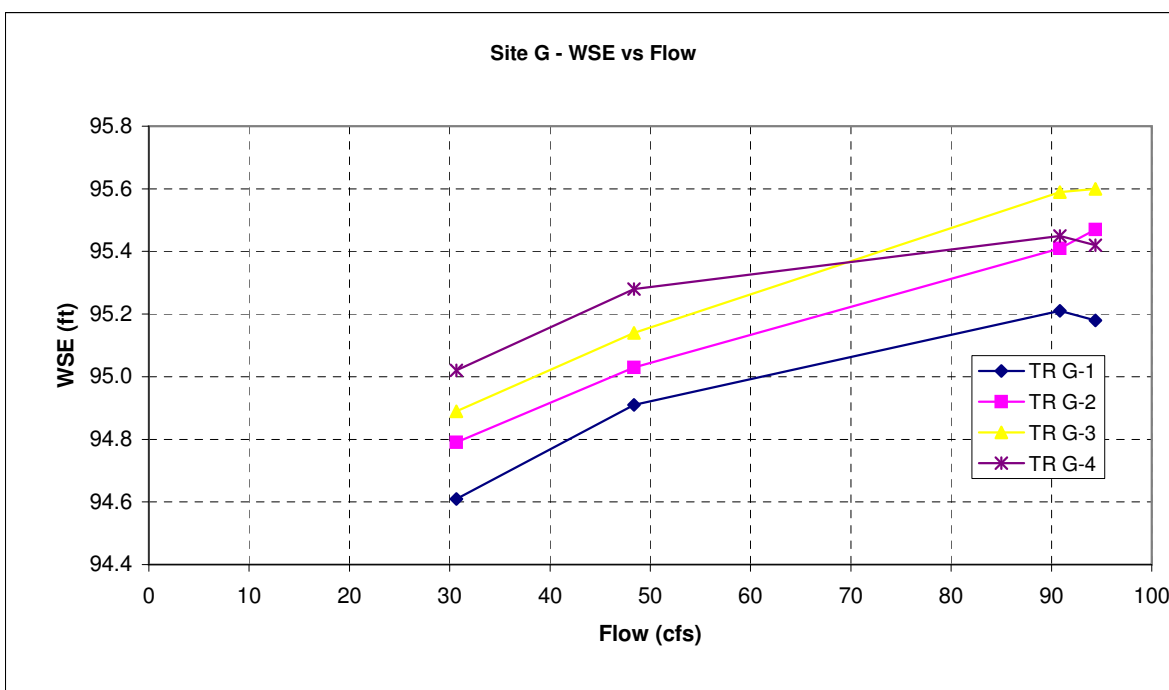
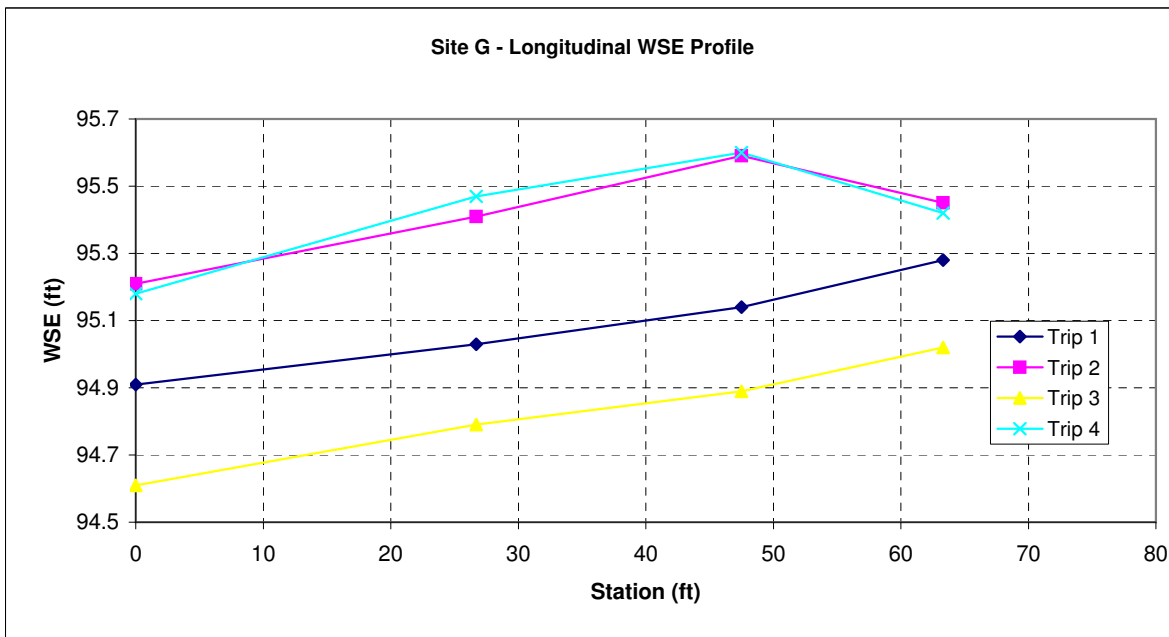


Reach: Canyon Reach  
 Stream: Cooper Creek  
 Site: Site G  
 Habitat Type: Riffle

			Q(cfs)					Vel-Depth Survey				
			30.7	48.4	90.8	94.4	?					
			Q (cfs) / WSE (ft)									
TR	length	Sta	Trip 3	Trip 1	Trip 2	Trip 4	Trip 5	Trip 3	Trip 1	Trip 2	Trip 4	Trip 5
TR G-1	-	0.0	94.61	94.91	95.21	95.18	no WSE		Y			
TR G-2	26.7	26.7	94.79	95.03	95.41	95.47			Y			
TR G-3	20.8	47.5	94.89	95.14	95.59	95.60			Y			
TR G-4	15.8	63.3	95.02	95.28	95.45	95.42			Y			
Average WSE slope			0.65%	0.58%	0.38%	0.38%						

