

# 2001 Perennial Initiation Point Project

Prepared By  
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## Introduction

During the Forest and Fish discussions the default initiation point of perennial stream flow was established for the eastern Washington watersheds at a basin area of 300 acres. This point would be used to delineate between the type 4/5 break under the present water typing system. Under the new water typing criteria this point will be used to determine the upper most flow of type N (non-fish bearing) waters. Type N waters are further subdivided into two categories: perennial (Np) segments that do not dry up, and seasonal (Ns) segments that do become dry in a year of normal rainfall. Type Np streams require partial forest buffering and other protections during forest practices (logging, road maintenance) not required for Ns streams.

The Perennial Initiation Point (PIP) Pilot Project was created to collect baseline data supporting adaptive management related to water typing in headwater streams. The field sample protocol for this project was developed in order to identify locations in streams where continuous perennial flow and spatially intermittent perennial flow are found. In addition, the validity of the default 300-acre (eastern WA) basin area was to be tested, addressing one of the L-2 questions on CMER's priority list of unresolved issues. Currently, the West-side default lies at 52 acres. However, Pre-2001 PIP data collected from Hydrologist Curt Veldhuisen of the Skagit System suggested a much lower basin size of 21 acres.

The Data collected for this project was in accordance with the protocol established by the Np Survey Working Group/ In-Stream Advisory Group (ISAG). Additional information resulting from this pilot project includes:

- data suggesting the appropriate sample sizes for the statewide stratification
- suggestions/ recommendations regarding the field sampling protocol
- additional variables related to stream relationships and functions that may add insight on better data stratification.

In addition, the data collected within the 2001 field season may be helpful in the development of the water typing system model and statewide map, which is a habitat based model to determine fish habitat Type F breaks, currently being created for the WADNR Forest Practices Act WAC222-16-030. There will also be a new section of the Forest Practices Board Manual (Section 23) developed to provide technical guidance to

landowners and foresters in determining the upper most headwater spring and/or the upper most extent of Type Np streams.

Eastern Washington is composed of a wide range of regional variability, which contributes to its diverse ecosystems. In order to better understand these complex relationships, data must be collected which is representative of the geographic diversity found in eastern Washington. The random site selection process in this study was designed to account for multiple environmental variables such as: aspect, elevation, geology, soils, vegetation, and precipitation. The TFW Biologists of the Upper Columbia United Tribes (UCUT) including, the Colville Confederated Tribes (CCT) and the Spokane Tribe of Indians (STOI), conducted the PIP surveys'.

### **Goals and Objectives**

The goal of this project is to investigate the appropriateness of the 300-acre basin size demarcation for the point of perennial flow of non-fish bearing waters in eastern Washington. The overall intent of this study was to aid in the development of State Forest Practice Regulations, while streamlining timber harvest operations and maintaining a high level of stream quality related to the management of public resources.

The objectives of this pilot project are consistent with the Scope of Work in Attachment A within the interagency agreement # IAA 02-109 between the Department of Natural Resources and the Colville Confederated Tribes.

### **Methods**

The methods used in this study are in compliance with the Perennial Stream Survey Field Sample Protocol (version 1.21) written by the Np Survey working Group/ In-Stream Advisory Group (ISAG). Sample sites were randomly selected in accordance with option 3 of the sample protocol. Following site selection the Main Thread Survey was performed using the Downstream Method.

CCT GIS coordinates were collected using a handheld Garmin GPS CX and downloaded into a PC using Garmin Mapsource. All coordinates were then converted to a shapefile in association with Arcview 3.2 GIS. Three individual maps were created for each PIP representing a 7.5 minute/1:24000-scale. Due to time constraints, 6 of the CCT off-reservation survey sites do not have aerial photo or vegetation mapping. In addition, the STOI basin mapping does not include vegetation or aerial photos due to discrepancies in map projections. The mapping data includes: National Geographic Seamless USGS Topographic Base Map with DNR stream layers (DNRSTR\_83), Aerial Photo/Digital Ortho-quad images (DOQ 1991/1996), and a NRCS/CCT Land Operations soil based vegetation data layer (soils\_83). The basin sizes for each PIP were calculated in Arcview by creating a Polygon Theme and digitizing the basin boundaries on top of the USGS Topographic Base Map. Starting from the PIP, a line was drawn to the nearest ridge

following the upper extent of the topography surrounding the basin. The polygon shape was completed when the line tied back into the PIP. The elevations for each PIP were determined using the associated contour lines on the individual USGS Topographic site maps.

STOI captured real-time Global Positioning System (GPS) coordinates using a TSC1 Tremble Navigator. Coordinates were downloaded into a PC using GPS Pathfinder Office Vers 2.70 software support. Differential conversions were run from base station files stored on the STOI GIS base station rover files. The PIP differential corrected files were then exported into Arc View and converted to shape-file format. The shape-file was then delivered to the CCT GIS specialist to determine basin size. As an additional resource, the STOI has their shape-files overlaid onto Arc View background overlay coverage's with WADNR watershed administrative units (lit.cit.), DOE (lit.cit.), USGS 24K Contour (lit.cit.) files and saved into (STOIPIP.apr) project. Other additional resources available from the STOI include: PIP basin vegetations recovered from a variety of scientific citations such as: Zamora 1983, Spokane Tribe Forest Habitat Type (FHA.shp) shape file coverage's, United States Forest Service Regional Ecosystem Office recovered GIS data dictionaries for vegetation of Lake Roosevelt and Pend Oreille and Little Spokane River basins (c115.shp and c116.shp). If no vegetation coverage's were accessible, then sites were confirmed by field observation according to Kovalchik, 2001. (Contact Sandra Collins, TFW Biologist STOI for more information)

The STOI and CCT participated in QA Training and QC Review on September 5<sup>th</sup>, 2001 with Allen Pleus (Forest Practices Coordinator, NWIFC) and Mara McGrath (Botanist, Ecological Land Services, Inc.). In addition, Mara McGrath met both the CCT and the STOI for field survey QA/QC training and review.

STOI & CCT TFW/F&F also participated in on going scientific peer review to the "Perennial Stream Survey Field Sample Protocol (Vers 1.21)" prepared by the Np Survey Working Group 8/8/01.

## **Results and Discussion**

The PIP survey's began in early August, but were postponed within the lands surrounding the Colville Confederated Tribes due to the extreme fire hazards and regulatory forest restrictions associated with the Virginia Lake Fire. Precipitation levels created drought like conditions limiting access to forested lands within the region. The surveys' resumed in mid-September through mid-October and ended due to seasonal increases in precipitation. The locations of our survey sites spanned from northcentral to northeast Washington (see master map). There was a significant variation between individual survey sites, associated with the changing topography, geology etc., across such a large landscape.

The TFW Biologists of the CCT and the STOI surveyed a total of 21 Perennial Initiation Points in the 2001 field season, averaging approximately 13 hours per PIP. These hours

include: site selection, travel, locating PIP and conducting the field survey. Hours associated with GIS mapping were not included. Basin size was calculated using Arcview 3.2 GIS for all 21 PIP's (see appendix A or Table 1.). The basin sizes varied from 3258.9 acres (Beaver Cr. 1) to 20.8 acres (Deadman Cr.), and averaged 343 acres. However, the average basin size is not a fair representation due to the extreme basin size of Beaver Cr. 1 and Kinkaid Cr. When the 2 smallest and 2 largest basins are eliminated from the average as outliers, the revised average becomes 159 acres. The average elevation including all sites was 3741 feet, and with the 4 outliers eliminated 3640 feet. The elevations associated with each PIP suggest that basin size may be a representation of the elevation at which the PIP is located (see table 1). The two largest basins, Beaver Cr. 1 (3258.9 acres) and Kinkaid Cr. (2461 acres) were both located at approximately 2500 feet or less. This could be analogous to an increase in the available surface area as you move down the side of a mountain. Additional field data may clarify this relationship, adding insight toward stratifying the default basin size with respect to elevation bands. For example, harvest practices occurring at a higher elevation would receive a smaller default basin size than those at a lower elevation.

Table 1. Relationship Between Elevation and Basin Size

<u>Stream Name</u>	<u>Elevation (ft)</u>	<u>Basin Size (acres)</u>
Peel Cr.	2789	227
Smith Cr.	2461	*22
Kinkaid Cr.	2461	*1202
Stepstone Cr.	4593	293
John's Mt. Cr.	4100	252
Lynx Cr.	4430	147
Sleepy Hollow Cr.	4600	143
Rock Cr. 01	3773	40
Rock Cr. 02	5300	66
Central Cr.	4260	211
Sinlahekin Cr.	*6234	40
Salmon Cr.	*6234	67
Bear Cr.	4101	171
Castle Cr.	2300	374
Joe Moses Cr.	3600	232
Buffalo Cr.	3445	126
Chamokane Cr	3200	178
Beaver Cr. 01	*2200	*3259
Beaver Cr. 02	2800	88
Cottonwood Cr.	*2000	44
Deadman Cr.	3680	*21

(\* = outlier)

Two examples that offer insight into the variability with which eastside PIP's can occur during seasonally low flows are Smith and Kinkaid Creek. In the 2001 field season we observed the presence of Brook Trout and Cutthroat Trout immediately below the perennial initiation point at 2 of our surveyed sites. Both of these sites were within the "Ponderosa Pine Zone" at approximately 2500 ft. in elevation.

The first of these sites was Smith Creek, which initiated at a spring, located at the base of a small bowl, approximately 22.2 acres in size (see appendix A). The immediate topography surrounding Smith Creek does not appear to be large enough to support perennial flow. Therefore it is likely that the spring is fed by subsurface water flows related to a larger basin area, not connected by a dry channel, but possibly influenced by geological variables. In addition, Smith Creek goes subsurface where it enters an agricultural area before entering the Nespelem River. There appears to be no associated surface channel present to connect the mouth to the headwaters, and there is no recent record of fish stocking. It is important to consider that the nature of the soils within the Okanogan Highlands (ash and loess), in combination with agricultural water use, can result in a significant drop in local water tables. One possible result of such an event is subsurface stream flow, which may cut off resident fish populations from downstream access. Dry stream channels or other features obstructing fish passage do not rule out the possibility of resident fish populations occurring upstream, especially at lower elevations associated within agricultural lands.

The second site was Kinkaid Creek, which initiated at a point far below the upper most extent of the dry stream channel. The calculated basin size above the Kinkaid Creek PIP was 1202 acres (see Appendix A). Riparian associated vegetation was continuous and the gradient of the dry channel was less than 8%, which suggests the potential for seasonal fish usage during periods of higher water. This is further substantiated by the presence of a 6" Eastern Brook Trout. Kinkaid Creek shows us that selecting August as the primary surveying month may facilitate a larger default basin size due to the PIP occurring farther downstream than it would occur during winter or spring. A repercussion of this idea is the default basin size being larger than necessary, resulting in negative impacts associated with downstream sediment delivery. Machinery associated with forest practices often increases soil density through compaction, resulting in decreased soil porosity. "A reduction in porosity reduces the rate at which water can enter soil, thus increasing the proportion of water flowing over the soil surface" (Singer and Munns 62). The soil that is picked up from this increase in water movement will eventually enter type F (fish bearing) waters.

The relationship between intermittent stream flow and fish/amphibian habitat is of great importance in this study. The idea of delineating default basin sizes, relative to perennial flow, shows little regard for the importance of the seasonal contributions made to downstream habitats by intermittent streams. For example, allochthonous material, water, sediment, and large wood are all delivered through intermittent stream flow. Reid and Ziemer (1994) found that intermittent channels contribute significantly to downstream reaches, as they can form a high proportion of the entire channel system in a watershed (lit. cit.). The occurrence of fish at the PIP, during drought conditions, suggests that fish could be found farther up the stream channel during seasons of high discharge such as spring run-off. The presence of fish in a stream should warrant type 3 protections, regardless of whether it is perennial or intermittent.

The extreme variability in basin size may be a function of multiple factors. The soils ability to retain water with respect to gradient, aspect, annual precipitation, and elevation will ultimately decide where perennial flow begins. Outside variables, such as agricultural water use, further increase the level of complexity associated with perennial stream flow in eastern Washington. The point of perennial flow will fluctuate as seasons change and the presence of riparian associated species in a stream channel may mirror these seasonal fluctuations. It is important that the default basin size for eastern Washington does not eliminate seasonal fish habitat on the basis of perennial flow in August.

### **Ideas and Suggestions**

- The protocol for the PIP study relies heavily on the location of perennial flow during drought conditions. It is important to understand the relationship between low seasonal precipitation and the location of the perennial initiation points within a watershed, but it is not a healthy representation of how streams and rivers function throughout the year. In eastern Washington drought-like conditions can have a substantial affect on the perennial flow of streams and rivers. Within the STOI study area, 9 out of 15 randomly selected streams were confirmed to be dry at the mouth. The amount of water available to a watershed is assumed to be a function of the current precipitation occurring on the landscape, as well as the precipitation from previous months/years. In order to draw solid scientific conclusions regarding the relationship between stream function and forest practices we must also include data, which represents seasonal precipitation throughout the year. "Most streams and rivers have a maximum discharge during winter rains or spring snow melt", which suggests the importance of surveying perennial initiation points throughout the year (Horne and Goldman 357).
- Overall as a group we felt concerned with the date of the sample period. The group felt that peak flow should be considered as a potential time for determining perennial initiation points.
- It was also felt that due to 2001 being an unusually dry year, the perennial flow would deviate substantially from normal variations in stream hydrology.
- Vegetation is an important indicator related to aquatic environments. Elevation, precipitation, soils, and geology all reflect the type of vegetation ( $E+P+S+G=V$ ). It would be beneficial to place more emphasis on the presence and absence of riparian related plant and tree species in association with the perennial initiation points. This may be the easiest way to determine the upper most extent of flowing water. Ephemeral stream flow does not usually support riparian vegetation, limiting the occurrence of riparian vegetation to sites that have a regular presence of water.
- The presence and absence of organic matter in the stream channel is an important part of the PIP survey. Evidence of heavy range cattle use can alter or mimic the appearance of native organic in-stream components. The presence of broken down fecal material often covers the native stream substrate, making it difficult to accurately classify. In addition, bankfull width and depth measurements can be

altered when cattle overuse a stream channel. Field forms should contain side notes regarding the presence/absence and severity of cattle use. This could be incorporated as part of the Poorly Defined Channel (PDC) or Modified Channel (MC) classification.

- The dry channel portion of the survey may be using valuable time, which could be used to locate and sample additional wet sites. The answer to this problem might be in noting the presence of a dry channel for 200 meters, but no data collection. However, if the data obtained from the dry channel survey is critical to Np delineation or basin size determination, a simplified version of data collection for the dry portion may be beneficial.
- The need for 200 meters of continuous visible or audible flowing water, in order to assume perennial flow to the mouth, may be moving the perennial initiation points too far down stream. The result of this is a larger basin size. Flowing water that subsurfaces and then reappears further down the stream channel should be considered perennial flow, regardless of how far it runs underground or whether you can hear it.
- Develop hydro-geomorphic associations to describe the watershed. (Developed and available through NWIFC).
- Record the Water Resource Inventory Area (WRIA) number on the field form for the segment of concern.
- Note an area on the field form to document if any fish or amphibians are present within PIP segment area.
- Note another area on the field form to record: associated seeps, springs, and wetlands and their approximate size (acreage) and relationship to the PIP.
- Standardize how precise the instream measurements need to be. Should the bankfull width/depth be rounded to the nearest tenth or hundredth? The QA/QC field auditor and PIP field crews need to be consistent.
- Segment breaks, associated with a change in gradient, should only occur when it is significant enough to result in a flow category change.
- Record the Rosgen Stream type on the field form.
- If the stream segment of concern is predominantly all agricultural land and void of any over story trees, is it warranted to eliminate the site from the PIP Survey?
- Calculating the basin size from topography breaks on a GIS based map may not be a fair representation of the actual basin size. In the field: draws, swales, and gullies, etc. that are undetectable on GIS based maps or aerial photos' may limit precipitation from entering the stream channel.

### Literature cited

Horne, Alexander J. and Charles R. Goldman. Limnology. 2<sup>nd</sup> ed. New York: McGraw and Hill, Inc. 1994.

Reid and Ziemer, 1994. [http://www.fs.fed.us/r6siskiyou/rrwa\\_ripeco.htm](http://www.fs.fed.us/r6siskiyou/rrwa_ripeco.htm)

Singer, Michael J. and Donald N. Munns. Soils. 3<sup>rd</sup> ed. New Jersey: Prentice-Hall, Inc. 1996.

Department of Natural Resource watershed administrative units 2201,  
Shapefile: wau0698.shp

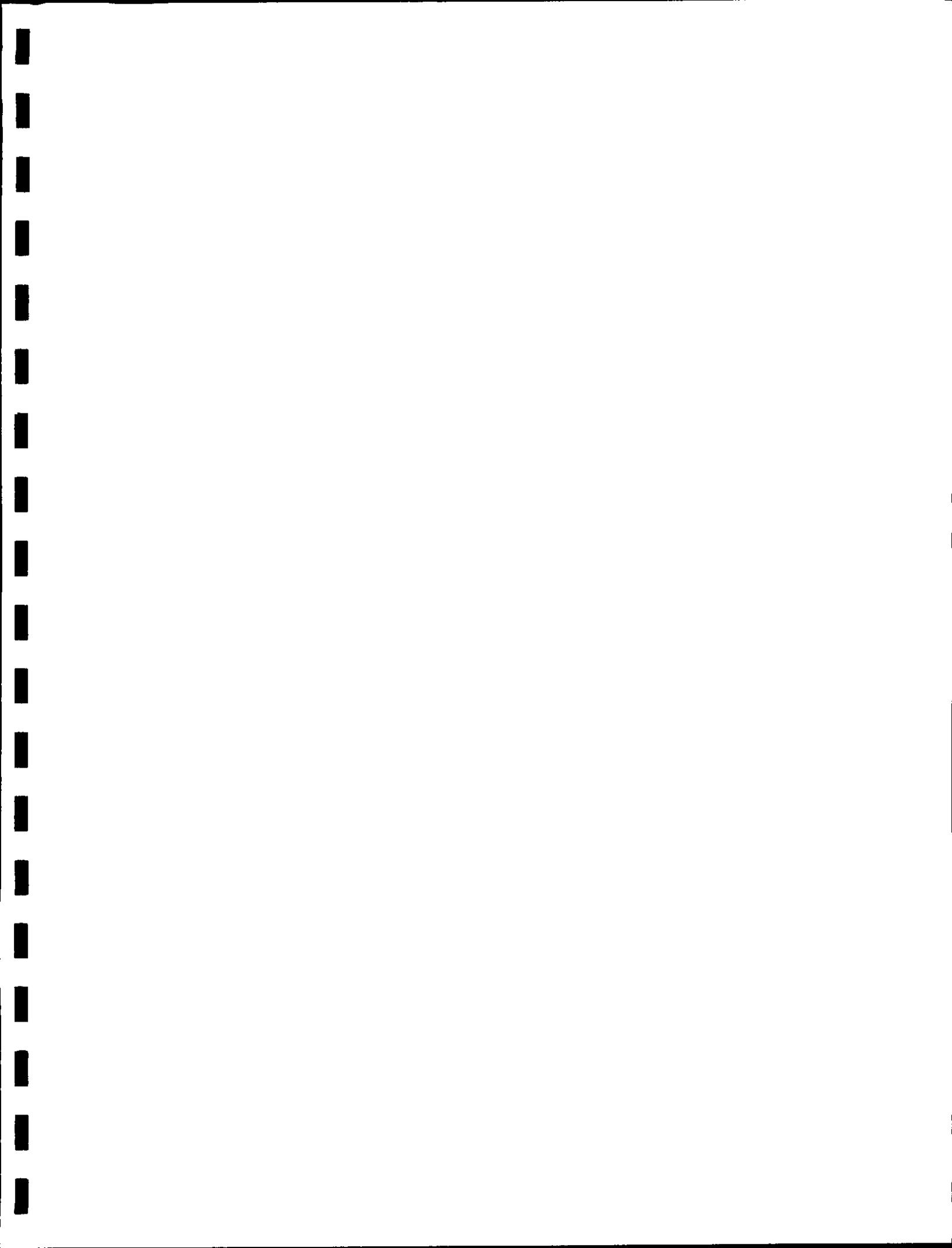
Department of Ecology 2001, Shapefile: rivers.shp; hydro54.shp; hydro55.shp;  
hydro59.shp

United States Geological System 24K Contour 2001, Shapefile: Adams.shp;  
Empey.shp

### **Acknowledgements**

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Cathy Cochrane, Biologist Technician, Spokane Tribe of Indians  
Tahnea Jafari, Wildlife Biologist II, Fish and Wildlife Department  
Donavon Antoine, Fisheries Technician, CCT Fish and Wildlife Department  
Yvonne Passmore, GIS Technician, CCT GIS  
Charlie Joseph, Fisheries Technician, CCT Fish and Wildlife Department  
Jackie Marchand, Biologist Technician, CCT Fish and Wildlife Department



# Appendix A

### Form B: Perennial Stream Survey Field Measurements

Note: Record all Measurements in metric units

WAU: Summit Creek	Stream Name: Rock Cr.	T/R/S T34 R24 S11	Topoquad name: Buck Mtn.
Organization: Colville Confederated Tribes TFW Fish & Wildlife Dept.	Description of start point (GPS optional): SEE NOTES		Landowner; State
Site Number: 01	Date: 10-01-01	Recorder(s): R. Peone, E. Krausz	
Precipitaion (mm) for the 2 days prior to survey 0		Survey type: Main thread or Total Tributary Tributary Number: 1	

Segment Number	Distance From Start (m)	GPS coordinates (optional)	Flow Category	Channel Category	Channel Bankfull Width (m)	Channel Bankfull Depth (m)	Up-stream gradient %	Down-stream gradient %	Dominant Substrate	Associated Feature at flow change	Flow categories of side trib not on main thread	Channel categories of side trib not on main thread	Notes (see also back page)
1	0-30	Y	D	NC			1	3					notes
2	30-60		D	NC			5	5					
3	60-90		D	NC			2	2					
4	90-120		D	NC			4	6	F	WS			
5	120-150		D	NC			0	2	F	WS			notes
6	150-180		D	DC	0.7	0.3	9	17	F	GB			notes
7	180-210		D	NC			10	2	F	WS			notes
8	210-240		FW	DC	0.5	0.2	11	42	F	WS/GB			
9	240-270		FW	DC	0.5	0.3	19	17	F				
10	270-300		FW	DC	0.4	0.2	11	2	F				
11	300-330		FW	DC	0.4	0.2	3	5	F				
12	330-360		FW	DC	0.5	0.3	5	9					
13	360-390		D	PDC	0.6	0.2	43	27	B				Gradient
14	390-420	Y	D	PDC	0.4	0.1	11	2	F	WS			14 END

Codes for Flow Categories: FW=Flowing Water, SW=Standing Water, FP=Flowing Pocket Water, SP=Standing Pocket Water, D=Dry, U=Unknown, O=Obscured

Codes for Channel Categories: DC=Defined Channel, PDC=Poorly Defined Channel, MC=Modified Channel, PC=Piped Channel, CC=Covered Channel, NC=No Channel

Back of Form B

<b>NOTES</b> Rock Creek 01	
Seg. 1	Another 100m will be at top of divide
Seg. 4 to 8	15 m of wide wetsite.
Seg. 5	Pocket of water in wholes of indentions in wet site
Seg. 6	165m to 175m standing pocket water
Seg. 7	channel starts at 195m first 15m is a bog. Pocket water in indentions.
Seg. 8	Water subsurface under boulders
Seg. 9	225m to 235m 2 % gradient, 235m to 240m 49% gradient Average as a whole 17%
Seg.14	25m of subsurface then 5m of water to end.
Seg. 4 to 8	15 m of wide wetsite.
Seg. 7	END N 48 27 31.4 W 119 48 47.6
PIP	N 48 27 35.1 W 119 47 17.1
END	N 48 27 31.4 W 119 47 25.1
Road	N 48 27 35.1 W 119 47 16.2

**SKETCH**  
see original forms

## Form B: Perennial Stream Survey Field Measurements

Note: Record all Measurements in metric units

Summit Cr

WAU: Louploup	Stream Name: <u>ROCK CREEK</u>	T/R/S T34R24311	Topoquad name: <u>Beck MT</u>
Organization: <u>CCT/TFW</u>	Description of start point (GPS optional): <u>N 48° 27.601 W 119 47.092</u>		Landowner: <u>state</u>
Site Number: <u>01</u>	Date: <u>Oct. 2, 2001</u>	Recorder(s): <u>Ruby + Eric + Jim</u>	
Precipitation (in mm) for the 2 days prior to survey		Survey type: <u>Main thread</u> or Total Tributary Tributary Number: <u>/</u>	

Segment Number	Distance from Start (m)	GPS coordinates (optional)	Flow Category	Channel Category	Channel Bankfull Width	Channel Bankfull Depth	Upstream gradient (%)	Downstream gradient (%)	Dominant Substrate	Associated Feature at flow change	Flow categories of side trib not on main thread	Channel categories of side trib not on main thread	Notes (see also back page)
1	0-30		D	NC			1	3					1.
2	30-60		D	NC			5	5					
3	60-90		D	NC			2	2					
4	90-120		D	NC			4	6	ØF	WS			
5	120-150		D	NC			0	2	ØF	WS			5.
6	150-180		D	DC	.7	.3	9	17	ØF	GB			6
7	180-210		D	NC			10	2	ØF	WS			7. <del>FP</del>
8	210-240		FW	DC	.5	.2	11	42	ØF	WS/GB			
9	240-270		FW	DC	.5	.3	19	17	ØF				
10	270-300		FW	DC	.4	.2	11	52	ØF				
11	300-330		FW	DC	.4	.2	3	5	ØF				
12	330-360		FW	DC	.5	.3	5	9					
13	360-390		D	PDC	.6	.2	43	27	B				Gradient
14	390-420		D	PDC	.4	.1	11	2	ØF	WS			14 END

Seg 7 PIP N48° 27.595 W 119° 47.215

Codes for Flow Categories: FW = Flowing Water, SW = Standing Water, FP = Flowing Pocket Water, SP = Standing Pocket Water, D = Dry, U = Unknown, O = Obscured.  
 Codes for Channel Categories: DC = Defined Channel, PDC = Poorly Defined Channel, MC = Modified Channel, PC = Piped Channel, CC = Covered Channel, NC = No Channel

End PIP N48° 27.532 W 119° 47.348  
 Road. N48° 27.595 W 119° 47.200

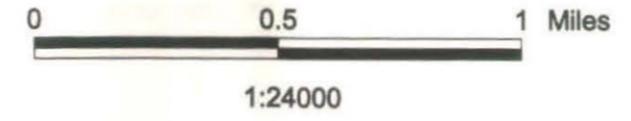
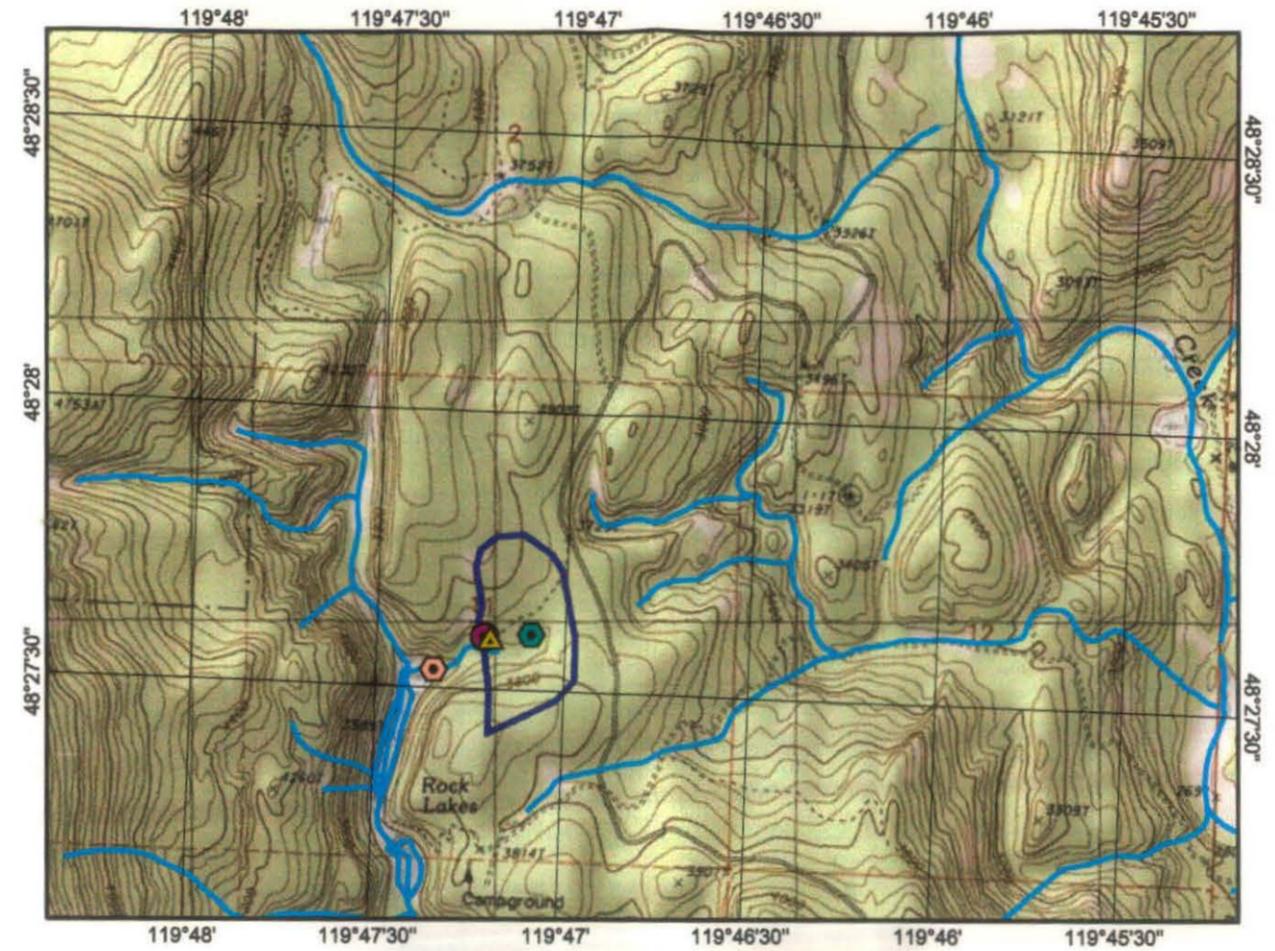
## Back of Form B

NOTES
Seg. 1 Another 100 meters will be at top of divide.
Seg. 5 Pocket of H <sub>2</sub> O in wholes of <sup>indentions</sup> <del>start</del> in wet site.
Seg. 6 165m to 175m Standing Pocket Water
Seg. 7 Channel starts at 195m. 1 <sup>st</sup> 15m. A BOG. Pocket H <sub>2</sub> O in indentions
Seg. 8 H <sub>2</sub> O subsurface under boulders
Seg. 9 225 to 235m 2% gradient
235 to 240m 49% gradient
Average as a whole 17%
Seg. 14. 25m of subsurface then 5m of H <sub>2</sub> O to end.
End of seg. 10m to Lake.
Seg 4 to 8 15m wide wet site

SKETCH

# Rock Creek 01

Rock Creek 01  
 Date of Survey 10/02/01  
 WAU: Summit Creek  
 WMUS: N/A  
 Quad: Buck Mountain  
 T 34 R 24 E S 11  
 48.4597500 -119.7880900  
 Basin Acreage: 39.766



For Reference Use Only.

This map has been produced on the Colville Confederated Tribes' Geographic Information System. Data provided herein is derived from sources with varying levels of accuracy. The Colville Confederated Tribes disclaims all responsibility for the accuracy or completeness of information contained herein.

CCT Resource Inventory & Analysis and  
 CCT Fish and Wildlife  
 January 2002

**2001 Perennial Initiation Point Survey**

- Basin Boundary
- Points**
- PIP
- Road Access Pt.
- Spring
- Start Survey
- Survey End Point

**Form B: Perennial Stream Survey Field Measurements**

**Note: Record all Measurements in metric units**

WAU: Summit Creek	Stream Name: Rock Cr. 02	T/R/S T 34 R 24 S 22	Topoquad name: Buck Mountain
Organization: Colville Confederated Tribes TFW/F&F Fish & Wildlife Dept.	Description of start point (GPS optional): SEE NOTES		Landowner; State
Site Number: 02	Date: 10-03-01	Recorder(s): R.Peone, E.Krausz	
Precipitaion (mm) for the 2 days prior to survey 0		Survey type: Main thread or Total Tributary Tributary Number: 1	

Segment Number	Distance From Start (m)	GPS coordinates (optional)	Flow Category	Channel Category	Channel Bankfull Width (m)	Channel Bankfull Depth (m)	Up-stream gradient %	Down-stream gradient %	Dominant Substrate	Associated Feature at flow change	Flow categories of side trib not on main thread	Channel categories of side trib not on main thread	Notes (see also back page)
1	0-30	Y	FW	DC	0.1	0.2	27	33	Substrate				see notes
	15		Seeps coming from both sides of trib. 10m on each side										
2	30-60		FW	DC	0.5	0.15	25	25	g				
	50-60		Seeps on left bank exttends to about 30m out										
3	60-90		FW	DC	0.4	0.1	24	23	Substrate				
	60		Channel braids, seep extends down to 60m on both sides of channel										
4	90-120		FW	DC	0.5	0.3	57	39	F	GB			
			Beg. Of Seg. 4 large clusters of 8 to 10 down wood about 100m long										
5	120-150		FW	DC	0.5	0.3	29	34	Substrate				
	130		Side trib. On left bank, seep on left bank (flowing from seeps seg. 2 and 3 to make trib., surrounded by seeps about 10m out LB										
6	150-180		FW	DC	0.4	0.3	33	33	Substrate				lot of boulders
7	180-210		FW	DC	0.4	0.2	22	24	Substrate				
	195		Creek obscured by down woody material										
	207		patches of woody debre										
													END

Codes for Flow Categories: FW=Flowing Water, SW=Standing Water, FP=Flowing Pocket Water, SP=Standing Pocket Water, D=Dry, U=Unknown, O=Obscured

Codes for Channel Categories: DC=Defined Channel, PDC=Poorly Defined Channel, MC=Modified Channel, PC=Piped Channel, CC=Covered Channel, NC=No Channel



# Form B: Perennial Stream Survey Field Measurements

Note: Record all Measurements in metric units

Summit CR

WAU: Loup Loup Cr.	Stream Name: <u>Rock Creek D2</u>	T/R/S <u>134R24522</u>	Topoquad name: <u>Buck Mountain</u>
Organization: <u>CCT</u> <u>TEW - Fish + Wildlife</u>	Description of start point (GPS optional): <u>See notes</u>		Landowner:
Site Number: <u>02</u>	Date: <u>10/03/01</u>	Recorder(s): <u>Ruby + Eric</u>	
Precipitation (in mm) for the 2 days prior to survey		Survey type: <u>Main thread</u> or Total Tributary	Tributary Number: <u>1</u>

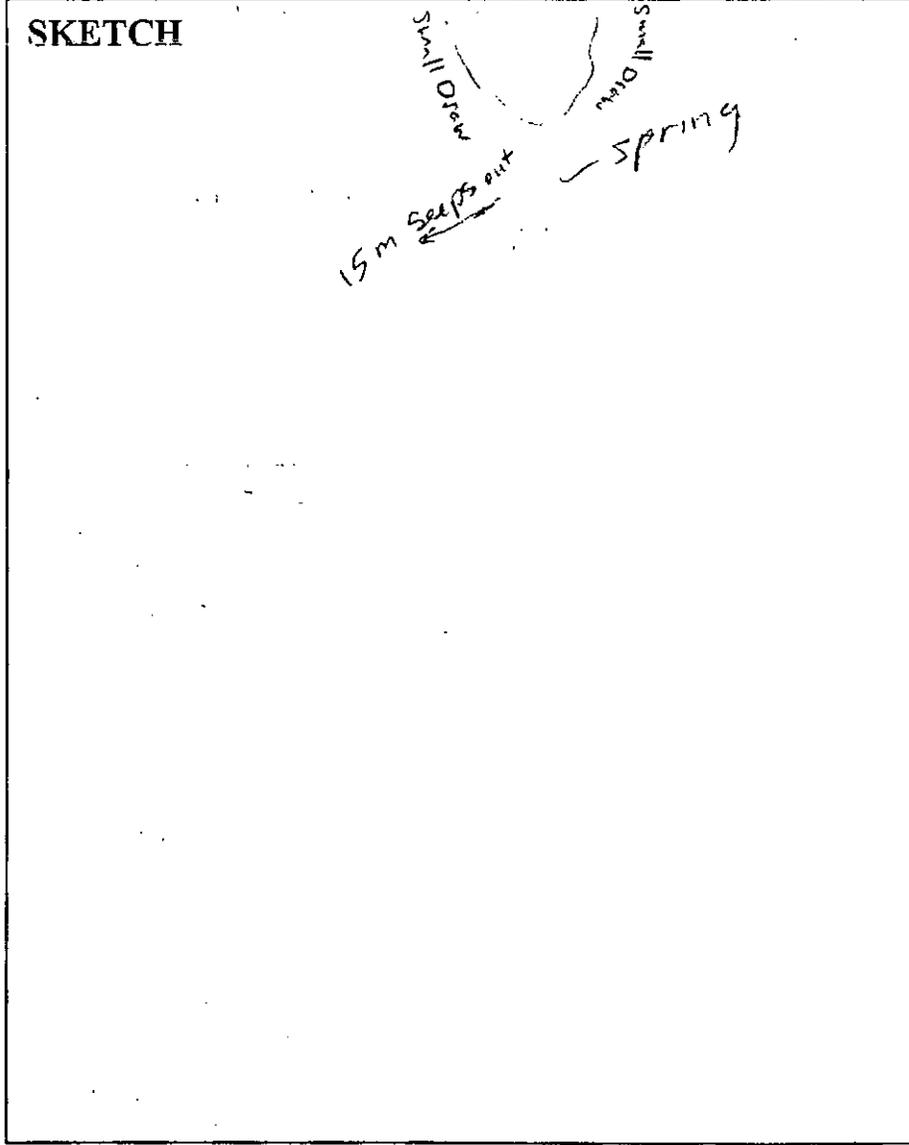
South East facing slope

Segment Number	Distance from Start (m)	GPS coordinates (optional)	Flow Category	Channel Category	Channel Bankfull Width	Channel Bankfull Depth	Upstream gradient (%)	Down-stream gradient (%)	Dominant Substrate	Associated Feature at flow change	Flow categories of side trib not on main thread	Channel categories of side trib not on main thread	Notes (see also back page)
1	0-30		FW	DC	.1	.2	27	33	S				
2	30-60		FW	DC	.5	.15	25	25	G				
3	60-90		FW	DC	.4	.1	24	23	S				
	60			Channel braids	1cm <sup>2</sup>		24	23					
4	90-120		FW	DC	.5	.3	57	39	OF GB				37%
5	120-150		FW	DC	.5	.3	29	34	S				
	130			side Trib. on LB	seep on LB								seep on LB
6	150-180		FW	DC	.4	.3	33	33	S				lots of boulders
7	180-210		FW	DC	.4	.5	22	24	S				
	195			creek obscured	by down woody								material / debris
	207m			creek appears	see <del>see</del> wood								debris / see creek
	210			then opens	at 207m								ends.

