

**Fish and Fish Habitat Inventory  
for  
Operational Areas  
Fulton River Watershed  
in the Tanglechain IRM Unit  
CP 435-1**

Prepared by

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for

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## **Disclaimer**

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

## Project Summary Sheet

### Project Reference Information

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

### Watershed Information

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

### Sampling Design

Number of Reaches Sampled	9
Total Sample Sites	6
Field Sampling Dates	Sept. 19, 1996 and July 13, 1997
Fish Species in Watershed	CH, CO, SK, KO, CT, PK, RB, MW, LW, DV, BB, CSU, NSC, LT, CC, PMC, LT

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## **1.0 INTRODUCTION**

The study area is located in the upper portion of the Babine River drainage in north-central British Columbia (Figure 1). Selected streams in the area were inventoried for Forest Practice Code (FPC) stream classification and evaluation of requirements for appropriate management of stream/wetland riparian zone related to cutting permit CP 435-1 (formerly CP 435-2). The area was previously inventoried in 1996 (SKR 1997), but stream classification could not be conclusively assigned until re-sampling established the extent of seasonal use of fish habitat.

The main objectives for this project were:

- to conduct re-sampling at 2 streams to confirm fish absence, or identify seasonal use of fish habitat,
- to describe management concerns for stream/wetland and lake riparian zones in the relevant areas,
- to provide recommendations to ensure adequate protection of stream riparian zones in cases where minimum standards of the FPC do not appear to be sufficient, and
- to provide recommendations for appropriate structures, designs and installation of planned road/stream crossings with regard to concerns for fish, fish migration, and fish habitat.

## **2.0 STUDY AREA**

### **2.1 Location**

The Tanglechain Integrated Resource Management (IRM) Unit is located in north-central British Columbia (Figure 1), and forms part of the Morice Forest District (Prince Rupert Forest Region). The main drainage in the Tanglechain IRM Unit is the Fulton River, which drains into Babine Lake. The study area for this project focused around proposed harvest in CP 435-1 (previously CP 435-2) and in a previously proposed block which will not be harvested (previously CP 435-1). Streams potentially impacted by harvest in the area drain via Tanglechain Creek or directly into the Fulton River. Reaches inventoried are located in the moist-cold subzone of the sub-boreal spruce biogeoclimatic zone (SBS mc<sup>2</sup>) (MOF 1988).

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

## **2.2 Access**

All of the stream survey sites were accessed by road and on foot. No helicopter access was required. The area can be accessed from the Granisle Highway (connecting the village of Granisle to Topley), or the Babine Lake Road to 42 km. A road runs along the northern shore of Fulton Lake and joins the Babine Lake Road at 42 km. This road can also be accessed from the Granisle Highway between Topley Landing and the village of Granisle.

## **2.3 Resource Use**

The study area within the Tanglechain IRM Unit is utilized for forestry purposes, with active logging being proposed for the next 3 years in the immediate study area. No range use plans or range permits were noted for the study area, and a Land Use Planning Document was not available at the time of writing. The Tanglechain IRM Unit has some recreational value, including snow mobiling, a BC Forest Service (BCFS) recreation trail and cross country skiing near the village of Granisle, a BCFS Recreation Site located at the Bear Island View Point Trail (about 6 km north of the village of Granisle), and a BCFS Recreation Site located approximately 15 km north of the village of Granisle. Also, BCFS Recreation Sites are located at Tanglechain Lake, Doris Lake, and Pine Tree Lake (MOF Morice Forest District Recreation Maps 1994). No Protected Areas Strategy (PAS) sites have been identified in the Tanglechain IRM Unit. The Lake Babine Nation has “claimed” parts of the Tanglechain IRM Unit, but no settlements were in process at the time of writing. There are no mineral tenures, placer stakes or coal licences in the study area, however, a mineral tenure was noted adjacent to the Tanglechain area inventoried. The Mineral Tenure is located on NTS map 93L/16W, Mineral Tenure “Cart 1” (240207 or old # 10006), and is located on the west side of CP 435-1 (Files at Ministry of Energy, Mines and Petroleum Resources, updated Feb. 6, 1996). The guide and outfitter territory in the study area is 608G006. Trapline territory relevant to the study is 608T012.