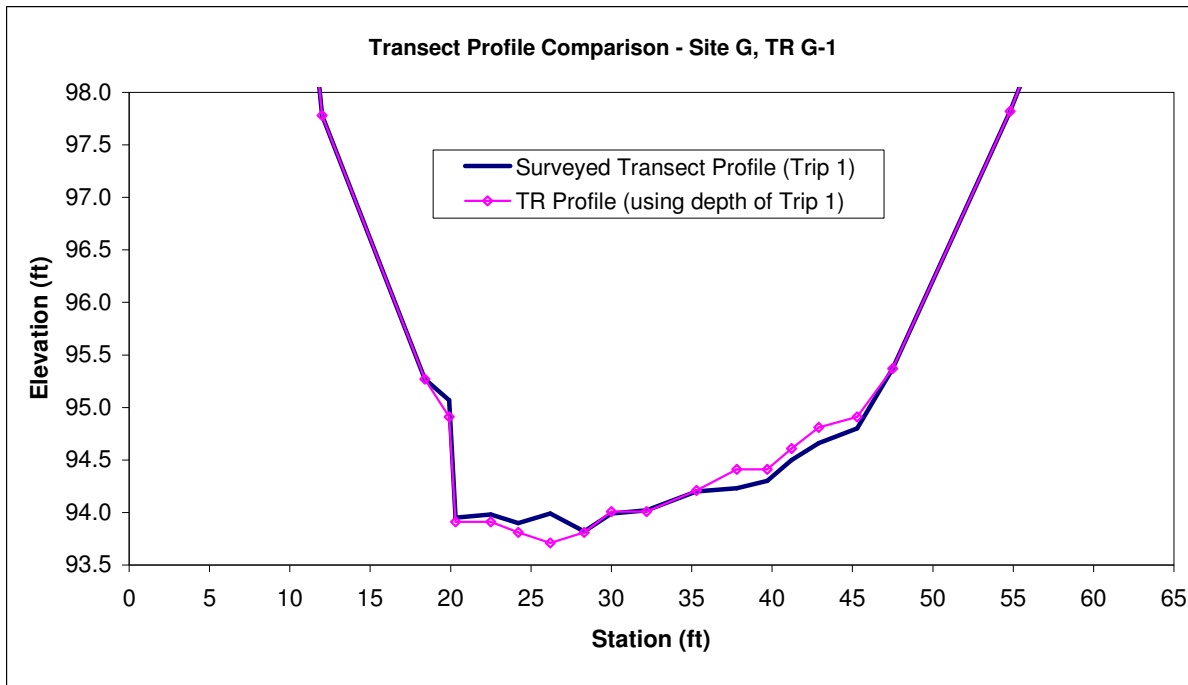


**Transect Profile Comparison - Site G, TR G-1**

Trip 1								Trip 5					
Sta (ft)	HI (ft)	FS (ft)	Elev (ft)	Depth (ft)	Velocity (ft/s)	q (cfs)	Bed Elev (ft)	Depth (ft)	Velocity (ft/s)	q (cfs)	Bed Elev (ft)	subs	code
10	101.21	0.33	100.88				100.88					org	0
12	101.21	3.43	97.78				97.78					org	0
18.4	101.21	5.94	95.27				95.27					bed	8
19.9	101.21	6.14	95.07	0.00	0.00	0.00	94.91					bed	8
20.3	101.21	7.26	93.95	1.00	0.40	0.52	93.91					32	3
22.5	101.21	7.23	93.98	1.00	2.30	4.49	93.91					45	4
24.2	101.21	7.31	93.9	1.10	2.80	5.70	93.81					45	4
26.2	101.21	7.22	93.99	1.20	2.70	6.64	93.71					64	4
28.3	101.21	7.39	93.82	1.10	2.70	5.64	93.81					90	5
30	101.21	7.22	93.99	0.90	2.60	4.56	94.01					23	3
32.2	101.21	7.19	94.02	0.90	2.70	6.44	94.01					23	3
35.3	101.21	7.01	94.2	0.70	3.10	6.08	94.21					45	4
37.8	101.21	6.98	94.23	0.50	2.30	2.53	94.41					64	4
39.7	101.21	6.91	94.3	0.50	2.60	2.21	94.41					32	3
41.2	101.21	6.71	94.5	0.30	1.00	0.48	94.61					45	4
42.9	101.21	6.55	94.66	0.10	0.00	0.00	94.81					45	4
45.3	101.21	6.41	94.8	0.00	0.00	0.00	94.91					23	3
47.5	101.21	5.84	95.37				95.37					32	3
54.8	101.21	3.39	97.82				97.82					org	0
59	101.21	1.76	99.45				99.45					org	0
62.4	101.21	0.25	100.96				100.96					org	0

**No flow (vel-depth) measurement during Trip 5**

TR Q (cfs) = **45.3**

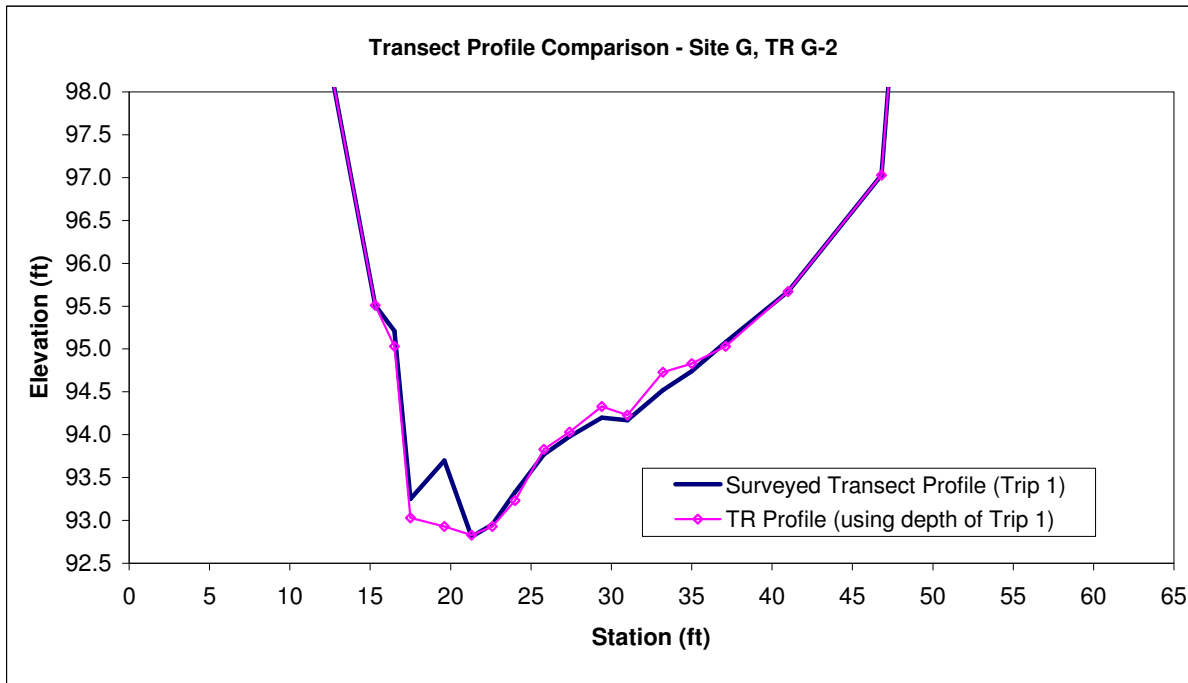


**Transect Profile Comparison - Site G, TR G-2**

Trip 1								Trip 5				subs	code
Sta (ft)	HI (ft)	FS (ft)	Elev (ft)	Depth (ft)	Velocity (ft/s)	q (cfs)	Bed Elev (ft)	Depth (ft)	Velocity (ft/s)	q (cfs)	Bed Elev (ft)		
10	101.21	0.41	100.8				100.80					org	0
15.3	101.21	5.7	95.51				95.51					bed	8
16.5	101.21	6.0	95.21	0.00	0.00	0.00	95.03					org	0
17.5	101.21	7.96	93.25	2.00	-0.60	-1.86	93.03					org	0
19.6	101.21	7.51	93.7	2.10	0.60	2.39	92.93					8	2
21.3	101.21	8.4	92.81	2.20	2.30	7.59	92.83					32	3
22.6	101.21	8.26	92.95	2.10	2.50	7.09	92.93					23	3
24	101.21	7.88	93.33	1.80	3.20	9.22	93.23					64	4
25.8	101.21	7.44	93.77	1.20	2.50	5.10	93.83					23	3
27.4	101.21	7.23	93.98	1.00	2.10	3.78	94.03					45	4
29.4	101.21	7.01	94.2	0.70	2.10	2.65	94.33					45	4
31	101.21	7.04	94.17	0.80	1.80	2.74	94.23					16	3
33.2	101.21	6.69	94.52	0.30	1.30	0.78	94.73					64	4
35	101.21	6.47	94.74	0.20	0.40	0.16	94.83					64	4
37.1	101.21	6.13	95.08	0.00	0.00	0.00	95.03					45	4
41	101.21	5.54	95.67				95.67					45	4
46.8	101.21	4.18	97.03				97.03					org	0
47.3	101.21	2.98	98.23				98.23					org	0
51.7	101.21	0.69	100.52				100.52					org	0
53.2	101.21	0.13	101.08				101.08					org	0

