

8-10-2004

## Ex. 280-US-435

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: 8A Kirk  
Survey Type: ODFW Stream Habitat  
Start: T36S-R11E-S10NW RM 49.5  
Quad: Sprague River West  
Date Surveyed: 10 August 04  
Surveyors: R. Nawa K. Hartzell  
Report: R. Nawa, C. Huntington  
Distance Surveyed: 1.5km

#### Land Use

Land use is light grazing with heavy use in some areas (Photo 71).

#### Valley and Stream Channel Geometry

The map measured 0.03 percent gradient river was in a broad valley over 1000 m wide. Sinuosity was uncharacteristically low (1.1). Low terraces sloped abruptly to constrain narrow (<8m) floodplains adjacent to the 58 m wide river.

#### Substrate

The streambed was very fine textured. An estimated 93 percent of the streambed was sand/organics; seven percent was gravel.

#### Spawning Gravel

A riffle formed by a mid channel bar was 30 percent 25 mm gravel and 70 percent sand/silt (Photo 68). An estimated 200 m<sup>2</sup> of gravel was judged to be unsuitable for salmon spawning due to high sand and fine gravel content (Photo 67).

#### Riparian Vegetation

Sagebrush and grass dominate the riparian zone. Streambanks lacked woody vegetation due to livestock grazing (Photo 71). In some areas all vegetation had been removed from streambanks leaving the soil vulnerable to erosion. Existing grass and shrub cover is inadequate to stabilize streambanks. About 21 percent of streambanks were actively eroding. Shade from terraces averaged only 3 percent.

#### Wood

The reach had low amounts of wood debris (<1 pieces/100m) because streambanks lack tree cover.

#### Rearing and Adult holding Habitat

Due to very low stream gradient, the reach consisted of long scour pools and glides (170-790 m). Pools were segregated from glides based on maximum depths that ranged from (2.6m-2.8 m). Residual pool depths averaged (2.1 m). Glides averaged about 0.5 m deep. Rooted aquatic vegetation was abundant in areas less than 1.5 m deep. About 8 percent of streambanks were undercut. Pool depths >1 m, dense aquatic vegetation, and undercut streambanks provide cover for fish.

#### Stream Temperature

Maximum spot stream temperature was 23.5°C at 1045 pdt.

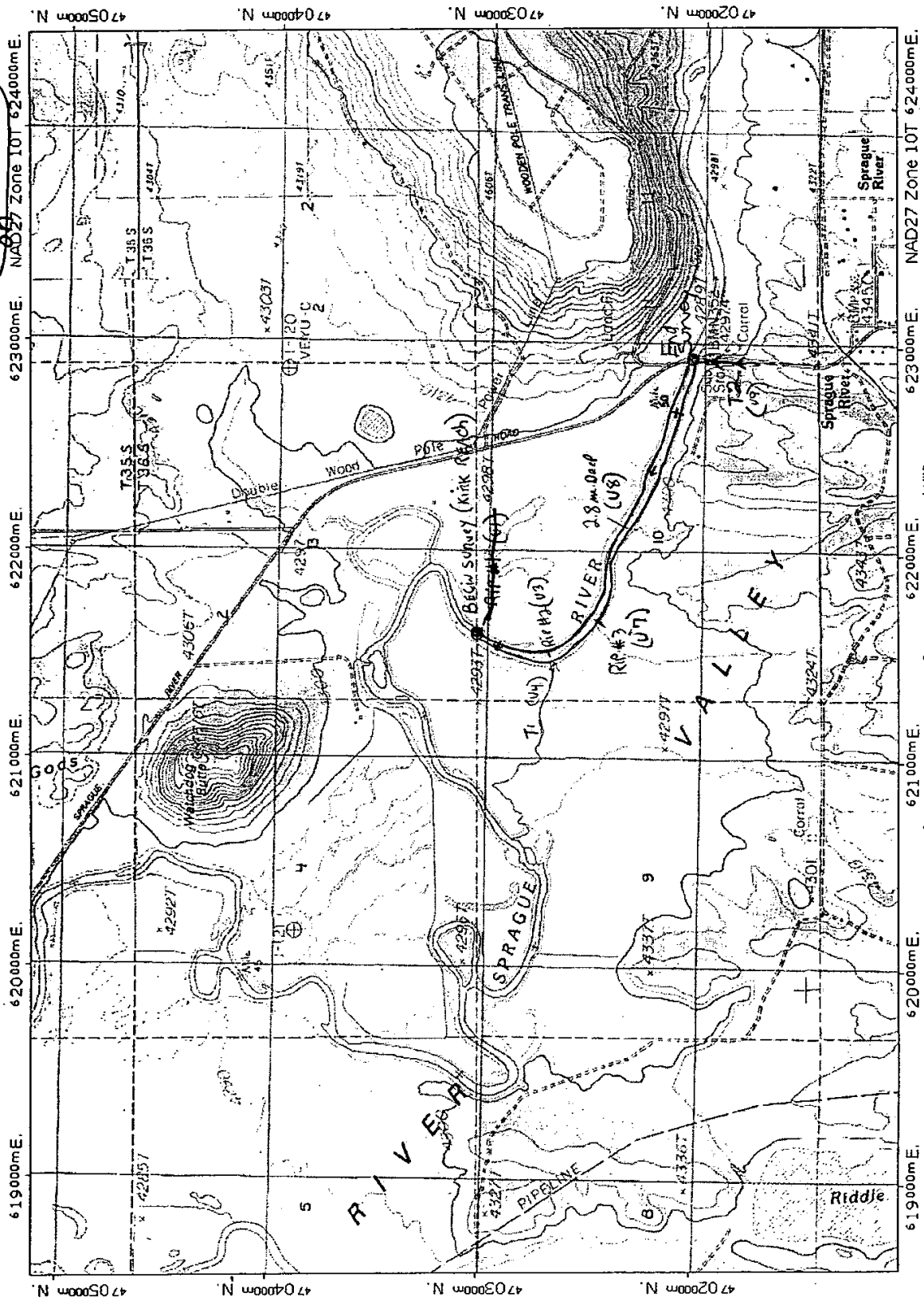
Photo 67 Unit3  
Fine gravel judged  
unsuitable for  
salmon spawning

Photo 68 Unit 3  
Shallow riffle with  
fine gravel deposit  
(foreground, middle)

Photo 71 Unit 6  
Lack of riparian  
vegetation resulted  
in 21% streambank  
erosion and only 3%  
shade.

