UIdaho Law
Digital Commons @ UIdaho Law

In re Klamath River (Klamath Tribe) | Hedden-Nicely

12-8-2009

Ex. 279-US-439

Mike Gagner
R2 Resource Consultants

Follow this and additional works at: https://digitalcommons.law.uidaho.edu/klamath

Recommended Citation
Gagner, Mike, "Ex. 279-US-439" (2009). *In re Klamath River (Klamath Tribe)*. 120.
https://digitalcommons.law.uidaho.edu/klamath/120

This Misc Filing is brought to you for free and open access by the Hedden-Nicely at Digital Commons @ UIdaho Law. It has been accepted for inclusion in In re Klamath River (Klamath Tribe) by an authorized administrator of Digital Commons @ UIdaho Law. For more information, please contact annablaine@uidaho.edu.

May 13, 2004

Sampling

1418.01

SY-8



"Rite in the Rain"

ALL-WEATHER

LEVEL BOOK

No. 310

CONTENTS

PAGE	REFERENCE	DATE

SY-8 Long Cr. 05/13/04

	In	Out
Time	8:50	4:30
S.G	2.49	2.48

Crew: M. Gagner
A. Weybright

Equipment: Marsh McBirney
Model 2000
SN: 2005068

Directions: From Chiloquin travel east on Sprague R. road for ~ 4.5 miles and turn left/north onto Williamson River Rd. Follow for ~ 22 miles to Head of River Campground Rd turns to gravel near headwaters of Williamson R. proceed straight & follow gravel rd for ~ 11 miles to T intersection with FS Rd 27. Turn left and follow for ~ 10.5 miles to Long Cr. Cross over Long Cr. and turn right on dirt trail ~ 100' after crossing Long Cr. Follow for ~ 150 yards and park. Look for transect flagging.

05/13/04

SY-8 Photo Log

Photo #	Description
15	looking Lt → Rt across TR-1 Run
14	" u/s from below TR-1 "
13	" Lt → Rt across TR-2 "
12	TR 3 L → R Run SY-8
11	Looking downstream TR 3 Run

SY-8 05/13/04

Unit Selection

Random # 8, 4, 2

Run .8 X 2241 = 1793'

Riffle .4 X 2241 = 896'

Pool .2 X 2241 = 448'

* first pool 448' u/s from start
Pool # 7

* first riffle 896' u/s from start
Riffle # 13

* first run 1793' u/s from start
Run # 25

Transect Selection

Pool Random #s - 2, 5, 8

61.0 X .2 = 12', 61.0 X .5 = 30.5', 61 X .8 = 48.8'

Run Random #s - 3, 6, 9

191.0 X .3 = 57.3', 191 X .6 = 114.6'

191 X .9 = 171.9'

Riffle Random #s - 1, 5, 8

155.0 X .1 = 15.5', 155 X .5 = 77.5'

155 X .8 = 124'

SY-8 Pool 05/13/04

STA	BS	HI	FS	Elevation
BM	4.05			100.00
		104.05		
TR-1 HP			4.48	99.57
TR-2 HP			4.83	99.22
TR-3 HP			5.23	98.82
(FP)				
TR-3	5.34			98.82
		104.16		
TR-2			4.93	99.23
TR-1			4.59	99.57
BM			4.16	100.00

SY-8 Pool WSE 05/13/04 Rain

STA	BS	HI	FS	Elevation
BM		104.16	4.16	100.00
HC				
LWS			7.59	96.57
RWS			7.68	96.48
TR-1				
LWS			7.39	96.77
RWS			7.41	96.75
TR-2				
LWS			7.28	96.88
RWS			7.38	96.78
TR-3				
LWS			7.35	96.81
RWS			7.39	96.77
~70' N/S of HC			9.72	bed/bottom
			7.98	WSE
BM			4.16	100.00

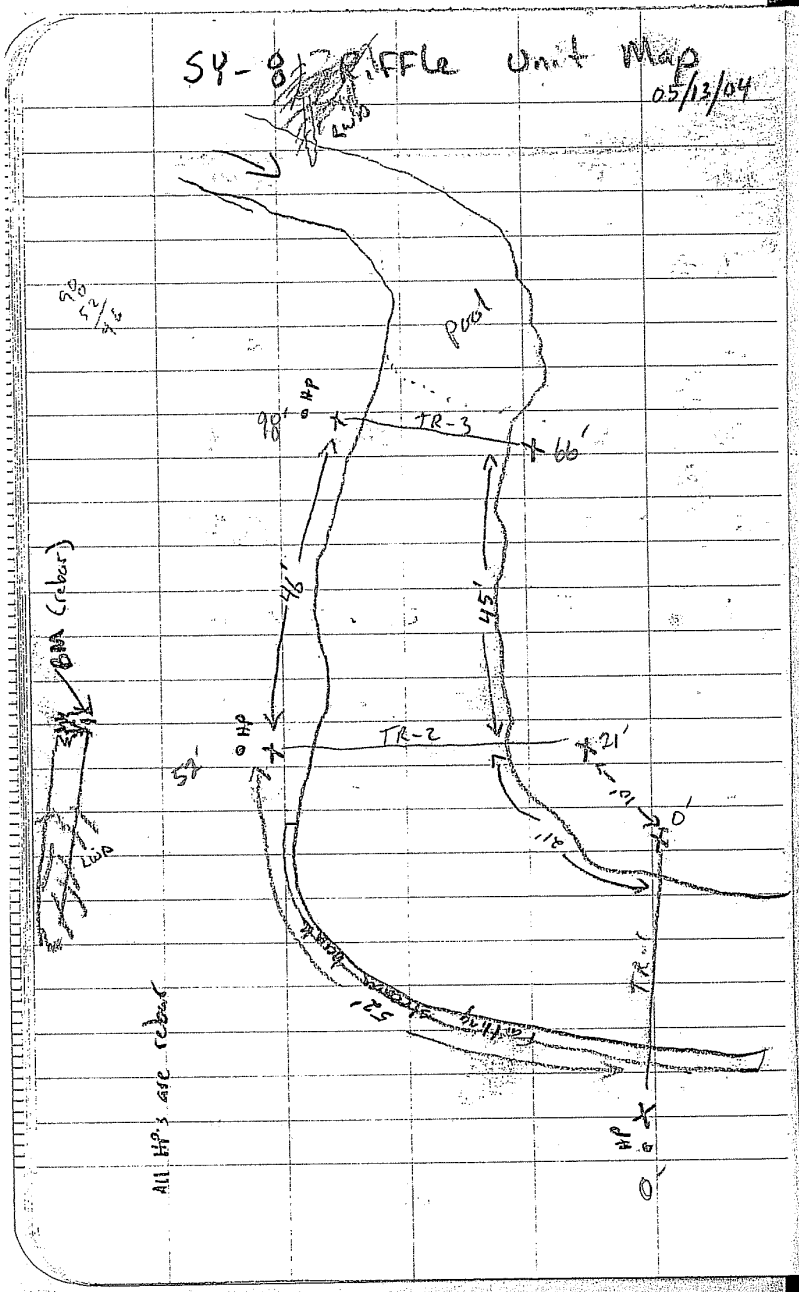
SY-8 Unit Map
w/ stakings
All HP's are taken with
caps
TR-3
TR-2
TR-1
SY-8 Pool
Unit Map w/ stakings
05/13/04

S4-8 Riffle
Level Loop
05/13/04

STA	BS	HI	FS	Elevn
BM	4.13			100.00
		104.13		
TR-1 HP			5.32	98.81
TR-2 HP			5.32	98.81
TR-3 HP			5.70	98.43
TA-3 TP	5.59		~~5.59~~	98.43
		104.02		
TR-2			5.20	98.82
TR-1			5.21	98.81
BM			4.02	100.00

S4-8 Riffle
WSE
05/13/04

STA	BS	HI	FS	Elevn	Rod
BM		1	4.02		
		104.02			
			10.13		
d/s "60' from TR-1			~~13.26~~		bottom
			7.69		surface
TR-1					
LWS			7.61		
RWS			7.51	96.51	
MWS			7.56		
TR-2					
LWS			7.49		
RWS			7.44	96.58	
TR-3					
LWS			7.36		
RWS			7.36	96.66	
BM			4.02		



SY-8 Run/Glide level loop 05/13/04

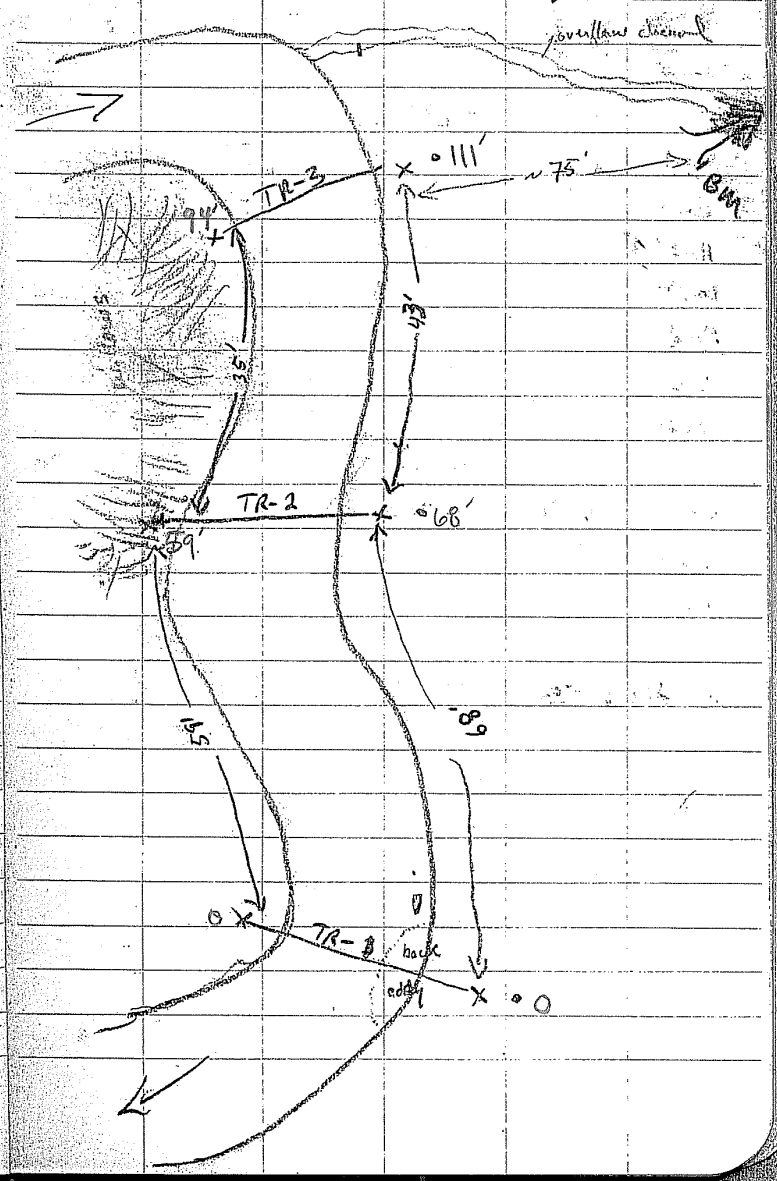
STA	BS	HI	FS	Elevn
BM	4.90			100.00
		104.90		
TR-3			4.79	100.11
TR-2			5.57	99.33
TR-1			5.07	99.83
(FP)				
TR-1	5.02			99.83
		104.85		
TR-2			5.52	99.33
TR-3			4.73	100.12
BM			4.85	100.00

SY-8 Run/Glide WSE

05/13/04

STA	BS	HI	FS	Elevation	Rod
TR-3 HP	4.46			100.12	
		104.58			
TR-3					
LWS			6.73		
RWS			6.81	97.77	
MWS			(6.75)	97.83 ✓	
TR-2					
LWS			6.86	97.72	
RWS			6.84	97.74 ✓	
TR-1 HP	4.99	104.82		99.83	
LWS			7.21		
RWS			7.22	97.60 ✓	
~60' d/s of TR-1			8.60		bottom
			7.37	97.45	surface

SY-8 Run Unit Map



SY-8 Run/Glide Unit 05/13/04

TR-1 Depths & Velocity

STA	Depth	Vel.	Notes
LWP = 1.0			
LWE = 8.2	0.0	0.0	0.4' of dcB
9.0	1.8	-.14	small eddy
10.0	1.85	-.43	"
11.0	1.90	-.18	"
12.0	1.90	.25	
13.0	1.85	.20	
14.0	1.90	.29	
15.0	1.85	.32	
16.0	1.90	.47	
17.0	1.90	.87	
18.0	2.0	.87	
19.0	2.05	.82	
20.0	2.05	.79	
21.0	2.10	.76	
22.0	2.10	1.10	
23.0	2.20	2.19	
24.0	2.20	2.31	
25.0	2.20	2.08	
26.0	2.05	2.00	
27.0	2.10	1.39	
28.0	2.00	0.85	
29.0	1.80	0.34	

TR-1 Run D & V cont'd.

STA	Depth	Vel.	Notes
30.0	1.1	-.11	edge grass
30.5 ~~30.5~~	.10	- 0.05	"
31.1	0.0	0.0	
RWP = 42.9'			

Marsh McBirney Meter

SN: 2005068

SU-8 Run 05/13/04

TR-2 marsh McBirney meter

STA	Depth	Vel.	Notes
LWP=1.0			
LWP=10.8	0.0	0.0	
11.5	.65	0.0	edge veg.
12.5	1.10	.11	
13.5	1.35	.35	
14.5	.55	.56	
15.5	~~1.2~~ 1.7	.77	
16.5	1.80	1.1	
17.5	1.85	1.33	
18.5	1.90	1.88	
19.5	1.85	2.43	
20.5	1.90	2.57	
20.0	1.90	2.50	
21.0	1.85	2.54	
21.5	1.85	2.48	
22.0	1.80	2.35	
22.5	1.80	2.25	
23.0	1.75	2.45	
23.5	1.70	2.35	
24.0	1.70	2.17	
24.5	1.65	2.11	
25.0	1.60	1.79	
25.5	1.5	1.81	

SU-8

TR-2 Run Contin.

STA	Depth	Vel.	Notes
26.0	1.50	1.75	
26.5	1.50	1.89	
27.0	1.55	1.89	
27.5	1.50	2.01	
28.0	1.45	.07	grass/veg. shelter
28.5	0.10	~.05	
28.6	0.0	0.0	
28.2	0.20	~0.05	

RWP = 32.2'

* excellent discharge measurement *

SY-B Run 5/13/04

TR-3

Sta	Depth	Vel.	Notes
LWP = 1.0'			
LWE = 7.2'	1.1	-0.25	undercut bank 0.5
8.0	1.6	-0.25	eddy
9.0	1.6	-0.16	eddy
10.0	1.75	-0.12	eddy
11.0	2.05	-0.03	eddy
12.0	1.90	0.21	out of eddy
13.0	1.90	0.41	
14.0	1.80	1.03	
15.0	2.00	0.98	
16.0	1.85	1.28	
17.0	1.85	1.33	
18.0	2.05	1.46	
19.0	2.10	1.95	
20.0	2.05	1.82	
21.0	2.05	1.77	
22.0	2.20	1.92	
23.0	2.25	1.77	
24.0	2.25	1.84	
25.0	2.15	1.88	
26.0	2.00	1.39	
27.0	1.85	0.57	
28.0	1.70	-0.09	velocity shelter
29.0	1.50	-0.07	back eddy, veg cover
30.0	1.00	-0.10	" " " "

TR-3 05/13/04

Station	Depth	Vel	Comments
31.0	0.7	-0.08	back eddy, veg cover
32.2	0.0	0.0	
RWP = 42.5'			

± 11 looking d/s

Marsh McBirney Model 2000
SN: 2005068

Ex. 279-US-439
Page 11 of 109

SY-8 TR-1 Pool 05/13/04

Swoffer # 4099 prop. 1A cal. 186

STA	Depth	Vel.	comments
1.0			RWP
19.4	0.0	0.0	RWE w/ veg.
20.0	0.15	0.1	
20.5	0.35	0.07	
21.0	0.53	0.02	
21.5	0.53	1.09	
22.0	0.8	1.35	
22.5	0.90	1.43	
23.0	.95	1.62	
23.5	.97	1.60	
24.0	1.03	1.78	
24.5	1.2	1.81	
25.0	1.3	1.83	
25.5	1.35	1.79	
26.0	1.55	2.06	
26.5	1.65	1.96	
27.0	1.65	2.08	
27.5	1.85	2.13	
28.0	1.80	2.17	
28.5	1.85	2.36	
29.0	1.85	2.22	
29.5	1.85	2.35	

SY-8 TR-1 Pool contin.