**No flow (vel-depth) measurement during Trip 5**

TR Q (cfs) = **39.6**

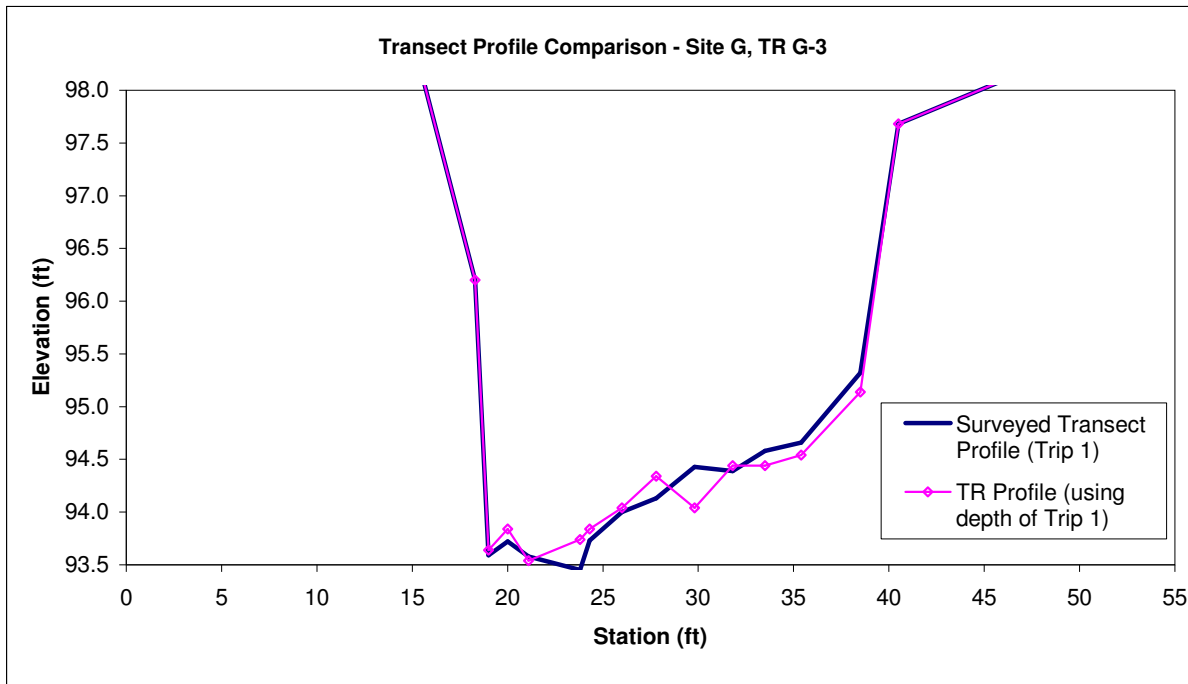


**Transect Profile Comparison - Site G, TR G-3**

Trip 1								Trip 5				subs	code
Sta (ft)	HI (ft)	FS (ft)	Elev (ft)	Depth (ft)	Velocity (ft/s)	q (cfs)	Bed Elev (ft)	Depth (ft)	Velocity (ft/s)	q (cfs)	Bed Elev (ft)		
10.1	101.21	1.71	99.5				99.50					org	0
15	101.21	2.71	98.5				98.50					bed	8
18.3	101.21	5.01	96.2				96.20					bed	8
19	101.21	7.6	93.59	1.50	1.10	0.83	93.64					23	3
20	101.21	7.49	93.72	1.30	2.60	3.55	93.84					bed	8
21.1	101.21	7.63	93.58	1.60	2.10	6.38	93.54					bed	8
23.8	101.21	7.76	93.45	1.40	2.70	6.05	93.74					45	4
24.3	101.21	7.48	93.73	1.30	2.50	3.58	93.84					45	4
26	101.21	7.21	94	1.10	2.80	5.39	94.04					90	5
27.8	101.21	7.08	94.13	0.80	3.60	5.47	94.34					45	4
29.8	101.21	6.78	94.43	1.10	3.10	6.82	94.04					90	5
31.8	101.21	6.82	94.39	0.70	3.10	4.01	94.44					128	5
33.5	101.21	6.63	94.58	0.70	2.60	3.28	94.44					45	4
35.4	101.21	6.55	94.66	0.60	1.50	2.25	94.54					32	3
38.5	101.21	5.89	95.32	0.00	0.00	0.00	95.14					11	3
40.5	101.21	3.53	97.68				97.68					org	0
46.2	101.21	3.1	98.11				98.11					org	0
48	101.21	2.32	98.89				98.89					org	0
48.9	101.21	0.35	100.86				100.86					org	0
50.4	101.21	-2.93	104.14				104.14					org	0

**No flow (vel-depth) measurement during Trip 5**

TR Q (cfs) = **47.6**

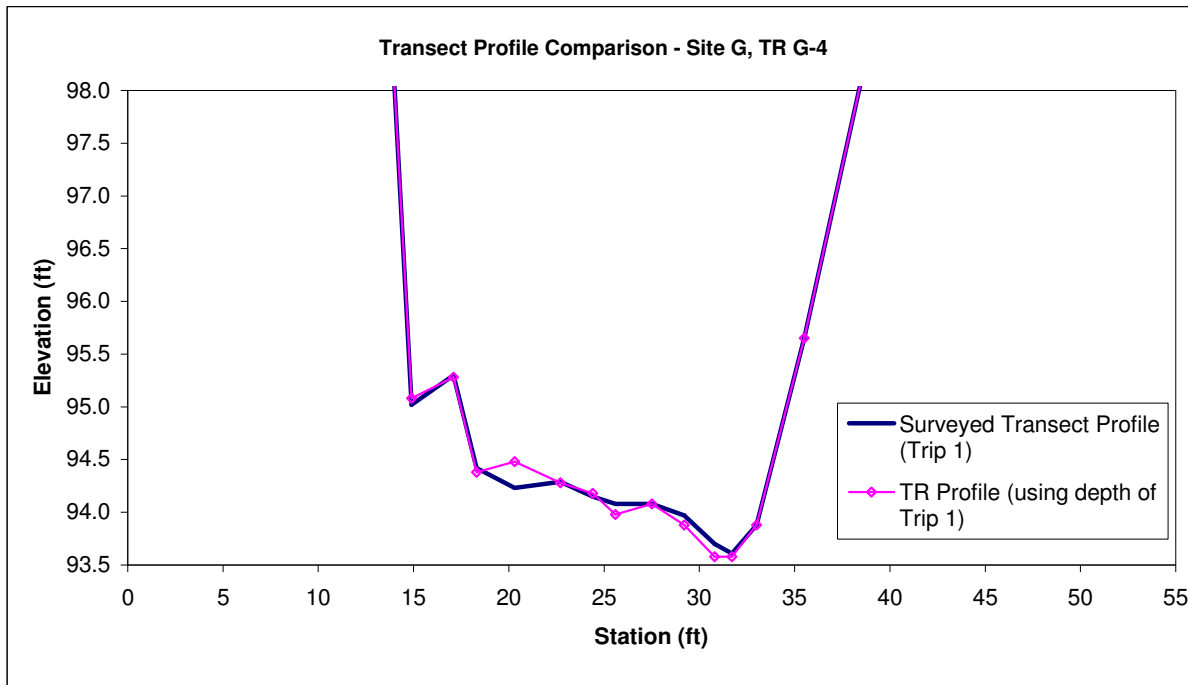


**Transect Profile Comparison - Site G, TR G-4**

Trip 1								Trip 5					
Sta (ft)	HI (ft)	FS (ft)	Elev (ft)	Depth (ft)	Velocity (ft/s)	q (cfs)	Bed Elev (ft)	Depth (ft)	Velocity (ft/s)	q (cfs)	Bed Elev (ft)	subs	code
10	101.21	1.21	100				100.00					org	0
11.2	101.21	2.48	98.73				98.73					org	0
13.9	101.21	2.86	98.35				98.35					bed	8
14.9	101.21	6.19	95.02	0.20	0.00	0.00	95.08					sand	1
17.1	101.21	5.91	95.3	0.00	0.00	0.00	95.28					bed	8
18.3	101.21	6.79	94.42	0.90	0.00	0.00	94.38					bed	8
20.3	101.21	6.98	94.23	0.80	3.10	5.46	94.48					64	4
22.7	101.21	6.92	94.29	1.00	2.00	4.10	94.28					256	6
24.4	101.21	7.06	94.15	1.10	2.50	3.99	94.18					128	5
25.6	101.21	7.13	94.08	1.30	2.70	5.44	93.98					45	4
27.5	101.21	7.13	94.08	1.20	1.90	4.10	94.08					90	5
29.2	101.21	7.24	93.97	1.40	3.60	8.32	93.88					90	5
30.8	101.21	7.51	93.7	1.70	4.80	10.20	93.58					180	6
31.7	101.21	7.6	93.61	1.70	4.90	9.16	93.58					180	6
33	101.21	7.33	93.88	1.40	1.60	1.46	93.88					bed	8
35.5	101.21	5.56	95.65				95.65					bed	8
39.1	101.21	2.62	98.59				98.59					bed	8
41.2	101.21	2.3	98.91				98.91					bed	8

**No flow (vel-depth) measurement during Trip 5**

TR Q (cfs)= **52.2**



**Reach:** Canyon Reach  
**Stream:** Cooper Creek  
**Site:** Site G  
**Habitat Type:** Riffle

**(1) Field Data**

- (a) Field data were collected in four trips between 5/2003 and 10/2003.
- (b) Flow data were only collected in Trip 1 on 5/14/2003.
- (c) WSE data were collected in all four trips.
- (d) Because of no flows measured in Trip 2 to Trip 4, flows of these three trips were estimated. The estimated flows along with measured flows and WSEs were plotted together in worksheet "Measured hydraulics", in which the graphs showed WSE vs flow relationships were inconsistent, indicating errors in estimated flows and/or surveyed WSEs.

