

12-4-2009

## Ex. 280-US-429

R. Nawa  
*Oregon Department of Fish and Wildlife*

C. Huntington  
*Oregon Department of Fish and Wildlife*

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Stream: Sprague River  
Tributary to: Williamson River  
Reach: 6 (Harris)  
Survey Type: ODFW Stream Habitat  
Access: Canoe  
Start: T34S-R09E-S30NE  
Quad: S'Ocholis Canyon  
Survey Date: 24 September 04  
Surveyors: R. Nawa K. Hartzell  
Report: R. Nawa, C. Huntington  
Distance Surveyed: 9.9 km

#### Land Use

Land use is light grazing and rural residential. Mr. Harris told us that diking and destruction of willows in the upper basin during the 1950s by Army Core of Engineers led to increased flooding in the lower Sprague and channel widening. He does not think the river has downcut or become incised.

#### Valley and Stream Channel Geometry

The 0.02 percent gradient river was in a valley about 5 km wide. Anastomosing stream channels and a major horseshoe bend (Map) created very high sinuosity (4.7). Low terraces sloped abruptly to constrain narrow floodplains adjacent to the 34 m wide river. The channel showed evidence of downcutting, widening, and narrowing at various locations. The channel appeared to be downcutting in a hardened clay substrate at pool unit 33. Discrete blocks of clay (15-60 cm) were being eroded as the resulting pool scoured (Photo 412). A side channel, paralleling pool unit 33, was narrowing due to lateral accretion (deposition) and new growth of vegetation (units 34,35,36; Photo 415). Apparently, as meander cutoffs deepen (unit 33), abandoned side channels fill with sediment and narrow. Extensive vertical eroding streambanks at unit 27 and other locations suggests channel widening. Lateral migration of the channel may appear to mimic both channel widening and downcutting. The presence of flow in secondary channels during low flow periods, lack of exposed hard claypan (bedrock) in riffles, and numerous mid channel bars suggests the channel is not presently downcutting.

#### Substrate

The streambed was 95 percent sand and organics and two percent bedrock. About 3 percent of the streambed was scoured to expose a hardened clay that functioned similar to bedrock. Exposed clay hardpan was found in pools as expected but not in riffles.

#### Spawning Gravel

About 85 m<sup>2</sup> of potentially suitable gravel was found at riffles associated with mid-channel bars at units 24 and 26 (7 m<sup>2</sup>/km). These mid-channel bars are not always shown on USGS maps, but would be visible on aerial photos. Fine gravel was found in riffles associated with mid-channel bars and islands (units 3,5,7, 11,19,21, Map). Gravel at these locations was often less than 10 mm and was judged not suitable for spawning salmon and steelhead (Photo 402). At unit 11 the median gravel size (D50) was 4-8 mm (Wolman Pebble Count; Photos 406,407). About 600 m<sup>2</sup> of fine gravel that was judged not suitable for salmon and steelhead had been disturbed in places indicating attempted fish reproduction, possibly by centrarchids or lamprey species.

P 402

Riparian Vegetation

Shade was only 4 percent because sagebrush and grass dominate the riparian zone. Riparian vegetation was inadequate to stabilize streambanks. About 25 percent of the streambanks were eroding. Instability of streambanks is also demonstrated by the low percent of undercut streambank (1% undercut).

Wood

The reach had only 10 pieces of wood (0.1 pieces/100m) because streambanks lack tree cover.

Rearing and Adult holding Habitat

Due to very low stream gradient, the reach was dominated by long scour pools (53%) and glides (38%). Pools were segregated from glides based on maximum depths that usually exceeded 2 m. Residual pool depths averaged 1.7 m. Glides averaged about 0.9 m deep. Emergent aquatic vegetation provides cover for fish.

Stream Temperature

Maximum spot stream temperature was 15 degrees C at 1435 pdt.

Photo 402 Unit 5  
Gravel too fine for  
salmon. Disturbance  
indicates use by lampreys  
or centrarchids for  
spawning.

Photo 407 Unit11  
Riffle location for  
Wolman Pebble  
Count.

Photo 406 Unit 11.  
Median gravel size was  
4-8mm, too small for  
spawning salmon and  
steelhead

Photo 412 Unit 27  
Chunks of clay  
hardpan calving off  
from streambed to  
deepen pool.

Photo 415 Unit 35  
Lateral accretion  
(deposition) in side  
channel being  
colonized by willows.

Photo 416 Unit 39  
Breeched diversion  
dam now replaced  
with pumps.



both springs are on Case's place  
Kankuan is in better condition

End HAMS SUMMIT  
Harris' Place



(Start Summit  
Harris

Sprague R.  
~~Harris~~

HAMS



STREAM: Sprague R. (Amnis) DATE: 9/24/04 ESTIMATOR: Hartze 11  
 Downstream Survey

