

**UPPER EXTENT OF FISH DISTRIBUTION AND
FISH HABITAT IN TWO RELATIVELY PRISTINE
WESTERN WASHINGTON WATERSHEDS**

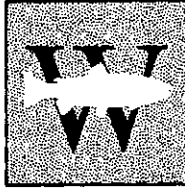
Prepared by

Jamie Glasgow



December 2000

W A S H I N G T O N T R O U T



Upper Extent of Fish Distribution and
Fish Habitat in Two Relatively Pristine
Western Washington Watersheds

by Jamie Glasgow

Prepared for CMER Committee
and Washington Department of Natural Resources,
Forest Practices Division

December 2000
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Executive Summary

The purpose of this cooperative agreement is to collect upper extent of fish and fish habitat data using a protocol established by the Timber, Fish and Wildlife (TFW) Watertype Committee (4/19/99). These data will be used by the Washington Department of Natural Resources to test and refine the model currently being used to produce the Forest and Fish rule map delineating Type S, F, and N waters.

Data were collected on a total of 113 streams – 47 in the Elwha basin and 66 in the Sauk-Suiattle basin. In some cases, data were collected on streams but comprehensive surveys were not executed due to logistical considerations and time constraints. Data sheets for incomplete surveys have been included in this report, labeled “Incomplete survey” in the “Reason for Ending Survey” field. Only those surveys that were executed in full registered points on the maps.

A total of 37 last fish observations were made. Of those observations, 24 were *Oncorhynchus mykiss*, 7 were native char, one observation included both *O. mykiss* and native char (*Salvelinus confluentis* or *S. malma*), one observation included both native char and *O. kisutch*, and four observations were unidentified salmonids not brought to hand. Amphibians, including Tailed frogs (*Ascaphus truei*) and Pacific Giant Salamanders (*Dicamptodon tenebrosus*), were observed throughout the surveys, often well upstream from the upper extent of fish distribution. These observations are incorporated into the notes section of the data sheets.

A total of 81 fish-bearing water boundaries were identified (Fransen et al., 1998). Of these, 45 were “at confluence” boundaries, and 36 were “along channel” boundaries. No “tributary junction” boundaries were observed.

Basin	Watershed	Boundary Type	
		At Confluence	Along Channel
Elwha	Lillian	4	4
	Lost	4	0
	Hayes	2	2
	Godkin	2	3
	Upper Elwha and Minor Tributaries	9	10
Sauk-Suiattle	Buck	5	0
	Downey	4	9
	Sulphur	10	0
	Upper Suiattle and Minor Tributaries	2	3
	White Chuck	3	5

Study Location

Fish and fish habitats were delineated in the Elwha Basin on the Olympic Peninsula, and in the Sauk-Suiattle Basin in the Western Cascades.

<u>Elwha</u>	<u>Sauk-Suiattle</u>
Lillian watershed	Buck Creek
Lost watershed	Downey Creek
Hayes watershed	Sulphur Creek
Godkin watershed	Vista Creek
Buckinghorse watershed	Miner Creek
Delabarre watershed	Upper Suiattle and Minor Tributaries
Upper Elwha and Minor Tributaries	White Chuck River

Methodology

The upper extent of fish and fish habitat distribution were delineated using the protocol created by the TFW Watertype Committee (5/18/99). The protocol has been included as an Appendix to this report. The surveys occurred between 07/18/00 and 10/03/00, with the field revisit of Pumice Creek in the White Chuck basin on 10/19/00. The field form provided by TFW was modified to facilitate note taking, while preserving all required data entry fields. Ultimately, the field data were entered into a Microsoft Access database, reports from which are provided in this report.

Because of the extreme remoteness of the surveys, a central location or base camp was identified for each four (Suiattle basin) or ten (Elwha basin) day trip. Day trips and overnight trips were then taken from each base camp, which were successively further from the trailhead. During those trips requiring substantial travel, commercial packhorses and llamas were used to transport camping and survey equipment to the base camps.

Typically, two person crews worked upstream from the mouth of the stream being surveyed. At the mouth of the stream, the crew collected air and water temperatures using a laboratory grade alcohol thermometer. The measurements and times of the measurements were recorded on the field form. In most cases, an aluminum tag was nailed to a tree near the mouth of the stream to denote the stream's identification. When this was done, the tag's location was noted on the field form. The tag either contained the name of the stream as from the USGS 7.5 minute quad map, or the location of the stream (left or right bank tributary, and distance upstream from the mouth of the channel the tributary enters). The tag was also inscribed with "WT" (Washington Trout), and the date of the survey. A GPS point was collected at the mouth of the stream using a Magellan GPS model 315 unit or a Trimble GeoExplorer II. This point was later used to confirm the location of the stream on a USGS 7.5 minute map.

The crew then surveyed for fish presence, electrofishing upstream using a Smith-Root Model 12 backpack electrofishing unit. The electrofisher was set at G-7, 700 volts. Voltage settings were

adjusted according to fish reaction to the unit, increased when fish were "turned", but not brought to hand, and decreased when fish were slow to recover from the shock. No fish mortalities were observed over the course of the surveys. Electrofishing was conducted following standardized protocols, the electrofishing crewmember working upstream, with the crewmember following several feet behind with a Smith-Root net. Electrofishing was temporarily halted when a fish was brought to hand, at which time the fish was identified, revived, and released. All electrofishing was single pass, and without the use of block-nets.

Once fish presence was established, the crew hiked upstream to a channel break without electrofishing. Channel breaks were identified as substantial changes in gradient, a falls, logjam, or a tributary junction. Fish presence was then determined downstream from the channel break by electrofishing. If no fish were observed immediately downstream from the break, the crew continued electrofishing downstream until fish were encountered. If fish presence was determined immediately downstream from the channel break, the crew continued electrofishing upstream until fish were no longer encountered. This point was marked on the USGS 7.5 minute field map (printed on waterproof paper), and a GPS point was collected. From this point, the crew continued electrofishing upstream from the channel break, until a habitat break was encountered. Habitat breaks were defined in the protocol as:

- Stream gradient increases by 5ft/100ft and extends over 100m.
- A tributary junction reduces main channel flow by 1/3.
- Average channel width < 2ft.
- A natural impassable barrier* occurs.
- Loss of surface flow for at least 100m.

* As defined by the surveyor. At such habitat breaks, notes on the physical characteristics of the barrier were collected.

In some cases, channel breaks were determined to be habitat breaks. At the habitat break, the location was marked on the USGS 7.5 minute field map, and a GPS point was collected. Upstream from the habitat break, pools and likely fish holding habitats were electrofished for at least 400m, or until the gradient was at or above 20% for 100m and channel width was less than 0.6m, or until the stream channel was dry for 100m. When USGS topographic maps showed a substantial reach of river with low gradient upstream from the end of survey point, the survey was expanded to include that reach whenever possible. At the upstream end of survey point, the location was marked on the USGS 7.5 minute field map, and a GPS point was collected. If a fish was observed at any point during this procedure, that location was marked on the USGS 7.5 minute field map, a GPS point was collected, and the crew would continue upstream to identify the habitat break point and the upstream end of survey point.

On some tributaries, the wetted width of the channel was great enough to render electrofishing ineffective, or a confined canyon or steep falls made safe upstream passage with the electrofisher impossible. In these situations, the crew stopped electrofishing and began angling using either barbless flies (size 8,10 and 12 orange "Stimulators" and red "Humpies"). Fishing rods were shortened to approximately 3 feet long to facilitate transport and "dapping" the fly or bait into holding water. On several occasions, the effectiveness of angling was tested using the

electrofisher. In some cases it was observed that, when wetted widths exceeded 4 meters, the electrofisher missed fish that angling did not. The technique used to identify the upper extent of fish distribution was recorded in the field notes.

Notes on bankfull widths, wetted widths, gradients, and debris torrents were collected during the entire length of the survey. Channel gradients were measured using Suunto clinometers, with one crewmember shooting off of another one at a distance of 30m. Distances were estimated, or calculated using Magellan and Trimble global positioning systems (GPS) and a USGS 7.5 minute field map.

Acronyms used in the report appear as follows:

US	upstream	LF	Last Fish
DS	downstream	LH	Last Habitat
LB	Left bank, facing downstream	EOS	End of survey
RB	Right bank, facing downstream	RBT	Rainbow trout (<i>O. mykiss</i>)
BFW	Bankfull width	LWD	Large woody debris
OHW	Ordinary high water	WW	Wetted width
MS	Mainstem	PP	Plunge Pool
Char	Native char of Washington (<i>Salvelinus confluentis</i> or <i>S. malma</i>)		

Data Considerations

All streams surveyed were located within unmanaged areas (the Olympic National Park and the Glacier Peak Wilderness). Although the habitats within both study locations are protected, recreational angling is permitted. In both study locations, two trout over 12 inches may be killed per angler/day. In the White Chuck and Suiattle basins, two trout over 8 inches or two native char over 20 inches may be killed per angler/day. No char may be legally harvested in the Elwha basin. The extent of the effect that the recreational removal of fish from the system may have on the upper extent of fish distribution is unknown at this time.

In some situations, the technique employed to document fish presence, as described in the TFW protocol, may have been inadequate. For example, no fish were observed in several medium gradient (2-15%) medium wetted width (12-120ft) streams upstream from what the protocol defined as the last habitat. This was observed on the following streams:

Stream name	Watershed	Upstream from	WW (ft)	Grade
Lillian River	Elwha	Lill-LH	20-25	7-8%
Lillian 6.2LB	Elwha	Lill6.2LB-LH	12-15	3-5%
Godkin	Elwha	Godk-LF	25-30	3-6%
Godkin 4.2RB	Elwha	Mouth of Godkin 4.2RB	15	3-5%
Hayes	Elwha	Haye-LF	25-30	7-12%
Delabarre 0.3RB	Elwha	Dela0.3RB-LH	25	6-15%
Delabarre	Elwha	Dela-LFLH	12	8%
Mainstem Suiattle	Suiattle	Buck Creek confluence	25-120	2-15%
Downey 6.2LB	Suiattle	Down6.2LB-LFLH	20	3%
Camp Creek	White Chuck	Whit10.4LB-LH	16-18	2-8%

The upper extent of fish habitat was extended well above the observed last fish on Miners Creek in the Suiattle watershed, the mainstem Suiattle, and the Elwha headwater. In each of these reaches and those listed above, it is possible that headwater fishes were present, but in densities low enough to evade detection by electrofishing, angling, and /or visual observation.

Also, the extent to which the seasonal distribution of headwater fishes fluctuates is uncertain. For example, it is possible that reaches identified as fish habitat in July are utilized by spawning populations of native char in October. Timber, Fish and Wildlife intends to address these issues in 2001.

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Basin	Watershed	Tab Number
Elwha	Lillian	1
	Lost	2
	Hayes	3
	Godkin	4
	Upper Elwha and Minor Tributaries	5
Sauk-Suiattle	Buck	6
	Downey	7
	Sulphur	8
	Upper Suiattle and Minor Tributaries	9
	White Chuck	10

Appendix A

Last Fish/Last Habitat Protocol

Timber, Fish, and Wildlife Watertype Committee

May 18, 1999

LAST FISH/LAST HABITAT FORM INSTRUCTIONS

STREAM, RIVER SYSTEM, COUNTY, SURVEYORS, DATE Are self-explanatory.

Reference Point: The reference point must be a distinctive landmark that other surveyors would have little trouble finding if they returned to the location at a later date. Reference points should be marked or "monumented" with a metal tag, permanent sign, or other long lasting marker, so that surveys can be initiated year later using the same reference point. It would be desirable to have these landmarks over or near the channel. Road crossings, stable tributary junctions, and distinctive geological features may serve this purpose. A GPS position can also be used if a reading is possible.

Map Location: Record location to the nearest 1/4 1/4 section. Record Section, Township and Range.

Downstream End of Survey: Identify and record the downstream end of the survey relative to the reference point. It may be the same point as the reference point, a distance (feet) upstream or downstream from the reference point, or a distance and compass direction from the reference point. Record the map location as above.

Upstream End of Survey. Upstream end of survey is recorded simply as the distance upstream from the downstream end of the survey. Record the map location as above.

Reason for Ending Survey: It is important to identify exactly why the survey was terminated. Check one box.

Location on Last Fish and Last Habitat Tables. Record channel distance from downstream end.

Bankful Width: Record the average width between Ordinary High Water Marks of the survey section in the vicinity of the point using a minimum of three measurements. If a tributary junction is at or immediately above the point, measure average width immediately above and below the junction, and record as 'above'/'below'. See WAC 222 for definition of OHWM.

Last Species: Record the one or more species found in the last Fish Location. Note that last fish may be any species of fish; It is not limited to salmon and trout. **Caution: If Bull Trout are encountered in any Columbia River drainage, skip upstream to where channel features have distinctly changed before resuming the last habitat protocol. Report the location of Bull Trout discovery to Scott Craig (USFWS) at 360-534-9320 as soon as possible. This species is listed as endangered under the Endangered Species Act, and exceptional precautions are required. This restriction may be modified in the near future by the USFWS.**

'True', or 'False'. Surveyors must use their experience to make potential last fish calls. They are encouraged to record every call, and subsequently identify whether it was a true call, or a false call. These may be abbreviated to 'T' or 'F'.

Last Habitat Location: In some situations, the last fish and last habitat location are the same. In these situations, record the same location identifier as the last fish location, and record the information on channel features that are likely limiting upstream distribution of fish. In other situations, there is nothing apparent that would limit the distribution of fish above the last fish location. In these cases, the surveyor must proceed further upstream to find one or more features that would limit fish distribution, and then record a last habitat location that is further upstream than the last fish location.

Last Habitat Feature. Upon making a potential last fish determination, surveyors should make a determination of what the last habitat feature is above the last fish. Record one habitat feature per line. If two habitat features are in the same location, record them on separate lines, and use the same location distance. Last habitat may be one or more of the following features:

- a) A 5% increase in gradient that extends for 100 meters (328') in stream channel. Multiple gradient measurements are typically necessary because of sighting distance, and the need to measure gradient along the thalweg of the channel.
- b) The next tributary junction above which the main channel flow is reduced by at least one-third.
- c) An average bankful width of less than 0.6 m (2 ft). Channel width should be measured from OHWM to OHWM every 20 meters (66 ft) for a distance of 100 meters (328 ft). If the average channel width is less than 0.6 meters, the downstream end can be marked as the last habitat.
- d) Natural impassable barrier. The definition of this is left open to the professional judgment of the field surveyor. The physical characteristics of a potential barrier will be recorded on the survey form. This will be used when sufficient data are collected to develop a definition of impassable barriers based on channel width, height of falls, and plunge pool depth.
- e) Loss of surface flow. There must be a complete absence of surface flow for at least 100 m (328 feet). Last habitat would be the downstream end of this 100 m section. There might be dry channel situations caused by water withdrawal or porous stream beds, but upstream segments have year-around surface flow that can support fish. Surveyors are expected to survey at these upstream areas for fish where the upstream basin size and topography suggest that year-around surface flow is possible.

Last Habitat Feature Attributes:

a) Gradient Increase: Record the downstream and upstream gradients. A clinometer should be used.

b) Tributary Junctions: Record the percentage of flow in the two upstream tributaries. Use professional judgement. Flow meters are not required.

c) Average Channel Width of 0.6 m (2 ft) or less: No habitat feature attributes need to be recorded.

d) Impassable Barriers: For falls record the Height of the falls, the residual depth of the pool and whether there is a plunge pool free of debris. For bed rock chutes and cascades, record gradient and slope distance between resting pools in the section believed to be a barrier.

'True', 'False', 'Temporary' or 'Artificial'. The definitions for true, and false are the same as above. "Artificial" calls are where the last fish is found immediately below a culvert or other artificial barrier. "Temporary" refers to impassable barriers that are natural, but temporary. Obstructing log jams are an example of this.

Appendix : Last habitat protocol as drafted by the Water Type Committee 4/19/99

Timing: Surveys must be done between March 30 and July 15. Surveyors should make a good faith effort to sample these streams during periods when there is continuous surface flow and when fish are likely to be present. This may vary by elevation, storm event timing, species life history attributes and from year to year.

Procedure:

1. Survey to last fish

Caution: If Bull Trout are encountered in any Columbia River drainage, skip upstream to where channel features have distinctly changed before resuming the last fish determination. Report the location of Bull Trout discovery to Scott Craig (USFWS) at 360-534-9320 as soon as possible.

2. At last fish, search upstream for any of the following 'last habitat' features. Last habitat may be immediately above last fish, or it may be a considerable distance above last fish.

a) 5% increase in gradient that extends for 100 m (328 ft) in stream channel

OR

b) to next tributary junction where channel flow is less than 30% of main channel flow

OR

c) to point at which the average channel width is less than 0.6 m (2 ft.) wide

OR

d) to natural impassable barrier (see definition below *)

THEN

e) survey for 1/4 mile above habitat break defined in a), b), c), or d) OR where the gradient continues at 20% for 100 m (328 ft) and the channel is <0.6 m (2 ft.) wide, whichever is less distance.

IF no fish are found within 400 m (1/4 mile) above habitat break OR where the gradient continues at 20% for 100 m (328 ft) and the channel is < 0.6 m (2 ft.) wide, record that break as "last habitat" point

IF fish are found within the next 400 m (1/4 mile) above habitat break, continue survey to the next habitat break

Record the following information:

a) point of last fish

b) point of last habitat

c) physical characteristics of features that proved not to be barriers or habitat breaks

d) physical characteristics of features that prove to be barriers or habitat breaks

e) flag and monument the last habitat location. Monumenting typically means placing an inscribed metal tag on a channel adjacent tree or other highly visible feature.

** Impassable barriers – the definition of this is left open to the professional judgment of the field surveyor. The physical characteristics of a barrier that is actually found to be impassable will be recorded on the survey form. This will be used when sufficient data are collected to develop a definition of impassable barriers based on channel width, height of falls, and plunge pool depth.

Off-channel habitat

The model is not able to map off-channel habitat because it is low gradient and typically made up of oxbows that don't have separate basins from a larger system. Therefore, the recommendation will be made from the group to policy that the physical criteria that describes off-channel habitat used in the emergency rule and associated protection should be kept.

Springs and seeps within floodplains of low gradient systems were also acknowledged to be missed by the model. These will also have to be addressed separately by policy.

ATTACHMENT III

LAST FISH/LAST HABITAT SURVEY

Stream _____ River system _____
County _____ Surveyors _____
Date _____ Stream mouth location S _____ T _____ R _____

1. Reference Point (distinctive landmark):

Description _____

Map Location: 1/4 1/4 _____ 1/4 _____ S _____ T _____ R _____

2. Downstream End of Survey:

Location relative to Reference Point: _____

Map Location: 1/4 1/4 _____ 1/4 _____ S _____ T _____ R _____

3. Upstream End of Survey: Distance from downstream end. _____

Map Location: 1/4 1/4 _____ 1/4 _____ S _____ T _____ R _____

4. Average Gradient over the Length of Survey. _____

5. Reason for Ending Survey.

- _____ Surveyed for 400 meters (1/4 mile) above last habitat without finding fish.
- _____ Gradient at 20% for 100 m (328 ft) and the channel is < 0.6 m (2 ft) wide
- _____ Dry stream channel for 100 m (328 ft).
- _____ Lack of Access Permission (invalid survey)
- _____ Other - Does it invalidate the sample? Explain;

6. Last Fish Location: GPS Coordinates

Location (Feet from down-stream end)	Average Channel Bankful Width (ft.)	Last Species (One or more)	Was This the Last Fish? True or False

7. Last Habitat Location: GPS Coordinates:

Location (Feet from down-stream end)	Average Channel Bankful Width	Last Habitat Feature (s). One feature per line.	Feature Attributes; Height, plunge pool character, gradients (see instructions)	True, False, Temp., Or Artificial

8. Elevation of the true Last Habitat location. _____

9. Surrounding land use: Forest ___ Agric. ___ Suburban ___ Other ___ Explain

10. Is There Evidence of Debris Torrent in the Last Ten Years?

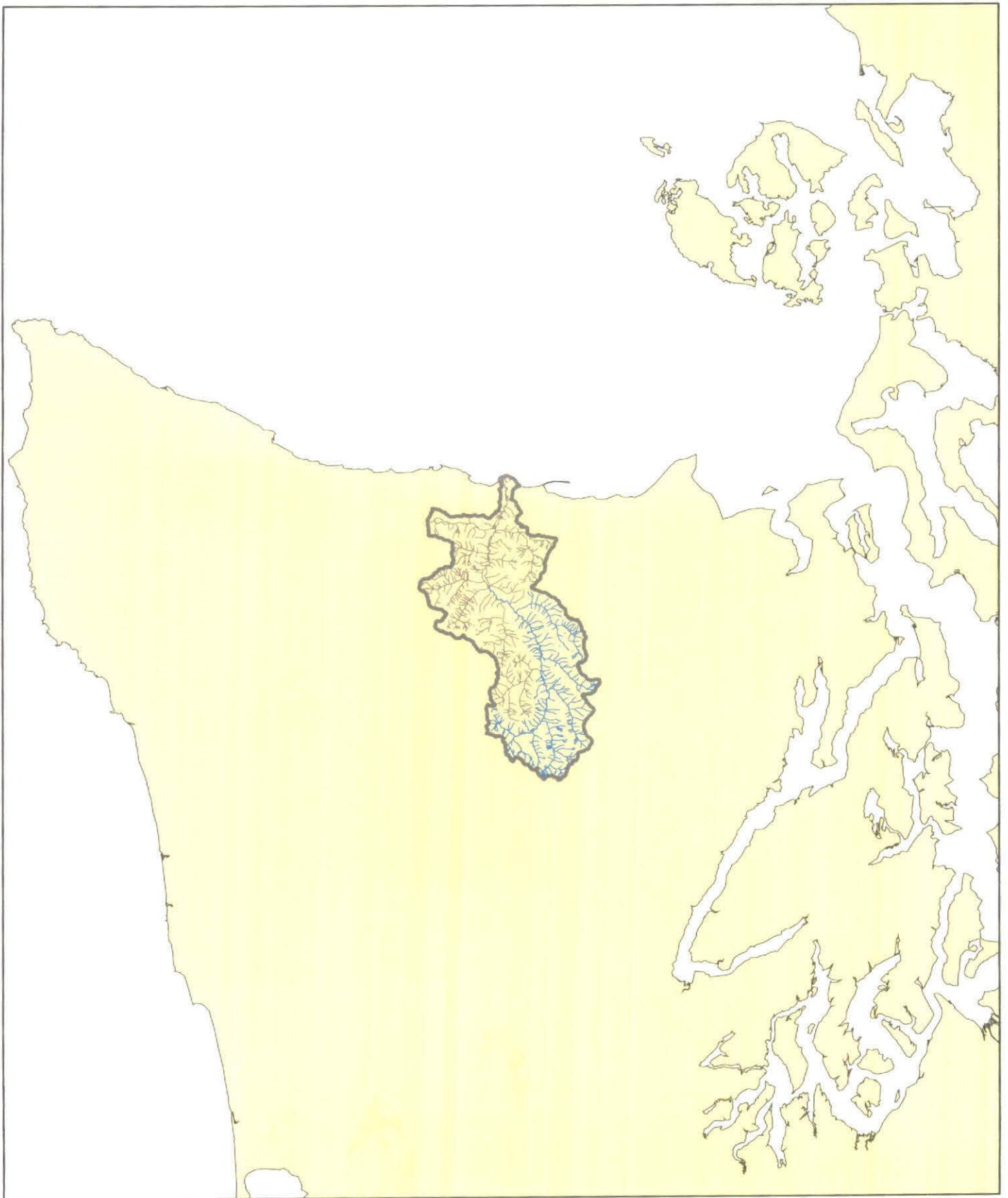
YES NO

Does the debris torrent appear to have affected fish distribution? Explain how you came to your conclusions.

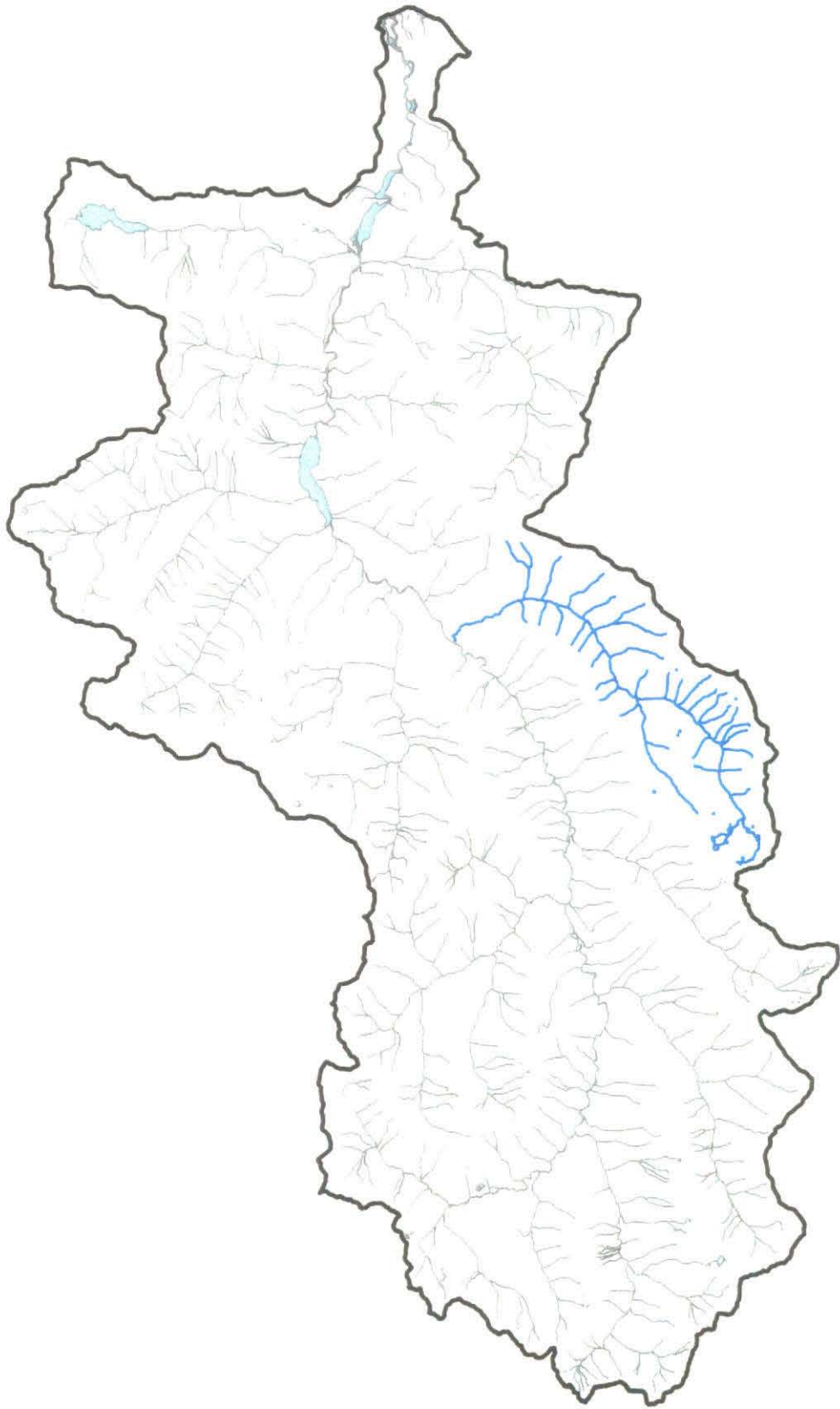
11. Temperature: Air _____ Water _____ Date, time and method for taking measurements:

Comments:

Last Fish Surveys: Elwha Basin



Lillian River Survey



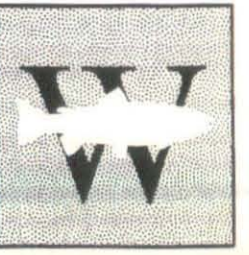
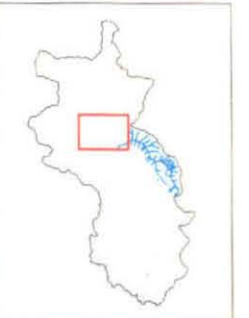
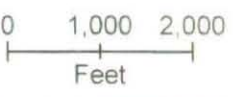
Elwha Basin Lillian River

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Hurricane Hill Quad

Stream Survey

- Fish Bearing
- Fish Habitat
- No Habitat
- Not Surveyed








- Last Fish
- Last Fish/Habitat
- Last Habitat
- Last Habitat, End Survey
- End Survey
- Last Fish/Habitat, End Survey

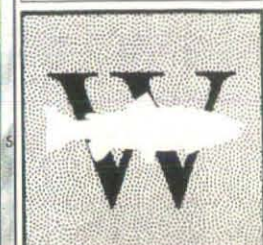
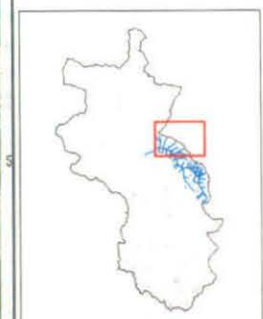
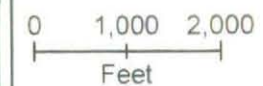
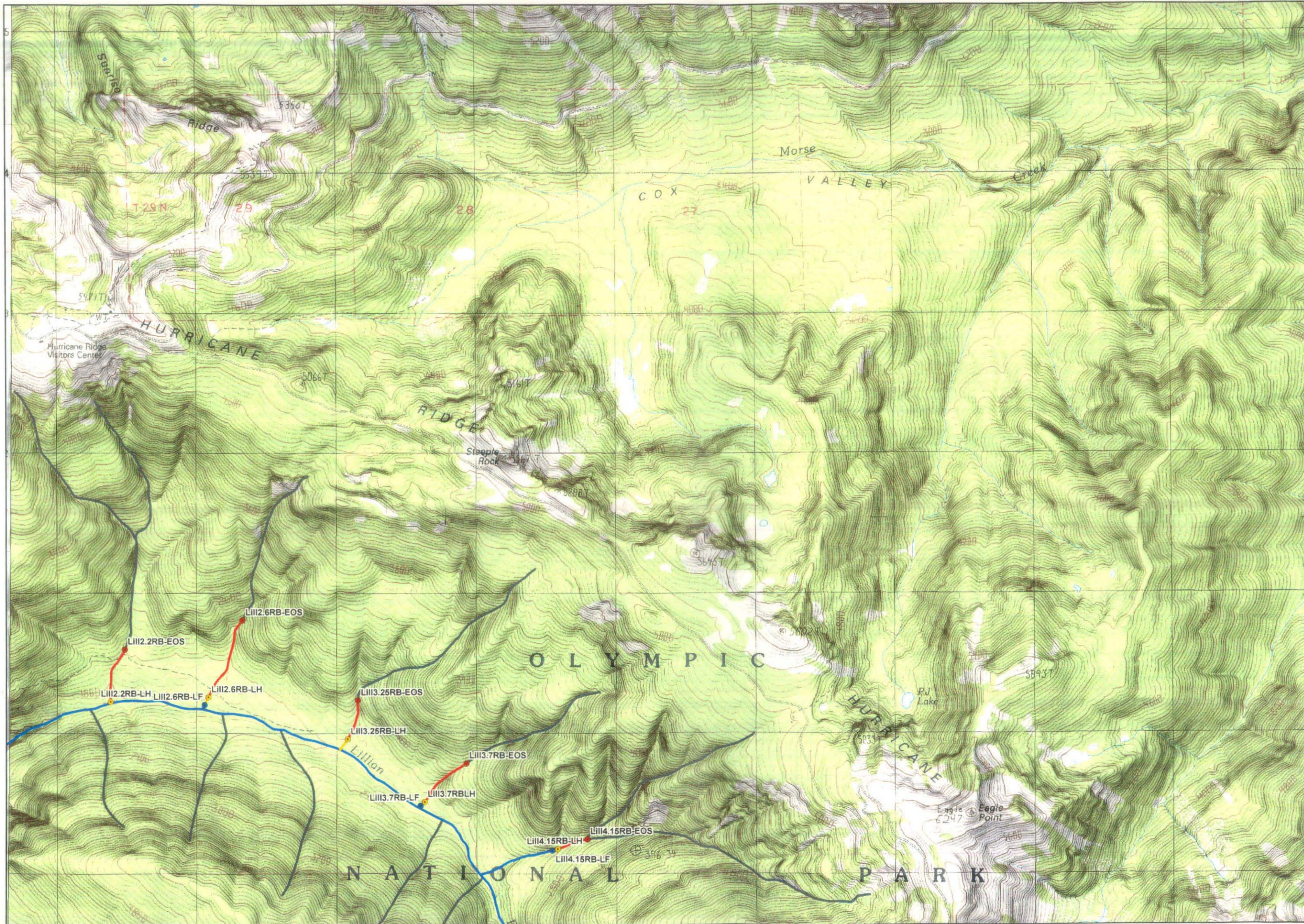


**Elwha Basin
Lillian River**

Page 2 of 3
Mt. Angeles Quad

Stream Survey

-  Fish Bearing
-  Fish Habitat
-  No Habitat
-  Not Surveyed
-  Last Fish
-  Last Fish/Habitat
-  Last Habitat
-  Last Habitat, End Survey
-  End Survey
-  Last Fish/Habitat, End Survey



Lillian RB 2.2rm

River System: Elwha

Crew: Staller, Glasgow, Beardslee

Survey Date: 07/19/00

Reference Point

Landmark Description: metal tag

Marker Location: RB hemlock @ mouth, 20 ft from water's edge

Downstream End of Survey

Relative to Reference Point: same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 1360

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other:

Detection Method Above Last Fish: Electrofishing

Debris torrent in Last 10 yrs?

Debris torrent affects fish distribution?

Air Temperature (C): 12

Water Temperature (C): 9.5

Temperature Time: 9:50 AM

Notes:

Gradients 20-30% beginning 30ft up from mouth to end of survey. Large boulder drops (4-8 ft) and plunge pool steps with debris jams, large wood.

Tailed frogs at 20-30% at trail crossing, 0.6 miles from mouth. Small RB trib enters .25 miles from mouth, 40% grade, 3-4' OHW. Trib not surveyed.

Last Fish Location:

Label:

Average Bankfull Width (ft.):

Last Species:

Habitat Notes: no fish observed

Significant Habitat Overcome:

Last Habitat Location:

Label: Lill2.2RB-LH

Distance To Downstream End (ft.): 38

Average Bankful Width (ft.): 15

Habitat Feature: Gradient Increase

Status: Permanent

Attributes: DS = 4%, US = 20-30%

End of Survey Location:

End of Survey Point Label: Lill2.2RB-EOS

Lillian RB 2.6rm

River System: Elwha

Crew: Staller, May, Beardslee, Glasgow

Survey Date: 07/18/00

Reference Point

Landmark Description: metal tag

Marker Location: RB cedar @ mouth

Downstream End of Survey

Relative to Reference Point: same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 2340

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other:

Detection Method Above Last Fish: Electofishing

Debris torrent in Last 10 yrs?