LOWRY • KIRK

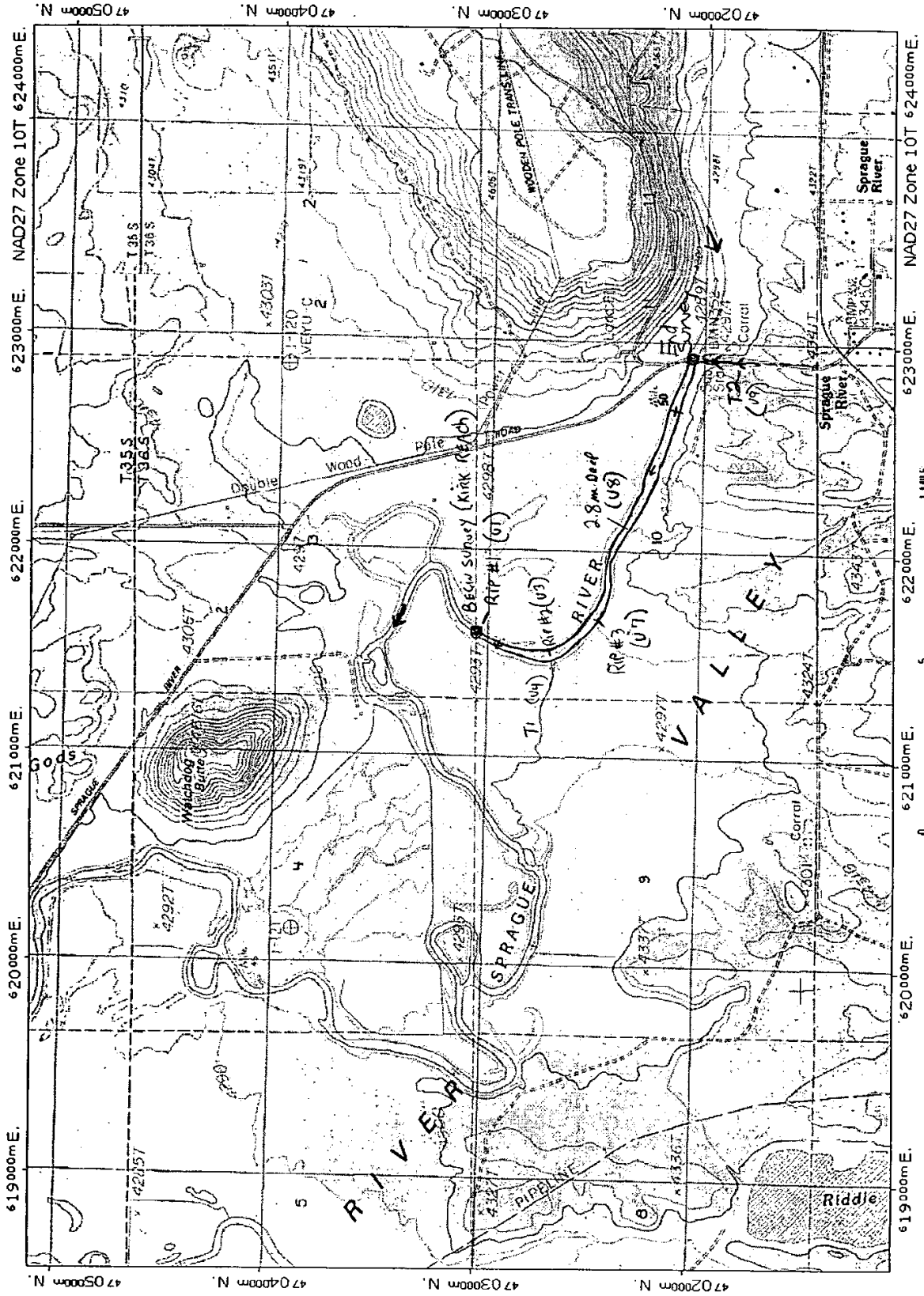
RM/KH 10AV604



Sprague R.

Map created with TOPO! © 2002 National Geographic (www.nationalgeographic.com/topo)

KMJKH 10AVL04 Lower • Kirk



Kirk

Sprague R.

Map created with TOPOI® ©2002 National Geographic (www.nationalgeographic.com/topo)







**PHOTO RECORD**

PAGE: 1 OF:       

STREAM: Sprague (Lower Kirk Road) SURVEY TYPE: OR. PLAN  BASIN  MIXED

BASIN OR GCG: Sprague FILM: DIGITAL  SLIDE  PRINTS

SURVEY CREW: RN, KH ROLL #: \_\_\_\_\_ MAILER #: \_\_\_\_\_

PHOTO # OR DIGITAL ID	UNIT #	DATE	TIME	STREAM / PHOTO DESCRIPTION
1: A 63	1	8/10/04	1045	US View From Sec. Line Fence - Kirk
2: 64	1		1045	US View " " " "
3: 65	1		1045	Left Bank View of Sec. Line Fence
4: 66	1		1045	Right Bank View of Sec. Line Fence
5: 67	3		1130	Unit 3 Riffle Substrate
6: 68	3		1145	Unit 3 Riffle View from Left Bank
7: 69	3		1155	Unit 3 Riffle Substrate
8: 70	3		1205	0-3 Rt. Bank Inflow of Side Channel
9: 71	6		1220	Unit 6 Left Bank View of Limestone
10: 72	6		1225	" " " "
11: A 73	8	↓	1300	Unit 8 Pool US View of Bridge Piers
12:				
13:				
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**PHOTO RECORD**

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

STREAM: \_\_\_\_\_ SURVEY TYPE: OR. PLAN  BASIN  MIXED

BASIN OR GCG: \_\_\_\_\_ FILM: DIGITAL  SLIDE  PRINTS

SURVEY CREW: \_\_\_\_\_ ROLL #: \_\_\_\_\_ MAILER #: \_\_\_\_\_

PHOTO # OR DIGITAL ID	UNIT #	DATE	TIME	STREAM / PHOTO DESCRIPTION
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UNIT - 1

PAGE: 1 OF: 1

ESTIMATOR: Hartzell

DATE: 8/10/04

\* STREAM: Sprague (Lower Kirk Reach)