REACH #	UNIT #	UNIT TYPE	CHANL TYPE	% FLOW	UNIT LENGTH	UNIT WIDTH	SLOPE %	SHADE (0-90)		ACTIVE CHANNEL		FLOOD PRONE		TERRACE		NOTE	
								LEFT	RIGHT	HT.*	WIDTH	HT.	WIDTH	HT.	WIDTH		
1	GL	00	00	100	250	41	0.5	3	1	1.3	43	2.6	40	3.2	57	12	
2	LP	00	00	100	120	42	0.0	3	1								
3	RL	00	00	100	60	53	0.5	3	2								
4	GL	00	00	100	210	43	0.5	2	2								
5	RL	00	00	100	20	51	0.5	2	3								
6	GL	00	00	100	250	32	0.5	2	2								
7	GL	00	00	100	250	33	0.5	4	2								
8	GL	00	00	100	250	31	0.5	2	2								
9	GL	00	00	100	250	30	0.5	2	2								
10	LP	00	00	100	550	31	0.0	1	2	1.4	32	2.8	39	3.2	43	8	
11	RL	00	00	100	60	39	0.5	1	1								
12	LP	00	00	100	700	36	0.0	2	1								
13	RL	00	00	100	115	40	0.5	2	1								
14	GL	00	00	100	250	28	0.5	2	1								
15	SP	00	00	100	310	30	0.0	2	1								
16	GL	00	00	100	250	40	0.5	2	3								
17	LP	01	01	70	930	37	0.0	2	3								Kamkaun Spring
18	GL	11	11	30	42	22	0.5	15	6								
19	RL	01	01	60	250	40	0.5	16	2	0.8	40	1.6	41	2.0	43	24	RT Terr. Only
20	GL	02	02	40	210	13	0.5	3	2								
21	RL	00	00	100	120	42	0.5	3	2								
22	GL	00	00	100	250	34	0.5	15	14								
23	GL	00	00	100	60	33	0.5	13	3								
24	RL	00	00	100	90	36	0.5	13	3								
25	LP	00	00	100	610	37	0.0	3	2								
26	RL	00	00	100	110	45	0.5	2	2								
27	LP	01	01	90	1160	38	0.0	2	2								
28	GL	02	02	10	170	10	0.5	2	2								
29	GL	00	00	100	250	36	0.5	1	2	1.4	33	2.8	37	2.8	37	24	
30	GL	01	01	70	250	38	0.5	1	2								

\* MEASURE FROM THE STREAMBED TO THE TOP OF THE ACTIVE CHANNEL. TAKE THE MEASUREMENT AT POOL TAIL CREST ON POOL UNITS.



**UNIT-2**

PAGE: 2 OF: 2

STREAM: Spruce (Harris Reach) DATE: 24 Sept 04 NUMERATOR: R. MAWA

UNIT #	UNIT TYPE	DEPTH*	DEPTH**	PTC	VERIFIED LENGTH	WIDTH	S/O	SND	PERCENT SUBSTRATE	BLDR	BDRCK	BDRCK COUNT	% ACTIVE EROSION	% UNDER CUT	COMMENT CODES	NOTE
1	GL	1.0					100						20		ES	5P @ 10.50 MAX DEPTH = 1.7 DIKE LB
2	LP	1.8	.5				95		5				30			Gravel < 1.75"
3	RI	.5											10			MAX D = 1.6
4	GL	1.0					100						10			Gravel < .75" w/ Roots
5	RI	.5											5			MAX D = 0.9
6	GL	.6					95		5				5		SD	10RICHLOW RETURN 0607475-475146
7	GL	.9											5		CS	RB DIKE
8	GL	.9											10	5		RB DIKE ?
9	GL	1.1	.4				100				50		10			CLAY MATTER BOTTOM
V 10	LP	2.6					50						40			REA GRAVEL < .75" - W/ MUD COUNT
11	RI	.4					70		30		5		10			
12	LP	2.6	.6				95		5				5			
13	RI	.6					95						10			
14	GL	.9					100						20			50 @ 1330
15	SP	1.7	.7				100						30			Mostly a 700000 GLOB
16	GL	.7					95		5				40			Gravel < .5"
17	LP	3.0	.4				100						40			MANUAL BOUND 5P @ 1100
18	GL	1.9					40	60					30			KRAM KAWISE SS @ 1115 12700 FT RB
19	RI	.3					80		20				20			NO 590 @ 1435 S.G. GRAVEL < .5"
V 20	GL	1.0					100						50			SIDE CHANNEL AROUND FILLING
21	RI	.4					50		20				50			GRAVEL < .5"
22	GL	.75					100						40			
23	GL	.95					100						40			
24	RI	.6					90		10				40			Gravel mostly < .5"
25	LP	2.7	.5				100						50			
26	RI	.5					80		20				40			
27	LP	2.2	.6				100						50			VERTICAL BANKS C10Y LOOSE CARBON off
28	GL	.8					100						5			SIDE CHANNEL AT HARRIS REACH (POOLS)
29	GL	0.8					100						40			
V 30	GL	1.1					100						30			MAX D = 1.4

AX DEPTH POOLS - MODAL DEPTH IN FAST WATER UNITS

\*\* ONLY MEASURED @ POOLS (EXCEPT OFF-CHANNEL POOLS)

UNIT #	UNIT TYPE	DEPTH*	DEPTH**	PTC	VERIFIED LENGTH	WIDTH	PERCENT SUBSTRATE			BLDR COUNT	% ACTIVE EROSION	% UNDER CUT	COMMENT CODES	NOTE
							S/O	SN	SD					
31	GL	1.8					100						Side channel	
32	GL	1.9					100						Clay Pan evolving Deepening	
33	LP	2.3	.7				100						Depositional Side channel	
34	GL	1.8					100						Side channel narrowing	
35	GL	1.8					100						Lateral accretion	
36	CL	1.6					100							
37	LP	2.0	.7				100							
38	GL	1.0					100						Lateral Deposition LB	
39	LP	1.9					100						Side Channel w/ bump	
40	GL	1.5					100					50	(Barehead) 20m. Hill down stream River	
41	GL	1.5					95		5					
42	GL	1.5					100							
43	LP	2.4	.8				100						0607784-4718009 Ero Survey	
V														
V														

