

12-4-2009

Ex. 277-US-434

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R2 Resource Consultants

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WM-5



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

April 13, 2004

sampling

1418.01

WJM-5

04/13/04

Crew: M. Gagner

A. Waybright

In Dist

Time 7:00 6:45

5.6 0.50 0.49

Equipment: Nikon Level SV15

Marsh Meter Model 3800

SN: 2005069

Directions: From K-Falls Road N on Hwy 97 toward Chilogaquin. Approx. 12 miles past Chilogaquin look for PS Rd 43 on the right. Turn right on PS43 and follow for $\approx 1/4 - 1/2$ mile to willow Rim crossing. Park on East side of bridge. First transects are located ≈ 200 yds downstream of bridge crossing.

WJM-5

04/13/04

* This research was habitat mapped by M. Gagner & C. Yoder on 04/16/04. The habitat composition is 38% cascade, 38% silt, and 24% glade/ron. All three habitat units/types will be sampled.

Habitat Unit Selection

Transect Placement

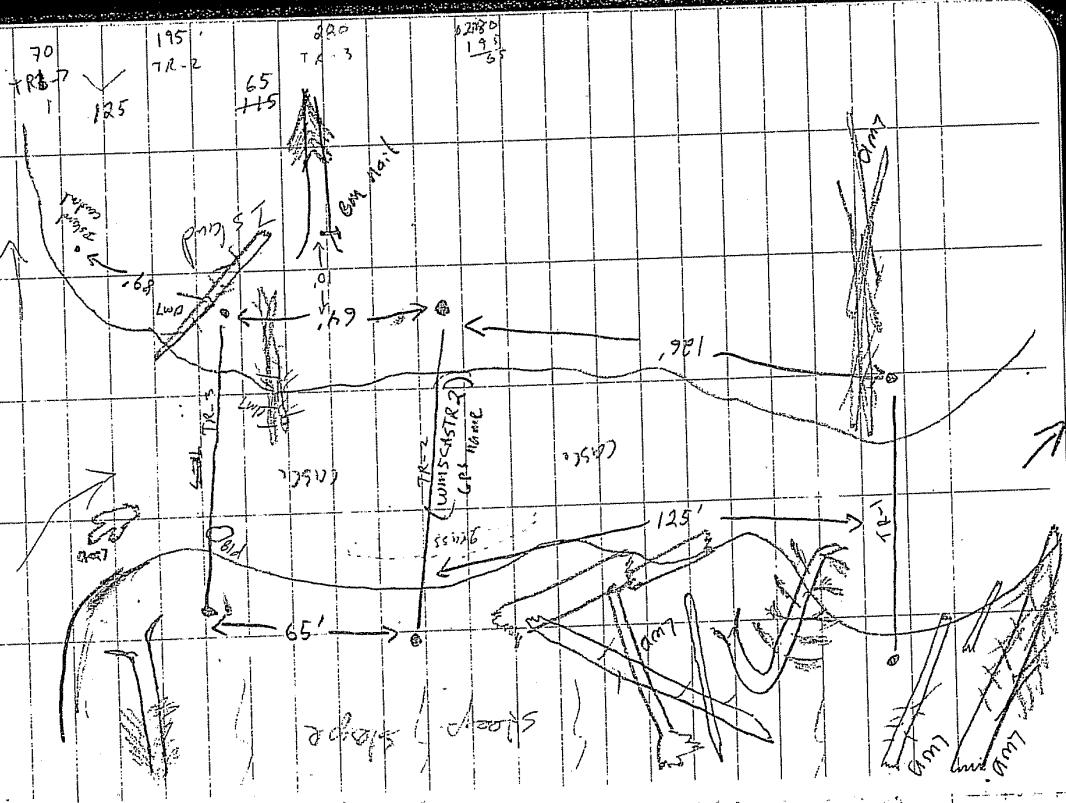
Riffle (2, 4, 6) Unit #1
47 yds $\times 2 = 94$ $\times 3 = 29.4'$
14 = $58 \frac{19.5}{8}$ $\times 3 = 58.8'$
18 = 29.4 $\times 3 = 88.2'$
Cascade (3, 5, 9) Unit #2 162 yds (306')
 $306 \times 3 = 91.8'$ measured $\frac{1}{3}$ from
.5 $\pm 152.0'$ $\frac{1}{3}$ end of unit
.9 $\pm 875.0'$

WM-5 Photo log 04/13/04

Photo #	Roll #	Description
#17		Island contour Lt → Rt
16		TR-1 Lt → Rt
15		TR-2 " " " "
14		TR-3 " " " "
13		looking d/s
12		" " " "
11		" " " "
10		" " " "
9		looking Rt → Lt TR-1
8		" " " " TR-2
7		" " " " TR-3
6		" " " " d/s from top of case
5		looking d/s from left channel
4		" " " " " " " "
3		TR-1 Lt → Rt on left channel
2		TR-1 Rt " Lt " right channel
#1		TR-2 Lt → Lt left channel
	Roll # 6	
#24		looking Lt → Rt across left channel
24		TR-3 Rt → Lt across left channel
23		TR-3 Lt → Lt → Rt across right channel
22		looking d/s at left channel
21		" " d/s at right channel

