
20	Unnamed Tributary	365	1	93L.051	NS	2 m F in reach 1
22	Unnamed Tributary	392	1	93L.051	NS	3 m F in reach 4 Many Bear
31	Miligit Cr.	440-429500-00000	5	93L.061	NS	350 m F in reach 4
42	Unnamed Tributary	626	1	93L.061	NS	no connection to Copper River
10	Unnamed Tributary	230	3	93L.051	NS	none
71	Unnamed Tributary	440-341700-79500-07600		93L.052	NS	none
12	Unnamed Tributary	242	1	93L.051	NVC	NVC
13	Unnamed Tributary	249	1	93L.051	NVC	NVC
15	Unnamed Tributary	310	2	93L.051	NVC	NVC
25	Unnamed Tributary	430	1	93L.051	NVC	NVC
70	Unnamed Tributary	440-341700-79500-07600	3	93L.052	NVC	NVC
35	Unnamed Tributary	491	1	93L.061	NVC	NVC
36	Unnamed Tributary	492	1	93L.061	NVC	NVC
37	Unnamed Tributary	492	2	93L.061	NVC	NVC
49	Unnamed Tributary	844	1	93L.061	NVC	NVC
51	Unnamed Tributary	842	1	93L.061	NVC	NVC
52	Unnamed Tributary	843	1	93L.061	NVC	NVC
53	Unnamed Tributary	440-512000-22900-00000	1	93L.061	NVC	NVC
80	Unnamed Tributary	620	1	93L.061	NVC	NVC

b. CO - coho, DV - Dolly Varden, RB - rainbow trout, NFC - no fish caught,

a. F - falls, C - cascades

4.7 Wildlife Observations

Wildlife observations were recorded during the survey and included a variety mammal, amphibian and bird species. Black bear (*Ursus americanus*) tracks, scat and sightings, moose (*Alces alces*) droppings, and wolf (*Canius lupus)* tracks were recorded. A bufflehead (*Bucephala albeola*) adult female with young were noted at one site. Northwestern salamander (*Ambystoma gracile),* western toad (*Bufo boreas*), tailed frog (*Ascaphus truei*) tadpoles, as well as an adult and tadpole frogs were recorded. Summaries of wildlife and wildlife sign observations are provided in Table 24.

4.8 Water Quality

Water quality measurements were carried out at each site and included measurement of temperature, pH, and conductivity with hand-held field meters. In addition, turbidity observations were recorded. Table 25 summarizes the water quality data collected during the field survey. The pH ranged from 5.6 to 8.6, while the conductivity ranged from 10 umhos/cm to 240 umhos/cm. The turbidity was clear at most sites but was medium or low at sites with glacial water sources. The flow stage was medium at most sites although low and high flow stage were also recorded, particularly as there were occasional large rain events during the study. Water temperature ranged from 3^{o}C to 15^{o}C.

A water temperature of 3^{o}C was recorded at Site 31 and did not interfere with fish sampling. This site was located at the glacial headwaters of Miligit Creek at an elevation of 1160 m and upstream of a 150 m waterfall. Given the site conditions no fish sampling was conducted at this site.

Table 24. Summary of wildlife observations in the No Gold Planning Area, August 1999.

Table 24. Summary of wildlife observations in the No Gold Planning Area, August 1999.

Site #	Local Name	Watershed Code/ILP	Reach #	Map	Wildlife Observations
7	Unnamed Tributary	440-341700-41900-00000	1	93L.051	moose scat
7	Unnamed Tributary	440-341700-41900-00000	1	93L.051	bear scat
7	Unnamed Tributary	440-341700-41900-00000	1	93L.051	wolf trail
39	Blackberry Cr.	440-439100-00000	4	93L.061	8 bufflehead young and an adult female
42	Unnamed Tributary	626	1	93L.061	black bear sow, cub and yearling
43	Treasure Cr.	440-467900-00000	3	103I.070	tailed frog tadpole
55	Unnamed Tributary	3627	1	93L.071	mayflies
61	Unnamed Tributary	440-613900-00000	1	93L.071	tailed frog tadpole
68	Unnamed Tributary	440-512000-00000	5	93L.061	blackflies
70	Unnamed Tributary	440-341700-79500-07600-0000	3	93L.052	western toad tadpoles
70	Unnamed Tributary	440-341700-79500-07600-0000	3	93L.052	northwestern salamander
70	Unnamed Tributary	440-341700-79500-07600-0000	3	93L.052	frog tadpoles

Table 25. Summary of water quality data collected in the No Gold Planning Area, August 1999.