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		VWI
1	1	GL	00	100	250	40	0.5	2	3	1.2	52	2.4	74	3.4	70	Temp. 73° @ 1000
2	2	GL	00	100	170	45	0.5	2	3	0.6	65	1.2	76	2.4	85	Rt. Bank Trnb < ICE
3	3	RP	01	99	142	56	0.5	3	3	1.1	57	2.2	75	3.2	81	Ended @ Bridge Rt. Bank Trnb. 800 @ 1330
4	4	GL	00	100	15	3.5	0.5	3	3							
5	5	LP	00	100	188	44	0.5	3	3							
6	6	GL	00	100	210	45	0.5	3	3							
7	7	GL	00	100	170	46	0.5	3	3							
8	8	LP	01	99	190	46	0.5	3	3							
9	9	GL	11	1	5	1.6	1.5	15	16							

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







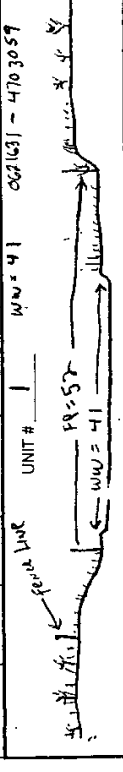
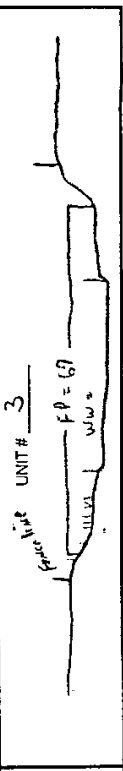
**RIPARIAN**

PAGE: 1 OF:         
 NAME: R. MAUER

DATE: 10 AUG 04

STREAM: SPRAGUE R. (Kick Reach)  
Lower

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+	
1	LEFT	1	FP	5	0	0	80	CONIFER					Observed
		2	LT	15	0	40	80	HARDWOOD					Sagebrush/Grass
		3	LT	0	0	60	80	CONIFER					Rushes at Edge of Riparian
1	RIGHT	1	FP	25	0	0	100	HARDWOOD					Estimating Flow in Run
		2	HT	20	0	20	80	CONIFER					
		3	HT	0	0	20	80	HARDWOOD					
3	LEFT	1	FP					CONIFER					
		2	FP	5	0	0	80	HARDWOOD					
		3	LT	0	0	80	60	CONIFER					
3	RIGHT	1	FP	5	0	0	100	HARDWOOD					
		2	FP	14	0	20	80	CONIFER					
		3	HT	1	0	40	60	HARDWOOD					



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: 2 OF 2  
 NAME: R. Mann

DATE: 10 Aug 04

STREAM: Spruce r. (Lower Kink 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+	
7	LEFT	1	FP	4	0	0	100	CONIFER					
		2	FP	4	0	0	100	HARDWOOD					
		3	LT	8	0	20	40	CONIFER					
7	RIGHT	1	FP	4	0	0	100	HARDWOOD					
		2	HT	1	0	0	100	CONIFER					
		3	HT	9	0	0	100	HARDWOOD					
7	LEFT	1						CONIFER					
		2						HARDWOOD					
		3						CONIFER					
7	RIGHT	1						CONIFER					
		2						HARDWOOD					
		3						CONIFER					
												UNIT # <u>7</u>	







*lowa Kiak*

REACH 1 T36S-R11E-S10NW REACH 1

**Valley and Channel Summary**

Valley Characteristics (Percent Reach Length)

Narrow Valley Floor		Broad Valley Floor	
Steep V-shape	0%	Constraining Terraces	100%
Moderate V-shape	0%	Multiple Terraces	0%
Open V-shape	0%	Wide Floodplain	0%
Valley Width Index	3.0	WVI Range:	3 - 3

Channel Morphology (Percent Reach Length)

Constrained		Unconstrained	
Hillslope	0%	Single Channel	0%
Bedrock	0%	Multiple Channel	0%
Terrace	100%	Braided Channel	0%
Alt. Terrace/Hill	0%		
Landuse	0%		

Channel Characteristics

Type	Length (m)	Area (m <sup>2</sup> )	Dry Units
Primary	1,920	87,484	0
Secondary	20	61	0

*1770  
9.993  
11.813*

Channel Dimensions (m)

Wetted		Active		Floodprone n = 3		First Terrace n = 3	
Width:	36.3	Width:	58.0	75.0 ( 74 - 76 )		81.3 ( 78 - 85 )	
Depth:	0.92	Height:	1.0	1.9 ( 1.2 - 2.4 )		3.0 ( 2.4 - 3.4 )	

W:D ratio: 67.8

Entrenchment (ACW:FPW ratio): 1.3

Stream Flow Type: LF

Habitat Units/100m (total channel length): 0.5

Average Unit Gradient 0.2%

Habitat Units/100m (primary channel length) 0.5

Water temperature (°C) 23.5 - 23.5

**Riparian, Bank, and Wood Summary**

	Primary	Secondary
Land Use:	AG	LG
Riparian Vegetation:	P	B

Bank Condition and Shade

Bank Status	Percent Reach Length	Shade (% of 180)
Actively Eroding:	21%	Reach avg: 3%
Undercut Banks:	8%	Range: 3 - 17

Large Wood Debris

	Total	Total / 100m primary channel
All pieces (>=3m x 0.15m):	5	0.3
Volume (m <sup>3</sup> ):	3	0.1
Key pieces (>=12m x 0.60m):	0	0.0

OREGON DEPARTMENT OF FISH AND WILDLIFE

SPRAGUE RIVER

HABITAT INVENTORY

Report Date: 8/26/2004

Survey Date:

8/10/2004

REACH 1		T36S-R11E-S10NW					REACH 1					
HABITAT DETAIL												
Habitat Type	Number Units	Total Length (m)	Avg Width (m)	Avg Depth (m)	Total Area (m <sup>2</sup> )	Large Boulders (>0.5m)	Substrate Percent Wetted Area					
							S/O	Snd	Grvl	Cbl	Bldr	Bdrk
GLIDE	5	783	35.3	0.51	33,750	0	91	0	9	0	0	0
POOL-LATERAL SCOUR	2	1,000	45.5	2.70	45,790	0	95	0	5	0	0	0
RIFFLE	2	157	29.8	0.15	8,005	0	85	0	15	0	0	0
<b>Total:</b>	<b>9</b>	<b>1,940</b>	<b>36.3</b>	<b>0.92</b>	<b>87,545</b>	<b>0</b>	<b>Avg 91</b>	<b>0</b>	<b>9</b>	<b>0</b>	<b>0</b>	<b>0</b>

