

10-8-1991

Ex. 280-US-421

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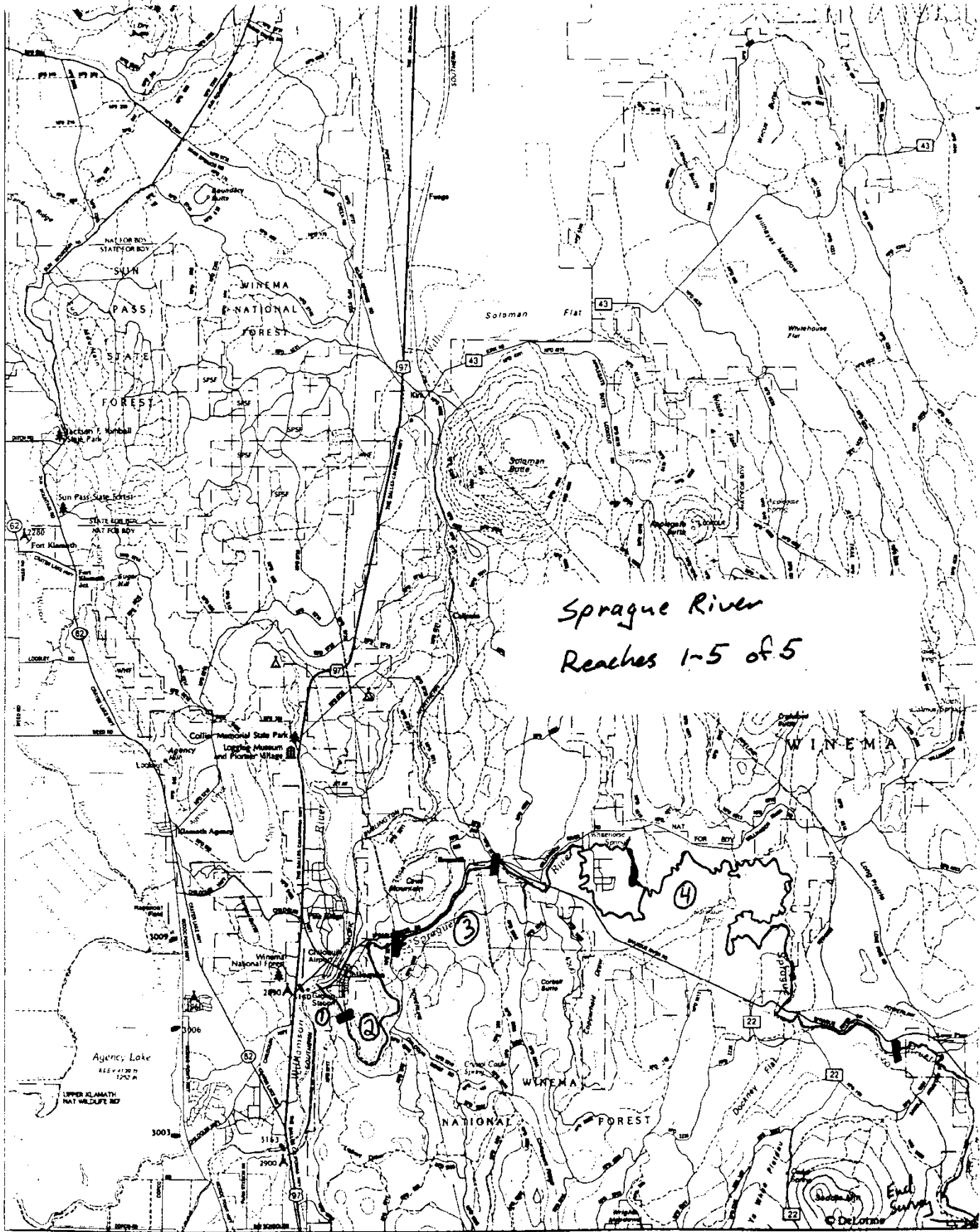
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*Sprague River  
Reaches 1-5 of 5*

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KILOMETERS 1 0 1 2 3 4

ODFW AQUATIC INVENTORY PROJECT

STREAM REPORT

STREAM: Sprague River

BASIN: Klamath

DATES: October 2-8, 1991

CREW: Ron Lefler, Jeffrey Dambacher, David Lowe

STREAM ORDER:\_\_\_ BASIN AREA:\_\_\_\_\_ NUMBER OF TRIBUTARIES:

USGS MAPS:

GENERAL DESCRIPTION: The Sprague River survey began at confluence with Williams River in the town of Chiloquin, and continued 54,590 meters to the upstream edge of USFS lands. Dominant land uses were rural residential, mature timber, and grazing. The stream was dominated by glide habitat (84%), and silt and organic substrate (56%). Large woody material contributed very little cover in all reaches surveyed.

REACH DESCRIPTIONS:

Reach 1: (T34S-R7E-NW3) Length 1,315 meters. This short reach consisted of nine habitat units. It started at the confluence with the Williams River, was bordered by the town of Chiloquin, and ended at an irrigation diversion dam equipped with a fish ladder. The average unit gradient is 0.5% and the valley width index is 20 (VWI is the ratio of the width of the active channel to the width of the valley floor). The channel was 100% constrained by alternating terraces and hillslopes. It was dominated by scour pool (54%), and riffle (43%) habitat. Stream substrate was dominated by cobble (27%), silt and organic (25%), boulder (24%), and bedrock (18%).

Reach 2: (T34S-R7E-11W) Length 5,960 meters. This reach started at a diversion dam that created a 1200 meter long pool. This reach was bordered by moderately sloped hillsides, had an average unit gradient of 0.3%, and a VWI of 3.4. The dominant habitat type was glide (62%), though the single dammed pool comprised 30 percent of the wetted area. The dominant substrate was gravel (42%), cobble (27%), and silt and organics (19%).

Reach 3: (T34S-7E-36NW) Length 1,385 meters. This was the most steep and hydraulically rough reach surveyed. It had an average unit gradient of 1.3 percent, a VWI of 2.5, and was bordered by moderately sloped hillsides. Stream habitat was dominated by riffles (69%) and scour pools (24%), and the dominant substrates were boulder (37%) and cobble (27%) sized sediment.

Reach 4: (T34S-8E-21NE) Length 32,235 meters. This was the longest reach surveyed. The stream channel in this reach was unconstrained, had multiple channels, and meandered greatly within a expansive floodplain. The average unit gradient was less than 0.1 percent and the VWI was 7.5. The flood plain was used for intensive cattle grazing. Forty-two percent of the length of stream banks were classed as actively eroding.

Reach 5: (T35S-9E-10SE) Length 13,695 meters. This reach had a more narrow floodplain, with a VWI of 3.4. Half (51%) the stream length of this reach was unconstrained with multiple channels, the remainder was in a single channel, the majority of which (41%) was intermittently constrained between gently sloping hillsides. The average unit gradient was less than 0.1 percent. Stream habitat was dominated by glides (99%), and silt and organic substrate (80%). Dominant land use was rural residential, and forty-five percent of the stream banks were classed as actively eroding.

#### CONCERNS/RECOMMENDATIONS:

#### COMMENTS:

This habitat survey was based upon methods developed for small mountain streams, and does not necessarily describe important habitat condition in large low gradient rivers. Habitat units were delineated only at observable breaks in water surface gradient, which often were many kilometers apart. Hence habitat descriptors that were averaged over the entire length of a unit may ignore important differences in micro habitats. Also, the amount of multiple channels were not accurately assessed, nor was stream slope on low gradient units, which dominated the stream.