Codes for Flow Categories: FW = Flowing Water, SW = Standing Water, FP = Flowing Pocket Water, SP = Standing Pocket Water, D = Dry, U = Unknown, O = Obscured.  
 Codes for Channel Categories: DC = Defined Channel, PDC = Poorly Defined Channel, MC = Modified Channel, PC = Piped Channel, CC = Covered Channel, NC = No Channel

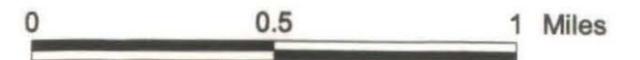
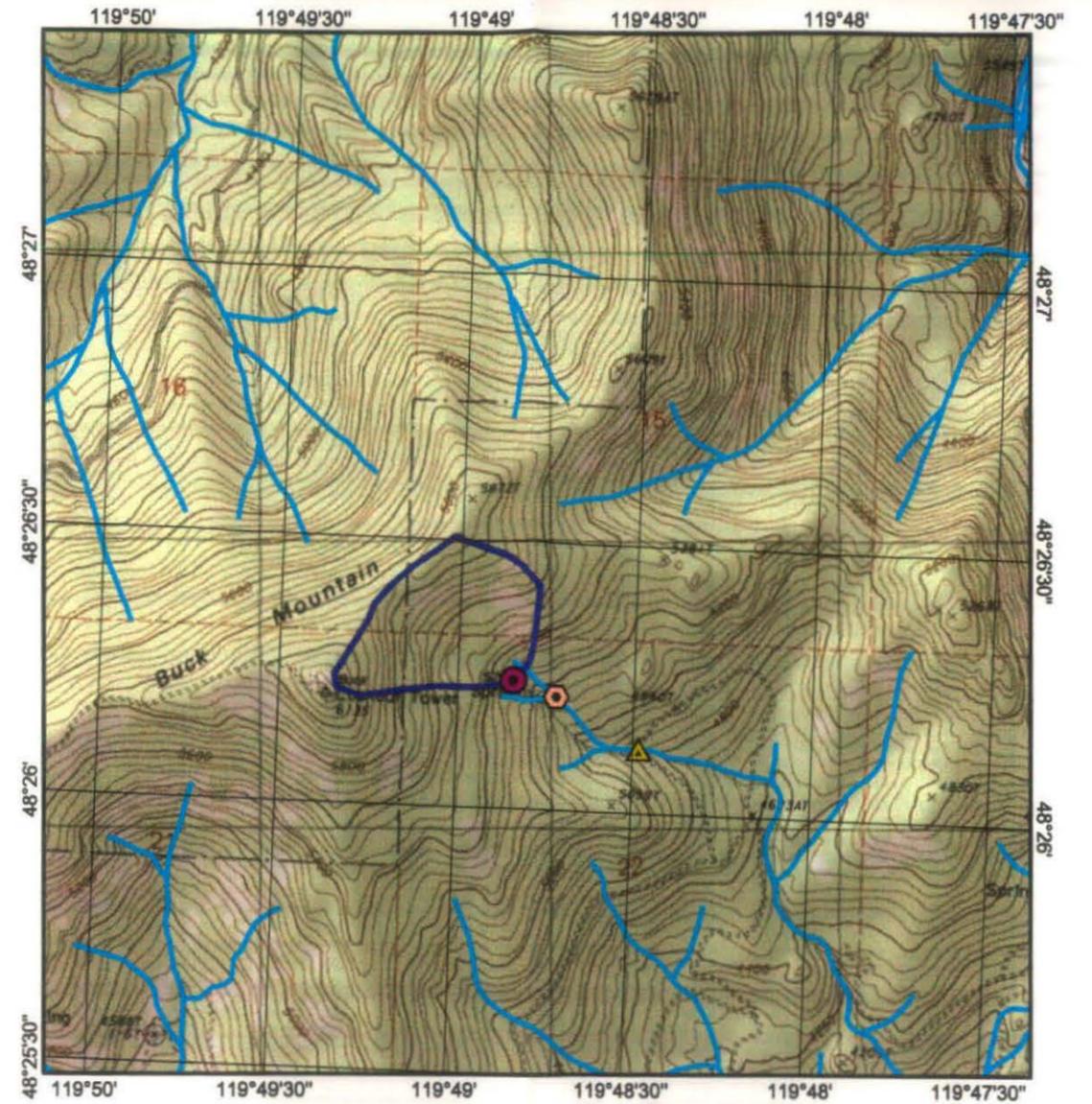
Back of Form B

NOTES PIP starts @ Spring  
Seg. 1 PIP @ Spring = Spring Channel  
is 2 m wide w/ seep extending  
upto 10m or 15m wide.



# Rock Creek 02

Rock Creek 02  
 Date of Survey 10/03/01  
 WAU: Summit Creek  
 WMUS: N/A  
 Quad: Buck Mountain  
 T 34 R 24 E S 22  
 48.4371700 -119.8152700  
 Basin Acreage: 66.250



1:24000



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 January 2002

**2001 Perennial Initiation Point Survey**

-  Basin Boundary
- Points**
-  PIP
-  Road Access Pt.
-  Spring
-  Start Survey
-  Survey End Point





Back of Form B

**NOTES Central Creek**

From PIP on down heavy cattle impact on stream.  
modified channel due to cattle degradation.

1. First 15m no channel and 20m of wet site on PIP

Had there been no cattle present this stream would have a defined  
channel.

**GPS READINGS**

PIP N 48 24 49.7 W 119 50 52.0

END N 48 24 45.3 W 119 50 45.9

ROAD N 48 24 43.7 W 119 50 40.1

**SKETCH**

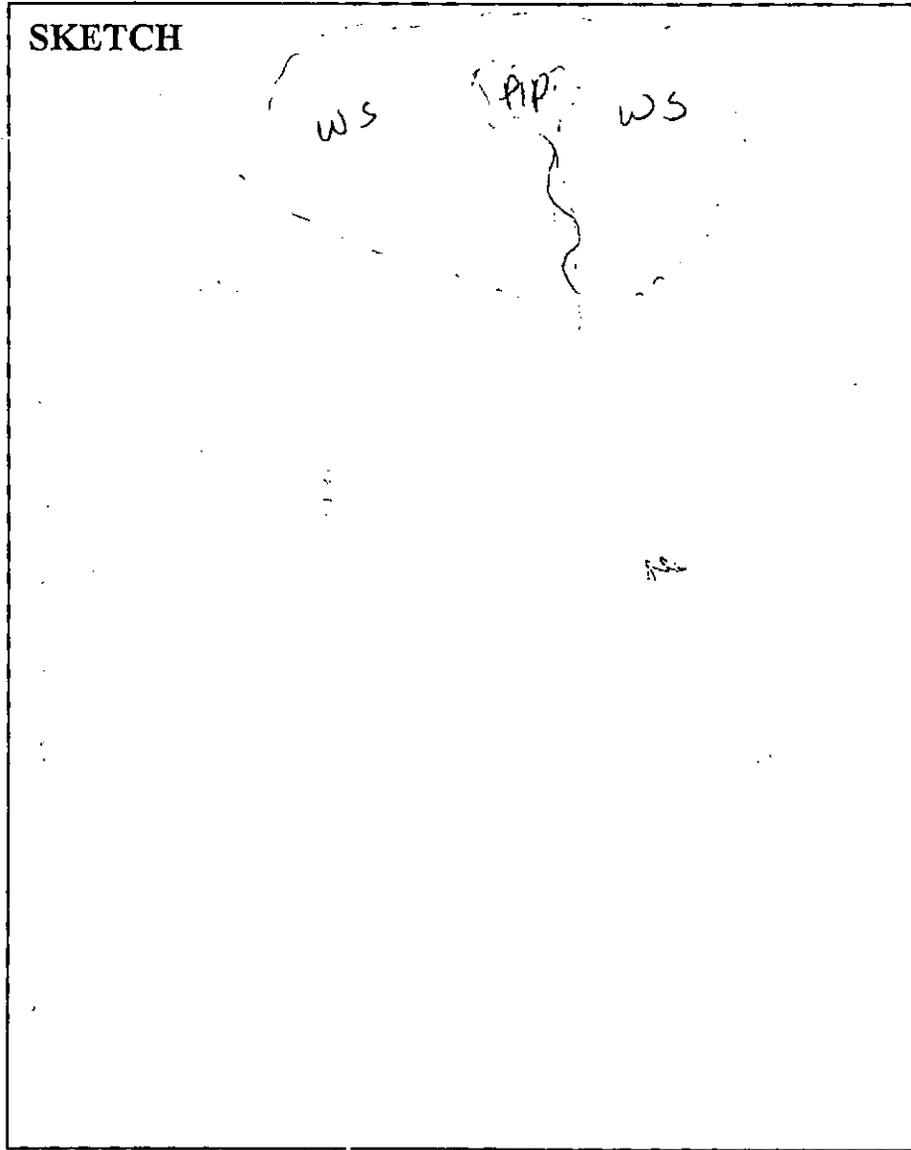
see original forms



Back of Form B

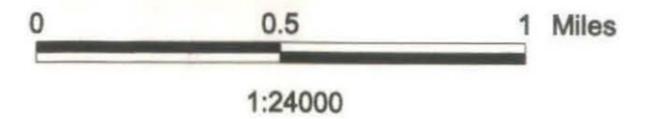
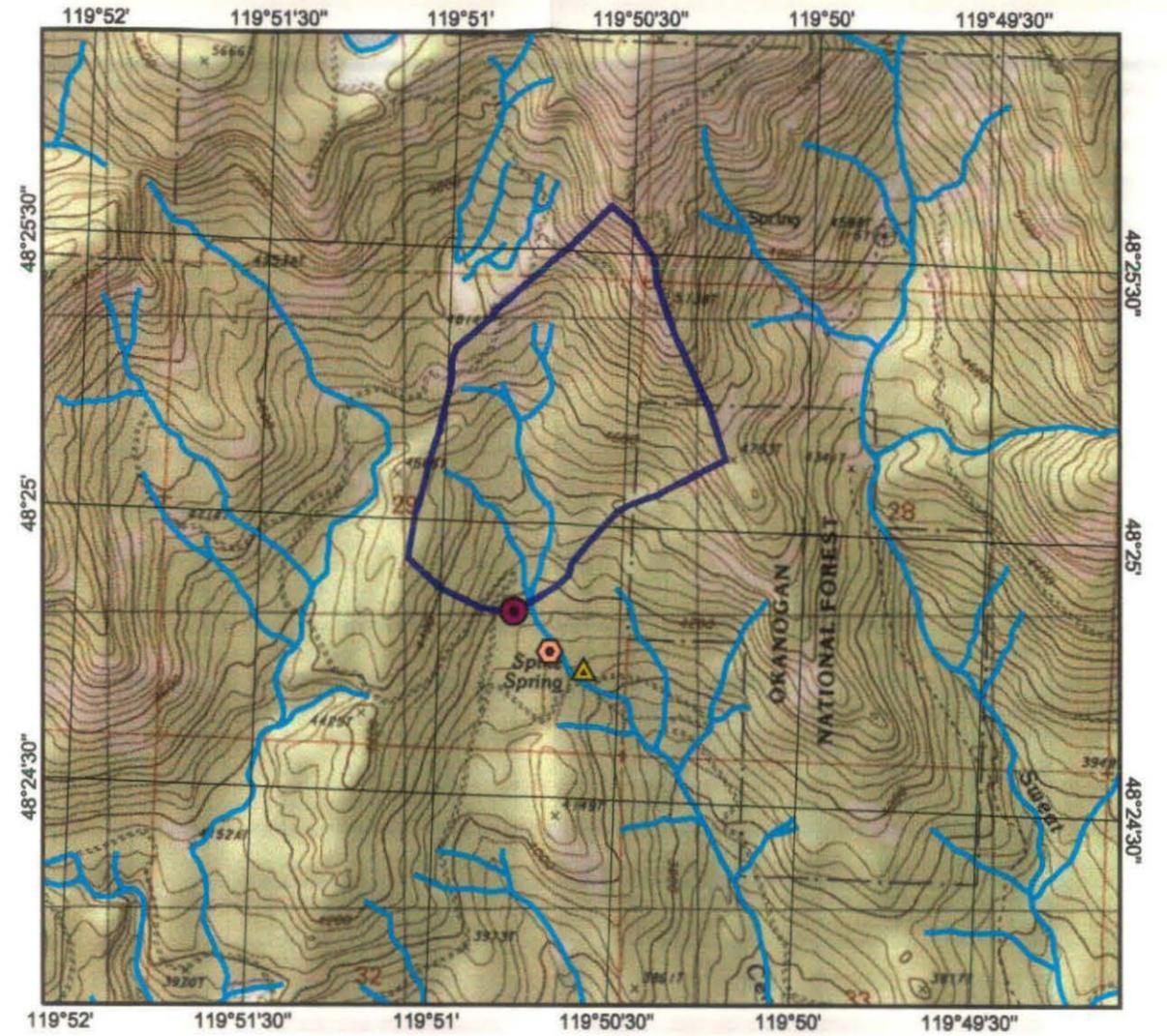
NOTES from PIP on down heavy  
cattle impact on stream  
modified channel due to cattle  
despadation  
Seg 1 1st 15m NC and 20m of wetsto  
on PIP.  
Had there been no cattle present this  
stream would have a defined channel

SKETCH



# Central Creek

Central Creek  
 Date of Survey 10/03/01  
 WAU: Summit Creek  
 WMUS: N/A  
 Quad: Buck Mountain  
 T 34 R 24 E S 29  
 48.4138200 -119.8477800  
 Basin Acreage: 210.495



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## 2001 Perennial Initiation Point Survey

-  Basin Boundary
- Points**
-  PIP
-  Road Access Pt.
-  Spring
-  Start Survey
-  Survey End Point



**Form B: Perennial Stream Survey Field Measurements**  
**Note: Record all Measurements in metric units**

WAU: Sinlanekin	Stream Name: Sinlanekin Cr.	T/R/S T 37 R 23 S 02	Topoquad name: Tiffany Mountain
Organization: Colville Confederated Tribes TFW/F&F Fish & Wildlife Dept.	Description of start point (GPS optional): PIP N 48 43 44.5 W 119 55 04.2 END N 48 43 48.5 W 119 54 57.2		Landowner; Okanogan Naional Forest
Site Number: 01	Date: 10-10-01	Recorder(s): R. Peone, E. Krausz	
Precipitaion (mm) for the 2 days prior to survey 0		Survey type: Main thread or Total Tributary Tributary Number: 1	

Segment Number	Distance From Start (m)	177.6 coordinates (optional)	Flow Category	Channel Category	Channel Bankfull Width (m)	Channel Bankfull Depth (m)	Up-stream gradient %	Down-stream gradient %	Dominant Substrate	Associated Feature at flow change	Flow categories of side trib not on main thread	Channel categories of side trib not on main thread	Notes (see also back page)
1	0-30		FW	DC	0.4	0.2	6	5	F				
2	30-60		FW	DC	0.6	0.35	5	6	F				
3	60-90		FW	DC	0.5	0.4	6	5	F				
4	90-120		FW	DC	0.6	0.4	8	6	F	WL			on both sides
5	120-150		FW	DC	0.7	0.45	6	3	F				
6	150-180		FW	DC	0.5	0.45	12	10	Substrate				
7	180-210		FW	DC	0.6	0.45	12	10	Substrate				

Codes for Flow Categories: FW=Flowing Water, SW=Standing Water, FP=Flowing Pocket Water, SP=Standing Pocket Water, D=Dry, U=Unknown, O=Obscured  
 Codes for Channel Categories: DC=Defined Channel, PDC=Poorly Defined Channel, MC=Modified Channel, PC=Piped Channel, CC=Covered Channel, NC=No Channel

Back of Form B

NOTES Sinlanekin Creek  
PIP starts at end of wetland

SKETCH  
see original forms

## Form B: Perennial Stream Survey Field Measurements

Note: Record all Measurements in metric units

WAU: <i>SINLANE KIN CLC</i>	Stream Name: <i>Sinlane Kin</i>	T/R/S: <i>T37 R23 S02</i>	Topoquad name: <i>T. Ffany Mountain</i>
Organization: <i>ICT</i> <i>JFW Fish Wildlife</i>	Description of start point (GPS optional): <i>P.O. N48 43 44.5 W 119 55 04.2</i> <i>END N48 43 48.5 W 119 54 57.2</i>		Landowner:
Site Number: <i>01</i>	Date: <i>10/10/01</i>	Recorder(s): <i>Ruby + Eric</i>	
Precipitation (in mm) for the 2 days prior to survey		Survey type: <u>Main thread</u> or Total Tributary Tributary Number:	

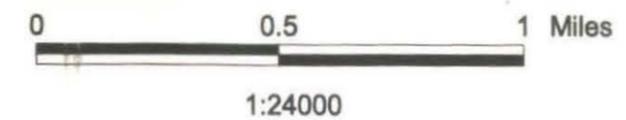
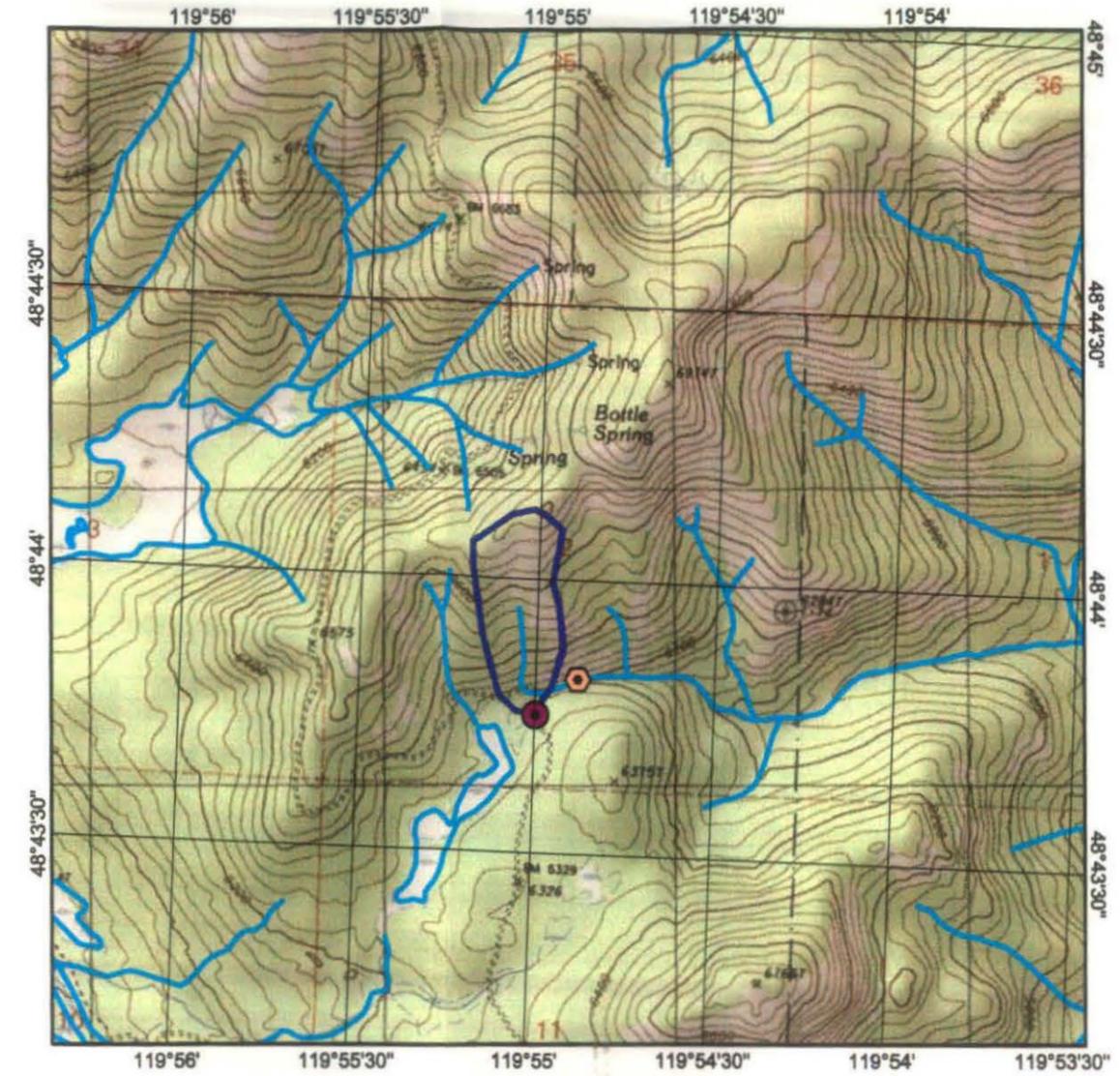
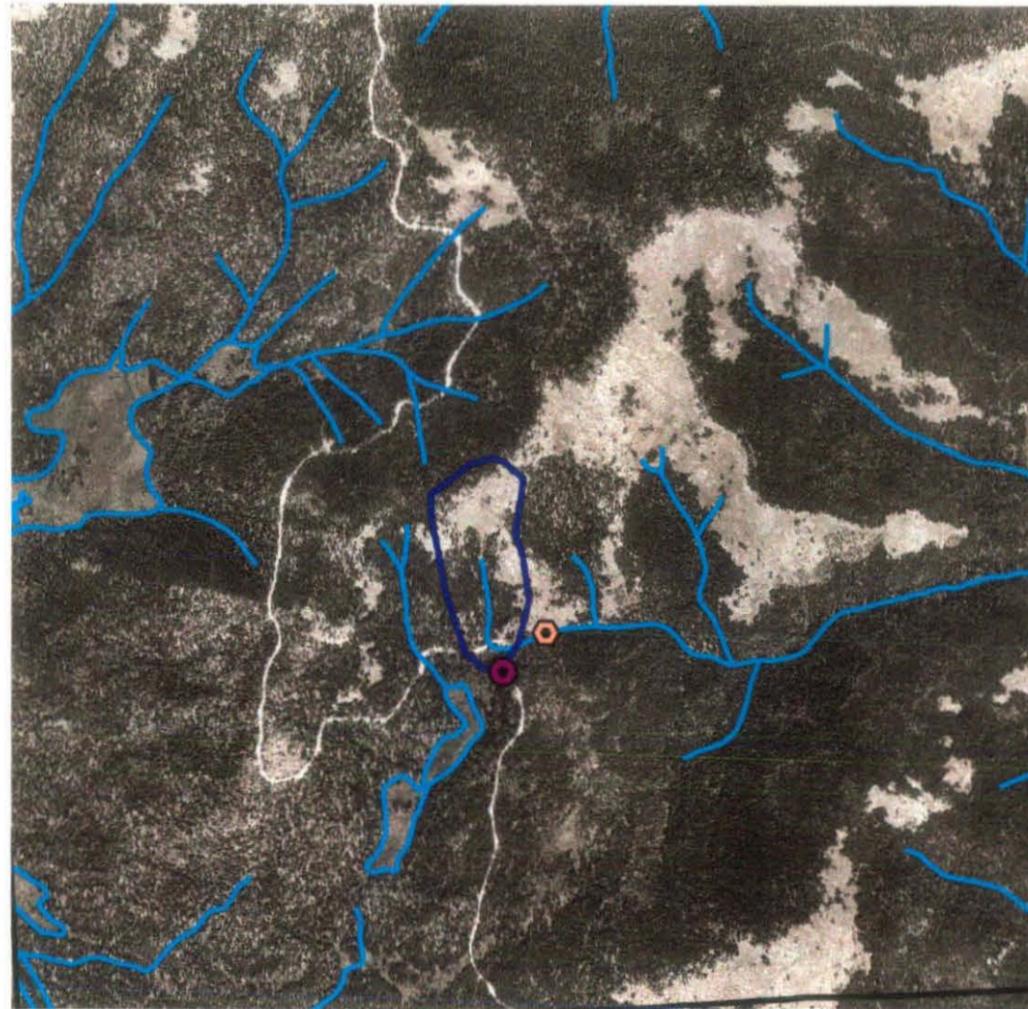
Segment Number	Distance from Start (m)	GPS coordinates (optional)	Flow Category	Channel Category	Channel Bankfull Width	Channel Bankfull Depth	Upstream gradient (%)	Downstream gradient (%)	Dominant Substrate	Associated Feature at flow change	Flow categories of side trib not on main thread	Channel categories of side trib not on main thread	Notes (see also back page)
1	0-30		FW	DC	.4	.2	6	5	OF				
2	30-60		FW	DC	.6	.3 1/2	5	6	OF				
3	60-90		FW	DC	.5	.4	6	5	OF				
4	90-120		FW	DC	.6	.4	8	6	OF	WL			<i>on both sides</i>
5	120-150		FW	DC	.7	.4 1/2	6	3	F				
6	150-180		FW	DC	.8	.4 1/2	12	10	KS				
7	180-210		FW	DC	.6	.45	12	10	S				

Codes for Flow Categories: FW = Flowing Water, SW = Standing Water, FP = Flowing Pocket Water, SP = Standing Pocket Water, D = Dry, U = Unknown, O = Obscured.  
 Codes for Channel Categories: DC = Defined Channel, PDC = Poorly Defined Channel, MC = Modified Channel, PC = Piped Channel, CC = Covered Channel, NC = No Channel



# Sinlahekin Creek

Sinlahekin Creek  
 Date of Survey 10/10/01  
 WAU: Sinlahekin  
 WMUS: N/A  
 Quad: Tiffany Mountain  
 T 37 R 23 E S 02  
 48.7290300 -119.9178400  
 Basin Acreage: 40.369



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## 2001 Perennial Initiation Point Survey

-  Basin Boundary
- Points
  -  PIP
  -  Road Access Pt.
  -  Spring
  -  Start Survey
  -  Survey End Point



**Form B: Perennial Stream Survey Field Measurements**  
**Note: Record all Measurements in metric units**

WAU: Little Pend Oreille Middle	Stream Name: Bear Creek	T/R/S T34 R42 S19	Topoquad name: Calispel Peak
Organization: Colville Confederated Tribes TFW Fish & Wildlife Dept.	Description of start point (GPS optional): PIP N 48 26 03.8 W117 33 39.9 END N 48 26 02.9 W 117 33 48.7		Landowner: Stimpson & Burlington Resources
Site Number: 01	Date: 10-17-01	Recorder(s): R. Peone, E. Krausz, J. Marchand, S. Collins, C. Cochran	
Precipitation (mm) for the 2 days prior to survey 0		Survey type: Main thread or Total Tributary Tributary Number: 1	

Segment Number	Distance From Start (m)	GPS coordinates (optional)	Flow Category	Channel Category	Channel Bankfull Width (m)	Channel Bankfull Depth (m)	Up-stream gradient %	Down-stream gradient %	Dominant Substrate	Associated Feature at flow change	Flow categories of side trib not on main thread	Channel categories of side trib not on main thread	Notes (see also back page)
1	0-06		D	PDC	0.3	0.1	16	F					
	,30,		D	NC				F	WT				1
2	30-38		D	NC			13	F					
	38-60		D	PDC	0.5	0.1		F	GB				
3	60-90		D	DC	0.8	0.2	28	F					
4	90-120		D	DC	1	0.3	12	F					
	115		D	DC				F	WL				
5	120-135		D	DC			12	F	WL				5
6	135-143		D	MC									CULVERT
	143-150		D	PDC	2	0.1	10	F					
7	150-186		D	DC	1.5	0.2	21	F	GB				
8	210	Y	FP	DC	0.7	0.3	14	13	G				
9	240		FW	DC	0.7	0.4	14	14	G				
10	270		FW	DC	0.7	0.3	10	11	Substrate				
11	300		FW	DC	1	0.3	17	17	Substrate				
12	330		FW	DC	1.2	0.3	12	11	G				
13	360		FW	DC	1	0.4	11	11	G				
14	390		FW	DC	1.2	0.2	11	10	Substrate	SE			

Codes for Flow Categories: FW=Flowing Water, SW=Standing Water, FP=Flowing Pocket Water, SP=Standing Pocket Water, D=Dry, U=Unknown, O=Obscured

Codes for Channel Categories: DC=Defined Channel, PDC=Poorly Defined Channel, MC=Modified Channel, PC=Piped Channel, CC=Covered Channel, NC=No Channel

Back of Form B

NOTES; BEAR CREEK

No channel above Seg.1 dry.

Seg. 1 headwaters of forest wetland greater than 20 acres.

Seg. 5 Forested wetland rightbank and leftbank.

At 290 meters braided stream, at 300 meters right bank trib. Of flowing water.

Seg. 11 subsurfaces under downed woody debris and forest litter.

At 350 meters braided stream returns left bank and small seep on right bank.

At 390 seeps.

SKETCH

see original

# Form B: Perennial Stream Survey Field Measurements

Note: Record all Measurements in metric units

Sub. of LTL Pond Or

AU: Lille Pond Oreille Middle	Stream Name: Bear Cr	T/R/S T34 R42 S19	Topoquad name: Calispel Peak
Organization: Colville Confederated Tribes / TFW Fish & Wildlife	Description of start point (GPS optional): PIP N 48 26 03.8 W 117 33 39.9 END N 48 26 62.9 W 117 33 48.7		Landowner:
Event Number: 01	Date: 10/17/01	Recorder(s): Ruby Peone, Sandra Collins	
Precipitation (in mm) for the 2 days prior to survey		Survey type: <u>Main thread</u> or Total Tributary Tributary Number: 1	

Point Number	Distance from Start (m)	GPS coordinates (optional)	Flow Category	Channel Category	Channel Bankfull Width	Channel Bankfull Depth	Upstream gradient (%)	Downstream gradient (%)	Dominant Substrate	Associated Feature at flow change	Flow categories of side trib not on main thread	Channel categories of side trib not on main thread	Notes (see also back page)
1	0-6		D	PDC	.3	.1	16	---	F				
	6-30		D	NC	---	---	---	14	F	WT			1.
2	30-38		D	NC	---	---	13	---	F				
	38-60		D	PDC	.5	.1	---	32	F	GB			
3	60-90		D	DC	.8	.2	28	19	F				
4	90-120		D	DC	1	.3	12	8	F				
	115		D	DC	---	---	---	---	F	WL			
5	120-135		D	DC	---	---	12	---	F	WL			2
6	135-143		O	MC	---	---	<del>10</del>	---	---	---			Culvert
	143-150		D	PDC	2	.1	10	---	F				
7	150-186		D	DC	1.5	.2	21	21	F	GB			
	186												END

for Flow Categories: FW = Flowing Water, SW = Standing Water, FP = Flowing Pocket Water, SP = Standing Pocket Water, D = Dry, U = Unknown, O = Obscured.  
for Channel Categories: DC = Defined Channel, PDC = Poorly Defined Channel, MC = Modified Channel, PC = Piped Channel, CC = Covered Channel, NC = No Channel

no channel above Seg 1  
dry

Seg. 1 headwater of Forest wetland.  
greater than 20 acres.