Table 25. Summary of water quality data collected in the No Gold Planning Area, August 1999.

Site #	Local Name	Watershed Code	Reach #	Map	Flow Stage Low	Flow Stage Medium	Flow Stage High	Water Temp. (oC)	pH	Conductivity (umos/cm)	Turbidity M	Turbidity L	Turbidity C	Intermittent
1	Limonite Cr.	440-341700-00000	2	93L.051		Y		8	8	80			Y	
2	Limonite Cr.	440-341700-00000	4	93L.052		Y		9	8	40		Y		
3	Limonite Cr.	440-341700-00000	8	93L.052		Y		10	7.6	50			Y	
4	Limonite Cr.	440-341700-00000	10	93L.052	Y			6	6.8	10			Y	
5	Unnamed Tributary	91	1	93L.051		Y		9	8	90			Y	
6	Unnamed Tributary	440-341700-22400-00000	1	93L.051		Y		8	8.3	160			Y	
7	Unnamed Tributary	440-341700-41900-00000	1	93L.051		Y		12	7.6	240			Y	
8	Unnamed Tributary	440-341700-79500-00000	3	93L.052		Y		7	7	30		Y		
9	Unnamed Tributary	230	2	93L.051		Y		5	8.1	20			Y	
10	Unnamed Tributary	230	3	93L.051		Y		5	7	20			Y	
11	Unnamed Tributary	440-355000-00000	1	93L.051		Y		9	7.1	50			Y	
14	Mattock Cr.	440-389800-00000	1	93L.051		Y		8	7.2	50			Y	
16	Nogold Cr.	440-410800-00000	1	93L.051		Y		9	7.9	50		Y		
17	Many Bear Cr.	440-411000-00000	1	93L.051		Y		9	7.9	40		Y		
18	Many Bear Cr.	440-411000-00000	4	93L.051		Y		4	6.6	20		Y		
19	Unnamed Tributary	360	1	93L.051		Y		7	7.4	90			Y	
20	Unnamed Tributary	365	1	93L.051		Y		7	8.4	110			Y	
21	Unnamed Tributary	440-411000-32900-00000	1	93L.051	Y			6	7.1	30			Y	
22	Unnamed Tributary	392	1	93L.051	Y			7	7.1	60			Y	
23	Unnamed Tributary	440-411000-64800-00000	1	93L.051		Y		4	6.6	20		Y		
24	Unnamed Tributary	408	1	93L.051		Y		6	7.6	10			Y	
26	Unnamed Tributary	440-423900-00000	1	93L.051		Y		8	8.2	40			Y	
27	Unnamed Tributary	438	1	93L.051		Y		8	7.7	30			Y	
28	Unnamed Tributary	440	1	93L.051		Y		10	7.3	30			Y	
29	Miligit Cr.	440-429500-00000	1	93L.051		Y		6	7.5	20			Y	
30	Miligit Cr.	440-429500-00000	3	93L.061		Y		5	6	10	Y			
31	Miligit Cr.	440-429500-00000	5	93L.061			Y	3	5.6	10	Y			
32	Unnamed Tributary	444	2	93L.061			Y	8	6.1	20			Y	
33	Unnamed Tributary	445	1	93L.061		Y		15	5.9	30		Y		
34	Unnamed Tributary	440-429500-29300-00000	1	93L.061		Y		7	7.6	40			Y	
38	Blackberry Cr.	440-439100-00000	2	93L.061		Y		6	7.8	30			Y	
39	Blackberry Cr.	440-439100-00000	4	93L.061		Y		6	7.1	30		Y		
40	Unnamed Tributary	9901	2	93L.061		Y		6	7.6	60			Y	
41	Unnamed Tributary	9901	3	93L.061		Y		5	7.1	80			Y	

