12-4-2009

Ex. 281-US-427

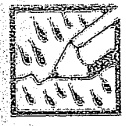
Mike Gagner
R2 Resource Consultants

May 14, 2004

Sampling

1442.01

WD-4



"Rite in the Rain"
ALL-WEATHER
LEVEL BOOK
No. 310

CONTENTS

PAGE	REFERENCE	DATE

WD-4 Fort Cr. 05/14/04

	In	Out
Time	1:30	5:45
S.G	0.90	.90
R2 staff gage	1.07	1.07

Crew: M. Gagner
A. Weybright

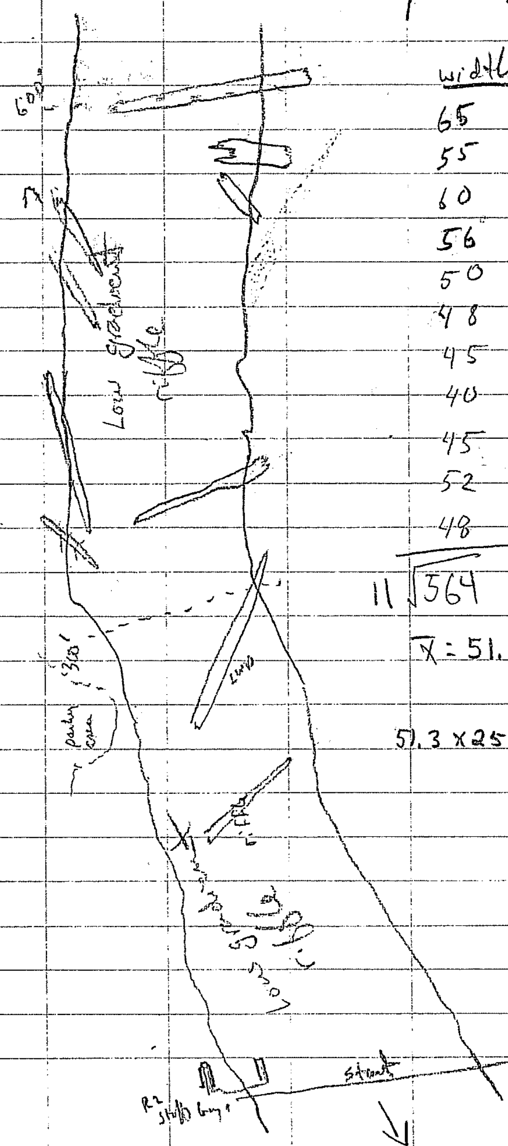
Equipment: Marsh McBirney
Model 2000
SN: 2005068

Directions: From Klamath Falls head ~~south~~ north on Hwy 97 toward Chiloquin. After ~20 miles cross over Williamson R. ~1/4 after crossing Williamson look for Hwy 62 turn left onto Hwy 62 and follow for ~11 miles. Turn right onto Kimball Rd (towards Kimball St. Park) Rd 623 and follow for ~ 1/4 mile and turn right onto FS Rd 990. Follow Rd 990 to ~ 1/8 mile before Fort Cr. spring and turn right onto unmarked trail/rd that parallels Fort Cr. follow to site (Rd 990)

WD-4 Habitat Mapping 05/14/04

Unit Type	Length	$\bar{X}$ width	Notes
riffle	1281'		* only one habitat type.

WD-4 Habitat Map 05/14/04



width
65
55
60
56
50
48
45
40
45
52
48

11 | 564

$\bar{X}$ = 51.3'

51.3 x 25 = 1282'

WD-4 Transect Map
& staining
05/14/04

WD-4 Habitat Map
05/14/04

* the channel is criss-crossed with LWD
* only riffle habitat present
* small scour holes located under large pieces of [illegible]

Ex. 281-US-427
Page 4 of 21

WD - 4 Level Loop 05/14/04

STA	BS	HI	FS	Elevn
BM	3.19			100.00
		103.19		
TR-1			5.44	97.75 ✓
TR-2			3.62	99.57 ✓
TR-3			2.89	100.30
TP TR-3	2.29			100.30
		102.59		
TR-2			3.03	99.56 ✓
TR-1			4.84	97.75 ✓
BM			2.59	100.00 ✓ OK

* Recommend using a turning point btw TR-2 & TR-3 survey points

WD-4 WSE 05/14/04

STA	BS	HI	FS	Elevn
		102.59		
TR-1				
RWS			7.69	94.90
MWS			7.68	94.91
LWS			7.69	94.90
TR-2				
RWS			6.93	95.66
MWS			6.92	95.68
LWS			6.91	95.68
TR-3 HP	2.68	102.98		100.30
RWS			5.82	97.16
MWS			5.82	97.16
LWS			5.83	97.15
BM				

swoffa=3602 05/14/04

WD-4 TR-2 est. 181 3A prop.