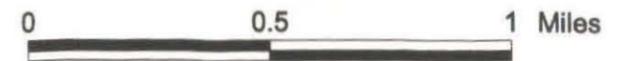
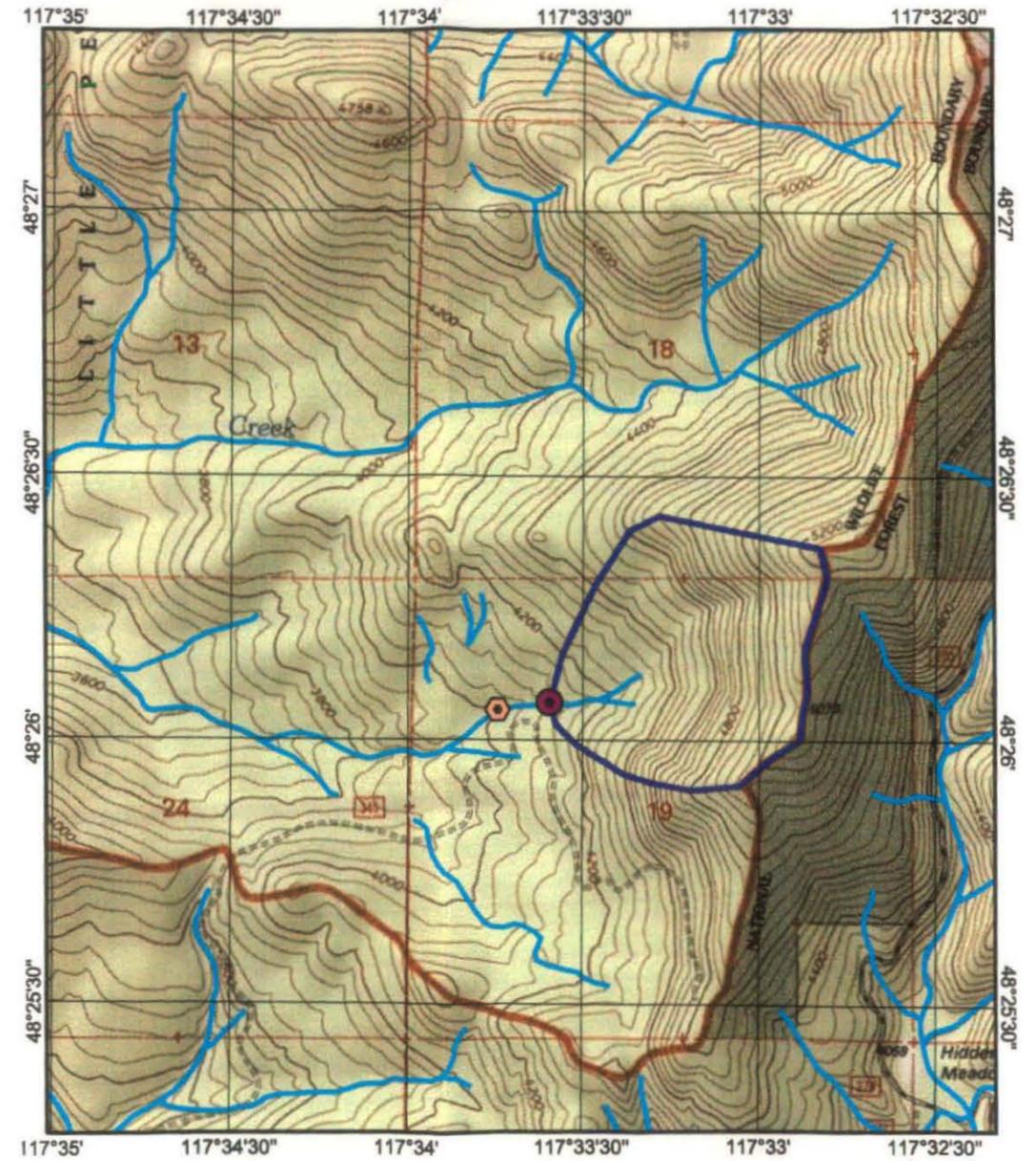
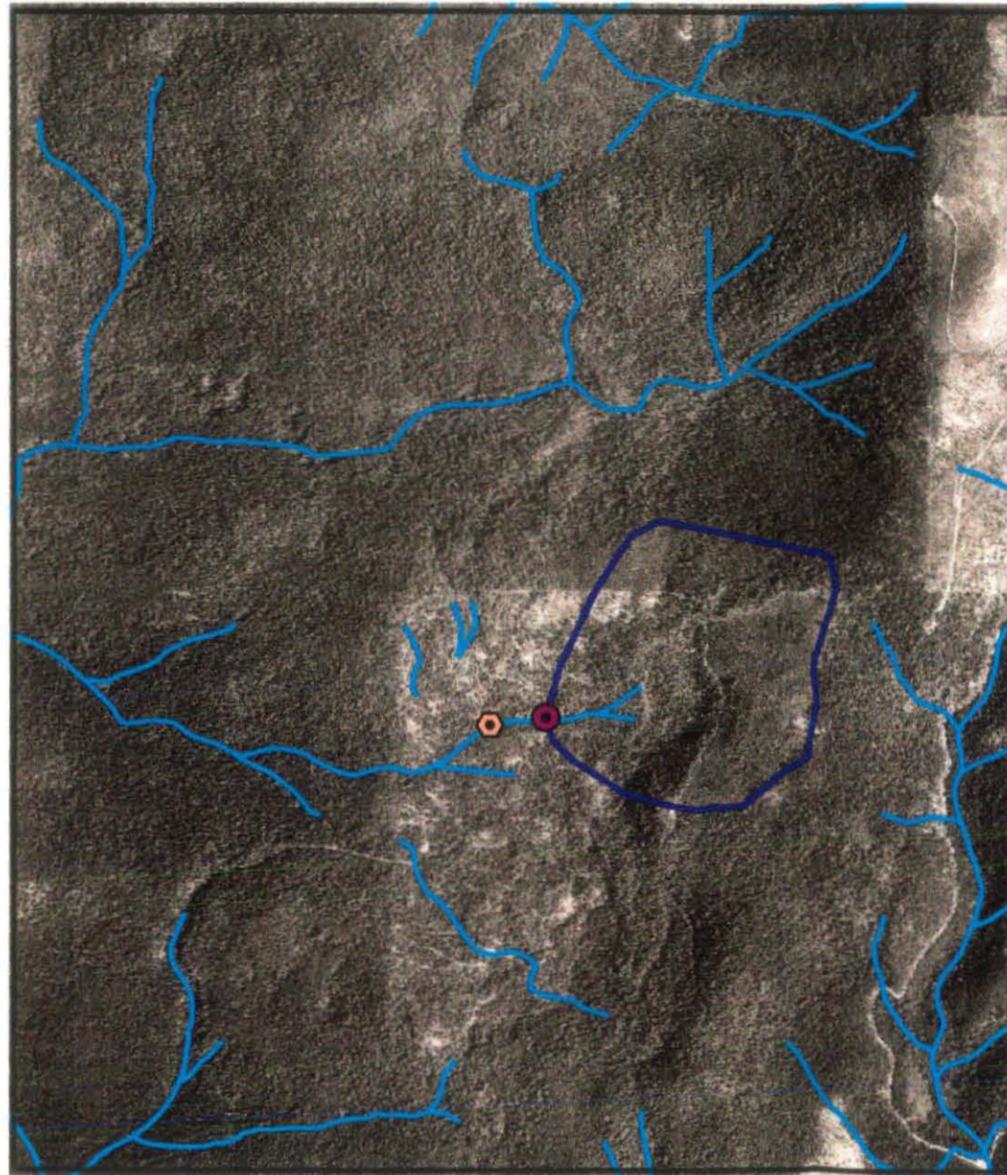
Seg. 5 Forested Wetland KB+LB





# Bear Creek

Bear Creek  
 Date of Survey 10/17/01  
 WAU: Little Pend Oreille Middle  
 WMUS: N/A  
 Quad: Calispell Peak  
 T 34 R 42 E S 19  
 48.4343900 -117.5610700  
 Basin Acreage: 171.051



1:24000



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CCT Resource Inventory & Analysis and  
 CCT Fish and Wildlife  
 January 2002

**2001 Perennial Initiation Point Survey**

-  Basin Boundary
- Points**
-  PIP
-  Road Access Pt.
-  Spring
-  Start Survey
-  Survey End Point



Form B: Perennial Stream Survey Field Measurements

Note: Record all Measurements in metric units

WAU: Nespelem Upper	Stream Name: Stepstone Ck.	T/R/S T 33 R 30 S 11	Topoquad name: Moses Mountain
Organization: Colville Confederated Tribes TFW Fish & Wildlife Depth.	Description of start point (GPS optional): See Notes		Landowner: Colville Confederated Tribes
Site Number: 09-03	Date: 09-20-01	Recorder(s): R. Peone and E. Krausz	
Precipitation (mm) for the 2 days prior to survey 0		Survey type: Main thread or Total Tributary Tributary Number: 1	

Segment Number	Distance From Start (m)	GPS coordinates (optional)	Flow Category	Channel Category	Channel Bankfull Width (m)	Channel Bankfull Depth (m)	Up-stream gradient %	Down-stream gradient %	Dominant Substrate	Associated Feature at flow change	Flow categories of side trib not on main thread	Channel categories of side trib not on main thread	Notes (see also back page)
1	0-30	Y	D	MC			6	4	O				1
2	30-60		D	MC			4	6	O				2
3	60-90		D	PDC	0.1	0.1	4	5	O				3
4	90		D	PDC	0.1	0.2	8		O				4
4	120		D	MC						RC			MC/CULVERT
5	120-150		D	DC	0.1	0.25	8	6	O				
6	150-180		D	DC	0.1	0.2	7	9	O				
7	180-210		D	DC	0.1	0.3	14	20	B	SEEPS			
8	210-240	Y	FW	DC	0.25	0.3	15	12	B	SEEPS			8
9	240-270		FW	DC	0.2	0.1	14	18	Substrate	SEEPS			9
10	270-300		FW	DC	0.6	0.3	27	26	B	SEEPS			10
11	300-330		FW	DC	0.9	0.35	22	26	B	SEEPS			
12	330-360		FW	DC	0.1	0.25	20	45	G/B	SEEPS			12
13	360-390		FW	DC	0.13	0.5	19	18	B	SEEPS			
14	390-420	Y	FW	DC	0.1	0.4	20	15	G	Trib. LB			END 14

Codes for Flow Categories: FW=Flowing Water, SW=Standing Water, FP=Flowing Pocket Water, SP=Standing Pocket Water, D=Dry, U=Unknown, O=Obscured

Codes for Channel Categories: DC=Defined Channel, PDC=Poorly Defined Channel, MC=Modified Channel, PC=Piped Channel, CC=Covered Channel, NC=No Channel

Back of Form B

NOTES: Stepstone Creek	
Seg. 1 MC due to past -	
corridors - organic and woody debris	
at 0 meters is DC for 2 meters.	
Seg. 2 Appears to be a skid trail from logging	
30 meters of no channel.	
Seg. 3 Channel covered with woody debris.	
Seg. 4 At 105 meters MC/Culvert 2'x2'	
undefined channel, woody debris & organic material	
Seg. 5 140 meters pocket of water	
Seg. 8 10 yards on both sides of the stream channel are seeps	
Present are boulders, cobbles and gravel, whole area on	
this contour is a seep.	
Seg. 9 Sand/Organic. Boulder in lower part.	
Seg. 12 Channel under and around vegetation from bed.	
Seg. 14 Side spring on LB looking downstream.	
GPS READINGS	
PIP	N 48 22 05.4 W 119 00 54.7
START	N 48 22 03.7 W 119 00 57.5
ROAD	N 48 21 45.2 W 119 01 22.9
END	N 48 21 18.8 W 119 00 56.8

SKETCH

see original forms

## Form B: Perennial Stream Survey Field Measurements

Note: Record all Measurements in metric units

*Nespelem Upper*

WAU: <i>Stepstone Cr.</i>	Stream Name: <i>Stepstone Cr. T/R/S/T 33 R30 S11</i>	Topoquad name: <i>Moses Mountain</i>
Organization: <i>CCT TFW fish + wildlife</i>	Description of start point (GPS optional): <i>see notes</i>	Landowner: <i>Colville Confederated Tribes</i>
Site Number: <i>09-03</i>	Date: <i>9-20-01</i>	Recorder(s): <i>Ruby + Eric</i>
Precipitation (in mm) for the 2 days prior to survey		Survey type: <u>Main thread</u> or Total Tributary Tributary Number: <i>/</i>

Segment Number	Distance from Start (m)	GPS coordinates (optional)	Flow Category	Channel Category	Channel Bankfull Width	Channel Bankfull Depth	Upstream gradient (%)	Downstream gradient (%)	Dominant Substrate	Associated Feature at flow change	Flow categories of side trib not on main thread	Channel categories of side trib not on main thread	Notes (see also back page)
1	0-30		D	MC			6	4	0				1
2	30-60		D	MC			4	6	0				2
3	60-90		D	PDC	.1	.1	4	5	0				3
4	90		O	PDC	.1	.2	8	—	0				4
4g.	120		D	MC						RC			mc/culvert 5
5	120-150		D	DC	.1	.25	8	6	0				
6	150-180		D	DC	.1	.2	7	9	0				
7	180-210		D	DC	.1	.3	14	20	B	Seeps			
8	210-240		FW	DC	.25	.3	15	12	B	Seeps			8
9	240-270		FW	DC	.2	.1	14	18	S	Seep.			9
10	270-300		FW	DC	.6	.3	27	26	B	Seep.			10
11	300-330		FW	DC	.9	.35	20	26	G/B	Seep.			
12	330-360		FW	DC	.1	.25	20	45	G/B	Seep			12
13	360-390		FW	DC	.13	.5	19	18	B	Seep			
14	390-420		FW	DC	.1	.4	20	15	G	Trib LB.			END. 14

Codes for Flow Categories: FW = Flowing Water, SW = Standing Water, FP = Flowing Pocket Water, SP = Standing Pocket Water, D = Dry, U = Unknown, O = Obscured.  
 Codes for Channel Categories: DC = Defined Channel, PDC = Poorly Defined Channel, MC = Modified Channel, PC = Piped Channel, CC = Covered Channel, NC = No Channel

Back of Form B

NOTES

Seg. 1 MC Due to past logging -  
Corridors - organic and  
woody debris

At 0 meters is DC for  
2 meters.

Seg. 2 appears to be a SKID TRAIL  
from logging. 30m of no channel.

Seg. 3. Channel covered with woody  
debris.

Seg. 4. At 105 m MC/culvert 2'x2'  
undefined channel - woody debris  
and organic material

Seg. 5 140 m pocket of water

Seg. 8 10 yards on both side of the  
Stream channel are seeps. Present  
Boulder, cobble + gravel, whole  
area on this contour is a seep.

Seg. 9 Sand/organic. Boulder in  
Lower part.

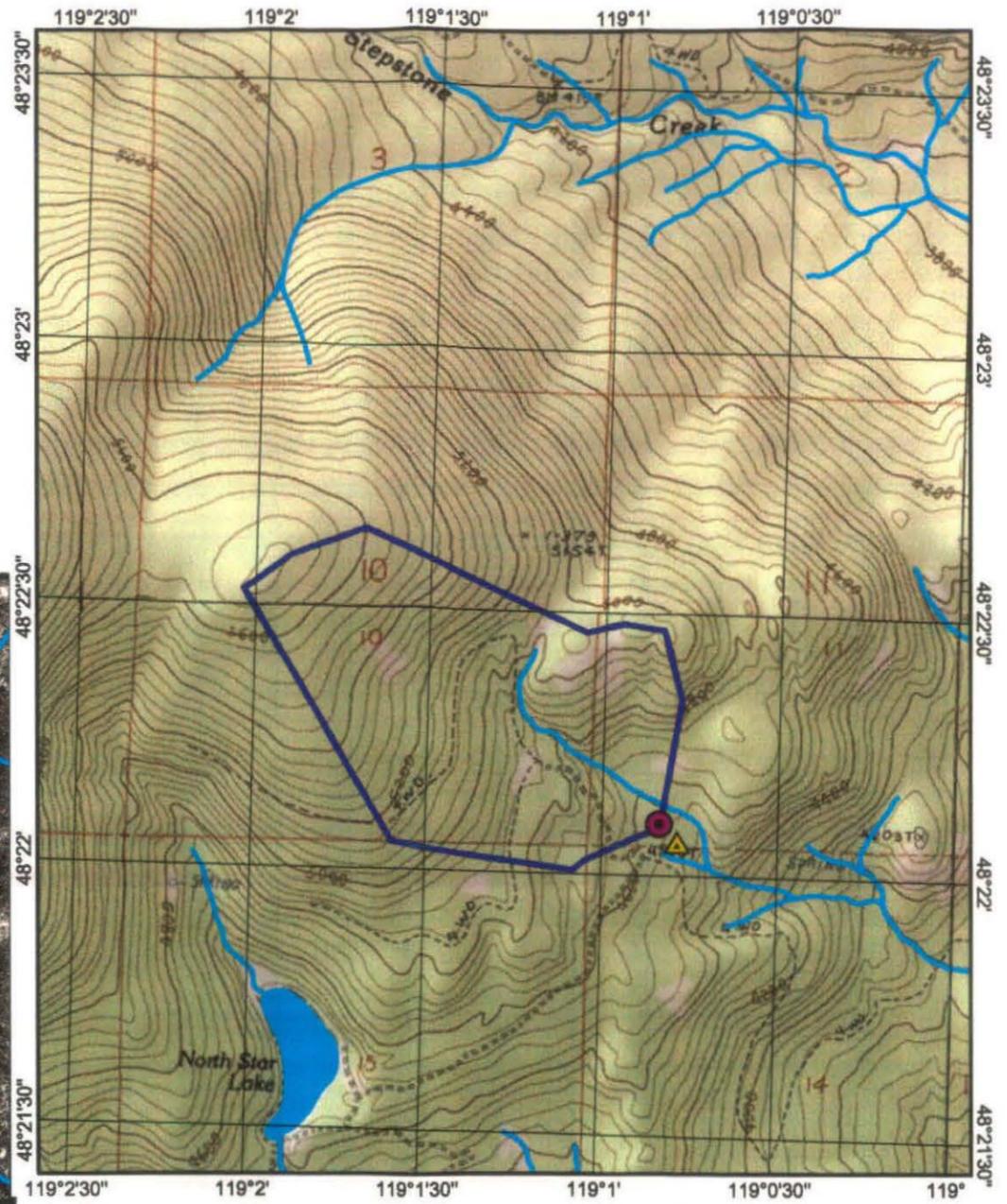
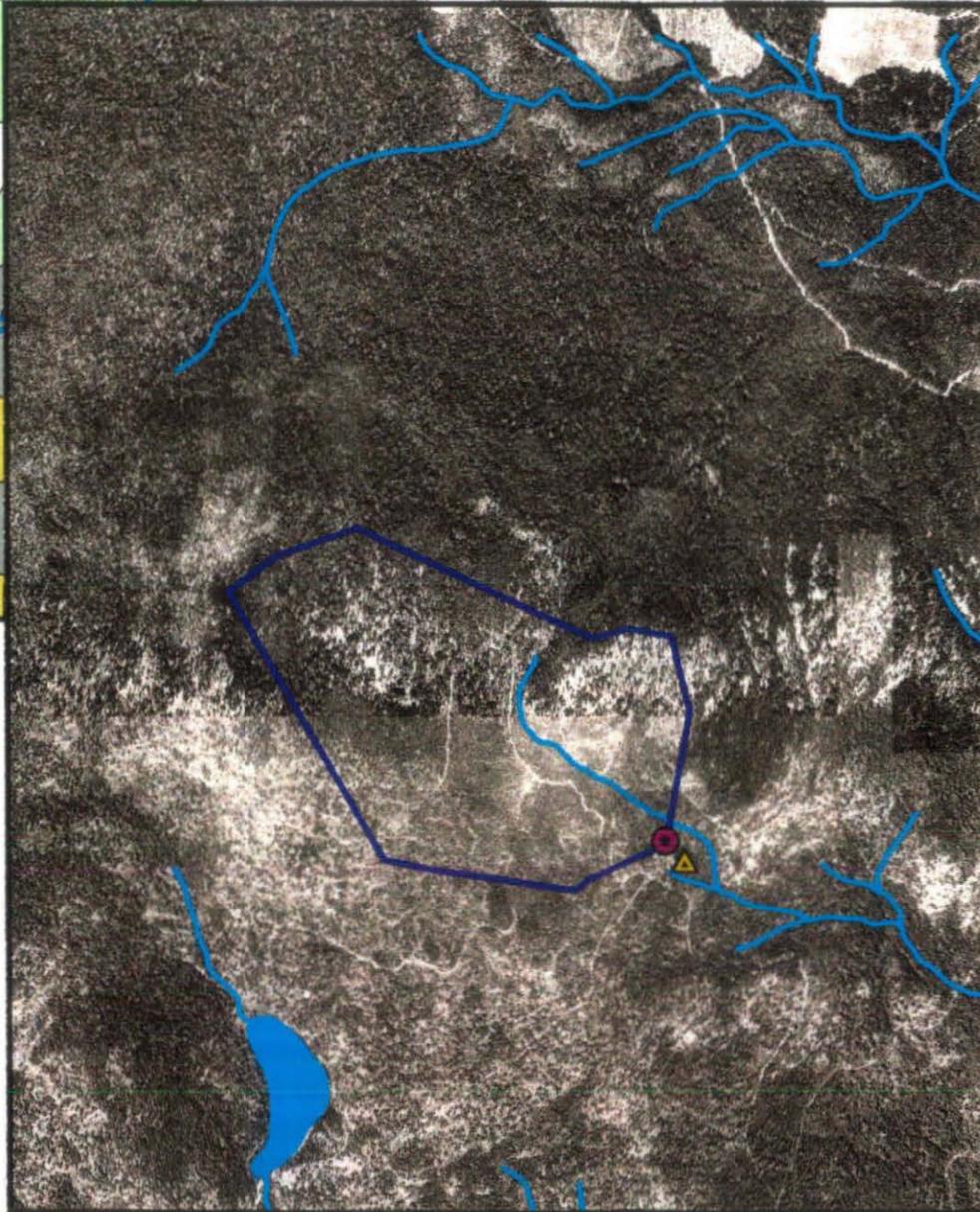
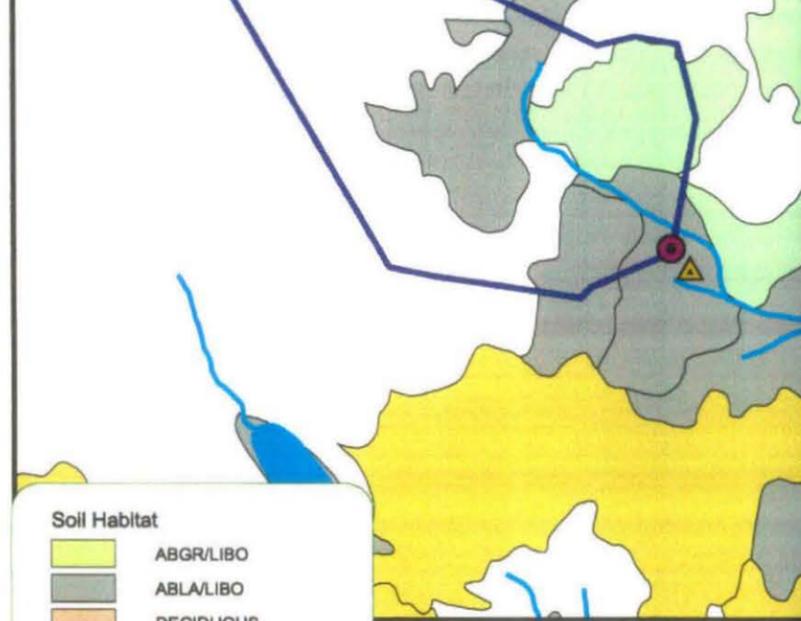
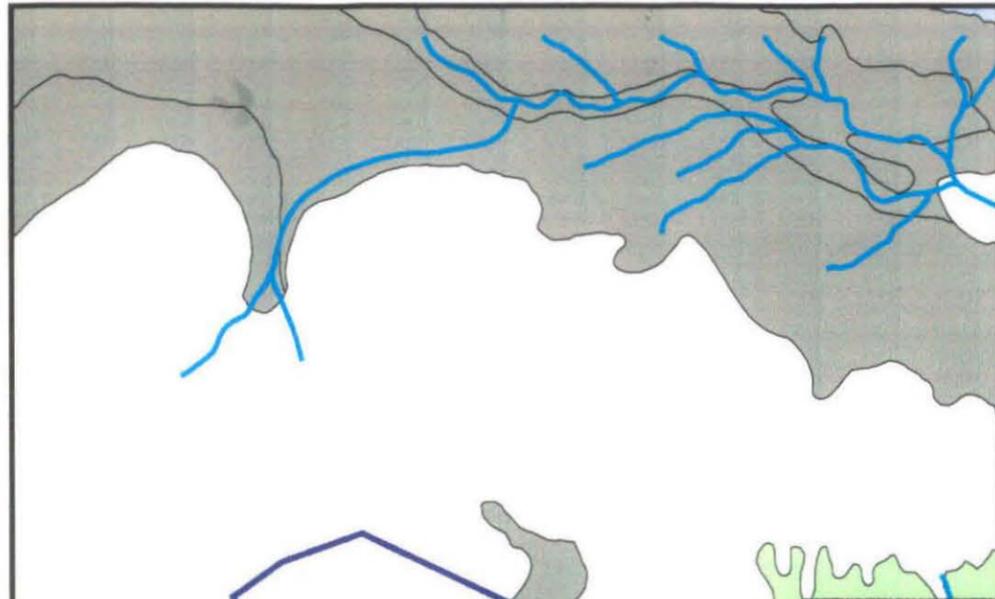
Seg. 12. Channel under and around vegetation bed.

Seg. 14 Side spring on LB looking  
down stream.

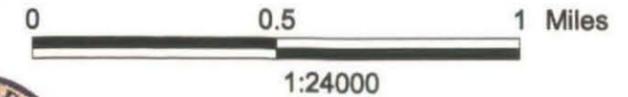
SKETCH

# Stepstone Creek

Stepstone Creek  
 Date of Survey: 8/30/01  
 WAU: Nespelem Upper  
 WMUS: Stepstone Creek  
 Quad: Moses Mountain  
 T 33 R 30 E S 11  
 48.3681700 -119.0151800  
 Basin Acreage 293.835



- Soil Habitat**
- ABGR/LIBO
  - ABLA/LIBO
  - DECIDUOUS
  - PIPO/AGSP
  - PIPO/FEID
  - PIPO/PUTR,AGSP
  - PIPO/PUTR,FEID
  - PIPO/SYAL
  - PIPO/SYAL,WET
  - PSME/CARU
  - PSME/CARU,ARUV
  - PSME/FEID
  - PSME/PHMA
  - PSME/PHMA,ARCO
  - PSME/PHMA,PAMY
  - PSME/SPBE
  - PSME/SYAL
  - PSME/SYAL,WET
  - PSME/SYAL-LOW



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 January 2002

**2001 Perennial Initiation Point Survey**

- Basin Boundary
- Points**
- PIP
- Road Access Pt.
- Spring
- Start Survey
- Survey End Point

**Form B: Perennial Stream Survey Field Measurements**

Note: Record all Measurements in metric units

<b>WAU: HALL CREEK UPPER</b>	<b>Stream Name: Sleepy Hollow</b>	<b>T/R/S T34R35S31</b>	<b>Topoquad name Sitdown Mountain</b>
<b>Organization: Colville Confederated Tribes TFW Fish &amp; Wildlife Dept.</b>	<b>Description of start point (GPS optional): PIP N 48 29 43.4 W 118 27 28.1 END N 48 29 38.1 W 118 27 29.1</b>		<b>Landowner; Colville National Forest</b>
<b>Site Number: 112</b>	<b>Date: 09-27-01</b>	<b>Recorder(s): R.Peone and E.Krausz</b>	
<b>Precipitaion (mm) for the 2 days prior to survey 0</b>		<b>Survey type: Main thread or Total Tributary Tributary Number: 1</b>	

Segment Number	Distance From Start (m)	GPS coordinates (optional)	Flow Category	Channel Category	Channel Bankfull Width (m)	Channel Bankfull Depth (m)	Up-stream gradient %	Down-stream gradient %	Dominant Substrate	Associated Feature at flow change	Flow categories of side trib not on main thread	Channel categories of side trib not on main thread	Notes (see also back page)
1	0-30	Y	O	PDC	0.4	0.1	39	39	O				PIP FW
2	30-60		FW	DC	0.4	0.1	36	30	O				
3	60-90		FW	DC	0.3	0.1	32	16	Substrate				3
4	90-120		FW	DC	0.5	0.2	25	45	Substrate				
5	120-150		FW	DC	0.3	0.3	24	15	Substrate				
6	150-180		FW	DC	0.5	0.4	17	15	C				6
7	180-210	Y	FW	DC	0.4	0.4	15	15	Substrate				7. END

Codes for Flow Categories: FW=Flowing Water, SW=Standing Water, FP=Flowing Pocket Water, SP=Standing Pocket Water, D=Dry, U=Unknown, O=Obscured  
 Codes for Channel Categories: DC=Defined Channel, PDC=Poorly Defined Channel, MC=Modified Channel, PC=Piped Channel, CC=Covered Channel, NC=No Channel





## Back of Form B

### NOTES

Dense stand of Alder at PIP site.

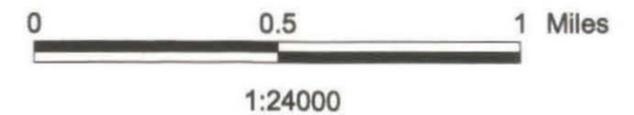
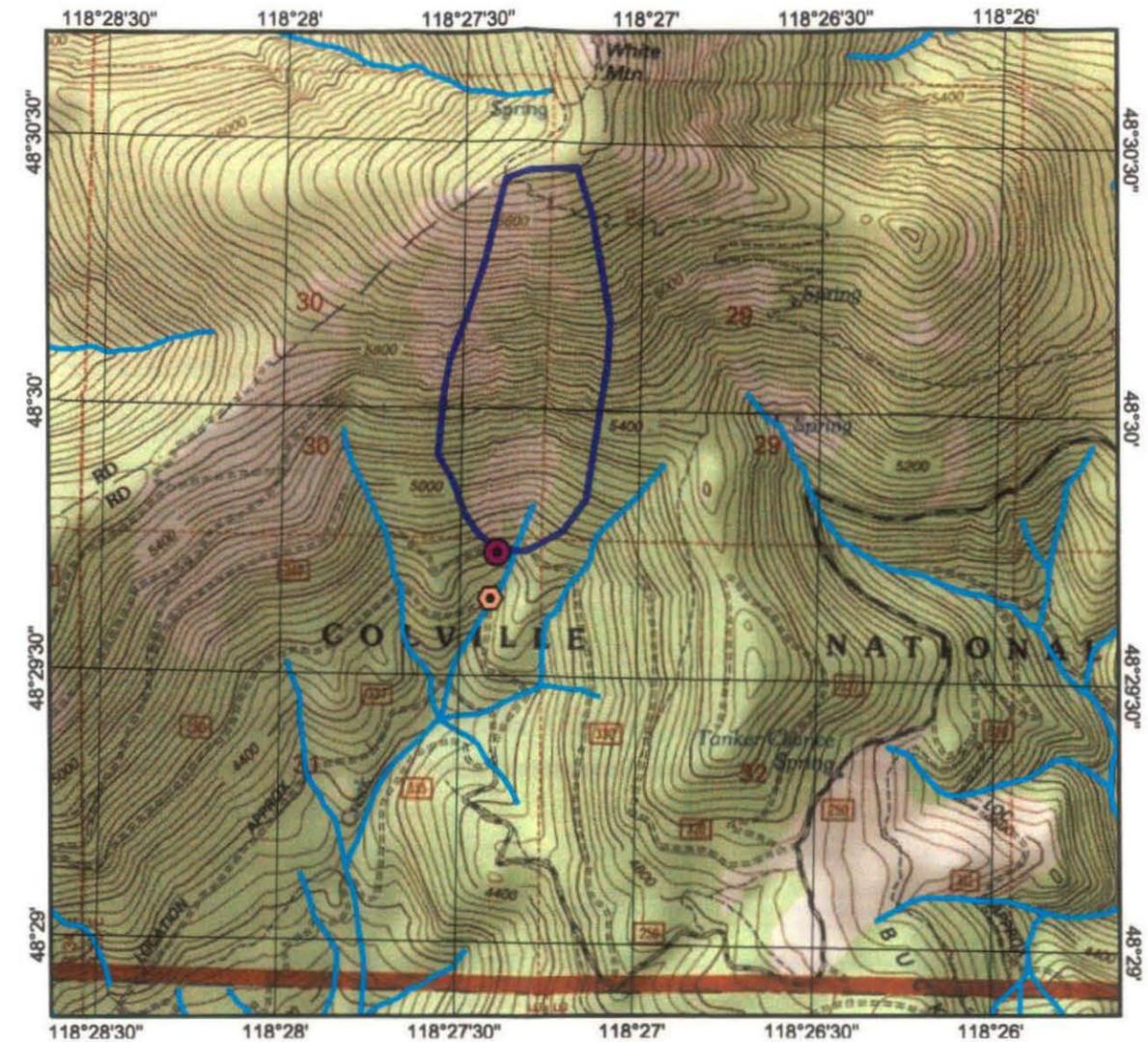
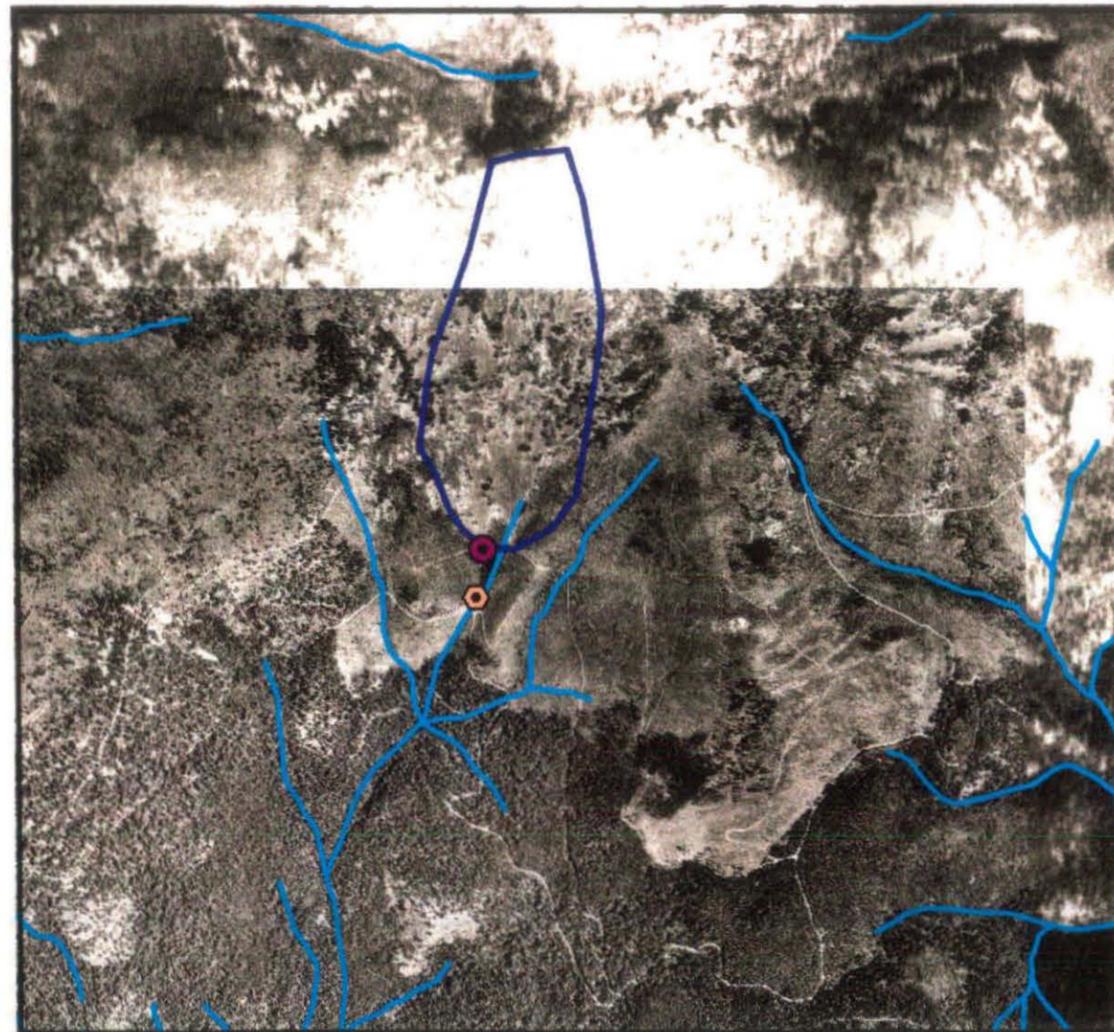
Drainage/Spring

1. PIP starts down slope side of road  
no channel above PIP - no water in culvert  
Wet site above PIP includes willow, organic material covers streams debt up to .5m, stream exposed once in a while then covered w/organic material.
  2. A 35m stream appears
  3. At about 75m two tribs meet LB
  4. At 90m another trib. meets LB
  5. At 120m channel braids out. At 145m single channel.
  6. 1<sup>st</sup> 1/2 Cobble 2<sup>nd</sup> 1/2 Boulder
  - 7 200m goes under ground (stream) then 5m then stream appears  
last
- About 45 to 50m to bottom road.

### SKETCH

# Sleepy Hollow Creek

Sleepy Hollow Creek  
 Date of Survey 9/27/01  
 WAU: Hall Creek Upper  
 WMUS: N/A  
 Quad: Sitdown Mountain  
 T 35 R 35 E S 31  
 48.4953800 -118.4578000  
 Basin Acreage: 143.560



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 January 2002

## 2001 Perennial Initiation Point Survey

-  Basin Boundary
- Points**
-  PIP
-  Road Access Pt.
-  Spring
-  Start Survey
-  Survey End Point



**Form B: Perennial Stream Survey Field Measurements**

Note: Record all Measurements in metric units

WAU:North Fork of Salmon Cr.	Stream Name: Mutton Creek	T/R/S T 37 R 24 S 19	Topoquad name: Tiffany Mountain
Organization: Colville Confederated Tribes TFW/F&F Fish & Wildlife Dept.	Description of start point (GPS optional): SEE NOTES FOR GPS READINGS		Landowner; Okanogan National Forest
Site Number: 1	Date: 10-11-01	Recorder's): R. Peone, E. Krausz	
Precipitation (mm) for the 2 days prior to survey 0		Survey type: Main thread Tributary Number: 1	

Segment Number	Distance From Start (m)	GPS coordinates (optional)	Flow Category	Channel Category	Channel Bankfull Width (m)	Channel Bankfull Depth (m)	Up-stream gradient %	Down-stream gradient %	Dominant Substrate	Associated Feature at flow change	Flow categories of side trib not on main thread	Channel categories of side trib not on main thread	Notes (see also back page)
1	0-30	Y	FW	DC	0.7	0.1	27	27	C				GPS readings
	14		FW							seep			
2	30-60		FW	DC	0.8	0.5	24	33	C				
	30		FW							seep			
3	60-75		FW	DC	0.5	0.2							channel braided
	75		FW	DC	0.8	0.2	31	17	C	C			
	88-90		FW	DC									channel braided
4	90-100												channel braided
	100-120		FW	DC	0.5	0.4	34	34	C/B				
5	120-150		FW	DC	0.5	0.4	32	41	B				
	125									SPW			
6	180		FW	DC	0.5	0.5	37	33	B				
7	180-210		FW	DC	0.6	0.5	35	33	B				

Codes for Flow Categories: FW=Flowing Water, SW=Standing Water, FP=Flowing Pocket Water, SP=Standing Pocket Water, D=Dry, U=Unknown, O=Obscured

Codes for Channel Categories: DC=Defined Channel, PDC=Poorly Defined Channel, MC=Modified Channel, PC=Piped Channel, CC=Covered Channel, NC=No Channel



## Form B: Perennial Stream Survey Field Measurements

Note: Record all Measurements in metric units

AU: North Fork <sup>Salt Creek</sup> 7	Stream Name: Mutton Cr.	T/R/S T37R24S19	Topoquad name: T1 FFany Mountain
Organization: CCT TFW Fish + Wildlife	Description of start point (GPS optional): See notes for GPS Reading		Landowner:
Site Number: 01	Date: 10/11/01	Recorder(s): Ruby + Eric	
Precipitation (in mm) for the 2 days prior to survey		Survey type: <u>Main thread</u> or Total Tributary Tributary Number: /	

Segment Number	Distance from Start (m)	GPS coordinates (optional)	Flow Category	Channel Category	Channel Bankfull Width	Channel Bankfull Depth	Upstream gradient (%)	Downstream gradient (%)	Dominant Substrate	Associated Feature at flow change	Flow categories of side trib not on main thread	Channel categories of side trib not on main thread	Notes (see also back page)
1	0-30		FW	DC	.7	.1	27	27	C				
	0-14		FW							Seep.			
2	30-60		FW	DC	.8	.5	24	33	C				
	30m		FW							Seep.			
3	60-75		FW	DC	.5	.1 1/2				CB.			3.
	75-88		FW	DC	.8	.2	31	17	C				
	88-90		FW	DC						CB.			3
4	90-100		FW	DC						CB.			4
	100-120		FW	DC	.5	.4	34	34	C/B				
5	120-150		FW	DC	.5	.4	32	41	B				
	@125									SPW			5
6	150-180		FW	DC	.5	.5	37	33	B				
7	180-210		FW	DC	.6	.5	35	33	B				

for Flow Categories: FW = Flowing Water, SW = Standing Water, FP = Flowing Pocket Water, SP = Standing Pocket Water, D = Dry, U = Unknown, O = Obscured.  
 for Channel Categories: DC = Defined Channel, PDC = Poorly Defined Channel, MC = Modified Channel, PC = Piped Channel, CC = Covered Channel, NC = No Channel

Source / DF.

Pit located at Base of 3 small draws forms seeps that forms a defined channel. Seeps extend up to 20m.

Seg. 3 Channel braided splits into two pieces

- channel braids again.