REACH 1

34S-7E-3NW

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	Cbbl	Bldr	Bdrk
GLIDE	1	40	40.0	0.8	1,600	10	86	0	0	0	14	0
POOL-LATERAL SCOUR	3	340	37.3	3.0	14,020	28	33	0	8	28	19	11
POOL-TRENCH	1	350	40.0	3.0	14,000	1	20	0	0	40	40	0
RIFFLE	3	580	35.0	0.5	22,300	208	6	0	9	40	35	10
STEP/STRUCTURE	1	5	40.0	0.4	200	0	0	0	0	0	0	100
Total:	9	1,315	37.4	1.6	52,120	247	Avg:25	0	6	27	24	18

HABITAT SUMMARY

Habitat Group	No. Units	Total Length (m)	Avg Width (m)	Avg Depth (m)	Wetted Area		Large Boulders Number	Wood #/100m <sup>2</sup>	Wood Class
					(m <sup>2</sup> )	Percent			
Dammed & BW Pools	0	0	.	.	0	0.00	0	0.00	.
Scour Pools	4	690	38.0	3.0	28020	53.76	29	0.10	1.0
Glides	1	40	40.0	0.8	1600	3.07	10	0.63	1.0
Riffles	3	580	35.0	0.5	22300	42.79	208	0.93	1.0
Rapids	0	0	.	.	0	0.00	0	0.00	.
Cascades	0	0	.	.	0	0.00	0	0.00	.
Step/Falls	1	5	40.0	0.4	200	0.38	0	0.00	1.0

Valley and Channel Summary

Valley Characteristics (Percent Reach Length)			
<u>Narrow Valley Floor</u>		<u>Broad Valley Floor</u>	
Steep V-shape	0	Constraining Terraces	100
Moderate V-shape	0	Multiple Terraces	0
Open V-shape	0	Wide Floodplain	0

Valley Width Index: 20.0

Channel Morphology (Percent Reach Length)			
<u>Unconstrained</u>		<u>Constrained</u>	
Single Channel	0	Hillslope	0
Multiple Channel	0	Bedrock	0
Braided Channel	0	Terrace	0
		Alt. Terrace/Hill	100

Channel Characteristics			
<u>Type</u>	<u>Length</u>	<u>Area</u>	<u>Dry Units</u>
Primary	1,315	52,120	0
Secondary	0	0	0

Channel Dimensions					
<u>Wetted Surface</u>		<u>Active Channel</u>		<u>First Terrace</u>	
Width	37.4	Width	***.*	Width	***.*
Depth	1.6	Height	**.*	Height	**.*

Stream Flow: LF                      Water Temp: 13.0-13.0  
 Avg. Unit Gradient: 0.5            Habitat Units/100m: 0.7

Riparian, Bank, and Wood Summary

Land Use:                      RR/IN                      Riparian Veg.: SP

Bank Stability		
<u>Bank Class</u>	<u>Percent Reach Length</u>	<u>Undercut Banks</u>
Non-Erodible	0.0	Unit Average: 0.00%
Vegetation Stabilized	97.3	
Actively Eroding	2.7	

<u>Wood Complexity</u>		<u>Open Sky Above Stream (% of 180°)</u>	
Average Unit Score:	1.0	Unit Average:	77
Average Wood Cover:	0.6%	Range:	67-86

REACH 2

34S-7E-11NW

REACH 2

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	Cbbl	Bldr	Bdrk
GLIDE	8	4,190	34.3	0.7	147,750	75	23	7	41	22	6	1
POOL-DAMMED	1	1,200	60.0	3.5	72,000	15	95	0	0	0	5	0
POOL-LATERAL SCOUR	1	30	15.0	2.0	450	0	40	10	20	30	0	0
POOL-STRAIGHT SCOUR	1	100	30.0	2.0	3,000	0	90	0	0	10	0	0
RIFFLE	10	480	28.1	0.4	13,595	34	0	3	53	34	10	0
<b>Total:</b>	<b>21</b>	<b>6,000</b>	<b>31.4</b>	<b>0.8</b>	<b>236,795</b>	<b>124</b>	<b>Avg:19</b>	<b>5</b>	<b>42</b>	<b>27</b>	<b>7</b>	<b>0</b>

HABITAT SUMMARY

Habitat Group	No. Units	Total Length (m)	Avg Width (m)	Avg Depth (m)	Wetted Area		Large Boulders		Wood Class
					(m <sup>2</sup> )	Percent	Number	#/100m <sup>2</sup>	
Dammed & EW Pools	1	1,200	60.0	3.5	72000	30.41	15	0.02	1.0
Scour Pools	2	130	22.5	2.0	3450	1.46	0	0.00	1.0
Glides	8	4,190	34.3	0.7	147750	62.40	75	0.05	1.0
Riffles	10	480	28.1	0.4	13595	5.74	34	0.25	1.0
Rapids	0	0	.	.	0	0.00	0	0.00	.
Cascades	0	0	.	.	0	0.00	0	0.00	.
Step/Falls	0	0	.	.	0	0.00	0	0.00	.

## Valley and Channel Summary

## Valley Characteristics (Percent Reach Length)

<u>Narrow Valley Floor</u>		<u>Broad Valley Floor</u>	
Steep V-shape	0	Constraining Terraces	0
Moderate V-shape	100	Multiple Terraces	0
Open V-shape	0	Wide Floodplain	0

Valley Width Index: 3.4

## Channel Morphology (Percent Reach Length)

<u>Unconstrained</u>		<u>Constrained</u>	
Single Channel	80	Hillslope	20
Multiple Channel	0	Bedrock	0
Braided Channel	0	Terrace	0
		Alt. Terrace/Hill	0

## Channel Characteristics

<u>Type</u>	<u>Length</u>	<u>Area</u>	<u>Dry Units</u>
Primary	5,960	235,995	0
Secondary	40	800	0

## Channel Dimensions

<u>Wetted Surface</u>	<u>Active Channel</u>	<u>First Terrace</u>
Width 31.4	Width 38.8	Width 50.0
Depth 0.8	Height 0.7	Height 1.4

Stream Flow: LF                      Water Temp: 13.0-13.0  
 Avg. Unit Gradient: 0.3              Habitat Units/100m: 0.4

## Riparian, Bank, and Wood Summary

Land Use:                      MT                                      Riparian Veg.: CM

## Bank Stability

<u>Bank Class</u>	<u>Percent Reach Length</u>	<u>Undercut Banks</u>
Non-Erodible	0.0	Unit Average: 0.00%
Vegetation Stabilized	100.0	
Actively Eroding	0.0	

<u>Wood Complexity</u>	<u>Open Sky Above Stream (% of 180°)</u>
Average Unit Score: 1.0	Unit Average: 79
Average Wood Cover: 0.2%	Range: 53-86



REACH 3

34S-7E-36NW

REACH 3

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	Cbbl	Bldr	Bdrk
GLIDE	1	40	35.0	0.5	1,400	6	80	0	0	0	20	0
POOL-STRAIGHT SCOUR	1	250	40.0	1.0	10,000	18	80	0	0	0	20	0
RAPID/BOULDERS	1	75	23.0	0.2	1,725	29	20	0	0	40	40	0
RIFFLE	2	370	27.5	0.4	10,750	121	10	0	5	45	40	0
RIFFLE W/ POCKETS	2	650	27.5	0.5	18,250	239	10	5	5	30	50	0
Total:	7	1,385	29.7	0.5	42,125	413	Avg:31	1	3	27	37	0

HABITAT SUMMARY

Habitat Group	No. Units	Total Length (m)	Avg Width (m)	Avg Depth (m)	Wetted Area		Large Boulders Number	Wood #/100m <sup>2</sup>	Wood Class
					(m <sup>2</sup> )	Percent			
Dammed & BW Pools	0	0	.	.	0	0.00	0	0.00	.
Scour Pools	1	250	40.0	1.0	10000	23.74	18	0.18	1.0
Glides	1	40	35.0	0.5	1400	3.32	6	0.43	1.0
Riffles	4	1,020	27.5	0.4	29000	68.84	360	1.24	1.0
Rapids	1	75	23.0	0.2	1725	4.09	29	1.68	1.0
Cascades	0	0	.	.	0	0.00	0	0.00	.
Step/Falls	0	0	.	.	0	0.00	0	0.00	.