Table 25. Cont'd

Site #	Local Name	Watershed Code	Reach #	Map	Flow Stage Low	Flow Stage Medium	Flow Stage High	Water Temp. (oC)	pH	Conductivity (umos/cm)	Turbidity M	Turbidity L	Turbidity C	Intermittent
42	Unnamed Tributary	626	1	93L.061		Y		7	7.4	20			Y	
43	Treasure Cr.	440-467900-00000	3	103I.070			Y	10	8.2	40			Y	
44	Unnamed Tributary	440-467900-13300-00000	2	93L.061		Y		8	8.4	60			Y	
45	Unnamed Tributary	827	1	93L.061	Y			6	8.6	60			Y	
46	Unnamed Tributary	440-512000-00000	3	93L.061	Y			6	8.6	30		Y		
47	Unnamed Tributary	440-512000-36700-00000	3	93L.061	Y			6	8.2	10		Y		
48	Unnamed Tributary	440-512000-12600-00000	1	93L.061	Y			8	8.2	60			Y	
50	Unnamed Tributary	440-512000-22900-00000	2	93L.061			Y	7	8	120			Y	
54	Unnamed Tributary	905	1	93L.061		Y		11	8.3	20			Y	
55	Unnamed Tributary	3627	1	93L.071	Y			11	8.2	60			Y	
56	Unnamed Tributary	440-560100-00000	3	93L.071		Y		7	8.3	70			Y	
57	Two Falls Cr.	440-578800-00000	3	103I.080		Y		6	7.6	30			Y	
58	Unnamed Tributary	3640	1	93l.071	Y			11	7.6	70			Y	Y
59	Unnamed Tributary	440-605000-00000	1	93L.071		Y		10	8.6	70		Y		
60	Unnamed Tributary	440-606400-00000	1	93L.071		Y		8	8.3	30			Y	
61	Unnamed Tributary	440-613900-00000	1	93L.071	Y			11	8.2	80			Y	
62	Unnamed Tributary	440-613900-00000	2	93L.071	Y			12	8.2	80			Y	
63	Unnamed Tributary	440-606400-00000	2	93L.071	Y			10	8.4	30			Y	
64	ManyBear Cr.	440-411000-00000	5	93L.051		Y		6	7.8	120			Y	
65	Unnamed Tributary	3900	1	93L.051		Y		7	7.8	110			Y	
67	Unnamed Tributary	9901	1	93L.061				6		60			Y	
68	Unnamed Tributary	440-512000-00000	5	93L.061		Y		6	7.8	60			Y	
69	Blackberry Cr.	440-439100-00000	3	93L.061		Y		6	7.9	20			Y	
71	Unnamed Tributary	440-341700-79500-07600	1	93L.052		Y								
72	Mattock Cr.	440-389800-00000	2	93L.051		Y		8	7.9	40			Y	
73	Nogold Cr.	440-410800-00000	3	103I.060	Y			6	7.2	50			Y	
74	Unnamed Tributary	3627	2	103I.070	Y			6	7.7	40			Y	
75	Two Falls Cr.	440-578800-00000	1	93L.071		Y		6	7.5	50			Y	