HABITAT SUMMARY									
Habitat Group	Number Units	Total Length (m)	Avg Width (m)	Avg Depth (m)	Wetted Area		Large Boulders		
					(m <sup>2</sup> )	Percent	Number	(# / 100m <sup>2</sup> )	
Dammed & BW Pools	0	0			0	0.00%	0	0.0	
Scour Pools	2	1,000	45.5	2.70	45,790	52.30%	0	0.0	
Glides	5	783	35.3	0.51	33,750	38.55%	0	0.0	
Riffles	2	157	29.8	0.15	8,005	9.14%	0	0.0	
Rapids	0	0			0	0.00%	0	0.0	
Cascades	0	0			0	0.00%	0	0.0	
Step/Falls	0	0			0	0.00%	0	0.0	
Dry	0	0			0	0.00%	0	0.0	
Culverts	0	0			0	0.00%	0	0.0	

POOL SUMMARY				
	Total	Total of all Channel Lengths		Primary Channel Length
		# / Km	# / Km	# / Km
All Pools:	2	1.0		1.0
Pools >=1m deep:	2	1.0		1.0
Complex pools (LWD pieces>=3):	0	0.0		0.0
Pool frequency (channel widths/pool):	16.7			
Residual pool depth (avg):	2.13			

**STREAM SUMMARY**

**SPRAGUE RIVER**

Number Units	Total Length (m)	Avg Width (m)	Avg Depth (m)	Total Area (m <sup>2</sup> )	Substrate Percent Wetted Area						Large Boulders (>0.5m)
					S/O	Snd	Grv	Cbl	Bldr	Bdrk	
9	1,940	36.3	0.92	87,545	91	0	9	0	0	0	0

Habitat Group	Wetted Area	
	(m <sup>2</sup> )	Percent
Dammed & BW Pools	0	0.00%
Scour Pools	45,790	52.30%
Glides	33,750	38.55%
Riffles	8,005	9.14%
Rapids	0	0.00%
Cascades	0	0.00%
Step/Falls	0	0.00%
Dry	0	0.00%
Culverts	0	0.00%

OREGON DEPARTMENT OF FISH AND WILDLIFE

SPRAGUE RIVER

HABITAT INVENTOR Report Date: 8/26/2004

Survey Date: 8/10/2004

**RIPARIAN ZONE VEGETATION SUMMARY**

REACH 1

REACH 1

Summary of Riparian Zone (0-30m) 2 transects

Total hardwoods/1000	0
Total conifers/1000 ft	0
Total conifers >20" dbh/1000 f	0
Total conifers >35" dbh/1000 f	0

Average number of trees in a 5-meter wide band

Diameter class (cm)	Zone 1 0-10 meters		Zone 2 10 - 20 meters		Zone 3 20 - 30 meters		Zones 1-3 0-30 meters	
	Conifer	Hardwood	Conifer	Hardwood	Conifer	Hardwood	Conifer	Hardwood
	3-15cm	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15-30cm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30-50cm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
50-90cm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
>90cm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total/100m2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Canopy closure and ground cover

	Zone 1 0-10 meters	Zone 2 10 - 20 meters	Zone 3 20 - 30 meters
	(%)	(%)	(%)
Canopy closure	0	0	0
Shrub cover	0	20	50
Grass/forb cover	73	80	70

Predominant landform in each zone

	Zone 1 0-10 meters	Zone 2 10 - 20 meters	Zone 3 20 - 30 meters
	(%)	(%)	(%)
Hillslope	0	0	0
High terrace	0	25	50
Low terrace	0	25	50
Floodplain	100	50	0
Wetland/meadow	0	0	0
Stream channel	0	0	0
Roadbed/Railroad	0	0	0
Riprap	0	0	0
Surface slope (%)	10	14	0

Summary of Riparian Zone (0-30m) for all reaches 2 transects

Summary of riparian zone (0-100 feet) extrapolated to 1,000 feet along stream

Total hardwoods/1000	0
Total conifers/1000 ft	0
Total conifers >20" dbh/1000 f	0
Total conifers >35" dbh/1000 f	0

Average number of trees in a 5-m wide band

Diameter class (cm)	Zones 1-3 0-30 meters	
	Conifer	Hardwood
3-15cm	0.0	0.0
15-30cm	0.0	0.0
30-50cm	0.0	0.0
50-90cm	0.0	0.0
>90cm	0.0	0.0

**RIPARIAN ZONE VEGETATION**

Reach 1

Reach 1

Unit	Side	Zone	Surface	Slope	Cover (percent)				Diameter class (cm)					Notes				
					Canopy	Shrub	Grass		3-15	15-30	30-50	50-90	>90					
1	LF	1	FP	5	0	0	80											
								Conifer										
								Hardwood										STREAMSIDE RUSHES
1	LF	2	LT	15	0	40	80	Conifer										
								Hardwood										
1	LF	3	LT	0	0	60	80	Conifer										
								Hardwood										
1	RT	1	FP	25			100	Conifer										EST. FROM RIVER
								Hardwood										
1	RT	2	HT	20	0	20	80	Conifer										
								Hardwood										
1	RT	3	HT	0	0	20	80	Conifer										
								Hardwood										
3	LF	1	FP	5	0	0	100	Conifer										
								Hardwood										
3	LF	2	FP	5	0	0	80	Conifer										
								Hardwood										
3	LF	3	LT	0	0	80	60	Conifer										
								Hardwood										
3	RT	1	FP	5	0	0	10	Conifer										
								Hardwood										
3	RT	2	FP	14	0	20	80	Conifer										
								Hardwood										
3	RT	3	HT	1	0	40	60	Conifer										
								Hardwood										



## SPRAGUE RIVER

REACH	UNIT#	TYPE	CHAN	DIST.(m)	COMMENTS	NOTE_ESTIMATOR	NOTE_NUMERATOR
1	1	GL	00	250		TEMP. 23C @ 1000	EMERGENT VEG 60% BOTTOM
1	3	RI	01	562			MOSTLY FINE GRAVEL <1"
1	4	RI	11	577		RB TRIB <1CFS	
1	6	LP	00	960			LIVESTOCK GRAZING LB
1	8	LP	01	1920	BC	ENDED @ BRIDGE	BOULDER PIERS BRIDGE SUPPORT
1	9	GL	11	1925		RB TRIB; 20C@1330	20C @ 1320