STA	Depth	Vel.	Notes
RWE = 8.7	0.0	0.0	~.30 ucb
9.0	.55	~.10 est	
11.0	.75	.51	
13.0	.70	.82	
15.0	.75	.70	
18.0	.90	.98	
21.0	1.10	1.27	
24.0	.85	1.33	
27.0	1.1	1.25	
30.0	1.05	.95	
33.0	1.10	1.0	
36.0	.90	.85	
39.0	.85	.88	
42.0	.90	.87	
45.0	.85	~~.90~~ 1.1	
48.0	.90	.98	
51.0	.90	1.55	
54.0	.90	1.19	
57.0	.85	.83	
60.0	.85	1.36	
63.0	.85	1.06	
66.0	.70	.72	
69	.75	.87	

WD-4 TR-2 conti. 05/14/04

STA	Depth	Vel.	Notes
72.0	.55	.82	
75.0	.40	.20	cobble vel. cover
77.0	~~.30~~ .35	.25	edge/vel. cover
79.0	.29	.12	
80.1	0.0	0.0	
LWP = 93.0			

Swoffer = 3602 prop, 3A

WD-4 TR-3 05/14/04

STA	Depth	Vel.	Notes
RWP = 1.0'			
RWE = 16.8	0.0	0.0	
17.5	0.5	-0.05	Estimated
19.0	0.7	0.20	
21.0	0.5	0.27	u/s velocity shelter (small log)
24.0	0.85	0.07	" " " "
27.0	1.15	0.03	" " " "
28.0	1.30	1.09	
31.0	1.30	1.10	
34.0	1.30	1.37	
37.0	1.30	1.63	
40.0	1.20	1.74	
43.0	1.20	1.63	
46.0	1.00	1.39	
49.0	0.90	0.96	
52.0	0.80	1.32	
55.0	0.80	1.24	Roll #6
58.0	0.75	1.48	#25: TR 3 L→R
61.0	0.75	1.52	#24: TR 3 R→L
64.0	0.70	1.34	#23: TR 3 looking u/s
67.0	0.80	1.24	#22: " " "
70.0	0.65	0.61	
73.0	0.80	0.69	
76.0	0.55	0.48	
79.0	0.60	0.49	

WD-4 TR-3 cont'd

STA	Depth	Vel	Notes
81.0	0.55	0.72	@ log @ 81'-82'
82.0	0.45	0.0	LWD vel. shelter
83.0	0.3	0.0	
83.4	0.0	0.0	LWE

WD-4 TR-1 Marsh McBirney
05/14/04 SN: 2005068

STA	Depth	Vel.	Comments
RWP = 1.0			
RWE = 7.3	0.0	0.0	
7.4	0.4*	0	estimated vel.
8.0	.55	.10	
8.5	.7	1.35	
9.0	.7	1.18	
11.5	.75	1.57	
14	0.7	1.5	
17	0.8	1.67	
20	0.97	1.33	
23	1.2	1.62	
26	.90	1.72	
29	.55	1.73	on top of LWD
32	.87	1.12	
35	.67	1.07	
38	.65	.64	
41	.75	.90	
44	.70	0.77	
47	0.65	0.98	
50	.80	.93	
53	.80	1.26	
56	0.80	1.76	