STA	Depth	Vel.	comments
30.0	1.85	2.38	
30.5	1.85	2.36	
31.0	1.90	2.21	
31.5	1.95	2.36	
32.0	1.95	2.36	
32.5	1.95	2.29	
33.0	1.90	2.27	
33.5	1.85	1.97	flow at ≈30° to transect
34.0	1.85	1.79	" "
34.5	1.9	1.51	" "
34.7	1.8	142	" "
34.8			edge of bank
35.3	.20	0.34	top of bank, flow thru grass
36.4	0.0	0.0	LWE
47.5			LWP

SY-8 Pool TR-2 05/13/04

Swoffer #4099 prop. 1A

STA	Depth	Vel.	Comments
1.0			RWP
14.8	0.0	0.0	RWE
15.7	0.3	0.0	est. vel.
16.2	0.6	-0.09	
17.0	0.75	-0.18	
17.5	.92	-.04	
18.0	1.05	.25	
18.5	1.15	0.4	
19.0	1.33	.50	
19.5	1.35	.66	
20.5	1.73	0.95	
*21.0	2.0	1.21	
21.5	2.15	1.26	
22.0	2.15	1.39	
23.0	2.0	1.50	
24.0	2.05	1.51	
25.0	2.0	1.71	
26.0	2.0	1.66	
27.0	2.05	1.84	
28.0	2.0	1.84	
29.0	2.0	1.73	
30.0	2.05	1.67	

Pool

SY-8 TR-2 continue

STA	Depth	Vel.	Comments
31.0	1.95	1.44	
32.0	1.90	1.35	log 32.6 – 33.0
33.0	1.95	0.95	woody debris shelter
34.0	1.7	1.24	vel. shelter from cobble
34.5	1.65	0.96	edge of bank
35.0	0.0	0.0	LWE / Top of bank
			* undercut by 1.6'
46.6			LWP
20	1.55	0.81	

S4-8 TR-3 Pool 05/13/04

swoffer-4099 prop 1A

STA	Depth	Vel.	Comments
1.0			RWP
24.4	0.5	0.0	RWE
25	0.5	.23	grass, flow appears negative
25.4	1.25	.14	" "
26.0	1.4	.68	"
27	1.6	.42	
28	1.9	.13	
29	2.2	1.18	
30	2.35	1.84	
31	2.3	1.64	
32	2.3	1.8	flow approx 30° to transect
33	2.25	2.22	" "
34	2.30	2.31	" "
35	2.3	2.02	" "
36	2.35	1.91	" "
37	2.25	1.71	" "
38	2.20	1.94	" "
39	1.95	2.08	
40	1.90	1.39	
41	1.9	0.84	
42	1.70	-.16	eddy from 42' to LWE
43	1.70	-.44	Flow looks negative

MRG 10/26/04

S4-8 Pool TR-3 contin.

STA	Depth	Vel.	Comments
44	1.67	-.80	flow looks negative
45	1.6	-1.16	
46	1.35	-.94	
47.	1.40	-.99	
47.8	1.0	-.44	edge of log
48.0	0.6	-1.25	top of log
49	.40	-.84	edge of grass
49.5	.30	-.2	grass
50	.25	-.15	"
51	.20	-.01	"
52.9	0.0	0.0	
59.1			

MRG 10/26/04

S4-8 Pool Hydraulic Control

05/13/04

STA	Depth	Comments
1.0		RWP
13.0	0	RWE
13.5	.70	
14.0	.55	
14.5	.70	
15.5	.65	
16.5	.75	
17.0	.95	
17.8	0	
18.0	.65	
18.6	.65	
19.5	.65	
20.0	.50	
21.0	.50	
22.0	.50	
23.0	.55	
24.0	.80	
25.0	.90	
26.0	1.05	
27.0	1.15	
28.0	1.1	
29.1	1.25	

S4-8 Pool Hydraulic Control

STA	Depth	Comments
30	1.2	
31	1.25	
32	1.25	Rock/bld
32.2	1.4	edge of bld
33	1.4	
33.5	1.3	
34	1.3	
34.3	0.7	
34.4	0.1	
34.6	0.0	RWE
40.8		RWP

S4-8 Riffle TR-1 05/13/04

swoffer: 4099 prop. 1A

STA	Depth	Vel.	comments
1.0			RWP
6.3	0.0	0.0	RWE
6.7	out/.9	—	
7.2	0.0	0.0	vel. shallow turbulent + or − direction
7.7	.7	.19	
8.3	.8	.53	
9.0	.9	.41	
9.5	1.15	2.1	
10.0	1.25	2.74	
10.5	1.5	2.46	
11.0	1.55	2.85	
11.5	1.6	3.03	
12.0	1.6	3.12	
12.5	1.7	3.04	
13.0	1.75	2.73	
14.0	1.75	2.7	
15.0	1.6	2.81	
16	1.6	2.61	
17	1.6	2.67	
18	1.7	2.60	
19.0	1.77	2.5	
19.5	1.65	2.00	

Riffle TR-1 contin.

STA	Depth	Vel	Comments
20	1.5	1.7	
20.5	1.43	1.6	
21	1.3	1.06	
21.5	1.3	0.45	
22	1.02	− .01	
22.5	.93	− .01	
23	.73	− .05	grass/aq. veg
23.5	.45	− .16	
24	.22	− .14	
24.8	0.0	0.0	LWE
37.3			LWP

S4-8 TR-2 Riffle 05/13/04

swoffer; 4099 prop. 1A

STA	Depth	Vel.	Comments
1.0			RWP
10.3	0.0	0.0	RWE
10.6	.25	.25	u/s veg, aq. veg
11.0	.82	.01	
11.5	1.12	0.38	
12.0	1.15	1.06	
12.5	1.25	1.81	
13.0	1.20	2.45	
13.5	1.30	2.59	
14.0	1.35	2.77	
15	1.40	2.37	
16	1.5	2.54	
17	1.50	2.96	
18	1.45	3.11	
19	1.5	3.15	
20	1.45	2.82	
21	1.40	2.89	
22	1.25	2.70	
23	1.05	2.87	
24.0	.90	2.64	
24.5	.85	2.1	
25	.80	1.61	
25.4	.65	4.34	

TR-2 Riffle Continue. 05/13/04

STA	Depth	Vel.	Comments
25.5	0.15	0.1	
26.1	0.0	0.0	LWE
37.4			LWP

SY-8 Riffle TR-3 05/13/04

swoffer # 4099 prop. # 1A

STA	Depth	Vel.	comments
1.0			
9.7	0.0	0.0	
10.0	.52	.16	
10.5	1.15	1.24	
11.0	1.25	1.92	
11.5	1.25	2.02	
12.0	1.25	2.11	
13.0	1.25	2.15	
14.0	1.25	2.29	
15.0	1.30	2.49	
16.0	1.35	2.73	
17.0	1.50	2.73	
18.0	1.65	2.84	
19.0	1.75	3.05	
19.5	1.95	2.99	
20	2.05	3.02	
21	2.05	2.56	
22	2.02	2.00	
23	2.02	1.20	
23.7	2.0	.86	
24.0	1.65	.35	
24.5	1.75	.29	

Riffle TR-3 05/13/04

STA	Depth	Vel	comments
25	1.55	.09	
25.5	1.4	.08	
26.0	1.2	-.15	
26.5	.90	-.17	
27.0	.75	-.11	
27.5	.70	-.25	
28	.60	-.12	
28.3	.47	-.08	edge of bankfull
28.4	0.0	0.0	LWE undercut bank ≈ .50'
32.7			LWP

CONTENTS

PAGE	REFERENCE	DATE

SY-8 Long Cr. 05/13/04

	In	Out
Time	8:50	4:30
S.G	2.49	2.48

Crew: M. Gagner
A. Weybright

Equipment: Marsh McBirney
Model 2000
SN: 2005068

Directions: From Chiloquin travel east on Sprague R. road for ~ 4.5 miles and turn left/north onto Williamson Rim Rd. Follow for ~ 22 miles to Head of Rim Campground Rd turns to gravel near headwaters of Williamson R. proceed straight & follow gravel Rd for ~ 11 miles to T intersection with FS Rd 27. Turn left and follow for ~ 10.5 miles to Long Cr. Cross over Long Cr. and turn right on dirt trail ~ 50 feet after crossing Long Cr. Follow for ~ 150 yards and park. Look for transect flagging

05/13/04

SY-8 Photo Log

Photo #	Description
15 –	looking Lt → Rt across TR-1 Run
14 –	" u/s from below TR-1 "
13 –	" Lt → Rt across TR-2 "
12 –	TR-3 L → R Run SY-8
11 –	Looking downstream TR 3 Run

SY-8 05/13/04

Unit Selection

Random # 8, 4, 2

Run .8 x 2241 = 1793'
Riffle .4 x 2241 = 896'
Pool .2 x 2241 = 448'

* first pool 448' u/s from start
Pool # 7
* first riffle 896' u/s from start
Riffle # 13
* first run 1793' u/s from start
Run # 25

Transect Selection

Pool Random #s – 2, 5, 8
61.0 x .2 = 12', 61.0 x .5 = 30.5', 61 x .8 = 48.8'

Run Random #s – 3, 6, 9
191.0 x .3 = 57.3', 191 x .6 = 114.6'
191 x .9 = 171.9'

Riffle Random #s – 1, 5, 8
155.0 x .1 = 15.5', 155 x .5 = 77.5'
155 x .8 = 124'

SY-8 Pool 05/13/04

STA	BS	HI	FS	Elevn
BM	4.05			100.00
		104.05		
TR-1 HP			4.48	99.57
TR-2 HP			4.83	99.22
TR-3 HP			5.23	98.82
(TP)				
TR-3	5.34			98.82
		104.16		
TR-2			4.93	99.23
TR-1			4.59	99.57
BM			4.16	100.00

SY-8 Pool WSE 05/13/04

STA	BS	HI	FS	Elevn	Rod
BM		104.16	4.16	100.00	
HC					
LWS			7.59	96.57	
RWS			7.68	96.48	
TR-1					
LWS			7.39	96.77	
RWS			7.41	96.75	
TR-2					
LWS			7.28	96.88	
RWS			7.38	96.78	
TR-3					
LWS			7.35	96.81	
RWS			7.39	96.77	
~70° d/s of HC			9.72		bed/bottom
			7.98		WSE
BM			4.16	100.00	

SY-8 Unit Map
Pool
05/13/04
Swallowing

SY-8 Pool
Unit Map & Stationary
05/13/04

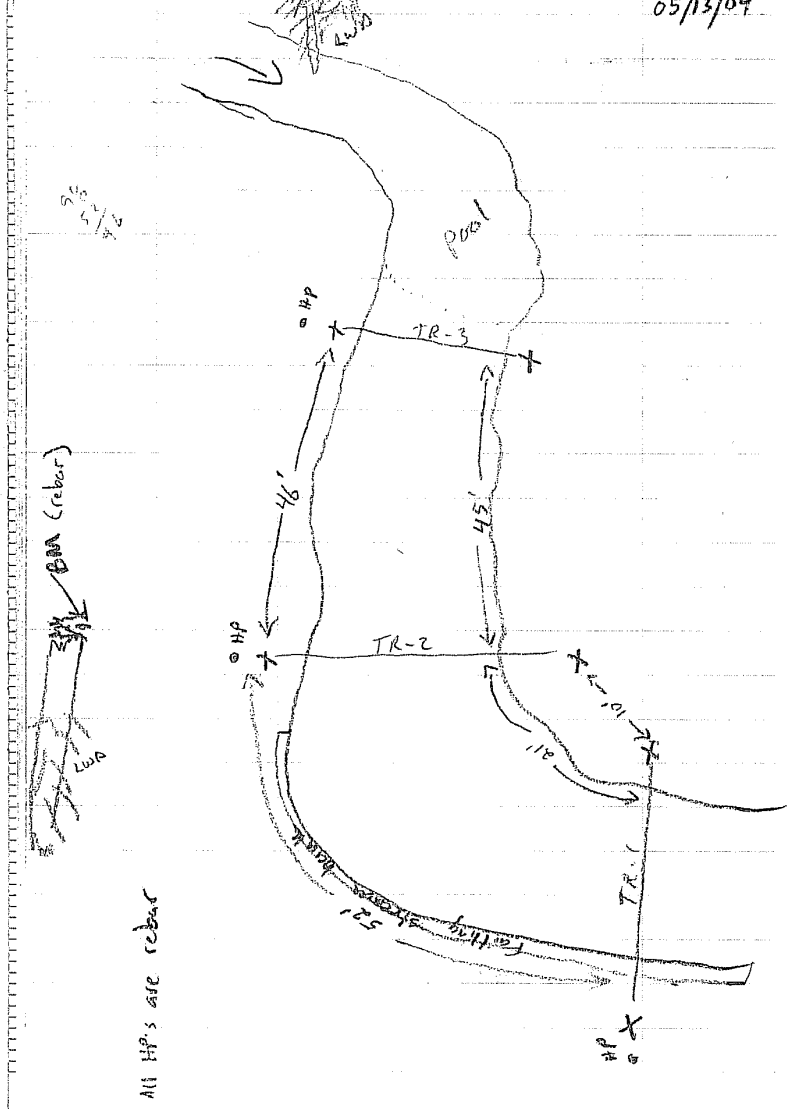
S4-8 Riffle
Level Loop 05/13/04

STA	BS	HI	FS	Elevn.
BM	4.13			100.00
		104.13		
TR-1 HP			5.32	98.81
TR-2 HP			5.32	98.81
TR-3 HP			5.70	98.43
TA-3 TP	5.59		~~5.59~~	98.43
		104.02		
TR-2			5.20	98.82
TR-1			5.21	98.81
BM			4.02	100.00

S4-8 Riffle
WSE 05/13/04

STA	BS	HI	FS	Elevn.	Rod
BM			4.02		
		104.02			
d/s "60' from TR-1			10.13 ~~13.26~~		bottom
			7.69		surface
TR-1					
LWS			7.61		
RWS			7.51	96.51	
MWS			7.56		
TR-2					
LWS			7.49		
RWS			7.44	96.58	
TR-3					
LWS			7.36		
RWS			7.36	96.66	
BM			4.02		