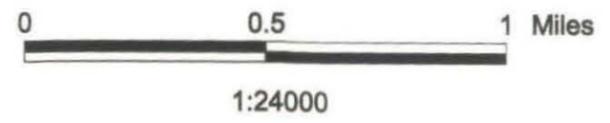
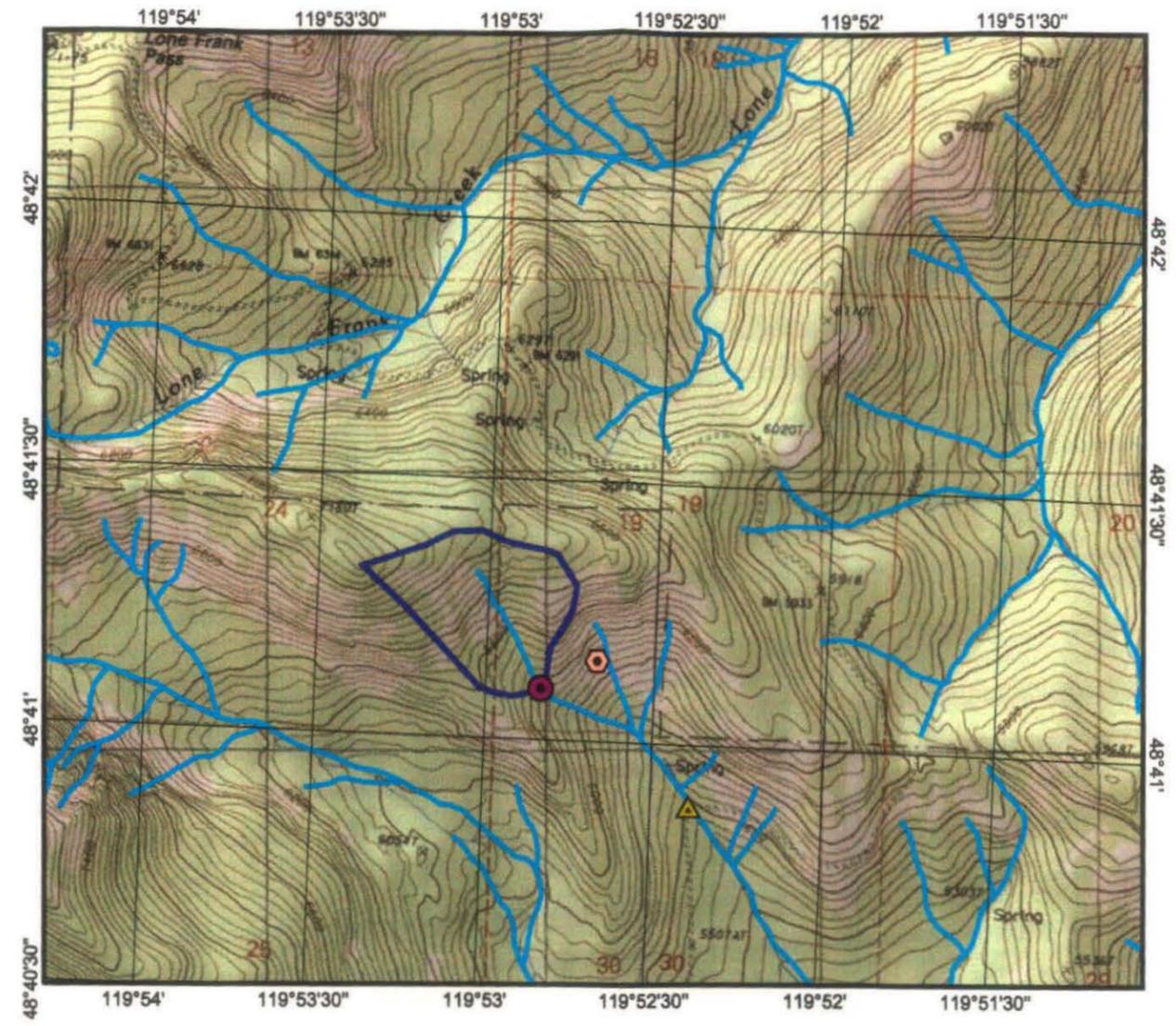
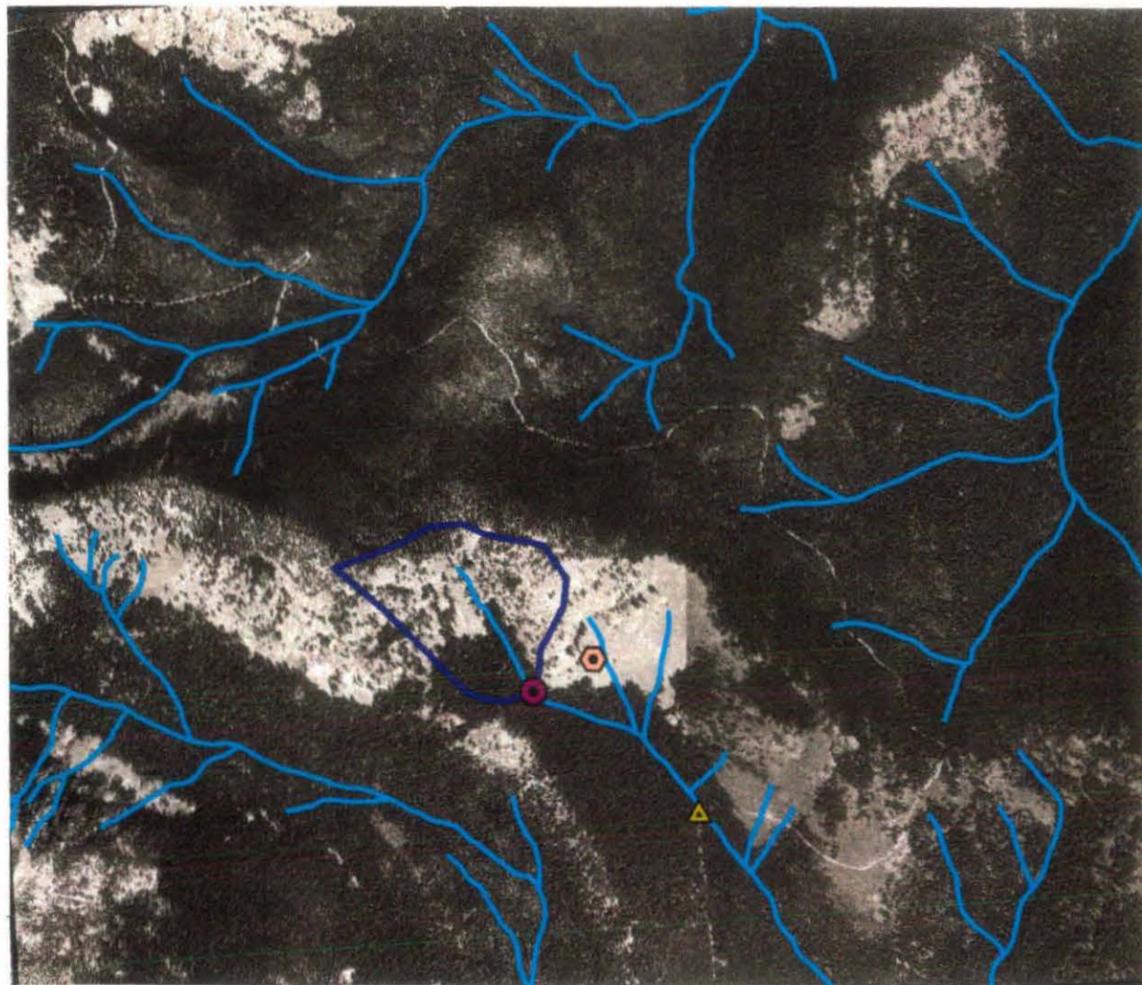
Seg. 4 Channel braids

Seg. 5. PW = Pocket H<sub>2</sub>O to the right of stream.

- at lower end 5m wide section flowing under boulders + organic and root system of trees, then emerges at Seg. 6.

# Mutton Creek

Mutton Creek  
 Date of Survey 10/11/01  
 WAU: Salmon Creek NF  
 WMUS: N/A  
 Quad: Tiffany Mountain  
 T 37 R 24 E S 19  
 48.6848200 -119.8818300  
 Basin Acreage: 67.452



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 January 2002

**2001 Perennial Initiation Point Survey**

-  Basin Boundary
- Points**
-  PIP
-  Road Access Pt.
-  Spring
-  Start Survey
-  Survey End Point



## Form B: Perennial Stream Survey Field Measurements

Note: Record all Measurements in metric units

<b>WAU: Nespelem Upper</b> <b>Organization: CCT</b> <b>Timber, Fish, and Wildlife/UCUT</b>	<b>Stream Name: Peel Cr.</b> <b>Description of start point (GPS optional):</b> <b>NAD 1983 Road N5346415217 E348837.642</b>	<b>T/R/S: T 32 R 30 S 21</b>	<b>Topoquad name: Moses Mountain</b> <b>Landowner: Landowner:</b> <b>Colville Confederated Tribes</b>
<b>Site Number: 09-08</b>	<b>Date: Sept. 5, 2001</b>	<b>Recorder(s): R. Peone</b>	
<b>Precipitation (in mm) for the 2 days prior to survey 0</b>		<b>Survey type: Main thread Tributary Number: 1</b>	

GPS N5346485 E348216015 Head Waters

Segment Number	Distance from Start(m)	GPS coordinates (optional)	Flow Category	Channel Category	Channel Bankfull Width (m)	Channel Bankfull Depth	Up stream gradient (%)	Down stream gradient (%)	Dominant Substrate	Associated Feature at flow change	Flow category of side trib not on main thread	Channel categories of side trib not on main thread	Notes
1	0		D	DC	1	0.2	9	11	F				
2	30		D	PDC	1	0.1	14	11	F				
2	42		D	DC	1.5	0.4			S				
3	60		D	DC	1.5	0.3	11	6	F				
4	90		D	PDC	1	0.25	10	8	F				
5	120		D	DC	1	0.1	6	8	F				
6	150		D	PDC	0.5	0.25	6	3	F				
7	180		SP	DC	1	0.1	4	4	F				
8	202		FW	DC	1	0.25	6		F	WS			
9	208		FW	DC	1	0.2	5	1	F	SP,WS	SE,FW	DC	1 RB
10	238		FW	DC	1	0.25	3	3	F				
11	268		FW	DC	0.5	0.3	5	5	F	WS			
12	298		FW	DC	0.5	0.25	4	8	F	WS			
13	328		FW	DC	0.5	0.3	5	3	F	WS/LB			
14	358		FW	DC	0.5	0.2	2		F				
15	368		FW	DC	1	0.2	1	4	F	WT	D	PDC	LB
16	398		FW	DC	1	0.2	2		F	WT			
17	413		FW	DC	1	0.3	5	1	G		D	DC	1 LB



Back of Form B

**NOTES; Peel Creek**

Seg. 1&2 CMZ / cattle impacted BFW + or - 0.5m / BFD + or - 0.1m

1. Junction of RB 10m trib. W/spring at head. Spring comes out from under orphan road bed - no channel or flow evidence above (see map)

2. 20m of upstream of start gradient becomes steeper and cobble size rocks.

Seg. 22 End of survey upstream of road culvert.

Seg. 17 5% on bend

**SKETCH**

see original forms

91-59  
37398  
37409  
up stream  
start gradient  
change + cable  
size change

## Form B: Perennial Stream Survey Field Measurements

Note: Record all Measurements in metric units

WAU: Nespelen River	Stream Name: Peel Cr.	T/R/S T32R30S21	Topoquad name: Armstrong + Nespelen
Organization: TFW CCT Fish/Wildlife	Description of start point (GPS optional): <sup>ROAD 618 meters</sup> NAD 1983 (M) N5346415 217 E 348837.642		Landowner: CCT
Site Number: 09-08	Date: Sept. 5, 2001	Recorder(s): Ruby	Elev 2759
Precipitation (in mm) for the 2 days prior to survey:		Survey type: <u>Main thread</u> or Total Tributary Tributary Number:	

GPS ⇒ N5346485 E348216065 head H<sub>2</sub>O's

Segment Number	Distance from Start (m)	GPS coordinates (optional)	Flow Category	Channel Category	Channel Bankfull Width	Channel Bankfull Depth	Upstream gradient (%)	Downstream gradient (%)	Dominant Substrate	Associated Feature at flow change	Flow categories of side trib not on main thread	Channel categories of side trib not on main thread	Notes (see also back page)
1	30.00		D	DC	1m	.2	9	11	F				
2	30		D	PDC	1m	.1	14	11	F				
2	42		D	DC	1.5	.4		7	FS				
3	60		D	DC	1.5	.3	11	46	F				
4	90		D	PDC	1m	.25	10	88	F				
5	120		D	PDC	1	0.1	6	8	F				
6	150		D	DC	0.5	.25	6	3	F				
7	180		D	PDC	1m	.1	4	4	F				
8	210	202	SP	DC	1m	0.25	6		F	WS			
9	208		FW	DC	1m	0.2	5%	1	F	SP, WS → SE	FW	DC	0 RB
10	238		FW	DC	1	.25	3	3	F				
11	268		FW	DC	0.5	.3	5	5	F	WS			
12	298		FW	DC	.5	.25	4	8	F	WS			
13	328		FW	DC	0.5	.3	5	3	F	WS(LB)			
14	358		FW	DC	0.5	.2	2		F				
15	368		FW	DC	1.0	.2	1	4	F	WT	D	PDC	LB
16	398		FW	DC	1.0	.2	2		F	WT			

Codes for Flow Categories: FW = Flowing Water, SW = Standing Water, FP = Flowing Pocket Water, SP = Standing Pocket Water, D = Dry, U = Unknown, O = Obscured.

Codes for Channel Categories: DC = Defined Channel, PDC = Poorly Defined Channel, MC = Modified Channel, PC = Piped Channel, NC = No Channel

Codes for Associated Features: SP = Spring, SE = Seep, PT = Perennial Tributary, WT = Wetland, BP = Beaver Pond, GB = Gradient Break, DS = Debris Slide, RC = Road Crossing, RD = Road Drainage Input, DI = Diversion, WS = Wet Site, SU = Substrate Change, OT = Other (describe in notes)

## Back of Form B

### NOTES

Segm. 1+2 CMZ / Cattle impacted  
BFW + or - 0.5m / BFD + or - 0.1m

~~Segment 7 Spring Right Bank.~~

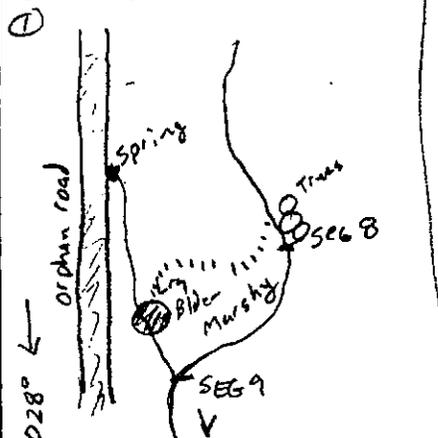
① Junction of RB 10m trib w/spring at head ~~road~~  
Spring comes out from under orphan road bed - NO  
channel or flow evidence above (see rap)

② 20 m of upstream of start gradient  
becomes steeper and cable size rocks

Seg. 22 End of survey upstream of  
road culvert.

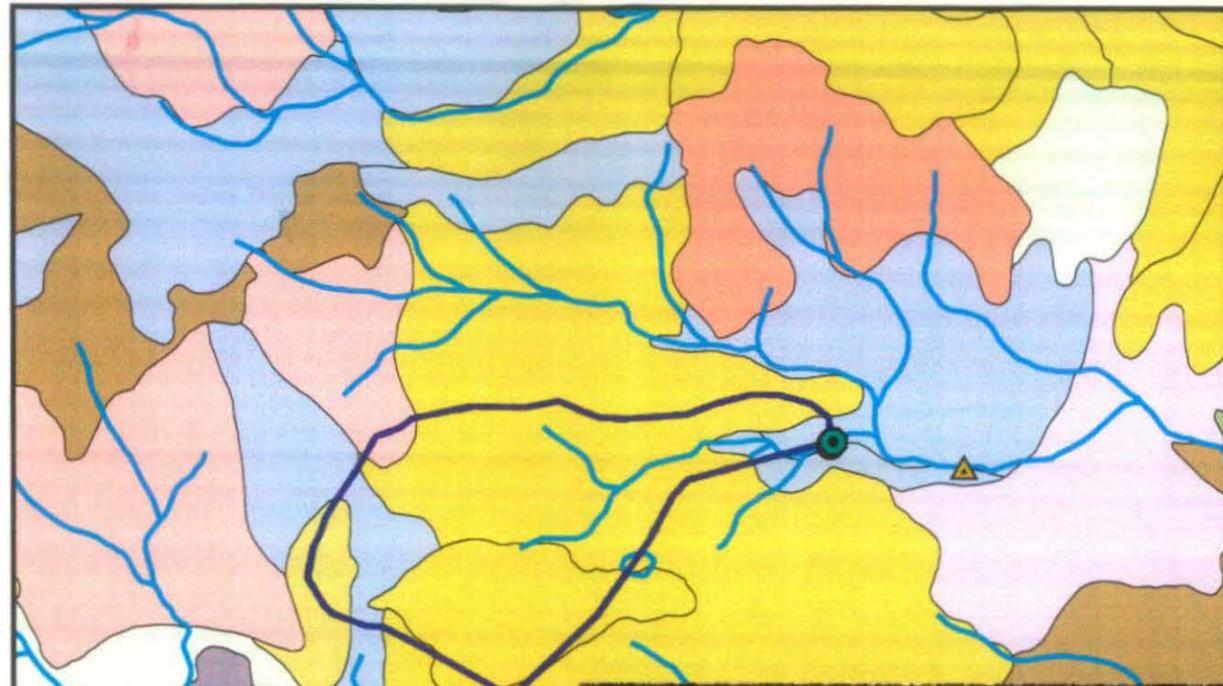
Seg. 17. 5% on bend.

### SKETCH







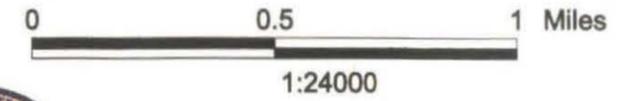
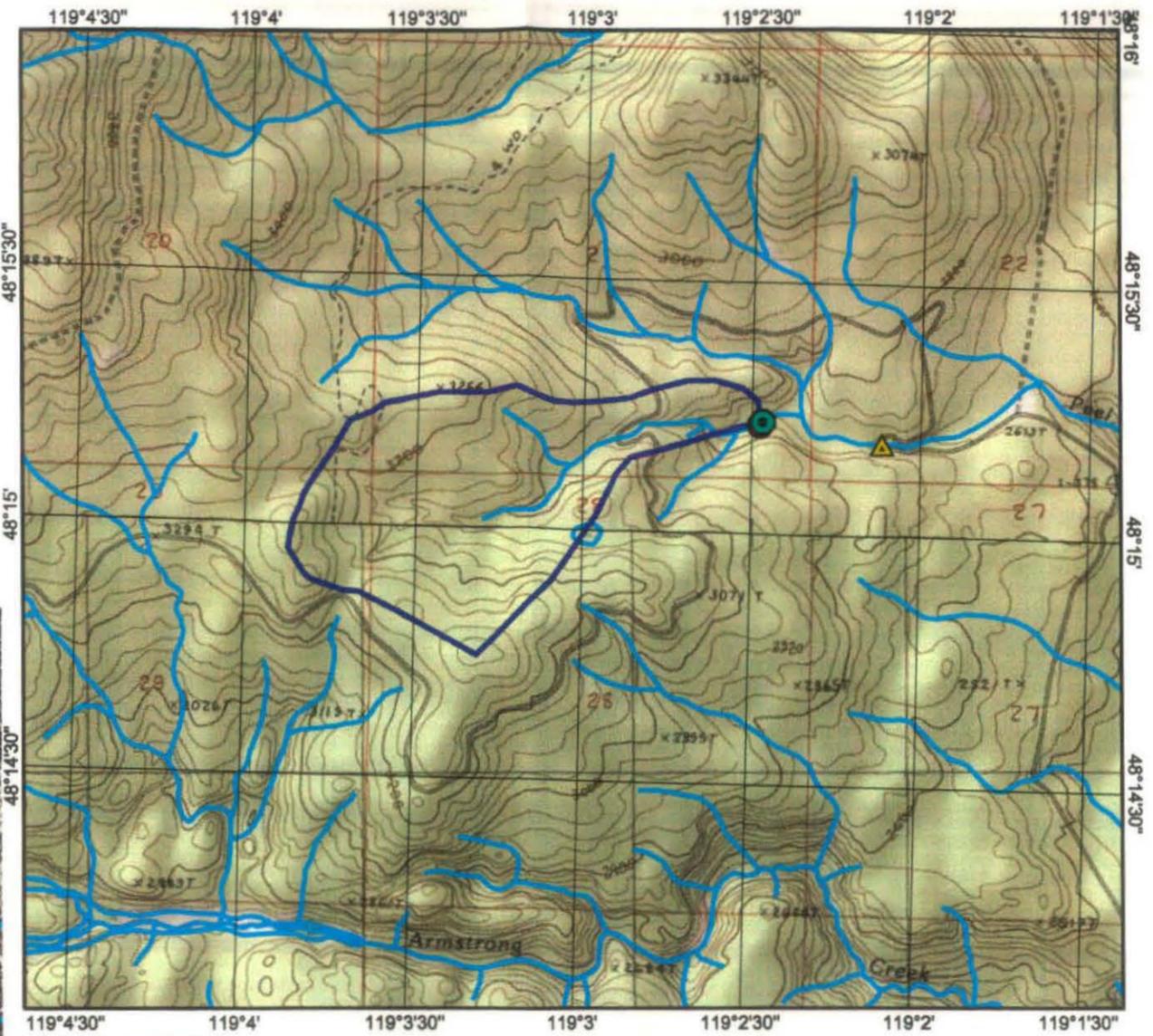
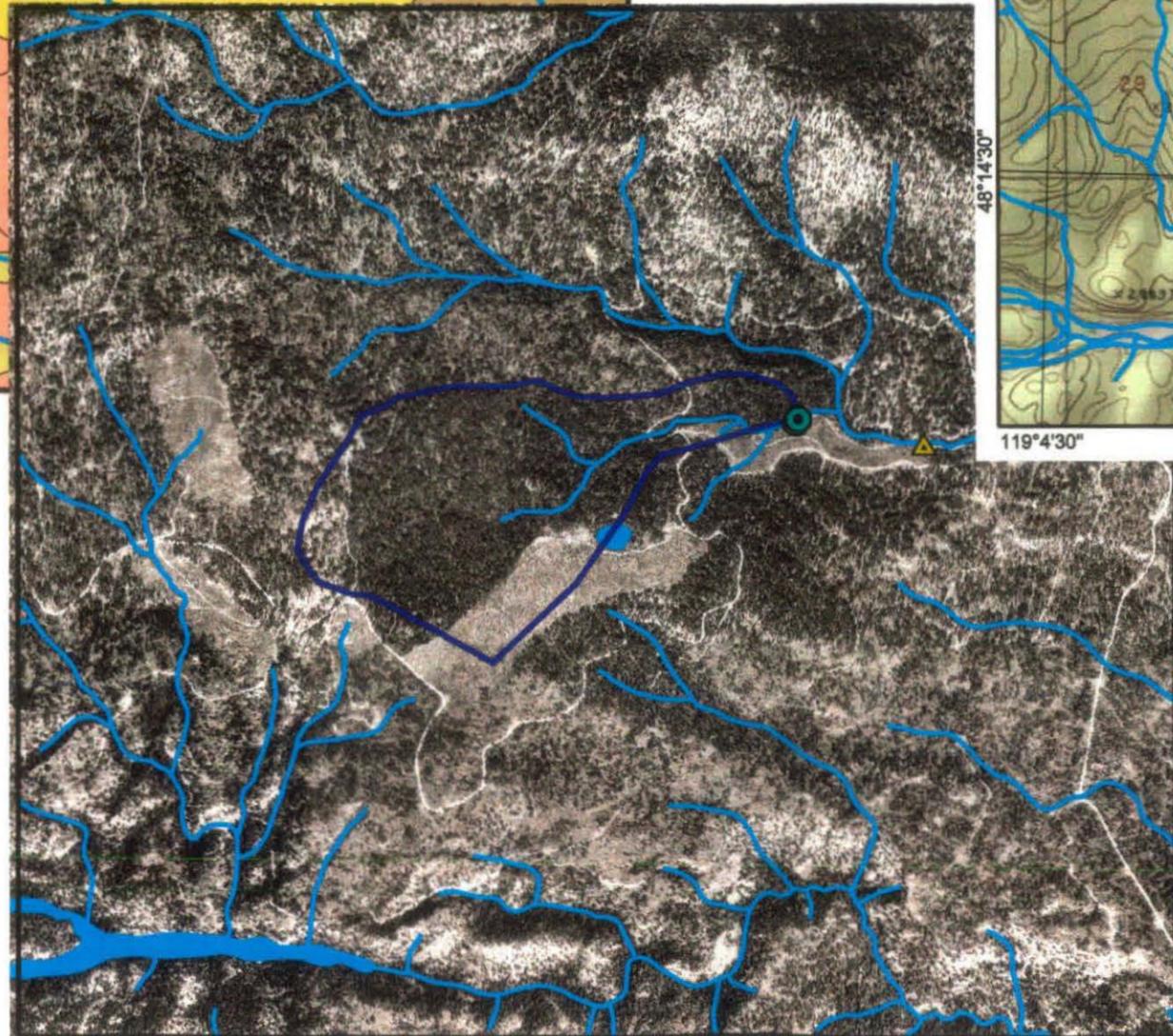


**Soil Habitat**

[Light Green]	ABGR/LIBO
[Light Blue]	ABLA/LIBO
[Light Orange]	DECIDUOUS
[Light Green]	PIPO/AGSP
[Light Orange]	PIPO/FEID
[Light Purple]	PIPO/PUTR,AGSP
[Light Orange]	PIPO/PUTR,FEID
[Light Purple]	PIPO/SYAL
[Light Green]	PIPO/SYAL,WET
[Light Orange]	PSME/CARU
[Light Yellow]	PSME/CARU,ARUV
[Light Green]	PSME/FEID
[Light Orange]	PSME/PHMA
[Light Yellow]	PSME/PHMA,ARCO
[Light Blue]	PSME/PHMA,PAMY
[Light Purple]	PSME/SPBE
[Light Orange]	PSME/SYAL
[Light Green]	PSME/SYAL,WET
[Light Yellow]	PSME/SYAL-LOW

# Peel Creek

Peel Creek  
 Date of Survey: 9/4/01  
 WAU: Nespelem Upper  
 WMUS: Peel Creek  
 Quad: Moses Mountain  
 T 32 R 30 E S 21  
 48.25346053 -119.0424818  
 Basin Acreage: 226.845



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 January 2002

**2001 Perennial Initiation Point Survey**

- [Blue Outline] Basin Boundary
- Points**
  - [Red Circle] PIP
  - [Yellow Triangle] Road Access Pt.
  - [Blue Circle] Spring
  - [Green Circle] Start Survey
  - [Orange Circle] Survey End Point

**Form B: Perennial Stream Survey Field Measurements**

Note: Record all Measurements in metric units

WAU: UPPER NESPELEM	Stream Name: Kinkaid Cr.	T/R/S T 32 R 31 S 10	Topoquad name: Stepstone creek
Organization: Colville Confederated Tribes TFW Fish & Wildlife Depth.	Description of start point (GPS optional): PIP N 48 17 06.4 W 118 54 34.8 ROAD N 48 17 20.5 W 118 54 56.1		Landowner; Colville Confederated Tribes
Site Number: 09-02	Date: 09-13-01	Recorder(s): R. Peone, E. Krausz, T Jafari	
Precipitaion (mm) for the 2 days prior to survey 0		Survey type: Main thread or Total Tributary Tributary Number: 1	

Segment Number	Distance From Start (m)	GPS coordinates (optional)	Flow Category	Channel Category	Channel Bankfull Width (m)	Channel Bankfull Depth (m)	Up-stream gradient %	Down-stream gradient %	Dominant Substrate	Associated Feature at flow change	Flow categories of side trib not on main thread	Channel categories of side trib not on main thread	Notes (see also back page)
1	0-30		D	PDC	0.8	0.2	3	3	F				
2	30-60		D	PDC	0.9	0.15	3	3	G				
3	60-90		D	DC	1	0.3	3	3	G				
4	90-120		D	DC	1.3	0.2	2	2.5	G				
5	120-150		D	DC	1	0.1	2	3	G				
6	150-180		D	DC	1.2	0.3	4	4	G				
7	180-210		D	DC	0.8	0.1	7	8	G				
8	210-240	Y	SW	DC	1.6	0.2	7	5	G	SP			SP feed spring
9	240-270		FW	DC	1.8	0.3	9	5	G				
10	270-300		FW	DC	2	0.2	8	5	G				
11	300-330		FW	DC	1.5	0.25	7	8	G				
	307				1	0.3		15	G		FW	DC	SIDE TRIB.
12	330		FW	DC	1.3	0.45	10	10	G	SP			
13	360		FW	DC	1.5	0.3	6	12	G				
14	390		FW	DC	2	0.3	6	12	G				
	420												end point

Codes for Flow Categories: FW=Flowing Water, SW=Standing Water, FP=Flowing Pocket Water, SP=Standing Pocket Water, D=Dry, U=Unknown, O=Obscured

Codes for Channel Categories: DC=Defined Channel, PDC=Poorly Defined Channel, MC=Modified Channel, PC=Piped Channel, CC=Covered Channel, NC=No Channel



# Form B: Perennial Stream Survey Field Measurements

Note: Record all Measurements in metric units

3

KINCAID Cr.

AU: UPPER Nespelen	Stream Name: Kincaid Cr.	T/R/S T37 R31 S10	Topoquad name: Stepston Creek
Organization: Fish & Wildlife (TFW)	Description of start point (GPS optional): D: P N 48 1706.8 W 118 54 348 Road N 48 1720.5 W 118 54 56.1		Landowner: Colville Gov. Tribe
Event Number: 0902	Date: 09/13/01	Recorder(s): Eric Krause	
Precipitation (in mm) for the 2 days prior to survey: 0		Survey type: <u>Main thread</u> or Total Tributary Tributary Number: 1	

Starting point →  
Dry channel →

Spring fed PIP →

Side trib.

End point

Point Number	Distance from Start (m)	GPS coordinates (optional)	Flow Category	Channel Category	Channel Bankfull Width	Channel Bankfull Depth	Upstream gradient (%)	Downstream gradient (%)	Dominant Substrate	Associated Feature at flow change	Flow categories of side trib not on main thread	Channel categories of side trib not on main thread	Notes (see also back page)
1	0		D	PDC	.8	.2	3%	3%	F				
2	30		D	PDC	.9	.15	3%	3	G				
3	60		D	DC	1.0	.3	3	3	G				
4	90		D	DC	1.3	.2	2	2 1/2	C				
5	120		D	DC	1.0	.1	2	3	G				See notes
6	150		D	DC	1.2	.3	4	4	G				
7	180		D	DC	.8	.1	7	8	C				SNOTE
8	210		SW	DC	1.6m	.2m	7%	5%	Gravel	SP		30 ft. error.	
9	240		FW	DC	1.8m	.3m	9%	5%	G				
10	270		FW	DC	2.0m	.2m	8%	5%	G				
11	300		FW	DC	1.5m	.25m	7%	8%	G				
Side trib.	307	N 48 17.149' W 118 54.556'	—	—	1.0m	.3m		15%	G		FW	DC	
12	330		FW	OC	1.3m	.45m	10%	10%	Cobble				
13	360		FW	DC	1.5m	.3m	7%	5%	G				
14	390		FW	DC	2.0m	.3m	6%	12%	G				
End point	420												

for Flow Categories: FW = Flowing Water, SW = Standing Water, FP = Flowing Pocket Water, SP = Standing Pocket Water, D = Dry, U = Unknown, O = Obscured.  
for Channel Categories: DC = Defined Channel, PDC = Poorly Defined Channel, MC = Modified Channel, PC = Piped Channel, CC = Covered Channel, NC = No Channel

(5) 135/150 PDC  
(1) 190m channel MZ last for 10m

Eric 1/35/01

Kincaid Cr.  
(downstream survey)

## Back of Form B

**NOTES** - start point is located W of road, 150m past end of sharp corner, below NE facing ridge. PIP is West-Southwest approx. 100 m. / flagging @ road is orange & white w/ orange dots on right side of road. Start elevation (PIP) 2909' ~~from location~~

Segment 8 small seep area extending 10m on left side of downstream direction approx. 15m from start.

Segment 9 small seep extending 15m on both sides, approx. 45m from start.

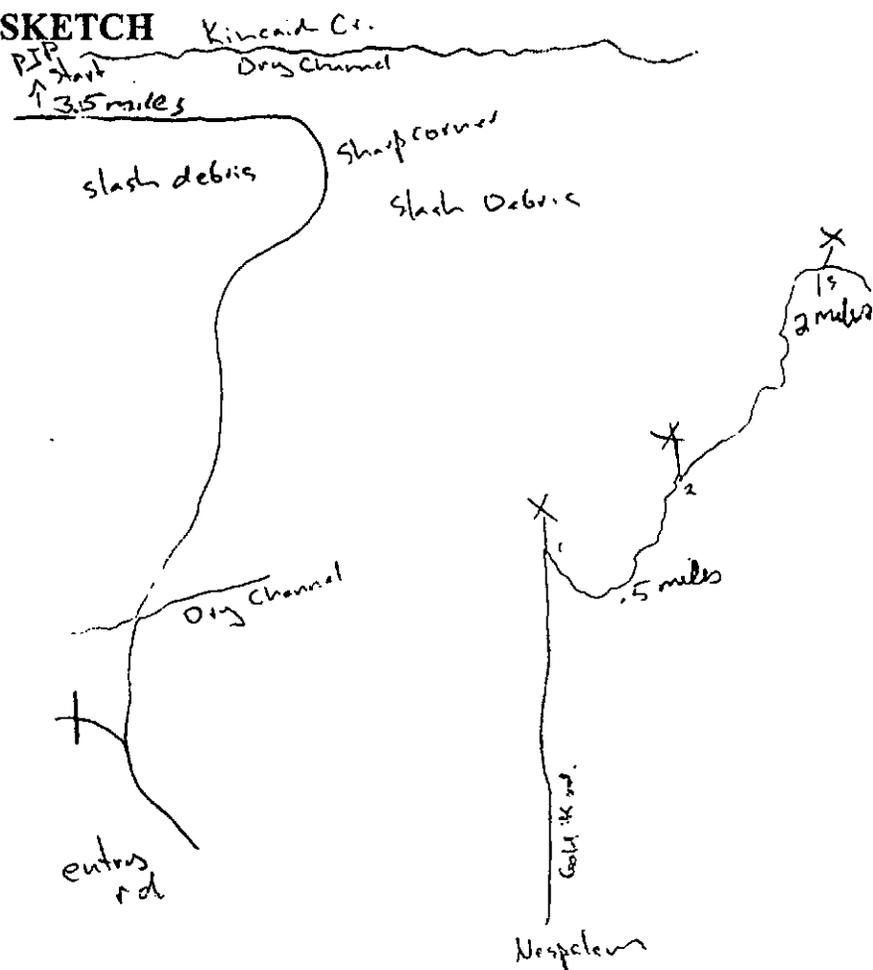
Segment 10 seep (10x15m) located on right side downstream direction approx. 75m from start

Segment 11 - side trib branches from right side of stream (downstream direc.) @ 97m from start. Trib. runs 30m reaching spring site.

GPS for spring -  $N 40^{\circ} 17.154'$   
 $W 118^{\circ} 54.334'$

- Entire stream has large amounts of large downed wood throughout.