WD-4 TR-1 continue 05/14/04

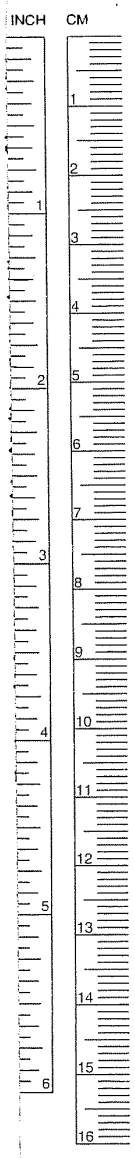
STA	Depth	Vel.	Comments
59	0.80	1.31	
61	0.55	.66	
63	0.55	.82	
66	0.80	1.14	
69	0.80	0.74	velocity shelter
70.3	.32	0.0	
LWE = 70.6	0.0	0.0	
LWP = 90.2			

WD-4

"Rite in the Rain"
ALL-WEATHER
LEVEL BOOK
No. 310

June 27, 2004

Survey



MEASUREMENT CONVERSIONS

IF YOU KNOW	MULTIPLY BY	TO FIND
LENGTH		
inches	2.540	centimeters
feet	30.460	centimeters
yards	0.914	meters
miles	1.609	kilometers
millimeters	0.039	inches
centimeters	0.393	inches
meters	3.280	feet
meters	1.093	yards
kilometers	0.621	miles
WEIGHT		
ounces	28.350	grams
pounds	0.453	kilograms
grams	0.035	ounces
kilograms	2.204	pounds
VOLUME		
fluid ounces	29.573	milliliters
pints	0.473	liters
quarts	0.946	liters
gallons (U.S.)	3.785	liters
milliliters	0.033	fluid ounces
liters	1.056	quarts
liters	0.264	gallons (U.S.)
TEMPERATURE		

°C = (°F - 32) x .555
°F = (°C x 1.8) + 32

Inches	Decimals of foot	Milli-meters
1/16	.0052	1.5875
1/8	.0104	3.1750
3/16	.0156	4.7625
1/4	.0208	6.3500
5/16	.0260	7.9350
3/8	.0313	9.5250
1/2	.0417	12.700
5/8	.0521	15.875
3/4	.0625	19.050
7/8	.0729	22.225
1"	.0833	25.400
2"	.1667	50.800
3"	.2500	76.200
4"	.3333	101.60
5"	.4167	127.00
6"	.5000	152.40
7"	.5833	177.80
8"	.6667	203.20
9"	.7500	228.60
10"	.8333	254.00
11"	.9167	279.40
1 foot	1.0000	304.80

"Rite in the Rain" ®
ALL-WEATHER WRITING PAPER

Name Mike Gagner
R2 Resource Consultants
Address 15250 NE 95 st.
Redmond, WA 98019
Phone 425/556-1288

Project 1442.01 PHABSIM Data

"**Rite** in the Rain" - a unique all-weather writing surface created to shed water and to enhance the written image. Makes it possible to write sharp, legible field data in any kind of weather.

a product of

J. L. DARLING CORPORATION
TACOMA, WA 98424-1017 USA
www.riteintherain.com

WD4 FORT CREEK | 6/27/04

	IN	OUT
TIME	12:50 pm	4:10 pm
S.G.	1.00	1.00

CREW: C. Yoder, A. Weybright

Equipment: Swoffer #5750 Prop 2A

nice sunny day, few clouds

TYPE	TR	RWP	LWP	RWE	LWE
Riffle	1	1.0	90.2	7.3	70.6
Riffle	2	1.0	93.0	8.7	80.1
Riffle	3	1.0	93.5	16.8	83.4

PHOTO LOG CFV5

20	WD4	TR2	LB to RB
19	WD4	TR2	upstream
18	WD4	TR2	downstream
17	WD4	TR2	RB to LB
16	WD4	TR3	RB to LB
15	WD4	TR3	upstream
14	WD4	TR3	Downstream
13	WD4	TR3	LB to RB
12	WD4	TR1	RB to LB
11	WD4	TR1	upstream
10	WD4	TR1	downstream
9	WD4	TR1	LB to RB

LEVEL LOOP SURVEY 6/27/04

STA	BS	HI	FS	ELV	ROD
BM	2.82	102.82		100.00	
TR1			5.09	97.73	
TR2			3.28	99.54	
TR3			2.54	100.28	
(TP)					
TR3	2.66	102.94		100.28	
TR2			3.37	99.57	
TR1			5.21	97.73	
BM			2.94	100.00	
TR2			3.38	99.56	