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APPENDIX I

FDIS Summary and Photographs

Organized By Ascending Site Number

Appendix 1. Index

Site Number	Local Name	Watershed Code/ILP	Reach #	Map
1	Limonite Cr.	440-341700-00000	2	93L.051
2	Limonite Cr.	440-341700-00000	4	93L.052
3	Limonite Cr.	440-341700-00000	8	93L.052
4	Limonite Cr.	440-341700-00000	10	93L.052
5	Unnamed Tributary	91	1	93L.051
6	Unnamed Tributary	440-341700-22400-00000	1	93L.051
7	Unnamed Tributary	440-341700-41900-00000	1	93L.051
8	Unnamed Tributary	440-341700-79500-00000	3	93L.052
9	Unnamed Tributary	230	2	93L.051
10	Unnamed Tributary	230	3	93L.051
11	Unnamed Tributary	440-355000-00000	1	93L.051
12	Unnamed Tributary	242	1	93L.051
13	Unnamed Tributary	249	1	93L.051
14	Mattock Cr.	440-389800-00000	1	93L.051
15	Unnamed Tributary	310	2	93L.051
16	No Gold Cr.	440-410800-00000	1	93L.051
17	Many Bear Cr.	440-411000-00000	1	93L.051
18	Many Bear Cr.	440-411000-00000	4	93L.051
19	Unnamed Tributary	360	1	93L.051
20	Unnamed Tributary	365	1	93L.051
21	Unnamed Tributary	440-411000-32900	1	93L.051
22	Unnamed Tributary	392	1	93L.051
23	Unnamed Tributary	440-411000-64800	1	93L.051
24	Unnamed Tributary	408	1	93L.051
25	Unnamed Tributary	430	1	93L.051
26	Unnamed Tributary	440-423900-00000	1	93L.051
27	Unnamed Tributary	438	1	93L.051
28	Unnamed Tributary	440	1	93L.051
29	Miligit Cr.	440-429500-00000	1	93L.051
30	Miligit Cr.	440-429500-00000	3	93L.061
31	Miligit Cr.	440-429500-00000	5	93L.061
32	Unnamed Tributary	444	2	93L.061
33	Unnamed Tributary	445	1	93L.061
34	Unnamed Tributary	440-429500-29300-00000	1	93L.061
35	Unnamed Tributary	491	1	93L.061
36	Unnamed Tributary	492	1	93L.061
37	Unnamed Tributary	492	2	93L.061
38	Blackberry Cr.	440-439100-00000	2	93L.061
39	Blackberry Cr.	440-439100-00000	4	93L.061
40	Unnamed Tributary	9901	2	93L.061
41	Unnamed Tributary	9901	3	93L.061
42	Unnamed Tributary	626	1	93L.061
43	Treasure Cr.	440-467900-00000	3	103I.070
44	Unnamed Tributary	440-467900-13300-00000	2	93L.061
45	Unnamed Tributary	827	1	93L.061
46	Unnamed Tributary	440-512000-00000	3	93L.061

Site Number	Local Name	Watershed Code/ILP	Reach #	Map
47	Unnamed Tributary	440-512000-36700-00000	3	93L.061
48	Unnamed Tributary	440-512000-12600-00000	1	93L.061
49	Unnamed Tributary	844	1	93L.061
50	Unnamed Tributary	440-512000-22900-00000	2	93L.061
51	Unnamed Tributary	842	1	93L.061
52	Unnamed Tributary	843	1	93L.061
53	Unnamed Tributary	440-512000-22900-00000	1	93L.061
54	Unnamed Tributary	905	1	93L.061
55	Unnamed Tributary	3627	1	93L.071
56	Unnamed Tributary	440-560100-00000	3	93L.071
57	Unnamed Tributary	440-578800-00000	3	103I.080
58	Unnamed Tributary	3640	1	93l.071
59	Unnamed Tributary	440-605000-00000	1	93L.071
60	Unnamed Tributary	440-606400-00000	1	93L.071
61	Unnamed Tributary	440-613900-00000	1	93L.071
62	Unnamed Tributary	440-613900-00000	2	93L.071
63	Unnamed Tributary	440-606400-00000	2	93L.071
64	Many Bear Cr.	440-411000-00000	5	93L.051
65	Unnamed Tributary	3900	1	93L.051
68	Unnamed Tributary	440-512000-00000	5	93L.061
69	Blackberry Cr.	440-439100-00000	3	93L.061
70	Unnamed Tributary	440-341700-79500-07600	3	93L.052
71	Unnamed Tributary	440-341700-79500-07600	1	93L.052
72	Mattock Cr.	440-389800-00000	2	93L.051
73	No Gold Cr.	440-410800-00000	3	103I.060
74	Unnamed Tributary	3627	2	103I.070
75	Two Falls Cr.	440-578800-00000	1	93L.071
77	Unnamed Tributary	492	1	93L.061
80	Unnamed Tributary	620	1	93L.061

APPENDIX II

Project and Interpretative Maps

1:20,000 TRIM maps:

93L.041, 93L.042, 93L.051, 93L.052,
93L.061, 93L.071, 103I.080, 103I.070,
103I.060, 103I.050

APPENDIX III

DNA Sample Submission Form

Appendix 3. Summary of Genetic Sample Data No Gold Planning Area, August 1999.