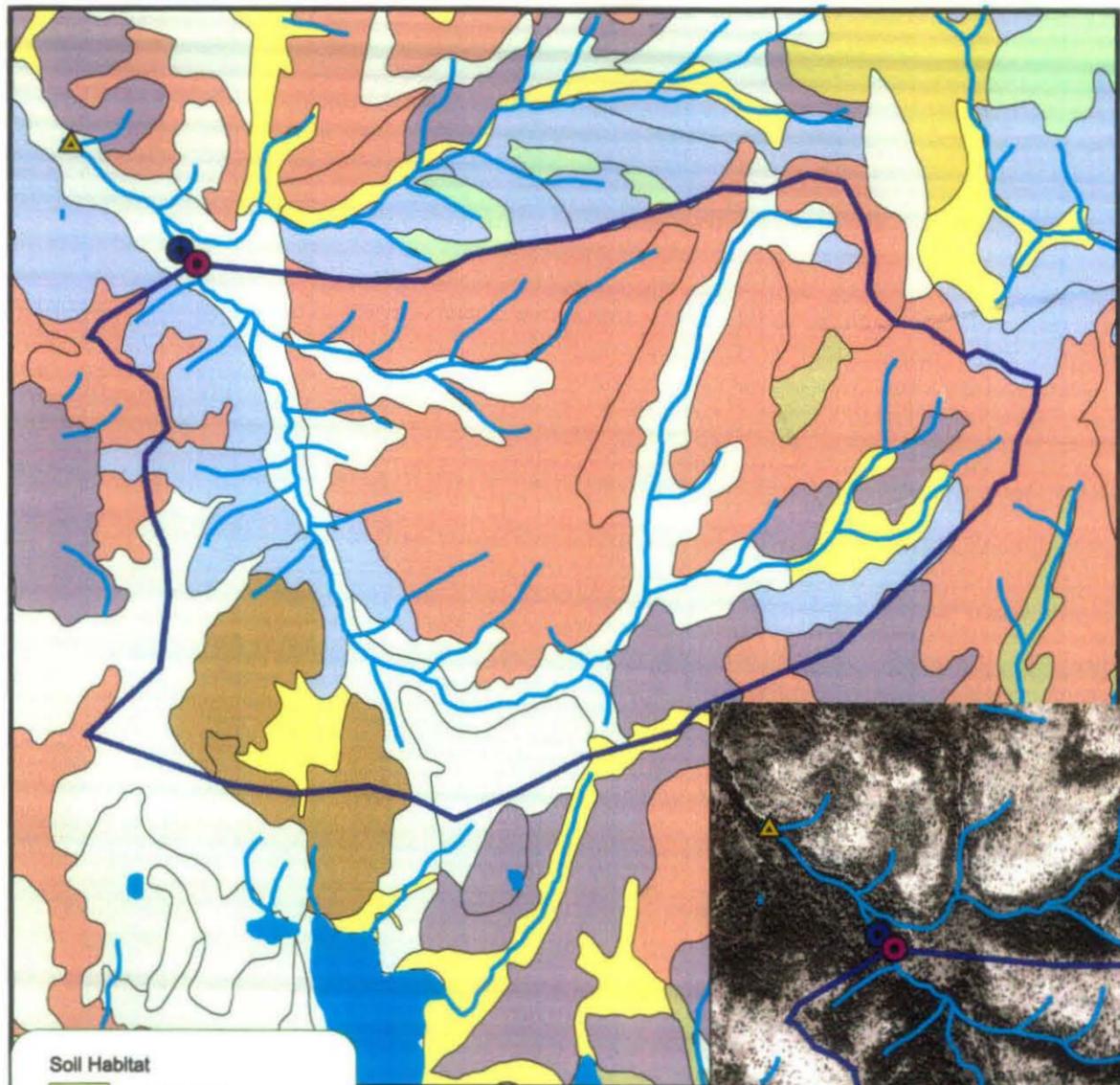
Segment 12 - seep on right side of stream @ 150m from start (Approx. 15m x 10m in size)

**SKETCH**

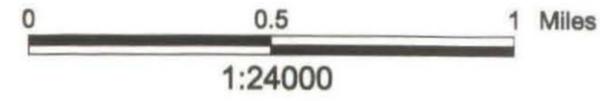
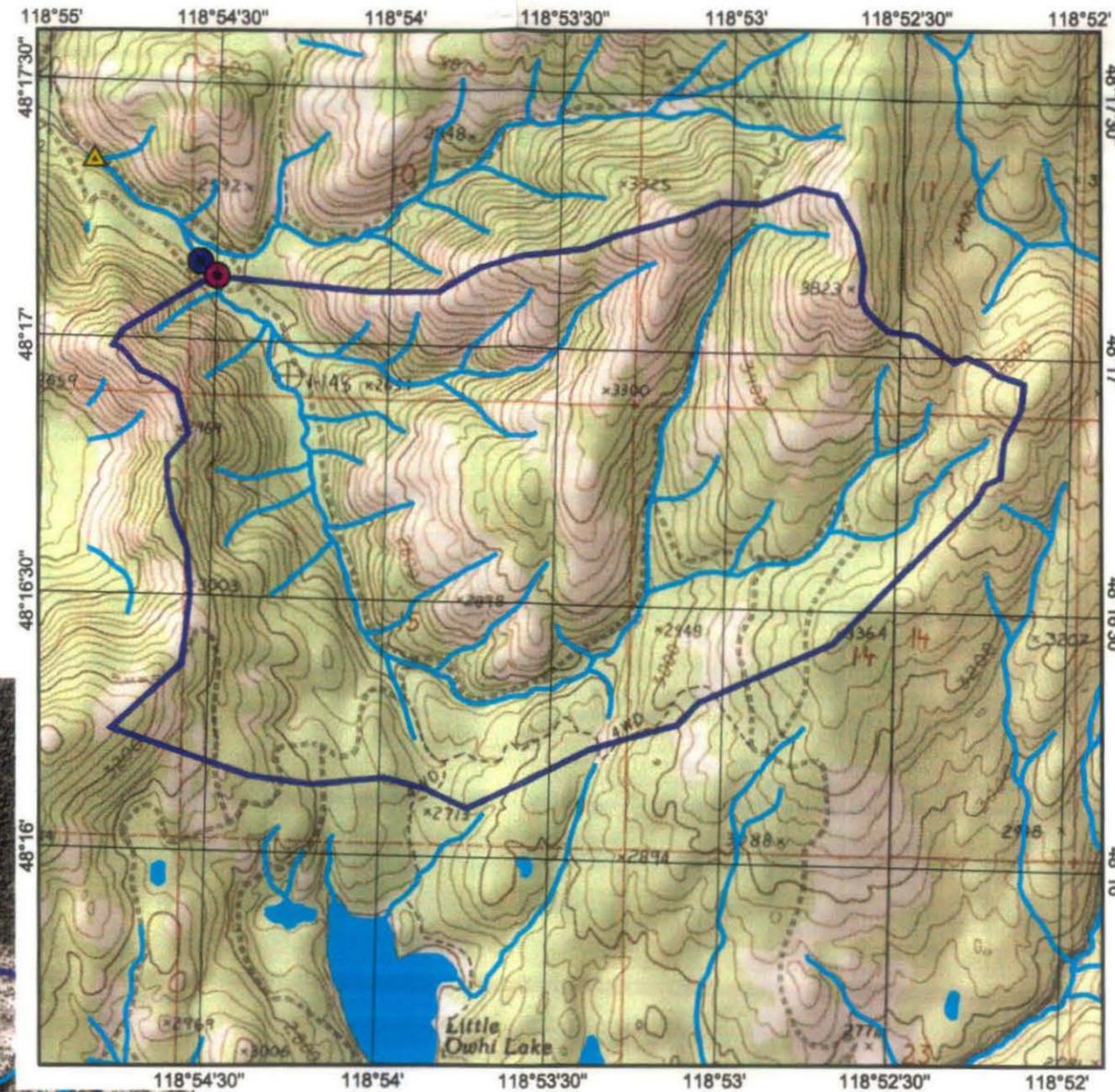
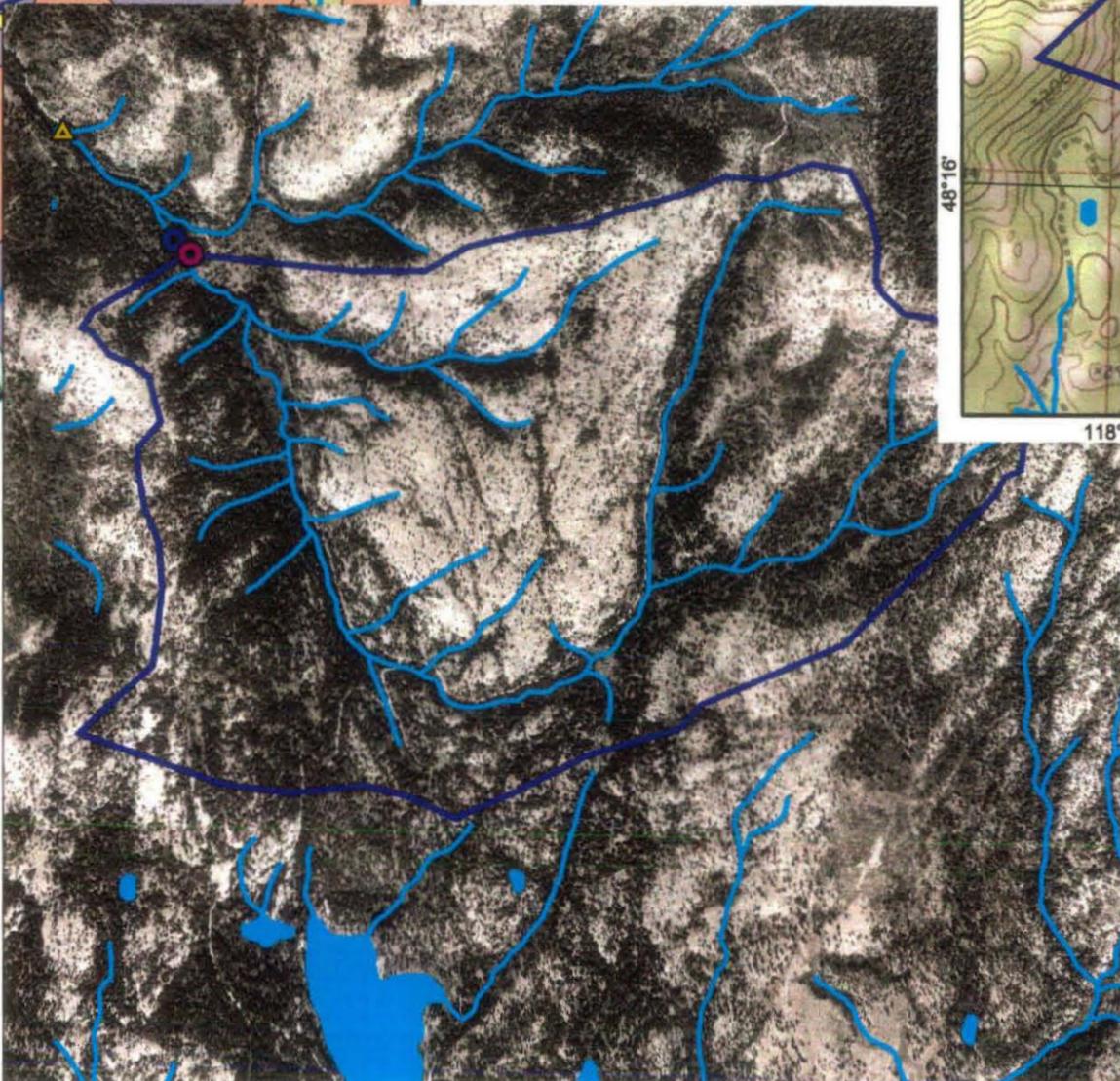
- should be 3 right turns off of Gold K rd coming from Nespelem.

# Kinkaid Creek

Kinkaid Creek  
 Date of Survey: 09/13/02  
 WAU: Nespelem Upper  
 WMUS: Stepstone Creek  
 Quad: Stepstone  
 T 32 R 31 E S 10  
 48.2852800 -118.9095200  
 Basin Acreage 1202.058



Soil Habitat	
[Light Green]	ABGR/LIBO
[Light Blue]	ABLA/LIBO
[Light Orange]	DECIDUOUS
[Light Green]	PIPO/AGSP
[Light Orange]	PIPO/FEID
[Light Purple]	PIPO/PUTR,AGSP
[Light Orange]	PIPO/PUTR,FEID
[Light Purple]	PIPO/SYAL
[Light Green]	PIPO/SYAL,WET
[Light Orange]	PSME/CARU
[Light Yellow]	PSME/CARU,ARUV
[Light Green]	PSME/FEID
[Light Orange]	PSME/PHMA
[Light Yellow]	PSME/PHMA,ARCO
[Light Blue]	PSME/PHMA,PAMY
[Light Purple]	PSME/SPBE
[Light Green]	PSME/SYAL
[Light Yellow]	PSME/SYAL,WET
[Light Green]	PSME/SYAL-LOW



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CCT Resource Inventory & Analysis and  
 CCT Fish and Wildlife  
 January 2002

**2001 Perennial Initiation Point Survey**

- Basin Boundary
- Points**
  - PIP
  - Road Access Pt.
  - Spring
  - Start Survey
  - Survey End Point

**Form B: Perennial Stream Survey Field Measurements**

Note: Record all Measurements in metric units

WAU: Lynx-Hall	Stream Name: Lynx Cr. 01	T/R/S T 33 R34 S10	Topoquad name: Twin & Cody Lks
Organization: Colville Confederated Tribes TFW/FFR Fish & Wildlife Depth	Description of start point (GPS optional): SEE NOTES		Landowner; Colville Confederated Tribes
Site Number: 01-17	Date: 09-26-01	Recorder(s): R. Peone & E. Krausz	
Precipitaion (mm) for the 2 days prior to survey 0		Surv type: Main thread or Total Tributary Tributary Number: 1	

Segment Number	Distance From Start (m)	GPS coordinates (optional)	Flow Category	Channel Category	Channel Bankfull Width (m)	Channel Bankfull Depth (m)	Up-stream gradient %	Down-stream gradient %	Dominant Substrate	Associated Feature at flow change	Flow categories of side trib not on main thread	Channel categories of side trib not on main thread	Notes (see also back page)
1	0-30	Y	D	DC	0.5	0.2	27	25	G				
2	30-60		D	DC	0.6	0.2	22	20	B				
3	60-90		D	DC	0.6	0.2	22	16	C				
4	90-120		D	DC	0.6	0.2	11	11	O				
5	120-135		D	MC									MC/CULVERT
6	135-150		D	DC	0.5	0.1		18	O				
7	150-165		D	MC									MC/CULVERT
8	165-195		D	DC	0.8	0.2	29	19	Substrate				
9	195-225	Y	FW	DC	0.7	0.2	26	21	Substrate				
10	225-240		FW	DC	0.6	0.3	15		Substrate				
11	240-255		D	MC									MC/CULVERT
12	255-285		FW	DC	0.5	0.2	20	20	Substrate				
13	285-315		FW	DC	0.5	0.2	19	22	B				
14	315-345		FW	DC	0.5	0.3	28	35	B				notes
15	345-375		FW	DC	0.7	0.3	18	23	G/O				
16	375-405		FW	DC	0.5	0.2	18	19	Substrate				
17	405	Y	END										END

Codes for Flow Categories: FW=Flowing Water, SW=Standing Water, FP=Flowing Pocket Water, SP=Standing Pocket Water, D=Dry, U=Unknown, O=Obscured

Codes for Channel Categories: DC=Defined Channel, PDC=Poorly Defined Channel, MC=Modified Channel, PC=Piped Channel, CC=Covered Channel, NC=No Channel



## Form B: Perennial Stream Survey Field Measurements

Note: Record all Measurements in metric units

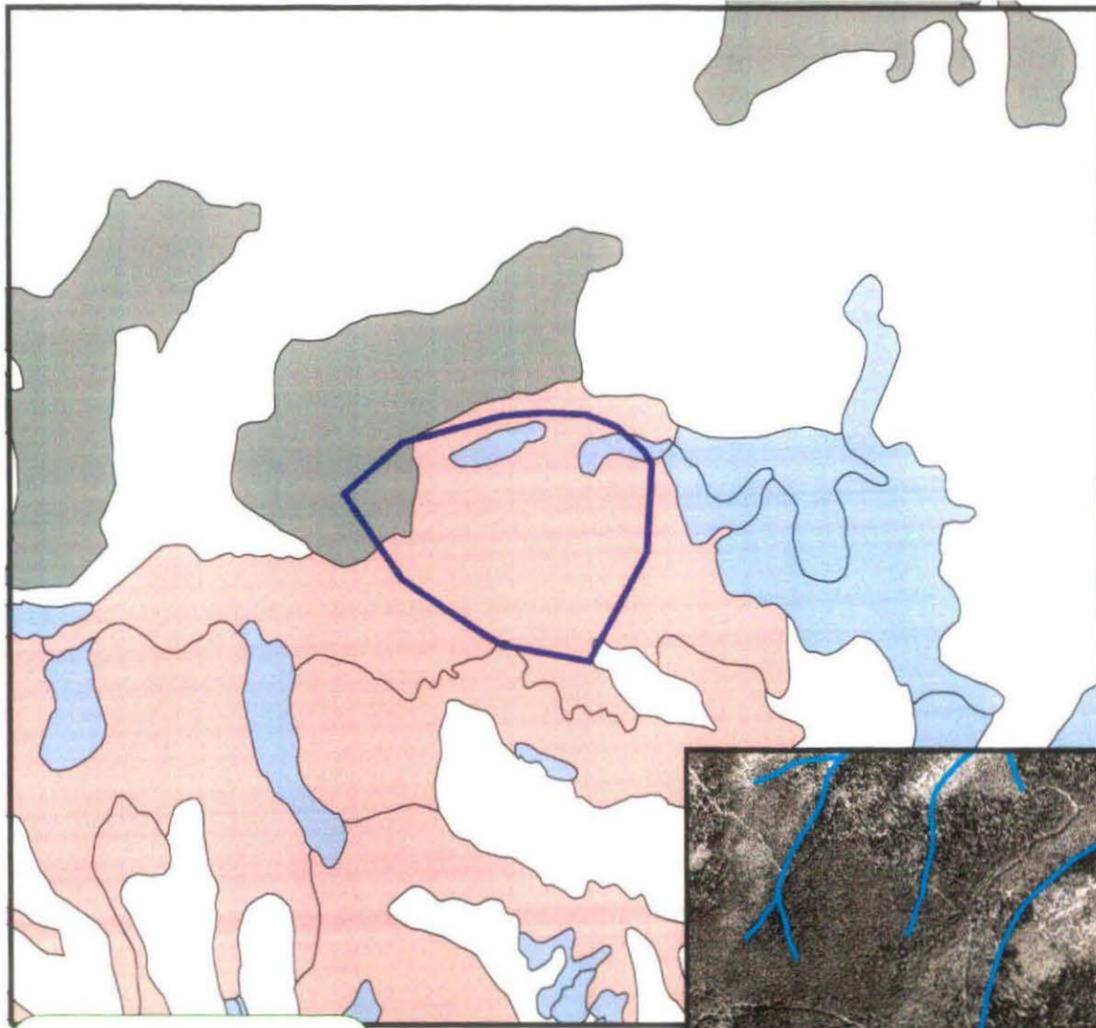
WAU: <i>LYNX Cr.</i>	Stream Name: <i>Lynx Cr. D</i>	T/R/S <i>T33 R34 S10</i>	Topoquad name: <i>Twin + Cody lakes</i>
Organization: <i>COT</i> <i>TFW Fish + Wildlife</i>	Description of start point (GPS optional): <i>see notes</i>		Landowner: <i>Colville Confederated Tribes</i>
Site Number: <i>01-17</i>	Date: <i>9-26-01</i>	Recorder(s): <i>Ruby + Eric</i>	
Precipitation (in mm) for the 2 days prior to survey		Survey type: <u>Main thread</u> or Total Tributary Tributary Number: <i>1</i>	

Segment Number	Distance from Start (m)	GPS coordinates (optional)	Flow Category	Channel Category	Channel Bankfull Width	Channel Bankfull Depth	Upstream gradient (%)	Downstream gradient (%)	Dominant Substrate	Associated Feature at flow change	Flow categories of side trib not on main thread	Channel categories of side trib not on main thread	Notes (see also back page)
1	0-30		D	DC	.5	.2	27	25	G				
2	30-60		D	DC	.6	.2	22	20	B				
3	60-90		D	DC	.6	.2	22	16	C				
4	90-120		D	DC	.6	.2	11	11	O				
5	120-135		D	MC									<i>mc/culvert</i>
6	135-150		D	DC	.5	.1		18	O				
7	150-165		D	MC									<i>mc/culvert</i>
8	165-195		D	DC	.8	.2	29	19	S				
9	195-225		FW	DC	.7	.2	26	21	S				
10	225-240		FW	DC	.6	.3	15		S				
11	240-255		D	MC									<i>mc/culvert</i>
12	255-285		FW	DC	.5	.2	20	20	S				
13	285-315		FW	DC	.5	.2	19	22	B				
14	315-345		FW	DC	.5	.3	28	35	B				<i>notes.</i>
15	345-375		FW	DC	.7	.3	18	23	G/O				
16	375-405		FW	DC	.5	.2	18	19	S				
17	405		END										END

Codes for Flow Categories: FW = Flowing Water, SW = Standing Water, FP = Flowing Pocket Water, SP = Standing Pocket Water, D = Dry, U = Unknown, O = Obscured.

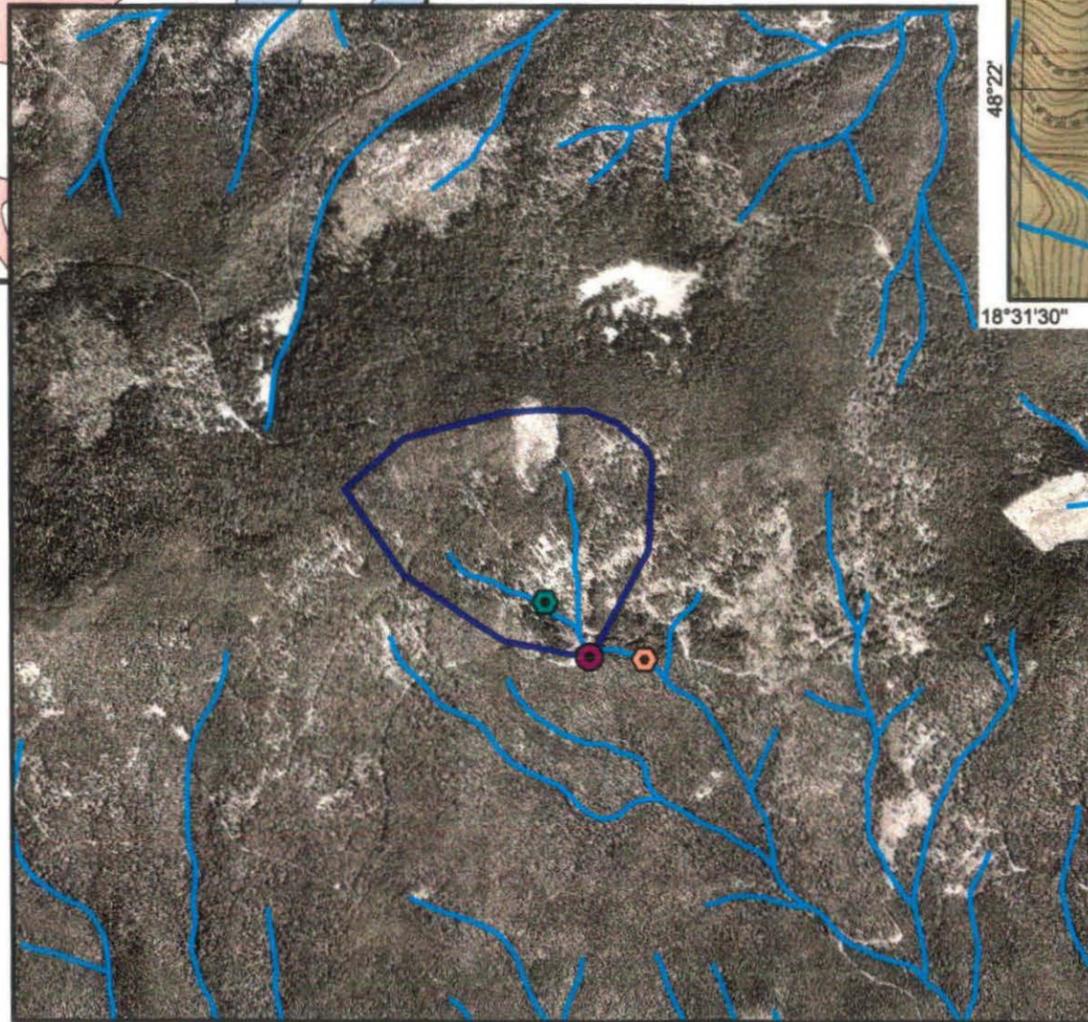
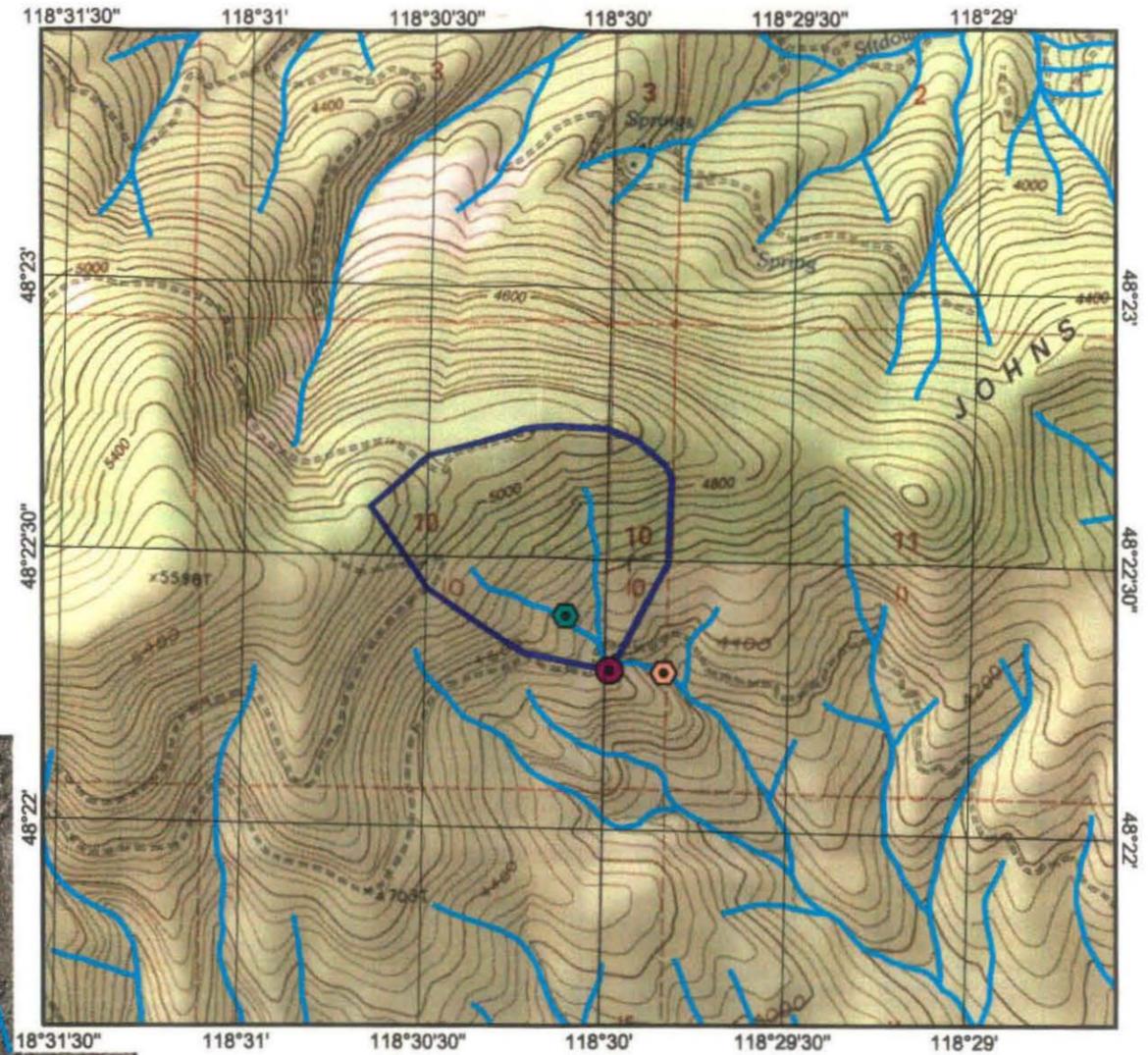
Code: for Channel Categories: DC = Defined Channel, PDC = Poorly Defined Channel, MC = Modified Channel, PC = Piped Channel, CC = Covered Channel, NC = No Channel



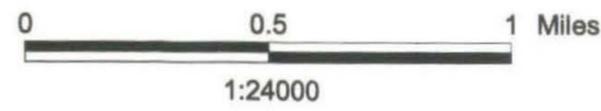


# Lynx Creek

Lynx Creek  
 Date of Survey: 9/26/01  
 WAU: Lynx-Hall  
 WMUS: Upper Lynx Creek  
 Quad: Twin Lakes / Cody Lake  
 T 33 R 34 E S 10  
 48.3714500 -118.5009900  
 Basin Acreage: 147.638



- Soil Habitat**
- ABGR/LIBO
  - ABLA/LIBO
  - DECIDUOUS
  - PIPO/AGSP
  - PIPO/FEID
  - PIPO/PUTR\_AGSP
  - PIPO/PUTR\_FEID
  - PIPO/SYAL
  - PIPO/SYAL\_WET
  - PSME/CARU
  - PSME/CARU\_ARUV
  - PSME/FEID
  - PSME/PHMA
  - PSME/PHMA\_ARCO
  - PSME/PHMA\_PAMY
  - PSME/SPBE
  - PSME/SYAL
  - PSME/SYAL\_WET
  - PSME/SYAL-LOW



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 CCT Resource Inventory & Analysis and  
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 January 2002

**2001 Perennial Initiation Point Survey**

- Basin Boundary
- Points**
  - PIP
  - Road Access Pt.
  - Spring
  - Start Survey
  - Survey End Point







PIP  
ASR

- Black Hawthorne
- ocean spray
- Mountain maple
- Black cottonwood
- water birch

- Smith Cr.

### Back of Form B

**NOTES** Distance from road (upstream) 2264 ft to PIP. approx. 690 m

- PIP channel starts from South facing slope (17%) emerging from the slope @ spring 20 m wide. Spring emerges from several points within the 20 m zone.
- Temp @ PIP (Air 73°F) 20°C  
11:00 am (Stream 47°F) 8°C
- Temp. @ End point Air 72°F / Water 11°C (3 AM)
- Dry trib @ 45 m from start of PIP on right side of downstream orientation.
- Endpoint Alt - 2402 ft.
- road crossing { N 48° 12.973'  
W 119° 03.137'
- all segments except (1 & 2) had been affected by cattle trampling the stream bed.
- Fish were found from segment 2 downstream.
- Many Garter snakes / Western toad
- No channel, trib. or dry streambed above the PIP.

**SKETCH** Start of PIP

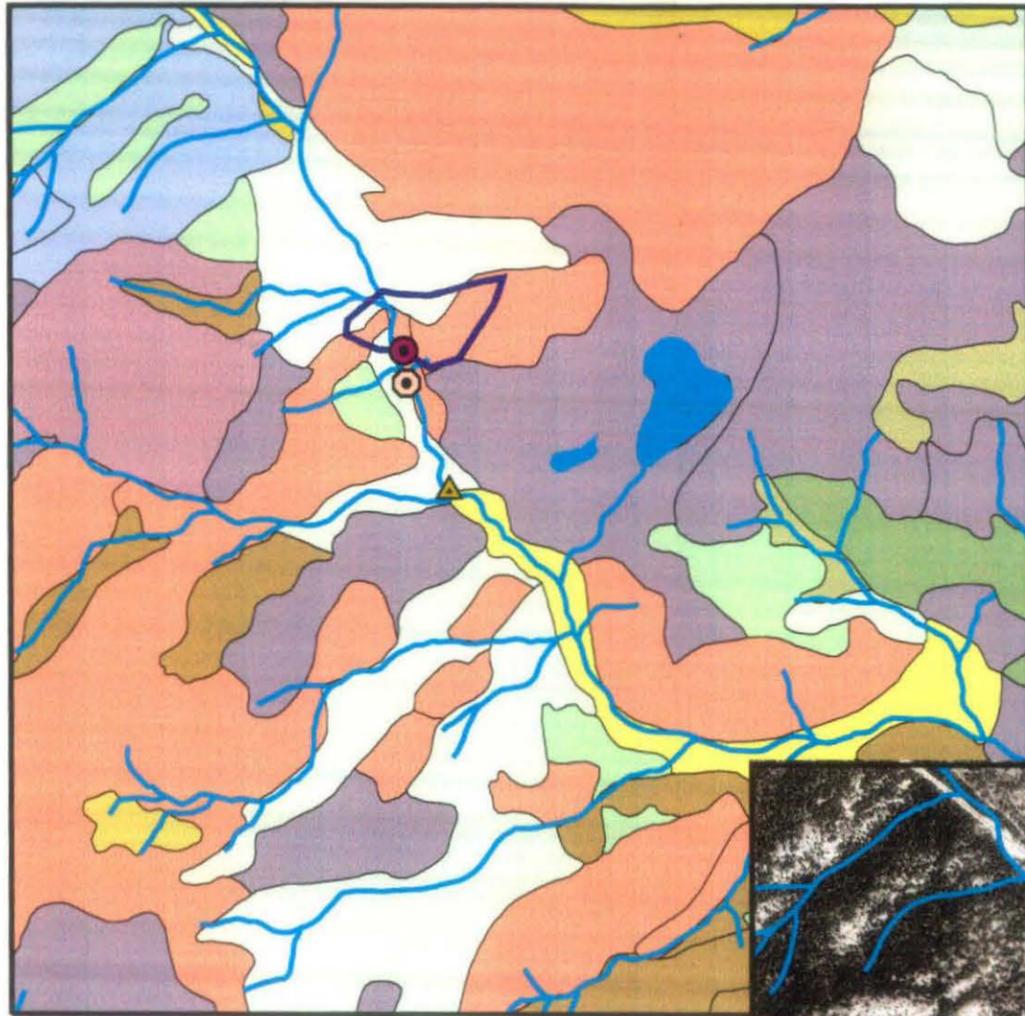
20 m

180° S

PIP

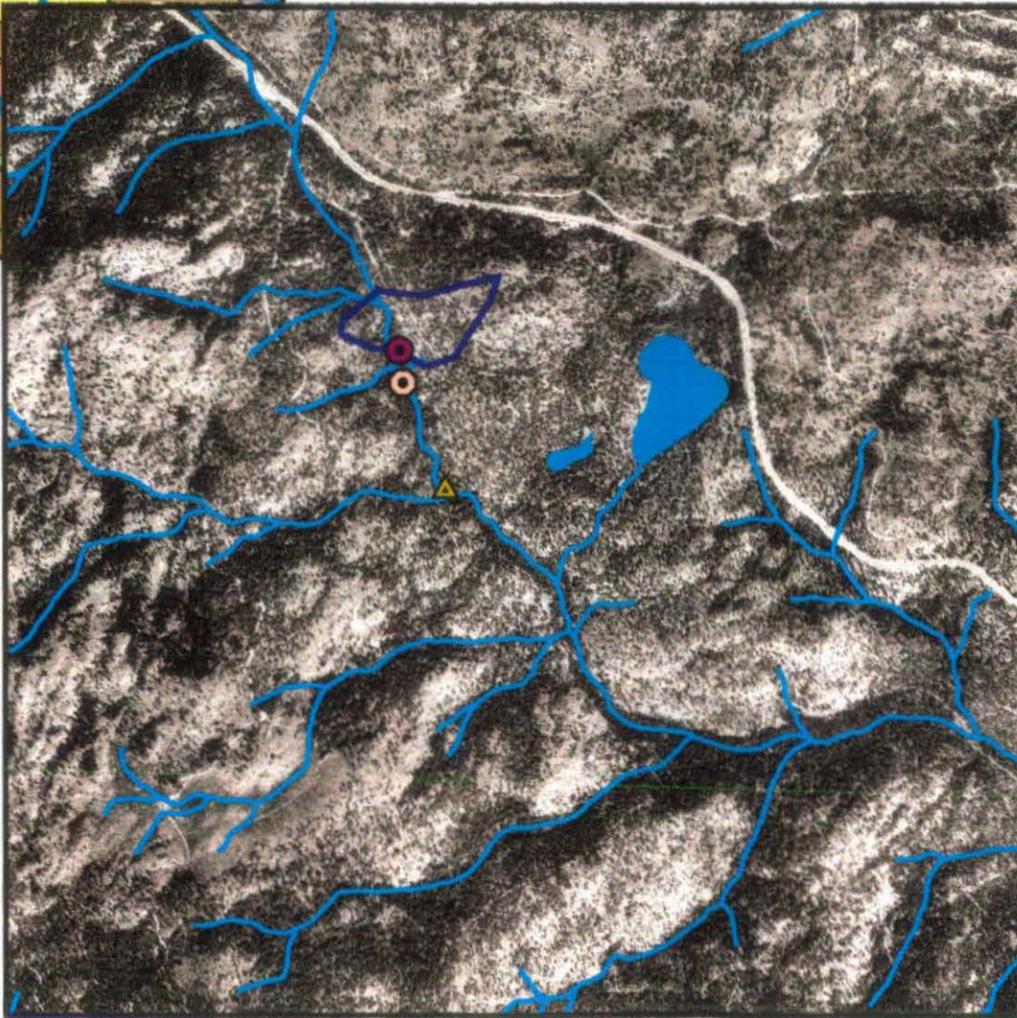
- multiple spring w/ super saturated soils & standing water pockets throughout.
- No defined channel @ start.