REACH: Sprague R. (Lower Kirk Reach) PAGE: 1 OF: 1

CREW: KH, RN

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

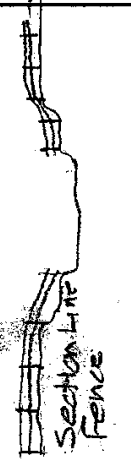
DATE	REACH #	UNIT NUMBER	CHANL FORM		VALLEY FORM	VVI	VEG CLASS		LAND USE		WATER TEMP	STRM FLOW	LOCATION TWIN-RING-SEC-1/4	PHOTO # / TIME	REACH NOTE
			DOM	SUB-DCM			DOM	SUB-DCM	DOM	SUB-DCM					
8/10/84	1024	1	CI	CI	CI	72.5	P	B	AG	LG	74°F	LF	38, 11, 5E, R, W	1045	Sec Line Fence

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

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

UTM: 062153  
4703059

ALW = 52m FFW = 74m  
 ACH = 1.20m



Section Line Fence

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

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

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

**WOOD**

PAGE 1 OF 6

STREAM: Sprague R. (Lower Fork Reach) DATE: 8/10/04 NAME: Hartzell

UNIT NUMBER	UNIT TYPE	DEBRIS TYPE	CONFIG	LOCAT	DBH CLASS	RW <3	3	6	9	12	15	18	21	24	28	32	36+	WOOD NOTE
1	GL	U	S	N	30		1											
2	GL	U	S	N	45		1											
3	GL	U	S	S	45		2											
7	GL	U	S	S	30		1											

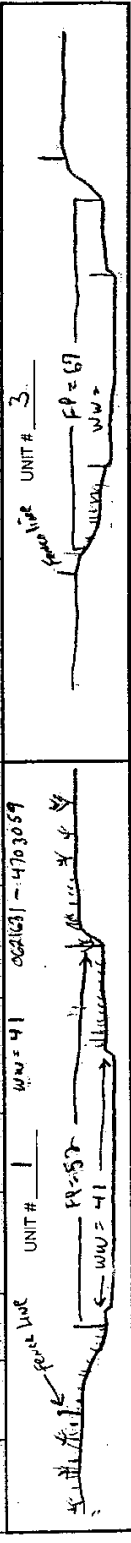
**RIPARIAN**

STREAM: SPRAGUE R. (Lower Kick Reach)

PAGE: 1 OF:         
 NAME: R. NAWA

DATE: 10 AUG 04

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+		
1	LEFT	1	FP	5	0	0	80	CONIFER						observed
		2	LT	15	0	40	80	HARDWOOD						Sagebrush / grass
		3	LT	0	0	60	80	CONIFER						Rushes at Edge of River
1	RIGHT	1	FP	25	0	0	100	HARDWOOD						Estimating from Area
		2	HT	20	0	20	80	CONIFER						
		3	HT	0	0	20	80	HARDWOOD						
3	LEFT	1	FP					CONIFER						
		2	FP	5	0	0	80	HARDWOOD						
		3	LT	0	0	80	60	CONIFER						
3	RIGHT	1	FP	5	0	0	100	HARDWOOD						
		2	FP	14	0	20	80	CONIFER						
		3	HT	11	0	40	60	HARDWOOD						



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.

UNIT - 1

PAGE: 1 OF 1

ESTIMATOR: Holtzell

DATE: 8/11/04

STREAM: Sprague (Lower Kirk Reach)

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	VWL		
1	GL	00	100	250	40	0.5	2	3	1.7	52	74	34	70	72.5	Temp. 73° @ 1000		
2	GL	00	100	170	45	0.5	2	3	0.6	65	76	2.4	85	72.5	RT. BANK ELEVATION 65		
3	GL	00	100	142	56	0.5	3	3	1.1	57	75	3.2	81	72.5	Imperfect Bridge		
4	GL	00	100	15	35	0.5	3	3							RT. BANK TAB. 60 @ 1830		
5	GL	00	100	188	44	0.5	3	3									
6	GL	00	100	210	45	0.5	3	3									
7	GL	00	100	170	46	0.5	3	3									
8	GL	00	100	190	46	0.5	3	3									
9	GL	00	100	15	16	0.5	15	16									

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

UNIT-2

PAGE: 1 OF 1  
 STREAM: Spacoe River - (Lower Kwik Beach) DATE: 10 AUG-04 NUMERATOR: R. MAWIA

UNIT #	UNIT TYPE	DEPTH*	DEPTH** PTC	VERIFIED LENGTH	WIDTH	PERCENT SUBSTRATE			BLDR COUNT	% ACTIVE EROSION	% UNDER CUT	COMMENT CODES	NOTE
						S/O	SND	GRL					
1	G	0.7			39.42	90		10	0	20	20		Emergent Veg 60% Bottom
2	G	0.5				80		20	0	50	10		Mostly fine G & 1"
3	RI	0.25				70		30	0	50	0		
4	RI	0.04				100			0	50	0		
5	G	0.5				90		10	0	0	10		Largest CRAZYS 10
6	P	2.6	.55			95		5	0	30	0		
7	G	0.6				96		3	0	30	0		
8	P	2.8	0.6			96		5	0	70	10	bc	Barren Pile. Barge Spill 68° @ 1350
9	RI	0.2				100			0	60	0		
V													

1300 p.m.

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

EMO Beach - AT Highway Bridge 0622919 - 4702042.

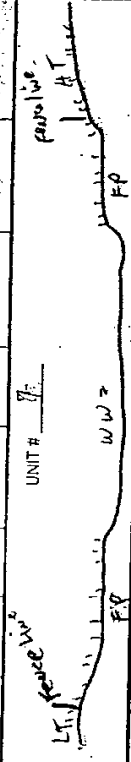
**RIPARIAN**

PAGE: 2 OF: 2  
 NAME: R. N. Shaw

DATE: 10 Apr 04

STREAM: Spruce r. (Lower Kink Bend)

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+		
7	LEFT	1	FP	4	0	0	100	CONIFER						
		2	FP	4	0	0	100	HARDWOOD						
		3	LT	8	0	20	40	CONIFER						
7	RIGHT	1	FP	4	0	0	100	HARDWOOD						
		2	HT	1	0	0	100	CONIFER						
		3	HT	9	0	0	100	HARDWOOD						
7	LEFT	1						CONIFER						
		2						HARDWOOD						
		3						CONIFER						
7	RIGHT	1						HARDWOOD						
		2						CONIFER						
		3						HARDWOOD						





Stream: Sprague River  
Tributary to: Williamson River  
Reach: 8C Hess  
Survey Type: ODFW Stream Habitat  
Access: Canoe  
Start: T36S-R11E-S12SW  
Quad: Beatty  
Date Surveyed: 20 August 04  
Surveyors: R. Nawa, K. Hartzell  
Report: R. Nawa, C. Huntington  
Distance Surveyed: 4.3 km

#### Land Use

Land use is hay production and light grazing.