WM-5 Cascade D.t 04/13/04

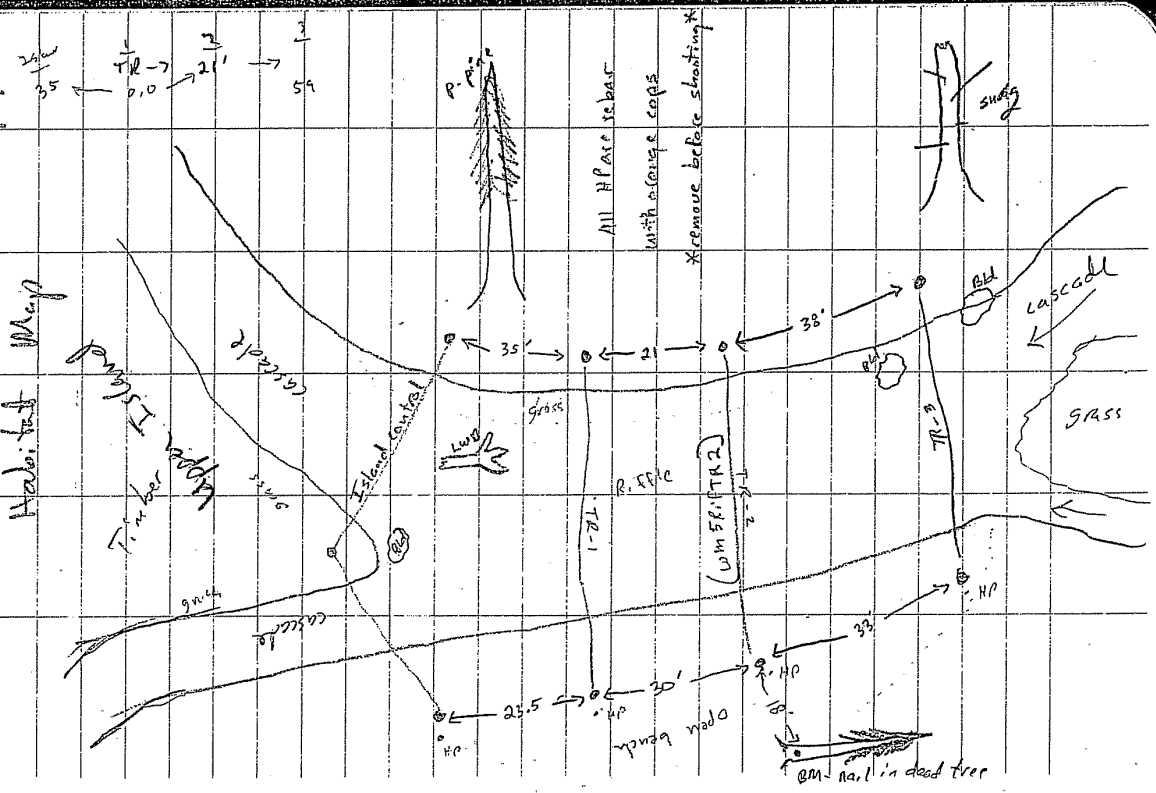
Site Map



WM-5 Cascade Unit 04/13/04

STA	BS	HI	FS	Eleva	Red
BM	1.95			100.00	
TR-1		101.95	6.44	95.51	
TR-2			4.23	97.72	
TR-3			2.19	99.76	
TP					
TR-3				99.76	
TR-2	1.89	101.65	3.94	97.71	
TR-1			6.14	95.51	
BM		101.65	1.65	100.00	100
TR-3 LWS-			3.75	97.90	
RWS-			2.78	97.87	
TR-2 LWS-			5.18	96.47	
RWS-			5.15	96.50	
TR-1 LWS-			7.70	93.95	
RWS-			7.72	93.93	

WM-5 Rifle Unit 04/13/04



STA	BS	HI	FS	Elevn	Rod
B.M.	2.89	102.89		100.00	
TR-3 ^{HP}			4.15	98.74	
TR-2 ^{HP}			4.42	98.47	
TR-1 ^{HP}			4.93	97.96	
Island HP			5.50	97.39	
Island HP	5.38	102.77		97.39	
TR-1			4.81	97.96	
TR-2			4.31	98.46	
TR-3			4.03	98.74	
B.M.			2.77	100.00	

WM-5	Rifle	Unit	04/13/04
Level Loop	WSE	Conchi	
STA	BS	HI	FS
		102.77	Elevn Rod
TR-3			
LWS		5.98	96.79
RWS		5.59	97.18
TR-2			
LWS		6.10	96.67
RWS		6.39	96.38
TR-1			
LWS		6.25	96.52
RWS		6.45	96.32
Island Level Loop			
LWS	(mid 6.99)	6.92	95.85
RWS		7.02	95.75
TR-3			
LWS	(mid 7.20)	7.39	95.38
RWS		7.47	95.30
Ridge (side channel)			
		7.85	94.92

WMM-5 Riff & Casc. Tie

04/13/04

STA BS HI FS Eleva

Casc.

TR-5 HP 6.53

106.29

Island control rebar

3.96

102.33

Riff

1.35

104.94

BM

WMM-5 Run/side Unit
Transect Placement

Unit length

146 yds = 438 ft

438 x .3 = 131'

TR-3

.5

219

TR-2

.7

307'

TR-1

transects placed in 1/3 direct from top of unit (i.e. measured 1/3 from start of unit)

WMM-5 ~~Casc~~ - Glide

04/13/04

Level Loop

STA BS HI FS Eleva

BM

4.37

100.00

TR-3

104.37

5.88

98.49 ✓

TR-2

5.45

98.92 ✓

TR-1 (FP)