Debris torrent affects fish distribution?

Air Temperature (C): 12

Water Temperature (C): 7.5

Temperature Time: 9:48 AM

Notes:

Four tailed frogs observed in 28% gradient waters. Uppermost frog observed 600ft downstream from end of survey. Frogs overcame step-pool series with 3 to 9 ft drops.

Last Fish Location:

Label: Lill2.6RB-LF

Average Bankfull Width (ft.): 10 Last Species: RBT

Distance to DS End (ft.): 118

Habitat Notes: 10% gradient, LWD step pools, boulder cobble substrate.

Significant Habitat Overcome:

Last Habitat Location:

Label: Lill2.6RB-LH

Distance To Downstream End (ft.): 317

Average Bankful Width (ft.): 10

Habitat Feature: Gradient Increase

Status: Permanent

Attributes: DS gradient = 10%, US gradient = 15-18% over 100m. Habitat upstream of this point looks suitable for another 500 feet, should be resurveyed in fall.

End of Survey Location:

End of Survey Point Label: Lill2.6RB-EOS

Lillian RB 3.25rm

River System: Elwha

Crew: Staller, May

Survey Date: 07/21/00

Reference Point

Landmark Description: metal tag

Marker Location: RB alder at mouth, 5' from waters edge

Downstream End of Survey

Relative to Reference Point: same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 1255

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other:

Detection Method Above Last Fish: Electrofishing

Air Temperature (C): 23

Debris torrent in Last 10 yrs?

Water Temperature (C): 10

Debris torrent affects fish distribution?

Temperature Time: 11:30 AM

Notes:

This stream has stable banks with cobble, boulder, gravel substrates. US 200' from the mouth the slope picks up to 16 to 18% than at 500' it picks up to 20 to 22% than at 800' it increases to above 25%. No fish were found on this stream. Survey may be pre-emergence? We found 15 tadpole and 2 adult tailed frogs, some above 20%.

Last Fish Location:

Label:

Average Bankfull Width (ft.):

Last Species:

Habitat Notes: no fish observed

Significant Habitat Overcome:

Last Habitat Location:

Label: Lill3.25RB-LH

Distance To Downstream End (ft.): 301

Average Bankfull Width (ft.): 7

Habitat Feature: Gradient Increase

Status: Permanent

Attributes: DS 13%, US 20%

End of Survey Location:

End of Survey Point Label: Lill3.25RB-EOS

Lillian RB 3.7rm

River System: Elwha

Crew: Staller, May

Survey Date: 07/21/00

Reference Point

Landmark Description: metal tag

Marker Location: RB doug fir 80' US from where the stream enters Lillian River, just above a 5' debris jam

Downstream End of Survey

Relative to Reference Point: 50' down at the mouth of the stream

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 1560

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other:

Detection Method Above Last Fish: Electrofishing

Debris torrent in Last 10 yrs?

Debris torrent affects fish distribution?

Air Temperature (C): 22

Water Temperature (C): 12

Temperature Time:

Notes:

We caught an 8" rainbow at the mouth than a 4" rainbow up 80ft where there is a 5' drop debris jam. Five tailed frogs were caught above the last habitat point some in >20% gradients. Although this stream had suitable habitat no juvenile fish were seen at the time of the survey.

Last Fish Location:

Label: Lill3.7RB-LF

Average Bankfull Width (ft.): 14 Last Species: RBT

Habitat Notes: debris jam pool

Distance to DS End (ft.): 75

Significant Habitat Overcome:

Last Habitat Location:

Label: Lill3.7RB-LH

Distance To Downstream End (ft.): 205

Habitat Feature: Natural Barrier

Attributes: boulder cascade 8'drop with 22% slope above

Average Bankfull Width (ft.): 14

Status: Permanent

End of Survey Location:

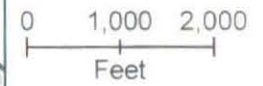
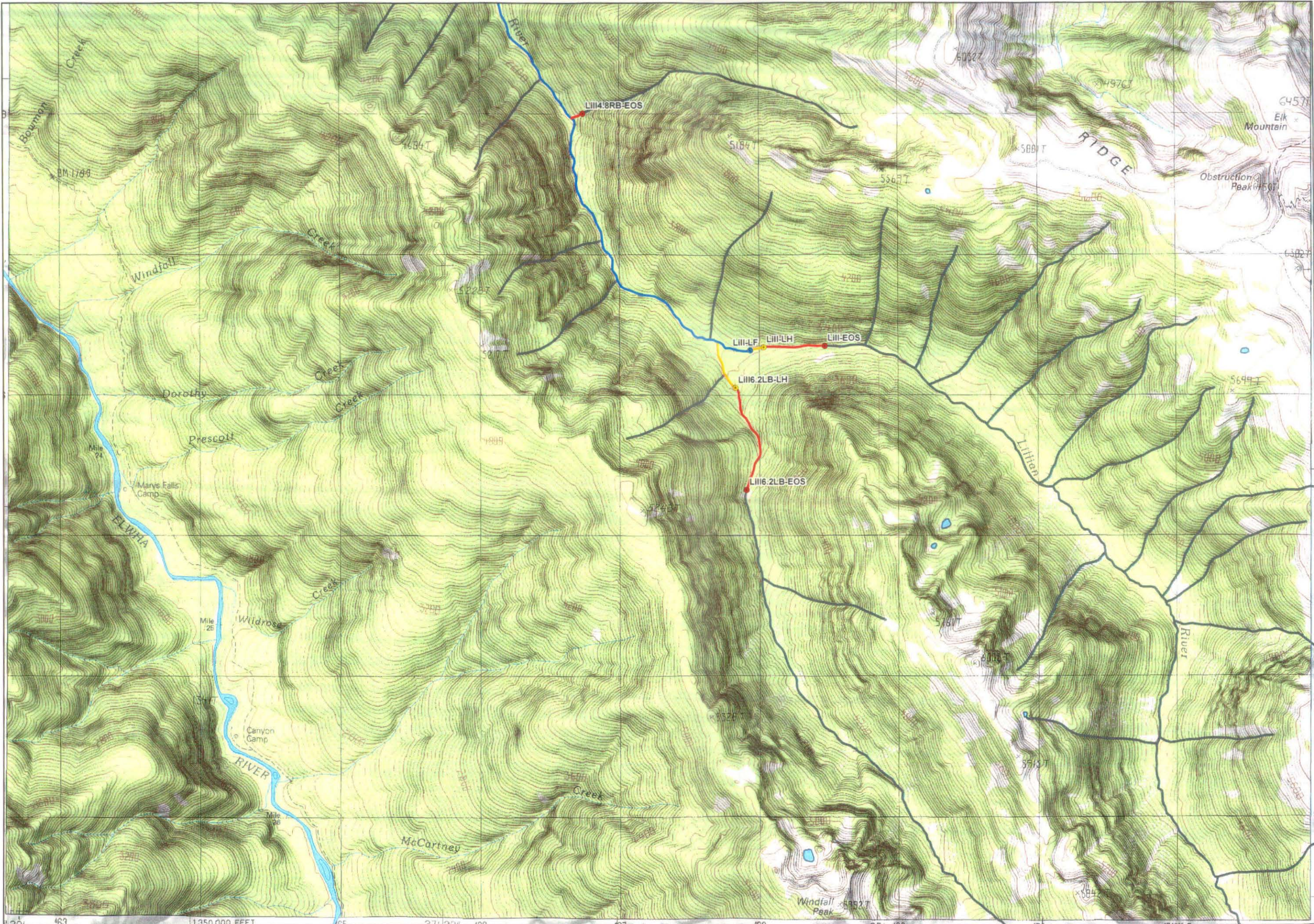
End of Survey Point Label: Lill3.7RB-EOS

**Elwha Basin
Lillian River**

Page 3 of 3
Mt. Angeles Quad

Stream Survey

-  Fish Bearing
-  Fish Habitat
-  No Habitat
-  Not Surveyed
-  Last Fish
-  Last Fish/Habitat
-  Last Habitat
-  Last Habitat End Survey
-  End Survey
-  Last Fish/Habitat End Survey



Lillian RB 4.15rm

River System: Elwha

Crew: Staller, Glasgow, Beardslee

Survey Date: 07/20/00

Reference Point

Landmark Description: metal tag

Marker Location: RB hemlock 20' up from the edge of the stream at the mouth

Downstream End of Survey

Relative to Reference Point: same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 2670

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other: Gradients increases to >25%. Upstream is 25% and higher.

Detection Method Above Last Fish: Electofishing

Air Temperature (C): 14

Debris torrent in Last 10 yrs?

Water Temperature (C): 10

Debris torrent affects fish distribution?

Temperature Time: 10:50 AM

Notes:

At the mouth this stream is 12' wetted and 18' BFW and 14 to 16% up 120' it picks up to 18 to 20% with 1 to 4' step pools the stream continues up at 14 to 20% up for 600' than increases to 18 to 22% up to the last fish location with 5 to 8' boulder and debris jam than averages 25% above with some 30% reaches. The stream has mostly boulder, cobble and gravel substrates with some scour. We eletrofished for about 500' in up to 30% slope and did not find more fish above the RB trib at the LH point.

Last Fish Location:

Label: Lill4.15RB-LF

Average Bankfull Width (ft.): 15 Last Species: RBT

Distance to DS End (ft.): 1808

Habitat Notes: 20% gradients with 3 to 8' step pools and debris jams

Significant Habitat Overcome:

18 to 20% step pools and debris jams with 5 to 8' drops

Last Habitat Location:

Label: Lill4.15RB-LH

Distance To Downstream End (ft.): 1932

Average Bankful Width (ft.): 15

Habitat Feature: Gradient Increase

Status: Permanent

Attributes: 2' BFW trib enters stream on RB, slopes increase to 25% with back to back cascades

End of Survey Location:

End of Survey Point Label: Lill4.15RB-EOS

Lillian RB 4.8rm

River System: Elwha

Crew: Staller, Glasgow, Beardslee

Survey Date: 07/20/00

Reference Point

Landmark Description: metal tag

Marker Location: 30' from the RB at the mouth on a 10" dia. Hemlock

Downstream End of Survey

Relative to Reference Point: at the mouth of the stream

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 290

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other: entire reach is above 35% gradient

Detection Method Above Last Fish: Electrofishing

Air Temperature (C): 18

Debris torrent in Last 10 yrs?

Water Temperature (C): 10

Debris torrent affects fish distribution?

Temperature Time: 11:50 AM

Notes:

This stream has a steep gradient at the mouth. It heads up through an 80' wide cobble and boulder field from a recent debris flow with some willow, stinky current, and nettle and other open meadow type plants up to a LB trib about 350' US which shows evidence of continuing debris torrent scour while the main stream has large old growth. Both head up at +30 % slope with lots of woody debris and step pools.

Last Fish Location:

Label:

Average Bankfull Width (ft.):

Last Species:

Habitat Notes: no fish observed

Significant Habitat Overcome:

Last Habitat Location:

Label:

Distance To Downstream End (ft.): 0

Average Bankfull Width (ft.): 10

Habitat Feature: Natural Barrier

Status: Permanent

Attributes: 35% gradient from mouth all the way up

End of Survey Location:

End of Survey Point Label: Lill4.8RB-EOS

Lillian LB 6.2rm (South Fork)

River System: Elwha

Crew: Staller, Yacker

Survey Date: 10/03/00

Reference Point

Landmark Description: none

Marker Location: none

Downstream End of Survey

Relative to Reference Point: at confluence with main fork Lillian River LMK28

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 3830

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other:

Detection Method Above Last Fish: Angling

Debris torrent in Last 10 yrs?

Debris torrent affects fish distribution?

Air Temperature (C): 3.7

Water Temperature (C): 3.2

Temperature Time: 9:00 AM

Notes:

No fish observed in the South Fork, but observed fish 400' below the confluence on the main fork. At the confluence this stream is 20' OHW with a 4-5% gradient for 800'. A bedrock cascade with 8' and 12' falls over 300' run with a 20% over all slope and continues up at 18to 22% up 1200' more than levels off to 8 to 10%. No fish sighted to the end of the survey.

Last Fish Location:

Label:

Average Bankfull Width (ft.):

Last Species:

Habitat Notes: No fish observed

Significant Habitat Overcome:

Last Habitat Location:

Label: Lill6.2LB-LH

Distance To Downstream End (ft.): 1201

Average Bankfull Width (ft.): 20

Habitat Feature: Natural Barrier

Status: Permanent

Attributes: bedrock cascade with 8' than 12' falls in 20% slope over 200' run

End of Survey Location:

End of Survey Point Label: Lill6.2LB-EOS

Lillian river

River System: Elwha

Crew: Staller, Yacker

Survey Date: 10/04/00

Reference Point

Landmark Description: none

Marker Location: 200' DS of RB Trib @ rm 2.2

Downstream End of Survey

Relative to Reference Point: 400' DS confluence with South Fork Lillian

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 24103

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other:

Detection Method Above Last Fish: Angling

Debris torrent in Last 10 yrs?

Debris torrent affects fish distribution?

Air Temperature (C): 3.5

Water Temperature (C): 3.2

Temperature Time: 8:45 AM

Notes:

Due to remoteness of this survey we surveyed by angleing and visual only. The stream slope was only 8 to 10% above the falls and it has nice habitat. Fish are known to be planted in the past at lake Lillian at this streams headwater so isolated pockets of fish may exist above these falls but we did not see any in the area we surveyed (1/4 mi. above the falls)..

Last Fish Location:

Label: Lill-LF

Average Bankfull Width (ft.): 22 Last Species: RBT

Habitat Notes: 8to 10% gradient boulder cascades

Distance to DS End (ft.): 22332

Significant Habitat Overcome:

numerous boulder and debris jams and cascades

Last Habitat Location:

Label: Lill-LH

Distance To Downstream End (ft.): 22658

Habitat Feature: Natural Barrier

Attributes: 25' falls

Average Bankfull Width (ft.): 22

Status: Permanent

End of Survey Location:

End of Survey Point Label: Lill-EOS

Lost River Survey

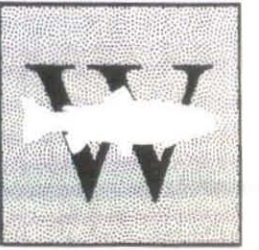
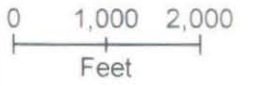
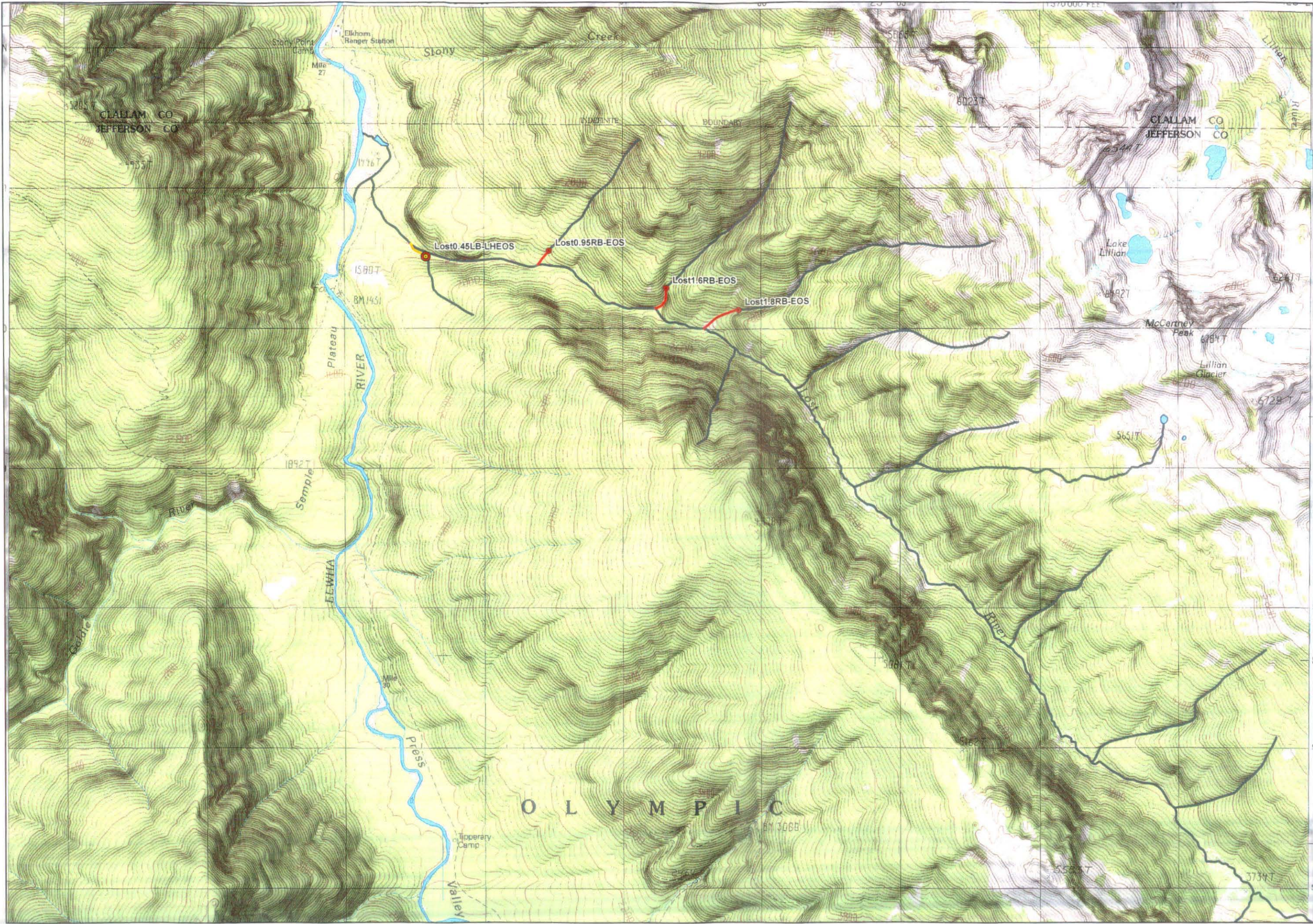


Elwha Basin Lost River

Page 1 of 1
McCartney Pk. Quad

Stream Survey

- Fish Bearing
- Fish Habitat
- No Habitat
- Not Surveyed
- Last Fish
- Last Fish/Habitat
- Last Habitat
- Last Habitat, End Survey
- End Survey
- Last Fish/Habitat, End Survey



Lost LB 0.45rm

River System: Elwha

Crew: Staller, Bennett

Survey Date: 08/04/00

Reference Point

Landmark Description: None

Marker Location: None

Downstream End of Survey

Relative to Reference Point: Mouth

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 481

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other:

Detection Method Above Last Fish: Visual

Debris torrent in Last 10 yrs?

Debris torrent affects fish distribution?

Air Temperature (C):

Water Temperature (C):

Temperature Time: 9:30 AM

Notes:

This stream was dry at the time of the survey. Near mouth (in the Lost River floodplain) the channel appears to migrate. The downstream-most 300' is below 5% gradient and 4' OHW. Up stream it enters a steep ravine above 20% and is still completely dry with a 2' channel width.

Last Fish Location:

Label:

Average Bankfull Width (ft.):

Last Species:

Habitat Notes: No Fish Observed

Significant Habitat Overcome:

Last Habitat Location:

Label: Lost0.45LB-LHEOS

Distance To Downstream End (ft.): 481

Average Bankfull Width (ft.): 4

Habitat Feature: Natural Barrier

Status: Permanent

Attributes: Dry channel with +20% gradient

End of Survey Location:

End of Survey Point Label: Lost0.45LB-LHEOS

Lost RB 0.95rm

River System: Elwha

Crew: Staller, Bennett

Survey Date: 08/04/00

Reference Point

Landmark Description: None

Marker Location: None

Downstream End of Survey

Relative to Reference Point: Mouth

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 419

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other:

Detection Method Above Last Fish: Visual

Debris torrent in Last 10 yrs?

Debris torrent affects fish distribution?

Air Temperature (C):

Water Temperature (C):

Temperature Time:

Notes:

This stream is mostly dry with a steep gradient from the mouth upstream.

Last Fish Location:

Label:

Average Bankfull Width (ft.):

Last Species:

Habitat Notes: No Fish Observed

Significant Habitat Overcome:

Last Habitat Location:

Label:

Distance To Downstream End (ft.): 0

Average Bankfull Width (ft.): 3

Habitat Feature: Natural Barrier

Status: Permanent

Attributes: 20-30% at the mouth with a small trickle of water. Dries up about 400' upstream.

End of Survey Location:

End of Survey Point Label: Lost0.95RB-EOS

Lost RB 1.6rm

River System: Elwha

Crew: Staller, Bennett

Survey Date: 08/04/00

Reference Point

Landmark Description: None

Marker Location: None

Downstream End of Survey

Relative to Reference Point: Mouth

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 600

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other:

Detection Method Above Last Fish: Visual

Debris torrent in Last 10 yrs?

Debris torrent affects fish distribution?

Air Temperature (C):

Water Temperature (C):

Temperature Time:

Notes:

As far as we could see up into the canyon above the slope was +30% no chance for fish passage.

Last Fish Location:

Label:

Average Bankfull Width (ft.): Last Species:

Distance to DS End (ft.):

Habitat Notes: No Fish Observed

Significant Habitat Overcome:

Last Habitat Location:

Label:

Distance To Downstream End (ft.): 0

Average Bankfull Width (ft.): 4

Habitat Feature: Natural Barrier

Status: Permanent

Attributes: +30% slope and small summer flow 1.5' wetted

End of Survey Location:

End of Survey Point Label: Lost1.6RB-EOS

Lost RB 1.8rm

River System: Elwha

Crew: Staller, Bennett

Survey Date: 08/04/00

Reference Point

Landmark Description: None

Marker Location: None

Downstream End of Survey

Relative to Reference Point: Mouth

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 962

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other:

Detection Method Above Last Fish: Electofishing

Debris torrent in Last 10 yrs?

Debris torrent affects fish distribution?

Air Temperature (C):

Water Temperature (C):

Temperature Time:

Notes:

2' wetted width, dried up up above about 400'. +20% gradient at the mouth increasing US.

Last Fish Location:

Label:

Average Bankfull Width (ft.):

Last Species:

Habitat Notes: No Fish Observed

Significant Habitat Overcome:

Last Habitat Location:

Label:

Distance To Downstream End (ft.): 0

Average Bankfull Width (ft.): 4

Habitat Feature: Natural Barrier

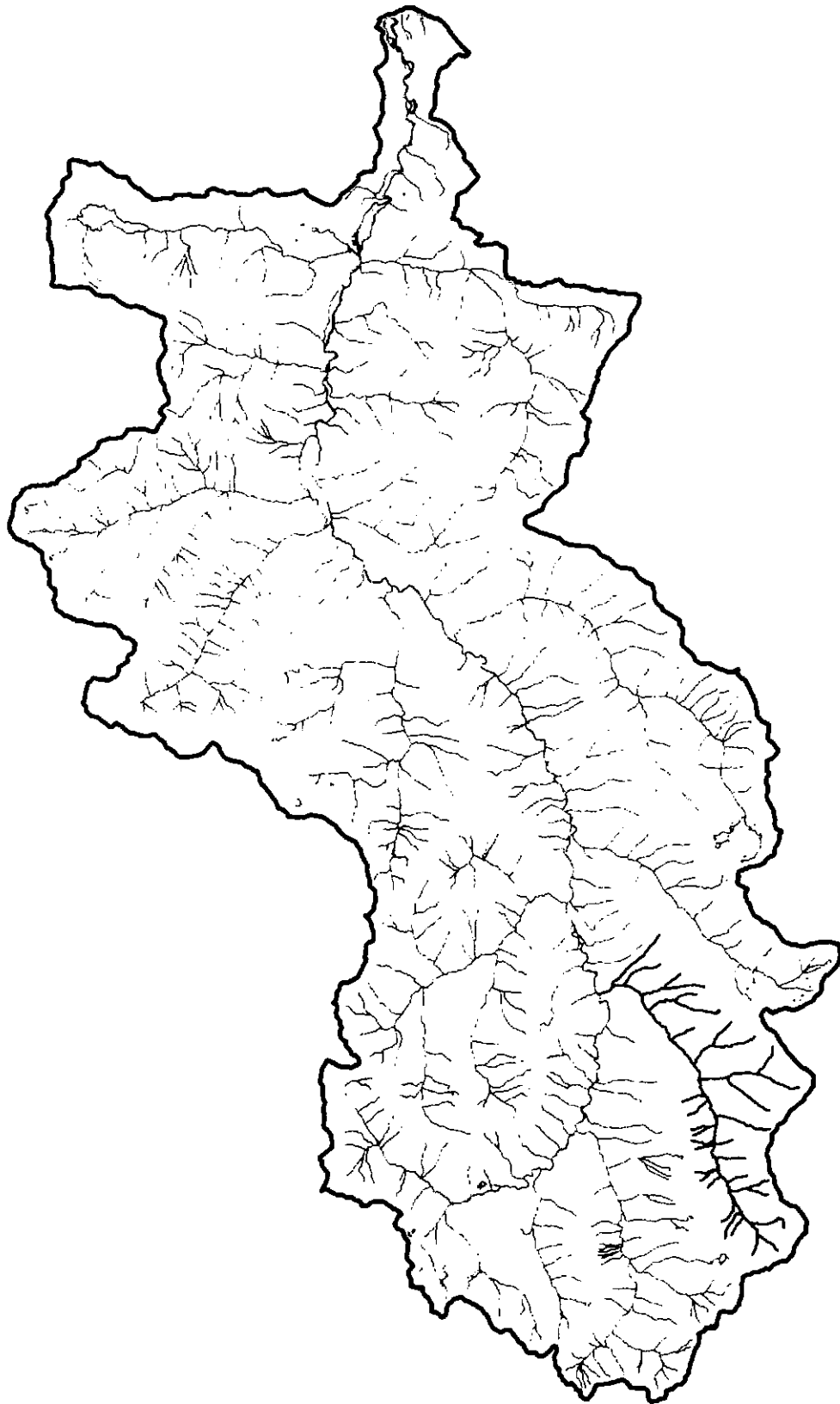
Status: Permanent

Attributes: +20% gradient getting steeper US

End of Survey Location:

End of Survey Point Label: Lost1.8RB-EOS

Hayes River Survey

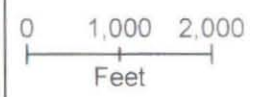
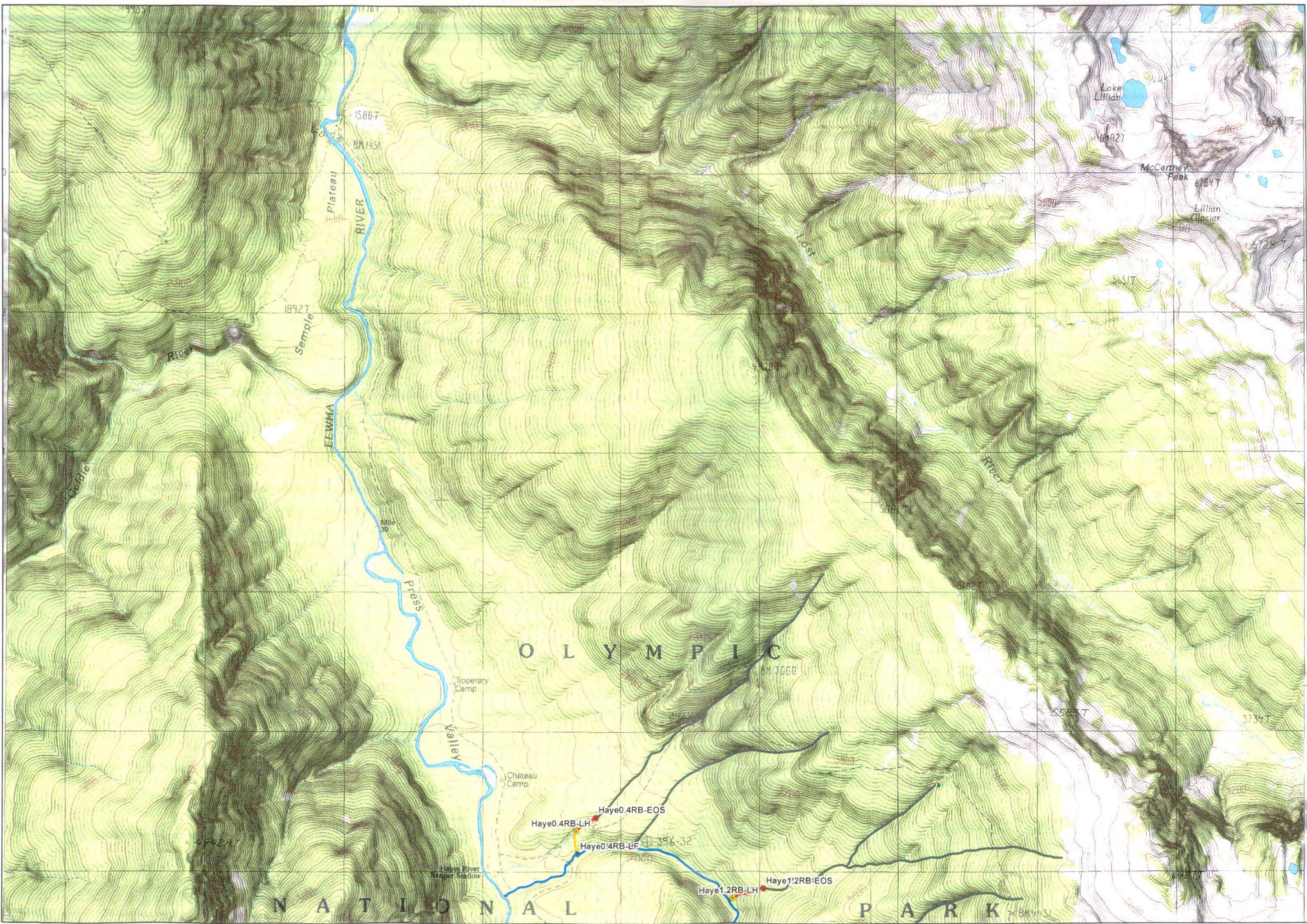


Elwha Basin Hayes River

Page 1 of 2
McCartney Pk. Quad

Stream Survey

- Fish Bearing
- Fish Habitat
- No Habitat
- Not Surveyed
- Last Fish
- Last Fish/Habitat
- Last Habitat
- Last Habitat, End Survey
- End Survey
- Last Fish/Habitat, End Survey



Hayes RB 0.4rm

River System: Elwha

Crew: Staller, Rainwater

Survey Date: 09/20/00

Reference Point

Landmark Description: Metal tag on 30" dbh Grand fir

Marker Location: LB, 25' from mouth

Downstream End of Survey

Relative to Reference Point: 25' DS, at mouth

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 1135

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other:

Detection Method Above Last Fish: Electrofishing

Air Temperature (C): 13.5

Debris torrent in Last 10 yrs?

Water Temperature (C): 9

Debris torrent affects fish distribution?

Temperature Time: 11:15 AM

Notes:

Due to debris jam this stream has changed course. USGS maps show this stream flowing into the Elwha by the rangers cabin. Now it flows into Hayes river 75' above the trail crossing at RM .4, shortening the stream by over 1000'. The debris torrent that created the jam may be over 10 years old. The LH point is about 75' above the jam. At this point the stream enters a ravine and gradient increases to +20%.

Last Fish Location:

Label: Haye0.4RB-LF

Average Bankfull Width (ft.): 8 Last Species: RBT

Distance to DS End (ft.): 11

Habitat Notes: 10% slope with small step pools.

Significant Habitat Overcome:

Last Habitat Location:

Label: Haye0.4RB-LH

Distance To Downstream End (ft.): 562

Average Bankfull Width (ft.): 8

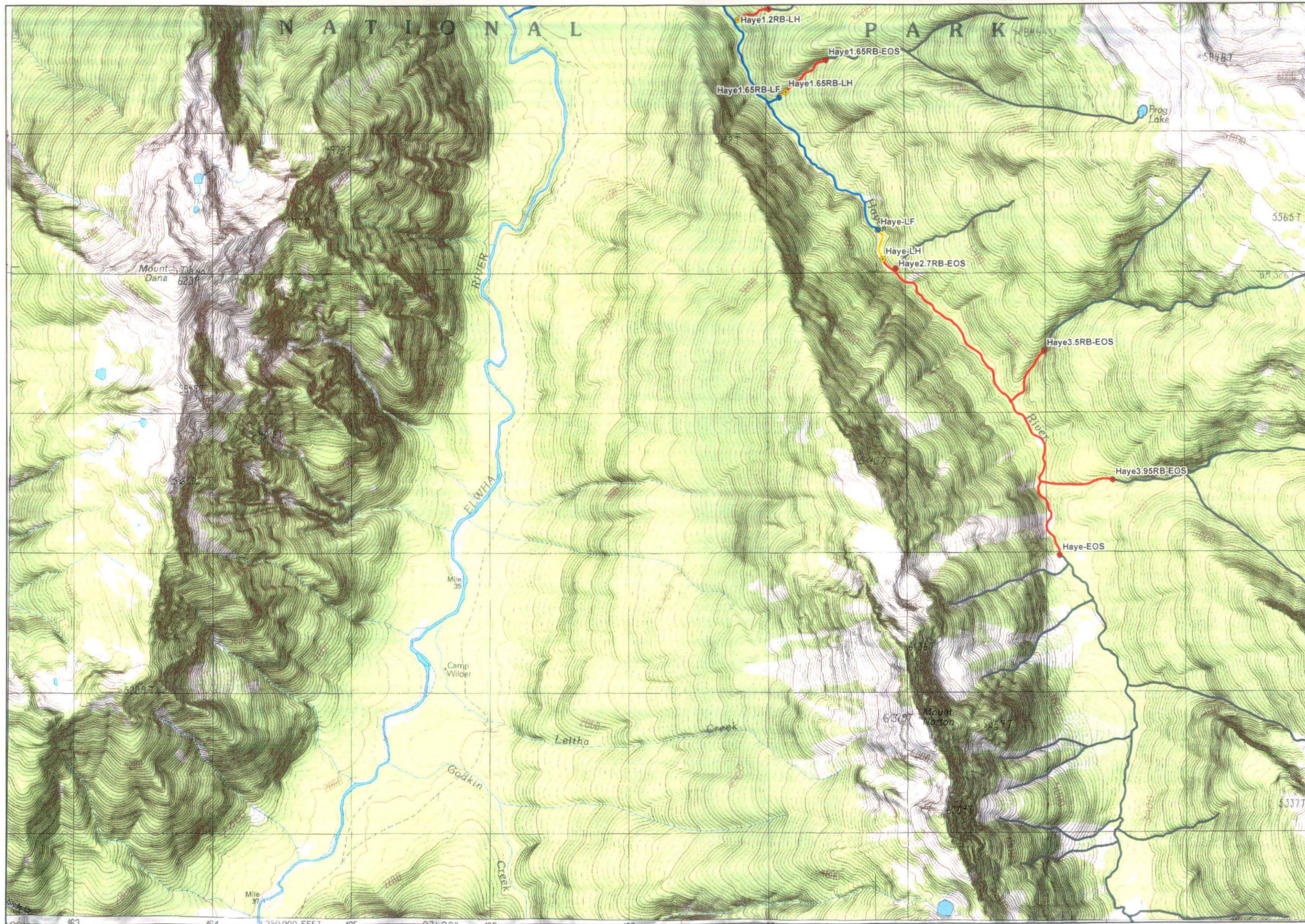
Habitat Feature: Gradient Increase

Status: Permanent

Attributes: Gradient goes from 10-12% up to 20-22% into a ravine

End of Survey Location:

End of Survey Point Label: Haye0.4RB-EOS

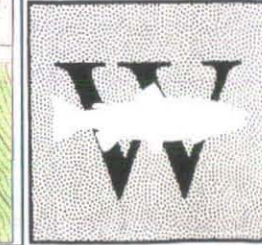
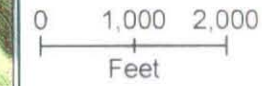


**Elwha Basin
Hayes River**

Page 2 of 2
McCartney Pk. Quad

Stream Survey

- Fish Bearing
- Fish Habitat
- No Habitat
- Not Surveyed
- Last Fish
- Last Fish/Habitat
- Last Habitat
- Last Habitat, End Survey
- End Survey
- Last Fish/Habitat, End Survey



Hayes RB 1.2rm

River System: Elwha

Crew: Staller, Rainwater

Survey Date: 09/22/00

Reference Point

Landmark Description: Metal tag on hemlock

Marker Location: RB at mouth

Downstream End of Survey

Relative to Reference Point: Same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 920

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other:

Detection Method Above Last Fish: Electofishing

Air Temperature (C): 9

Debris torrent in Last 10 yrs?