#### Valley and Stream Channel Geometry

The 0.03 percent gradient river was in a valley about 2.5 km wide. Anastomosing stream channels created high sinuosity (1.7). Low terraces sloped abruptly to constrain narrow floodplains adjacent to the 32 m wide river. The channel appeared to be locally downcutting in a hardened clay substrate which is deepening the glide at unit 3.

#### Substrate

The streambed was very fine textured. An estimated 86 percent of the streambed was sand/organics and 14 percent was gravel. Five riffles were fine textured gravel (28%) and sand (72%).

#### Spawning Gravel

About 106 m<sup>2</sup> of spawning gravel was associated with a mid-channel bar in unit 13 (Map) but 90 percent of the gravel was dry (Photos 130,131). Surveyors recorded an estimated 11 m<sup>2</sup> of spawning gravel suitable for steelhead at existing low flows (3 m<sup>2</sup>/km). An additional 95 m<sup>2</sup> (22 m<sup>2</sup>/km) would become available at bankful flows. A riffle at unit 6 had 20 m<sup>2</sup> of gravel (8-30 mm) and a dry mid channel bar in unit 11 had 80 m<sup>2</sup> of gravel (8-20 mm). Marginal spawning gravel at these 2 riffles were not judged suitable for salmon spawning.

#### Riparian Vegetation

Shade was only 3 percent because sagebrush and grass dominate the riparian zone (Photo 131). Riparian vegetation was inadequate to stabilize streambanks. About 23 percent of the streambanks were eroding.

#### Wood

The reach had no wood debris because streambanks lack tree cover.

#### Rearing and Adult holding Habitat

Due to very low stream gradient, the reach consisted of long scour pools (33%) and glides (50%). Pools were segregated from glides based on maximum pool depths that ranged from (1.6 m-2.6 m). Residual pool depths averaged 1.4 m. Glides averaged about 0.5 m deep. Undercut streambanks (7%) and emergent aquatic vegetation provide cover for fish.

#### Stream Temperature

High stream temperature (25°C at 1630 pdt ) reduces salmonid rearing potential.

Photo 131 Unit 13  
Fine textured gravel  
deposited as mid-  
channel bar.

Photo 130 Unit 13  
Gravel judged suitable  
for steelhead  
spawning at higher  
flows. Most pebbles  
20 mm (1") or greater.

KT-CHIL-HABFS-00792



Sprague - Hess Reach ~~Smith~~

065272  
4702372

R. Nantz  
24 Aug 04  
Sprague R.

UNIT - 1

PAGE: 1 OF 1

STREAM: Sprague (Hess)

DATE: 8/20/04

ESTIMATOR: Hantec 11

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	
1	1	LP	01	60	87	16	0.5	3	3						Starte N-S FL
2	2	RP	01	50	62	16	1.0	3	3						
3	3	GL	02	40	43	16	0.5	3	3						
4	4	LP	02	40	60	16	0.5	2	2						
5	5	GL	03	100	120	17	0.5	2	2						
6	6	RI	00	100	40	45	0.5	2	2	1.0	32	2.0	2.2	50	72
7	7	GL	00	100	250	30	0.5	2	2						
8	8	GL	00	100	250	34	0.5	2	2						
9	9	GL	00	100	110	37	0.5	1	1						
10	10	SP	00	100	40	44	0.5	1	1	1.0	50	2.0	2.4	74	10
11	11	RI	00	100	110	52	0.5	2	2						
12	12	LP	00	100	115	37	0.5	2	2						
13	13	GL	00	100	250	52	0.5	3	3						
14	14	LP	00	100	575	40	0.5	2	2						
15	15	RI	00	100	170	37	0.5	2	2						
16	16	SP	00	100	135	30	0.5	1	1						
17	17	RI	00	100	145	65	0.5	1	1						
18	18	LP	00	100	260	43	0.5	1	1						
19	19	GL	00	100	105	40	0.6	2	2						Side Ch. off Hess Prop.
20	20	GL	02	40	250	24	0.5	2	2						
21	21	GL	01	60	250	35	0.5	2	2	1.2	32	2.4	2.4	45	10
22	22	GL	01	60	250	32	0.5	2	2						
23	23	GL	01	60	150	25	0.5	2	2						
24	24	GL	01	60	65	34	0.5	2	2						
25	25	RI	01	60	70	40	0.5	2	2						
26	26	GL	01	50	250	24	0.5	2	2						
27	27	AL	03	10	320	15	0.5	1	1						Investigation Chan. Entak
28	28	LP	01	60	390	20	0.5	2	2						Ende N-S FL

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



UNIT-2

STREAM: SPRAGUE R. (Hess Road) DATE: 20 AUG 04 NUMERATOR: R. NAUW / K.H PAGE: 1 OF: 1

UNIT #	UNIT TYPE	DEPTH* FT	DEPTH** FT	VERIFIED LENGTH	WIDTH	PERCENT SUBSTRATE			BLDR COUNT	% ACTIVE EROSION	% UNDER CUT	COMMENT / CODES	NOTE
						S/O	SND	GRVL					
1	LP	1.6	0.30			100				40			
2	SLP	0.6				80		20		30			74° @ 1420
3	RL	0.6				90		10		20			
4	LP	1.0	0.2			80		20		50			G is < 6" Channel Downcut Hole in SOFT BRCK
5	GL	0.25				100				20			G mostly < 6"
6	RI	0.30				70		30		10			G mostly < 1"
7	GL	0.6				80		20		40			< mostly < 7"
8	GL	0.5				70		30		30			
9	GL	0.4				90		10		20			
V10	SP	2.6	0.2			100				20			
11	RI	0.5				70		30		20			G mostly < 1"
12	LP	1.0	0.3			90		10		20			
13	RI	0.30				70		30		20			
14	LP	2.1	0.4			80		20		20			71° @ 1630
15	RI	0.30				70		30		40			
16	SP	1.5	0.3			90		10		10			G < 1"
17	RI	0.35				70		30		10			
18	LP	1.7	0.3			100				10			
19	GL	0.6				90		10		10			SECONDARY CHANNEL
V20	GL	0.5				100				40			
21	GL	0.6				100				10			
22	GL	0.7				80		20		30			
23	GL	0.8				90		10		30			
24	GL	0.6				90		10		20			
25	RI	0.3				80		20		20			Min Channel Bar
26	GL	0.4				60		40		20			FOR LARGE POND
27	AL	0.9				100				40		SD	77 1820 - END AT fence
28	LP	1.7	0.3			100				40			81° in active region at R6
V													0637412 - 4701882 - END