5.47

98.90

TR-1

5.36

98.90

104.26

TR-2

5.34

98.92 ✓

TR-3

5.77

98.49 ✓

BM

4.27

99.99 OK

* All HP are rebar with caps - remove before shooting *

Upper Island Right channel		Discharge	Notes	
STA	Depth	Vel		
18.0	0.0	0.0	edge	
19.5	0.5	0.09	Ag. veg/velocity break	
22.0	1.50	1.38		
24.5	1.30	0.81	Ag. veg/velocity break	
27.0	1.50	1.75		
29.5	1.60	1.73		
32.0	1.60	1.68		
34.5	1.60	1.99		
37.0	1.60	1.64		
39.5	1.60	1.40		
42.0	1.60	2.14		
44.5	2.10	1.85		
47.0	2.40	1.50		
49.5	2.30	2.19		
52.0	2.30	1.50		
54.5	2.20	1.51		
57.0	2.30	0.87		
59.5	1.90	0.06	Ag. veg/velocity skitter	
62.0	1.30	0.05	"	
64.5	1.10	0.03	"	
67.0	0.30	0.02	"	
70.0	0.0	0.0	edge	

Upper Island Left channel		Discharge	Notes	
STA	Depth	Vel		
18.5	0.0	—	edge	
19.0	0.30	0.40	edge grass	
20.0	1.3	1.38	edge grass	
21.0	1.60	1.39		
22.0	1.60	1.40	grass vel. break	
23.0	0.90	0.84	grass vel. break	
24.0	0.50	0.07	"	
25.0	1.0	1.40		
26.0	1.50	1.81		
27.0	1.80	1.93		
28.0	2.0	1.86		
29.0	2.2	1.76		
30.0	2.2	1.72		
31.0	2.3	2.05		
32.0	2.0	2.19		
33.0	1.9	1.56		
34.0	1.5	0.57		
35.0	0.0	—	edge	

Disschance	Lower Island		Right Channel		Notes
	STA	Depth	Vel.	Notes	
	26.0	0.0	0.0	edge	
	26.5	1.5	1.78		
	27.5	1.6	1.46		
	28.5	1.9	1.38		
	29.5	2.1	1.28		
	30.5	2.2	0.96		
	31.5	1.8	0.93	veg on bottom	
	33.5	1.8	0.33	"	
	35.5	1.60	0.17	"	
	37.5	1.30	0.42	"	
	39.5	1.20	0.1	veg / velocity break	
	41.5	1.1	0.12	veg /	(45°)
	43.5	1.3	.48	"	"
	45.5	0.9	.82	"	(45°)
	47.5	1.6	1.86	"	"
	49.5	0.6	0.0	"	"
	51.5	0.8	0.12	"	"
	53.5	0.7	0.03	"	"
	54.5	0.0	0.4		
	56.0	0.0	0.4		
	56.5	2.4	.87		
	57.5	1.5	.83		
	59.0	0.30	.05		

Disschance	Lower Island		Right Channel		Notes
	STA	Depth	Vel.	Notes	
	37.0	0.0	0.0	edge	
	36.0	0.8	0.0	grass / vel. break	
	34.5	2.3	0.15	"	
	33.0	2.2	0.06	"	
	31.5	2.0	0.04	"	
	30.0	2.5	0.57	edge grass	
	28.5	2.8	0.80		
	27.0	3.0	0.89	some veg. near bottom	
	25.5	3.1	0.89		
	24.0	3.1	1.44		
	22.5	3.3	1.78		
	21.0	3.4	2.10		
	19.5	3.5	2.08		
	18.0	3.4	2.24		
	16.5	3.5	2.06		
	15.0	3.4	1.94		
	13.5	3.3	1.90		
	12.0	3.2	1.58		
	10.5	3.2	1.78		
	9.0	3.1	1.44		
	7.5	3.0	0.96	edge grass	
	6.0	0.5	0.0	veg / vel. break	
	4.5	0.2	0.0		
	4.0	0.0	0.0	edge	

~~Upper Island~~ Left

Lower Island Left channel
Discharge Cont.: 04/13/04

Notes

STA	Depth	Vel.	Notes
60	0.0		out
64.5	0.0		out
65.5	.70	.03	veg
67.0	.90	.18	veg
68.0	0.80		
69.0	0.0		edge