SY-8 Riffle Unit Map 05/13/04



SY-8 Run/Glide level loop 05/13/04

STA	BS	HI	FS	Elevn
BM	4.90			100.00
		104.90		
TR-3			4.79	100.11
TR-2			5.57	99.33
TR-1			5.07	99.83
(TP)				
TR-1	5.02			99.83
		104.85		
TR-2			5.52	99.33
TR-3			4.73	100.12
BM			4.85	100.00

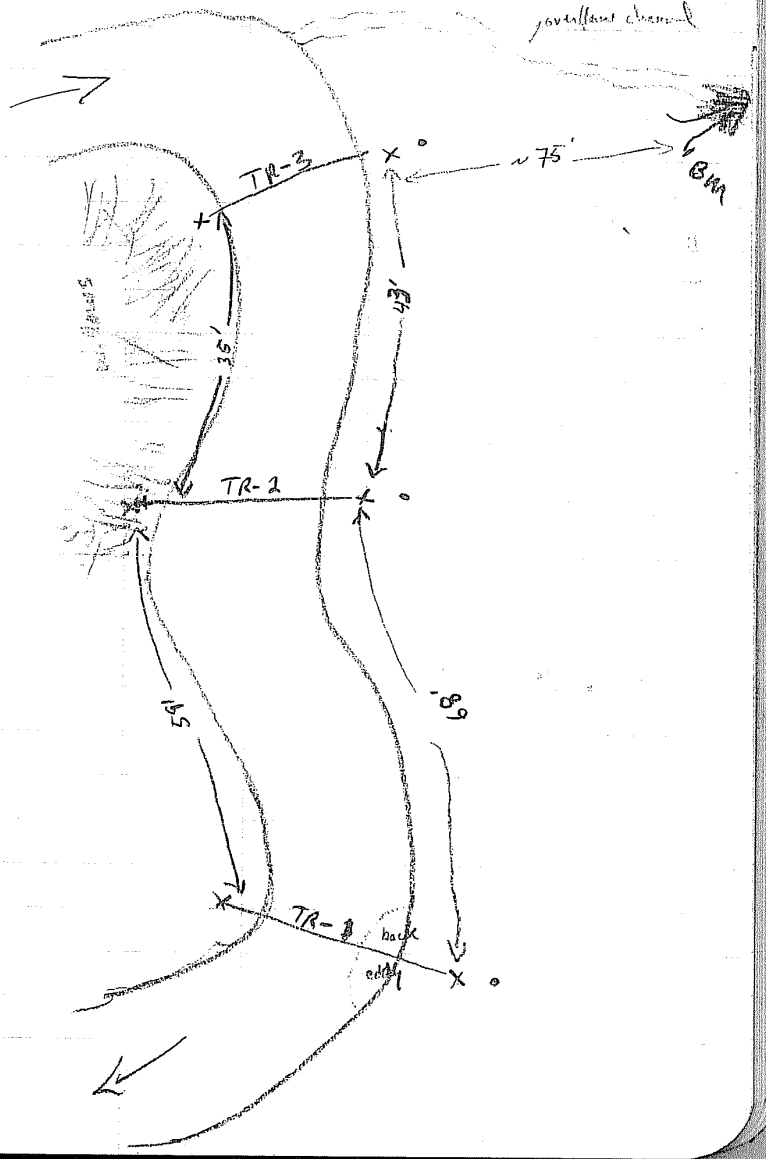
SY-8 Run/Glide WSE

05/13/04

STA	BS	HI	ES	Elevation	Rod
TR-3 HP	4.46			100.12	
		104.58			
TR-3					
LWS			6.73		
RWS			6.81	97.77	
MWS			6.75	97.83 ✓	
TR-2					
LWS			6.86	97.72	
RWS			6.84	97.74 ✓	
TR-1 HP	4.99	104.82		99.83	
LWS			7.21		
RWS			7.22	97.60 ✓	
~60' d/s of TR-1			8.60		bottom
			7.37	97.45	surface

SY-8 Run Unit Map

05/13/04



SY-8 Run/Glide Unit 05/13/04

TR-1 Depths & Velocity

STA	Depth	Vel.	Notes
LWP = 1.0			
LWE = 8.2	0.0	0.0	0.4' of ice
9.0	1.8	-.14	small eddy
10.0	1.85	-.43	"
11.0	1.90	-.18	"
12.0	1.90	.25	
13.0	1.85	.20	
14.0	1.90	.29	
15.0	1.85	.32	
16.0	1.90	.47	
17.0	1.90	.87	
18.0	2.0	.87	
19.0	2.05	.82	
20.0	2.05	.79	
21.0	2.10	.76	
22.0	2.10	1.10	
23.0	2.20	2.19	
24.0	2.20	2.31	
25.0	2.20	2.08	
26.0	2.05	2.00	
27.0	2.10	1.39	
28.0	2.00	0.85	
29.0	1.80	0.34	

TR-1 Run D & V cont'd.

STA	Depth	Vel.	Notes
30.0	1.1	-.11	edge grass
30.5 ~~30.5~~	.10	- 0.05	" "
31.1	0.0	0.0	

RWP = 42.9'

Marsh McBirney Meter Model 2000
SN: 2005068

SY-8 Run 05/13/04

TR-2 marsh McBirney meter

STA	Depth	Vel.	Notes
LWP=1.0			
LWE= 10.8	0.0	0.0	
11.5	.65	0.0	edge veg.
12.5	1.10	.11	
13.5	1.35	.35	
14.5	.55	.56	change to 1.55'
15.5	~~1.2~~ 1.7	.77	
16.5	1.80	1.1	
17.5	1.85	1.33	
18.5	1.90	1.88	
19.5	1.85	2.43	
20.5	1.90	2.57	
20.0	1.90	2.50	
21.0	1.85	2.54	
21.5	1.85	2.48	
22.0	1.80	2.35	
22.5	1.80	2.25	
23.0	1.75	2.45	
23.5	1.70	2.35	
24.0	1.70	2.17	
24.5	1.65	2.11	
25.0	1.60	1.79	
25.5	1.5	1.81	

SY-8

TR-2 Run Contin.

STA	Depth	Vel.	Notes
26.0	1.50	1.75	
26.5	1.50	1.89	
27.0	1.55	1.89	
27.5	1.50	2.01	
28.0	1.45	.07	grass/veg. shelf
28.5	0.10	~.05	
28.6	0.0	0.0	
28.2	0.20	~0.05	

RWP= 32.2'

* excellent discharge measurement *

SY-8 Run 5/13/04

TR-3

Sta	Depth	Vel.	Notes
LWP = 1.0'			
LWE = 7.2'	1.1	-0.25 ~~-0.25~~	undercut bank 0.5
8.0	1.6	-0.25	eddy
9.0	1.6	-0.16	eddy
10.0	1.75	-0.12	eddy
11.0	2.05	-0.03	eddy
12.0	1.90	0.21	out of eddy
13.0	1.90	0.41	
14.0	1.80	1.03	
15.0	2.00	0.98	
16.0	1.85	1.28	
17.0	1.85	1.33	
18.0	2.05	1.46	
19.0	2.10	1.95	
20.0	2.05	1.82	
21.0	2.05	1.77	
22.0	2.20	1.92	
23.0	2.25	1.77	
24.0	2.25	1.81	
25.0	2.15	1.88	
26.0	2.00	1.39	
27.0	1.85	0.57	
28.0	1.70	-0.09	velocity shelter
29.0	1.50	-0.07	back eddy, veg cover
30.0	1.00	-0.10	" " " "

TR-3 05/13/04

Station	Depth	Vel	Comments
31.0	0.7	-0.08	back eddy, veg cover
32.2	0.0	0.0	
RWP = 42.5'			

#11 looking d/s

Marsh McBirney Model 2000
SN: 2005068

Ex. 279-US-439
Page 28 of 109

SY-8 TR-1 Pool 05/13/04

Swoffer # 4099 prop. 1A cal. 186

STA	Depth	Vel.	comments
1.0			RWP
19.4	0.0	0.0	RWE w/ veg.
20.0	0.15	0.1	
20.5	0.35	0.07	
21.0	0.53	0.02	
21.5	0.53	1.09	
22.0	0.8	1.35	
22.5	0.90	1.43	
23.0	.95	1.62	
23.5	.97	1.60	
24.0	1.03	1.76	
24.5	1.2	1.81	
25.0	1.3	1.83	
25.5	1.35	1.79	
26.0	1.55	2.06	
26.5	1.65	1.96	
27.0	1.65	2.08	
27.5	1.85	2.13	
28.0	1.80	2.17	
28.5	1.85	2.26	
29.0	1.85	2.22	
29.5	1.85	2.35	

SY-8 TR-1 Pool contin.

STA	Depth	Vel.	Comments
30.0	1.85	2.38	
30.5	1.85	2.36	
31.0	1.90	2.21	
31.5	1.95	2.36	
32.0	1.95	2.36	
32.5	1.95	2.29	
33.0	1.90	2.27	
33.5	1.85	1.97	flow at ≈30° to transect
34.0	1.85	1.79	" "
34.5	1.9	1.51	" "
34.87	1.8	142	" "
34.8			edge of bank
35.3	.20	0.34	top of bank, flow through grass
36.4	0.0	0.0	LWE
47.5			LWP

SY-8 Pool TR-2 05/13/04

Swoffer #4099 prop. 1A

STA	Depth	Vel.	Comments
1.0			RWP
14.8	0.0	0.0	RWE
15.7	0.3	0.0	est. vel.
16.2	0.6	-0.09	
17.0	0.75	-0.18	
17.5	.92	-.04	
18.0	1.05	.25	
18.5	1.15	0.4	
19.0	1.33	.50	
19.5	1.35	.66	
20.5	1.73	0.95	
*21.0	2.0	1.21	
21.5	2.15	1.26	
22.0	2.15	1.39	
23.0	2.0	1.50	
24.0	2.05	1.51	
25.0	2.0	1.71	
26.0	2.0	1.66	
27.0	2.05	1.84	
28.0	2.0	1.84	
29.0	2.0	1.73	
30.0	2.05	1.67	

Pool

SY-8 TR-2 combine

STA	Depth	Vel.	Comments
31.0	1.95	1.44	
32.0	1.90	1.35	log 32.6 – 33.0
33.0	1.95	0.95	woody debris shelter
34.0	1.7	1.24	vel. shelter from cobble
34.5	1.65	0.96	edge of bank
35.0	0.0	0.0	LWE / Top of bank
			* undercut by 1.6'
46.6			LWP
20	1.55	0.81	

Did not change vel., but may change later.

Entered 1.6 depth per: 6/25/04 Notes. JA

S4-8 TR-3 Pool 05/13/04

swoffer-4099 prop. 1A

STA	Depth	Vel.	Comments
1.0			RWP
24.4	0.5	0.0	RWE
25	0.5	.23	grass, flow appears negative
25.4	1.25	.14	" "
26.0	1.4	.68	"
27	1.6	.42	
28	1.9	.13	
29	2.2	1.18	
30	2.35	1.84	
31	2.3	1.64	
32	2.3	1.8	flow approx 30° to transect
33	2.25	2.22	" "
34	2.30	2.31	" "
35	2.3	2.02	" "
36	2.35	1.91	" "
37	2.25	1.71	" "
38	2.20	1.94	" "
39	1.95	2.08	" "
40	1.90	1.39	
41	1.9	0.84	
42	1.70	.16	eddy from 42' to RWE
43	1.70	.44	Flow looks negative

Entered as neg. per notes.

S4-8 Pool TR-3 contin.

STA	Depth	Vel.	Comments
44	1.67	-.80	flow looks negative
45	1.6	-1.16	
46	1.35	-.94	
47.	1.40	-.99	
47.8	1.0	-.44	edge of log
48.0	0.6	-1.25	top of log
49	.40	-.84	edge of grass
49.5	.30	-.2	grass
50	.25	-.15	"
51	.20	-.01	"
52.9	0.0	0.0	
59.1			

S4-8 Pool Hydraulic Control

05/13/04

STA	Depth	Comments
1.0		RWP
13.0	0	RWE
13.5	.70	
14.0	.55	
14.5	.70	
15.5	.65	
16.5	.75	
17.0	.95	
17.8	0	
18.0	.65	
18.6	.65	
19.5	.65	
20.0	.50	
21.0	.58	
22.0	.50	
23.0	.55	
24.0	.80	
25.0	.90	
26.0	1.05	
27.0	1.15	
28.0	1.1	
29.1	1.25	

S4-8 Pool Hydraulic Control

STA	Depth	Comments
30	1.2	
31	1.25	
32	1.25	Rock/bld
32.2	1.4	edge of bld
33	1.4	
33.5	1.3	
34	1.3	
34.3	0.7	
34.4	0.1	
34.6	0.0	RWE – LWE
40.8		RWP LWP

SY-8 Riffle TR-1 05/13/04

swoffer: 4099 prop. 1A

STA	Depth	Vel	comments
1.0			RWP
6.3	0.0	0.0	RWE
6.7	out/.9	—	
7.2	0.0	0.0	
7.7	.7	.19	vel. shifted turbulent + or − direction
8.3	.8	.53	
9.0	.9	.41	
9.5	1.15	2.1	Entered as positive
10.0	1.25	2.74	
10.5	1.5	2.46	
11.0	1.55	2.85	
11.5	1.6	3.03	
12.0	1.6	3.12	
12.5	1.7	3.04	
13.0	1.75	2.73	
14.0	1.75	2.7	
15.0	1.6	2.81	
16	1.6	2.61	
17	1.6	2.67	
18	1.7	2.60	
19.0	1.77	2.5	
19.5	1.65	2.00	

Riffle TR-1 contin.