8 B

108.90

STA	BS	HI	FS	ELV	ROD
TR2-R		102.94	7.25	95.69	
TR2-L			7.23	95.71	
upstream TR3 ~60'		103.84	6.61	97.23	
upstream TR3 ~60'		103.84	7.76	97.33	1.25
~~downstream TR1 ~60'~~		~~100.83~~	5.59	95.24	
downstream TR2 ~60'		100.83	7.39	94.72	1.33
downstream TR1 ~60'			6.09	94.74	
downstream TR1 ~60'			7.40	94.75	1.32

RIFFLE - TR2

CROSS SECTIONAL PROFILE

STA	BSI	HI	FS	ELV	ROD
-11.0		102.94	1.28	101.66	
-6.0			1.81		
1.0			4.80		
4.0			5.95	96.99	
7.0			6.72	96.22	
8.84			6.95	95.99	
8.7			7.25	95.69	
80.1			7.23	95.71	
70.5	80.5	MG KP 10/11	7.04	95.90	
83.0			6.83	96.11	
88.0			5.89	97.05	
93.0			5.28	97.66	
113.0			4.37	98.57	
123.0			2.37	100.57	

6/27/04

DOM	SUB	%	COMMENTS
Sand	Veg	60	RWP - 12'
		60	RWP - 7
Veg	Sand	70	RWP
Veg	Sand	80	
Veg	Sand	80	
Veg	Sand	90	
Veg	Sand	80	RWE
Veg	Sand	80	LWE
Veg	Sand	80	
Veg	Sand	80	
Veg	Sand	60	
Veg	Sand	60	LWP
Sand	Veg	70	LWP +20
Veg	Sand	60	LWP +30

TR2

DISCHARGE SURVEY 6/27/04

STA	DEPTH	VEL	DOM	SUB	%	COM
1.0						RWP
8.7	0	0	Veg	Sand	80	RWE
9.0	0.6	0.2	Sand	sm. gravel	70	
11.0	0.75	0.65	Sand	sm. gravel	70	
13.0	0.75	0.78	sand	sm. gravel	60	
15.0	0.8	0.81	sand	sm. gravel	70	
18.0	0.88	0.96	sm. gravel	coarse gravel	60	
21.0	1.12	1.31	coarse gravel	sand	60	
24.0	0.88	1.47	coarse gravel	fine gravel	60	
27.0	1.1	1.13	coarse gravel	Sand	70	
30.0	1.02	0.95	Sand	sm. gravel	70	
33.0	1.05	1.03	Sand	sm. gravel	70	
36.0	0.9	0.87	sand	sm. gravel	70	
39.0	0.7	1.07	sm. gravel	Sand	60	
42.0	0.82	0.62	sm. gravel	Sand	80	
45.0	0.97	1.15	coarse gravel	fine gravel	60	
48.0	0.9	1.18	coarse gravel	fine gravel	60	
51.0	0.92	1.48	coarse gravel	fine gravel	80	
54.0	1.02	1.37	coarse gravel	fine gravel	80	behind ROCK
57.0	0.85	0.70	coarse gravel	" "	80	behind rock
60.0	0.78	1.27	"	" " "	80	
63.0	0.82	0.95	"	" " "	70	
66.0	0.68	0.83	"	" " "	60	

STA	DEPTH	VEL	DOM	SUB	%	COM
69.0	0.7	0.74	fine gravel	coarse gravel	60	
72.0	0.57	0.86	sand	sm. gravel	60	
75.0	0.35	0.19	Sand	sm. gravel	60	
77.0	0.3	0.40	Sand	sm. gravel	70	
79.0	0.2	0.4	Sand	sm. gravel	60	
80.1			Veg	Sand	80	LWE
93.0						LWP