AX DEPTH POOLS - MODAL DEPTH IN FAST WATER UNITS

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



**RIPARIAN**

PAGE: 2 OF: 2  
 NAME: Naming

DATE: 8/20/04

STREAM: Sprague R. (Hess Road)

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	FP	10	0	0	40	CONIFER						
		2	LT	0	0	0	80	HARDWOOD						
		3	LT	0	0	40	60	CONIFER						
22	RIGHT	1	FP	8	0	0	100	HARDWOOD						
		2	FP	0	0	0	100	CONIFER						
		3	FP	0	0	0	100	HARDWOOD						
	LEFT	1						CONIFER						
		2						HARDWOOD						
		3						CONIFER						
	RIGHT	1						HARDWOOD						
		2						CONIFER						
		3						HARDWOOD						
UNIT # <u>22</u> 0136739-4702308 LT      FP      RE=32      LT, FP												UNIT # _____		

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: 1 OF: 2  
 NAME: R. Newell / K.H.

DATE: 20 Aug 04

STREAM: Spangor R. (Hess 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+		
7	LEFT	1	FP	10	0	0	40	CONIFER						
		2	FP	10	0	0	80	HARDWOOD						
		3	LT	0	0	0	100	CONIFER						
7	RIGHT	1	FP	10	0	0	60	HARDWOOD						
		2	LT	0	0	20	100	CONIFER						
		3	LT	0	0	0	100	HARDWOOD						
10	LEFT	1	FP	12	0	0	100	CONIFER						
		2	LT	4	0	0	100	HARDWOOD						
		3	LT	0	0	0	100	CONIFER						
10	RIGHT	1	FP	10	0	0	80	HARDWOOD						
		2	LT	0	0	20	100	CONIFER						
		3	LT	0	0	20	100	HARDWOOD						

UNIT # 7      0635126 - 4702189  
 AC = 32.00      fence  
 LT      FP      LT

UNIT # 10      063559 - 4702486  
 AC = 58  
 LT      FP      FP      LT

**PHOTO RECORD**

PAGE: 1 OF: 2

STREAM: SPRAGUE R. (Hess Reach) SURVEY TYPE: OR. PLAN  BASIN  MIXED

BASIN OR GCG: SPRAGUE FILM: DIGITAL  SLIDE  PRINTS

SURVEY CREW: RN, KH ROLL #: \_\_\_\_\_ MAILER #: \_\_\_\_\_

PHOTO # OR DIGITAL ID	UNIT #	DATE	TIME	STREAM / PHOTO DESCRIPTION
1: <u>A 125</u>	<u>7</u>	<u>20 Aug 04</u>	<u>1400</u>	<u>UPSTREAM RIPAR #1</u>
2: <u>126</u>	<u>7</u>	<u>"</u>	<u>"</u>	<u>DOWN</u>
3: <u>127</u>	<u>7</u>	<u>"</u>	<u>"</u>	<u>RICKI BANK</u>
4: <u>128</u>	<u>7</u>	<u>"</u>	<u>"</u>	
5: <u>129</u>	<u>11</u>	<u>"</u>	<u>1600</u>	<u>GRAVEL BAR - SPAWNING CHANNEL &lt; 1"</u>
6: <u>130</u>	<u>13</u>	<u>"</u>	<u>1635</u>	<u>GRAVEL BAR - SPAWNING CHANNEL = 1"</u>
7: <u>131</u>	<u>17</u>	<u>"</u>	<u>"</u>	<u>"</u>
8: <u>132</u>	<u>22</u>	<u>"</u>	<u>1720</u>	<u>UPSTREAM RIPAR #3</u>
9: <u>133</u>	<u>22</u>	<u>"</u>	<u>"</u>	<u>DOWN</u>
10: <u>A 134</u>	<u>22</u>	<u>"</u>	<u>"</u>	<u>DOWN - Better View</u>
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**PHOTO RECORD**