**(2) WSE Calibration**

**WSE:** Average WSE is used as the representative transect WSE.

**Discharge:** Trip 1 Q = Average discharge of TR G-1 , TR G-3, and TR G-4. TR G-2 was considered as outliers. No flows were surveyed for Trip 2 to Trip 4.

**Slope:** Use Trip 1's average WSE slope (from TR G-1 to TR G-5) = 0.58%

**SZF:**

TR	channel Invert (ft)		SZF (ft)
	Trip 1	Trip 5	
TR G-1	93.71	-	93.71
TR G-2	92.83	-	93.71
TR G-3	93.54	-	93.71
TR G-4	93.58	-	93.71

Note: Invert is the lowest elevation of the transect.

SZF of upstream transect must be equal or greater than the SZF of downstream transect.

**Level Loop and Headpins:**

Date	Trip	BM-A	BM-B
5/14/2003	1	100.00	95.66
6/24/2003	2		95.66
9/18/2003	3		95.66
10/8/2003	4		95.66

- (a) There were no level loop surveys performed on 6/24/03, 9/18/03, and 10/8/03.

BM-B elevation from the first survey (5/14/03) was used for WSE survey.

There was only one level loop survey from the first trip, and the later three WSE surveys were all based on BM-B. Due to the lack of relative pin elevation changes between BM-A and BM-B, we are not able to determine the stability of BM-B, and thus the WSE survey results for the last three trips may not be based on the same datum. As a result, the reliability of the surveyed WSEs for this site are questionable.

**Calibration Flow:**

This site has four sets of measured WSEs and only one set of velocity-depth surveys. Flows for Trip 2 to Trip 4 were estimated and plotted along with all measured flows and WSEs in worksheet "Measured Hydraulics". However, the graph "Site G - WSE vs Flow" show inconsistent flow-WSE relationship, such as water flowing uphill. Due to the inconsistency between flows and WSEs, it was decided to only use flow taken in Trip 1 for calibration. Estimated flows and measured WSEs of Trip 2 to Trip 4 will not be included for calibration, but will be used for comparison.

**WSE Calibration Method:**

- (1) MANSQ was used to calibrate WSE for TR G-1.
- (2) WSP was selected to calibrate WSEs for TR G-2 to TR G-4. MANSQ results of TR G-1 was used as the boundary condition for WSP.

**WSE Calibration Result:**

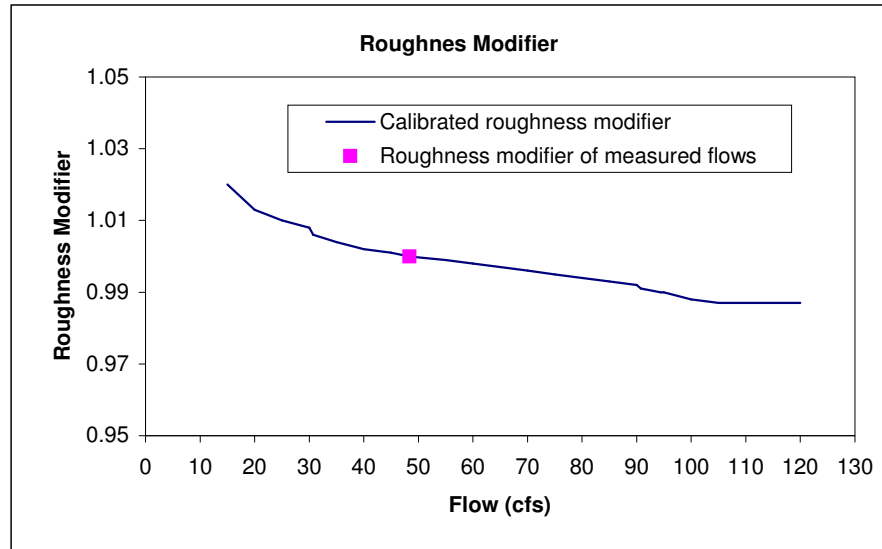
Trip	Survey Date	Q (cfs)	Modeling WSE(ft)				Calibrated WSE(ft)				ΔWSE (ft, measured-calib.)			
			TR-1	TR-2	TR-3	TR-4	TR-1	TR-2	TR-3	TR-4	TR-1	TR-2	TR-3	TR-4
1	5/14/2003	48.4	94.91	95.03	95.14	95.28	94.91	95.02	95.12	95.26	0.00	0.01	0.02	0.02
2	6/24/2003	90.8	95.21	95.41	95.59	95.45	95.28	95.42	95.54	95.70				
3	9/18/2003	30.7	94.61	94.79	94.89	95.02	94.71	94.81	94.89	95.01				
4	10/8/2003	94.4	95.18	95.47	95.60	95.42	95.30	95.44	95.57	95.73				

Note: (a) WSEs of Trip 2 to Trip 4 are listed in the table only for comparison, not for calibration error calculation.

**WSP Roughness Modifier**

Flow	RAF
15.0	1.02
20	1.01
25	1.01
30	1.01
30.7	1.01
35	1.00
40.0	1.00
45.0	1.00
48.4	1.00
55	1.00
60	1.00
65.0	1.00
70	1.00
75	1.00
80	0.99
85.0	0.99
90	0.99
90.8	0.99
94.4	0.99
95	0.99
100	0.99
105	0.99
110	0.99

(\*) The table on the left lists the Roughness Modifier used in the WSE calibration.



115	0.99
120	0.99

## (2) Calibrated Hydraulics

- (a) For MANSQ WSE calibration,  $\beta_{TR1}=0.00$  and Trip 1 flow (48.4cfs) was used as the calibration flow.
- (b) For velocity calibration, Trip 1's velocity profiles were used as the templates for calibration.
- (c) Hydraulic calibration results are summarized in worksheets cTR G-y, where y=1, 2, 3, and 4.
- (d) WSE Calibration errors for all transects are reasonably small, with a maximum error of 0.03ft.
- (e) TR G-1, TR G-2, TR G-3, and TR G-4 : WSE, transect average velocity (V), and wetted perimeter are all reasonable.
- (f) For all transects, except TR G-2, VAFs, Froude numbers, and cross-sectional Manning's n had little variations with respect to flows. Not able to determine the cause.
- (g) Comparison of modeling and calibrated WSEs are shown in worksheet "SimWSE".
- (h) PHABSIM model did not calculate wetted perimeter and Manning's, both of which were calculated outside the model.