Water Temperature (C): 6.8

Debris torrent affects fish distribution?

Temperature Time: 1:15 AM

Notes:

This stream has 10-12% gradient for 100' then jumps up to 20-30% gradient for several hundred ft. Above 500' there are some flat spots but the stream is mostly +20% gradient. No fish were observed.

Last Fish Location:

Label:

Average Bankfull Width (ft.):

Last Species:

Habitat Notes: No Fish Observed

Significant Habitat Overcome:

Last Habitat Location:

Label: Hayes1.2RB-LH

Distance To Downstream End (ft.): 114

Average Bankfull Width (ft.): 11

Habitat Feature: Gradient Increase

Status: Permanent

Attributes: 10% increasing to 20-30% 100' from mouth.

End of Survey Location:

End of Survey Point Label: Hayes1.2RB-EOS

Hayes River

River System: Elwha

Crew: Staller, Rainwater

Survey Date: 09/24/00

Reference Point

Landmark Description: None

Marker Location: None

Downstream End of Survey

Relative to Reference Point: Mouth

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 22588

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other:

Detection Method Above Last Fish: Electrofishing

Debris torrent in Last 10 yrs?

Debris torrent affects fish distribution?

Air Temperature (C): 8.5

Water Temperature (C): 5

Temperature Time: 11:00 AM

Notes:

Observed bull trout and rainbows from the mouth up to rm 2.5. Last fish found in a large pool just above a debris jam. At this point a large debris jam and cascade run extends from RM 2.65 to 2.8 with consecutive 8-10' drops. The average gradient over this reach is 18-20%. Electrofished up to RM 4.6 and no fish were observed.

Last Fish Location:

Label: Haye-LF

Average Bankfull Width (ft.): 30 Last Species: RBT, Char

Distance to DS End (ft.): 12841

Habitat Notes: Pool above a large debris jam with 6-8' drop.

Significant Habitat Overcome:

numerous 2-5' drop cascades and log jams.

Last Habitat Location:

Label: Haye-LH

Distance To Downstream End (ft.): 13610

Average Bankful Width (ft.): 30

Habitat Feature: Natural Barrier

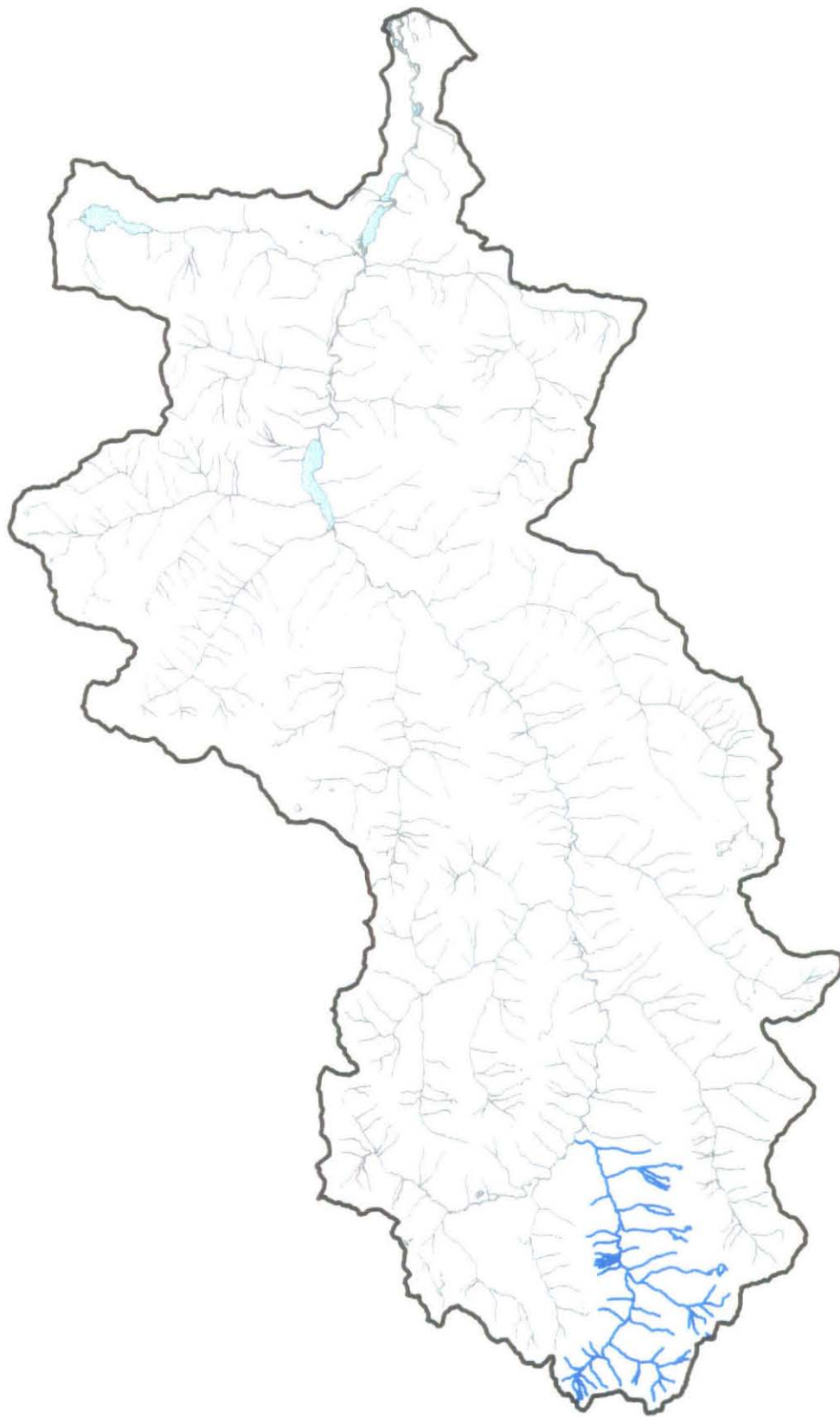
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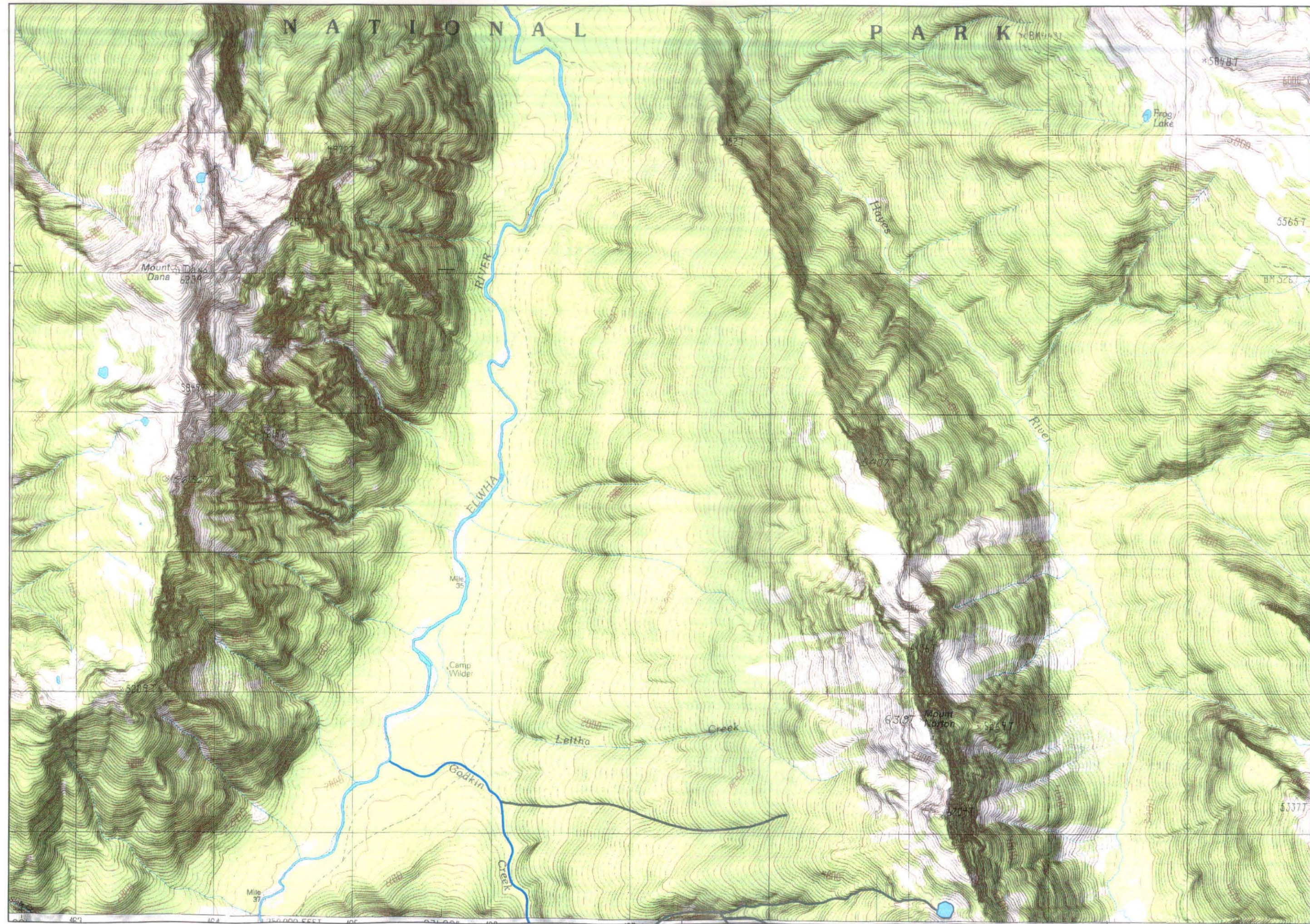
Attributes: 18-20% gradient cascades and log jams with 8-10' drops.

End of Survey Location:

End of Survey Point Label: Haye-EOS

Godkin Creek Survey

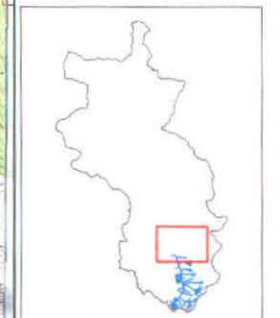
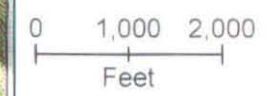




Stream Survey

- Fish Bearing
- Fish Habitat
- No Habitat
- Not Surveyed

- Last Fish
- Last Fish/Habitat
- Last Habitat
- Last Habitat, End Survey
- End Survey
- Last Fish/Habitat, End Survey

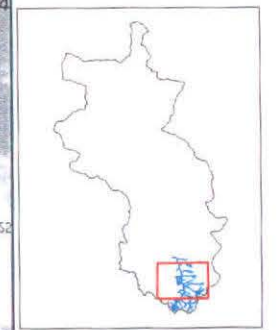
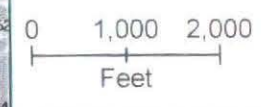
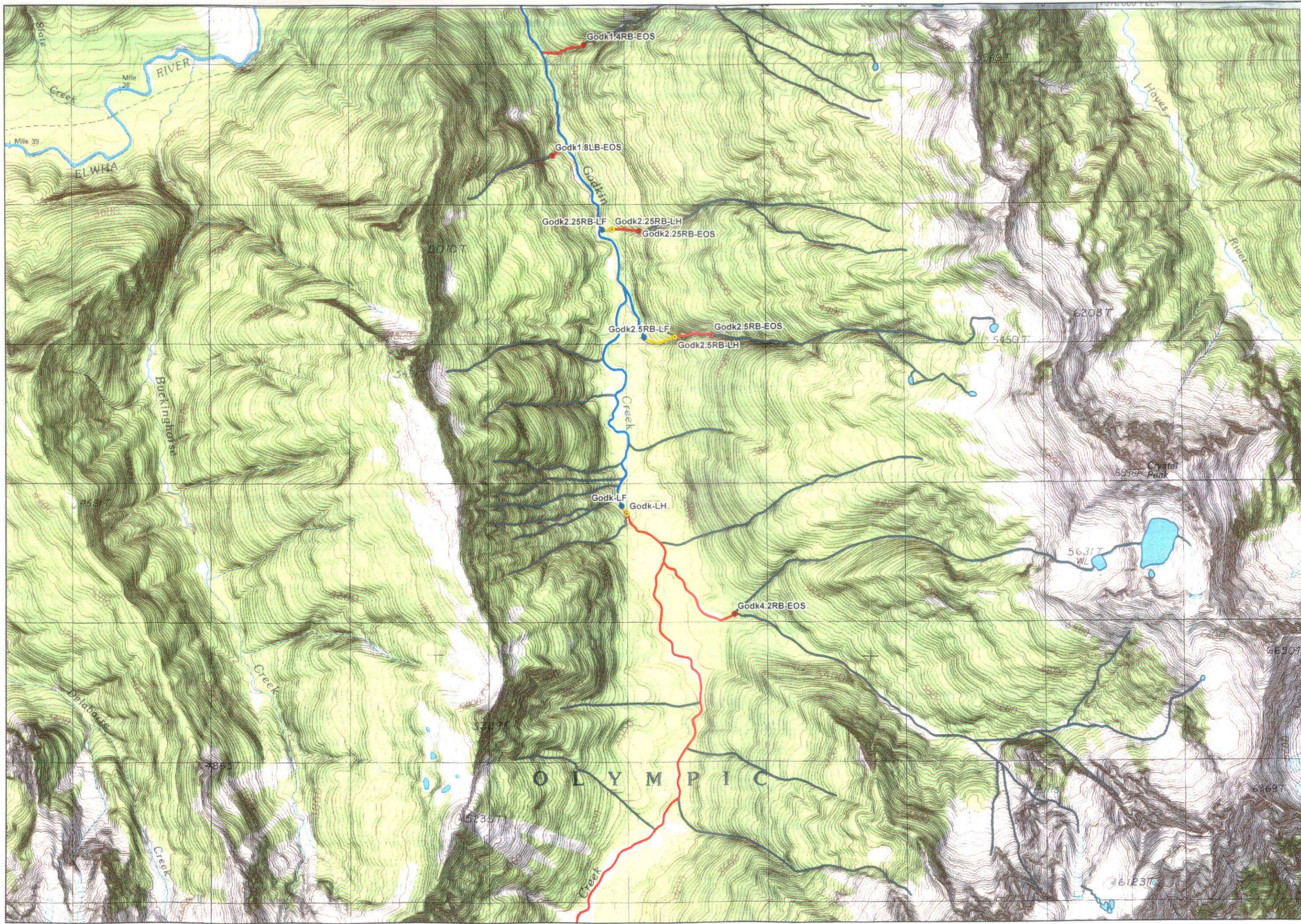


Elwha Basin Godkin Creek

Page 2 of 3
Chimney Pk. Quad

Stream Survey

- Fish Bearing
- Fish Habitat
- No Habitat
- Not Surveyed
- Last Fish
- Last Fish/Habitat
- Last Habitat
- Last Habitat, End Survey
- End Survey
- Last Fish/Habitat, End Survey



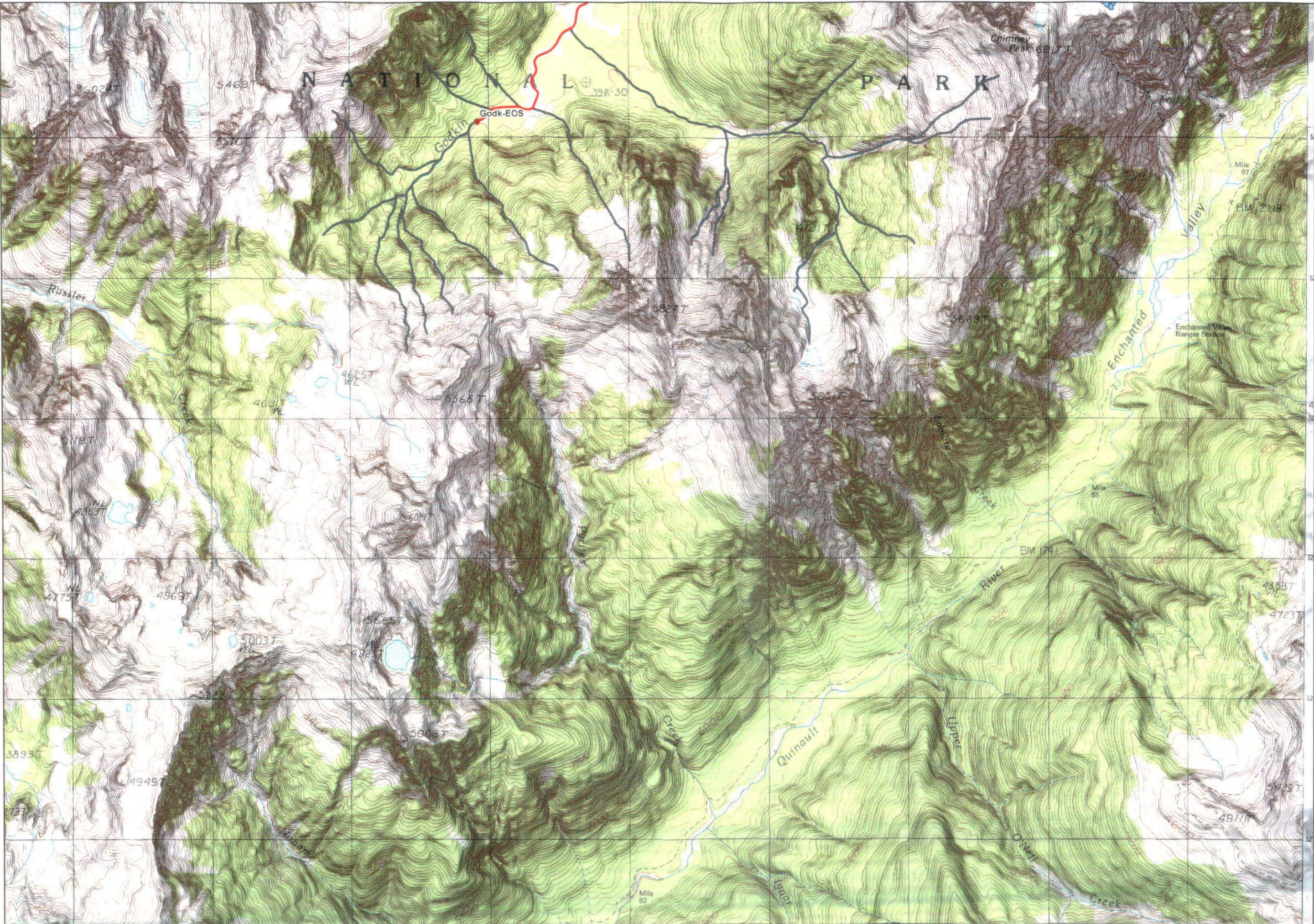
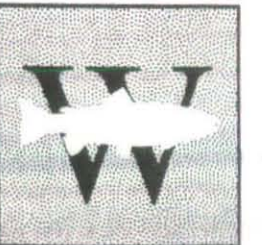
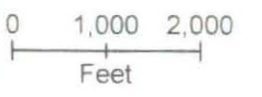
**Elwha Basin
Godkin Creek**

Page 3 of 3
Chimney Pk. Quad

Stream Survey

- Fish Bearing
- Fish Habitat
- No Habitat
- Not Surveyed

● Last Fish
● Last Fish/Habitat
● Last Habitat
● Last Habitat, End Survey
● End Survey
● Last Fish/Habitat, End Survey



Godkin RB 1.4rm

River System: Elwha

Crew: Staller, Rainwater

Survey Date: 09/14/00

Reference Point

Landmark Description: Metal tag on 15" doug fir

Marker Location: RB, 20' from mouth

Downstream End of Survey

Relative to Reference Point: 20' DS, at mouth

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 1075

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other:

Detection Method Above Last Fish: Electofishing

Debris torrent in Last 10 yrs?

Debris torrent affects fish distribution?

Air Temperature (C): 16.1

Water Temperature (C): 10.8

Temperature Time: 3:00 PM

Notes:

This stream is 4-6' wetted width and 8-10 OHW with boulder cobble substrate. Within 100' of mouth the gradient picks up to +20%, getting steeper up above, with 6-8' debris jams and falls. No fish were observed.

Last Fish Location:

Label:

Average Bankfull Width (ft.): Last Species:

Distance to DS End (ft.):

Habitat Notes: No Fish Observed

Significant Habitat Overcome:

Last Habitat Location:

Label:

Distance To Downstream End (ft.): 0

Average Bankful Width (ft.): 9

Habitat Feature: Natural Barrier

Status: Permanent

Attributes: +20% gradient at mouth and 6-8' drops

End of Survey Location:

End of Survey Point Label: Godk1.4RB-EOS

Godkin LB 1.8rm

River System: Elwha

Crew: Staller, Rainwater

Survey Date: 09/14/00

Reference Point

Landmark Description: None

Marker Location: None

Downstream End of Survey

Relative to Reference Point: Mouth

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 422

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other: Steep channel gradient, minimal flow

Detection Method Above Last Fish: Visual

Debris torrent in Last 10 yrs?

Debris torrent affects fish distribution?

Air Temperature (C): 17.3

Water Temperature (C): 9.3

Temperature Time: 1:50 PM

Notes:

This stream was mostly dry at the time of the survey with steep gradient above 40% continuing US.

Last Fish Location:

Label:

Average Bankfull Width (ft.):

Last Species:

Habitat Notes: No Fish Observed

Significant Habitat Overcome:

Last Habitat Location:

Label:

Distance To Downstream End (ft.): 0

Average Bankfull Width (ft.): 6

Habitat Feature: Natural Barrier

Status: Permanent

Attributes: 40% slope with low summer flow. 1.5' wetted

End of Survey Location:

End of Survey Point Label: Godk1.8LB-EOS

Godkin RB 2.25rm

River System: Elwha

Crew: Staller, Rainwater

Survey Date: 02/10/00

Reference Point

Landmark Description: Metal tag on 15" doug fir

Marker Location: RB, 180' from mouth

Downstream End of Survey

Relative to Reference Point: 180' DS at mouth

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 944

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other:

Detection Method Above Last Fish: Electofishing

Debris torrent in Last 10 yrs?

Debris torrent affects fish distribution?

Air Temperature (C): 11.5

Water Temperature (C): 7.8

Temperature Time: 12:05 AM

Notes:

Stream is 3-4' wetted width. At 300' a 20% bedrock cascade with some step pools was observed.

Last Fish Location:

Label: Godk2.25RB-LF

Average Bankfull Width (ft.): 9 Last Species: RBT

Distance to DS End (ft.): 65

Habitat Notes: 15% gradient, boulder/cobble substrate, step pools

Significant Habitat Overcome:

1-3' step pools

Last Habitat Location:

Label: Godk2.25RB-LH

Distance To Downstream End (ft.): 307

Average Bankfull Width (ft.): 9

Habitat Feature: Gradient Increase

Status: Permanent

Attributes: gradient increase to 20%, bedrock cascade with step-pools.

End of Survey Location:

End of Survey Point Label: Godk2.25RB-EOS

Godkin RB 2.5rm

River System: Elwha

Crew: Staller, Rainwater

Survey Date: 09/13/00

Reference Point

Landmark Description: Metal tag on 16" hemlock

Marker Location: RB, 75' US from mouth

Downstream End of Survey

Relative to Reference Point: 75' DS at mouth

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 2978

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other:

Detection Method Above Last Fish: Electofishing

Air Temperature (C): 17.3

Debris torrent in Last 10 yrs?

Water Temperature (C): 9.3

Debris torrent affects fish distribution?

Temperature Time: 1:50 PM

Notes:

At the mouth this stream enters Godkin creek at about RM2.5. The map shows it entering at RM2.6. The stream flows adjacent to Godkin Creek for about 1200' before turning north into a canyon. We did not see any fish in the first 500'. Then we started seeing mostly juveniles 6-50 per 100' of stream. We also saw some adults that were 4-5". All observed fish were rainbow trout. The last habitat point was at a 6' waterfall in bedrock with cascades above with a +20% gradient.

Last Fish Location:

Label: Godk2.5RB-LF

Average Bankfull Width (ft.): 6 Last Species: RBT

Distance to DS End (ft.): 1298

Habitat Notes: 3-5% gradient, gravel and cobble step pools

Significant Habitat Overcome:

Last Habitat Location:

Label: Godk2.5RB-LH

Distance To Downstream End (ft.): 2084

Average Bankfull Width (ft.): 5

Habitat Feature: Gradient Increase

Status: Permanent

Attributes: 6' falls, 20% gradient above

End of Survey Location:

End of Survey Point Label: Godk2.5RB-EOS

Godkin RB 4.2rm

River System: Elwha

Crew: Staller, Rainwater

Survey Date: 02/12/00

Reference Point

Landmark Description: None

Marker Location: None

Downstream End of Survey

Relative to Reference Point: Mouth

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 2400

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other:

Detection Method Above Last Fish: Electofishing

Air Temperature (C): 9.3

Debris torrent in Last 10 yrs?

Water Temperature (C): 5

Debris torrent affects fish distribution?

Temperature Time: 10:20 AM

Notes:

This stream was above the 3.9rm falls on Godkin creek but we were seaching for pockets of fish above this falls. None were found on this stream. Crystal lake is at the headwater of this stream. We hiked up to crystal lake to see if fish were in the lake. The lakes were partialy coverd in ice and no fish were observed.

Last Fish Location:

Label:

Average Bankfull Width (ft.): Last Species:

Distance to DS End (ft.):

Habitat Notes: No Fish Observed

Significant Habitat Overcome:

Last Habitat Location:

Label:

Distance To Downstream End (ft.): 0

Average Bankful Width (ft.): 18

Habitat Feature: Natural Barrier

Status: Permanent

Attributes: above 3.9rm falls on mian stem Godkin

End of Survey Location:

End of Survey Point Label: Godk4.2RB-EOS

Godkin Creek

River System: Elwha

Crew: Staller, Rainwater

Survey Date: 02/11/00

Reference Point

Landmark Description: Metal tag on 30" hemlock

Marker Location: RB at RM 3.8 at base of barrier falls

Downstream End of Survey

Relative to Reference Point: 3.1 mi. DS at the mouth

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 37000

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other: stream dry for 1.5 mi. No fish above point at which stream goes subsurface.

Detection Method Above Last Fish: Electrofishing

Air Temperature (C): 12

Debris torrent in Last 10 yrs?

Water Temperature (C): 6.3

Debris torrent affects fish distribution?

Temperature Time: 11:40 AM

Notes:

Series of cascades and falls from 10 to 20' at RM 3.8. Stream goes subsurface from RM 5.5 to 7.0 then resurfaces with 6-7' wetted width and 15-18' OHW. Electroshocking 1300' above this point produced no results. We did not survey RB5.5 or RB6.3 on Godkin because we did not see any fish above the 3.9rm falls area.

Last Fish Location:

Label: Godk-LF

Average Bankfull Width (ft.): 30 Last Species: RBT

Distance to DS End (ft.): 19938

Habitat Notes: Large cascade step pools.

Significant Habitat Overcome:

Numerous debris and boulder cascades with up to 6' drops

Last Habitat Location:

Label: Godk-LH

Distance To Downstream End (ft.): 20162

Average Bankfull Width (ft.): 30

Habitat Feature: Natural Barrier

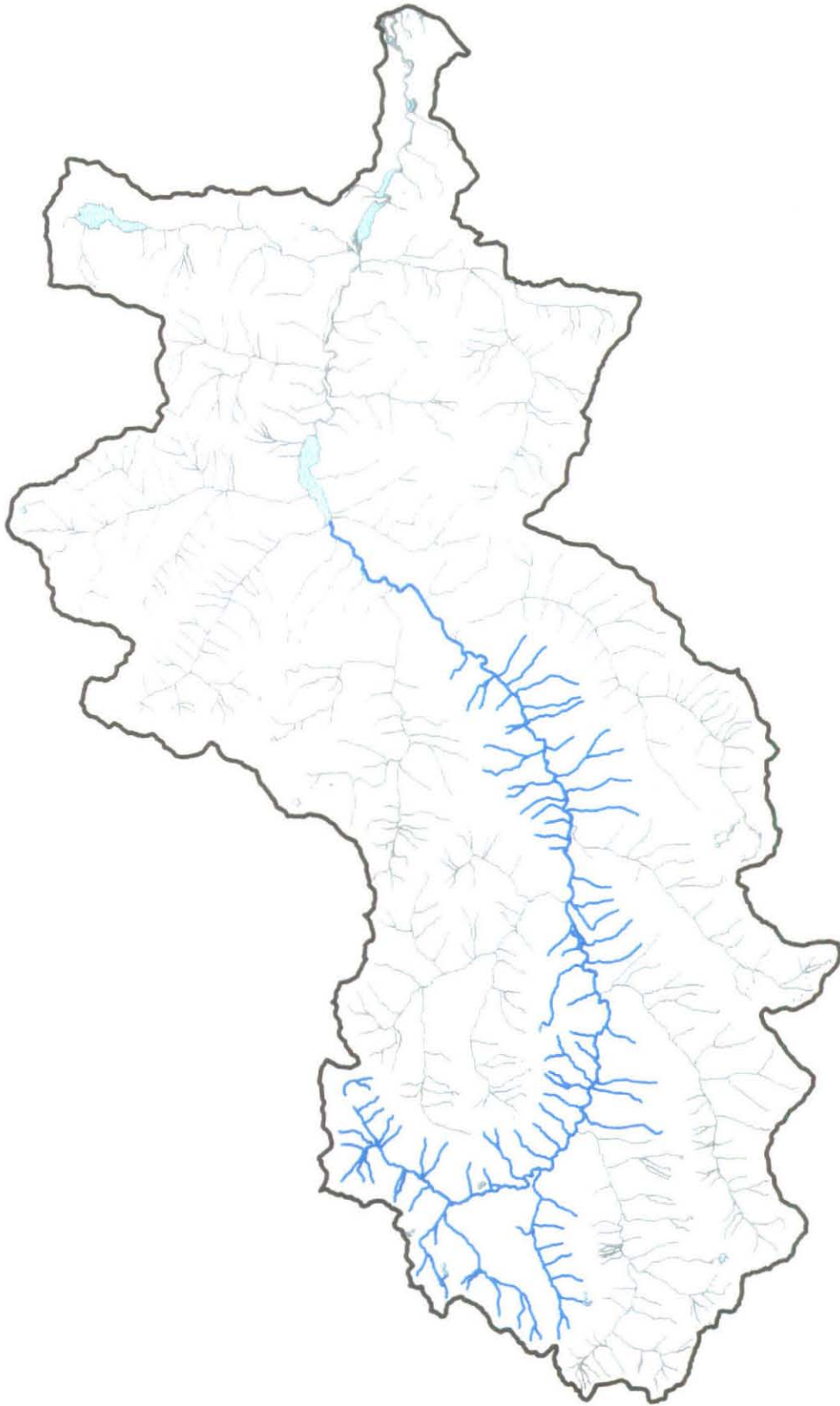
Status: Permanent

Attributes: 120' drop in 0.2 mi with 20' drop on largest falls.

End of Survey Location:

End of Survey Point Label: Godk-EOS

Upper Elwha and Minor Tributaries

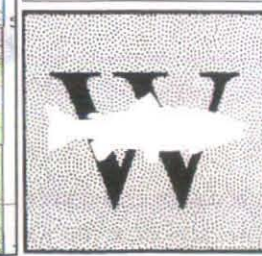
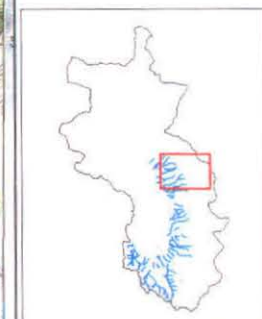
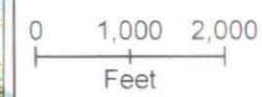


Elwha Basin Elwha River

Page 1 of 6
Mt. Angeles Quad

Stream Survey

- Fish Bearing
- Fish Habitat
- No Habitat
- Not Surveyed
- Last Fish
- Last Fish/Habitat
- Last Habitat
- Last Habitat, End Survey
- End Survey
- Last Fish/Habitat, End Survey



Elwha RB 23.5rm (Windfall Cr.)

River System: Elwha

Crew: Staller, Bennett

Survey Date: 08/03/00

Reference Point

Landmark Description: Metal tag

Marker Location: Triple maple on RB, 20' from the mouth.