AX DEPTH POOLS - MODAL DEPTH IN FAST WATER UNITS  
 \*\* ONLY MEASURED @ POOLS (EXCEPT OFF-CHANNEL POOLS)

REACH: \_\_\_\_\_ PAGE: 1 OF \_\_\_\_\_

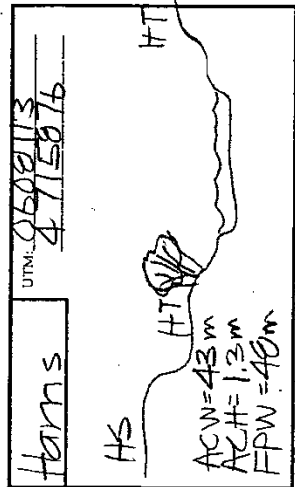
STREAM: Sprague (Horns) CREW: KH, RN

BASIN: Sprague USGS 7.5 MAP NAMES: \_\_\_\_\_

DATE	REACH #	UNIT NUMBER	CHANL FORM		VALLEY FORM		VWI	VEG CLASS		LAND USE		WATER TEMP	STRM FLOW	LOCATION TWIN-RNG-SEC-14	PHOTO #	REACH NOTE
			FORM	FORM	FORM	FORM		DOM.	SUB-DOM.	DOM.	SUB-DOM.					
9/29/04	Horns	1	CT	CT	CT	CT	12	P	S	RR	RR	57°F	LF	345, 9E, 308	1030	

UTM: \_\_\_\_\_

UTM: \_\_\_\_\_



UTM: \_\_\_\_\_

UTM: \_\_\_\_\_

UTM: \_\_\_\_\_

**RIPARIAN**

PAGE: 1 OF: 3  
 NAME: Rich Nakwa

DATE: 24 Sept. 04  
 STREAM: Sprague River (Harris Ranch)

UNIT NUMBER	SIDE	ZONE	SURFACE	SLOPE	CANOPY CLOSURE	SHRUB % COVER	GRASS/FRB % COVER	COUNT (DBH in CENTIMETERS)					RIPARIAN NOTE
								3-15	15-30	30-50	50-90	90+	
1	LEFT	1	HS	20	0	0	100	CONIFER					
		2	HS	20	0	0	40	HARDWOOD					
		3	HS	20	0	20	20	CONIFER					
1	RIGHT	1	FP	15	0	0	80	HARDWOOD					
		2	LT	0	0	20	100	CONIFER					
		3	LT	0	0	0	80	HARDWOOD					
10	LEFT	1	LT	8	0	0	100	CONIFER					
		2	LT	0	0	0	100	HARDWOOD					willow
		3	LT	0	0	0	100	CONIFER	2				
10	RIGHT	1	LT	10	0	20	80	HARDWOOD					
		2	LT	0	80	20	60	CONIFER					
		3	LT	0	0	40	100	HARDWOOD					

UNIT # 1 0608113-4715876  
 UNIT # 10 0607102-4715420  
 AC = 43 LT  
 Rip #1  
 Rip #1  
 willow  
 willows  
 RPB2

**RIPARIAN**

STREAM: SRAGUE (HARRIS REACH) DATE: 24 Sept 04 NAME: R NACE PAGE: 2 OF 3

UNIT NUMBER	SIDE	ZONE	SURFACE	SLOPE	CANOPY CLOSURE	SHRUB % COVER	GRASS/FORB % COVER	COUNT (DBH in CENTIMETERS)					RIPARIAN NOTE	
								3-15	15-30	30-50	50-90	90+		
22	LEFT	1	LT	12	0	0	100	CONIFER						
		2	LT	0	0	0	100	HARDWOOD						
		3	LT	0	0	0	100	CONIFER						
22	RIGHT	1	LT	80	0	0	20	HARDWOOD						
		2	LT	0	80	0	60	CONIFER						Willows
		3	LT	0	80	0	60	HARDWOOD	15					Willows
	LEFT	1	LT	12	0	0	100	HARDWOOD						
		2	LT	0	0	0	100	CONIFER						
		3	LT	0	0	0	100	HARDWOOD						
	RIGHT	1	LT	8	0	0	100	CONIFER						
		2	LT	0	0	0	100	HARDWOOD						
		3	LT	0	0	0	100	CONIFER						
					UNIT # 22	0607092-4716235						UNIT # 30	0608126-4716566	
					LT	FP	RE=28	LT	AC=33	LT	RP #3	LT	RP #1	

FOR EACH RIPARIAN TRANSECT, DRAW AND LABEL THE SURFACES (HT, LT, FP, HS, ETC) OF A CROSS SECTION IN THE BOX PROVIDED ABOVE. DRAWING AND LABELING VEGETATION IS NOT NECESSARY.