WM-5

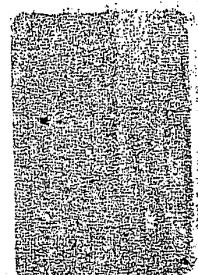
WM-5

May 12, 2004
Survey



Listen to the Rain

ALL-WEATHER
LEVEL BOOK
No. 310 F



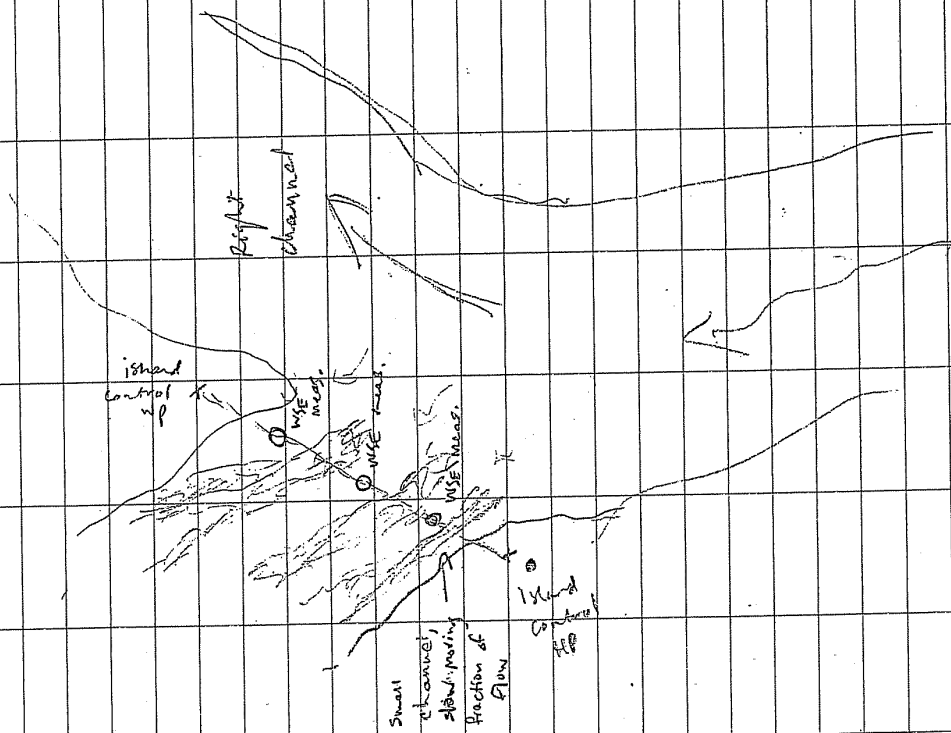
CFY ROLL 2		05/18/04
PHOTO LOG:		
29.	WM-5 TR3 Riffle UB to RB	'
30.	WM-5 TR3 Riffle RB to LB	'
31.	WM-5 TR3 Riffle ^{up} upstream	'
32.	WM-5 TR3 Riffle downstream	'
33.	WM-5 TR2 Riffle LB to RB	. X
34.	WM-5 TR2 Riffle RB to UB	'
35.	WM-5 TR2 Riffle ^{up} upstream	X
36.	WM-5 TR2 Riffle downstream	X
CFY ROLL 2 POSSIBLY exposed.		

WM-5	5/18/04
IN	OUT
TIME	6:45
S.G.	0.65
old staff gorge from 41304 just out of rd at old	
Crew: C. Yoder, A. Newbrough	
Equipment: Marsh McBirney slide 2000	
SN: 2005068	
Weather: nice sunny, few clouds, wind 60.6	
no precip	

RIPPLE				5/2/04	RIPPLE				
LEVEL LOOP SURVEY					WSEL SURVEY				
STA	BS	HI	FS	ELV	STA	BS	HI	FS	ELV
BM	2.75	102.75		100	TR3-L		102.59	6.39	96.20
TR1			4.79	97.96	TR2-L			6.54	96.05
TR2			4.28	98.47	TR2-L			6.65	95.94
I. Island (IC) control			5.36	97.39	IC-Left left channel			7.17	95.42
TR3			4.01	98.74	IC-Left middle channel			7.41	95.18
(FO)					IC-Left rt. channel			7.21	95.38
TR3	3.05	102.59		93.74	IC-Rt L. side			7.60	94.99
IC			5.20	97.39	IC-Rt Rt. side main stem			7.67	94.92
TR2			4.12	98.47	IC-Rt Rt. side channel			8.12	94.47
TR1			4.63	97.96	TR1-R			6.76	95.83
BM			2.59	100.00	TR2-R			6.61	95.98
					TR1-R			6.30	96.29

5/2/04

WSE measurement locations



S1R2/04

CASCADE LEVEL LOOP

STA	BS	HI	FS	ELV.
BM	2.07	102.07		100.00
TR-1			6.56	95.51
TR-2			4.35	97.72
TR-3			2.31	99.71
TR-3	3.00	99.71		99.71
TR-2			4.03	97.67 97.72
TR-1			6.24	95.47 95.51
BM		101.75	1.75	99.96
TR-3			2.00	99.75

5/12/04

WM5
RIFFLE TR-3 DISCHARGE SURVEY

CASCADE WSEL SURVEY

COMMENTS

STA

DEPTH

ELV.

FS

HI

BS

STA

RWP

0

0

97.38

4.37

101.75

TR3-L

RWE

0.15

0.1

96.10

5.65

TR2-L

Rock out of H₂O
by 0.5'

r. edge of rock

1.0

93.46

8.29

TR1-L

L. edge of rock

1.2

93.44

8.31

TR1-M

0.17

1.25

93.36

8.39

TR1-R

2.57

2.0

96.22

5.53

TR2-R

0.72

0.71

96.24

5.51

TR2-R

0.76

0.84

97.35

4.40

TR3-R

huge boulder
down stream at
transsect from 29 to 34

0.32 / 0.84

3.50

0.55 / 2.24

TR3-R

1.53

2.58

TR3-R

2.68

4.38

TR3-R

1.13

TR3-R

Continued →

5112104

(CONTINUED)		RIFFLE TR-3 DISCHARGE SURVEY		RIFFLE TR-2 DISCHARGE SURVEY		
(F)	(FIS)	(F) STA	(FIS) VELOCITY	DEPTH	VELOCITY	COMMENTS
42.0	0.73	1.0				RWP
43.5	0.87	21.2	0.85	0	0	RWE
45.0	2.44	22.0	2.44	0.55	0.106	sm. channel
44.1	2.24	23.5	2.24	0.75	0.28	
46.5	1.43	24.0	1.43	0.6	-0.04	grass
48.0	0.48	24.6	0.48	0	0	grass island
49.5	0.39	26.0	0.39	0	0	height = 0.05'
51.7	0.36	27.4	0.36	0.75	-0.09	grass
53.0	1.51	29.0	1.51	0.7	0.08	grass
53.8	0	30.0	0	0.45	-0.06	
55.6	0	30.5	0	0	0	Rock height = 0.2
56.1	1.06	31.5	1.06	0	0	
56.7	0	32.0	0	0.3	1.02	
58.7	0	33.5	0	0.55	1.1	
59.7	-0.01	34.0	-0.01	0.25	0.48	Rock edge of Rock
60.7	1.53	34.4	1.53	0	0	Rock height = 0.3'
61.7	0.64	35.0	0.64	0	0	edge of rock
62.7	0	35.3	0	0.4	-0.07	
63.6	0	37.0	0	0.35	1.11	
64.2	0.53	38.0	0.53	0.65	1.69	
64.7	0.05	39.5	0.05	0.45	0.97	
65.2	0	41.5	0	0.9	1.08	
44.5	0	43.5	0	1.45	0.33	Continued →