## Valley and Channel Summary

## Valley Characteristics (Percent Reach Length)

<u>Narrow Valley Floor</u>		<u>Broad Valley Floor</u>	
Steep V-shape	0	Constraining Terraces	0
Moderate V-shape	100	Multiple Terraces	0
Open V-shape	0	Wide Floodplain	0

Valley Width Index: 2.5

## Channel Morphology (Percent Reach Length)

<u>Unconstrained</u>		<u>Constrained</u>	
Single Channel	0	Hillslope	100
Multiple Channel	0	Bedrock	0
Braided Channel	0	Terrace	0
		Alt. Terrace/Hill	0

## Channel Characteristics

<u>Type</u>	<u>Length</u>	<u>Area</u>	<u>Dry Units</u>
Primary	1,385	42,125	0
Secondary	0	0	0

## Channel Dimensions

<u>Wetted Surface</u>	<u>Active Channel</u>	<u>First Terrace</u>
Width 29.7	Width ***.*	Width ***.*
Depth 0.5	Height **.*	Height **.*

Stream Flow: MF                      Water Temp: 14.0-14.0  
 Avg. Unit Gradient: 1.3              Habitat Units/100m: 0.5

## Riparian, Bank, and Wood Summary

Land Use: MT                      Riparian Veg.: CM

## Bank Stability

<u>Bank Class</u>	<u>Percent Reach Length</u>	<u>Undercut Banks</u>
Non-Erodible	2.7	Unit Average: 0.00%
Vegetation Stabilized	97.3	
Actively Eroding	0.0	

<u>Wood Complexity</u>	<u>Open Sky Above Stream (% of 180°)</u>
Average Unit Score: 1.0	Unit Average: 71
Average Wood Cover: 0.0%	Range: 69-75

REACH 4

34S-8E-21NE

REACH 4

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	Cbbl	Bldr	Bdrk
GLIDE	23	31,840	20.6	1.1	783,885	22	91	0	0	3	2	3
POOL-LATERAL SCOUR	2	110	25.0	1.5	2,750	1	65	0	0	5	5	25
POOL-STRAIGHT SCOUR	3	1,275	31.7	1.5	39,125	0	80	3	3	0	0	13
RIFFLE	1	35	35.0	0.3	1,225	3	80	0	0	10	10	0
STEP/STRUCTURE	1	10	30.0	0.3	300	0	0	0	0	100	0	0
Total:	30	33,270	22.8	1.1	827,285	26	Avg:85	1	1	6	3	5

HABITAT SUMMARY

Habitat Group	No. Units	Total Length (m)	Avg Width (m)	Avg Depth (m)	Wetted Area		Large Boulders		Wood Class
					(m <sup>2</sup> )	Percent	Number	/100m <sup>2</sup>	
Dammed & BW Pools	0	0	.	.	0	0.00	0	0.00	.
Scour Pools	5	1,385	29.0	1.5	41875	5.06	1	****,**	1.0
Glides	23	31,840	20.6	1.1	783885	94.75	22	****,**	1.0
Riffles	1	35	35.0	0.3	1225	0.15	3	0.24	1.0
Rapids	0	0	.	.	0	0.00	0	0.00	.
Cascades	0	0	.	.	0	0.00	0	0.00	.
Step/Falls	1	10	30.0	0.3	300	0.04	0	0.00	1.0

Valley and Channel Summary

Valley Characteristics (Percent Reach Length)			
<u>Narrow Valley Floor</u>		<u>Broad Valley Floor</u>	
Steep V-shape	0	Constraining Terraces	0
Moderate V-shape	0	Multiple Terraces	0
Open V-shape	14	Wide Floodplain	86

Valley Width Index: 7.5

Channel Morphology (Percent Reach Length)			
<u>Unconstrained</u>		<u>Constrained</u>	
Single Channel	9	Hillslope	5
Multiple Channel	86	Bedrock	0
Braided Channel	0	Terrace	0
		Alt. Terrace/Hill	0

Channel Characteristics			
<u>Type</u>	<u>Length</u>	<u>Area</u>	<u>Dry Units</u>
Primary	32,235	815,710	0
Secondary	1,035	11,575	0

Channel Dimensions					
<u>Wetted Surface</u>		<u>Active Channel</u>		<u>First Terrace</u>	
Width	22.8	Width	79.9	Width	241.7
Depth	1.1	Height	1.7	Height	2.5

Stream Flow: MF                      Water Temp: 0.0-14.0  
 Avg. Unit Gradient: \*\*. \*          Habitat Units/100m: 0.1

Riparian, Bank, and Wood Summary

Land Use:                      MT                      Riparian Veg.: GS/CM

Bank Stability		
<u>Bank Class</u>	<u>Percent Reach Length</u>	<u>Undercut Banks</u>
Non-Erodible	0.0	Unit Average: 0.00%
Vegetation Stabilized	57.9	
Actively Eroding	42.1	

<u>Wood Complexity</u>		<u>Open Sky Above Stream (% of 180°)</u>	
Average Unit Score:	1.0	Unit Average:	85
Average Wood Cover:	0.0%	Range:	75-92

REACH 5

35S-9E-10SE

REACH 5

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	Cbbl	Bldr	Bdrk
GLIDE	13	14,030	16.5	1.1	282,450	17	95	3	0	0	1	0
RIFFLE	3	120	20.0	0.6	2,460	14	13	7	3	67	10	0
<b>Total:</b>	<b>16</b>	<b>14,150</b>	<b>17.2</b>	<b>1.0</b>	<b>284,910</b>	<b>31</b>	<b>Avg:80</b>	<b>4</b>	<b>1</b>	<b>13</b>	<b>3</b>	<b>0</b>

HABITAT SUMMARY

Habitat Group	No. Units	Total Length (m)	Avg Width (m)	Avg Depth (m)	Wetted Area		Large Boulders		Wood
					(m <sup>2</sup> )	Percent	Number	#/100m <sup>2</sup>	Class
Dammed & BW Pools	0	0	.	.	0	0.00	0	0.00	.
Scour Pools	0	0	.	.	0	0.00	0	0.00	.
Glides	13	14,030	16.5	1.1	282450	99.14	17	0.01	1.0
Riffles	3	120	20.0	0.6	2460	0.86	14	0.57	1.0
Rapids	0	0	.	.	0	0.00	0	0.00	.
Cascades	0	0	.	.	0	0.00	0	0.00	.
Step/Falls	0	0	.	.	0	0.00	0	0.00	.