**RIPARIAN**

STREAM: SPRAGUE (HARRIS ROAD)

DATE: 24 Sept 04

NAME: R. NAUVA

PAGE: 3 OF: 3

UNIT NUMBER	SIDE	ZONE	SURFACE	SLOPE	CANOPY CLOSURE	SHRUB % COVER	GRASS/FORB % COVER	COUNT (DBH in CENTIMETERS)					RIPARIAN NOTE
								3-15	15-30	30-50	50-90	90+	
143	LEFT	1	LT	8	0	0	100	CONIFER					
		2	LT	0	0	0	100	HARDWOOD					
		3	LT	0	0	0	100	CONIFER					
143	RIGHT	1	LT	12	0	0	100	HARDWOOD					
		2	LT	0	0	0	100	CONIFER					
		3	LT	0	0	0	100	HARDWOOD					
	LEFT	1						CONIFER					
		2						HARDWOOD					
		3						CONIFER					
								HARDWOOD					
	RIGHT	1						CONIFER					
		2						HARDWOOD					
		3						CONIFER					
								HARDWOOD					
								UNIT # <u>43</u> <u>0607784-4718009</u>					UNIT # _____
								LT <u>05-35</u> LT <u>RIPAR #5</u>					

FOR EACH RIPARIAN TRANSECT, DRAW AND LABEL THE SURFACES (HT, LT, FP, HS, ETC) OF A CROSS SECTION IN THE BOX PROVIDED ABOVE. DRAWING AND LABELING VEGETATION IS NOT NECESSARY.



**RIPARIAN**

PAGE: \_\_\_\_\_ OF: \_\_\_\_\_

STREAM: \_\_\_\_\_ DATE: \_\_\_\_\_ NAME: \_\_\_\_\_

UNIT NUMBER	SIDE	ZONE	SURFACE	SLOPE	CANOPY CLOSURE	SHRUB % COVER	GRASS/FORB % COVER	TREE	COUNT (DBH in CENTIMETERS)				RIPARIAN NOTE	
									3-15	15-30	30-50	50-90		90+
	LEFT	1						CONIFER						
		2						HARDWOOD						
		3						CONIFER						
								HARDWOOD						
	RIGHT	1						CONIFER						
		2						HARDWOOD						
		3						CONIFER						
								HARDWOOD						
	LEFT	1						CONIFER						
		2						HARDWOOD						
		3						CONIFER						
								HARDWOOD						
	RIGHT	1						CONIFER						
		2						HARDWOOD						
		3						CONIFER						
								HARDWOOD						
										UNIT # _____				

Stream Name SPRACUE Rosgen Channel Type \_\_\_\_\_  
 Hydrologic Unit 11 EPA Reach \_\_\_\_\_ EPA EXT \_\_\_\_\_  
 Stream Survey Reach HARRIS Sample # \_\_\_\_\_ Habitat Unit Type RT Fast/Slow Water \_\_\_\_\_  
 Observers \_\_\_\_\_ Date 24 Sept  
 Procedure \_\_\_\_\_ (Wolman, 1954) \_\_\_\_\_ (Beverger and King, 1995) \_\_\_\_\_ Other \_\_\_\_\_  
 Measurement Device Ruler Gravelometer (FISP US SA-97)

Class Name	Particle Size (mm)	Dot Count	Total #	% Total	Cum. #	Cum %
Small Organic	< 25 mm					
Large Organic	> 25 mm					
Clay	<0.0039					
Silt	0.0039-0.0625					
Fine Sand	0.0625 - 0.25					
Med. Sand	0.25 - 0.5					
Coarse Sand	0.5 - 1.0					
VC Sand	0 - 2		40			
VF Gravel	2 - 4		12			
Fine Gravel	4 - 8		29			
<del>Fine Gravel</del>	<del>6 - 8</del>					
Med. Gravel	8 - 16		22			
Coarse Gravel	16 - 32		11			
VC Gravel	32 - 64		3			
Sm. Cobble	64 - 128		1			
Lg. Cobble	128 - 256					
Sm. Boulder	256 - 512		118			
Med. Boulder	512 - 1024					
Lg. Boulder	1024 - 2048					
VL Boulder	2048 - 4096					
Bedrock						

Total #: \_\_\_\_\_

Calculations: % Fines <2mm \_\_\_\_\_ % Fines <6mm \_\_\_\_\_ D50 \_\_\_\_\_ D84 \_\_\_\_\_

Notes:

UTM = 0606648 - 4715438 ~ 20 6-8" depressions  
 WW = 39m D = .30 BASS NESTS?

Stream Name \_\_\_\_\_ Rosgen Channel Type \_\_\_\_\_  
 Hydrologic Unit \_\_\_\_\_ EPA Reach \_\_\_\_\_ EPA EXT \_\_\_\_\_  
 Stream Survey Reach \_\_\_\_\_ Sample # \_\_\_\_\_ Habitat Unit Type \_\_\_\_\_ Fast/Slow Water \_\_\_\_\_  
 Observers \_\_\_\_\_ Date \_\_\_\_\_  
 Procedure \_\_\_\_\_ (Wolman, 1954) \_\_\_\_\_ (Beverger and King, 1995) \_\_\_\_\_ Other \_\_\_\_\_  
 Measurement Device \_\_\_\_\_ Ruler \_\_\_\_\_ Gravelometer (FISP US SA-97) \_\_\_\_\_