STA	Depth	Vel	Comments
20	1.5	1.7	
20.5	1.43	1.6	
21	1.3	1.06	
21.5	1.3	0.45	
22	1.02	−.01	
22.5	.93	−.01	
23	.73	−.05	
23.5	.45	−.16	
24	.22	−.14	
24.8	0.0	0.0	LWE
37.3			LWP

S4-8 TR-2 Riffle 05/13/04

swoffer: 4099 prop. 1A

STA	Depth	Vel.	Comments
1.0			RWP
10.3	0.0	0.0	RWE
10.6	.25	.25	30% veg, aq. veg
11.0	.82	.01	
11.5	1.12	0.38	
12.0	1.15	1.06	
12.5	1.25	1.81	
13.0	1.20	2.45	
13.5	1.30	2.59	
14.0	1.35	2.77	
15	1.40	2.37	
16	1.5	2.54	
17	1.50	2.96	
18	1.45	3.11	
19	1.5	3.15	
20	1.45	2.82	
21	1.40	2.89	
22	1.25	2.70	
23	1.05	2.87	
24.0	.90	2.64	
24.5	.85	2.1	
25	.80	1.61	
25.4	.65	1.34	

TR-2 Riffle Continue. 05/13/04

STA	Depth	Vel.	Comments
25.5	0.15	0.1	
26.1	0.0	0.0	LWE
37.4			LWP

S4-8 RIFFLE TR-3 05/13/04

swoffer # 4099 prop. # 1A

STA	Depth	Vel.	comments
1.0			
9.7	0.0	0.0	
10.0	.52	.16	
10.5	1.15	1.24	
11.0	1.25	1.92	
11.5	1.25	2.02	
12.0	1.25	2.11	
13.0	1.25	2.15	
14.0	1.25	2.29	
15.0	1.30	2.49	
16.0	1.35	2.73	
17.0	1.50	2.73	
18.0	1.65	2.84	
19.0	1.75	3.05	
19.5	1.95	2.99	
20	2.05	3.02	
21	2.05	2.56	
22	2.02	2.00	
23	2.02	1.20	
23.7	2.0	.86	
24.0	1.65	.35	
24.5	1.75	.29	

RIFFLE TR-3 05/13/04

STA	Depth	Vel	Comments
25	1.55	.09	
25.5	1.4	.06	
26.0	1.2	-.15	
26.5	.90	-.17	
27.0	.75	-.11	
27.5	.70	-.25	
28	.60	-.12	
28.3	.47	-.08	edge of bank
28.4	0.0	0.0	LWE undercut bank ≈ .50'
32.7			LWP

5/13/04

Long Creek Velt Depths

Swoffer : #4094
prop 1A
calib = 186

POOL TR 1 DISCHARGE SURVEY

STA	DEPTH	VELOCITY	COMMENTS
1.0			RWP
19.4	0	0	RWE Veg.
20.0	0.15	0.1	estimated
20.5	0.35	0.07	upstream vol. shelter
21.0	0.53	0.02	
21.5	0.53	1.09	
22.0	0.8	1.35	
22.5	0.9	1.43	
23.0	0.95	1.62	
23.5	0.97	1.60	
24.0	1.03	1.70	
24.5	1.20	1.81	
25.0	1.30	1.83	
25.5	1.35	1.79	
26.0	1.55	2.06	
26.5	1.65	1.96	
27.0	1.65	2.08	

Supp 1

SVP POOL TR 1 Continued

STA	DEPTH	VELOCITY	COMMENTS
27.5	1.85	2.13	
28.0	1.80	2.17	
28.5	1.85	2.26	
29.0	1.85	2.22	
29.5	1.85	2.35	
30.0	1.85	2.38	
30.5	1.85	2.36	
31.0	1.90	2.21	
31.5	1.95	2.36	
32.0	1.95	2.36	
32.5	1.95	2.29	
33.0	1.90	2.27	
33.5	1.85	1.97	flow at ~ 30° to transect
34.0	1.85	1.79	flow at ~ 30° to transect
34.5	1.90	1.51	flow at ~ 30° to transect
34.8			edge of bank
34.7	1.8	1.42	flow at ~ 30° to transect
36.3	0.2	0.34	top of bank, flow thru grass
36.4	0	0	LWE
47.5			LWP

16 ROLL : IMG

PHOTO LOG

14 SY-8 POOL TR1 LB to RB
16. SY-8 POOL TR 1 RB to LB
15. SY-8 POOL TR1 upstream
14. SY-8 POOL TR1 downstream
13. SY-8 POOL TR 2 downstream
12. SY-8 POOL TR2 upstream
11. SY-8 POOL TR2 upstream w/ tape
10. SY-8 POOL TR2 LB to RB
9. SY-8 POOL TR2 RB to LB
8. SY-8 POOL TR3 RB to LB
7. SY8 POOL TR3 LB to RB
6. SY8 POOL TR3 Upstream
5. SY8 POOL TR3 Downstream
4. SY8 HC LB → RB
3. SY8 HC RB → LB
2. SY8 HC Downstream
1. SY8 Riffle TR1 LB to RB

IMG ROLL 4

25. SY-8 Riffle TR1 RB to LB
24. SY-8 Riffle Upstream TR1
23. SY-8 RIFFLE TR1 DOWNSTREAM
22. SY-8 Riffle TR2 LB → RB
21. SY-8 Riffle TR2 RB to LB

17

SY 8 POOL TR2 DISCHARGE

STA	DEPTH	VELOCITY		COMMENTS
1.0				RWP
14.8	0	0		RWE grass veg
15.7	0.3	0	*est	
16.2	0.60	-0.09	} negative velocity	
17.0	0.75	-0.18		
17.5	0.92	-0.04		
18.0	1.05	0.25		
18.5	1.15	0.4		
19.0	1.33	0.50		
19.5	1.35	0.66		
20.0	1.55	0.81		
20.5	1.73	0.95		
21.0	2.0	1.21		
21.5	2.15	1.26		
22.0	2.15	1.39		
23.0	2.0	1.50		
24.0	2.05	1.51		
25.0	2.0	1.71		
26.0	2.0	1.66		
27.0	2.05	1.84		
28.0	2.0	1.84		
29.0	2.0	1.73		

SY-8 TR2 POOL (Cont'd)

STA	DEPTH	VELOCITY	COMMENTS
30.0	2.05	1.67	
31.0	1.95	1.44	
32.0	1.90	1.35	log 32.6' to 33.0'
33.0	1.95	0.95	woody debris vel. shelter
34.0	1.7	1.24	vel. shelter from cobble?
34.5	1.65	0.96	edge of bank
35.0	0	0	top of bank, LWE
			* undercut bank by 1.6'
46.6			LWP

SY8 TR3 POOL DISCHARGE

STA	DEPTH	VELOCITY	COMMENTS
1.0			RWP
24.4	0.5	0	RWE
25.0	0.5	0.23	grass, flow appears negative
25.4	1.25	0.14	veg, appears negative
26.0	1.4	0.68	flow appears negative
27.0	1.6	0.42	
28.0	1.9	0.13	
29.0	2.20	1.18	
30.0	2.35	1.84	
31.0	2.30	1.64	
32.0	2.30	1.8	flow approx 30° to thalweg
33.0	2.25	2.22	" "
34.0	2.30	2.31	" "
35.0	2.80	2.02	" "
36.0	2.35	1.91	" "
37.0	2.25	1.71	" "
38.0	2.20	1.94	" "
39.0	1.95	2.08	" "
40.0	1.90	1.39	
41.0	1.90	0.84	
42.0	1.70	0.16	eddy from 42' to
43.0	1.70	0.44	flow looks negative

SYB POOL TR3 Discharge

STA	DEPTH	VELOCITY	COMMENTS
44.0	1.67	-0.80	flow looks negative
45.0	1.6	-1.16	" "
46.0	1.35	-0.94	" "
47.0	1.40	-0.99	" "
47.8	1.0	-0.44	edge of log / bank
48.0	0.6	-1.25	top of log
49.0	0.40	-0.84	edge of grass
49.5	0.30	-0.2	grass
50.0	0.25	-0.15	grass
51.0	0.2	-0.1	grass
52.9	0	0	LWE
59.1			LWP

HYDRAULIC CONTROL

STA	DEPTH	COMMENTS
1.0		RWP
13.0	0	RWE
13.5	0.70	
14.0	0.55	
14.5	0.70	
15.5	0.65	
16.5	0.75	
17.0	0.95	
18.0	0	LWD out = 0.6' height
17.8	0.65	side LWD
18.6	0.65	side LWD
19.5	0.65	
20.0	0.50	
21.0	0.50	
22.0	0.50	
23.0	0.55	
24.0	0.8	
25.0	0.9	
26.0	1.05	
27.0	1.15	
28.0	1.10	
29.0	1.25	

22

HYDRAULIC CONTROL SY8

STA	DEPTH	COMMENTS
30.0	1.20	
31.0	1.25	
32.0	1.25	rock
32.2	1.4	edge of rock
33.0	1.4	
33.5	1.3	
34.0	1.3	
34.3	0.7	edge of bank
34.4	0.1	
34.6	0	RWE
40.8		RWP

23

SY8 RIFFLE TRI DISCHARGE

STA	DEPTH	VELOCITY	COMMENTS
1.0			RWP
6.3	0	0	RWE
6.7	out/9	-	
7.2	0	0	
7.7	.7	.19	turbulent - fluctuate +/- direction
8.3	0.8	0.53	Velocity shelter
9.0	0.9	0.41	
9.5	1.15	2.1	
10.0	1.25	2.74	
10.5	1.50	2.46	
11.0	1.55	2.85	
11.5	1.6	3.03	
12.0	1.6	3.12	
12.5	1.70	3.04	
13.0	1.75	2.73	
14.0	1.75	2.70	
15.0	1.60	2.81	
16.0	1.60	2.61	
17.0	1.60	2.67	
18.0	1.70	2.60	
19.0	1.77	2.50	
19.5	1.65	2.00	

Continued →

24

SY 8 RIFFLE TR1 DISCHARGE

STA	DEPTH	VELOCITY	COMMENTS
20	1.50	1.70	
~~20.5~~	~~0.93~~	~~1.25~~	
~~21.0~~			
20.5	1.43	1.60	
21.0	1.30	1.06	
21.5	1.30	0.45	
22.0	1.02	-0.01	
22.5	0.93	-0.01	kick test, negative
23.0	0.73	-0.05	little bit of grass
23.5	0.45	-0.16	"
24.0	0.22	-0.14	"
24.3	0	0	LWE
34.3			LWP

SY 8 RIFFLE TR2 DISCHARGE

STA	DEPTH	VELOCITY	COMMENTS
1.0			RWP
10.3	0	0	RWE
10.6	0.25	0.25	upstream veg grass
11.0	0.82	0.1	~~grass~~ veg. veg
11.5	1.12	0.38	
12.0	1.15	1.06	
12.5	1.25	1.81	
13.0	1.20	2.45	
13.5	1.30	2.59	
14.0	1.35	2.77	
15.0	1.40	2.37	
16.0	1.5	2.54	
17.0	1.50	2.96	
18.0	1.45	3.11	
19.0	1.50	3.15	
20.0	1.45	2.82	
21.0	1.40	2.89	
22.0	1.25	2.70	
23.0	1.05	2.87	
24.0	0.90	2.64	
24.5	0.85	2.1	
25.0	0.80	1.61	
25.4	0.65	1.34	edge of sm. bank
25.5	0.15	0.1	

STA	D	V	
26.1	5	0	LWE
37.4			LWP

SYB RIFFLE TR3 DISCHARGE

STA	DEPTH	VELOCITY	COMMENTS
1.0			RWP
9.7	0	0	RWE
10.0	0.52	0.16	Veg
10.5	1.15	1.24	
11.0	1.25	1.92	
11.5	1.25	2.02	
12.0	1.25	2.11	
13.0	1.25	2.15	
14.0	1.25	2.29	
15.0	1.30	2.49	
16.0	1.35	2.73	
17.0	1.50	2.73	
18.0	1.65	2.84	
19.0	1.75	3.05	
19.5	1.95	2.99	
20.0	2.05	3.02	
21.0	2.05	2.56	
22.0	2.02	2.00	
23.0	2.02	1.20	
23.7	2.0	0.86	side of cobble
24.0	1.65	0.35	on top cobble
24.5	1.75	0.29	eddy 24' to bank
	CONTD →		Velocity Shelter

PHOTO LOG:

20. SYB RIFFLE TR2 UPSTREAM
19. SYB Riffle TR2 Downstream
18. SYB RIFFLE TR3 LB → RB
17. SYB Riffle TR3 RB → LB
16. SYB Riffle TR3 Upstream
15. SYB Riffle TR3 Downstream

S/B RIFFLE TR3 DISCHARGE

STA	DEPTH	VELOCITY	COMMENTS
25.0	1.55	0.09	
25.5	1.40	0.06	
26.0	1.20	-0.15	
26.5	0.90	-0.17	
27.0	0.75	-0.11	
27.5	0.70	-0.25	
28.0	0.60	-0.12	
28.3	0.47	-0.08	edge of bank
28.4	0	0	LWS undercut bank = 0.5'
32.7			LWP

SY-8

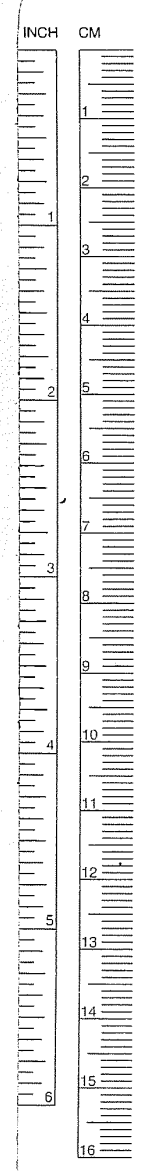
"Putting the Plane"

ALL-WEATHER

LEVEL BOOK

No. 310

6/25/64



MEASUREMENT CONVERSIONS

IF YOU KNOW	MULTIPLY BY	TO FIND
LENGTH		
inches	2.540	centimeters
feet	30.480	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 98052
Phone 425/556-1288

Project 1418.01 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

SY-8 Long Ck. 6/25/04

	IN	OUT
Time	9:50 am	5 pm
SG	6.00	6.00

Crew: Glen Anderson
Marcus Appy

Equip: Level Nikon AP-7
prop. 3A (181)
Swoffer 3602

Sunny & Warm (High 85°F)

SY-8 6/25/04

Pool Level Loop

STA	BS	HI	FS	ELEV
BM	4.40	104.40		100.00
TR 1			4.82	99.58
TR 2			5.17	99.23
TR 3			5.57	98.83
(TP)				
TR 3	5.71	104.54		98.83
TR 2			5.30	99.24 ✓
TR 1			4.96	99.58 ✓
BM			4.53	100.01 ✓

	LWE	RWE	LWS	RWS
HC				
TR-1	35.2	20.5		96.50
TR-2	34.9	16.1		96.99
TR-3	49.5	24.7		96.48

SY-8 6/25/04

Pool TR1 Bank Survey

STA	BS	HI	FS	Elev	Sub. D/S	%	Notes	
47.5		104.54	5.57		1	100	LWP	Grass
45.4			5.82		1	100		
44.0			6.44		1	100		
42.5			7.04		1	100		
39.0			7.27		1	100		
38.5			7.56		1	100		
36.5			7.64		1	100		
35.4			7.99		1	100		
35.2			8.03		2/1	60	LWE	
NA			8.04	96.50	NA		WSE	
20.5			8.04		2/1	90	RWE	
20			7.92		1/2	90		
18			7.69		1	100		Grass
16.2			7.59		1	100		
14.8			6.93		1	100		
11			7.02		1	100		
7			7.19		1	100		
4.2			7.34		1	100		
1.0			6.12		1	100	RWP	Grass

SY-8 Long ck.