05/12/04

(CONTINUED)

RIFLE DISCHARGE TR-2

COMMENTS

STA DEPTH VELOCITY

45.5	1.7	1.70	
47.0	0.45	1.75	
48.0	1.05	1.25	
50.0	1.4	1.88	
50.0	2.05	1.61	
51.8	2.1	2.63	
52.0	1.75	2.77	
54.0	1.55	2.76	
55.0	1.85	2.28	
56.5	1.3	3.24	
58.0	1.95	2.77	
60.0	1.85	1.20	
61.4	1.35	1.07	
63.0	1.20	0.35	
65.3	0.65	0.22	
66.1	0	0	RWE
75.7			RWP

RIFLE DISCHARGE TR-1

STA DEPTH VELOCITY COMMENTS

1.0			RWP
9.3	0	0	RWE
10.0	0.4	1.54	sm. channel
10.6	0.45	-0.13	
10.4	0.4	0.93	NOTE: OUT OF ORDER
11.2			edge height = 0.8
21.0	0	0	channel flow at 45° to rsg.
21.3	0.3	0.5	
22.6	0.2	1.17	
23.5	0.2	-0.04	
23.8	0	0	edge
32.1	0	0	edge height = 0.4 abv WS
32.5	0.4	0.11	sm. channel
33.0	0.4	0.07	
33.7	0	0	edge
35.0	0	0	height = 0.2'
35.7	0.70	1.01	main channel beg.
37.2	1.0	1.27	
38.7	0.33		
39.7	0.65	0.64	
40.5	0.65	0.09	behind barrier
41.2	0.7	-0.05	
42.5	0.85	0.81	

CFJ Roll 3

PHOTO LOG

1. WM-5 TRI Riffle RB to LB
(may be 2 photos)
2. WM-5 TR2-Riffle RB to LB
3. WMS TR3-Riffle RB to LB
4. WMS TRI Riffle looking upstream
5. WMS TRI Riffle looking downstream
6. WMS TR1 Riffle LB to RB
7. WMS TR2-Riffle LB to RB
8. WMS TR3-Riffle LB to RB
9. WMS Island Control LB to RB
Right Channel
10. WMS Right Channel Island Control
looking upstream
11. WMS Island Control Rt. Channel
looking downstream
12. WMS Island Control Rt. Channel
LB to RB
13. WMS Cascade TR-3 LB to RB
14. WMS Cascade TR-3 RB to LB
15. WMS Cascade TR-3 Upstream
16. WMS Cascade TR-3 Downstream
17. WMS Cascade TR-2 LB to RB
18. WMS Cascade TR-2 RB to LB
19. WMS Cascade TR-2 upstream
20. WMS Cascade TR-2 downstream

05/12/04

DISCHARGE

STA	DEPTH	VELOCITY	COMMENTS
44.0	0.85	1.9	
46.0	1.1	0.51	
48	1.1	1.58	
50	0.8	1.79	
52	0.7	1.80	
54	1.0	1.62	
55.5	1.35	0.75	
57.5	1.35	1.20	
59.5			
59.5	1.7	1.77	
61.0	0.7	2.60	rock 60-62
62.0	1.85	2.14	
63.5	2.0	0.95	
65.0	1.7	0.63	
66.0	0.55	-0.01	behind rock
65.5	1.7	0.08	NOTE: OUT OF RANGE
67.8	1.4	-0.11	
67.5	1.35	0.16	
68.0	1.7	0	behind rock
68.6	0.7	0.67	
69.4	0.6	1.81	
70.2	1.1	2.39	
71.2	1.1	0.69	

Continued →

(CONTINUED)

RIFFLE TRI DISCHARGE

STA DEPTH VELOCITY COMMENTS

72.7 1.3 1.15

74.2 1.0 0.80

75.7 0.95 0.14

77.2 0.6 -0.02

78.5

87.5

grass

LWP

LWP

5/12/04

ISLAND CONTROL DISCHARGE

RWP

COMMENTS

RWE

off sm. channels

sm. channel

0

7.9

9.0

10.5

11.3

11.4

12.4

12.5

12.8

15.0

15.1

16.3

17.7

18.7

19.2

19.4

24.6

25.4

27.0

28.4

28.8

30.1

30.6

31.1

31.6

Rock

0.3 height of hump

edge of hump conf take velocity

grassy hump height = 1.0

channel running parallel to transect

grass clump 0.2' in grain channel

RWE of main channel

grass hummock

0.2' abv. water surface

DEPTH VELOCITY

0 0

0.8 0.1

0.55 0.42

0.7 0.41

0 0

0 0

0.2 0.25

0 0

0 0

0 0

0.5 0.77

0.2 0.22

~~0.7~~ 0.65 1.85

0.5 1.33

0 0

0 0

0.25 0.6

0.55 -0.05

0.2 0.1

0 0

0 0

0.2 1.13

0.6 0.82

0 0

0 0

5/12/04

(Continued)