RIFFLE TL3

CROSS SECTIONAL PROFILE

6/27/04

STA	BS	HI	FS	ELV	ROD	DOM	SUB	%	COMMENTS
TRB HP	3.56	103.84		100.28					
-3.5			2.13			Sand	Veg	80	RWP - 4.5'
1.0			3.99	7.55		Sand	Veg	80	RWP
6.0			4.93	98.91		Sand	Veg	80	
11.0			5.23	98.61		Sand	Veg	80	9'-12' Log
12.6			5.95	97.89		~~Veg~~ Sand	~~Sand~~ Veg	70	
14.5			6.22	97.64		Veg	Sand	80	
16.7			6.48	97.36		Veg	Sand	80	
16.8			6.69	97.15		Veg	Sand	80	RWE
			6.70	97.14					RWSE
			6.71	97.13					LWSE
83.4			6.71	97.13		Veg	Silt	60	LWE
83.6			6.58	97.26		Veg	Silt	60	
87.5			6.35	97.49		Veg	Silt	70	
91.0			5.66	98.18		Veg	Silt	80	
93.5			4.83	99.01		Veg	Sand	60	LWP
98'			4.07	98.97		Sand	Veg	60	LWP +4.5'
102.5				LWP +4.0 = 102.97					LWP + 9'

TR3

DISCHARGE SURVEY

STA	DEPTH	VEL	DOM	SUB	%	COM
1.0						RWP
16.8	0	0	Veg	Sand	80	RWE
17.5	0.58	-0.03*	sm. gravel	lrg gravel	60	
19.0	0.7	0.09	" "	" "	70	
21.0	0.5	0.22	sand	sm gravel	70	
24.0	0.82	0.15	sand	lrg gravel	80	
27.0	1.07	0.38	Sand	sm. gravel	60	
28.0	1.25	1.16	lrg gravel	sm gravel	60	
31.0	1.32	0.98	" "	" "	80	
34.0	1.37	0.99	" "	Sand	80	
37.0	1.2	1.55	lrg gravel	sm. Gravel	60	
40.0	1.1	1.62	" "	" "	60	
43.0	1.2	1.34	" "	" "	70	
46.0	1.02	1.06	" "	" "	60	
49.0	0.88	0.83	lrg gravel	sm. gravel	60	
52.0	0.8	1.18	Sand		100	
55.0	0.75	1.21	sm. gravel	lrg gravel	60	
58.0	0.8	1.08	lrg gravel	sm. gravel	60	
61.0	0.8	1.08	sm. gravel	lrg gravel	70	
64.0	0.8	1.03	" "	" "	60	
67.0	0.8	1.02	lrg. gravel	sm. gravel	60	
70.0	0.63	0.69	sm. gravel	Sand	80	70
73.0	0.83	0.56	sm. gravel	Sand		70

log at 75.5'

6/27/03

STA	DEPTH	VEL	DOM	SUB	%	COM
76.0	0.55	0.52	sm. gravel	Sand	70	
79.0	0.67	0.71	" "	" "	60	
80.0	0.62	0.57	Sand	Cobble	60	log at 81.6'
81.0	0.55	0.77	Sand	sm. gravel	70	
82.0	0.47	0.02*	Sand	Silt	60	
83.0	0.38	0.02*	Sand	Silt	60	
83.4	0	0	Veg	Silt	60	LWE
						LWP

TR1

CROSS SECTIONAL PROFILE

6/27/04

STA	BS	HI	FS	ELV	ROD	Dom Veg	SUB	%	COMMENTS
TR1 MP	3.10	100.83		97.73					
-12			101.87	97.87	+4.0	Veg	Sand	80	RWP - 13
-4			2.96	97.87		Veg	Sand	80	RWP -5
#1.0			3.00	96.95		Veg	Sand	80	RWP
2.1			4.62	96.21		Sand	Veg	70	
5.5			5.66	95.71		Veg	Sand	80	
7.1			5.59	95.24		Veg	Sand	80	
7.3			5.91	94.92		Veg	Sand	80	RWE
			5.92	94.91					RWSE
			5.93	94.90					LWSE
70.6			5.92	94.91		Veg	Silt	70	LWE
70.9			5.84	94.99		Veg	Silt	70	
73.0			5.55	95.28		Veg	Silt	90	
76.5			5.24	95.59		Veg	Silt	90	
79.5			5.07	95.76		Veg	Silt	90	
83.0			4.50	96.33		Veg	Sand	80	
86.5			3.42	97.41		Veg	Sand	80	
90.2			2.53	98.3		Veg	Sand	80	LWP
100.2			0.79	100.04		Veg	Sand	90	LWP #10