Downstream End of Survey

Relative to Reference Point: Same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 2100

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other:

Detection Method Above Last Fish: Electofishing

Air Temperature (C): 21

Debris torrent in Last 10 yrs?

Water Temperature (C): 11

Debris torrent affects fish distribution?

Temperature Time: 1:30 PM

Notes:

At the mouth of this stream we saw hundreds of rainbow fry in the main channel of the Elwha but only saw a few in the first 50' of Windfall creek. At 50' US of the mouth is a debris jam and the slope increases from about 15% to 20%. This continues to the base of a 100' waterfall. This is the last habitat point. Above the waterfall about 500' is another falls with a 20' drop. Above this falls the stream levels off to a 12-15% gradient, continuing up to the trail crossing (2100' US from the mouth). We electofished up to the trail and no fish were sighted above the falls area.

Last Fish Location:

Label: Elwh23.5RB-LF

Average Bankfull Width (ft.): 12 Last Species: RBT

Distance to DS End (ft.): 50

Habitat Notes: Pool downstream from LWD jam.

Significant Habitat Overcome:

Last Habitat Location:

Label: Elwh23.5RB-LHEOS

Distance To Downstream End (ft.): 350

Average Bankful Width (ft.): 12

Habitat Feature: Natural Barrier

Status: Permanent

Attributes: 100' waterfall.

End of Survey Location:

End of Survey Point Label: Elwh23.5RB-LHEOS

Elwha RB 23.8rm (Dorothy Cr.)

River System: Elwha

Crew: Staller, Bennett

Survey Date: 08/03/00

Reference Point

Landmark Description: Metal tag

Marker Location: Alder on RB, 30' @ 12 degrees AZ from the mouth.

Downstream End of Survey

Relative to Reference Point: At the mouth

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 1300

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other:

Detection Method Above Last Fish: Electofishing

Debris torrent in Last 10 yrs?

Debris torrent affects fish distribution?

Air Temperature (C): 22

Water Temperature (C): 10.5

Temperature Time: 1:40 PM

Notes:

An 80ft long 50% gradient cascade at the mouth. Above this, gradient levels to about 16%. No fish observed. Above falls on LB evidence that fire created a minor slide.

Last Fish Location:

Label:

Average Bankfull Width (ft.):

Last Species:

Habitat Notes: No Fish Observed

Significant Habitat Overcome:

Last Habitat Location:

Label:

Distance To Downstream End (ft.): 0

Average Bankfull Width (ft.):

Habitat Feature:

Status:

Attributes: N/A

End of Survey Location:

End of Survey Point Label: Elwh23.8RB-EOS

Elwha RB 24.1rm (Prescott Cr.)

River System: Elwha

Crew: Staller, Bennett

Survey Date: 08/03/00

Reference Point

Landmark Description: Metal tag

Marker Location: 16' on RB on forked alder at the mouth

Downstream End of Survey

Relative to Reference Point: At the mouth

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 1350

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other:

Detection Method Above Last Fish: Electofishing

Air Temperature (C): 19

Debris torrent in Last 10 yrs?

Water Temperature (C): 9.5

Debris torrent affects fish distribution?

Temperature Time: 11:24 AM

Notes:

Saw rainbow fry at the mouth in nice spawning gravels (within the flood plain of the Elwha). After 50' the stream makes a 90 degree bend and heads east up the hill slope at 8% for about 300' to the Elwha river trail. Just above the trail the gradient increases to 24% and continues up at +20%.

Last Fish Location:

Label: Elwh24.1RB-LF

Average Bankfull Width (ft.): 7 Last Species: RBT

Distance to DS End (ft.): 50

Habitat Notes: In flood plain of Elwha river

Significant Habitat Overcome:

Last Habitat Location:

Label: Elwh24.1RB-LH

Distance To Downstream End (ft.): 320

Average Bankful Width (ft.): 5

Habitat Feature: Gradient Increase

Status: Permanent

Attributes: 8% gradient to a 24% gradient

End of Survey Location:

End of Survey Point Label: Elwh24.1RB-EOS

End of Survey Point Label:

Elwha RB 25.0rm (Wildrose)

River System: Elwha

Crew: Staller, Bennett

Survey Date: 08/02/00

Reference Point

Landmark Description: Metal tag

Marker Location: Twin top Douglas firs with 40" dia., 20' above trail crossing on LB of aluvial fan.

Downstream End of Survey

Relative to Reference Point: 300' downstream, at mouth

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 900

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other:

Detection Method Above Last Fish: Visual

Air Temperature (C): 21

Debris torrent in Last 10 yrs?

Water Temperature (C):

Debris torrent affects fish distribution?

Temperature Time:

Notes:

Due to a debris torrent this stream is subsurface at this time. A large alluvial fan that comes out of a canyon has changed the direction of the stream. The map shows the stream flowing north through the flood plain and entering the Elwha River downstream, but it now has a channel that goes west, directly to the river. We hiked up stream about 900' from the mouth, into the canyon where the stream comes back to the surface. At that point it heads up a steep ravine at 40% gradient and has a 6-10" wetted width and 3-4' BFW.

Last Fish Location:

Label:

Average Bankfull Width (ft.):

Last Species:

Habitat Notes: No fish observed

Significant Habitat Overcome:

Last Habitat Location:

Label:

Distance To Downstream End (ft.): 0

Average Bankful Width (ft.):

Habitat Feature:

Status:

Attributes:

End of Survey Location:

End of Survey Point Label: Elwh25.0RB-EOS

Elwha RB 25.85rm

River System: Elwha

Crew: Staller, Bennett

Survey Date: 08/02/00

Reference Point

Landmark Description: Metal tag

Marker Location: RB 15" dia. Alder 20' from mouth

Downstream End of Survey

Relative to Reference Point: At mouth

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 1350

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other:

Detection Method Above Last Fish: Electofishing

Debris torrent in Last 10 yrs?

Debris torrent affects fish distribution?

Air Temperature (C): 19

Water Temperature (C): 10

Temperature Time: 2:25 PM

Notes:

At mouth this stream has 6% gradient. After 50' it jumps up a bedrock cascade with a 47% gradient. Above the cascade gradient eases to 27%, and stays above 20% up to the end of the survey.

Last Fish Location:

Label: Elwh25.85RB-LFLH

Average Bankfull Width (ft.): 9 Last Species: RBT

Distance to DS End (ft.): 50

Habitat Notes: At base of bedrock cascade with 47% gradient.

Significant Habitat Overcome:

Last Habitat Location:

Label: Elwh25.85RB-LFLH

Distance To Downstream End (ft.): 65

Average Bankful Width (ft.): 9

Habitat Feature: Natural Barrier

Status: Permanent

Attributes: Bedrock cascade with 47% gradient and 50' drop.

End of Survey Location:

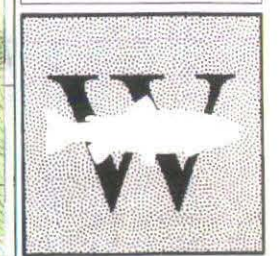
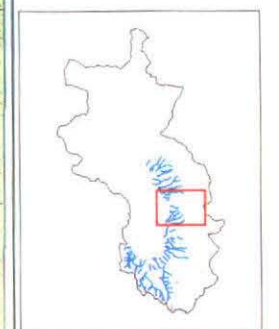
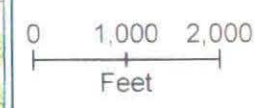
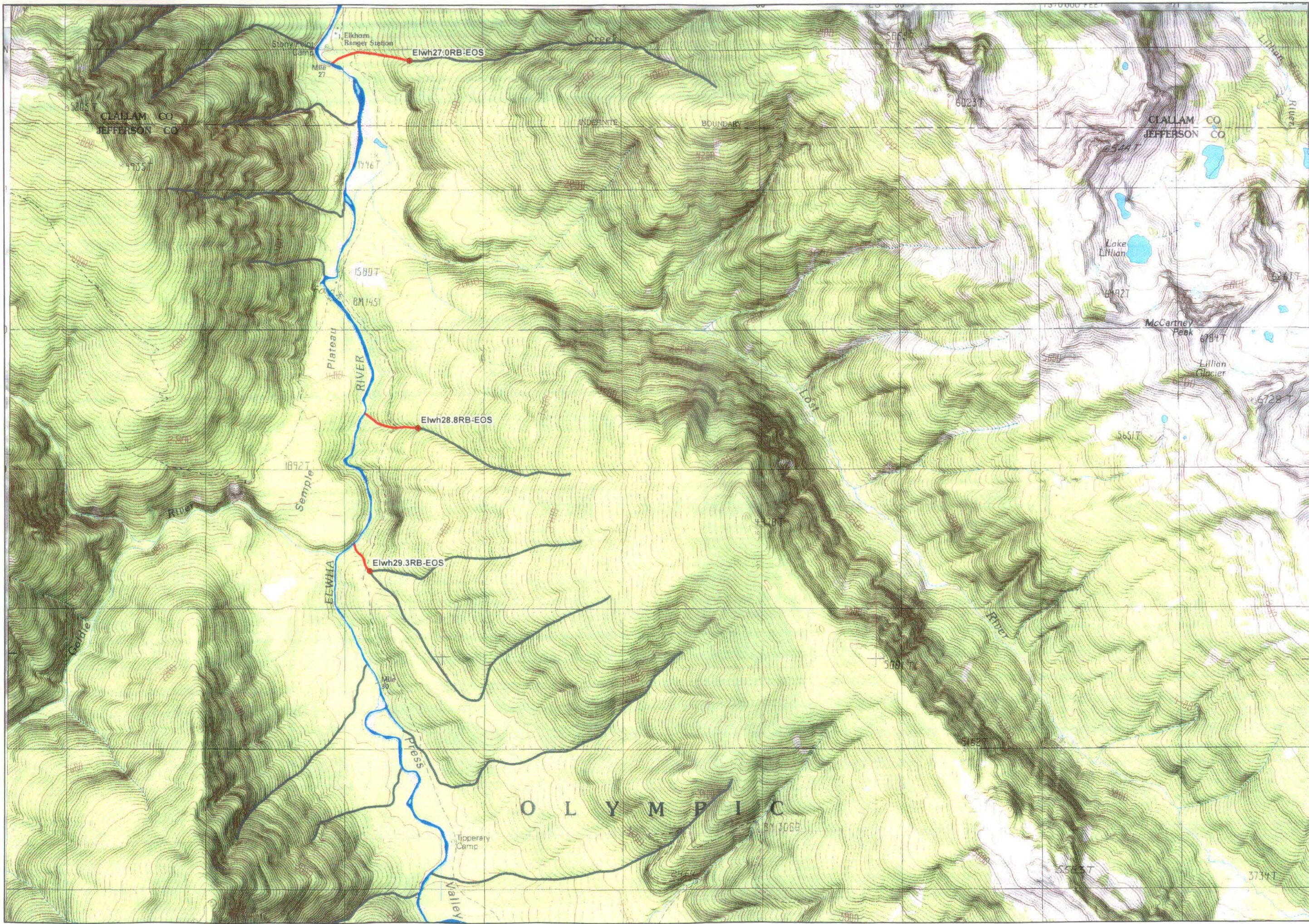
End of Survey Point Label: Elwh25.85RB-EOS

Elwha Basin Elwha River

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McCartney Pk. Quad

Stream Survey

- Fish Bearing
- Fish Habitat
- No Habitat
- Not Surveyed
- Last Fish
- Last Fish/Habitat
- Last Habitat
- Last Habitat, End Survey
- End Survey
- Last Fish/Habitat, End Survey



Elwha RB 26.45rm (McCartney Cr.)

River System: Elwha

Crew: Staller, Bennett

Survey Date: 08/02/00

Reference Point

Landmark Description: Metal tag

Marker Location: RB alder at mouth of McCartney Cr.

Downstream End of Survey

Relative to Reference Point: Same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 1300

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other:

Detection Method Above Last Fish: Electofishing

Air Temperature (C): 22.5

Debris torrent in Last 10 yrs?

Water Temperature (C): 10.2

Debris torrent affects fish distribution?

Temperature Time: 1:28 PM

Notes:

There is a small boulder cascade at the mouth with 30% gradient. 20-25% above the cascade. Spotted a tailed frog in 25% gradient in step pool area. Above 350' the slope averages +20% to end of survey with no fish observed.

Last Fish Location:

Label:

Average Bankfull Width (ft.):

Last Species:

Habitat Notes: No fish observed.

Significant Habitat Overcome:

Last Habitat Location:

Label:

Distance To Downstream End (ft.): 0

Average Bankful Width (ft.):

Habitat Feature: Natural Barrier

Status: Permanent

Attributes: Entire reach has +20% gradient.

End of Survey Location:

End of Survey Point Label: Elwh26.45RB-EOS

Elwha RB 27.0rm (Stony Cr.)

River System: Elwha

Crew: Staller, Bennett

Survey Date: 08/02/00

Reference Point

Landmark Description: Metal tag on grand fir (6" diameter)

Marker Location: 20' US from mouth on RB

Downstream End of Survey

Relative to Reference Point: At the mouth

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 1300

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other:

Detection Method Above Last Fish: Electofishing

Air Temperature (C): 16

Debris torrent in Last 10 yrs?

Water Temperature (C): 9

Debris torrent affects fish distribution?

Temperature Time: 11:15 AM

Notes:

This stream is 30% gradient at the mouth then leveling off to 20-24% up above. We observed tailed frogs on this stream but no fish were observed on this survey.

Last Fish Location:

Label:

Average Bankfull Width (ft.):

Last Species:

Habitat Notes: No Fish Observed

Significant Habitat Overcome:

Last Habitat Location:

Label:

Distance To Downstream End (ft.): 0

Average Bankfull Width (ft.): 10

Habitat Feature: Natural Barrier

Status: Permanent

Attributes: 30% gradient

End of Survey Location:

End of Survey Point Label: Elwh27.0RB-EOS

Elwha RB 28.8rm

River System: Elwha

Crew: Staller, Bennett

Survey Date: 08/05/00

Reference Point

Landmark Description: metal tag

Marker Location: RB 24in dia. Hem 10' from wetted edge

Downstream End of Survey

Relative to Reference Point: At stream mouth

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 1300

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other:

Detection Method Above Last Fish: Electofishing

Debris torrent in Last 10 yrs?

Debris torrent affects fish distribution?

Air Temperature (C): 20

Water Temperature (C): 11

Temperature Time: 12:55 PM

Notes:

This stream is very steep at the mouth. It heads up at 44% gradient, then at 150' levels to +25% to the end of the survey. No fish observed on entire length.

Last Fish Location:

Label:

Average Bankfull Width (ft.):

Last Species:

Habitat Notes: No Fish Observed

Significant Habitat Overcome:

Last Habitat Location:

Label:

Distance To Downstream End (ft.): 0

Average Bankfull Width (ft.): 5

Habitat Feature: Natural Barrier

Status: Permanent

Attributes: 35 to 45% at the mouth

End of Survey Location:

End of Survey Point Label: Elwh28.8RB-EOS

Elwha RB 29.3rm

River System: Elwha

Crew: Staller, Bennett

Survey Date: 08/05/00

Reference Point

Landmark Description: Metal tag on alder (20@ diameter)

Marker Location: RB, 30' US from the mouth

Downstream End of Survey

Relative to Reference Point: At the mouth

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 900

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other: Steep gradient, surveyed for 900ft without seeing fish.

Detection Method Above Last Fish: Electofishing

Air Temperature (C): 19

Debris torrent in Last 10 yrs?

Water Temperature (C): 10

Debris torrent affects fish distribution?

Temperature Time: 12:10 PM

Notes:

Shale bedrock chute cascade just US of the mouth with 37% gradient is a total barrier. Above the chute the average gradient decreases to the tributary junction above the elwha trail crossing. No fish were found in entire reach surveyed.

Last Fish Location:

Label:

Average Bankfull Width (ft.):

Last Species:

Habitat Notes: No Fish Observed

Significant Habitat Overcome:

Last Habitat Location:

Label:

Distance To Downstream End (ft.): 0

Average Bankfull Width (ft.): 5

Habitat Feature: Natural Barrier

Status: Permanent

Attributes: Bedrock cascade @ 37% gradient.

End of Survey Location:

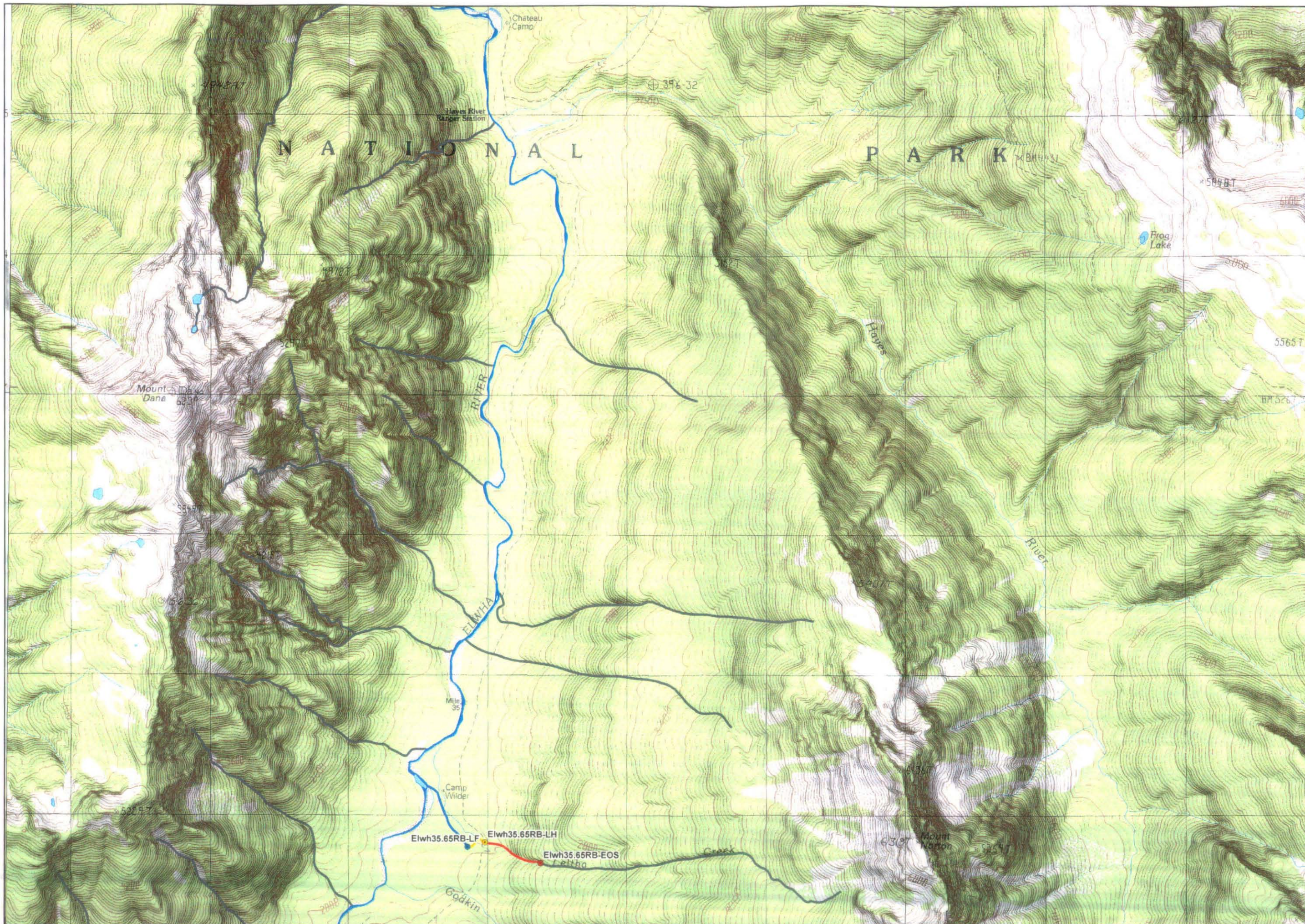
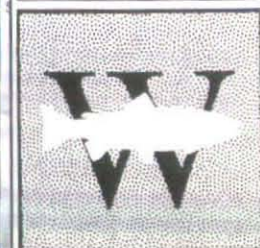
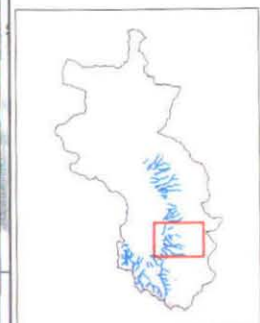
End of Survey Point Label: Elwh29.3RB-EOS

Elwha Basin Elwha River

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McCartney Pk. Quad

Stream Survey

- Fish Bearing
- Fish Habitat
- No Habitat
- Not Surveyed
- Last Fish
- Last Fish/Habitat
- Last Habitat
- Last Habitat, End Survey
- End Survey
- Last Fish/Habitat, End Survey



Elwha RB 35.65rm (Leitha Cr.)

River System: Elwha

Crew: Staller, Rainwater

Survey Date: 09/08/00

Reference Point

Landmark Description: Metal tag on doug fir

Marker Location: RB,r 50' US from mouth

Downstream End of Survey

Relative to Reference Point: 50' down stream, at the mouth

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 3680

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other:

Detection Method Above Last Fish: Electofishing

Debris torrent in Last 10 yrs?

Debris torrent affects fish distribution?

Air Temperature (C): 9

Water Temperature (C): 8

Temperature Time: 9:20 AM

Notes:

This stream was full of juvenile rainbow and char (bull trout). Fish observed from the first 50' all the way up to last fish point (1700'), with large numbers concentrated in a braided channel area about 1300' from the mouth. About 800' up there is a small LB tributary that runs adjacent to this creek with some small wetlands and seep springs. It is low gradient/velocity and is 4 to 5' OHW, but no fish were observed on this branch. RBT and char were observed 40 feet ds from LF point in braided channel, 3-5% grade, good spawning habitat. On the main stem of Leitha Cr., above the LH point, at the trail crossing

Last Fish Location:

Label: Elwh36.65RB-LF

Average Bankfull Width (ft.): 7 Last Species: RBT

Distance to DS End (ft.): 1740

Habitat Notes: stream gradient 10 to 12 %

Significant Habitat Overcome:

Last Habitat Location:

Label: Elwh36.65RB-LH

Distance To Downstream End (ft.): 2250

Average Bankfull Width (ft.): 6

Habitat Feature: Natural Barrier

Status: Temporary

Attributes: 15' debris jam and falls

End of Survey Location:

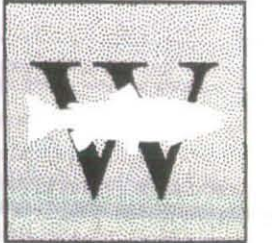
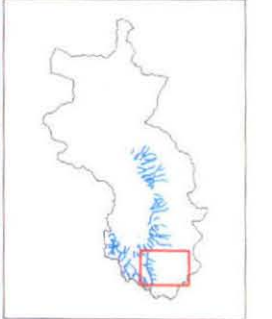
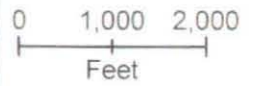
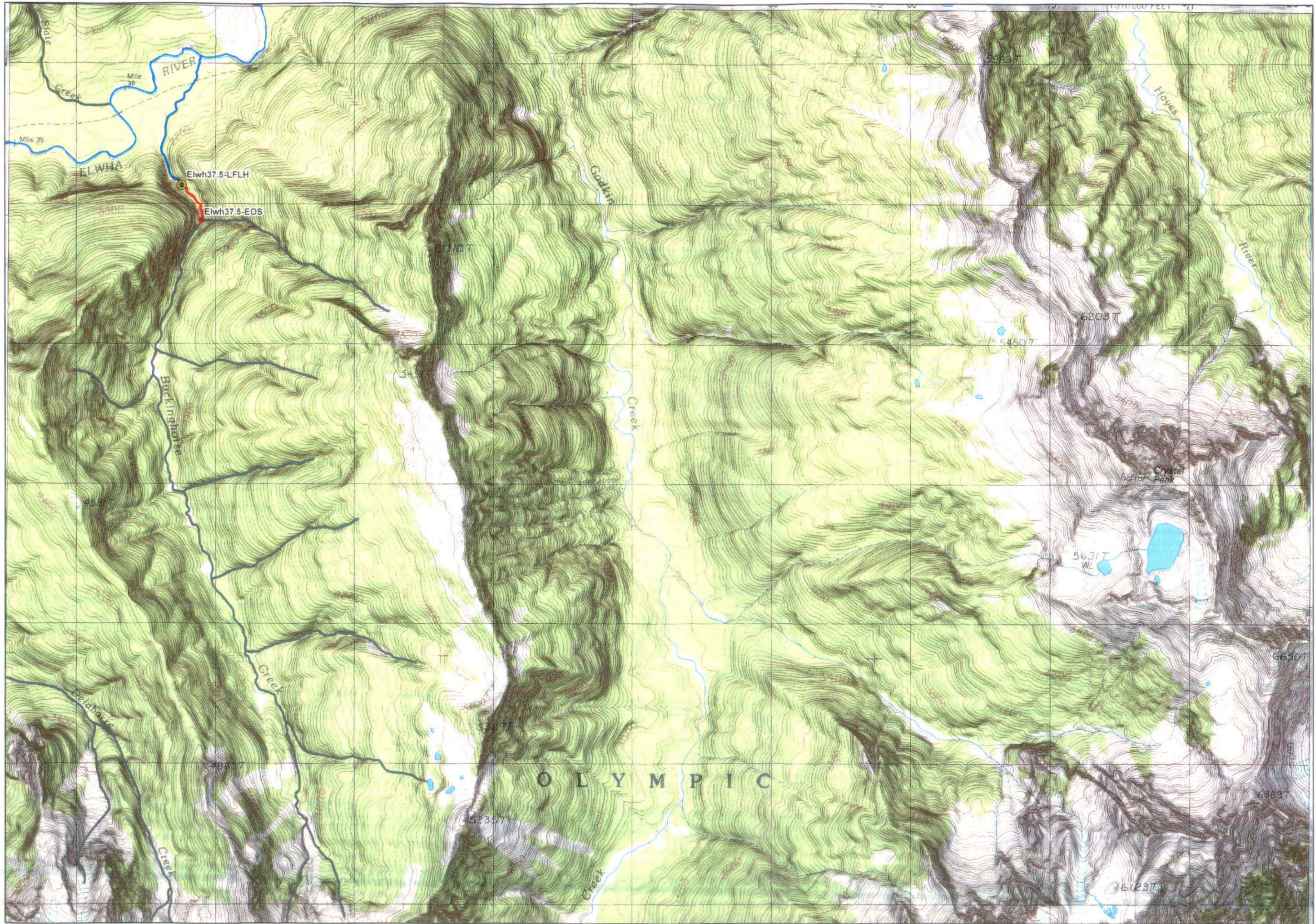
End of Survey Point Label: Elwh36.65RB-EOS

Elwha Basin Elwha River

Page 4 of 6
Chimney Pk. Quad

Stream Survey

- Fish Bearing
- Fish Habitat
- No Habitat
- Not Surveyed
- Last Fish
- Last Fish/Habitat
- Last Habitat
- Last Habitat, End Survey
- End Survey
- Last Fish/Habitat, End Survey



Elwha RB 37.5rm (Buckinghorse Cr.)

River System: Elwha

Crew: Glasgow, Beardslee

Survey Date: 09/14/00

Reference Point

Landmark Description: Metal tag on alder

Marker Location: LB at mouth

Downstream End of Survey

Relative to Reference Point: Same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 4627

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other:

Detection Method Above Last Fish: Angling

Debris torrent in Last 10 yrs?

Debris torrent affects fish distribution?

Air Temperature (C): 16

Water Temperature (C): 9

Temperature Time: 3:00 PM

Notes:

Channel goes subsurface at 60 feet upstream of mouth, re-emerges 20 feet upstream of mouth. Gradient increases at 1500 feet upstream, entering canyon - 10% with boulder cascades. Cascade/falls in canyon at LF point. Up to this point, catching 6-8" RBT. Above LF, LH - canyon pinches in to 20' wide, ww=10' at points. Long, deep pools, no fish observed. 4-8' steps, 2-8' deep pools. Gradient increases to 23% over 100', then fluctuates to as low as 12% over 100'. Several sets of bedrock falls, 15-20 ft. high, some with no plunge pools. EOS at 23ft tall perm bedrock falls at RB trib entry. Interesting note: visited

Last Fish Location:

Label: Elwh37.5-LFLH

Average Bankfull Width (ft.): 35 Last Species: RBT

Distance to DS End (ft.): 3588

Habitat Notes: 4' deep plunge pool just DS a 15 ft high cascade/falls.

Significant Habitat Overcome:

Step-pool cascades, 4 ft. drops, 15'x7'x3-5' deep pools

Last Habitat Location:

Label: Elwh37.5-LFLH

Distance To Downstream End (ft.): 3588

Average Bankfull Width (ft.): 35

Habitat Feature: Natural Barrier

Status: Temporary

Attributes: a 15 ft high cascade/falls. Falls composed of LWD/Boulder matrix. Likely a temporary barrier.

End of Survey Location:

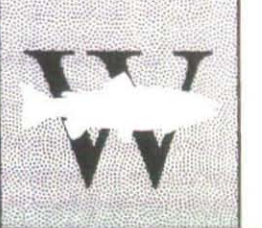
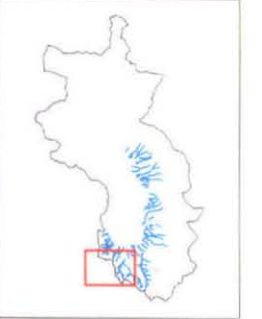
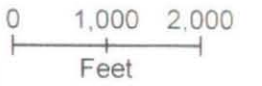
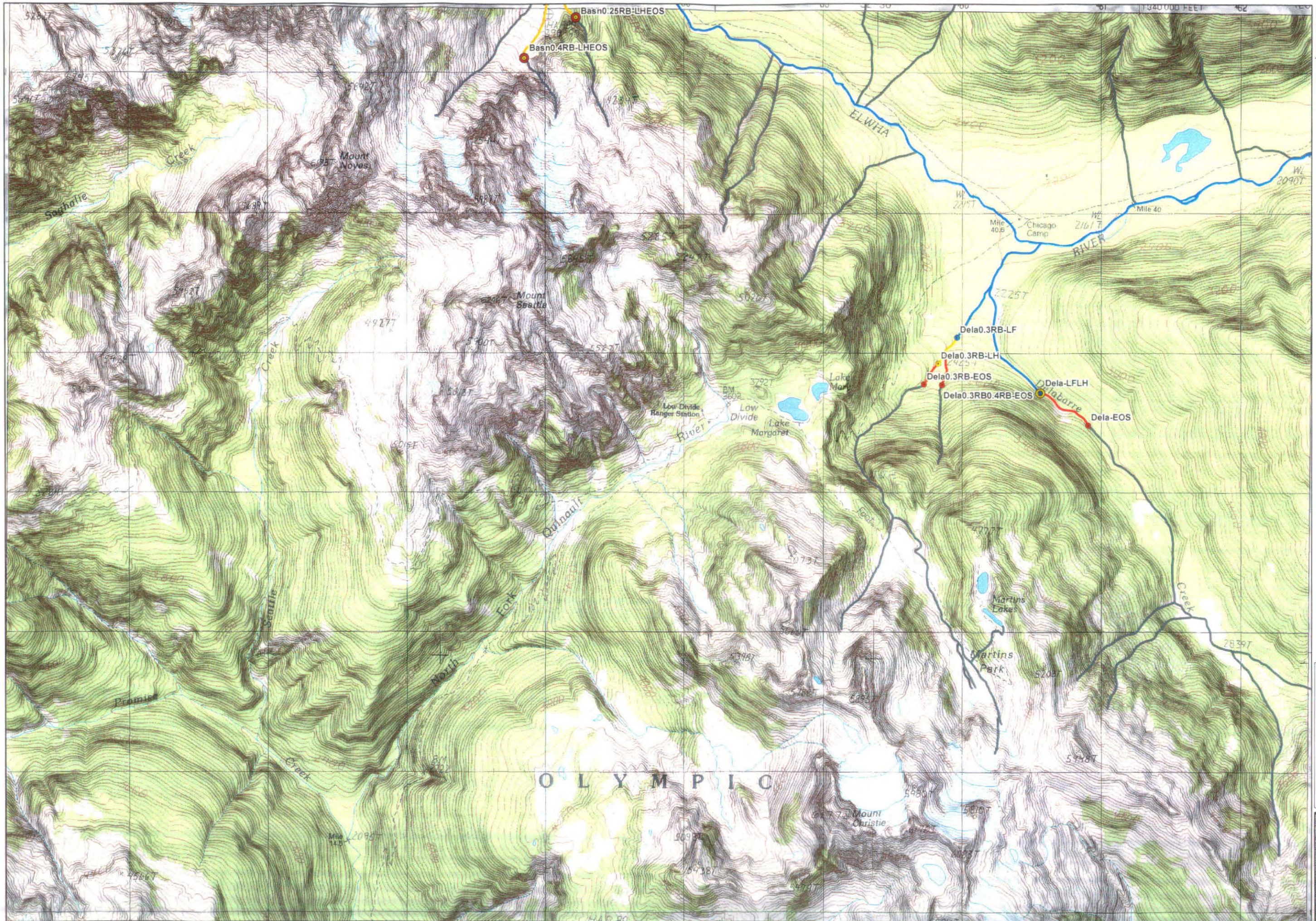
End of Survey Point Label: Elwh37.5-EOS

Elwha Basin Elwha River

Page 5 of 6
Mt. Christie Quad

Stream Survey

- Fish Bearing
- Fish Habitat
- No Habitat
- Not Surveyed
- Last Fish
- Last Fish/Habitat
- Last Habitat
- Last Habitat, End Survey
- End Survey
- Last Fish/Habitat, End Survey



Delabarre LB 0.3rm

River System: Elwha

Crew: Glasgow, Beardslee

Survey Date: 09/13/00

Reference Point

Landmark Description: none

Marker Location: mouth of tributary LB 0.3rm

Downstream End of Survey

Relative to Reference Point: same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 2872

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other:

Detection Method Above Last Fish: Angling

Debris torrent in Last 10 yrs?

Debris torrent affects fish distribution?