Pool TR 1 Discharge

STA	D	V	Sub D/S	%	Cover	Notes
35.2	0	0	—		—	LWE
34.7	1.35	0.95	3/4	90	2	
34.5	1.52	1.30	3/4	90	4	
34.0	1.50	1.59	3/4	60	4	
33.5	1.58	1.75	3/4	90	4	
33	1.60	1.96	3/4	90	4	
32.5	1.70	2.06	3/4	95	4	
32	1.62	1.96	2/5	80	4	
31.5	1.70	1.95	2/5	80	4	
31	1.58	1.98	2/5	75		
30.5	1.50	1.84	8/4	75		
30	1.55	1.83	8/4	75		
29.5	1.50	1.82	8/4	75		
29	1.55	1.74	8/4	60		
28.5	1.55	1.65	8/4	60		
28	1.55	1.54	8/4	60		
27.5	1.50	1.54	4/2	75		
27	1.35	1.43	4/2	90		
26.5	1.30	1.34	4/2	90		
26	1.20	1.29	4/3	80		
25.5	1.10	1.18	4/3	80		
25	1.0	1.14	4/2	80		

GO AHEAD 4 PAGES → (continues)

Notes

flow @ ∠ 30° to transect
" "
" "
" "
" ∠ 20°
" ∠ 10°

Photo Log

Roll #2

1 Large bug raft
2 Pool TR 1 L-R
3 Pool TR 2 L-R
4 TR 1 R-L
5 TR 2 R-L
6 Pool U/S
7 Pool HC L-R
8 Pool U/S (w HC tape)
9 Pool TR 3 L-R
10 R-L
11 Pool D/S
12 Riffle TR 1 L-R
13 R-L
14 Riffle U/S
15 TR 2 L-R
16 R-L
17 Riffle U/S between TR 1 & 2
18 " D/S
19 TR 3 L-R

SY-8 6/25/04

Pool TR2 Bank Survey

STA	BS	HI	FS	ELEV	Sub D/S	Sub %	Notes
1.0		104.54	6.50		1	100	RWP Grass
3.0			7.09		1	100	
6.0			7.11		1	100	
9.0			7.00		1	100	
11.0			7.05		1	100	
13.5			7.64		1	100	
16.0			8.06		1/2	90	
16.1			8.06		1/2	70	RWE
NA			8.05	96.49	NA		WSE
34.9			8.02		6/5	80	LWE
35 0			7.83		1	100	— mat of dead bugs.
36.4			7.08		1	100	— small willow from [35'-45']
38.5			7.31		1	100	↓
41			7.18		1	100	
44.6			6.68		1	100	
45.9			5.80		1	100	
46.6			5.70		1	100	LWP

SY-8 6/25/04

Pool TR 2 Discharge

STA	D	V	Sub °/s	%	cover	Notes
						RWE
16.1	⊖	⊖	—		—	
16.2	0.05	⊖	9/2	60	2	
17.0	0.45	-0.33	9/2	60	2	
17.5	0.65	-0.31	9/2	60	2	
18	0.75	-0.42	2/3	90	4	
18.5	0.75	0.21	2/3	90	4	
19	0.85	0.20	2/3	90	4	
19.5	1.10	0.11	2/4	85	4	
20	1.20	0.23	2/4	80	4	
20.5	1.45	0.45	2/4	60	4	
21	1.55	0.49	4/2	60	4	
21.5	1.70	0.67	5/4	60	4	
22	1.75	0.72	5/8	75	4	
23	1.72	0.93	5/8	80	4	
24	1.75	1.03	5/8	70	4	
25	1.65	1.23	5/8	60	4	
26	1.70	1.23	8/5	60	4	
27	1.70	1.44	8/5	60	4	
28	1.60	1.46	5/8	80	4	
29	1.60	1.37	5/6	60	4	
30	1.70	1.45	5/6	70	4	
31	1.62	1.38	6/5	60	4	
32	1.55	1.26	6/5	70	1	

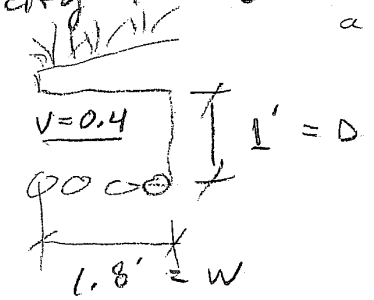
∡ 45° flow negative and ∂ angle
" " " " "
∡ 60° " " " "
∡ 90° Flow ⊥ to transect
∡ 90° " " "
∡ 45° flow positive and ∂ angle
∡ 45° " " " "

SY-8 6/25/04

Pool TR2 (continued)

STA	D	V	D/S	%	Cover	Notes
33	1.55	0.96	G/S	70	1	
34	1.40	0.54	G/S	90	1	Velocity shelter
34.8	1.30	0.78	G/S	80	2	Next to undercut bank (1.8' undercut)
34.9	~~0~~	~~0~~	—		—	L-Bank Edge

Velocity in Undercut area.



SY-8 6/25/04

Pool TR1 Discharge

(Continued) (Back 4 pages)

SIA	D	V	D/S	%	Cover
24.5	0.85	1.09	4/2	70	4
24	0.80	1.04	4/2	70	4
23.5	0.70	0.92	4/2	60	4
23	0.65	1.00	4/2	60	4
22.5	0.50	0.76	2/4	80	4
22	0.45	0.81	2/4	80	4
21.5	0.25	0.37	2/1	60	1
21	0.23	0.05 *	2/1	60	1
20.5	0	0	—	—	—

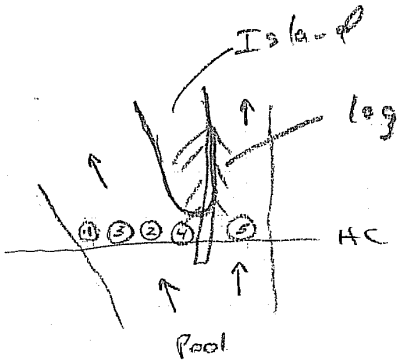
* Estimated

Blank

SY-8

Pool HC Bank Survey

STA	BS	HI	FS	ELEV	NOTES	
40.8		104.54	6.90		LWP	
38			7.39			
35			7.92			
34.3			8.29		LWE	
—			8.28	96.26	WSE ①	(34.0)
34.4			8.26			
—			8.18		WSE ②	(25)
—			8.20		WSE ③	(30)
—			8.14	96.40	WSE ④	(21)
—			8.33		WSE ⑤	(17)
13.2			8.30		RWE	
13.0			7.90			
11.0			7.29			
4.5			6.89			
1.0			6.12		RWP	



SY-8 6/25/04

Pool TR3 Bank Survey

Sub

STA	BS	HI	FS	EL	D/S	%	
59.1		104.54	6.00		1	100	LWP Grass
55			6.65		1	100	
54.4			7.48		1	100	Small willow 55' - 51'
49.5			8.06	96.48	1/2	70	LWE
—			8.06		—		WSE (48')
—			8.07		—		WSE (37')
—			8.07	96.47	—		WSE (26')
24.7			8.07		1/2	70	RWE
24.4			7.40		1	100	Grass
17.0			6.93		1	100	
4.0			6.75		1	100	
1.0			5.94		1	100	RWP

↘ 5.70 98.84 ✓ OK

LHP (TR3) - Shot HP to check level because Pool WSE's going up (down stream). Shot good. Re-shot WSE's at other trasects, and they were correct. WSE's increase over short distance going down stream.

SY-8 6/25/04

Pool TR 3 Discharge

STA	D	V	Sub D/S	% cover	Notes
49.5					LWE
49	0.20	-0.10	2/9	70	1
48	0.20	-0.90	2/9	70	1
47.8	0.70	-0.23	2/9	70	1
47	1.10	-1.12	5/6	70	1
46	1.25	-0.86	5/4	60	4
45	1.25	-0.78	5/4	60	4
44	1.25	-0.68	5/4	70	4
43	1.35	-0.28	5/4	70	4
42	1.42	0.08	5/6	60	4
41	1.60	0.07	5/4	70	4
40	1.60	0.16	5/4	70	4
39	1.60	0.79	5/4	70	4
38	1.70	1.20	5/4	70	4
37	1.90	1.44	5/4	70	4
36	1.90	1.57	5/6	60	4
35	1.90	1.65	5/6	60	4
34	1.95	1.55	5/6	60	4
33	1.90	1.45	5/6	60	4
32	1.95	1.55	5/6	70	4
31	1.95	1.44	5/4	70	4
30	2.00	0.72	5/4	60	4
29	1.75	-0.14	4/5	60	4

Top of Log (measured to top)
Edge of log

SY-8 6/25/04

Pool TR 3 (continued)

STA	D	V	Sub D/S	Sub %	cover	
28	1.5	-0.32	4/2	60	4	
27	1.4	-0.73	2/4	90	4	
26	1.0	-0.82	2/9	90	2	
25.4	0.9	-0.10*	2/9	70	3	
24.7	⊖	⊖	—	—	—	RWE

* Estimated vel. (Ag. Veg.)

SY-8 Riffle Level Loop 6/25/04

STA	BS	HI	FS	ELEV
BM	4.26	104.26		100.00
TR 2			5.45	98.81
TR 1	5.26	104.07	5.45	98.81
TR 3			5.65	98.42
BM	4.375	104.375	4.07	100.00
TR 2			5.56	98.815
TR 1	5.09	103.905	5.56	98.815
TR 3			5.48	98.425 ✓

Riffle

	LWE	RWE	LWS	RWS
TR-1	24.1	7.4	96.08	96.09
TR-2	25.5	10.9	96.14	96.17
TR-3	28.3	9.8	96.24	96.24

SY-8

SY-8 6/25/04

Riffle TR 1 Bank Survey

Sub. NAD83

STA	BS	HI	ES	D/S	%	
—	5.09	103.90				RHP
1.0			5.30	1	100	RWP
5.3			5.34	1	100	
5.9			7.39	2/3	90	
6.3			6.72	1	100	
6.9			7.15	1	100	
7.4			7.77	2	100	RWE
—			7.81	—		RWSE
—			7.82	—		LWSE
24.1			7.82	2/1	80	LWE
24.9			7.74	2/1	80	
25.1			7.17	1	100	
27			6.84	1	100	
37.3			6.31	1	100	LWP

TR 1	ELEV.
Top of Bank	
bottom of Bank	
(7.5')	96.09
(22')	96.08

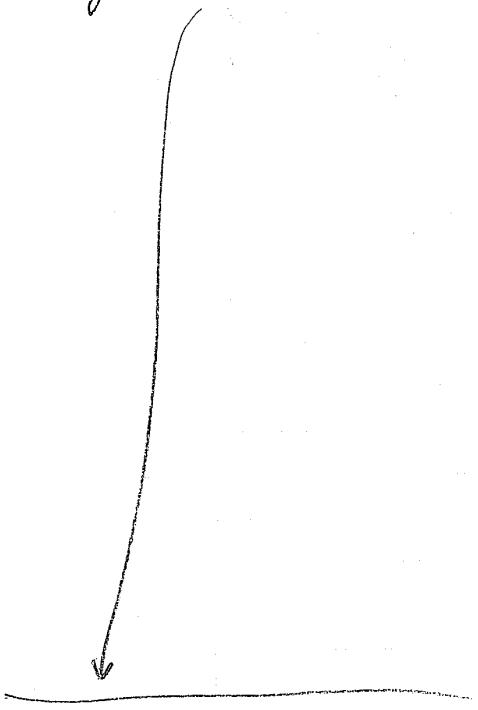
SV-8 6/25/04

Riffle TR1 Discharge

STA	D	V	Sub D/S %		Cover	
7.4	~~0~~	~~0~~	—		—	RWE
7.7	0.30	-0.26	2/1	70	4	
8.3	0.45	-0.26	2/8	60	4	
9.0	0.55	0.09	2/8	60	4	
9.5	0.57	0.63	8/2	70	4	
10.0	0.80	2.01	8/2	90		
10.5	1.05	1.86	8/4	90		
11	1.25	2.31	8/4	90		
11.5	1.20	2.52	8/4	90		
12	1.20	2.59	8/4	80		
12.5	1.25	2.55	8/4	80		
13	1.25	2.45	8/4	80		
14	1.30	2.33	8/4	90		
15	1.20	2.39	8/4	90		
16	1.17	2.34	8/4	90		
17	1.17	2.32	8/4	70		
18	1.20	2.18	8/4	70		
19	1.37	1.73	8/5	60		
19.5	1.37	1.67	8/5	60		
20	1.20	1.49	5/4	60		
20.5	1.10	1.06	4/2	80		
21	1.00	0.58	4/2	60		
21.5	0.90	-0.04	2/4	80		

Notes

Clay bedrock material



SY-8 6/25/04

Riffle TR 1 (continued)

STA	D	V	Sub. D/S	%	Cover	Note
22	0.85	-0.02	2/1	90	4	
22.5	0.50	-0.05	2/9	90	4	
23	0.40	-0.05	2/9	90	4	
23.5	0.20	0	2/9	70	4	
24	0.05	0	2/9	70	4	
24.1	0	0	—		—	LWE

Notes

Ex. 279-US-439
Page 60 of 109

SY-8 6/25/04

Riffle TR 2 Bank Survey

STA	BS	HI	FS	ELEV	D/S	SmbO %	Notes
37.4		103.90	6.08		1	100	LWP
32			6.49		1	100	
29.5			7.05		1	100	
26.5			7.25		1	100	
25.6			7.67		1	160	
—			7.76	96.14	—		WSE-L (25')
—			7.73	96.17	—		WSE-R
10.4			7.56		1	100	
10.0			7.16		1	100	
7.0			6.76		1	100	Small Pine trees 1.0'-5.0'
5.0			6.66		1	100	
-2.0			5.13		1	100	

SY-8 6/25/04

Riffle TR 2 Discharge

STA	D	V	Sub D/S	%	Cover	
10.9	~~0~~	~~0~~	9/2	80	—	RWE
11.0	0.4	0.1	2/9	70	2	
11.5	0.55	0.18	2/9	70	2	
12	0.80	0.52	2/5	60	4	
12.5	0.80	1.39	5/4	70	4	
13	0.90	1.91	5/4	70	4	
13.5	0.90	2.23	5/4	70		
14	0.95	2.42	5/8	70		
15	1.00	2.15	5/4	80		
16	1.05	2.27	5/4	80		
17	1.15	2.48	5/4	80		
18	1.10	2.56	5/4	80		
19	1.15	2.54	5/4	70		
20	1.05	2.55	5/4	60		
21	1.00	2.53	4/5	60		
22	0.80	2.79	4/5	60		
23	0.70	2.73	4/5	60		
24	0.55	2.06	4/5	60		
24.5	0.50	1.75	4/5	60		
25	0.40	1.11	2/9	90		
25.4	0.30	0.54	2/9	80		
25.5	~~0~~	~~0~~	1/2	80		LWE

Notes

SY-8 6/25/04

Riffle TR 3 Bank Survey

STA	BS	HI	FS	ELEV	Sab D/S	Sab %	
HP	3.74	102.16		98.42			RHP TR 3
1.0			4.10		1	100	RWP
9.0			5.10		1	100	
9.7			5.64		1	100	
—			5.92	96.24	—		WSE - R
—			5.91	96.25	—		WSE - C
28.5			4.71		1	100	
28.9			4.24		1	100	
30			3.85		1	100	
32.7			3.36		1	100	LWP

SY-8 6/25/04

Riffle TR 3 Discharge

STA	D	V	Sub D/S	%	cover
9.8	~~0~~	~~0~~	1/2	70	—
10.0	0.03	~~0~~	9/1	80	4
10.5	0.70	0.57	4/2	60	2
11.0	0.80	1.35	4/2	90	2
11.5	0.85	1.50	4/2	90	4
12	0.85	1.64	4/5	80	
13	0.85	1.74	4/5	70	
14	0.90	1.81	4/5	60	
15	0.90	1.55	4/5	60	
16	1.00	1.93	5/4	60	
17	1.05	1.94	5/4	70	
18	1.20	2.17	5/4	80	
19	1.30	1.99	5/4	90	
19.5	1.45	2.32	5/4	90	
20	1.55	2.03	5/4	90	
21	1.65	1.89	5/8	80	
22	1.70	1.63	5/4	70	
23	1.60	1.06	4/5	60	
23.7	1.65	0.68	8/4	70	
24	1.60	0.47	2/8	60	
24.5	1.30	0.15	2/8	70	
25	1.30	0.07	2/8	70	
25.5	1.10	0.04	2/3	80	

Notes
RWE

SY-8 6/25/04

Riffle TR3 (continued)

Sta	D	V	D/S	%	Cover	Comments
26	1.0	-0.03	2/3	80	4	
26.5	0.60	-0.07	2/3	80	4	
27	0.30	⊖	2/9	70	2	
27.5	0.30	⊖	2/9	70	2	
28	0.20	⊖	2/9	70	2	
28.3	⊖	⊖	2/1	90	–	LWE

SY-8 6/25/04

RUN TR 1 Discharge

STA	D	V	%s	%	cover
30.2	~~0~~	~~0~~	1/2	90	4
30	0.1	~~0~~	1/2	90	2
29	1.25	-0.26	4/2	90	2
28	1.53	-0.21	5/2	80	4
27	1.63	-0.02	5/6	60	4
26	1.60	0.18	8/5	70	
25	1.63	1.05	5/6	80	
24	1.65	1.45	5/6	60	
23	1.70	1.41	5/8	80	
22	1.70	1.86	5/6	80	
21	1.65	1.27	5/4	90	
20	1.60	1.00	5/6	70	
19	1.55	1.06	5/6	90	
18	1.55	1.04	5/4	70	
17	1.40	0.97	5/4	70	
16	1.45	0.70	5/4	70	
15	1.40	0.80	5/4	60	
14	1.50	0.60	5/4	60	
13	1.40	0.42	5/4	60	
12	1.42	0.39	5/4	60	
11	1.41	0.14	5/2	80	
10	1.40	0.11	4/2	70	
9	1.35	-0.19	2/4	70	2
8.3	1.30	-~~0~~	2/4	70	2

EDGE OF BANK

Undercut bank - 1.0' undercut

Note: FOR RUN HAB. Bank Surveys and TR 3 Discharge x-sec in other field Book.