Class Name	Particle Size (mm)	Dot Count	Total #	% Total	Cum. #	Cum %
Small Organic	< 25 mm					
Large Organic	> 25 mm					
Clay	<0.0039					
Silt	0.0039-0.0625					
Fine Sand	0.0625 - 0.25					
Med. Sand	0.25 - 0.5					
Coarse Sand	0.5 - 1.0					
VC Sand	1 - 2					
VF Gravel	2 - 4					
Fine Gravel	4 - 6					
Fine Gravel	6 - 8					
Med. Gravel	8 - 16					
Coarse Gravel	16 - 32					
VC Gravel	32 - 64					
Sm. Cobble	64 - 128					
Lg. Cobble	128 - 256					
Sm. Boulder	256 - 512					
Med. Boulder	512 - 1024					
Lg. Boulder	1024 - 2048					
VL Boulder	2048 - 4096					
Bedrock						

Total #: \_\_\_\_\_

Calculations: % Fines <2mm \_\_\_\_\_ % Fines <6mm \_\_\_\_\_ D50 \_\_\_\_\_ D84 \_\_\_\_\_

Notes: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

WOOD

PAGE: 1 OF 1

STREAM: Sprague (Horns)

DATE: 9/24/04

NAME: Hartzell

UNIT NUMBER	UNIT TYPE	CONFIG	DEBRIS TYPE	LOCAT	DBH CLASS	RW < 3	3	6	9	12	15	18	21	24	28	32	36+	WOOD NOTE
2	P	MM	R	W	45													
3	P	MM	R	W	45													
4	P	MM	R	W	45													
5	P	MM	R	W	45													
6	P	MM	R	W	45													
7	P	MM	R	W	45													
8	P	MM	R	W	45													
9	P	MM	R	W	45													
10	P	MM	R	W	45													
11	P	MM	R	W	45													
12	P	MM	R	W	45													
13	P	MM	R	W	45													
14	P	MM	R	W	45													
15	P	MM	R	W	45													
16	P	MM	R	W	45													
17	P	MM	R	W	45													
18	P	MM	R	W	45													
19	P	MM	R	W	45													
20	P	MM	R	W	45													
21	P	MM	R	W	45													
22	P	MM	R	W	45													
23	P	MM	R	W	45													
24	P	MM	R	W	45													
25	P	MM	R	W	45													
26	P	MM	R	W	45													
27	P	MM	R	W	45													
28	P	MM	R	W	45													
29	P	MM	R	W	45													
30	P	MM	R	W	45													
31	P	MM	R	W	45													
32	P	MM	R	W	45													
33	P	MM	R	W	45													
34	P	MM	R	W	45													
35	P	MM	R	W	45													
36	P	MM	R	W	45													
37	P	MM	R	W	45													
38	P	MM	R	W	45													
39	P	MM	R	W	45													
40	P	MM	R	W	45													
41	P	MM	R	W	45													
42	P	MM	R	W	45													
43	P	MM	R	W	45													
44	P	MM	R	W	45													
45	P	MM	R	W	45													
46	P	MM	R	W	45													
47	P	MM	R	W	45													
48	P	MM	R	W	45													
49	P	MM	R	W	45													
50	P	MM	R	W	45													







PHOTO RECORD

PAGE: 1 OF 1

STREAM: Sprague R. (Case) SURVEY TYPE: OR. PLAN  BASIN  MIXED   
 BASIN OR GCC: Sprague R. FILM: DIGITAL  SLIDE  PRINTS   
 SURVEY CREW: KH, RN ROLL #: \_\_\_\_\_ MAILER #: \_\_\_\_\_

UJKLAM - PHOTOS / 103 CANYON - A

PHOTO # OR DIGITAL ID	UNIT #	DATE	TIME	STREAM / PHOTO DESCRIPTION
1: B 145/342	1	7/9/04	1040	US View
2: 146/343				DS View
3: 147/344	✓			LB Rip
4: 148/345	✓		1050	RB Rip
5: 149/346	3		1110	US View of Cleaved RB
6: 150/347	10		1230	US View
7: 151/348				DS View
8: 152/349				LB Rip
9: 153/350	✓		↓	RB Rip
10: 154/351	10		1305	RB View of BD impounded Spring outflow
11: 155/352	13		1400	US View
12: 156/353				DS View
13: 157/354				LB Rip
14: 158/355	✓		↓	RB Rip
15: 159/356	10		1425	Close Look @ Lalo Spring DS Beaver Dam
16: 160/357	Lalo Sp		1435	View of Lalo Spring Pool
17: 161/358			1440	View of Spring Pool Spillway
18: B 162/359	✓		1450	View of Spring Sour
19:				
20:				
21:				
22:				
23:				
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SPRAGUE RIVER

LALO SPRING



REACH: \_\_\_\_\_ PAGE: 1 OF \_\_\_\_\_

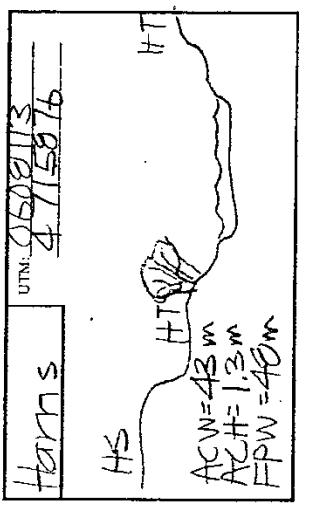
STREAM: Sprague (Hams)  
 CREW: KH, RN

BASIN: Sprague  
 USGS 7.5' MAP NAMES: \_\_\_\_\_

DATE	REACH #	UNIT NUMBER	CHANL FORM	VALLEY FORM	VVI	VEG CLASS		LAND USE		WATER TEMP	STRM FLOW	LOCATION TWN-RNG-SEC-1/4	PHOTO #	REACH NOTE
						DOM.	SUB-DOM.	DOM.	SUB-DOM.					
9/24/04	Hams	1	CT	CT	24	P	S	LG	RR	57°F	LF	34S, 9E, 30R	11030	