Valley and Channel Summary

Valley Characteristics (Percent Reach Length)

<u>Narrow Valley Floor</u>		<u>Broad Valley Floor</u>	
Steep V-shape	0	Constraining Terraces	30
Moderate V-shape	0	Multiple Terraces	0
Open V-shape	41	Wide Floodplain	30

Valley Width Index: 3.4

Channel Morphology (Percent Reach Length)

<u>Unconstrained</u>		<u>Constrained</u>	
Single Channel	8	Hillslope	41
Multiple Channel	51	Bedrock	0
Braided Channel	0	Terrace	0
		Alt. Terrace/Hill	0

Channel Characteristics

<u>Type</u>	<u>Length</u>	<u>Area</u>	<u>Dry Units</u>
Primary	13,695	280,360	0
Secondary	455	4,550	0

Channel Dimensions

<u>Wetted Surface</u>	<u>Active Channel</u>	<u>First Terrace</u>
Width 17.2	Width 35.0	Width 70.0
Depth 1.0	Height 2.0	Height 2.5

Stream Flow: MF                      Water Temp: 12.0-15.0  
 Avg. Unit Gradient: \*\*. \*          Habitat Units/100m: 0.1

Riparian, Bank, and Wood Summary

Land Use:                      RR/MT                      Riparian Veg.: GS/CM

Bank Stability

<u>Bank Class</u>	<u>Percent Reach Length</u>	<u>Undercut Banks</u>
Non-Erodible	0.2	Unit Average: 0.00%
Vegetation Stabilized	54.9	
Actively Eroding	44.9	

<u>Wood Complexity</u>		<u>Open Sky Above Stream (% of 180°)</u>	
Average Unit Score:	1.0	Unit Average:	80
Average Wood Cover:	0.0%	Range:	75-86

STREAM SUMMARY

SPRAGUE RIVER

Number <u>Units</u>	Total Length	Avg Width	Avg Depth	Total Area	Substrate						Total Large
	(m)	(m)	(m)	(m <sup>2</sup> )	S/O	Sand	Grvl	Cbbl	Bldr	Bdrk	Boulder
83	56,120	26.1	1.0	1,443,235	56	2	12	17	9	4	841

<u>Habitat Group</u>	Wetted Area	
	(m <sup>2</sup> )	Percent
Scour Pool	83345	5.8
Backwater Pools	72000	5.0
Glide	1217085	84.3
Riffle	68580	4.8
Rapid	1725	0.1
Cascade	0	0.0
Step	500	**.*

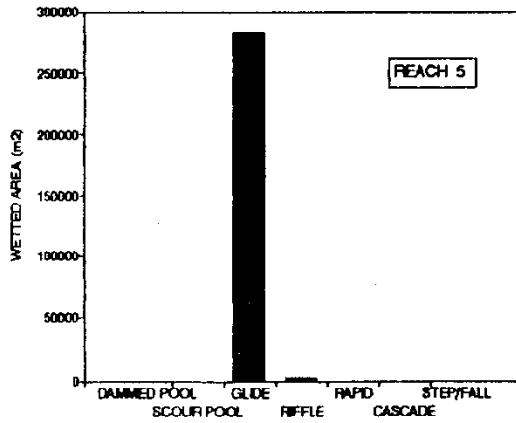
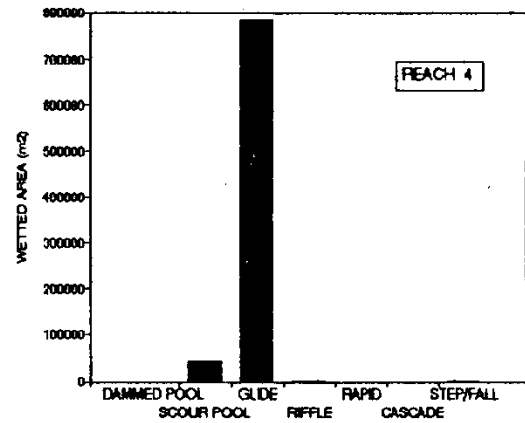
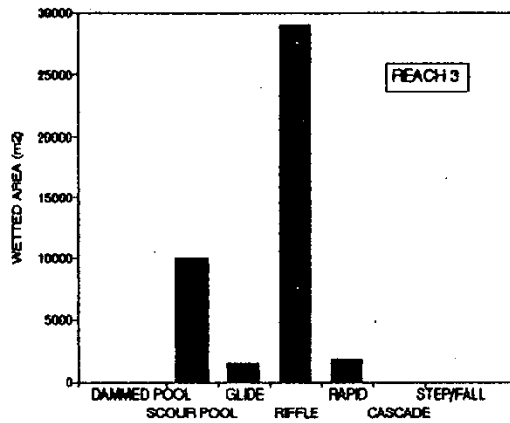
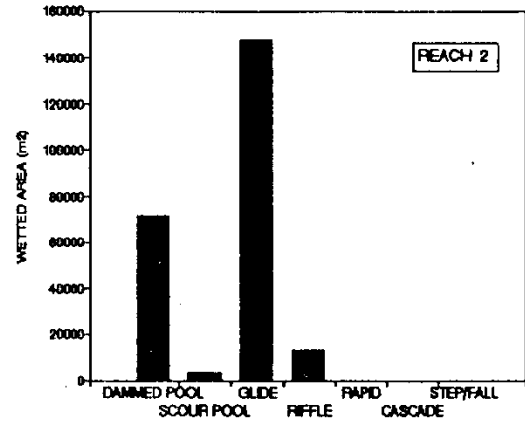
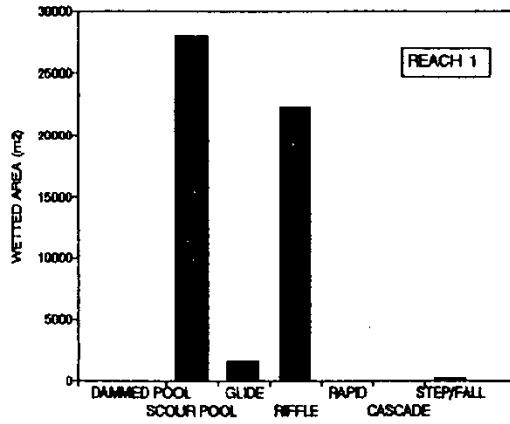
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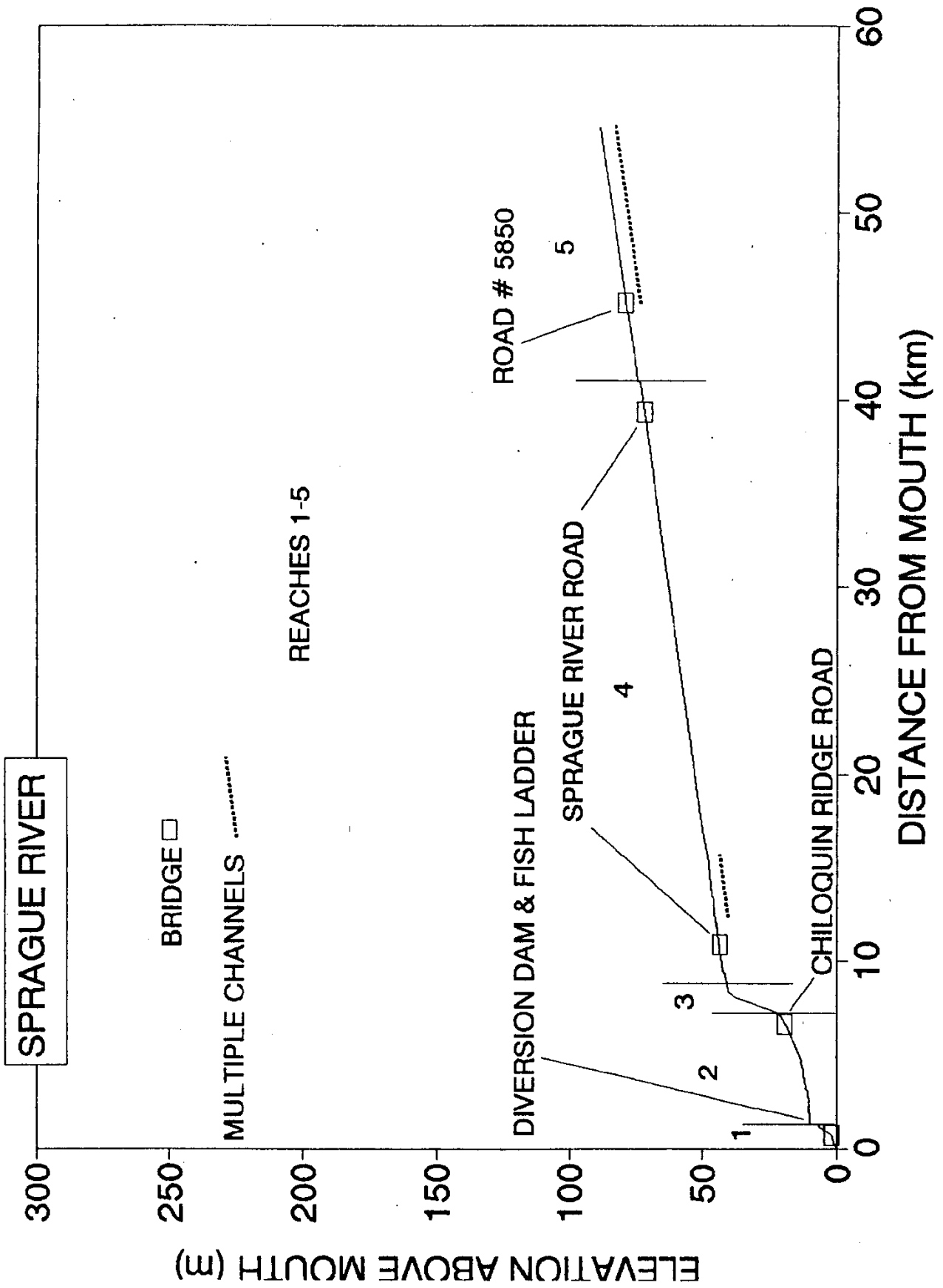
SPRAGUE RIVER, WOOD SUMMARY