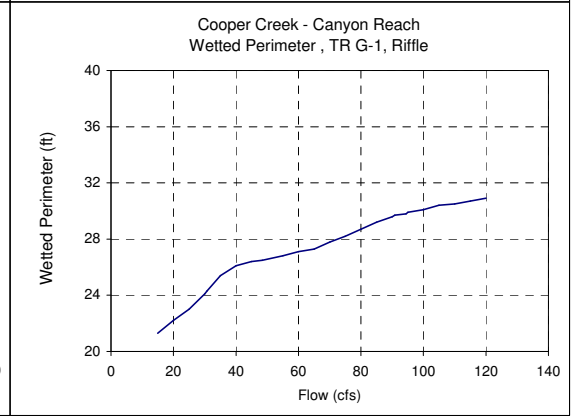
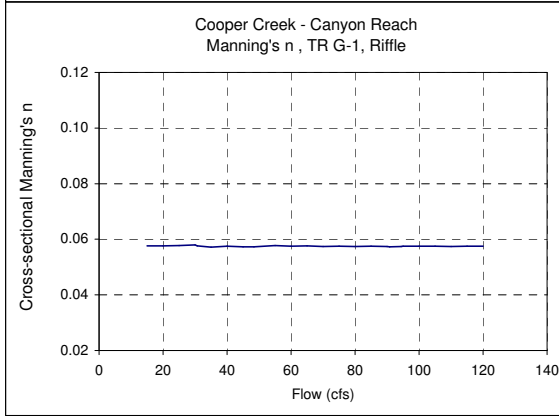
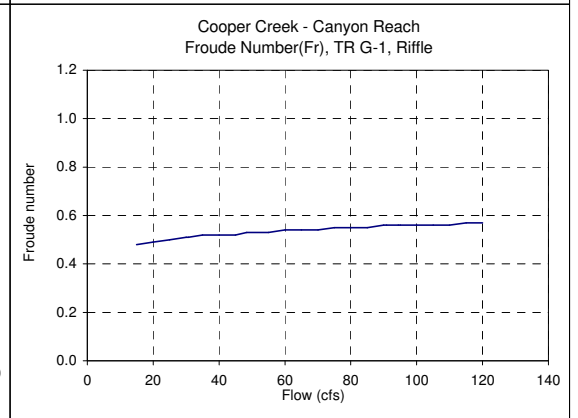
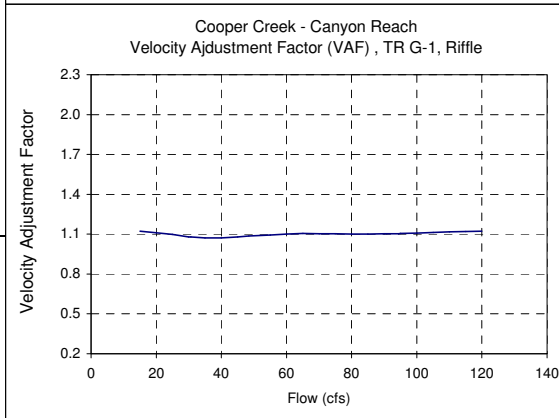
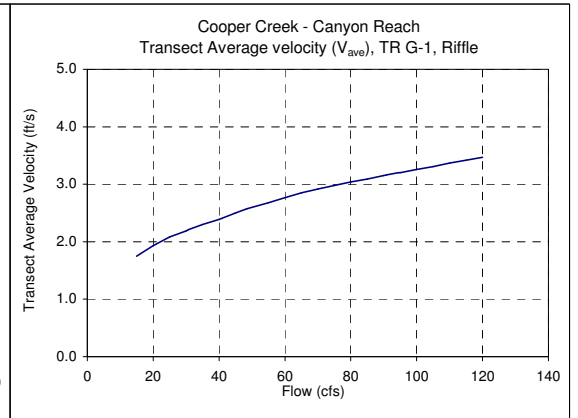
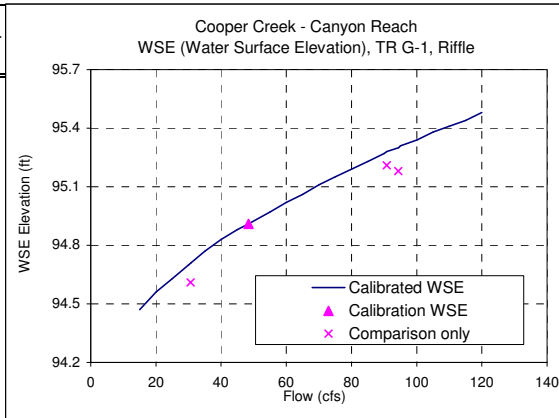
## (3) Velocity calibration

- TR G-1: Trip 5's velocity profile was used as template for calibration.  
Slightly adjusted Manning's n values calculated by PHABSIM to make the simulated velocity near the water edge more reasonable.
- TR G-2: Trip 5's velocity profile was used as template for calibration.  
Predicted velocity profile was reasonable, and no changes to the Manning's n calculated by PHABSIM were made.
- TR G-3: Trip 5's velocity profile was used as template for calibration.  
Predicted velocity profile was reasonable, and no changes to the Manning's n calculated by PHABSIM were made.
- TR G-4: Trip 5's velocity profile was used as template for calibration.  
Slightly adjusted Manning's n values calculated by PHABSIM to make the simulated velocity near the water edge more reasonable.

The comparison of simulated and measured velocity profiles are included in worksheet "VelComp", which shows the simulated profiles resemble the measured ones.

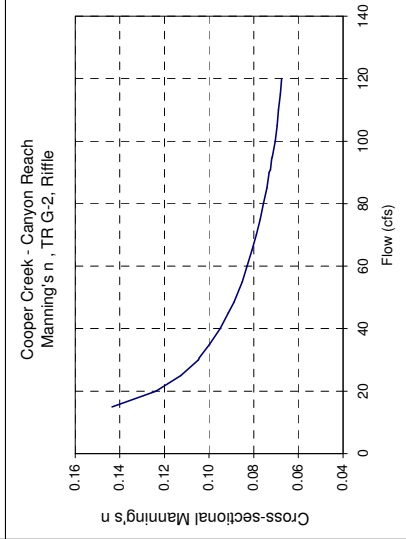
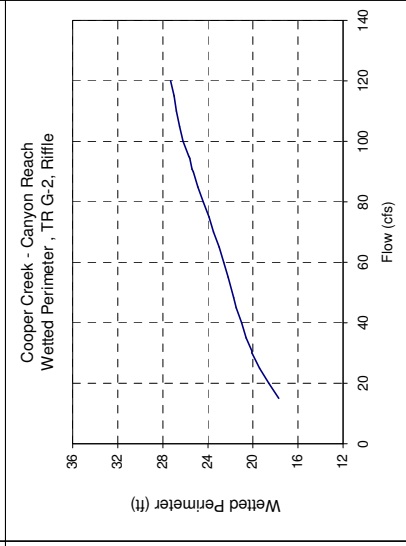
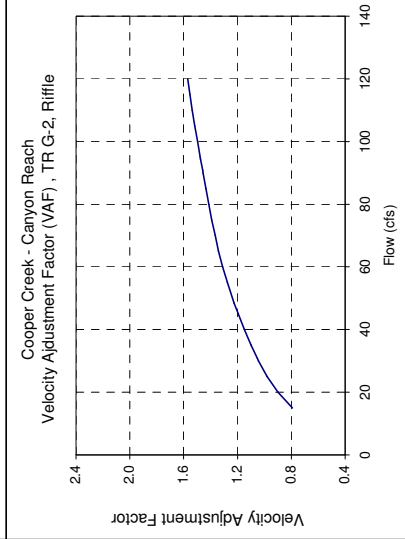
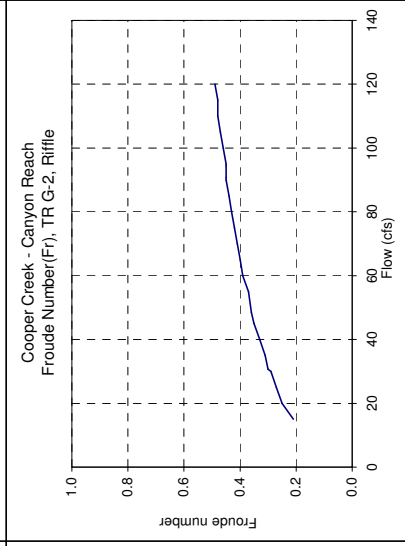
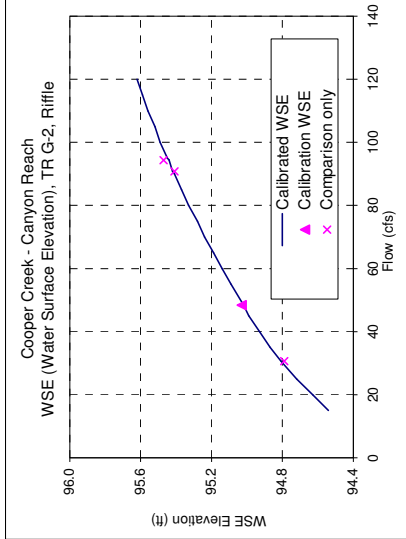
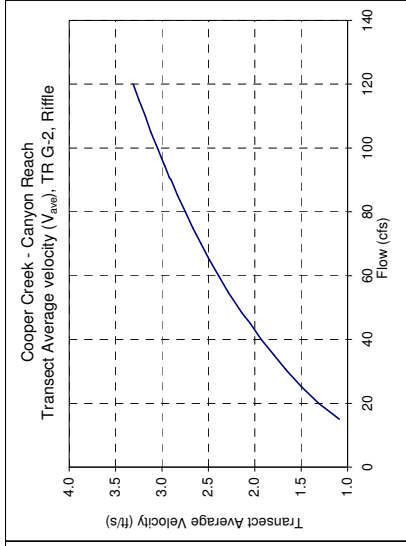
Reach: Canyon Reach  
 Stream: Cooper Creek  
 Transect: G-1  
 Habitat: Riffle