Air Temperature (C): 11

Water Temperature (C): 5.3

Temperature Time: 9:30 AM

Notes:

Fished and electrofished a reach with same results re. presence/absence (angling first). Surveyed 0.25 mi upstream falls, no fish, WW=14, BFW=28, grade 13-25%

Last Fish Location:

Label: Dela0.3RB-LF

Average Bankfull Width (ft.): 25 Last Species: RBT

Distance to DS End (ft.): 1502

Habitat Notes: Low gradient at mouth up to 600', 1-3%. Braided at points, side channels, LWD, great pools, gravels, vegetation. At 600', increases to 4-6%, than up to 14% at 0.2 mi

Significant Habitat Overcome:

10-14% cascades

Last Habitat Location:

Label: Dela0.3RB-LH

Distance To Downstream End (ft.): 2278

Average Bankfull Width (ft.): 20

Habitat Feature: Natural Barrier

Status: Permanent

Attributes: 45 foot permanent bedrock falls. 6' deep plunge pool.

End of Survey Location:

End of Survey Point Label: Dela0.3RB-EOS

Delabarre LB 0.3rm RB 0.4rm

River System: Elwha

Crew: Glasgow, Beardslee

Survey Date: 09/13/00

Reference Point

Landmark Description: None

Marker Location: Mouth of tributary, 200ft ds falls on Delabarre LB 0.3rm

Downstream End of Survey

Relative to Reference Point: Same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 757

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other: Bedrock, 30-45% grade for length of survey

Detection Method Above Last Fish: Visual

Debris torrent in Last 10 yrs?

Debris torrent affects fish distribution?

Air Temperature (C):

Water Temperature (C): 7.5

Temperature Time: 12:00 PM

Notes:

This is the RB trib to the LB trib of Delabarre. Bedrock cascade, ww=8', BFW=20'. Lots of LWD, few pools to 1.0ft. Surveyed for .25 mi, no fish, found tailed frog juvenile at 0.2mi.

Last Fish Location:

Label:

Average Bankfull Width (ft.):

Last Species:

Habitat Notes: No Fish Observed

Significant Habitat Overcome:

Last Habitat Location:

Label:

Distance To Downstream End (ft.): 0

Average Bankfull Width (ft.):

Habitat Feature: N/A

Status:

Attributes:

End of Survey Location:

End of Survey Point Label: Dela0.3RB0.4RB-EOS

Delabarre

River System: Elwha

Crew: Glasgow, Beardslee

Survey Date: 09/13/00

Reference Point

Landmark Description: None

Marker Location: Mouth

Downstream End of Survey

Relative to Reference Point: Same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 6193

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other:

Detection Method Above Last Fish: Angling

Debris torrent in Last 10 yrs?

Debris torrent affects fish distribution?

Air Temperature (C): 10

Water Temperature (C): 5.5

Temperature Time: 8:45 AM

Notes:

Beautiful habitat US LF/LH falls. 20-40 ft long, 4-10 ft deep pools with 1-6 ft steps, avg. grade 13%. Confined bedrock canyon begins approx. 500 ft. US LF/LH falls. Above canyon, tailed frogs and 8% grade, ww = 12ft, boulder-step with 1-3' deep pools. Could not get electrofisher through canyon, angling for fish above canyon.

Last Fish Location:

Label: Dela-LFLH

Average Bankfull Width (ft.): 40 Last Species: RBT

Distance to DS End (ft.): 4759

Habitat Notes: RBT observed in plunge pool of LH falls. Step pools, bedrock and boulder. 2% to 12% grade, 0.5 to 4' deep pools below canyon. Canyon begins approx. 0.5 mi from mouth, 10-50' OHW. 3-

Significant Habitat Overcome:

Some cascades in canyon 25% over 20 feet. Narrow confined step-pool configuration in canyon.

Last Habitat Location:

Label: Dela-LFLH

Distance To Downstream End (ft.): 4759

Average Bankfull Width (ft.): 40

Habitat Feature: Natural Barrier

Status: Permanent

Attributes: 9' Bedrock/boulder falls

End of Survey Location:

End of Survey Point Label: Dela-EOS

Elwha Basin Creek RB 0.25rm

River System: Elwha

Crew: Glasgow, Beardslee

Survey Date: 09/10/00

Reference Point

Landmark Description: none

Marker Location: mouth of tributary

Downstream End of Survey

Relative to Reference Point: same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 2156

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other: unstable channel

Detection Method Above Last Fish: Electrofishing

Air Temperature (C): 11.5

Debris torrent in Last 10 yrs?

Water Temperature (C): 5

Debris torrent affects fish distribution?

Temperature Time: 11:55 AM

Notes:

WW=8-10ft, BFW=30ft, avg. grade of 20%. Last Habitat is upstream from end of survey. Survey ended because of unstable slopes and loose substrate, indicative of a recent debris flow.

Last Fish Location:

Label:

Average Bankfull Width (ft.):

Last Species:

Habitat Notes: No Fish Observed

Significant Habitat Overcome:

Last Habitat Location:

Label: Basn0.25RB-LHEOS

Distance To Downstream End (ft.): 2156

Average Bankful Width (ft.): 30

Habitat Feature: Gradient Increase

Status: Temporary

Attributes:

End of Survey Location:

End of Survey Point Label: Basn0.25RB-LHEOS

Elwha Basin Creek RB 0.4rm

River System: Elwha

Crew: Glasgow, Beardslee

Survey Date: 09/10/00

Reference Point

Landmark Description: none

Marker Location: mouth of tributary

Downstream End of Survey

Relative to Reference Point: same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 2387

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other: unconsolidated slopes, 60+% grade

Detection Method Above Last Fish: Electrofishing

Air Temperature (C): 9

Debris torrent in Last 10 yrs?

Water Temperature (C): 3.5

Debris torrent affects fish distribution?

Temperature Time: 5:40 PM

Notes:

Unconsolidated alluvium. Rills on LB and high, loose slope on RB. Mean grade of 25%, increasing at end of survey to 60%. No fish observed.

Last Fish Location:

Label:

Average Bankfull Width (ft.):

Last Species:

Habitat Notes: No Fish Observed

Significant Habitat Overcome:

Last Habitat Location:

Label: Basn0.4RB-LHEOS

Distance To Downstream End (ft.): 2387

Average Bankfull Width (ft.): 40

Habitat Feature: Gradient Increase

Status: Permanent

Attributes: 20% ds to 60% us

End of Survey Location:

End of Survey Point Label: Basn0.4RB-LHEOS

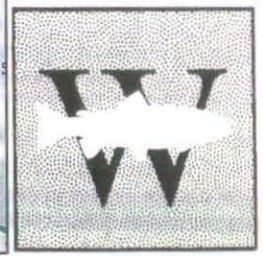
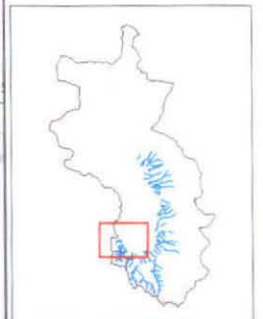
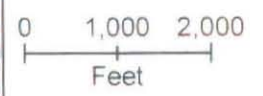
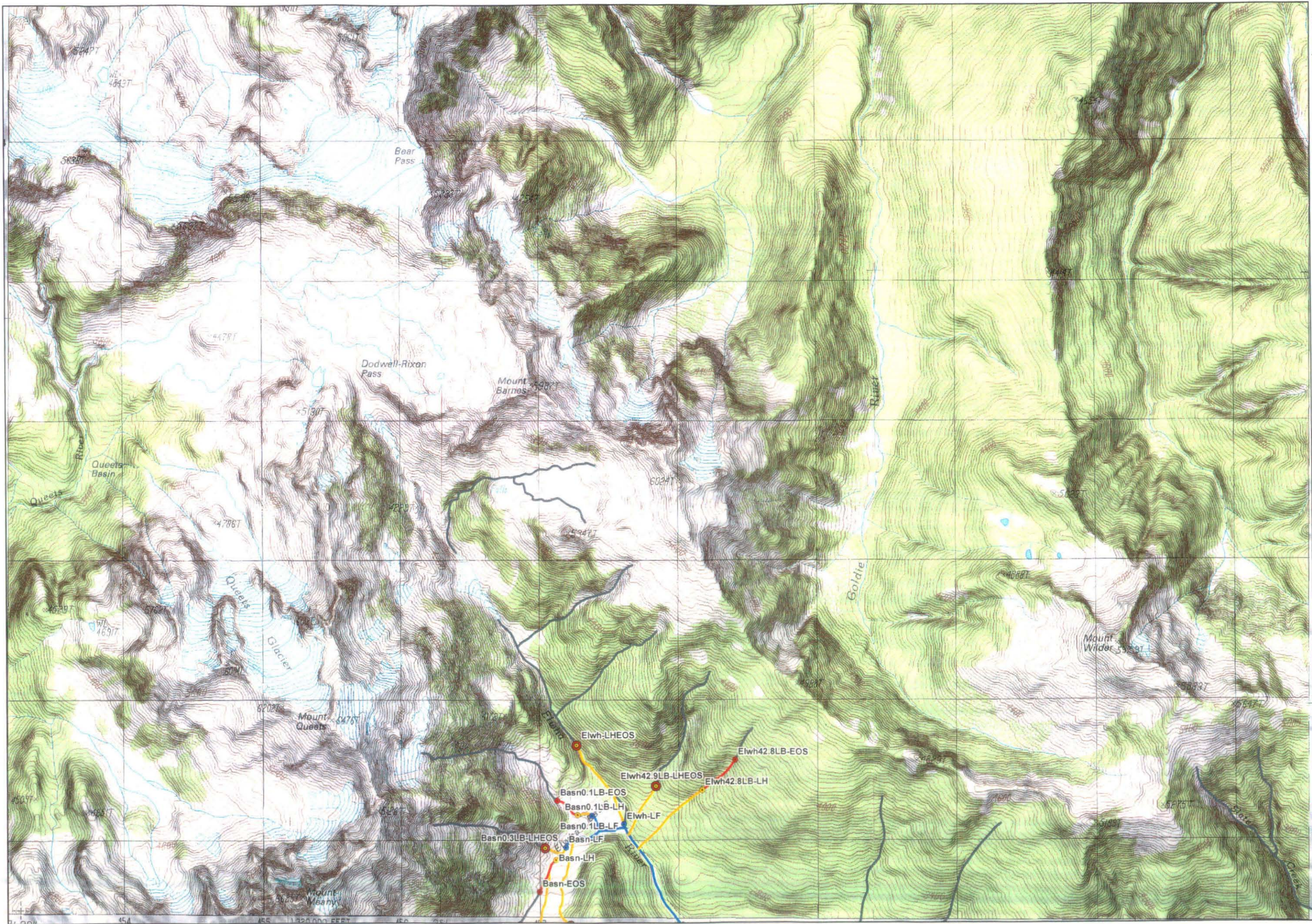
**Elwha Basin
Elwha River**

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Mt. Queets Quad

Stream Survey

-  Fish Bearing
-  Fish Habitat
-  No Habitat
-  Not Surveyed

-  Last Fish
-  Last Fish/Habitat
-  Last Habitat
-  Last Habitat, End Survey
-  End Survey
-  Last Fish/Habitat, End Survey



Elwha LB 42.8rm

River System: Elwha

Crew: Glasgow, Beardslee

Survey Date: 09/12/00

Reference Point

Landmark Description: none

Marker Location: mouth

Downstream End of Survey

Relative to Reference Point: same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 3105

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other:

Detection Method Above Last Fish: Visual

Debris torrent in Last 10 yrs?

Debris torrent affects fish distribution?

Air Temperature (C): 11

Water Temperature (C): 9

Temperature Time: 1:00 PM

Notes:

WW=6ft, BFW = 18ft, step-pool configuration. Stream appeared stable, less volatile then the streams from the past several days. The stream was subsurface from the mouth to 60ft us mouth. Tailed frogs observed along length of survey to end of survey. 100ft grades ranged from 11-16% near mouth to 23-52% at end of survey.

Last Fish Location:

Label:

Average Bankfull Width (ft.):

Last Species:

Habitat Notes: No Fish Observed

Significant Habitat Overcome:

Last Habitat Location:

Label: Elwh42.8LB-LH

Distance To Downstream End (ft.): 2041

Average Bankfull Width (ft.): 18

Habitat Feature: Natural Barrier

Status: Permanent

Attributes: 6ft bedrock falls, 0.8ft plunge pool. WW at falls 3ft.

End of Survey Location:

End of Survey Point Label: Elwh42.8LB-EOS

Elwha LB 42.9rm (Avalanche Cr.)

River System: Elwha

Crew: Glasgow, Beardslee

Survey Date: 09/12/00

Reference Point

Landmark Description: none

Marker Location: mouth of tributary

Downstream End of Survey

Relative to Reference Point: same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 1370

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other: electrofished to LH (.25 miles) without seeing any fish. LH at .25 mile, did not contin

Detection Method Above Last Fish: Electrofishing

Air Temperature (C): 12.5

Debris torrent in Last 10 yrs?

Water Temperature (C): 7.5

Debris torrent affects fish distribution?

Temperature Time: 11:30 AM

Notes:

This stream had recently experienced an avalanche. All riparian trees within 50ft of ww were down, most across the channel. Regardless, tailed frogs abound - some pools with 3-4 juveniles. Frogs less abundant with distance from Elwha. None observed upstream of 0.2 miles. 6ft bedrock falls at 0.25mi, grade holding at 20%, 5ft ww at falls. No plunge pool, passage seemed unlikely.

Last Fish Location:

Label:

Average Bankfull Width (ft.):

Last Species:

Habitat Notes: No Fish Observed

Significant Habitat Overcome:

Last Habitat Location:

Label: Elwh42.9LB-LHEOS

Distance To Downstream End (ft.): 1370

Average Bankfull Width (ft.): 30

Habitat Feature: Natural Barrier

Status: Permanent

Attributes: 6 ft bedrock falls. DS mean grade of 18-22%

End of Survey Location:

End of Survey Point Label: Elwh42.9LB-LHEOS

Elwha Basin Creek LB 0.1rm

River System: Elwha

Crew: Glasgow, Beardslee

Survey Date: 09/11/00

Reference Point

Landmark Description: none

Marker Location: mouth of tributary

Downstream End of Survey

Relative to Reference Point: same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 1362

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other: 60 foot tall bedrock falls, grade increases us.

Detection Method Above Last Fish: Electrofishing

Air Temperature (C): 8

Debris torrent in Last 10 yrs?

Water Temperature (C): 6.25

Debris torrent affects fish distribution?

Temperature Time: 6:00 PM

Notes:

Trib "A" in notes. Stream scoured to bedrock in several places. Three bedrock falls between LF and EOS - first is 40% over 25ft (LH), second is 30ft falls, third is 60ft falls.

Last Fish Location:

Label: Basn0.1LB-LF

Average Bankfull Width (ft.): 30 Last Species: RBT

Distance to DS End (ft.): 404

Habitat Notes: ww = 15ft, grade 10% below LF

Significant Habitat Overcome:

Last Habitat Location:

Label: Basn0.1LB-LH

Distance To Downstream End (ft.): 754

Average Bankfull Width (ft.): 15

Habitat Feature: Natural Barrier

Status: Permanent

Attributes: 40% over 25 ft, bedrock chute.

End of Survey Location:

End of Survey Point Label: Basn0.1LB-EOS

Elwha Basin Creek LB 0.3rm

River System: Elwha

Crew: Glasgow, Beardslee

Survey Date: 09/10/00

Reference Point

Landmark Description: none

Marker Location: mouth of tributary

Downstream End of Survey

Relative to Reference Point: same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 447

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other: snow field up to base of bedrock falls.

Detection Method Above Last Fish: n/a

Debris torrent in Last 10 yrs?

Debris torrent affects fish distribution?

Air Temperature (C):

Water Temperature (C):

Temperature Time:

Notes:

Could not survey stream for fish because snowfield. Steep grade, approx. 30ft BFW, 35% grade (measurements are approximate, made from 100ft or so above stream on snow field). No temperature measurements were possible.

Last Fish Location:

Label:

Average Bankfull Width (ft.):

Habitat Notes: No Fish Observed

Last Species:

Significant Habitat Overcome:

Last Habitat Location:

Label: Basn0.3LB-LHEOS

Distance To Downstream End (ft.): 447

Habitat Feature: Natural Barrier

Attributes: 300 foot bedrock falls, no plunge pool

Average Bankfull Width (ft.): 30

Status: Temporary

End of Survey Location:

End of Survey Point Label: Basn0.3LB-LHEOS

Elwha Basin Creek

River System: Elwha

Crew: Glasgow, Beardslee

Survey Date: 09/10/00

Reference Point

Landmark Description: none

Marker Location: mouth of Elwha Basin Creek

Downstream End of Survey

Relative to Reference Point: same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 2834

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other: snowfield obscures creek for over 1100 ft.

Detection Method Above Last Fish: Electrofishing

Air Temperature (C): 11

Debris torrent in Last 10 yrs?

Water Temperature (C): 3.5

Debris torrent affects fish distribution?

Temperature Time: 10:00 AM

Notes:

Stream "B" in notes. Entire basin is volatile - rills of alluvium attest to several streams and even more channels knocking around in the basin. Active channel width in basin is 125ft. Fish was electrofished but not brought to hand.

Last Fish Location:

Label: Basn-LF

Average Bankfull Width (ft.): 70 Last Species: char or rainbow Distance to DS End (ft.): 1601

Habitat Notes: Step-pool, ww=12ft, bw=72ft. Very depositional, rills of alluvium, braided channels. Fish located 80ft ds snowfield. Immediately ds LF is a 30% cascade over 17ft. Mean grade ds LF is

Significant Habitat Overcome:

Last Habitat Location:

Label: Basn-LH

Distance To Downstream End (ft.): 1981

Average Bankful Width (ft.): 60

Habitat Feature: Gradient Increase

Status: Temporary

Attributes: ds 18%, us 50% over 20ft

End of Survey Location:

End of Survey Point Label: Basn-EOS

Elwha Mainstem Headwater

River System: Elwha

Crew: Glasgow, Beardslee

Survey Date: 09/11/00

Reference Point

Landmark Description: none

Marker Location: Mouth of Elwha Basin Creek

Downstream End of Survey

Relative to Reference Point: same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 2290

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other: could not pass 30ft falls in bedrock canyon.

Detection Method Above Last Fish: Electrofishing

Air Temperature (C): 10

Debris torrent in Last 10 yrs?

Water Temperature (C): 2.75

Debris torrent affects fish distribution?

Temperature Time: 9:00 AM

Notes:

US LF, mean grade was 15% step pool channel with steps 1 to 8ft tall, ww=18ft. Grade range was 8-20%. At falls, hiked up canyon wall - could not descend to stream, but mean grade us falls was 15%. Habitat between LF and LH appeared to be great holding water - deep pools. Cold water and low productivity may be factors. A tailed frog was brought to hand 50ft ds LH falls. The "at confluence" end of fish distribution was puzzling - apparent end of fish for no apparent reason. Fish distribution continued up "Elwha Basin Creek (EBC)", but ended in Mainstem Elwha(MSE). MSE was 0.1 deg. C

Last Fish Location:

Label: Elwh-LF

Average Bankfull Width (ft.): 55 Last Species: RBT

Distance to DS End (ft.): 87

Habitat Notes: LF located at base of 200ft long step-pool cascade with avg. grade of 15%. Steepest section in cascade was 25% over 50ft. Pools in cascade ranged from 0.5 to 4.3ft deep, 3-5ft square,

Significant Habitat Overcome:
6-12% grade.

Last Habitat Location:

Label: Elwh-LHEOS

Distance To Downstream End (ft.): 2290

Average Bankfull Width (ft.): 50

Habitat Feature: Natural Barrier

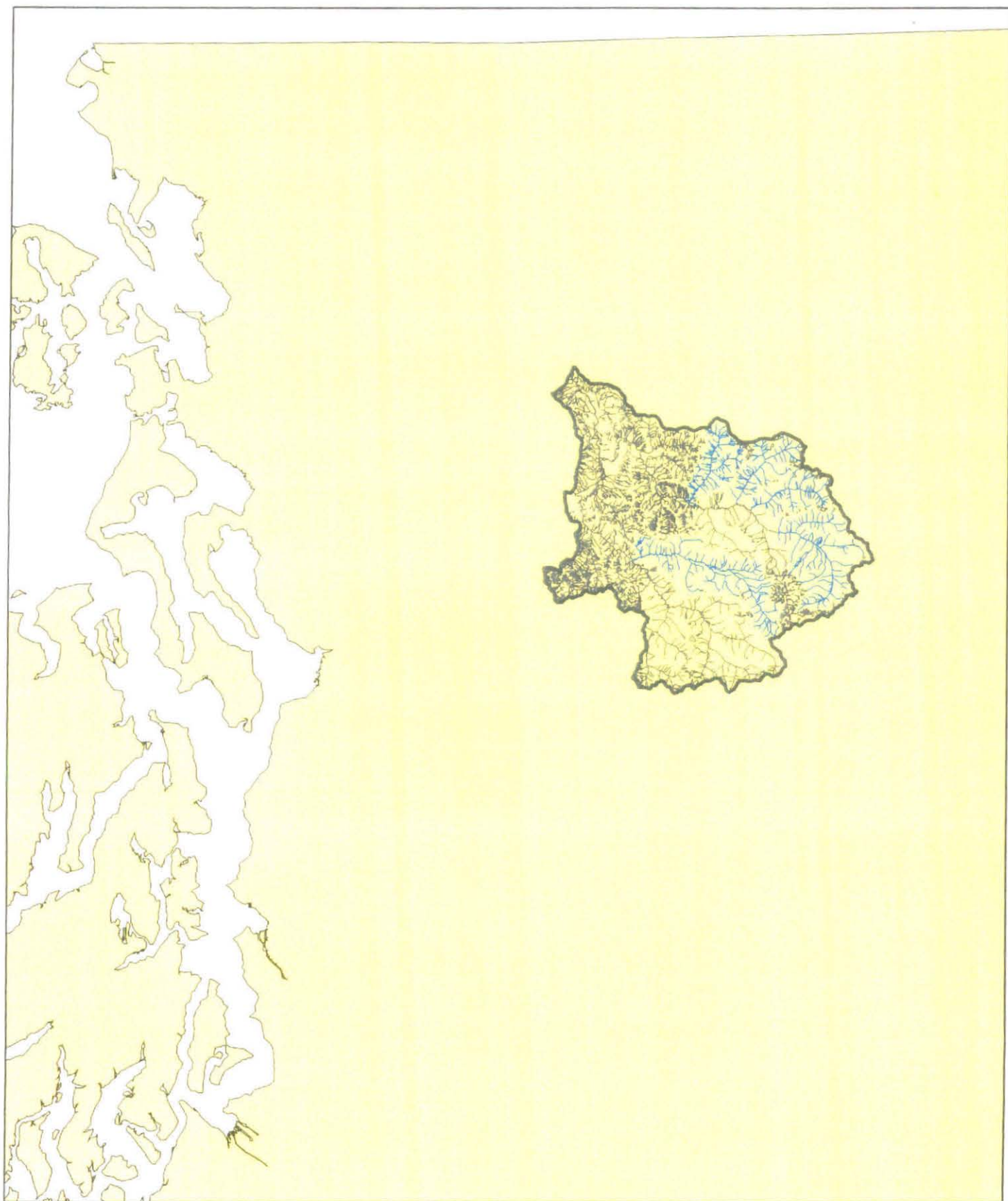
Status: Permanent

Attributes: 30 ft waterfall

End of Survey Location:

End of Survey Point Label: Elwh-LHEOS

Last Fish Surveys: Sauk/Suiattle Basin



Buck Creek Survey

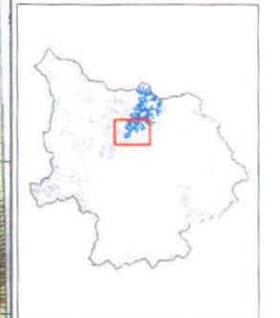
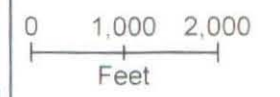
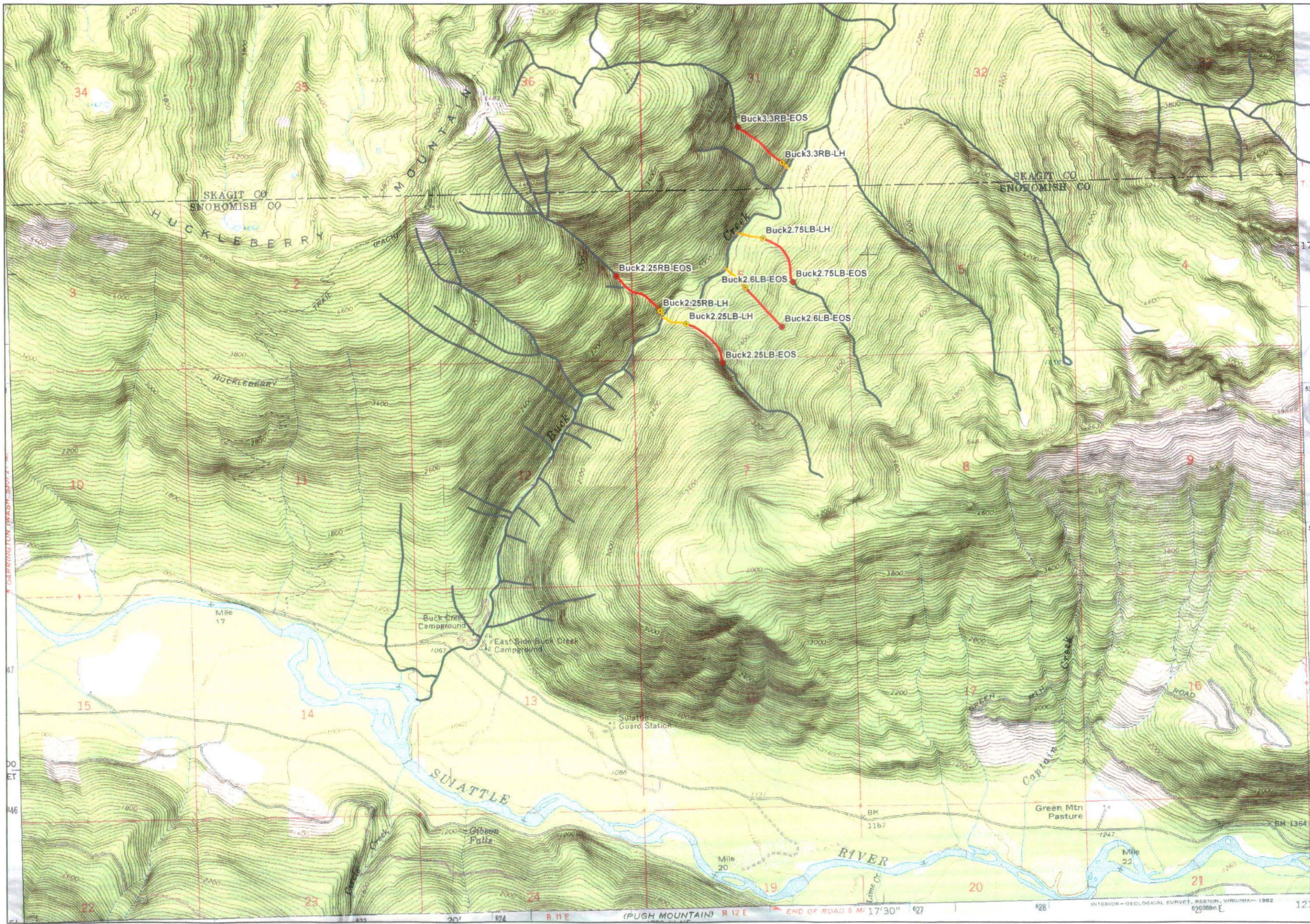


Suiattle Basin Buck Creek

Page 1 of 1
Huckleberry Mtn. Quac

Stream Survey

- Fish Bearing
- Fish Habitat
- No Habitat
- Not Surveyed
- Last Fish
- Last Fish/Habitat
- Last Habitat
- Last Habitat, End Survey
- End Survey
- Last Fish/Habitat, End Survey



Buck LB 2.25rm

River System: Suitttle

Crew: Crabb, McMillan, Remlinger

Survey Date: 08/02/00

Reference Point

Landmark Description: metal

Marker Location: RB ds side cedar log across crk

Downstream End of Survey

Relative to Reference Point: same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 1900

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other:

Detection Method Above Last Fish: Electofishing

Air Temperature (C): 17.2

Debris torrent in Last 10 yrs?

Water Temperature (C): 10.3

Debris torrent affects fish distribution?

Temperature Time: 8:30 AM

Notes:

Major washout, likely within last 5 yrs, 85' in width. No fish observed. From mouth 40% cascade for 20', then 40' at 8%, 5' at 20%, the last 500' at 12%. Stream holds constant 5'ww .

Last Fish Location:

Label:

Average Bankfull Width (ft.):

Last Species:

Habitat Notes: no fish observed

Significant Habitat Overcome:

Last Habitat Location:

Label: Buck2.25LB-LH

Distance To Downstream End (ft.): 590

Average Bankfull Width (ft.): 12

Habitat Feature: Gradient Increase

Status: Permanent

Attributes: 35% us cascades, then 24%

End of Survey Location:

End of Survey Point Label: Buck2.25LB-EOS

Buck RB 2.25rm

River System: Suiattle

Crew: Crabb, McMillan, Remlinger

Survey Date: 08/01/00

Reference Point

Landmark Description: metal

Marker Location: RB alder 15' off stream

Downstream End of Survey

Relative to Reference Point: same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 1450

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other:

Detection Method Above Last Fish: Electofishing

Debris torrent in Last 10 yrs?

Debris torrent affects fish distribution?

Air Temperature (C): 13.3

Water Temperature (C): 12.2

Temperature Time: 5:05 PM

Notes:

Three fish sampled in mainstem Buck at mouth of tributary, none in trib. Bfw 4.5' at mouth, 2.5' at last habitat, 4' water falls after which gradient increases to 45%.

Last Fish Location:

Label:

Average Bankfull Width (ft.):

Last Species:

Habitat Notes: no fish observed

Significant Habitat Overcome:

Last Habitat Location:

Label: Buck2.25RB-LH

Distance To Downstream End (ft.): 100

Average Bankfull Width (ft.): 2.5

Habitat Feature: Gradient Increase

Status: Permanent

Attributes: DS 4%, US 45%

End of Survey Location:

End of Survey Point Label: Buck2.25RB-EOS

Buck LB 2.6rm

River System: Suitttle

Crew: Crabb, McMillan, Remlinger

Survey Date: 08/1/00

Reference Point

Landmark Description: metal tag

Marker Location: RB alder at mouth 30' off buck

Downstream End of Survey

Relative to Reference Point: same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 1920

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other: 45% gradient above water falls

Detection Method Above Last Fish: Visual

Debris torrent in Last 10 yrs?

Debris torrent affects fish distribution?

Air Temperature (C): 14.4

Water Temperature (C): 9.4

Temperature Time: 12:50 PM

Notes:

From mouth, 30' at 26%, then 600' at 15%, then 24-30%.

Last Fish Location:

Label:

Average Bankfull Width (ft.):

Last Species:

Habitat Notes: no fish observed

Significant Habitat Overcome:

Last Habitat Location:

Label: Buck2.6LB-LH

Distance To Downstream End (ft.): 642

Average Bankfull Width (ft.): 2.5

Habitat Feature: Gradient Increase

Status: Permanent

Attributes: ds 15% us 24-30%

End of Survey Location:

End of Survey Point Label: Buck2.6LB-EOS

Buck LB 2.75rm

River System: Suiattle

Crew: Crabb, McMillan, Remlinger

Survey Date: 08/02/00

Reference Point

Landmark Description: metal tag

Marker Location: RB alder 10' from trib

Downstream End of Survey

Relative to Reference Point: same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 1950

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other:

Detection Method Above Last Fish: Visual

Debris torrent in Last 10 yrs?

Debris torrent affects fish distribution?

Air Temperature (C): 17.7

Water Temperature (C): 8.8

Temperature Time: 12:15 PM

Notes:

First 600' braided wetland forming 5'ww channels.

Last Fish Location:

Label:

Average Bankfull Width (ft.):

Last Species:

Habitat Notes: no fish observed

Significant Habitat Overcome:

Last Habitat Location:

Label: Buck2.75LB-LH

Distance To Downstream End (ft.): 598

Average Bankfull Width (ft.): 7

Habitat Feature: Gradient Increase

Status: Permanent

Attributes: ds 4-6% us 35%

End of Survey Location:

End of Survey Point Label: Buck2.75LB-EOS

Buck RB 3.3rm

River System: Suiattle

Crew: Crabb, McMillan, Remlinger

Survey Date: 08/01/00

Reference Point

Landmark Description: metal

Marker Location: RB hemlock 10' from stream

Downstream End of Survey

Relative to Reference Point: same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 1540

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other:

Detection Method Above Last Fish: Electrofishing

Debris torrent in Last 10 yrs?

Debris torrent affects fish distribution?

Air Temperature (C): 16.6

Water Temperature (C): 12.7

Temperature Time: 1:45 PM

Notes:

First 50' 18%, next 150' 12-14%.

Last Fish Location:

Label:

Average Bankfull Width (ft.):

Last Species:

Habitat Notes: no fish observed

Significant Habitat Overcome:

Last Habitat Location:

Label: Buck3.3RB-LH

Distance To Downstream End (ft.): 187

Average Bankfull Width (ft.): 5.5

Habitat Feature: Natural Barrier

Status: Permanent

Attributes: 65' water falls

End of Survey Location:

End of Survey Point Label: Buck3.3RB-EOS

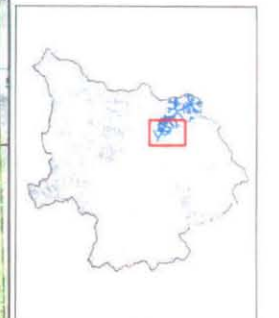
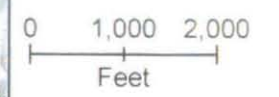
Downey Creek Survey



Suiattle Basin Downey Creek

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Downey Mtn. Quad

- ### Stream Survey
- Fish Bearing
 - Fish Habitat
 - No Habitat
 - Not Surveyed
 - Last Fish
 - Last Fish/Habitat
 - Last Habitat
 - Last Habitat, End Survey
 - End Survey
 - Last Fish/Habitat, End Survey



Downey RB 3.6rm

River System: Suiattle

Crew: Crabb, Remlinger

Survey Date: 8 /24/00

Reference Point

Landmark Description:

Marker Location: mouth

Downstream End of Survey

Relative to Reference Point: same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 2260

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other:

Detection Method Above Last Fish: Electofishing

Debris torrent in Last 10 yrs?

Debris torrent affects fish distribution?

Air Temperature (C): 22

Water Temperature (C): 14

Temperature Time: 1:30 PM

Notes:

Stream 4'ww and 8'bfv at mouth. 800' from mouth a 100' 22% step falls with a rbt 1/2 way up. Observed a 6" rbt 100' ds falls.