							UTM						
Genetic Sample Number	**Local_Name**	**Wshd_Code**	**ILP**	**Reach_ID**	**Site_ID**	**Site MAP**	**Zone**	**Easting**	**Northing**	**Agency**	**Species**	**Fish Length (mm)**	**Genetic Structure**
1	Unnamed Tributary		360	1	19	93L.051	9	570582	6048155	C172	DV	124	FR
2	Blackberry Cr.	440-439100-00000		2	38	93L.061	9	568308	6051704	C172	DV	107	FR
9	Mattock Cr.	440-389800-00000		2	72	93L.051	9	565969	6044033	C172	DV	104	FR
10	Mattock Cr.	440-389800-00000		2	72	93L.051	9	565969	6044033	C172	DV	172	FR
21	Two Falls Cr.	440-578800-00000-		1	75	93L.071	9	565359	6066235	C172	RB	110	FR
22	Two Falls Cr.	440-578800-00000		1	75	93L.071	9	565359	6066235	C172	RB	122	FR
23	No Gold Cr.	440-410800-00000		3	73	103I.060	9	564009	6047748	C172	DV	135	FR
24	No Gold Cr.	440-410800-00000		3	73	103I.060	9	564009	6047748	C172	DV	140	FR

ATTACHMENT I -Planning Documents

Phase Completion Reports

Phase 1-3 Planning Report:

Triton Environmental Consultants Ltd. 1999. Phase I-III Pre-Field Project Planning Report. Reconnaissance (1:20,000) Fish and Fish Habitat Stream Inventory in the Kitnayakwa, No Gold, and Williams/Hatchery Working Areas. Prepared for Skeena Cellulose Inc., Terrace, BC.

ATTACHMENT II - Field Cards

Site Cards (75)
Fish Cards (58)

ATTACHMENT III - Photodocumentation

Binder With Photosummary Report
Photographs
Contact Sheets
1 Photo CD's #3711
Labelled Negatives in Plastic Sleeves

ATTACHMENT IV - Digital Data

Watershed Report: (on CD)

Watershed report	NoGold.doc
Figure 1	Overview.apr
Table 1	Watsumm.xls
Table 2	Watsumm2.xls
Table 3	Habitatq.xls
Table 4	Habdescr.xls
Table 5	Features.xls
Table 6	NVC.xls
Table 7	Indifish.xls
Table 8	Fishdist.xls
Table 9	Features.xls
Table 10	Minmax.xls
Table 11	Minmax.xls
Table 12	Minmax.xls
Table 13	Minmax.xls
Table 13	Indifish.xls
Table 14	Fishgrad.xls
Table 15	Sitesum.xls
Table 16	Sitesum.xls
Table 17	Sitesum.xls
Table 18	Efdata2.xls
Table 19	Order.xls
Table 20	Elev2.xls
Table 21	Slope_2.xls
Table 22	Fishbarr.xls
Table 23	Wild.xls
Table 24	Watqual.xls
PhotoForm1	Form1.xls
Appendix I Index	Index.xls
Appendix III table	Genetic.xls

FDIS File (on CD)

FDIS database	Fdisdat.mdb

ARC/INFO (on CD)

Export File containing:	f2199808.e00
Data Source	f2199808.prj
Point Coverage	f2199808.pat
Attribute Table	f2199808.att
Metadata Table	f2199808.meta

ATTACHMENT V -Hardcopy FISS Update Forms

FISS Update Forms
FISS Update Maps 93L/12, 93L/5, 103I/1, 103I/8, 103I/9