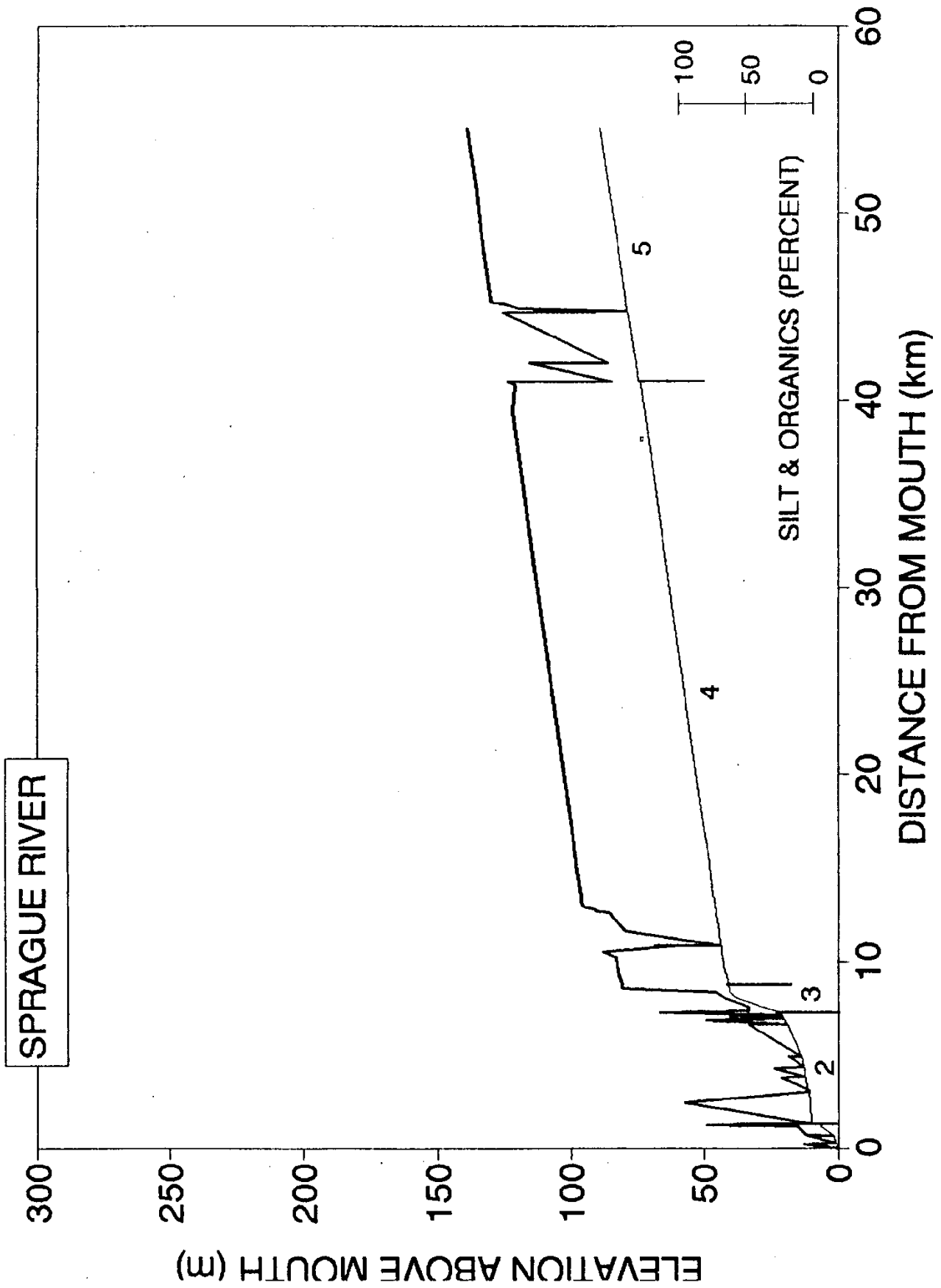
	(m)		(m <sup>3</sup> )	PIECES	VOLUME
REACH	DISTANCE	PIECES	VOLUME	/100m	/100m
1	1310	0	0	0.00	0.00
2	5865	24	25	0.41	0.42
3	1485	12	6	0.81	0.43
4	32235	32	17	0.10	0.05
5	13695	8	17	0.06	0.13