TR 1

DISCHARGE SURVEY

STA	DEPTH	VEL	DOM	SUB %	COM
1.0					LWP
7.3	0	0	Veg	Sand 80	RWE
8.0	0.62	0.13	sm gravel	Sand 70	
8.5	0.62	1.38	" "	" " 80	
9.0	0.62	1.41	" "	cobble 60	
11.5	0.78	0.91	cobble	coarse gravel 70	
14.0	0.75	1.49	coarse gravel	Cobble 70	
17.0	0.92	1.63	lrg gravel	sm. gravel 60	
20.0	1.05	1.31	" "	" " 60	
23.0	1.15	1.34	coarse gravel	sm. gravel 70	
26.0	0.97	1.63	lrg gravel	sm. gravel 70	
29.0	0.68	1.79	" "	Sand 70	
32.0	0.78	1.28	sm. gravel	Sand 70	
35.0	0.7	0.99	Sand	sm. gravel 60	
38.0	0.7	0.72	Sand	sm. gravel 70	
41.0	0.8	0.83	Sand	sm. gravel 60	
44.0	0.75	0.87	sm. gravel	Sand 60	
47.0	0.65	1.11	" "	" " 80	
50.0	0.8	1.09	" "	lrg gravel 60	
53.0	0.85	0.91	lrg gravel	sm. gravel 70	
56.0	1.0	2.12	" "	cobble 60	
59.0	0.92	1.16	" "	sm. gravel 80	
61.0	0.62	0.68	Sand	sm. gravel 70	

6/27/04

STA	DEPTH	VEL	DOM	SUB %	COM
63.0	0.5	0.87	sm. gravel	Sand 70	
66.0	0.7	1.52	cobble	lrg gravel 60	
69.0	0.62	0.76	lrg gravel	sm. gravel 80	sm. stick
70.3	0.45	0	Sand	sm. gravel 60	
70.6	0	0	Veg	Silt 70	LWE
90.2					LWP

Aug. 19 2024

Sampling

1442.01

WD-4

FORT CREEK 8/19/04

	IN	OUT
Time	12:20	3pm
SG	1.47	1.47

Crew: Adam Wiegbright
Glen Anderson

Sunny, clear ~85°F

Equip: Swoffer # 5750
prop. 2A
Cal 186

Photo Log

23/22 WD-4 looking u/s
19 SG below WD-4 site
order
29/20 Const. in stream below SG - may have changed reading
Same flow & WSE, no pics taken of Transects.

Fort Ck WD-4 8/19/04

Level Loop (2 loops - too big for 1 Loop)

	STA	BS	HI	FS	ELEV	
Loop	BM	1.30	101.30		100.00	
	TR-3			1.02	100.28	
	TR2	1.85	101.41	1.74	99.56	
	BM			1.41	100.00	✓
	TR3			1.13	100.28	✓
WSE	TR2		101.41	5.72	95.69	LWSE
				5.75	95.66	RWSE
	TR3-HP	3.52	103.80		100.28	
	TR3			6.66	97.14	LWSE
				6.66	97.14	RWSE
Loop	BM	1.46	101.46		100.00	
	TR1-HP	3.89	101.57	3.73	97.73	
	BM			1.56	100.01	✓
WSE	BM	1.56			100.00	
	TR 1		101.56	6.64	94.92	LWSE
				6.62	94.94	RWSE

100
101.56
6.62
94.94

Fort Creek WD-4

TR 3 Discharge 8/19/04

STA	D	V	
1.0	—	—	RWP
16.8	⊖	⊖	RWE
17.5	0.60	0.05	
19	0.70	0.08	
21	0.52	0.12	
24	0.75	0.03	
27	1.10	0.39	
28	1.20	1.02	
31	1.40	0.98	
34	1.40	1.19	
37	1.2	1.63	
40	1.15	1.59	
43	1.25	1.44	
46	1.02	1.13	
49	0.88	0.86	
52	0.82	1.20	
55	0.80	1.16	
58	0.80	1.10	
61	0.75	1.42	
64	0.78	1.14	
67	0.85	1.03	
70	0.63	0.71	
73	0.78	0.70	
76	0.57	0.48	

STA	D	V	
79	0.58	0.43	
80	0.60	0.56	
81	0.57	0.49	
82	0.48	0.05*	
83	0.40	0.01*	
83.4	⊖	⊖	LWE
			LWP