Modeling		Simul. Q (cfs)	Cal'd WSE (ft)	VAF	Froude Number	Velocity (ft/s)	Manning's n	wettered perimeter (ft)
Q (cfs)	WSE (ft)							
48.4	94.91	15	94.47	1.12	0.48	1.75	0.058	21.3
90.8	95.21	20	94.56	1.11	0.49	1.93	0.058	22.2
30.7	94.61	25	94.63	1.10	0.50	2.08	0.058	23
94.4	95.18	30	94.70	1.08	0.51	2.19	0.058	24.1
		30.7	94.71	1.08	0.51	2.21	0.058	24.3
		35	94.77	1.07	0.52	2.30	0.057	25.4
		40	94.83	1.07	0.52	2.39	0.058	26.1
		45	94.88	1.08	0.52	2.50	0.057	26.4
		48.4	94.91	1.09	0.53	2.57	0.057	26.5
		55	94.97	1.09	0.53	2.68	0.058	26.8
		60	95.02	1.10	0.54	2.77	0.058	27.1
		65	95.06	1.11	0.54	2.85	0.058	27.3
		70	95.11	1.10	0.54	2.92	0.057	27.8
		75	95.15	1.10	0.55	2.98	0.058	28.2
		80	95.19	1.10	0.55	3.04	0.057	28.7
		85	95.23	1.10	0.55	3.09	0.058	29.2
		90	95.27	1.10	0.56	3.15	0.057	29.6
		90.8	95.28	1.10	0.56	3.16	0.057	29.7
		94.4	95.30	1.10	0.56	3.20	0.057	29.8
		95	95.31	1.11	0.56	3.20	0.058	29.9
		100.0	95.34	1.11	0.56	3.26	0.057	30.1
		105	95.38	1.11	0.56	3.31	0.058	30.4
		110	95.41	1.12	0.56	3.37	0.057	30.5
		115	95.44	1.12	0.57	3.42	0.057	30.7
		120	95.48	1.12	0.57	3.47	0.057	30.9



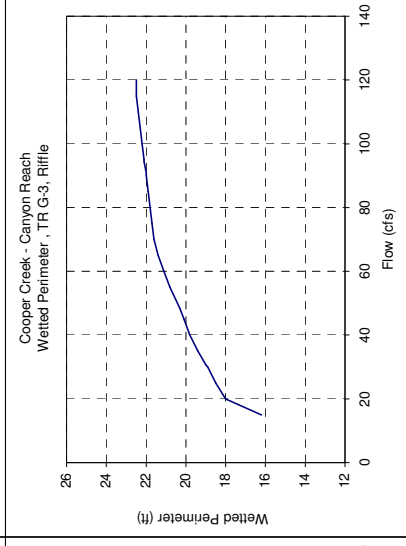
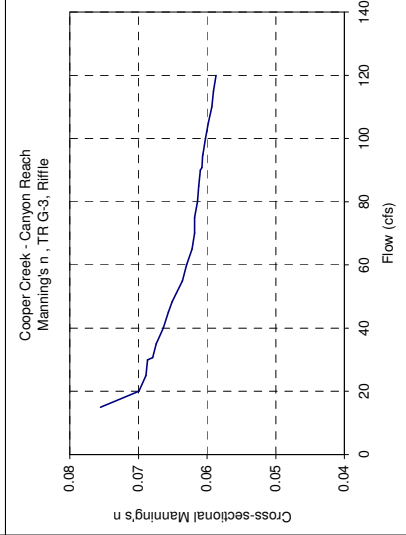
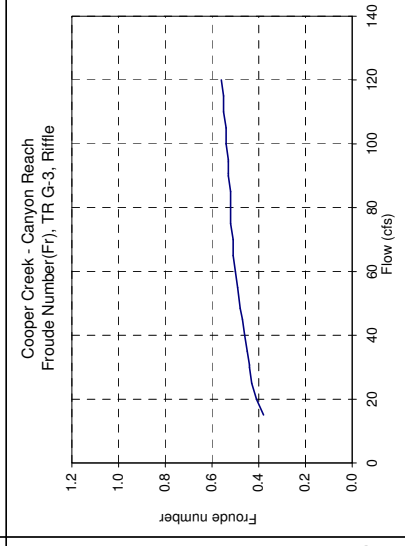
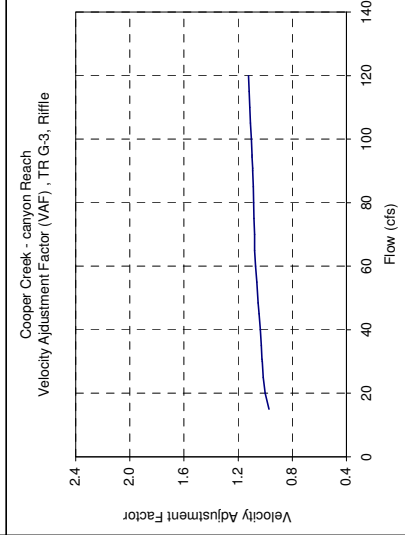
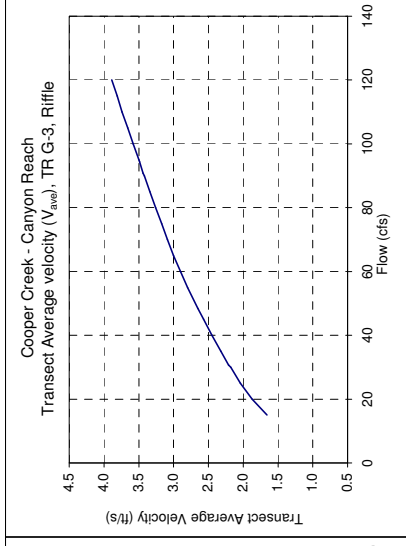
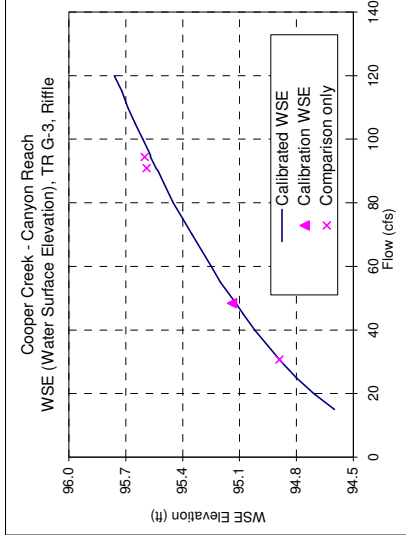
Reach: Canyon Reach  
 Stream: Cooper Creek  
 Transect: G-2  
 Habitat: Riffle

Modeling Q (cfs)	WSE (ft)	Simul. Q (cfs)	Cal'd WSE (ft)	WAF	Froude Number	Velocity (ft/s)	Manning's n	wetted perimeter (ft)
48.4	95.03	15	94.54	0.79	0.21	1.09	0.144	17.7
20	95.41	20	94.63	0.90	0.25	1.31	0.124	18.6
25	94.79	25	94.72	0.98	0.27	1.49	0.113	19.4
30	94.79	30	94.80	1.04	0.29	1.65	0.105	20.1
30.7	95.47	30.7	94.81	1.05	0.30	1.67	0.104	20.1
35		35	94.87	1.10	0.31	1.79	0.100	20.6
40		40	94.93	1.15	0.33	1.93	0.095	21
45		45	94.99	1.20	0.35	2.05	0.092	21.5
48.4		48.4	95.02	1.23	0.36	2.14	0.089	21.7
55		55	95.09	1.28	0.37	2.29	0.085	22.2
60		60	95.14	1.31	0.39	2.39	0.083	22.6
65		65	95.19	1.34	0.40	2.49	0.081	23
70		70	95.24	1.37	0.41	2.58	0.079	23.5
75		75	95.28	1.39	0.42	2.67	0.077	23.9
80		80	95.33	1.41	0.43	2.75	0.076	24.4
85		85	95.37	1.43	0.44	2.83	0.074	24.9
90		90	95.41	1.46	0.45	2.90	0.073	25.3
90.8		90.8	95.42	1.46	0.45	2.92	0.073	25.4
94.4		94.4	95.44	1.47	0.45	2.97	0.072	25.6
95		95	95.45	1.48	0.45	2.98	0.072	25.7
100		100	95.49	1.50	0.46	3.05	0.070	26.2
105		105	95.52	1.52	0.47	3.12	0.070	26.5
110		110	95.56	1.54	0.48	3.18	0.069	26.8
115		115	95.59	1.55	0.48	3.25	0.068	27
120		120	95.62	1.57	0.49	3.31	0.068	27.3