UTM: \_\_\_\_\_

UTM: \_\_\_\_\_



UTM: \_\_\_\_\_

UTM: \_\_\_\_\_

UTM: \_\_\_\_\_

UNIT - 1

PAGE: 1 OF 2

STREAM: Sprague R. (Hams) DATE: 9/24/04  
 ESTIMATOR: Hartzell  
 Downstream Survey

REACH #	UNIT #	UNIT TYPE	CHANL TYPE	% FLOW	UNIT LENGTH	UNIT WIDTH	SLOPE %	SHADE (0-90)		ACTIVE CHANNEL HT. *	FLOOD PRONE		TERRACE		NOTE	
								LEFT	RIGHT		HT.	WIDTH	HT.	WIDTH		VVI
1	GL	00	00	100	250	41	0.5	3	1	13	2.6	40	3.2	57	24	
2	LP	00	00	100	170	42	0.5	3	1							
3	GL	00	00	100	60	53	0.5	3	1							
4	GL	00	00	100	210	43	0.5	2	2							
5	GL	01	00	100	300	51	0.5	2	3							
6	GL	00	00	100	250	32	0.5	4	2							
7	GL	00	00	100	250	33	0.5	4	2							
8	GL	00	00	100	250	31	0.5	2	2							
9	GL	00	00	100	250	30	0.5	2	2							
10	LP	00	00	100	550	31	0.0	1	2	1.4	2.8	39	3.2	43	24	
11	RP	00	00	100	60	39	0.5	1	1							
12	LP	00	00	100	700	36	0.0	2	1							
13	RP	00	00	100	115	40	0.5	2	1							
14	RP	00	00	100	250	28	0.5	2	1							
15	RP	00	00	100	310	30	0.5	2	1							
16	GL	00	00	100	250	40	0.5	2	1							
17	LP	01	01	70	930	37	0.5	2	5							Kamkaun Spring
18	GL	01	01	30	42	32	0.5	15	0							
19	RP	01	02	60	250	40	0.5	15	0							
20	GL	02	02	40	210	13	0.5	15	0							
21	RP	00	00	100	120	42	0.5	3	15	0.8	1.6	41	2.0	43	24	RT Terr. Only
22	GL	00	00	100	250	34	0.5	15	0							
23	GL	00	00	100	60	33	0.5	15	0							
24	RP	00	00	100	80	36	0.5	15	0							
25	LP	00	00	100	510	37	0.0	3	3							
26	RP	00	00	100	110	45	0.5	2	2							
27	LP	01	01	90	1150	38	0.0	2	2							
28	GL	02	02	10	170	10	0.5	2	2							
29	GL	00	00	100	250	36	0.5	1	2	1.4	2.8	37	2.8	37	24	
30	GL	01	01	70	250	38	0.5	1	2							

\* MEASURE FROM THE STREAMBED TO THE TOP OF THE ACTIVE CHANNEL... TAKE THE MEASUREMENT AT POOL TAIL CREST ON POOL UNITS.

UNIT - 1

PAGE: 2 OF 2

STREAM: Sprague (Hans) Damnstrick Survey DATE: 9/24/64 ESTIMATOR: Hartzell

REACH #	UNIT #	UNIT TYPE	CHANL TYPE	% FLOW	UNIT LENGTH	UNIT WIDTH	SLOPE %	SHADE (0-90)	LEFT	RIGHT	ACTIVE CHANNEL		FLOOD PRONE		TERRACE		NOTE
											HT.	WIDTH	HT.	WIDTH	HT.	WIDTH	
	31	GL	02	30	195	10	0.5	2		1							
	32	GL	00	100	250	37	0.5	2		2							
	33	LP	01	70	450	30	0.0	1									
	34	GL	02	30	250	20	0.5	10		25							
	35	GL	02	30	250	16	0.5	4		3							
	36	GL	02	30	47	17	0.5	2		2							
	37	LP	00	100	210	40	0.0	2		1							
	38	GL	00	100	70	32	0.5	2		2							
	39	LP	01	80	360	33	0.0	1		2							
	40	GL	02	20	172	11	0.5	1		10							
	41	GL	00	100	250	45	0.5	2		4							
	42	GL	00	100	70	52	0.5	1		2	1.0	54	2.0	56	2.5	61	US OF BRICKED DAM
	43	LP	00	100	190	44	0.0	2		1							End of Survey

\* MEASURE FROM THE STREAMBED TO THE TOP OF THE ACTIVE CHANNEL. TAKE THE MEASUREMENT AT POOL TAIL CRIST ON POOL UNITS.