Last Fish Location:

Label: Down3.6RB-LF

Average Bankfull Width (ft.): 6 Last Species: RBT

Habitat Notes: cobbled step pools

Distance to DS End (ft.): 1064

Significant Habitat Overcome:

22% stepped gradient. 1 RBT was observed half way up 100' steps

Last Habitat Location:

Label: Down3.6RB-LH

Distance To Downstream End (ft.): 1413

Habitat Feature: Gradient Increase

Attributes: gradient increase with stream becoming fast and uninterrupted cascade

Average Bankfull Width (ft.): 6

Status: Permanent

End of Survey Location:

End of Survey Point Label: Down3.6RB-EOS

Downey RB 3.75

River System: Suiattle

Crew: Crabb, Remlinger

Survey Date: 8/24/00

Reference Point

Landmark Description:

Marker Location: mouth

Downstream End of Survey

Relative to Reference Point: same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 1500

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other:

Detection Method Above Last Fish: Electofishing

Debris torrent in Last 10 yrs?

Debris torrent affects fish distribution?

Air Temperature (C):

Water Temperature (C):

Temperature Time: 12:01 PM

Notes:

Probable 100' of habitat during high flows

Last Fish Location:

Label:

Average Bankfull Width (ft.):

Last Species:

Habitat Notes: no fish observed

Significant Habitat Overcome:

Last Habitat Location:

Label: Down3.75RB-LH

Distance To Downstream End (ft.): 92

Average Bankfull Width (ft.): 4

Habitat Feature: Channel Width

Status: Permanent

Attributes: low volume pools decreasing to small seep on hill

End of Survey Location:

End of Survey Point Label: Down3.75RB-EOS

Downey LB 4.1 rm

River System: Suiattle

Crew: Crabb, Remlinger

Survey Date: 8/24/00

Reference Point

Landmark Description: none

Marker Location: mouth

Downstream End of Survey

Relative to Reference Point: same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 1190

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other:

Detection Method Above Last Fish: Electofishing

Debris torrent in Last 10 yrs?

Debris torrent affects fish distribution?

Air Temperature (C): 19.5

Water Temperature (C): 12.5

Temperature Time: 11:20 AM

Notes:

710' of marginal habitat, needle lined pools with minimal gravels

Last Fish Location:

Label:

Average Bankfull Width (ft.):

Last Species:

Habitat Notes: no fish observed

Significant Habitat Overcome:

Last Habitat Location:

Label: Down4.1LB-LH

Distance To Downstream End (ft.): 710

Average Bankfull Width (ft.): 70

Habitat Feature: Gradient Increase

Status: Permanent

Attributes: ds2-3% us24%

End of Survey Location:

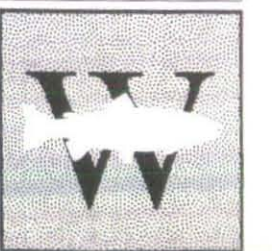
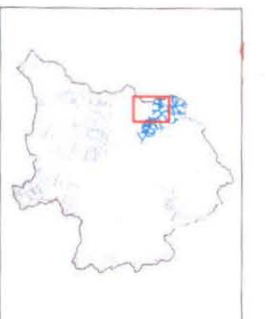
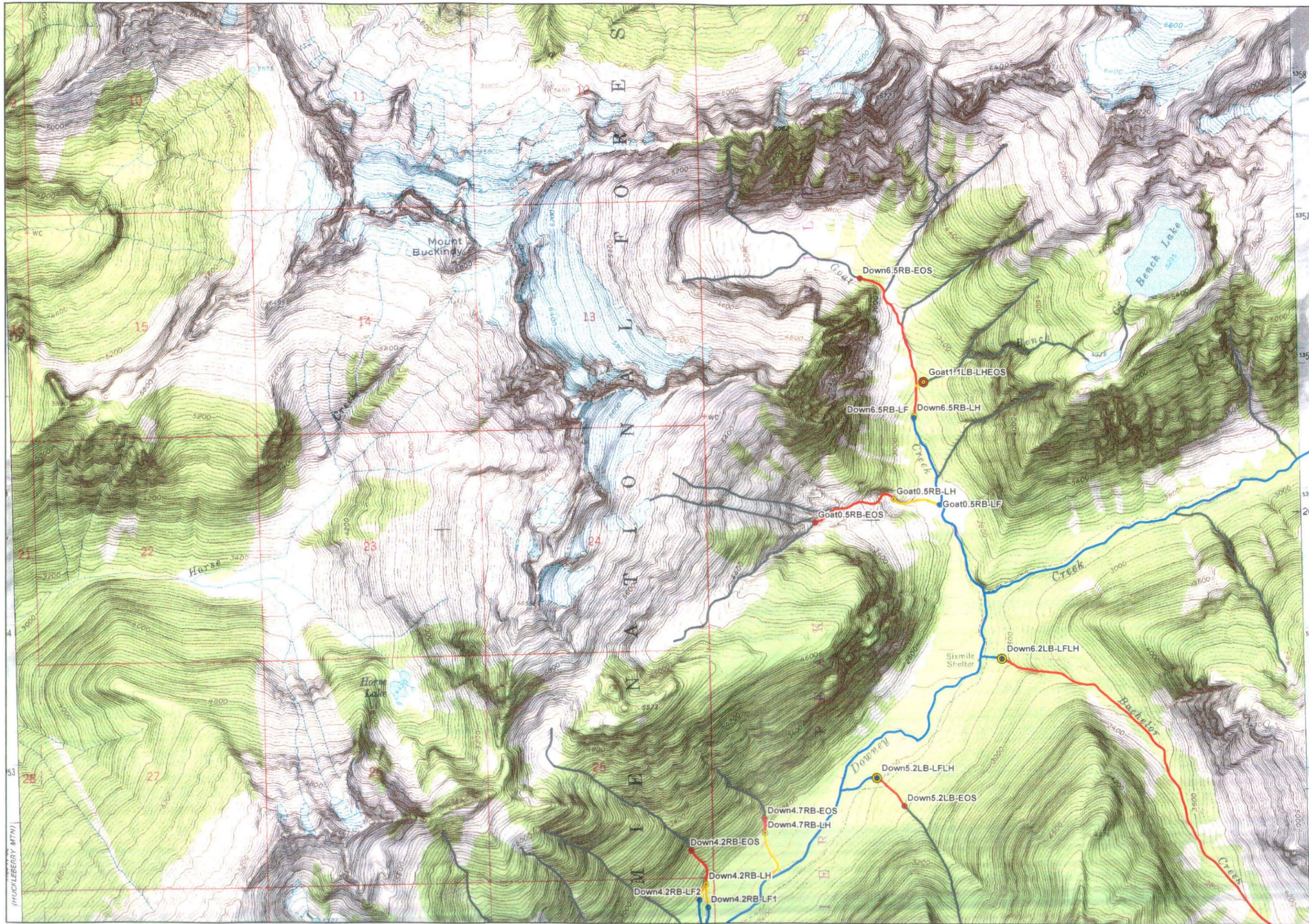
End of Survey Point Label: Down4.1LB-LH

Suiattle Basin Downey Creek

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Downey Mtn. Quad

Stream Survey

- Fish Bearing
- Fish Habitat
- No Habitat
- Not Surveyed
- Last Fish
- Last Fish/Habitat
- Last Habitat
- Last Habitat, End Survey
- End Survey
- Last Fish/Habitat, End Survey



Downey RB 4.2rm

River System: Suiattle

Crew: Remlinger, Crabb

Survey Date: 8 /24/00

Reference Point

Landmark Description: metal tag

Marker Location: RB alder at mouth 5' from water

Downstream End of Survey

Relative to Reference Point: same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 2225

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other:

Detection Method Above Last Fish: Electofishing

Debris torrent in Last 10 yrs?

Debris torrent affects fish distribution?

Air Temperature (C): 19

Water Temperature (C): 12

Temperature Time: 10:20 AM

Notes:

Stream divided into two channels. RB and LB channels found to have juveniles. Good habitat for about 1300' to log jam. Gradient starting at 2% increasing to 12% at jam, then increase to 32%. RB last fish temp. a-18.7C w-12.1C, LB last fish temp. A-19 C w- 12C

Last Fish Location:

Label: Down4.2RB-LF2

Average Bankfull Width (ft.): 6.5 Last Species: RBT

Habitat Notes: cobble,gravel, step pools

Distance to DS End (ft.): 899

Significant Habitat Overcome:

Label: Down4.2RB-LF1

Average Bankfull Width (ft.): 6.5 Last Species: RBT

Habitat Notes: cobble,gravel, step pools

Distance to DS End (ft.): 745

Significant Habitat Overcome:

Last Habitat Location:

Label: Down4.2RB-LH

Distance To Downstream End (ft.): 1290

Habitat Feature: LWD jam

Attributes: 32% gradient above jam

Average Bankful Width (ft.): 6

Status:

End of Survey Location:

Downey RB 4.7rm

River System: Suiattle

Crew: Remlinger, Crabb

Survey Date: 8/24/00

Reference Point

Landmark Description: Metal tag on RB hemlock

Marker Location: Approximately .25 mi. US mouth, where stream goes subsurface.

Downstream End of Survey

Relative to Reference Point: .25 mi. DS reference point, at mouth

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 1624

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other:

Detection Method Above Last Fish: Electofishing

Air Temperature (C): 17.9

Debris torrent in Last 10 yrs?

Water Temperature (C): 11.9

Debris torrent affects fish distribution?

Temperature Time: 8:10 AM

Notes:

Dry channel for 1140" turning into type 4 stream for 100', then type 5 for 50' ending small channels.
Lower section 1 to 2% gradient.

Last Fish Location:

Label:

Average Bankfull Width (ft.): Last Species:

Distance to DS End (ft.):

Habitat Notes: No Fish Observed

Significant Habitat Overcome:

Last Habitat Location:

Label: Down4.7RB-LH

Distance To Downstream End (ft.): 1291

Average Bankful Width (ft.): 6

Habitat Feature: Gradient Increase

Status: Permanent

Attributes: above spring many channels with steep gradient

End of Survey Location:

End of Survey Point Label: Down4.7RB-EOS

Downey LB 5.2rm

River System: Suitttle

Crew: Remlinger, Crabb

Survey Date: 8/22/00

Reference Point

Landmark Description: Metal Tag, on alder 5' from stream

Marker Location: RB at mouth

Downstream End of Survey

Relative to Reference Point: Same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 1890

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other:

Detection Method Above Last Fish: Electofishing

Debris torrent in Last 10 yrs?

Debris torrent affects fish distribution?

Air Temperature (C): 24

Water Temperature (C): 9

Temperature Time: 3:51 PM

Notes:

Wetted Width: 9' Avg. Last fish not brought to hand.

Last Fish Location:

Label: Down5.2LB-LFLH

Average Bankfull Width (ft.): 14 Last Species: Unknown

Distance to DS End (ft.): 957

Habitat Notes: 3' LWD step pools, grave/sand/cobble substrate

Significant Habitat Overcome:

8-10% gradient w/ LWD step pools

Last Habitat Location:

Label: Down5.2LB-LFLH

Distance To Downstream End (ft.): 957

Average Bankful Width (ft.): 14

Habitat Feature: Gradient Increase

Status: Permanent

Attributes: 22-24% gradient with 4' LWD falls for remainder of survey

End of Survey Location:

End of Survey Point Label: Down5.2LB-EOS

Downey LB 6.2rm (Bachelor Cr.)

River System: Suiattle

Crew: Remlinger, Crabb

Survey Date: 8/23/00

Reference Point

Landmark Description: Metal Tag on Alder 1' from stream

Marker Location: RB at mouth

Downstream End of Survey

Relative to Reference Point: Same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 15925

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other:

Detection Method Above Last Fish: Electofishing

Debris torrent in Last 10 yrs?

Debris torrent affects fish distribution?

Air Temperature (C): 19.5

Water Temperature (C): 9

Temperature Time: 3:10 PM

Notes:

Wetted width = 12'.

Last Fish Location:

Label: Down-LFLH

Average Bankfull Width (ft.): 20 Last Species: char

Distance to DS End (ft.): 508

Habitat Notes: LF in plunge pool below step falls, 10-12' tall steps, extending over 1000'

Significant Habitat Overcome:

Last Habitat Location:

Label: Down-LFLH

Distance To Downstream End (ft.): 508

Average Bankfull Width (ft.): 20

Habitat Feature: Natural Barrier

Status: Permanent

Attributes: step fall series, 10-12' steps, extending over 1000'

End of Survey Location:

End of Survey Point Label: Down-EOS

Downey RB 6.5rm (Goat Creek)

River System: Suiattle

Crew: Remlinger, Yacker

Survey Date: 8/16/00

Reference Point

Landmark Description: Metal Tag, 18" Hemlock

Marker Location: RB at mouth on Downy Cr.

Downstream End of Survey

Relative to Reference Point: Same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 8520

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other:

Detection Method Above Last Fish: Electofishing

Debris torrent in Last 10 yrs?

Debris torrent affects fish distribution?

Air Temperature (C):

Water Temperature (C):

Temperature Time:

Notes:

Last fish found in pool above 5' falls. Last habitat occurs where gradient increases to 20% for 0.6 mi. Gradient then increases to 30% for 0.3 mi.

Last Fish Location:

Label: Down6.5RB-LF

Average Bankfull Width (ft.): 25 Last Species: char

Distance to DS End (ft.): 4663

Habitat Notes: Pool above 5' stepped falls.

Significant Habitat Overcome:

5' stepped falls

Last Habitat Location:

Label: Down6.5RB-LH

Distance To Downstream End (ft.): 4720

Average Bankfull Width (ft.): 25

Habitat Feature: Gradient Increase

Status: Permanent

Attributes: gradient above 20%, minimal holding habitat

End of Survey Location:

End of Survey Point Label: Down6.5RB-EOS

Goat RB 0.5rm

River System: Suiattle

Crew: Remlinger, Starr

Survey Date: 8/07/00

Reference Point

Landmark Description: Metal Tag on alder

Marker Location: RB 15' from mouth

Downstream End of Survey

Relative to Reference Point: Same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 3391

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other:

Detection Method Above Last Fish: Electofishing

Air Temperature (C): 15.5

Debris torrent in Last 10 yrs?

Water Temperature (C): 7.2

Debris torrent affects fish distribution?

Temperature Time: 8:25 AM

Notes:

Fish observed on 2nd survey of this stream (8/22/00). Stream cut through seasonal ice field for first 200'.

Last Fish Location:

Label: Goat0.5RB-LF

Average Bankfull Width (ft.): 20 Last Species: RBT

Distance to DS End (ft.): 107

Habitat Notes: 12-14% gradient, boulder & cobble substrate

Significant Habitat Overcome:

Last Habitat Location:

Label: Goat0.5RB-LH

Distance To Downstream End (ft.): 1252

Average Bankful Width (ft.): 20

Habitat Feature: Natural Barrier

Status: Permanent

Attributes: 500' cascade falls

End of Survey Location:

End of Survey Point Label: Goat0.5RB-LF

Goat LB 1.1 (Bench Cr.)

River System: Suiattle

Crew: Remlinger, Yacker

Survey Date: 8/16/00

Reference Point

Landmark Description: None

Marker Location: N/A

Downstream End of Survey

Relative to Reference Point: Mouth

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 193

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other: according to maps, 30% gradient not expected to decrease.

Detection Method Above Last Fish: Electofishing

Air Temperature (C):

Debris torrent in Last 10 yrs?

Water Temperature (C):

Debris torrent affects fish distribution?

Temperature Time:

Notes:

Last Fish Location:

Label:

Average Bankfull Width (ft.): Last Species:

Distance to DS End (ft.):

Habitat Notes: No Fish Observed

Significant Habitat Overcome:

Last Habitat Location:

Label: Goat1.1LB-LHEOS

Distance To Downstream End (ft.): 193

Average Bankfull Width (ft.): 4.5

Habitat Feature: Gradient Increase

Status: Permanent

Attributes: 200 ft. of step pools forced by LWD, then +30% gradient continuing up mountain.











End of Survey Location:

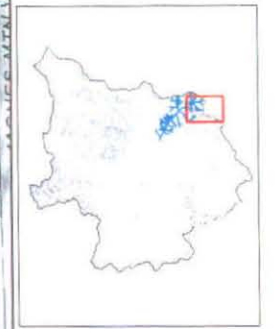
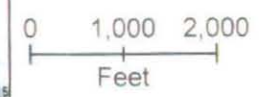
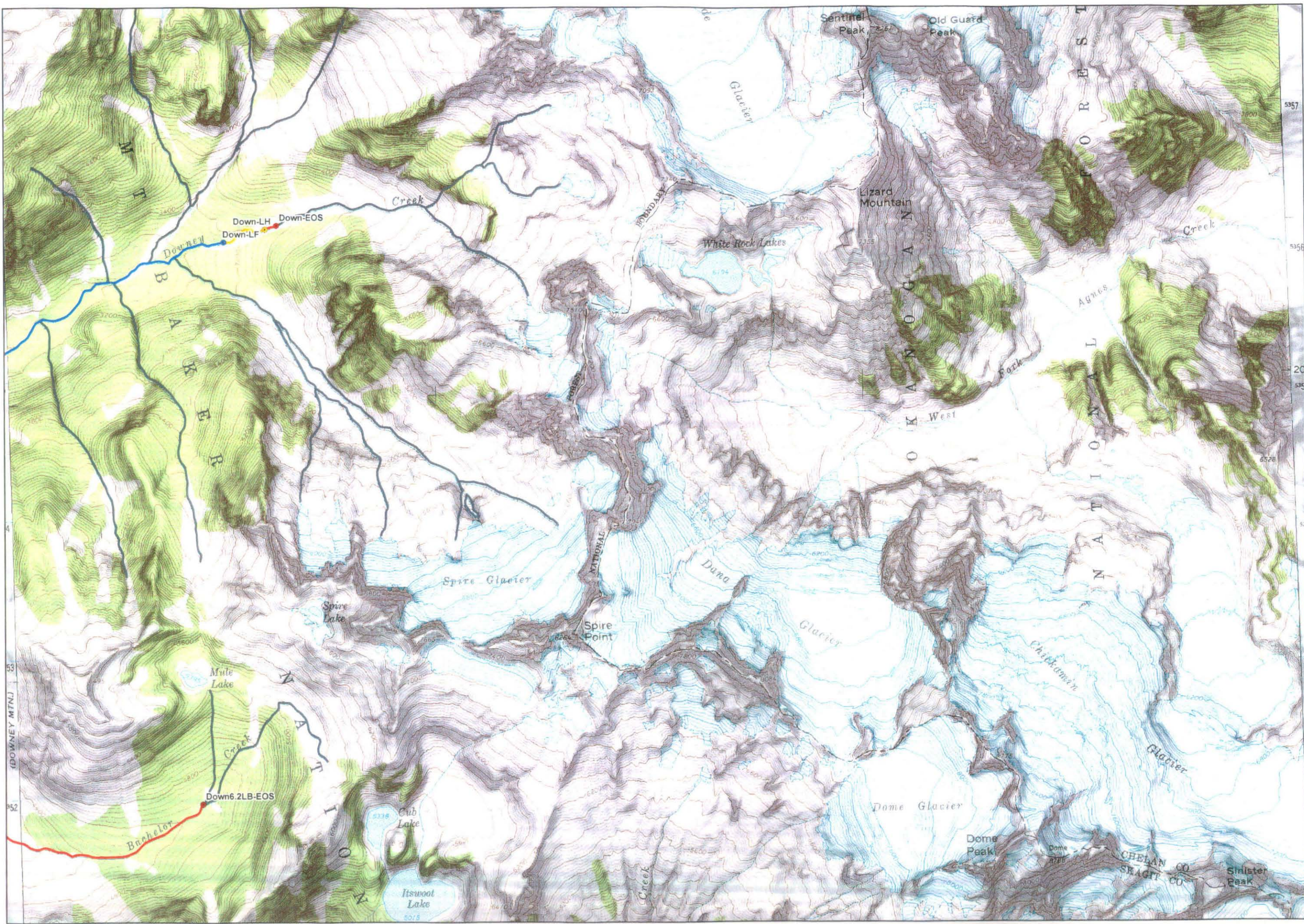
End of Survey Point Label: Goat1.1LB-LHEOS

Suiattle Basin Downey Creek

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Dome Pk. Quad

Stream Survey

-  Fish Bearing
-  Fish Habitat
-  No Habitat
-  Not Surveyed
-  Last Fish
-  Last Fish/Habitat
-  Last Habitat
-  Last Habitat, End Survey
-  End Survey
-  Last Fish/Habitat, End Survey



Downey Creek

River System: Suiattle

Crew: Remlinger, Yacker

Survey Date: 8/17/00

Reference Point

Landmark Description: None

Marker Location: None

Downstream End of Survey

Relative to Reference Point: Downey/Goat Confluence

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 15081

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other: Last habitat barrier prevented further surveying.

Detection Method Above Last Fish: Angling

Air Temperature (C):

Debris torrent in Last 10 yrs?

Water Temperature (C):

Debris torrent affects fish distribution?

Temperature Time:

Notes:

Entered stream above confluence with Goat Cr., bypassing reported falls. Did not observe falls, which were very audible while hiking around. At this point stream was very low gradient (2-3%) for several miles of pristine habitat with up to 40' Wetted width and 65' OHWM. Last habitat was caused by combination of gradient and velocity in restricted channel.

Last Fish Location:

Label: Down-LF

Average Bankfull Width (ft.): 10 Last Species: char

Distance to DS End (ft.): 13664

Habitat Notes: Step pools, cobble/gravel/sand substrate.

Significant Habitat Overcome:

Falls on Downey Cr. just above Downey/Goat confluence. Also 5-6' Falls at Downey rm 8.6.

Last Habitat Location:

Label: Down-LH

Distance To Downstream End (ft.): 14793

Average Bankfull Width (ft.): 4

Habitat Feature: Natural Barrier

Status: Permanent

Attributes: Gradient increases to 22-24% for 100m, at which point stream enters slick rock chute, with no pools and high velocity, acting as barrier.

End of Survey Location:

End of Survey Point Label: Down-EOS

Sulphur Creek Survey



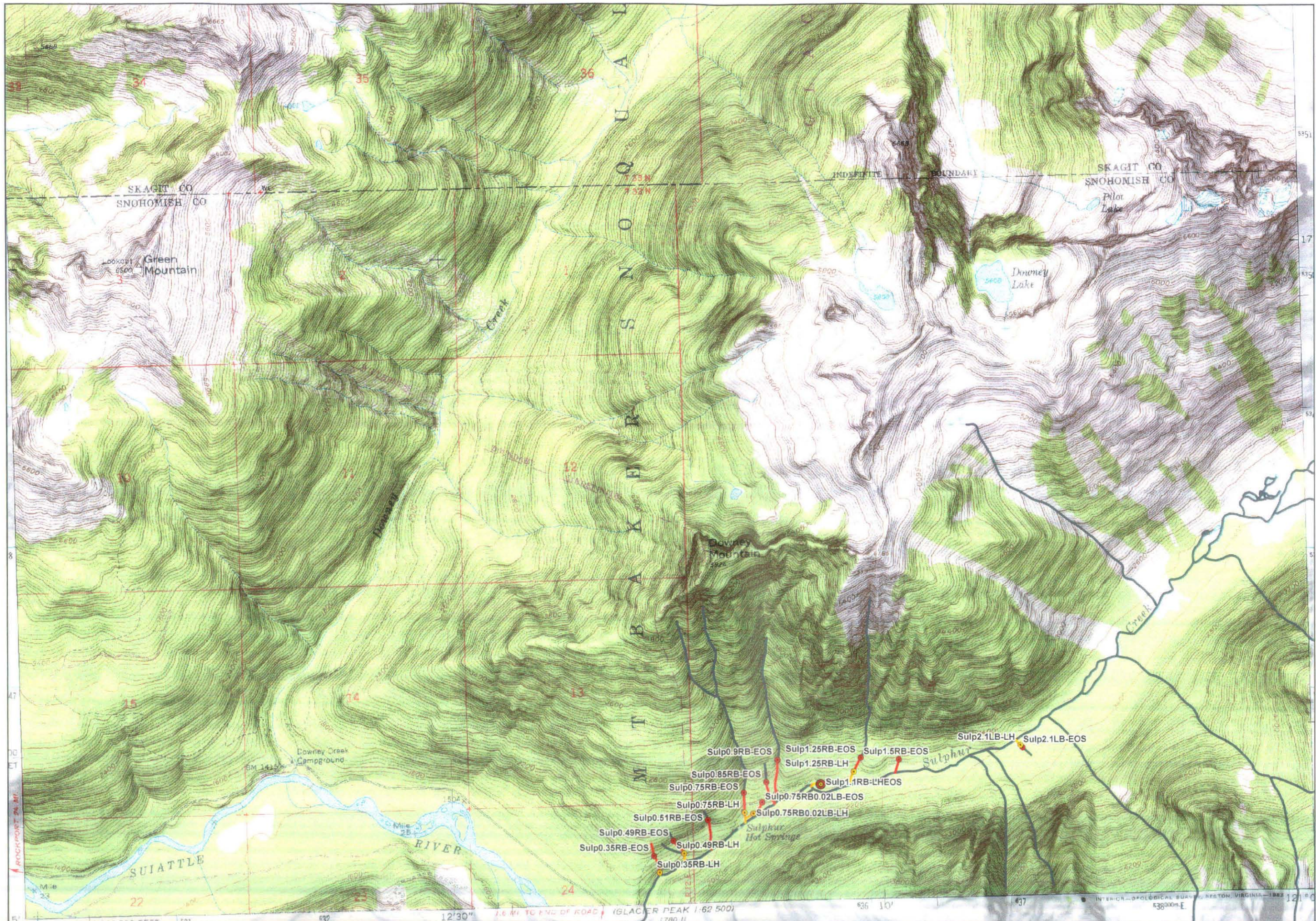
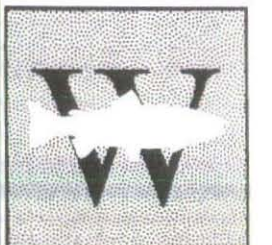
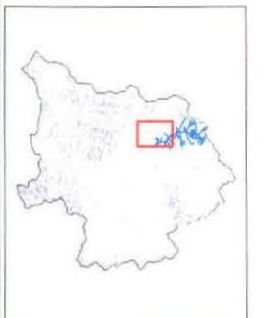
Suiattle Basin Sulphur Creek

Page 1 of 1
Downey Mtn. Quad

Stream Survey

- Fish Bearing
- Fish Habitat
- No Habitat
- Not Surveyed
- Last Fish
- Last Fish/Habitat
- Last Habitat
- Last Habitat, End Survey
- End Survey
- Last Fish/Habitat, End Survey

0 1,000 2,000
Feet



Sulphur RB 0.35rm

River System: Suiattle

Crew: White, Remlinger

Survey Date: 08/30/00

Reference Point

Landmark Description: metal

Marker Location: 1b cedar 40' upstream

Downstream End of Survey

Relative to Reference Point: same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 761

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other:

Detection Method Above Last Fish: Visual

Debris torrent in Last 10 yrs?

Debris torrent affects fish distribution?

Air Temperature (C):

Water Temperature (C):

Temperature Time:

Notes:

Sub-surface flow at mouth (does run during rainy season) 60' at 2%, then increasing to 55%+.

Last Fish Location:

Label:

Average Bankfull Width (ft.):

Last Species:

Habitat Notes: no fish observed

Significant Habitat Overcome:

Last Habitat Location:

Label: Sulp0.35RB-LH

Distance To Downstream End (ft.): 63

Average Bankfull Width (ft.): 2.5

Habitat Feature: Gradient Increase

Status: Permanent

Attributes: ds 2% us 55%+

End of Survey Location:

End of Survey Point Label: Sulp0.35RB-EOS

Sulphur RB 0.49rm

River System: Suiattle

Crew: White, Remlinger

Survey Date: 08/30/00

Reference Point

Landmark Description: metal

Marker Location: alder in center mouth delta

Downstream End of Survey

Relative to Reference Point: same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 400

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other:

Detection Method Above Last Fish: Visual

Debris torrent in Last 10 yrs?

Debris torrent affects fish distribution?

Air Temperature (C):

Water Temperature (C):

Temperature Time:

Notes:

Very braided at the mouth. Stream substrate composed mostly of sand and small gravel. Upstream channel is subsurface, intermittent and divided.

Last Fish Location:

Label:

Average Bankfull Width (ft.):

Last Species:

Habitat Notes: no fish observed

Significant Habitat Overcome:

Last Habitat Location:

Label: Sulp0.49RB-LH

Distance To Downstream End (ft.): 186

Average Bankfull Width (ft.): 4

Habitat Feature: Tributary Junction

Status: Temporary

Attributes: Intermittant, subsurface and braided, ww decreased to 1.5'

End of Survey Location:

End of Survey Point Label: Sulp0.49RB-EOS

Sulphur RB 0.51rm

River System: Suiattle

Crew: White, Remlinger

Survey Date: 08/30/00

Reference Point

Landmark Description: metal

Marker Location: Mid-delta Alder at mouth

Downstream End of Survey

Relative to Reference Point: same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 705

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other:

Detection Method Above Last Fish: Electofishing

Debris torrent in Last 10 yrs?

Debris torrent affects fish distribution?

Air Temperature (C):

Water Temperature (C):

Temperature Time:

Notes:

Barrier at mouth, 45% for 20'. 8 to 10% for 300', 3' ww shallow and gravel. Increasing to 25% with amphibians in upper reaches.

Last Fish Location:

Label:

Average Bankfull Width (ft.):

Last Species:

Habitat Notes: no fish observrd

Significant Habitat Overcome:

Last Habitat Location:

Label:

Distance To Downstream End (ft.): 0

Average Bankfull Width (ft.): 6

Habitat Feature: Natural Barrier

Status: Permanent

Attributes: 45% over 20' at mouth

End of Survey Location:

End of Survey Point Label: Sulp0.51RB-EOS

Sulphur RB 0.75rm

River System: Suiattle

Crew: White, Remlinger

Survey Date: 08/31/00

Reference Point

Landmark Description: metal

Marker Location: rb cedar 10' from mouth.

Downstream End of Survey

Relative to Reference Point: same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 700

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other:

Detection Method Above Last Fish: Electofishing

Debris torrent in Last 10 yrs?

Debris torrent affects fish distribution?

Air Temperature (C):

Water Temperature (C):

Temperature Time:

Notes:

6' wv and 16' bfw at mouth. 70' upstream mouth, 12% step pools next 150', increasing to 20% next 60', increasing to 30+%. Sand, boulder, and gravel substrate, several salamanders brought to hand.

Last Fish Location:

Label:

Average Bankfull Width (ft.):

Last Species:

Habitat Notes: no fish observed

Significant Habitat Overcome:

Last Habitat Location:

Label: Sulp0.75RB-LH

Distance To Downstream End (ft.): 246

Average Bankfull Width (ft.): 5

Habitat Feature: Gradient Increase

Status: Permanent

Attributes: ds <20% us 30+%

End of Survey Location:

End of Survey Point Label: Sulp0.75RB-EOS

Sulphur RB 0.75rm 0.02 LB

River System: Suiattle

Crew: White, Remlinger

Survey Date: 08/31/00

Reference Point

Landmark Description: metal

Marker Location: rb cedar 70' below confluence

Downstream End of Survey

Relative to Reference Point: same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 570

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other:

Detection Method Above Last Fish: Electofishing

Debris torrent in Last 10 yrs?

Debris torrent affects fish distribution?

Air Temperature (C):

Water Temperature (C):

Temperature Time:

Notes:

2'ww and 4'bfw at mouth. Small lb trib (12' in length) to a spring with resident salamander, stream continues approx. 400, with sand , small cobbles and pools, until going subsurface.

Last Fish Location:

Label:

Average Bankfull Width (ft.):

Last Species:

Habitat Notes: no fish observed

Significant Habitat Overcome:

Last Habitat Location:

Label: Sulp0.75RB0.02LB-LH

Distance To Downstream End (ft.): 217

Average Bankfull Width (ft.): 4

Habitat Feature: Natural Barrier

Status: Temporary

Attributes: seasonal - stream goes subsurface

End of Survey Location:

End of Survey Point Label: Sulp0.75RB0.02LB-EO

Sulphur RB 0.85rm

River System: Suiattle

Crew: White, Remlinger

Survey Date: 08/31/00

Reference Point

Landmark Description: mouth

Marker Location: RB alder 5' from mouth

Downstream End of Survey

Relative to Reference Point: same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 550

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other:

Detection Method Above Last Fish: Electofishing

Debris torrent in Last 10 yrs?

Debris torrent affects fish distribution?

Air Temperature (C):

Water Temperature (C):

Temperature Time:

Notes:

Barrier at mouth, 42% for 80', then 22% for 80', then 35%. 2-3' ww and 8' bfw at mouth. Tailed frogs and salamanders observed.

Last Fish Location:

Label:

Average Bankfull Width (ft.): Last Species:

Distance to DS End (ft.):

Habitat Notes: no fish observed

Significant Habitat Overcome:

Last Habitat Location:

Label:

Distance To Downstream End (ft.): 0

Average Bankfull Width (ft.): 8

Habitat Feature: Gradient Increase

Status: Permanent

Attributes: 42% gradient at mouth

End of Survey Location:

End of Survey Point Label: Sulp0.85RB-EOS

Sulphur RB 0.9rm

River System: Suiattle

Crew: White, Remlinger

Survey Date: 09/01/00

Reference Point

Landmark Description: metal

Marker Location: LB 35' from Sulphur, 5' from trib on an alder

Downstream End of Survey

Relative to Reference Point: same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 920

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other:

Detection Method Above Last Fish: Electofishing

Debris torrent in Last 10 yrs?

Debris torrent affects fish distribution?

Air Temperature (C):

Water Temperature (C):

Temperature Time:

Notes:

Channel braided at mouth, 35' at 60%. Then 4% for next 75' before going subsurface. Stream 5' to 6' ww but very shallow. Salamanders observed.

Last Fish Location:

Label:

Average Bankfull Width (ft.):

Last Species:

Habitat Notes: no fish observed

Significant Habitat Overcome:

Last Habitat Location:

Label:

Distance To Downstream End (ft.): 0

Average Bankfull Width (ft.): 8

Habitat Feature: Gradient Increase

Status: Permanent

Attributes: 60% for 35'

End of Survey Location:

End of Survey Point Label: Sulp0.9RB-EOS

Sulphur RB 1.1rm

River System: Suiattle

Crew: White, Remlinger

Survey Date: 09/01/00

Reference Point

Landmark Description: metal

Marker Location: RB alder 15' from mouth

Downstream End of Survey

Relative to Reference Point: same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 250

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other:

Detection Method Above Last Fish: Electofishing

Debris torrent in Last 10 yrs?