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

## **3.0 METHODS**

### **3.1 Literature Review**

All pertinent literature on the streams inventoried in this project were collected and summarized. Existing data pertaining to stream classification in the Fisheries Information Summary System (FISS), and rivers and lakes files at the B.C. Environment Office (Skeena Region) were summarized and mapped. The information of concern pertained primarily to



fish distribution. Existing watershed codes were assigned to streams. For streams where no watershed codes exist, codes were generated following guidelines in “A guide to the hierarchical watershed coding system for British Columbia”. UTM coordinates at the mouth of each stream were determined from the watershed code dictionary or from 1:50,000 or 1:20,000 maps. Stream order was determined from 1:20,000 NTS map sheets.

### **3.2 Reach Break Identification**

Reach breaks were tentatively identified and mapped by examining 1:20,000 TRIM maps, and air photographs (approx. 1:16,000). The identification of reach breaks followed RIC standards (RIC 1996). Reach breaks were confirmed in the field, when feasible. Reaches are numbered from the mouth of the stream in ascending order. Where the number of reaches from the mouth was not determined, reaches were identified alphabetically in ascending order up the stream.

### **3.3 Stream Assessment**

All sites were accessible by road and on foot. No helicopter access was required. Sections of streams identified as requiring re-sampling in the fall of 1996 (SKR 1997) were re-visited. Fish sampling was conducted at these sites to determine seasonal presence of fish. All fish sampling was conducted with a Smith Root Model 15C backpack electroshocker. An area of approximately 100 m<sup>2</sup> was sampled by electroshocking, and fish captured were identified to species, measured (fork length) and released. Stream information was collected on DFO/MOE stream survey cards, and data was entered into an MsAccess database. Potential or known barriers to fish migration, sensitive sites, and critical fish habitat were identified and mapped, when possible. A photographic record was taken for sample locations, barrier, and other points of interest. Photographs were compiled in a photodocumentation document.

### **3.4 Map Production**

All sections of streams examined were digitized using a Kurta XGT digitizer. Maps were produced in Corel Draw version 5.0. The following is indicated on all maps: watershed codes, reach breaks and reach number, sample sites, stream classification, and fish distribution. Codes for fish species present follow those outlined in FISS, and are indicated on applicable maps.

## **4.0 RESULTS AND DISCUSSION**

The results section describes the streams surveyed to the reach level. General information for relevant mainstems and tributaries are summarized, followed by a more detailed description for each reach inventoried. Reach descriptions include recommended stream, wetland and/or lake classifications (identified following the FPC standards), comments

describing fish habitat types and fish captured at the sites sampled, and recommendations for proposed stream/road crossings and riparian management. Recommendations for riparian management generally fall into one of three types:

1. No additional recommendations are made in cases when FPC standards for riparian management are expected to provide adequate protection to fish and fish habitat.
2. Recommendations for riparian management are provided in cases where FPC standards appear to provide insufficient protection of fish habitat based on
  - reach characteristics, including stream gradient, stream substrate, bank material, and surrounding topography (e.g. wetland, sideslope, valley:channel ratio),
  - fisheries resources in immediate and downstream reaches and/or mainstems,
  - influences of riparian vegetation on fish habitat (e.g. nutrients, LOD, stream temperature, bank stability),
  - potential flood conditions, and
  - forest type and values within riparian reserve and management zones.
3. Recommendations with explanations for S6 classification of streams with S4 default classification under FPC standards. This is exemplified at reaches where:
  - a definite barrier to fish migration exists with no available habitat for resident fish populations upstream (e.g. no potential spawning habitat above barrier or channel width of less than 1.5 m in the Central Interior Region), or
  - a single season's sampling in good fish habitats, and good sampling conditions confirms fish absence above definite barriers to fish migration, or
  - a single season's sampling in available habitat confirms fish absence above a potential barrier in a reach that contains limited fish habitat, or
  - no potential fish habitat was identified in the reach, and no valuable fish habitat is present upstream (e.g. no well defined channel).