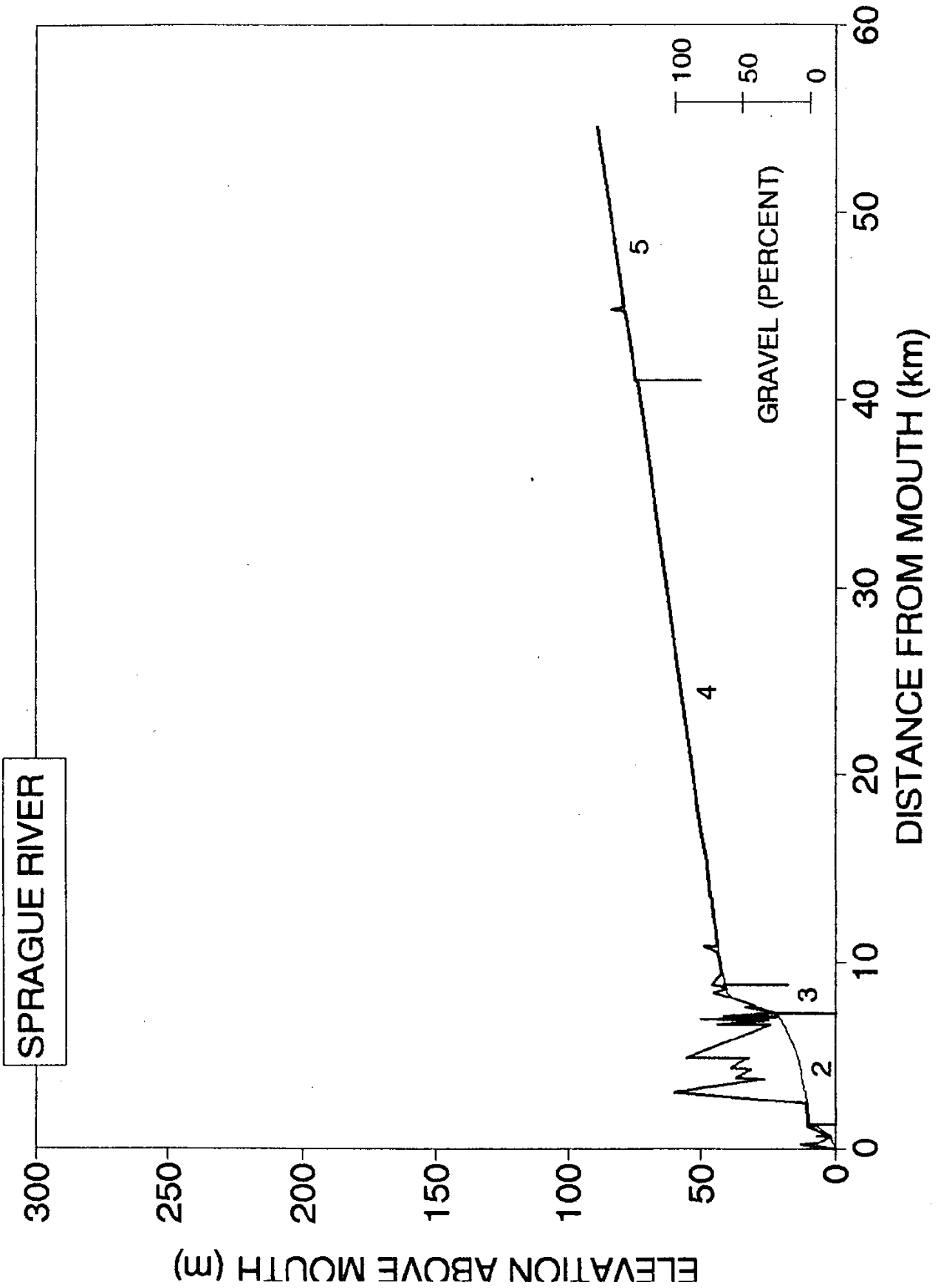


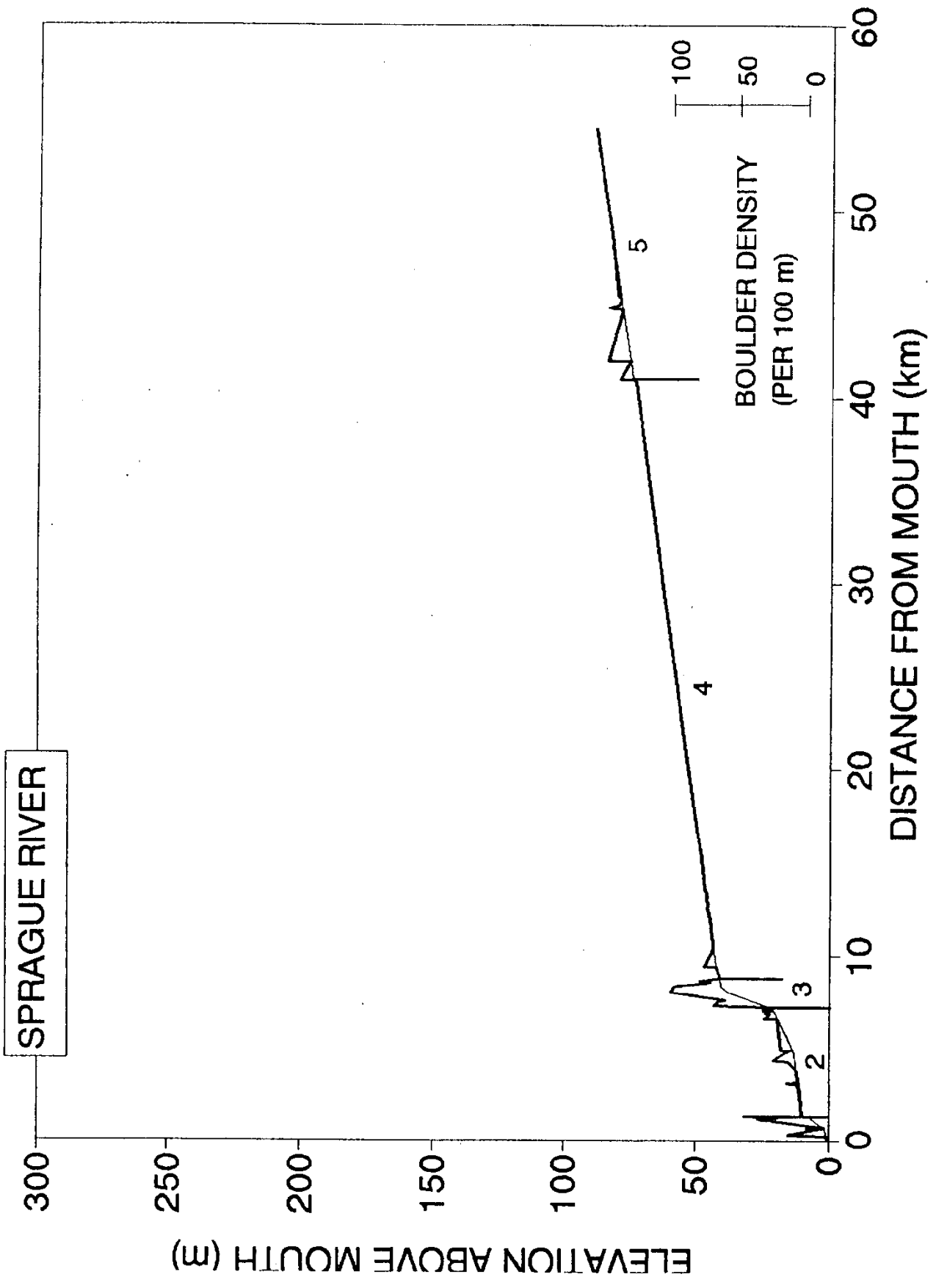
# SPRAGUE RIVER: HABITAT DISTRIBUTION

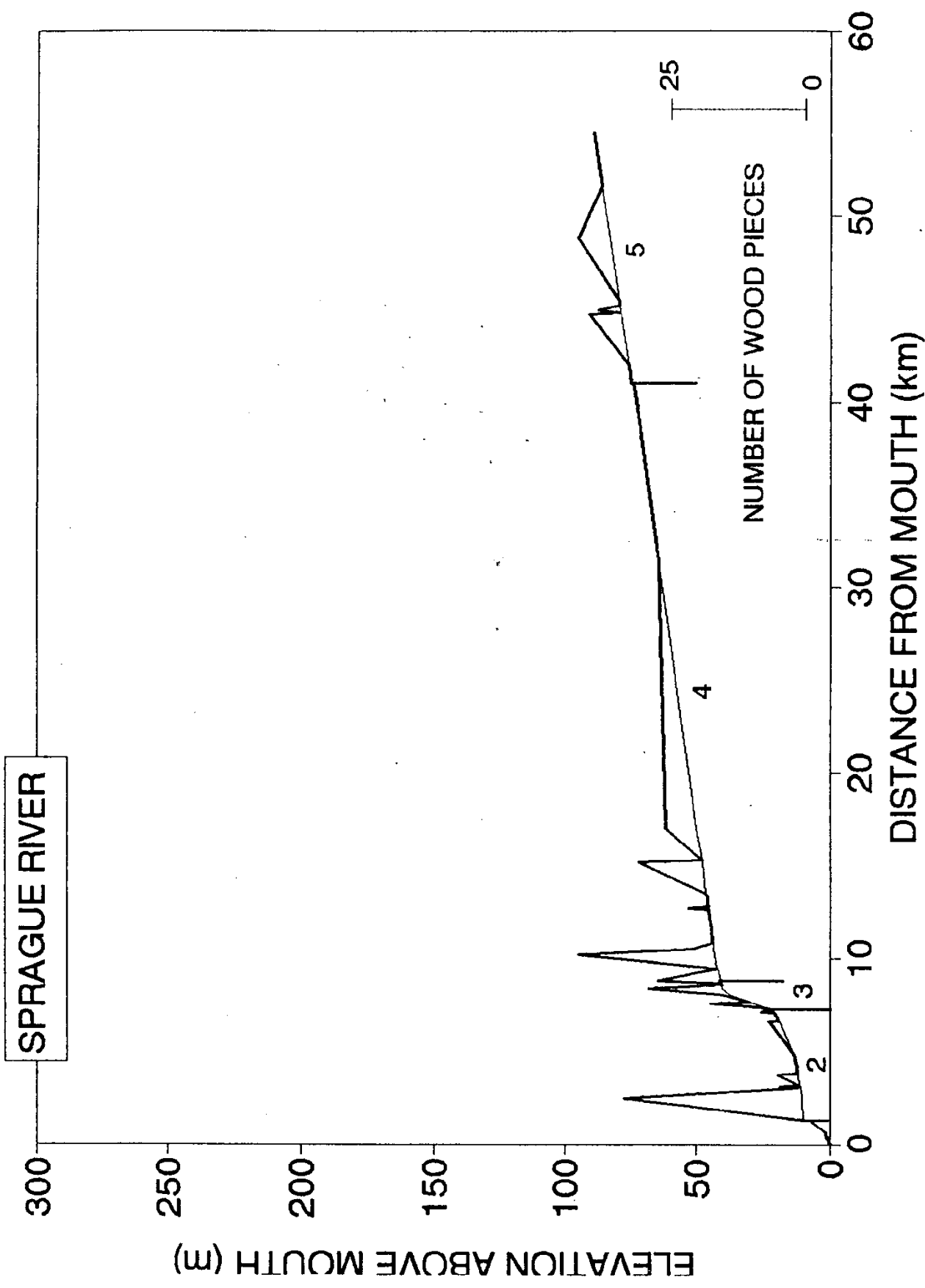


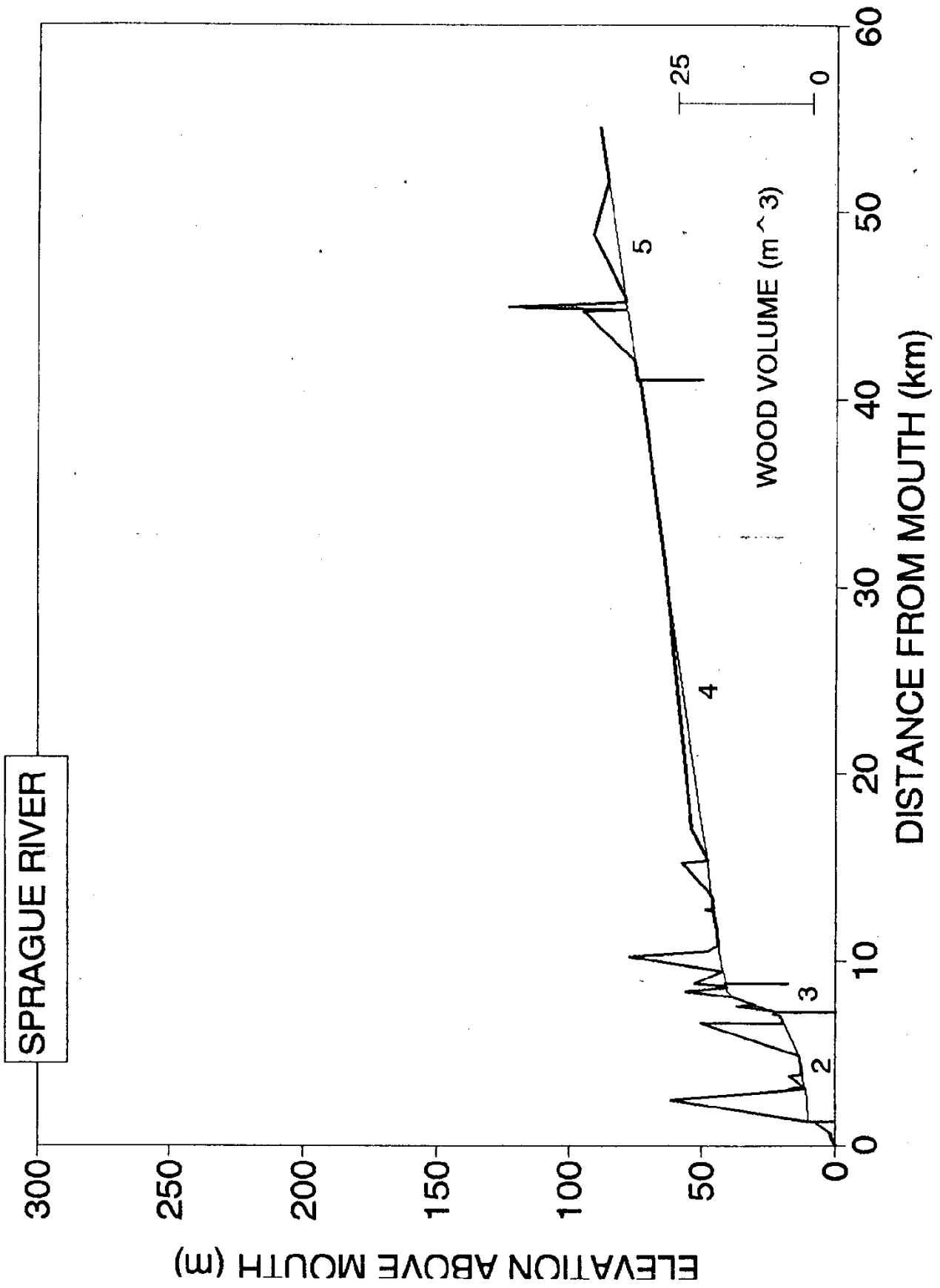


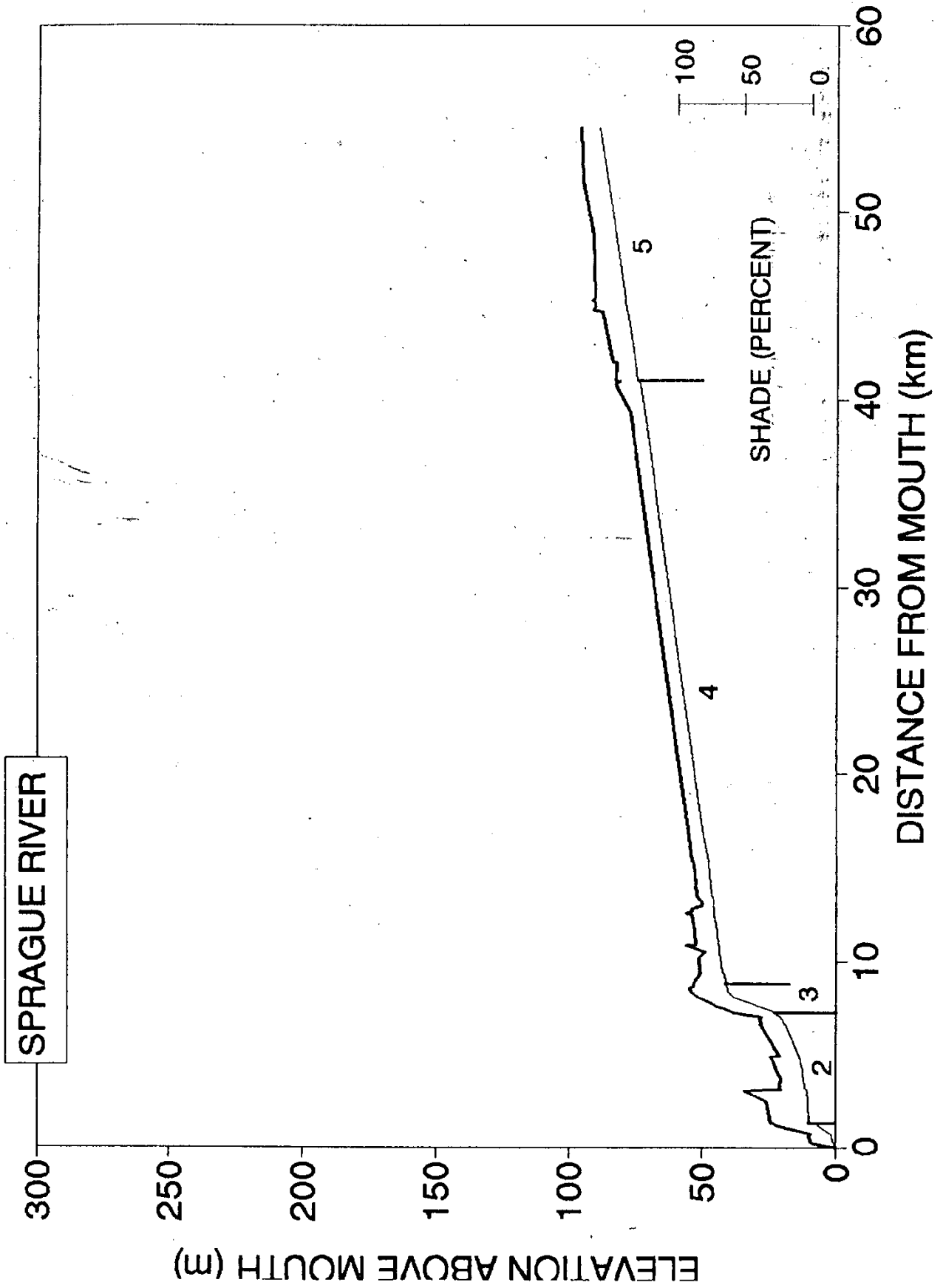














SPRAGUE RIVER, KLAMATH BASIN, COMMENT SUMMARY: 1991 SURVEY 1 of 1

REACH	UNIT	TYPE	CH-ANL	DISTANCE	CODE	NOTE 1	NOTE 2
1	1	LP	00	0.23			RAILROAD BRIDGE-BOTTOM COVERED
1	2	FI	00	0.30			IN WEED/ALGAE MATS
1	5	LP	00	0.77	BC		PRIVATE BRIDGE
1	8	FI	00	1.22	SDY		HIGH SCHOOL
1	7	GL	00	1.26			95% S/O=VEG MATS
1	9	SS	00	1.22	DAM	DIVERSION & FISH LADDER	PHOTO 4/11:09A/11:12
2	10	DP	00	2.32			P-7 FLOODED TERRACE/BA OLD
2	11	GL	00	3.07		ISLAND AT 350M	
2	15	GL	00	3.78	BC (OLD)		
2	20	FI	00	4.94			EDGE OF USFS