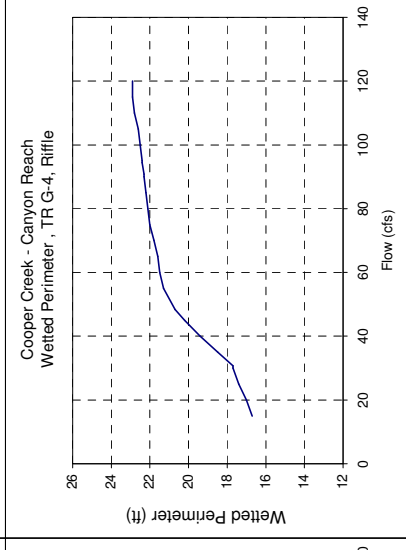
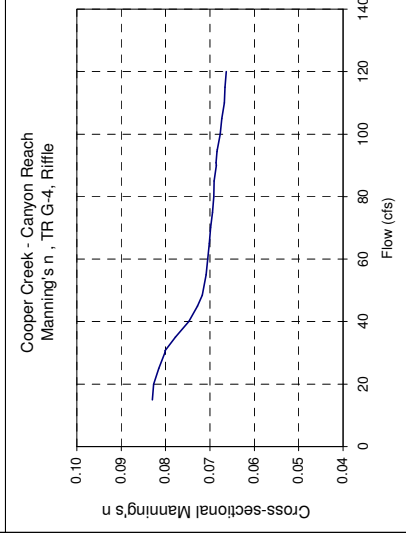
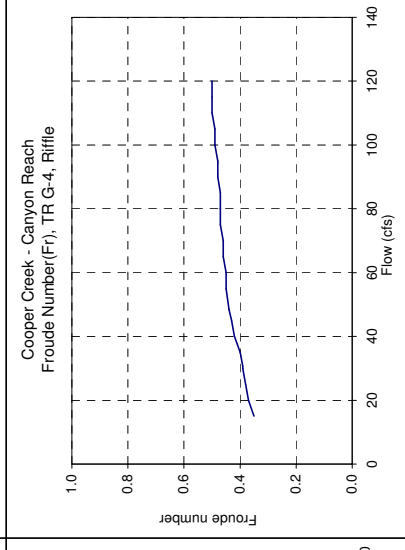
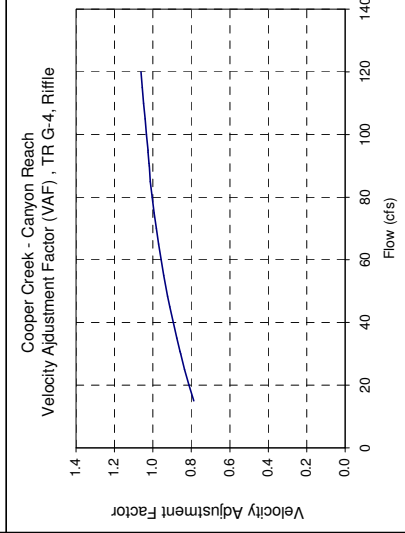
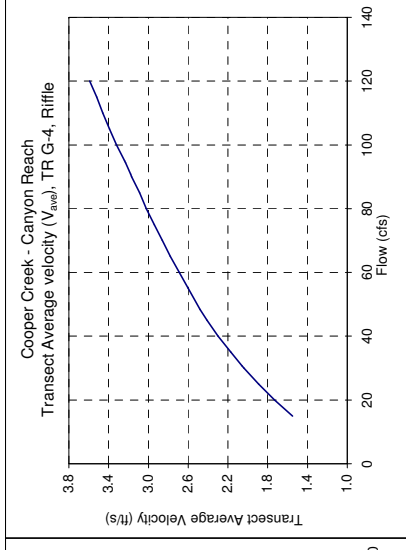
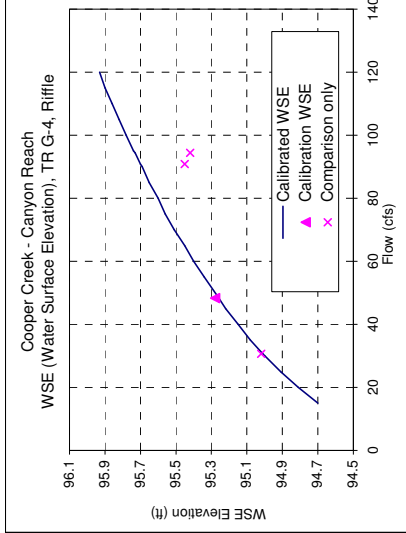
**Reach** : Canyon Reach  
**Stream** : Cooper Creek  
**Transect** : G-3  
**Habitat** : Riffle

Modeling Q (cfs)	Modeling WSE (ft)	Simul. Q (cfs)	Cal'd WSE (ft)	VAF	Froude Number	Velocity (ft/s)	Manning's n	wetted perimeter (ft)
48.4	95.14	15	94.60	0.97	0.38	1.66	0.076	16.2
90.8	95.59	20	94.71	1.00	0.41	1.87	0.070	18
30.7	94.89	25	94.80	1.01	0.43	2.04	0.069	18.5
94.4	95.60	30	94.88	1.02	0.44	2.18	0.069	18.9
		30.7	94.89	1.02	0.44	2.21	0.068	19
		35	94.95	1.03	0.45	2.32	0.067	19.4
		40	95.02	1.04	0.46	2.45	0.066	19.8
		45	95.08	1.05	0.47	2.57	0.066	20.1
		48.4	95.12	1.05	0.48	2.65	0.065	20.3
		55	95.20	1.06	0.49	2.80	0.064	20.8
		60	95.25	1.07	0.50	2.90	0.063	21.1
		65	95.30	1.08	0.51	3.00	0.062	21.4
		70	95.35	1.08	0.51	3.09	0.062	21.6
		75	95.40	1.08	0.52	3.17	0.062	21.7
		80	95.45	1.08	0.52	3.26	0.061	21.8
		85	95.49	1.09	0.52	3.34	0.061	21.9
		90	95.53	1.09	0.53	3.42	0.061	22
		90.8	95.54	1.09	0.53	3.44	0.061	22
		94.4	95.57	1.10	0.53	3.49	0.061	22.1
		95	95.57	1.10	0.53	3.50	0.061	22.1
		100	95.61	1.10	0.54	3.58	0.060	22.2
		105	95.65	1.11	0.54	3.66	0.060	22.3
		110	95.69	1.11	0.55	3.74	0.059	22.4
		115	95.72	1.12	0.55	3.81	0.059	22.5
		120	95.76	1.12	0.56	3.89	0.059	22.5