**UNIT-2**

PAGE: 1 OF 2

STREAM: Sprague (Harris Reach) DATE: 24 Sept 04 NUMERATOR: R. NAWA

UNIT #	UNIT TYPE	DEPTH* PTC	DEPTH** PTC	VERIFIED LENGTH	WIDTH	SIO	SND	PERCENT SUBSTRATE	BLDR COUNT	% ACTIVE EROSION	% UNDER CUT	COMMENT CODES	NOTE
1	GL	1.0				100				20			5% 10.50 MAX DEPTH = 1.7 DIKE LB
2	LP	1.8	.5							30			GRAVEL < 7.5"
3	RT	.5				95		5					MAX D = 1.6
4	GL	1.0				100				10			GRAVEL < 7.5" w/ ROADS
5	RT	.5								10			MAX D = 0.9
6	GL	.6				95		5		5		SD	IRREGULAR RETURN 0607473-4715146
7	GL	.9								5			RB DIKE
8	GL	.9				100				5			540 @ 100
9	GL	1.1								10	5		RB DIKE ?
V 10	LP	2.6	.4			50		30	50	10			CLAY MAGNETIC BOTTOM
11	RT	.4				70			5	40			NEA GRAVEL < 7.5" - VOL MUD COUNT
12	LP	2.6	.6			95		5		10			
13	RT	.6				95				5			SP @ 1530
14	GL	.9				100				20			MASTLY 9.70 DEEP CLAY
15	SP	1.7	.7			100				30			GRAVEL < 1.5"
16	GL	.7				95		5		40			MAGNETIC BOTTOMS SP @ 1400
17	LP	3.0	.4			100				40			
18	GL	1.9				40	60			30			KARIN KAWAISE 55 @ 1415 132 @ 1417 RB
19	RT	1.3				80		20		20			K @ SP @ 1435 GRAVEL < 1.5"
V 20	GL	1.0				100				50			SIDE CHANNEL AROUND ISLAND
21	RT	.4				50		20		20			GRAVEL < 1.5"
22	GL	.75				100				40			
23	GL	.95				100				40			
24	RT	.6				90		10		40			GRAVEL MAGNETIC < 1.5"
25	LP	2.7	.5			100				50			
26	RT	.5				80		20		40			
27	LP	2.2	.6			100				50			VERTICAL BANKS, CLAY LAYER CALIBRITY OK
28	GL	.2				100				5			SIDE CHANNEL AT HARRIS REACH
29	GL	0.8				100				40			MAX D = 1.4
V 30	GL	1.1				100				30			

AX DEPTH POOLS - MODAL DEPTH IN FAST WATER UNITS  
 \*\* ONLY MEASURED @ POOLS (EXCEPT OFF-CHANNEL POOLS)

UNIT-2

PAGE: 2 OF 2

NUMERATOR: R. NAONA

DATE: 24 SEPT 04

STREAM: SPAG CUL

UNIT #	UNIT TYPE	DEPTH*	DEPTH**	PTC	VERIFIED LENGTH	WIDTH	PERCENT SUBSTRATE			BLDR COUNT	% ACTIVE EROSION	% UNDER CUT	COMMENT CODES	NOTE
							S/O	SND	GRVL					
31	GL	1.8					100						Side channel	
32	GL	1.9					100						Side channel	
33	LP	2.3	.7				100						Side channel	
34	GL	1.8					100						Side channel	
35	GL	1.8					100						Side channel	
36	GL	1.6					100						Side channel	
37	LP	2.0	.7				100						Side channel	
38	GL	1.0					100						Side channel	
39	LP	1.9					100						Side channel	
40	GL	1.5					100						Side channel	
41	GL	1.5					95						Side channel	
42	GL	1.5					100						Side channel	
43	LP	2.4	.8				100						Side channel	
V														
V														

AX DEPTH POOLS - MODAL DEPTH IN FAST WATER UNITS

\*\* ONLY MEASURED @ POOLS (EXCEPT OFF-CHANNEL POOLS)

WOOD

PAGE: 1 OF 1

STREAM: Sprague (Harris)

DATE: 9/24/04

NAME: Hartzell

UNIT NUMBER	UNIT TYPE	CONFIG	DEBRIS TYPE	LOCAT	DBH CLASS	RW	3	6	9	12	15	18	21	24	28	32	36+	WOOD NOTE
2	P	M	R	W	45													
3	P	M	R	W	45													
4	P	M	R	W	45													
5	P	M	R	W	60													
6	P	M	R	W	60													
7	P	M	R	W	60													
8	P	M	R	W	60													
9	P	M	R	W	60													
10	P	M	R	W	60													
11	P	M	R	W	60													
12	P	M	R	W	60													
13	P	M	R	W	60													
14	P	M	R	W	60													
15	P	M	R	W	60													
16	P	M	R	W	60													
17	P	M	R	W	60													
18	P	M	R	W	60													
19	P	M	R	W	60													
20	P	M	R	W	60													
21	P	M	R	W	60													
22	P	M	R	W	60													
23	P	M	R	W	60													
24	P	M	R	W	60													
25	P	M	R	W	60													
26	P	M	R	W	60													
27	P	M	R	W	60													
28	P	M	R	W	60													
29	P	M	R	W	60													
30	P	M	R	W	60													
31	P	M	R	W	60													
32	P	M	R	W	60													
33	P	M	R	W	60													
34	P	M	R	W	60													
35	P	M	R	W	60													
36	P	M	R	W	60													
37	P	M	R	W	60													
38	P	M	R	W	60													
39	P	M	R	W	60													
40	P	M	R	W	60													

**RIPARIAN**

PAGE: 1 OF 3  
 NAME: Rich Narva

DATE: 24 Sept 04

STREAM: Sprague River (Harris Reach)