SY-8 6/25/04

RUN TR 2. Discharge

STA	D	V	Sub. D/S	%	Cover	
11.3	~~0~~	~~0~~	2/1	80	—	LWE
11.5	0.1	~~0~~	2/1	80	2	
12.5	0.7	~~0~~	2/9	80	2	
13.5	1.0	0.02	2/4	70	4	
14.5	1.15	0.30	2/4	60	4	
15.5	1.25	0.43	4/6	70		
16.5	1.40	1.05	4/5	60		
17.5	1.40	1.42	4/5	60		
18.5	1.45	1.76	4/5	60		
19.5	1.40	1.91	5/4	60		
20.0	1.45	1.85	5/4	60		
20.5	1.40	1.97	5/4	60		
21	1.40	2.04	5/4	60		
21.5	1.35	2.02	5/4	60		
22	1.35	1.91	5/4	60		
22.5	1.30	1.84	5/4	60		
23	1.27	1.84	5/4	60		
23.5	1.25	1.68	5/4	60		
24	1.15	1.95	5/4	60		
24.5	1.15	1.70	5/4	60		
25	1.10	1.68	5/4	60		
25.5	1.05	1.61	5/4	60		
26	1.05	1.66	4/5	60		

SY-8 6/25/04

RUN TR 2 (continued)

STA	D	V	Sub D/S	%	Cover	
26.5	1.05	1.71	4/5	60	4	
27	1.10	1.64	4/5	60	2	
27.5	1.10	1.71	5/4	60	2	
28.0	1.0	0.64	5/4	60	2	EDGE * OF BANK

* Undercut by 0.55' RWE

SY-B

Run TR-3 06/25/04

STA	D	V	D/S	Sub % Cover	Notes
7.2	0.57	-.14	ST/SD	70 0.4'GCB	LWE
8.0	1.18	-.05	ST/SD		
9	1.15	.10			
10	1.38	.43			
11	1.58	0.24			
12	1.5	0.26	SD/ST	60	
13	1.47	0.66	SG/ST		
14	1.4	0.69	SG/ST		
15	1.51	1.07	SG/ST		
16	1.4	1.14	ST/SG		
17	1.52	1.44	ST/SG	60	
18	1.68	1.61	ST/SG	60	
19	1.6	1.42	ST/SG	70	
20	1.57	1.59	ST/SG	70	
21	1.6	1.54	ST/SG	70	
22	1.7	1.54	SG/ST	60	
23	1.8	1.39	SG/ST	60	
24	1.81	1.35	"	60	
25	1.7	1.19	"	60	
26	1.53	0.50	ST/SG	60	
27	1.4	0.23	ST/SG	80	
28	1.22	0.05	ST/SG	70	veg
29	0.90	*0.50	ST/SD	80	veg

SY-B

Run TR-3 subst.

STA	D	V	D/S	% Cover	Notes
30	0.42	0.0	ST/veg	60	
31	0.2	0.0	veg/ST	70	
31.7	Ø	Ø	"	70	RWE

SY-8

Run TR-1 Bank Survey 06/25/04

STA	HI	FS	Elevation	Sub/%	Rod
TR-1 HP	104.80	4.99	99.81		
1.0 LWP		5.27		veg/soil 90	
5.0		5.96		" "	
8.0		7.21		" 80	
8.5 LWS		8.96	97.15	SD/LG 60	1.31
30.2 RWS		8.07	97.11	SD/LG "	0.38
30.7		7.42		veg/ST 60	
42.9 RWP		6.38		veg/soil 80	
+6.0		6.35		" "	

Run TR-2 Bank Survey

STA	HI	FS	Elevation	Sub/%	Rod
TR-2 HP	104.13	4.79	99.35		
1.0 LWP		5.07		veg/soil 90	
4.0		5.47		" "	
10.0		6.03		" "	
11.2		6.85	97.28	ST/SD 70	0.0
27.9		7.92	97.27	" "	1.06
28.2		6.60		veg/ST 80	
30.0		5.57		veg/soil 90	
32.2		5.18		" "	

SY-8 06/25/04

Run TR-3 Bank Survey

STA	HI	FS	Elevation	Sub	%D	Rod
	104.84					
1.0 LWP		4.96		veg/soil	80	
7.0		5.67		"	"	
7.5 LWS/E		8.21	97.45	SD/ST	60	0.82
31.7 RWS/E		7.54	97.37	"	"	0.07
32.5		6.64		veg/ST	80	
42.5 RWP		6.34		veg/soil	80	

Run Unit Bed Slope Survey

STA	BS	HI	FS	Elevation	Rod
TR-3 HP	4.54	104.70		100.16	
~50' u/s of TR-3			8.75	97.38	1.43
~40' d/s of TR-1			9.76	97.09	2.15
TR-3 WSE			8.98	97.35 use	1.63

Ex. 279-US-439
Page 69 of 109

SY-8

S Run Unit Level Loop 06/25/04

STA	BS	HI	FS	Elevn
BM	4.79			100.00
		104.79		
TR-1			4.98	99.81
TR-2			5.44	99.35
TR-3			4.63	100.16
TR-3 (TP)	4.68			100.16
		104.84		
TR-2			5.49	99.35
TR-1			5.03	99.81
BM			4.84	100.00

SY-8 Long Ck. 6/25/04

	IN	OUT
Time	9:50 am	5 pm
SG	6.00	6.00

Crew: Glen Anderson
Marcus Appy

Equip: Level Nikon AP-7
prop. 3A (181)
Swoffer 3602

Sunny & Warm (High 85 'F)

SY-8 6/25/04

Pool Level Loop

STA	BS	HI	FS	ELEV	
BM	4.40	104.40		100.00	
TR 1			4.82	99.58	
TR 2			5.17	99.23	
TR 3			5.57	98.83	
(TP)					
TR 3	5.71	104.54		98.83	
TR 2			5.30	99.24	✓
TR 1			4.96	99.58	✓
BM			4.53	100.01	✓

HC	LWE	RWE	LWS	RWS
TR-1	35.2	20.5		96.50
TR-2	34.9	16.1		96.49
TR-3	49.8	24.7		96.48

SY-8 6/25/04

Pool TR1 Bank Survey

STA	BS	HI	FS	Elev	Sub. D/S	Sub. %	Notes	
47.5		104.54	5.57		1	100	LWP	Grass
45.4			5.82		1	100		
44.0			6.44		1	100		
42.5			7.04		1	100		
39.0			7.27		1	100		
38.5			7.56		1	100		
36.5			7.64		1	100		
35.4			7.99		1	100		
35.2			8.03		2/1	60	LWE	
NA			8.04	96.50	NA		WSE	
20.5			8.04		2/1	90	RWE	
20			7.92		1/2	90		
18			7.69		1	100		Grass
16.2			7.59		1	100		
14.8			6.93		1	100		
11			7.02		1	100		
7			7.19		1	100		
4.2			7.34		1	100		
1.0			6.12		1	100	RWP	Grass

SY-8 Long ck.

Pool TR 1 Discharge

STA	D	V	Sub D/S	%	Cover	Notes
35.2	0	0	—		—	LWE
34.7	1.35	0.95	3/4	90	2	
34.5	1.52	1.30	3/4	90	4	
34.0	1.50	1.59	3/4	60	4	
33.5	1.58	1.75	3/4	90	4	
33	1.60	1.96	3/4	90	4	
32.5	1.70	2.06	3/4	95	4	
32	1.62	1.96	2/5	80	4	
31.5	1.70	1.95	2/5	80	4	
31	1.58	1.98	2/5	75		
30.5	1.50	1.84	8/4	75		
30	1.55	1.83	8/4	75		
29.5	1.50	1.82	8/4	75		
29	1.55	1.74	8/4	60		
28.5	1.55	1.65	8/4	60		
28	1.55	1.54	8/4	60		
27.5	1.50	1.54	4/2	75		
27	1.35	1.43	4/2	90		
26.5	1.30	1.34	4/2	90		
26	1.20	1.29	4/3	80		
25.5	1.10	1.18	4/3	80		
25	1.0	1.14	4/2	80		

GO AHEAD 4 PAGES → (continues)

Notes

flow @ ∡ 30° to transect
" "
" "
" "
" "
" ∡ 20°
" ∡ 10°

Photo Log

Roll #2

1 Large bug raft
2 Pool TR 1 L-R
3 Pool TR 2 L-R
4 TR 1 R-L
5 TR 2 R-L
6 POOL U/S
7 Pool HC L-R
8 Pool U/S (w HC tape)
9 Pool TR 3 L-R
10 R-L
11 Pool D/S
12 Riffle TR 1 L-R
13 R-L
14 Riffle U/S
15 TR 2 L-R
16 R-L
17 Riffle U/S between TR 1 & 2
18 " D/S
19 TR 3 L-R

SY-8 6/25/04

Pool TR 2 Bank Survey

STA	BS	HI	FS	ELEV	Sub O/S	Sub %	Notes
1.0		104.54	6.50		1	100	RWP Grass
3.0			7.09		1	100	
6.0			7.11		1	100	
9.0			7.00		1	100	
11.0			7.05		1	100	
13.5			7.64		1	100	
16.0			8.06		1/2	90	
16.1			8.06		1/2	70	RWE
NA			8.05	96.49	NA		WSE
34.9			8.02		6/5	80	LWE
35 0			7.83		1	100	— mat of dead bugs.
36.4			7.08		1	100	— small willow from [35'-45']
38.5			7.31		1	100	
41			7.18		1	100	
44.6			6.68		1	100	
45.9			5.80		1	100	
46.6			5.70		1	100	LWP

SY-8 6/25/'04

Pool TR 2 Discharge

STA	D	V	Sub °/s	%	cover	Notes
16.1	~~0~~	~~0~~	—		—	RWE
16.2	0.05	0	9/2	60	2	
17.0	0.45	-0.33	9/2	60	2	
17.5	0.65	-0.31	9/2	60	2	
18	0.75	-0.42	2/3	90	4	
18.5	0.75	0.21	2/3	90	4	
19	0.85	0.20	2/3	90	4	
19.5	1.10	0.11	2/4	85	4	
20	1.20	0.23	2/4	80	4	
20.5	1.45	0.45	3/4	60	4	
21	1.55	0.49	4/2	60	4	
21.5	1.70	0.67	5/4	60	4	
22	1.75	0.72	5/8	75	4	
23	1.72	0.93	5/8	80	4	
24	1.75	1.03	5/8	70	4	
25	1.65	1.23	5/8	60	4	
26	1.70	1.23	8/5	60	4	
27	1.70	1.44	8/5	60	4	
28	1.60	1.46	5/8	80	4	
29	1.60	1.37	5/6	60	4	
30	1.70	1.45	5/6	70	4	
31	1.62	1.38	6/5	60	4	
32	1.55	1.26	6/5	70	1	

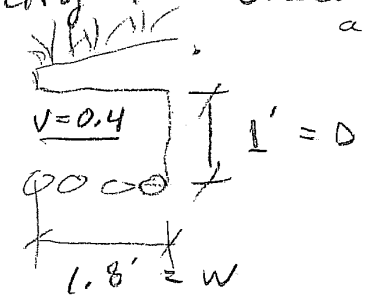
∢ 45° flow negative and ∅ angle
" " " " "
∢ 60° " " " "
∢ 90° Flow ⊥ to transect
∢ 90° " " "
∢ 45° flow positive and ∅ angle
∢ 45° " " " "

SY-8 6/25/04

Pool TR2 (continued)

STA	D	V	D/S	%	Cover	Notes
33	1.55	0.96	G/S	70	1	
34	1.40	0.54	G/S	90	1	Velocity shelter
34.8	1.30	0.78	G/S	80	2	Next to undercut bank (1.8' undercut)
34.9	~~0~~	~~0~~	—	—	—	L-Bank Edge

Velocity in Undercut area.



SY-8 6/25/04

Pool TR1 Discharge

(continued) (Back 4 pages)

STA	D	V	D/S	%	Cover
24.5	0.85	1.09	4/2	70	4
24	0.80	1.04	4/2	70	4
23.5	0.70	0.92	4/2	60	4
23	0.65	1.00	4/2	60	4
22.5	0.50	0.76	3/4	80	4
22	0.45	0.81	3/4	80	4
21.5	0.25	0.37	2/1	60	1
21	0.23	0.05 *	2/1	60	1
20.5	0	0	—	—	—

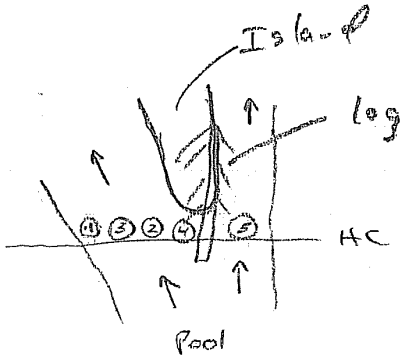
* Estimated

Blank

SY-8

Pool HC Bank Survey

STA	BS	HI	ES	ELEV	NOTES	
40.8		104.54	6.90		LWP	
38			7.39			
35			7.92			
34.3			8.29		LWE	
—			8.28	96.26	WSE ①	(34.0)
34.4			8.26			
—			8.18		WSE ②	(25)
—			8.20		WSE ③	(30)
—			8.14	96.40	WSE ④	(21)
—			8.33		WSE ⑤	(17)
13.2			8.30		RWE	
13.0			7.90			
11.0			7.29			
4.5			6.89			
1.0			6.12		RWP	



SY-8 6/25/04

Pool TR 3 Discharge

STA	D	V	Sub D/S	%	Cover	Notes
49.5						LWE
49	0.20	-0.10	2/4	70	1	
48	0.20	-0.90	2/4	70	1	
47.8	0.70	-0.23	2/4	70	1	
47	1.10	-1.12	5/6	70	1	
46	1.25	-0.86	5/4	60	4	
45	1.25	-0.78	5/4	60	4	
44	1.25	-0.68	5/4	70	4	
43	1.35	-0.28	5/4	70	4	
42	1.42	0.08	5/6	60	4	
41	1.60	0.07	5/4	70	4	
40	1.60	0.16	5/4	70	4	
39	1.60	0.79	5/4	70	4	
38	1.70	1.20	5/4	70	4	
37	1.90	1.44	5/4	70	4	
36	1.90	1.57	5/6	60	4	
35	1.90	1.65	5/6	60	4	
34	1.95	1.55	5/6	60	4	
33	1.90	1.45	5/6	60	4	
32	1.95	1.55	5/6	70	4	
31	1.95	1.44	5/4	70	4	
30	2.00	0.72	5/4	60	4	
29	1.75	-0.14	4/5	60	4	

Top of Log (measured to top)
Edge of log

SY-8 6/25/04

Pool TR 3 (continued)

STA	D	V	Sub D/S	Sub %	cover	
28	1.5	-0.32	4/2	60	4	
27	1.4	-0.73	2/4	90	4	
26	1.0	-0.82	2/9	90	2	
25.4	0.9	-0.10*	2/9	70	3	
24.7	~~0~~	~~0~~	—	—	—	RWE

* Estimated vel. (Ag. Veg)

Ex. 279-US-439
Page 80 of 109

SY-8 6/25/04

Pool TR3 Bank Survey

Sub

STA	BS	HI	FS	EL	D/S	%	
59.1		104.54	6.00		1	100	LWP Grass
55			6.65		1	100	
54.4			7.48		1	100	Small willow 55' - 51'
49.5			8.06	96.48	1/2	70	LWE
—			8.06		—		WSE (48')
—			8.07		—		WSE (37')
—			8.07	96.47	—		WSE (26')
24.7			8.07		1/2	70	RWE
24.4			7.40		1	100	Grass
17.0			6.93		1	100	
4.0			6.75		1	100	
1.0			5.94		1	100	RWP

↘ 5.70 98.84 ✓ OK

LHP (TR3) - Shot HP to check level because Pool WSE's going up (down stream). Shot good. Re-shot WSE's at other trasects, and they were correct. WSE's increase over short distance going down stream.