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

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

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

#### 4.1 Fulton River Tributary (480-6972)

Watershed code: 480-6972  
Date surveyed: Sept. 19, 1996, July 13, 1997

In addition to a tributary to Tanglechain Creek (see section 4.2), one tributary stream to the Fulton River was also inventoried. This tributary stream drains into the Fulton River approximately 3.3 km downstream of Tanglechain Creek. No physical or biological information could be located for this system. cursory information for Fulton River and Fulton Lake are summarized below to place the Unnamed tributary surveyed into context.

The presence of chinook (*Oncorhynchus tsawyscha*), coho (*O. kisutch*), cutthroat trout (*O. clarki*), pink salmon (*O. gorbusha*), sockeye (*O. nerka*), rainbow trout (*O. mykiss*), mountain whitefish (*Prosopium williamsoni*), lake whitefish (*Coregonus clupeaformis*), largescale suckers (*Catostomus macrocheilus*), northern squawfish (*Ptychocheilus oregonensis*), lake trout (*Salvelinus namyacush*), and sculpin (*Cottus sp.*) in Fulton River have been documented (FISS). Escapement data for Fulton River, available from the Department of Fisheries and Oceans is summarized in Appendix 1. An 18 m high water fall at the outlet of Fulton Lake has been identified as a barrier to fish migration for anadromous fish.

The watershed inventoried for this project drains into Fulton River upstream of Fulton Lake, and is therefore not accessible to anadromous salmonids. However, fisheries data for Chapman Lake (located along the Fulton River, upstream of Fulton Lake) indicates that burbot (*Lota lota*), cutthroat trout (*Oncorhynchus clarki*), lake trout (*Salvelinus namyacush*) and lake whitefish (*Coregonus clupeaformis*) are found upstream of the barrier. In addition to these species, the presence of rainbow trout (*Oncorhynchus mykiss*), and mountain whitefish (*Prosopium williamsoni*) have been documented in other tributaries to the Fulton River upstream of Fulton Lake (FISS).

##### 4.1.1 Unnamed Creek (480-6972-296)

Watershed Code: 480-6972-296  
Map # / ILP #: 93L088 / N.A  
UTM (at mouth): 9.6082566.657976  
Length surveyed: 408 m  
Estimated number of reaches: not determined  
Number of reaches examined: 3

This Unnamed Creek drains into the Fulton River just upstream of Fulton Lake (Figure 2). The watershed drained by this tributary is relatively extensive, and lies to the immediate east of the Tanglechain drainage basin. The mainstem of this stream was inventoried to evaluate potential impacts on fish and fish habitat from harvesting in CP 435-1 (previously CP 435-2).

**Figure 2.** Stream inventory and classification at an unnamed tributary (480-6972-296) to Fulton River and at a small unnamed tributary (480-6972-334-AA1) to Tanglechain Creek which are in contact with planned forest harvest areas in the Tanglechain IRM Unit.

*Reach 1*

NID #/NID Map#:	02017 / 93L088	Site #:	1
Length of Reach:	200 m	Stream Order:	2
Length surveyed:	200 m	Channel Width:	2.0 m
		Gradient:	4%

Initial sampling: Sept. 19, 1996  
Re-sampling: July 13, 1997  
Fish presence: no fish present

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

The lower reach of this stream was sampled to establish the presence of downstream fisheries values and fish habitat. The stream was sampled at a site located 25 m downstream of the road crossing of the Fulton Mainline. The creek bed was dry at the time of the fall survey (Sept. 19, 1996), but some discharge was noted at the culvert. The entire reach from Fulton River to the road crossing was walked in the spring of 1997, and no barriers to fish migration were encountered. Although suitable fish habitat was identified during spring sampling (spring rearing habitat), no fish were captured in 600 s. of electroshocking. The culvert at the road crossing had been identified as a barrier to fish migration during fall sampling in 1996.