Island Control Discharge

STA	DEPTH	VELOCITY	COMMENTS
32.4	0	0	edge of grass hummock
33.5	0.55	0.6	right behind rock
35.0	0.9	0.57	
36.5	0.95	0.81	
38.5	1.1	0.87	
40.0	1.15	0.73	
41.5	0.5	1.83	
43.0	0.5	1.09	
44.5	1.1	2.18	
46.0	1.5	2.53	
47.5	0.55	2.41	at 48.5' depth = 2.1'
49.0	2.1	2.83	edge of rock 48.2' to 47'
50.5	2.0	2.56	
51.5	2.2	2.35	
52.5	1.65	0.77	
53.5	0.6	2.99	
54.9	1.65	1.42	log at 54.5'
54.2	0.55	1.32	top of rock NOTE: OUT OF ORDER
			small wood from 55' to 56.5'
56.6	1.1	0.51	
58.0	0.8	0.19	
59.5	0.5	0.05	
60.5	0.2	0.13	
60.9	0	0	
74.8			1/2 LWE LWP

5/12/04

CASCADE TR3 DISCHARGE

STA	DEPTH	VELOCITY	COMMENTS
1			RNP
3.5	0	0	RNE
4.5	0.3	0.8	
6.5	1.3	2.04	
7.5	1.45	1.23	rt edge of rock
8.1	0	0	height = 0.2 1/3 max height downstream
9.4	0	0	L-edge of rock
9.6	1.20	1.21	
11.0	1.15	1.34	
13.0	1.20	1.22	
15.0	0.9	1.64	
16.5	1.1	1.08	0.09
18.0	0.95	2.66	behind 2 rocks
19.0	1.35	2.70	1.54
20.5	1.30	2.86	2.77
21.8	1.3	-0.21	behind rock
23.5	0.2	1.37	on rock
25.0	0.9	0.67	
26.5	1.35	1.21	
28.0	0.9	1.85	
29.5	0.95	2.83	
31.0	0.8	-0.15	behind rock

(CONTINUED)		S17204	
CASCADE TR-3	DISCHARGE	STA	COMMENTS
			31.5 \times 31.5 cascades over rock
32.5	3.07	34.0	
34.0	0.49	35.5	
35.5	1.21	36.5	* water definitely moving on top
36.5	-0.14	37.5	* underneath cascade
37.5	2.37	39.0	
39.0	1.27	40.5	
40.5	2.09	42.1	aq. very out of water
42.1	0	42.1	0.1 height
42.1	0.44	48.3	LWE
48.3	0	53.6	LWP
53.6			

S17204		CASCAD E TR-2		DISCHARGE	
STA	DEPTH	VELOCITY	COMMENTS	STA	DEPTH
1.0	0	0	RWP	1.0	0
4.4	0	0	RWE	4.4	0
6.0	0.9	0.5		6.0	0.9
7.5	0.8	1.46		7.5	0.8
9.0	0.9	0.37	behind rock	9.0	0.9
10.0	0.85	0.32		10.0	0.85
8.5	0.8	1.01	NOTE: OUT of OVER	8.5	0.8
10.7	0.7	0.5	edge	10.7	0.7
10.9	0	0	height = 0.7	10.9	0
13.5	0	0	K-munack	13.5	0
14.2	0.45	0.13		14.2	0.45
14.7	0.45	1.63	rock	14.7	0.45
16.0	0.9	0.44	observed running of 45° from K-section	16.0	0.9
16.7	0.75	1.90		16.7	0.75
17.7	1.05	0.02	behind grassy island	17.7	1.05
18.2	1.0	0.9		18.2	1.0
19.2	0.5	0.47		19.2	0.5
20.2	0.6	1.01		20.2	0.6
21.2	0.8	1.97		21.2	0.8
21.6	0	0	bottom of hummock	21.6	0
22.7	0	0	height = 0.3	22.7	0
23.6	0.3	0.16		23.6	0.3

Continued →

(CONTINUOUS)

05/22/04

CASCADE TR-2 DISCHARGE

STA	DEPTH	VELOCITY	COMMENTS
25	1.55	2.69	
26.5	0.8	0.30	
25.5	1.6	0.75	NOTE: OUT OF ORDER
27.5	1.2	3.47	
29.0	1.0	2.56	
30.5	0.25	2.21	top of boulder
32.0	0.15	1.37	top of boulder. <small>edge at 33.2 depth = 0.1</small>
33.7	1.15	1.24	
35.0	1.15	2.08	
36.5	0.85	1.88	
38.0	0.85	2.42	
39.5	1.65	1.99	
40.5	1.45	1.52	
41.5	0.35	0.27	top of rock <small>40.9 to</small>
43.0	0.3	3.01	drop off at 44.5'
44.6	1.15	0.32	
44.0	0.45	1.52	NOTE: OUT OF ORDER
46.0	1.4	0.48	behind grass (REG)
47.5	0.7	1.45	
48.5	0.4	0.98	NOTE: OUT OF ORDER
46.5	0.95	1.36	
49.5	0.2	0.36	
50.0	0	0	LNE
67.0			LWP

CASCADE TR-1 DISCHARGE

STA	DEPTH	VELOCITY	COMMENTS
1.0			RWP
5.3			RWE
6.0	1.2	-0.22	
7.0	1.5	-0.1	
8.0	1.5	0.92	
9.5	1.7	1.40	
11.0	1.8	0.22	
12.5	1.5	0.05	behind grass
13.5	0.9	0.11	
14.5	0.55	2.90	
15.5	1.3	0.06	under weath. rock
17.0	0	0	Rock height = 0.3
18.8	0	0	
16.7	1.1	0.28	NOTE: OUT OF ORDER
19.0	0.75	1.58	
20.5	0.5	2.65	
22.0	1.35	1.39	
23.5	1.25	1.74	
25.0	1.7	1.94	
26.5	0.7		
26.0	1.6	2.19	
28.0	1.5	0.72	
29.5	1.3	-0.03	

continued

(Continued)