SY-8 Riffle Level Loop 6/22/04

STA	BS	HI	FS	ELEV
BM	4.26	104.26		100.00
TR 2			5.45	98.81
TR 1	5.26	104.07	5.45	98.81
TR 3			5.65	98.42
BM	4.375	104.375	4.07	100.00
TR 2			5.56	98.815
TR 1	5.09	103.905	5.56	98.815
TR 3			5.48	98.425 ✓

Riffle

	LWE	RWE	LWS	RWS
TR-1	24.1	7.4	96.08	96.09
TR-2	25.5	10.9	96.14	96.12
TR-3	28.3	9.8	96.24	96.24

Slide

SY-8 6/25/04

Riffle TR 1 Bank Survey

Sub. North

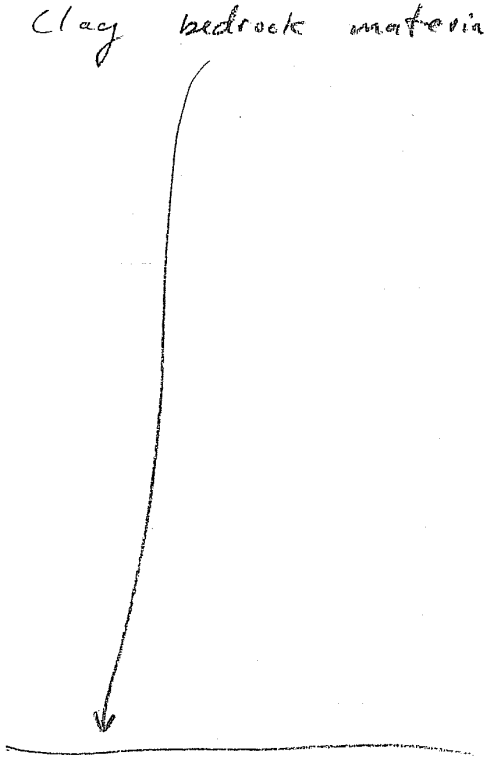
STA	BS	HI	FS	D/S	%		TR 1	ELEV.
—	5.09	103.90				RHP		
1.0			5.30	1	100	RWP		
5.3			5.34	1	100		Top of Bank	
5.9			7.39	2/3	90		bottom of Bank	
6.3			6.72	1	100			
6.9			7.15	1	100			
7.4			7.77	2	100	RWE		
—			7.81	—		RWSE	(7.5')	96.09
—			7.82	—		LWSE	(22')	96.08
24.1			7.82	2/1	80	LWE		
24.9			7.74	2/1	80			
25.1			7.17	1	100			
27			6.84	1	100			
37.3			6.31	1	100	LWP		

SV-8 6/25/04

Riffle TR1 Discharge

STA	D	V	Sub D/S	%	Cover	
7.4	⊖	⊖	—		—	RWE
7.7	0.30	-0.26	2/1	70	4	
8.3	0.45	-0.26	2/8	60	4	
9.0	0.55	0.09	2/8	60	4	
9.5	0.57	0.63	8/2	70	4	
10.0	0.80	2.01	8/2	90		
10.5	1.05	1.86	8/4	90		
11	1.25	2.31	8/4	90		
11.5	1.20	2.52	8/4	90		
12	1.20	2.59	8/4	80		
12.5	1.25	2.55	8/4	80		
13	1.25	2.45	8/4	80		
14	1.30	2.33	8/4	90		
15	1.20	2.39	8/4	90		
16	1.17	2.34	8/4	90		
17	1.17	2.32	8/4	70		
18	1.20	2.18	8/4	70		
19	1.37	1.73	8/5	60		
19.5	1.37	1.67	8/5	60		
20	1.20	1.49	5/4	60		
20.5	1.10	1.06	4/2	80		
21	1.00	0.58	4/2	60		
21.5	0.90	-0.04	2/4	80		

Notes



SY-8 6/25/04

Riffle TR 1 (continued)

STA	D	V	Sub. D/S %	Cover	Note
22	0.85	-0.02	2/1 90	4	
22.5	0.50	-0.05	2/9 90	4	
23	0.40	-0.05	2/9 90	4	
23.5	0.20	~~0~~	2/9 70	4	
24	0.05	~~0~~	2/9 70	4	
24.1	~~0~~	~~0~~	—	—	LWE

Notes

SY-8 6/25/04

Riffle TR 2 Discharge

STA	D	V	Sub D/s	%	cover	
10.9	~~0~~	~~0~~	9/2	80	—	RWE
11.0	0.4	0.1	2/9	70	2	
11.5	0.55	0.18	2/9	70	2	
12	0.80	0.52	2/5	60	4	
12.5	0.80	1.39	5/4	70	4	
13	0.90	1.91	5/4	70	4	
13.5	0.90	2.23	5/4	70		
14	0.95	2.42	5/8	70		
15	1.00	2.15	5/4	80		
16	1.05	2.27	5/4	80		
17	1.15	2.48	5/4	80		
18	1.10	2.56	5/4	80		
19	1.15	2.54	5/4	70		
20	1.05	2.55	5/4	60		
21	1.00	2.53	4/5	60		
22	0.80	2.79	4/5	60		
23	0.70	2.73	4/5	60		
24	0.55	2.06	4/5	60		
24.5	0.50	1.75	4/5	60		
25	0.40	1.11	2/9	90		
25.4	0.30	0.54	2/9	80		
25.5	~~0~~	~~0~~	1/2	80		LWE

Notes

Ex. 279-US-439
Page 86 of 109

SY-8 6/25/04

Riffle TR 2 Bank Survey

STA	BS	HI	FS	ELEV	D/S	%	Notes
37.4		103.90	6.08		1	100	LWP
32			6.49		1	100	
29.5			7.05		1	100	
26.5			7.25		1	100	
25.6			7.67		1	100	
—			7.76	96.14	—		WSE-L (25')
—			7.73	96.17	—		WSE-R
10.4			7.56		1	100	
10.0			7.16		1	100	
7.0			6.76		1	100	Small Pine trees 1.0'-5.0'
5.0			6.66		1	100	
-2.0			5.13		1	100	

SY-8 6/25/04

Riffle TR 3 Bank Survey

STA	BS	HI	FS	ELEV	Sab D/S	%	
HP	3.74	102.16		98.42			RHP TR 3
1.0			4.10		1	100	RWP
9.0			5.10		1	100	
9.7			5.64		1	100	
—			5.92	96.24	—		WSE - R
—			5.91	96.25	—		WSE - L
28.5			4.71		1	100	
28.9			4.24		1	100	
30			3.85		1	100	
32.7			3.36		1	100	LWP

S1-8 6/25/09

Riffle TR 3 Discharge

STA	D	V	Sub D/S	%	cover
9.8	~~0~~	~~0~~	1/2	70	—
10.0	0.03	~~0~~	9/1	80	4
10.5	0.70	0.57	4/2	60	2
11.0	0.80	1.35	4/2	90	2
11.5	0.85	1.50	4/2	90	4
12	0.85	1.64	4/5	80	
13	0.85	1.74	4/5	70	
14	0.90	1.81	4/5	60	
15	0.90	1.55	4/5	60	
16	1.00	1.93	5/4	60	
17	1.05	1.94	5/4	70	
18	1.20	2.17	5/4	80	
19	1.30	1.99	5/4	90	
19.5	1.45	2.32	5/4	90	
20	1.55	2.03	5/4	90	
21	1.65	1.89	5/3	80	
22	1.70	1.63	5/4	70	
23	1.60	1.06	4/5	60	
23.7	1.65	0.68	8/4	70	
24	1.60	0.47	2/8	60	
24.5	1.30	0.15	2/8	70	
25	1.30	0.07	2/8	70	
25.5	1.10	0.04	2/3	80	

Notes
RWE

Riffle TR3 (continued) 6/25/04

Sta	D	V	D/S	%	Cover	Comments
26	1.0	-0.03	2/3	80	4	
26.5	0.60	-0.07	3/3	80	4	
27	0.30	⊖	2/9	70	2	
27.5	0.30	⊖	2/9	70	2	
28	0.20	⊖	2/9	70	2	
28.3	⊖	⊖	2/1	90	–	LWE

SY-8

S Run Unit Level Loop 06/25/04

STA	BS	HI	FS	Elevn
BM	4.79			100.00
		104.79		
TR-1			4.98	99.81
TR-2			5.44	99.35
TR-3			4.63	100.16
TR-3 (TP)	4.68			100.16
		104.84		
TR-2			5.49	99.35
TR-1			5.03	99.81
BM			4.84	100.00

ST-0

RUN TR 1 Discharge

STA	D	V	%s	%	Cover
30.2	~~0~~	~~0~~	1/2	90	4
30	0.1	~~0~~	1/2	90	2
29	1.25	-0.26	4/2	90	2
28	1.53	-0.21	5/2	80	4
27	1.63	-0.02	5/6	60	4
26	1.60	0.18	8/5	70	
25	1.63	1.05	5/6	80	
24	1.65	1.45	5/6	60	
23	1.70	1.41	5/8	80	
22	1.70	1.86	5/6	80	
21	1.65	1.27	5/4	90	
20	1.60	1.00	5/6	70	
19	1.55	1.06	5/6	90	
18	1.55	1.04	5/4	70	
17	1.40	0.97	5/4	70	
16	1.45	0.70	5/4	70	
15	1.40	0.80	5/4	60	
14	1.50	0.60	5/4	60	
13	1.40	0.42	5/4	60	
12	1.42	0.39	5/4	60	
11	1.41	0.14	5/2	80	
10	1.40	0.11	4/2	70	
9	1.35	-0.19	2/4	70	2
8.3	1.30	-~~0~~	2/4	70	2

Undercut bank - 1.0' undercut

EDGE OF BANK

FOR RUN HAB.

Note: Bank Surveys and TR 3 Discharge X-sec in other field Book.

SY-8 6/25/04

RUN TR 2. Discharge

STA	D	V	Sub. D/S	%	cover	
11.3	~~0~~	~~0~~	2/1	80	—	LWE
11.5	0.1	~~0~~	2/1	80	2	
12.5	0.7	~~0~~	2/9	80	2	
13.5	1.0	0.02	2/4	70	4	
14.5	1.15	0.30	2/4	60	4	
15.5	1.25	0.43	4/6	70		
16.5	1.40	1.05	4/5	60		
17.5	1.40	1.42	4/5	60		
18.5	1.45	1.76	4/5	60		
19.5	1.40	1.91	5/4	60		
20.0	1.45	1.85	5/4	60		
20.5	1.40	1.97	5/4	60		
21	1.40	2.04	5/4	60		
21.5	1.35	2.02	5/4	60		
22	1.35	1.91	5/4	60		
22.5	1.30	1.84	5/4	60		
23	1.27	1.84	5/4	60		
23.5	1.25	1.68	5/4	60		
24	1.15	1.95	5/4	60		
24.5	1.15	1.70	5/4	60		
25	1.10	1.68	5/4	60		
25.5	1.05	1.61	5/4	60		
26	1.05	1.66	4/5	60		

SY-8 6/25/04

RUN TR 2 (continued)

STA	D	V	Sub D/S	%	cover	
26.5	1.05	1.71	4/5	60	4	
27	1.10	1.64	4/5	60	2	
27.5	1.10	1.71	5/4	60	2	
28.0	1.0	0.64	5/4	60	2	EDGE OF BANK *

* Undercut by 0.55' RWE

SY-8

Run TR-1 Bank Survey 06/25/04

STA	HI	FS	Elevation	Sub/%		Rod
TR-1 HP	104.80	4.99	99.81			
1.0 LWP		5.27		veg/soil	90	
5.0		5.96		"	"	
8.0		7.21		"	80	
8.5 LWS		8.96	97.15	SD/LG	60	1.31
30.2 RWS		8.07	97.11	SD/LG	"	0.38
30.7		7.42		veg/ST	60	
42.9 RWP		6.38		veg/soil	80	
+6.0		6.35		"	"	

Run TR-2 Bank Survey

STA	HI	FS	Elevation	Sub/%		Rod
TR-2 HP	104.13	4.79	99.35			
1.0 LWP		5.07		veg/soil	90	
4.0		5.47		"	"	
10.0		6.03		"	"	
11.2		6.85	97.28	ST/SD	70	0.0
27.9		7.92	97.27	"	"	1.06
28.2		6.60		veg/ST	80	
30.0		5.57		veg/soil	90	
32.2		5.18		"	"	

SY-8 06/25/04

Run TR-3 Bank Survey

STA	HI	FS	Elevation	Sub	%D	Rod
	(104.84)					
1.0 LWP		4.96		veg/soil	80	
7.0		5.67		"	"	
7.5 LWS/E		8.21	97.45	SD/ST	60	0.82
31.7 RWS/E		7.54	97.37	"	"	0.07
32.5		6.64		veg/ST	80	
42.5 RWP		6.34		veg/soil	80	

Run Unit Bed Slope Survey

STA	BS	HI	FS	Elevation	Rod
TR-3 HP	4.54	(104.70)		100.16	
~50' u/s of TR-3			8.75	97.38	1.43
~40' d/s of TR-1			9.76	97.09	2.15
TR-3 WSE			8.98	(97.35) use	1.63

USED THIS WSE FOR TR 3
HAD TO CHANGE HI. ELEV. MANUALLY IN TR 3 SHEET FOR 6/25/04

SY-B

Run TR-3 06/25/04

STA	D	V	D/S Sub	% Cover	Notes
7.2	0.57	-.14	ST/SD	70	0.4' wGB LWE
8.0	1.18	-.05	ST/SD		
9	1.15	.10			
10	1.38	.43			
11	1.58	0.24			
12	1.5	0.26	SD/ST	60	
13	1.47	0.66	SG/ST		
14	1.4	0.69	SG/ST		
15	1.51	1.07	SG/ST		
16	1.4	1.14	ST/SG		
17	1.52	1.44	ST/SG	60	
18	1.68	1.61	ST/SG	60	
19	1.6	1.42	ST/SG	70	
20	1.57	1.59	ST/SG	70	
21	1.6	1.54	ST/SG	70	
22	1.7	1.54	SG/ST	60	
23	1.8	1.39	SG/ST	60	
24	1.81	1.35	"	60	
25	1.7	1.19	"	60	
26	1.53	0.50	ST/SG	60	
27	1.4	0.23	ST/SG	80	
28	1.23	0.05	ST/SG	70	veg
29	0.90	*0.50	ST/SD	80	veg

Ask Mike Gagner what * means here. estimated (MRG 8/03/04)

Run TR-3 Subst.