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

STREAM: \_\_\_\_\_ SURVEY TYPE: \_\_\_\_\_ OR. PLAN  BASIN  MIXED

BASIN OR GCG: \_\_\_\_\_ FILM: \_\_\_\_\_ DIGITAL  SLIDE  PRINTS

SURVEY CREW: \_\_\_\_\_ ROLL #: \_\_\_\_\_ MAILER #: \_\_\_\_\_

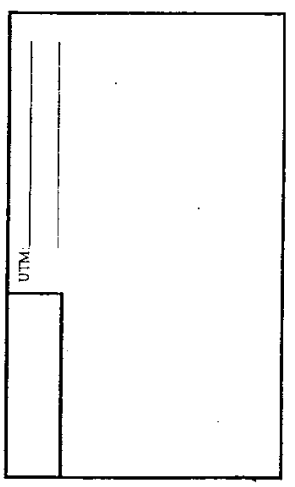
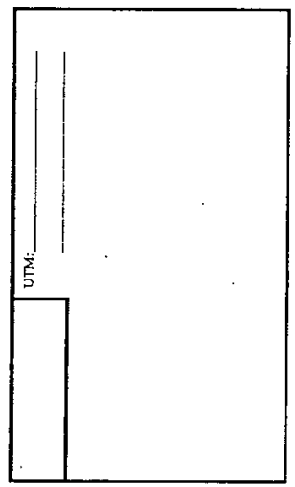
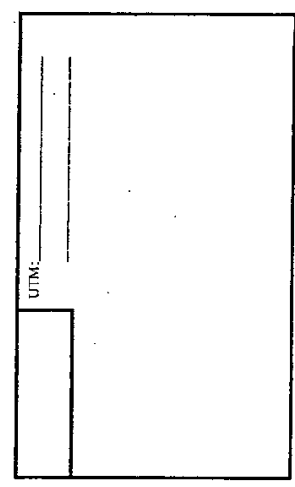
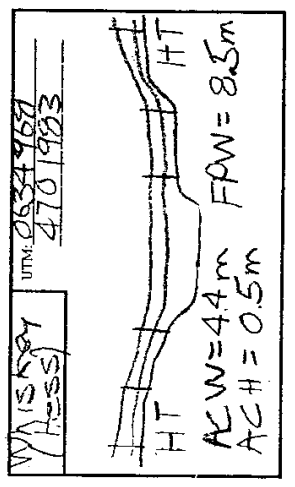
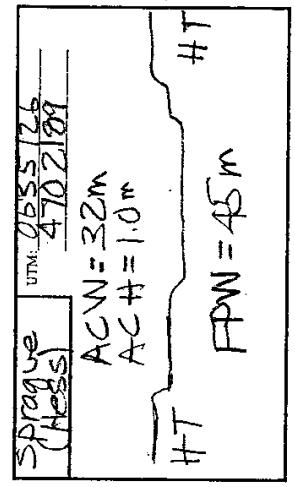
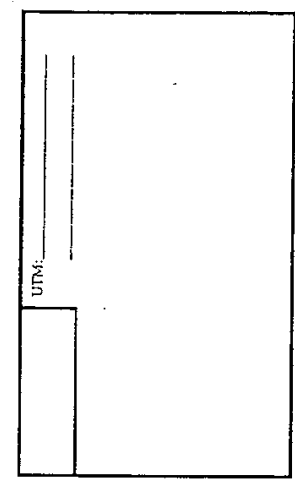
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REACH: \_\_\_\_\_ PAGE: \_\_\_\_\_ OF: \_\_\_\_\_

STREAM: Sprague & Whiskey (Hess Pop.) 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 TWP-RNG-SEC-1/4	PHOTO # / TIME	REACH NOTE
						DOM.	SUB-DOM.	DOM.	SUB-DOM.					
8/20/04	Hess	1	CT	CT	50	P	B	AG	LG	72°F	LF	38S, 11E, 12SE	101/1115	N-S Fence line
8/20/04	Hess	7	CT	CT	22	P	B	AG	LG	74°F	LF	38S, 11E, 12SE	125/1450	Main Channel

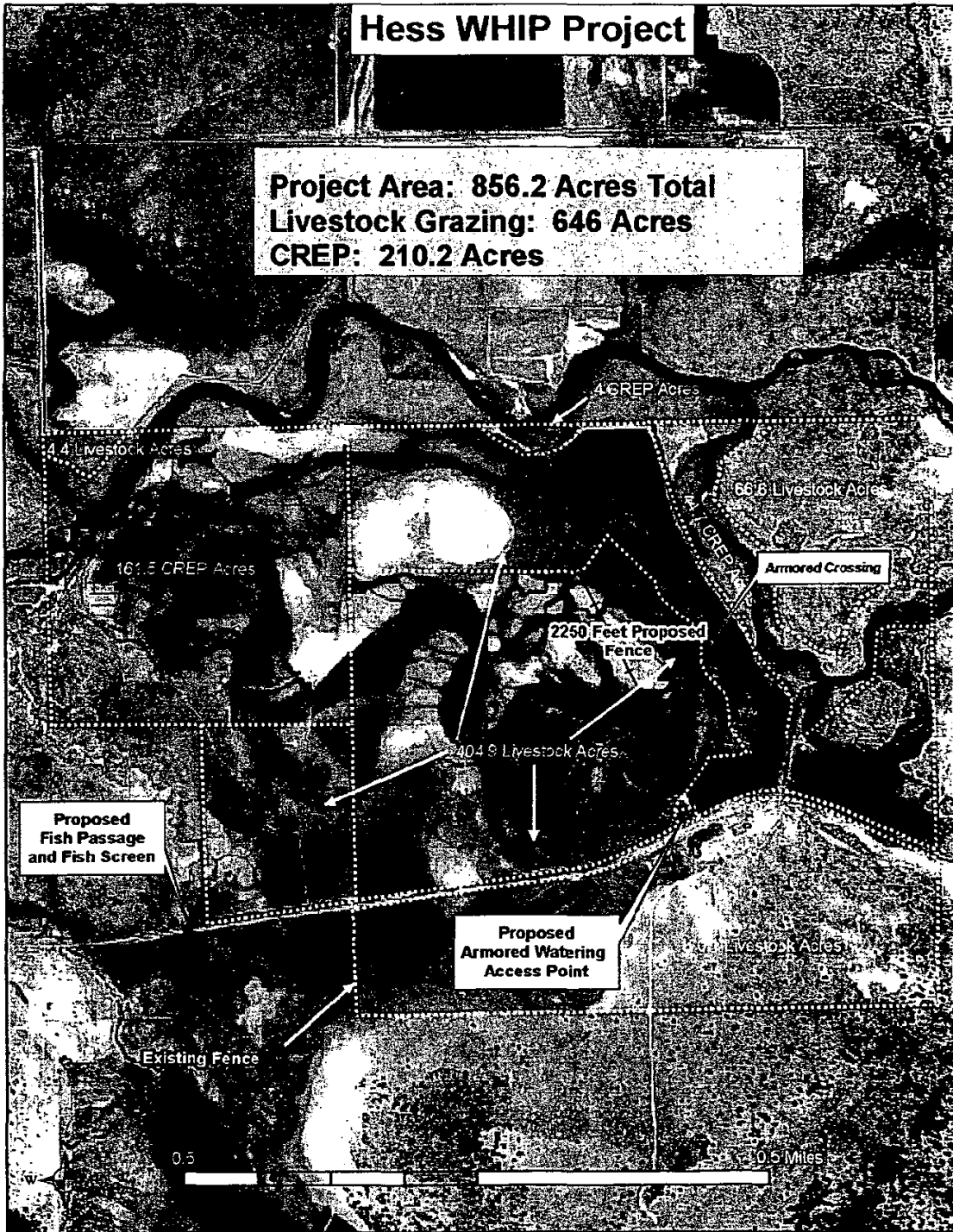






# Hess WHIP Project

**Project Area: 856.2 Acres Total**  
**Livestock Grazing: 646 Acres**  
**CREP: 210.2 Acres**



*Sprague R*