Debris torrent affects fish distribution?

Air Temperature (C):

Water Temperature (C):

Temperature Time:

Notes:

Stream 12% for 10', 4% for 150'. 1'ww for last 60', before going subsurface.

Last Fish Location:

Label:

Average Bankfull Width (ft.):

Last Species:

Habitat Notes: no fish observed

Significant Habitat Overcome:

Last Habitat Location:

Label: Sulp1.1RB-LHEOS

Distance To Downstream End (ft.): 220

Average Bankfull Width (ft.): 4

Habitat Feature: Natural Barrier

Status: Temporary

Attributes: ds 4% us subsurface - seasonal barrier

End of Survey Location:

End of Survey Point Label: Sulp1.1RB-LHEOS

Sulphur RB 1.25rm

River System: Suiattle

Crew: White, Remlinger

Survey Date: 09/01/00

Reference Point

Landmark Description: metal

Marker Location: LB cedar 6' from mouth

Downstream End of Survey

Relative to Reference Point: same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 660

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other:

Detection Method Above Last Fish: Electofishing

Debris torrent in Last 10 yrs?

Debris torrent affects fish distribution?

Air Temperature (C):

Water Temperature (C):

Temperature Time:

Notes:

14% for 15' at mouth, 5% with sand and gravel pools for 250'. 2'ww until going subsurface. Salamanders and Tailed Frogs observed

Last Fish Location:

Label:

Average Bankfull Width (ft.):

Last Species:

Habitat Notes: no fish observed

Significant Habitat Overcome:

Last Habitat Location:

Label: Sulp1.25RB-LH

Distance To Downstream End (ft.): 290

Average Bankfull Width (ft.): 5

Habitat Feature: Natural Barrier

Status: Temporary

Attributes: ds 5% us subsurface - seasonal

End of Survey Location:

End of Survey Point Label: Sulp1.25RB-EOS

Sulphur RB 1.5rm

River System: Suiattle

Crew: White, Remlinger

Survey Date: 09/01/00

Reference Point

Landmark Description: metal

Marker Location: hemlock middle of delta, 25' from Sulphur

Downstream End of Survey

Relative to Reference Point: same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 330

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other:

Detection Method Above Last Fish: Visual

Debris torrent in Last 10 yrs?

Debris torrent affects fish distribution?

Air Temperature (C):

Water Temperature (C):

Temperature Time:

Notes:

At time of survey, no water in channels. 4 channels 6' wide, with total area covered approx 70' in width. 25% and increasing. Do not know if fish were ever present, as creek is now dry. No idea what may have caused mass wasting.

Last Fish Location:

Label:

Average Bankfull Width (ft.):

Last Species:

Habitat Notes: no fish observed

Significant Habitat Overcome:

Last Habitat Location:

Label:

Distance To Downstream End (ft.): 0

Average Bankfull Width (ft.): 6

Habitat Feature: Natural Barrier

Status: Temporary

Attributes: us 25+% dry creek channels

End of Survey Location:

End of Survey Point Label: Sulp1.5RB-EOS

Sulphur LB 2.1rm

River System: Suiattle

Crew: White, Remlinger

Survey Date: 8/29/00

Reference Point

Landmark Description: metal

Marker Location: cedar RB 10' from mouth

Downstream End of Survey

Relative to Reference Point: same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 244

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other:

Detection Method Above Last Fish: Visual

Debris torrent in Last 10 yrs?

Debris torrent affects fish distribution?

Air Temperature (C):

Water Temperature (C):

Temperature Time:

Notes:

Sub-surface at mouth. Channel emerges for 150', 2' ww, 4' bfw, 2-3% gradient, before going sub-surface again.

Last Fish Location:

Label:

Average Bankfull Width (ft.):

Last Species:

Distance to DS End (ft.):

Habitat Notes: no fish observed

Significant Habitat Overcome:

Last Habitat Location:

Label: Sulp2.1LB-LH

Distance To Downstream End (ft.): 167

Average Bankful Width (ft.): 4

Habitat Feature: Natural Barrier

Status: Temporary

Attributes: stream is sub-surface - seasonal barrier

End of Survey Location:

End of Survey Point Label: Sulp2.1LB-EOS

Upper Suiattle and Tributaries

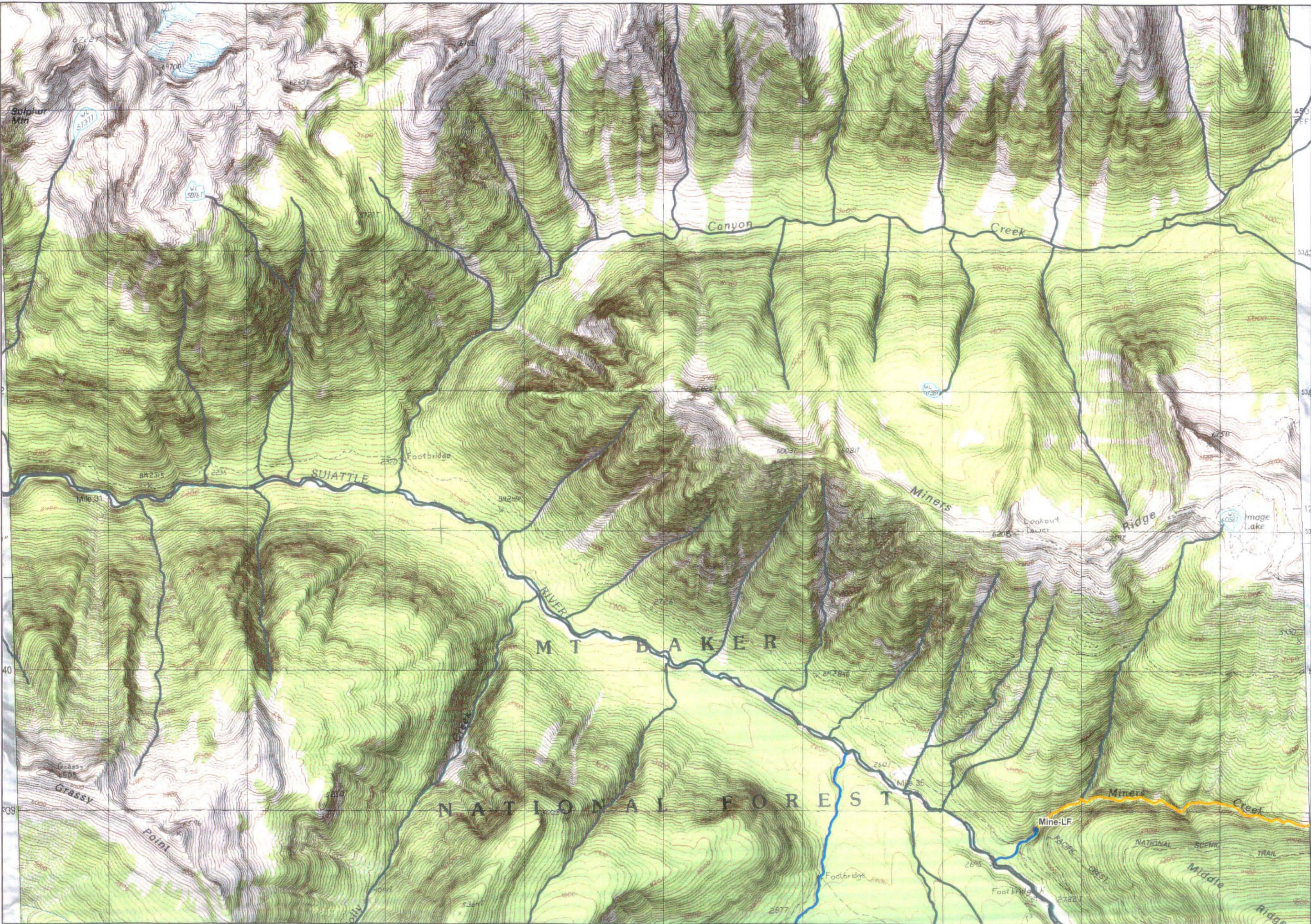


Suiattle Basin Suiattle River

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Gamma Pk. Quad

Stream Survey

- Fish Bearing
- Fish Habitat
- No Habitat
- Not Surveyed
- Last Fish
- Last Fish/Habitat
- Last Habitat
- Last Habitat, End Survey
- End Survey
- Last Fish/Habitat, End Survey

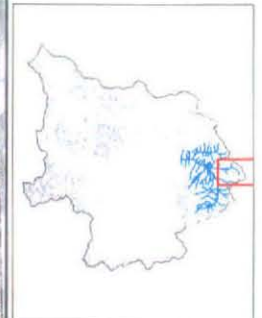
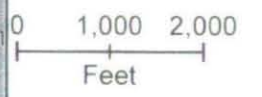
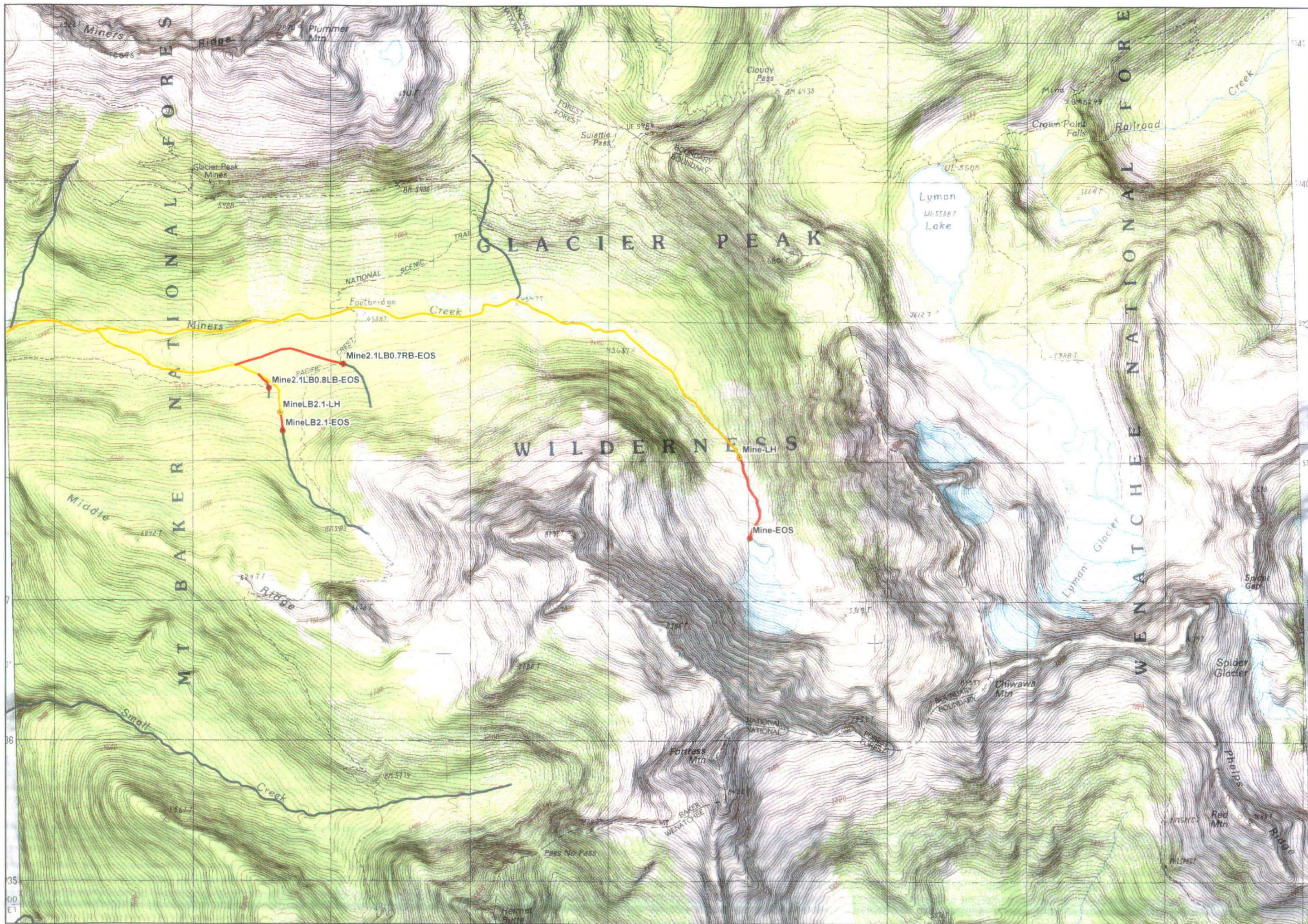


Suiattle Basin Suiattle River

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Suiattle Pass Quad

Stream Survey

- Fish Bearing
- Fish Habitat
- No Habitat
- Not Surveyed
- Last Fish
- Last Fish/Habitat
- Last Habitat
- Last Habitat, End Survey
- End Survey
- Last Fish/Habitat, End Survey



Miners LB 2.1rm

River System: Suiattle

Crew: Crabb, Remlinger

Survey Date: 09/13/00

Reference Point

Landmark Description:

Marker Location: mouth

Downstream End of Survey

Relative to Reference Point: same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 5750

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other: grade increases, well above fish bearing waters

Detection Method Above Last Fish: Electofishing

Air Temperature (C): 10.25

Debris torrent in Last 10 yrs?

Water Temperature (C): 7.25

Debris torrent affects fish distribution?

Temperature Time: 3:05 PM

Notes:

16' ww, 20' bfw with a 16% gradient at mouth. 16% continued until RB trib where it increased to 20%. At trail crossing, 8' ww, 16' bfw, 16 to 18% step falls approx. 200' above trail, at last habitat. Gradient then increases to 35%. A tailed frog was electrofished approx. 200yds downstream from the trail crossing.

Last Fish Location:

Label:

Average Bankfull Width (ft.):

Last Species:

Habitat Notes: no fish observed

Significant Habitat Overcome:

Last Habitat Location:

Label: MineLB2.1-LH

Distance To Downstream End (ft.): 5325

Average Bankfull Width (ft.): 14

Habitat Feature: Gradient Increase

Status: Permanent

Attributes: 35% gradient

End of Survey Location:

End of Survey Point Label: MineLB2.1-EOS

Miners LB 2.1rm RB 0.7rm

River System: Suiattle

Crew: Crabb, Remlinger

Survey Date: 09/13/00

Reference Point

Landmark Description:

Marker Location: mouth

Downstream End of Survey

Relative to Reference Point: same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 2600

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other: Incomplete survey, lack of time

Detection Method Above Last Fish: Electofishing

Debris torrent in Last 10 yrs?

Debris torrent affects fish distribution?

Air Temperature (C):

Water Temperature (C):

Temperature Time:

Notes:

At mouth 3-4' ww, 10' bfw. 20% gradient. No fish observed. Trail crossing, crk was 2-3' ww, 10' bfw, 20% gradient, no fish.

Last Fish Location:

Label:

Average Bankfull Width (ft.):

Last Species:

Habitat Notes: no fish observed

Significant Habitat Overcome:

Last Habitat Location:

Label:

Distance To Downstream End (ft.): 0

Average Bankfull Width (ft.):

Habitat Feature: N/A

Status:

Attributes:

End of Survey Location:

End of Survey Point Label: Mine2.1LB0.7RB-EOS

Miners LB 2.1rm LB 0.8rm

River System: Suiattle

Crew: Crabb, Remlinger

Survey Date: 09/17/00

Reference Point

Landmark Description:

Marker Location: mouth

Downstream End of Survey

Relative to Reference Point: same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 407

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other: Incomplete survey, out of time.

Detection Method Above Last Fish: Electofishing

Debris torrent in Last 10 yrs?

Debris torrent affects fish distribution?

Air Temperature (C):

Water Temperature (C):

Temperature Time:

Notes:

At mouth, 2' ww, shallow approx 10' drop into main stem. Trail crossing, 1.5' ww, 5' bfv.

Last Fish Location:

Label:

Average Bankfull Width (ft.):

Last Species:

Habitat Notes: no fish observed

Significant Habitat Overcome:

Last Habitat Location:

Label:

Distance To Downstream End (ft.): 0

Average Bankful Width (ft.):

Habitat Feature: N/A

Status:

Attributes:

End of Survey Location:

End of Survey Point Label: Mine2.1LB0.8LB-EOS

Miners Creek

River System: Suiattle

Crew: Crabb, Remlinger

Survey Date: 09/11/00

Reference Point

Landmark Description: metal

Marker Location: RB alder 15' from RB at mouth

Downstream End of Survey

Relative to Reference Point: same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 30255

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other:

Detection Method Above Last Fish: Electofishing

Air Temperature (C): 16

Debris torrent in Last 10 yrs?

Water Temperature (C): 6.5

Debris torrent affects fish distribution?

Temperature Time: 2:30 PM

Notes:

Stream at mouth was 24'ww, 36'bfw, at 2-3%. 70' us is an 18' temporary water falls based on LWD jam. RBT LF found at base of falls. Also noticable was a change in stream direction, possibly responsible for the falls. Next 400' 4-6% to plunge pool at base of 20' permanent rock falls. Above falls 16%, for a short distance turning into an incised canyon for approx. 1.75rm. Miners crk then becomes 14-15% for 0.5rm, ending with 3rm of 1-3%, 8-16ww, 16-26'bfw. Survey ended at an 125' 30% step falls, 5.4rm. Stream has excellent sands, gravels and lwd. Despite suitable habitat, no fish were found above 20' falls located 475'

Last Fish Location:

Label: Mine-LF

Average Bankfull Width (ft.): 36 Last Species: RBT

Distance to DS End (ft.): 475

Habitat Notes: last fish found in plunge pool at base of 60' falls

Significant Habitat Overcome:

18' (temporary?) step falls 70' US mouth

Last Habitat Location:

Label: Mine-LH

Distance To Downstream End (ft.): 28185

Average Bankful Width (ft.): 36

Habitat Feature: Natural Barrier

Status: Permanent

Attributes: 125' step falls

End of Survey Location:

End of Survey Point Label: Mine-EOS

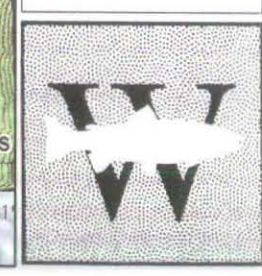
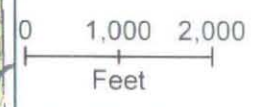
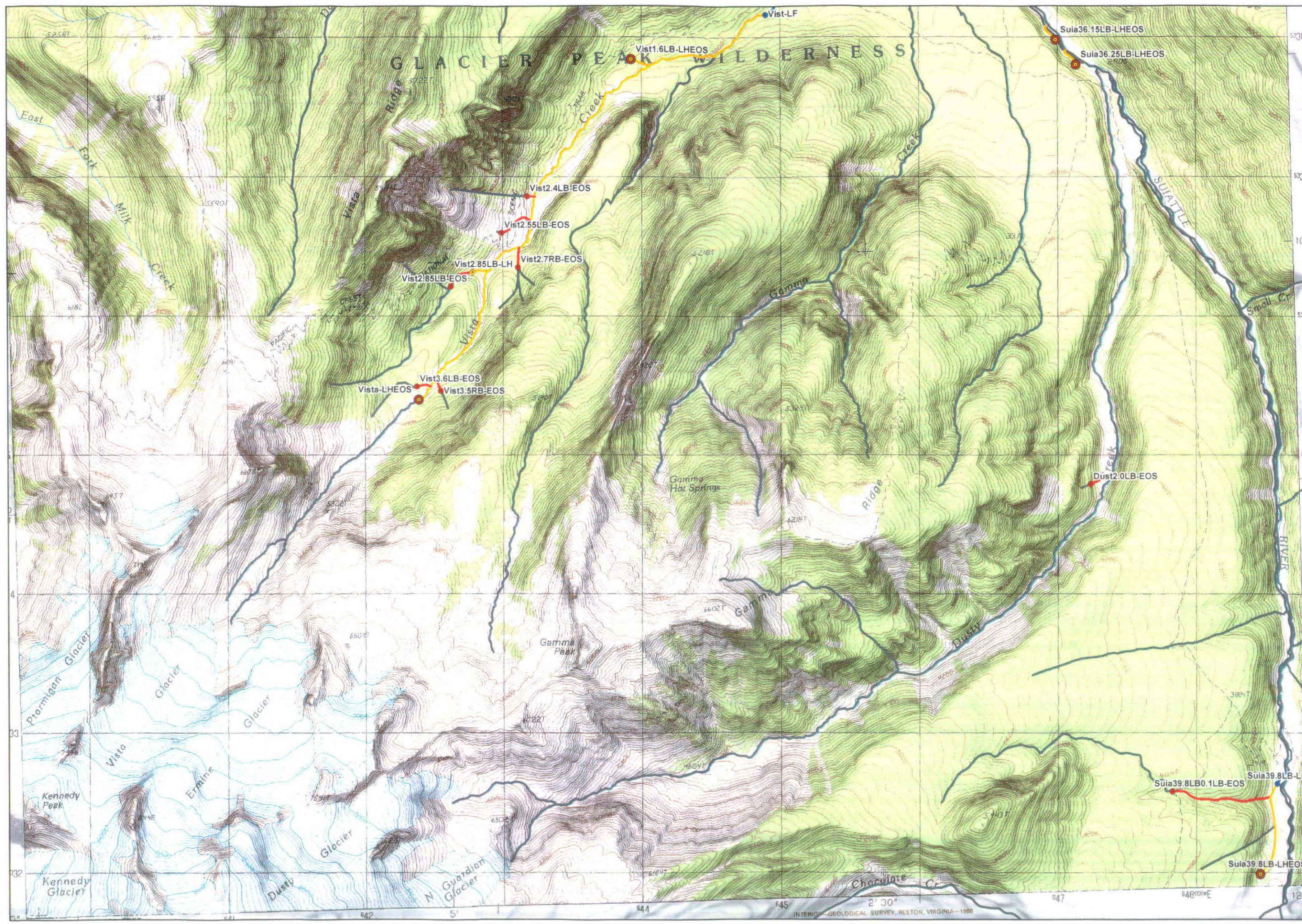
Suiattle Basin Suiattle River

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Gamma Pk. Quad

Stream Survey

- Fish Bearing
- Fish Habitat
- No Habitat
- Not Surveyed

- Last Fish
- Last Fish/Habitat
- Last Habitat
- Last Habitat, End Survey
- End Survey
- Last Fish/Habitat, End Survey



Vista LB 1.6rm

River System: Suiattle

Crew: Crabb, Remlinger

Survey Date: 09/15/00

Reference Point

Landmark Description: metal

Marker Location: LB hemlock 5' from channel at mouth

Downstream End of Survey

Relative to Reference Point: same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 500

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other: stream braids into three small branches <.6m

Detection Method Above Last Fish: Electrofishing

Air Temperature (C): 14.5

Debris torrent in Last 10 yrs?

Water Temperature (C): 5.75

Debris torrent affects fish distribution?

Temperature Time:

Notes:

Clear water, sand, gravel and cobble. 8% grade at mouth, dropping to 4% gradient upstream. 500' of usable habitat.

Last Fish Location:

Label:

Average Bankfull Width (ft.):

Last Species:

Habitat Notes: no fish observed

Significant Habitat Overcome:

Last Habitat Location:

Label: Vist1.6LB-LHEOS

Distance To Downstream End (ft.): 500

Average Bankfull Width (ft.): 8

Habitat Feature: Channel Width

Status: Temporary

Attributes: channel braided into <2ft wide channels

End of Survey Location:

End of Survey Point Label: Vist1.6LB-LHEOS

Vista LB 2.55rm

River System: Suiattle

Crew: Crabb, Remlinger

Survey Date: 09/15/00

Reference Point

Landmark Description: trail crossing

Marker Location:

Downstream End of Survey

Relative to Reference Point: same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 500

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other:

Detection Method Above Last Fish: Visual

Debris torrent in Last 10 yrs?

Debris torrent affects fish distribution?

Air Temperature (C):

Water Temperature (C):

Temperature Time:

Notes:

1st trail crossing point, 4'ww, 8'bfw, 40% gradient. 2nd trail crossing point, 3'ww, 10'bfw, 35+% gradient. 100' us spring emerged with a 2' width, stream was then dry to next trail crossing with a 10'bfw and a 35% gradient.

Last Fish Location:

Label:

Average Bankfull Width (ft.):

Last Species:

Distance to DS End (ft.):

Habitat Notes: no fish observed

Significant Habitat Overcome:

Last Habitat Location:

Label:

Distance To Downstream End (ft.): 0

Average Bankfull Width (ft.):

Habitat Feature: N/A

Status:

Attributes:

End of Survey Location:

End of Survey Point Label: Vist2.55LB-EOS

Vista LB 2.4rm

River System: Suiattle

Crew: Crabb, Remlinger

Survey Date: 09/15/00

Reference Point

Landmark Description: mouth

Marker Location:

Downstream End of Survey

Relative to Reference Point: same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 185

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other:

Detection Method Above Last Fish:

Debris torrent in Last 10 yrs?

Debris torrent affects fish distribution?

Air Temperature (C):

Water Temperature (C):

Temperature Time:

Notes:

Dry trib 12' bwf at mouth, 45% grade.

Last Fish Location:

Label:

Average Bankfull Width (ft.):

Last Species:

Habitat Notes: no fish observed

Significant Habitat Overcome:

Last Habitat Location:

Label:

Distance To Downstream End (ft.): 0

Average Bankfull Width (ft.): 12

Habitat Feature: N/A

Status:

Attributes:

End of Survey Location:

End of Survey Point Label: Vist2.4LB-EOS

Vista RB 2.7rm

River System: Suiattle

Crew: Crabb, Remlinger

Survey Date: 09/15/00

Reference Point

Landmark Description:

Marker Location: mouth

Downstream End of Survey

Relative to Reference Point: same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 450

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other: gradient

Detection Method Above Last Fish: Electofishing

Debris torrent in Last 10 yrs?

Debris torrent affects fish distribution?

Air Temperature (C):

Water Temperature (C):

Temperature Time:

Notes:

Water was clear, 4'ww. Gradient approaching 40% near mouth.

Last Fish Location:

Label:

Average Bankfull Width (ft.):

Last Species:

Habitat Notes: no fish observed

Significant Habitat Overcome:

Last Habitat Location:

Label:

Distance To Downstream End (ft.): 0

Average Bankfull Width (ft.): 7

Habitat Feature: Natural Barrier

Status: Permanent

Attributes: 38% gradient

End of Survey Location:

End of Survey Point Label: Vist2.7RB-EOS

Vista LB 2.85rm

River System: Suiattle

Crew: Crabb, Remlinger

Survey Date: 09/15/00

Reference Point

Landmark Description:

Marker Location: mouth

Downstream End of Survey

Relative to Reference Point: same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 1100

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other:

Detection Method Above Last Fish: Electofishing

Air Temperature (C): 14

Debris torrent in Last 10 yrs?

Water Temperature (C): 6.5

Debris torrent affects fish distribution?

Temperature Time:

Notes:

Clear water, 10%, 4ww for 100' at mouth. Changing to 25% and increasing.

Last Fish Location:

Label:

Average Bankfull Width (ft.):

Last Species:

Habitat Notes: no fish observed

Significant Habitat Overcome:

Last Habitat Location:

Label: Vist2.85LB-LH

Distance To Downstream End (ft.): 396

Average Bankful Width (ft.): 6

Habitat Feature: Gradient Increase

Status: Permanent

Attributes: ds10% us 25%

End of Survey Location:

End of Survey Point Label: Vist2.85LB-EOS

Vista RB 3.5rm

River System: Suiattle

Crew: Crabb, Remlinger

Survey Date: 09/15/00

Reference Point

Landmark Description:

Marker Location: mouth

Downstream End of Survey

Relative to Reference Point: same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 330

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other: prohibitive gradient

Detection Method Above Last Fish: Electofishing

Debris torrent in Last 10 yrs?

Debris torrent affects fish distribution?

Air Temperature (C): 13.5

Water Temperature (C): 10.5

Temperature Time:

Notes:

Clear water, 4' ww, 8' bfw, 30-35% gradient at mouth.

Last Fish Location:

Label:

Average Bankfull Width (ft.):

Last Species:

Habitat Notes: no fish observed

Significant Habitat Overcome:

Last Habitat Location:

Label:

Distance To Downstream End (ft.): 0

Average Bankfull Width (ft.): 8

Habitat Feature: Natural Barrier

Status: Permanent

Attributes: 30-35%gradient

End of Survey Location:

End of Survey Point Label: Vist3.5RB-EOS

Vista LB 3.6rm

River System: Suiattle

Crew: Crabb, Remlinger

Survey Date: 09/15/00

Reference Point

Landmark Description: mouth

Marker Location:

Downstream End of Survey

Relative to Reference Point: same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 300

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other: Incomplete survey, out of time

Detection Method Above Last Fish: Electrofishing

Air Temperature (C): 11.5

Debris torrent in Last 10 yrs?

Water Temperature (C): 6

Debris torrent affects fish distribution?

Temperature Time:

Notes:

Clear water, 3-4' ww, 8' bfw, 10% gradient at mouth. Did not go past 300', running out of time.

Last Fish Location:

Label:

Average Bankfull Width (ft.):

Last Species:

Habitat Notes: no fish observed

Significant Habitat Overcome:

Last Habitat Location:

Label:

Distance To Downstream End (ft.): 0

Average Bankfull Width (ft.): 0

Habitat Feature: N/A

Status:

Attributes:

End of Survey Location:

End of Survey Point Label: Vist3.6LB-EOS

Vista

River System: Suiattle

Crew: Crabb, Remlinger

Survey Date: 09/15/00

Reference Point

Landmark Description:

Marker Location: trail crossing

Downstream End of Survey

Relative to Reference Point: same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 15450

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other: gradient increase, stream flows from glacier.

Detection Method Above Last Fish: Electofishing

Air Temperature (C): 13.5

Debris torrent in Last 10 yrs?

Water Temperature (C): 7.25

Debris torrent affects fish distribution?

Temperature Time: 10:50 AM

Notes:

Last fish probably char by coloration, not brought to hand. 8% gradient and very turbid (glacial flour), boulder, cobble, gravel and sand. Vista is a set of continuous cascades, gradually increasing to 20+% at glacier. Trail crossing was start of survey.

Last Fish Location:

Label: Vist-LF

Average Bankfull Width (ft.): 45 Last Species: salmonid

Distance to DS End (ft.): 1575

Habitat Notes: 12-14' ww very turbid

Significant Habitat Overcome:

very turbid waters

Last Habitat Location:

Label: Vista-LHEOS

Distance To Downstream End (ft.): 15470

Average Bankful Width (ft.): 16

Habitat Feature: Natural Barrier

Status: Temporary

Attributes: 8% becomes 20% right into glacier

End of Survey Location:

End of Survey Point Label: Vista-LHEOS

Gamma RB.35rm

River System: Suiattle

Crew: Crabb, Remlinger

Survey Date: 09/15/00

Reference Point

Landmark Description: trail crossing

Marker Location:

Downstream End of Survey

Relative to Reference Point: same

Upstream End of Survey

Distance From Upstream End of Survey (ft.):

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other: Survey Incomplete

Detection Method Above Last Fish: Electrofishing

Debris torrent in Last 10 yrs?

Debris torrent affects fish distribution?

Air Temperature (C):

Water Temperature (C):

Temperature Time:

Notes:

Last Fish Location:

Label:

Average Bankfull Width (ft.):

Habitat Notes: no fish observed

Last Species:

Significant Habitat Overcome:

Last Habitat Location:

Label:

Distance To Downstream End (ft.): 0

Habitat Feature: N/A

Attributes:

Average Bankfull Width (ft.): 0

Status:

End of Survey Location:

End of Survey Point Label: N/A

Gamma RB 0.6rm

River System: Suiattle

Crew: Crabb, Remlinger

Survey Date: 09/15/00

Reference Point

Landmark Description: trail crossing

Marker Location:

Downstream End of Survey

Relative to Reference Point:

Upstream End of Survey

Distance From Upstream End of Survey (ft.):

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other: Survey Incomplete

Detection Method Above Last Fish:

Debris torrent in Last 10 yrs?

Debris torrent affects fish distribution?

Air Temperature (C):

Water Temperature (C):

Temperature Time:

Notes:

Dry RB channel to gamma crk. 6' to 8' bfw, 6%, cobbles,sand and gravel. Likely good winter and spring habitat.

Last Fish Location:

Label:

Average Bankfull Width (ft.):

Last Species:

Habitat Notes: no fish observed

Significant Habitat Overcome:

Last Habitat Location:

Label:

Distance To Downstream End (ft.): 0

Average Bankfull Width (ft.): 8

Habitat Feature:

Status:

Attributes:

End of Survey Location:

End of Survey Point Label:

Gamma

River System: Suiattle

Crew: Crabb, Remlinger

Survey Date: 09/15/00

Reference Point

Landmark Description:

Marker Location: trail crossing

Downstream End of Survey

Relative to Reference Point: 400 ft DS trail crossing at mouth

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 800

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other: Survey Incomplete due to time limitation.

Detection Method Above Last Fish: Electrofishing

Air Temperature (C): 15

Debris torrent in Last 10 yrs?

Water Temperature (C): 9

Debris torrent affects fish distribution?

Temperature Time: 9:10 AM

Notes:

Gamma shows much high water damage, with a high watermark of 25'. Stream is 6% with lwd, boulder, cobble, gravel and sand debris. Electrofished 400' both us and ds from trail crossing without observing any fish. Stream was free of any turbidity, had good habitat, and should have contained a resident population of fish. It is very possible that a major event did displace them.

Last Fish Location:

Label:

Average Bankfull Width (ft.):

Last Species:

Habitat Notes: no fish observed

Significant Habitat Overcome:

Last Habitat Location:

Label:

Distance To Downstream End (ft.): 0

Average Bankfull Width (ft.): 0

Habitat Feature: N/A

Status:

Attributes:

End of Survey Location:

End of Survey Point Label:

Suiattle LB 36.15rm

River System: Suiattle

Crew: Crabb, Remlinger

Survey Date: 09/16/00

Reference Point

Landmark Description:

Marker Location: mouth

Downstream End of Survey

Relative to Reference Point: same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 420

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other: spring head

Detection Method Above Last Fish: Electofishing

Debris torrent in Last 10 yrs?

Debris torrent affects fish distribution?