N  
W + E  
S



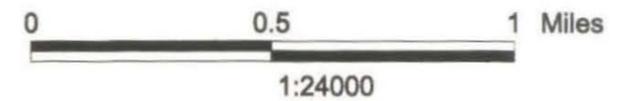
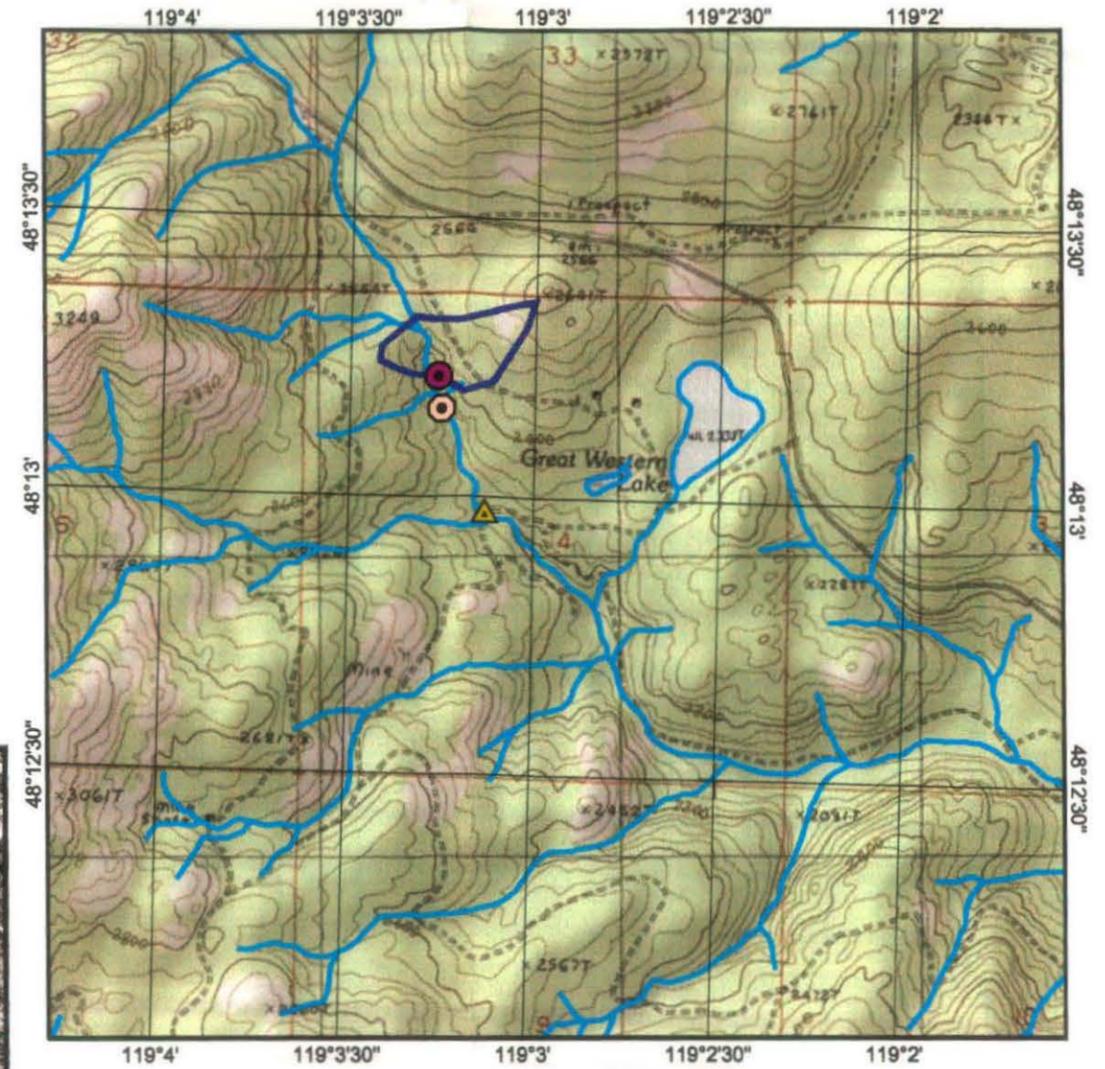
# Smith Creek

Smith Creek  
 Date of Survey: 9/12/01  
 WAU: Nespelem Upper  
 WMUS: Smith Creek  
 Quad: Armstrong Creek  
 T 31 R 30 E S  
 48.322012603 -119.0555871  
 Basin Acreage: 22.166



### Soil Habitat

- ABGR/LIBO
- ABLA/LIBO
- DECIDUOUS
- PIPO/AGSP
- PIPO/FEID
- PIPO/PUTR,AGSP
- PIPO/PUTR,FEID
- PIPO/SYAL
- PIPO/SYAL,WET
- PSME/CARU
- PSME/CARU,ARUV
- PSME/FEID
- PSME/PHMA
- PSME/PHMA,ARCO
- PSME/PHMA,PAMY
- PSME/SPBE
- PSME/SYAL
- PSME/SYAL,WET
- PSME/SYAL-LOW



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 January 2002

### 2001 Perennial Initiation Point Survey

- Basin Boundary
- Points**
- PIP
- Road Access Pt.
- Spring
- Start Survey
- Survey End Point

### Form B: Perennial Stream Survey Field Measurements

Note: Record all Measurements in metric units

WAU: Lynx-Hall	Stream Name: Johns Mtn. Ck.	T/R/S T33 R 34 S 12	Topoquad name: Twin Lakes
Organization: Colville Confederated Tribes TFW/F&F Fish & Wildlife Dept.	Description of start point (GPS optional): SEE NOTES		Landowner; COLVILLE CONFEDERATED TRIBES
Site Number: 116	Date: 09-25-01	Recorder(s): R. Peone, E. Krausz	
Precipitation (mm) for the 2 days prior to survey 0		Survey type: Main thread or Total Tributary Tributary Number: 1	

Segment Number	Distance From Start (m)	GPS coordinates (optional)	Flow Category	Channel Category	Channel Bankfull Width (m)	Channel Bankfull Depth (m)	Up-stream gradient %	Down-stream gradient %	Dominant Substrate	Associated Feature at flow change	Flow categories of side trib	Channel categories of side trib not on main thread	Notes (see also back page)
1	0-30	Y	D	PDC	0.7	0.2	4	5	Substrate				see notes
2	30-60		D	DC	0.7	0.2	4	4	Substrate				
3	60-90		D	DC	0.8	0.3	9	3	Substrate				
4	90-120		D	DC	0.8	0.2	7	7	Substrate				
5	120-150		D	DC	0.8	0.3	10	6	Substrate				
6	150-180		D	DC	1	0.2	7	12	Substrate				
7	180-210		D	DC	1	0.2	10	12	C				
8	210-240	Y	FW	DC	1	0.4	10	10	Substrate				see notes
9	240-270		FW	DC	0.7	0.4	11	12	Substrate				
10	270-300		FW	DC	0.6	0.3	10	8	Substrate				
11	300-330		FW	DC	0.6	0.3	9	10	Substrate				
12	330-360		FW	DC	0.7	0.3	8	6	Substrate				
13	360-390		FW	DC	0.9	0.3	10	11	Substrate				
14	390-420	Y	FW	DC	0.6	0.25	14	8	Substrate				see notes

Codes for Flow Categories: FW=Flowing Water, SW=Standing Water, FP=Flowing Pocket Water, SP=Standing Pocket Water, D=Dry, U=Unknown, O=Obscured

Codes for Channel Categories: DC=Defined Channel, PDC=Poorly Defined Channel, MC=Modified Channel, PC=Piped Channel, CC=Covered Channel, NC=No Channel



**Form B: Perennial Stream Survey Field Measurements**  
**Note: Record all Measurements in metric units**

WAU: <i>Lynx - Hall</i>	Stream Name: <i>JOHNS MTN CREEK</i>	T/R/ST <i>33R34S12</i>	Topoquad name: <i>Twin Lakes</i>
Organization: <i>CCT Fish + Wildlife</i>	Description of start point (GPS optional): <i>See notes</i>	Landowner: <i>CCT</i>	
Site Number: <i>01-16</i>	Date: <i>09-25-01</i>	Recorder(s): <i>Ruby + Eric</i>	
Precipitation (in mm) for the 2 days prior to survey		Survey type: <i>Main thread</i> or Total Tributary	Tributary Number: <i>1</i>

*JMC PIP*

Segment Number	Distance from Start (m)	GPS coordinates (optional)	Flow Category	Channel Category	Channel Bankfull Width	Channel Bankfull Depth	Upstream gradient (%)	Downstream gradient (%)	Dominant Substrate	Associated Feature at flow change	Flow categories of side trib not on main thread	Channel categories of side trib not on main thread	Notes (see also back page)
1	0-30		D	PDC	.7	.2	4	5	S				
2	30-60		D	DC	.8.7	.2	8.4	4	S				NOTE
3	60-90		D	DC	.8	.3	9	3	S				NOTE
4	90-120		D	DC	.8	.2	7	7	S				
5	120-150		D	DC	.8	.3	10	6	S				
6	150-180		D	DC	1	.2	7	12	S				
7	180-210		D	DC	1	.2	10	12	C				r
8	<del>210-240</del>		FW	DC	1	.4	10	10	S				PIP
9	240-270		FW	DC	.7	.4	11	12	S				
10	270-300		FW	DC	.6	.3	10	8	S				
11	300-330		FW	DC	.6	.3	9	10	S				
12	330-360		FW	DC	.7	.3	8	6	S				
13	360-390		FW	DC	.9	.3	10	11	S				NOTE RPL
14	390-420		FW	DC	.6	.25	14	8	S				

Codes for Flow Categories: FW = Flowing Water, SW = Standing Water, FP = Flowing Pocket Water, SP = Standing Pocket Water, D = Dry, U = Unknown, O = Obscured.  
 Codes for Channel Categories: DC = Defined Channel, PDC = Poorly Defined Channel, MC = Modified Channel, PC = Piped Channel, CC = Covered Channel, NC = No Channel

## Back of Form B

### NOTES

PIP 15 Below a North Facing slope  
flowing south.

3.2 End of seg. 2 10 ft of CMZ

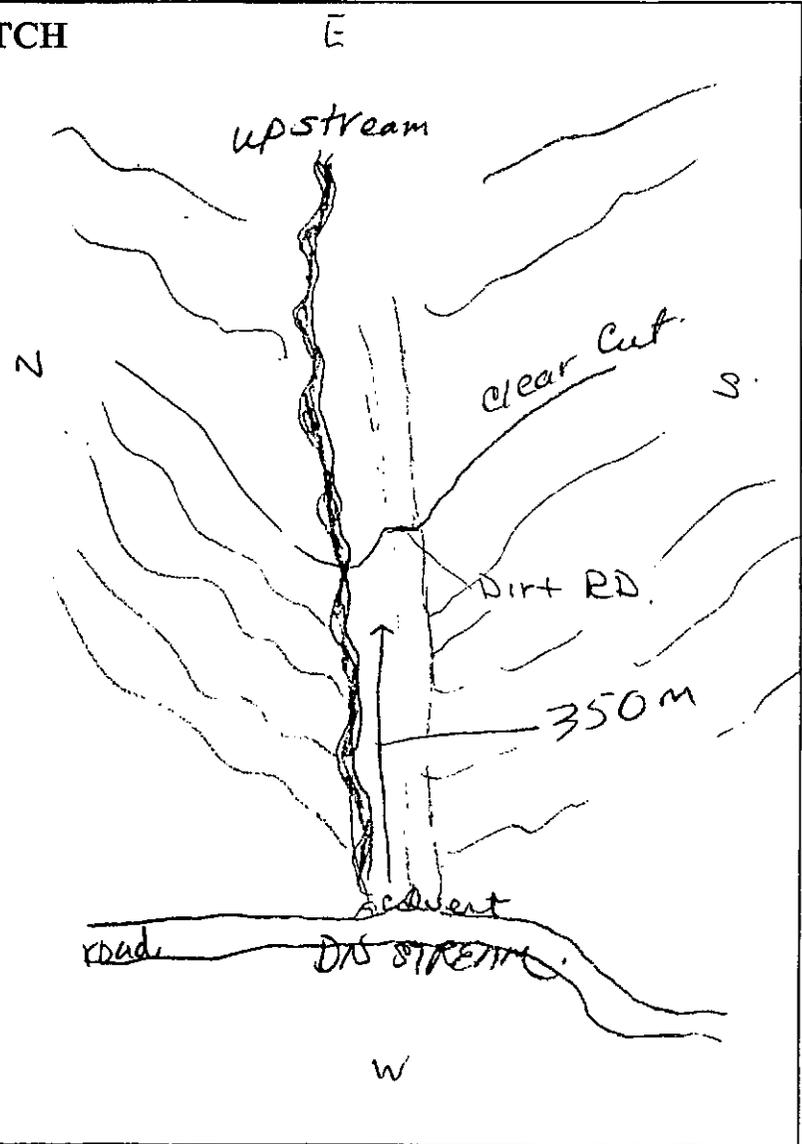
12. segment 12 just 15m boulders

Seg. 14 end of 30m flag 3m from  
road - stream 3m from Rd.

350 meters up the creek or Rd to end  
of PIP Seg. 14.

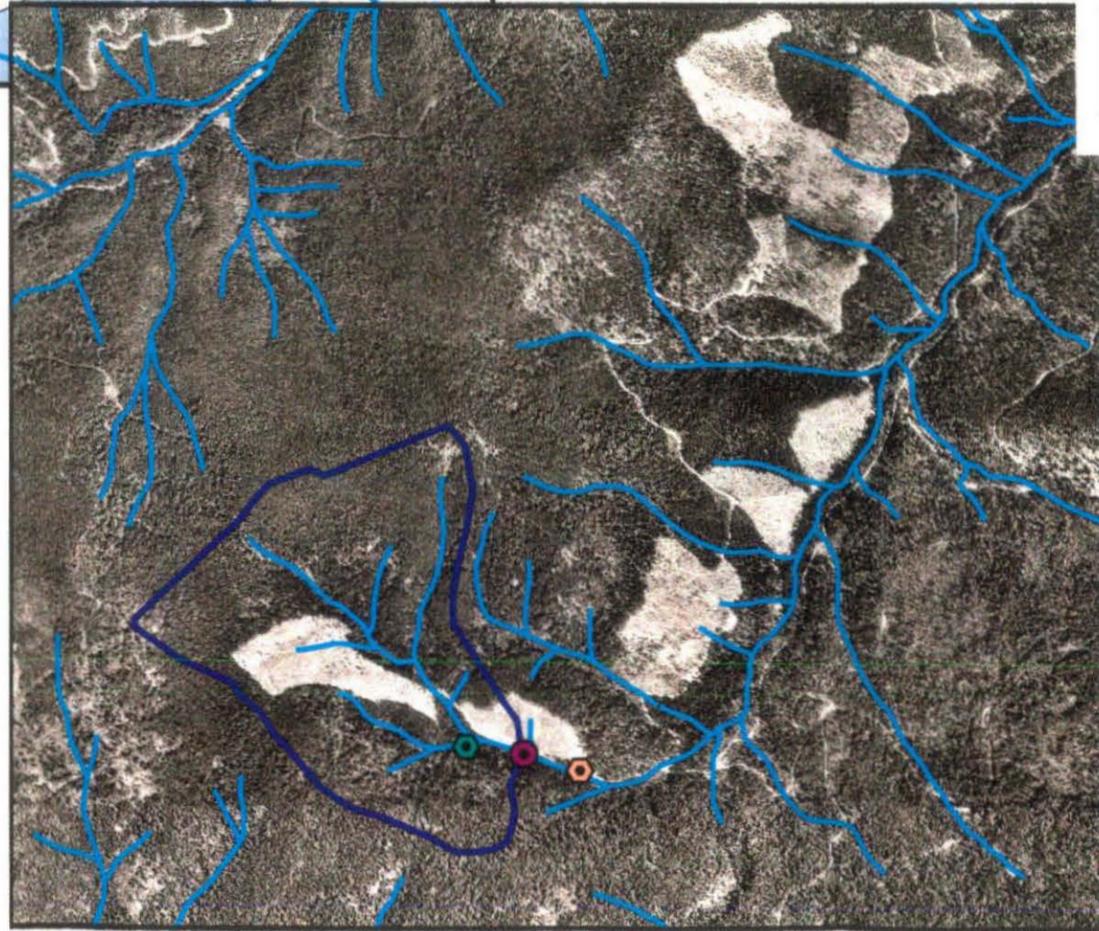
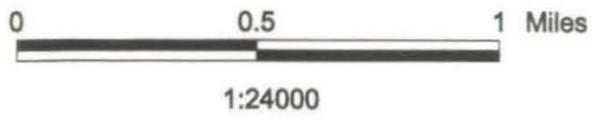
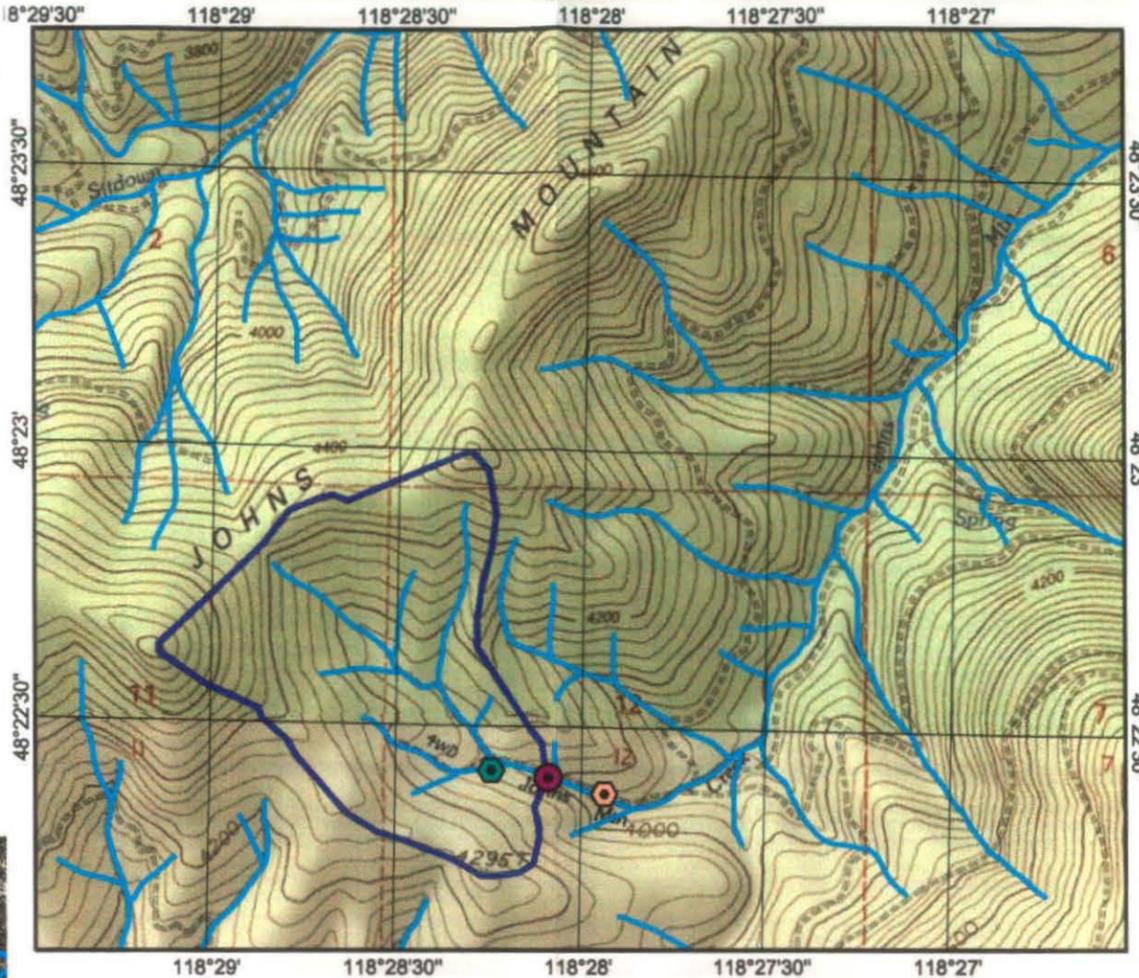
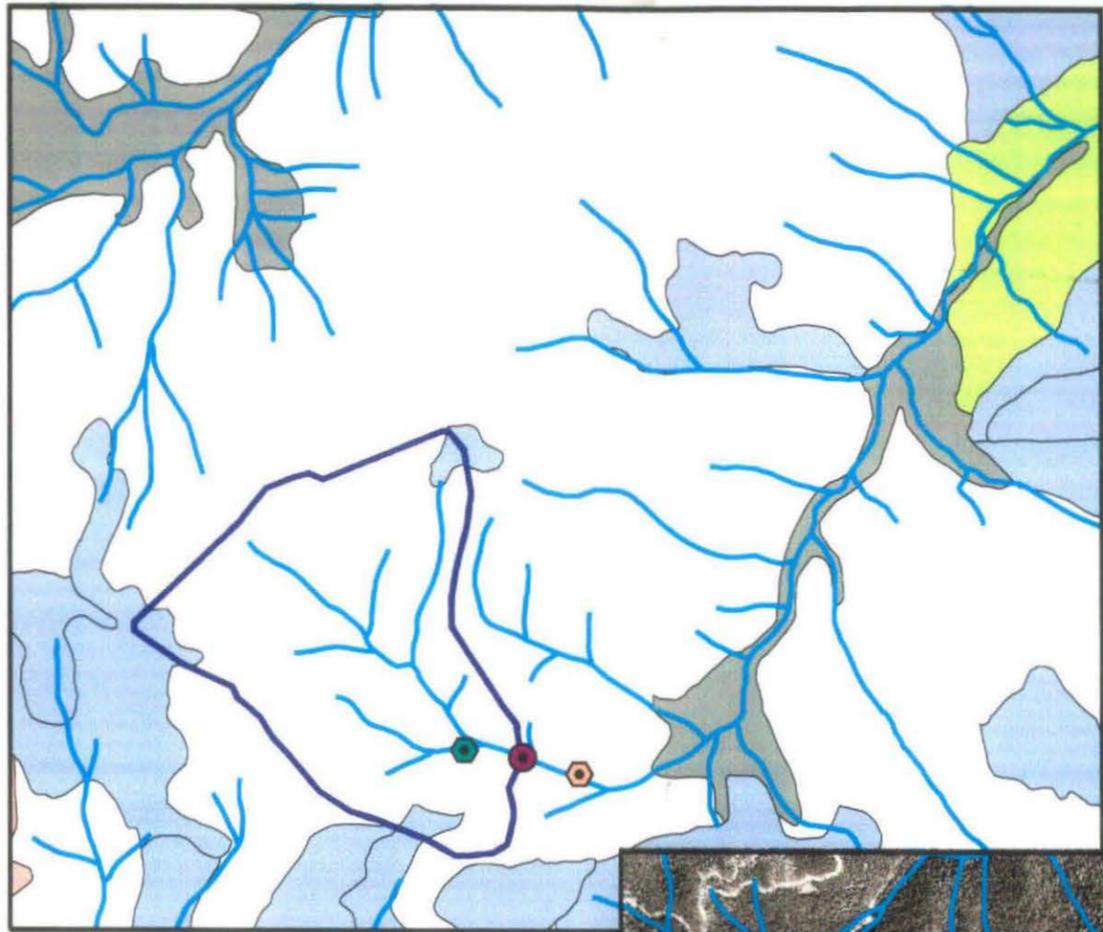
took a picture at PIP

### SKETCH



# Johns Mountain Creek

Johns Mountain Creek  
 Date of Survey 9/25/01  
 WAU: Lynx-Hall  
 WMUS: Johns Mountain Creek  
 Quad: Twin Lakes  
 T 33 R 34 E S 12  
 48.3733300 -118.4693500  
 Basin Acreage: 252.098



**Soil Habitat**

[Light Green]	ABGR/LIBO
[Light Blue]	ABLA/LIBO
[Light Yellow]	DECIDUOUS
[Light Green]	PIPO/AGSP
[Light Orange]	PIPO/FEID
[Light Purple]	PIPO/PUTR,AGSP
[Light Orange]	PIPO/PUTR,FEID
[Light Purple]	PIPO/SYAL
[Light Green]	PIPO/SYAL,WET
[Light Orange]	PSME/CARU
[Light Yellow]	PSME/CARU,ARUV
[Light Green]	PSME/FEID
[Light Orange]	PSME/PHMA
[Light Yellow]	PSME/PHMA,ARCO
[Light Blue]	PSME/PHMA,PAMY
[Light Purple]	PSME/SPBE
[Light Yellow]	PSME/SYAL
[Light Green]	PSME/SYAL,WET
[Light Yellow]	PSME/SYAL-LOW



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 CCT Fish and Wildlife  
 January 2002

**2001 Perennial Initiation Point Survey**

- Basin Boundary
- Points**
  - PIP
  - Road Access Pt.
  - Spring
  - Start Survey
  - Survey End Point







Seg. 1 Large seep on both sides  
40 meters

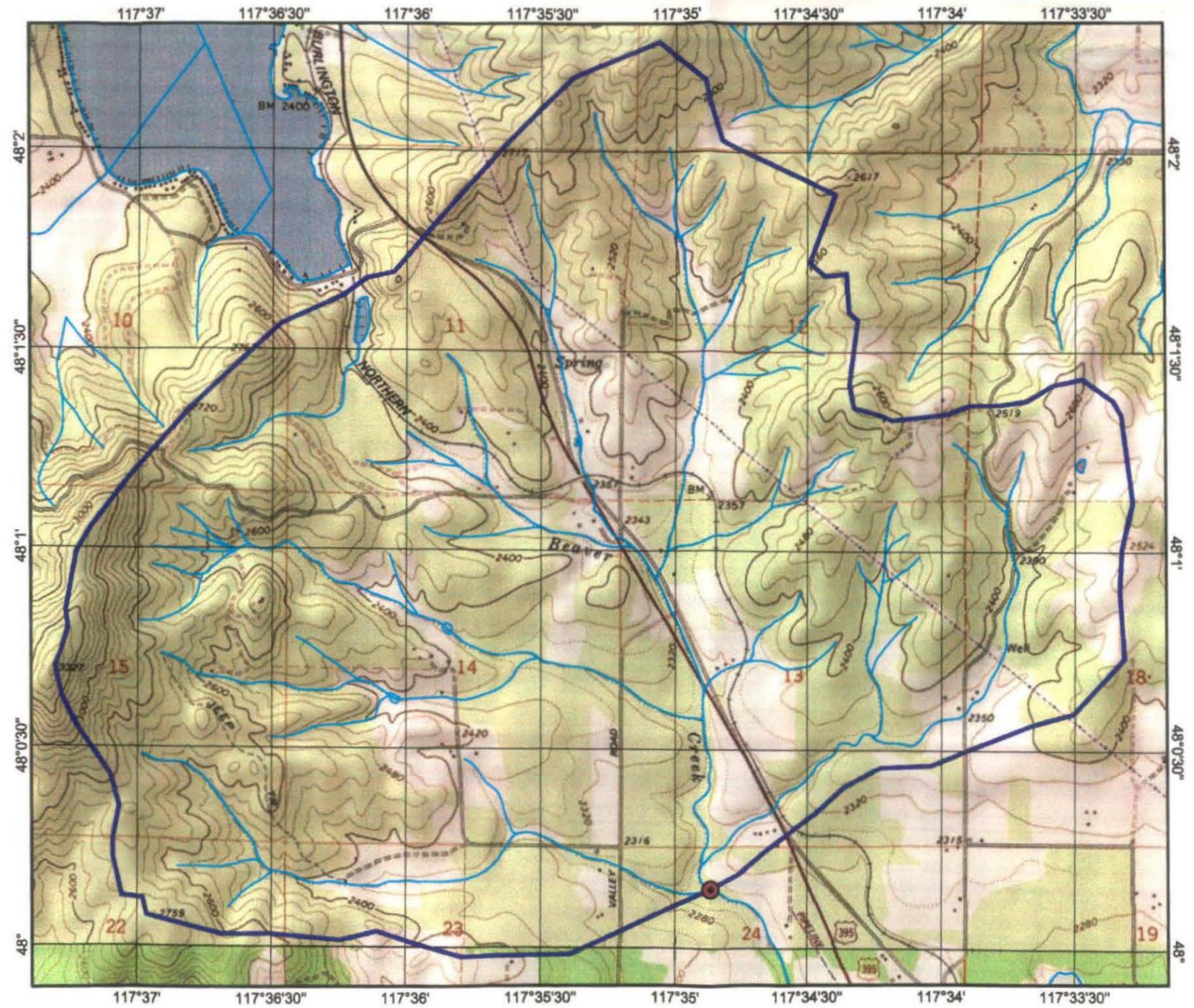
Seg. 15 large seep on LB going  
downstream  
Spring started on Seg. 15 on LB.

Seg. 16 Seep connecting LB.

F1

# Beaver Creek 1

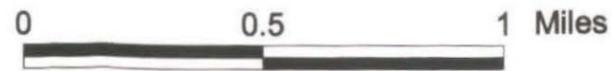
Beaver Creek 1  
 Date of Survey: 10/17/01  
 WAU: Beaver Creek  
 WMUS: N/A  
 Quad: Deer Lake  
 T 29 R 41 E S 24  
 N5316724.478 E456566.280  
 Basin Acreage: 3258.813  
 PIP Surveyed by Spokane Tribe of Indians



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1:24000

## 2001 Perennial Initiation Point Survey

-  Basin Boundary
-  PIP







## Form B: Perennial Stream Survey Field Measurements

**Note: Record all Measurements in metric units**

WAU: <u>W Branch Little Spokane</u> WRIA-55 Organization: <u>UCUT</u>	Stream Name: <u>Beaver Cr. 2</u> Description of start point (GPS optional): <u>Pip Start</u> <u>Urm NAD 83 Zone 13 F</u> <u>N5327455.177m E 461928.763m</u>	T/R/S <u>30N/42E/9</u>	Topoquad name: <u>Chewelah 100k quad</u> Landowner: <u>21632 Keesom Rd.</u> <u>Deer-Park, WA.</u> <u>Jay Baker 276-5322</u>
Site Number: <u>WRIA 55 4</u>	Date: <u>10/11/01</u>	Recorder(s): <u>Ruby, Sandra, Eric, Cathy, E. Jacky Marchon</u>	
Precipitation (in mm) for the 2 days prior to survey		Survey type: <u>Main thread or Total Tributary</u> Tributary Number:	

Segment Number	Distance from Start (m)	GPS coordinates (optional)	Flow Category	Channel Category	Channel Bankfull Width	Channel Bankfull Depth	Upstream gradient (%)	Downstream gradient (%)	Dominant Substrate	Associated Feature at flow change	Flow categories of side trib not on main thread	Channel categories of side trib not on main thread	Notes (see back page)
1	0-30		D	DC	.4	.2	14	13	G				
2	30-60		D	PDC	.4	.1	9	9	G				
3	60-90		D	PDC	.5	.2	11	8	F				
4	90-120		D	DC	.6	.2	11	8	F				
5	120-150		D	DC	.9	.2	8	6	F				
6	150-180		D	PDC	1.5	.1	9	9	F				
7	180-210		D	PDC	1.3	.1	8	9	F				
8	200-230		SW	DC	1.2	.3	1	2	F	SE			
9	230-260		SW	DC	1.2	.4	2	2	F				
10	260-290		SW	DC	1.4	.5	2	1	F				
11	290-320		SW	DC	1.7	.5	1	2	F				
12	320-350		FW	DC	1.1	.6	1	1	F				
13	350-380		FW	DC	2.3	.9	1	1	S				
14	380-410		FW	DC	2.0	.6	1	1	S				

Cedar & Yew

Codes for Flow Categories: FW = Flowing Water, SW = Standing Water, FP = Flowing Pocket Water, SP = Standing Pocket Water, D = Dry, U = Unknown, O = Obscured.  
 Codes for Channel Categories: DC = Defined Channel, PDC = Poorly Defined Channel, MC = Modified Channel, PC = Piped Channel, CC = Covered Channel, NC = No Channel



# Beaver Creek 2

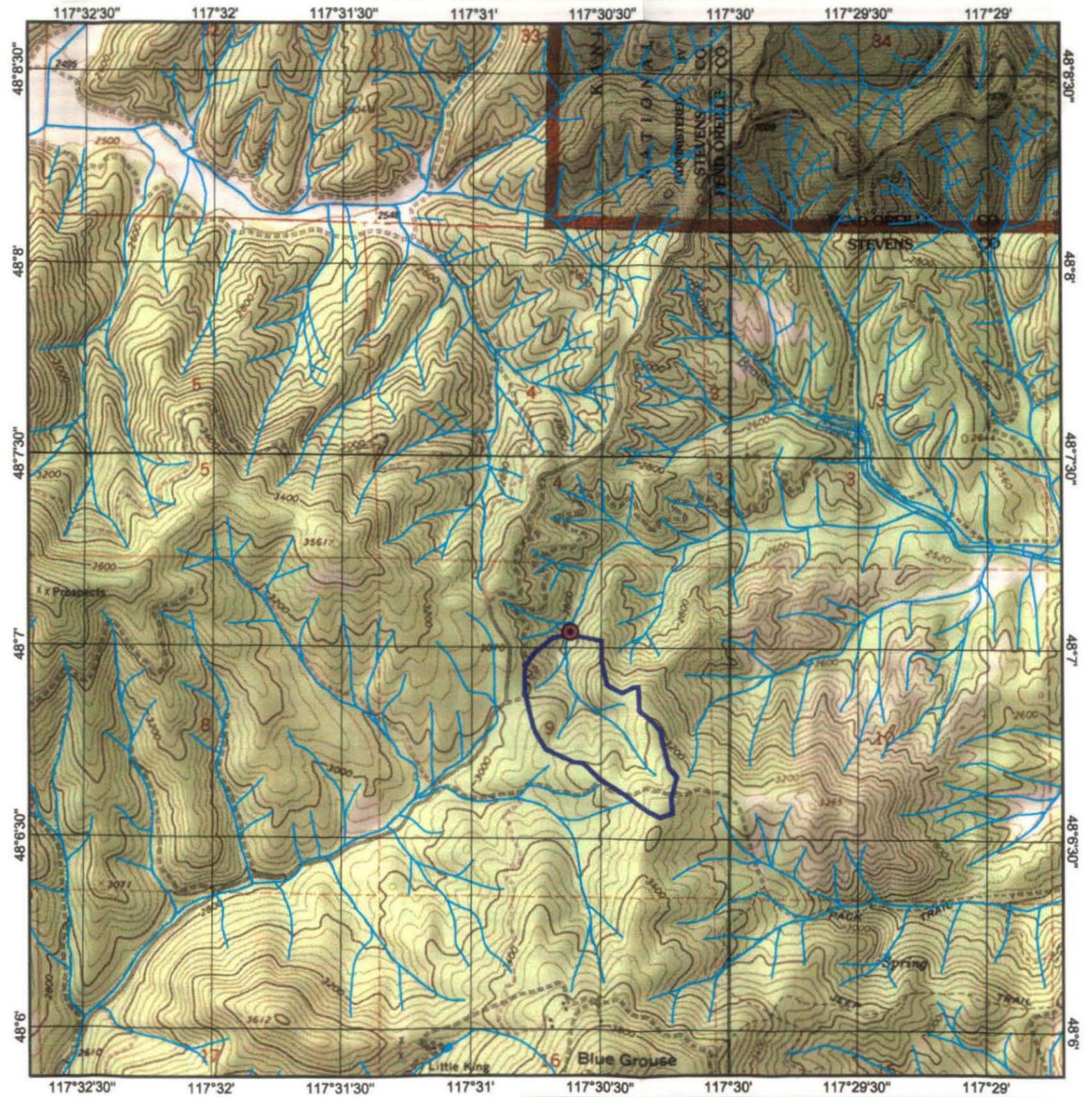
Beaver Creek 2  
 Date of Survey: 10/17/01  
 WAU: Branch W  
 WMUS: N/A  
 Quad: Deer Lake  
 T 30 R 42 E S 09  
 N5329455.499 E461928.763  
 Basin Acreage: 87.899  
 PIP Surveyed by Spokane Tribe of Indians



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**2001 Perennial Initiation Point Survey**

 Basin Boundary  
 PIP



Form B: Perennial Stream Survey Field Measurements

Note: Record all Measurements in metric units

WAU: WRIA 55 Deadman Creek Organization: Spokane Tribe Timber, Fish, and Wildlife/UCUT	Stream Name: Deadman Creek	T/R/S: T28N/R45E/28	Topoquad name: Mount Spokane Landowner: Mt. Spokane State Park
	Description of start point (GPS optional): From Hwy2 travel 15.6 mi. to site area. Look for "No Vehicle Access sign" ; .8mi. From Mt. Spokane . State Park main entrance gate.		
Site Number: 55-1	Date: 09/11/01	Recorder(s): P. Peterson, T. Baldwin, S. Collins, C. Cochran	
Precipitation (in mm) for the 2 days prior to survey		Survey type: Main thread Tributary Number: 1	

Segment Number	Distance from Start (m)	GPS coordinates (optional)	Flow Category	Channel Category	Channel Bankfull Width (m)	Channel Bankfull Depth (m)	Upstream gradient (%)	Down stream gradient (%)	Dominant Substrate	Associated Feature at flow change	Flow category of side trib not on main thread	Channel categories of side trib not on main thread	Notes (see also back page)
1	15	F8	D	NC			39	37	F	WT			F1
2	45		D	NC			39	38	F	WT			F2
3	75		D	NC			31	29	F	WT	SW		F3
4	105		D	NC			20	21	F	WT			F4
5	135		D	NC			20	19	F	WT	SE, WS		F5
6	165		D	NC			14	18	F	WT			F6
7	180	F7	D	NC			10	11	F	SP			F7
8	196		SP	PDC	0.5	0.12M	7	8	F	SE			F15
9	220		FW	DC	0.8	0.2	20	19	G				
10	235		FW	DC	0.6	0.3	30	29	F				F8, F9
11	265		FW	DC	0.72	0.3	22	21	G				
12	292		FW	DC	0.76	0.32	9	9	F	FW	PT	PDC	F10
13	312		FW	DC	0.72	0.3	9	11	G	WT			F11
14	342		FW	DC	0.6	0.32	8	8	G	SE			
15	372		D	DC	0.6	0.3	8	10	F	RC			F12
16	402	F15	FW	DC	0.6	0.3	10	12	G	SE, WT			F13, F14