2	21	GL	00	6.04			PRIVATE PROPERTY
2	22	FI	00	6.06	BC		CHILOQUIN RIDGE RD
2	23	GL	00	6.04	BC	BC	CHILOQUIN RIDGE RD#2
3	30	SP	00	7.26			MM#2
3	31	FB	00	7.25		AT #2 ROAD MILE	
4	40	FI	00	9.47		DEPTHS IMPOSSIBLE TO DETERMINE	INTERS OF SPRAGUE R HWY + 5812
4	41	GL	00	10.27		5 MILE MARKER	
4	44	LP	00	10.82	BC		SPRAGUE RIVER HWY
4	45	SS	00	10.93	DD	OLD BRIDGE CROSSING	OLD BRIDGE COBBLES
4	46	SP	00	11.73			WILLAMSON ROAD
4	47	GL	00	12.53			17/14:51 RIVER SPLITS, MARSH
4	48	LP	00	12.59	WL/BV		BEAVERMINK
4	49	GL	01	12.69	WL/BV	WM BETWEEN SPLIT	SPLIT CHANNEL
4	50	GL	02		WL/BV	AC WIDTH=300	18/15:58
4	51	GL	01	12.78	WL/BV		
4	52	GL	02		WL/BV		
4	53	GL	01	12.88	WL/BV		
4	54	GL	02		WL/BV		
4	55	GL	00	12.96	WL/BV		
4	56	GL	01	13.21	WL/BV		19/08:37
4	57	GL	02		WL/BV		