STA	D	V	D/S	% Cover	Notes
30	0.42	0.0	ST/veg	60	
31	0.2	0.0	veg/ST	90	
31.7	Ø	Ø	"	70	RWE

Note: Used Marsh McBirney Model 2000 SN: 2005068 on TR3 (only)

SY-8

"Keep it flying"

ALL-WEATHER
LEVEL BOOK
No. 310

08/18/64

8/18/04

SY-8 Long Creek

	IN	OUT
Time	9:30	4:30
SG	1.66	1.66

Crew: Glen Anderson
Marcus Appy

Equip. Swoffer 5750
prop 2A
Level Zeiss Ni 40 (Geoline)

☼ SUN, warm (~90°F High), clear

* TR 3 has eddys on both edges - that is why TR 3 WSE's lower than TR2 OK ✓

Pool Level Loop 8/18/04

STA	BS	HI	FS	ELEV
BM	4.41	104.41		100.00
TR1			4.84	
TR2			5.19	
TR3	5.67	104.49	5.59	98.82
TR2			5.27	
TR1			4.92	
BM			4.49	100.00
TR1	LWSE	104.49	8.36	96.13
	RWSE		8.36	
TR2	LWSE		8.33	
	RWSE		8.35	
	CWSE		8.35	
* TR 3	LWSE		8.34	
	RWSE		8.36	
	CWSE		8.34	
HC	LWSE		8.46	
	RWSE		8.43	

SY-8 8/18/04

	Photo	Log	
20	TR1	L-R	↑ Pool
19	TR2	R-L	
18	TR1	U/S	
17	TR3	L-R	↓
16	TR1	L-R	↑
15	TR2	L-R	Riffle
14	TR3	L-R	↓
13	TR1		↑
12	TR2		RUN
11	TR3		
10	TR3	D/S	↓

SY-8 Long Creek 8/18/04

Pool TR1 Discharge

STA	D	V	
1.0	–	–	RWP
21.7	~~0~~	~~0~~	RWE
22	0.1	0.1 *	
22.5	0.22	0.31	
23	0.29	0.38	
23.5	0.33	0.43	
24	0.41	0.44	
24.5	0.59	0.57	
25	0.60	0.53	
25.5	0.75	0.63	
26	0.86	0.61	
26.5	0.94	0.66	
27	1.01	0.77	
27.5	1.17	0.79	
28	1.19	0.79	
28.5	1.20	0.86	
29	1.20	0.92	
29.5	1.19	1.00	
30	1.20	0.95	
30.5	1.17	1.00	
31	1.20	1.02	
31.5	1.25	1.04	
32	1.30	1.09	

SY-8 8/18/04

Pool TR1 (continued)

STA	D	V	Comments
32.5	1.30	1.02	
33	1.30	1.05	∡ 20°
33.5	1.23	0.86	∡ 25°
34	1.12	0.84	∡ 30°
34.5	0.93	0.72	∡ 30°
34.7	0.95	0.59	∡ 10°
35.1	~~0~~	~~0~~	LWE
47.5	—	—	LWP

Ex. 279-US-439
Page 99 of 109

SY-8 8/18/04

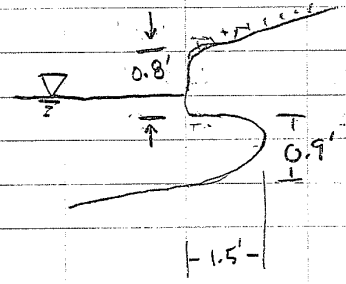
Pool TR2

STA	D	V	Comments
1.0	—	—	RWP
17.0	~~0~~	~~0~~	RWE
17.5	0.28	~~0~~	
18	0.40	~~0~~	
18.5	0.50	~~0~~	
19	0.53	~~0~~	
19.5	0.62	0.18	
20	0.90	0.16	
20.5	1.05	0.31	
21	1.23	0.48	
21.5	1.40	0.53	
22	1.45	0.65	
23	1.47	0.68	
24	1.36	0.82	
25	1.35	0.82	
26	1.40	0.70	
27	1.40	0.80	
28	1.33	0.54	
29	1.30	0.55	∡ 30°
30	1.35	0.24	∡ 20°
31	1.33	0.45	∡ 10°
32	1.30	0.34	∡ 10° { Woody debris
33	1.32	0.15	
34	1.10	0.02	
34.5	1.05	0.27	LBE (UCB)
46.6	—	—	LWP

SY-8

Pool TR2 8/18/04

Left Bank



SY-8 8/18/04

Pool TR 3

STA	D	V	Comments
1.0	—	—	RWP
24.9	⊖	⊖	RWE
25.4	0.5	-0.52	grass in channel - vel break
26	0.75	-0.58	
27	1.07	-0.50	
28	1.10	-0.12	
29	1.44	0.10	
30	1.60	0.62	
31	1.70	1.22	
32	1.52	1.27	
33	1.45	1.13	
34	1.62	0.86	
35	1.53	0.29	∡ 10°
36	1.60	0.05	
37	1.50	-0.02	
38	1.40	-0.14	
39	1.23	-0.38	∡ 80°
40	1.28	-0.37	∡ 70°
41	1.18	-0.49	∡ 80°
42	1.00	-0.36	∡ 85°
43	0.95	-0.27	∡ 90°
44	0.98	-0.02	
45	0.98	⊖	
46	0.80	⊖	

SY-8

Pool TR 3 (continued) 8/18/04

STA	D	V	Comments
47	0.75	⊖	
47.8	0.25	⊖	woody debris
48	0.10	⊖	
48.4	⊖	⊖	LWE
59.1	—	—	LWP

SY-8 8/18/04

Level Shots to Connect Pool to Riffle

STA	BS	HI	FS	ELEV.
Pool TR3	5.67	104.49		98.82
TP	4.30	105.07	3.72	100.77
BM-Riffle			4.05	101.02

SY-8 8/18/04

Level Loop Riffle

STA	BS	HI	FS	ELEV.
BM-R	2.50	102.50		100.00
TR 1			3.69	98.81
TR 2			3.69	98.81
TR 3			4.07	98.43
TP				
TR3	4.11	102.54		98.43
TR2			3.73	98.81
TR1			3.73	98.81
BM			2.54	100.00
		102.54		
TR1	LWSE		6.85	95.69
	RWSE		6.82	
TR2	LWSE		6.73	95.81
	RWSE		6.69	
TR3	LWSE		6.59	95.95
	RWSE		6.59	

SY-8 8/18/04

TR 1 Riffle

STA	D	V	
1.0	—	—	RWP
7.9	~~0~~	~~0~~	RWE
8.3	0.03	~~0~~	
9	0.12	-0.1	
9.5	0.18	-0.05	
10	0.40	1.09	
10.5	0.63	0.90	
11	0.77	1.30	
11.5	0.80	1.37	
12	0.77	1.96	
12.5	0.80	1.90	
13	0.90	1.74	
14	0.90	1.92	
15	0.73	1.93	
16	0.70	1.71	
17	0.72	1.59	
18	0.82	1.23	
19	0.93	0.98	
19.5	0.90	0.47	
20	0.78	0.21	∡ 30°
20.5	0.67	~~0~~	
21	0.62	-0.10	
21.5	0.52	-0.14	
22	0.34	~~0~~	

STA	D	V	
22.5	0.12	~~0~~	
23	0.02	~~0~~	
23.1	~~0~~	~~0~~	LWE
37.3	—	—	LWP

SY-8 8/18/04

TR 2 Riffle (Good Q)

STA	D	V	
1.0	—	—	RWP
10.9	~~0~~	~~0~~	RWE
11	0.1	~~0~~	
11.5	0.33	0.09	
12	0.43	0.63	
12.5	0.50	0.96	
13	0.52	1.20	
13.5	0.55	1.44	
14	0.63	1.45	
15	0.65	1.74	
16	0.75	1.75	
17	0.77	1.69	
18	0.80	1.61	
19	0.80	1.81	
20	0.70	1.88	
21	0.67	1.83	
22	0.48	1.81	
23	0.35	1.46	
24	0.21	0.59	
24.5	0.12	0.10*	Est - Ag. Veg.
25	0.06	~~0~~	
25.4	~~0~~	~~0~~	LWE
37.4	—	—	LWP

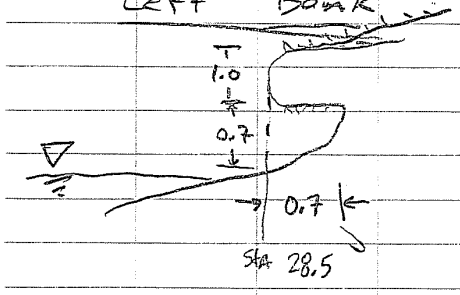
SY-8 8/18/04
TR 3 Riffle

STA	D	V	
1.0	—	—	RWP
10.1	0	0	RWE
10.5	0.30	0.10	
11	0.42	0.55	
11.5	0.50	0.62	
12	0.52	1.00	
13	0.52	1.04	
14	0.52	0.95	
15	0.53	1.10	
16	0.61	1.09	
17	0.70	1.23	
18	0.87	1.12	
19	0.95	1.26	
19.5	1.06	1.20	
20	1.15	1.19	
21	1.28	1.08	
22	1.35	0.86	
23	1.29	0.45	
23.7	1.30	0.28	
24	1.25	0.13	
24.5	1.00	0.13	
25	0.95	0.10	
25.5	0.82	-0.05	

SY-8
Riffle (continued)

STA	D	V	
26	0.58	0	
26.5	0.34	0	
27	0.02	0	
27.2	0	0	LWE
32.7	—	—	LWP

Left Bank



SY-8 RUN Level Loop — 8/18/04 — Adam & Clair

STA	BS	HI	FS	ELEV.
BM	4.48	104.48		100.00
TR1			4.65	99.83
TR2			5.14	99.34
TR3			4.36	100.12
TP				
TR3	4.12	104.24		100.12
TR2			4.90	99.34
TR1			4.40	99.84
BM			4.24	100.00
TR3	LWSE	104.24	7.30	96.94
	RWSE		7.31	96.93
BM	4.49	104.49		100.00
TR 2	LWSE		7.59	96.90
	RWSE		7.59	96.90
TR1	LWSE		7.68	96.81
	RWSE		7.70	96.79

SY-8 Tie-in to Riffle — 8/18/04 — Adam & Clair

STA	BS	HI	FS	ELEV
BM-RUN	4.49	104.49		100.00
HP2-Rif.			6.20	98.29 (98.81)
HP1-Rif.			6.20	98.29
BM-Rif.				99.48 (100.00)

SY-8 8/18/04

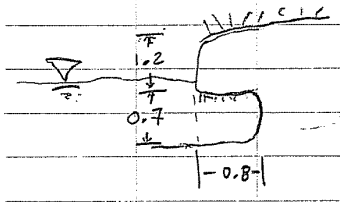
RUN TR 1

STA	D	V	
1.0	—	—	LWP
8.2	0.92	-0.10	LBE (ucb)
9	0.97	⊖	
10.0	1.02	0.28	✱ 45°
11	1.05	0.25	✱ 10°
12	1.05	0.48	
13	1.05	0.58	
14	1.10	0.59	
15	1.04	0.61	
16	1.05	0.65	
17	1.08	0.90	
18	1.12	0.96	
19	1.17	0.81	
20	1.20	0.72	
21	1.28	1.05	
22	1.28	0.75	
23	1.33	0.66	
24	1.33	0.45	
25	1.25	⊖	*
26	1.25	⊖	*
27	1.32	-0.05	*
28	1.17	-0.08	*
29	0.90	-0.12	*
30	0.21	⊖	*
30.2	⊖	⊖	RWE

* = very soft silty/org sub. Any variation of bed elev. due to how far topsel pod sinks in sub.

RWP = 42.9

Left Bank

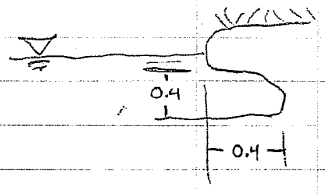


SY-8 8/18/04

RUN TR2

STA	D	V	
1.0	—	—	LWP
12.0	⌀	⌀	LWE
12.5	0.20	⌀	
13.5	0.50	⌀	
14.5	0.72	⌀	
15.5	0.86	0.10	
16.5	0.95	0.43	
17.5	0.95	0.76	
18.5	1.02	1.15	
19.5	1.02	1.35	
20	1.05	1.26	
20.5	1.00	1.17	
21	0.97	1.22	
21.5	0.97	1.14	
22	0.93	1.09	
22.5	0.90	1.17	
23	0.86	1.14	
23.5	0.80	1.10	
24	0.71	1.22	
24.5	0.70	1.11	
25	0.70	1.05	
25.5	0.63	1.02	
26	0.62	1.12	
26.5	0.64	0.96	

Right Bank



SY-8 8/18/04

RUN TR2 (cont.)

STA	D	V	
27	0.69	0.91	
27.5	0.70	1.05	
28	0.63	0.49	RBE
32.2	—	—	RWP

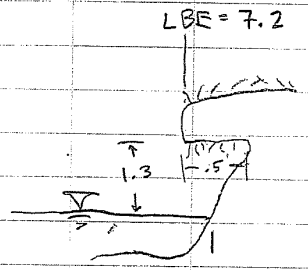
RUN		
TR1	L-R	✓
TR2	L-R	✓
TR3	L-R	✓
TR3	D/S	✓

SY-8 8/18/04

RUN TR 3

STA	D	V	
1.0	—	—	LWP
7.2	0.10	~~0~~	LBE (UCB)
8	0.58	~~0~~	
9	0.80	~~0~~	
10	0.93	~~0~~	
11	1.04	0.32	
12	1.00	0.31	
13	0.97	0.36	
14	0.90	0.62	
15	1.03	0.69	
16	1.00	0.58	
17	1.10	0.49	
18	1.10	0.87	
19	1.18	0.75	
20	1.11	0.81	
21	1.18	0.80	
22	1.22	0.76	
23	1.38	0.68	
24	1.35	0.53	
25	1.30	0.44	
26	1.10	0.54	
27	0.97	0.16	∡ 30°
28	0.80	0.02	
29	0.69	~~0~~	

Left Bank



SY-8 8/18/04

RUN TR 3 (cont.)

STA	D	V	
29.8	~~0~~	~~0~~	RWE
42.5	—	—	RWP