# Form B: Perennial Stream Survey Field Measurements

Note: Record all Measurements in metric units

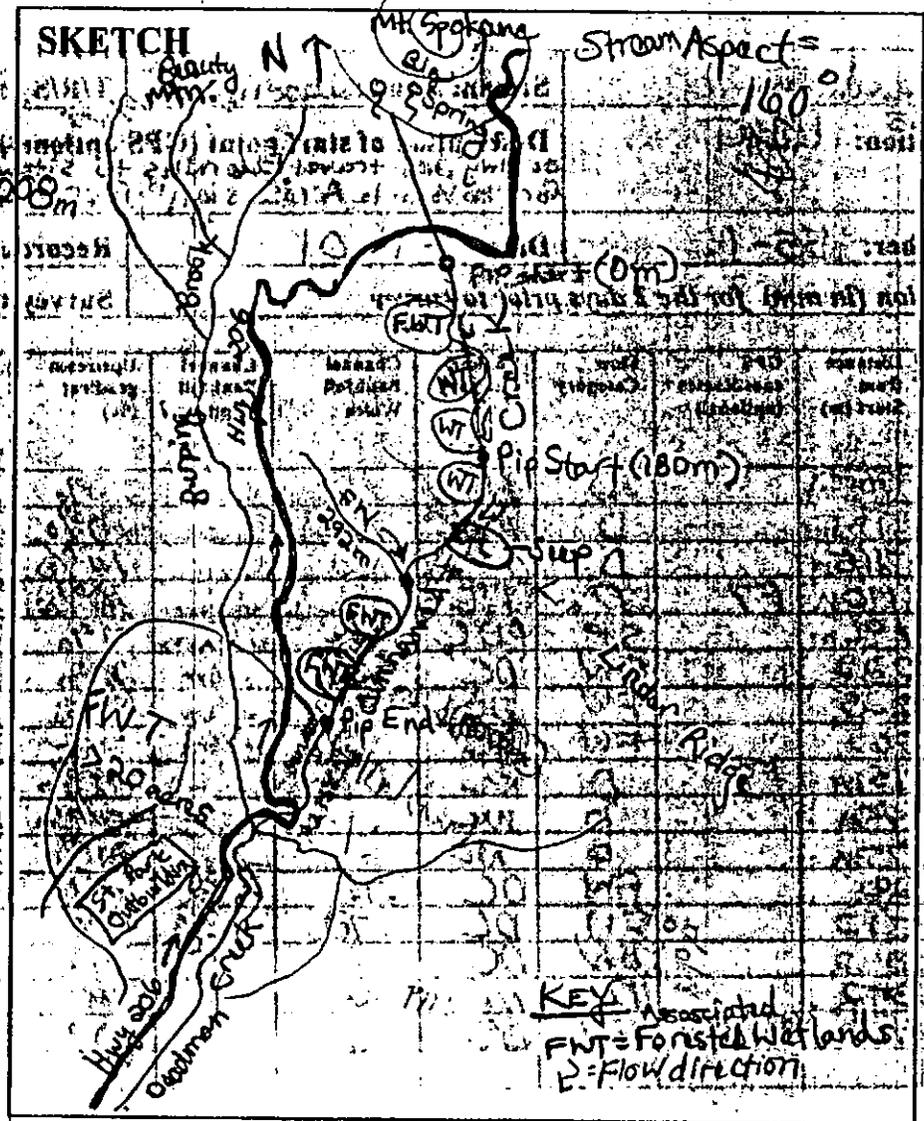
WAI: Deadman Cr. Stream Name: Deadman Cr. T/R/S: 28N/45E/22 Topoquad name: Mt. Spokane 1:24K  
 WRIA: 55 Organization: UCAT Description of start point (GPS optional): From Hwy 2 or Hwy 206 travel 15.6 miles to site. Look for "No Vehicle Access sign". Site from State Park Gate. Landowner: Mt. Spokane State Park  
 Site Number: 55 Date: 9-11-01 Recorder(s): Pete P., Todd B., Sondra C., Cathy C.  
 Precipitation (in mm) for the 2 days prior to survey: \_\_\_\_\_ Survey type: Main thread or Total Tributary Tributary Number: 1

Segment Number	Distance from Start (m)	GPS coordinates (optional)	Flow Category	Channel Category	Channel Bankfull Width	Channel Bankfull Depth	Upstream gradient (%)	Downstream gradient (%)	Dominant Substrate	Associated Feature at flow change	Flow categories of side trib not on main thread	Channel categories of side trib not on main thread	Notes (see back page)
4	105m		D	NC	NC	NC	20%	21%	F	WT	—	—	F4
5	136m		D	NC	NC	NC	20%	19%	F	WT	—	—	F5
6	154m		D	NC	NC	NC	14%	13%	F	WT	—	—	F6
7	180m	F7	D	ENC	NC	NC	16%	11%	F	SP	—	—	F7
8	196m		SP	PDC	.5m	.12m	7%	8%	F	SE	—	—	F8
9	220		FW	DC	.8m	.20m	20%	19%	G	—	—	—	F9
10	235		FW	DC	.6m	.3m	50%	29%	F	—	—	—	F8, F9
11	265		FW	DC	.72	.3m	28	21%	G	—	—	—	F10
12	15m	F8	D	NC	NC	NC	39%	37%	F	WT	—	—	F1
13	45m		D	NC	NC	NC	39%	38%	F	WT	—	—	F2
14	75m		D	NC	NC	NC	31%	29%	F	WT	—	—	F3
15	291		FW	DC	.76	.32	29%	29%	F	FW	PT	PDC	F10
16	310		FW	DC	.72	.30	9%	11%	G	WT	—	—	F11
17	372		FW	DC	.6	.32	6%	8%	G	RC	—	—	F12
18	372		ID	DC	.6	.3	8%	10%	SF	RC	—	—	F12
19	455m		FW	DC	.6	.3	10%	12%	G	BE, WT	—	—	F13, F14

Codes for Flow Categories: FW = Flowing Water, SW = Standing Water, FP = Flowing Pocket Water, SP = Standing Pocket Water, D = Dry, U = Unknown, O = Obscured.  
 Codes for Channel Categories: DC = Defined Channel, PDC = Poorly Defined Channel, MC = Modified Channel, PC = Pipal Channel, CC = Covered Channel, NC = No Channel

Back of Form B

NOTES	
F4	Forested wetland < 20 acres RB
F5	Associated forested wetland < 20 acres RB
F6	Associated forested wetland < 20 acres RB
F7	Pip START; GPS N 5305116.924 E 491000
F8	Assos. forested wetland < 20 acres RB
F9	Assos. forested wetland < 20 acres continuing
F10	Creek subsurface for 6m
F11	Assos. forested wetland < 20 acres RB
F12	Creek subsurface @ 282m Pr. 10m
F13	Assos. forested wetland LB + RB < 20 acres
F14	Historical Road Crossing (Pip End SW) GPS: N 5304955.760 E 491032.165m (NAD 83)
F15	Pip on Left Bank



3462  
130  
222

# Deadman Creek

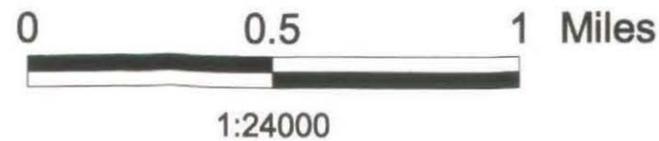
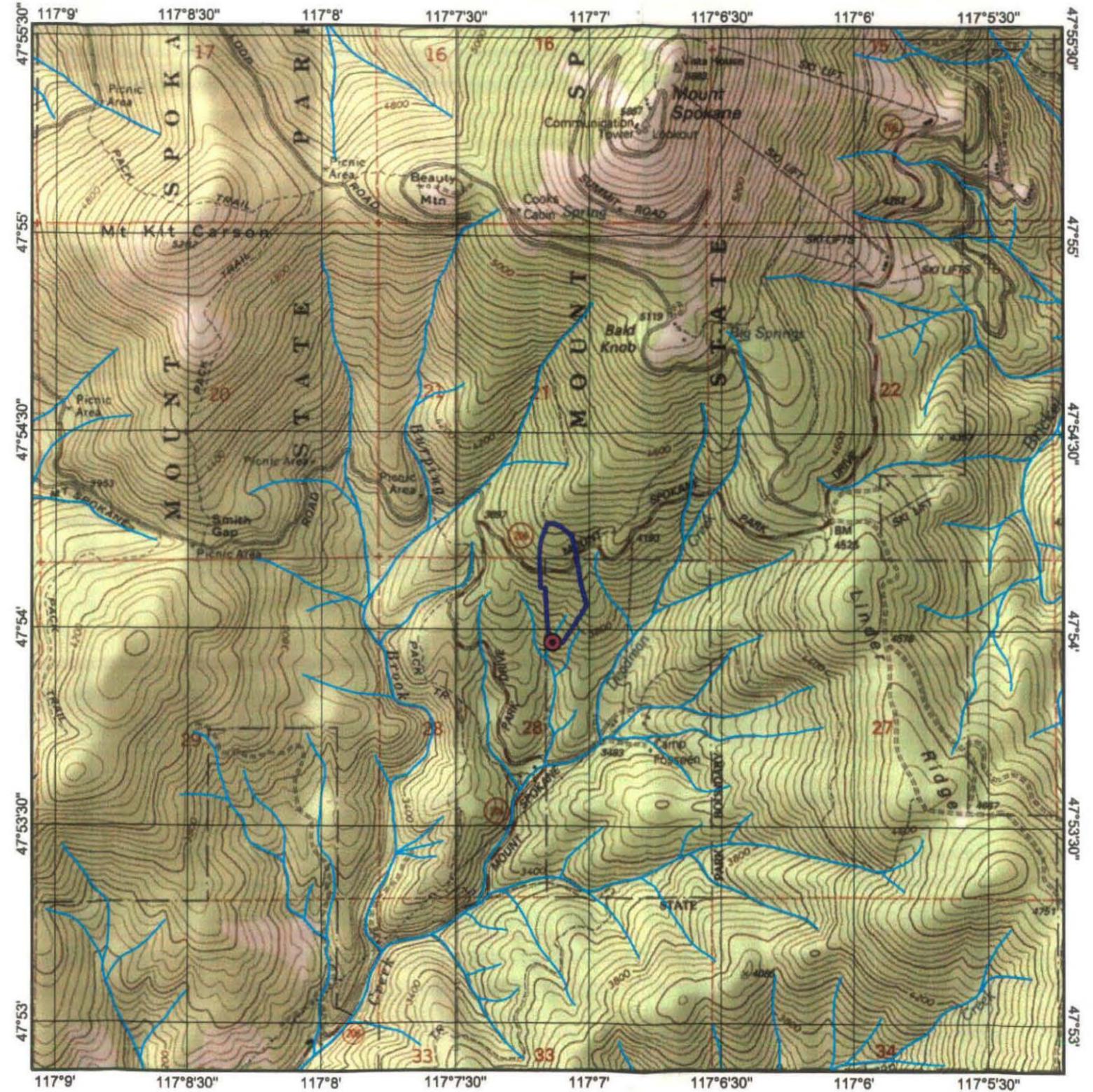
Deadman Creek  
 Date of Survey: 9/11/01  
 WAU: Deadman Creek  
 WMUS: N/A  
 Quad: Mount Spokane  
 T 28 R 45 E S 28  
 N5305116.924 E491020.208  
 Basin Acreage: 20.766  
 PIP Surveyed by Spokane Tribe of Indians



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**2001 Perennial Initiation Point Survey**

	Basin Boundary
	PIP

**Form B: Perennial Stream Survey Field Measurements**

Note: Record all Measurements in metric units

WAU: OR-A-PAK-EN CR.	Stream Name: Castle Rock Cr. T/R/S:T29 R36 S29	Topoquad name:Fort Spokane
Organization: Spokane Tribe Timber, Fish, and Wildlife/UCUT Site Number: 54-2	Description of start point (GPS optional): LAT/LONG N4759.402 W118 18.800	Landowner: Spokane Tribe of Indians
Precipitation (in mm) for the 2 days prior to survey 0	Date: 10/19/01	Recorder(s): R. Peone and C. Cochran
WRIA 54		Survey type: Main thread or Total Tributary Tributary Number:1

Segment Number	Distance from Start(m)	GPS coordinates (optional)	Flow Category	Channel Category	Channel Bankfull Width	Channel Bankfull Depth	Up stream gradient (%)	Down stream gradient (%)	Dominant Substrate	Associated Feature at flow change	Flow category of side trib not on main thread	Channel categories of side trib not on main thread	Notes
1	0-30		D	DC	1.5	0.8	9	9	C				
2	30-60		FW	DC	1.5	0.7	6	5	F	SP (F1)			F1-Small spring on LB flowing downstream
	41			DC						SP			F2-Spring on RB
3	60-90		FW		3.5	1.7	1.5	1.5	F	WL			
4	90-120		FW	DC	3.5	1.9	6	6	F	WS/WL			
5	120-150		FW	DC	1.9	0.6	3	4	F	WL			
6	150-180		FW	DC	0.5	0.3	8	8	F	WL			
7	180-210		D (F3)	DC	0.6	0.5	2	2	F				F3-for the whole 30m the water sub-surfaces than appears after segment 7.



## Form B: Perennial Stream Survey Field Measurements

**Note: Record all Measurements in metric units**

Spokane Tribe (usa.shp)  
WSA: Spokane River

WAU: Or-A-Pak <b>EM</b>	Stream Name: <u>Castle Rock Creek</u>	T/R/ST <u>29N/R36E/29</u>	Topoquad name: <u>Coulee Drain 100 K.</u>
Organization: <u>WRIAS4</u>	Description of start point (GPS optional): <u>LAT/LONG</u>		Landowner:
Site Number: <u>54-2</u>	Date: <u>10/19/01</u>	Recorder(s): <u>Ruby &amp; Calvin</u>	
Precipitation (in mm) for the 2 days prior to survey		Survey type: <u>Main thread</u> or Total Tributary Tributary Number:	

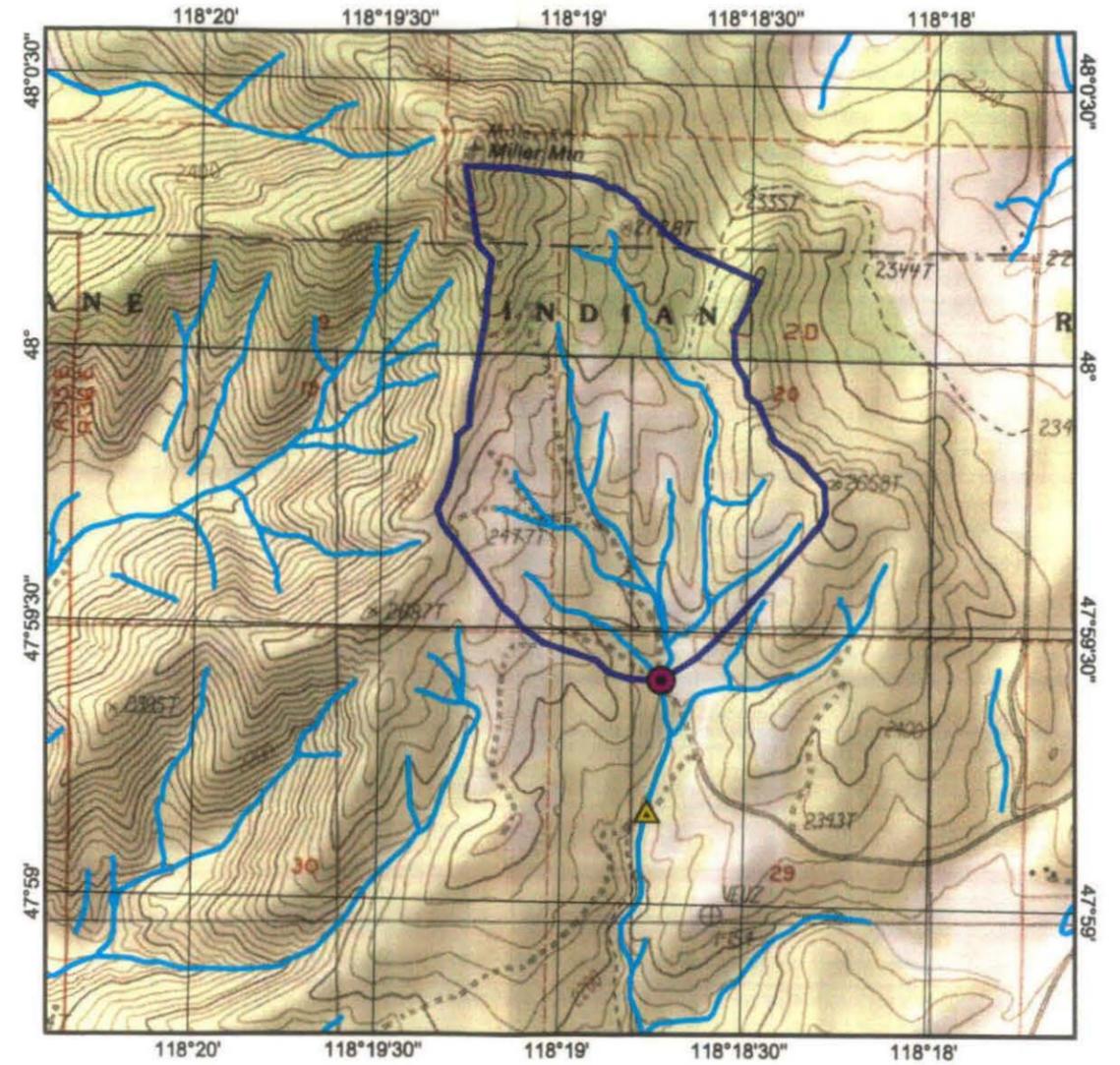
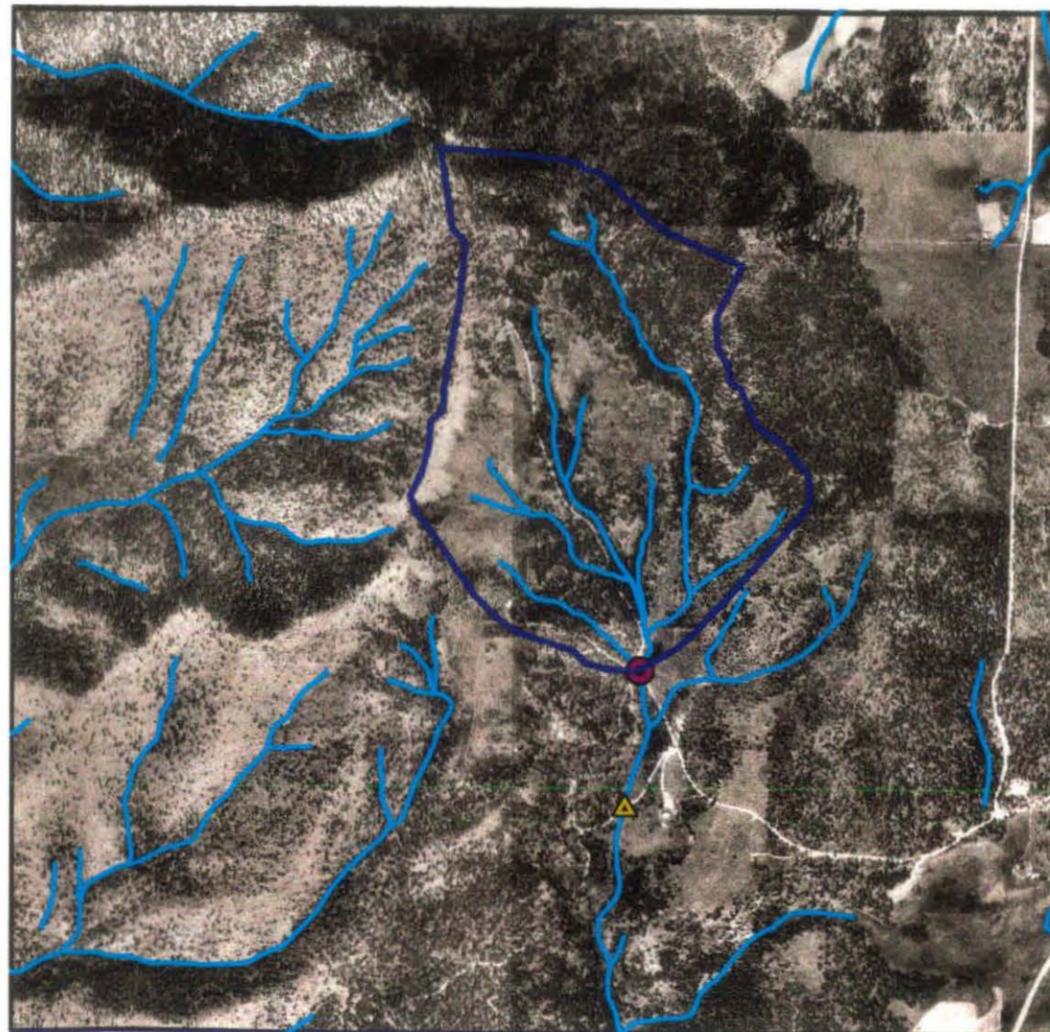
Segment Number	Distance from Start (m)	GPS coordinates (optional)	Flow Category	Channel Category	Channel Bankfull Width	Channel Bankfull Depth	Upstream gradient (%)	Downstream gradient (%)	Dominant Substrate	Associated Feature at flow change	Flow categories of side trib not on main thread	Channel categories of side trib not on main thread	Notes (see a back page)
1	0-30		D	DC	1.5	.8	9	9	C				1
2	30-60		FW	DC	1.5	.7	6	5	F	SP			2-LB
	41									SP			RB
3	60-90		FW	DC	3/2	1.7	1.5		F	WL			
4	90-120		FW	DC	3 1/2	1.9	6		F	WS/WL			10/11/01
5	120-150		FW	DC	1.9	.6	3	4	F	WL			
6	150-180		FW	DC	.5	.3	8	8	F	WL			
7	180-210		D	DC	.6	.5	To 2TH	2	F				7

Codes for Flow Categories: FW = Flowing Water, SW = Standing Water, FP = Flowing Pocket Water, SP = Standing Pocket Water, D = Dry, U = Unknown, O = Obscured.  
 Codes for Channel Categories: DC = Defined Channel, PDC = Poorly Defined Channel, MC = Modified Channel, PC = Piped Channel, CC = Covered Channel, NC = No Channel



# Castle Rock Creek

Castle Rock Creek  
 Date of Survey 10/19/01  
 WAU: OR-A-PAK-EN Creek  
 WMUS: N/A  
 Quad: Fort Spokane  
 T 29 R 36 E S 29  
 47.9900400 -118.3133300  
 Basin Acreage: 374.522



1:24000



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**2001 Perennial Initiation Point Survey**

- Basin Boundary

**Points**

- PIP
- Road Access Pt.
- Spring
- Start Survey
- Survey End Point

**Form B: Perennial Stream Survey Field Measurements**

Note: Record all Measurements in metric units

WAU: WRIA 55 Deer Creek	Stream Name: Cottonwood Cr.	T/R/S: T28N/R44E/16	Topoquad name: Chattaroy
Organization: Spokane Tribe Timber, Fish, and Wildlife/UCUT	Description of start point (GPS optional): From Hwy2 travel North; Turn Right Elk Chattaroy Rd; Turn Right Deer Creek Road travel 2miles to 10915 Deer Cr. Road.		Landowner: Ida Ostby 10915 Deer Cr. Rd. Chattaroy, WA. 99003
Site Number: 55-2	Date: 09/13/01	Recorder(s): Pete Peterson., Todd Baldwin, Sondra Collins, Cathy Cochran	
Precipitation (in mm) for the 2 days prior to survey		Survey type: Main thread or Total Tributary	Tributary Number: 1

Segment Number	Distance from Start(m)	GPS coordinates (optional)	Flow Category	Channel Category	Channel Bankfull Width	Channel Bankfull Depth	Upstream gradient (%)	Downstream gradient (%)	Dominant Substrate	Associated Feature at flow change	Flow category of side trib not on main thread	Channel categories of side trib not on main thread	Notes
1	0	F1	D	DC	2.5	0.4	1	1	S				F1 start PIP dry N5377869.901m
2	30		D	DC	1	0.3	4	4	G				E480908.367m (UTM NAD83 Zone 11N
3	60		D	DC	1.2	0.3	1	1	G				
4	90		D	DC	1.6	0.4	1	1	G				
5	120		D	DC	1.5	0.5	2	1	G				
6	150		D	DC	1.5	0.3	1	3	G				F2 Associated Forested Wetland >20 acres LB
7	180		D	DC	2	0.4	1	1	G	WT			
8	200	F2	SW	DC	2.6	0.46	1.5	1.5	G				F3 Start PIP wet N5307710.001m E489832.011m UTM NAD83 Zone 11N



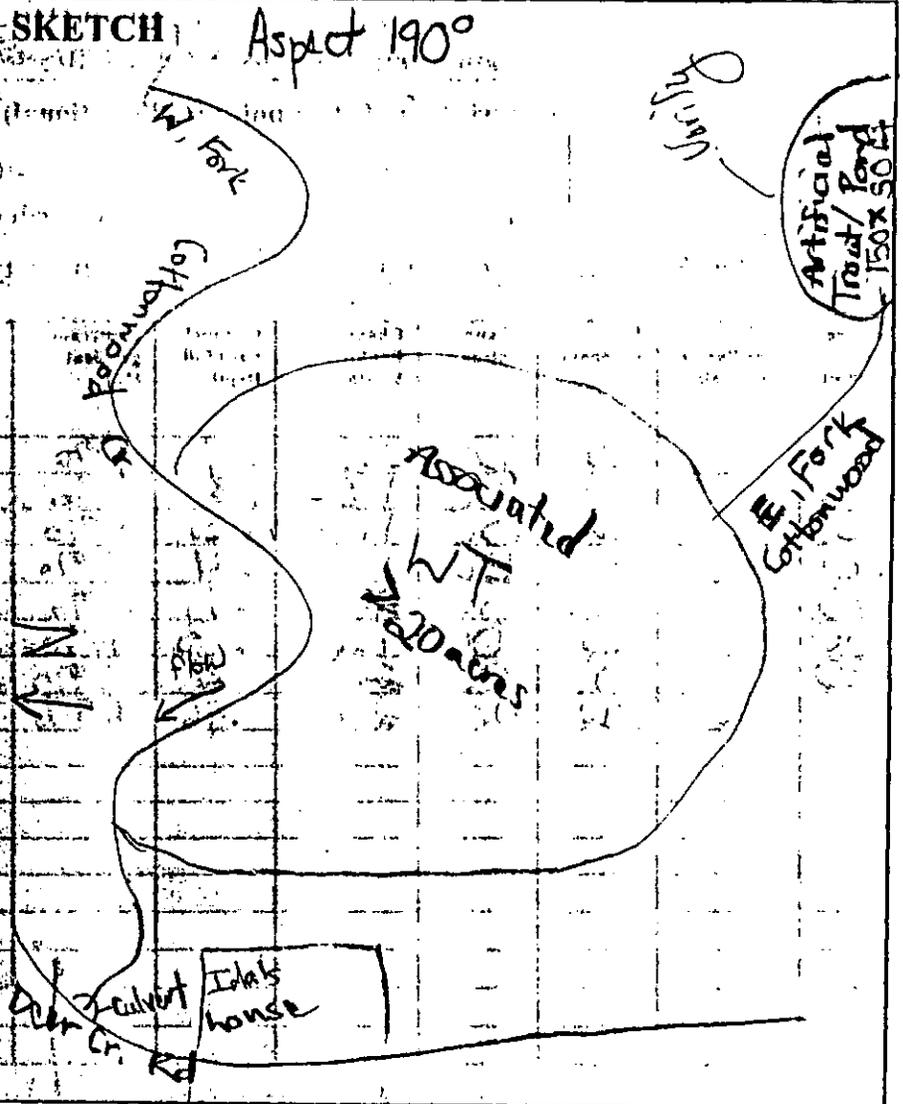


Back of Form B

NOTES

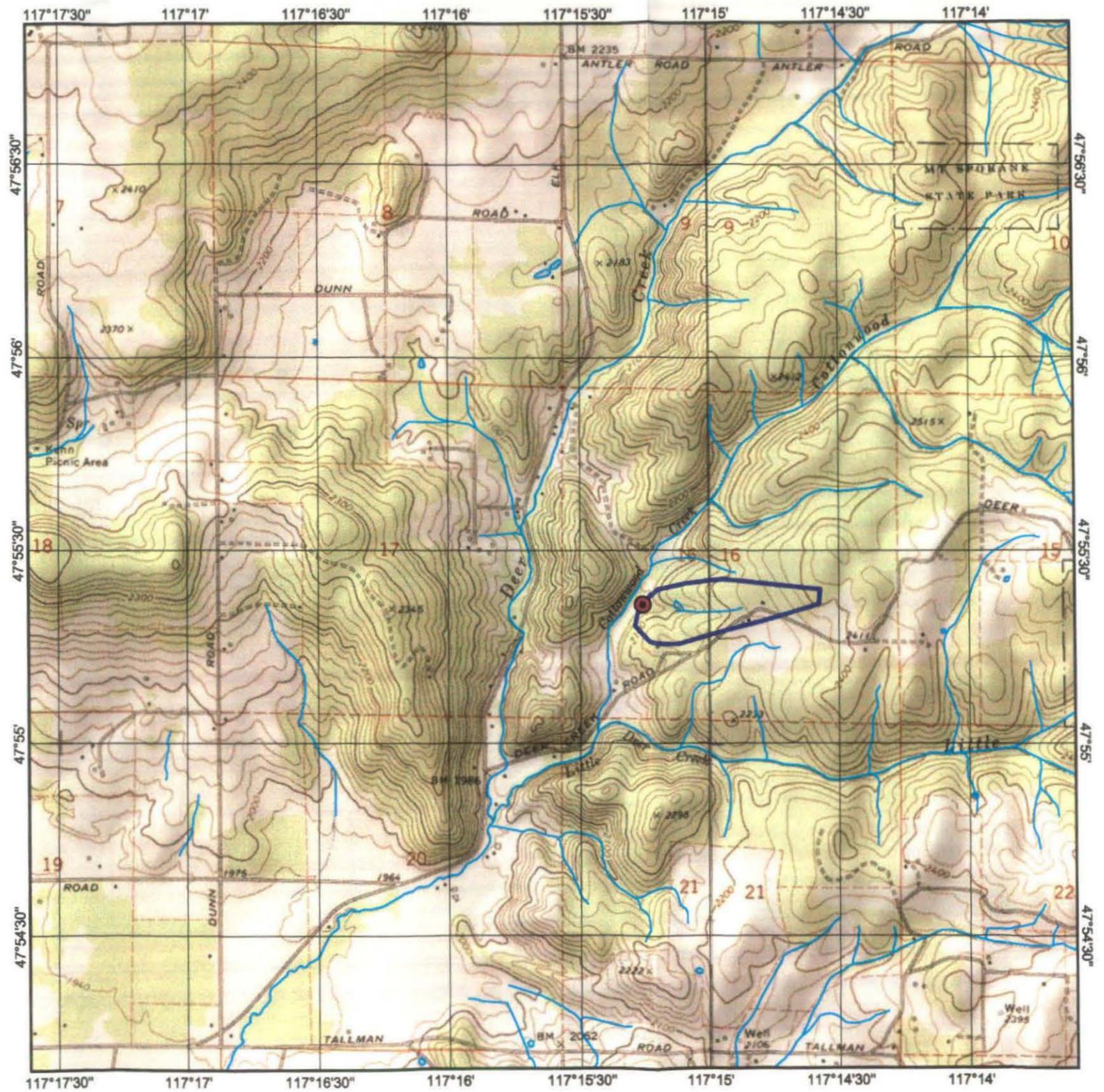
E1 - Associated Wetlands 20 acres LB  
 E3 - N530711000/m E480832.011/m UTM NAD83  
 End: PIP day, start of 200m, Zone 11N  
 PIP SWIT: 140

SKETCH



# Cottonwood Creek

Cottonwood Creek  
 Date of Survey: 9/13/01  
 WAU: Deer Creek  
 WMUS: N/A  
 Quad: Chattaroy  
 T 28 R 44 E S 16  
 N5307710.001 E480832.011  
 Basin Acreage: 44.406  
 PIP Surveyed by Spokane Tribe of Indians



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0 0.5 1 Miles



1:24000

2001 Perennial Initiation Point Survey

-  Basin Boundary
-  PIP



## Form B: Perennial Stream Survey Field Measurements

**Note: Record all Measurements in metric units**

Spokane Tribe  
WSA: Chamokane Creek

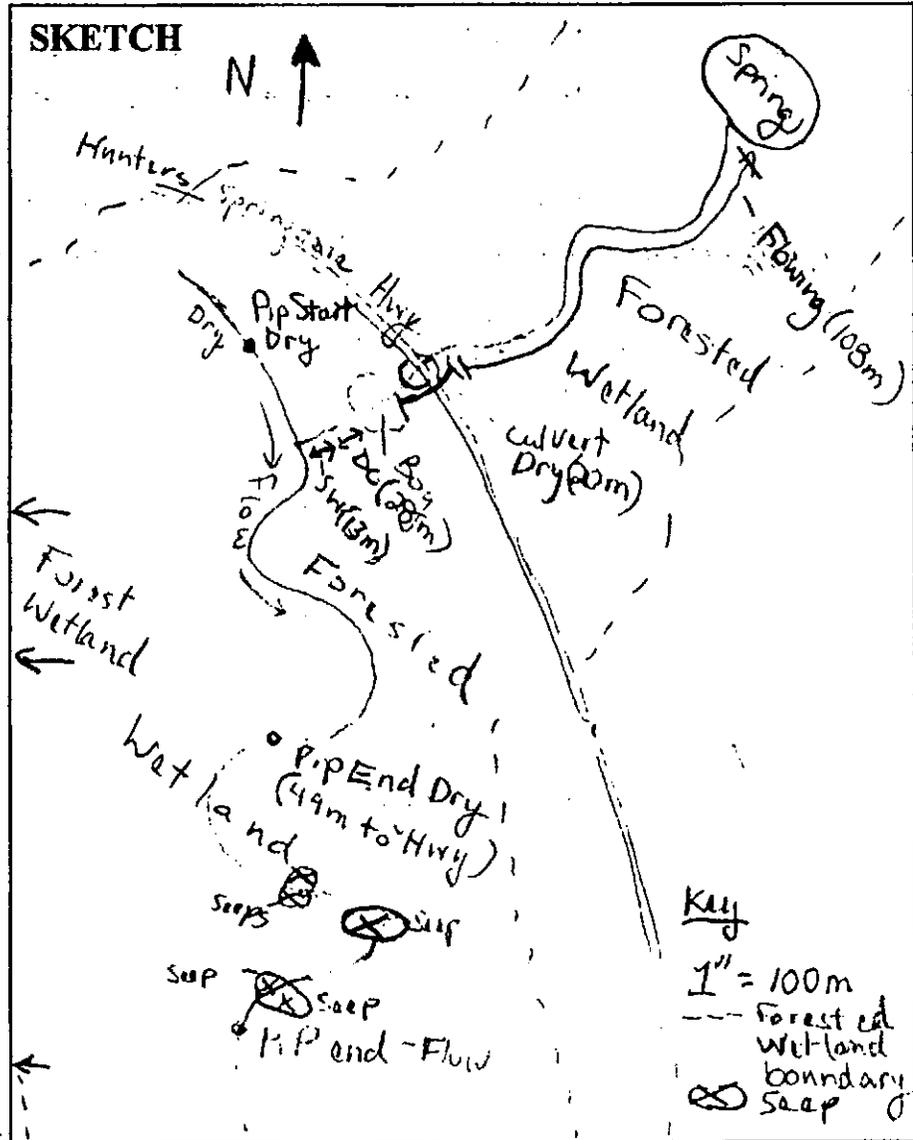
WAU: <u>Camas Valley</u>	Stream Name: <sup>NIP Chamokane</sup> <u>Creek</u>	T/R/S: <u>30N 38E 15</u>	Topoquad name: <u>Adams MT. 1:24,000</u>
Organization: <u>WRIA 5421</u>	Description of start point (GPS optional): <sup>Trail</sup> <u>15.8 miles West along Hunters/Springdale Road to site area.</u>		Landowner: <u>Boise Cascade</u>
Site Number: <u>WRIA 54-S1</u>	Date: <u>9/27/01</u>	Recorder(s): <u>Cathy &amp; Sondra Collins</u>	
Precipitation (in mm) for the 2 days prior to survey		Survey type: <u>(Main thread or Total Tributary)</u> Tributary Number: <u>1</u>	

Segment Number	Distance from Start (m)	GPS coordinates (optional)	Flow Category	Channel Category	Channel Bankfull Width	Channel Bankfull Depth	Upstream gradient (%)	Downstream gradient (%)	Dominant Substrate	Associated Feature at flow change	Flow categories of side trib not on main thread	Channel categories of side trib not on main thread	Notes (see back page)
1	0	F6	D	PDC	1.3	.1	14	14	F	WT			Forested WT
2	30	F5	D	PDC	2.6	.25	10	12	F	WT			" "
3	31	F3&4	SW							SP	SW		" "
4	60		D	DC	1.0	.1	13	12	F	SE			" "
5	90		D	PDC	.5	.15	13	14	F	WT	SE, WS		F3
6	120		D	PDC	.5	.1	18	11	F	WT			Forested WT
7	130		D	DC	.8	.2	13	14	F	WT			" "
8	160		D	DC	1.0	.25	16	14	F	WT			F2
9	200	F1	D	DC	2.8	.25	16	8	F	SE, WT			
10	230	F7	SW	DC	1.3	.4	10	9	F	SE, WT	SE		F7
11	260		FW	DC	2.2	.4	8	8	G				
12	290		FW	DC	1.8	.5	8	8	F	SE			F8
13	320		FW	DC	1.3	.4	8	7	G				
14	350		FW	DC	1.1	.4	6	6	F	SE			F9
15	380		FW	DC	1.2	.3	7	7	G				
	410	END											F10

Codes for Flow Categories: FW = Flowing Water, SW = Standing Water, FP = Flowing Pocket Water, SP = Standing Pocket Water, D = Dry, U = Unknown, O = Obscured.  
Codes for Channel Categories: DC = Defined Channel, PDC = Poorly Defined Channel, MC = Modified Channel, PC = Piped Channel, CC = Covered Channel, NC = No Channel

Back of Form B

NOTES
F1 UTM NAD83 N5327250.358, E424619.22m
F2 >20acre forested wetland extending beyond >100ft LB+RB and upstream and downstream of PIP start and end.
F3 New segment break - SW 13m; 320° LB 28m dry to associated bog (10x10m) to DC road culvert (20m) following 108m continuous flow to LARGE SPRING!
F4 Old historic road bed augmenting channel RB.
F5 - LMZ though ephemeral flow.
F6 UTM NAD83 zone 11N - N5327226.797m E 424438.400m
F7 Seep/Moss-Lichen Wetland LB and RB 17m x 18m.
F8 Seep RB 1m and Seep LB 11x17m.
F9 Seep RB 1m and seep LB 1x9m
F10 PIP end of 200m continuous flow.