UNIT NUMBER	SIDE	ZONE	SURFACE	SLOPE	CANOPY CLOSURE	SHRUB % COVER	GRASS/FORB % COVER	COUNT (DBH in CENTIMETERS)					TREE	RIPARIAN NOTE
								3-15	15-30	30-50	50-90	90+		
1	LEFT	1	HS	20	0	0	100					CONIFER		
		2	HS	20	0	0	40					HARDWOOD		
		3	HS	20	0	20	20					CONIFER		
1	RIGHT	1	FP	15	0	0	80					CONIFER		
		2	LT	0	0	20	100					HARDWOOD		
		3	LT	0	0	0	180					CONIFER		
10	LEFT	1	LT	8	0	0	100					CONIFER		
		2	LT	0	30	20	180				2	HARDWOOD	Willow	
		3	LT	0	0	10	100					CONIFER		
10	RIGHT	1	LT	10	0	20	80					CONIFER		
		2	LT	0	80	20	160					CONIFER		
		3	LT	0	0	40	100					HARDWOOD		

UNIT # 1 0608113-4715876  
 UNIT # 10 0607102-4715420  
 AC = 43 LT RIP #  
 Willows  
 Rip #2

**RIPARIAN**

STREAM: SPRAGUE (HARRIS BEACH) DATE: 24 Sept 04 NAME: R. NACER PAGE: 2 OF: 3

UNIT NUMBER	SIDE	ZONE	SURFACE	SLOPE	CANOPY CLOSURE	SHRUB % COVER	GRASS/FORB % COVER	COUNT (DBH in CENTIMETERS)					RIPARIAN NOTE
								3-15	15-30	30-50	50-90	90+	
22	LEFT	1	LT	12	0	0	100	CONIFER					
		2	LT	0	0	0	100	HARDWOOD					
		3	LT	0	0	0	100	CONIFER					
22	RIGHT	1	LT	80	0	0	20	HARDWOOD					
		2	LT	0	80	0	60	CONIFER	15				Willows
		3	LT	0	80	0	60	CONIFER	12				Willows
	LEFT	1	LT	12	0	0	100	HARDWOOD					
		2	LT	0	0	0	100	CONIFER					
		3	LT	0	0	0	100	HARDWOOD					
	RIGHT	1	LT	8	0	0	100	CONIFER					
		2	LT	0	0	0	100	HARDWOOD					
		3	LT	0	0	0	100	CONIFER					
UNIT # <u>22</u> 0607092-4716235 LT      RP #3      AC=28      LT      RP #3 willows								UNIT # <u>30</u> 0608126-4716566 LT      AC=33      LT      RP #4					

FOR EACH RIPARIAN TRANSECT, DRAW AND LABEL THE SURFACES (HT, LT, FP, HS, ETC.) OF A CROSS SECTION IN THE BOX PROVIDED ABOVE. DRAWING AND LABELING VEGETATION IS NOT NECESSARY.



NAME: R. NAWA

DATE: 24 Sept 04

**RIPARIAN**

STREAM: SPRAGUE (Harris Reach)

UNIT NUMBER	SIDE	ZONE	SURFACE	SLOPE	CANOPY CLOSURE	SHRUB % COVER	GRASS/FORB % COVER	COUNT (DBH in CENTIMETERS)					RIPARIAN NOTE
								3-15	15-30	30-50	50-90	90+	
43	LEFT	1	LT	8	0	0	100	CONIFER					
		2	LT	0	0	0	100	HARDWOOD					
		3	LT	0	0	0	100	CONIFER					
43	RIGHT	1	LT	12	0	0	100	HARDWOOD					
		2	LT	0	0	0	100	CONIFER					
		3	LT	0	0	0	100	HARDWOOD					
	LEFT	1						CONIFER					
		2						HARDWOOD					
		3						CONIFER					
	RIGHT	1						HARDWOOD					
		2						CONIFER					
		3						HARDWOOD					
								UNIT # 43 0607784-4718009					UNIT #
								LT NC=35 LT RIPAR #5					

FOR EACH RIPARIAN TRANSECT, DRAW AND LABEL THE SURFACES (HT, LT, FP, HS, ETC) OF A CROSS SECTION IN THE BOX PROVIDED ABOVE. DRAWING AND LABELING VEGETATION IS NOT NECESSARY.

**PHOTO RECORD**

PAGE: 1 OF:     

STREAM: Sprague (Harris) SURVEY TYPE: OR. PLAN  BASIN  MIXED   
 BASIN OR GCG: Sprague FILM: DIGITAL  SLIDE  PRINTS   
 SURVEY CREW: KH, RN ROLL #:      MAILER #:     

PHOTO # OR DIGITAL ID	UNIT #	DATE	TIME	STREAM / PHOTO DESCRIPTION
1: B 399	1	9/24/04	1030	US View
2: 399				US View
3: 400				RB Rip
4: 401	↓		↓	US View of Left Bank
5: 402	5		1110	View of Riffle Gravel (Possible Add)
6: 403	7		1130	Screened Diversant Pump Structure
7: 404	10		1205	US View
8: 405	10		1205	US View
9: 406	11		1240	View of Riffle Gravel
10: 407	11		1240	RB to LR View of Wolman Site
11: 408	22		1505	ES View
12: 409	21		1515	US View of Riffle
13: 410	21		1518	View of Available Gravel in Riffle
14: 411	27		1545	LR Erosion
15: 412	27		1548	View of Submerged Clearing Hardpan
16: 413	30		1625	US View
17: 414	30		1625	US View
18: 415	35		1720	LR View of Side Channel Accretion & Willows
19: 415	39.40		1755	US View of Breached Dam
20: B 417	39.40		1755	" " " " " "
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