CASCADE TR-1, DISCHARGE

05/12/04

PHOTO LOG

05/12/04

STA	DEPTH	VELOCITY	COMMENTS
29	1.3	0.99	NOTE: out of channel
30.5	0.45	0.89	
32.0	0.5	0.35	behind gravel
33.0	0.55	1.39	
34.0	0.15		on top of rock
35.	0.5	2.16	on top of rock
36.5	1.1	2.01	
38.0	1.0	1.28	
39.5	0.65	0.62	RCG
41.0	0.8	0.35	
42.	0.4	0.11	
42.0	0	0	R LWP
55.0			LWP

21. WMS	CASCADE TR-1	RB to RB
22. WMS	CASCADE TR-1	RB to LB
23. WMS	CASCADE TR-1	upstream
24. WMS	Cascade TR-1	downstream
25. WMS	Glide TR3	looking from island to left bank
26. WMS	Glide TR3	looking from island to right bank

MG ROLL 2

24. WMS	Glide Island to LB	TR3
23.	WMS	Glide Island to RB TR3
22.	WMS	Glide Island to RB TR2
21.	WMS	Glide Island to RB TR1
20.	WMS	Glide TR1 Island to RB (flash)
19.		" no flash
18.	WMS	Glide TR2 Island to LB
17.	WMS	Glide TR2 Island to LB

05/12/04

GILDE LEVEL LOOP SURVEY

STA BS HI FS ELV

BM 3.96 103.96 100.00

TR1 5.00 98.88

TR2 5.05 98.91

TR3 5.46 98.50

(TP)

TR3 5.20 102.70 98.50

TR2 4.80 98.53

TR1 4.83 98.87

BM 3.70 100

5/12/04

GILDE NSE SURVEY

STA BS HI FS ELV

TR3 Left side 103.70 9.07 94.65

Left Channel 9.02

TR3 Left side 9.16 94.54

Left Channel

TR2 Left side 9.24 x 94.46

Middle

TR1 Left side 9.28 x 94.42

Middle

TR1-RT side 9.17 x 94.53

Middle

TR2-RT side 9.12 x 94.58

Middle

TR3-RT side 9.05 94.65

Left Channel 9.16

TR3-RT side 9.02 94.68

RT Channel

Marsh Mc-Birney
501 2005068

TR-2 D.I.V 05/12/04
left channel

STA	Depth	Vel.	Notes
LWP=207.4			
LWE=189.8	0.0	0.0	
189	0.9	.10	
187	1.65	.15	
185	2.0	.15	
183	2.0	.14	
181	1.8	.02	
179	1.7	-.02	
176	.85	-.01	
173	.9	-.01	
171	.7	-.03	
RWF=169.9	0.0	0.0	
Mid Pin = 94.4			
LWE=36.2	0.0	0.0	
36	1.45	-.02	
35	1.8	-.07	
34	1.1	-.06	
33	1.95	-.08	
32	2.2	.06	
31	2.25	.72	
29	2.4	1.06	

TR-1 Conti. 05/12/04
left channel

STA	Depth	Vel.	Notes
195	2.2	0	
198	1.95	-.04	
201	1.75	.06	
204	1.5	-.01	
206.4	.7	-.07	
LWP=207	0.0	0.0	
LWP=219.3			

5/22/69

Slide TR-2 cont.

Right Channel

Notes

STA Depth Vel.

32		
31		
29		
27	2.4	.68
25	2.4	.78
23	2.4	1.18
21	2.4	1.51
19	2.4	.71
17	2.4	1.0
15	2.3	.99
13	2.2	.95
11	2.15	.92
9	1.2	.12
7	1.25	0.0
	RWE = 6.1	0.0
	RWF = 1.0	

Slide TR-3 D=V

Left Channel

STA Depth Vel Notes

127.1			
126	0.0	0.0	veg in channel
125	.65	.14	0
123.3	0.0	0	
121.5	out/.6	-	
120.1	0.0	0.0	
119	.4	-.04	
117.8	0	0	
117	out/.4	0	
116	0	0	
114.5	.4	0	
112	.6	-.02	
110	1.0	-.03	
108	1.35	.07	
106	1.15	.29	
104	.75	.22	
102	.75	.35	
102	.30	-.04	
	RWE = 91.2	0.0	
	Mid Pt = 76.1		Right Channel
	RWE = 49.7	0.0	0.0
	49.5	1.25	.28

WM-5



"Put in the Rain"
ALL WEATHER
LEVEL BOOK
No. 310 F

WM 5



WM-5 May 04/05

In Out
Time 9:45 12:20
5.6 3.27

Crew: M. Gagne
A. Weybright

Weather: overcast, some rain, water colored by tannins (coffee/coka)

Equipment:

Photo Log: Roll #1

- (34) #22: Look v/s from gorge
- (37) #23: @ gorge
- (32) #24: Look v/s from top island @ riffle TR37
- (31) #25: Look d/s from top island @ cascade TR41

Roll #2

- (33) #21: Look v/s from cascade TR3
- (24) #26: Look d/s from cascade TR3
- (25) 3: R → L TR 1 cascade
- (22) 4: R → L TR 2 riffle

Photo Log (cont'd)