The lack of fish in two seasons of sampling indicate that the stream is not fish bearing, and can be classified as S6. Due to the proximity of the lower reach to the Fulton River which presents high fisheries values, 100 % retention in the riparian management zone is recommended.

*Reach 2*

NID #/ NID Map #:	- / -	Site #:	-
Length of Reach:		Stream Order:	2
Length surveyed:		Channel Width:	
		Gradient:	

Initial sampling: not sampled  
Fish presence: none in downstream reach

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

No sample site was established for this reach. The stream has similar stream bed characteristics as found in reach 1, however, the channel is located in a gully with relatively steep side slopes.

100 % retention in the riparian management zone is recommended for this reach, due to the steep nature of the gully, and the presence of downstream fisheries resources.

#### *Reach 4*

NID #/NID Map #:	02062/93L088	Site #:	5
Length of Reach:	not evaluated	Stream Order:	1
Length surveyed:	200 m	Channel Width:	1.1 m
		Gradient:	5%

Initial sampling:	Sept. 19, 1996
Re-sampling:	N.A.
Fish presence:	no fish present downstream

Reach Classification:	S6
Recommended Reach Classification:	<b>S6</b>

This reach was sampled in the fall of 1996 at site 5 (Figure 2), and is located in the southern half of CP 435-1. No electroshocking was conducted in this reach due to the low water level, lack of fish in reach 1 in two seasons, and the presence of an unnatural barrier to fish migration located downstream (culvert in reach 1). Some fish habitat was observed in this section, however, the culvert in reach 1 prevents seasonal fish access to this habitat.

Since re-sampling of reach 1 in the spring indicated lack of fish in more than one season, this reach can be classified as S6. There is limited potential for downstream impacts due to the wetland located downstream of this reach.

#### **4.1.1.1 Unnamed Creek (480-6972-296-675)**

Watershed Code:	480-6972-296-675
Map # / ILP #:	93L088 / N.A.
UTM (at mouth):	9.6084430.658690
Length surveyed:	1165 m
Estimated number of reaches:	3
Number of reaches examined:	2

The confluence of this unnamed stream with 480-6972-296 is located in an extensive wetland (Figure 2). Reach 1 of this stream is located in the wetland, and was not surveyed. Reach 2 drains in a north-south direction, and lies between existing block CP433-1 and the previously proposed block (previously CP 435-1). Reach 3 is the upper reach of this stream, and is located in the western portion of the block previously numbered CP 435-1 (SKR 1996).

### *Reach 2*

NID #/ NID Map #:	-/93L088	Site #:	4
Length of Reach:	1700 m	Stream Order:	1
Length surveyed:	1060 m	Channel Width:	1.1 m
		Gradient:	3%

Initial sampling: Sept. 19, 1996  
Re-sampling: N.A.  
Fish presence: no fish present in mainstem

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

This reach forms the eastern boundary of the harvested block CP 433-1, and runs just west of the western boundary of block CP 435-1. Sections of the channel of this stream appeared to be located in areas impacted by previous operations CP 433-1. It could not be determined if the operations in CP 433-1 impacted the stream, or if the stream bed has moved since operations in CP 433-1 have ceased. The reach was dry at the time of survey. Some potential fish habitat was identified, and may be used by fish on a seasonal basis.

The potential for downstream impacts is minimal due to the location of the wetland in reach 1. This reach can be classified as S6 due to the lack of fish in Reach 1 of the mainstem (see section 4.1.1).