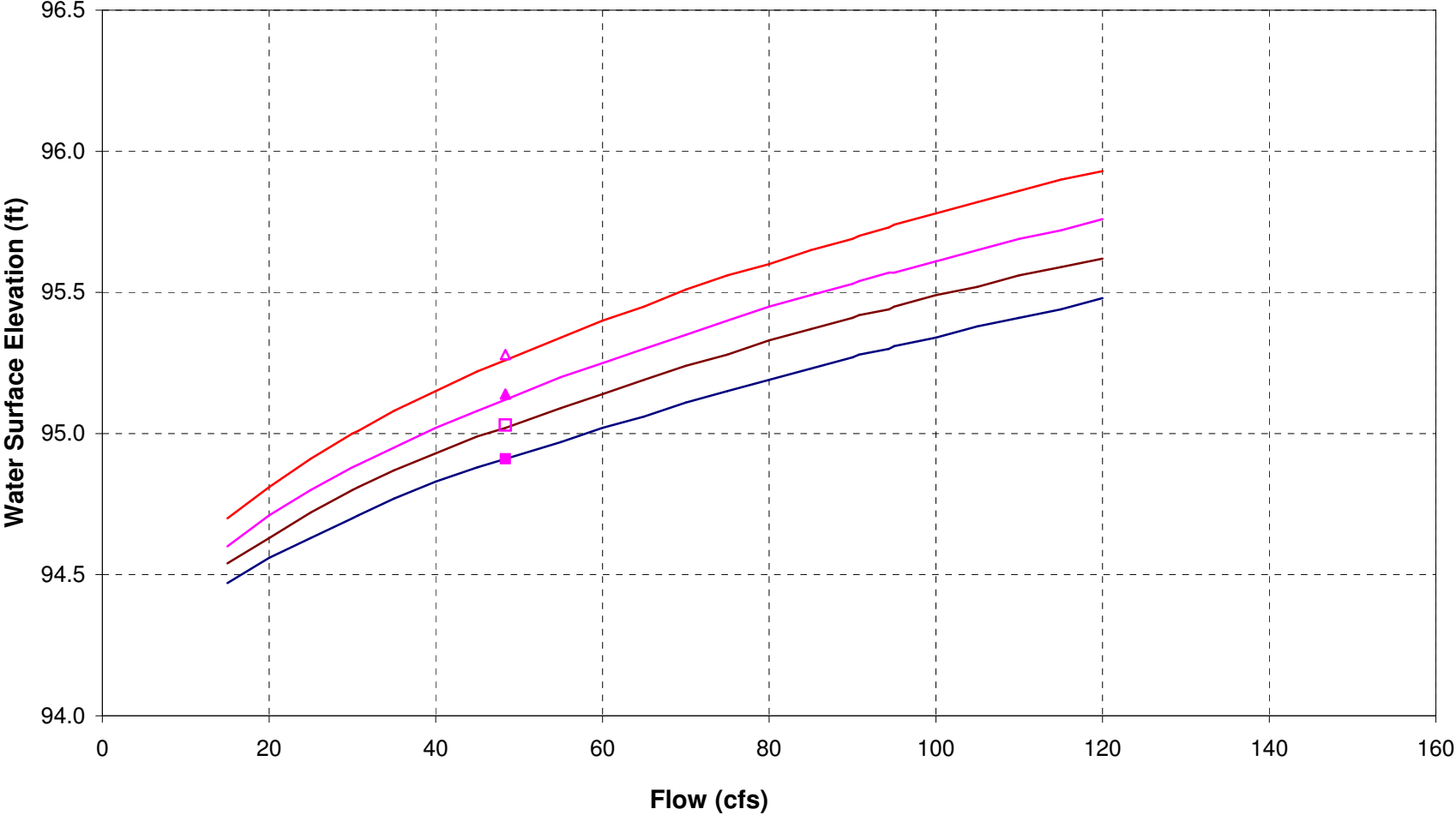


Reach: Canyon Reach  
 Stream: Cooper Creek  
 Transect: G-4  
 Habitat: Riffle

Modeling		Simul. Q (cfs)	Cal'd WSE (ft)	VAF	Froude Number	Velocity (ft/s)	Manning's n	wetted perimeter (ft)
Q (cfs)	WSE (ft)							
48.4	95.28	15	94.70	0.79	0.35	1.55	0.083	16.7
90.8	95.45	20	94.81	0.81	0.37	1.73	0.083	17
30.7	95.02	25	94.91	0.84	0.38	1.89	0.082	17.4
94.4	95.42	30	95.00	0.86	0.39	2.04	0.080	17.7
		30.7	95.01	0.86	0.39	2.06	0.080	17.7
		35	95.08	0.88	0.40	2.17	0.078	18.5
		40	95.15	0.89	0.42	2.30	0.075	19.4
		45	95.22	0.91	0.43	2.41	0.073	20.2
		48.4	95.26	0.92	0.44	2.48	0.072	20.7
		55	95.34	0.94	0.45	2.60	0.071	21.3
		60	95.40	0.96	0.45	2.69	0.070	21.5
		65	95.45	0.97	0.46	2.78	0.070	21.6
		70	95.51	0.98	0.46	2.86	0.070	21.8
		75	95.56	0.99	0.47	2.94	0.069	22
		80	95.60	1.00	0.47	3.02	0.069	22.1
		85	95.65	1.01	0.47	3.09	0.069	22.2
		90	95.69	1.02	0.48	3.17	0.069	22.3
		90.8	95.70	1.02	0.48	3.18	0.069	22.3
		94.4	95.73	1.03	0.48	3.23	0.068	22.4
		95	95.74	1.03	0.48	3.24	0.068	22.4
		100	95.78	1.03	0.49	3.32	0.068	22.5
		105	95.82	1.04	0.49	3.39	0.067	22.6
		110	95.86	1.05	0.50	3.46	0.067	22.8
		115	95.90	1.05	0.50	3.52	0.067	22.9
		120	95.93	1.06	0.50	3.59	0.066	22.9



### Cooper Creek - Stetson Reach, Site G Comparison of Modeling and Simulated WSEs



Reach: Stream: Habitat: CalibrationFlow:	Canyon Reach Cooper Creek Riffle 5/14/2003 (Q=48.4cfs)	Comparison of Measured and Simulated Velocity Profile															
		TR G-1				TR G-2				TR G-3				TR G-4			
		Sta	meas.	simul.	Sta	meas.	simul.	Sta	meas.	simul.	Sta	meas.	simul.	Sta	meas.	simul.	
		10.0	2.70	2.93	10.0	0.00	0.00	10.1	0.00	0.00	10.0	0.00	0.00	10.0	0.00	0.00	
		12.0	2.80	3.04	15.3	0.00	0.00	15.0	0.00	0.00	11.2	0.00	0.00	11.2	0.00	0.00	
		18.4	2.30	2.50	16.5	0.00	0.00	18.3	0.00	0.00	13.9	0.00	0.00	13.9	0.00	0.00	
		19.9	2.80	3.04	17.5	0.00	0.00	19.0	0.00	0.00	14.9	0.00	0.00	14.9	0.00	0.16	
		20.3	2.70	2.93	19.6	0.40	0.73	20.0	0.60	0.73	17.1	0.00	0.00	17.1	0.00	0.00	
		22.5	2.30	2.50	21.3	2.30	2.81	21.1	2.10	2.20	18.3	0.00	0.00	18.3	0.00	0.93	
		24.2	2.80	3.04	22.6	2.50	3.06	23.8	2.70	2.83	20.3	3.10	2.83	20.3	3.10	2.83	
		26.2	2.70	2.93	24.0	3.20	3.91	24.3	2.50	2.61	22.7	2.00	1.83	22.7	2.00	1.83	
		28.3	2.70	2.93	25.8	2.50	3.05	26.0	2.80	2.92	24.4	2.50	2.29	24.4	2.50	2.29	
		30.0	2.60	2.83	27.4	2.10	2.56	27.8	3.60	3.75	25.6	2.70	2.47	25.6	2.70	2.47	
		32.2	2.70	2.93	29.4	2.10	2.56	29.8	3.10	3.22	27.5	1.90	1.74	27.5	1.90	1.74	
		35.3	3.10	3.37	31.0	1.80	2.20	31.8	3.10	3.22	29.2	3.60	3.30	29.2	3.60	3.30	
		37.8	2.30	2.50	33.2	1.30	1.58	33.5	2.60	2.69	30.8	4.80	4.40	30.8	4.80	4.40	
		39.7	2.60	2.83	35.0	0.40	0.48	35.4	1.50	1.54	31.7	4.90	4.50	31.7	4.90	4.50	
		41.2	1.00	1.09	37.1	0.00	0.00	38.5	0.00	0.00	33.0	1.60	1.47	33.0	1.60	1.47	
		42.9	0.00	0.27	41.0			40.5			35.5	0.00	0.00	35.5	0.00	0.00	
		45.3		0.11	46.8			46.2			39.1	0.00	0.00	39.1	0.00	0.00	
		47.5		0.00	47.3			48.0			41.2	0.00	0.00	41.2	0.00	0.00	
		54.8		0.00	51.7			48.9				0.00	0.00		0.00	0.00	
		59.0		0.00	53.2			50.4				0.00	0.00		0.00	0.00	
		62.4		0.00	54.9							0.00	0.00		0.00	0.00	