Form B: Perennial Stream Survey Field Measurements

Note: Record all Measurements in metric units

WAU: WRIA 54 Camas Valley Organization: Spokane Tribe Timber, Fish, and Wildlife/UCUT Site Number: 54-1	Stream Name: MF Chimokane Description of start point (GPS optional): from Springdale, 15.8 mi. west along Hunter/Springdale Road to site area.	T/R/S: T30N/R38E/15	Topoquad name: Adams Mt. 1:24K Landowner: Boise Cascade
Date: 09/27/01		Recorder(s): Sondra Collins, Cathy Cochran	
Precipitation (in mm) for the 2 days prior to survey 1:		Survey type: Main thread or Total Tributary Tributary Number: 1	

Segment Number	Distance from Start(m)	GPS coordinates (optional)	Flow Category	Channel Category	Channel Bankfull Width	Channel Bankfull Depth	Upstream gradient (%)	Downstream gradient (%)	Dominant Substrate	Associated Feature at flow change	Flow category of side trib not on main thread	Channel categories of side trib not on main thread	Notes
1	0	F6	D	PDC	1.3	0.1	14	14	F	WT			Forested Wetland (FW)
2	30	F5	D	PDC	2.6	0.25	10	12	F	WT			FW continuing
3	31	F3 & F4	SW	DC						SP	SW		FW continuing
4	60		D	DC	1	0.1	13	12	F	SE			FW continuing
5	90		D	PDC	0.5	0.15	13	14	F	WT	SE, WS		F3, FW CONTINUING
6	120		D	PDC	0.5	0.1	12	11	F	WT			FW continuing
7	130		D	DC	0.8	0.2	13	14	F	WT			FW continuing
8	160		D	DC	1	0.25	16	14	F	WT			F2
9	200	F1	D	DC	2.8	0.25	6	8	F	SE, WT			
10	230	F7	SW	DC	1.3	0.4	10	9	F	SE, WT	SE		F7
11	260		FW	DC	2.2	0.4	8	8	G				
12	290		FW	DC	1.8	0.5	8	8	F	SE			
13	320		FW	DC	1.3	0.4	8	7	G				
14	350		FW	DC	1.1	0.4	6	6	F	SE			
15	380-410		FW	DC	1.2	0.3	7	7	G				END



## Form B: Perennial Stream Survey Field Measurements

**Note: Record all Measurements in metric units**

Spokane Tribe  
WSA: Chamokane Creek

WAU: <u>Camas Valley</u>	Stream Name: <sup>N14 Chamokane</sup> <u>Creek</u>	T/R/S: <u>30N/38E/15</u>	Topoquad name: <u>Adams MT. 1:24,000</u>
Organization: <u>WRIA 5421</u>	Description of start point (GPS optional): <sup>Travel</sup> <u>15.8 miles S. West along Hunters/Springdale Road to site area.</u>		Landowner: <u>Borise Cascade</u>
Site Number: <u>WRIA 54-S1</u>	Date: <u>9/27/01</u>	Recorder(s): <u>Cathy &amp; Sonda Collins</u>	
Precipitation (in mm) for the 2 days prior to survey:		Survey type: <u>Main thread</u> or Total Tributary Tributary Number: <u>1</u>	

Segment Number	Distance from Start (m)	GPS coordinates (optional)	Flow Category	Channel Category	Channel Bankfull Width	Channel Bankfull Depth	Upstream gradient (%)	Downstream gradient (%)	Dominant Substrate	Associated Feature at flow change	Flow categories of side trib not on main thread	Channel categories of side trib not on main thread	Notes (see a back page)
1	0	F6	D	PDC	1.3	.1	14	14	F	WT			Forested WT
2	30	F5	D	PDC	2.6	.25	10	12	F	WT			" "
3	31	F3&4	SW							SP	SW		" "
4	60		D	DC	1.0	.1	13	12	F	SE			" "
5	90		D	PDC	.5	.15	13	14	F	WT	SE, WS		F3
6	120		D	PDC	.5	.1	12	11	F	WT			Forested WT
7	130		D	DC	.8	.2	13	14	F	WT			" "
8	160		D	DC	1.0	.25	16	14	F	WT			F2
9	200	F1	D	DC	2.8	.25	16	8	F	SE, WT			
10	230	F7	SW	DC	1.3	.4	10	9	F	SE, WT	SE		F7
11	260		FW	DC	2.2	.4	8	8	G				
12	290		FW	DC	1.8	.5	8	8	F	SE			F8
13	320		FW	DC	1.3	.4	8	7	G				
14	350		FW	DC	1.1	.4	6	6	F	SE			F9
15	380		FW	DC	1.2	.3	7	7	G				
	410	END											F10

Codes for Flow Categories: FW = Flowing Water, SW = Standing Water, FP = Flowing Pocket Water, SP = Standing Pocket Water, D = Dry, U = Unknown, O = Obscured.  
Codes for Channel Categories: DC = Defined Channel, PDC = Poorly Defined Channel, MC = Modified Channel, PC = Piped Channel, CC = Covered Channel, NC = No Channel

Back of Form B

NOTES

F1 UTM NAD83 N5327250.358, E424619.22m

F2 >20 acre forested wetland extending beyond >100ft LB+RB and upstream and downstream of PIP start and end.

F3 New segment break. SW 13m; 320° LB 28m dry to associated bog (10x10m) to DC road culvert (20m) following 100m continuous flow to LARGE SPRING!

F4 Old historic road bed augumenting channel RB.

F5 - LMZ though ephemeral flow.

F6 UTM NAD83 zone 11N-N5327226.797m

E 424438.400m

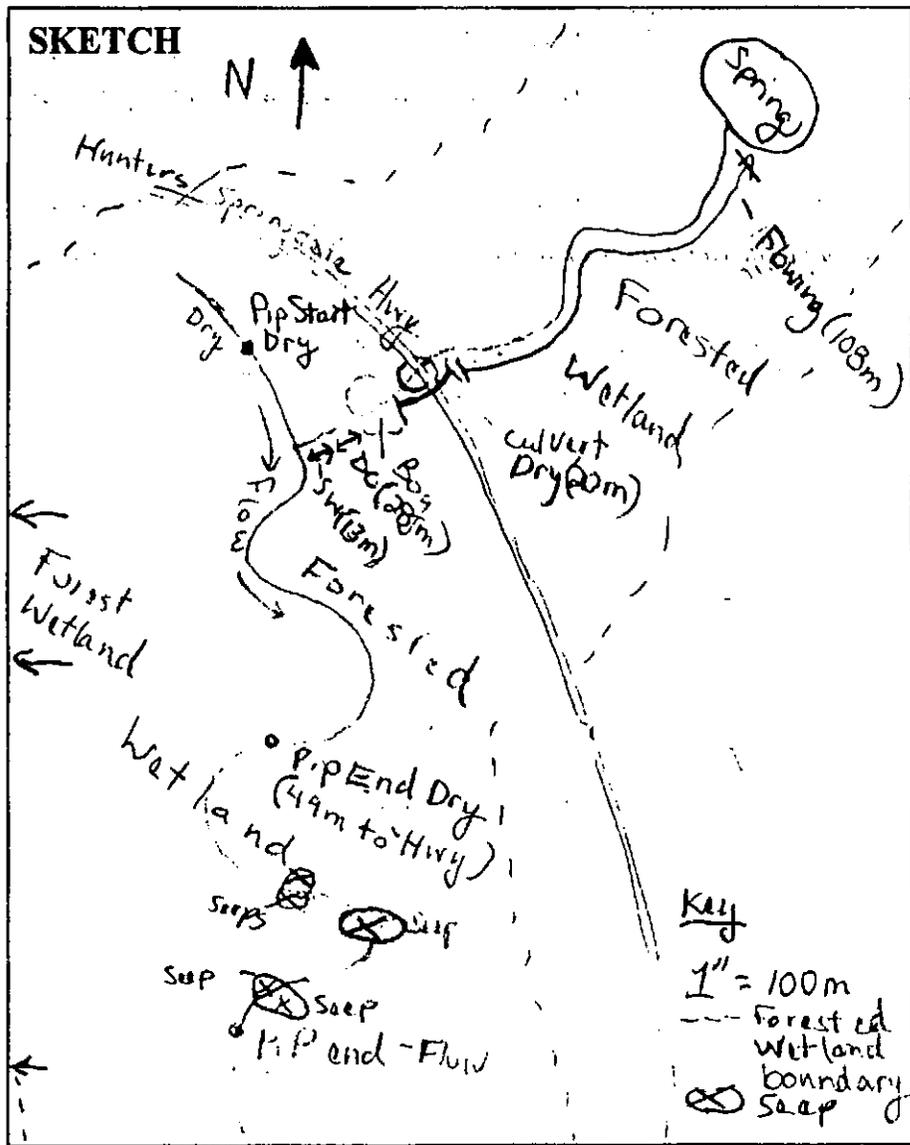
F7 Seep/Moss-Lichen Wetland LB and RB 17m x 18m.

F8 Seep RB 1m and Seep LB 1x7m

F9 Seep RB 1m and seep LB 1x9m

F10 PIP end of 200m continuous flow.

SKETCH



# Chamokane Creek

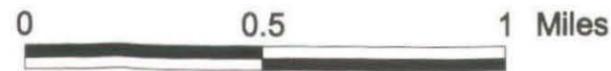
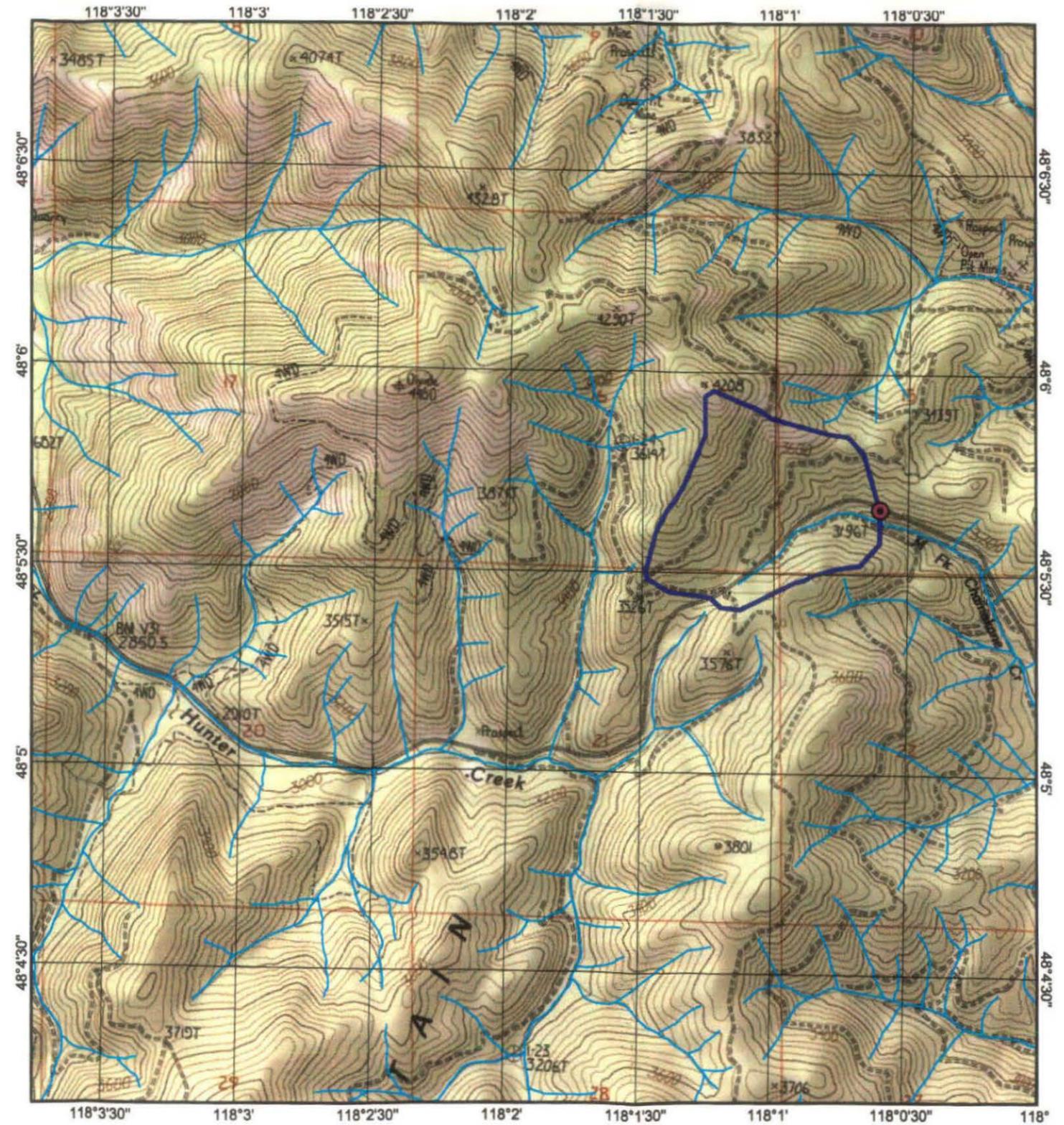
Chamokane  
 Date of Survey: 9/27/01  
 WAU: Camas Valley  
 WMUS: N/A  
 Quad: Adams Mountain  
 T 30 R 38 E S 15  
 N5327049.336 E424699.084  
 Basin Acreage: 178.030  
 PIP Surveyed by Spokane Tribe of Indians



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January 2002



1:24000

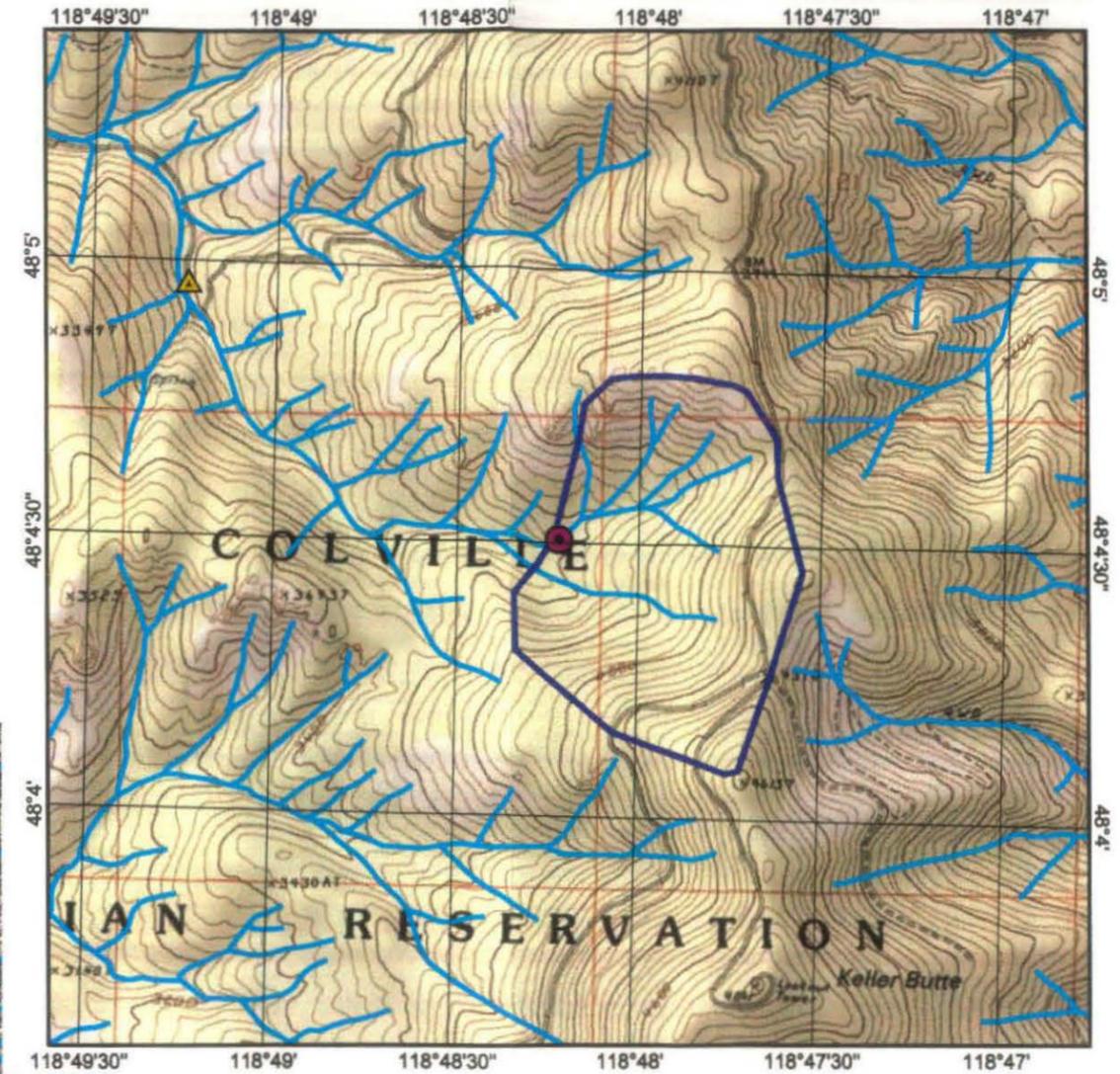
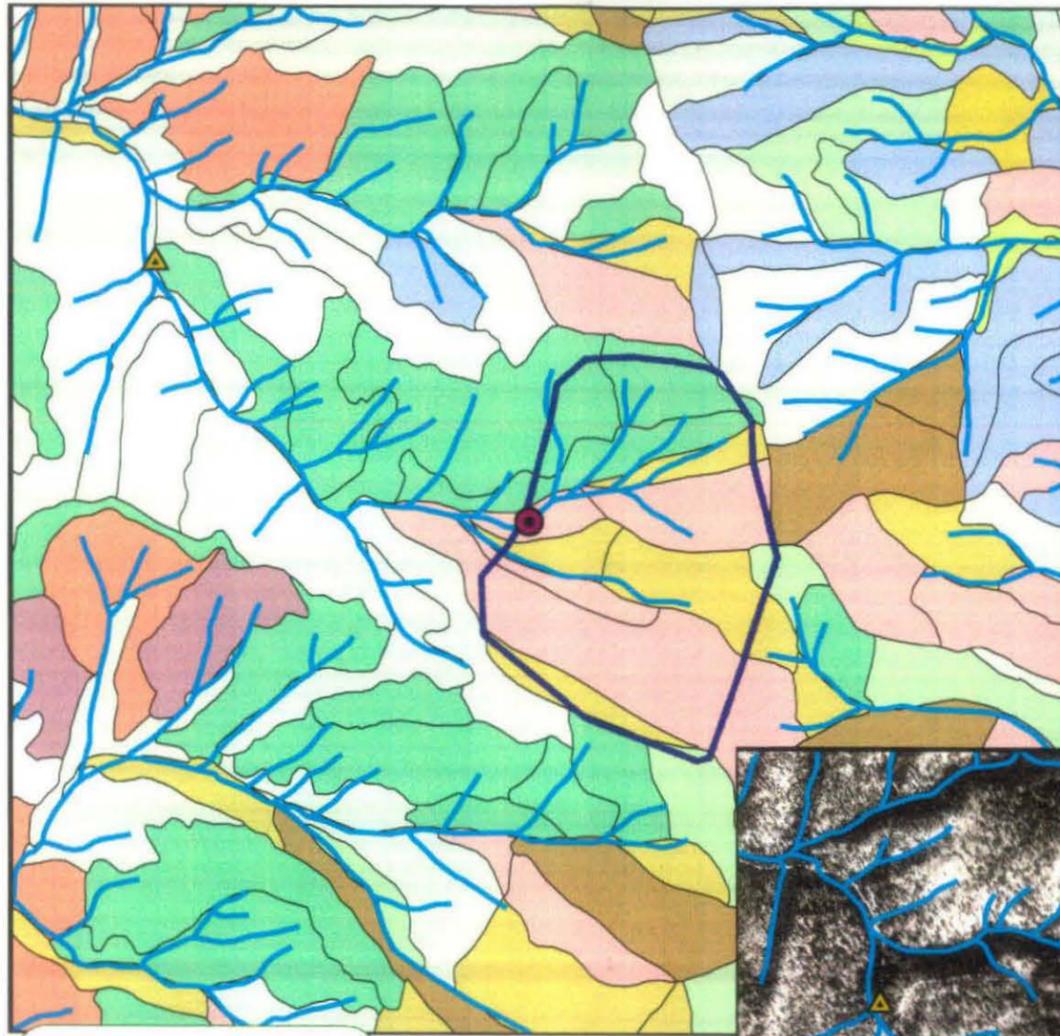
2001 Perennial Initiation Point Survey

-  Basin Boundary
-  PIP



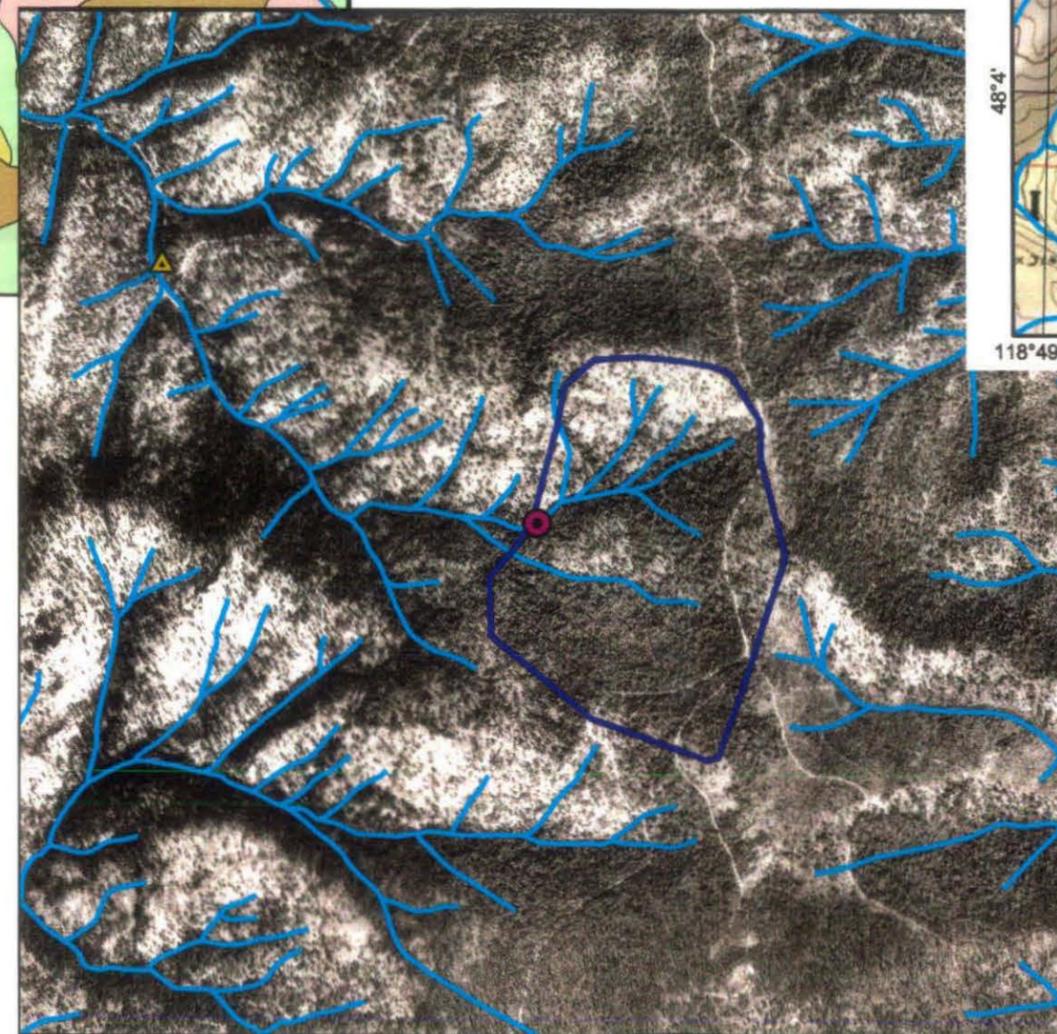
# Joe Moses Creek

Joe Moses Creek  
 Date of Survey: 5/11/01  
 WAU: Little Nespelem  
 WMUS: Joe Moses Creek  
 Quad: Keller Butte  
 T 30 R 32 E S 29  
 48.07495415 -118.8048703  
 Basin Acreage: 232.215



**Soil Habitat**

[Color]	ABGR/LIBO
[Color]	ABLA/LIBO
[Color]	DECIDUOUS
[Color]	PIPO/AGSP
[Color]	PIPO/FEID
[Color]	PIPO/PUTR,AGSP
[Color]	PIPO/PUTR,FEID
[Color]	PIPO/SYAL
[Color]	PIPO/SYAL,WET
[Color]	PSME/CARU
[Color]	PSME/CARU,ARUV
[Color]	PSME/FEID
[Color]	PSME/PHMA
[Color]	PSME/PHMA,ARCO
[Color]	PSME/PHMA,PAMY
[Color]	PSME/SPBE
[Color]	PSME/SYAL
[Color]	PSME/SYAL,WET
[Color]	PSME/SYAL-LOW



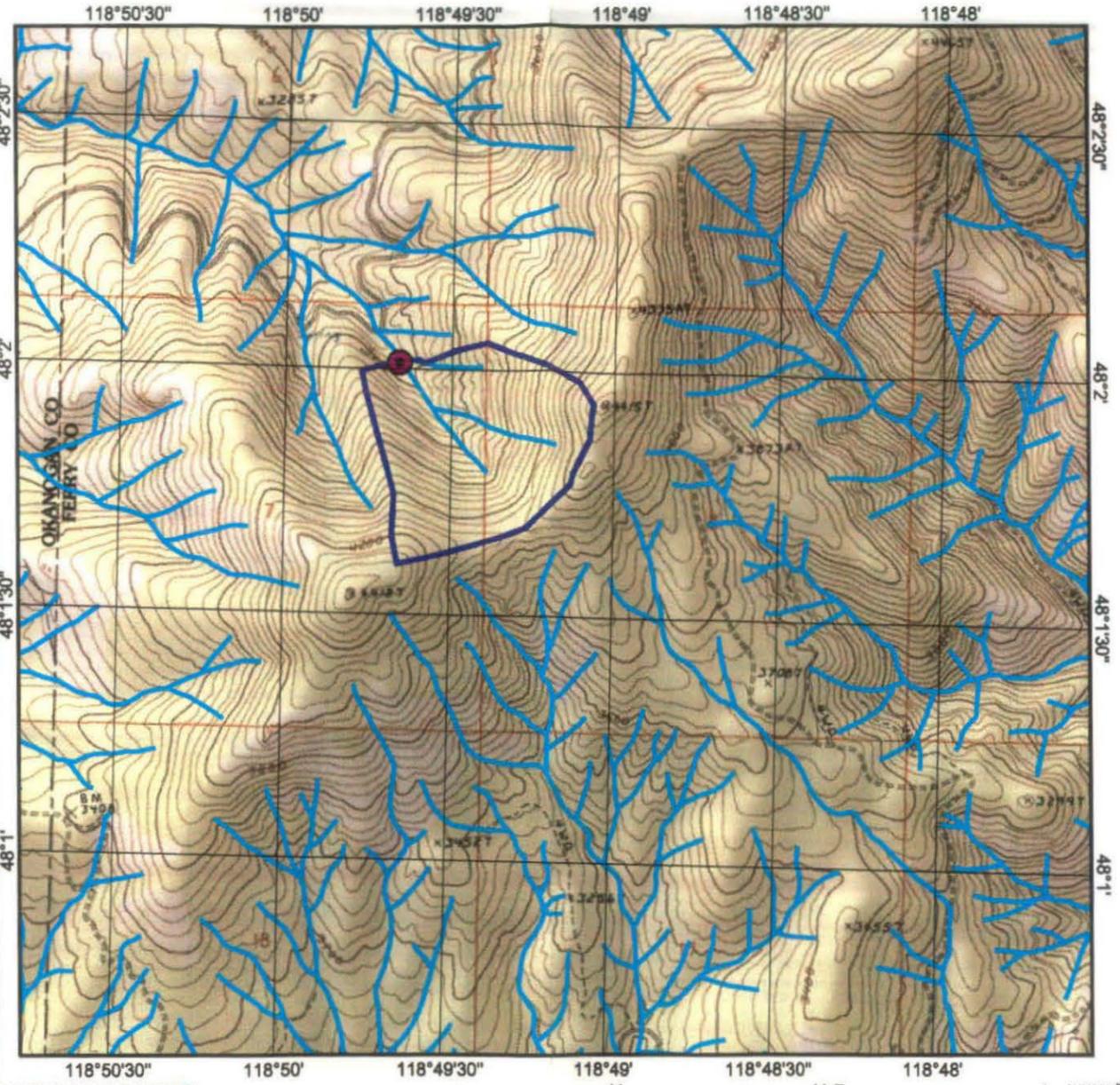
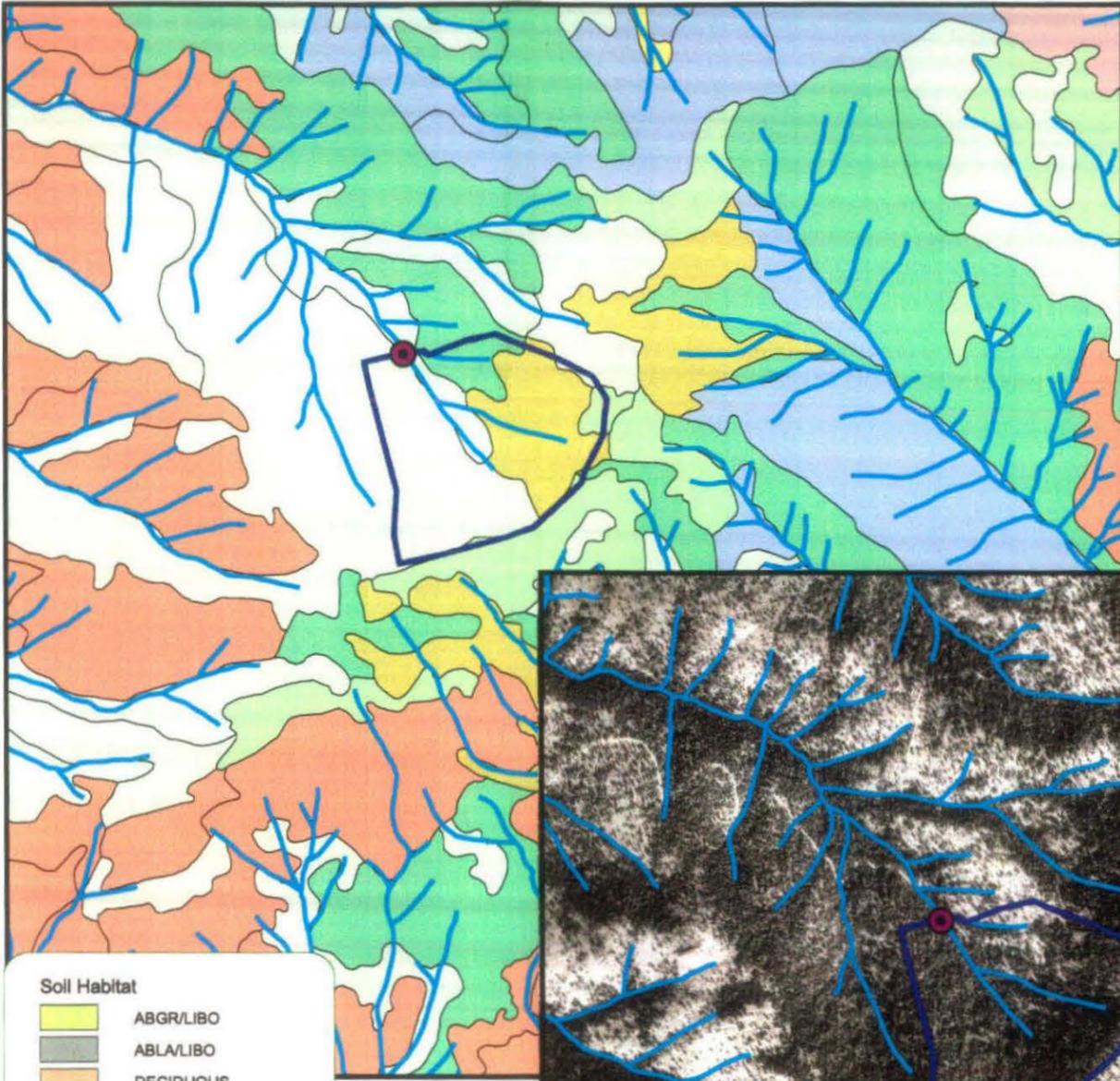
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 January 2002

**2001 Perennial Initiation Point Survey**

- Basin Boundary
- Points**
  - PIP
  - Road Access Pt.
  - Spring
  - Start Survey
  - Survey End Point

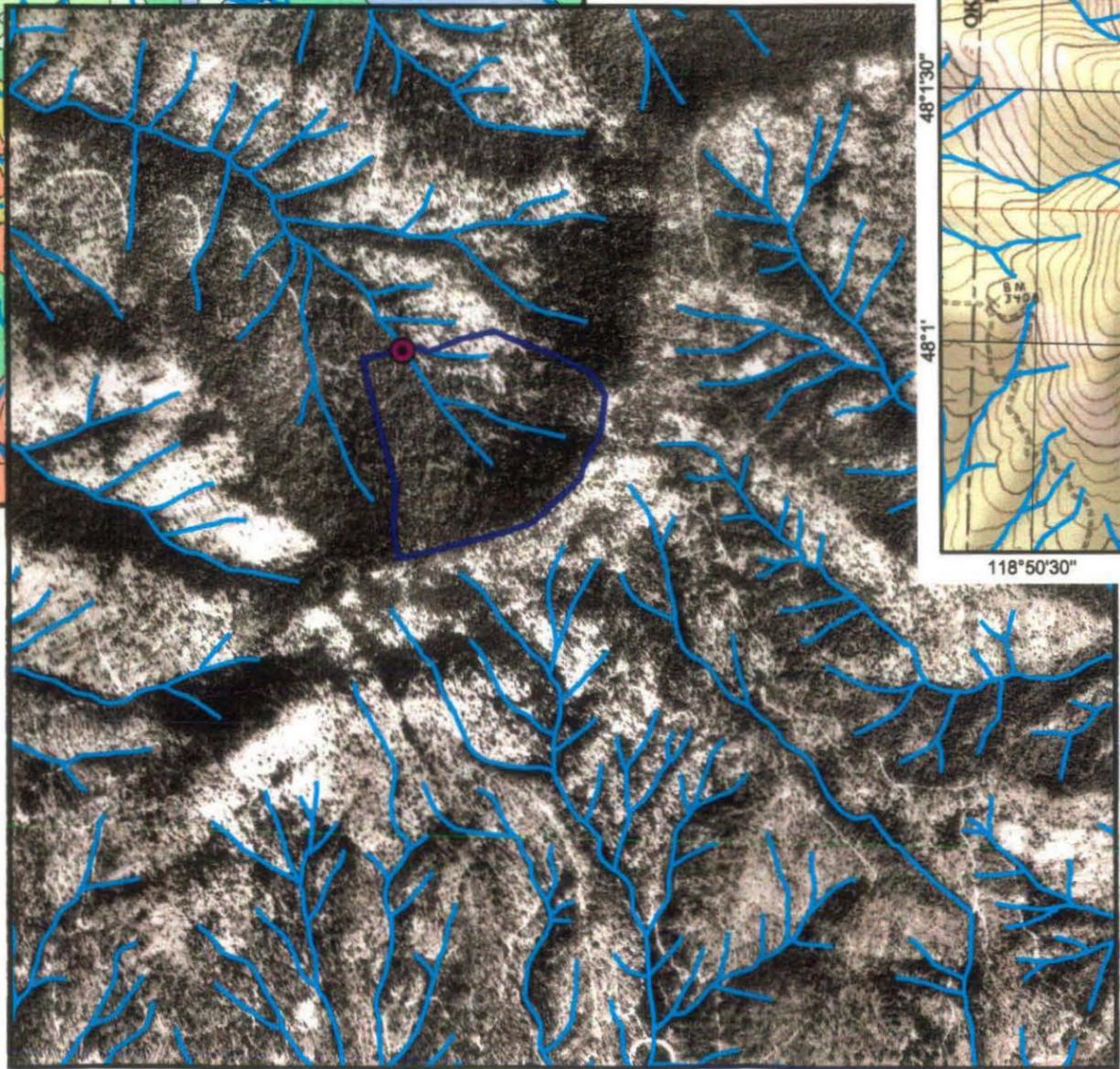
# Buffalo Creek

Buffalo Creek  
 Date of Survey: 5/11/01  
 WAU: Buffalo Lake  
 WMUS: Buffalo Creek  
 Quad: Keller Butte  
 T 29 R 32 E S 07  
 48.03341210 -118.8288492  
 Basin Acreage: 126.014

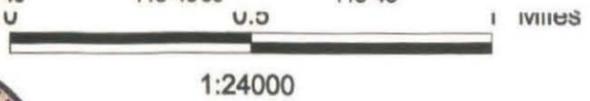


**Soil Habitat**

[Light Green]	ABGR/LIBO
[Light Blue]	ABLA/LIBO
[Light Orange]	DECIDUOUS
[Light Green]	PIPO/AGSP
[Light Orange]	PIPO/FEID
[Light Purple]	PIPO/PUTR,AGSP
[Light Orange]	PIPO/PUTR,FEID
[Light Purple]	PIPO/SYAL
[Light Green]	PIPO/SYAL,WET
[Light Orange]	PSME/CARU
[Light Green]	PSME/CARU,ARUV
[Light Green]	PSME/FEID
[Light Orange]	PSME/PHMA
[Light Green]	PSME/PHMA,ARCO
[Light Blue]	PSME/PHMA,PAMY
[Light Purple]	PSME/SPBE
[Light Orange]	PSME/SYAL
[Light Green]	PSME/SYAL,WET
[Light Green]	PSME/SYAL-LOW



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 January 2002



**2001 Perennial Initiation Point Survey**

- [Blue Outline] Basin Boundary
- Points**
  - [Red Dot] PIP
  - [Yellow Triangle] Road Access Pt.
  - [Blue Circle] Spring
  - [Green Circle] Start Survey
  - [Orange Circle] Survey End Point