### *Reach 3*

NID #/NID Map #:	- /93L088	Site #:	2
Length of Reach:	640 m	Stream Order:	1
Length surveyed:	200 m	Channel Width:	0.63 m
		Gradient:	5%

Initial sampling: Sept. 19, 1996  
Re-sampling: N.A.  
Fish presence: no fish present in mainstem

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

This reach was dry at the time of survey, and does not offer any suitable fish habitat. The channel was undefined 100 m downstream of the sample site.

This reach can be classified as S6 with limited potential for downstream impacts.

#### 4.1.1.1.1 Unnamed Creek (ILP 02021)

Watershed Code: 480-6972-296-675-AA1  
Map # / ILP #: 93L098 / 02021  
UTM (at mouth): 9.6085920.659450  
Length surveyed:  
Estimated number of reaches: 1  
Number of reaches examined: 1

##### *Reach 1*

NID #/ NID Map #:	- / 93L088	Site #:	-
Length of Reach:		Stream Order:	1
Length surveyed:		Channel Width:	not
defined		Gradient:	

Initial sampling: Sept. 19, 1996  
Re-sampling: N.A.  
Fish presence: no stream located

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

This “stream” drains in a south-western direction between the previously proposed harvest area CP 435-1 and the currently proposed harvest area CP 435-1 (previously CP 435-2) (Figure 2). Although the entire section of the mainstem (Unnamed Creek 480-6972-296-675, reach 3) was walked in the area identified to be the confluence of these two creeks, no defined channel could be located.

More defined channels further upstream can be classified as S6 due to the lack of fish access and limited potential for downstream impacts. If no defined channel is located during block lay out, the classification can be reduced to “no stream identified”.



#### 4.1.1.1.2 Unnamed Creek (ILP 02023)

Watershed Code: 480-6972-296-675-AA2  
Map # / ILP #: 93 L 088 / 02023  
UTM (at mouth): 9.6086090.659350  
Length surveyed:  
Estimated number of reaches: 1  
Number of reaches examined: 1

##### *Reach 1*

NID # / NID Map #:	- / 93L088	Site #:	-
Length of Reach:		Stream Order:	1
Length surveyed:		Channel Width:	not defined
		Gradient:	

Initial sampling: Sept. 19, 1996  
Re-sampling: N.A.  
Fish presence: no fish in mainstem

Reach Classification: S6  
Recommended Reach Classification: S6

This “stream” drains in a south-western direction along the southern boundary of previously proposed CP 435-1. Although the entire section of the mainstem (Unnamed Creek 2a, reach 3) was walked in the area identified to be the confluence of these two creeks, no defined channel could be located.

More defined channels further upstream can be classified as S6 due to the lack of fish access and limited potential for downstream impacts. If no defined channel is located during block lay out, the classification can be reduced to “no stream identified”.

## 4.2 Tanglechain Creek Tributary

Watershed code: 480-6972-334  
Date surveyed: Sept. 17 - Sept. 19, 1996

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

The presence of cutthroat trout (*Oncorhynchus clarki*), rainbow trout (*Oncorhynchus mykiss*), mountain whitefish (*Prosopium williamsoni*), and lake whitefish (*Coregonus clupeaformis*) in Tanglechain Creek has been documented (FISS). In addition to these species, Tanglechain Lake is known to contain Dolly Varden (*Salvelinus malma*; could be bull trout (*S. confluentus*)), peamouth chub (*Mylocheilus caurinus*), largescale suckers (*Catostomus macrocheilus*), longnose suckers (*Catostomus catostomus*), and northern squawfish (*Ptychocheilus oregonensis*). Doris Lake is known to have lake whitefish, peamouth chub, rainbow trout, lake trout (*Salvelinus namayacush*), mountain whitefish, cutthroat trout, largescale suckers, longnose suckers, redbreast shiners (*Richardsonius balteatus*), burbot (*Lota lota*) and northern squawfish. Longnose suckers, peamouth chub, redbreast shiners and cutthroat trout have also been documented in Boomerang Lake. Prickly sculpin (*Cottus asper*), peamouth chub, redbreast shiners, northern squawfish, cutthroat trout, rainbow trout and longnose suckers have been found in Pine Lake.