Air Temperature (C): 13

Water Temperature (C): 7.2

Temperature Time:

Notes:

Clear water, 2-4%gradient, 3-4'ww, 6-8'bfw at mouth. At 420' mark stream ends at spings. No fish observed

Last Fish Location:

Label:

Average Bankfull Width (ft.):

Last Species:

Habitat Notes: no fish observed

Significant Habitat Overcome:

Last Habitat Location:

Label: Suia36.15LB-LHEOS

Distance To Downstream End (ft.): 420

Average Bankful Width (ft.): 3

Habitat Feature: Natural Barrier

Status: Permanent

Attributes: spring head

End of Survey Location:

End of Survey Point Label: Suia36.15LB-LHEOS

Suiattle LB 36.25rm

River System: Suiattle

Crew: Crabb, Remlinger

Survey Date: 09/16/00

Reference Point

Landmark Description:

Marker Location: mouth

Downstream End of Survey

Relative to Reference Point: same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 430

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other: spring head

Detection Method Above Last Fish: Electofishing

Debris torrent in Last 10 yrs?

Debris torrent affects fish distribution?

Air Temperature (C): 17

Water Temperature (C): 7

Temperature Time:

Notes:

Clear spring fed stream. 4'ww, 6'bfw at mouth, 2-4% gradient, shallow. No fish observed.

Last Fish Location:

Label:

Average Bankfull Width (ft.):

Habitat Notes: no fish observed

Last Species:

Significant Habitat Overcome:

Last Habitat Location:

Label: Suia36.25LB-LHEOS

Distance To Downstream End (ft.): 431

Habitat Feature: Natural Barrier

Attributes: spring head

Average Bankfull Width (ft.): 3

Status: Permanent

End of Survey Location:

End of Survey Point Label: Suia36.25LB-LHEOS

Dusty LB 2rm

River System: Suiattle

Crew: Crabb, Remlinger

Survey Date: 09/16/00

Reference Point

Landmark Description:

Marker Location: mouth

Downstream End of Survey

Relative to Reference Point: same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 534

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other:

Detection Method Above Last Fish: Visual

Debris torrent in Last 10 yrs?

Debris torrent affects fish distribution?

Air Temperature (C): 12

Water Temperature (C): 6.5

Temperature Time:

Notes:

Clear water, 2'ww, 12bfv, 55% gradient, last habitat at mouth.

Last Fish Location:

Label:

Average Bankfull Width (ft.):

Last Species:

Habitat Notes: no fish observed

Significant Habitat Overcome:

Last Habitat Location:

Label:

Distance To Downstream End (ft.): 0

Average Bankfull Width (ft.):

Habitat Feature: N/A

Status:

Attributes:

End of Survey Location:

End of Survey Point Label: Dust2.0LB-EOS

Dusty

River System: Suitttle

Crew: Crabb, Remlinger

Survey Date: 09/16/00

Reference Point

Landmark Description: mouth

Marker Location:

Downstream End of Survey

Relative to Reference Point: same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 11000

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other: Survey Incomplete

Detection Method Above Last Fish: Electofishing

Air Temperature (C): 11.5

Debris torrent in Last 10 yrs?

Water Temperature (C): 6

Debris torrent affects fish distribution?

Temperature Time: 9:25 AM

Notes:

The mouth of Dusty was 14'ww, 45'bfw, very turbid with a pronounced chocolate color. Continuous cascade at 6% gradient. Gradient gradually increasing to 10-12% at up stream end of survey. Survey ended at a canyon with 75' walls, with bedrock streambed. Dusty now very high velocity with high turbidity, no pools all rapids. 14'ww, 16'bfw.

Last Fish Location:

Label:

Average Bankfull Width (ft.):

Last Species:

Habitat Notes: no fish observed

Significant Habitat Overcome:

Last Habitat Location:

Label:

Distance To Downstream End (ft.): 0

Average Bankful Width (ft.):

Habitat Feature: N/A

Status:

Attributes:

End of Survey Location:

End of Survey Point Label:

Suiattle LB 39.8rm

River System: Suiattle

Crew: Crabb, Remlinger

Survey Date: 09/19/00

Reference Point

Landmark Description: mouth

Marker Location:

Downstream End of Survey

Relative to Reference Point: same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 2633

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other:

Detection Method Above Last Fish: Electrofishing

Debris torrent in Last 10 yrs?

Debris torrent affects fish distribution?

Air Temperature (C):

Water Temperature (C):

Temperature Time:

Notes:

This stream was rerouted following the mass wasting caused by debris flows on Chocolate Ck. It cuts through the Chocolate delta area that is devoid of vegetation. Three fish were electrofished, but not brought to hand. Stream ran at 4-6% gradient until its source at many fingered seeps at base of hill. The mouth was 8-10'ww, 16'bfw and had no vegetation. Stream bed composition was boulder, cobble, gravel and sand. The water was clear.

Last Fish Location:

Label: Suia39.8LB-LF

Average Bankfull Width (ft.): 8 Last Species: salmonid

Distance to DS End (ft.): 345

Habitat Notes: 4-6% grade, step pool

Significant Habitat Overcome:

Last Habitat Location:

Label: Suia39.8LB-LHEOS

Distance To Downstream End (ft.): 2633

Average Bankfull Width (ft.): 6

Habitat Feature: Natural Barrier

Status:

Attributes: subsurface seeps

End of Survey Location:

End of Survey Point Label: Suia39.8LB-LHEOS

Suiattle LB 39.8rm LB 0.1rm

River System: Suiattle

Crew: Crabb, Remlinger

Survey Date: 09/19/00

Reference Point

Landmark Description:

Marker Location: mouth

Downstream End of Survey

Relative to Reference Point: same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 1460

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other: Incomplete survey, lack of time

Detection Method Above Last Fish:

Debris torrent in Last 10 yrs?

Debris torrent affects fish distribution?

Air Temperature (C):

Water Temperature (C):

Temperature Time:

Notes:

LB 39.8rm had downcut to the point where its LB 0.1rm trib was perched. 12' falls 4'ww, 12'bfw at mouth, running clear water. New crk has cut a deep channel at this point. Trib was crossed on the trail at end of survey. At this point trib 2-3'ww, 8'bfw, 22% gradient. Step pools with sand and gravel substrate.

Last Fish Location:

Label:

Average Bankfull Width (ft.):

Last Species:

Distance to DS End (ft.):

Habitat Notes: no fish observed

Significant Habitat Overcome:

Last Habitat Location:

Label:

Distance To Downstream End (ft.): 0

Average Bankfull Width (ft.):

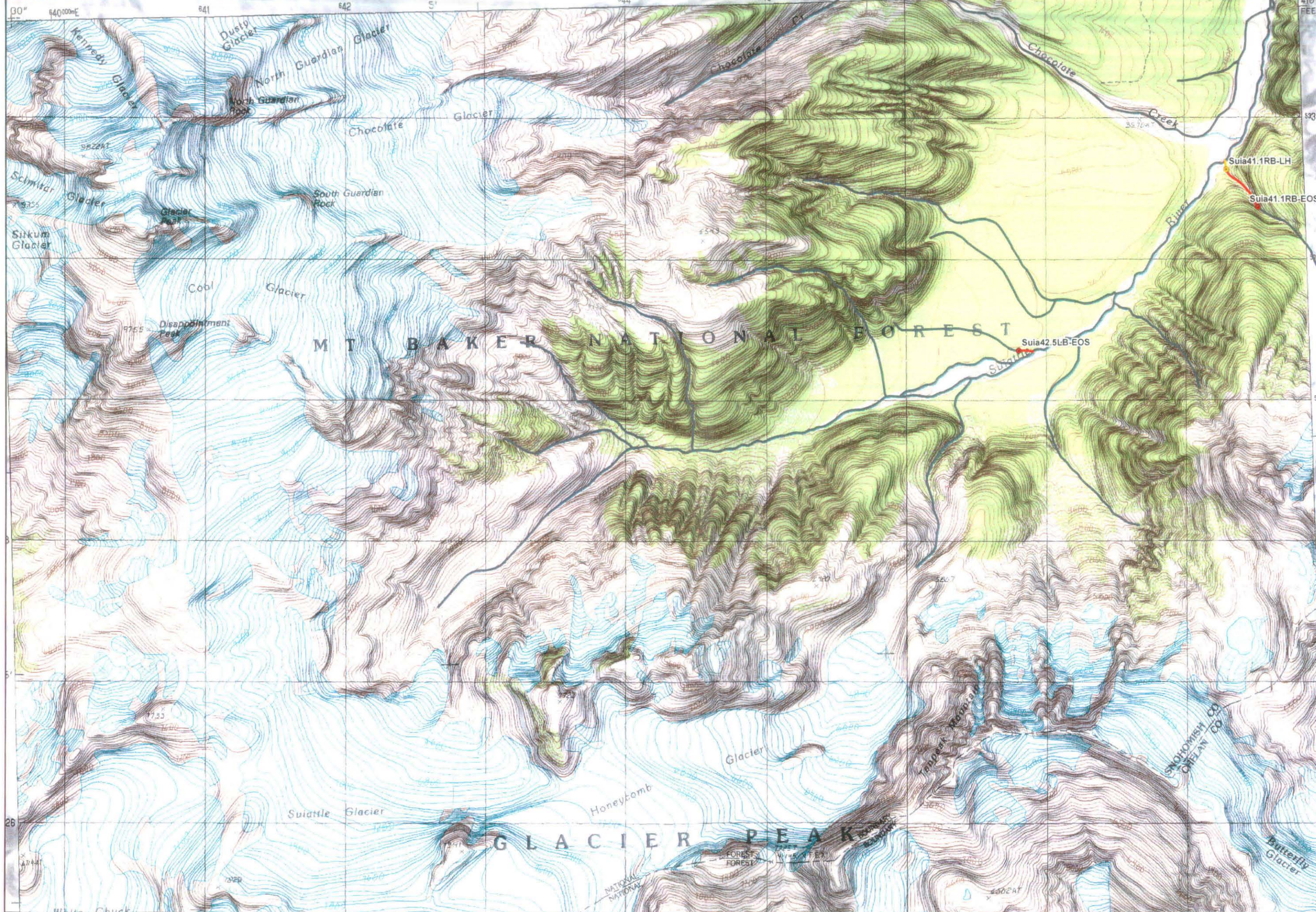
Habitat Feature: N/A

Status:

Attributes:

End of Survey Location:










End of Survey Point Label: Suia39.8LB0.1LB-EOS

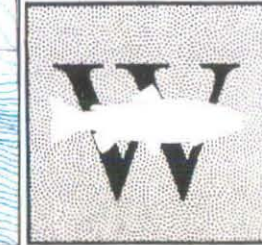


Suiattle Basin Suiattle River

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Glacier Pk. East Quad

Stream Survey

-  Fish Bearing
-  Fish Habitat
-  No Habitat
-  Not Surveyed
-  Last Fish
-  Last Fish/Habitat
-  Last Habitat
-  Last Habitat, End Survey
-  End Survey
-  Last Fish/Habitat, End Survey



Chocolate

River System: Suiattle

Crew: Crabb, Remlinger

Survey Date: 09/17/00

Reference Point

Landmark Description: mouth

Marker Location:

Downstream End of Survey

Relative to Reference Point: same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 5280

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other: Survey not completed due to time constraint

Detection Method Above Last Fish: Electrofishing

Air Temperature (C):

Debris torrent in Last 10 yrs?

Water Temperature (C):

Debris torrent affects fish distribution?

Temperature Time:

Notes:

Mass wasting, from 300yds to 1mi. Major flood event that deposited 15 to 20' of gravel and boulder debris for approx. 1 mi. wide at mouth. It appears that it may have blocked off the Suiattle, as debris was on the opposite bank. Resulting stream is 14-16' wetted, extremely turbid, continuous rapids, and very swift. It has a continual 6-8% gradient. No fish were observed. The mouth of Chocolate has moved down river approx. 0.6mi.

Last Fish Location:

Label:

Average Bankfull Width (ft.):

Last Species:

Habitat Notes: no fish observed

Significant Habitat Overcome:

Last Habitat Location:

Label:

Distance To Downstream End (ft.): 0

Average Bankfull Width (ft.):

Habitat Feature: N/A

Status:

Attributes:

End of Survey Location:

End of Survey Point Label:

Chocolate LB 0.4rm

River System: Suiattle

Crew: Crabb, Remlinger

Survey Date: 09/19/00

Reference Point

Landmark Description: none

Marker Location: mouth of tributary

Downstream End of Survey

Relative to Reference Point: same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 0

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other: Survey Incomplete. Couldn't cross Chocolate crk.

Detection Method Above Last Fish:

Debris torrent in Last 10 yrs?

Debris torrent affects fish distribution?

Air Temperature (C):

Water Temperature (C):

Temperature Time:

Notes:

Mouth appeared to have 2-3'ww and a 4% gradient. Trib was running clear water.

Last Fish Location:

Label:

Average Bankfull Width (ft.):

Last Species:

Habitat Notes: No Fish Observed

Significant Habitat Overcome:

Last Habitat Location:

Label:

Distance To Downstream End (ft.): 0

Average Bankfull Width (ft.):

Habitat Feature: N/A

Status:

Attributes:

End of Survey Location:

End of Survey Point Label:

Suiattle RB 41.1rm

River System: Suiattle

Crew: Crabb, Remlinger

Survey Date: 09/17/00

Reference Point

Landmark Description:

Marker Location: mouth

Downstream End of Survey

Relative to Reference Point: same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 1360

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other:

Detection Method Above Last Fish: Visual

Debris torrent in Last 10 yrs?

Debris torrent affects fish distribution?

Air Temperature (C):

Water Temperature (C):

Temperature Time:

Notes:

Clear water, minimal habitat. No fish observed.

Last Fish Location:

Label:

Average Bankfull Width (ft.):

Habitat Notes: no fish observed

Last Species:

Significant Habitat Overcome:

Last Habitat Location:

Label: Suia41.1RB-LH

Distance To Downstream End (ft.): 185

Habitat Feature: Gradient Increase

Attributes: ds 4% us 30-35%

Average Bankfull Width (ft.): 14

Status: Permanent

End of Survey Location:

End of Survey Point Label: Suia41.1RB-EOS

Suiattle LB 42rm

River System: Suiattle

Crew: Crabb, Remlinger

Survey Date: 09/17/00

Reference Point

Landmark Description:

Marker Location: mouth

Downstream End of Survey

Relative to Reference Point: same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 1350

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other: Survey Incomplete due to time limitation.

Detection Method Above Last Fish: Electofishing

Debris torrent in Last 10 yrs?

Debris torrent affects fish distribution?

Air Temperature (C):

Water Temperature (C):

Temperature Time:

Notes:

Wetland, beaver ponds, shallow and boggy in nature, heavily grassed and wooded. At end of survey crk is 5'ww, 10'bfw, very stringy mosses in creek. Creek appears to have a high mineral content. Picture available.

Last Fish Location:

Label:

Average Bankfull Width (ft.):

Last Species:

Habitat Notes: no fish observed

Significant Habitat Overcome:

Last Habitat Location:

Label:

Distance To Downstream End (ft.): 0

Average Bankful Width (ft.):

Habitat Feature: N/A

Status:

Attributes:

End of Survey Location:

End of Survey Point Label:

Suiattle LB 42rm RB1350'

River System: Suiattle

Crew: Crabb, Remlinger

Survey Date: 09/18/00

Reference Point

Landmark Description:

Marker Location: mouth

Downstream End of Survey

Relative to Reference Point: same

Upstream End of Survey

Distance From Upstream End of Survey (ft.):

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other: Survey Incomplete, due to time limitation.

Detection Method Above Last Fish: Electofishing

Debris torrent in Last 10 yrs?

Debris torrent affects fish distribution?

Air Temperature (C):

Water Temperature (C):

Temperature Time:

Notes:

Crk. 4-5'ww, 10'bfw, The crk is very slow running, filled with mosses and silt. Crk is also ponded and appears mineral rich.

Last Fish Location:

Label:

Average Bankfull Width (ft.):

Habitat Notes: no fish observed

Last Species:

Significant Habitat Overcome:

Last Habitat Location:

Label:

Distance To Downstream End (ft.): 0

Habitat Feature: N/A

Attributes:

Average Bankfull Width (ft.):

Status:

End of Survey Location:

End of Survey Point Label:

Suiattle LB 42.5rm

River System: Suiattle

Crew: Crabb, Remlinger

Survey Date: 09/17/00

Reference Point

Landmark Description:

Marker Location: mouth

Downstream End of Survey

Relative to Reference Point: same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 330

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other:

Detection Method Above Last Fish:

Debris torrent in Last 10 yrs?

Debris torrent affects fish distribution?

Air Temperature (C):

Water Temperature (C):

Temperature Time:

Notes:

Creek was dry at time of survey. 7' bfw, lots of woody debris. Stream bed made up of some gravel but mostly fines.

Last Fish Location:

Label:

Average Bankfull Width (ft.):

Last Species:

Habitat Notes: no fish observed

Significant Habitat Overcome:

Last Habitat Location:

Label:

Distance To Downstream End (ft.): 0

Average Bankfull Width (ft.):

Habitat Feature: N/A

Status:

Attributes:

End of Survey Location:

End of Survey Point Label: Suia42.5LB-EOS

Suiattle

River System: Suiattle

Crew: Crabb, Remlinger

Survey Date: 09/18/00

Reference Point

Landmark Description:

Marker Location: 43.9rm

Downstream End of Survey

Relative to Reference Point: 36.7rm

Upstream End of Survey

Distance From Upstream End of Survey (ft.):

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other: Incomplete Survey. Mainstem size and turbidity prevent accurate sampling.

Detection Method Above Last Fish: Electofishing

Air Temperature (C):

Debris torrent in Last 10 yrs?

Water Temperature (C):

Debris torrent affects fish distribution?

Temperature Time:

Notes:

Electrofished and angled Suiattle from mouth of Miners crk to rm 43.9 without observing any fish . We felt that this was due to water turbidity and volume. Fish have been observed throughout these reaches during periods of less volume and improved clarity. Timing of surveys is critical.

Last Fish Location:

Label:

Average Bankfull Width (ft.):

Last Species:

Habitat Notes: no fish observed

Significant Habitat Overcome:

Last Habitat Location:

Label:

Distance To Downstream End (ft.): 0

Average Bankfull Width (ft.): 0

Habitat Feature: N/A

Status:

Attributes:

End of Survey Location:

End of Survey Point Label:

White Chuck River Survey

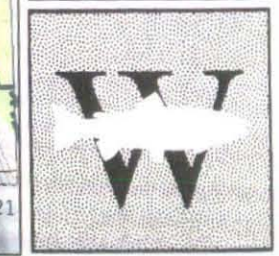
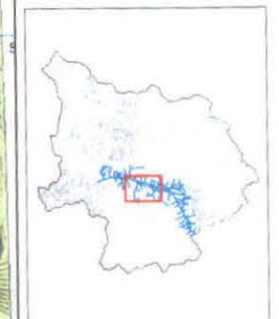
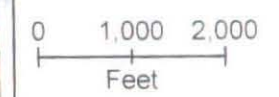


Sauk Basin White Chuck River

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Pugh Mtn. Quad

Stream Survey

- Fish Bearing
- Fish Habitat
- No Habitat
- Not Surveyed
- Last Fish
- Last Fish/Habitat
- Last Habitat
- Last Habitat, End Survey
- End Survey
- Last Fish/Habitat, End Survey



White Chuck LB 6.9 (Pugh Cr.)

River System: Sauk

Crew: Crabb, Remlinger

Survey Date: 10/03/00

Reference Point

Landmark Description:

Marker Location: mouth

Downstream End of Survey

Relative to Reference Point: same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 5900

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other:

Detection Method Above Last Fish: Electrofishing

Debris torrent in Last 10 yrs?

Debris torrent affects fish distribution?

Air Temperature (C): 7

Water Temperature (C): 6

Temperature Time: 10:00 AM

Notes:

24' ww, 36' bfw and 3% gradient at mouth. Coho fry were observed at mouth. Crk increases to 6% grade until RB trib. RB trib (not surveyed) had a ww of 10-12', 24' bfw. Gradient increases to 15% for next 600', then to 25% with 12 to 25ft cascades with 4-10ft steps. Last fish, a char, was found upstream of the third of five "barrier" cascades. Ww ranged from 6 to 30', bfw up to 40'. Gradient increased to 20%. Us of LF/LH, with continued cascades with 10ft steps.

Last Fish Location:

Label: Whit6.9LB-LFLH

Average Bankfull Width (ft.): 30 Last Species: char

Habitat Notes: 30'x40'x6' pool at base of cascade/falls

Distance to DS End (ft.): 5120

Significant Habitat Overcome:

3 cascade tiers with 4-10ft drops and 25% grade.

Last Habitat Location:

Label: Whit6.9LB-LFLH

Distance To Downstream End (ft.): 5120

Habitat Feature: Natural Barrier

Attributes: 30X40' plunge pool

Average Bankfull Width (ft.): 30

Status: Permanent

End of Survey Location:

End of Survey Point Label: Whit6.9LB-EOS

White Chuck LB 10.4rm (Camp Cr.)

River System: Sauk

Crew: Glasgow, Remlinger

Survey Date: 10/02/00

Reference Point

Landmark Description:

Marker Location: mouth

Downstream End of Survey

Relative to Reference Point: same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 3600

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other:

Detection Method Above Last Fish: Electofishing

Debris torrent in Last 10 yrs?

Debris torrent affects fish distribution?

Air Temperature (C): 5.5

Water Temperature (C): 4.4

Temperature Time: 10:40 AM

Notes:

Mouth 18-20' ww, 24-30 bfw, 4% gradient. Visual on adult char, char fry brought to hand. Approximately 1/4mi up stream a large log jam, bfw 75-100'X150'. Large (18-25 inch) char were observed spawning throughout the debris jam. Photos taken. For 300 ft up stream of the jam the gradient increases to 10% with 4' step pools. The next 100' at 14%, then 18% for 200'. 100' of 3-4% gradient with excellent gravels, although no fish were observed. LH occurs 600ft us LF. At this point a 200' bedrock/boulder cascade, with 2-8' steps. 16-18'ww, 35'bfw. A debris torrent and slide created the fairly new jam.

Last Fish Location:

Label: Whit10.4LB-LF

Average Bankfull Width (ft.): 75 Last Species: char

Distance to DS End (ft.): 1050

Habitat Notes: Large LWD jam, char spawning under jam and behind tailouts. LB slope failure contributing gravels.

Significant Habitat Overcome:
mean 4% grade to mouth

Last Habitat Location:

Label: Whit10.4LB-LH

Distance To Downstream End (ft.): 2100

Average Bankful Width (ft.): 35

Habitat Feature: Natural Barrier

Status: Permanent

Attributes: 200' cascade falls

End of Survey Location:

End of Survey Point Label: Whit10.4LB-EOS

White Chuck LB10.6rm

River System: Sauk

Crew: Glasgow, Remlinger

Survey Date: 10/02/00

Reference Point

Landmark Description: mouth

Marker Location:

Downstream End of Survey

Relative to Reference Point: same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 300

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other: spring fed

Detection Method Above Last Fish: Electofishing

Air Temperature (C): 5.7

Debris torrent in Last 10 yrs?

Water Temperature (C): 4.5

Debris torrent affects fish distribution?

Temperature Time: 3:30 PM

Notes:

Small spring fed, stream/wetland area. Slow current and watercress filled, home to both coho and char fry. Classic off-channel rearing habitat.

Last Fish Location:

Label: Whit10.6LB-LF

Average Bankfull Width (ft.): 8 Last Species: juvenile char and coho Distance to DS End (ft.): 180

Habitat Notes: small spring fed wetland, wall based channel

Significant Habitat Overcome:

Last Habitat Location:

Label: Whit10.6LB-LHEOS

Distance To Downstream End (ft.): 300

Average Bankfull Width (ft.): 20

Habitat Feature: Natural Barrier

Status: Permanent

Attributes: springs

End of Survey Location:

End of Survey Point Label: Whit10.6LB-LHEOS

White Chuck RB 12.2rm

River System: Sauk

Crew: Villella, Remlinger

Survey Date: 09/26/00

Reference Point

Landmark Description: none

Marker Location: mouth

Downstream End of Survey

Relative to Reference Point: same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 430

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other: prohibitive gradient

Detection Method Above Last Fish: Electrofishing

Air Temperature (C): 3.4

Debris torrent in Last 10 yrs?

Water Temperature (C): 5.5

Debris torrent affects fish distribution?

Temperature Time: 10:44 AM

Notes:

No habitat, barrier at mouth. 90+% gradient to trail where channel parallels trail, goes subsurface for 35' and continues uphill at 22% gradient. Clear water, no fish observed.

Last Fish Location:

Label:

Average Bankfull Width (ft.):

Last Species:

Distance to DS End (ft.):

Habitat Notes: no fish observed

Significant Habitat Overcome:

Last Habitat Location:

Label:

Distance To Downstream End (ft.): 0

Average Bankfull Width (ft.): 5

Habitat Feature: Natural Barrier

Status: Permanent

Attributes: 90-95% gradient

End of Survey Location:

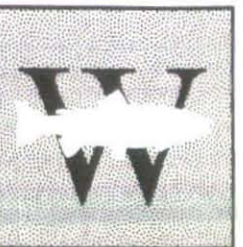
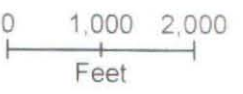
End of Survey Point Label: Whit12.2RB-EOS

Sauk Basin White Chuck River

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Lime Mtn. Quad

Stream Survey

- Fish Bearing
- Fish Habitat
- No Habitat
- Not Surveyed
- Last Fish
- Last Fish/Habitat
- Last Habitat
- Last Habitat, End Survey
- End Survey
- Last Fish/Habitat, End Survey



White Chuck RB 12.85rm

River System: Sauk

Crew: Vilella, Remlinger

Survey Date: 09/26/00

Reference Point

Landmark Description:

Marker Location: mouth

Downstream End of Survey

Relative to Reference Point: same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 370

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other: prohibitive gradient

Detection Method Above Last Fish: Electofishing

Debris torrent in Last 10 yrs?

Debris torrent affects fish distribution?

Air Temperature (C):

Water Temperature (C):

Temperature Time:

Notes:

Gradient 90-95% from mouth to trail, at this point a 4'ww. Above trail 78% gradient, no fish. Stream was clear.

Last Fish Location:

Label:

Average Bankfull Width (ft.):

Last Species:

Distance to DS End (ft.):

Habitat Notes: no fish observed

Significant Habitat Overcome:

Last Habitat Location:

Label:

Distance To Downstream End (ft.): 0

Average Bankfull Width (ft.): 7

Habitat Feature: Natural Barrier

Status: Permanent

Attributes: 90-95% gradient

End of Survey Location:

End of Survey Point Label: Whit12.85RB-EOS

White Chuck LB 13.0rm

River System: Sauk

Crew: Villella, Remlinger

Survey Date: 09/26/00

Reference Point

Landmark Description: mouth

Marker Location:

Downstream End of Survey

Relative to Reference Point: same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 500

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other: prohibitive gradient

Detection Method Above Last Fish: Visual

Debris torrent in Last 10 yrs?

Debris torrent affects fish distribution?

Air Temperature (C):

Water Temperature (C):

Temperature Time:

Notes:

From mouth to the trail crossing the gradient was 58%. Us from trail the channel forked. RB trib was less than 1'ww. Main stem was less than 2'ww. Us gradient 26% for a short distance then increasing to 75%. No suitable habitat, no fish, but the water was clear.

Last Fish Location:

Label:

Average Bankfull Width (ft.):

Last Species:

Habitat Notes: no fish observed

Significant Habitat Overcome:

Last Habitat Location:

Label:

Distance To Downstream End (ft.): 0

Average Bankful Width (ft.): 6

Habitat Feature: Natural Barrier

Status: Permanent

Attributes: 58% gradient

End of Survey Location:

End of Survey Point Label: Whit13.0RB-EOS

White Chuck RB 13.1rm (Fire Cr.)

River System: Suitttle

Crew: Villella, Remlinger

Survey Date: 09/26/00

Reference Point

Landmark Description:

Marker Location: mouth

Downstream End of Survey

Relative to Reference Point: same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 3550

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other:

Detection Method Above Last Fish: Electofishing

Debris torrent in Last 10 yrs?

Debris torrent affects fish distribution?

Air Temperature (C): 3.3

Water Temperature (C): 4.4

Temperature Time: 12:50 PM

Notes:

Gradient 10 to 12% to last fish, step pools, boulder, cobble, gravel, and sand. Water clear and cold. Electrofished char just below 10' stepfalls, 60' below trail crossing. Gradient continues at 12% to plunge pool at 75' step falls, last habitat. Above falls 6-8% gradient for 1/4+ mi, excellent habitat, but no fish observed. 14' ww, 40' bfw. At this point a series of low falls, 8 to 12'.

Last Fish Location:

Label: Whit13.1RB-LF

Average Bankfull Width (ft.): 24 Last Species: char

Habitat Notes: step pools, 10-12%

Distance to DS End (ft.): 750

Significant Habitat Overcome:

Last Habitat Location:

Label: Whit13.1RB-LH

Distance To Downstream End (ft.): 1400

Habitat Feature: Natural Barrier

Attributes: plunge pool at 75' sep falls

Average Bankfull Width (ft.): 24

Status: Permanent

End of Survey Location:

End of Survey Point Label: Whit13.1RB-EOS

White Chuck RB 13.7rm (Pumice Cr.)

River System: Sauk

Crew: White, Staller, Remlinger

Survey Date: 10/19/00

Reference Point

Landmark Description: none

Marker Location: trail crossing

Downstream End of Survey

Relative to Reference Point: same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 14800

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other:

Detection Method Above Last Fish: Electrofishing

Debris torrent in Last 10 yrs?

Debris torrent affects fish distribution?

Air Temperature (C): 4.5

Water Temperature (C): 3.6

Temperature Time: 10:40 AM

Notes:

Adult char observed at trail crossing. For the first 0.4rm, Pumice increases to 24% gradient with several 20' falls, ending in a 50'+ falls at 0.4rm. 350' ds 50' falls a RBT was electrofished, brought to hand. Above the falls RBT were brought to hand to 2.5rm. LF,LH was a plunge pool at the base of a 60' falls, 10-12ww, 35-40'bfv, 15% gradient. No fish observed us 60ft falls

Last Fish Location:

Label: Whit13.7RB-LFLH

Average Bankfull Width (ft.): 35 Last Species: RBT

Habitat Notes: plunge pool at base of 60' falls

Distance to DS End (ft.): 13350

Significant Habitat Overcome:

a series of 20' falls, up to 24% gradient, and a 50' water fall.

Last Habitat Location:

Label: Whit13.7RB-LFLH

Distance To Downstream End (ft.): 13350

Habitat Feature: Natural Barrier

Attributes: plunge pool at base of 60' falls

Average Bankfull Width (ft.): 35

Status: Permanent

End of Survey Location:

End of Survey Point Label: Whit13.7RB-EOS

White Chuck RB 15.9rm (Glacier Cr.)

River System: Sauk

Crew: Villella, Remlinger

Survey Date: 09/27/00

Reference Point

Landmark Description:

Marker Location: mouth

Downstream End of Survey

Relative to Reference Point: same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 2100

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other:

Detection Method Above Last Fish: Electofishing

Debris torrent in Last 10 yrs?

Debris torrent affects fish distribution?

Air Temperature (C): 7.2

Water Temperature (C): 5.5

Temperature Time:

Notes:

75' cascade at mouth with a 45% gradient. 2% gradient from this point to just below trail, increasing to 6-8% above trail. Clear water with a 5-6'wv, step-pool configuration. No fish observed in Glacier Creek.

Last Fish Location:

Label:

Average Bankfull Width (ft.):

Last Species:

Habitat Notes: no fish observed

Significant Habitat Overcome:

Last Habitat Location:

Label:

Distance To Downstream End (ft.): 0

Average Bankfull Width (ft.): 8

Habitat Feature: Natural Barrier

Status: Permanent

Attributes: 75' stepped falls, 4to12' steps

End of Survey Location:

End of Survey Point Label: Whit15.9RB-EOS

White Chuck RB 16.5 (Kennedy Cr.)

River System: Sauk

Crew: Villella, Remlinger

Survey Date: 09/28/00

Reference Point

Landmark Description:

Marker Location: mouth

Downstream End of Survey

Relative to Reference Point: same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 3600

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other: Incomplete Survey, due to time limitation

Detection Method Above Last Fish: Electofishing

Debris torrent in Last 10 yrs?

Debris torrent affects fish distribution?

Air Temperature (C):

Water Temperature (C):

Temperature Time:

Notes:

Area at mouth shows evidence of a mass wastage event. Stream very turbid and fast. Approx. 80' bfw, 10' ww, 6% gradient and continuous rapids for first 1/2 mile. Stream then increases to 12% with low step falls, 12-14'ww. Stream then increases to 16% with solid rapids and bank failures, 12'ww, 36'bfw, end of survey.

Last Fish Location:

Label:

Average Bankfull Width (ft.):

Last Species:

Habitat Notes: no fish observed

Significant Habitat Overcome:

Last Habitat Location:

Label:

Distance To Downstream End (ft.): 0

Average Bankfull Width (ft.): 0

Habitat Feature: N/A

Status:

Attributes:

End of Survey Location:

End of Survey Point Label:

White Chuck

River System: Sauk

Crew: Vilella, Remlinger

Survey Date: 09/28/00

Reference Point

Landmark Description:

Marker Location: FR23 Bridge, approx. rm 5

Downstream End of Survey

Relative to Reference Point: same

Upstream End of Survey

Distance From Upstream End of Survey (ft.): 10.5rm

Reason for Ending Survey:

- Surveyed for 400m above last habitat without finding fish.
- Gradient at 20% for 100m and channel < .6m wide.
- Dry stream channel for 100m.
- Lack of access permission
- Other: Incomplete Survey. Mainstem size and turbidity prevent accurate sampling.

Detection Method Above Last Fish: Electofishing

Air Temperature (C): 8.5

Debris torrent in Last 10 yrs?

Water Temperature (C): 5.5

Debris torrent affects fish distribution?

Temperature Time:

Notes:

Started sampling at bridge, FR23/White Chuck, approx. rm 5. Lastfish seen was LB side channel, 14'ww, 24'bfw, boulder, cobble, gravel, sand. Sampled intermittently from there. Last habitat is a falls of undeterminable height. The river is confined to a wvw and bfw of 10-12'. Electrofished upstream canyon, and found no fish in main stem, or tribs. This time of year the stream is very turbid, although clears up nicely in cooler seasons.

Last Fish Location:

Label: Whit-LF

Average Bankfull Width (ft.): 60 Last Species: char

Distance to DS End (ft.): 10032

Habitat Notes: LB side channel

Significant Habitat Overcome:

Last Habitat Location:

Label: Whit-LH

Distance To Downstream End (ft.): 53328

Average Bankful Width (ft.): 0

Habitat Feature: Natural Barrier

Status: Permanent

Attributes: Falls in confined canyon

End of Survey Location:

End of Survey Point Label: Whit-EOS