4	58	GL	00	13.35	WL/BV		
4	59	GL	01	13.55	WL/BV		
4	60	GL	02		WL/BV	AC WIDTH=300	
4	61	GL	00	15.25	WL/BV		
4	62	GL	01	15.40	WL/BV		
4	63	GL	02		WL/BV		
4	64	GL	00	17.00	WL/BV		GEORGE WEBB PROPERTY
4	65	GL	00	31.40	WL/BV		
4	66	GL	00	39.40	WL/BV		
4	67	GL	00	40.90			24/09:38-WATER WITH DRAW
5	69	FI	00	41.05			MM ROCK CONSTRUCTION
5	70	GL	00	42.05		ISLAND	
5	71	FI	00	42.08	BC (OLD)	OLD BC	
5	72	GL	00	44.78	WL/BV	SEE NOTE ON BACK	26/27/12:56-DOWN + UPSTREAM
5	73	FI	00	44.84	WL/BV		
5	74	GL	00	45.04	WL/BV		28/12:20 T=13:5C
5	75	GL	01	45.19	WL/BV		
5	76	GL	02		WL/BV		
5	77	GL	01	45.39	WL/BV		
5	78	GL	02		WL/BV		
5	79	GL	01	45.49	WL/BV		
5	80	GL	02		WL/BV		
5	81	GL	00	48.79	WL/BV	WM MANY SPLIT CHANNELS	
5	82	GL	00	51.59	WL/BV		
5	83	GL	00	54.59	WL/BV		