### 4.2.1 Unnamed Creek (ILP 02020)

Watershed Code: 480-6972-334-AA1  
Map # / ILP #: 93 L 098 / 02020  
UTM (at mouth): 9.6087270.657930  
Length surveyed: 205 m  
Estimated number of reaches: 2  
Number of reaches examined: 2

This stream is an unnamed tributary which drains into the eastern shore of Tanglechain Creek just upstream of Unnamed Creek 480-6972-334-223 (Figure 2 ). Two reaches were identified in this creek from air photo interpretation.

#### *Reach 1*

NID # / NID Map #:	2058/ 93L098	Site #:	6
Length of Reach:	1350 m	Stream Order:	1
Length surveyed:	125 m	Channel Width:	1.2 m
		Gradient:	0.5%

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

Recommended Reach Classification: **S6**

This reach was surveyed just above its confluence with Tanglechain Creek. A 3 m high cascade was located at the mouth of the stream. The cascade exhibited a gradient of 14% for 15 m, and was identified as a potential barrier to fish migration. Upstream of the cascade, the gradient leveled quickly, and the area surrounding the reach was characteristic of a wetland. The stream was dry at the time of the fall survey (Sept. 19, 1996). No fish habitat was present in the section surveyed. Spring re-sampling confirmed that the stream is intermittent, with some sub-surface flow even at high run off periods. No fish were captured in 700 s. of electroshocking, confirming that the cascade is a barrier to fish migration.

The reach appeared to consist of a series of large ponds, which would allow for settling of sediments resulting from freshets and potential impacts of proposed harvesting upstream.. Partial retention is recommended in the riparian management zone to minimize potential downstream impacts on fisheries resources in Tanglechain Creek.

### *Reach 2*

NID #/ NID Map #:	02061/93L098	Site #:	3
Length of Reach:	1900 m	Stream Order:	1
Length surveyed:	80 m	Channel Width:	0.87 m
		Gradient:	8%

Initial sampling: Sept. 19, 1996  
Re-sampling: N.A.  
Fish presence: no fish present downstream

Recommended Reach Classification: **S6**

The second reach of this stream was considerably steeper in nature than the first reach. The second reach forms the northern boundary of previously proposed CP 435-1. This stream was also dry at the time of survey, and no potential fish spawning habitat was identified at the site examined.

The potential for downstream impacts is limited due to the low gradient and intermittent nature of the reach 1.

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

## **APPENDIX 1 - SITE CARDS**

Site cards for all streams inventoried and/or re-sampled in 1996 or 1997 relevant to cutting permits CP 435-1.

Please note:

- photos for 1996 sampling are not included in this report. Please see SKR (1997) for applicable photos.



Unnamed Creek #2 (480-6972-296) - Reach 1

**Plate 1:** Reach 1 - sample site 1. Upstream view (above - left) and downstream view (above - right). View of downstream side of culverts (right).

Unnamed Creek #2 (480-6972-296) - Reach 4



Unnamed Creek #2a (480-6972-296-675) - Reach 2

Unnamed Creek #2a (480-6972-296-675) - Reach 3

Unnamed Creek #2a1 (480-6972-296-675-AA1) - Reach 1

Unnamed Creek #2a2 (480-6972-296-675-AA2) - Reach 1







Unnamed Creek #4 (480-6972-334-AA1) - Reach 2



## **APPENDIX 2 - 1:20,000 TRIM MAPS**

1 map (93E065) illustrating the reach breaks, sampling sites with NID's, ILP's and stream classification for applicable watersheds