Roll #2

- (01) #5: L → R TR 2 Riffle
- (20) #6: v/s from
- 19: 7:
- (18): 8:
- (21) 9:
- (2) 10:

WMM-5 R: PPLG WSE 05/04/05

STA BS HI FS Eleva
 101.79
 TR-3 L 5.66 96.13
 R 5.71 96.08

TR-2 L 5.90 95.89
 R 5.94 95.85

TR-1 L 6.00 95.79
 R 6.05 95.74

Island Control
 TR-1 L 6.66 95.13
 R 6.48

TR-1 L 6.95 94.84
 R

WMM-5 R: PPLG Loop Eleva 05/04/05

STA BS HI FS Eleva
 BM 1.50 101.00
 TR-3 2.77 98.73
 TR-2 3.01 98.46
 TR-1 3.54 97.96

Island Control
 TR-1 4.40 97.39
 TR-2 4.11 97.39

TR-1 3.83 97.96
 TR-2 3.34 98.45

TR-3 3.06 98.73
 BM 1.79 100.00 ✓

05/04/05 ✓

WM-5 Cascade Level Coop

STA	BS	HI	FS	Eleva
BM	2.84	102.84		100.00
TR-1			7.38	95.51
TR-2			5.12	97.72
TR-3			3.08	99.76
(TP) TR-3	2.87			99.76
TR-2		102.63		
TR-1			4.91	97.72
BM			7.12	95.51
			2.62	100.01 ✓ _{oik}

05/04/05

WM-5 Cascade WSE

STA	BS	HI	FS	Eleva
		102.63		
TR-3			5.52	97.11
L			5.38	97.25
R			5.46	97.17
M				97.18
TR-2			6.76	95.87
L			6.45	96.18
R			6.71	95.92
M				95.92
TR-1			9.27	93.36
L			9.28	93.35
R				93.37

15/04/05

NM-5 RIFFLE TR2

Discharge

KTOV

Sta Depth Vel. Cover Comments

21.7	0.2	0.0		
22.0	0.9	0.01	veg	
23.5	0.65	0.01	veg	
24.0	0.35	0.01	veg	
24.6	0.0	0.0		grass island
25.0	1.005			slug
27.4	0.6	0.01	veg	
29.0	0.6	0.01	veg	
30.0	0.2	0.01		WE of rock
30.2	0.0	0.0		dry on rock
30.5	1.0.2			
31.6	0.0	0.0		WE of rock
32.0	0.15	1.16	veg	
33.5	0.05	1.13		
34.0	0.25	0.24	blde	edge rock
34.8	0.0	0.0		WE of rock
34.4	dry			
35.0	dry			
35.1	0.0	0.0		WE of rock
35.3	0.25	0.12		
37.0	0.25	0.06	veg	veg / slugs
78.0	0.50	0.80		
39.5	0.10	0.31	veg	

Sta Depth Vel. Cover Comments

41.5	0.40	0.56		
43.5	1.25	0.20	blde	
45.4	1.55	1.22	blde	between rocks
45.5	0.50	1.59		
47.0	0.20	1.20		
48.0	0.90	0.80		
50.0	1.25	1.26		
50.8	1.80	1.82		
51.8	2.0	2.0		
52.8	0.9	2.39		
54.0	1.40	2.66		
55.0	1.70	2.70		
56.5	1.10	2.37		
58.0	1.60	2.57		
60.0	1.60	0.90	blde	
61.4	1.10	1.14		
62.0	0.85	1.46		
66.0	1.10	0.32		
65.3	0.50	0.08		
66.1	0.0	0.0		

WM-5	Glide	Lower Island	05/04/05
STA	BS	FS	Eleva
BM	4.35	104.35	100.00
TR-3		5.85	98.50
TR-2		5.44	98.71
TR-1		5.47	98.88
TR-1	5.62	104.50	98.88
TR-2		5.59	98.71
TR-3		6.00	98.50
BM		4.49	100.01

WM-5	Glide	WSE	05/04/05
STA	BS	FS	Eleva
TR-1		104.50	
TR-1		m → 10.13	94.37
TR-1		10.03	
TR-1		10.03	94.47
TR-2		m → 10.12	94.38
TR-2		9.98	94.52
TR-2		9.98	
TR-3		10.00	94.50
TR-3		9.95	
TR-3		9.92	94.58
TR-3		9.89	94.61
BM		4.50	100.00

05/04/05 ✓

WM-5 RUN TR-2

Discharge

RIGHT CHANNEL

Sta Depth Vel Cover RWE

62 2.0 0.06 E

70 0.9 0.01 veg

90 2.0 0.15 veg

110 2.05 0.29

130 2.10 0.62

150 2.20 1.02

170 2.30 0.73

190 2.30 1.10

210 2.35 0.94

230 2.35 0.55

250 2.30 0.82

270 2.30 0.53

290 2.30 0.73

310 2.10 0.01 veg

320 2.00 0.01

330 1.80 0.01

340 1.70 0.01

350 1.70 0.01

360 1.35 0.01

LWE (cut bank)

undercut bank

0.7'

140 ✓

LEFT CHANNEL DISCHARGE

Sta Depth Vel Cover Comments RWE

169.5 0.0 0.0

171.0 0.6 0.01 veg

173.0 0.8 0.01 veg

176.0 1.3 0.01 veg

179.0 1.6 0.01 veg

181.0 1.9 -0.06 veg

183.0 1.95 0.08

185.0 1.90 0.10

187.0 1.60 0.09

189.0 0.80 0.05

189.7 0.0 0.0 LWE

Instrument

Nonst. Mercury